

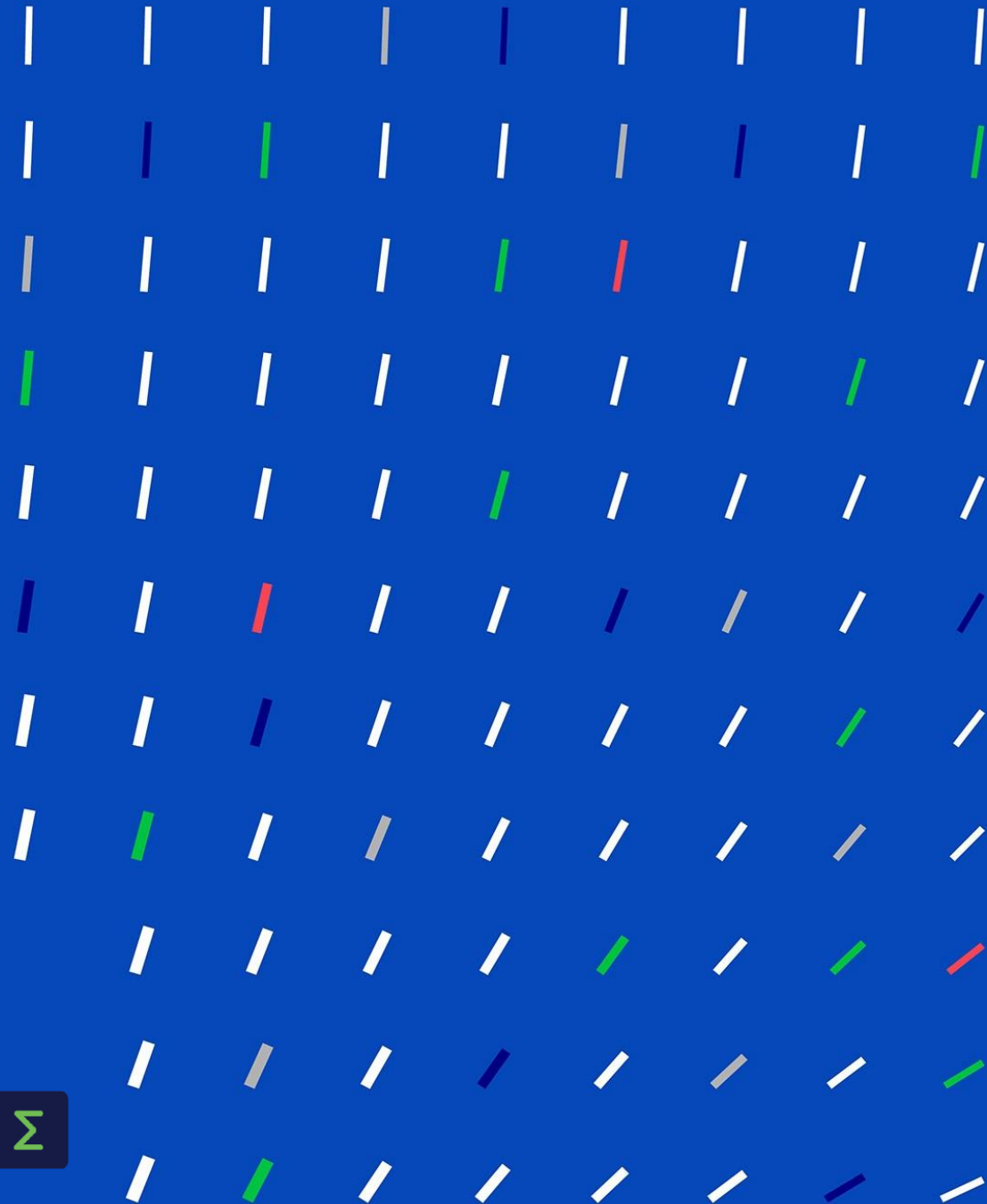
# ITEA Award of Excellence winners with French participation



Status March 2024



ITEA 4 is the Eureka Cluster on software innovation



A hand holding a glowing blue sphere with radiating lines, set against a background of a molecular structure and binary code.

**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.

A futuristic highway with a glowing blue circuit board pattern on the ground and a car covered in binary code. The scene is set against a white background with a clear sky. The highway has multiple lanes and a guardrail on the left. In the distance, there are overhead signs and a building. The overall aesthetic is high-tech and digital.

