GeoSmartCity

open geo-data for innovative services and user applications towards Smart Cities

The GeoSmartCity Portuguese Pilot

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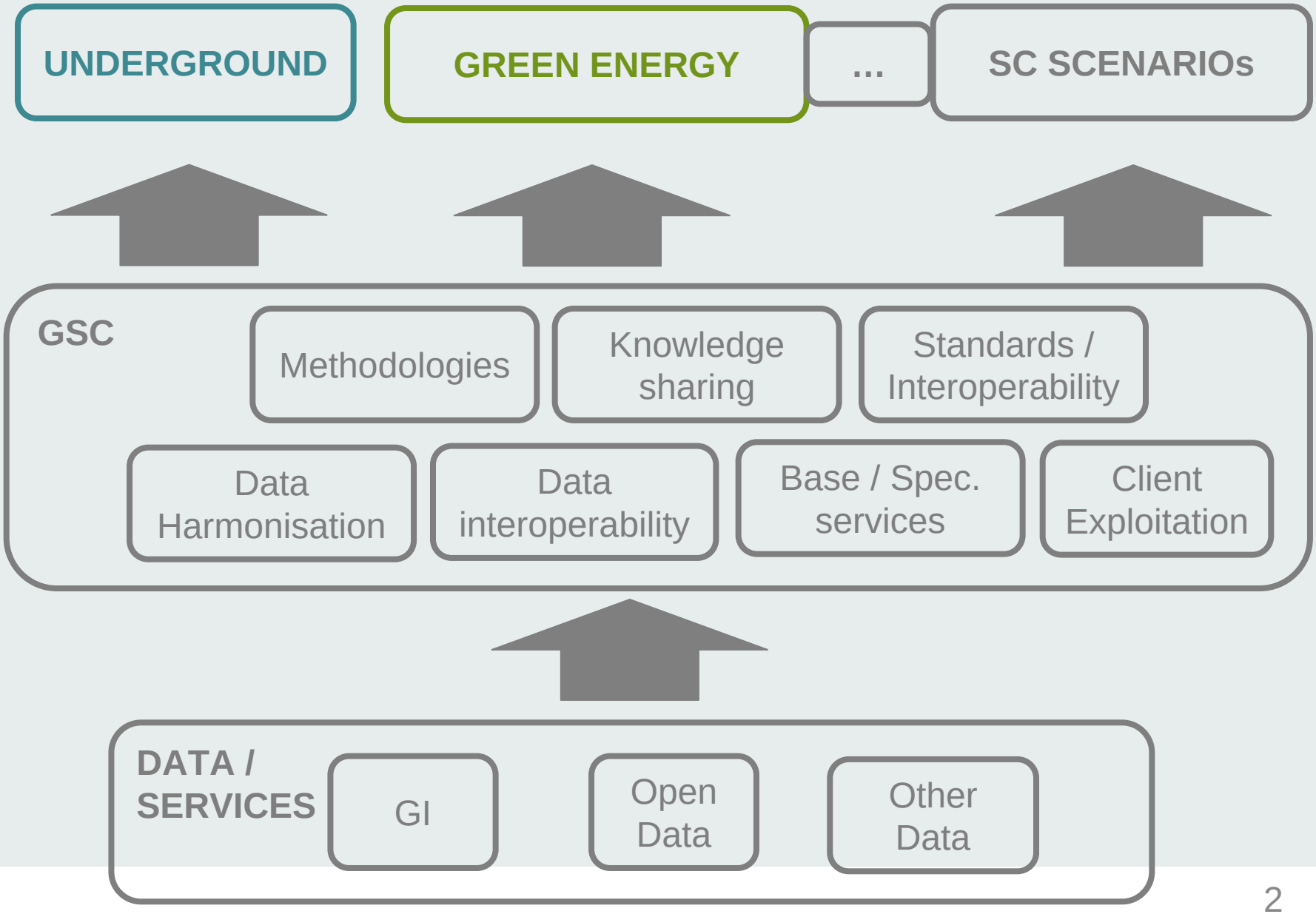
CIP ICT-PSP Project n. 621150

Start date 01-03-2014, duration 36 months

Scenarios


UNDERGROUND
GREEN ENERGY
...
SC SCENARIOs
GSC
Methodologies
Knowledge sharing
Standards / Interoperability
Data Harmonisation
Data interoperability
Base / Spec. services
Client Exploitation
DATA / SERVICES
GI
Open Data
Other Data

