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Focus on Austria

Cyber Security &
Cloud Expo 2020

ITEA Success stories
BENEFIT and ACCELERATE

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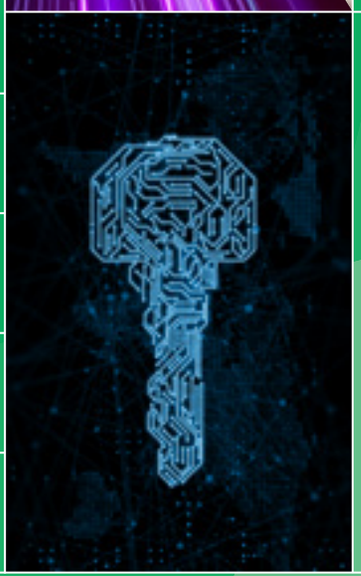

Cyber Security & Cloud Expo 2020

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Editorial

Dear ITEA Community,

Not only technology itself but anything related to or using technology has changed enormously over the past 50 years. Our social life has moved to a digital version; commercial transactions for books and even for videos are digitalised. Additionally, 'Technological Change' and its steps as Invention, Innovation and Diffusion are also changing continuously:

- Invention: the creation of a new product has gone from ideation amongst researchers to discussion with customers.
- Innovation: the application of inventions has moved for the first time from laboratories to industry-driven, collaborative research projects.
- Diffusion: the adoption of new innovations has shifted from scientific conferences to customer exhibitions.

Change in ITEA has been continuous since its inception and by checking the outcomes of the ITEA projects and their impact it also proves how ITEA has responded to Technological Change in an agile way. In this magazine,

- when you read the outcomes of the ACCELERATE project, you will witness how the Invention stage of Technological Change has improved;
- you will see that ITEA's participation in the Smart City Expo with 12 projects shows how ITEA has adapted in the Diffusion step of Technological Change.

A few examples of the impact of Technological Change are:

- Creating new products and processes for industries and people
- Increasing efficiency for manufacturing and operations
- Helping economies evolve via incremental and disruptive change
- Reducing self-reliance for companies and countries

In this magazine, several articles relate to the impact of Technological Change:

- Invention: the creation of a new product has gone from ideation amongst researchers to discussion with customers
- As in the BENEFIT project where new products are being developed, university and industry partnerships improved, the healthcare process is accelerated, and many others in the article.
- In Community Talk: read how business in healthcare has changed technologically, economically and culturally via ITEA projects.
- SME in the Spotlight: experience how the life of an SME can change via impactful ITEA projects.

When the subject of a discussion is 'Technological Change', the follow-up discussion is always the type of change: Evolutionary or Revolutionary. So in the Simulation article, you will find out how a set of projects on Simulation created a chain reaction. While these may be considered evolutionary, the outcome as a whole is revolutionary.

While we all discuss Technological Change and the organisation adapts to the change itself, ITEA has been driving a roadmap of change as a bottom-up organisation and has adapted on the basis of the survey results as you can also read in this magazine.

If you are interested in change and how to adapt to change, I am sure you will find interesting examples in this magazine.

Happy reading!

Zeynep Sarılar

The Austrian Research Promotion Agency (FFG) is the national funding agency for industrial research and development in Austria. Its statutory task is enshrined in the FFG Act, namely "to promote research, technology, development and innovation for the benefit of Austria." Not only does the FFG make it easier, or possible, to finance research and innovation projects, as well as help to absorb the risks involved in research, the agency also supports international networking and acts as a national 'one-stop shop' for industrial research and development, but also as National Contact Point for Horizon 2020. As part of the European and International Programmes section and High Level Representative of Austria to EUREKA, Ulrich Schuh is well placed to discuss, from an IT perspective, the role of the FFG in enabling the generation of new knowledge, new products and services, and boosting Austrian competitiveness in the global marketplace.

Focus on Austria

One-stop shop accelerates industrial R&D

Research facilitator

"The Austrian government has made digitalisation and, therefore, ICT top priorities for the coming years. In fact," Ulrich explains, "every second euro of FFG funding on research and development is spent on digitalisation. It's worth noting that when it comes to investing private and public spending in R&D, Austria is currently second in terms of its percentage of GDP invested. We are certainly in a phase currently where we are striving to be among the top European countries in this area. So while we still have some way to go, we are making every effort to get there. Our job as FFG is to facilitate this process by implementing support for applied research."

Top priorities

FFG, with an annual budget of about 2.5 billion euros at its disposal, coordinates a variety of funding instruments to facilitate R&D and focuses on active innovation players, from large industries to SMEs. "By acting as a kind of bridge between the funding options and the research spearheads, I think we are able to provide a very effective and efficient conduit in this respect," Ulrich says. "Among these spearheads, we have very strong IT research clusters in Upper Austria and in the region of Carinthia that focus on microelectronics to which there is a software internet cluster attached. The focus on IT research in Austria lies for example on Deep Learning methods and Artificial Intelligence – the latter being a high priority for the government and has a lot of support through

various programmes and initiatives. Furthermore, we are also starting to support blockchain and virtual reality technologies. So, to sum up, we are intensifying our efforts to enhance the opportunities in a number of technology areas in which we are successful and giving other, newer technologies a boost to enable them to be at the forefront of developments."

Bottom-up and top-down

"Our government adopts a broad, comprehensive approach to IT technology, not only with regard to software but also in terms of expanding and improving the infrastructure. There is, for example, a firm commitment introducing 5G, and FFG supports this with a broad set of instruments. We do this for a large part in a bottom-up approach, supporting research projects in the business and science sectors, impulse programmes for the economy and research facilities, and networks that cooperate between science and industry. But as I mentioned before," Ulrich points out, "Austria still has some catching up to do to get among the top European players, so there is also a more top-down approach at the same time. This is evident, for example, with the foundation of the IST (Institute of Science and Technology) that helps steer research in specific directions and with a view to industry needs. This combination of the two approaches benefits SMEs in particular since they are able to develop certain applications and business models that perhaps would not have been possible otherwise. While Austria is not yet at the top table regarding innovation, we are very close, and with increasing government spending on initiatives to accelerate this process of ICT innovation activities will soon pay off. FFG is certainly doing its best to support and promote this process."

Europe-wide cooperation

Austria is a small open economy that is well integrated in and well aligned with the European R&D landscape. Ulrich: "We have already been quite successful in European programmes like Horizon 2020 and these programmes are important instruments for the Austrian R&D&I actors. Our relationship with European countries, especially Central Europe, also plays a significant role since we are part of the value chains and cooperate in technological innovation with our partners, Germany in particular. And in this arena, programmes and platforms like the Eureka Clusters are very important elements of this international cooperation. These are instruments that complement national funding schemes and therefore enhance our promotion of R&D among Austrian companies, especially SMEs, which we encourage to seek cooperation and collaboration beyond their national borders."

Use the potential

While among all the Eureka Clusters ITEA is the most valuable one from an Austrian perspective, Ulrich suggest there is still work to be done to make the Cluster more visible. He cites the upcoming synchronised AI Call that involves multiple Eureka Clusters as a good example of this. "We have a good basis," he says, "but I see there is potential to increase the use of the ITEA instrument among Austrian companies, especially given the growth in IT activity in Austria and the priority this area has been given by the government. In Austria, as throughout Europe, we are good at developing ideas and innovating, at laying the foundations for software development. However, when it comes to getting products and services into the market, we have to concede that we are still behind the US and Asia in this respect. ITEA, with its bottom-up, industry impact-driven approach, has a lot to offer, so that is why it is important to stand out among the portfolio of instruments available to Austrian companies and get them more involved in the ITEA Community. Because they have much to gain from developing business models, upscaling and creating success stories in and for Europe. These goals are shared by both ITEA and the Austrian government, so let me conclude by saying that there is a lot of potential – now we need to take advantage of it."

More information

https://www.ffg.at/europa/eureka/cluster/itea3

SparxSystems Central Europe (Sparx CE) is an Austrian SME and consortium member of the ITEA COMPACT project that aims to enable fast and efficient IoT software development by providing novel solutions for the application-specific and customer-oriented realisation of ultra-small IoT nodes. In a nutshell, this is the arena in which SparxCE operates. Peter Lieber's SME is, in many ways, an example of Austria's brave new IT world, as both a beneficiary of its government's commitment to IT and a contributor to the growing impact SMEs are having in this environment.

Tooling for standards

Founded in 2004 as a retail company, Sparx CE originally operated as an independent sister of an Australian company to resell its Enterprise Architect modelling platform in Europe, Peter Lieber explains. "Being a modelling platform – like UML (Unified Modelling Language), MDA (Model-Driven Architecture), and so on – means that it can be expanded – defining a new standard, a new language, a new methodology. We currently provide 60 modelling languages out of the box and our focus is to be standard-oriented by providing support through tools. A standard is a written document governing a specific domain, but it is only helpful with tools. So, it's this 'tooling' that our company provides. A fool with a tool is still a fool, but a genius without a tool is not productive."

"And since software is everywhere, so are we. We are not bound by domains or sectors. Of course, there are some areas that are more driven than others by standards, like the automation and aviation industries where safety is critical. Which means that modelling the architecture is key. In fact, standardisation and legislation require the modelling of your ecosystem. Whether that's a car or financial institution, you need to have an abstracted visualisation of the processes and operations of the system that you're running."

Modelling and architecture for everyone

"Originally we came in from the software side of things but nowadays we are additionally focused on cyber physical systems and enterprise architecture. The funny thing is that our product was called Enterprise Architect long before it became the term as it is known

SparxSystems Central Europe

Innovation sparks – with an x!

today. So, I guess we can claim to be a bit of a pioneer. We have over 160 partners and 750,000 users worldwide, and the top 500 companies worldwide have at least one of our licences. We maintain a very competitive pricing model because we believe that modelling or an architecture tool should be available to any user, not only the architects. We want a product with a high degree of functionality and availability in the market, with access to new features, updates, etc."

"It stands to reason," says Peter, "that an industry in which safety is vital will have higher priority for the modelling tools that we supply. But we are also seeing a trend in domains like healthcare and embedded devices whereby modelling is becoming increasingly indispensable. Other branches such as banking and insurance, whose challenges and issues are completely different, are also emerging fast in this respect."

Predict the unknown

"Some people say that software innovation is an endless cycle of inventing and reinventing wheels. Take AI in the 70s – it was a hot topic then and is a hot topic now, but in reality the difference is that 50 years ago it was a fantasy or a possibility but now it's a reality. And while things may appear simpler, in fact the complexity is increasing. And that's where innovation is needed because you cannot deal with the problems of today using the methodologies of yesterday. So, it's not so much a matter of reinventing wheels but inventing wheels much faster. Nowadays we have a lot more power than we had before – in terms of memory, speed, performance, image interpretation. There's almost no limit to what we can imagine. It's a matter of complexity. Everything is connected. We have to consider issues in a much more complex whole. We have to predict the unknown." The complexity is increased by the essential difference between IT people and software people, Peter suggests. "The IT guys want security, want to avoid endangering the system. Software people are more visionary – strive for newer, better features. So just adding a bit of spice to the pot of ingredients we already have to deal with, this 'conflict' also has to be resolved. Myself, I come down on the visionary side."

