UNDERGROUND SCENARIO

Underground Context

- Different infrastructure under the same area
- Unconnected information for the management of assets and systems (damages during maintenance activities)
- Environmental ← impact → infrastructure
- Safety and security

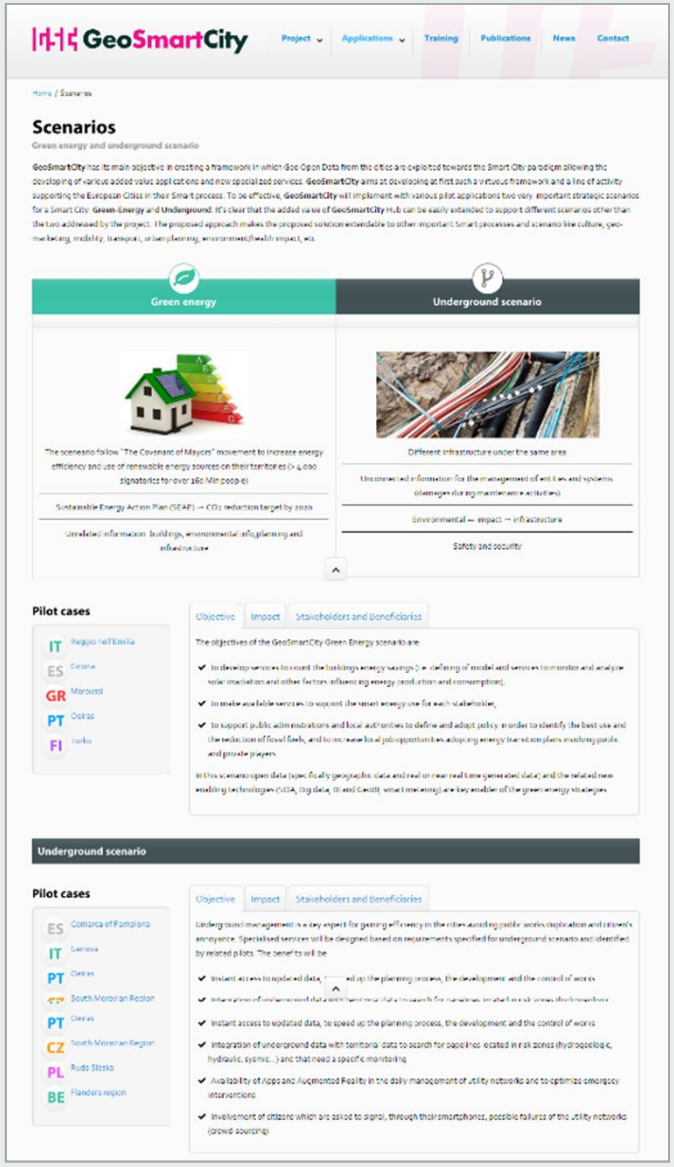
UNDERGROUND Scenario

Objectives: enforce the dialogue between utility companies and Public Administrations to improve the sharing of underground data and the data flow toward and from the Public Administration.

Benefits:

- access to updated data, to speed up the planning process, the development and the control of works
- Integration of underground data with territorial data to search for papelines located in risk zones (hydrogeologic, hydraulic, sysmic…) and that need a specific monitoring
- Availability of Apps and Augmented Reality in the daily management of utility networks and to optimize emergecy interventions
- Involvement of citizens which are asked to signal, through their smartphones, possible failures of the utility networks (crowd-sourcing)

