



Finanziato  
dall'Unione europea  
NextGenerationEU



Ministero  
dell'Università  
e della Ricerca



Italiadomani  
PIANO NAZIONALE  
DI RIPRESA E RESILIENZA



ISTITUTO NAZIONALE  
DI GEOFISICA E VULCANOLOGIA

# PEOS: Platform for Earth Observation from Space

## WP 9 of MEET

Coordinator

Vincenzo Romano

Advisor

CTS COS

Assigned Budget

3.58 M€



*PEOS aims to realize a common platform of data and products of Earth observation from space, an important and challenging effort in one of the most promising scientific disciplines for hazard assessment and mitigation.*



Finanziato dall'Unione europea  
NextGenerationEU



Ministero dell'Università e della Ricerca

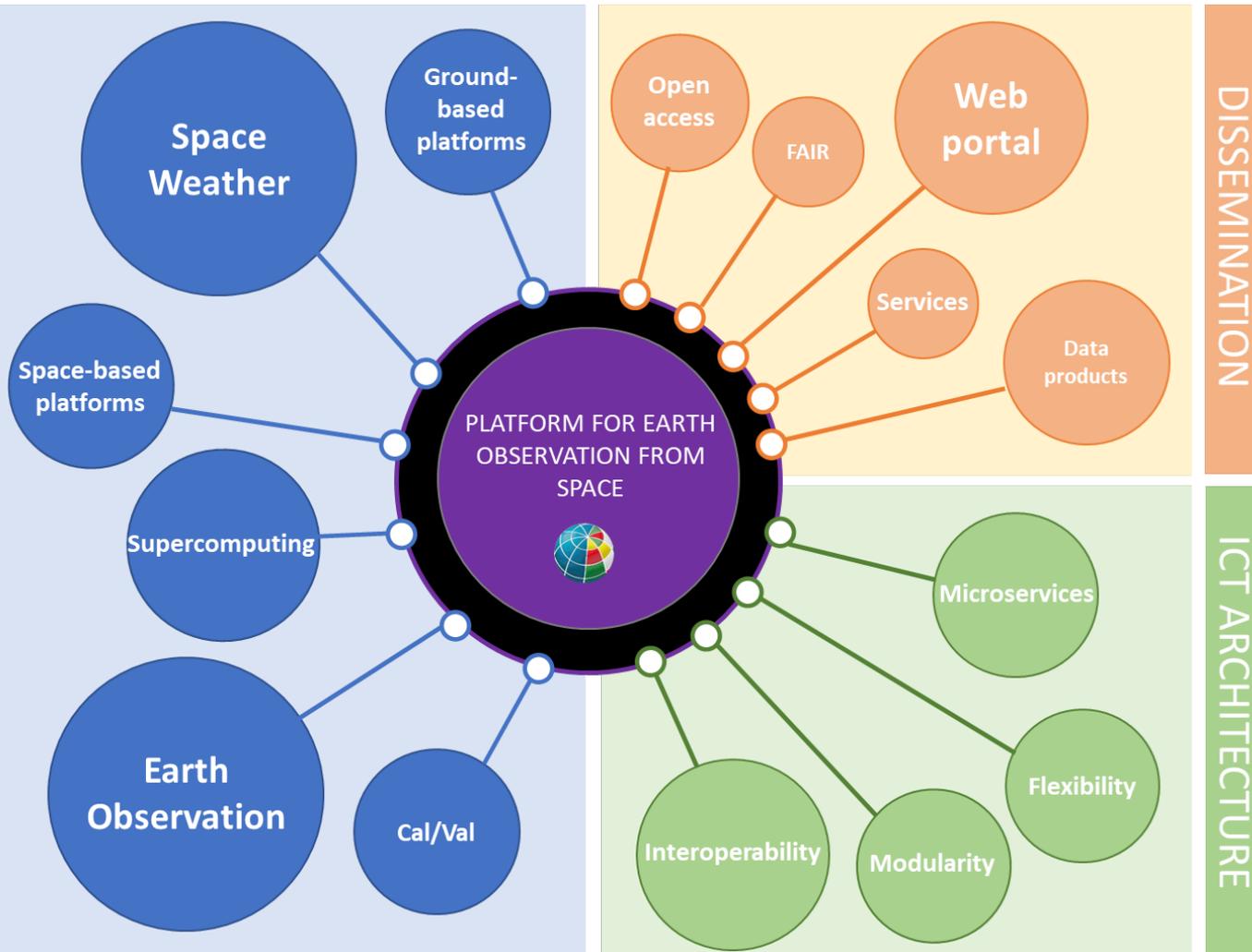


Italiadomani  
PIANO NAZIONALE DI RIPRESA E RESILIENZA



ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA

MODULES AND THEMATIC AREAS

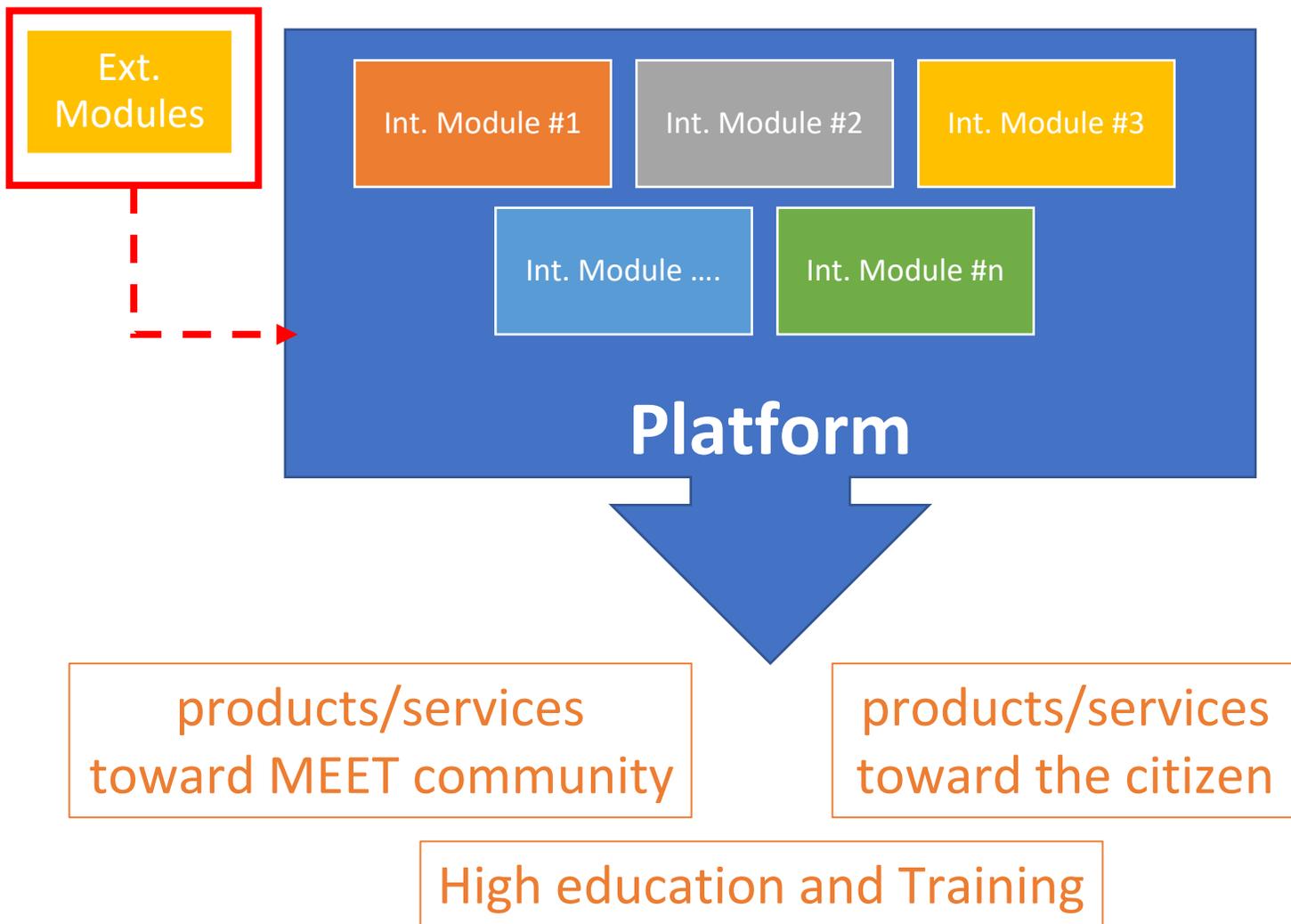