Special  
Vice-Chair  
Award

EMPHYSIS

# EMPHYSIS

## The missing link between digital simulation and embedded software

Winner ITEA  
Award of  
Excellence  
'Special VC'  
2021

EMPHYSIS delivered the new, global standard for smart industry, "eFMI standard" (embedded Functional Mock-up Interface), for digital model exchange among manufacturers.

It accelerates the development of embedded software, with a focus on automotive industry, thanks to which up to 90% gains can be made in productivity. Another successful outcome is the official approval of a new Modelica Association project to further develop, standardise and promote eFMI.

### Start date – End date

Sept 2017 - Feb 2021

### Website

<https://itea4.org/project/emphasis.html>

<https://emphasis.github.io/>



# EMPHYSIS

## Examples of impact highlights

- A 25% reduction in run-time performance was achieved and 25% greater memory consumption versus state-of-the-art manual code.
- In addition, FMU requires 9% less data memory.
- The knock-on benefit for productivity saw a reduction in development time for five use-cases, including by 93% for a PID controller, 92% for a drive train controller and 88% for a slider crank controller.
- eFMI's versatility was also demonstrated: the air system use-case required the same modelling time but saw a radical drop in embedded implementation and validation for a 52% overall increase in productivity.



Standardisation

ACOSAR



# ACOSAR

## An innovative simulation that saves time and money

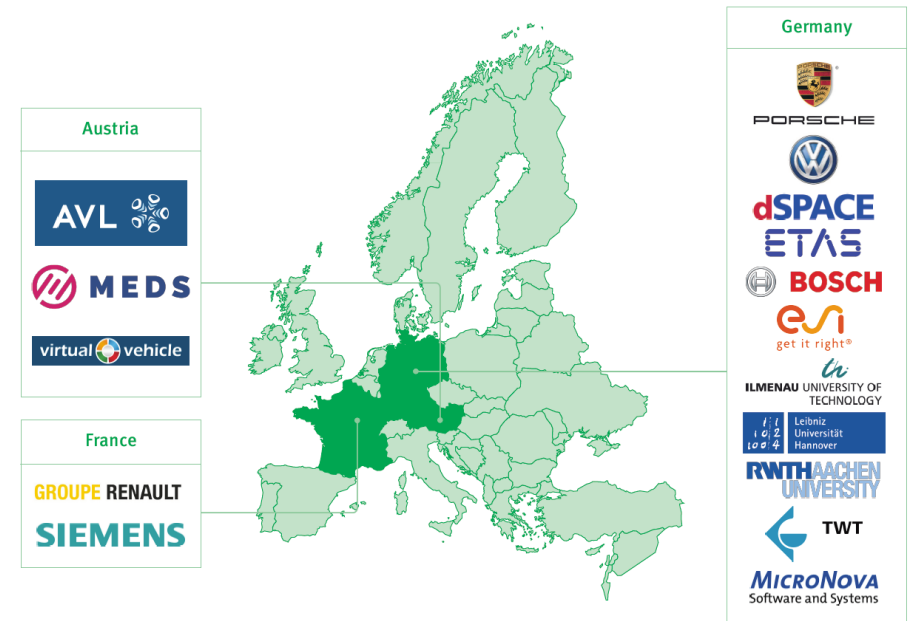
The development of vehicles has become increasingly complex, involving over 50 different suppliers who need to ensure that all components, parts and devices work together. Modelling and simulation represent key methods for a successful development. To facilitate this, the introduction of co-simulation methodologies and the interoperability of simulation tools and infrastructure had already taken root. But there was no standardised way of integrating distributed simulation and test environments back in 2015. In the ACOSAR project was set up to accelerate development steps with new simulation technologies.

