ITEA Award of Excellence winners with Finnish participation

Status February 2024

ITEA 4

ITEA 4 is the Eureka Cluster on software innovation


Innovation
IVVES

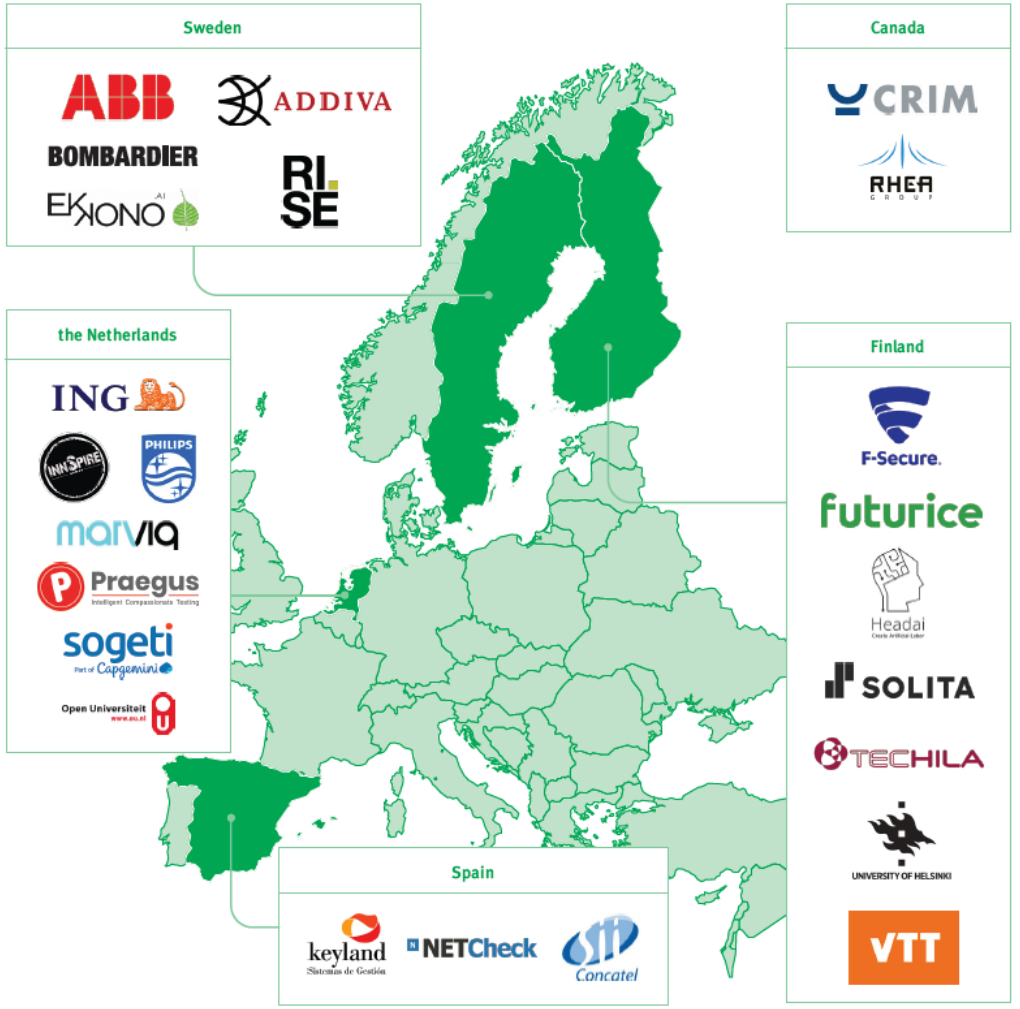
IVVES

Methods for verification and validation of AI in strictly regulated domains

The use of AI is rapidly increasing, and we experience the strong benefits of AI, including reduction in human error, 24/7 availability, unbiased decisions and faster decision-making. On the other side, more and more questions are raised concerning the use of AI on how to make sure it is safe and correct. This is especially the case for strictly regulated domains as a mistake can have huge consequences. IVVES has developed new verification and validation methods, ensuring the trustworthiness and reliability of AI and ML in these environments.

