

ITEA Magazine 25

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Editorial

High Quality Efficiently Delivered With Happiness for Free

This is ITEA. We recently conducted a web-survey on our PO/FPP process. As usual in our stakeholder satisfaction surveys, it appeared again that over 90% of our stakeholders stated that they would recommend ITEA to friends and colleagues. While this may be seen as just a number, the people featuring in the articles in our magazine confirm the message, also in this issue.

Initiated and managed by industry, the ITEA Office operates as a small business, with prudent finance. The cost of participation is low compared to other schemes.

Our project monitoring process helps the consortia to achieve maximum bang for the bug, which is, as again demonstrated by our stakeholder satisfaction surveys, strongly appreciated. People enjoy our events: a late applicant for the upcoming PO Days initially wanted to participate offline with the ITEA Project Idea Tool, but later approached the office to ask if he still could join, because of the positive stories he heard. How could we deny...

For industry and countries, ITEA is the unique tool in software innovation that supports international, indeed global, cooperation initiated by companies with funding decisions based on national priorities.

So, the world is perfect for ITEA? Well, no, not entirely. The one single most important challenge for ITEA is related to one of its key characteristics, its bottom-up character and decision processes. In an environment which is economically not so stable, countries may be forced to reduce their spending rather suddenly. Other countries are increasing their spending, but then it takes time for new ideas and projects to exploit this. We worked hard to improve the time from idea to project start and made a record of 10 months between call opening and kick-off covering the full cycle from the start of the Project Outline, the Full Project Proposal and the decisions on national funding. But despite the optimisation of our call calendar in cooperation with the public authorities, we still see delays in project start and reductions in project size after labelling. We will continue to address this in cooperation with industry and public authorities.

But the positive message should prevail: this issue of the magazine covers a report of two very successful events: our second international customer and end user workshop on healthcare and the PO Days for ITEA 3 Call 3. There is a strong message on the Turkish ambitions in software innovation and international cooperation in programmes like ITEA. A sequence of achievements in healthcare innovations is described from the Philips viewpoint accompanied by strong quotes from their customers. There is a strong success story on the ADAX project, which addressed the dynamic field of cybersecurity with happiness. And we focus on the people in our Community talk and in the Viewpoint by Laila Gide, Director for Advanced Studies Europe Thales, ITEA Board member and President of ARTEMIS-IA. And there is more: innovations in border control from IDEA4SWIFT, emergency management from BaaS, the report of the Masterclass on Digitisation and Jotne as SME in the spotlight. Enjoy the read!



Fopke Klok

Focus on Turkey

From fringe to forefront



ICT is one of the fastest growing sectors in Turkey and is of primary importance for technology-based growth. In recent years ICT-related technology development skills have witnessed promising enhancement and ICT is one of the frontrunners of internationalisation in research and development.

Double-digit growth

ICT has been determined as one of the priority areas in Turkey with strong R&D&I capacity within the National Science, Technology and Innovation Strategy (UBTYS) 2011-2016. In 2014 the ICT sector grew by 12.1%, reaching revenues of 21.7 billion euros. In the software-intensive sector growth was slightly higher at 12.3% and is expected to continue between 11-15% for the coming years. Total software exports were over 400 million euros, which is nearly half of the ICT export and total ICT government funding amounted to 1.1 billion euros.

The figures are impressive and with the ICT workforce increasing from 227,000 in 2014 to 248,000 in 2015, Mete Karaca, Scientific Programmes expert at TÜBİTAK, sees the new generation of young people willing to work in the ICT sector in Turkey as a key ingredient. "There is a growing tendency of building skills and capabilities to enable ICT to compete in the global arena. Recently, the Turkish government took steps to attract R&D foreign direct investment (FDI), which is expected to help the country to become technologically independent. Given the highly skilled workforce, especially in this sector, R&D related FDI is most likely to add on to the existing capabilities we have in ICT."

Strategic roadmaps

A cooperative *High-Level Prioritisation Group for ICT* in Turkey involving leading experts from the private and public sectors, including the CEOs of R&D-intensive companies, academics with key expertise and decision makers from ministries and non-governmental organisations, has drafted a set of strategic priorities for ICT to determine concrete R&D targets and help establish technology roadmaps. To date five such technology roadmaps have been prepared regarding ICT implementation:

- mobile communication technologies
- micro/nano electro mechanical system technologies
- advanced display technologies
- machine control and factory automation systems
- embedded systems for automotive and machinery applications

These technology roadmaps included a timeline containing an action plan for each R&D target.

"Within the preparation process of technology roadmaps," Mete adds, "focus groups have played a major role in setting the future sub-priorities along with the timeline and action plan for each R&D target. These prioritisation efforts occur at all levels and by all means including the High-Level Prioritisation Group workshops, technology roadmaps, the Input Supply Strategy (GITES), questionnaires to determine the private sector's R&D problems and global trend analyses including OECD projections and EU Commission's monitoring studies have been used as inputs for the preparation of TÜBİTAK Call Plan 2015-2017 for target-based calls announced online in 2015."

Target-based calls

Target-based calls have been published by TÜBİTAK on the topics prioritised by sectoral stakeholders and technology foresight studies. "We expect that this systematic approach will achieve a more ordered, comprehensive and deliberate structure through call planning practice," Mete explains. "At TÜBİTAK, we are responsible for managing and evaluating the support schemes and also dedicated to keeping the STI policy orientations up to date. The progress is reported to the Supreme Council of Science and Technology, which is headed by the Prime Minister and evaluated on a regular basis twice annually. Between 2012 and 2015, 242 target-based project calls were opened in this manner, with nearly one in ten academic calls dedicated to the ICT sector. One in five calls were for private sector R&D while supported business R&D projects in ICT were the calls with large budgets."

The wider picture

A further TÜBİTAK priority for ICT is building technological cooperation with leading European economies within the context of Horizon2020 calls and bilateral cooperation schemes. "We attach special importance to 5G, Internet of Things, Big Data, Cloud Computing topics as we believe those sub-themes offer an effective framework for cooperation," Mete confirms. "EUREKA is a major programme for our researchers to make bilateral and multilateral research collaborations. We advise EUREKA clusters and international collaborations to our researchers and companies after they successfully complete national projects. Of

course, Horizon2020 is also a significant programme for us. Turkey is an associated member and Turkish researchers can apply for all Horizon2020 calls like any member state. The EUREKA network is strategically important for being successful in Horizon2020."

Leading role

Turkey is one of the founder countries of the EUREKA Programme and is an active member, holding the EUREKA Chairmanship twice, in 1998 and in 2012. "During our chairmanship years, we supported clusters because they are industry-oriented platforms. We also support Turkish companies in their membership of Cluster boards. The thematic focus of some clusters are in line with our National Science, Technology and Innovation Strategy (NSTIS). For instance, the thematic focus of ITEA is one of the most important topics in the NSTIS document. Therefore, Turkey is very active in ITEA projects and it is a leading country in ITEA. In fact," Mete proudly proclaims, "Turkey was the second country in effort per country in ITEA 3 Call 1. In Call 2 Turkey has even taken over top spot. We are expecting Turkey to take first place again in Call 3. At a national ITEA event in Ankara to prepare our researchers for the Call 3, more than 100 researchers attended and 10 project proposal presentations were made. We are also proud of having a Turkish lady chairing the ITEA Cluster. ITEA Chairwoman Zeynep Sarılar and ITEA Vice-chairman Philippe Letellier were in attendance and inspired all those present at this very successful event. Thank you to the ITEA Office for helping us disseminate this event."

The SME factor

Almost 99% of the Turkish companies are SMEs, so SMEs play a key role in the Turkish economy in terms of employment, exports, etc. Therefore, there are several incentives dedicated to SMEs. For example, TÜBİTAK supports innovative SMEs with its national programmes with high funding rates and grants. SMEs can get 75% of their expenditure for their EUREKA projects, and there is no project budget limit for EUREKA and Eurostars projects. SMEs are an important driver of the Turkish 'non-financial business economy', providing three out of four jobs and producing more than half of the country's added value. Several governmental agencies put in place measures directly affecting SMEs.

Metem explains the role. “Among them, the Small and Medium Enterprises Development Organisation (KOSGEB) and the Scientific and Technological Research Council of Turkey (TÜBİTAK) are the two main institutions that manage programmes targeting SMEs. KOSGEB is the coordinating agency in charge of SME policies. It is also preparing and coordinating the SME Strategy and Action Plan in cooperation with public and private stakeholders. TÜBİTAK has been actively focusing its efforts to provide R&D and innovation grants for business partners through its support schemes. The R&D Starting Grant Programme for SMEs to promote newcomers to participate in R&D&I activities was revised by TÜBİTAK in 2012 and it attracted great interest from SMEs, with applications rising from 1,353 in 2013 to 1,527 in 2015. The Individual Entrepreneurship Support Programme aims to motivate technological and academic entrepreneurship and to increase the survival rate of technology-based start-ups as well as spin-offs by providing seed capital, mentorship and relevant business courses. The final phase of the programme aims to facilitate start-up access to equity financing. TÜBİTAK collaborates with implementing organisations in each phase of the programme as consultants, equity-funders, mentors and trainers.”

