ITEA Magazine 30

JULY 2018

20 YEARS ITEA

ITEA 3

EUREKA Innovation Days
The power of collaboration

Focus on the
Netherlands

ITEA Success Story
BaaS

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Editorial

We can look back on the EUREKA Innovation Days 2018 in Finland as a great success, one that underlined the power of collaboration in which our global dimension was strengthened with Korea and Canada confirming their involvement in EUREKA and more especially in ITEA. All the Clusters demonstrated their strong support to SME growth through a direct address organised with a set of SMEs and chairpersons. The ITEA corridor of innovation was particularly impressive with 37 projects demonstrating numerous unique innovations and strong, fast market impact, such as the MEDIATE project that received the 2018 EUREKA Innovation Award in the category 'Innovations of Tomorrow'. Honourable mention also goes to this year's four ITEA-awarded projects: BENEFIT, C^{3}PO, IDEA4SWIFT and FUSE-IT.

We celebrated our 20 years of success stories in an atmosphere of happiness with testimonials from large industrials, SMEs, researchers and public authorities, all nicely kicked off by our iconic former Chairman, Rudolf Haggenmüller. But while it was pleasing to enjoy this long history of successes, our focus is always on the next game and our current Chairwoman, Zeynep Sarılar, looked ahead towards the challenges of the next twenty years. Have a look at the customer challenges on our website to help prepare the next ITEA proposals for our PO Days on 4 and 5 September in Stockholm.

This issue also features the last harvest of Call 4 and the impact of our new tool: the international customer workshop aimed at orienting our projects even more towards customer challenges. Rudolf Scholte, the COO of Quantib, a healthcare spinoff of Erasmus University that is in the business of mastering artificial intelligence, stresses that, although funding is a vital ingredient, it's not about the money, but about adding value to their customers, the clinics.

In this magazine you will also discover the new Golden Age of the Netherlands, based on innovation and making strong use of ITEA to enable industry to change the game and impact the market. Wilbert Schaap, programme coordinator for the international technology programmes at the Dutch Ministry of Economic Affairs and Climate Policy, confirmed the Dutch government's support for ITEA.

Dominique Défossez and Päivi Jaring talk about their various experiences in ITEA, stressing our involvement in Smart Communities, the topic of our last international customer workshop where we were welcomed by Barco, a worldwide leader on cooperative tools. Read also the Community Talk article with Martin Benedikt on his successful experience with the ACOSAR project to develop a co-simulation interface for RT-System integration. I am particularly proud of their success in standardisation, Champagne! Be sure to also have a look at the next ITEA Success story on the ITEA BaaS project design, an architecture that considers a building rather as a service and with a long list of market impacts. And if UAVs are your thing, then check the HI-RISE report.

Once again, when we speak about ITEA the best thing we can do is to focus on our projects and their successes. It all points towards a great future for our next 20 years.

Philippe Letellier
ITEA Vice-chairman

The power of collaboration giv Helsinki an ext shine

EUREKA Innovation Days
& ITEA Event 2018

FINLAND 2017/18
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Pampered with a daily dose of almost 18 hours of sunlight, Helsinki at the end of May is a very generous place to be. But at the EUREKA Innovation Days, there was no time to bask in the sun. “Ten seconds to meet, greet and make contact!” This was the call issued to and taken up by all with great enthusiasm in the Finlandia Hall at the start of the EUREKA Innovation Days from 22-24 May. An enjoyable way that moderator Charlotte Geerdink got the theme of the power of collaboration launched, reiterating the opening address of Heikki Uusi-Honko, EUREKA high-level group Chairman, who began the event with the anecdote that the venue had hosted the Helsinki treaty of 1975 when, in the middle of the Cold War, East and West sat at the same table. So it was also appropriate that it should afford the opportunity for South Korea to sign up as a partner country of EUREKA and for Canada to reaffirm its commitment to the EUREKA Network by signing the Canada-EUREKA Association renewal.

Helsinki provided three days of ‘smart’ insights and trends, coupled with the essential role of collaboration in getting innovation into people’s lives

Smart insights and collaboration

With over 900 participants treated to an exhibition of projects, demonstrations of success stories, interactive panel discussions, keynote speeches and presentations of awards, Helsinki provided three days of ‘smart’ insights and trends in mobility, energy, health and industry coupled with the essential role of collaboration in getting innovation into people’s lives. And with delegations from Korea, Canada, Chile and South Africa, four continents were represented to give the event a really global feel, and once again emphasize how the ITEA Community is a veritable global village.

Corridor of innovation

Evidence of the prominent role of ITEA was underlined by the largest number of projects being exhibited, 37 in total, all ready and willing to share and collaborate – key ingredients in the DNA of this EUREKA Cluster. The guided tours along the collaborative ITEA project successes generated a vibrant buzz of expectation and reward, prompting lively engagement along this corridor of software innovation. Each project was a fascinating story in itself, stories that ranged from enabling more effective personalised healthcare to making real sense out of big data and from being able to slip securely and smoothly through passport control to preventing the malicious hackers doing harm in critical buildings like hospitals. In addition to the usual guided tours for Public Authorities and ITEA body members, for the first time ITEA organised tailored Innovation Discovery tours of the exhibition. This offered invited companies the opportunity to learn how the latest innovations coming from ITEA projects could solve their current challenges and to initiate partnerships in ITEA for the future.

Prize-winner

One of these projects, MEDIATE, received the 2018 EUREKA Innovation Award in the category ‘Innovations of Tomorrow’ from this year’s Millennium Technology Prize-winner, Finnish

physicist Tuomo Suntola. Dr Suntola has been rewarded for his innovative technology, atomic layer deposition (ALD), which has helped lay the technical foundations for smartphones and computers. The ITEA 2 MEDIATE project aimed at supporting healthcare professionals in the transition from invasive open surgery to minimally invasive, image-guided interventions. In accepting the award, project coordinator, Herman Stegehuis of Philips, expressed the power of collaboration by paying tribute to the whole team without whom the success would not have been possible. "Because there are many simultaneous changes in healthcare (clinically, technically, regulatory, financially) and clinical applications are diverse, no single company can cover all innovation aspects on its own."

Better quality of life

Four parallel sessions on Day 2 saw the four key areas of Smart Health, Smart Industry, Smart Mobility and Smart Energy explored through presentations and interactive debates. While technological innovation was a central feature in all four sessions, the discussions moved beyond the actual technological innovations to the impact these have on our way of life. For instance, in her presentation in the Smart Mobility session, Dr. Maria Rimini-Döring of Robert Bosch and a member of the ITEA Steering Group, considered what it is that we mean by 'smart', the common denominator of the four sessions. "We need to consider what meaningful mobility is when we develop our new smart mobility solutions and services. Smart and meaningful for what and for whom? The end user, the environment, manufacturers, business? And then there are the aspects of privacy, infrastructure, safety." So not just the impact of technology on life but vice versa, the influence of life on the development of technology – a kind of symbiotic relationship. In the Smart Health session Caspar Garos of Philips referred to the higher purpose of 'smart', pointing out that "artificial intelligence and data science will become a key enabler for care everywhere" as the data explosion leads to more and greater opportunities to personalise healthcare on an industrial scale. He cited the ITEA MEDUSA project as heralding "the start of driving digital transformation in healthcare." The message that rang loud and clear from the 'Smart' sessions was that digitalisation and innovation both influence and are influenced by our lives, and hopefully for the better.

Innovation in a global environment

Zeynep Sarılar opened Day 3 as InterCluster spokesperson with the words: "EUREKA is the place for innovation in a global environment." This event not only offered new insights into business and technology developments within the four 'Smart' domains but it also provided opportunities for networking and initiating or developing collaborative projects with companies and research organisations from Europe and beyond. During the plenary EUREKA Clusters session that followed, the Clusters underlined their roles in the innovation ecosystem in their own two-minute pitches to an inquisitive audience. ITEA Chairwoman Zeynep Sarılar referred to the high and growing participation of SMEs in many successful projects within the ITEA collaborative community. SMEs were also given an opportunity by Philippe Letellier (by lottery) to pitch their ideas to, and get feedback from, the Cluster representatives and find out how the different Clusters might serve as enablers. Furthermore, B2B matchmaking sessions each day proved a big draw to finding international collaboration for innovative ideas. This conference was all about demonstrating and not simply showcasing how collaboration has the power to make success happen.

Positive impact in a global market

Of course, during the ITEA Event 2018, ITEA made use of the occasion to celebrate its 20 years of successful innovation, and to this end participants were invited to gain an insider view on ITEA impact and participation from project leaders, ITEA body members and Public Authorities. This involved an interactive, audience-involving panel session with the four winners of the 2018 ITEA Awards of Excellence in which the project leaders from Airbus, Barco, IDEMIA and Philips shared their inspiring solutions for the challenges of

ITEA Awards of Excellence

Big impact, better society

During the ITEA Event 2018 that formed part of the EUREKA Innovation Days, four ITEA projects received the 2018 ITEA Award of Excellence.

FUSE-IT, an Airbus CyberSecurity led project, received an award in the category “Innovation” for solving the dilemma between efficiency and security in intelligent buildings, addressing the need for sustainable, reliable, user-friendly, efficient, safe and secure Building Management Systems in the context of Smart Critical Sites. So now the scenario in which a malicious hacker wants to manipulate a hospital’s heating, ventilation and air-conditioning system to spread instead of help cure diseases can be avoided and, at the end-user level, both energy and lives can be saved!

IDEA4SWIFT, winner in both “Innovation” as well as “Business impact”, addressed important and current safety and security issues. IDEMIA, which led the project, came up with MorphoPass, a fully integrated security system that manages the different stages in a passenger’s journey through an airport, based on biometric identification. Singapore’s Changi Airport has now selected IDEMIA to provide biometric identification and authentication services as passengers pass through this airport’s highly innovative terminal.

C^{3}PO is a project coordinated by Barco that developed a cloud collaborative and semantic platform for city co-design. The project has created new and enhanced participation apps to enhance collaboration between different city stakeholders, giving them a voice in the co-creation of their urban environment. C^{3}PO won an ITEA Award of Excellence for “Business Impact”.

Finally, the Philips-led **BENEFIT** project developed software analysis and imaging methods, navigation tools, and a structured database that gathers patient and treatment information. This helps healthcare professionals before and during minimally invasive interventions by presenting quantified information, personalising models of diseased organs and implantable medical devices, and offering treatment alternatives. Based on this architecture, Philips has introduced new tools with significantly higher accuracy for the treatment of cranial aneurysms and liver tumours. BENEFIT was awarded in the category “Business impact”.

Four projects out of the many impressive ITEA projects with a proven track record of actual business and societal impact, contributing to a better society in their own way.

ITEA projects are capable of addressing global challenges of the highest ambitions

collaborative city co-design (C³PO), safe and secure Building Management System (FUSE-IT), security of border management (IDEA4SWIFT) and minimally-invasive interventional treatments (BENEFIT). Finally, in a celebration of 20 years of ITEA, several representatives from industry and Public Authorities spoke about the impact of ITEA, its projects and their personal experiences in ITEA. It was only fitting that Zeynep should invite former ITEA Chairman, Rudolf Hagenmüller, "the father" back among his 'family' and friends, to kick off the retrospective.

Big ambitions for big challenges

"In terms of impact, I believe the real success of ITEA is that it has convinced businesses and industry that collaborative projects really can deliver business impact. And this business impact has to happen not in a far future but even during the lifetime of a project. Fast exploitation has been a major success of ITEA projects. And what I think ITEA has shown over the past 20 years is that ITEA projects are capable of addressing global challenges of the highest ambitions. I coined the term 'seizing the high ground' for this. I think of the global OEM that came with the challenge of a global standard for simulation for all OEMs. ITEA delivered. That's what I mean by seizing the high ground. And we did so not by burning people out but by bringing happiness. On a personal note, ITEA was a high point where I was able to bring together all my experience together. And now, after my chairmanship, ITEA helps me to realise that my life has not been just a dream. It shows me that my life is real."