Start date – End date
Oct 2019 – June 2023

Website
https://itea4.org/project/ivves.html



IVVES
Examples of impact highlights

- Thanks to IVVES, Philips can now use a new AI method in its SmartSpeed MR software, speeding up the MRI examination; FDA approval was provided end of 2022. Philips expects this method to be used in 97% of future clinical examinations.
- For MRI PRACTICE POTSDAM, SmartSpeed is an absolute gamechanger; before SmartSpeed, they examined about 160 to 170 patients a week and now they can manage up to 200 patients a week.
- For cyber security, WithSecure has developed a tool suite to automatically analyse test results and feedback provision to increase confidence in its product releases.
- For Alstom the IVVES results led to improved maintenance of legacy train fleets which do not have data collection infrastructure by design.


SPEEDOMETER v0.1
BOOST
min
max
k-W
Nm
km/h
193
DASHBOARD
Model
Climate-contrpl
INTERIOR
OUTDOOR
Run of Kilometers
Tire Pressure
GLOBAL
FRONT LEFT
FRONT RIGHT
BACK LEFT
BACK RIGHT
PSI
40
41
31
39
Standar-
disation
PANORAMA

PANORAMA

Supporting the shift to open source

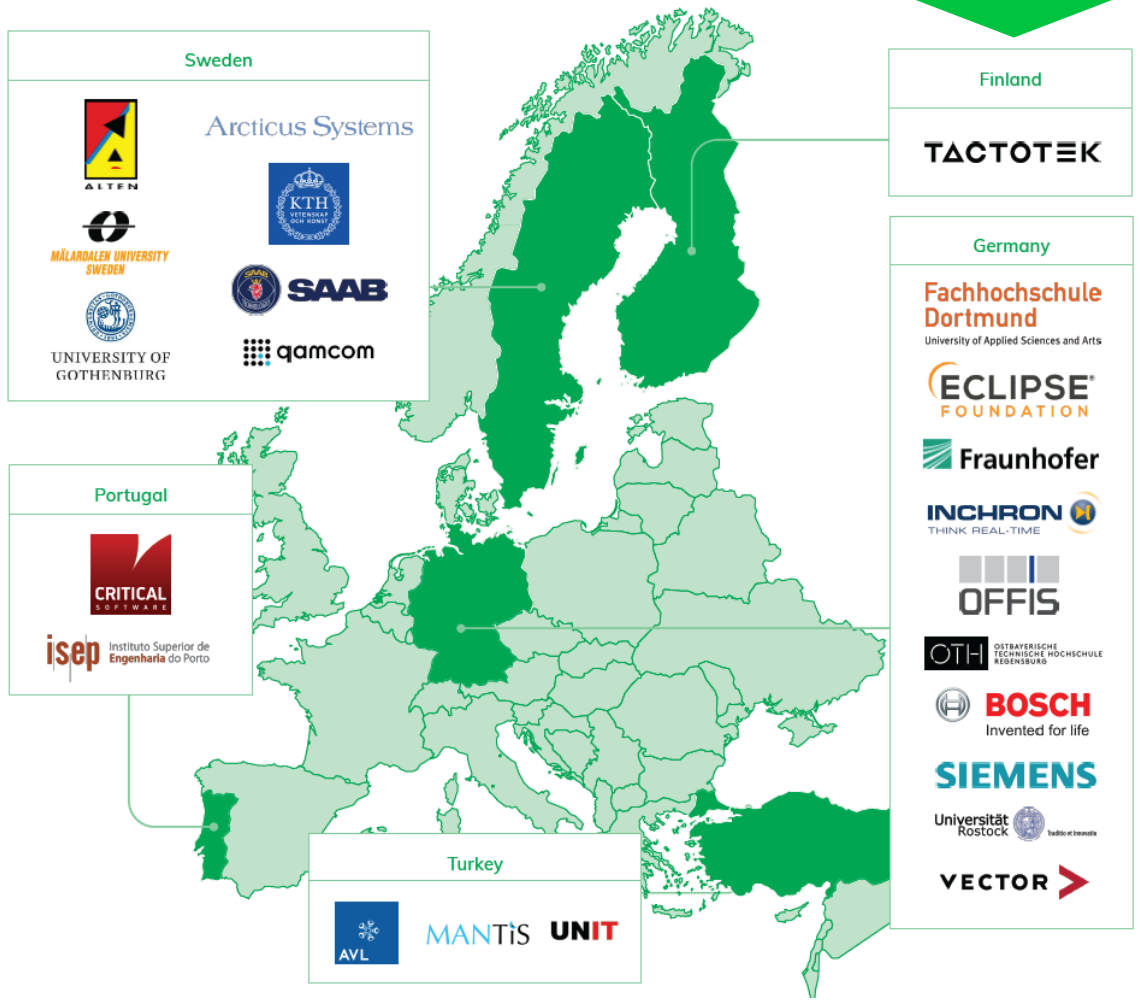
Winner ITEA Award of Excellence ‘Standardisation’ 2022

In the automotive domain, many similar control units are used, but different organisations often use heterogeneous functional domains, hardware and teams. This complicates collaboration, while this is very important as many stakeholders are involved.