6 pilot cases (ES, IT, PT, BE, CZ, PL)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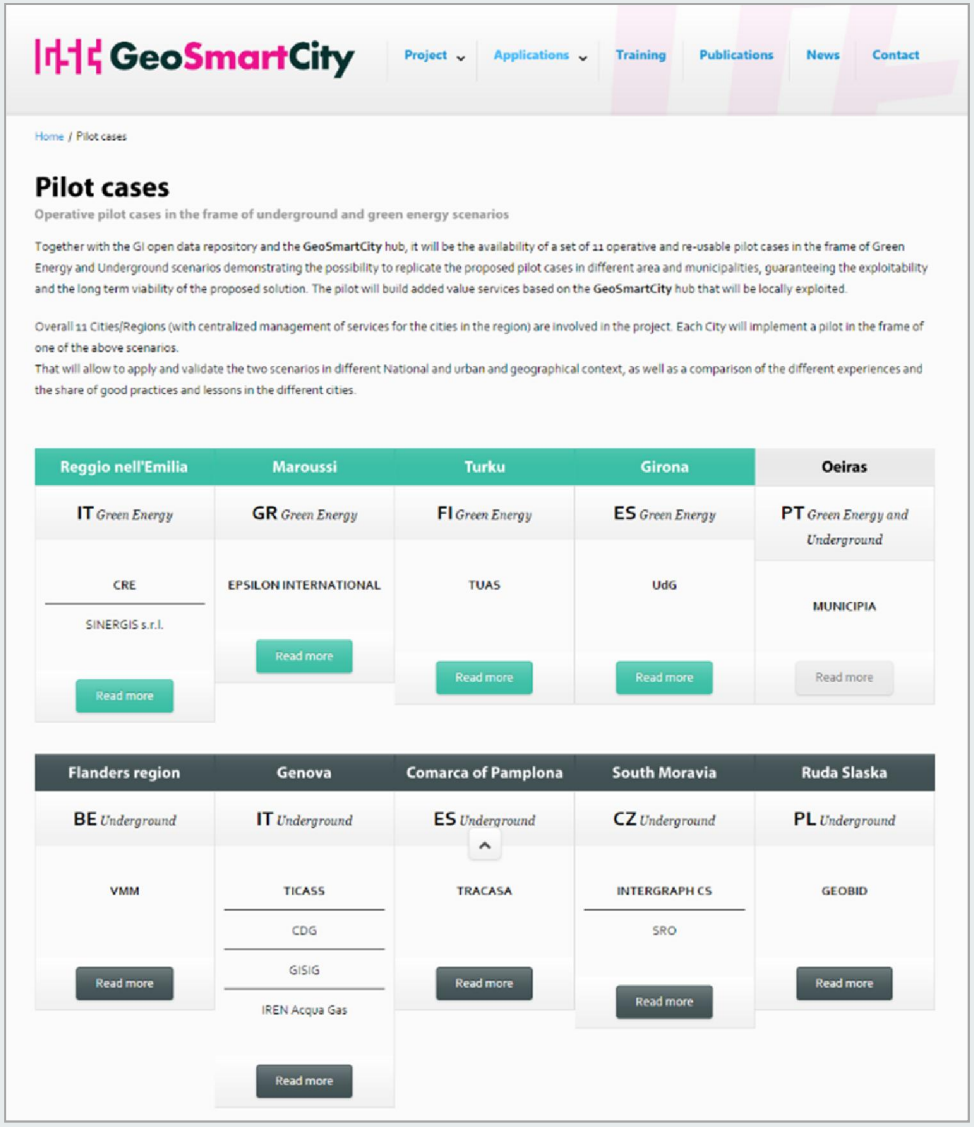
Scenarios
Green energy and underground scenario
Green energy
Underground scenario
Pilot cases
Underground scenario
Pilot cases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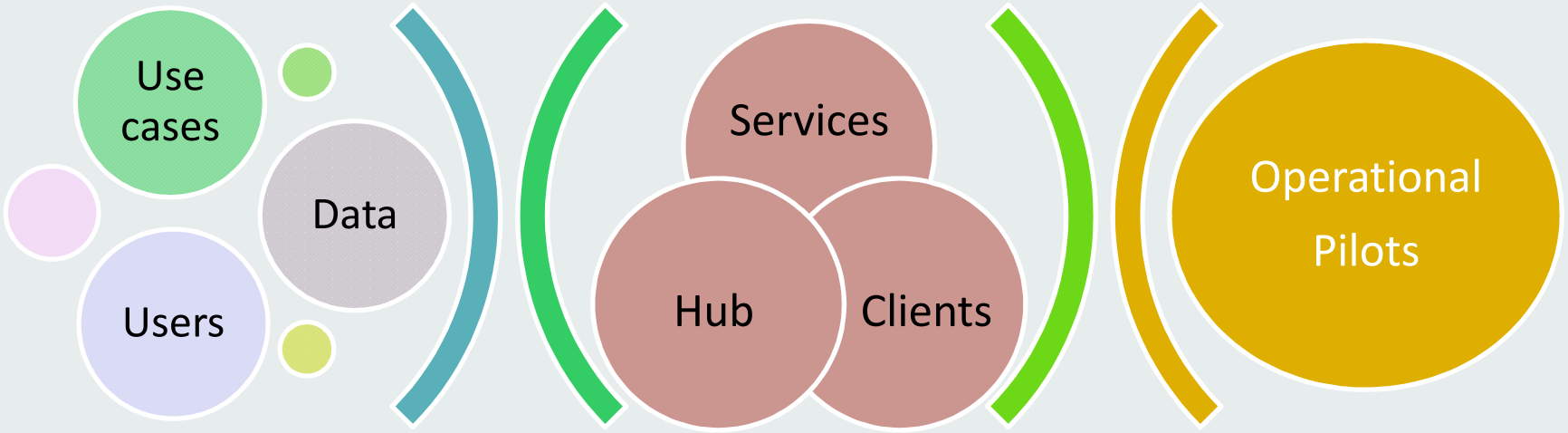
Pilot cases
Operative pilot cases in the frame of underground and green energy scenarios
Together with the GI open data repository and the GeoSmartCity hub, it will be the availability of a set of 11 operative and re-usable pilot cases in the frame of Green Energy and Underground scenarios demonstrating the possibility to replicate the proposed pilot cases in different area and municipalities, guaranteeing the exploitability and the long term viability of the proposed solution. The pilot will build added value services based on the GeoSmartCity hub that will be locally exploited.
Overall 11 Cities/Regions (with centralized management of services for the cities in the region) are involved in the project. Each City will implement a pilot in the frame of one of the above scenarios.
That will allow to apply and validate the two scenarios in different National and urban and geographical context, as well as a comparison of the different experiences and the share of good practices and lessons in the different cities.
Reggio nell'Emilia
Maroussi
Turku
Girona
Oeiras
IT Green Energy
GR Green Energy
FI Green Energy
ES Green Energy
PT Green Energy and Underground
CRE
SINERGIS s.r.l.
EPSILON INTERNATIONAL
TUAS
UdG
MUNICIPIA
Read more
Flanders region
Genova
Comarca of Pamplona
South Moravia
Ruda Slaska
BE Underground
IT Underground
ES Underground
CZ Underground
PL Underground
VMM
TICASS
CDG
GISIG
IREN Acqua Gas
TRACASA
INTERGRAPH CS
SRO
GEOBID

