EUROPEAN UNION
SATELLITE CENTRE
Analysis for decision making

GIS IN THE EUROPEAN UNION

The importance of GIS technology as an effective tool to support European Union defence and security priorities.

10 November 2016
Adriano Baptista
Head of Operations Division
Adriano.Baptista@satcen.europa.eu

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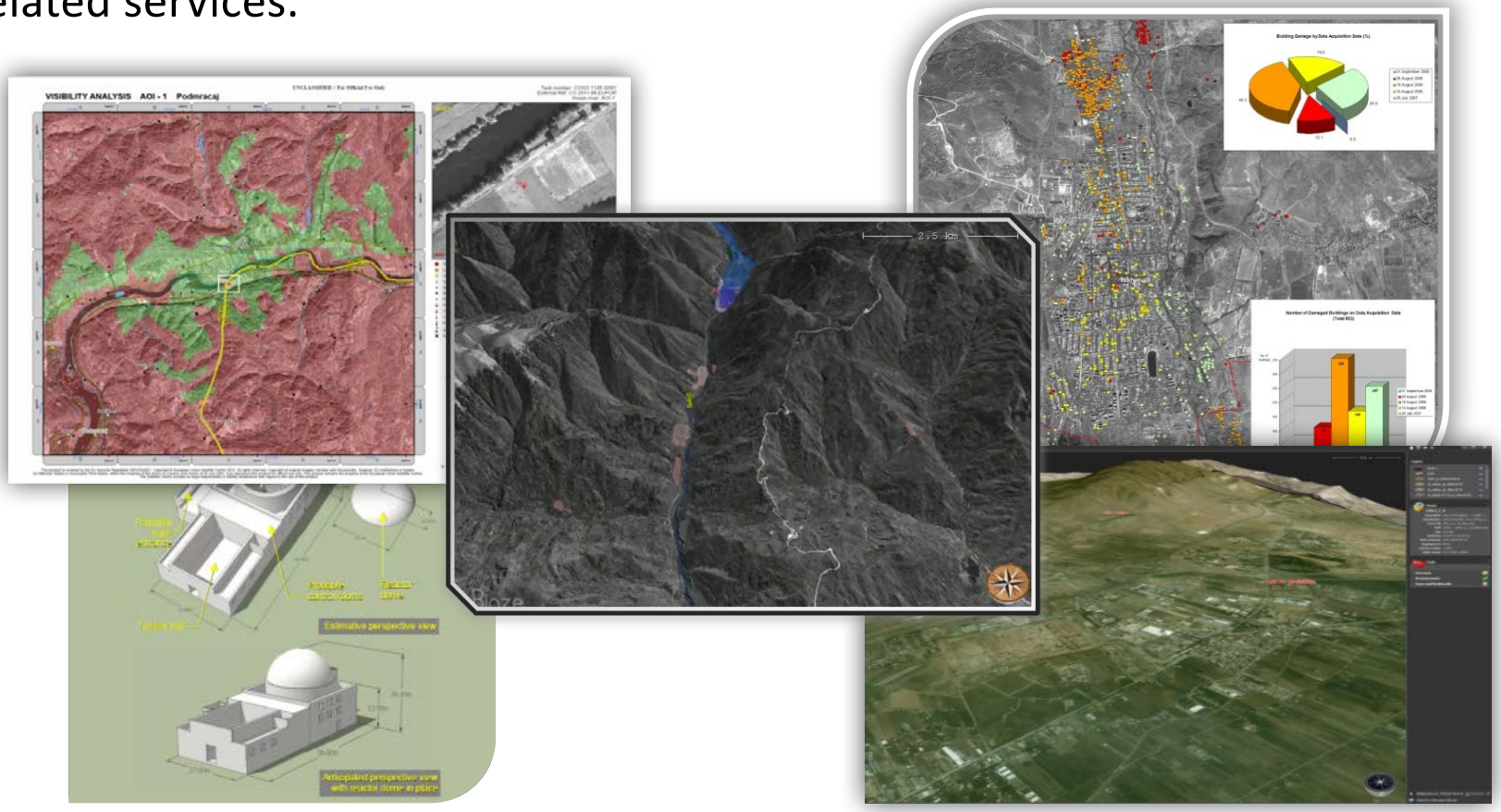
Products and services resulting from the **exploitation of relevant space assets and collateral data**, including satellite and aerial imagery, and related services.



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New imagery data enhances the possibilities for imagery Exploitation and Analysis

Increasing number of sensors with better Spatial and Spectral Resolutions imply a challenge to the Image Analysts and GEOINT specialists…

… as they have the possibility, not only to detect, but also to identify features of the terrain and man-made objects that provide more information to feed the analytical process and conclude with specific deductions in order to answer the specific request of the task.

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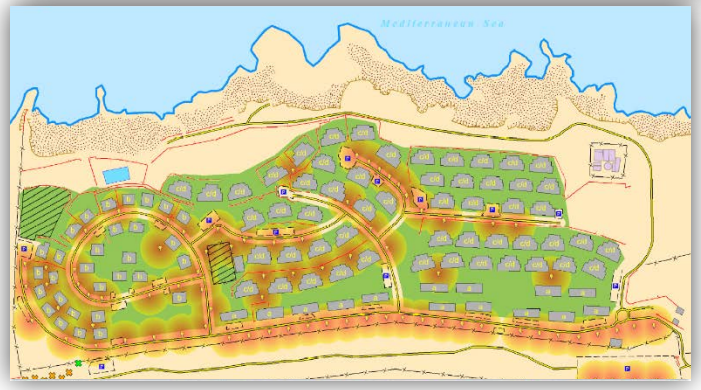
Main Analysis Domains

Military capabilities

Analysis of military activity/deployed forces, battle damage assessment

Contingency planning

Support to evacuation operations, rapid mapping



Humanitarian aid

Refugee camps, state failure and insurgency, man-made and natural disasters

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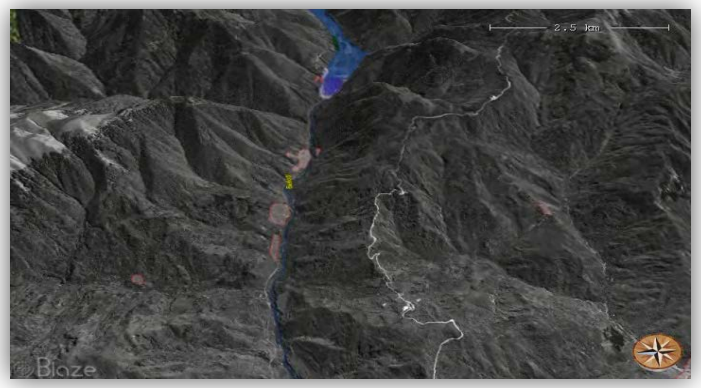
Main Analysis Domains

Weapons of Mass Destruction

Arms control and non-proliferation, chemical weapons

Critical infrastructure

Elements-at-risk, mapping



General crime and security surveillance

Treaty verification, border control, global terrorism, piracy and coastal analysis, drugs/illegal cropping

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GIS and GEOINT

- GIS technology alone cannot solve problems that require additional knowledge and sense-making of multiple geographic entities and their relationships but is a critical infrastructure for GEOINT allowing:
  - Efficient management of geospatial data,
  - Fusion of geospatial data with other forms of intelligence, and
  - advanced analysis

- GEOINT as a discipline requires the use of GIS technology, geospatial reasoning and analysis for finding, merging then processing and analysing very heterogeneous data from numerous and diverse sources (big data approach).