## The WP9: Platform for Earth Observation from space

**COS** | CENTRO OSSERVAZIONI SPAZIALI DELLA TERRA

  
ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA

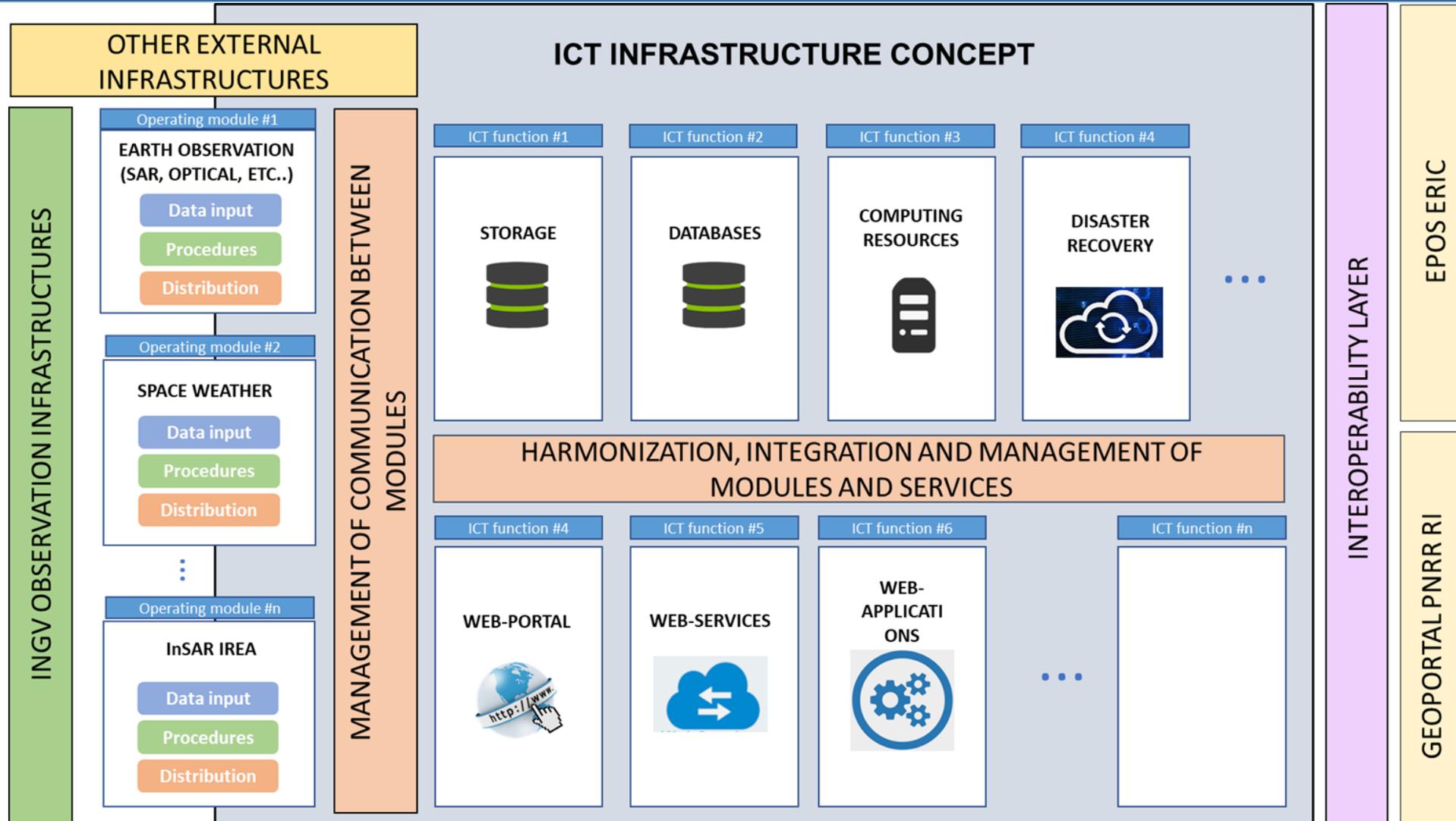
  
istituto per il rilevamento elettromagnetico dell'ambiente



**External Modules (and sub modules)** provide products/services to the Platform by using their own resources enlarging the capability of the platform in furnishing products toward the user community

**Internal Modules (and sub modules)** generate and provide products/services to the user community by using shared resources ensuring the capability of the platform in furnishing products

- Modules for Space geodesy and SAR products
- Modules for Optical products
- Modules for Space Weather products and LAIC
- Module for Calibration and Validation products



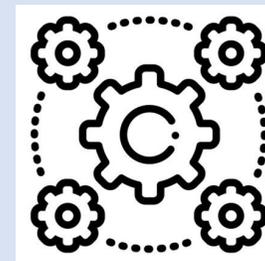
## MODULARITY



New COS modules, both thematic or related to new service modules can be easily added to the platform

## INTEROPERABILITY

Services for accessing and consulting data are in agreement with the international standards. Infrastructure allows interoperability with other platforms (PNRR RI Geoportal, EPOS, Data registry, etc)



## FLEXIBILITY

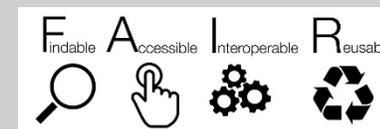
The infrastructure is easily scalable and its deployment is adaptable to different needs and systems (local infrastructure, distributed nodes, hybrid cloud, etc.)



kubernetes



## OPEN



It's developed with open source software and oriented to a data FAIR (Findable, Accessible, Interoperable, Reusable) approach



Activity 9.1 - Strengthening of observational and ICT infrastructures  
M. Musacchio (INGV)

Activity 9.2 - Platform design & development  
C. Marcocci (INGV)