A place to call home

Andy de Mets of Barco, a 'veteran' of the ITEA set-up for 20 years, paid tribute to the game-changing impact of ITEA on his company: "In 2001 a small consortium came together in ITEA to find out whether digital cinema had a future. Well, we created a complete new market. We are the world market leader today with over 50% of market share in digital cinema and with over €300 m in sales revenue." Mike Timmermans, project coordinator of the Netherlands Enterprise Agency (RVO), said that the impact of ITEA for him was also very tangible. "With two of the projects we co-funded, MEDIATE and BENEFIT, winning awards I can return home a happy man," and Jonas Bjarne of the Swedish Innovation Agency, Vinnova, considered ITEA a success not only in terms of project results but also on the human front, referring to "a family, the place I come home to."

Brighter future

In her closing address, Zeynep Sarılar paid homage to the impact of ITEA's past 20 years but also looked ahead to the next twenty, reiterating the power of collaboration. "We don't know what to expect at this moment. The only thing that we can do is to continue to be curious, open to learn and be ready to adapt to the future. So let's focus on innovative solutions to societal challenges, collaborate with each other and go to the global markets to create a positive impact. If you want to be a part of this future of ITEA, then join us in the next Call and through collaboration make the future much brighter for everyone."

For all presentations and photos:
https://itea3.org/itea-event-2018/index.html

Country focus on the Netherlands

Economic momentum driven by innovation

The Dutch economy is in good shape again. As the most competitive economy of the European Union and the fourth-most competitive economy of the world, the Netherlands has achieved its ambition to be among the top five most competitive economies by 2020. What's more, the Netherlands is now an innovation leader on the European Innovation Scoreboard. Wilbert Schaap is programme coordinator for the international technology programmes ITEA 3 and ECSEL, and Dutch lead delegate in the H2020 ICT LEIT programme at the Directorate for Enterprise and Innovation of the Ministry of Economic Affairs and Climate Policy. He provides an insight into a country committed to enterprise and innovation built on a tradition of international trade and an eye for sustainability.

Upward investment curve
The 2017 Enterprise Policy Report that bears the title *Navigating under full sail* (alluding perhaps aptly to the Golden Age of Dutch trade, science, military prowess and art in the 17th century) refers to the technological developments, such as digitisation, that continue to appear at a dizzying pace. According to the CPB, the Netherlands Bureau for Economic Policy Analysis, the Netherlands is on course to grow by 3.3% in 2017. Wilbert Schaap is, not surprisingly, both proud and pleased with such figures. "Not only are we seeing a difference in terms of the facts and figures, the numbers and percentages, but the government's top sector policy introduced a few years ago is really starting to pay dividends. There is plenty of evidence to suggest that this policy of concentrating on those sectors in which the Netherlands excels is having a significant impact on tackling societal challenges. That's something that ITEA, which is also part of the Dutch top sector policy, has been doing very successfully for a long time through its projects."

A new Golden Age?
"It's not only our very good R&D and innovation, especially in areas like agrifood, high-tech systems and materials but also our digital infrastructure, human capital, our markets and regulatory environment together produce a picture that could be heralding a new Golden Age," Schaap suggests. In June 2017, the Netherlands was third (from ninth) on the Global Innovation Index – just behind Switzerland and Sweden - and was also doing better in terms of committing 2.03% of its GNP (Gross National Product) to R&D investment (almost 14.3 billion euros annually) while the share of spending by companies was also up to around half of all R&D spent. "But, of course, we're not quite where we want to be yet," Schaap adds: "because our aim is to get the R&D investment figure up to 2.5% by 2020. It won't be easy but since we have come from 1.9% in 2011, the good news is that it is still going up. And we need programmes like ITEA to stimulate companies and research institutions to take up more R&D activities."

DNA
The report states that sustainability is not an option but a necessity and that strong international competition is spurring the Netherlands to keep on innovating, "with no time for slacking." The evidence of this is apparent in 13 quarters of uninterrupted economic growth. Schaap attributes much of the success to the Dutch DNA that is implicit in a nation built on consensus – the polder model. "Collaboration is key. We realised centuries ago how important it was to collaborate. If we hadn't worked together, we couldn't have built our world-renowned dikes that have managed to keep the North Sea from flooding our delta lands! And it is the same kind of spirit of partnership that is evident today in the open innovation environment of places like the High Tech Campus (HTC) in Eindhoven, which proudly lays claim to being the world's most intelligent square kilometre. It is not without reason," Schaap says, "that ITEA chose to locate its office at the heart of this campus where collaboration really does take place on a daily basis."

Pooling resources
Referring again to the government's top sector policy, Schaap says that it is essential "to ensure that universities, knowledge institutions, RTOs, companies and government cooperate very closely on innovation, trade/export and human capital, with the right people with the right skills in the right places in order to tackle our societal challenges. In terms of innovation, we have very clear targets – we want to get the total corporate R&D investment in the field of High Tech Systems and Materials up to five billion euros by 2025. We are heading

We need these kind of collaborative R&D programmes and projects working on such important areas to secure the future for our industry and society, and our planet

in the right direction. We are the smallest of the large countries or the largest of the small countries – it depends which way you look at it. Our annual dedicated budget for international R&D support in the field of High Tech Systems and Materials is 40 million euros – split 50-50 for the EUREKA Cluster programmes ITEA 3 and PENTA and for ECSEL. By investing in international R&D cooperation and pooling resources beyond borders, significant gains can be made in efficiency and effectiveness."

Innovators and entrepreneurs

The structural economic recovery has also been boosted by the Dutch government's enterprise policy that has created the conditions for entrepreneurs to innovate and grow in recent years. There are now fewer direct business grants, more generic innovation incentives and more self-recouping financial inducements such as credits and guarantees. "The idea is to promote sustainable economic growth by improving earning capacity and tackling societal challenges through the vehicles of innovation and entrepreneurship," Schaap explains. The policy also aims to help get access to capital market financing, to create a favourable business climate, attract foreign investment and reduce regulatory pressure. "And in this whole process we want to make use of the opportunities for digitisation and sustainability. ICT innovations are relevant for renewal in (top) sectors, for societal challenges and for the earning power of the Netherlands as a data-driven, versatile economy. Our multiannual ICT Knowledge and Innovation Agenda has been updated with a focus on innovation opportunities for big data, digitalisation, cyber security, artificial intelligence, blockchain and 5G communication," Schaap reveals.

Economic Affairs and Climate Policy

"And if we look at these topics, we see that these are all issues that ITEA has been targeting for years. We need these kind of collaborative R&D programmes and projects working on such important areas to secure the future for our industry and society, and our planet, of course. It is important also that the initiatives we take in the Netherlands should be aligned with those in Brussels, through the European Commission and FP9 for example, because once again, it is only by working together that we will be able to solve the major societal challenges. Totally in line with ITEA's happiness objective he adds, "We're all in it together and we all have a stake in the future of our society, industry and planet. This is borne out by the recent change of name of the Ministry of Economic Affairs to include Climate Policy. The things we are striving to achieve, such as prosperity, wellbeing and quality of life, must be realised not only together but in a sustainable way. That's where the technological innovations that are produced in programmes like ITEA can ensure that our production, farming, healthcare, energy supply and other key aspects of life are affordable and sustainable. And in all these areas we are seeing how innovations like digitisation and artificial intelligence are helping to overcome our societal challenges."

Quantib

The SME leading the way into the future of radiology

Rudolf Scholte is the COO of Quantib, a company of "young and passionate people dedicated to advancing healthcare by writing awesome algorithms", as stated on their website, that he and professor Wiro Niessen of the Erasmus Medical Center in Rotterdam co-founded in 2012. With over 25 years of management experience in the healthcare industry, he has spent the last ten years focusing on building innovative start-ups.

Quantib began life as a spin-off from the Erasmus University that houses the Biomedical Imaging Group Rotterdam led by Wiro Niessen that researches the application of new technological innovations for medical imaging analysis. "The unique thing about this," Rudolf points out, "is that the Erasmus University does not have a specific physics or computer science department and as such is forced to internalise these skills within its medical centre where the physicists, mathematicians and computer sciences among its staff are geared to medical imaging analysis." A major reason for the group's success is that it is actually housed inside the medical centre, working together with radiologists, neurologists and other specialists. This means that the developments are really focused on the clinic's needs. "Just imagine the benefits of sharing all that knowledge, next to the coffee machine!"

AI +

When General Electric Healthcare visited the centre and saw for itself the work that was

going on, it proposed a collaboration and become a launching customer for the innovative technologies that were being created. "And so we had a substantial agreement in place to get Quantib off the ground," Rudolf explains. "Looking at the company's business, several buzzwords come to mind, such as artificial intelligence (AI), machine learning and deep learning – these are the technologies that play a key role in medical image analysis. We all know how AI got the better of the human world champion in Go! Well, we use the same kind of AI to 'win' but with an essential add-on – a deep understanding of clinical usage and the clinic's underlying workflow." The first area where Quantib applied this valuable combination of different types of expertise was neurology. In collaboration with GE Healthcare, Quantib developed its first product: Quantib Brain, a plug-in to the GE branded software that radiologists use to view and assess medical images.

Tweak and optimise

Quantib goes further than simple medical imaging analysis – its solutions involve the complete workflow from reading the image to diagnosing the patient. Key to this whole process is software. "Our product is software – data science. We use the software to analyse the data and try to use it in a more intelligent way. It's not the software and algorithms on their own that distinguish us from other high-tech companies. Where we are different," Rudolf says, "is our deep knowledge of clinical workflows, diagnostics and clinical processes. The innovation takes place in tweaking and optimising our algorithms in such a way that they can easily be used in combination with all the other software radiologists are already using. You have to realise that all vendors provide slightly different programs for processing, storing, viewing and reporting of medical cases. To not unnecessarily complicate the radiologist workflow even further, we have to make sure our product integrates seamlessly with the software being used currently."

Power of collaboration

Quantib's work of tweaking and optimising its algorithms is strongly supported by participation in programmes like ITEA that provide an opportunity to collaborate in funded projects. "It certainly helped us in the past," Rudolf says, "as programmes like ITEA encourage the large companies to work with SMEs, which they may not be inclined to do otherwise. Of course, it's a chicken-and-egg scenario. You need to prove yourself, but you also need the opportunity to do so." In the very successful ITEA project BENEFIT Quantib did just that. In collaboration with, amongst others, Philips, the company assisted with the development of an 'Organ-at risk' segmentation tool for brain tumor treatments. Additionally, Quantib is involved in the current ITEA STARLIT project, collaborating with partners, including Philips and Elekta. The aim of the project is to develop novel technologies in radiation oncology for improvement of the quality of life for cancer survivors by using real-time MRI imaging in order to enlarge treatment accuracy and minimise healthy tissue doses. A future ITEA project, IMPACT, which is also led by Philips, will involve Quantib's work on enabling the shift from evidence-based to intelligence-based healthcare, promoting automatic data collection and artificial intelligence throughout the complete clinical pathway.

Adding value to clinics and patients

"Funding is a vital ingredient, there's no denying that," Rudolf admits. Quantib recently secured a significant amount of fresh funding from Holland Venture and Innovation Quarter to enable the company to scale up its international expansion ambitions and establish new partnerships with leading international academic hospitals. "But let me make one thing clear," Rudolf stresses, "it's not about the money. It's about adding value to clinics. That's a key criterion for selecting people – they must be committed to this goal. There is so much work that has to be done in that area, and that is our primary motivation. Our first commercial product targets better diagnosis of neurodegenerative diseases – everyone knows that Alzheimer's is a tremendous societal challenge, with millions of people and their families affected. We currently lack an effective therapy. This process starts with developing an effective drug, which means selecting the right kind of drug for development. We can help by analysing the images in the very early stages of clinical research and identifying the differences in things like the rate of brain shrinkage. The same goes for multiple sclerosis – we can help identify early on what works and what doesn't. The data science can make the difference. A colleague of mine has calculated that the amount of data generated in the next two to three years will be more than in the past hundred years. We want to use that data to 'supercharge' our radiologists so that they can help find solutions to these major societal challenges in healthcare."