Oeiras Pilot

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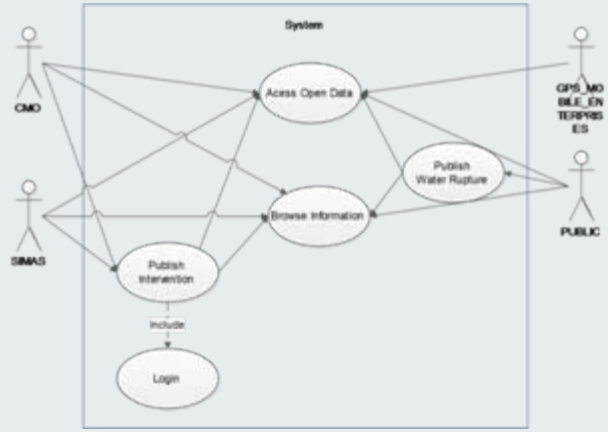
Use Cases Definition

- Green Energy Scenario
  - Urban Sustainable Planning Tool
  - Zero-balance calculation
  - Calculation of energy performance (EPBD class energy) at building level
- Underground Scenario
  - Underground Event Management



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- Green Energy Scenario Specialized Services
  - Estimation of energy performance of buildings
  - Buildings CO2 emissions estimation
  - Solar potential calculation
  - Upload of “future” buildings datasets
  - Zero-balance layer

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- Estimation of energy performance of buildings
  - based on physical/thermal properties
  - using basic attributes (age of construction, building type, height,…)
  - display existing energy certificates
  - communicate new/missing energy certificates
  - The output will be a map (WMS/WFS) representing the performance classification of buildings

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- Estimation of energy performance of buildings

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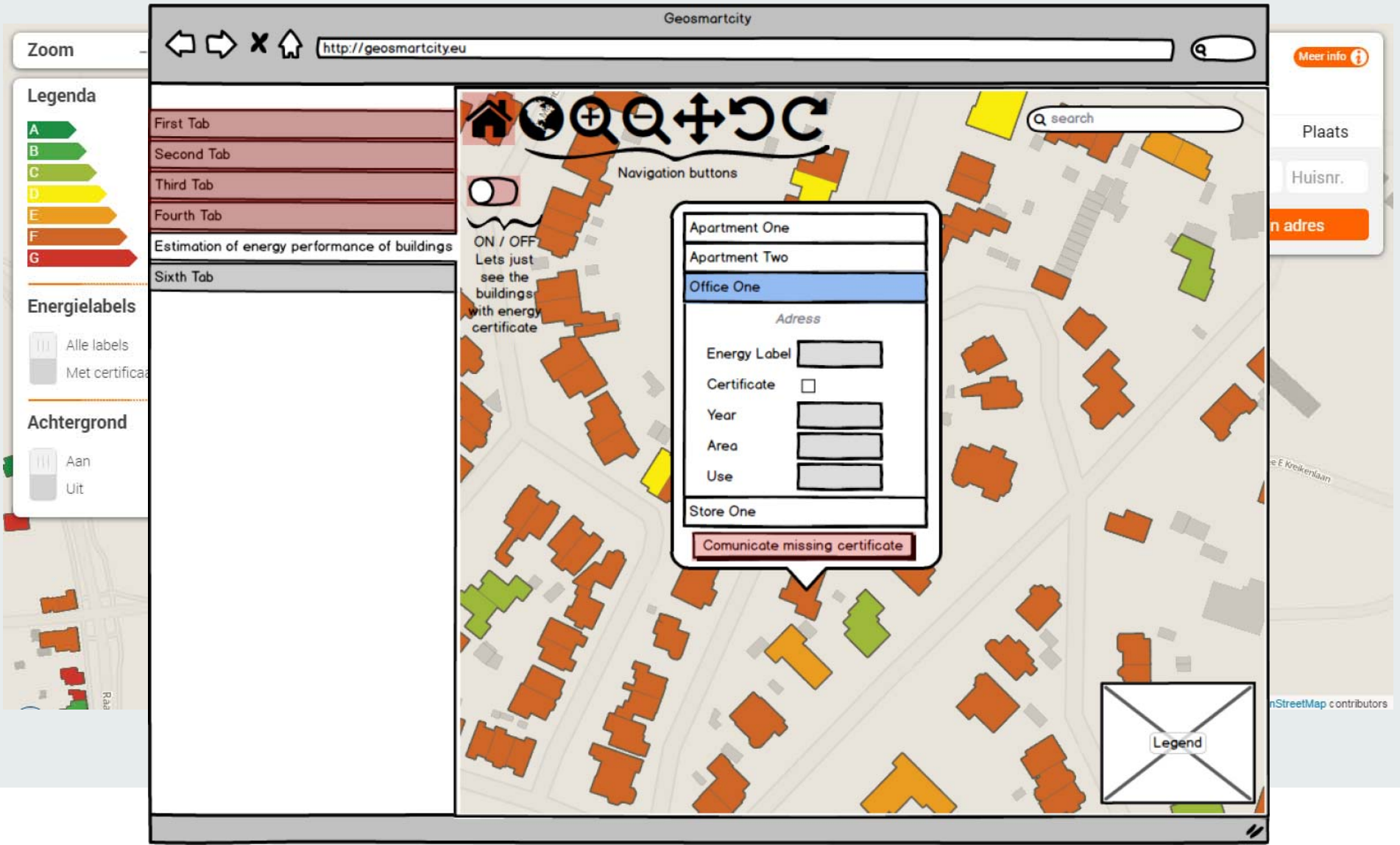
- Estimation of energy performance of buildings