Activity 9.3

Space geodesy and SAR  
products

M. Manunta (CNR)

Activity 9.4

Optical products

G. Ganci (INGV)

Activity 9.5

Space Weather and  
LAIC products

C. Scotto (INGV)

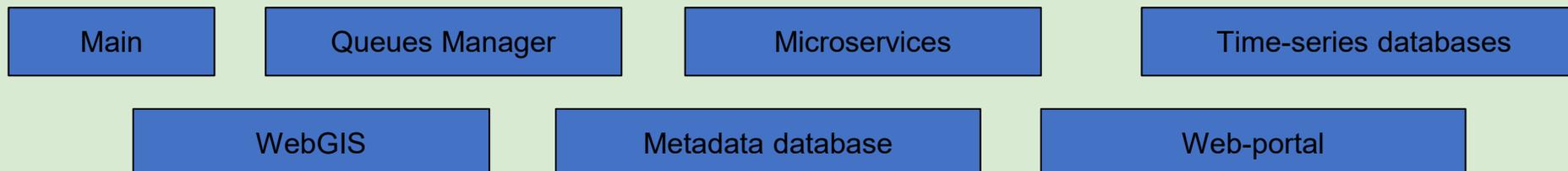
Activity 9.6

Calibration and  
validation products

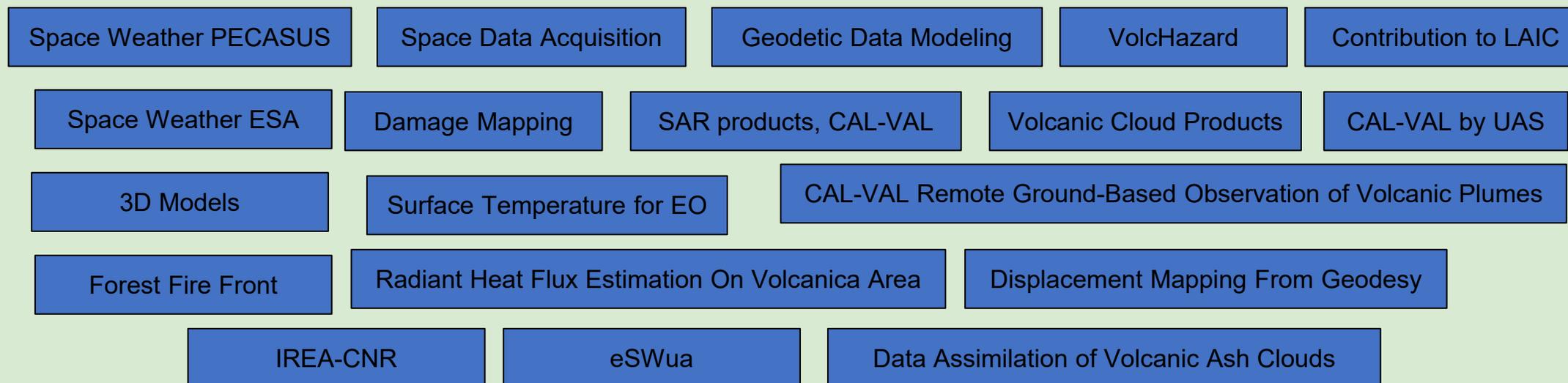
E. Marotta (INGV)

Activity 9.7 - Training and Higher Educations  
C. Cesaroni (INGV)

## Activity 9.2 - Platform design & development - Core Modules



## Activity 9.2 - Platform design & development - Thematic Modules





Finanziato  
dall'Unione europea  
NextGenerationEU



Ministero  
dell'Università  
e della Ricerca



Italiadomani  
PIANO NAZIONALE  
DI RIPRESA E RESILIENZA



ISTITUTO NAZIONALE  
DI GEOFISICA E VULCANOLOGIA



Emanuele  
Pica  
Tecnologo  
Recruited  
1/7/2023



Marco  
Spina  
Tecnologo  
Recruited  
16/06/2023



Nicola  
Guglielmi  
CTER  
Recruited  
1/9/2023



Project  
Manager  
Tecnologo



Finanziato  
dall'Unione europea  
NextGenerationEU



Ministero  
dell'Università  
e della Ricerca



Italiadomani  
PIANO NAZIONALE  
DI RIPRESA E RESILIENZA



ISTITUTO NAZIONALE  
DI GEOFISICA E VULCANOLOGIA

# Contribution by “Rete Multiparametrica” Space Weather PECASUS project



Sara Mainella  
Project  
Manager  
Research  
Grant



Massimo  
Viola  
IT expert  
Research  
Grant

## Hardware

- Finalized the purchasing procedures for:
  - Storage
  - Networking
  - Servers



## Software

- Accomplished the European tender for the software
- “Links management and technology” and “Planetek italia” emerged as winners





Finanziato dall'Unione europea  
NextGenerationEU



Ministero dell'Università e della Ricerca



Italiadomani  
PIANO NAZIONALE DI RIPRESA E RESILIENZA



ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA

RTI



## Links



### CLIENTS

Banking & Financial Services	+ 60
Public Services & Government	+ 30
Other Industries	+ 20



### PEOPLE

Numero Dipendenti	560
Età Media	34,5
Dipendenti con Certificazioni IT	505

## Planetek

A benefit company strongly committed to operate in a responsible, sustainable and transparent way towards people, communities, environment.

Year **1994**



People **100+**



Earth Observation



Space Software



Spatial Data Infrastructure & GIS



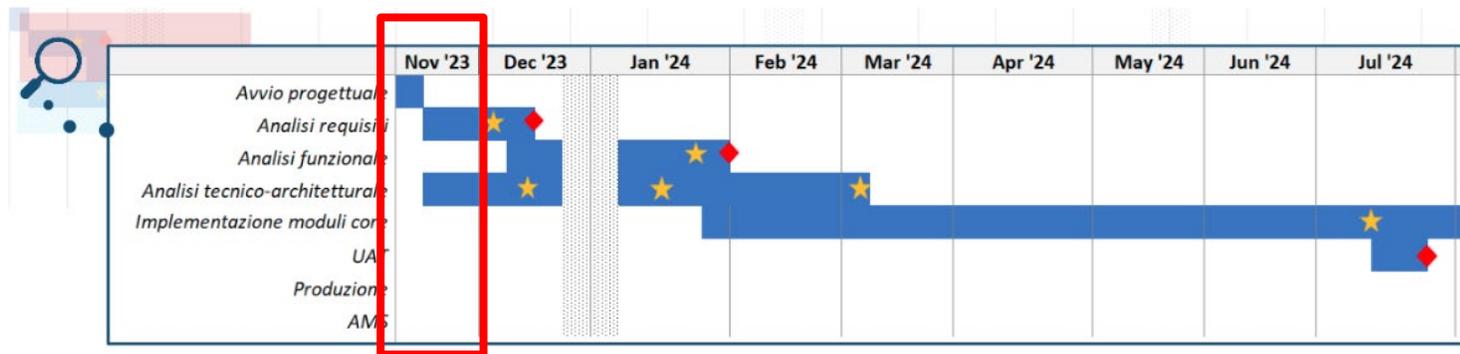
Location Based Systems





## On going work...

- Links and Planetek Kick-off meeting held in 14/11/2023 at INGV
- Meetings for the collection of requirements of the platform's core modules already started
- Meetings for the collection of requirements of the platform's thematic modules starting soon



