

Earth Observation and Cultural Heritage:

a Smart match



SPACE FOR TWIN CITIES

The circular cities
seen from space

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Space for Twin Cities | Cultural Heritage

EO data in CH management

- ✈️ Potential of EO for a variety of application in CH management
- ✈️ **‘Space verticals’** have a crucial role to play in the smart city ecosystem as a technological enablers
- ✈️ EO can support local governments to deliver better solutions for management of CH.



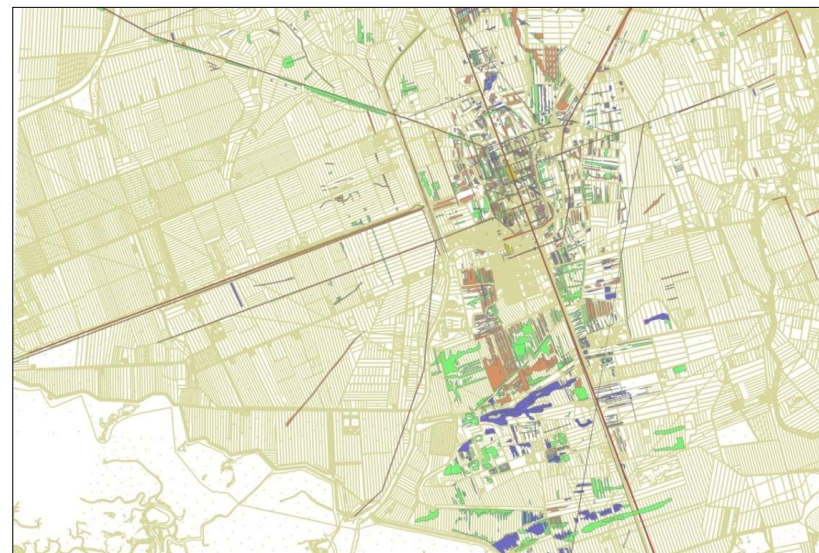
Mapping CH information from EO data

- ✈ Not just a 'pinpointing' activity
- ✈ Nature and attributes of features identified via EO data are normally stored in GIS, handling the complexity of data
- ✈ Looking at relationships between
 - identified object
 - surroundings/landscape
 - other available information.makes possible to decode the 'trace'.



Sharing information

- ✈ From mapping and interpreting traces to...
- ✈ ...'Charts of archeological risk assessment' based on EO remote identifications
- ✈ Traces related to
 - anthropic
 - naturalphenomena.
- ✈ Each trace encapsulates data for re-use of information.



Benefits of the use of EO data

- ✈ Capacity to check large blocks of landscapes in a short timeframe
- ✈ Ability to get a global vision of the landscape (understand connections)
- ✈ EO data Time Series enables to
 - check tentative sites over different seasons and environmental conditions
 - detect changes in status of tentative sites
 - reduce fieldwork by discounting traces that are not validated over >n images
- ✈ Ability to provide crucial information for Landscape Planning and impact assessment.