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- Estimation of equivalent tons of CO2 emissions
  - based on an algorithm using input spatial feature (buildings) with attributes either containing:
    - energy performance of buildings, or
    - real energy consumption (amount of energy will be based on annual consumption values, coming from official/authoritative sources)
  - both cases could be also considered, for further benchmark analysis and comparisons
  - the value of the estimated CO2 emissions values may vary during the time

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- Estimation of equivalent tons of CO2 emissions

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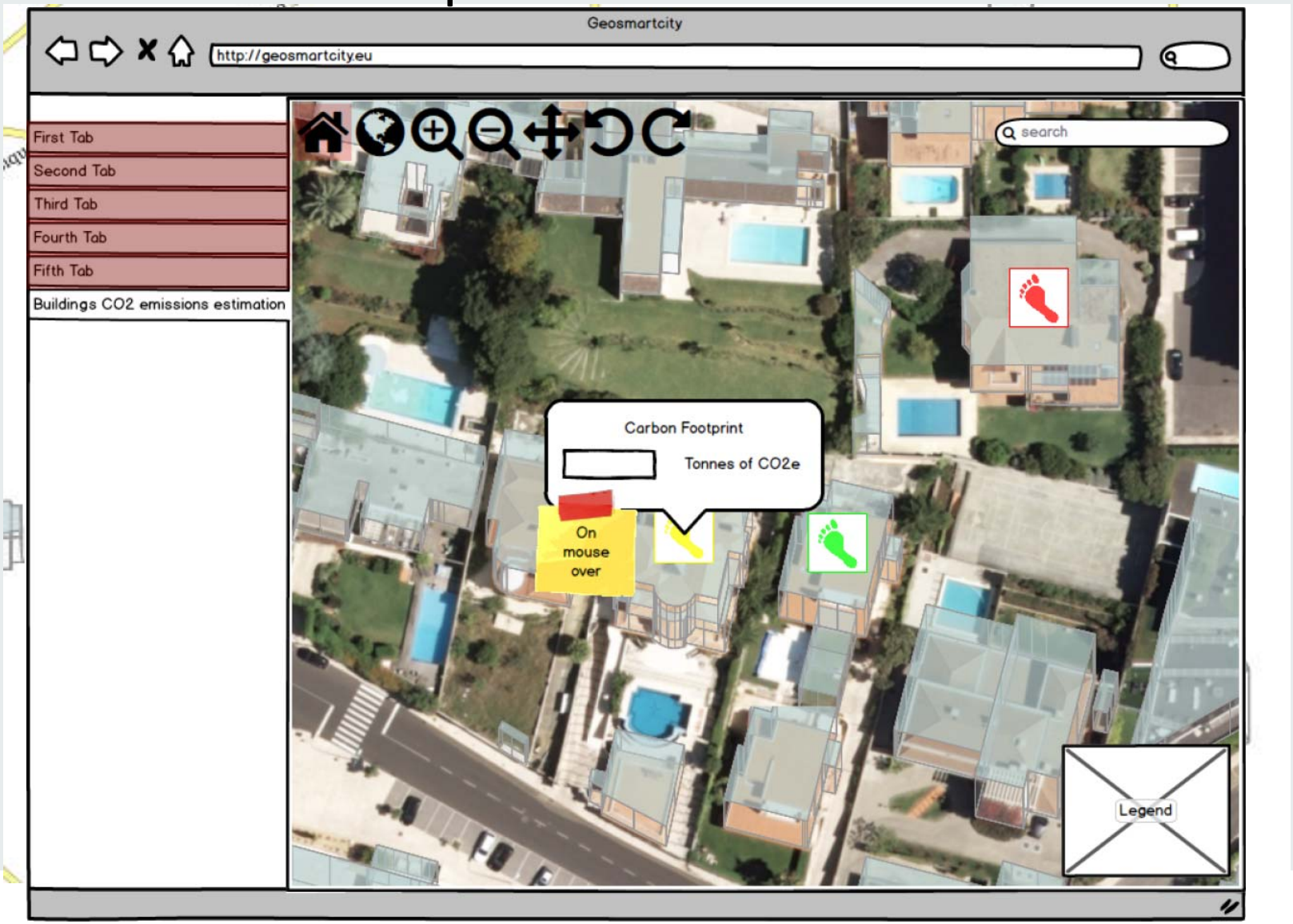
- Estimation of equivalent tons of CO2 emissions