Innovate to market

Peter underlines the need for innovation to take place on a large scale. "Innovation is meaningless unless it gets to market. And that's where public funding has a role to play. In the EU's Framework 7 tsunami recognition system project geared towards predicting a potential tsunami, I realised how fruitful the collaboration between different European partners can be. It whetted my appetite. In Austria we have the FFG, the Austrian Research Promotion Agency that provides a palette of instruments for collaborative research but you really have to make your case for software innovation since it is often regarded as a bit of an 'invisible' miracle potion in the mix. When the ITEA 3 COMPACT project came along, this seemed like the ideal higher-level project to become involved in. ITEA is certainly an environment to be in if you want to be innovative in the software domain. And we have learned a lot from being together with different partners, from software to hardware and from researchers to suppliers. Being able to see through the eyes of others as well as building good relationships and friendships. And getting a success story to market can act as a springboard for actual exploitation with a real product with real impact. We look forward to that!"

More information

https://www.sparxsystems.eu/

Enterprise Architect

A scalable, easily deployed, multi-user environment, Enterprise Architect integrates team members from all sections and all phases of a product's (or system's) development and maintenance lifecycle, providing significant benefits from built-in collaboration and inherent information sharing. A single repository for business analysts, software architects, developers, project managers, testers, roll-out and support staff. A 'unified' view of a complex system having many viewpoints and many possible subsystems. Shared models can be accessed easily and securely by remote team members with Enterprise Architect's ProCloud Server.

ITEA Success story

BENEFIT

Advancing evidence-based medicine for better patient outcome

When the blood vessels of the heart, the coronary arteries, get obstructed this may cause a heart attack. Coronary artery disease affects more than 100 million people per year worldwide. For acute cases, percutaneous coronary intervention (PCI) is at present the most effective procedure to reduce the mortality rate. A long, flexible thin plastic tube, a catheter, is inserted into an artery through a small incision in the groin or in the arm and navigated via the vessel tree to the location of the obstruction. Then a balloon at the tip of the catheter is inflated to re-open the vessel and a so-called stent is placed to keep the vessel open afterwards. In the USA alone, already around 2 million stents are placed in about 1 million patients every year. The decision to apply a stent used to be (and still largely is) based on visual assessment of the reduced diameter of the vessel due to the obstruction. However, clinical trials have shown that not all obstructions limit the flow of blood and that many stents are unnecessary. Furthermore, measuring of the pressure drop over the obstruction gives a more reliable indication than diameter reduction. The result is a significant reduction in the number of stent placements and thereby potential complications for the patient and costs for society.

Optimal diagnostic and treatment pathway for patients

The ITEA project BENEFIT aimed to support clinicians in selecting the optimal diagnostic and treatment pathway for patients. As a first example, a procedure called QFR® (Quantitative Flow Ratio) analysis was developed by the Dutch SME **Medis** to calculate this pressure drop from the X-ray images which are acquired anyway. This saves the costs of a separate disposable catheter for pressure measurement - in the order of €500 to €1000 per patient - and promotes widespread adoption of pressure analysis to further reduce the overuse of stents. The company has gained CE and FDA approval and a large outcome study is running to make the procedure part of professional guidelines, including reimbursement by insurance companies.

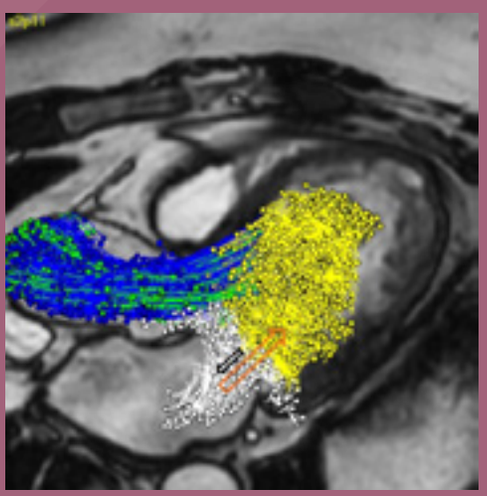
Additionally, **Leiden University Medical Center** (LUMC) contributed to the imaging of coronary vessels and stents by Optical Coherence Tomography to check proper stent deployment and promote its worldwide standardisation. The algorithm may also indicate vulnerable regions in a coronary vessel, which will need additional treatment to reduce the risk of future cardiac events; this is currently being evaluated.

These are two examples where the results of the BENEFIT project have improved medical imaging and the quantification of relevant parameters to support decision making and increase both clinical efficiency (overall costs of treatment and follow-up) and effectiveness (health for the patient). The continuously rising costs of healthcare worldwide make this a topic of prime importance for governments, insurance companies and healthcare providers. It fits in with the trend from 'fee for service' to 'value-based' healthcare: payment for healthcare services will be based on the use of evidence-based professional guidelines and on the result for the patient, not on the number of procedures and the costs that the care provider has spent. BENEFIT focused on tools and protocols for imaging and treatment (image acquisition, image fusion, navigation tools) and quantified data before/during/after treatment, supported by common IT tools for structured collection and analysis of these data. This generic approach was applied to five different clinical use cases: diagnosis and treatment of cardiac blood vessels, cardiac valves, brain vessels, brain tumours and liver tumours.

The consortium consisted of 3 large industrial partners, 5 SMEs and 4 university hospitals to cover scientific input, input from clinical end users, technical innovation and market access. This has resulted in new products and dissemination in 70 publications, 3 master theses, 2 PhD theses, 2 book chapters, 60 presentations at scientific and commercial conferences and 7 patents.

Significant impact on business and society

In the clinical use case of cardiac valves, the LUMC evaluated novel 4D flow Magnetic Resonance (MR) imaging protocols and image analysis methods for patient risk assessment. This research has resulted in various scientific papers, increased knowledge on the optimal usage of non-invasive MR imaging techniques and has contributed to the commercial release of a new 4D Flow MRI module for the Medis Suite MR image processing software.



"FEops HEARTguide gives our team increased confidence to perform TAVI in the most challenging of aortic valve anatomies."

Dr Cameron Dowling
St. George's University Hospital, UK

The BENEFIT project also had a significant impact on **FEops** in terms of technology, funding and staffing. This Belgian SME received CE approval for its TAVIguide product which helps to improve placement of artificial heart valves by pre-operative imaging and simulation. It also recently secured an investment injection of €6 m to help drive commercial adoption of the FEops HEARTguideTM in the fast-growing market for transcatheter valve therapies. FEops has almost quadrupled its number of staff from 4 to 15 people.

For brain vessels, **Philips** has introduced a new commercial tool to the market for the treatment of cranial aneurysms, based on the research efforts performed within the scope of the BENEFIT project. An aneurysm is a weak spot in the wall of a blood vessel which gets dilated due to the blood pressure and is at risk of rupturing. It is the first interventional tool to visualise and quantify flow patterns in a vessel and an aneurysm. It predicts the chance of long-term treatment success while the patient is still on the table and the catheter is in place. This means that the surgeon can take immediate additional actions in the event that the chance of success is too low, so that the risk for the patient is reduced as well as the need for repeated treatment. At the end of 2019 more than 250 units had been sold.

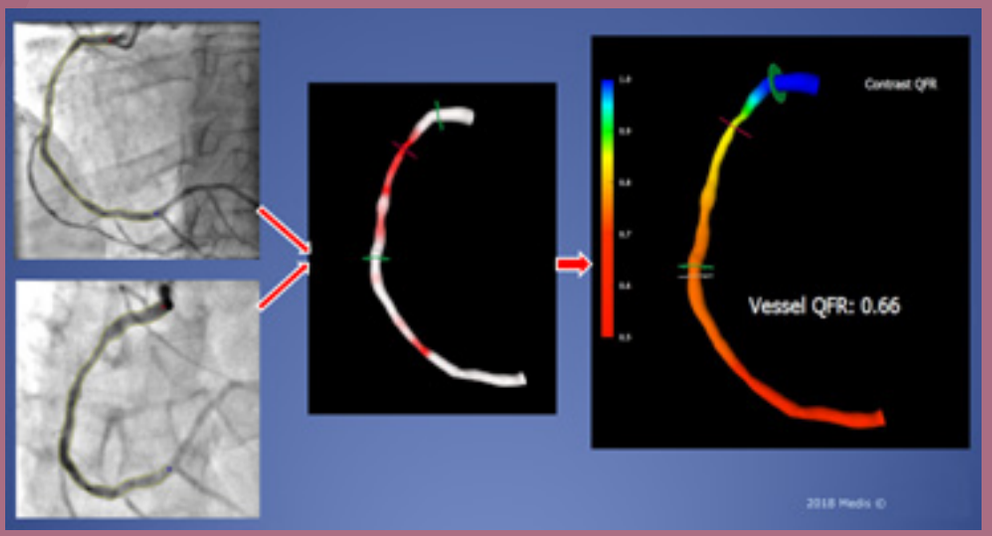
Also Erasmus University Medical Center (**Erasmus MC**) based in Rotterdam, contributed to stroke treatment by introducing novel tools and charts to increase the information from conventional CT and X-ray images. These tools and knowledge will be used in a subsequent large Dutch project, called CONTRAST (COllaboration for New TReatments of Acute STroke), where Erasmus MC will work with partners on imaging biomarkers for stroke and stroke treatment.

For brain tumour radiotherapy, **Elekta** received CE and FDA approval for its Leksell Gamma Knife ICON system with Cone beam CT (CBCT) for optimal patient positioning, in part due to BENEFIT. The CBCT positioning system allows frame and frameless workflow in radiotherapy such that patients do not need to carry the stereotactic frame for imaging before treatment planning. Thus it allows more flexibility and efficiency in treatment planning for both clinicians and patients. 107 systems have been installed and are clinically in use as of September 2019. There is also potential in upgrading the existing systems, i.e. over 200 worldwide. The automatic dose planning system that has also been developed and is currently being evaluated by clinical experts, with a partial contribution from BENEFIT, reduces planning time for test cases significantly by an estimated factor of 2 or more, while the inverse planner maintains performance.

In this same use case, **Linköping University** (LiU) in Sweden has published in BENEFIT a total of 10 journal papers, 3 conference papers and 2 book chapters, including on a new framework for MR diffusion imaging of brain tumours. For functional MRI, the most important publication, published in PNAS (Proceedings of the National Academy of Sciences) in 2016, showed severe problems with statistical methods used to analyse fMRI data. The paper has been covered by Science, The Economist, The New York Times, has been downloaded nearly 300,000 times and received over 2000 citations. LiU has continued the work in BENEFIT in collaboration with Harvard Medical School (USA) and Lund University (Sweden), for example through an SSF (Swedish foundation of strategic research) funded project about diffusion MRI.