**PEOS - INGV technical group:**  
C.Marcocci, E.Pica,  
N.Guglielmi, M.Spina,  
G.Sensale, M.Viola

- Contribution to the Expoforum «New Space Economy» at Fiera di Roma 2022 and 2023
- Organization of the Convective and Volcanic Clouds Training School, October 2023
- PEOS presentation at ICEAA-IEAA, October 2023
- PEOS presentation at Earth Technology, November 2023
- PEOS presentation at “Giornata INGV dati”, November 2023
- Active collaboration with:
  - PNRR “Space It UP”,
  - PNRR “Centro Nazionale di Ricerca in High Performing Computing”
  - PNRR “Geosciences IR”,
  - “Azione di Accompagnamento for IRIDE Constellation”
  - PNRR PhD program «Corso di Dottorato Nazionale in Space Science and Technology» - a.y. 2022/2023
- Participation to the Copernicus Italian User Forum



- Activity 9.7 “Training and Higher Educations” can’t carry on its approved activities
- Some procurements can’t proceed for administrative difficulties, especially at “OV” and “OE”
- Recruitment can’t be finalised for administrative difficulties to open new positions



~~Capacity Building Workshops~~

~~Master in collaboration with Italian university~~

~~Training for professional stakeholders~~

~~October 2023 @ Broglio Space Center, Malindi, Kenya~~

~~May 2023, MaSAG, Rome, Italy~~

~~October 2023, Nicolosi (Catania), Italy~~

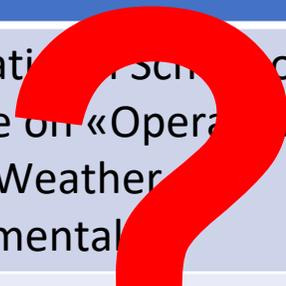
~~April 2024, L'Aquila, Italy~~

~~Capacity Building Workshop on Space Weather and Low-latitude Ionosphere~~

~~Mathematics for Signal processing and Applications in Geophysics and other fields~~

~~International Training School on Convective and Volcanic Clouds detection, monitoring and modelling~~

~~International School of Space Science on «Operational Space Weather Fundamental»~~

