# “ ESA & 5G for Cultural Heritage – ESA & 5G για Ανοιχτούς Χώρους Πολιτισμού και Αρχαιολογικού Ενδιαφέροντος“

*26 Νοεμβρίου 2019, Ξενοδοχείο Divani Caravel*

**Vasiliki (Betty) Charalampopoulou**
**Geosystems Hellas S. A.**

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Economy 4.0 Connected Future

ΤΡΙΤΗ 26 11 2019 Ξενοδοχείο Divani Caravel

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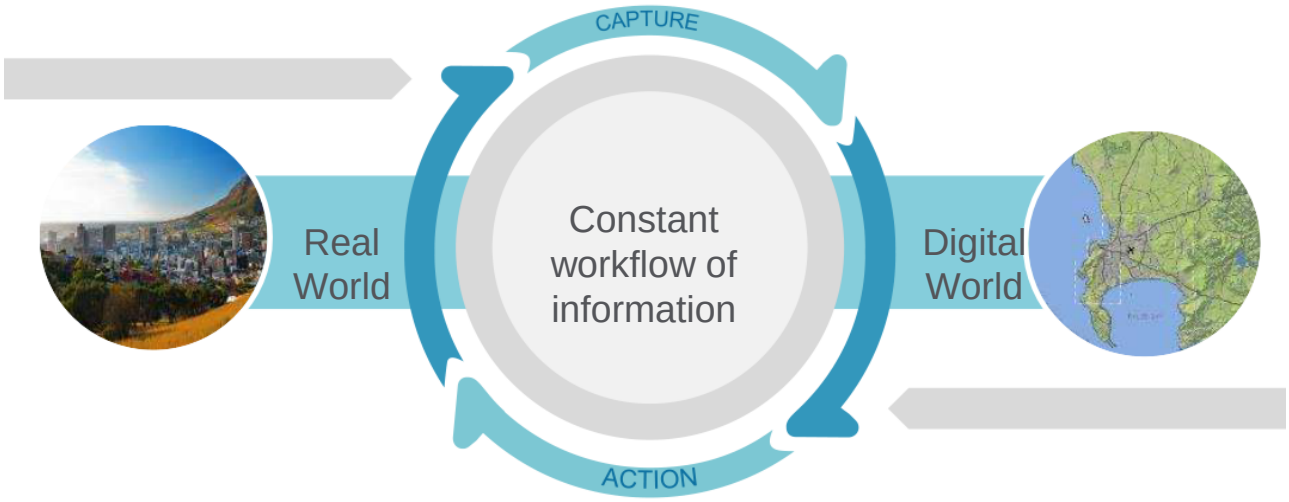
**GEOSYSTEMS HELLAS S.A. (GSH) was established in November 2009 as the newest member of GEOSYSTEMS EU GROUP (www.geosystems-group.eu).**
**Is a Greek SME with 9 engineers.**
**Shareholders : 49 % METRICA SA, 20 % VCH & 31% GS GmbH.**
**Has three main activities : 1. acting commercially as Hexagon Geospatial and Hexagon Airborne Solutions authorized reseller and as consultant in Greece and Cyprus on subjects of Photogrammetrical, Remote Sensing, Geodetic and Environmental Monitoring projects working also with Big Data 2. participating in service projects, Enterprise Solutions /Smart M.Apps, Smart Cities /IoT ML and DL Technology Trends and 3. participating in R&D projects based on the above expertise.**



# Member

EARSC
European Association of Remote Sensing Companies

ΕΒΙΔΙΤΕ
Ένωση Ελληνικών Βιομηχανιών Διαστημικής Τεχνολογίας & Εφαρμογών

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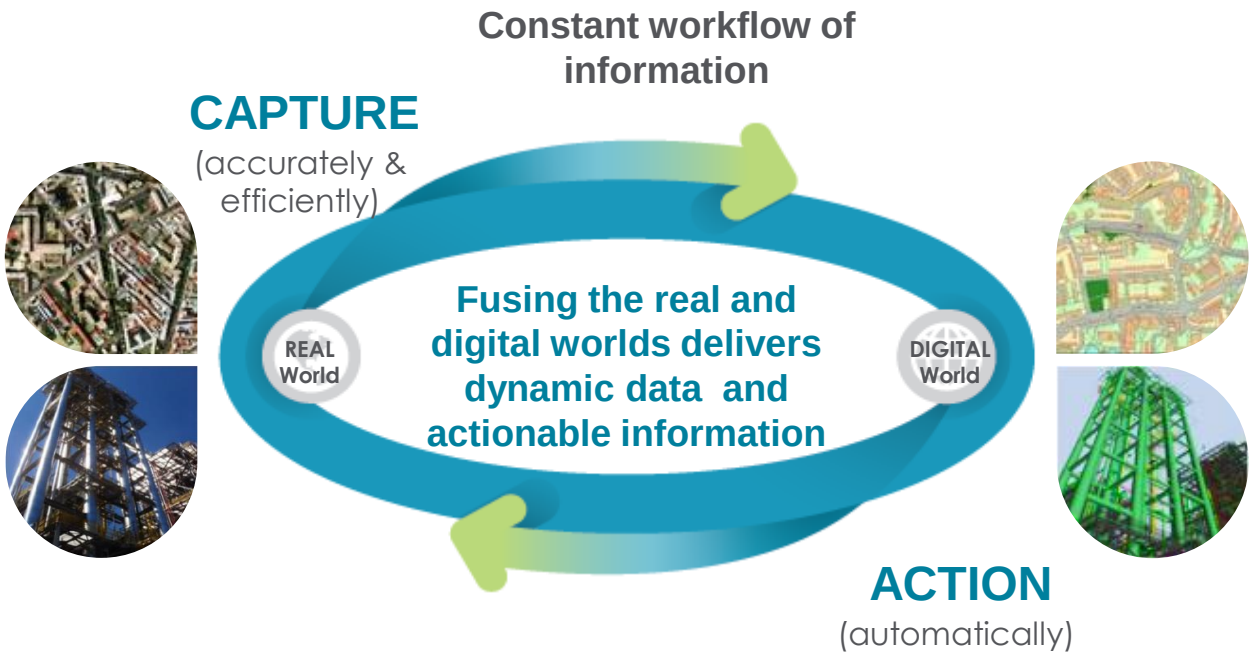
## Following Technical Chamber, FIG, GEO, ESA, NASA etc

