THEIA

Enhancing Copernicus Security services – EU governmental crisis management hub for forced population displacement

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Introduction

THEIA is a cutting-edge initiative funded under the Horizon Europe programme, aimed at enhancing the European Union's **crisis management** and **security capabilities.** Addresses complex challenges such as **forced population displacement**, **climate-driven emergencies** and **geopolitical conflicts**.

Multi-source data: **S**atellite imagery, Satellite optical video, Radio frequency signals and non-space information + **Geospatial Artificial Intelligence (GeoAI)** and **Machine Learning**, THEIA supports **informed decision-making** for a wide range of end-users like SATCEN and Frontex, national ministries, intelligence agencies and international organizations.

Aims & Objectives

Aims of THEIA

I. **Enhance** the EU's capacity to respond effectively to **security crises** and **forced population displacement**

II. **Support** autonomous, timely, and data-driven decision-making through advanced **Earth Observation** services

III. **Strengthen** Europe's strategic independence in **space-based** technologies and services

Objectives of THEIA

- **Enhance Copernicus Security Services** fitness to better respond to evolving policy and user requirements
- Create beyond State-of-the-Art re-usable information tools tailored to users' needs
- Integration of GeoAI and Earth Observation data analytics with a variety of other application-specific data sources

Materials & Methods

Combination of **high-value data sources** :

- **Earth Observation data** from Copernicus and Copernicus Contributing Missions
- **Satellite optical video**
- **Radio Frequency (RF) data** for activity detection in denied or low-visibility areas
- **Advanced computing infrastructure** to support large-scale data processing and real-time analytics

THEIA employs **a multi-layered, technology-driven approach** that includes:

- **Data Fusion and Integration:** Multi-temporal and multi-modal datasets are aggregated
- **Geospatial Artificial Intelligence (GeoAI):** AI and Machine Learning models are developed and trained to detect displacement patterns, abnormal activities, and emerging crises with high accuracy.
- **Automated Processing Pipelines:** Modular and scalable processing chains

Discussion

THEIA represents **a strategic step** forward in enhancing the European Union's ability to manage complex **security** and **humanitarian challenges**. By combining cutting-edge technologies such as **GeoAI, Machine Learning, and multi-source data fusion,** THEIA addresses the growing need for timely, accurate, and actionable information in crisis scenarios, particularly those involving **forced population displacement**.

The project not only improves detection and monitoring capabilities but also ensures that services are responsive to evolving user requirements and policy priorities.

A key strength of THEIA lies in its integration of both **space** and **non-space** data, creating a holistic view that enhances situational awareness. This user-centric approach supports better coordination across EU entities, national authorities, and international organizations, facilitating more effective response strategies.

As THEIA progresses, its modular and scalable architecture positions it to evolve alongside future challenges, reinforcing its long-term impact and value.

Consortium

12 Partners
10 Countries

Coordinator: GEOSYSTEMS HELLAS

Website & Social Media

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