More information

https://www.quantib.com

20 years of ITEA

The inside track on Smart Communities

Double interview with Dominique Défossez and Päivi Jaring

Dominique Défossez and Päivi Jaring have both played their role in giving the Smart Communities focus of ITEA a solid foundation and springboard to the future. Dominique has been involved in several projects, often as project leader, and Päivi was the driving force behind the recently finished ACCELERATE project. Both attribute a good deal of their successes to the indispensable ingredient of teamwork.

Dominique Défossez

Päivi Jaring

Dominique Défossez is programme manager for strategy and partnership at NXP Semiconductors in France where he is responsible for initiating, preparing and leading national and international cooperative projects for NXP in France. He is also a member of the ENIAC committee charged with evaluating Nanoelectronics research projects and member of the *Agence Nationale pour la Recherche*, which evaluates Content and Interaction research projects submitted to the French Ministry of Research. He is a familiar face within the ITEA Community where he has both participated in and led a number of projects.

Well-defined structure

"My first ITEA project was HDTVNext in 2010. I became project leader in this collaborative project as NXP took the leadership of this Thomson initiated project because the decoding element was considered a key factor in the focus on systems-oriented interactive algorithms. It was quite a large project, with 21 partners throughout the chain, all contributing in their various ways to the demonstrations, four platforms and exploitation. The collaboration and cooperation were strongly supported by the well-defined structure that ITEA provided. A major overall benefit was the capacity to define a common view between academics and industry on the future for multimedia distribution. It brought the European partners a step further in their video roadmap perspective and also generated credibility and technical advances in European innovation. Since then, I have contributed to 16 other ITEA projects more or less directly in various roles, from team member to work package leader and project coordinator."

Impressive business impact

Dominique's involvement in ITEA is substantial but reducing this to the Smart Communities arena, three projects stand out: HDTVNext, JEDI and MOOC TAB. "As I said, HDTVNext was a project dedicated to the deployment of HD technology. The main problem it proposed to solve concerned the CPU capability to handle such high-performance computing required for multi-standard video decoding. We achieved a number of key advances including the enhancement of the advanced video coding (AVC) standard that enables good video quality at substantially lower bit rates than previous standards. The audio digital signal processing (DSP) rendering algorithms we developed enable a system to learn the topology of a room and adapt the sound output accordingly. A further innovation was an scalable video coding (SVC) decoder that automatically adjusts to the available bandwidth. In terms of business impact, 15 different products emerged from the HDTVNext project results – from automatic content creation for regional broadcasters to video transcoders, power-line communications (PLC) extenders, HD video on demand, an interactive platform and HD conversion."

Award winner

Another Smart Communities project in which Dominique had an important hand, as work package leader this time, was the award-winning JEDI project that was dedicated to the 3D TV proof of concept. It confronted issues that were more in the 3D acquisition capability than in the 3D rendering performances. "Capturing

Thanks to the ITEA structure, SMEs can meet and expand their visibility outside national boundaries

3D movie requires a completely different way of making films," Dominique explains. "So we wanted to build a JEDI standard vision of the development and evolution for the revolutionary 3D TV in the near and distant future. We did this by firstly exploring the concepts of multiple views throughout the broadcast chain for the next generation of 3D TV, and secondly by establishing a stereoscopic chain from end to end as a demonstrator and as a tool for assessing the acceptability to the user." The project's success was evident in the impressive results that followed. One such result was the first-ever satellite transmission of 3D TV in full-HD resolution per view in excellent 3D quality all over Europe in Digital Video Broadcasting (DVB). JEDI won the golden ITEA 2 Achievement Award in 2012.

Lifelong learning

And now Dominique is leading the three-year MOOC TAB project that is due to finish this year and is dedicated to the fast-emerging offer of MOOCs (Massive Open Online Courses). The success of MOOC is expected to change the structure of the higher and corporate education industry within 10 years. The tablet, as a tool for having content whenever you want, is very complementary to the online Web MOOC Platform but, Dominique points out, "such massive deployment within education underlines the need for tablet fleet management as well as content management protection. Our MOOC TAB project is creating a tablet-based platform dedicated to lifelong learning through an on-demand and open MOOC platform, on which data is stored on a local secured cloud."

Team spirit

Looking at his involvement in ITEA projects, Dominique feels that the experience has taught and is still teaching him a lot. "What I have noticed is the capability to build a complete value chain from a bottom-up perspective. NXP is mainly focused on the hardware but, fortunately, my background is on the software side. I have learned that by building a team spirit within a competent consortium, we can achieve real, impressive results. At the beginning of the project, each partner just knows its piece of the puzzle. During the project execution, we all start to learn how the complete picture works. ITEA projects bring software companies together. By definition, software companies are more numerous than hardware companies because they require a lower level of investment. Thanks to the ITEA structure, SMEs can meet and expand their visibility outside national boundaries. Big industrial partners have the benefits of internal structure to lead them in the consortium and academics build strong relationships by bringing research activities, transferring IPs or allowing potential students to be hired. All round, it's a worthwhile venture for everyone."

Transformational impact

So, as Dominique is drawing his latest project, MOOC TAB, to its conclusion at the time of writing, Päivi Jaring, former Senior Research Scientist at VTT Technical Research Centre of Finland and now an independent research scientist based in the Netherlands, is able to take stock of the very substantial and successful project ACCELERATE that ran from September 2013 till November 2016. This project set out to shorten the innovation cycle and time-to-market, and to increase the number of new products or solutions as well as the number of ideas that are accelerated and/or created. The project created a lot of visibility for this highly relevant topic and had significant transformational impact on several of the participating companies, such as new spin-offs, products and business models, culture changes. So how does Päivi look back at her ITEA experience, and what did she get out of it from both a personal and a professional perspective?

From SHOPS …

"I first came into contact with ITEA in 2003 when I was working as a group manager at VTT in Finland. The project was SHOPS, which aimed to help solve the challenge faced at the time by the European utility sector: how to reconcile the three major constraints of deregulation, increasing demand for energy and preservation of natural resources." This project's answer was to deliver a services-oriented platform dedicated to the residential energy consumer segment and enable utilities to not only offer differentiated energy services but improve the overall energy consumption efficiency at the same time. "Mind you," Päivi points out, "you may not recognise any references to me back then because I still went by my maiden name,

Kallio." And some years further down the line, Päivi had the opportunity to coordinate an ITEA project herself.

... to ACCELERATE ...

Päivi got a taste for national and international research projects, in part through her role in her early years at VTT where she managed the software architectures research group, being responsible for personnel management and for acquiring research projects and new customers. Her own research focused on the potential of using ICT in business and this made her the ideal candidate to take charge of the ITEA 2 project ACCELERATE where the focus was on employing ICT to accelerate the go-to-market of companies. "What we wanted to do was to shorten the innovation cycle and time-to-market, and to increase the number of new products, solutions and ideas. After all, innovation has to go beyond creating technology; it has to 'go to market'. So if European technology companies are to be able to rapidly validate the match between the market and their innovative ICT-intensive technology, they must acquire acceleration knowhow. Our aim, then, was to transfer knowledge on a massive scale and introduce a new type of product development. This so-called validated learning process, which systematically searches for the technology-market match by validating the mechanics of a business model."

... into the market fast

So an ACCELERATE platform emerged. It eases and facilitates interactions between start-ups and investors for business and product ideas or just an idea that can become marketable. "The results we achieved had a real impact on the consortium partners," Päivi explains. "For instance, the Finnish Bittium saw its share of business ideas rise from 25% to 35% and expected the potential impact of the ACCELERATE project to result in revenues of several million euros within three years. With the prospect of more to come. That really is a shining example of innovation going beyond the technology and into the market ... fast! And what is interesting to mention is the fact that ACCELERATE really works as a platform should, sparking other developments and projects even after the project's end." ACCELERATE was also the basis of one of the presentations at the VINNOVA-ITEA masterclass on the Digital Transformation.

SotA

ITEA vice-chairman Philippe Letellier suggested in his SotA (State of the Art) article on ACCELERATE in the ITEA magazine (March 2017 issue) that "speed is now the alpha and omega of innovation. Thus acceleration of the go-to-market is a key focus for today's industry. ACCELERATE is one of our success stories on this topic and its SotA provides answers to how we can develop a methodology for acceleration, what role ICT technology itself can play in acceleration and how we can get towards a 'market' of acceleration services. It proposes an exciting comparison of innovation in SMEs and large companies. It helps to understand the strengths and weaknesses of these two kinds of organisation ahead of innovation."

Independent but connected

So, all in all, Päivi has had quite an impact on the ITEA Community even though for the past year she has focused on developing herself as an independent scientist and is supporting the establishment of a company. "I should explain that I worked remotely for VTT in the Netherlands since 2014 and when faced last year with the choice of returning to Finland, which is what VTT wanted, or staying in the Netherlands, where my children are now well and truly settled, I chose to stay and focus on becoming independent. Of course, through my ITEA and VTT work I have built up a network of good and valuable connections. So I have access to a much wider range of people I can call up and ask for advice or knowledge, which can be very useful for setting up new things. I would say that this is one of the main benefits of being in an ITEA project – you get to cooperate and collaborate with many different players and benefit from their insight and expertise. I would say that coordinating a project with many partners from various countries and making a success out of it would certainly go down as one of my highlights and without ITEA I would not have had this experience. Having been a coordinator has added another string to my bow. And although I am busy with other challenges at the moment, I'm still in touch with some of the partners, so friendships do develop out of business."

ACCELERATE is a shining example of innovation going beyond the technology and into the market ... fast!

Community Talk with:

Martin Benedikt

… being part of a winning team

Martin Benedikt graduated with distinction from his doctoral studies in technical sciences at Graz University of Technology. In his thesis, "A coupling method for non-iterative co-simulation", he developed a new method to compensate inevitable coupling errors in modular simulation of complete systems. Martin works at the VIRTUAL VEHICLE Research Centre in Graz and lectured at the Institute of Control and Automation Technology at Graz University of Technology.

Martin took a somewhat unorthodox route to arriving in his current innovation manager role. "I think you can say my educational background is a little bit special," he says. "I followed a vocational training course to become an electrician before switching to study automation and mechatronics at college. All the new technology that was happening at the time fascinated me and inspired me to begin studies in Graz where I focused on mechatronics and autonomous systems. This led me to the field of co-simulation, the topic of my thesis. The fundamental research I did laid the basis for a commercial co-simulation tool that has been developed at the VIRTUAL VEHICLE Research Centre in Graz where I headed the co-simulation team for four years after completing my PhD. And it's here where I am the innovation manager for Efficient Development topics today. For me, to see the research I did getting into a product like Model.CONNECT from AVL, formerly known as ICOS, makes me quite proud."

From Model.CONNECT to ACOSAR

Essentially, Model.CONNECT is an innovative co-simulation platform that allows the integration of a variety of engineering domains based upon novel coupling algorithms: it paves the way for cross-domain modelling, simulation and validation for innovations in vehicles and supports the user with a simple handling and the integration of various simulation tools from different domains. "Ultimately, this reduces both development time and cost," Martin explains, "and significantly increases the chances of a First-Time-Right solution."

Given this background, it is hardly surprising that Martin became involved in preparing, proposing and eventually leading a project for ITEA, ACOSAR (Advanced Co-simulation Open System Architecture). “Basically the aim of this project is to develop both a non-proprietary advanced co-simulation interface for RT-System integration and a corresponding integration methodology. We are in the final step to make a substantial contribution to international Distributed Co-simulation Protocol (DCP) standardisation within the Modelica Association. Our goal is to pursue a modular, considerably more flexible and shorter system development process for numerous industrial domains as well as establish new business models.”