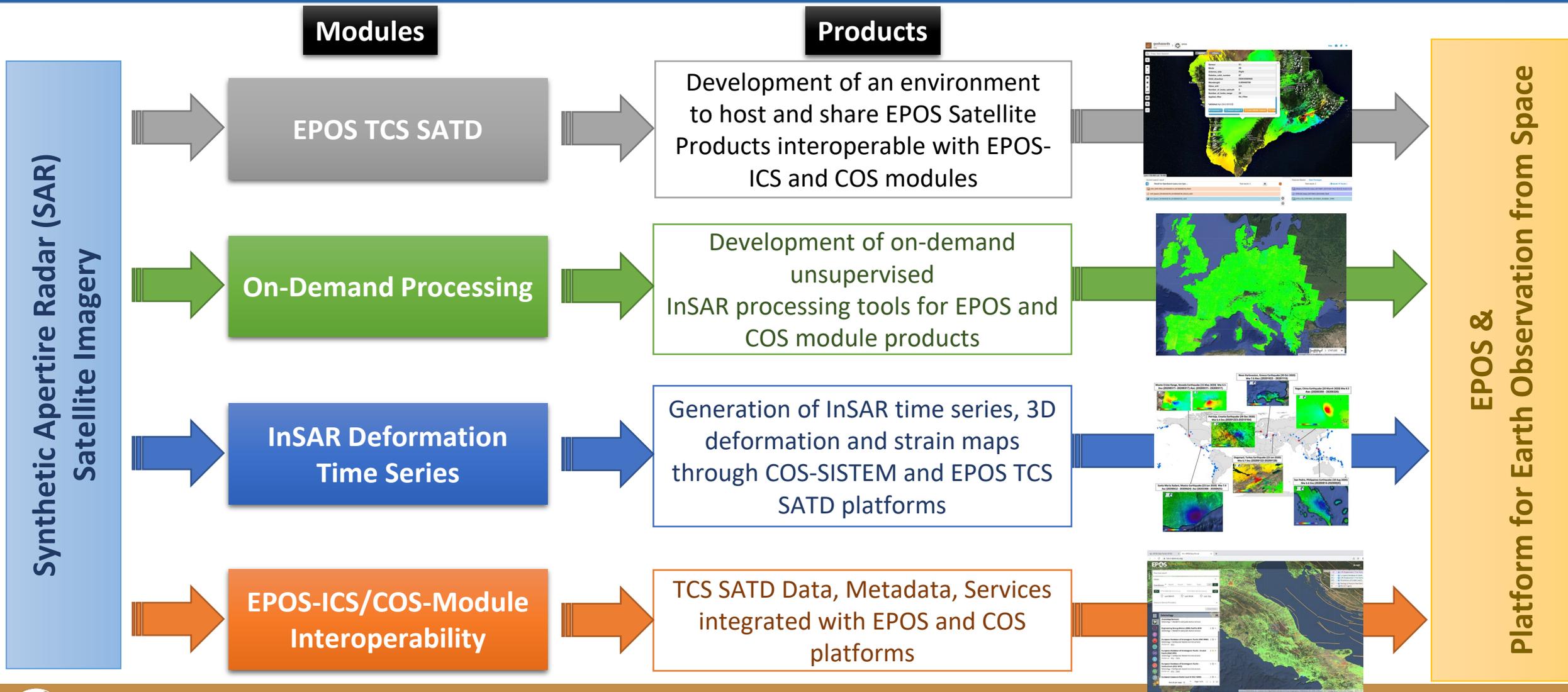


- PEOS is designed to be a tool to improve quality, level and visibility of space-related products, particularly oriented on mitigation of impact of natural events
- PEOS community is very large and enthusiast of the common infrastructure
- The new IT team and the IT company started effectively to operate
- CNR IREA just concluded its recruitment and procurement process
- PEOS is disseminated at national and international level
- Collaboration from national and international stakeholders is active to enhance the quality of the results and to be aligned with the requests from the society
- Criticalities must be solved or mitigated (we need help!)

# Thank you for your attention



Visit the INGV-COS booth at NSE, Fiera di Roma, December 5-7





Finanziato dall'Unione europea  
NextGenerationEU



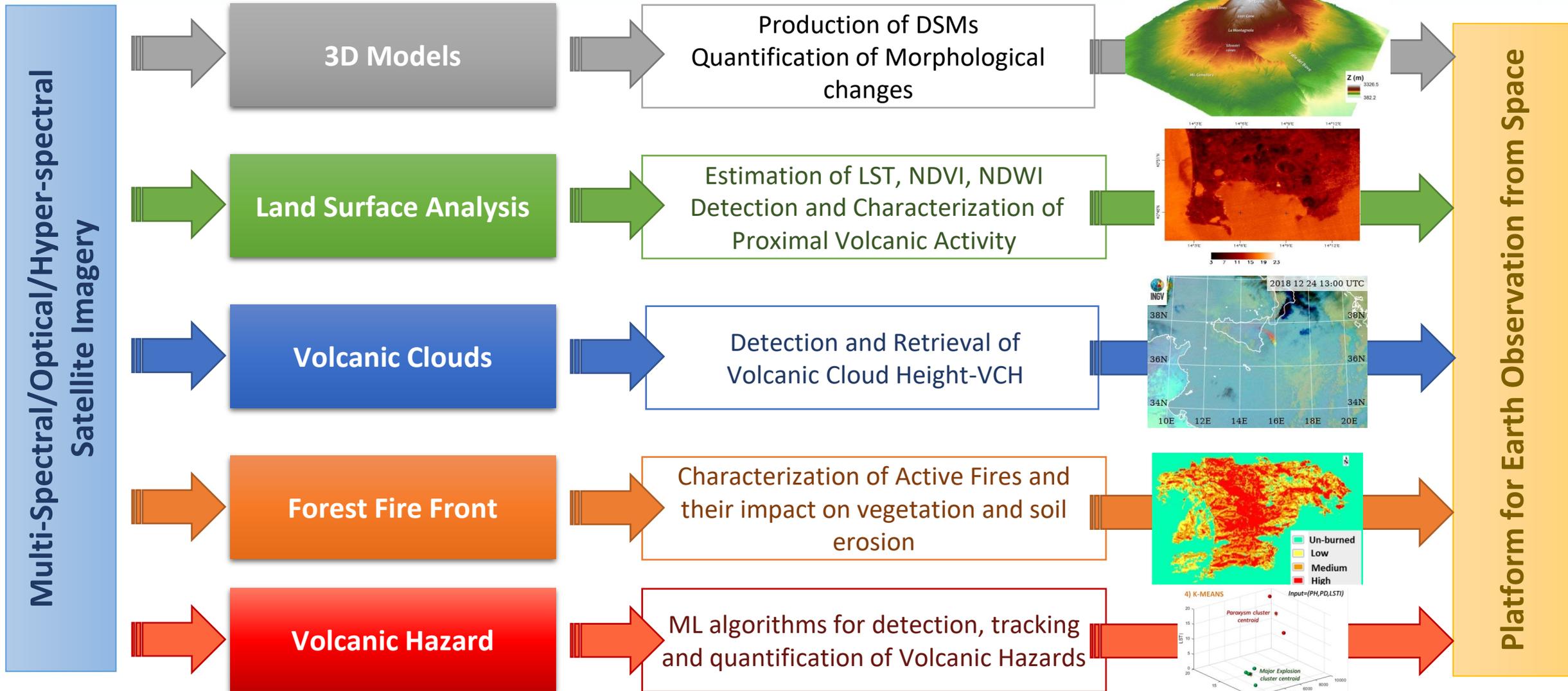
Ministero dell'Università e della Ricerca