PANORAMA has created an open-source meta-model and framework that promotes collaboration on software and hardware development using heterogenous tools and practices and without losing control of one’s own data.

Start date – End date
Apr 2019 - Sep 2022

Website
https://itea4.org/project/panorama.html
https://www.panorama-research.org/



PANORAMA
Examples of impact highlights

- The project focused on open-source collaboration in a business-friendly ecosystem. This approach has resulted in the emergence of a global community: partners in Europe, Asia, Africa and the Americas are already making use of PANORAMA, including the huge automotive and avionics markets of Germany, China and the USA.

- Clear benefits can be seen in maintainability (time reduction from 57 to 12 days), reliability (A grade for code quality from the industry standard SonarQube) and efficiency (reduction of local set-up of the installation and integration of several tools from eight hours to 0.8 hours).


Business
impact
CyberFactory#1

CyberFactory#1

Fostering the optimisation and resilience of the Factory of the Future

To enable the Factory of the Future, optimisation must be reconciled with security. The growing integration of Information Technology into Operational Technology exposes manufacturing systems to a growing number and diversity of threats. The ITEA project CyberFactory#1 has designed, developed, integrated and demonstrated a set of key enabling capabilities to foster the optimisation and resilience of the Factory of the Future.

Start date – End date
Dec 2018 – June 2022

Website
https://itea4.org/project/cyberfactory-1.html

CyberFactory#1

Examples of impact highlights

- Airbus in France is collaborating with Bittium in Finland to deploy CyberRange to simulate and monitor their distributed manufacturing environment. Airbus is also offering Security Operation Centre (SOC) services that monitor a factory's traffic, raise alarms and respond to anomalies. Across the project, commercialisation will target the digital twin, Industry 4.0 and IIoT security markets, with impressive results expected in each: by 2025, partners can expect revenues of EUR 8 million and 82 new jobs in the digital twin domain, EUR 28 million and 114 jobs in Industry 4.0 and EUR 114 million and 256 jobs in IIoT security. This total impact equals EUR 150 million and 452 jobs across the consortium.
- RoboShave has achieved 100% traceability of processes and products from the shop floor and 100% accuracy of (near) real-time information on dashboards, both of which started at zero. By automating machine and manufacturing execution system communication, it has also seen a 100% reduction in the time spent by human operators on manual machine data collection. In turn, this reduces human error while improving worker satisfaction by allowing them to focus on more stimulating tasks.
- The project has been recognised as a pioneer of Industry 5.0, which goes beyond efficiency and productivity and reinforces industry's contribution to societal goals. With its focus on a sustainable, human-centric and resilient industry, CyberFactory#1 has paved the way to the next industrial revolution.