# Fusing the real and digital worlds




- Remote Sensing and photogrammetry applications
- Big Data, Data Fusion and Data Analytics techniques (AI)
- 3D monitoring techniques

## ARTES INTEGRATED APPLICATIONS PROMOTION (IAP)

## - CULTURAL HERITAGE

**The cultural heritage as well as the natural heritage is increasingly threatened with destruction, not only by the traditional causes of decay, but also by changing social and economic conditions which aggravate the situation with even more formidable phenomena of damage or destruction. Deterioration or disappearance of any item of the cultural or natural heritage constitutes a harmful impoverishment of the heritage of all nations of the world. Protection of this heritage at the national level often remains incomplete, because of the scale of the resources which it requires and of the insufficient economic, scientific, and technological resources of the country where the property to be protected is situated.**

- **The following scenarios have been identified as key focus areas:**
- **Cultural Heritage Fruition and Diffusion**
- **Cultural Heritage Preservation**

## Feasibility Study or Demonstration Project

**Space technologies can play an important role in conjunction with the deployment of novel technologies (e.g. AR/VR/immersive reality, UAV) in the fruition and diffusion as well as in the preservation of cultural heritage.**

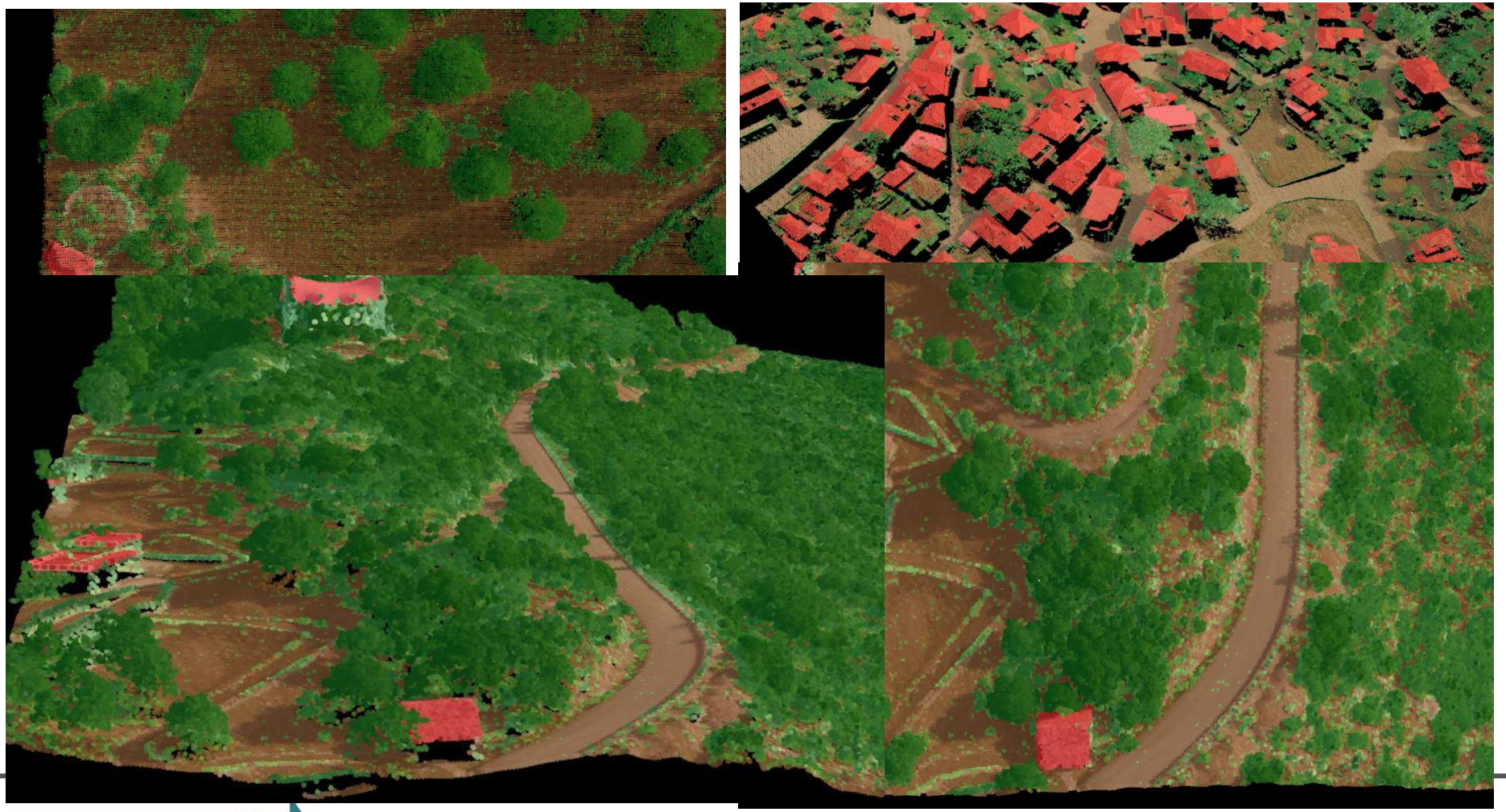
**The proposed ideas must use satellite or space-based data *as well as* 5G technology.**

- **Satellite Communication: In case of UAV based operations, both command & control and payload data can be transferred exploiting SatCom, which can complement the terrestrial network or replace them in case of post-disaster scenario. SatCom can provide connectivity in those for example archaeological sites, where the terrestrial coverage is not reliable.**
- **Earth Observation: Earth Observation (EO) satellites can monitor the environment, weather and climate of the Earth. EO data can map terrain, produce detailed imagery, and detect minute changes to vegetation, structures and the atmosphere. Earth Observation can be exploited to identify and delineate the macro-changes induced on the landscape assets and on the historical centres.**
- **Satellite Navigation: Satellite Navigation enables positioning, geo-tagging of in-situ data.**

# Remote Sensing Services - Forecasts to 2025

**The Remote Sensing Services market worldwide is projected to grow by US$20.9 billion, driven by a compounded growth of 15.4%. Satellites, one of the segments analyzed and sized in this study, displays the potential to grow at over 14.9%. The shifting dynamics supporting this growth makes it critical for businesses in this space to keep abreast of the changing pulse of the market. Poised to reach over US$18.6 Billion by the year 2025, Satellites will bring in healthy gains adding significant momentum to global growth.**

