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Project Profile

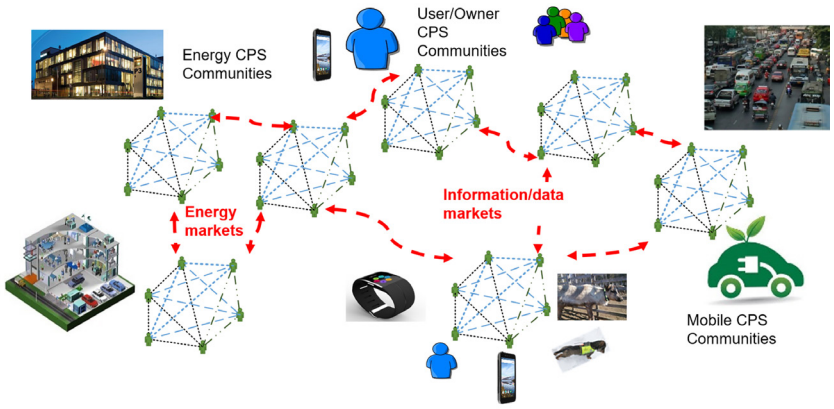
TIoCPS

Filling the gap in data sharing around cyber-physical systems

The lack of digital trust prevents the establishment of information sharing around cyber-physical systems (CPS). By enabling trustworthy and smart communities for CPS, the ITEA project TIoCPS (Trustworthy and Smart Communities of Cyber-Physical Systems) will contribute towards enabling digital trust for feasible industrial CPS businesses around the selected energy, mobility and user-related cases, resulting in an interoperable CPS based real-time ecosystem, fostering a more smart, sustainable and interoperable future society.

ADDRESSING THE CHALLENGE

The cyber-physical systems are typically operating around a continuous process, where monitoring and control of physical assets, communication and computing follow each other in a more or less closed real-time loop. Such systems usually have devices that interact with the virtual world, and specific service providers (SP) host related physical resources and exposed data in their service cloud. The owners of these resources may be the SP's customers, therefore data sharing and value exchanges must respect their collaboration agreements and digital rights (e.g. GDPR). These rights cause the grand challenge of preventing the increase of smart industrial CPS and fair businesses due to the lack of digital trust. This is a gap waiting to be filled by the TIoCPS project.



Trustworthy communities for enabling new business opportunities around CPS.

PROPOSED SOLUTIONS

The TIoCPS project will enable smart operations with multiple vertical domains/SPs based on CPS communities in which members can exchange data relying on digital trust solutions. The architecture will consist of communication, security & trust intermediaries, connectors, distributed data spaces and a brokerage framework, which the project will produce according to use-cases around energy-related and mobility-related CPS systems. TIoCPS focuses primarily on specific roles within CPS value networks and encompasses sub-challenges such as unreliable/capacity-limited wireless channels & storage, cross-domain use, smart contracts, and digital twins.

PROJECTED RESULTS AND IMPACT

The solutions for digital trust enabling secure sharing of CPS data/information bring a number of benefits for industrial companies. From a sustainability perspective, energy communities will enable multiple energy-sensitive sectors to collaborate and utilise distributed energy resources (DERs) more efficiently and flexibly, thereby reducing peak loads, CO_2 emissions and user costs. This smart use of DERs in buildings should enable 20% savings on energy investments and consumption. Enabling trustworthy mobile communities will contribute towards more smart services based on physical resources, such as wearables, smart-phones, robots and vehicles, applied in multiple sectors. For example, the safety of people in outdoor activities can be improved by enabling trustworthy information sharing without compromising businesses of involved vendors and service providers. Therefore, the participation in TIoCPSprovides strategic opportunities for European stakeholders to improve their market positions in targeted CPS sectors and increase the business scale of international CPS markets.

