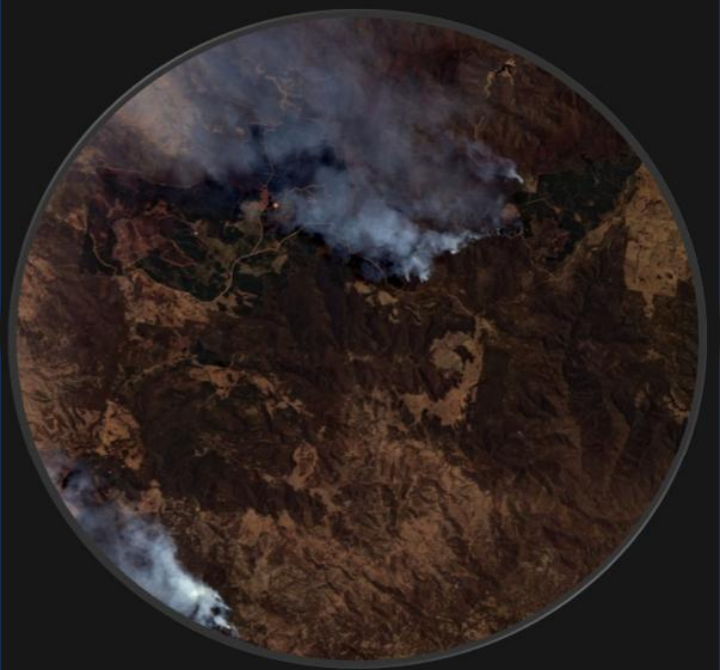




ASI — Earth Observation for Disaster Risk Management

How EO data are used by the National Fire Corps (CNVVF) of Italy to support urgent technical rescue during disaster response, fire prevention and surveillance



OPERATIONAL CONTEXT

The Role of Satellite Data in Emergencies

The CNVVF has progressively integrated satellite data into emergency management — extending beyond wildfires to interface fires, territorial monitoring, and post-event assessment.

Wildfire Monitoring

Active fire detection and perimeter mapping in near real-time

Geoportale VVF

Shared geographic and satellite data across operational rooms and field teams

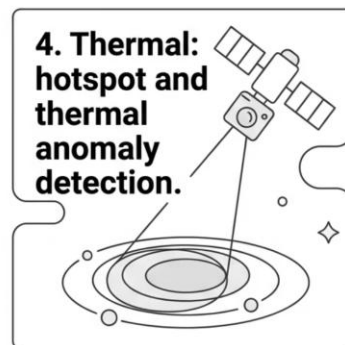
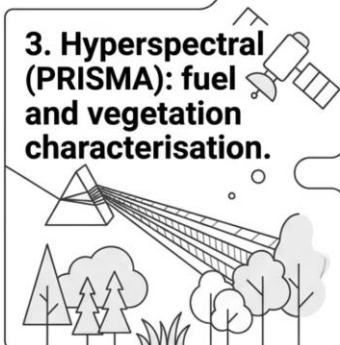
Operational Support

Satellite data as a live decision-making tool, not just post-event analysis



Earth Observation Technologies in Use Today

The CNVVF already operates on a solid technological foundation. Multiple sensor types are integrated within the Geoportale and operational systems.



These capabilities — multispectral, SAR, hyperspectral, and thermal — form the operational baseline from which a truly real-time system can evolve.

THE CHALLENGE

The Operational Limit of Polar Orbits

The Core Problem

*Polar orbit platforms deliver high-quality data, but cannot provide **continuous observation** of the same territory. Revisit rate and data latency are the key constraints.*



A wildfire evolves in minutes — intensity, direction, and behaviour change rapidly. Data arriving hours after acquisition can lead to operational decisions based on outdated information



*This is where a **paradigm shift** becomes necessary.*

PARADIGM SHIFT

Why Geostationary Changes Everything

Persistent Monitoring

Geostationary systems observe the same geographic area continuously, enabling frequent updates and greater responsiveness.

Proven Technology

Platforms like Meteosat Third Generation demonstrate that continuous observation is already a consolidated reality in meteorology.

Operational Integration

Emergency response requires thermal sensors specifically designed for fires — transforming satellite data from a consultable element into an integrated decision-making tool.



Technical-Operational Requirements

Achieving truly operational satellite support demands a precise set of capabilities working in concert.

- 1 Update Frequency**
Ideally less than 30 minutes to track event evolution in real time
- 2 Thermal Resolution**
Adequate spatial resolution to identify small-scale hotspots
- 3 Radiometric Sensitivity**
High sensitivity to TIR (detection of thermal anomalies before full ignition)
- 4 Minimal Latency**
Data rapidly integrable into operational room workflows
- 5 Multi-Sensor Interoperability**
Full integration of optical, SAR, thermal, and hyperspectral data
- 6 Operational Interoperability**
Standard APIs and geospatial services for direct integration into command-and-control and WebGIS environments.