Give and take

This is the first ITEA project that Martin has led and he has already gained valuable learning from the experience. “It was the first time I had an opportunity to become familiar with the perspectives of various so-called competitors or the importance of technical and business value chains. To experience the process of how these competitors work together, trying to push the technology forward, has been really interesting. In the beginning it was my job to build the consortium, network, communicate to the national funding agencies and liaise between the national organisations and the ITEA Office, where I got a lot of guidance, especially on the meaning of ‘funding’. Yes, it’s great to get funding but in the end you have to give something back. You have to come up with results that make a difference and are of sustainable value. We have already made very good progress on delivering the intended result, which is to produce a freely available standard. The fact that we are well on the way to achieving this has a lot to do with the support we get from the ITEA process and Office and the willingness of people to deliver results – special thanks to Martin Krammer at this point for working hard in the background. The interim reports and reviews in particular help us to stay on track and offer good moments to make any necessary adjustments. It’s a question of give and take … on both sides.”

Never change a winning team

“I should point out,” Martin adds, “that in Austria it is very difficult to initiate an ITEA project. There’s almost no separate funding set aside for this. For our company, this was the first time we had tried to initiate such an ITEA project and we were successful in getting the project off the ground with a second national application trial and the strong support from industrial partners. And we’re very happy it did because the ITEA framework is one in which a lot of experienced and motivated people get together to help drive the project in the right direction in a very familial atmosphere. My first impression was that ITEA is a very professionally run programme, with clear guidelines and an informative website. And that impression hasn’t changed. Although I did notice that during the last Project Outline preparation day I attended, the number of project idea presentations had doubled compared to when I attend this event for the first time. So if that and the fact that we would be keen to participate in future projects are anything to go by, my advice would be to stick to the same strategy and not change a winning team!”

Nice experience

From a professional perspective, Martin feels he has gained a lot from going through the project proposal and preparation process. “I must say I appreciate all the guidance and assistance I got from my ITEA programme manager, and I’m sure the same goes for my consortium colleagues. In terms of funding, procedures, where to focus effort, and so on. This was really added value. And from a personal point of view, it was just a nice experience to be involved, to be part of the network. It’s all about the people in the end, and so the benefits of having contact with all the different industrial partners and others from the ITEA organisation just makes you feel good, also personally.”

ITEA project results enhancing people's lives

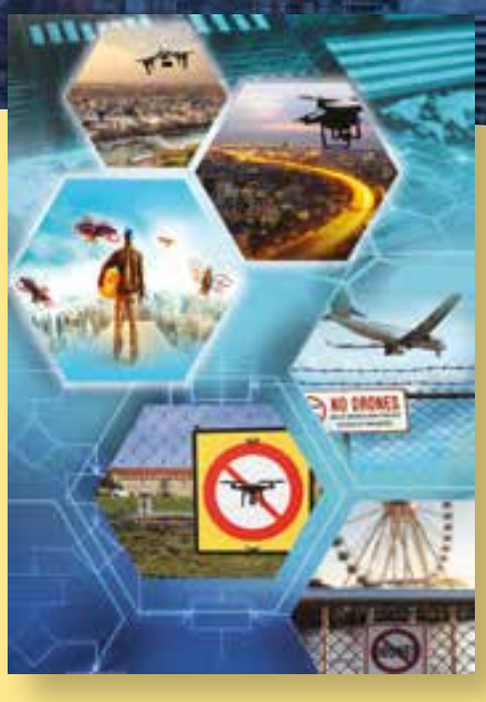
A new chapter for Unmanned Aircraft Vehicles

Unmanned Aircraft Vehicles (UAVs) are opening up a promising new chapter in the history of aviation. These unmanned aircraft, whether autonomously or remotely operated, offer citizens many societal benefits in terms of supplying new and improved services. Because they can fly close to the ground and near obstacles, UAVs are perfect for doing all sorts of important jobs that are considered dull, dangerous or dirty like freight delivery, real-time traffic management, search & rescue operations, mapping fire or natural disaster areas and ecological surveillance.

However, today's UAV is extremely limited in its operational abilities because it needs to be in line of sight of the operator, which means the UAV along with its required equipment must be transported to its mission destination. This is inefficient, as a lot of time and effort is wasted. In addition, given their relatively high failure rate, for UAVs to fly over built-up areas compliance with recognised safety standards such as DO-178C, the current aircraft software safety standard, is essential. The problem here is that this safety standard is not a good fit for UAVs. First of all, because there is no pilot on board and, secondly, because UAVs tend to sell for much lower than manned aircrafts. It is difficult, therefore, to justify an investment in DO-178C certification given the current cost and time of certification.

With all the players involved, HI-RISE will attempt to develop a "plug-and-play" ecosystem where certified and certifiable UAV components can be integrated into a certifiable UAV system to fly over cities safely. HI-RISE is researching innovative ways to adapt aviation software standards, such as DO-178C, to the unique characteristics of UAVs. It will offer a feasible certification methodology for seamless integration of low-cost UAVs into the national airspace with provisions for separation and collision avoidance capabilities. This will exponentially increase potential uses for UAVs, with society being the main benefactor.

ITEA 3 project
HI-RISE



Calendar

13-19 July 2018
IJCAI-ECAI 2018
Stockholm, Sweden
https://www.ijcai-18.org

4-5 September 2018
ITEA PO DAYS 2018
(opening ITEA 3 Call 5)
Stockholm, Sweden
https://itea3.org/podays2018/index.html

11 September 2018
EIT DIGITAL CONFERENCE 2018
Brussels, Belgium
https://www.eitdigital.eu/conference

19 September 2018
HOLLAND HIGH TECH NAJAARSEVENEMENT
's-Hertogenbosch, the Netherlands
https://www.hollandhightech.nl

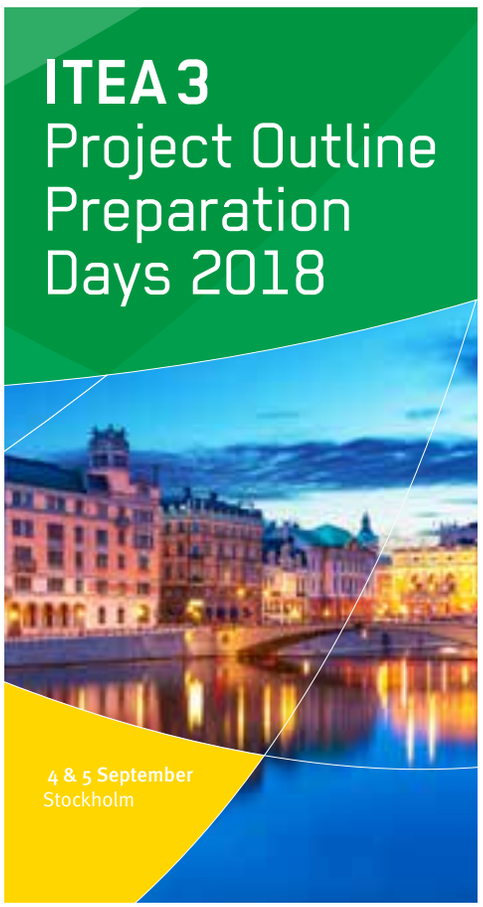
23-25 September 2018
INDUSTRY OF THINGS WORLD
Berlin, Germany
https://industryofthingsworld.com

1-5 October 2018
IROS 2018 – INTERNATIONAL CONFERENCE ON INTELLIGENT ROBOTS AND SYSTEMS
Madrid, Spain
https://www.iros2018.org

10 October 2018
SOFTWARE-CENTRIC SYSTEMS CONFERENCE
Eindhoven, the Netherlands
https://softwarecentricsystems.com

14-18 October 2018
GITEX TECHNOLOGY WEEK
Dubai, United Arab Emirates
https://www.gitex.com

30 October 2018
ITEA 3 CALL 5
Deadline submission of Project Outlines
https://itea3.org



Smart Communities challenges: can you solve them?

Results of the ITEA customer workshop

Customer orientation and business impact are two key objectives in ITEA; ITEA projects focus on creating real business outcomes and from experience we know that R&D projects are more successful in this when they involve customers from the beginning. To facilitate this, ITEA organised its fourth international customer workshop on 20-21 June. This year, the Barco premises in Kortrijk was the venue for the workshop that included a smart set of selected international customers, key technology providers and innovative SMEs from Belgium, Canada, France, Germany, the Netherlands, Sweden and Turkey to discuss the challenges of Smart Communities. As Smart Communities can be very useful in many cases, there was a wide variety of customers, as you can see in the table on the next page.

On the first day, they presented their most urgent challenges to deploy Smart Communities functionalities. Afterwards, the large industrials presented some key innovation trends relevant to Smart Communities and the SMEs that

Customers	Technology providers	SMEs
Airbus Cybersecurity (FRA)	Airbus Cybersecurity (FRA)	Appnovation Technologies (CAN)
Axians (BEL)	Barco (BEL)	Bumbee Labs (SWE)
Koç University (TUR)	Turkcell Technology (TUR)	CityzenData (FRA)
Migros Retail (TUR)		Esri (CAN)
Port of Antwerp (BEL)		Immanens (FRA)
Toulouse Oncology Center (FRA)		Inovia (SWE)
Turkcell Academy (TUR)		Nurogames (GER)
S2E Technologies (CAN)		

attended the workshop were introduced by ITEA Vice-chairman Philippe Letellier. As Barco hosted the workshop, the participants had the unique opportunity to visit their amazing Experience Center at the beginning of the evening.

On the second day, two parallel sessions focused on the challenges highlighted by the customers. The aim of these parallel sessions was to deliver usable input to initiate new R&D projects targeting clear user and business added value. The topics discussed in-depth during the meeting were:

- Heterogeneous communities
  - Hospital patient journey and apparatus management case (see details below)
  - IoT & Industry monitoring with digital twin case
- Tracking and tracing
- Collaborative learning (see details below)
- Embedded learning
- Miscellaneous challenges

Two of the resulting challenges are outlined below:

Heterogeneous community: Hospital patient journey and apparatus management case
A hospital is a typical example of a heterogeneous community gathering together patients, specialists, doctors, local doctors, nurses and families. As the number of chronically ill patients that will be partly treated from home will increase, several challenges arise in managing this community and all the related interactions well.

Examples of challenges:
- Optimise the matrix of the workflows combining the workflows of the patients and the workflows of the key apparatus
- Breaking silos
- Common data to build a global vision (patient, apparatus usage)
- Optimisation tool on all the data
- Data lake of the history of the patient treatment and results to reuse the diagnosis and protocol
- What data, when, for what, personalised for each person, manageable in a time window
- Visualisation tools of the data to simplify the decision and avoid mistakes
- How to mobilise the customers on such a platform
- Dashboard to support decision
- Heterogeneous components must deliver elements for the dashboard on their risk of breakdown

Collaborative Learning
There are different high-pressure jobs that generate a high rate of job changes: in sales, call centres, cashiers, etc. People leaving a company is a problem, as knowledge is lost. Furthermore, it is important that people stay motivated to keep learning.

Example of challenges:
- Traditional learning will still remain, but more personalised short training is needed to adapt to the dynamic company environment
- Training is sometimes boring; people need to be motivated
- Business model for training is not always clear

More details about these challenges and the challenges of the other topics can be found in the detailed report accessible from the website: https://itea3.org/news/smart-communities-challenges-can-you-solve-them.html. You can also find some initial ideas of solutions to solve these challenges and ideas of ITEA R&D proposals including the interested partners. Feel free to contact the ITEA Office if you are interested in joining a proposal or if would like to contact one of the workshop participants. Once again, this international customer workshop demonstrated its added value to support the ITEA Community to be even more customer-oriented and to work on actual challenges coming from their future customers.

Join our next ITEA PO Days on 4-5 September in Stockholm and pick a challenge described in this document; you can be sure you will respond to the real demands of actual customers.
We look forward to discovering new unique innovations!

ITEA Success Story

BaaS

Blueprint for Building Automation and Management ecosystems

Smart buildings of the future need comprehensive and extendible cross-domain management and control functionality that today's building automation and management systems (BAS) do not adequately provide. These buildings should not only create an environment that optimises the conditions in which people can work and live in comfort and with security but should also ensure that management and maintenance are performed effectively and efficiently. The BaaS (Building as a Service) project set out to tackle these challenges by introducing a novel semantic IoT service framework for commercial buildings along with a reference architecture and corresponding software platform as a basis for current and future commercial building automation and management technologies.