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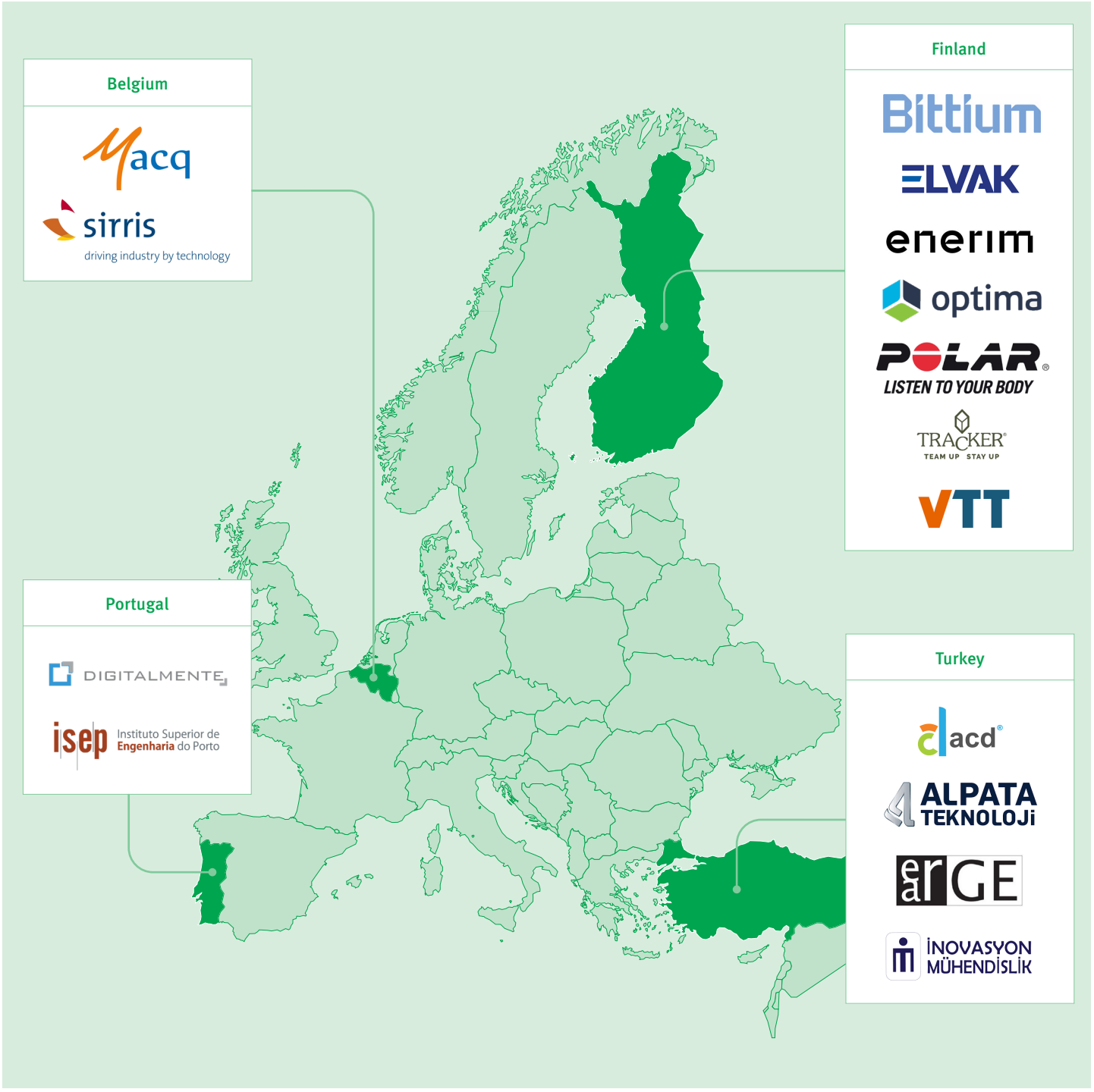

Project start
July 2020

Project end
June 2023

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Project website
https://itea3.org/project/tiocps.html

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