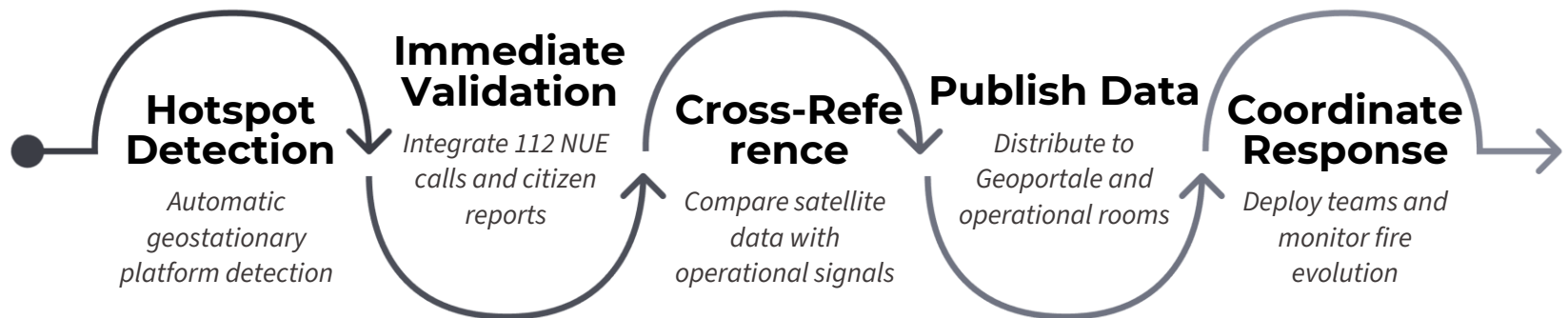


It is not enough to see the fire — the system must follow its operational evolution.

OPERATIONAL FLOW

The Evolved Operational Workflow

A seamless, integrated flow from automatic detection to coordinated response — reducing false alarms and accelerating decision-making.



*The objective is a **continuous, shared, and integrated workflow** enabling faster, more effective, and safer emergency response.*

FUTURE VISION

A Dedicated Geostationary Thermal Platform

Continuous Observation

Uninterrupted monitoring of the national territory with high spatial resolution

Multi-Hazard Applications

Wildfires, volcanic monitoring, multi-risk events, and civil protection support

Operational Impact

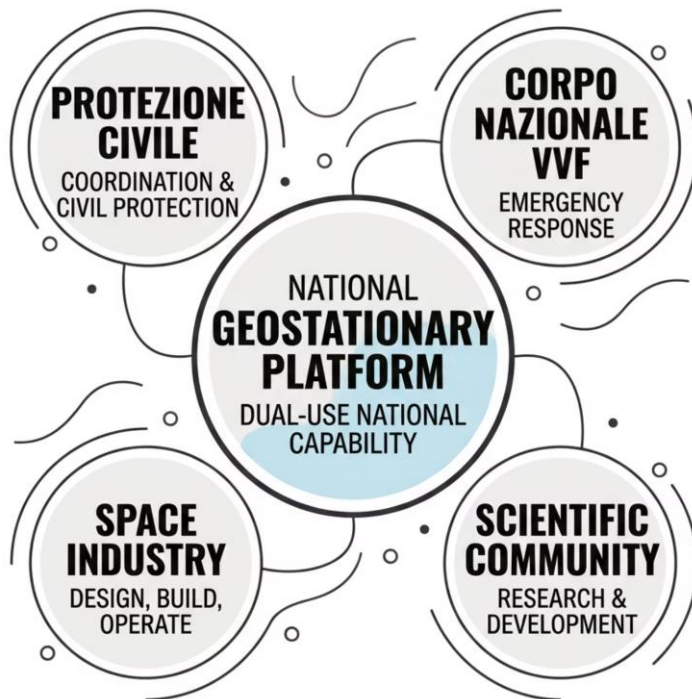
Reduced intervention times, improved decision-making, and enhanced territorial protection

*This would represent a **strategic evolution** in how the national emergency system observes and manages the Country.*

CONCETTO DI SISTEMA



A National Strategic Vision



Building National Resilience

*A dedicated national platform requires a **shared vision** and the involvement of multiple strategic actors working in concert.*

*Such an investment would strengthen national resilience and create **dual-use capabilities** — operational, civil, and commercial.*



The value extends beyond emergencies to environmental monitoring, territorial planning, and technological R&D.

CONCLUSIONS

The Future of Emergency Response Passes Through Space

The value of satellite data lies not only in its accuracy, but in its ability to arrive at the precise moment when decisions must be made.



More evolved operational rooms

Dynamic Geoportals and enhanced decision-support capacity



Reduced time between observation and action

Integrating satellite data directly into operational workflows



From consultable data to operational data

The central ambition of this strategic evolution

ASI — PRESENTE E FUTURO DELLE APPLICAZIONI TERMICHE



GRAZIE PER L'ATTENZIONE

Earth Observation Data in Emergency Response

**IA Ing. Gianmarco Valletta –
gianmarco.valletta@vigilfuoco.it**