Incentives

Other TÜBİTAK instruments include the Technology Transfer Office (TTO) Support Programme to support TTOS transfer university technologies to the

market. “The programme provides ten years of financial support for the eligible TTO’s budget for technology transfer activities including training, capacity building for university-industry cooperation, project management support, academic entrepreneurship activities and IPR support,” Metem explains. “TTOs are considered as interfaces between the academic and the private sector, including SMEs. The grant rate is 80% for the first 5 years and 60% for the rest of the period. The Venture Capital Funding Programme aims to provide grants to venture capital funds which invest, or intend to invest, in potential start-ups in need of seed capital to assist them with their technology-intensive research and development, production and commercialisation activities. The programme is designed with the objective of supporting venture capital funds that intend to invest in R&D-intensive start-up companies based in Turkey, in their R&D&I activities, building or improving their production infrastructure for products and technologies. Support is granted up to 20% of the total venture capital fund, with 79% required to be provided from other

investors or fund manager and 1% from the fund manager.”

A final word about what is still needed. “R&D expenditure is about 1% of GDP in Turkey. It is absolutely essential that we boost this to 3% of GDP up till 2023. We are on the right track and we must make sure that investment in R&D is sufficient to help our ICT sector maintain the impressive growth it has registered over the past few years and really makes it mark on the international stage.”

Bor Software

Making a mark in the software domain

Earlier this year at the EUREKA Innovation Week in Stockholm, Özer Aydemir was part of the impressive presentation by the ITEA BaaS (Building as a Service) project team that is establishing a generic service platform for commercial buildings that integrates traditional building automation and management systems with ICT infrastructures. It is a project that pushes innovation and Bor Software Inc. is applying to this ITEA 2 project the knowledge and experience in software infrastructure development gained during the TÜBİTAK funded Mobile Application Development Infrastructure and Content-Based Video Broadcasting project. In addition, the company has been involved in the research and development phases of the project, working on the classification of assistive technology, development and testing

of the service platform and value-added building services, programming of constrained devices, and modelling of video programming needs. With his company, Özer will be leading a new ITEA 3 Call 2 labelled project, SecureGrid, which is geared to security, fraud detection and encryption for smart grids based on Artificial Intelligence and Big Data analysis. Innovation and ITEA are clearly in his blood.

Emerging technologies

Özer began working at TÜBİTAK in 2002 where he came across two of his former classmates from university. "On 1 March, 2007," he explains, "the three of us got together to set up a company focusing on emerging technologies, expecting this to be a key business areas within about five years. We were fortunate to become involved in a successful project in Turkey, which saw us grow to eight people within one and a half years. Then one of our partners in the United States asked us to become involved in the media business where we started developing software for television and video-processing. On the back of this success, we

grew to 14 but due to the economic recession there at that time we didn't renew our contracts. So we turned our attention to our domestic market, which had matured by around 2010, to develop the knowhow we had gained in mobile and media applications. Interestingly, when we began in 2007, there were only two companies in Turkey offering mobile software solutions. By 2011, this figure had risen to more than 200." To put this growth into a financial perspective, in 2002 (when Özer graduated) its annual value was 1 million dollars; now it is more than 40 billion dollars, and growing. "I suppose that is a pretty clear indication of how important software has become in our industry." The company decided to switch tack after 2011 to develop mobile operating systems as a new business focus, targeting major users like the police or Defence or the government. "We have even developed an educational app for the Turkish army," Özer adds.

Local knowledge

It was in 2013 that Bor Software first became involved in the ITEA Community with



INTERNET VIDEO MIDDLEWARES FOR ENTERPRISES



ENTERPRISE MOBILITY MANAGEMENT

participation in two projects, DEMWatch (aimed at producing new applications for long-term assistive solutions for Dementia sufferers) and BaaS “in which we developed a building management tool that we are already selling in Turkey, even though the project has not yet finished,” Özer proudly points out. The company has grown to 35 engineers and three products today, and projects such as those mentioned have been a contributory factor to the Bor Software’s success and subsequent growth. In fact, Özer’s only complaint is that some aspects of the business, like updating the website, is a consequence of the success. “As we say in Turkey, a tailor can’t make clothes for himself because he’s too busy working for others. We have to compete hard for our market share. Since Turkey is a relatively young developing country in western terms, foreign firms (US, Far East, European) tend to dominate the standard hardware and software side of things but the positive flipside of this is that we can offer the extensions and variations that institutions, for example, demand of software solutions. We

have the local knowledge and, as an SME, are agile and can customise according to customer requirements.” However, the geographical location can be a problem since all around the country there have been various political and economic upheavals this millennium. This presents a constant challenge to industry.

Making a mark

Nevertheless, the resilience and innovative nature of the industry are evident in Turkey, which has become one of the most active countries within ITEA. “We are keen to participate in projects,” Özer says, “and we always consider what we can learn, or teach, and how such participation can help us extend our products. You have to bring in your own innovations – whether that’s a method, a product or an idea – but you can also feed off the innovations of others. It’s one big melting pot and out of that you distil the ingredients for an innovative service or product, like BaaS, which really has an impact of the quality of people’s lives. That’s where the real pay-off

happens. Of course, it’s not a matter of just throwing our hat into the ring; we have to consider the financial aspect and so public funding is an important element. And when we look at the ITEA projects, we are looking within the emerging technologies domain to exchange expertise and knowledge to contribute to partners and gain from them, especially in those areas that we want to ‘beef up’ in our company. ITEA provides the right kind of community and environment for us to do that. I think it is important to prove yourself. In the beginning we were a bit of an unknown quantity but after two successful projects, we have now managed to get a proposal labelled and will be leading a new ITEA 3 project, SecureGrid. I guess you could say we have made our mark on ITEA. And ITEA, in its turn, has made its mark on us. Our engineers are regularly in contact with other consortium companies and the impression is quickly created that we are a large, important company – so that enriches and enhances our profile. It’s a win-win situation.”

Opening of ITEA 3 Call 3: Hot and happening in Paris

At the ITEA PO Days 2016 on 13 and 14 September it was literary hot and happening! The Marriot Paris Rive Gauche was the cool place to be. The outside temperature of 35°C was very reflective of the hot discussions of the new project ideas for the upcoming ITEA Call.

In many way the PO Days participants broke - again - all the records. The number of participants, the number of project ideas uploaded in the ITEA Call 3 Project idea tool and the number of project ideas presented at the event, both during the poster session as during the pitch session were higher than ever. Furthermore, the Public Authorities broke the record by participating in big numbers; 14 representatives of 8 countries, showing their commitment to innovation and their support to the ITEA Community members. The overall evaluation score of 4.1 out of 5 does not break but levels the highest evaluation score ever.

Landscape of project idea topics

The tried and tested programme including the plenary sessions with the general information about ITEA and the upcoming call, the poster session where 72

project ideas were presented and the pitch session in which 66 pitches were held in 2 parallel session resulted in a few main topics that dominated the landscape this year:

- a large number of Smart Health proposals, which is surely an impact of this year's ITEA international customer workshop (covering all the dimensions as the workflows, the large scale data exploitation - see page 30 for the report) and the Canadian Health delegation
- Big Data & Internet of Things is everywhere as a consequence of the digital transition in which ITEA has already invested a lot
- Manufacturing 4.0 will again be a very important topic in ITEA and is a clear concern for our industrial community
- Software engineering remains an important zone of innovation to ensure a better level of productivity and quality. For these proposals it is important to check the tool vendors' involvement and any potential impact on large development team adaptation.

PO Days 2016 in numbers

- 294 attendees
- 84 project ideas uploaded in the Call 3 project idea tool
- 72 project ideas presented during the posters session
- 66 pitches held during the pitch session
- 22 final project ideas presented

These numbers show the high interest in ITEA. It's important that we keep working on the improvement of the time from project idea to project start to keep ITEA successful.



Why you had to be there... according to some of our attendees

Anil Turkmayali - Bahcesehir University:

“Everything related to the organization was awesome. Throughout the event we tried our best to use the opportunities provided by [the] ITEA network. Thank you very much for the amazing support and your efforts in leading the community towards a very good and globally competitive direction.”