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Users

- Council Bodies – EEAS
- Member States
- European Commission
- Third States
- International Organisations (NATO, UN, OSCE, OPCW)

Field Support

Planning

Decision making

Written Reports

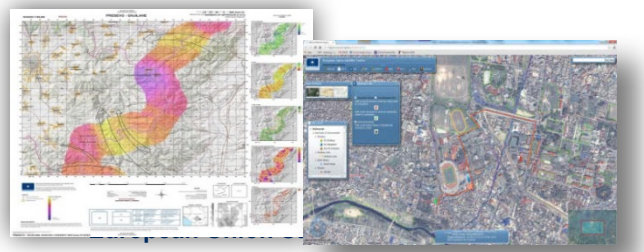
- *Planning operations*
- *Military activity*

Cartography

- *High detail maps*
- *Complex*

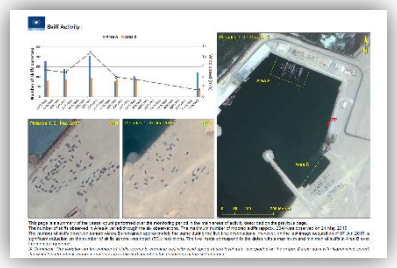
Spatial Analysis

- *Added value GI overlays*



Written Reports

- *Figures*
- *Statistics*
- *Simple*



Support to EU Missions and Operations, EU Agencies and International Organizations

EUMM GEORGIA

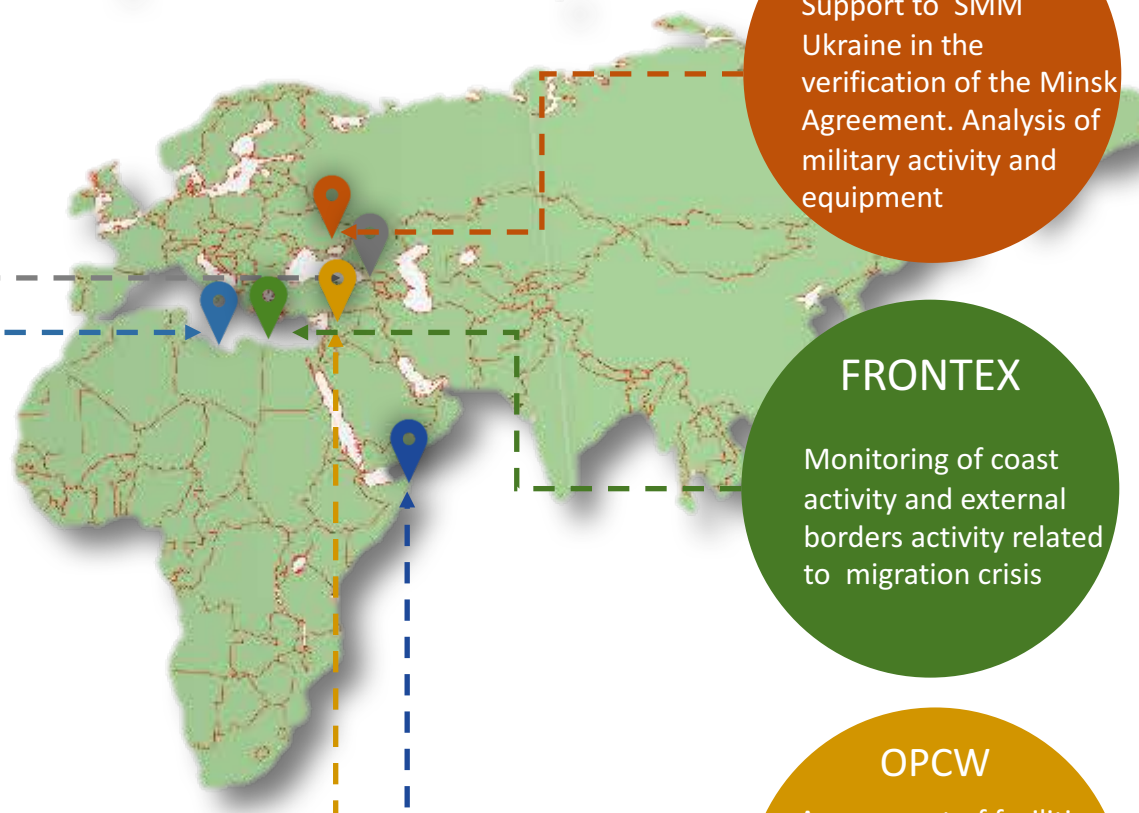
Border monitoring, assessment of military facilities and analysis of military activity

EU NAVFOR MED–SOPHIA

Surveillance and assessment of human smuggling and trafficking networks

EU NAVFOR SOMALIA

Monitoring known Pirate Operating locations, maritime facilities and shoreline activity



OSCE

Support to SMM Ukraine in the verification of the Minsk Agreement. Analysis of military activity and equipment

FRONTEX

Monitoring of coast activity and external borders activity related to migration crisis

OPCW

Assessment of facilities, site surroundings and road network. Support to Fact Finding Teams and verification of Syrian Reports