# Classification Methods



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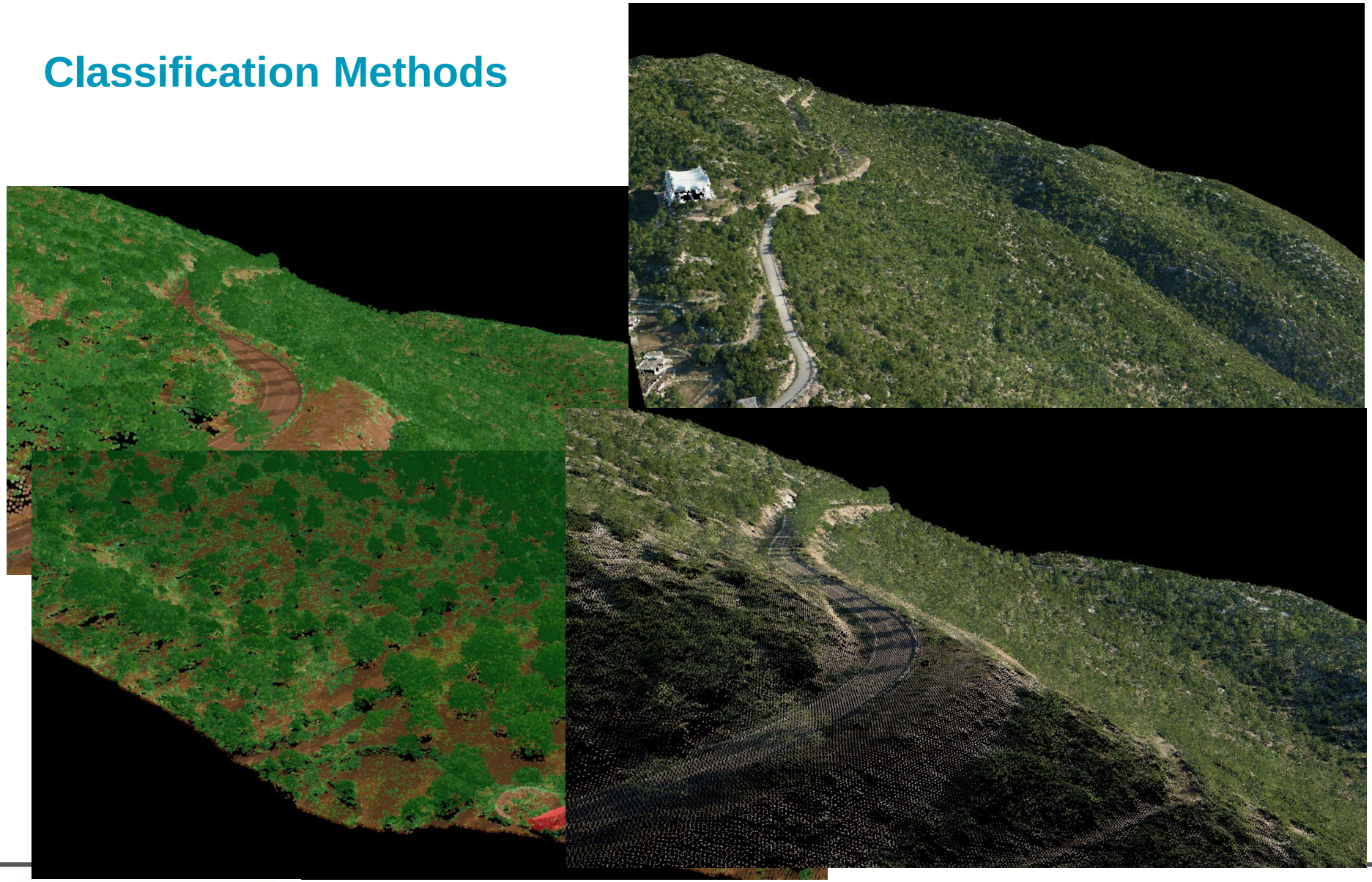

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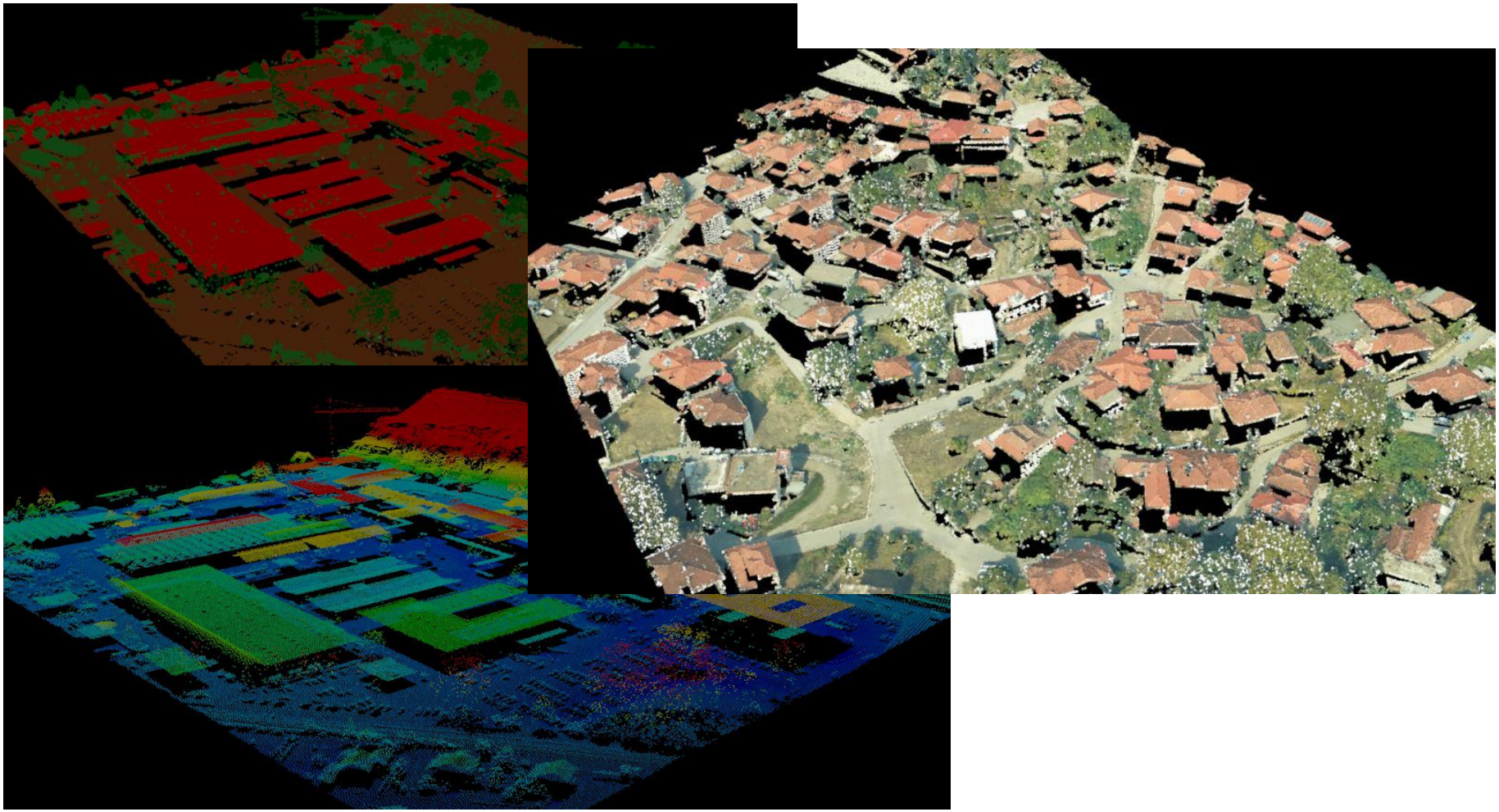