Maria Rimini Döring - Robert Bosch:

“Fantastically organized as always, everything running smoothly in the background, allowing concentration on the project work and networking”

Anonymous:

“All had been really well-organized and enough time allocated for every item, resp. the schedule was well-obeyed. Still, it didn’t feel over-organized or discussions cut in any way.”

Patrick Chombart - Dassault Systèmes:

“Very well prepared, pragmatic, efficient.”

Christine Balch - TNO:

“Well done, congrats with the organization! Form and content strengthening each other!”



Community Talk with: Irina Fiegenbaum

“What you have is a fantastic mix of research genius and business acumen, and it is the combination of this that gets innovation to market.”

Irina Fiegenbaum hails originally from Russia and holds a PhD in Innovation Management. As well as working as an independent consultant, Irina is currently coordinating the ISPIIM (International Society for Professional Innovation Management) component of the TACIT (Teaching and Coaching Innovation & Entrepreneurship InnovaTively) project. Before that she spent just over six years at Lappeenranta University of Technology in Finland as project manager (innovation projects) and researcher, preparing project applications, both national (e.g. Tekes) and international (e.g. ITEA) and coordinating with industry. Her research focus is innovation management, innovation strategies, open innovation, national innovation systems (especially Russia) and her teaching encompasses topics like strategic entrepreneurship, innovation management and open innovation. At the risk of repetition, there is one word that stands out here: innovation.

Getting innovation to market

“My main task is to help get results to market

and to help companies develop innovation processes,” Irina explains. “Innovation is my passion and it gives me a great sense of fulfilment when I can enable companies to innovate. At the moment I am taking maternity leave and in this period I’m acting as a consultant to help SMEs prepare for European projects like those of ITEA. And I must say that of the projects I have managed over the years the ITEA projects have been real highlights for me. The ACCELERATE project, which is nearing completion, has been really fascinating and right up my street, as it were. Innovation is about more than just creating technology. Many companies are searching for new ways to rapidly validate the match between the market and their innovative ICT-intensive technology, so we want to develop services that will enable massive adoption of acceleration knowhow by the European technology industry. Unfortunately, because of my job change and maternity leave, I am currently on the sidelines of the project but I am eagerly awaiting the final results. I can categorically say that this project



has been a game-changer for me – personally, in terms of my network, my career prospects and my learning path. I’m really grateful for the opportunities ITEA has given me through this project.”

Love at first sight

So how was it that you became involved in the ITEA Community in the first place? “At Lappeenranta University of Technology I was working in the Department of Industrial Management within the Innovation track and we came across ITEA, which seemed to have a number of interesting projects from our point of view. It was ‘love at first sight’! And it’s a relationship that is still going strong. In terms of my own role, I suppose you could say that I have gone from being an observer to being more of a strategist and an expert, but that’s a

process that most regular project participants tend to go through. Over the years I have witnessed various changes on the practical side but these have enhanced the marriage from my point of view. A lot of the administration has got easier. There is less of a burden in that sense now than there was when I started. It is also quite apparent that the smaller companies are increasingly becoming an integral part of the community and feeling more at home; they do not seem to be overawed or overwhelmed by their large counterparts. And, of course, growth. With the arrival of countries such as Canada, South Korea, South Africa and others, ITEA is cooperating on a really global front. That can only have a positive effect, especially in terms of creating opportunities for consortium partners and the economic and societal impact that projects can have worldwide. But there is

also one less pleasing development, and that is a decrease in national funding. While this is out of the control of ITEA, it nevertheless puts a bit of a spanner in the works of a number of good project ideas that can’t get off the ground due to a lack of funding. So that is maybe something that could be looked at. For example, having some kind of tacit agreement with national (public) authorities on a minimum commitment.”

Research genius and business acumen

“We should not underestimate the importance of ITEA projects. No-one can compete alone these days. Innovation cycles are fast and companies need the consortiums, ecosystems and support afforded by ITEA and other EUREKA Clusters to get their products and services to market and benefit the world. What you have is a fantastic mix of research genius and business acumen, and it is the combination of this that gets innovation to market. This is the formula that makes ITEA what it is, and a formula that will enable European industry to be competitive and seize the high ground. Being the leader has attracted global interest, too – you just have to look at the country expansion I mentioned earlier. It would be nice if my native Russia could be part of the ITEA Community – I think there are many ways each could benefit the other. But that depends not only on good technology and business relationships ... What is certain, though, is that the ITEA formula will continue to be essential to European industry’s ambitions for the coming decade. Exciting times ahead.”

Brilliant constellation of stars

“And happy times, too. We should be happy with the results that we achieve in ITEA projects. Happy about the benefits they bring. I’ve noticed myself how many happy faces there are in the projects, especially when there is a catalyst in the person of a very capable and inspirational manager. And when the participants are happy, the end users can be happy. Happy consortium = happy end user. Looking at my own happiness, I turn again to the ACCELERATE project. The people I met there – all these unique characters that came together like a brilliant constellation of stars to create something really outstanding and of great value. I’m sure when the final results are published, this will make me very happy indeed.”

ITEA project results enhancing people's lives

'Safe and Sound' Intelligent Evacuation

In cases of fire, earthquake, heavy storm, flooding and other types of disaster, it is critical to have an efficient centralised evacuation service in place in order to immediately alert the residents of commercial buildings. Intelligent Evacuation is a service developed by BaaS partner DEFNE that runs on the BaaS Runtime environment of the BaaS Platform. It detects emergency alarms from the sensors placed in the building and provides evacuation alerts to individuals based on their location. It informs them where to go through digital signage and voice broadcast services. At any point during evacuation, it provides emergency help services with information on the total number of people inside the building and their location as well as signals in case anyone is not heading to the correct evacuation exit. Intelligent Evacuation services are crucial for end-user security and safety in buildings!

ITEA 2 Project
BaaS



Calendar

27 October 2016

DEADLINE PO SUBMISSION ITEA 3 CALL 3

<https://itea3.org/call-process.html>

7-10 November 2016

WEB SUMMIT

Lisbon, Portugal

<https://websummit.net/>

14-17 November 2016

EUROPEAN INNOVATION SUMMIT

Brussels, Belgium

<http://www.knowledge4innovation.eu/8th-european-innovation-summit-14-17-november-2016>

15-17 November 2016

SMART CITY WORLD CONGRESS 2016

Barcelona, Spain

<http://www.smartcityexpo.com/en/>

18 November 2016

CUT-OFF DATE EUROGIA CALL

<http://eurogia.com/>

22-24 November 2016

EUROPEAN NANO-ELECTRONICS FORUM CONSORTIUM BUILDING AND CONFERENCE

Rome, Italy

<http://www.nanoelectronicsforum.org/forum2016/index.php>

23 November 2016

CELTIC-PLUS PROPOSERS DAY

Leuven, Belgium

www.celticplus.eu

24 November 2016

SWISS INNOVATION FORUM 2016

Basel, Switzerland

www.swiss-innovation.com

1 December 2016

DEADLINE FPP SUBMISSION EURIPIDES AUTUMN CALL 2016

<http://euripides-eureka.eu>

14 February 2017

DEADLINE FPP SUBMISSION ITEA 3 CALL 3

<https://itea3.org/call-process.html>

SAVE THE DATE

10-11 May 2017

DIGITAL INNOVATION FORUM 2017

RAI Amsterdam
10-11 May

digital transformation

Organised by
ARTEMIS-IA & ITEA



Working Information
Schule: Steven Lee
City: Maria M.
Anesthesiology Information
Anesth: Michael Khan PHD
Nurs: The Brooks
Surgeon Information
Primary: Michael Thoma #0079
Fell: Robert Lee

DR 420 11 11 2016
Age: 70 No. 100 22766790

Cap Set: 30ml
Infuse: 100ml
Flow: 100ml

Smart, smarter, smartest ... the Philips route to superlative healthcare solutions

in conversation with Casper Garos, Frank van der Linden
and Herman Stegehuis

Recent decades have witnessed phenomenal advances in healthcare. But the combination of longevity, chronic disease and costs have made the need for smart solutions paramount. The growing presence of healthcare in the RD&I landscape has been making its mark within the ITEA Community, so time to reflect on the input and impact of Philips over the past seven or so years. This brief retrospective of Philips' very active involvement in the (smart) healthcare projects within the ITEA Community bears testimony to the key role it has played and continues to play, one that benefits business, users, knowledge and, most important of all, patients.

