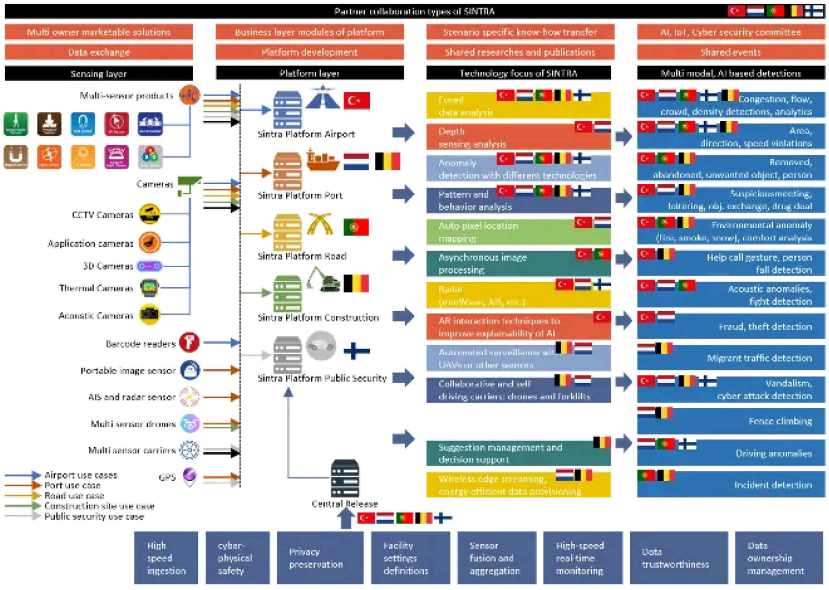
SINTRA

An upcoming ITEA project poised to revolutionize the protection of critical infrastructure. As we embark on this journey, SINTRA aims to enhance resilience by creating an open data-streaming AI platform. Through advanced multi-modal sensing and AI analysis, it will offer a comprehensive view of safety and security, enabling stakeholders to proactively detect and respond to complex anomalies. Stay tuned as SINTRA paves the way for a more secure and interconnected future.

Project Introduction



Stakeholders of critical industrial and civil infrastructure, e.g., airports, harbours, power plants, construction sites, road networks, frequently suffer from the disruptions caused by an overwhelming diversity of safety and security threats. These man-made physical threats are ranging from well-organized subversive crime activities to low-level but costly actions, like vandalism, thievery, and violence. Various security monitoring and protection

systems are nowadays offered on the market. The state-of-the-art SIEM solutions offer a camera network with integrated video analysis capability and video (meta)data streaming to control room operators.

However, the capabilities of these solutions are insufficient to ensure resilience and protection of critical infrastructure. Lack of trustworthy means for public-private cross-coordination, low interoperability and weak compliance with the EU data-privacy legislation are leading to local-only deployment of these systems and, as a result, fragmented situational awareness of security operators. Decisions are currently based on fragmented information within closed systems and siloed organization models. Besides this, the common reliance on analysis of sole video data limits the monitoring to simple incidents (trespassing, panic, fighting), but does not allow detection of complex, high-impact, and context-dependent threats (human/drug trafficking, thievery, attacks on infrastructure).

The SINTRA project aims to overcome these limitations by delivering an open data-streaming AI platform that enables cross-organizational interoperability and ensures trustworthiness in the safety and security monitoring. The platform facilitates cross-coordination between involved stakeholders, aids information sharing, management, and analysis from the public and private security operators, thereby enabling global situational awareness in the infrastructure threats. SINTRA aims at researching and defining the methodology for EU legislation-aware privacy protection and ethical use of data, that serves as a basis for the cross-coordination.

Technology-wise, the project envisions a significant step beyond the state-of-the-art by the synthesis of innovative multi-modal sensing and AI-powered combined data analysis. Incorporation and fusion of acoustic, visual, radar, multispectral, LiDAR, ToF or environmental sensor modalities together with already existing data sources (police data, logistic timetables, social media data) helps to obtain a multi-faceted, comprehensive view on the security/safety of the infrastructure situation. The AI-based analysis of the combined data enables robust detection of hidden, complex, or context-dependent anomalies, as well as their subsequent mapping to threats and timely cross-coordinated response, contingency or mitigation.

The SINTRA consortium is composed of partners from six countries (The Netherlands, Turkey, Belgium, Finland, Portugal, and Germany) that cover the full market value chain of research centers, sensor/data providers, platform, and service providers, where each country use-case is supported by one or more end-users. The consortium carefully balances the scale and impact of large industrial partners () providing the platform and service integrations with the in-depth expertise of academic institutes () and the innovative power of selected SMEs (). The benefits of the SINTRA platform will be demonstrated on six critical infrastructure types of end-users: logistic hubs (Port of Moerdijk), airports (), harbors, construction sites, shopping centers, and road networks. The project will actively engage with citizens, authorities, and external stakeholders to stimulate acceptance, validate scalability, and maximize the impact.