The Dutch SME **Quantib** gained CE and FDA approval for its brain tumour analysis software and recently secured €4.5 m in fresh funding to support the company in its international expansion ambitions. Improvements developed within this project will continue to flow into future versions of the Quantib™ Brain and Quantib™ ND products. Furthermore, Quantib

set up a framework to develop and evaluate deep-learning methods to quickly create prototypes and assess the clinical relevance. Prototypes include automated hip joint degeneration assessment based on X-rays to decrease hip joint replacements, and estimation of body fat percentage based on MRI e.g. to obtain better dose estimation for chemotherapy treatment. The prototypes are currently being evaluated in a clinical setting. From the start of BENEFIT until the present, Quantib grew from 6 employees to nearly 30, developed 4 products including certification, has installations in over 20 countries and initiated partnerships with 3 top medical university centres in the Netherlands.

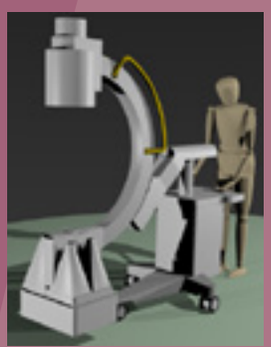


Assessment of the 'Quantitative Flow Ratio' across an obstruction in a blood vessel of the heart to help decide whether a stent needs to be placed.

Collaborative and complementary work on liver tumour treatments

In addition, for the use case of liver tumours, partners collaborated on different treatment alternatives. One option is surgical resection supported by intra-operative images from an endoscope. For reliable differentiation of healthy tissue and tumours Barco has developed a colour calibration procedure for the whole chain of endoscopes and medical displays which can now be performed in less than 5 seconds.

Philips improved its navigation support for catheter-based treatment in which the feeding vessels of the tumours are blocked by injection of small beads. The automatic 3D detection of tumour feeding vessels boosts detection accuracy by 26%, which means that fewer feeders are missed, resulting in at least 20% less recurrence than with 2D feeder detection, so better patient outcome and lower costs for follow-up treatment. Those beads may contain radioactive particles which will kill the tumour cells by their localised short-range radiation. To increase efficiency and accuracy of this procedure, UMC Utrecht has designed and evaluated algorithms for simultaneous X-ray fluoroscopic and nuclear imaging, for use in a hybrid interventional system. A prototype of such a system is currently in development boosted by subsequent Dutch and European grants.



Ablation is a method whereby tumours can be destroyed by heat from a needle tip. Erasmus MC has developed a method for the registration of pre-operative and intra-operative/post-operative CT images of the liver for use in ablation procedures to check whether indeed the whole tumour has been removed.

DEMCON has developed a CT guided needle positioning system (NPS). A first clinical study with the University Medical Center Groningen showed that ablation needles for the treatment of liver cancer with the NPS can be placed more accurately compared to freehand needle placement; freehand placement required on average one additional placement compared to placement by the NPS. More accurate needle positioning is expected to result in less damage to the critical surrounding tissue, and improved patient outcome for biopsies and ablation. Based on these positive results, improvements and extensions are currently being made to NPS technology, like compensation for patient movement, suitability for use in MRI and integration of ultrasound. However, concrete market access plans are still under development.

Finally, **UMC Utrecht** developed methods for subject-specific four-dimensional liver motion modelling and motion correction of dynamic liver MR images, aimed at therapy selection and image-guided therapeutic procedures for patients with liver cancer. During the BENEFIT project, a collaboration on method development with Erasmus MC was set up, and useful contacts with companies as DEMCON and Quantib were established.

At the end of the project, integrated demonstrators of the collaborative and complementary work of the partners in all five use cases showed that BENEFIT has advanced evidence-based medicine by providing imaging tools, devices and a database for heterogeneous medical data. This closes the learning circle for continuous improvement of the efficiency and effectiveness of a broad array of minimally invasive surgery procedures. It also has prepared for a next step in healthcare, which is the adoption of artificial intelligence based on such quantified clinical data. This has been taken up by a new ITEA project called IMPACT.

More information

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

ITEA at Smart City Expo 2019

Bringing together Smart City Challenges and Smart City Solutions

At the end of November last year, Barcelona's Fira Exhibition Centre was the venue for a sparkling and spectacular success if numbers are anything to go by: 12 running ITEA projects presented their Smart City solutions to the 24,399 visitors to be precise and over one thousand exhibitors from 146 countries at the Smart City Expo (SCEWC) 2019.

As ITEA projects are based on customers' needs and focus on both societal and business impact, it can be regarded as a logical step for ITEA to reach out beyond its own Community to a customer-oriented fair and engage with a wider audience, including potential customers and end users, to showcase the results of its projects. Thus the Smart City Expo (SCEWC) was not an opportunity to let slip by!

Stepping outside its 'comfort zone' to showcase some of the latest innovations and solutions at this major and impressive congress, ITEA joined participants and stakeholders from all over the globe to address the challenges faced in the Smart Cities domain. With stands ranging from the voluminous to the intimate and representation from Montreal to Moscow and from Seoul to the host city itself, a whole spectrum of innovative and fascinating solutions was presented to the hordes of visitors over the three congress days. Three days in which attention focused on matters like breaking down information silos or deploying connected services, enhancing mobility or optimising energy consumption, citizen engagement and quality of life – all urban dilemmas and all with potential solutions.

Solving Smart City challenges

The twelve project booths at the ITEA 'pavilion' each offered several solutions for a variety of

Smart City challenges. For example, the DANGUN project, involving French and Korean partners, aims to tackle urban mobility issues such as traffic jams and autonomous driving assistants in an affordable and practical way. Not for the few but for the many. Or PARTNER, which addresses the health domain that is part of the significant quality of life challenge to cities both now and in the future. This project is geared to optimising the patient journey through the engagement of the patient beyond the hospital walls in his or her health and wellbeing. And in terms of the air that we breathe, this is a real measure of quality of life so the ESTABLISH project wants to convert sensor data into actionable information on an individual level and so boosts the quality of life for citizens.

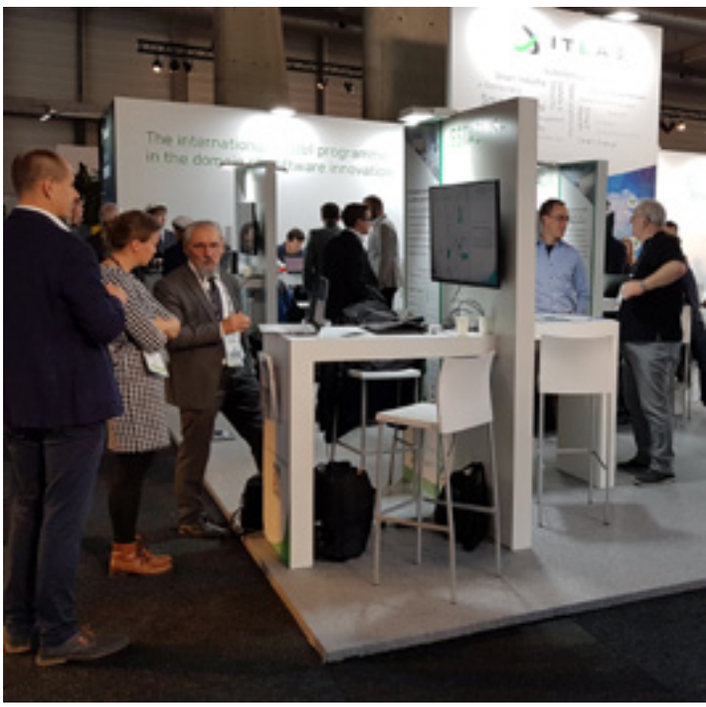
The projects present at the ITEA pavilion were:

APPSTACLE	MOS2S
BIMy	PARTNER
CitiSim	POLDER
DANGUN	PS-CRIMSON
ESTABLISH	SOLOMON
i2PANEMA	SPEAR

Engaging visitors

With e-commerce having transformed the retail industry, the SOLOMON project uses the same technologies as a counterweight to improve the customer experience in bricks-and-mortar stores. It enables interaction between the technology and the retailers, shop personnel and consumers through seamless services. To demonstrate the benefits, visitors were invited to build their own app in just a few clicks. The interactivity – visitor engagement – was even taken a step further by the MOS2S project that aims to develop audio-visual Smart City technologies that address the needs of citizens and embed these solutions in a dedicated Smart City Playground. The walk-in booth at the corner of the ITEA pavilion encouraged passers-by to quite literally drop in and give their opinions on urban issues … in the comfort and non-threatening safety of a 'private' area. This offers an opportunity for honest and frank engagement between the citizen and the city. It is just one

ITEA at Smart City Expo 2019



of the steppingstones towards a full Smart City Operating System that can help accelerate the creation and market introduction of new unique Smart City applications to improve profitability, sustainability, safety and customer experience.

Innovation Discovery tours …
At its pavilion, ITEA offered visitors customised Innovation Discovery tours. In these engaging personalised guided tours, ITEA staff took their guests to the projects that specifically dealt with the Smart City challenges they were facing. Designed around customer needs, these tours firstly aimed on bringing together Smart City Challenges and their Smart City solutions. In this way, some 20 representatives, from Almere to Istanbul and from Oulu to Grenoble, were made aware of how they could actually exploit the relevant ITEA innovations with the support of the ITEA Community partners. It was all hands on deck, ensuring that these urban stakeholders got the best insights and information possible.

… and an Innovation side event
On the final day of the congress, a further flavour was added to the theme of innovation discovery with a Smart City Innovation side event organised by ITEA. This event gave the audience of city stakeholders the possibility of actively engaging with ITEA project leaders in the latest ideas and developments as well as sharing challenges and perspectives. Using an interactive tool, the audience provided views and opinions during the presentations, giving the projects a better insight into priorities and ideas of the audience. For example, safety is a main priority in all Smart City challenges, and although autonomous driving is already possible now for some traffic situations, 60% of the audience will only be ready in 10 years to buy a car with autonomous driving capabilities. It was evident that trust is an issue that needs to be resolved too.

Reaching out
Participating at the SCEWC was a first for ITEA, but a logical step for a platform dedicated to solving the challenges shared around the increasingly smart and urban world where health, energy, mobility, connectivity and other such issues need solutions.

Zeynep Sarilar, Chairwoman of ITEA, commented: “I think that this has been a very positive initiative. Looking at the 12 projects represented here, I can really appreciate how the smart solutions we are generating are not only exceptional from a technological perspective, but it is clear at a congress like this that our results are having an impact on users. The feedback we have received from visitors to our booth suggest that this Smart City Expo is the right place for us to be. We are in the middle of the marketplace, close to the users of our innovations.”

Looking back…
This is a sentiment echoed by the stand holders and project leaders present, who commonly advise other projects to take part in similar events, as it can lead to relevant new business opportunities. The evaluation survey also shows that nearly all respondents that have taken part in previous ITEA Co-summits indicate that exhibiting at SCEWC was better for the project and 65% would participate again, while others are ‘not sure yet’ as their project has come to an end.

CitiSim, which has just been completed with the development of a Smart City 3D simulation and monitoring platform and which had several demos all around the SCEWC Expo, was represented by its project leader Carlos Jiménez. “In my opinion, participating in this edition of the Smart City Expo World Congress was a very successful experience for the CitiSim project. In that sense, being part of the ITEA Community together with other innovative projects had a very positive impact in terms of increasing the interest of the audience towards our project

and attracting more visitors. In the same way, the support provided as well as the promotion opportunities managed by ITEA resulted not only in great possibilities for disseminating the outcomes of the project but also in interesting contacts for partners of the CitiSim project. This event was also a great chance for us to test and show some of our real-world demonstrators and update our knowledge about real market demands."