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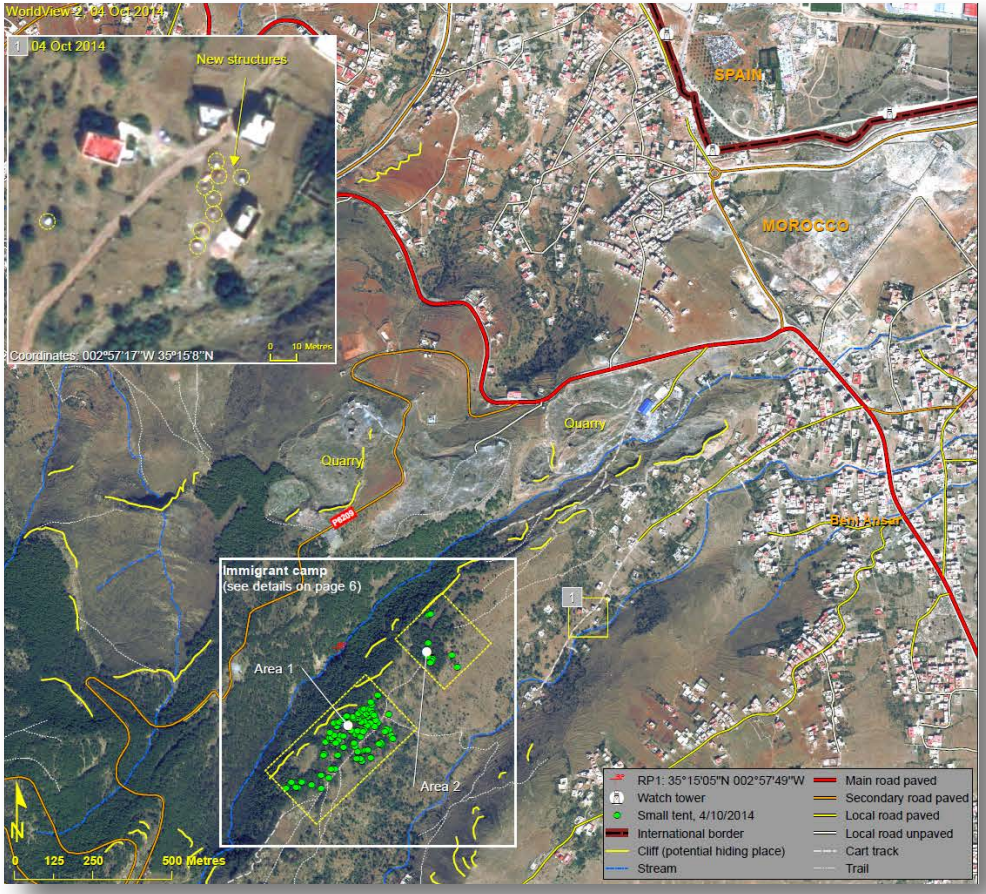
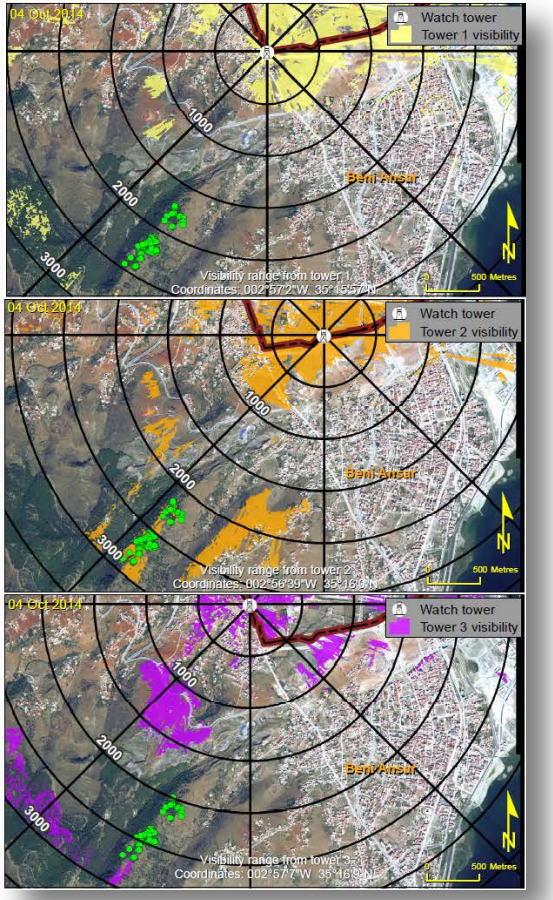
GIS - Illegal Immigration

Location of Immigrant Camp
Estimation of Number of Immigrants



Visibility Analysis



Preparation for Force Deployment

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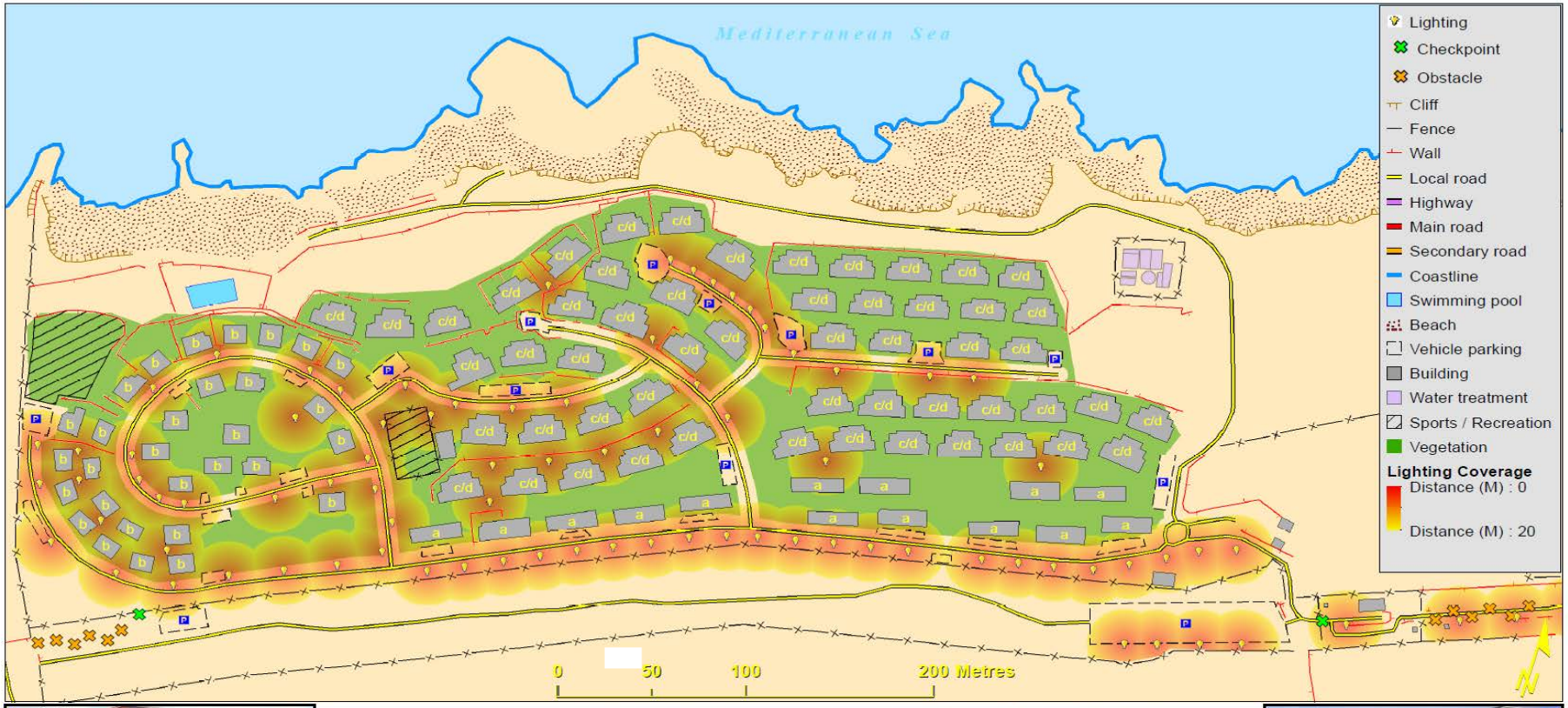
Village Light Coverage Study



The above map displays Oea Family Village as a schematic with the addition of Light Coverage Analysis. Lamp posts were captured where possible and where resolution was clear enough to facilitate this. It is important to note this is an estimate because lamps may vary in brightness due to available power, lighting element type and environmental factors. Distances are calculated on an estimated 10 m projected light radius based upon the general 20 m distance between lamp posts.