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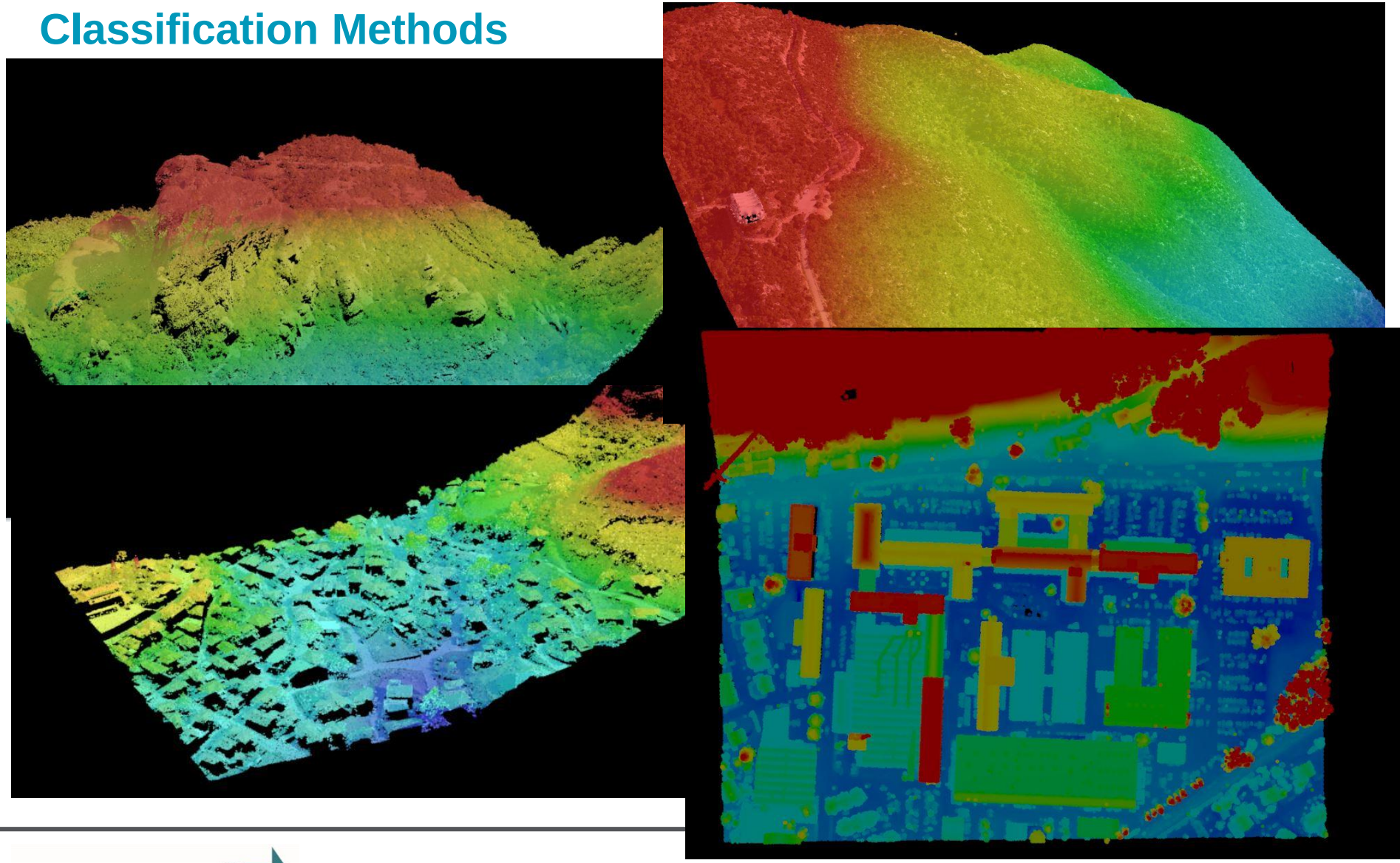
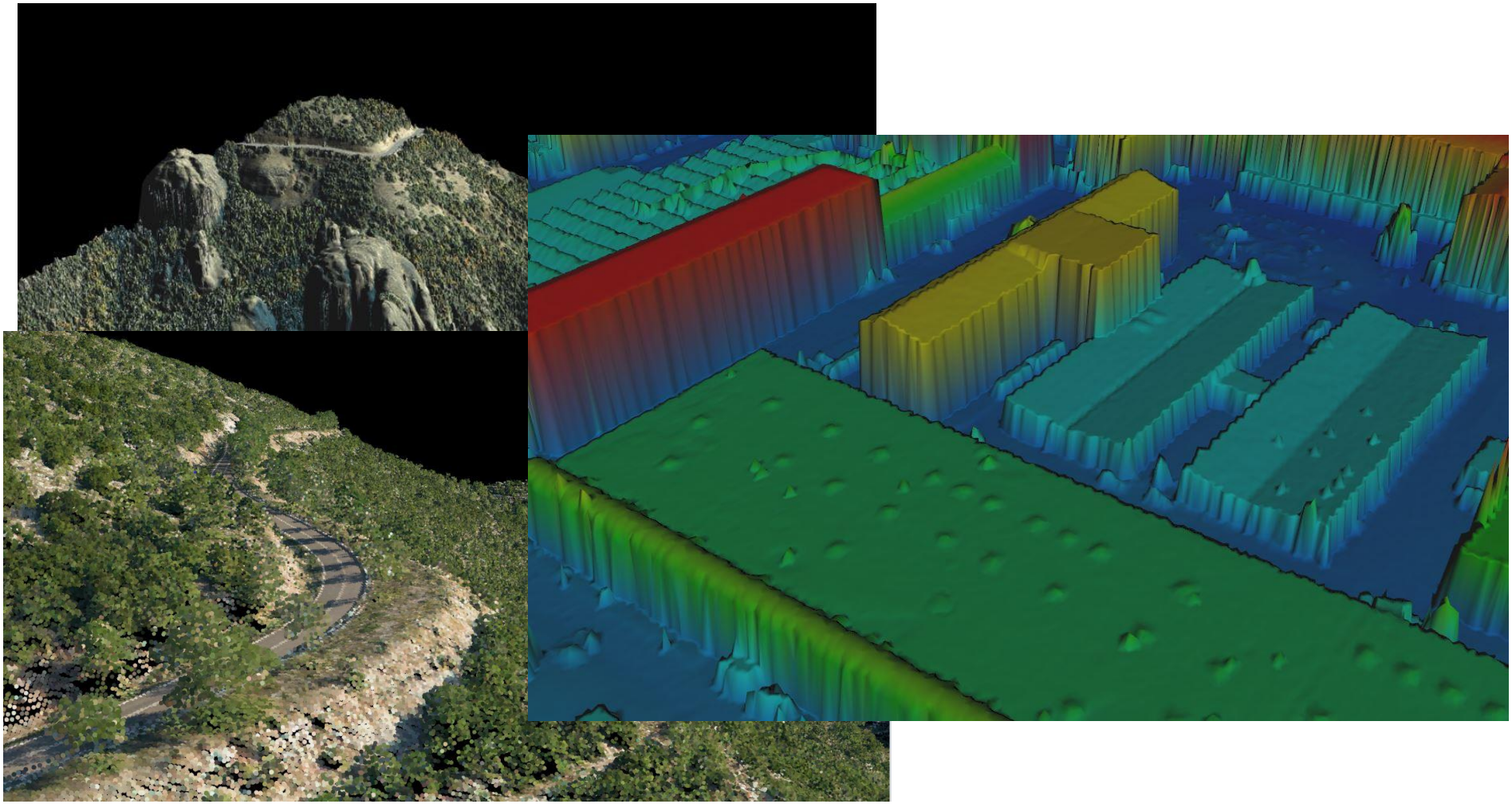


