

# Sa4CPS

## Enhancing secure situational awareness in critical sectors

With a particular focus on ports, the ITEA project Sa4CPS (Secure situational awareness for critical cyber-physical systems) will enhance secure situational awareness in critical sectors while enabling shared digital trust across stakeholders and sectors.

### Addressing the challenge

Targeted end users – people, autonomous devices/physical objects, and company servers with digital twins – need to be continuously aware of their situation and able to operate in a secure manner in cyber-physical system (CPS) spaces and real-time economies. Unexpected events, such as accidents or physical and virtual attacks, can also threaten CPS resilience, potentially resulting in blocked access to essential functions and resources, critical data misuse and compromised physical safety. In turn, this may cause fatalities, bankruptcies or even societal instability. However, when considering critical areas, situation awareness processes are usually distributed to multiple stakeholders, causing information sharing challenges and digital trust risks.

### Proposed solutions

Sa4CPS will address this by developing a secure situation awareness concept to be applied in eight use-cases in the logistics, mobility, energy and security sectors, especially in ports. This will be based on the entity-centric model with local and distributed situational awareness (DSA) and will focus on enabling physical and virtual entities to perceive their environment, comprehend the current situation, project the future status, and make smart decisions accordingly. To enable secure DSA, Sa4CPS will consider distributed data spaces, smart operations with AI, Internet of Things (IoT) platforms, secure information sharing, verifiable access control, a zero-trust approach, and shared trust infrastructure, as well as entity roles and security policies. As a

result, Sa4CPS is expected to improve the resiliency, security, privacy and safety of people, autonomous physical objects and company digital twins during unexpected events.

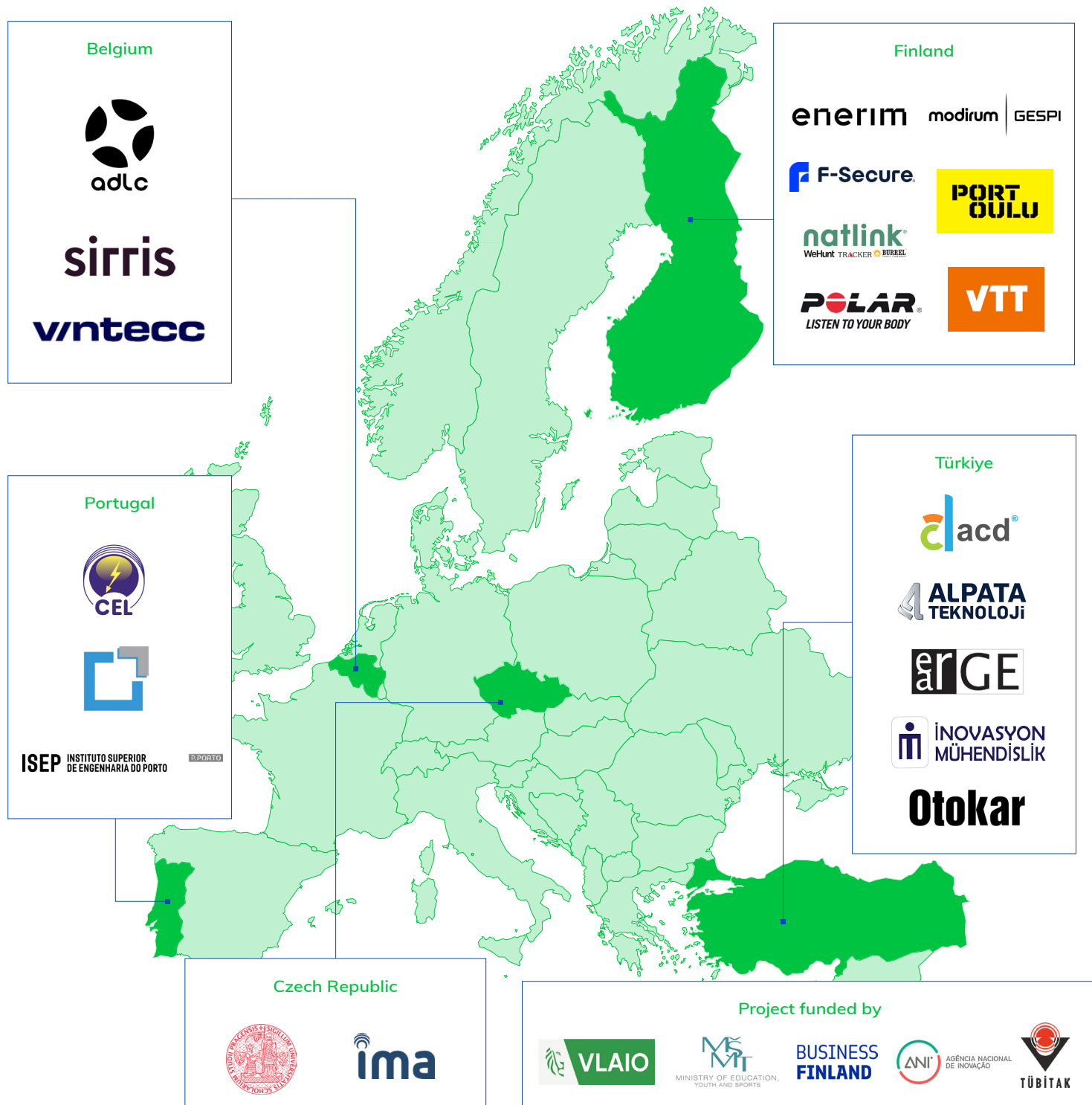
all while lowering the risks of various attacks and ensuring that the port can recover from incidents. The critical port area of Oulu, Finland, can serve as a potential pilot environment for the conceptual validation of secure situation awareness for operations. The project is then expected to launch a variety of products and services that enable the Sa4CPS concept and that drive revenue growth and competitiveness for partners in the logistics, mobility, energy and



### Projected results and impact

For exploitation, each use-case will focus on specific physical devices, related CPS services and digital twins within targeted business ecosystems. Some will concern a single sector, but their contributions to the overall Sa4CPS concept will create connections for cross-use-case applicability. Application in the port environment will enable a critical area to enhance trust and security by building autonomous resilience into the system,

security-related markets. By facilitating digital trust and value transactions for all stakeholders in a transparent manner, Sa4CPS will help create a reliable ecosystem for secure situational awareness and contribute to the establishment of a smart, interoperable and sustainable society.



**Project start**  
March 2024

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**Project website**  
<https://itea4.org/project/sa4cps.html>

**Project end**  
September 2027

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<https://itea4.org>