Building types are broken down into four categories (a-d). Category (a) are advertised as 265 m.sq and are two floor villas. Category (b) are advertised as 220 m.sq and are also two floor villas. Category (c) is advertised as 270 m.sq, and category (d) are 135 m.sq. both are one floor villas.

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Value of GEOINT to the Decision Maker

Imagery analysis can be used effectively to **understand, monitor, detect, and warn** of a Threat or Crisis

- Identify a specific activity
- Quantify that activity
- Qualify that activity
- Verify events
- Provide irrefutable evidence of events and activity
- Confirm other intelligence information
- Fuse with other intelligence
- Provide timely intelligence products (IMINT and GEOINT)

Imagery analysis enhances situational awareness by

removing doubt to enable informed decision making

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From Products to Services

- Yesterday: PDF
- Today: Full GIS + Metadata for easy ingestion + unclassified web services + tools
- Tomorrow: Full classified 24/7 interoperable services (data + processing). Intelligence + reference data.
- After tomorrow: Big data analytics, automatic change detection and fusion

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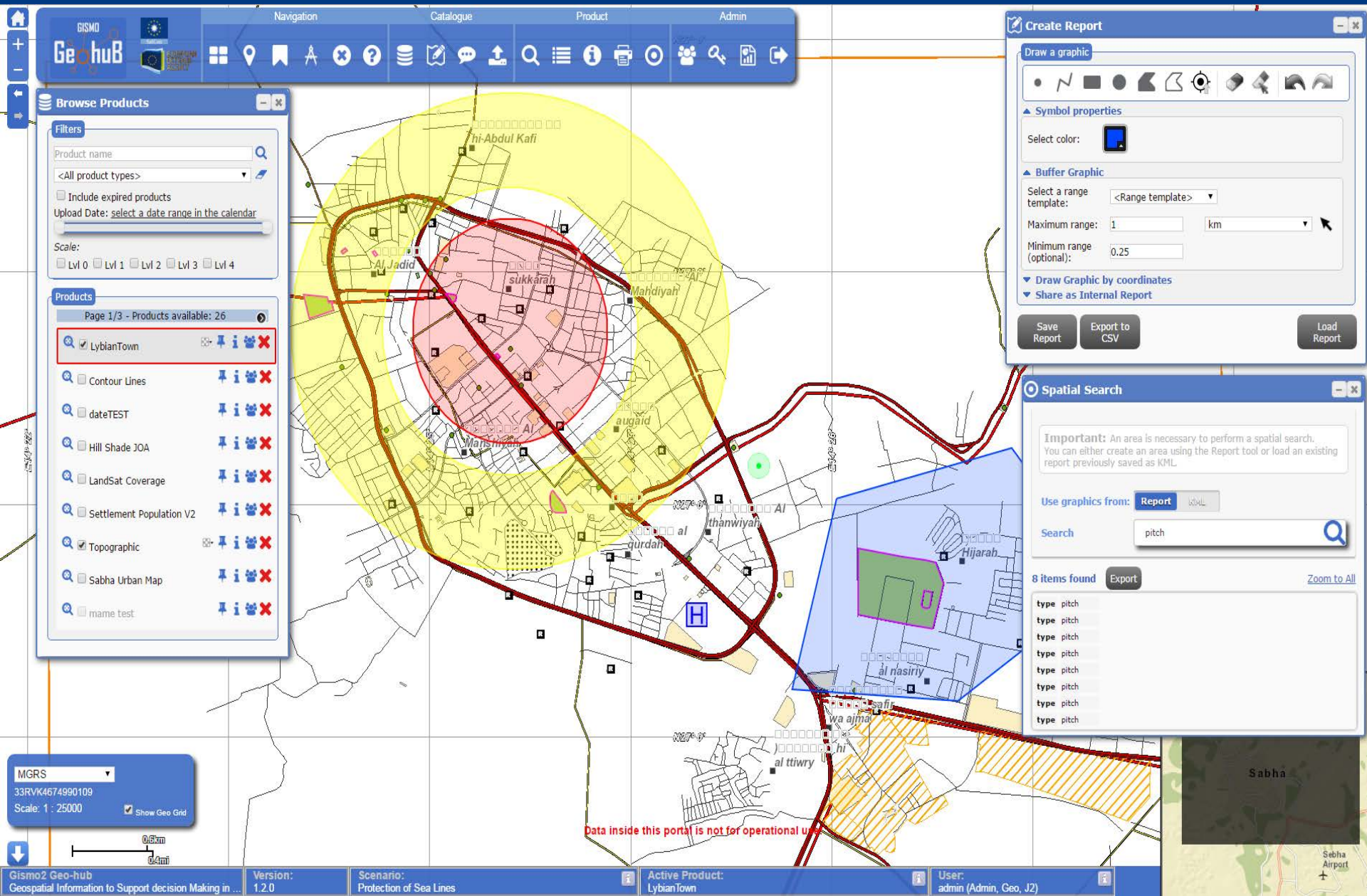
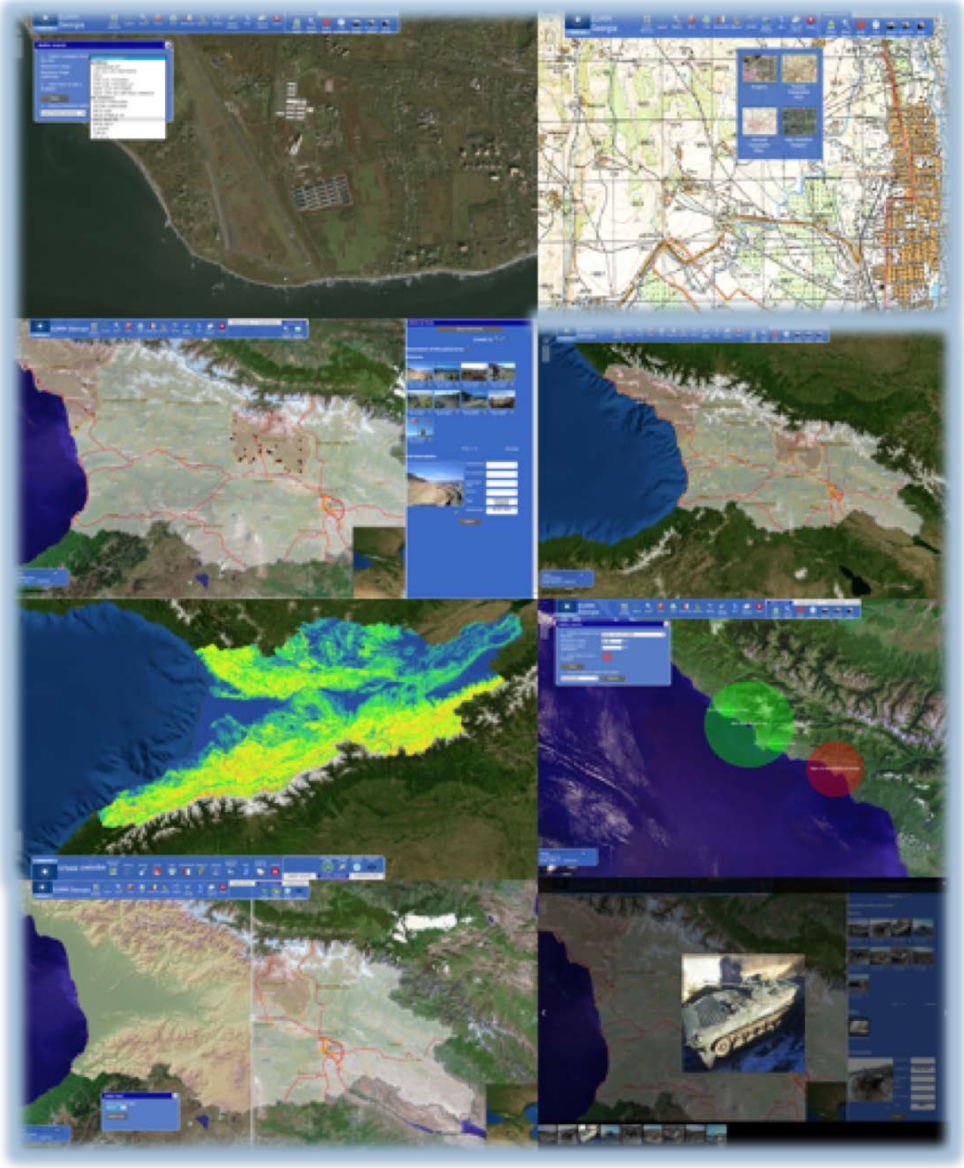
From Products to Services