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- Upload of “future” buildings datasets
  - ingestion of datasets representing spatial features of new/designed buildings to perform solar potential analysis (SHP, GML, CityGML)
  - data will be ingested into a spatial database (PostGIS)
  - optional attribute to be taken will be the “heightAboveGround”, i.e., vertical dimension of new (2D) buildings
  - the new buildings added will be used to calculate the solar potential in a buffer area around them
  - will be performed as a WPS operation

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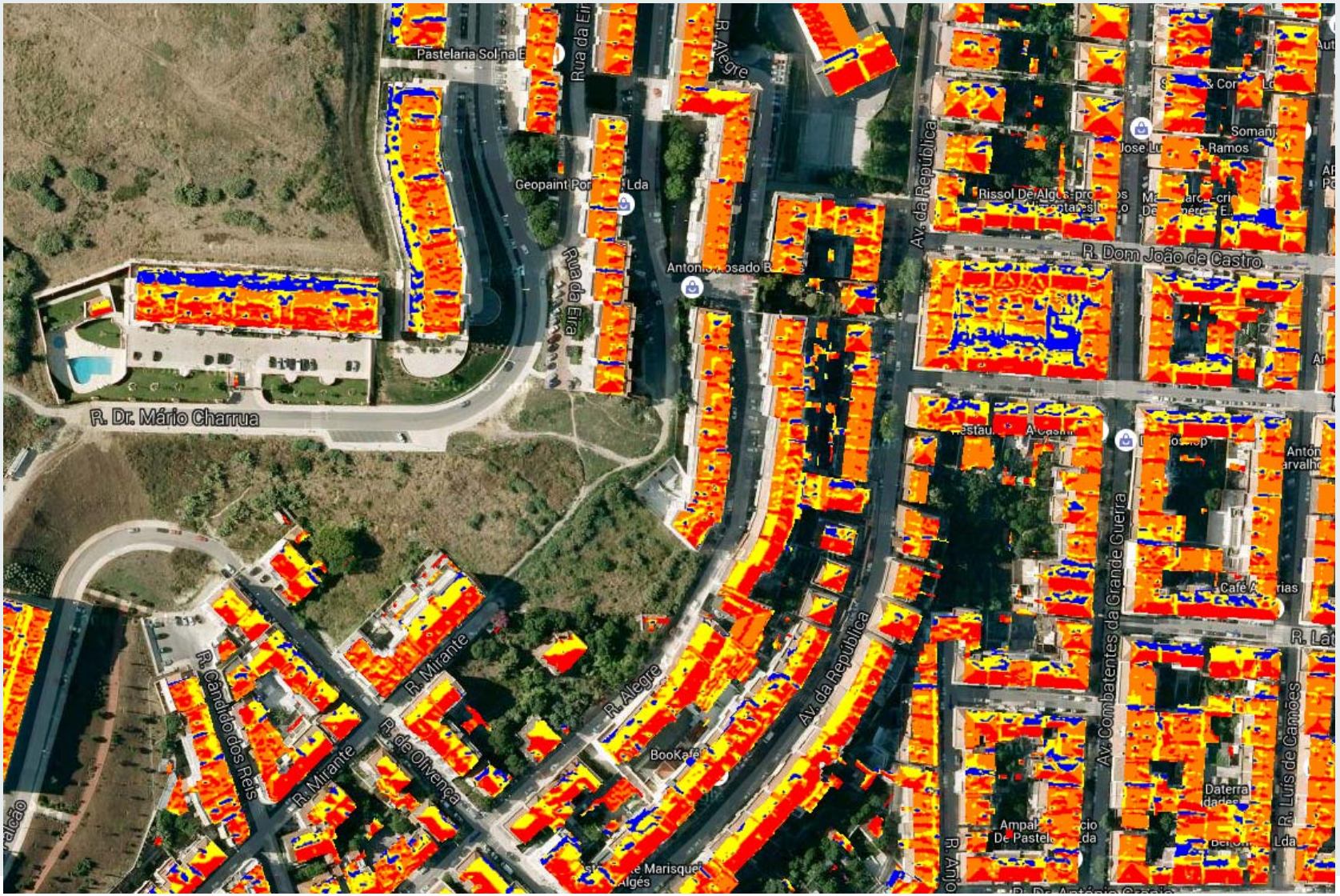
- Upload of “future” buildings datasets