As global leader in medical diagnostic imaging and patient monitoring, Philips' healthcare innovation revolves around improving the quality and efficiency of healthcare through a focus on continuum of care, central to which is a patient-centric approach. In combining its expertise in medical technology with the clinical know-how of its customers to produce innovative solutions, the focus lies on two main domains: *imaging* and *IT architecture*. Herman Stegehuis explains: "All kinds of imaging techniques are applied to provide support during diagnostics and therapy while IT architecture is geared towards

the communication aspects, such as gathering and integrating data so that the information can be used efficiently and effectively. These two domains, which often overlap and interconnect, enable patients to be treated – through minimally invasive surgery or tele-medicine, for instance – that would not otherwise be able to be treated, shorten hospitalisation and rehabilitation time for patients, make procedures and processes more efficient and reduce the escalating costs of healthcare." Both domains are evident in the ITEA projects that Philips has led in recent years.

Maximum impact, minimal invasion

Going back five years or so, to the completed ITEA 2 EDAFMIS project, Frank van der Linden reveals how important a role information technology could play in the modern operating theatre, especially to meet the growing demand for minimally invasive surgery. "The problem was that surgical operations were not well supported by IT; too many independent systems were trying to communicate with each other. On top of that, surgeons did not have access to modern IT solutions such as decision-support systems." EDAFMIS brought together a group

of healthcare equipment companies in the Netherlands with a major computer software company in Turkey to change this and develop a new generation of medical operation support systems. The result was a software package for imaging and intervention that enabled easy interoperability and user interaction, providing a minimal operation cockpit that supports automation and navigation, and ultimately a marked improvement in quality and speed of treatment in operating theatres.

On EP-cockpit (EDAFMIS):

“I think when we did the first procedure with EP navigator here it was like a new dimension, because there was so much new information... 3D information adds a certain level of confidence when you do mapping and ablation procedures.”

Dr. M. V. Orlov, St Elizabeth’s Medical Center, Boston, USA

High-performance computing reduces healthcare costs

Finishing at more or less the same time as the EDAFMIS project, and also coordinated by Van der Linden, the HiPiP project aimed at developing affordable high-tech medical image-processing applications based on high performance computing multicore, multiprocessor technologies. “Real-time image processing has become increasingly important in healthcare,” Van der Linden stresses, “particularly for minimally-invasive operations,

automated screening and medical research.” With massive amounts of data to be processed, the key was to use parallel processing technologies to make faster use of this information – ideally in real time – especially for applications of faster 2-, 3- and 4-D – space and time – images like detailed brain imaging, minimally invasive surgery, real-time radiation therapy planning, mass screening for early cancer detection and faster operation of high-resolution transmission electron microscopes. HiPiP has not only increased speeds but also improved real-time aspects of multicore processing – particularly the predictability of images being shown in a very short time with little variation in the time taken to process the images. This now enables a doctor to see an image taken a tenth of a second earlier, allowing much improved hand-eye co-ordination when using advanced image processing during surgery. The significant progress achieved in the ITEA 2 project enabled four of the partners to launch a series of different products on the market in 2012 based on HiPiP results. Furthermore, the project has boosted Europe’s position on the global stage with a greater understanding of real-time parallel processing.

Healthcare dilemmas in an ageing population

Rising healthcare costs and shortage of personnel present real challenges and healthcare innovation is being pushed to the limit to come up with suitable clinical and technological solutions. Care4Me (project leader Frenk Sloff) set out to improve quality and productivity in healthcare using advanced medical imaging and decision-support methods with the ultimate goal of developing clinical prototypes for early diagnosis of cancer, cardiovascular and neurodegenerative diseases connected to hospital information systems in a new systems architecture. The consortium involved large and small medical equipment manufacturers, research institutes and academic hospitals and its main outcome can be summarised as an open and dynamic hospital-wide, service-oriented architecture that integrates models of anatomy and pathology, computer-aided detection and diagnosis components as well as decision-support tools. Care4Me helped to strengthen the competitive position of Europe, especially its consortium partners, and the exploitation

potential for cardiology tools and products and fast exploitation of the results was evident in a number of software packages, including QCA-3d by Pie Medical, Qivius by Medis and ClarityIQ by Philips Healthcare. Ultimately, of course, it is the patient that benefits – through better care and lower healthcare costs.

On Clarity-IQ (Care4Me):

“This dose reduction is, at least in my mind, a real quantum leap in reducing the dose and improving thereby the procedure both for the patient and for us. I think it’s really fantastic.”

Dr. T. Andersson, Interventional Neuroradiologist, Karolinska University Hospital, Stockholm, Sweden

Boosting health on three fronts

With global healthcare spending at around 15% of world GDP in 2015, the drive to increase hospital efficiency and reduce the average length of stay for acute care cannot be overstated. Herman Stegehuis, the MEDIATE project leader, explains that “the focus was on cardiology, oncology and orthopaedics in developing system architectures to enable the integration of multi-modal systems, support multi-vendor interoperability, allow integration of third-party solutions and facilitate user interaction. The resulting set of technologies improves not only healthcare practitioners’ knowledge of the condition of individual patients but also the predictability of procedures, reducing complications and obtaining better clinical outcomes from treatment.” Key MEDIATE consortium member, Barco, used the results of the MEDIATE project to create its Nexxis platform, an IP-centric solution for video and image management and distribution in the next-generation digital operating room and over 500 operating rooms within Europe have installed Nexxis. In commercial terms, the diagnostic and interventional medical imaging market is substantial, worth almost €20 billion globally, and growing steadily at an average compound

annual growth rate (CAGR) of about 4%. “The future healthcare challenges being faced by society create, of course, opportunities for the kinds of innovations being generated in projects like MEDiate,” Stegehuis adds, “and they are not restricted only to the healthcare imaging market. Some of the techniques that have been developed in MEDiate can be used in other domains like traffic and microscopy.” In addressing a major societal challenge, MEDiate delivered a very powerful impact on both revenue and jobs, and brought together a large number of innovations.

MEDUSA: three new healthcare concepts

The recently completed MEDUSA project, with Frank van der Linden at the helm, enhances the quality of diagnosis and decision-making in acute and/or critical situations in a patient’s condition by introducing the integrated combination of three new, healthcare service concepts – advanced imaging, secure virtual workspaces and medical diagnosis support. It paves the way for new, commercial services in the European healthcare business by offering a combination of advanced real-time image processing, real-time decision support, secure and rapid exchange of massive data sets within virtual collaborative workspaces. MEDUSA provides solutions to on-demand, high-performance image processing, all of which share the common cloud-based framework. The collaboration and results have spawned a number of spin-offs, including NiCo-Lab, created to leverage market access for the MEDUSA cutting-edge research results. Philips’ own strategy aims to provide an infrastructure as service (IaaS) in future and, during the course of the project, Philips realised the IntelliSpace Discovery product, which targets academic hospitals worldwide to support the fast, solid development of new medical algorithms and prototypes that can be easily and quickly integrated in new products. By the end of 2020 Philips expects to support 140 applications annually for prototypes developed by academic hospitals.

Up and running

Three ITEA projects led by Frank van der Linden (Medolution and SoRTS) and Herman Stegehuis (BENEFIT) are still in progress. Philips will use the SoRTS innovations in embedded software

to extend its range of interventional diagnostic imaging products. Within the project context, interventional MRI will take its first step from research tool towards a product for clinical practice thereby expand the MRI market. Van der Linden is confident that “most of the larger European hospitals will be installing one or multiple of image-based treatment delivery systems in the coming decade.”

Herman Stegehuis is tasked with addressing three challenges in the BENEFIT project: societal (to cope with the increasing number of minimally invasive image guided interventions), economic (to deliver care with quantified targets in terms of quantity, price and quality of care) and technical (to show the technical feasibility of an integrated infrastructure that includes all relevant imaging and data sources, the modelling, analysis and presentation of these data and the integration into a Clinical Decision Support System).

BENEFIT brings together an industry-driven consortium of world-class complementary partners including universities and clinical end users to develop software analysis and imaging methods and tools that will present quantified information, personalised patient models and treatment alternatives before and during minimally invasive surgery procedures. “Ultimately,” Stegehuis explains, “this fits in the trend of ‘evidence based medicine’ aiming to support physicians in decision making, to deliver care with quantified targets in terms of quantity, price and quality and to continuously measure, analyse and improve effectiveness and efficiency of targeted medical procedures.”

As for Medolution, this project proposes reducing the cost of healthcare parallel with improving the patients’ quality of life, creating smart environments that integrate professional and user created data. The tangible results will include early and pro-active decision support for patients and healthcare professionals through timely meaningful alerts and notifications, the ability to generate healthcare predictions based on continuous trend analysis and the sharing of healthcare data between devices and persons. By realising big healthcare data processing and analysis in the cloud, Medolution will deal with the challenge to integrate and combine

enormous amounts of heterogeneous data and data sources, and extract relevant information yet ensure the safety and reliability of the devices in the patient’s environment as well as the security and privacy of data.