Geo-Intelligence Portal for EU Missions and Operations

- Deployable, self-contained tool
- Improves the communication, coordination and data flow with supported missions/operations
- Online platform (closed loop at Restricted level) allowing user to consume data and products in a geospatial environment (pdf reports, satellite imagery, maps)
- Set of tools that allows users to generate geospatial intelligence, interacting with the data provided by the SatCen.



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GISMO

- **GISMO** is an initiative from **EDA-SatCen**
- Gap identified by EDA Project Team ISR
- Cooperation EDA-SatCen
- Participation of EUMS and MSs
- 3 phases already, GISMO, GISMO2 and GISMO3

- **GeohuB** is a tool created by GISMO initiative
- Support **sharing** of geospatial **information** at OHQ
- **Facilitate** the **turn-over** of staff at OHQ

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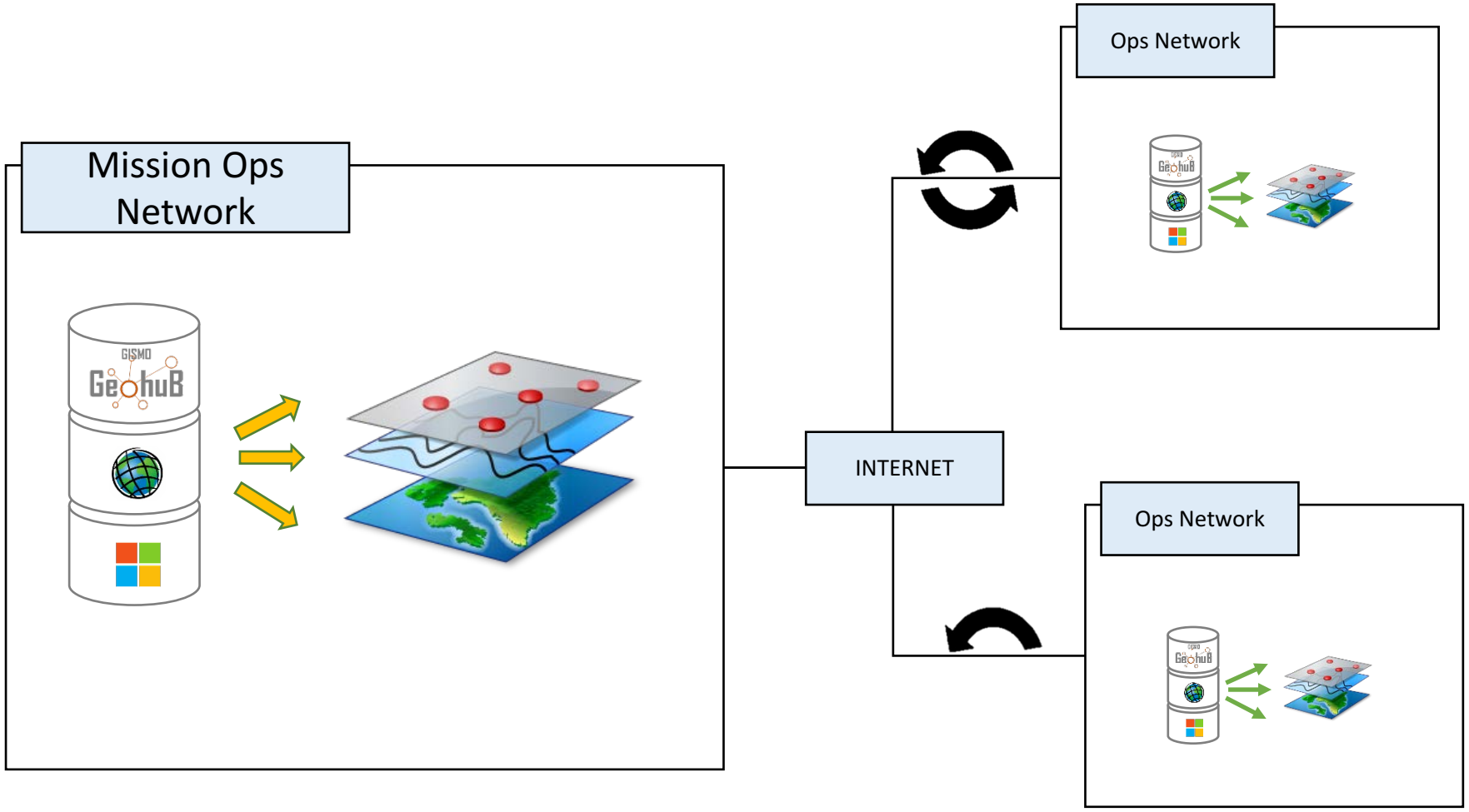
GISMO2