The expected project business impact is threefold. First, the current analysis-based security industry is technologically stagnating due to the constantly rising legislation barriers on data collection and usage for machine learning.

Establishment of the methodology for privacy-preserving AI-based security systems will enable large-scale business growth in this domain. Second, the plug-and-play SINTRA platform will help to reduce the partner maintenance and technology upgrade costs by up to 120m euro a year. Finally, and most importantly, the project results allow partners to enter the opening market of full-fledged security and monitoring solutions, with additional revenues estimated to 400m euro a year.

Process

Sep 2022

Born of Idea

At the PO Days event organized by ITEA in Helsinki, two projects were merged, journey started.

Nov 2022

Po Submitted

Dec 2022

Po Approval

Feb 2023

FPP Submitted

Mar 2023

FPP Approved

May 2023

First Country Approval

Netherlands consortium got approval from their national funding agency

Nov 2023

First CR Approval

Dec 2023 - Mar 2024

Other Countries Approval

Except Finland, all countries got approval but Finnish partners started to project as self-funding organizations

Dec 2023

Project Start

Jan 2024

Kickoff Meeting

Mar 2024

PCA Signatures

Mar 2024

WP1 Started

July 2024

Other work packages started

?

Focused Challenges

- Cross-coordination in threat detection
- Limited situational awareness
- Detection of complex anomalies and safety threats
- Context-dependent anomaly definition
- GDPR related challenges
- Trustworthiness and privacy protection of AI analysis techniques
- Limited coverage of premises and insufficient data resolution
- Cost inefficiencies
- High processing power and capacity requirements
- Vulnerability to adversarial attacks
- Biases in datasets, overfitting of training sets, calibration, quantization, precision errors
- Transforming multi-modal sensor data into a standard frame of reference
- High false detection rates from automated analysis
- Multi-tenancy challenges
- Unpredictability

Involved Countries and Partners

Belgium ✔

sirris innovation forward

Yacq traffic & automation

AIRobot

CSITE

CITYMESH connecting opportunities

sensolus

SKYEBASE
Drone Inspection Services

Finland

JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

2NS

ABLOY

HOXHUNT

jamk

KEMIN SATAMA
Port of Kemi

secapp

SENSOAN

TELESTE

Netherlands ✔

TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY


Avular


BOSCH


MS
MantiSpectra


omines


SafeCity


Sorama


ViNotion
Making surveillance smart

Turkey

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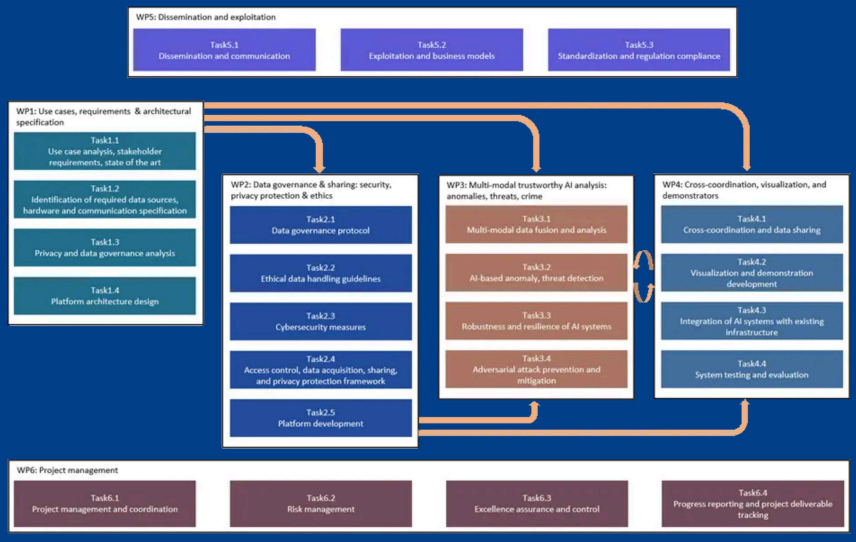
KoçSistem