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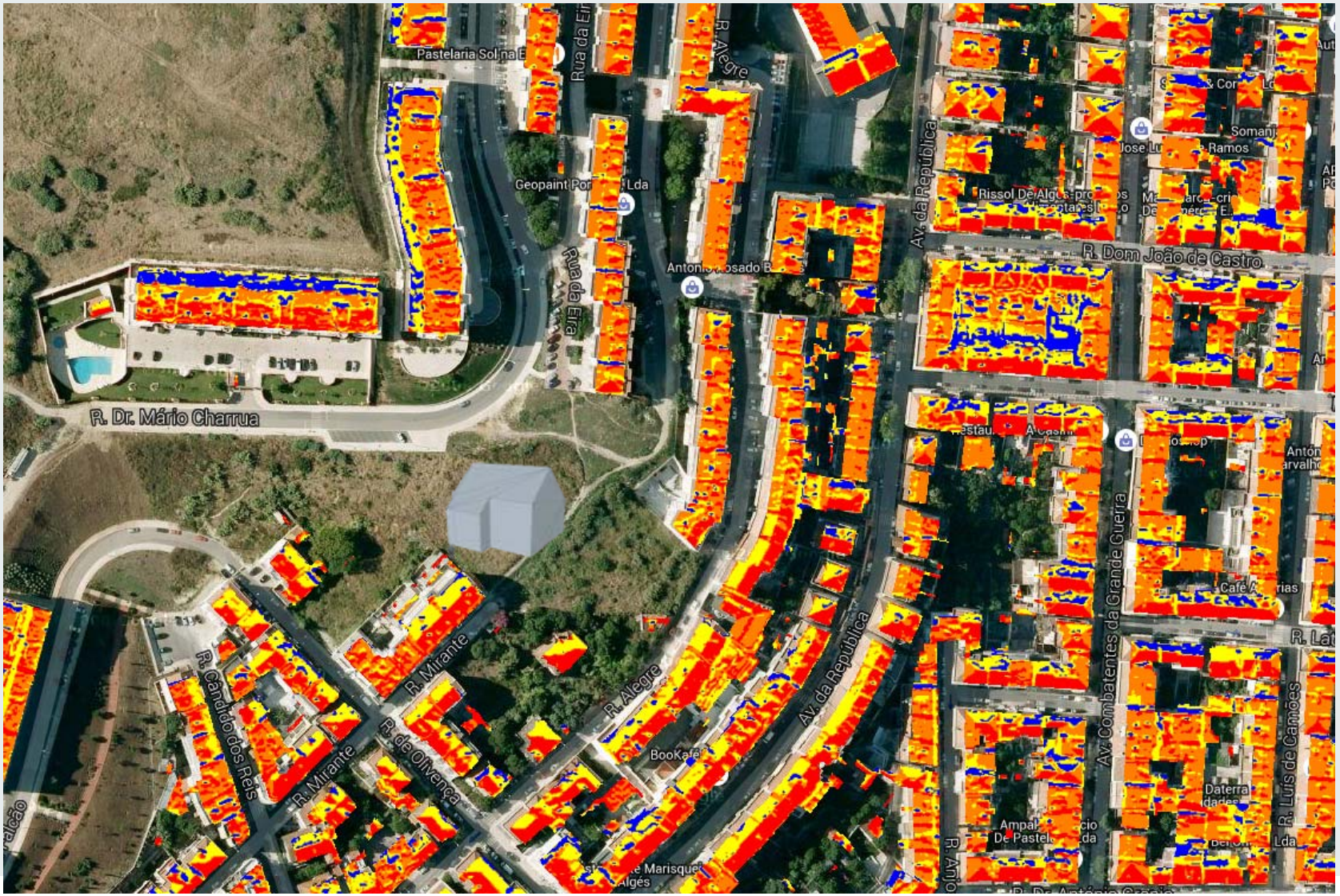