OPENCPS

OPENCPS

New opportunities for high-quality systems modelling & simulation

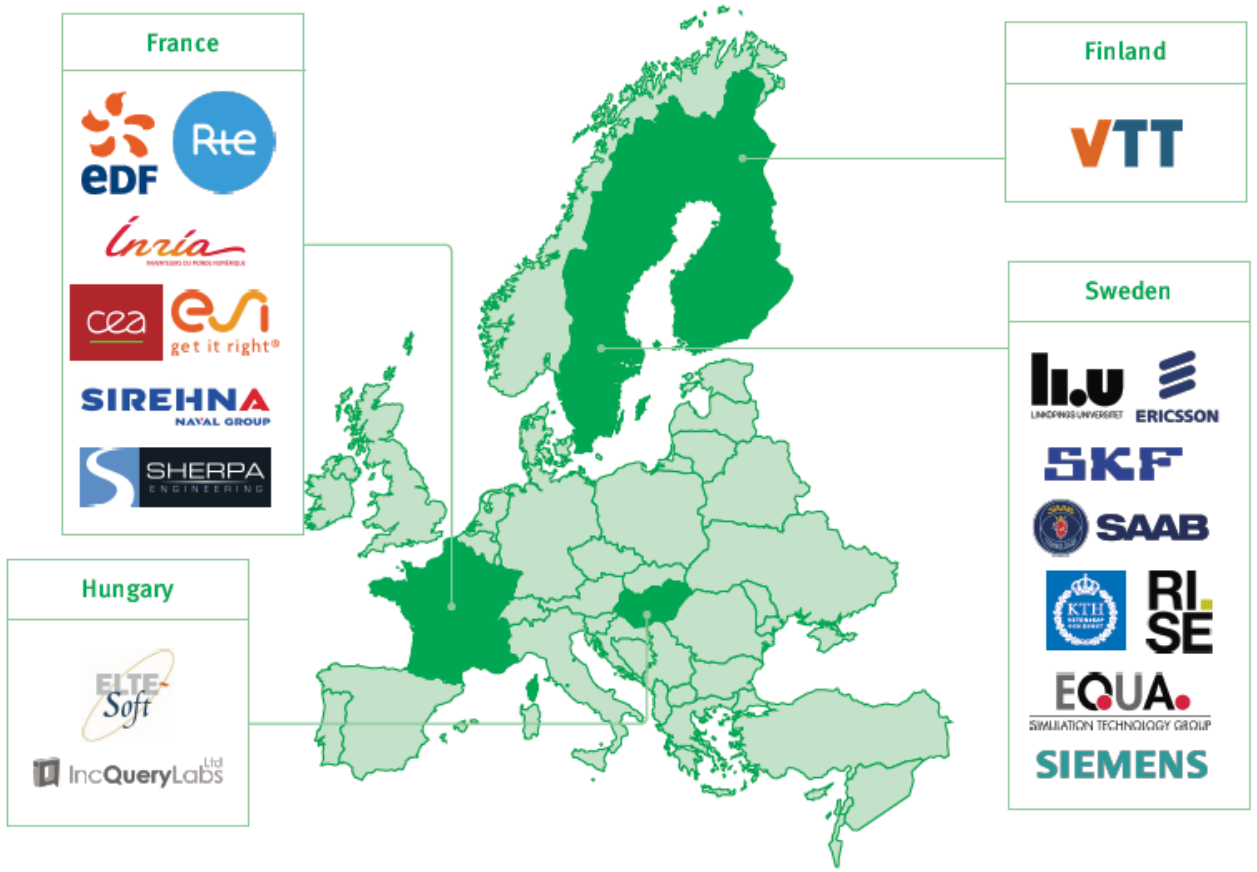
Winner ITEA Award of Exceptional Excellence 2019

OpenCPS (Open Cyber-Physical System Model-Driven Certified Development) has been a three-year international R&D project concerning methodology, standards, and open-source tools for the efficient development of cyber-physical systems.

OpenCPS achieved to create a solution that enabled effective modelling and simulation of CPS throughout the entire value chain and system lifecycle.

Start date – End date
Dec 2015 - April 2019

Website
https://itea4.org/project/opencps.html
https://www.opencps.eu/



OPENCPS

Examples of impact highlights

- One main joint result from the project is the brand-new master simulation tool, OMSimulator for the standardised import, interconnection, and efficient distributed simulation of system simulation models. The tool is open source letting end-users control and add features, allowing new users (including SMEs) to more easily access the market.
- Although unable to afford existing intellectual property, SMEs can enter the world of modelling using this open-source alternative, allowing for faster lead times, easier maintenance and new business models.
- For larger companies, OpenCPS is a means of sharing knowledge, avoiding tool vendor lock-ins, and reducing development cost thanks to improved frontloading capabilities.