Use Cases and Requirements

PROJECT PHASES



Use case analysis and description

Requirements analysis and description

Technical specifications

Real Deployment

Underground Pilots

Status

- 6 pilot sites in EU
- 12 Use cases
- 53 User/System Requirements

Commonalities

- The improvement of the efficiency of the underground network management (mainly in terms of integration of resources from different actors)
- The citizen involvement (crowdsourcing mobile apps)

Pilot in Pamplona (Spain)

Use cases:

- Consulting real-time data of the water supply and sanitation systems in a GIS viewer.
- Check smart sensor values or incidents in networks

General Objectives:

- They want to improve the water and sewage GIS existing platform:
- Integrating **real-time information** provided by smart sensors through a SCADA system (a computer system for gathering and analyzing real time data)
- Consult a map with values from sensors or incidents from SCADA

Main requirements:

- The SCADA system should be linked to the GIS through standardized protocols
- An interface should enable the user to communicate with the SCADA system to consult the real-time data
- The platform should enable the user to generate thematic maps (geoprocessing)

Pilot in Genova (Italy)

Use cases:

- Underground Cadastre
- Field works
- Underground networks and environmental hazards

General Objectives:

- **Integrate different underground information** layers from different actors (mainly Municipality and Multi-utilities)
- Include **INSPIRE** compliant data in the city underground data management workflow (Harmonisation of gas, water and sewer datasets)
- Use of mobile client for data management
- Use of advanced visualization techniques such as **Augmented Reality**
- Use of a high precision positioning (**GNSS**) device integrated with mobile client for field works
- Intersection between Underground Network and **Environmental Hazard information**

Pilot in Oeiras (Portugal)

Use cases:

- Underground Event Management

General Objectives:

- The Municipality wants to implement an event management platform.
- This platform will take shape in a mobile **crowdsourcing** app for characterization and location of **ruptures in water network**.
- The System shall serve as a Metadata and Open Data provider through Web Services (WMS, WCS, ...).

Main requirements:

- An authenticated user must approve the crowdsourcing inputs to appear on the map.
- The web client should ensure different authentication levels depending on user roles.
- Open data: All information must be available to be used by applications from other stakeholders.

Pilot in South Moravian Region (CZ)

Use cases:

- Mobile application

General Objectives:

- Focus the provision or **volunteered geographic information** (VGI) trough a mobile app to report a problems on the public underground infrastructure.
- Use of mobile clients by municipalities and companies technicians (equipped with innovative visualization features such as **Augmented Reality**) to support the management and update of existing data on the field.

Main requirements:

- Take a picture, determine local position, user comment and send it to appropriate service.
- Read data from dedicated WFS and display them in AR environment.

Pilot in Ruda Śląska (Poland)

Use cases:

•An integrated WebGIS platform giving the ability to verify/update basic information on the underground networks and to share the data in order to clarify the ownership issues.

General Objectives:

•Similar to the Genova case, this pilot also focuses on the **integration and harmonization of the underground network** data coming from the municipality and the Utility companies.
•Data and specialized services will be integrated in existing GIS platform supporting an integrated approach on the management and maintenance of the networks.

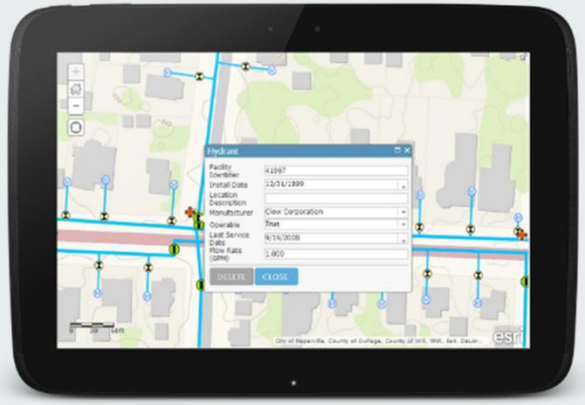
Main requirements:

•Mobile and web clients
•Authenticated access to information and permission roles

Pilot in Flanders Region (Belgium)

Use cases:

- Mobile application for the management of the sewage database
- Crowd-sourcing tool