Benefits across the board

The BaaS Reference Architecture provides common concepts and guidance for the development of concrete BaaS platforms. In particular, the BaaS Information Model facilitates the semantic modelling of devices, functions and data and thus provides a blueprint for the specification and generation of BaaS services. The establishment of a BaaS system follows a service lifecycle model that covers the phases of Design, Development, Engineering, Commissioning, Operation and Optimisation. The BaaS platform provides a number of tools and methodologies supporting the first phases of this lifecycle while the BaaS runtime facilitates the capabilities needed to operate a system of BaaS services. A technical management system monitors the services and ensures their proper operation.

Building automation engineers benefit from BaaS tools that facilitate easy and flexible modelling, development, engineering and commissioning of services while tenants

benefit from enhanced comfort, better customisation of services and energy savings through presence detection and environment awareness. Essentially, the BaaS approach can serve as a blueprint for stakeholders in future BAS ecosystems and provides for promising exploitation options. A few representative examples, to reflect the many exploitations that have already materialised, follow below.

Growth generator

Project partner *BOR Software* generated a commercial product from the BaaS results: BEY, a Building Inventory Management tool for commissioning, operating and monitoring BAS. Furthermore, Software Development Services for Smart Environments were created along with consultancy services for IT companies on semantic interoperability and device modelling for Smart Environment Solutions. Five years ago, BOR was not familiar with smart environments, but now the company has a strong business in this field. Beginning the project as the smallest SME participant (2 people), now 15 people are working in BaaS-based IoT products and services, a total that could be doubled if the right talented engineers can be found. BaaS gave BOR a fast learning curve to convert knowledge into commercial exploitation and new opportunities. The income resulting from the project is estimated at around 1.5 million euros for the period 2017-2020. After BaaS, BOR has established a new division for Smart Environment Engineering releasing commercial products and professional services. Through this, BOR has been participating in commercial projects. Also spin-off companies were recently founded under the guidance of BOR, inspired by the gained BaaS knowledge and its IoT focus (IOTIQ GmbH, www.iotiq.de, and ERSTE Software Ltd., www.ersteyazilim.com).

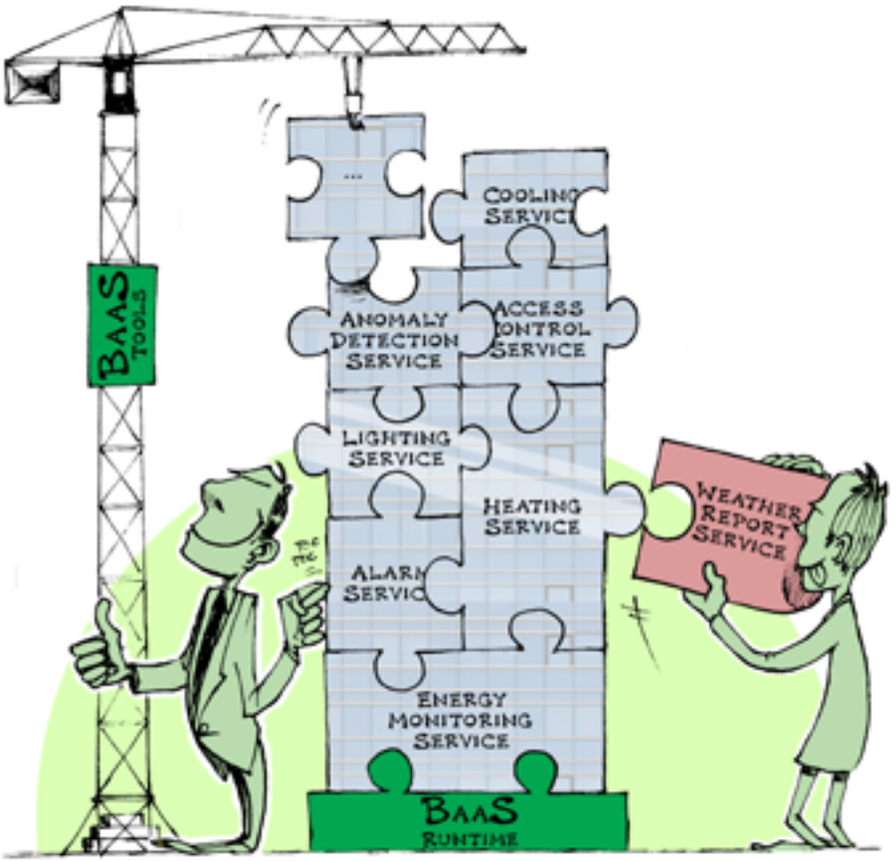
Kieback&Peter is developing an Integrated Building Management System (iBMS). This buildings operating system integrates all the technical equipment (like HVAC, IT, access) of buildings, their substance and planning models around the operational efficiency, economy, user comfort, productivity as well as safety and reliability. It enables the joint management of several buildings (e.g. via Internet), the secure exchange of data and communication with infrastructure systems (e.g. Smart Grid). Independent use case-related applications can be installed, customised and uninstalled in the iBMS at any time. The data obtained in the system (sensor, actuator and application-calculated data) are supplemented by semantic and location-related information and are available to all applications. iBMS can be exploited by third-party applications and provides the basic energy and building management functions. It can be extended to value-added services such as optimisation, forecasting, billing, maintenance, security, etc.

Cascade of downloads

Project leader *Materna* continued to develop its Open Source JMEDS (Java Multi Edition Device Stack) framework based on DPWS (Devices Profile for Web Services) in BaaS. The foundations for JMEDS were laid in the ITEA

projects SIRENA and OSAmI. JMEDS implements an abstraction layer for the integration of diverse device technologies as used and found in BAS. It has been downloaded more 31,000 times all over the world (87 countries) since its publication. Its latest release, modified by the BaaS developments, has been downloaded more than 15,000 times. A new release of JMEDS, to be published later this year as one result of the running ITEA Medolution project, will realise MDPWS (IEEE 11073 standard for safe and interoperable medical device communication), the 'medical' edition of DPWS.

Prodevelop provided the prototype 3D Web Visualisation for Real-Time Maintenance of Smart Buildings in BaaS. This has been successfully scaled to Smart City scenarios, namely for 3D real-time reconstruction from wearable sensors of buildings during emergency operations and for a Smart City 3D simulation and monitoring platform. Prodevelop is currently transferring these technological advances to a geo-smart product in the port sector.



Demonstrating the value

Siemens has taken advantage of the results of the BaaS project for supporting the development of new BACnet standards (a data communication protocol for Building Automation and Control networks) together with Siemens Building Technologies. Ideas from the BaaS project have contributed to the Technical Working Group of the Fairhair Alliance, launched in 2015, to adopt and develop IoT technologies for Building Automation Systems, with Siemens, Philips and NXP as members. The BaaS Demonstrator has been shown many times to various Siemens business units for the internal dissemination of BaaS results and has gained several internal research and development projects that continue the semantic approach started in BaaS. In particular, a novel engineering methodology called Semantic-Driven Engineering (SDE) needed as an enabler for creating large-scale IoT deployments, such as those targeted by Siemens' IoT operating system MindSphere, has been proposed and will be further developed.

Spreading the knowledge

The *University of Rostock*, whose focus in BaaS was security protocols of building automation, like thread modelling in the commissioning phase of building automation systems and the relevant specific semantics, has published a survey on information modelling and ontologies in building automation in collaboration with Kieback & Peter in which all existing semantic definitions of building automation devices and data have been investigated. Furthermore, its CoAP (Constrained Application Protocol) stack for IoT has been extended to 'jCoAP', part of BaaS technologies, and is available as open source. BaaS knowledge feeds into the teaching on IoT and related subjects and has a strong impact on the research domain, with new research projects being generated.

Some significant (academic) BaaS follow-up is also anticipated at *Istanbul Technical University* (ITU): nine graduation projects were completed and seven MSc theses written and based on project activities. ITU is currently awaiting the evaluation of a project proposal that targets system design and implementation of a secure IoT network and has been organising special IoT sessions for two years at ELECO, the International Conference on Electrical and Electronics Engineering.

While more time is still required for some of the exploitation opportunities of BaaS technologies to mature, the examples above reveal that this potential is already being utilised and that more prospects of doing so are in the pipeline.

More information

http://baas-itea2.eu/cms/

Share your personal message for ITEA's 20th anniversary!

This year, ITEA is celebrating its 20 years of impact this year and of course, we will celebrate this in a festive manner! As ITEA would not have existed without its valuable Community and its strong projects, we would like to involve our Community members in this unique celebration. Therefore, we invited you to share your ITEA experience in a short personal video message. By now we have received the first contributions and a short video with testimonials has been created. Check it out on our YouTube Channel: https://www.youtube.com/watch?v=1LLCxsPjDrI.

For the 20 years of ITEA celebration during the ITEA PO Days 2018 in Stockholm we will create a new version of the video, allowing you, as

20 yrs of ITEA video testimonial

a valued ITEA Community member, to share your personal message. Of course, we will also disseminate it via our social media channels on the ITEA website.

So please tell us about your most surprising (personal) experience in ITEA, or about strong partnerships resulting from a project, amazing project outcomes, your project's impact on (happiness of) society or any other remarkable experience that you would like to share. All video formats including self-recorded HD videos from a smart phone are welcome. You can send them via Dropbox, WeTransfer or any other tool that allows you to transmit large files.

We look forward to receiving your submission **at the latest by 12 August 2018**! And of course, we hope we may welcome you at the ITEA PO Days in Stockholm! For more information and registration, please check: https://itea3.org/podays2018/index.html.

ITEA 3 project MOS2S impresses during the Winter Olympics in PyeongChang

In February 2018, a delegation of the MOS2S - Media Orchestration from Sensor to Screen - project with partners from the Netherlands, Belgium, Turkey and Korea visited the Winter Olympics in PyeongChang. The main purpose of the visit was to collaborate in a trial that demonstrated Ultra-Wide Vision (UWV) multimedia technology, that can maximise realism through super high resolution large-screen panorama images. The trial consisted of a live broadcast of a cultural event at the Olympic Venue to Incheon, Korea's main international airport, 200 km away. By using UWV, a spectator may truly experience a live event as if he or she was at an event in person, through high-quality (12kx2K@60FPS) panoramic video and multichannel audio.

ETRI's UWV technology is aiming to capture wider field of view rather than usual aspect

ratios using multiple cameras. Similarly, Samsung's 360VR technologies are based on the international standards, MPEG Media Transport and Omnidirectional Media Format. The tests of the live broadcast during the Winter Olympics have been concluded successfully, and were received well by national and international press, including amongst other news items regarding the developed UWV multimedia live relay technology reported by the biggest Korean news platforms e.g. YTN, the world's first 24-hour Korean news channel broadcast around South Korea.
Later this year, with those wide field of view technologies, the MOS2S project will provide immersive experiences from the Amsterdam ArenA (recently renamed to the Johan Cruyff ArenA) to multiple locations world-wide such as Korea and Turkey. It would be a world-first intercontinental live transmission of UWV, and will require the active involvement of all the partners.

20 years of ITEA

How ITEA projects changed today's society with their innovations

By ITEA Vice-chairman Philippe Letellier
and Programme coordinator Erik Rodenbach

This article shares, among many others, a set of unique innovations pushed by 20 ITEA projects during the last 20 years showing how ITEA projects are extending the State-of-the-Art in different directions. The first set will be shared in this magazine. In the next magazine, you will be able to read about the others.

"When we are in love, we are always 20 and when we are 20, we are always in love."

- Pierre Dac

For ITEA I would say, indeed we were, and we intend to stay in love, with innovation and impact on the market, for many years.

"When you are 20 the future erases the past when hope is shining"

- Georges Brasens

For ITEA I would say our past remains in our memory through the evolution of the State-of-the-Art, but we are already working on the next shining steps.