...and looking forward to the 2020 customer-oriented events

ITEA can look back at a successful new experience, with of course some valuable lessons learnt, but now it is time to look forward. Encouraged by the positive feedback ITEA feels to have chosen the right path for its event strategy and is now preparing its participation in two costumer-oriented fairs in 2020. Together with a selected set of related projects ITEA will participate in the Cyber Security & Cloud Expo that will take place on 1 and 2 July 2020 in Amsterdam and they will return to the 2020 edition Smart City Expo in Barcelona on 17-19 November.

If you / your ITEA project would be interested in participating, don't hesitate to get in touch with the ITEA Office!

ITEA at Smart City Expo 2019

Community Talk with:

Herman Stegehuis

Harvesting the fruits of one's labours

IMPACT, BENEFIT, MEDIATE … highly successful projects with a familiar common denominator: Herman Stegehuis, senior scientist at Philips Healthcare and who, for the past decade, has been conspicuous in giving healthcare quite a bit of prominence in the ITEA project package. Here, at the Leiden University Medical Center, Herman takes time out to reflect on his experience in the ITEA Community. "I think it's quite interesting," Herman says, "that we are sitting here in the hospital. I've just come from a meeting between the surgeons, scientists and technology providers at which we discussed the status, progress and ongoing cooperation in efforts to improve clinical procedures and surgery. It is really rewarding to see how cooperation between the different players is shaping the way forward." After April, however, Herman will be watching from the sidelines. He'll be retiring after 35 years at Philips.

From analogue to digital

"I joined Philips in the mid-eighties, a couple of years after completing my degree in electronics at the University of Twente, where I specialised in medical image processing for my Master's thesis. After that I worked for a couple of years at the university hospital in Utrecht on this same topic. At a time when the transition from analogue to digital really started to take off, our efforts concentrated on digitising analogue cine film images so that we could gain greater insight into the perfusion of the coronary arteries and the heart muscle. A lot of calibration was involved so we needed quite a bit of computer power. Well, for this purpose there were just a few suitable computers in the Netherlands, among them one at the University of Utrecht and two at Philips. So that is when I first came into

contact with my future employer. I was offered a position, and so began my long association with Philips."

Patience needed for innovation

"Of course, Philips was known more as the consumer electronics giant then but nowadays the focus is almost entirely on healthcare. Here the central question is still the same: how can we use technology to improve procedures and boost clinical efficiency? It's the combination of new technological developments applied to new clinical procedures that has always attracted me. You see innovation from both sides. When you're working in this domain, it's great when you see the innovation actually getting into products and benefiting the domain for which it is intended. Although you also have to face up to the fact that other innovations don't make it through. You need to have patience because it can take many years before you see the fruits of your labours being harvested, especially in the medical arena. Research is a job for people with staying power!"

Collaborative environment

Herman has seen tremendous strides over the past 35 years, none greater than the arrival of the digital age. "Just think back to when I started. For image sequences you had resolutions of 256 x 256 pixels at 8 bits per pixel. Now we are working with 2k x 3k and 16 bits per pixel. Storage capacity and processing speeds have increased incredibly. The changes have not only come in terms of the technology but also the actual environment in which a physician or surgeon works is much more complex than it used to be – with all kinds of procedures, workflows, data and technology. It's become a collaborative environment of people, workflows and systems. People are living longer because more and better treatment is possible, but with the costs of healthcare rising, also the need for efficiency is growing. This is where advanced technologies have made a real difference. More people can receive better treatment than ever before."

A dynamic Babel

For the past ten years, ITEA has played an important role in Herman's work, ever since he took on the MEDIATE project in 2010. "I had been used to managing projects within Philips but now I was confronted with a bit of a tower of Babel, if you like – different companies and institutes, different cultures, external partners, languages, areas of expertise, specific objectives … it was an interesting period, and I learned a lot. The mix often leads to unexpected ideas and innovations that you could not have conceived on your own. You get to know each other as time goes by and realise the benefits of this open collaborative dynamic. You may find yourself collaborating with a different partner than you had planned in the beginning. And then with surprising results."

In this highly dynamic process within projects, Herman emphasises that the scope of the ITEA framework gives flexibility to realise changes. "As long as you stay within the general strategic objective of the project and show that there is good exploitation potential in the innovation. Communication with the ITEA team is good, especially with the reviewers who are very encouraging and positive towards well-founded proposals for change or come up with suggestions themselves. I have found this to be the case in the three projects that I have led (MEDIATE, BENEFIT and IMPACT)."

Fun at work and at play

And with retirement imminent, Herman is looking forward to enjoying the time that will become available to him. He looks back fondly on the past decade within the ITEA Community, one in which his projects have received various awards. "That's something that came as an unexpected surprise. Of course, it is good to get recognition as a consortium and to see some consortium partners really be able to exploit the results in a commercial or scientific way. But in working together with all these different people from different backgrounds, I have been able to see how they innovate and have got to know them better. Especially during the time given to social events in the evenings. It's been a lot of fun, both at work and at play. What more could you wish for?" What more indeed. And a nice sentiment to take on the next step … into retirement.

ITEA project results enhancing people's lives

Panacea Gaming Platform: Setting a world standard in gaming for special populations

Children with disabilities represent 13-15% of the paediatric population. For the elderly population, this figure is 40%. The incidence rate of Autism Spectrum Disorders (ASD), meanwhile, has increased by 600% in the last ten years. Gamification (the use of gaming elements in non-gaming contexts) offers a means for those affected to practise skills such as memory and social interactions. In turn, this benefits those within their circle of care, their practitioners and the developers that create such games. The resultant research, standardisation and applications can create systemic enhancements in how conditions such as dementia and autism are treated, improving quality of life and saving billions.

When attempting to assist vulnerable individuals while reducing healthcare costs, interventions must be efficient, sustainable and broadly applicable. Panacea Gaming Platform's (PGP) clinical gamification – including guidelines, stakeholder matchmaking and application evaluation – presents a solution as it will lead to new serious healthcare games being developed based on the scientific methodologies and guidelines developed during the project.

The Panacea Gaming Platform (PGP) is an international collaboration of software developers, researchers, industry leaders and clinical experts. The PGP's partners have completed important, foundational work for the serious healthcare gaming industry. They have also designed three evidence-based Serious Games and two gamified health apps.

PGP's significance lies in its clinical, personal and societal benefits: the opportunity to bring healthcare to individuals themselves, relieving the burden on hospitals and allowing those with disabilities to personalise their therapy and improve their quality of life. As the cost to care for individuals with autism is between USD 1.4 and 2.3 million per person, applications that offer earlier diagnosis and more effective treatment have the potential to create enormous savings.

Furthermore, the PGP developed a new quality standard for the game/app development industries; a revolutionary assurance and scoring model called TERCA (Technology, Engagement, Research, Clinical foundations and Accessibility). TERCA offers a quality certification service and seal-of-approval programme designed exclusively for serious healthcare applications; including virtual reality worlds, social networks, online games, mobile games/apps, educational services and other similar services that are accessible via interactive media. The revolutionary nature of this domain is underpinned by the fact that currently no standards exist. PGP is thus pursuing standardisation for TERCA in all countries involved, establishing best practices to ensure that the model continues to reflect developments within the field.

The project's commercial spin-off (Kids Digital Health) acts as a trusted voice and uses advanced technology and state-of-the-art methodologies to provide the best recommendations for those with disabilities and their families.

ITEA 3 project
Panacea Gaming Platform

Calendar

23-27 March 2020
ICST 2020
Porto, Portugal
https://icst2020.info/

25 March 2020
HOLLAND HIGH TECH VOORJAARSEVENEMENT 2020
Utrecht, the Netherlands
https://www.hollandhightech.nl/agenda/holland-high-tech-voorjaarsevenement-2020

1 April 2020
OPENING SYNCHRONISED CLUSTER CALL ON AI
https://eureka-joint-call.eu/

2 April 2020
EVALAN IOT INNOVATION DAY
Amsterdam, the Netherlands
https://evalan.com/en/evalan-iot-innovation-day-2020/

20-24 April 2020
HANNOVER MESSE 2020
Hannover, Germany
https://www.hannovermesse.de/en

27-30 April 2020
TRA2020
Helsinki, Finland
https://traconference.eu/

5-6 May 2020
13TH GRAZ SYMPOSIUM VIRTUAL VEHICLE
Graz, Austria
https://www.gsvf.at/

7-8 May 2020
WORLD PRODUCTIVITY CONGRESS 2020
Bangalore, India
https://wpc2020.in/

13-14 May 2020
VMAP INTERNATIONAL CONFERENCE ON CAE INTEROPERABILITY 2020
Bamberg, Germany
https://www.vmap.eu.com/vmap-conference-2020/

19-20 May 2020
FUTURE SUMMITS 2020
Antwerp, Belgium
https://www.futuresummits.com/2020/belgium

26-27 May 2020
KOREA EUREKA DAY 2020
Seoul, Korea
http://www.eurekaday2020.kr/

1-5 June 2020
IOT WEEK
Dublin, Ireland
https://iotweek.org/

10-11 June 2020
EUROPEAN BUSINESS SUMMIT 2020
Brussels, Belgium
http://www.ebsummit.eu/

15 June 2020
SUBMISSION DEADLINE SYNCHRONISED CLUSTER CALL ON AI
https://eureka-joint-call.eu/

16-17 June 2020
TERATEC FORUM 2020
Palaiseau, France
http://www.teratec.eu/gb/forum/

CYBER SECURITY & CLOUD EXPO EUROPE 2020

1-2 July 2020
CYBER SECURITY & CLOUD EXPO 2020
Amsterdam, the Netherlands
https://cybersecuritycloudexpo.com/europe/
ITEA will be present at the exhibition together with a set of 10 R&D&I projects

SAVE THE DATE
8-9 September 2020
ITEA PO DAYS 2020
Helsinki, Finland
https://itea3.org/

ITEA Success story

ACCELERATE

A go-to-market acceleration platform for ICT

Innovation is much more than creating technology; it must ‘go to market’. Many companies need new ways to rapidly validate the match between the market and their innovative ICT-intensive technology. The ITEA project ACCELERATE took up the challenge of enabling the mass adoption of acceleration knowhow by European technology companies by focusing on two goals: the transfer of knowledge on a massive scale and the introduction of a new type of product development, the so-called validated learning process that systematically searches for the technology-market match by validating the mechanics of a business model. This way ACCELERATE 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.

Finding answers

The method created in ACCELERATE was presented by the Belgian partner **SIRRIS**. It generated one book, "From Idea to Product/ Market Fit", on the basis of different e-books. Successful start-ups are all about turning ideas into action quickly and efficiently. Taking action is the hard part. Launching a start-up requires a willingness to fail and learn. Avoiding failure is not a sign that you are smart and being smart is not about knowing all the answers; it's about knowing how to find them. It is the premise of the book to help ask the right questions and formulate possible answers. This book provides guidance, insights, perspective and inspiration to go from idea to product/market fit in three stages:

1. The idea stage
2. The Problem/Solution stage
3. The Product/Market Fit stage

The e-books created by SIRRIS have been used in coaching programmes and so far about 80 companies have been coached.