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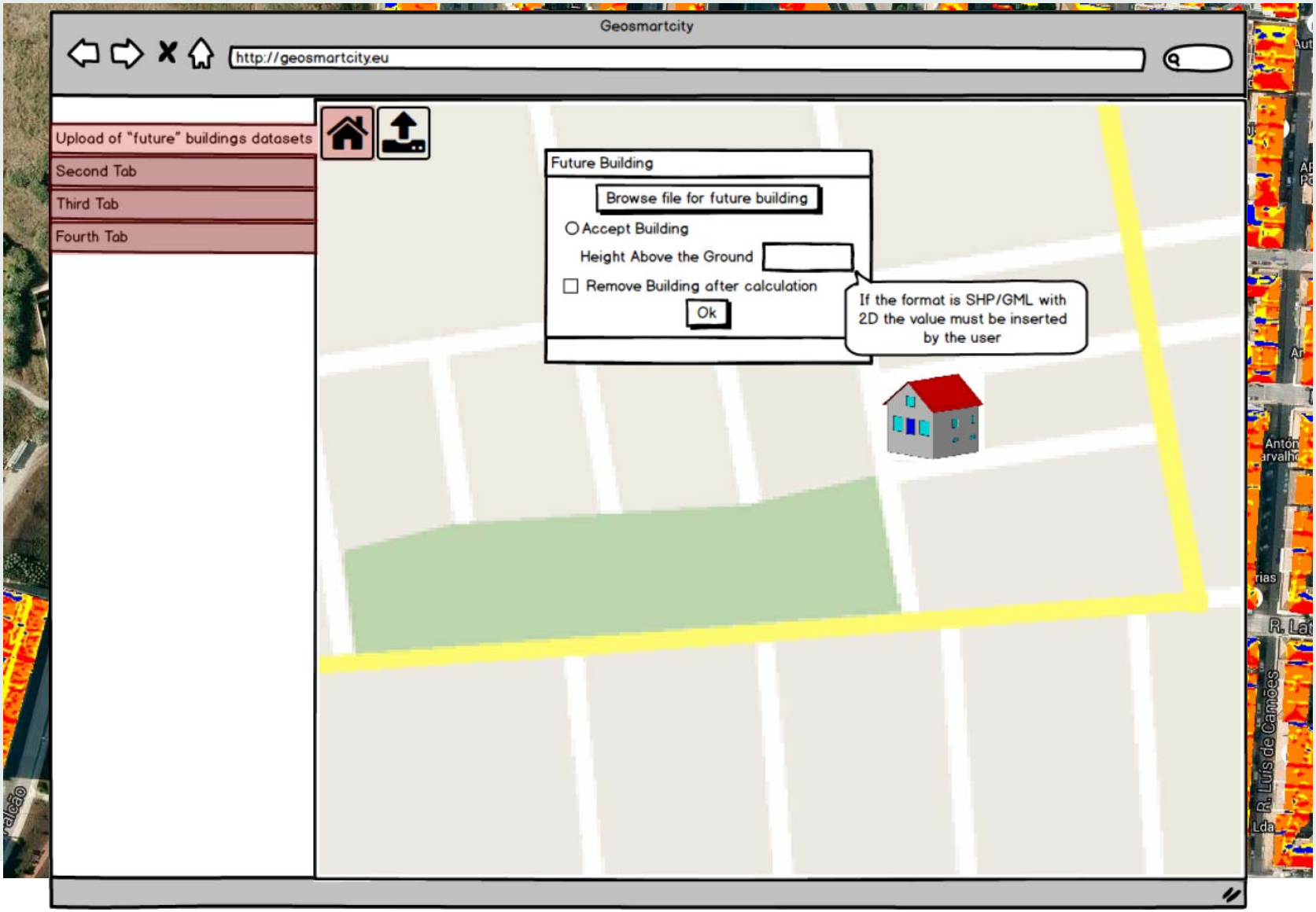

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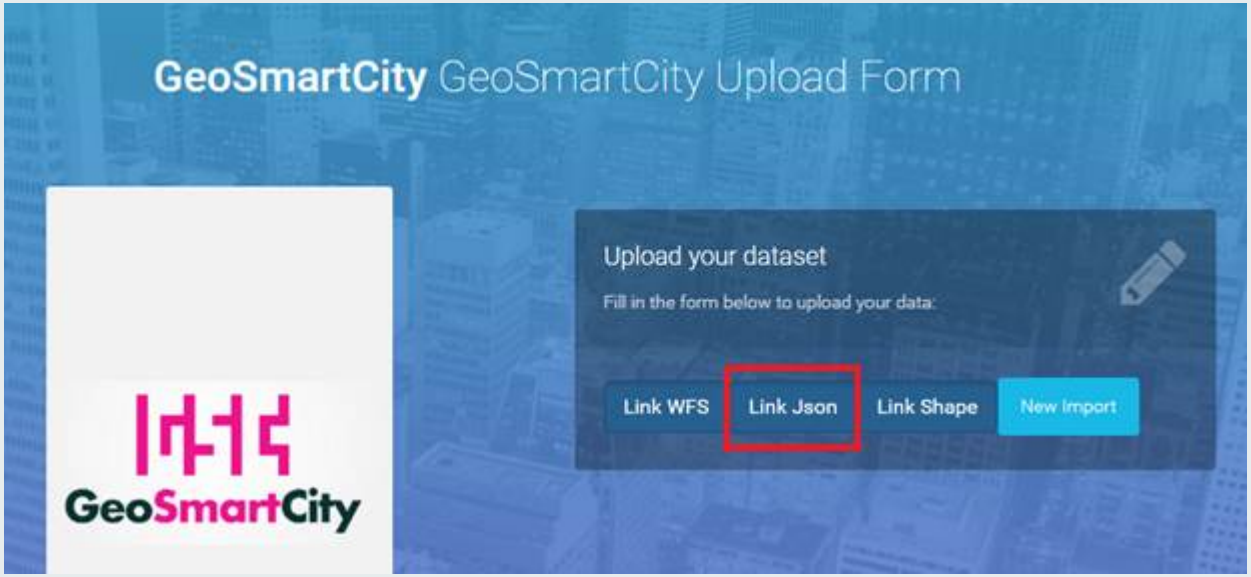