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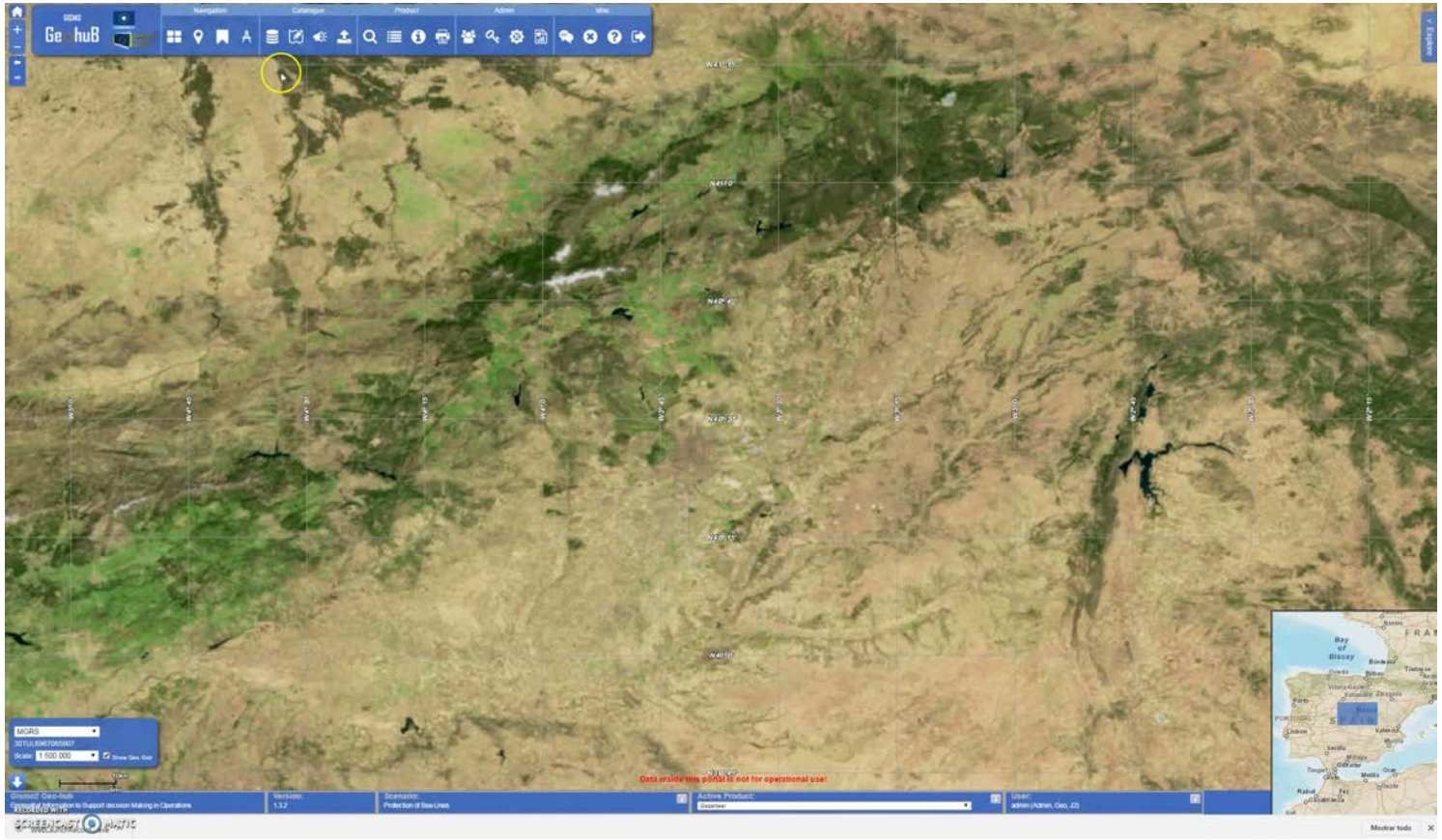
GISMO2

Custom Web-based Viewer | Custom Web-based Editor | Request Managing | Bulk Data Insertion | **Analysis**

- Custom weapon range analysis
- 3D Analysis Tools
- Automatic upload of GeoTagged information
- Collateral data management



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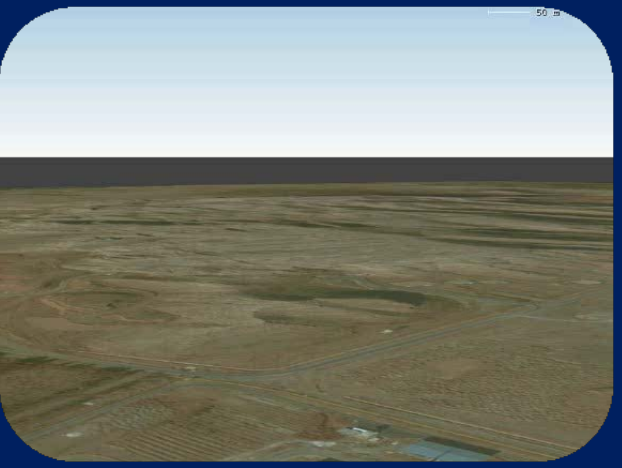
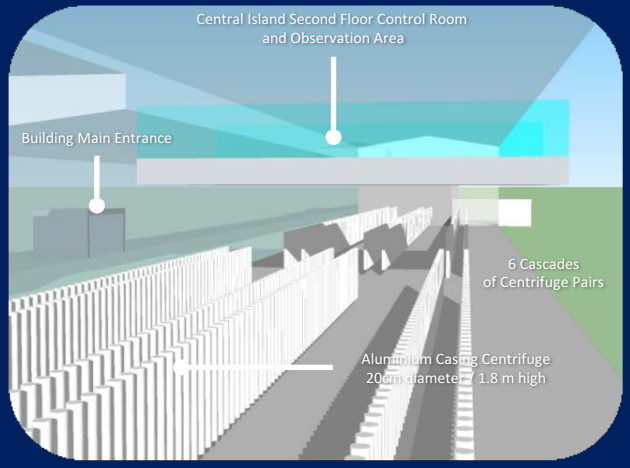
Support of 3D Techniques