**Start date – End date**

Sept 2015 – Aug 2018

**Website**

<https://itea4.org/project/acosar.html>



# ACOSAR

## Examples of impact highlights

- Since July 2018, the main and sustainable project outcome, the Distributed Co-simulation Protocol (DCP), is developed as a Modelica Association Project (MAP) and is available as an open-access international standard.
- Competitors and non-funded partners collaborated in this project because of its importance.
- International technology leaders such as AVL, Volkswagen and Boeing are already applying this solution.
- A prominent German sports car manufacturer reports over 13,000 developer days which could be saved in the next five years thanks to this developed protocol – which corresponds to a value of around five to seven million euros.
- This prominent German sports car manufacturer represents less than 1% of the market share of car manufacturers, thus this clearly shows the huge impact the ACOSAR project results can have in the automotive domain.
- The international partner network of Virtual Vehicle Research GmbH now consists of 30 national and 50 international industrial partners (OEMs, Tier 1 and Tier 2 suppliers as well as software providers) as well as 18 national and 30 international scientific institutions.



**Exceptional  
excellence**

**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.

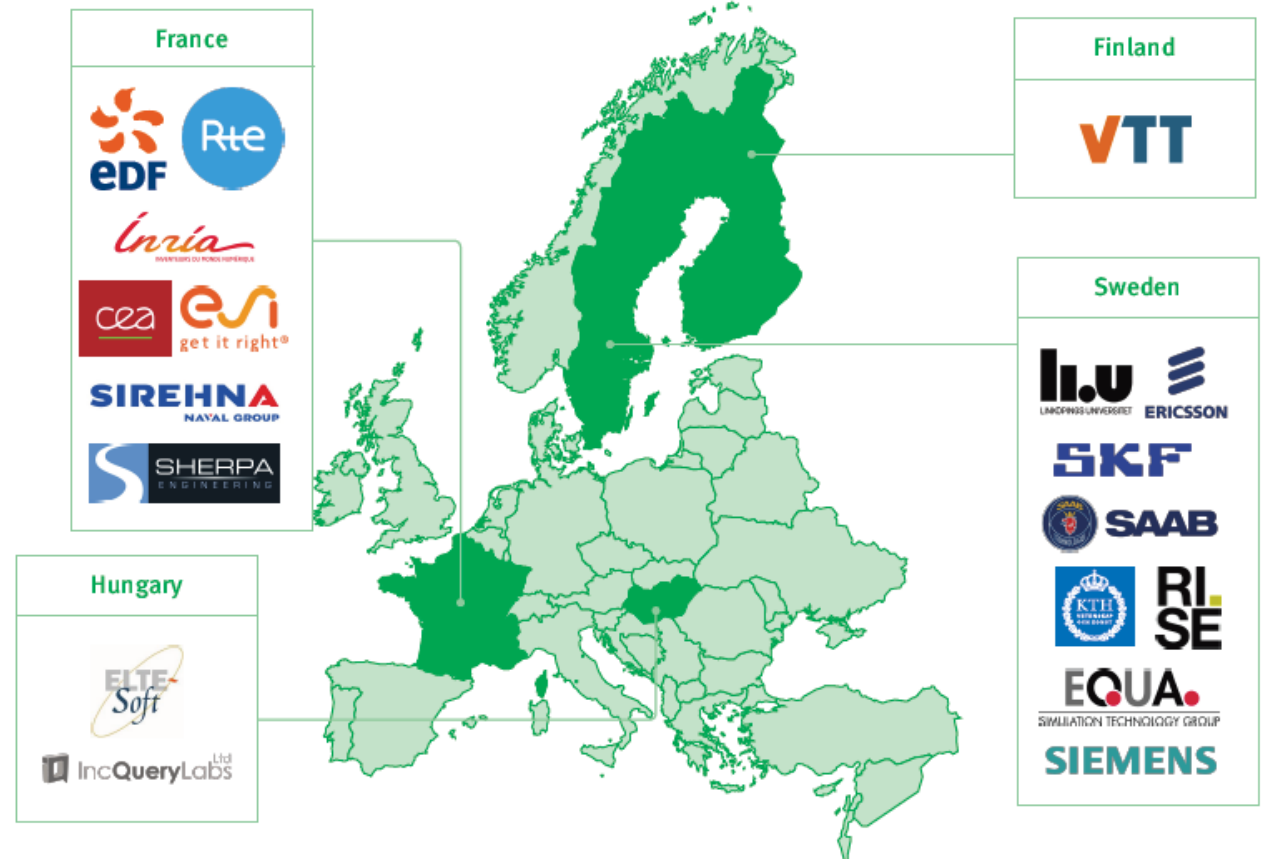
### Start date – End date

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.