On MRI (SoRTS):

“To quote Professor Oelfke from the Institute of Cancer Research in London: ‘In radiotherapy, we are trying to hit an invisible target with an invisible beam’ ... We don’t want to estimate the tumour position, we want to see it during radiation delivery. MRI can offer this.”

Professor Bas Raymakers, Department of Radiotherapy, University Medical Centre, Utrecht

Benefits all round

That healthcare is well and truly on the ITEA agenda is evident from an international customer workshop on Smart Health organised by ITEA in June to find out the concerns from the different stakeholders in the value chains about the desired functionalities or difficulties encountered in their daily environment. Casper Garos highlights the same need throughout the whole patient journey in developing strategic solutions for the continuum of care and underlines the commitment of Philips to ongoing research. Alluding to the words of the famous poet, T.S. Eliot*, he says that “we target tangible results in each project but the results at end of the project always signal a new beginning, prompt a new path in our ongoing drive to improve the lives and conditions of patients and clinicians alike, and ultimately the whole healthcare experience. The future is personalised medicine and that is certainly a key for our future direction.”

* *“What we call the beginning is often the end. And to make an end is to make a beginning. The end is where we start from.”*
(from *Four Quartets*)

SME in the spotlight

Jotne: research is the key to innovation

The Norwegian company Jotne EPM Technology AS is part of the Jotne Group and is a leader in product data exchange and sharing. Jotne EPM Technology data products have successfully reduced development and product lifecycle costs through the use of intelligent data management in the areas of Defence, Aeronautics, Oil & Gas, Built Environment and Space.

All the way to Mars ...

“One of the turning points for the company was an EU-funded research project that ran from 1992 to 1995,” explains Kjell A. Bengtsson, Vice President at Jotne EPM Technology. “The project gave us the opportunity to develop technology that had commercial potential, so we looked at the prospects and with more or less perfect timing, the Eurofighter programme then also asked us to provide support for the Eurofighter aircraft data configuration. Since no single aircraft is identical, its configuration (the use of its various parts) may be unique. Equally, it is vital that the customer is able to access the full information about the aircraft in order to make changes and undertake repairs after a few years. Subsequently when Lockheed Martin, one of

the world’s largest manufacturers of defence equipment, supported a new F-35 factory in Italy they looked to Jotne to provide the information technology for transferring data from the USA to Italy. Therefore, when a customer gets its new F-35 fighter aircraft from Lockheed Martin, our information technology will be important.” Furthermore, with the European Space Agency (ESA) planning to send the ExoMars rover to Mars, Jotne’s PLM technology will enable the rover to collect statistics about bacteria populations, part of the Planetary Protection programme and for Long Term Archiving (LOTAR) using ISO 10303 (STEP) for CAD and PLM.

“Our customers are often large companies facing considerable integration challenges, both

in-house and externally. Product components are often made in different countries and other companies may be responsible for product maintenance. Our information technology makes it easy to trace product information and to integrate it in a well arranged manner,” Bengtsson adds.

Competitive edge

Much of the innovation work conducted by Jotne has been performed through the vehicle of research projects and with the aid of research funding. “Research is the key to innovation,” Bengtsson emphasises. “Projects like IDEaliSM – our first ITEA project involvement – is a case in point. If Europe is to be competitive, we need to be inventive, innovative and operationally excellent. IDEaliSM contributes strongly to this by bringing together partners that can collaborate to develop novel high-tech solutions combined with fast, robust and low-cost product development and operationally excellent manufacturing and delivering the project outputs via a new distributed, flexible and service-oriented development framework. The framework is capable of integrating people, process and technology to advance multidisciplinary design and optimisation (MDO). Furthermore the partners benefit from being able to access a new network of contacts, working with large companies and other SMEs as well as being able to link up with universities. We’ve already successfully connected our own development tool with the NOESIS/Optimus tool and are working on connecting with the KE-chain tool, which means that our customers can do a lot of interesting things and we can provide specific data sharing and archiving capabilities that had not been there before. To be able to optimise data engineering without a loss of semantics for 5-10 years – this is a major achievement of the project.”

So how did you become involved in ITEA? “That’s an interesting story. I didn’t know about ITEA in the first place but at a EUREKA workshop in Oslo a couple of years ago, I did a presentation on behalf of the Research Council of Norway at the Korean EUREKA workshop there. At the dinner in Lillestrøm later on I sat at a table next to Rudolf Haggemüller, the ITEA chairman at the time, and started chatting to him. He introduced me to ITEA and the project opportunities, and specifically



in the direction of the IDEaliSM project. So Mr Haggemüller whetted my appetite, as it were, to become part of the ITEA community.”

Constructive feedback

Bengtsson is enthusiastic about the kind of support ITEA provides. “There’s a very good management and administration system in place as well as a good user-friendly portal for reporting. In respect of the annual review sessions for our project, they put together a very talented team to do an in-depth analysis of the project results and give good feedback and recommendations. The comments of the reviewers have been very constructive. For me, the project has been a very good journey to learn about ITEA, despite a few contractual issues that saw a few partners drop out in the preparatory stages – but that’s not an ITEA problem, it happens in all collaborative R&D projects.”

Facilitating research

In the September 2013 issue of this magazine, Tron Espeli of the Research Council of Norway underlined how important ICT was for the country, especially from the perspective of social welfare and industrial competitiveness. “Within the Norwegian industrial sector the role of software is a vital one,” he said. Software-intensive industry, SMEs in particular, has benefited from a tax incentive scheme introduced a little over a decade ago and this is evident in the fact that R&D spending in the software industry is much greater in relative terms than among other industries in Norway.

Due to the importance of ICT in the development of public services and administration, the software sector also benefits from a specific funding scheme for projects involving public-private partnerships. This scheme also contributes to the progress of the software sector by providing support for start-ups, internationalisation and export, etc.

Apart from these schemes, the Research Council of Norway is actually the only Norwegian government funding agency for research, whether academic or industrial. Its innovation division funds projects in companies directly as well as projects in research institutes and universities where companies are research partners and, in many instances, co-sponsor that research. One important funding scheme is for R&D projects designed to support business innovation needs, where funding is channelled directly to the companies who champion projects such as those in the ITEA programme. Jotne is a beneficiary of this approach as an ITEA project partner. The Research Council has recently launched a large-scale initiative on Information Technology and digital innovation, which will strengthen research efforts in areas with a large potential for value creation through utilisation of ICT. By linking ICT research with this kind of application areas the new initiative aims to foster growth and innovation both in the ICT industry and in other sectors.

More information

www.jotne.com

ITEA Success Story

ADAX

From technical leadership to business excellence in cybersecurity

The ADAX project started in early 2013, aiming at developing advanced capabilities for cyber-Attack Detection And Countermeasures Simulation. The consortium was comprised of 8 partners from France and Turkey including 2 large enterprise, 4 SMEs, 2 academics. Airbus DS Cybersecurity (Cassidian CyberSecurity SAS) acted as Project Coordinator while Yapi Kredi Bank acted as pilot end user. The project duration was 30 months for a total effort of 86 person-years.

A key success factor for this project has been the continuous assessment of the innovativeness of our developments versus the state of the art. Cybersecurity being a very fast evolving discipline, we had to keep an eye on both the

evolution of threats and the market solutions landscape to make sure the technology outputs from ADAX would make the difference. For example, we started the project with a set of developments targeting improved detection of DDoS attacks (Distributed Denial of Service) because at this stage, the banking sector was still under shock of the large DDoS on global payment system, which occurred in 2010. This massive attack carried out by the “Anonymous hacktivists group” had caused major disruptions of services to powerful transaction and banking champions like VISA, MASTERCARD or PAYPAL. So we reassessed the market and found out that there was a lack of available solutions for

incident response to emerging APTs (Advanced Persistent Threat). An APT named “Pitty Tiger” was discovered by Airbus DS Cybersecurity on the IT network of a monitored customer, using a spear phishing e-mail, a corrupted word document and several RATs (Remote Access Tools) in order to disclose company-confidential information. Consequently, we focused our second batch of experiments on response to APT threats. This continuous adaptation to changing conditions of the attacker-defender game helped us stay nearest to the end-user needs and capture key customer contracts throughout the project execution thanks to a fast integration of ADAX developments into the portfolio.