Business
impact
C³PO

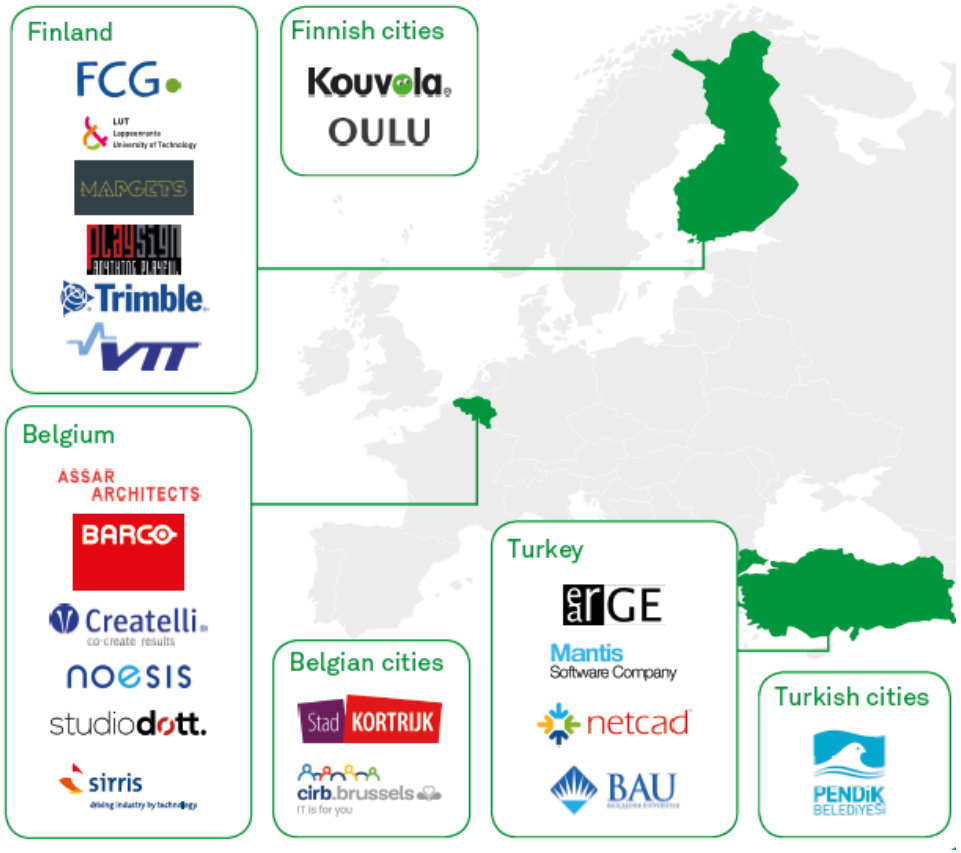
C³PO

Democratising city planning

The ITEA C³PO project has found ways for city planners and designers to consult citizens throughout the urban transformation process and thereby give citizens a better say in urban developments. The aim of the project was to set up a common digital platform that connects all the tools for collaborative urban development.

Start date – End date
Dec 2014 – Nov 2017

Website
https://itea4.org/project/c3po.html



C³PO

Examples of impact highlights

- Thanks to the enhanced collaborative capabilities developed by Noesis in the C³PO project, aerospace and automotive engineers from different teams worldwide benefit from the possibility to share engineering workflows, data and knowledge related to common design projects, enabling them to improve product performance by 10% or more and save on average over 30% in engineering time.
- For Studio Dott, the project gave access to a new market of citizen's involvement and this is reflected in a projected revenue growth of €1.7 m within 5 years.
- The resulting demonstrator TCAVE helps Barco to sell its 'Group VR' solutions to the market. Barco's annual revenue on this type of product is about €20 m. In addition, it will also further help Barco in commercialising other solutions such as PowerWalls and CANVAS, the latter addressing a new market segment, the Architecture, Engineering and Construction industry, where Barco expects annual growth of about 10% in the coming 3-5 years.
- The new solutions developed by Mantis pushed up their annual revenue by almost 15%. The know-how has also been used in other projects after C³PO.
- Netcad developped Netigma and Netcad Digital Universe which are marketed and sold in Turkey and in the Middle East region yielding in a revenue increase of 30%. Netigma is used extensively by local authorities (1000+ municipalities).
- The project also supported FCG's expansion in three channels of its digital business: solution development, platform economy and SDK sharing. Between 2018-2022 this will result in an annual revenue growth of 5%. During C³PO, a computer scientist was hired who finalised his MSc in support of the project.