# Classification Methods - pespective



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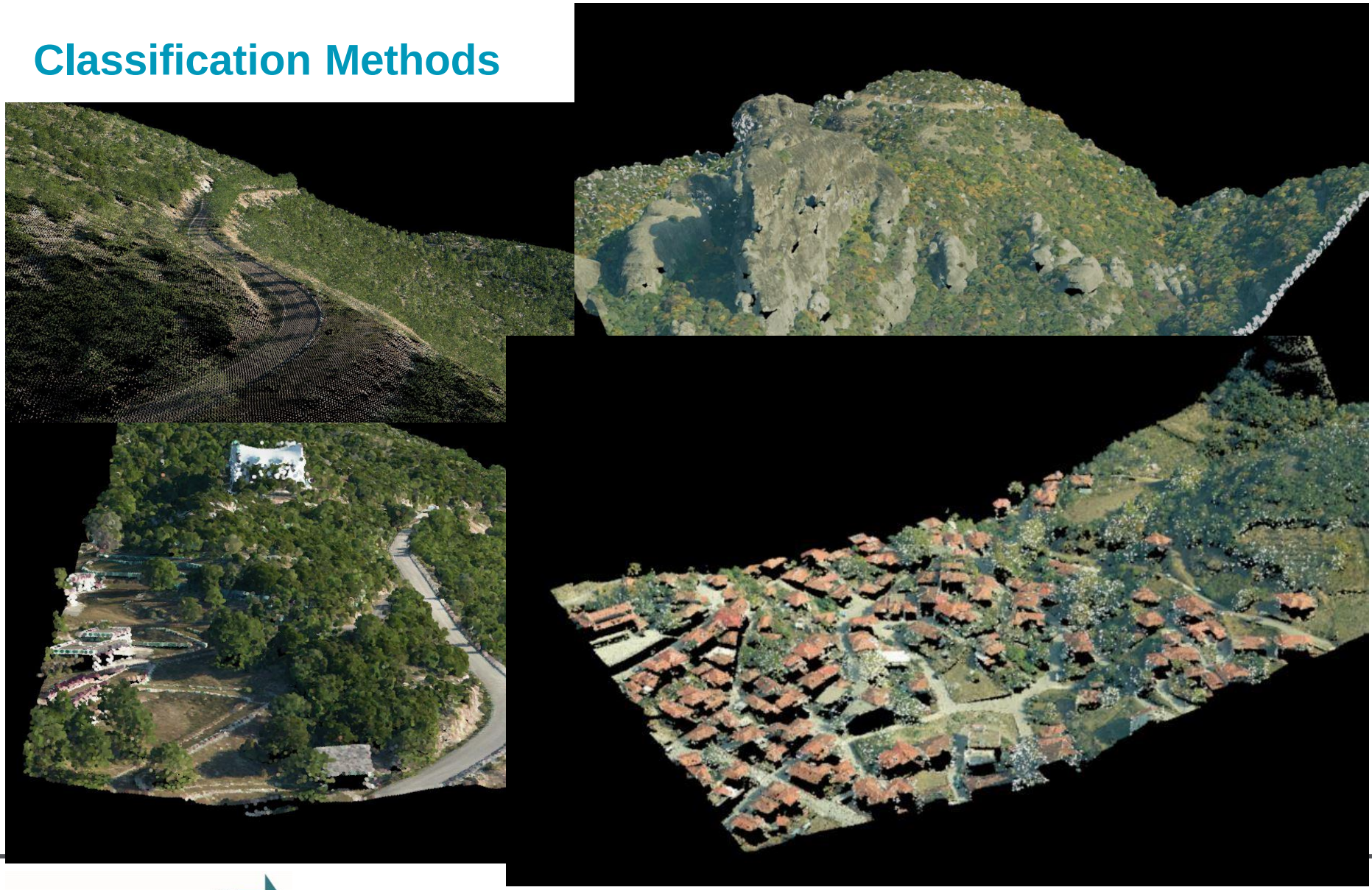