ACCELERATE platform

The eighteen ACCELERATE project partners from Belgium, Finland, France, Romania and Spain created a platform (www.agile.ro/accelerate) that eases and facilitates interactions between start-ups and investors for business and product ideas or just an idea that can become marketable. The platform was built on Drupal 7 CMS, an enterprise-level open source solution for anything that implies content, user profiles, user roles and access permissions. Start-ups can communicate on the platform using the forums and with other users using the Private Messaging System. They can also access all the information sections of the platform and contribute to the library of resources by adding/ publishing tools, methodologies, KPIs, success stories and lessons learnt. Most importantly, they have the possibility to add/edit/remove ideas. Investors can also use these features but for private ideas they must request access from the idea owner in order to view its details. The ACCELERATE platform has grown over the years, being now the meeting point for 15 investors and 105 users registered as start-ups. The platform is hosting in the present over 60 project ideas.

Improving continuous innovation

ACCELERATE immediately had an impact on the project's partners, during and after the project. In Finland, **Elektrobit** (since 2015 **Bittium**) had used the traditional stage-gate model for their ideation for well over ten years. In the stage-gate innovation process, the collected ideas were used only to create intellectual property rights (IPR), and therefore involved only a limited number of experts. But without a common, familiar practice to present ideas, especially business ideas for the decision makers, and without well-defined criteria to assess the potential value of the ideas, the quality of the ideas varied a lot, and the link to the company's business targets missed completely. Consequently, the lead time of idea handling varied and many of the ideas remained a bit fuzzy, which also led to decreased employee motivation to propose ideas. To improve the situation, the company set out a new approach to have more radical innovations (products or applications) to be able to scale the business aiming to utilise the full potential of the entire organisation. The first step in the journey of improving continuous innovation was the deployment of an innovation management information system tool for collecting all ideas and covering the innovation process from idea harvesting to the business validation. During and after the project, several new business innovations led to either improvement of the products or to completely new innovations. However, the biggest change made was to evolve the company culture for the innovations. This kind of company culture needs to be fostered continuously. During 2015-2018, Bittium grew significantly and evolved to a clearly more product and innovation-driven company than previously. This is also evident in the revenue share; the product-based net sales rose from 37% in 2H.2017 to 56% in 1H.2019 and the net sales increased by about 16% between 1H.2018 and 1H.2019.

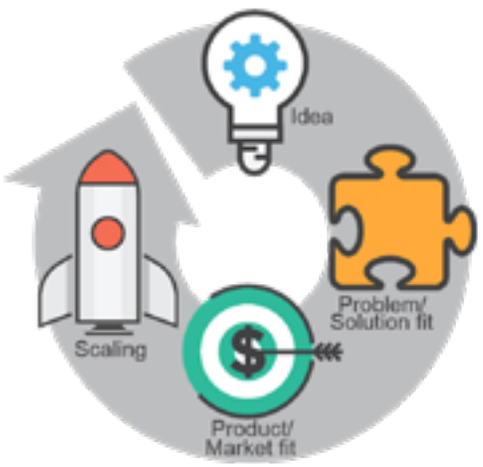
Major efficiency gains and growth

Based on the ACCELERATE results, the level of automation for the Finnish industry partner **AAC Global** has increased

significantly from where they started; in a typical process, the estimated increase of automated steps is 15%. The turnaround times and go-to-market of new services and updates to existing services are 20% shorter than before participation in the project. They are now also able to integrate seamlessly to their customers' processes and hence to increase automation and smart processes even more. ACC Global most likely would not have reached this level of automation and systematic approach without ACCELERATE. In the project, they created completely new service channels and services for their customers, and also monitored closely the customer feedback and the ROI regarding the services. These processes and channels are still in use in the company and being constantly maintained and developed. Despite the fact that AAC Global's ownership has changed several times since the project start, benefits from the project are still reaped in the daily operations and it is now planned to also scale this to other companies. This year the customer portal and backend processes that were a part of the ACCELERATE project will be shared with the global group of companies, Acolad Group, of which they are now part. The efficiency increase gained from ACCELERATE is thus planned to be scaled up to other entities in the group.

BEIA's telemetry start-up in Romania has been improved through the ACCELERATE project to increase the awareness of telemetry systems among potential clients, as well as increasing the visibility of the solutions in both online and offline environments. Even more, the company has become a reseller in Romania for F-Secure, one of the Finnish partners from ACCELERATE. The start-up has expanded its telemonitoring solutions from agriculture fields to heliports, photovoltaic parks and smart buildings. BEIA Telemetry has undergone huge growth; from the end of the project until end of 2019 the hiring rate has gone up to 10% and, in terms of partnerships, three more manufacturers have been contracted with BEIA now offering more precise solutions for indoor and outdoor measurements, like air and water quality, weather forecasts, using on-site sensors and satellite scans.

For **Mondragon University** in Spain, the methodologies and tools identified and designed in ACCELERATE to address the original objectives/challenges have been continuously implemented since the project ended. Every year, two or three contests are organised at the university involving different groups of students, companies and territorial agencies. Company's requests for projects have increased every year. Companies request projects aligned with their strategy. In many cases, those projects are adopted by the company as solutions to their needs and about 15-20% of the students end up working there. Companies use these projects not only to enhance their knowledge and capacity but also to scout for good reliable workers. Mondragon University has activated new measures to enhance the participation of students in companies.



ITEA was a catalyst for validating the results of **CogniStreamer**, like the Nimble Bee programme - developed during the course of the project and already commercialised - which assists in solving product and package design challenges with an international community of university students. The Nimble Bee competition takes place on a secure, closed (cloud-based) platform that allows companies to launch strategic challenges to a tailored community of students. Universities participating in the Nimble Bee competition come from different parts of the world (Asia, Europe, Americas) and include both design-oriented as more technical-focused schools like Mondragon University in Spain (who was also a consortium member of the ITEA project). Since the launch of the Nimble Bee programme, different challenges for Procter & Gamble, Heineken, McBride, ABInBev, Samsonite and AGC Automotive were successfully hosted. At this point in time, Nimble Bee has involved 2,060 students and solved 21 challenges, with an average of 42 submitted designs per challenge. The sponsoring companies used the option to buy the full intellectual property rights for, on average, 3 designs per challenge.

And last, but not least, Aptual created a new spin-off, **Johku,** on the basis of the methodologies learnt in the project and the Belgian SME **Zenjoy** has enjoyed a revenue growth of 33% thanks to the ACCELERATE results. But the impact is not just financial – more and better qualified employees, better clients, more professional R&D, new products and services as well as a quicker go-to-market process are among the other impactful effects of the project on Zenjoy.

Ongoing impact

The ACCELERATE partners are now digital transition experts with a huge amount of industrial experience on the topic. To share their knowledge, some of them participated in the ITEA Digital transformation Masterclass set-up with VINNOVA in October 2016 in Stockholm, targeting managers from Swedish industry confronted with the digital transition of their organisation, and willing to learn how the digital approach can be an opportunity to transform their organisation to be closer to their customers. With their approach, the partners continue to spread the ACCELERATE impact and benefits.

More information

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

Smart city platform for environmental and traffic monitoring and simulation

Within the ITEA Project ESTABLISH (Environmental Sensing To Act for a Better quality of LIfe: Smart Health), partners Prodevelop and HI-Iberia have developed a smart city platform with a set of smart services to monitor and make decisions on the city traffic and pollution, as well as providing optimised routes for users.

Briefly, the platform architecture is composed of several layers. The acquisition layer is responsible for loading and cleaning information from various open data sources such as traffic, air pollution, public transport or weather, the knowledge layer stores and analyses the information, the interconnection layer allows connection with other solutions, and the smart services layer includes the mobility services.

As a final result, this platform includes the following services: a mobile app for citizens, a web app for pollution and traffic predictions and simulations, and a web app for real-time data visualisation dashboards. The mobile app provides some real-time mobility recommendations and ecological routes using data fusion and deep learning techniques. Moreover, one of the web apps provides city authorities help on the urban mobility planning bringing them seven-day predictions about traffic and pollution and simulations of pollution scenarios in the city; meanwhile the other web app, a city authority management dashboard, uses a complex event detector to define time-series events.

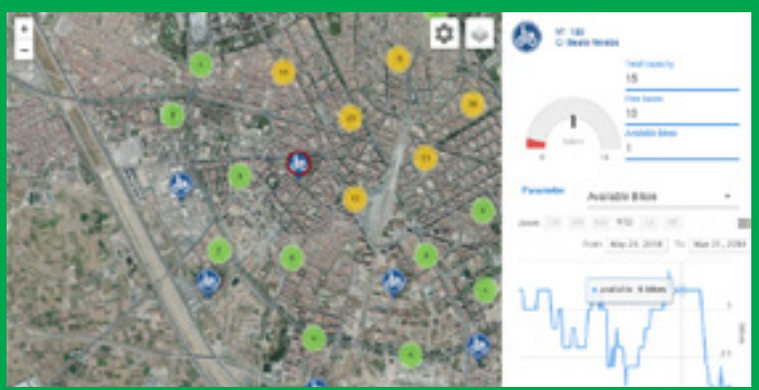


Figure 1: Bike stations availability

Figure 2: Web app for pollution simulation and prediction

At this stage, Prodevelop and HI-Iberia in conversation with Valencia and Madrid City Councils for the deployment of a few pilots prior to future commercialisation. If you are interested in learning more about the possibilities of this platform for you or your city, do not hesitate to contact Ismael Torres: itorres@prodevelop.es and Diego Fuentes: dfuentes@hi-iberia.es, the corresponding Project Managers in Prodevelop and HI-Iberia

More information
https://itea3.org/project/establish.html

2020 KOREA EUREKA DAY

On 26 & 27 May 2020, the the Ministry of Trade, Industry and Energy of Korea, Korea Institute for Advancement of Technology and the Netherlands Eureka Chairmanship will host the 2020 Korea Eureka Day.

The event will aim to attract entrepreneurs, researchers, academia representatives and all interested stakeholders from Eureka's cross-continental membership to Korea and provide them with the platform to initiate new and expand existing partnerships in the attempt to address societal challenges through innovation.

ETRI – ITEA Information session
Last year during a visit by a Korean delegation at the ITEA Office, it was agreed to intensify the collaboration between ITEA and Korean partners. As a follow up of that, ITEA will host an information session at the Korea Eureka event together with ETRI, the National AI Research institute and active ITEA project partner. During this session, which will take place in the morning of 27 May, attendees will learn about the opportunities to engage in ITEA and several Korean project partners will share their experiences. We look forward to welcoming you there!

More information
http://www.eurekaday2020.kr/

Note: Due to the outbreak of the COVID-19 (Corona) virus in Korea, the dates of the Eureka Korea Days 2020 might be subject to change. We will keep you informed.