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- Solar potential calculation
  - estimation of solar potential of buildings (roofs)
  - for each building, the incoming solar irradiation are determined individually based on the available roof surface area
  - select the typology of solar panel to calculate the potential energy production
  - input parameter (DSM, 2D/3D building shapes and properties: albedo, clearness coefficient, slope, aspect, etc.) and an optional clipping area where to perform/limit the calculation
  - the result will be a WMS map, each building will be classified on the basis of the “potential for renewable energy production” range, in kWh/sqm/day

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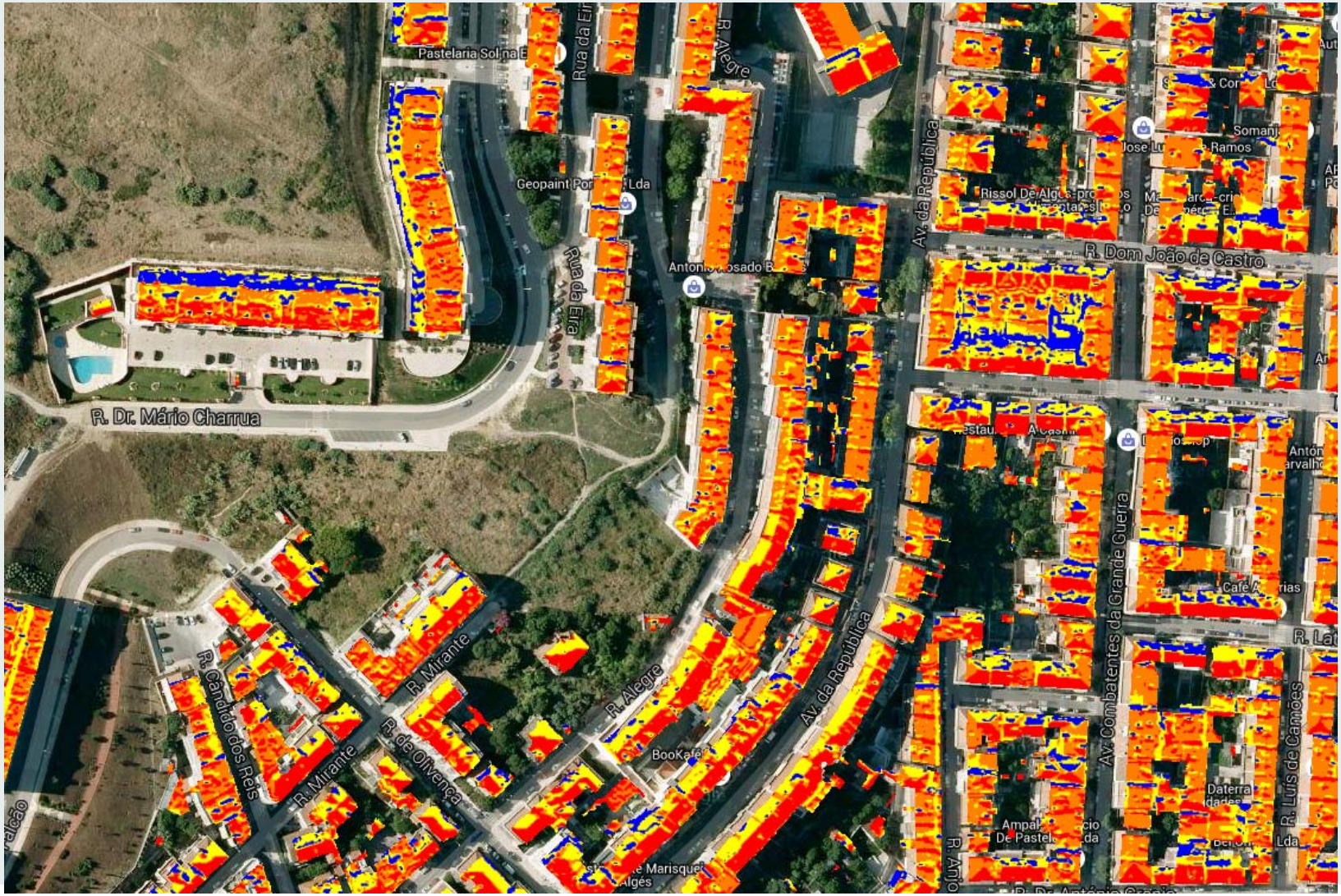
- Solar potential calculation