## On going H2020 RISE 2018 :

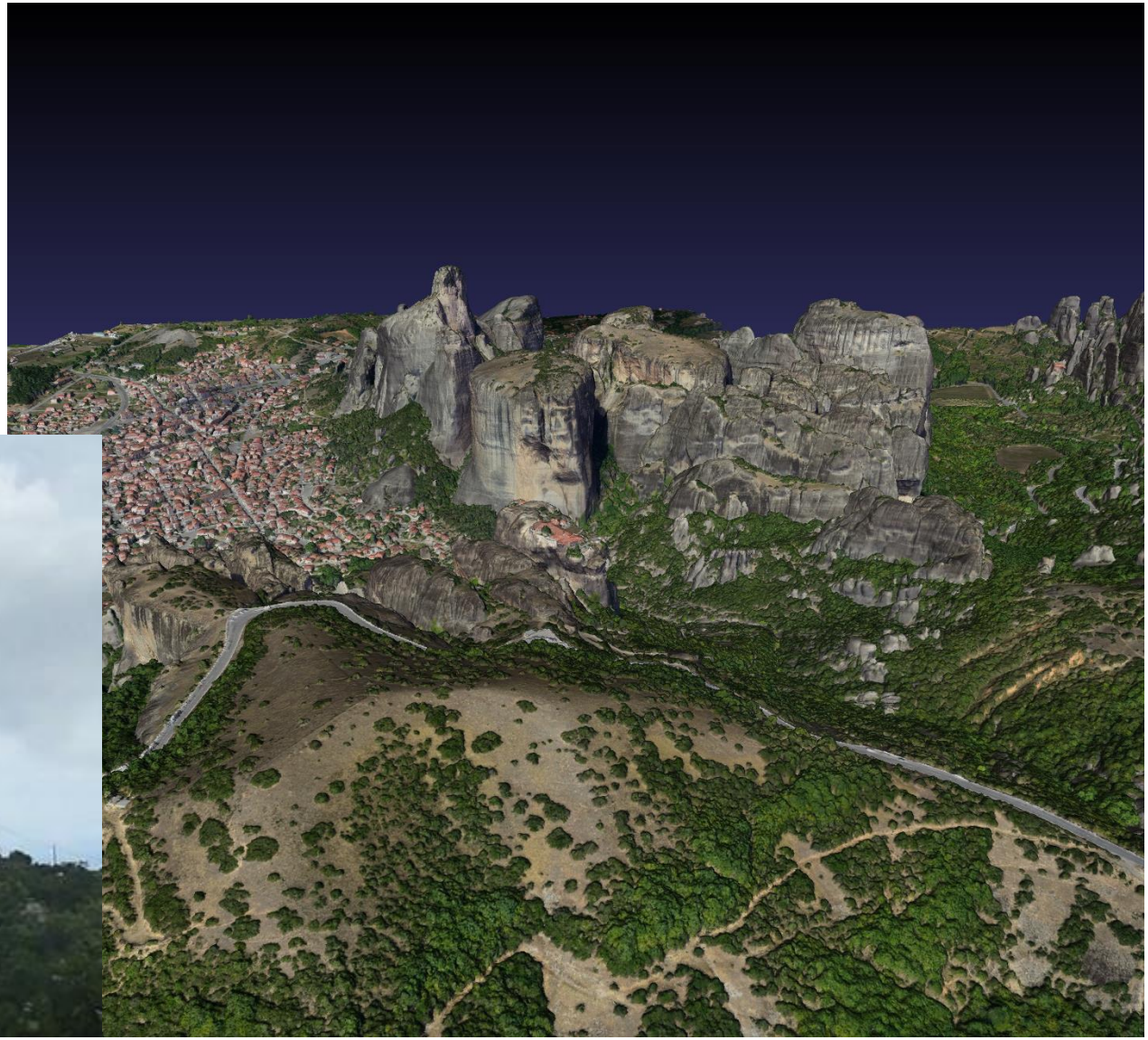
**“STABLE”, http://www.stable-project.eu : Combining structural stability models, damage assessment simulation tools, advanced remote sensing, in-situ monitoring technologies, geotechnics and cadastral data sets with WebGIS application, STABLE is trying to preserve our Heritage.**
**- “RESEARCH”, https://www.re-se-arch.eu/ : (REmote Sensing techniques for ARCHaeology) aims at testing risk assessment methodology using an integrated system of documentation and research in the fields of archaeology and environmental studies. Introduce a strategy and select most efficient tools for risk assessment and harmonization of data, criteria, and indicators, to be used to assess and monitor the impact of environmental changes on tangible cultural heritage assets. The project addresses the design and development of a multi-task thematic platform, combining advanced remote sensing technologies with GIS application for mapping and long-term monitoring of archaeological heritage in order to identify changes due to environmental factors, climate change, and anthropic pressures.**