Distributed simulation

Modelisar designed an open interface standard FMI (Functional Mock-up Interface) to conveniently exchange models from different simulation environments, including the Modelica and non-Modelica tools of the MODELISAR partners. Usage of a model in another environment can be performed either by model coupling, i.e., no integrators are embedded in the model, or by co-simulation in various levels. The first target was to improve the exchange of simulation models between suppliers and OEMs. This approach allows dynamic modelling of different software systems to be used together for software and hardware-in-the-loop simulation. As a result, different disciplines can now work on their models with their own modelling approach and tools while the FMI offers standardised application programming interfaces (APIs) into the software world. Effectively, the FMI offers a sort of plug&play approach for components in the simulation framework.

Smart product development

High-tech manufacturing industries are globalising through multiple projects that involve the collaboration of multiple sites and multiple companies, supplying each other with specific services in engineering and manufacturing. To survive in this very competitive environment, European industry should combine high-tech solutions with fast, robust and low-cost product development and operationally excellent manufacturing. **IDEaliSM** addressed this challenge by creating a flexible and service-oriented framework for multidisciplinary design optimisation (MDO) that integrates people, process and technology. This platform includes an Engineering Language Workbench (a set of domain-specific and high-level modelling languages, ontologies and data standards) and a methodology for service-oriented development processes. Airbus Defence and Space improved its processes for early aircraft design by including multidisciplinary design optimisation as well as more extensive automation. Fokker Elmo demonstrated how the developed technology could design a wire harness in 10 days - instead of several months- at the equivalent level of the detailed design and production preparation phases. Employing the same technologies, DRÄXLMAIER demonstrated an automotive cockpit wire harness design within 3 weeks, integrating mechanical, electrical and electronic components inside the installation space provided.

Energy optimisation

Energy consumption optimisation has been explored in **Nemo&coded, Imponet and DiCoMa** through an RT infrastructure for smart grids and in **Geodes** through consumption optimisation at terminal and system level.

The **Nemo&coded, Imponet** and **DiCoMa** projects started to use open source Big Data technologies early for processing large amounts of data coming from the smart meter deployments that were being initiated, developing the concept of Meter Data Management (MDM) to comply with regulations. Among the technical challenges were new demands for efficient management and sustainable energy, which require the development of intelligent networks (Smart Grids) whereby the information flow is integrated into a real-time platform for operation and monitoring of the network. They developed energy monitoring and the evolution of consumption patterns as a key performance indicator for energy-management systems. A key innovation lies in the service-oriented architecture (SOA) ready to carry out distributed monitoring, diagnostics and control so that service suppliers can provide accurate forecasts of energy costs and potential savings. It resulted in:

- A distributed infrastructure enabling dynamic energy efficiency services for low-voltage

electrical distribution
- Global architecture and SOA models for dynamic control, monitoring and diagnostic of electrical distribution devices
- A communication paradigm – publish/subscribe SOA – and a novel implementation of semantic SOA
- Enhancement of current Web Service technologies
- Development of a real-time acquisition platform for collecting energy data
- Extension of the classical SOA on an Extreme Transaction and Processing Platform
- A real-time platform by means of a high-performance Data Distribution Service middleware and developing algorithms to more accurately predict energy consumption

Low-power technologies and energy-efficient protocols have been developed in **GEODES** to improve product power consumption. It responds to consumer awareness of the need to focus on energy use for environmental reasons and device autonomy to use less energy despite embedded devices implementing many functions. GEODES demonstrated that energy consumption optimisation can't be solved only at the terminal level but that the networked system optimisation generates another level of opportunities. GEODES delivered many innovations like:
- A transparent network which can be easily deployed through plug&play for end-user applications. It is a reliable, secure and easy-to-manage network that allows the measurement of energy consumption as well as interpretation and communication of this
- New stand-by mechanisms to reduce energy consumption
- Transmit power control, where correct power levels need to be assigned to nodes in such a way that total power consumption is minimised but the whole network stays connected
- Power-aware protocols and applications
- Power-aware components at operating-system level – new schedulers, new file system algorithms for data storage, new graphics drivers, quality of service (QoS) managers and power-monitoring facilities
- New MAC algorithms, new routing algorithms, dynamic power transmission and dynamic node power adaptation to transmission rate
- Middleware for QoS handling and node interoperability
- SystemC simulator for power estimation

These innovations resulted in:
- Almost doubling of the autonomy of video surveillance applications
- A 100% extension in Wireless Sensor Network (WSN) lifetime, depending on size, structure and latency
- Up to 11% reduction of total energy consumption for TV set-top boxes - in a 10 million product market, this would save some 62 GW of power a year

Smart Buildings & Collaborative City Co-Design

The problem in buildings today is that automation disciplines are still separated into independent control systems, e.g. for lighting control, HVAC (heating, ventilation and air-conditioning), safety and security. The trend towards smart commercial buildings demands the integration of building automation systems.

BaaS developed a novel semantic IoT service framework for commercial buildings along with a reference architecture and corresponding software platform as a basis for current and future commercial building automation and management technologies. The publicly available BaaS Reference Architecture provides common concepts and guidance for the development of concrete BaaS platforms. The BaaS Information Model facilitates the semantic modelling of devices, functions and data and thus provides a blueprint for the specification and generation of BaaS services. The establishment of a BaaS system follows a service lifecycle model that covers the six phases: Design, Development, Engineering, Commissioning, Operation and Optimisation. The BaaS platform provides tools and methodologies that support the first four phases of the service lifecycle while the BaaS runtime provides the capabilities needed to operate a system of BaaS services. A technical management system monitors the services and ensures their proper operation.

The enhancement of city planning by co-design requires simple access to different sources of information, the visualisation of relevant information for decision-making, the simulation of different scenarios, stakeholder communication support and static and dynamic data. **C^{3}PO** achieved tackling the urban design challenges through a cloud collaborative and semantic platform for city co-design.
In developing what is essentially an open and generic intermediary, the C^{3}PO project followed the three key functions of participative urban planning:
- City data access, acquisition, transformation, analysis, management and integration;
- Applications development support and dissemination;
- Enabling user (stakeholder) involvement, participation and city co-design.

This process ensured that the interaction between existing applications was focused through a unique multi-dimensional repository covering the different types of information in city co-design, like GIS, BIM, electricity grids and traffic. This resulted in unique partial solutions of city co-design, incorporating simulation tools, open API, 3D modelling and visualisation, gaming tools, etc.

The C^{3}PO platform takes two forms: cloud-based data storage (owned by NETAS) and local data storage (MAPGETS, owned by FCG City Portal). Among the key innovations are multi-ontology usage via one platform that breaks down the vertical silos and enables the faster development of applications, process management for the large-scale participation of multiple stakeholders and visualisation (3D, Augmented Reality and Virtual Reality).

Security

Different aspects of security have been impacted by ITEA projects such as:
- Hybrid attack detection and countermeasure impact analysis with **ADAX**
- The SEPA protocols with **EPAS**

ADAX innovates mainly at 2 levels. The first innovation is a hybrid detection technique

in which behaviour-based and signature-based detection are combined. The former is a probabilistic approach that helps to identify new attacks (0-day attacks) while the latter is a deterministic approach that is largely applied to known attacks. Combining both techniques helps improve detection rates, lower false-alarm rates and shorten the detection time, saving both time and costs for customers and security service providers in the detection phase, resulting in improved detection of new complex attacks (detection rate of 98.7% and false alarm rate <1%). A second level of innovation is the simulation of the countermeasure impact associated with the ROI concept so as to avoid using a proverbial sledgehammer to crack a nut and pay the consequence for continuity of operation. The result is an acceleration of the detection-to-remediation loop resulting from the development of enhanced decision-support tools along with a network simulation tool to enable attack and countermeasure impact to be assessed before implementation on a real IT infrastructure. A new metric, 'Return-On-Response-Investment' (RORI), was set up to calculate the 'cost-benefit' of the different countermeasures that can be implemented to remediate a specific attack.

European actors worked together to ensure the successful creation of the Single Euro Payments Area. SEPA allows payments in euros to be made and received between and within countries under the same conditions anywhere in the area. This will ensure that consumers, businesses and public administrations will be able to make cashless payments from their domestic accounts to anywhere within SEPA. Such harmonisation required issuers, acquirers, card schemes and operators to adapt to new principles known as the SEPA card framework. Overall, **EPAS** has delivered a series of specifications that enabled a smooth migration from yesterday's non-interoperable and proprietary solutions with dedicated interfaces to an open environment based on interoperable hardware and software components from different manufacturers. Their innovations were around three major elements involved in point-of-interaction transactions:

1. A terminal management system involving data transfer, including encryption, and maintenance; this ensures easier payment systems administration and suitable security
2. A retailer protocol covering administrative, payment-services and device-services exchanges; it ensures a separation between sales and payment functions, removes dependencies between payment services and products, and offers a common protocol for all types of architectures and environments
3. An acceptor-acquirer protocol covering authorisation, completion, rejection, reconciliation, diagnostic and specific service exchanges; this offers a single common solution for multiple acquirers, removes local and regional constraints and embeds security

Healthcare

SoRTS solved the challenge of availability of coupled real-time feedback of the imaging and therapy systems during interventions. Essentially, the problem was that the movement of a tumour in the abdomen under the effect of respiration, for example, risked damaging surrounding tissue, whereas the only imaging modality, MRI, that can visualise the tumour well, traditionally has image creation times of minutes. However, the image-based feedback has to be available within a fraction of a second. SoRTS came up with a solution to this problem in the shape of the MR-linac system.

The key world-leading innovations centre around:

- A Real-time Therapeutic Procedure Supervisor providing the required architecture for adaptive real-time operation
- Heterogeneous real-time motion correction including visualisation chains dedicated to image-guided therapies running on a distributed heterogeneous RT High Performance Computing architecture
- A Magnetic Resonance Imaging system suitable for low latency real-time feedback during image guided interventions. Image capture to treatment system adaptation in 300ms
- RT interfaces with therapy systems, like brachytherapy, linear accelerator (Linac) and high-intensity focused ultrasound
- Parallel real-time reconstruction

BENEFIT developed software analysis and imaging methods and tools that present quantified information, personalise patient models and offer treatment alternatives before and during minimally invasive surgery procedures. The technologies developed in BENEFIT were demonstrated in several use cases, e.g. on heart valves, involved 4D MRI based blood-flow quantification across heart valves and personalised computer modelling that accurately predicts device-host interaction for heart valve replacement. Another use case concerned the quantification of flow in aneurysms to enable better assessment of therapy success, shorter time to intervention and the integration of brain anatomy and function information with improved biomarkers. Another example of their use cases concerned liver tumours which provided the focus for the development of an accurate overlay of contrast-enhanced pre-operative to non-contrast-enhanced intra-operative images, resulting in better guidance during ablation. A new way to calibrate endoscopes and surgical displays in real-time was developed so that the perceived colours will be the same irrespective of which endoscope and display are used.

In this magazine, we are only able to share a small selection of successful ITEA projects and show how they have changed today's society with their innovations. In the next magazine, we will present another selection. Browse our ITEA Impact Stream for more incredible impact stories on https://itea3.org/impact-stream.html.

You now also have the chance to become part of one of these life-changing projects: join the ITEA PO Days 2018 on 4-5 September in Stockholm and submit your project proposal in ITEA 3 Call 5, opening 4 September. More information on: https://itea3.org/podays2018/index.html

ITEA Project Outline Preparation Days 2018

Celebrate 20 years of impact in ITEA and become part of the ITEA future!

In 1998, ITEA was founded as a Cluster programme of the intergovernmental R&I Network EUREKA and to this day ITEA is one of its most impactful instruments. Impact is one of the main objectives in ITEA; on business, on the market, on society. Since the start of ITEA, 227 projects have run, many of which have achieved impressive results with worldwide impact. This impact has been accomplished by a community of close to 1600 partners from large industries, SMEs, universities, research institutes and user organisations in 32 countries worldwide.

PO Days 2018: celebrate & innovate

You now have the chance to become part of the ITEA future; join us at the Project Outline Preparation Days (PO Days) 2018, which will be held on 4-5 September in Stockholm.