SME IN THE SPOTLIGHT

Genode Labs

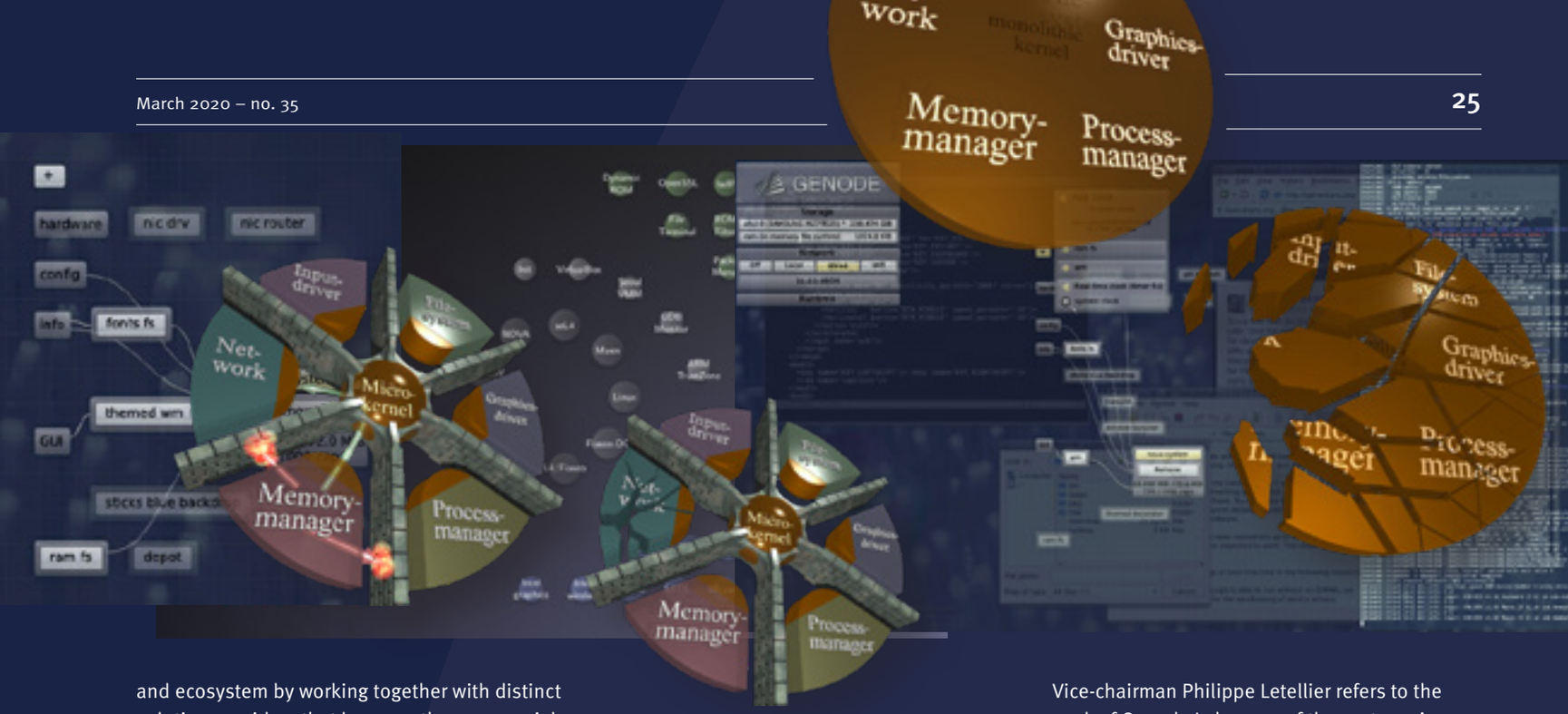
Where fantasy creates a new reality

Norman Feske co-founded Genode Labs in 2008 together with fellow Genode architect Christian Helmuth. "In 2003," he recalls, "we formed a vague idea of a new operating-system technology designed and implemented from the ground up with the vision of a truly trustworthy and resilient OS." In 2006 they created a first prototype at university. "It blew our minds!" Norman reveals. "Once we saw its enormous potential, we could not unsee it. We just had to bring those ideas to the real world. Hence, in 2008, we formed the company Genode Labs in our hometown Dresden in Germany." A few months later, Genode was publicly announced as an open-source project. "We went on with combining our completely new system structure with microkernels, capability-based security, sandboxed device drivers and virtual machines. Over the past decade, it has steadily evolved from the once obscure research prototype to a product that scales from embedded systems to commodity PC hardware."

The root of the problem

Committed to the open-source community and our customers alike, the Genode Labs business model combines consulting with dual licensing. "Our starting point was a technological vision formed over several years prior to starting the company. We observed that all popular commodity operating systems rest on assumptions that are no longer valid. Their foundation was laid decades ago, at a time when programmes and networked computers were designed for smooth collaboration, not mutual distrust. Today, any device – once connected to the internet – finds itself in a hostile environment. When confronted with malware or cyberattacks, users intuitively call for defensive measures. But those measures remain largely reactive: timely software updates, virus scanners, intrusion detection. They do not attack the root of the problem," Norman stresses.

"Business-wise, we retain a sharp focus on base technology, not solutions. This allows us to stay small, efficient, frictionless. With a tight-knit team of less than 12, the company is still rather tiny. Even though we are not looking to increase the headcount of our team, we are trying to foster the growth of Genode as a technology



and ecosystem by working together with distinct solution providers that leverage the commercial license of our technology for their respective markets."

Breaking the mould

In terms of the operating systems that prevail in the market, Norman regards these as rather conservative. "They cling on to notions that were established decades ago. For example, the Linux kernel has become ubiquitous. It is familiar and time-tested. But it is hardly innovative. Many people regard infrastructure such as operating systems as a problem solved. Innovation in this space – if it happens at all – is presumably conducted by large corporations like Google, Apple or Microsoft. This must be challenged. We have made this our mission."

Inspiring and eye-opening

"Given the market pressure to innovate, I believe that valuable research would still be pursued without public funding. That said, however, publicly funded research projects certainly bring people together who would possibly not meet otherwise. Incentivised by the funding that is provided, there is strong motivation for fostering a collaborative work structure, and for creating valuable output together. This cross-pollination between different markets and players can be inspiring and eye-opening."

It is partly this aspect of a collaborative work structure that proved to be the draw of ITEA to Genode Labs. "Our primary objective is to increase our visibility at large," Norman admits. "So the fact that we are here in this article nicely reflects that ITEA has met this objective.

The economic aspect of the funding was not really pivotal for us. When we were invited to participate, we felt attracted by the opportunity to identify points of connection with solution providers as our potential customers. Although the latter has not materialised yet, we have still gained valuable outcomes from the project." And while Norman admitted to having little or no direct contact with the ITEA Office during the course of the project, he did notice that all the related administrative aspects were very streamlined and caused no perceptible constraints.

One particular example concerns the company's desire to deploy the Genode technology on an ARM-based embedded device. During the course of the project, however, an unforeseen requirement presented a challenge. Norman explains: "The domain experts for the designated market were proficient with the enterprise Java/Spring stack only. In the spirit of bridging the gap between the domain experts' world and the embedded world, we set out to create a custom Genode-based operating system that would run a domain-specific, Java-implemented firmware directly on the embedded device. Without the project, we would not have fantasised about such a construction. We took unusual requirements as a source of inspiration."

Business value through innovation

In a recent blog (see https://itea3.org/post/security-a-question-of-surface.html), ITEA Vice-chairman Philippe Letellier refers to the work of Genode Labs, one of the partners in the Flex4Apps project. He cites the company's approach to tackling the challenge of security, which is focused not on fighting against attacks but on increasing the resilience of the system. "Genode is working on an open-source kernel of isolated compartments with controlled and explicitly authorised interactions between compartments. The less complex the kernel, the smaller the chance of cracks in the walls between the compartments. With a microkernel of less than 15K lines of code in open source being viewed by many other developers than the authors, there is a realistic chance that the kernel is completely free from vulnerabilities." The innovation that came out of the collaborative environment within the Flex4Apps project has greatly increased the business value of Genode Labs' technology. Not only has the resulting Java support for Genode been well-received by the community but it may also lead to new business prospects for Genode Labs. "Of course, the consortium partners come in with their own agendas and objectives, but the cooperation and collaboration in a very open environment was a good experience for us, something different and with useful learning moments. It also confirmed our own philosophy that our open-source approach is enabling a kind of digital sovereignty whereby Europe really can compete with China, the US and other 'blocs', especially in these times of turbulent political relationships. We may be small but our ambition is big."

More information

https://www.genode-labs.com/

Cyber Security & Cloud Expo 2020

Continuing to focus on customer orientation

On 1-2 July, a number of projects will provide the latest Cyber Security solutions at the ITEA booth at the Cyber Security & Cloud Expo that will take place in the RAI Amsterdam in the Netherlands. This event provides a perfect opportunity for our project partners to present their results to potential customers and for other attendees to discover the latest trends and developments in the cyber security solutions domain. And the ITEA booth will be the place where the impact of innovation will be showcased!

As customer orientation represents a strong success factor for the impact of R&D projects, ITEA targets several customer-oriented events in its new event approach. After a fruitful/ valuable participation in the Smart City Expo World Congress showcasing twelve ITEA projects last year, this year ITEA will continue the implemented pathway to success and participate in the Cyber Security & Cloud Expo with a set of thematic projects:

- AutoDC
- CitiSim
- CyberFactory#1
- DEFRAUDify
- MERgE
- PARFAIT
- TESTOMATproject
- XIVT
- MEDICYNE (Eurostars)

Cyber Security & Cloud Expo – explore the security needs of future technology

The Cyber Security & Cloud Expo Europe 2020 will host two days of top-level discussions around cyber security and cloud, and the impact

they are having on industries including financial services, healthcare, insurance, energy, government, automotive and more. Co-located with the IoT Tech Expo, AI & Big Data Expo, 5G Expo and Blockchain Expo, the exhibition provides a great opportunity for networking, learning and discovering opportunities across the entire ecosystem. 8,000 attendees are expected to congregate from across the world including Chief Information Security Officers (CISOs), Heads of Innovation and Technology, IT Directors, Security Professionals, Start-ups, OEMs, Government, Operators, Technology Providers, Investors and many more.
The conference agenda will tackle real issues faced by CISOs and security professionals today as modern enterprises evolve, as well as showcase the most innovative and important developments in the security solutions market. ITEA and the project partners will have a prominent role at this event with speakers in different sessions and an eye-catching booth at the main entrance of the exhibition. There will be plenty of opportunity to match challenges and solutions.

Discover Cyber Security innovation
To further strengthen the customer orientation and the exploitation of innovations developed by the industrial partners within the projects, ITEA will again organise 'Innovation Discoveries' at the ITEA project booths, which are dedicated guided tours based on a customer's need. The target is:

- to understand the customer's innovation challenges;
- to identify some unique results developed by the attending projects that can contribute to solving these challenges; and
- to help the customer exploit the ITEA innovations presented by the industrial partners who will be present during the event.