Sentinel2B-20190419

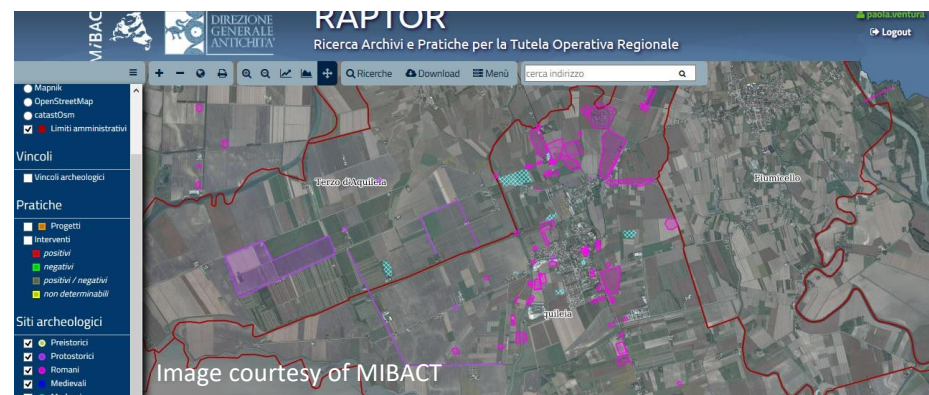
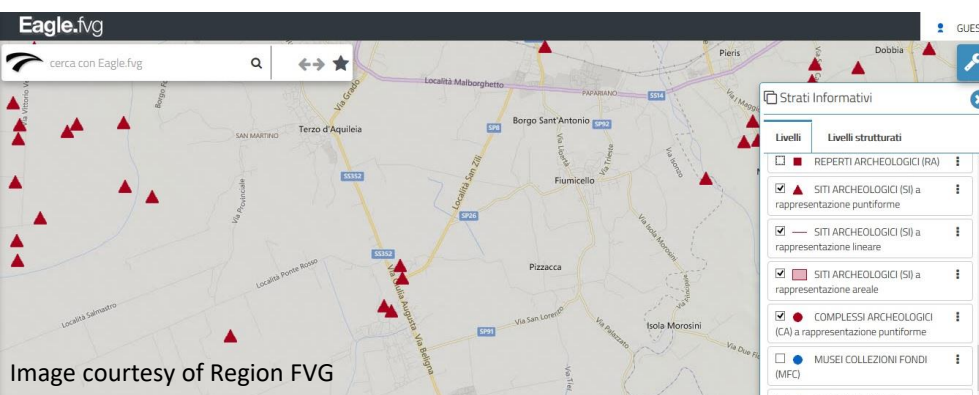
Benefits of the use of EO data

- 📡 Background information for regional/national Landscape Planning
- 📡 Prevents adverse impacts during urbanistic development phases
- 📡 Enables more accurate landscape design and integration of landscape aspects in spatial planning and development processes.



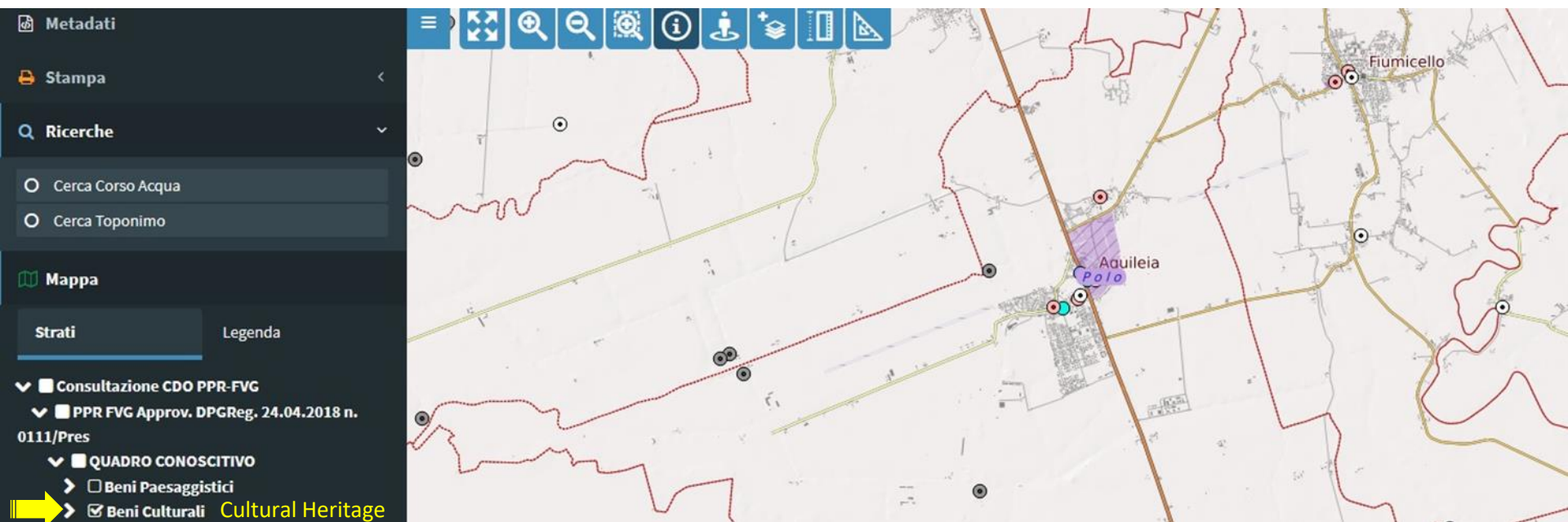
Limits vs benefits for local Governments