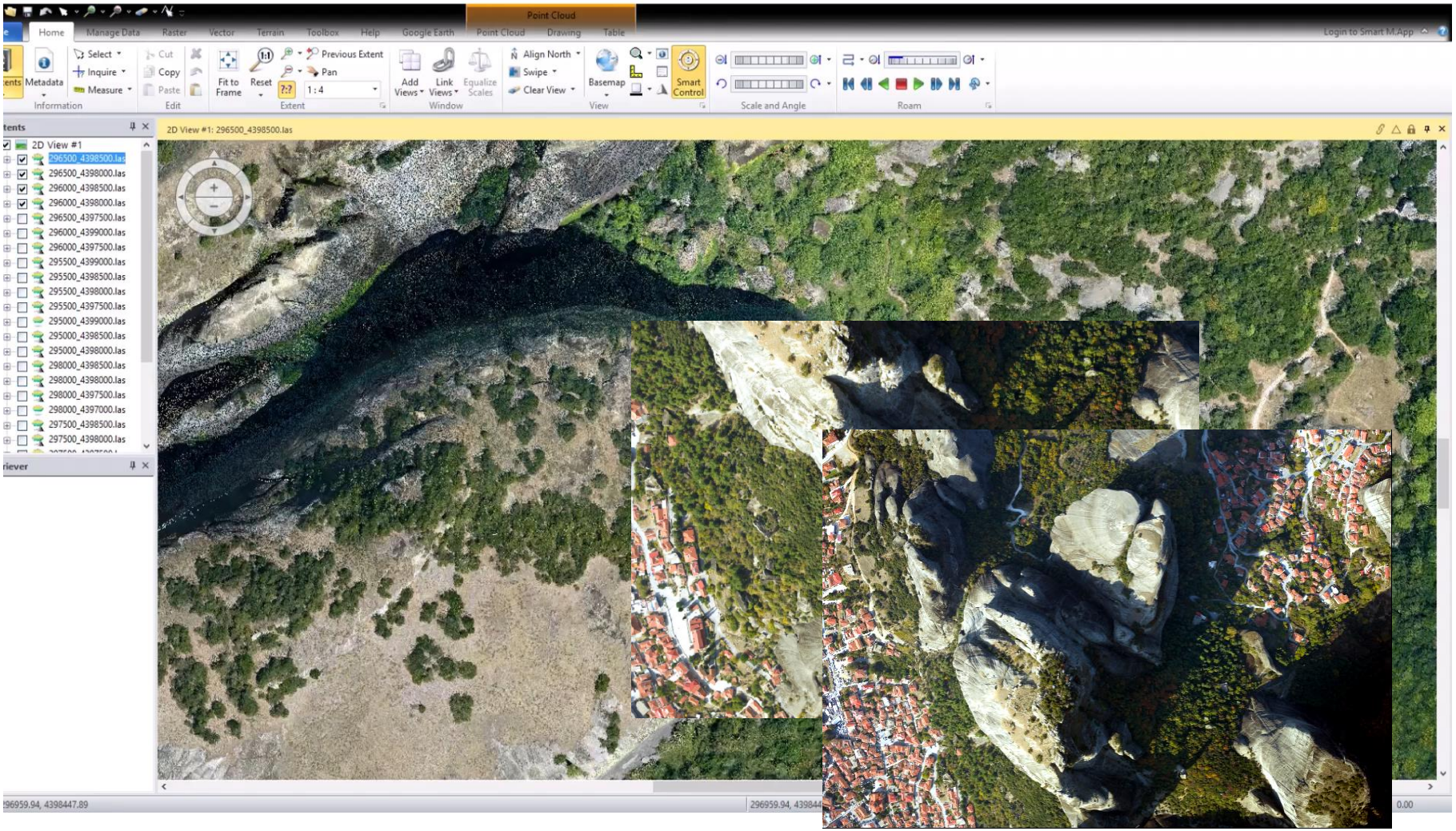
# METEORA R&D Project

Ευρωπαϊκή Ένωση
Ευρωπαϊκό Ταμείο Περιφερειακής Ανάπτυξης
ΕΠΑνΕΚ 2014-2020
ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΠΡΟΓΡΑΜΜΑ
ΑΝΤΑΓΩΝΙΣΤΙΚΟΤΗΤΑ ΕΠΙΧΕΙΡΗΜΑΤΙΚΟΤΗΤΑ ΚΑΙΝΟΤΟΜΙΑ
ΕΣΠΑ 2014-2020
ανάπτυξη - εργασία - αλληλεγγύη
Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης

ΣΥΣΤΗΜΑ ΠΟΛΥΕΠΙΠΕΔΗΣ ΤΕΚΜΗΡΙΩΣΗΣ ΘΡΗΣΚΕΥΤΙΚΩΝ ΤΟΠΩΝ και ΙΣΤΟΡΙΚΩΝ ΣΥΜΠΛΕΓΜΑΤΩΝ
ΑΚΡΩΝΥΜΙΟ: ΜΕΤΕΩΡΑ
ΜΕΤΕΩΡΑ

- **METEORA is an R&D project started in August 2018 with a total lifespan of 36 months**
- **METEORA is funded from Greek and EU's resources**
- **The objective of METEORA project is to create an easy-to-use digital platform for multiple applications and potential users, that will support an interactive Information System for a multi-dimensional documentation of Cultural Heritage sites**
- **The case study area for the implemented digital platform will be a part of the Historic Holy Meteora region in Central Greece**

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Manage Data
Raster
Vector
Terrain
Toolbox
Help
Google Earth
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Drawing
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Cut
Copy
Paste
Metadata
Information
Edit
Fit to Frame
Reset
Previous Extent
Pan
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Extent
Add Views
Link Views
Equalize Scales
Window
Align North
Swipe
Clear View
View
Basemap
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Scale and Angle
Roam
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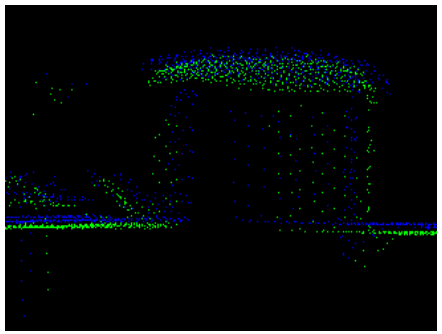