DEM

Transcription From document

3D Sketch

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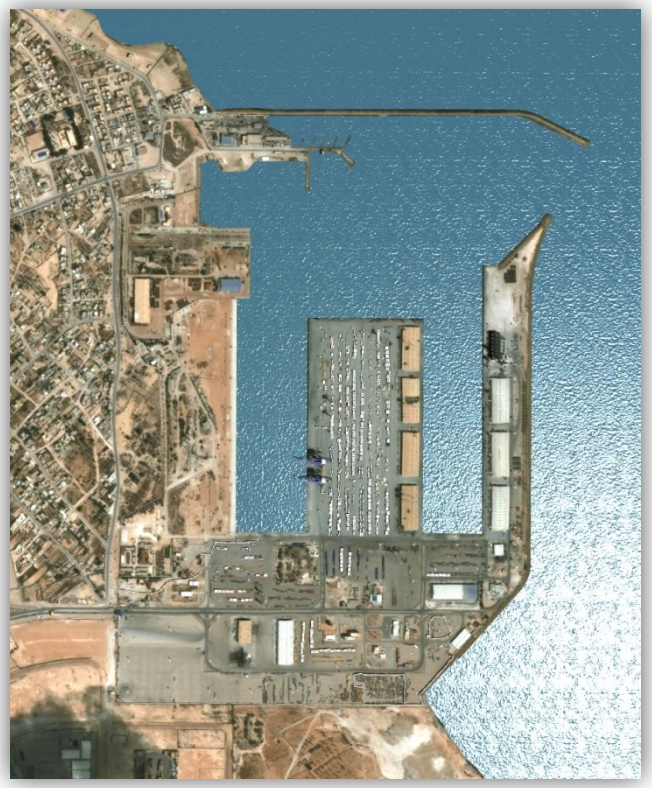
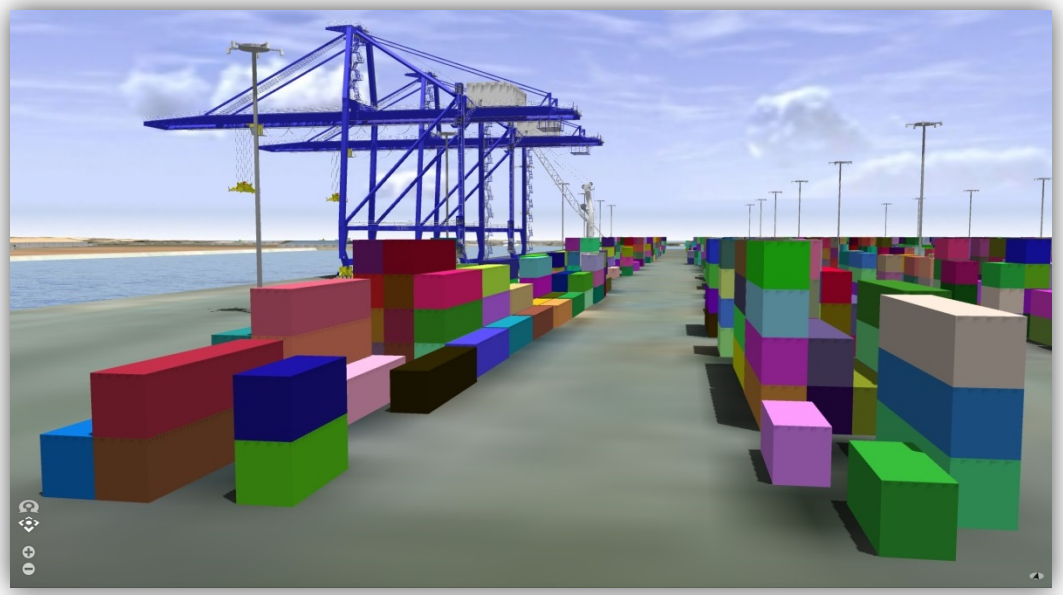
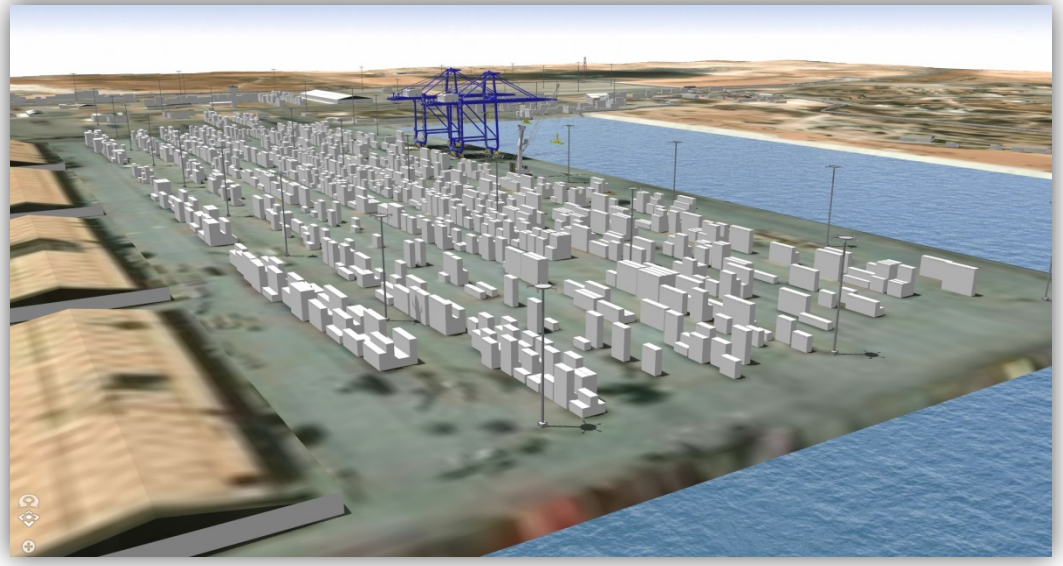
3D Models for Operational Use