Another success factor was the effective involvement of Yapi Kredi Bank as an on-board end user, pilot owner and specification authority. This kept us away from the very dreadful temptation to do engineering for engineers. It also drove us in a direction that was slightly different from our first intuition. As security operators, we have been from the start very focused on the objective to shorten time to response, and this would mean the sum of detection, investigation, decision and remediation time. From a banking perspective however, the challenge appeared to be rather on optimising response to the lower cost. This would mean that not only the cost of damages caused by the attack, but also the cost of countermeasures should be assessed for rational decision making. Putting those two objectives in balance, we found out that the most demanding process in both time and cost was decision making. Hence we have put significant efforts in developing an advanced decision support tool, proposing optimised response plans to security operators and quantified metrics for business owners to make appropriate decisions. A mechanism to assess the impact of attacks and countermeasures on multiple criteria (Attack Volume Mechanism) and to quantify the Return On Risk Investment (RORI) was developed and patented by Institut Mines-Télécom. Attack generation and countermeasure simulation engines were developed by Airbus DS Cybersecurity to perform the calculation of optimised response plans and a dedicated

module was added to Cymerius® security supervision software for exploitation by security operators.

Last but not least, the project was driven by a multidisciplinary team of excellent mindset, with a balanced care for scientific, technical, economic, contractual, social and business aspects. Academic partners (IMT & Bogazici University) have fostered intensive research activities, leading to the production of no less than 30 articles, 7 theses, 2 patents and 2 conference events. SMEs have delivered key innovations which are being largely adopted by the market like a hybrid attack detection system for which P1M1 was awarded contracts with 2 major telecom and transaction companies, a mixed-signature based intrusion prevention system, which has been deployed by Stormshield on more than 10 000 appliances, a dynamic knowledge and model acquisition tool, which was sold by Provus to a world leader in payment systems, a remote countermeasure enforcement tool, which has been operated by 6Cure to protect a European champion in telecom services. Airbus DS Cybersecurity has integrated all ADAX developments into its commercial version of Cymerius® security supervision tool, sold to 5 customers from financial, military, retail, space and oil & gas sectors, providing a unique advantage to their security operators by simulation-supported incident response. Yapi Kredi Bank has implemented the full ADAX system on its IT

network in Gebze (Turkey), supporting 5000 users. A total of 12 customer contracts have been reported directly linked with the project results, addressing diverse vertical markets like finance, military, retail, space or oil & gas. Further developments include the exploitation of ADAX results for a new product to be marketed by Airbus DS Cybersecurity, supporting financial quantification of cyber-exposure for risk managers. A marketing announcement will be issued by the end of 2016.

All the above choices that have led this project to a success would not have been fruitful without the effective mentoring, steering and support from ITEA. Getting back to the words of Rudolf Haggemüller: “innovation, business impact, fast exploitation, seizing the high ground and happiness”; I’d like to say that is a quite unique formula in the research & technology community, and a probable reason for ADAX’s success. Beyond the scientific and technical excellence, beyond the project management quality, beyond the business relevance, happiness has been a key driver to success of ADAX project, and I’d like to thank ITEA as well as our partners from Bogazici University, Yapi Kredi Bank, Provus, P1M1, Institut Mines Telecom, Stormshield & 6Cure for that.

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VIEWPOINT

The free spirit of software innovation

By Laila Gide

As Director for Advanced Studies Europe, Laila Gide is responsible for coordinating externally funded research at THALES. She has been active in European R&D funding since 2002, and represents THALES' interests in various bodies, including the Aerospace and Defence Association (ASD), Integrated Mission Group for Security (IMGS), GIFAS and ITEA. In 2012, she also actively participated in the Sherpa Group to develop the ARTEMIS-ITEA Common High-level Vision 2030. As President of ARTEMIS-IA and ITEA Board Member, Laila is well placed to consider the 'hot' issue of software innovation.

Out of Africa

Africa is considered the cradle of our human species that grew into the modern technological people we know today - a process of millions of years. Our development now appears to be progressing at breakneck speed.

"I think we've all been taken aback at the pace of change," Laila says. "The older, more traditional industries in particular are going through significant shifts in their production processes due to the rapid advances being made in software. Take farming, for instance. It's a sector that is much further down the line than many people think. And that's not only in the developed world. In fact, in Africa mobile banking is even more mature than it is

in Europe. Strange but true. In Africa there are such massive distances to the physical facilities like ATMs, so answers have to be found in innovative mobile (phone) solutions, driven by difficulty and shaped by software."

Quantum physics and clouds

While this is a clear example of the societal and economic benefits of software innovation, plenty of challenges are strewn along the path of the coming decade or so, not least in terms of complexity. This applies not only to the engineering aspects but also to our definitions and understanding.

"What we understood by the Cloud ten years ago – a storage solution is hardly valid any



more. The Cloud itself has become a more complex concept. We have ‘fog’ and ‘edges’; data and services are distributed to, within and out of the Cloud. And then there are issues of security, reliability and speed, particularly with respect to big data analysis and interpretation. Furthermore, add the safety-critical ingredient and high-performance computing and artificial intelligence becomes indispensable.”

And what about quantum computing? A pipe dream or in the pipeline? “I am the eternal optimist,” Laila concedes. “Many are cautious about how realistic such a development could be in the short term for some areas or even much longer term for some others to reach industrial application but it is attracting significant amounts of research funding and I, for one, am very positive on the outcome. The speed and extent of innovation is something that always astonishes us in retrospect. And if the past century taught us anything, it is that visions of tomorrow have a habit of ambushing our complacency and becoming a reality before we are prepared for it. So maybe we’ll be nicely surprised.”

The moral dilemma

The Big Data question is not only technical – algorithms and the like – it also concerns ownership, privacy, regulation, morals.

“I think that the moral question is probably more of an issue than the engineering. You just have to look at the wave of recent takeovers involving massive sums of money for data-rich companies. While I won’t mention any names here, the ‘usual suspects’ are well represented. There is no doubt that (personal) data has become the most valuable business commodity these days, which makes the question of secure identity crucial. Perhaps we need to have multiple identities along the spectrum from public (shared information) to private (private encoded). But there is no going back, and the way forward will be punctuated with such problems. We will have to find ways to cooperate and agree, so standards and standardisation are important tools in helping us negotiate and shape innovation in the future. Nobody can go it alone and our resources are so precious that we have to work together to ensure that the world we create is sustainable.”

Open minds

Can we manage this innovation?

“Innovation can be managed, but innovation is a free spirit that knows no barriers, limits or constraints. It’s more a matter of funding than management. What we can do is to help shape the environment for innovation to take place. ITEA, in many respects, does this. Through the collaborative setting of projects, partners are encouraged to develop their ideas, to push the boundaries to think out of the box and come up with atypical ideas – essentially to create innovations. But with innovation comes risk. And that’s where the model that we see in ITEA and similar programmes comes into its own. It’s the mix of the often highly original thinkers in SMEs and the bigger, more experienced and very knowledgeable counterparts – the large companies and academic partners – that the pot really starts cooking the ingredients and produces, at times, quite remarkable innovations. We have to open our minds to the possibilities. Possibilities that could come from anywhere. All over the world. In a multicultural society. It is, therefore, not surprising that EUREKA and its clusters such as ITEA are fleshing out their global profile, reaching out to the Far East, the Southern Hemisphere and North America. Everyone stands to benefit from such global collaboration. Open innovation can accelerate the process, bring new thinking into organisations, and ensure that the best ideas are implemented and successfully brought to market. It is, of course, a process that needs money. And that’s where venture capitalists have a role to play. At the sharp end of business. Investors that see the prospects inherent in project outcomes.”

The dinosaur question

Should we think in terms of a one-size-fits-all or some other solution?

“In this context of open collaboration, the open source proposition is a very appropriate business model. But then again, there are many other valid and valuable business models. I think it’s a question of selecting the best fit – a hybrid solution. It’s like any effective ecosystem, whether natural or artificial – it works best when there is a good variety and a good balance. It’s lucky for us that the Earth was not entirely the monopoly of dinosaurs 65 million years ago. A little bit of variety then meant that we could develop into human beings and consider such questions now! GAFA giants should coexist with other business models.”

1st ITEA masterclass dedicated to digital transformation

Learning from ITEA projects

ITEA and Sweden's funding agency Vinnova co-organised a first Digital Transformation masterclass in Stockholm on 19 October 2016.

The ITEA masterclasses are a new tool developed by ITEA to make a further step in the direction of market impact. There are already many ITEA projects delivering fast exploitation and thereby generating much value for our industrial partners (large companies, SMEs and start-ups) in the global market. The ITEA community is learning from these projects on topics like digital transformation, energy transition, software and system engineering, security, automotive standards, etc. ITEA is willing to share these understandings outside of the ITEA community to strengthen the impact and for the interest of Public Authorities who are investing in ITEA projects.