Project Plan

Project Plan	Leaders
WP1: Use cases, requirements & architectural specification	MacQ
Task1.1: Use case analysis, stakeholder requirements, state of the art	
Task1.2: Identification of required data sources, hardware and communication specification	
Task1.3: Privacy and data governance analysis	
Task1.4: Platform architecture design	
WP2: Data governance & sharing: security, privacy protection & ethics	JYU
Task2.1: Data governance protocol	
Task2.2: Ethical data handling guidelines	
Task2.3: Cybersecurity measures	
Task2.4: Access control, data acquisition, sharing, and privacy protection framework	
Task2.5: Platform development	
WP3: Multi-modal trustworthy AI analysis: anomalies, threats, crime	ISEP
Task3.1: Multi-modal data fusion and analysis	
Task3.2: AI-based anomaly, threat detection	
Task3.3: Robustness and resilience of AI systems	
Task3.4: Adversarial attack prevention and mitigation	
WP4: Cross-coordination, visualisation, and demonstrators	FZI
Task4.1: Cross-coordination and data sharing	
Task4.2: Visualization and demonstration development	
Task4.3: Integration of AI systems with existing infrastructure	
Task4.4: System testing and evaluation	
WP5: Dissemination & exploitation	TUE
Task5.1: Dissemination and communication	
Task5.2: Exploitation and business models	
Task5.3: Standardization and regulation compliance	
WP6: Project Management	TAV
Task6.1: Project management and coordination	
Task6.2: Risk management	
Task6.3: Excellence assurance and control	
Task6.4: Progress reporting and project deliverable tracking	

Workpackages



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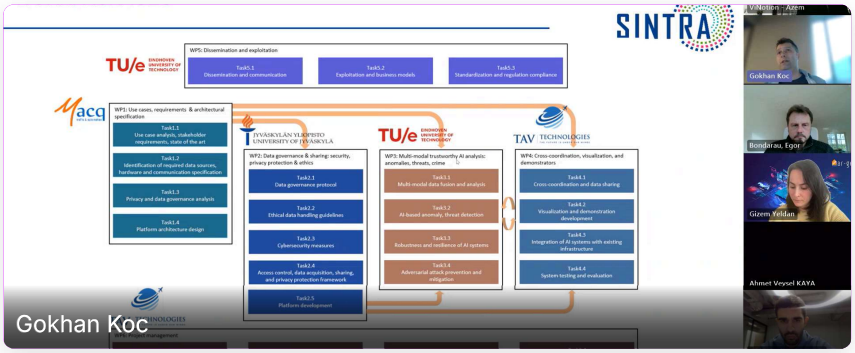

Celebrating the Launch: Sintra Project Kickoff Meeting Overview

SINTRA Kick-off Meeting Recording In an exhilarating leap towards innovation, the Sintra project embarked on its journey with an engaging kickoff meeting this February, marking the beginning of a prom...

Mar 11, 2024

Netherlands Consortium Officially Launches SINTRA Project

Date: November 8, 2023 In a groundbreaking move towards enhancing the safety and security of critical infrastructure, the SINTRA project officially kicked off in Netherlands, on November 8, 2023. The ...

Nov 22, 2023

Gökhan Koç, Project Coordinator

R&D Manager, TAV TECHNOLOGIES

As the R&D and Innovation Manager at TAV Technologies since 2018, Gökhan Koç has been at the forefront of driving technological advancements and fostering innovation within the organization. With a proven track record, Gökhan Koç has successfully led various R&D projects, skillfully navigating the dynamic landscape of technology and artificial intelligence.

Egor Bondarev, Project Coordinator

Prof., EINDHOVEN UNIVERSITY OF TECHNOLOGY

Egor Bondarev is an Assistant Professor in the Video Coding and Architectures group of TU/e, focusing on research areas such as multi-modal sensor fusion, smart surveillance with multi-camera systems and photorealistic 3D reconstruction of environments.

Anna Hristoskova, Belgium Coordinator

Senior Expert Distributed Intelligence, SIRRIS

Anna has experience in innovative industrial R&D projects at Sirris (knowledge center of the Belgian technological industry), within the domain of secure and distributed intelligent systems applied in various applications such as renewable energy & sustainability, smart cities & mobility, smart health, logistics, supply chains, manufacturing, smart and connected products.

Geert Vanstraelen, Belgium Coordinator

Research & Development Manager, MACQ

Research & Development Manager at MACQ. He will lead project with Anna Hristoskova

Reijo Savola, Finland Coordinator

Project Manager, UNIVERSITY OF JYVASKYLA

He is currently working as a project manager at University of Jyvaskyla of Finland. He has experience in information and network security, software engineering, telecom,multi-technology engineering topics and in digital signal processing algorithms.

Anna Hristova, Country Coordinator

Senior Expert Distributed Intelligence, SIRRIS

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Partners


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innovation
forward


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AIRobot


SITE


CITYMESH
connecting opportunities


sensolus


SKYEBASE
Drone Inspection Services

Use Case

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Partners


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Making surveillance smart

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SafeCity


TU/e
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TECHNOLOGY


Avular


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Use Case

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Contact us

Contact us about anything related to our project.
We'll do our best to get back to you as soon as possible.

Name *

Phone Number +90

Email *

Company

Subject *

Question *

Submit

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