- ✈ Lack of dedicated space ('layers') within local existing planning instruments
- ✈ Only 'out of the ground CH' is protected
- ✈ Need to revise current approaches to accommodate vetted information from remote sensing
- ✈ Preventing risks to mitigate consequences (cultural and economic).




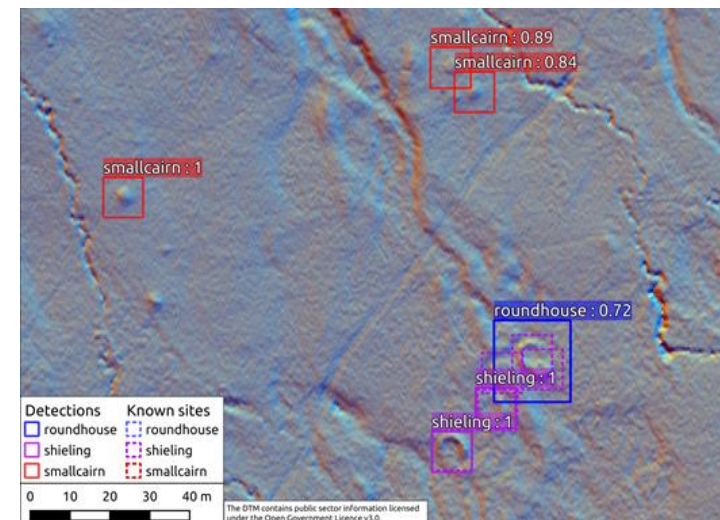
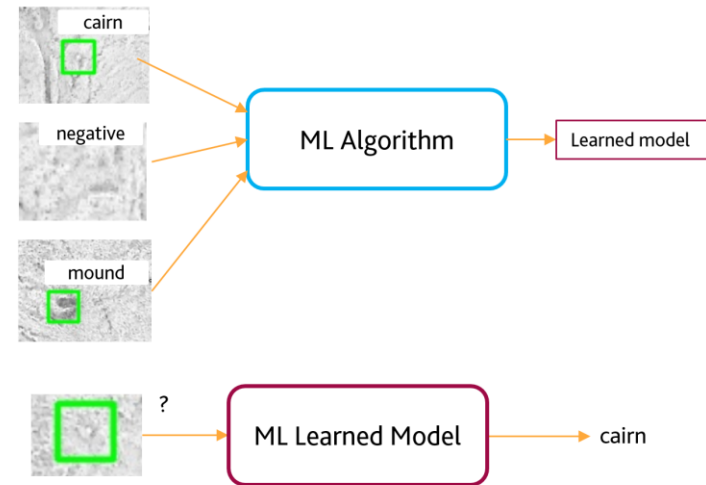
The way forward

- ✈️ Create/improve digital infrastructures for organically integrating EO data
- ✈️ Include detected features in Regional/national Landscape Plans
- ✈️ Promote regional-level systematic ground-truthing.






A fast moving domain

- 🛰️ Rapid advancements via AI
- 🛰️ Detection and monitoring will become easier via automation of landscape monitoring
- 🛰️ Recently launched research project to automate detection of CH features on imagery from Copernicus 
- 🛰️ Predictive modelling based on patterns to support landscape planning.



Credits: I. Kramer/D. Cowley

Sustainable spatial development in EU

-  Need for inclusion of EO data-derived information to be integrated in
 - land use planning
 - landscape planning
 - impact assessment
-  Integrate EO data in landscape decision-making (especially for cultural landscapes)
-  EO data to provide baseline material for professionals in spatial development: planners, designers, architects, engineers and others.

Credits and thanks



RS data courtesy of



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Thanks for the invitation 