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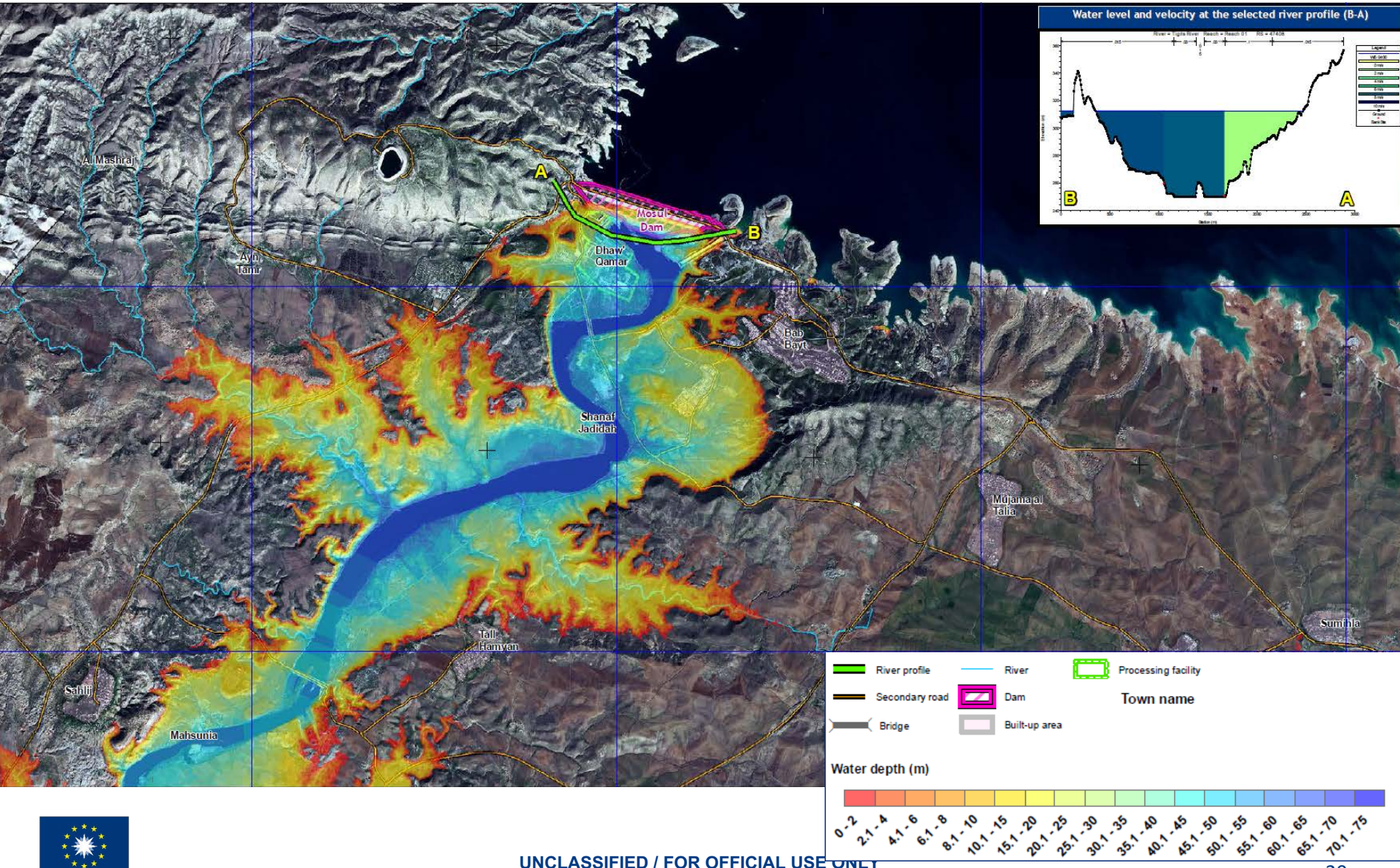
Example of detailed products



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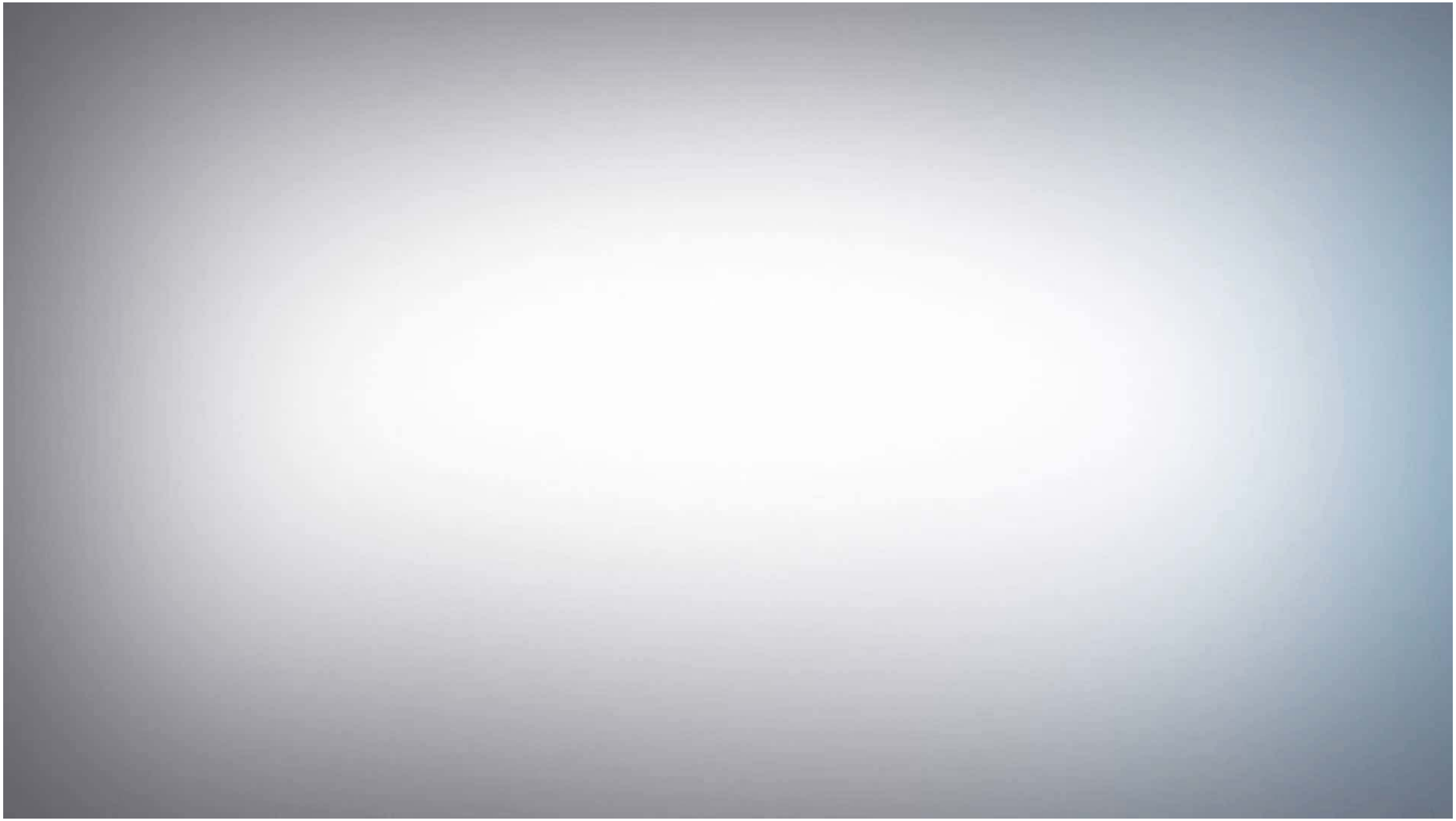
Mosul Dam (IRAQ); Dam Break Simulation Analysis

- VIDEO: From Mosul Dam and to Mosul city -



**Sound included*

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Questions?

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