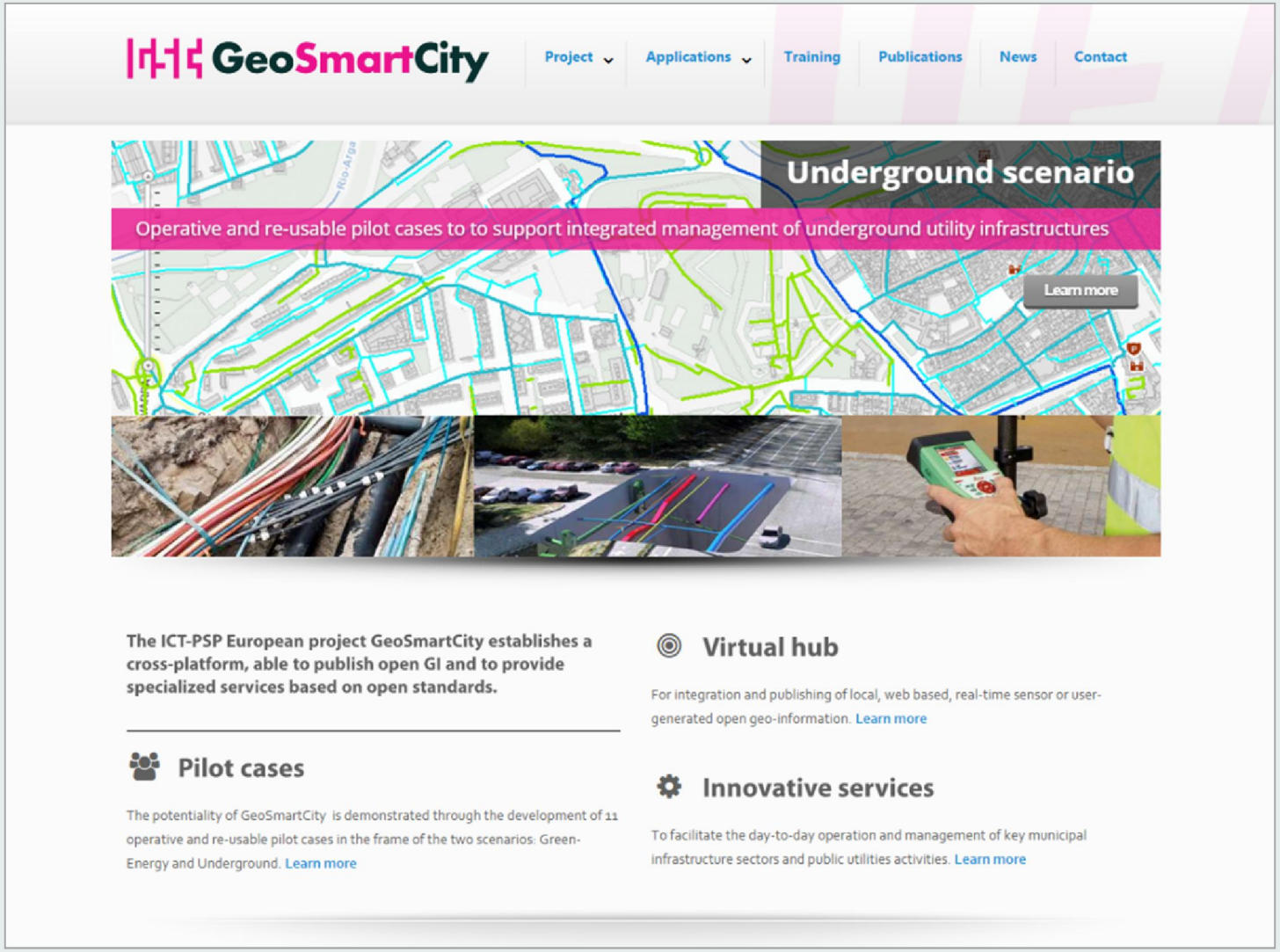
General Objectives:

- Focus on the conformance of the Flanders sewer network data to **INSPIRE** specifications
- Manage sewage network from a **mobile/web client** application
- Integrate in the system a **crowdsourcing** component so the sewage database can be consulted by the public in order to report possible anomalies or remarks.

Main requirements:

- The application must give the opportunity to professionals to enter data, upload different files and to propose changes to geodata.
- The updates (by the users) are live but will only be implemented in the sewage database after validation.