This first masterclass focused on digital transformation. Digital transformation is often seen as a threat for European industries, especially for the more traditional ones, while it could be used as an opportunity. We gathered the know-how of three successful ITEA projects:

- **ACCELERATE:** a platform for the acceleration of go-to market in the ICT Industry
- **SCALARE:** a database of industrial best practices and tools to support enterprises in their transitions; and
- **InValue:** data management architecture for manufacturing

A diverse set of Swedish companies from large traditional industry, consultants to industry and SMEs participated in this first masterclass to share an understanding of the challenges and steps in the direction of digital transformation. For the participants it was a unique opportunity to meet a set of digital transformation experts with a large amount of industrial experience on the topic.

The masterclass consisted of three presentations enriched with inspirational concrete industrial use cases, covering the different steps of the digital transformation:

- New digitally enabled business models and services around servitization, intermediation and platform approach
- Speed to market with growth hacking and continuous delivery
- Digital manufacturing

During the day, a set of strong messages on digital transformation were stressed and discussed with the participants:

- Back to the users
- Data focus, data acquisition, IOT, data analysis
- Experimenting is key; learn from the failures and from the successes
- The endless story of innovation
- Spirit of openness and partnership
- Move towards new business models based on servitization, intermediation, platforms
- The motto is: Value creation, Value capture, Value sustainability



- Scalability at the business level and at the architecture level
- Security to protect your system

And a few paradoxes:

- Digital is software, but the licensing business model of software has been destroyed
- Speed, but a cultural transition in a large organisation regularly takes 10 years
- Speed reduces complexity as you are forced to focus only on what is absolutely necessary when the state of the art shows that 40% of the functionalities of a large software is actually never used. Speed is the challenge but is also the solution.

The afternoon of the masterclass was dedicated to Open Space discussions fuelled by the participants themselves. In 6 sessions of 20 minutes each there was ample room to discuss the cases, challenges and questions put forward by the participants. This part of the masterclass proved very useful and ITEA will strengthen it even more in future masterclasses.

At the end of the day, a joint evaluation session enabled the attendees to already give their

feedback on the value of the presentations and discussions. Overall, the reactions were positive and the ITEA Office will use the valuable points for improvement received to enhance this Digital transformation masterclass even more.

The ITEA Office intends, with the support of Public Authorities, to set up a European tour of masterclasses for the global interest of Europe. If you are interested in setting up such a masterclass for companies in your country, please contact the ITEA Office at info@itea3.org.

More information:

ACCELERATE: <http://www.accelerateproject.eu>
 InValue: <https://itea3.org/project/invalue.html>
 SCALARE: <http://scalare.org>
 VINNOVA: <http://www.vinnova.se/en>

PROJECT SHOWCASE

IDEA4SWIFT

Border control solutions, combining speed and convenience with safety and security

Perhaps there is no current ITEA project that can be considered such a ‘hot’ topic as IDEA4SWIFT, whose point of focus is a border control environment that has become ‘explosive’ – in terms of the growth of international arrivals expected to reach nearly 1.6 billion by 2020 and the recent upsurge in terrorist threats and attacks. Today’s travellers expect both speed and a convenience, non-intrusive but safe passage at borders that are secured against illegal immigration, terrorism, crime and other threats. Project leader, Jean-Loup Depinay, explains what the projects hopes to achieve.

“Of course, privacy has to be respected and guaranteed but, at the same time, security is of utmost concern. A good illustration of how the two worlds merge rather than collide is evident in the Finger On the Fly solution, a fingerprint controller, a product generated within the project consortium and an example of how innovation speeds up security.” By simplifying deployment and improving user experience, advanced biometrics facilitate security for agents and users; swiping four fingers across a scanner provides an efficient and elegant solution to improve both accuracy and speed. The resulting solution is transformative; the algorithms process the resulting data in less than a second. Such

an application extends beyond border control to all kinds of access control for sensitive and high-density traffic sites like airport and seaport sensitive areas, government facilities, power and petrochemical plants, banking and financial institutions, hospitals, sports stadiums ... the list is almost endless.

Beyond border control

Promoting both security and mobility within EU Border control is a major challenge for the authorities and considerable efforts have been made to establish best practice guidelines and recommendations. Being embedded in the European secure identification research project landscape, IDEA4SWIFT is incorporating

the results of previous and current collaborative projects in its efforts to maintain the highest level of security and increase the speed and comfort of all legitimate travellers at all types of border control point. Jean-Loup: “We have focused on the latest generation of passports within our project. We can embed electronic visas on these passports so that these can be checked in a contactless way with a high level of performance to enable quick passage through the control gate. It is not yet perfect but we are well on the way in adding new biometric controls to make things easier for the traveller and boost security.” In developing compliant security protocols, the project has also been exploring the possibilities of extending the services to, for example, boarding control at

the same passport control gate. “By proposing a mobile phone application,” Jean-Loup adds, “we can enable automatic boarding based on the same identity of the passport. Eventually, we could see a comprehensive package of services that will cater to traveller passage from the preparation of the journey through to the arrival at the destination – door-to-door.”

Integration and interoperability

The project expects to contribute towards a more harmonised common European approach, combining interoperability with existing solutions by putting the emphasis upon standardisation for data flow and secure communications.

“Right from the very beginning of the project we have tried to integrate all the relevant existing technologies in designing and developing disruptive technologies in biometry and soft-biometry in a real environment. By fusing the results we envisage enhancing authentication protocols for citizens crossing frontiers and secure communications for sensitive systems.” The IDEA4SWIFT consortium also underlines the key role played by the e-Gate market in enabling the e-Passport market. “No doubt that e-Gates will be the driver for global ePassport and eVisa markets, the integration of e-Passport and e-Visa verification as well as live biometric capture and document verification.”

In terms of its required technical building bricks, the project has already achieved an architecture that integrates security considerations from the beginning of the system design as well as new protocols for the 3rd generation of e-Passport (SAC) along with optimisation of earlier versions to reinforce the global security of the document itself and to speed up cryptographic

computation for accelerating the border control. The applicability of novel technologies at ABC (automatic border control) gates will also improve security and accelerate the process of border crossing as well as reduce the workload for border officers. The addition of enhanced security check features will solve spoofing and identity fraud, and new biometric and soft-biometric modalities will accelerate the flow. “The final year of the project is geared to integrating the results,” Jean-Loup says. “What we want to be able to do is to produce the results so that they can be deployed in a modular way.”

Make-up

Looking at the need for products dedicated to border control to implement the technology that corresponds to the biometric passport, namely fingerprint and face, Jean-Loup explains that citizens expect the biometry-based system to ensure complete respect of privacy and, in this respect, they are also expecting seamless biometry, for instance the possibility of identity verification using the face and iris of a person walking through a portal to increase the flow and to reduce constraints for the user. “But we are also aware of pitfalls,” he says. “Take ID creation, and the role that make-up plays. Let’s say a person passes through border control but the current superficial ID differs from the original ID due to a different hairstyle, make-up or other changes.” Project partners have investigated the influence that make-up has on verification and developed algorithms to assess this influence and determine whether the ID is the same as the original.

Real impact

As it nears the final stages, the project has already succeeded in achieving one of its most

Project details

12028 IDEA4SWIFT



Project leader

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Oberthur Technologies

Partners

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Gemalto SA
id3 Technologies
Institut Eurécom
Institut Mines-Télécom
Oberthur Technologies
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Turkey

MOZAIK Yazilim ve Bilisim Sistemleri
Proline Bilisim Sistemleri ve Tic. A.S.
SmartSoft

Start date

April 2014

End date

March 2017

Website

<http://idea4swift.eurecom.fr>

important aims – to demonstrate that various technologies can be integrated and produce a high-quality border control solution: a unique comprehensive, technology and vendor agnostic, modular platform for continuous innovation including supported dynamic business rules managed by key stakeholders in a federated manner. The results will certainly have a considerable impact, especially in the light of recent events in Europe that highlight the need for very secure border control without compromising the convenience of travellers. The European Commission has already expressed a desire to see more ABC gates, so Jean-Loup is hopeful that “we can see the results of the project efforts being used very soon in real life.”

Results of the 2nd ITEA international customer and end-user workshop on Smart Health



Following ITEA's ambition to be more user oriented and last year's success, on 21-22 June ITEA organised its 2nd international customer workshop together with the Charité – Universitätsmedizin Berlin in the Bosch Repräsentanz in Berlin. This year's topic was 'Smart Health'. The aim was to find out from the different stakeholders in the value chains their concerns about desired functionalities or any difficulties they encounter in delivering efficiently in their daily environment.

The results of the customer workshops provide the ITEA Community with an opportunity to create new ITEA R&D projects dedicated to solving actual end-user concerns or challenges. We have observed that projects involving user demands from the outset are usually more successful in demonstrating an impact on the market, which remains the first priority for ITEA.