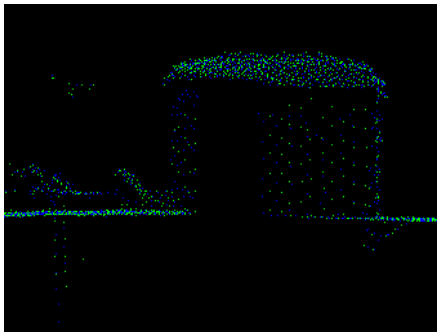

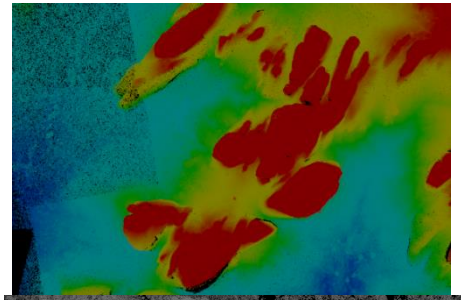

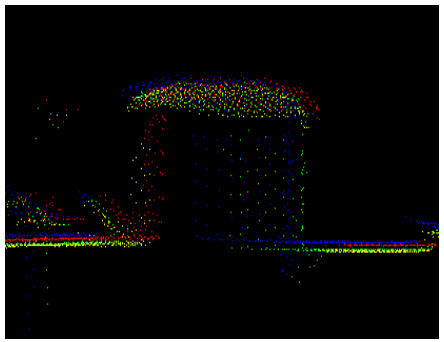

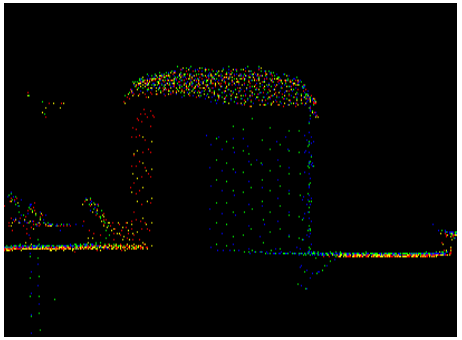

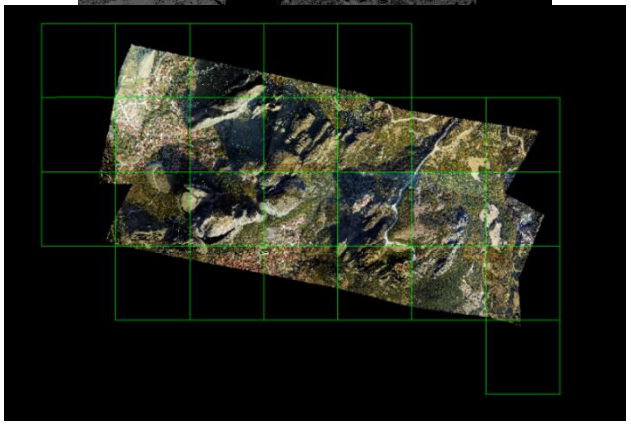

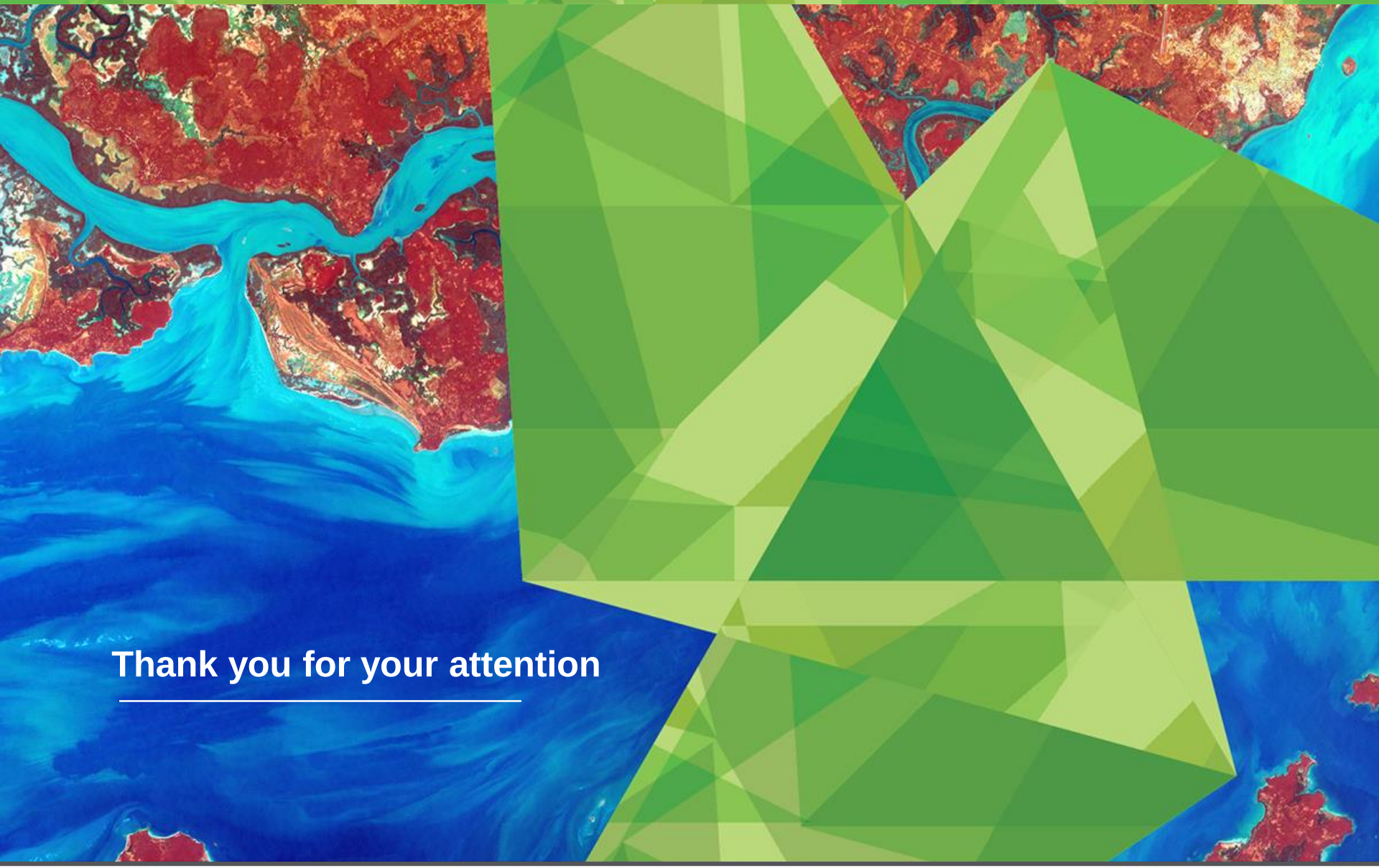
Thank you for your attention