Come visit us!
The ITEA stand, at the entrance of the Cyber Security & Cloud Expo, will be the place to understand the latest innovation trends focused on key challenges in the Cyber Security and Cloud domain, like:

- Financial Crimes
- The Rise of Multi-Cloud Computing
- Third-Party and Supply Chain Attacks
- Shortage of Cybersecurity Professionals
- More Sophisticated Phishing Exploits
- Cyber Attacks on the Grid
- Personal Attacks
- State-Sponsored Attacks
- IoT and Autonomous Systems
- Smart Health Devices and EMR

We look forward to meeting you there!

More information
https://itea3.org/cyber-security-cloud-expo-2020.html

Modelling & Simulation

A vision of standards and state of play

By ITEA Vice-chairman Philippe Letellier

Co-signed by: Thomas Bär (Daimler), Daniel Bouskela (EDF), Patrick Chombart (Dassault Systèmes), Magnus Eek (Saab), Martin Benedikt, Martin Krammer (Virtual Vehicle/ Modelica Association), Martin Otter (DLR/Modelica Association) and Klaus Wolf (Fraunhofer SCAI)

To be or not to be … that is *not* the question

In today's market, developments in simulation are being driven by a number of trends. These can be summarised as:

- **Optimisation** of both product and production line design
- Production line **command & control** for efficiency, quality and security
- Better **understanding** of how end products are actually used
- Dynamic **personalisation** of the end product

At the heart of these trends is digitalisation. This encompasses two main dimensions: real data acquisition through IoT from the physical world of the product in operational conditions (the real world) and modelling & simulation of the product to forecast its usage and efficiency as well as modelling & simulation of the production lines, in relation to the product itself. It is at the intersection of these two dimensions that we are building the connected **digital twin** of our physical world to enable us to create a better-informed design as well as efficient command & control to ensure productivity and quality. Importantly, it also means that the environment for human-machine collaboration (the use of cobots) can be made more safe. The upshot is that you acquire a flow of information that helps you to understand how the product is actually used along with the associated new trends in usage, something that is the heart of the agility approach that, in turn, enables the product to be dynamically adapted to the actual demand/ use.

So the question of whether or not we have to establish these kinds of digital twins is not really relevant any longer. The question is more how do we design such complex digital twins and how can we increase the precision of a digital twin that, after all, remains just an image of the reality. ITEA understands how simulation is becoming more and more relevant and important, and has invested a lot in it, gaining great successes and significant impact on **standards** and business.

Coupling the small and the large

When it comes to software engineering, the normal first step to take is modelling. Then,

when you become confronted with complexity, you move towards modularity. The present situation is already that no one is able to gather all the knowledge needed to model a product in all its dimensions. As an example, in the automotive industry the 3D model of the car has been around for many years now. But if you are a premium brand, you will want to master, for example, the sound the car door makes when it is slammed shut. It helps differentiate a Mercedes or BMW, for instance, from a SEAT or a Dacia. The customer expects a certain quality of 'clunk'. However, to reach a good level of realism, a simple model is not enough. It requires in-depth knowledge on audio. An innovative SME has invested a lot of knowhow to build this kind of simulator and while it remains a very small market, a niche, it is rather rewarding. For the major 3D model players it is not really reasonable to invest in such in-depth knowledge given the size of the market. Yet where the customer wants the 3D model and the car-door slamming model, they are duty-bound to collaborate in an interoperable way, with a multi-physics approach.

Rising to the challenges

The first ITEA project that worked on this kind of challenge was **MODELISAR**. It aimed to ensure that a complex model can be designed on the basis of car sub-systems, independent of the modelling tools and langages. To this end they designed the concept of the Functional Mock-up Unit (FMU), and its associated Functional Mock-up Interface (FMI) to allow the exchange of behavioural models between FMUs and ensure interoperability. This FMI (https://fmi-standard.org) has nowadays become a worldwide standard of the Modelica Association (www.modelica.org) used by all the main industries. For instance, over 140 tools support FMI, with both big software editors, SMEs and academic solutions. There is a continuous momentum to support and enhance the standard in a permanent FMI project that includes several Working Groups in liaison with the numerous successor projects: OpenCPS, VMAP, ACOSAR and MOSIM. But rather than closing a problem with a solution that would have been already a very good success, related to the application domains, Modelisar's successful FMI standard was exploited in further industry landscapes. For instance, it has ventured beyond the initial Automotive domain to satisfy similar needs for interoperability that exist in the Aerospace and Energy domains.

Compatibility and interoperability

After the FMI step, which has allowed modularity in the design of complex models, the question of ensuring compatibility and interoperability between the previous existing design tools that nonetheless remain useful on a daily basis was a challenge taken up by the **OpenCPS** project. A recap on the state of play: The Modelica Association traditionally 'housed' the modelling experts family responsible for developing many of the solutions and tools whereby FMI was the agreed standard for allowing the exchange of models between simulators. The SSP (System Structure and Parameterization) Working Group initiated by ZF, based on a workshop of ZF, Bosch and BMW, designed a new standard, under the auspices of the Modelica Association, to integrate and interoperate different FMUs and their parameters using the FMI standard. UML (Unified Modelling Language) and SysML (Systems Modelling Language) are key standards for designing software solutions and system architectures. OpenCPS focused on the interoperability between these different standards, developing the OMSimulator (an open-source industry grade FMI and SSP master simulation tool) enabling FMUs to be imported, connected and simulated in an efficient and standardised way. OMSimulator is the first tool to integrate FMI, SSP and the Transmission Line Method (TLM) – a well-established technique for numerically robust distributed simulation. In addition, successful SSP-based round-trip engineering between the simulation and architecture domains have been demonstrated in the project.

Virtual material modelling …

While the efforts of OpenCPS focused on system simulation, there is another physical level for simulation if you want to take into account the property of materials themselves. This was the focus of the VMAP project.

VMAP worked on a new Interface Standard for Integrated Virtual Material Modelling in the manufacturing industry where the state-of-the-art in the exchange of local material information in a Computer-Aided Engineering (CAE) software workflow is not standardised and raises a lot of manual and case-by-case implementation efforts and costs. To be able to facilitate the holistic design of manufacturing processes and product functionality, knowledge of the details and behaviour of the local material is required. The VMAP project therefore targeted the acquisition of a common understanding and interoperable definitions for virtual material models in CAE and the establishment of an open and vendor-neutral 'Material Data Exchange Interface Standard' community to carry the standardisation efforts forward into the future.

… and integration

But the project had a challenge to overcome: how to interface a system simulation as described by FMU, FMI and SSP with some model of material behaviour as described in the VMAP format. VMAP's answer was to enable the interaction of detailed 3D Finite Element Analysis (FEA) codes to model parts of a complete production line. An example in the composite domain could be (step 1) draping simulation → (step 2) curing analysis → (step 3) moulding simulation → (step 4) noise, vibration, and harshness (NVH) product analysis. Each of these FEA models will run for hours even on larger high-performance computing systems. In order to integrate these two levels of modelling, a three-phase approach emerged. Run detailed coupled FEA workflows and validate each single step and the coupled analysis so that the 'heavy' FEA models can be reduced

(by numerical methods or AI & data-driven approaches) to systems models, in Modelica language for example. Such systems models can then be integrated into an FMI-based systems workflow – and finally even be used to realise online control of production.

Industrial process

But this does not mean 'job done' yet because when you are able to set up such a sophisticated model, you are faced with the challenge of integrating it in an industrial process. This is exactly the problem that the **ENTOC** project wrestled with, working on how to gather the models of the different components of a production line to allow industrial engineering. The result was a components behaviour standardisation for production line engineering coupled with a safe marketplace approach managed by trusted tiers that ultimately allows FMU to be integrated in virtual engineering.

From model to application

Once you have been able to establish such sophisticated models, many applications present themselves. One such key application is to enhance the test phase, which is always long, costly and agonising. **AVANTI** reused FMI to test the production line through virtual commissioning while **ACOSAR** developed standardised integration of models and real-time systems into simulation environments, including hardware-in-the-loop.

ACOSAR specified and standardised a communication protocol to integrate different distributed components. It is known as DCP, Distributed Co-simulation Protocol (www.dcp-standard.org). ACOSAR included a model-based methodology to integrate modules, compatible with FMI. One of the key aspects of ACOSAR in developing the DCP was that starting from simulation, a pure virtual prototype, the first pieces of hardware might become available. So single simulation models are replaced with real components, and the same or similar experiments can be done again. Following this approach, more and more models are successively replaced. The virtual prototype then becomes more real, until the actual product emerges. The DCP supports this approach, because it can be used

- by simulation tools, for pure numerical calculations;
- by hardware-in-the-loop setups, integrating models with target hardware;
- by real-time systems, for full real-time co-simulation experiments on large test rigs, for example.

The DCP was designed for real-time operation, with a very low or no communication overhead, and implementations can be done with a low memory footprint. Therefore it is highly suitable for real-time communication. However, the actual real-time performance depends on the chosen underlying transport protocol running on a communication system.

Safe cobot environment

Another application revolves around the safety of human workers in the context of a production line that incorporates many robots. The challenge is not the robot component – we know more or less the exact movement of the robots through their simulation – but more the movement of the human workers that have to interact with their robot counterparts. How can we take account of that? This is exactly the challenge covered by the **MOSIM** project.

To deal with this issue, MOSIM developed what it refers to as a Motion Model Unit (MMU), and a Motion Model Interface (MMI) directly inspired by FMI. It allows the connection of heterogeneous digital human motion simulation. MOSIM is currently focusing on human motions only, but the **AIToC** project (whose Full Project Proposal has been submitted) intends to address the next logical step combining robots and workers ("hybrid workplace") whereby the incorporation of AI is envisaged. Then a production line can be modelled with Modelica, FMI, UML, and the human motion with MMU and MMI. Two simulators will become immediately interoperable to support integration in the production line.

Situational awareness

Nowadays, many systems include control software that requires better awareness of the environment and systems to be controlled. An ITEA project aiming to tackle this issue is **EMPHYSIS**. Still with another year to run, EMPHYSIS wants to bridge the gap between the multi-physics complex modelling and the embedded software in vehicles. In this context, a derivation of the established FMI standard is being created to describe new interfaces and the interoperability specifications between the tools used for modelling/simulation, embedded code development, quality checking, testing and integration in ECU (Electronic Control Unit). The new born eFMI standard will here expand in a new domain, with the commitment of more than 25 partners along with automotive OEMs & Tier 1 suppliers.

Future evolutions

The domain of simulation is very fertile and warrants some major investment in R&D. If we look at the trend in digital twinning, there are clear benefits for design automation given the substantial data that is acquired during the physical testing. Such feedback can be used to evaluate the system model performance. In addition, use can be made of investments in digital twinning at various levels for detecting anomalies in engineering, long-life maintenance and product adaptation to different kinds of use.

Questions will arise, for example concerning quality assurance on the simulation stack. How can **V&V (verification and validation**) standards be efficiently integrated with the simulation approach in industrial settings, and with a high level of automation? And then you have to look at the complete picture concerning simulation governance, credibility assessment, the issue of **traceability**, and how to define and objectively measure the fidelity of a model. This requires a kind of **model analytics**. Which combination of model fidelity is needed to enable a specific intended use of a connected set of models?