The workshop was highly valued (4.2 on a 5-point scale) and gathered 38 participants representing a wide range of stakeholders in the Smart Health value chain:

- **Hospitals:** Charité Berlin, Amsterdam Medical Center, Schüchtermann-Schiller'sche Kliniken, University Health Network from Toronto, Medical Hospital Göztepe, Canceropole Toulouse
- **Insurance companies:** Axa
- **Home care:** Madopa France, Eczacibasi Home Care, Robert Bosch Foundation
- **Cities:** Istanbul, Arnsberg
- **Market elements:** Canadian Institute of Health Research, Chinese Bosch representative
- **Industrials:** Airbus, Barco, Bosch, Bull/Atos, Elekta, Materna, Philips
- **Innovative SMEs:** Sopheon, Evalan, Medvision360, Prologue, Santech, SRDC

To organise the discussions we focused on two topics, even if many discussions overlapped:

1. Collaborative care & new acquisition devices
2. Autonomy & participative care



The key challenges gathered during these two brainstorming sessions are presented in the next two paragraphs.

1. Collaborative care and new acquisition devices

1.1 Workflow management requirements

Workflow management requirements cover many kinds of workflow in different environments and at different stages. One issue here is **overtriage** which requires a clear workflow and associated data exchange

to determine which hospital is best suited to treating a patient. Furthermore, hospitals are calling for the definition of the **patient workflow**, from the first contact with the hospital to when he is at home; in other words, eradicating the artificial border between the workflow in the hospital and the workflow at home. Remote **patient monitoring** is becoming key to the earlier release of the patients with patient monitoring at home. Furthermore, the pressure of chronic diseases is extending the role of the hospital from acute care to providing



community care. **The patient has to do more:** he has to be able to provide input to enable the health system to learn but without this being a burdensome task. If the patients have an easy way to fill in their data, experiences, usage, etc., this lowers the workload of the health professionals and, at the same time, takes account of the patient's social and psychological circumstances. The challenge is to ensure that this can be scaled up to millions of patients. In addition, hospitals are under such pressure in terms of activity, number of patients and level of cost that they need to move from an urgency management process to a **care 'production process'**. Bearing in mind that the hospital manages a few key moments, which are the human face-to-face contacts between the patient and the nurse / doctor, such moments (20% of the time) need to be protected. The optimisation of the rest of the process (80%) is an opportunity to protect these moments, which are always cut back under pressure. Finally, these workflows act cooperatively. For the special case of chronic diseases like cancer, **multidisciplinary conferences** (requiring tools like an efficient collaborative data browser, data registrations tools, a generalised cooperative visualisation

tool and a profile & risk analysis tool) enable the different actors to share their understanding of the patient's situation and jointly decide on the next protocol to propose to the patient.

1.2 The sense of being overwhelmed by data

In the healthcare domain the **quantity of data is exploding** because of:

- The number of new acquisition devices generating images, video and even 3D
- The longitudinal monitoring

This data explosion is such that the doctors are no longer able to mentally organise all the available data. It requires big data analysis to allow simple browsing of registered data. In the special case of intensive care too many sensors and data generate alarm fatigue. A side effect is the requirement of anonymous databanks to design and test all these algorithms. Finally, there is a greater demand for training and education (virtual rooms, MOOCs, ..).

1.3 Interoperability

Interoperability of data access management systems taking into account data ownership and security.



1.4 Patients, the elderly, are people

We need to take good care of the soft human aspects in Smart Healthcare.

2. Autonomy and participative care

2.1 Back to the user

In this world where we want to have and can collect and analyse more and more data automatically, it is very important that **the first step remains to ask the users!** They can provide you with the best information with the help of tools/devices, as long as the usability is good – simplicity of usage, gamification, no training to start usage, no stigmatisation. There are two things to keep in mind: there is a great danger of isolation and users must cover the different stakeholders (patient, family, nurses, doctors ...). A challenge is to find solutions to **engage people** to provide the right data, stimulate right usage, etc. Families often feel guilty but need to be given an incentive to participate.

Autonomy in the Smart Health domain means that people continue living an autonomous, self-defined life despite their disease. **The patient's home is the setting of chronic**

conditions – not the hospital. The focus needs to be on primary care. Furthermore, healthcare services in the primary care sector need to be bundled to create synergies, reduce redundancies and to **ease cooperation and communication among multi-professional teams** that deliver real integrated care to accompany the patient along their journey. And at home health devices are in competition with native iOS/Android features (calendars, health kit,..), posing the challenge of the quality of the acquired data.

Autonomy has to be enabled as the system is unsustainable if spending continues as now: **we have to reduce the need for personnel, reduce the pressure on the professional.** A net increase in the workforce is not feasible, therefore we must multiply by ten the patient/professional ratio when patients are at home. **Self-care and informal care-giver are the new keys**, which poses a challenge on the user side: where technology replaces the human, that technology needs to be trustworthy. **The data needs to be automatically interpreted and transformed to a higher semantic level**, and be actionable by the patient. It must be interoperable at the higher semantic level.

2.2 Privacy and security

The identification of privacy and responsibility are sensitive issues. In some countries, like Germany, this is particularly the case. We need to think about **“Can we implement single patient consent for each access (and how can we do it)?”** Cloud services are not feasible if you split them per country: how to comply with the laws? (counter example: USA, Patriot Act). Another challenge is the secondary use of data for scientific questions; **how to generate statistical data in a trusted way.**

One aside, the more ill you are, the less you care about privacy; **privacy is negotiable for better personalised services.**

2.3 Architecture

The brainstorm sessions showed that there is a need to switch from low-margin high-volume to high-margin low-volume, which has up till now characterised med-tech, and for **Open cloud infrastructure / open source. Not for free, but creating an eco-system** (docking for SMEs).

2.4 Multiscale

To improve the autonomy of the patient, there is an interoperability challenge. When **all are committed to working around the same patient**, who owns the therapy? **Personalised care / medicine will move into personalised health and lifestyle.**

2.5 City policy

Cities are important health actors and will have to solve multiple challenges:

- City centre revitalisation
- Prevent congestion in hospitals and healthcare facilities
- Reduce the cost of scaling up health
- Generate statistical data for research
- Attractive housing conditions for elderly people
- Mobility and accessibility
- Improvements in the local healthcare system – connecting the stakeholders

For the cities the **connection with the community**, social life, volunteering, prevention is important: **can we offer a platform? Can we evaluate the how well they are doing?** Can we give the participants something back?

2.6 Business model

Challenges for the business model are **How can the deployment start on a different scale than just small numbers? Who is going to share the risk?** “Crowd-funding” for some technological innovations could be an option. **Business model doesn't have to be within the hospital, it could be the city, the insurance...** It needs to **cover the complete value chain, different in different countries**, including the insurance companies.

Now the ball is in your court!

Many ideas for ITEA R&D projects arose during the workshop discussions. They can be found in the full report online: <https://itea3.org/news/the-results-of-the-itea-international-customer-end-user-workshop-on-smart-health.html>. Now the ball is in your court to create innovative new proposals that, as the saying goes “are just what the doctor ordered”!



EUREKA welcomes the Spanish Chairmanship for 2016-2017

EUREKA is pleased to announce that as of 1 July 2016, Spain has taken over the EUREKA Chairmanship for one year (July 2016 to June 2017). Spain is a EUREKA founding member

country taking over the network's chairmanship for the third time. The Centre for the Development of Industrial Technology (CDTI), as part of the Ministry of Economy and Competitiveness (MINECO), will be a key player in every activity linked to this Mandate.



The Spanish Chairmanship has established three priorities in accordance also with the EUREKA 2014-2020 Strategic Roadmap:

- Priority 1: Open EUREKA: Enhancing its internationalisation strategy.
- Priority 2: Upgrade EUREKA: Optimising its current tools and network management.
- Priority 3: Check EUREKA: Analysing its performance and impacts.

During the Spanish presidency, three major network meetings will be held in Bilbao, Seville and Madrid. Furthermore, there will be a EUREKA Innovation Event focused on "Globalisation" that will take place in April 2017. More information on this event will follow soon.

Source: www.eurekaneetwork.org

	14-feb	Deadline ITEA 3 Call 3 FPP Submission		https://itea3.org
	10-11 May 2017	Digital Innovation Forum	Amsterdam, the Netherlands	
	23 November	Celtic-Plus Proposers Day	Leuven, Belgium	www.celticplus.eu
	1 December	Submission deadline - Full Project Proposal Autumn Call 2016	Stockholm, Sweden	www.euripides-eureka.eu
	18 November	Next Cut-off date		www.eurogia.com
	22-23 November	Consortium building event 2016	Rome, Italy	penta-eureka.eu
	23-24 November	European Nanoelectronics Forum 2016	Rome, Italy	

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.

Please submit your information to communications@itea3.org.

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