Underground Scenario



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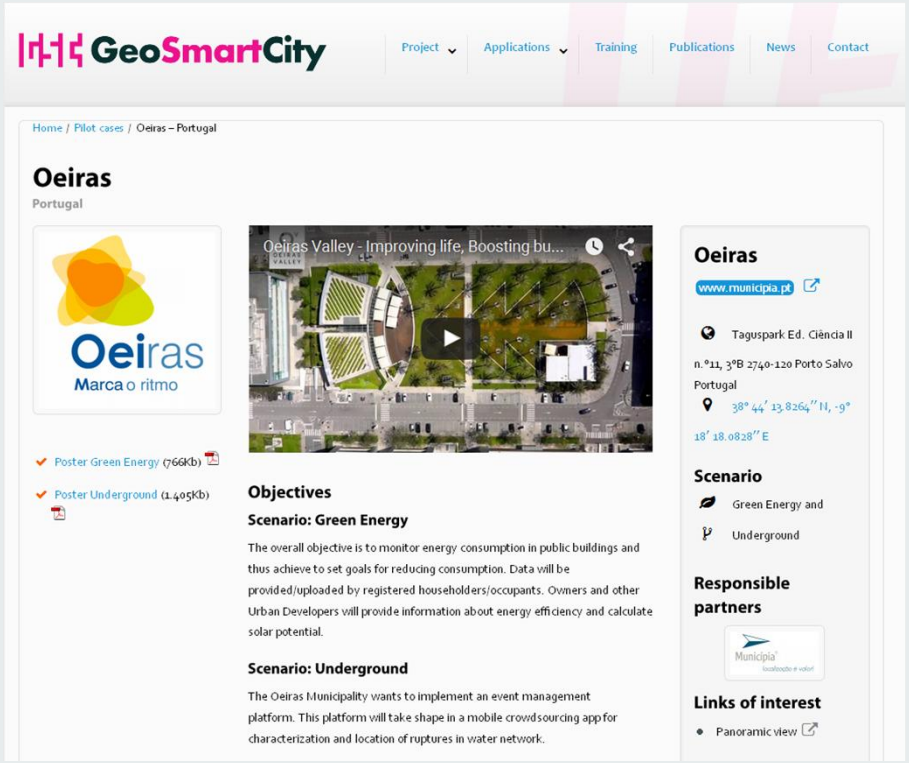

Underground Scenario

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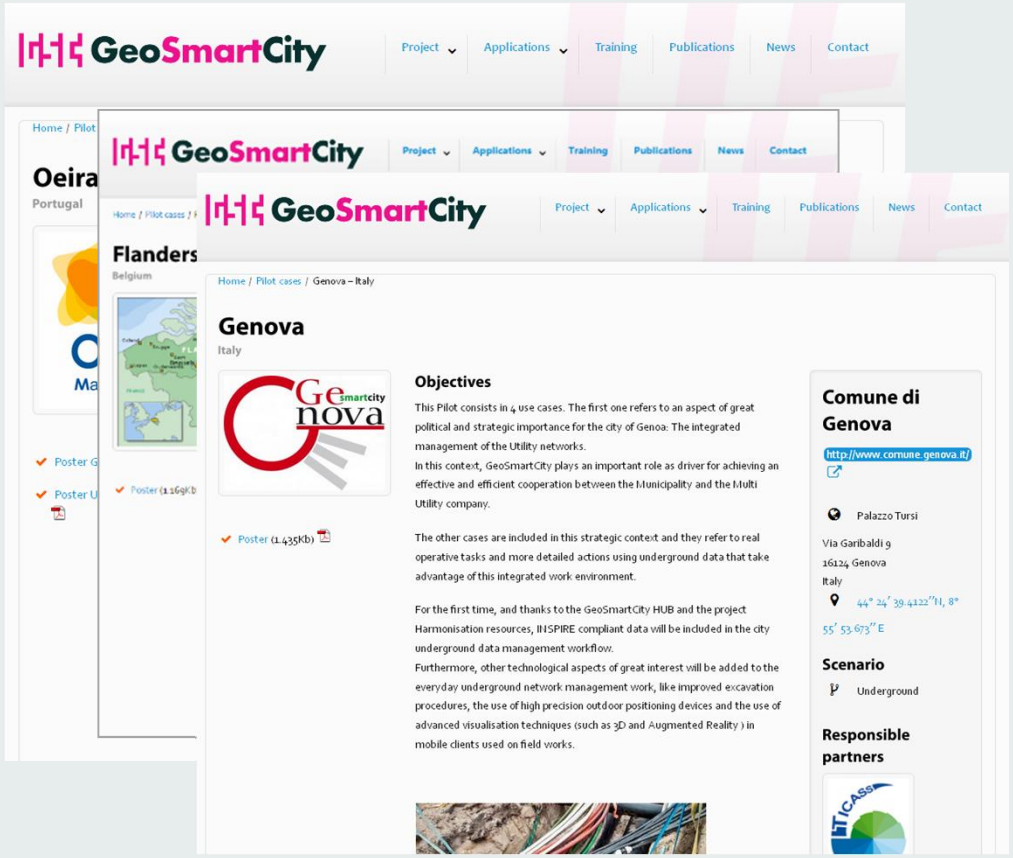