This year the PO Days will have a double focus: not only will we reflect on and celebrate 20 years of ITEA impact, but we will certainly look ahead as well, with the presentation of the next generation of successful projects at this year's event. The PO Days event has proven to be the perfect stepping stone to kick-off your new R&D&I project in the Software Innovation domain; over 75% of the submitted POs in ITEA were presented first at this inspiring brokerage event.

In short, the ITEA PO Days 2018 will enable you to:

- Present your project idea(s) and/or learn about other project ideas in a poster session and during parallel project idea pitch sessions
- Discuss and work on your project ideas in workgroup sessions
- Meet companies 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 presented ITEA best practices and see how the ITEA Office can support you during the full project lifetime
- And celebrate our 20th anniversary!

PO Days in figures

- Last year, 27 of the 31 submitted Project Outlines were presented first at the PO Days event (87%).
- In 2017, 74 project ideas were uploaded in the Project idea tool. During the PO Days in 2016, 65 project ideas were presented during the poster session and 65 project ideas during the pitch sessions.
- In 2017, 307 participants from 18 different countries participated in the event.

Don't delay your registration!
If you plan to participate in the ITEA PO Days 2018, do not miss this opportunity and register now! Availability is limited and each year this 2-day brokerage event is fully booked weeks before it takes place.

Visit: https://itea3.org/podays2018/index.html for more information and registration.

Kick off your project proposal now
You don't have to wait until the opening of ITEA 3 Call 5 on 4 September to start preparing for this year's Call. You can visit the ITEA website at https://itea3.org/getting-started.html now and use the Project idea tool and the Partner search. It is highly recommended to start shaping your project idea(s) and identifying potential partners in advance to optimise your preparation period before the opening of ITEA 3 Call 5. For tips and tricks from experienced project partners, please also check out: https://itea3.org/podays2018/tips-tricks.html.

20 years of ITEA celebration:

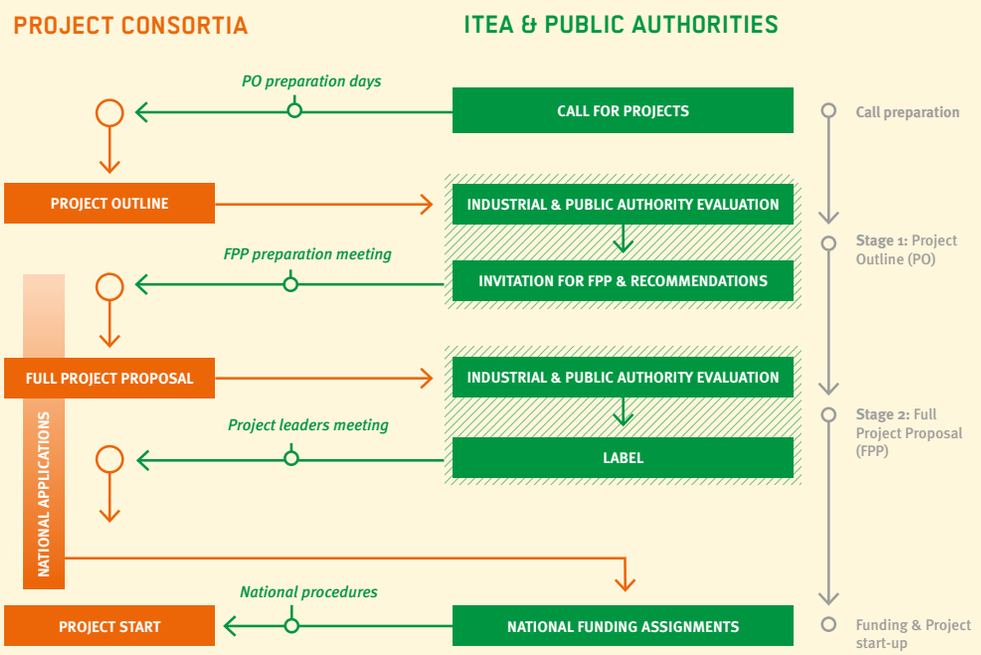
Share your ITEA experience in a short personal video message!

ITEA would not have existed without its valuable Community and its strong projects, so we would like to involve all our Community members in this unique celebration.

We will create one inspiring video, including statements by different Community members and show this at the ITEA PO Days 2018 and on the ITEA website.

Tell us about your most surprising experience in ITEA, strong partnerships resulting from a project, amazing project outcomes, your project's impact on (the happiness of) society or any other remarkable experience that you would like to share. All video formats including self-recorded HD videos from a smart phone are welcome. You can send them via Dropbox, WeTransfer or any other tool that allows you to transmit large files to us at info@itea3.org.

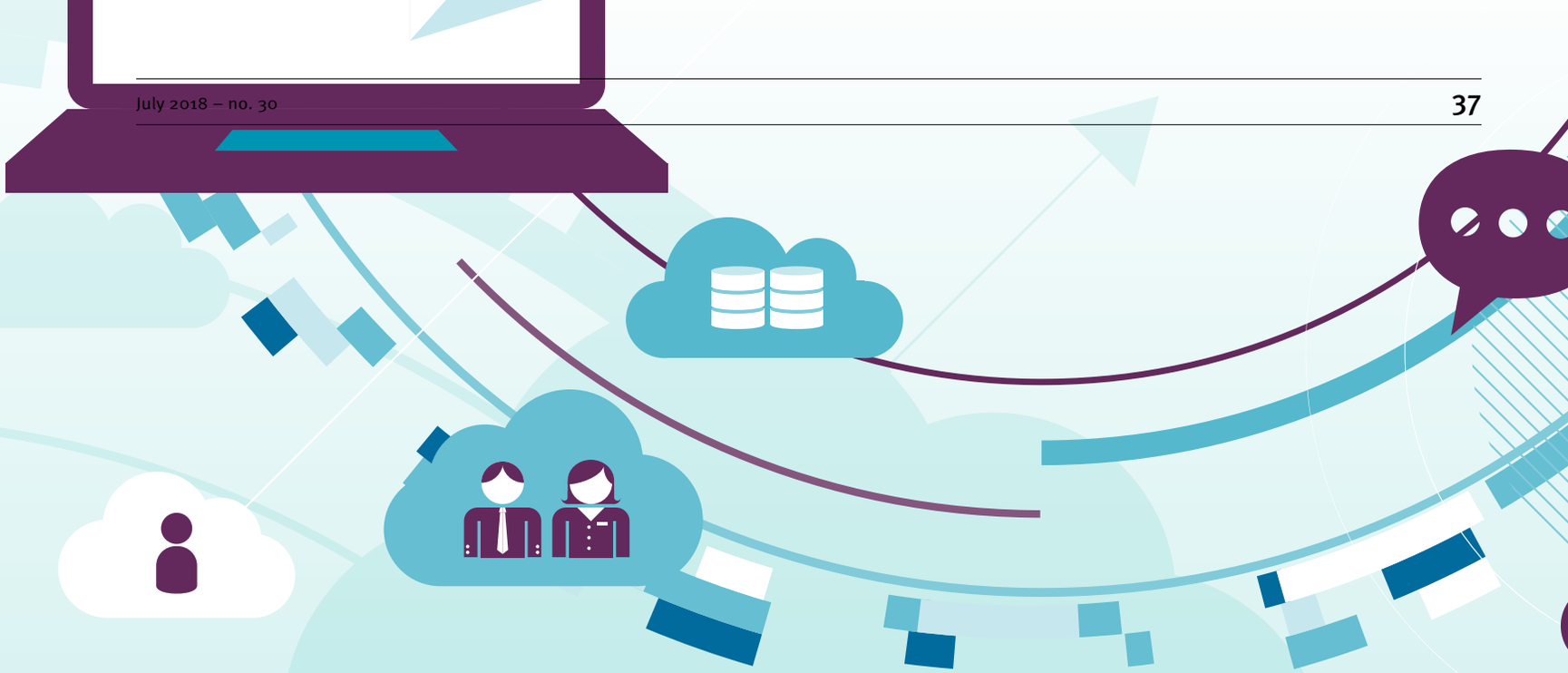
ITEA 3 Call process



ITEA 3 Call 4 projects

ITEA's 20th Call shows ITEA has found the recipe that nourishes the whole innovation community

Introduction by Vice-Chairman
Philippe Letellier



The 4th Call of ITEA 3 delivered 24 submitted FPPs, finally resulting in 19 labelled ITEA projects. This year, the labelled projects involved 2942 PY and 15 countries, clearly showing the ongoing interest of our international community in the ITEA Programme.

Again this year, with 53% of the manpower dedicated to SMEs, ITEA appears to be the excellent tool for SMEs to push innovation, and even further, to transform it into market impact, which is the unique characteristic of our Programme. The difficulty in building relationships between large companies and SMEs is common knowledge, but our results show we have found a recipe in ITEA that has major value for the entire innovation community.

This Call again shows the impact of the international customer workshops that ITEA is organising to steer proposals around solving the actual problems of customers through ITEA R&D projects. Seven of the 19 labelled projects (MOSIM, CyberFactory#1, DayTiMe, PIANiSM, SAMUEL, SMART-PDM) address the Smart Manufacturing challenges, taking into account many of the recommendations arising from customers. Besides this important topic, which was the subject of the ITEA Customer Workshop in 2017, the other key themes we observe are:

- Software Engineering, which remains very important in ITEA as our industry is continuously under pressure of new challenges concerning efficiency and quality (CASCAdE, EMBrACE, PANORAMA, SCRATCh, VISDOM, XIVT)
- IoT is nowadays everywhere (COSIBAS, I2PANEMA, SCRATCh)
- Security is always an important theme in the digital transformation (CyberFactory#1, SCRATCh)
- Smart Cities continues to be a place for innovation in ITEA (I2PANEMA, POLDER)
- Smart Health is historically important with a smaller number of projects this year but with an incredibly high level of quality (IMPACT, VrSurgery)
- Simulation (EMBrACE)
- Digital Life (AutoDC)
- Media is back with an original project (Citystory)

Furthermore in this article, you will find a short description of each labelled project. I advise you to follow them along their project journey, you can be sure they will deliver a set of impactful innovative results for your business!

OVERVIEW OF PROJECTS

Theme	Call 4 projects
Smart Manufacturing	MOSIM, CyberFactory#1, DayTiMe, PIANiSM, SAMUEL, SMART-PDM
Software Engineering	CASCAdE, EMBrACE, PANORAMA, SCRATCh, VISDOM, XIVT
Internet of Things	COSIBAS, I2PANEMA, SCRATCh
Security	CyberFactory#1, SCRATCh
Smart Cities	I2PANEMA, POLDER
Smart Health	IMPACT, VrSurgery
Simulation	EMBrACE
Digital Life	AutoDC
Media	CityStory

I2PANEMA - 17001
Intelligent IoT-based Port Artefacts Communication, Administration & Maintenance
Project leader: Materna GmbH (Germany)

Digitalisation is still in its infancy in ports. I2PANEMA aims to deploy the power of IoT to improve port operations, making them more efficient and sustainable, paving the way towards networks of smart ports. Barriers like data security and the lack of integration of existing, heterogeneous IT systems are to be overcome. The requirements of the pilots are important stimuli for developing an IoT port reference architecture. The architectural findings are planned to be contributed to standardisation bodies such as Industry 4.0 RAMI.

AutoDC - 17002
Autonomous data centres for long term deployment
Project leader: Ericsson (Sweden)

With growth in the data centre market expected to continue, the cost of operating and maintaining the data centre footprint will increase. The aim of AutoDC is to provide an innovative design framework for autonomous data centres to enable ongoing operation and self-healing independent of contextual interference, e.g. intermittent power failure or overheating, without the need for any human intervention. Due to lower maintenance and operation costs, autonomous data centres can become key enablers of markets in developing countries.

PANORAMA - 17003
Boosting Design Efficiency for Heterogeneous Systems
Project leader: Bosch (Germany)

The goal of PANORAMA is to research model-based methods and tools to master development of heterogeneous embedded hardware/software systems in collaboration with diverse and heterogeneous parties by providing best practice, novel analysis approaches, and guidance for development. To that end, the main line of action is geared to extending the scope and interoperability of current system level analysis approaches, particularly by enhancing existing abstract performance meta-models. The enhanced meta-model and the related tool framework will be a common and open platform to support collaborative development.