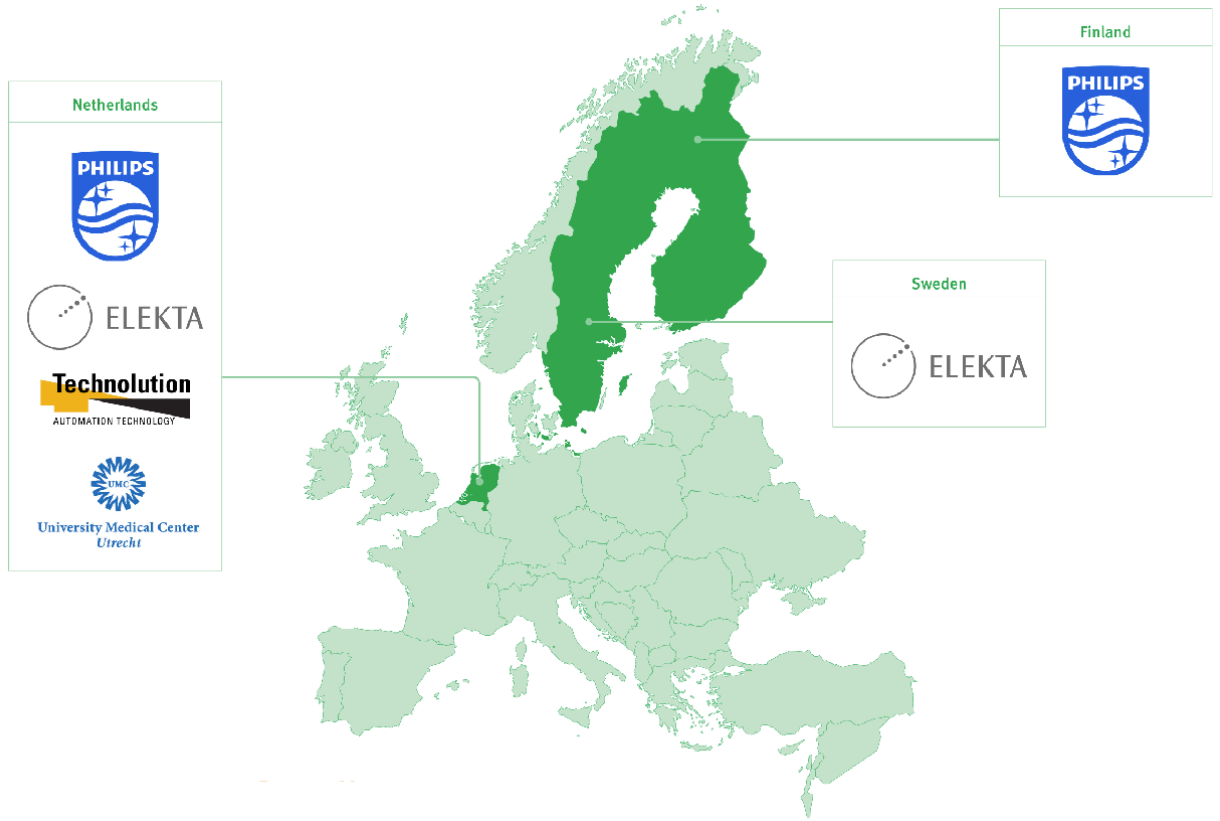

Innovation
&
Business
Impact
SoRTS

SoRTS

A system of real-time systems for more effective healthcare

Winner ITEA Award of Excellence 'Innovation' & 'Business Impact' 2018

While there have been considerable advances in recent years in the oncological and radiotherapy treatment of cancer, a major challenge still faced by image-guided intervention and treatment is the availability of coupled real-time feedback of the imaging and therapy systems during interventions. The goal of the SoRTS project was to develop a System of Real-Time Systems to support healthcare professionals in the transition from invasive, open surgery to minimally invasive, image-guided intervention and treatment (IGIT). The outcome not only significantly lowers healthcare costs through shorter hospital stays and higher throughput, but it also boosts the productivity and effectiveness of cancer treatment and reduces patient risk.



Start date – End date

Jan 2014 - Dec 2016

Website

https://itea4.org/project/sorts.html

SoRTS
Examples of impact highlights

- For Elekta, the results from the SoRTS project represent an order opportunity of over USD 700 million until 2019. As of April 2018, Elekta began installing 18 high-field MR-adaptive linear accelerator systems - Elekta Unity - worldwide. The target is to generate orders for 75 systems before the end of 2019.

- With the key innovations from the SoRTS project, Philips MRI will sell 50-100 systems in Europe in a new market, meaning an addition of more than 5% to the present MRI market of €4.5 billion

- On 19 May 2017, less than six months after the end of the SoRTS project, the University Medical Centre (UMC) Utrecht treated the first patient as part of a clinical study with Elekta Unity.

- Based on the SoRTS results, Technolution released its SigmaXG product platform for video switching over standard IP infrastructure successfully to the market through its partners/resellers. An exploitation example: the Erasmus MC university hospital in Rotterdam has selected Technolution partner Inter Visual Systems' Sensumed platform for 26 new operating theatres in it is building.