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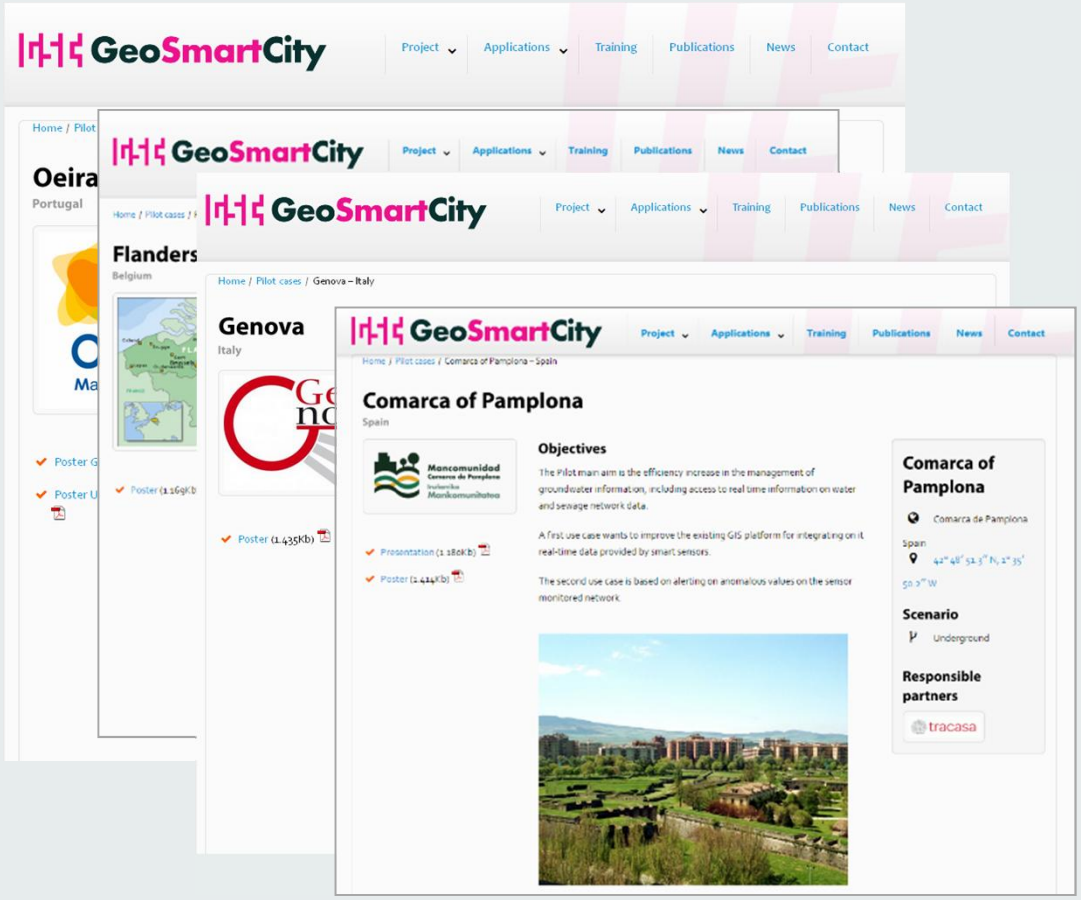