EMBrACE - 17004
Environment for model-based rigorous adaptive co-design and operation of CPS
Project leader: Electricité de France (France)

The next industrial revolution is happening. This is evident in the combination of renewables, electric mobility and connected objects. The proper operation of complex systems requires cooperation between all stakeholders from the start of system design and all along the engineering lifecycle. The EMBrACE project will provide a user-friendly open environment for the co-design of CPS based on a common requirements modelling language, so that requirements can be easily understood, used to verify and optimise the system design, and ensure that the system design is robust in the face of real-life physical and economic constraints and uncertainties.

SCRATCh - 17005
SeCuRe and Agile Connected Things
Project leader: SIRRIS (Belgium)

The development and operation of secure, large-scale IoT systems is difficult. Technological platforms providing the necessary building blocks to integrate devices and backbone logic exist, but do not address the major concerns of today's software-intensive systems: security, agility and a need for continuous deployment. SCRATCh proposes an integrative approach to IoT, security and DevOps practices through an architectural and process platform consisting of a hardware security foundation for device identity management and security metrics collection, DevOps IoT platform and DevSecOps process, promoting continuous secure operation.

CityStory - 17006
Citizen Storytelling
Project leader: VRT (Belgium)

The project CityStory wants to innovate through a creative, intelligent, safe and social storytelling development environment. Do-it-yourself and do-it-with-others, around media and make it accessible for everyone. The project aims to stimulate collaboration with a co-creation and design platform to share ideas and get opinions heard. Through new modes of interactive storytelling, city touchpoints, interactive screens, innovative media recognition and data analysis, tools that assist while filming and intelligent and deep learning tools, the project will enable ideas to be turned into a story and valuable media output.

PIANiSM – 17008
Predictive and Prescriptive Automation in Smart Manufacturing
Project leader: KoçSistem (Turkey)

PIANiSM aims at putting together predictive and prescriptive maintenance techniques to achieve an end-to-end automated manufacturing process and optimise end-to-end manufacturing value chains. To disrupt traditional maintenance processes in manufacturing environments, a sophisticated system is required that covers a wide range of domains such as data science, machine learning, analytics, simulation and real-time processing. PIANiSM will provide related missing analytics techniques and algorithms, introduce new generation of data identification & integration and modelling processes, and try to develop standards to enable more flexible and applicable solutions for manufacturers.

SAMUEL - 17010
Smart Additive Manufacturing – an AM Intelligent Platform
Project leader: 3DSemantix (Canada)

Additive manufacturing (AM) is becoming more mainstream for prototyping, tooling and production. However, the industry has pointed out that there is a clear need to create an accessible expertise on "which technology for which application for AM process/technology/material". Therefore, the major goal of the SAMUEL project is to combine the engineer's experience through data-mining and machine-learning methods and advanced analysis concepts to create an AM knowledge base that can assist an engineer or business developer in all major AM steps.

POLDER - 17020
Urban Data Policy Lab: POLicy & Data Exploitation & Re-use
Project leader: Accuro Technology S.l (Spain)

Recent advances in technology, from wireless sensor networks to big data processing and analysis, are changing our cities radically. Urban policymaking is a fundamental aspect of such transformation and can benefit from these emerging technologies with new supporting tools and optimised processes. The POLDER project aims to design, develop and deploy a software tool-suite to support government, city councils and related organisations in the elicitation, design, application and validation of policymaking. POLDER proposes a hybrid policymaking model, where policy is made:
- Data-driven
- Model-driven
- Society-driven

IMPACT - 17021
Intelligence based iMprovement of Personalised treatment And Clinical workflow supporT
Project leader: Philips (The Netherlands)

Healthcare faces many challenges like improving patient outcome and working more cost-effectively in the face of growing demand, declining staff capacity and the rapid succession of new clinical and technological developments. The IMPACT project will address these challenges by building on preceding ITEA projects like MEDIATE and BENEFIT to add the next logical step: from evidence-based towards intelligence-based healthcare. To achieve intelligence-based healthcare the IMPACT project will promote automatic data collection and artificial intelligence throughout the complete clinical pathway.

COSIBAS - 17022
Cognitive Services for IoT-based Scenarios
Project leader: Framatome GmbH (Germany)

The Digital Transformation in the industrial domain is currently limited to the connectivity of devices, machines, tools, workers, etc. The amount of data is rising and requires a sophisticated interpretation through analytics to generate business value in terms of faster detection, better forecasts and improved decisions with overall increased flexibility. Current IoT stacks are frequently focused on handling data or data streams. The COSIBAS project targets the next step in IoT-based applications and solutions, namely the integration of semantic and cognitive AI technologies.

MOSIM - 17028
End-to-end Digital Integration based on Modular Simulation of Natural Human Motions
Project leader: Daimler AG (Germany)

Within the European economy, digital modelling activities and especially simulation of human motion have emerged during the last decades. The ability to realistically predict real-world observations is key to remain competitive. In order to introduce approaches and software solutions, which are capable to automatically simulating a rich repertoire of realistic human motions, MOSIM aims to develop and implement a generic concept, inspired by the FMI standard, transferring the idea of co-simulating models from different simulation environments to the field of human simulation by introducing the Motion Model Units.

DayTiMe - 17030
Digital Lifecycle Twins for Predictive Maintenance
Project leader: Philips (The Netherlands)

The concept of digital twin can provide solutions for the challenges faced in Smart Manufacturing, e.g. for Predictive Maintenance (PdM) techniques. Even though predictive maintenance and digital twins expected to have a high impact on future Smart Manufacturing and Engineering, there are still very few functioning examples of digital twins being used for predictive maintenance in actual industrial practice. It is the gap DayTiMe is about to fill, integrating findings and solutions from 14 industrial use cases and using a generic value chain model.

CyberFactory#1 - 17032
Addressing opportunities and threats for the Factory of the Future (FoF)
Project leader: Cassidian Cybersecurity (France)

CyberFactory#1 aims at designing, developing, integrating and demonstrating a set of key enabling capabilities to foster optimisation and resilience of the Factories of the Future (FoF). It will address the needs of pilots from Transportation, Automotive, Electronics and Machine manufacturing industries around use cases such as statistical process control, real time asset tracking, distributed manufacturing and collaborative robotics. It will also propose preventive and reactive capabilities to address security and safety concerns to FoF like blended cyber-physical threats, manufacturing data theft or adversarial machine learning.

CASCAdE - 17034
Compositional Analysis and Synthesis of Critical Embedded Applications
Project leader: Robert Bosch GmbH (Germany)

New services and solutions for future mobility and Industry 4.0 introduce a new level of complexity for software systems. This challenge is addressed within CASCAdE by introducing a compositional verification approach and automatic synthesis of parallel SW for multicore. It allows individual software components to be verified separately, and then uses these results to construct overall system verification. This approach will be standardised and designed in such a way that other verification solutions can be integrated easily. CASCAdE makes the software more resilient to safety and security issues.

VISDOM - 17038
Visual diagnosis for DevOps software development
Project leader: Vincit Development Oy (Finland)

Visualisation is a powerful method for communication, especially in cross-disciplinary communication with various stakeholders, as in operations. Many software development tools already provide some visualisations, but integrated views that combine data from several sources are still at research prototype level. The VISDOM project will develop new types of visualisations that utilise and merge data from several data sources in modern DevOps development. The aim is to provide simple “health check” visualisations about the state of the development process, software and use.

XIVT - 17039
eXcellence In Variant Testing
Project leader: Bombardier (Sweden)

Within the XIVT project, a method and toolchain will be defined for testing highly configurable, variant-rich embedded systems in the automotive, rail, telecommunication and industrial production domains. This will enable a highly effective, cost-efficient quality assurance, allowing the shift to autonomous, flexible and adaptive applications. The method is founded on a knowledge-based analysis of requirements formulated in natural language, and a model-based test generation at product-line level. It is expected that XIVT methods will result in higher test coverage, more flexible processes of higher quality and better products.

SMART-PDM - 17041
A Smart Predictive Maintenance Approach based on Cyber Physical Systems
Project leader: Siemens AG (Germany)

Manufacturing is undergoing immense yet gradual Industry 4.0 transformation with the help of advancements including predictive maintenance. SMART-PDM’s objective is to acquire manufacturing data to provide diagnosis and prognosis information while rendering the underlying technology financially feasible. This will result in lower costs of maintenance, waste and parts as well as improvements in quality and throughput. The technological advancements validated by the demonstrators will help enhance the know-how, technologies, solution offerings and toolsets of the partners.

VrSurgery - 17044
Virtual Reality in Surgical Training
Project leader: Simsoft (Turkey)

The project VrSurgery aims to develop a new generation, intuitive, portable and affordable simulation kit for brain surgery training based on virtual reality technology, enhancing the training of surgeons by granting broader access to simulation environments, and lowering the costs of surgical education in hospitals and medical schools. Increasing the level of skills of brain surgeons will lead to a reduction in national health and insurance costs. Moreover, the simulation approach will be easily extendible to other surgical branches as further applications and business roadmap.

South Korea first non-regional partner in EUREKA & EUREKA's association with Canada renewed

On 22 May, during the EUREKA Innovation Days 2018 in Helsinki, Petri Peltonen, Under-Secretary of State at Finland's Ministry of Economic Affairs and Employment, signed the EUREKA Partnership Agreement with Lee Sang-hoon, an industrial technology officer at South Korea's Ministry of Trade, Industry and Energy.

South Korea is now officially (the first non-regional) full partner country in EUREKA. This partnership will further strengthen and facilitate the international collaboration between South Korea and the other EUREKA countries. A large delegation of about 70 Korean representatives of industry, academia and research belonging to the fields of smart industry, smart mobility, smart health and smart energy, was present at the EUREKA Innovation Days and interested in meeting and collaborating with European partners.

Moreover, Under-Secretary of State Petri Peltonen and Iain Stewart, President of the National Research Council Canada (NRC) officially renewed Canada's EUREKA Association Agreement, committing to another 4 years of support for market-oriented R&D and innovation projects.

"Canada's relationship with EUREKA is extremely valuable, as it allows us to continue to pursue collaborative innovation projects that are mutually beneficial and strengthen the competitiveness of both European and Canadian economies," says Iain Stewart, President of the NRC. "EUREKA has been, and continues to be, an important mechanism for Canadian innovators to continue meeting the challenge of global innovation."

Together with the other associated countries South Africa and Chile, Canada makes significant contributions to EUREKA's positioning as a global player in research and innovation.

EUREKA Cluster events and Call dates

ITEA 3	4-5 Sep	ITEA PO Days 2018	Stockholm, Sweden	https://itea3.org/podays2018/index.html
	30 Oct	Deadline for submission of Project Outlines		https://itea3.org
Celtic-Plus Smart Connected World	15 Oct	Project submission deadline		www.celticplus.eu
EURIPIDES²	24 Sept	Deadline for Project Outline Autumn Call 2018		www.euripides-eureka.eu
eurogia 2020	21 Sept	Project submission deadline		www.eurogia.com
metallurgy europe	End July	Submission deadline for Full Project Proposals		http://metallurgy-europe.eu
SMART advanced manufacturing	10 Sept	Opening SMART Call 2		https://www.smarteureka.com

Colophon

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

Publisher:
ITEA Office - High Tech Campus 69-3 - 5656 AG Eindhoven, The Netherlands

Editorial contributions and copywriting:
CPLS text & copy - Zoetermeer, The Netherlands

Design and creative lay-out:
Studio Kraft - Veldhoven, The Netherlands

Printing:
Drukkerij Snep - Eindhoven, The Netherlands

With thanks to the interviewees, project participants, ITEA Office, ITEA Presidium and other ITEA-involved persons for any assistance and material provided in the production of this issue of the ITEA Magazine.

Submissions:
The ITEA Office is interested in receiving news or events linked to the ITEA programme, its projects or in general: R&D in the Software-intensive Systems and Services field.
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