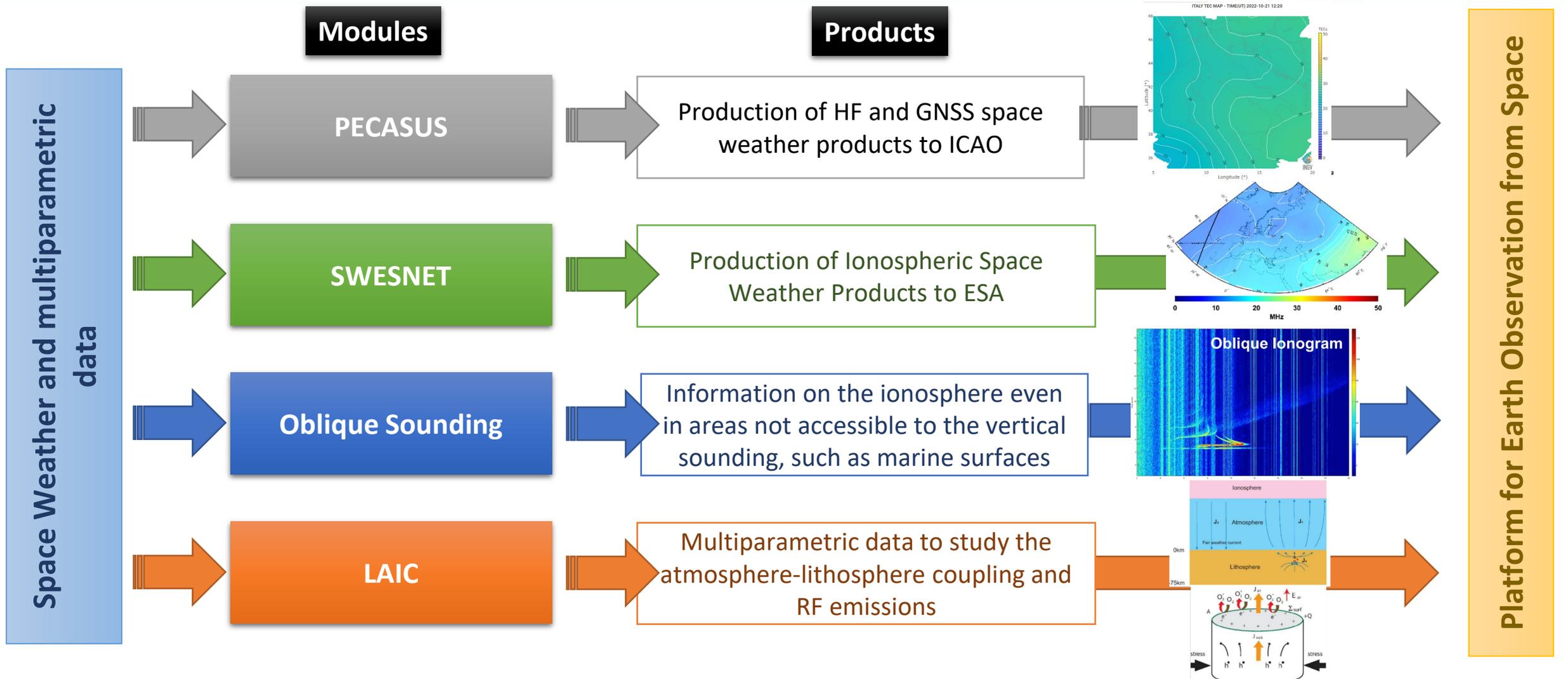


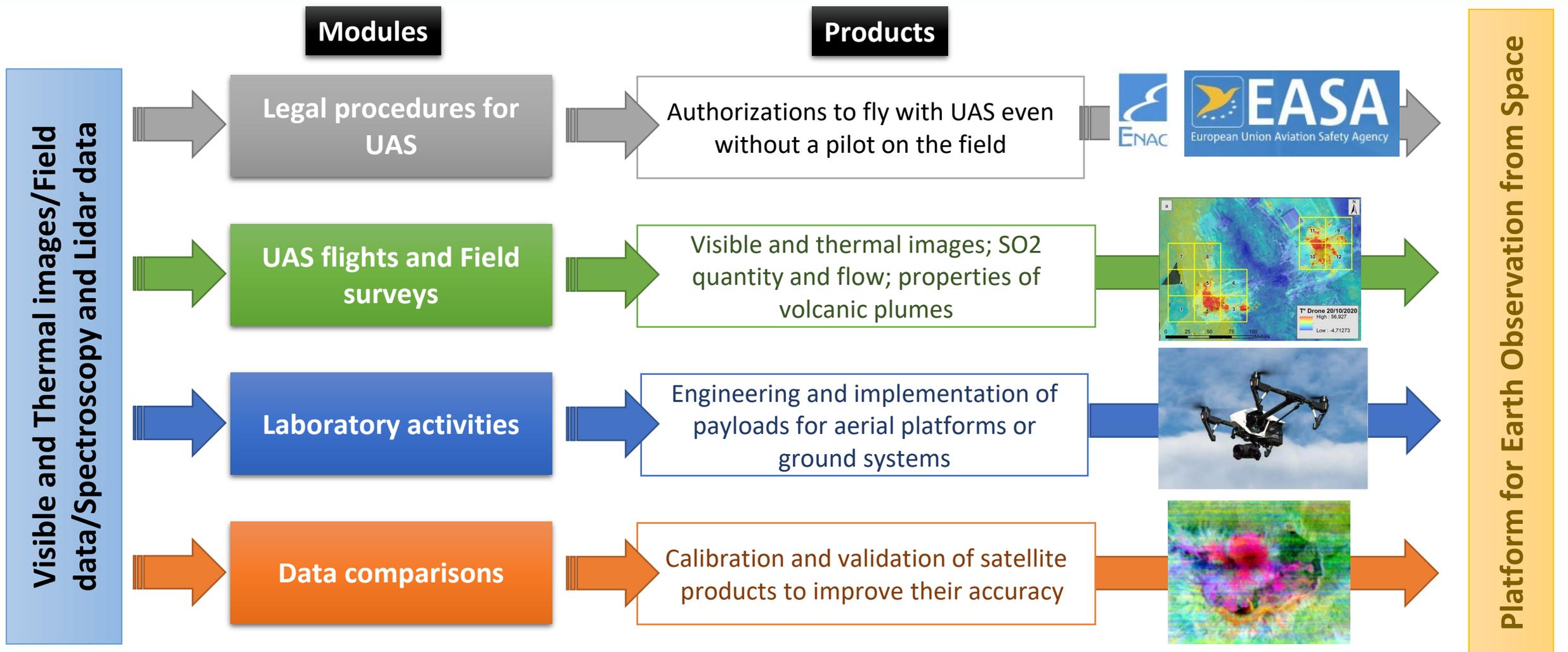
Italiadomani  
PIANO NAZIONALE DI RIPRESA E RESILIENZA



ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA









Finanziato dall'Unione europea  
NextGenerationEU



Ministero dell'Università e della Ricerca



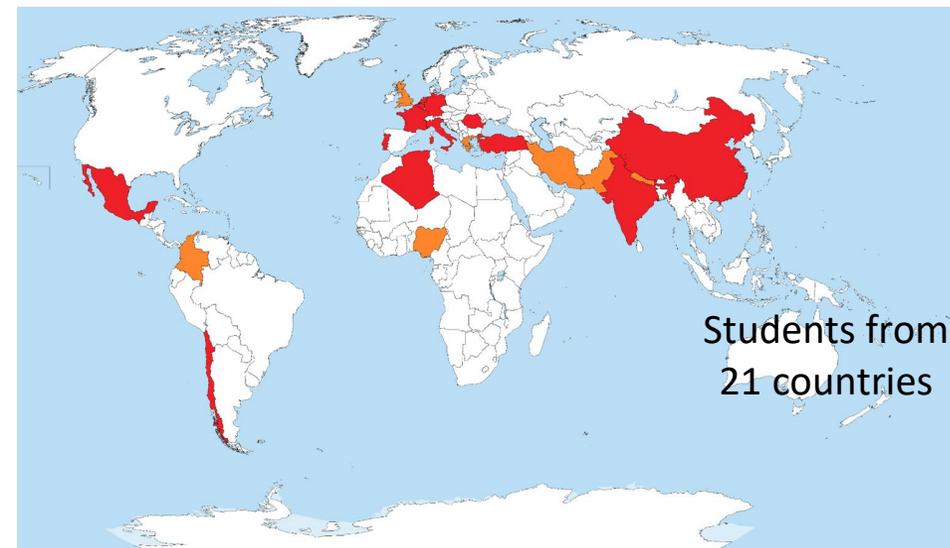
Italiadomani  
PIANO NAZIONALE DI RIPRESA E RESILIENZA



ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA



## CONVECTIVE AND VOLCANIC CLOUDS TRAINING SCHOOL



### 8<sup>th</sup> International Training School on CONVECTIVE AND VOLCANIC CLOUDS (CVC) Detection, Monitoring and Modelling

2-8 October 2023, Nicolosi (CT), Italy

The purpose of the School is to train students with primary research interest in:

- Techniques to Detect, Monitor and Model Convective and Volcanic Clouds,
- State-of-the-art Instruments and Satellite Missions (present and future),
- Early Warning Systems and Aviation Safety in support of policymakers.

HYBRID Format: online and in-person



Seven days with in depth lectures, excursion to the summit craters, field measurements, practice with data analysis, as well as morning run overlooking Mt. Etna and gastronomic diversions.  
An immersive experience in support of Sicilian cultural heritage.



**Keynote Lecturers:**  
Gordon Grainger (Univ. Oxford, UK)  
Marcello Miglietta (ISAC-CNR, Italy)  
Dorinel Visoiu (ROMATSA, Romania)

**Lecturers:**  
Riccardo Biondi (CIMA, Italy)  
Tajana Bolje (Univ. of Westminster, UK)  
Hugues Brenot (BIRA, Belgium)  
Alejandro Cervantes (Univ. de la Rioja, Spain)  
Stefano Corradini (INGV, Italy)  
Pascal Hedelt (DLR, Germany)  
Federica Pardini (INGV, Italy)  
Mario Montopoli (CNR, Italy)  
Antonio Parodi (CIMA Foundation, Italy)  
Matteo Picchiani (ASI, Italy)  
Giuseppe Salerno (INGV, Italy)  
Simona Scollo (INGV, Italy)  
Martin Setvak (CHMI, Czech Republic)  
Cecilia Tirelli (CNR, Italy)  
Mark Woodhouse (University of Bristol, UK)

Organizing Committee:

Riccardo Biondi (CIMA, Italy)  
Valentina Colini (INGV, Italy)  
Stefano Corradini (INGV, Italy)  
Susanna Dragoni (INGV, Italy)  
Emilio Pecora (INGV, Italy)  
Giuseppe Salerno (INGV, Italy)  
Cecilia Tirelli (IFAC-CNR, Italy)



- ★ Student oral and poster presentations
- ★ Field Trip
- ★ Lectures
- ★ Field Measurements



## Activity 9.7 Training and high education