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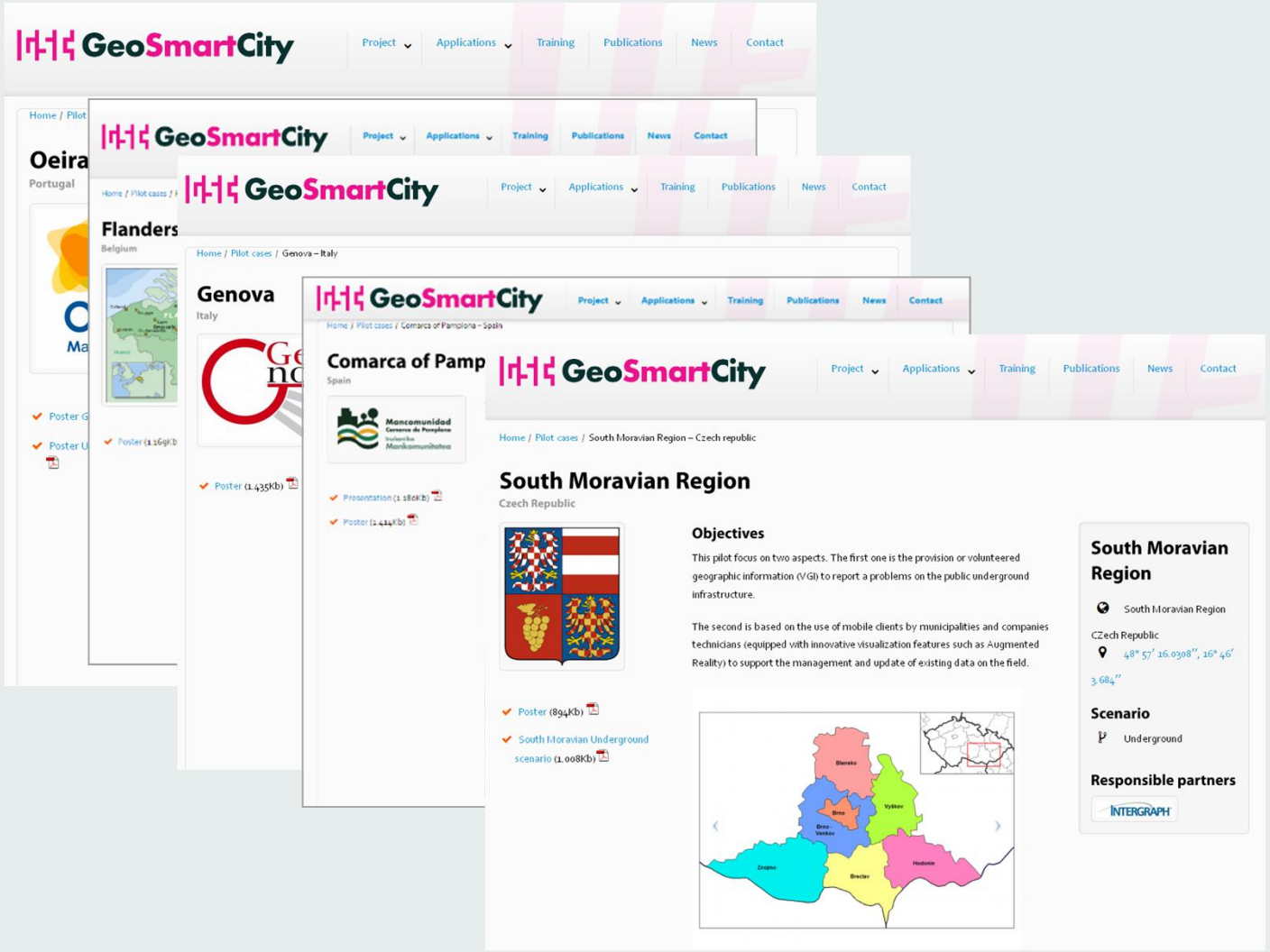

Underground Scenario