While Modelica language is already a standard, industry still needs to push for increased interoperability between Modelica tools. This requires further standardisation of the Modelica language itself as well as standardisation of model encryption.

It should be realised that simulation is very much at the heart of the corporate value, but companies are unwilling to take the risk of becoming locked in to a tool vendor, especially for the heavy industries that manage product lifecycle in terms of decades.

Another open question arises when considering the cases where virtual commissioning is sufficient and where hardware in the loop is required. ACOSAR worked on the integration of hardware in simulation environments, and delivered the DCP as well as defined an accompanying integration process. Currently there is a strong demand for a reduction in test cases aimed at saving time and money so it is important to think about cases where it makes most sense to front-load testing activities, and perform mixed real-virtual simulations. Typical applications can be found in the field of automated driving. Confidence in self-driving vehicles can only be established by driving reasonable amounts of test kilometres, which can only be achieved through simulation. And here lies the possibility to integrate new sensors, actuators and controls. Where complexity is an issue, virtual commissioning tends to be most used for some areas (such as robot cell) of a production line since the hardware of the whole production line is also a step-by-step accumulation process. Virtual components are also replaced by real hardware in the same kind of gradual process.

Project bites

- **MODELISAR**
  FMI is the seminal standard to exchange multi-physics behavioural models between different simulators to build complex simulators from different simulators
- **MOSIM**
  Motion Model Unit (MMU) and Motion Model Interface (MMI) directly inspired by FMI allow connection of heterogeneous digital human motion simulation
- **ENTOC**
  Components behaviour standardisation for production-line engineering
  Integrating FMI in virtual engineering
- **AVANTI**
  Reuse FMI to test the production line through virtual commissioning
- **ACOSAR**
  Standardised integration of models and real-time systems into simulation environments
- **VMAP**
  Vendor-neutral standard for CAE data storage to enhance interoperability in virtual engineering workflows

Another direction is better integration of modelling and simulation to systems engineering processes in order to facilitate innovation (open the solution space) while rigorously ensuring compliance of design with respect to all requirements. This is the goal of

the ITEA **EMBrACE** project that has just started and aims to develop a new standard for the modelling and simulation of assumptions and requirements. Indeed, safety critical systems cannot be commissioned and operated if one cannot prove that they strictly comply with all requirements, in particular those expressed by the safety authorities. This is a striking example where the proof of the correct functioning of the system, using a justification method efficiently supported by a modelling and simulation framework, is as important as the system itself.

It is clear that these new R&D topics must be handled in an open and standardised spirit so there will be a need for compatibility among all relevant engineering standards. The EMMC (European Materials Modelling Council) is a very strong initiative driven by the EC and aimed at the digitisation of materials and manufacturing information, with work increasingly focusing on the very fine levels like micro, nano or even atomic.

Conclusions

This domain of modelling, simulation and digital twins has progressed a lot during the last few years. In particular, ITEA has been a key player in accelerating the evolution and impact at a global level through standardisation which is now being deployed in the markets. We are proud of these results, but the game is not over and already many new challenges are emerging that will make these first results even more impactful. Join the game and continue to transform the world with its digital twin. ITEA, the twin-headed programme that handles the concrete reality with digital models.

We survey to serve you better

ITEA focuses on customer orientation; it is part of our DNA. During project reviews, the project's success depends partly on its involvement of and verification with customers. Customers are even regularly part of ITEA projects and the entire ITEA event approach is geared to being closer to the customer, with the annual thematic ITEA customer workshops and participation in customer fairs such as the Smart City Expo World Congress (SCEWC) and the Cyber Security & Cloud Expo.

Essentially, the ITEA project partners are, in addition to important building blocks, also 'customers' of the ITEA programme; they use the services, such as the (network) events like the ITEA PO Days, the interface, like the ITEA Project idea tool and Community website, and we work together with them on the ITEA (project) promotion, including the ITEA project leaflets, the ITEA Magazine and the Impact stream.

As they work 'in the field', these customers have wishes and ideas that are important, from which ITEA can learn, improve and innovate. To this end we ask time and effort from the ITEA project partners to share their valuable information with us; after every event or stage in an ITEA Call for projects (e.g. PO Submission, FPP Submission, start and completion) we ask about their experience, ideas and wishes. This requested time and effort is only well spent if something is really done with the results. Although not every idea can be implemented (immediately) and there are numerous different opinions, rest assured that many improvements have been achieved thanks to the ITEA Community's input.

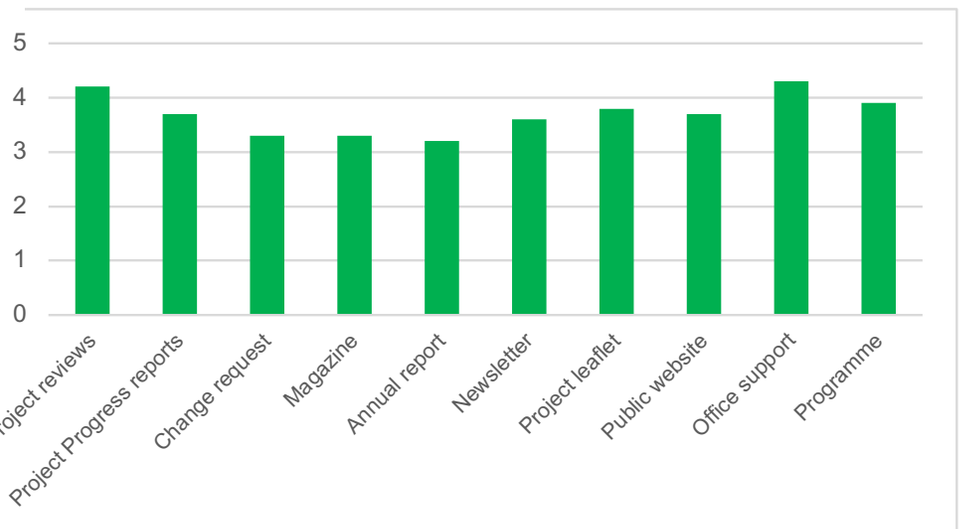
To give a clear example; participation in SCEWC was inspired by the surveys conducted after our Co-summits and the Digital Innovation Forum (DIF). Every year we received feedback such as "*This type of event should attract more people outside the Community*", "*There is not enough outside participation and it feels to be much more an event for the people that are already engaged in projects*" and "*Not enough potential customers*". ITEA has always encouraged projects to involve customers but has not always succeeded in achieving that at its own events. That is why the thematic ITEA customer workshop was first set up 6 years ago, in which customers from a specific theme were brought into contact with solution providers from the ITEA Community and specific customer challenges were converted into customer-oriented R&D projects. That was a success; the events were very well rated - with a record score of 4.23 on a scale of 5.0. But it wasn't enough; during the ITEA Events, the demand for more customers and outsiders remained high. That is why ITEA changed course in 2019 and went to the Smart City Expo World Congress in Barcelona with 12 projects. This experience yielded many learning points, but 88% of the participants that had participated to the ITEA events before thought this new approach was better (and the other 12% thought it was similar): "*Participating in SCEWC helped us shape the presentation and parts of the product that we developed in the project*". Through this successful participation, we will continue to participate in various thematic customer fairs in the future. In 2020, besides the SCEWC, preparations for participating in the Cyber Security & Cloud Expo in Amsterdam are already ongoing.

In addition to major changes, such as an event approach, the details are not forgotten. Suggestions for improvement of the PO and FPP submission process are evaluated seriously each year. Overall, the PO submission process in ITEA is now well appreciated; PO leaders gave a score of 4.11 (compared to 3.54 in 2018). This higher satisfaction level was partly thanks to the improvements made based on the evaluation outcomes of the PO submission of 2018:

- Creation of a revised and shorter version of the PO Annex template
- Improvement of the ITEA Living Roadmap
- Creation of a proxy Project Leader role
- Creation of a checklist at partner level

Although this score is already high, we are not going to sit back and relax; we continue to listen to learn where we can still improve.

Even after the completion of a project, the Project Leader is asked to review each process one last time. In 2019, the results per topic were as follows:



Results Project Leader satisfaction survey 2019

The scores on a scale of 1-5, where 1=very poor, 2=poor, 3=good, 4=very good and 5=excellent

From the processes, the Change Request process received a relatively low score (3.2 out of 5, where 3 = good and 4 = very good). Based on the feedback received, the process has been analysed and improvements have been implemented in January 2020.

We are proud of having received a 100% recommendation score from all 226 respondents over three different surveys in 2019 and comments like *"Very, very good tool, best in kind in EU projects. Congratulations"* are definitely rewarding, but we also highly appreciate the constructive feedback from the ITEA Community. We want to take this opportunity to thank everyone for their valuable contribution and for helping to improve ITEA's response to the needs of the users over the past few years. We will keep listening to you in the future!

Introducing Nadja Rorhbach

Senior Expert at the Eureka Secretariat

Before I started my professional carrier, I studied biology and my aim was to once receive the Nobel Prize, but finally I didn't pursue a scientific career. However, aiming high is still one of my ambitions.

14 year ago, I joined Eureka, which is called a family and it really is.

At the DLR Project Management Agency I started with the classical Eureka Network projects, but it was also the time when Eurostars was being developed. After a short time, it became clear for me that this appealed a lot to me, and I followed it up closely and engaged in it. I built up the Eurostars team in Germany, implemented Eurostars, developed the programme further together with the colleagues from the network and improved the national processes over the time. I also coordinated the development and discussions to set up Eurostars 2 and I now do the same for Eurostars 3. The only difference is that I am in the Eureka Secretariat (ESE) now and can act more centrally and under the guidance of the current Dutch Chair.

About 2 years ago the Federal Ministry of Education and Research in Germany gave me the chance to join the ESE for a term of 2 years. Here I became familiar with the last instrument I didn't know that much about: the Clusters. In the ESE I am in charge of the Clusters and I support them as well as the Chair and the Network, to work out how the Cluster can evolve to stay fit for the future. This new challenge was what I was looking for and it is a very rewarding task to work together with the Cluster Offices and the industry.

Eureka Cluster events and Call dates

Celtic-Next, Euripides, Penta, Eurogia and ITEA	1 April 15 June	Opening Synchronised Cluster Call on AI Submission deadline Synchronised Cluster Call on AI		eureka-joint-call.eu
ITEA 3	8-9 Sept	ITEA PO Days 2020 & opening ITEA 3 Call 7 (save the date)	Helsinki, Finland	itea3.org
CELTIC-NEXT	30 March	Submission deadline - Joint call with Eurogia		www.celticnext.eu
eurogia2020	30 March	Submission deadline - Joint call with Celtic-Next		eurogia.com
EURIPIDES²	20 May	Submission deadline FFP - Synchronised Call with Penta		euripides-eureka.eu
Penta	20 May	Submission deadline FFP - Synchronised Call with Euripides		penta-eureka.eu
SMART advanced manufacturing	23 March	Submission deadline FFP - SMART Call 3		www.smarteureka.com

Colophon

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