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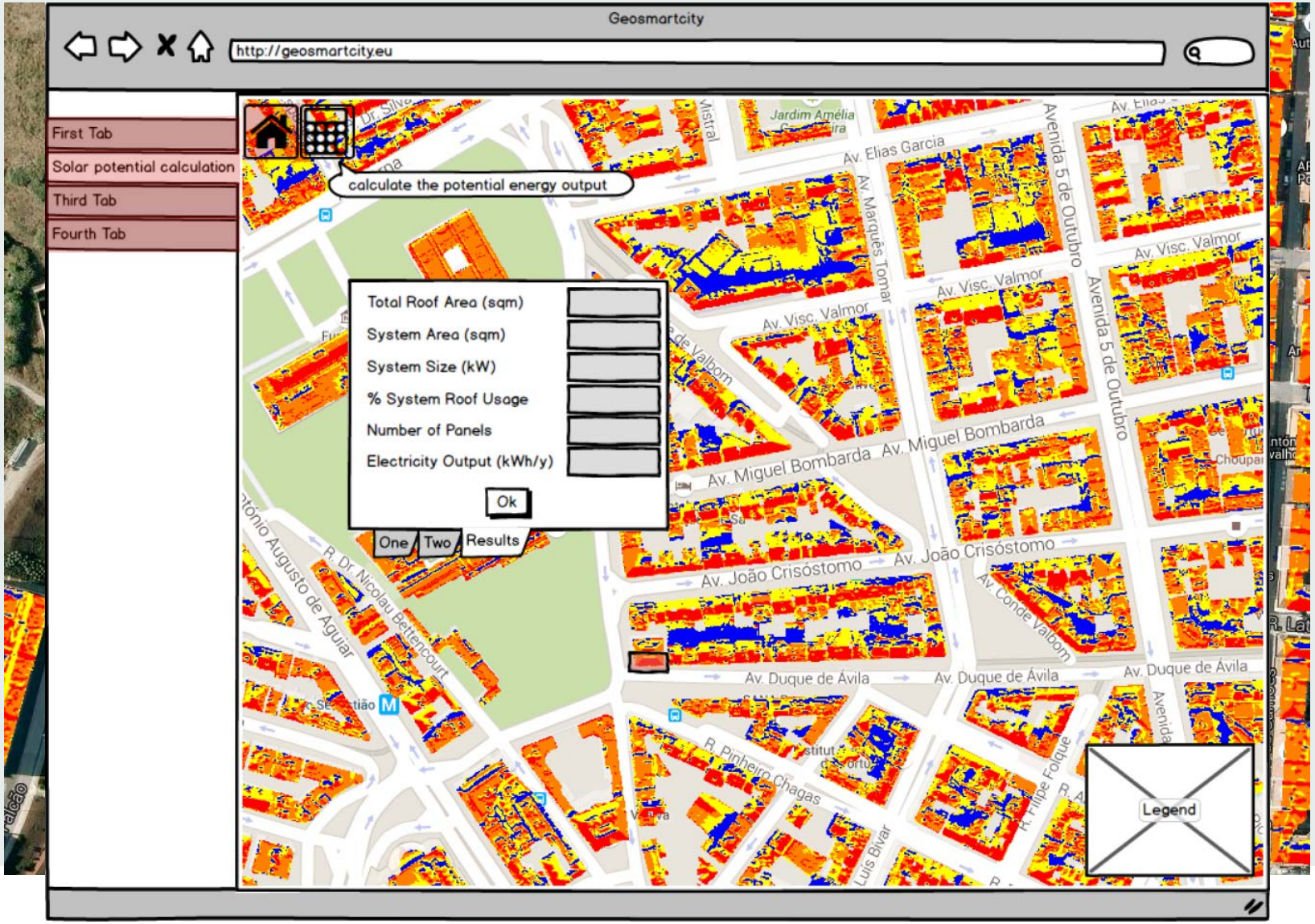

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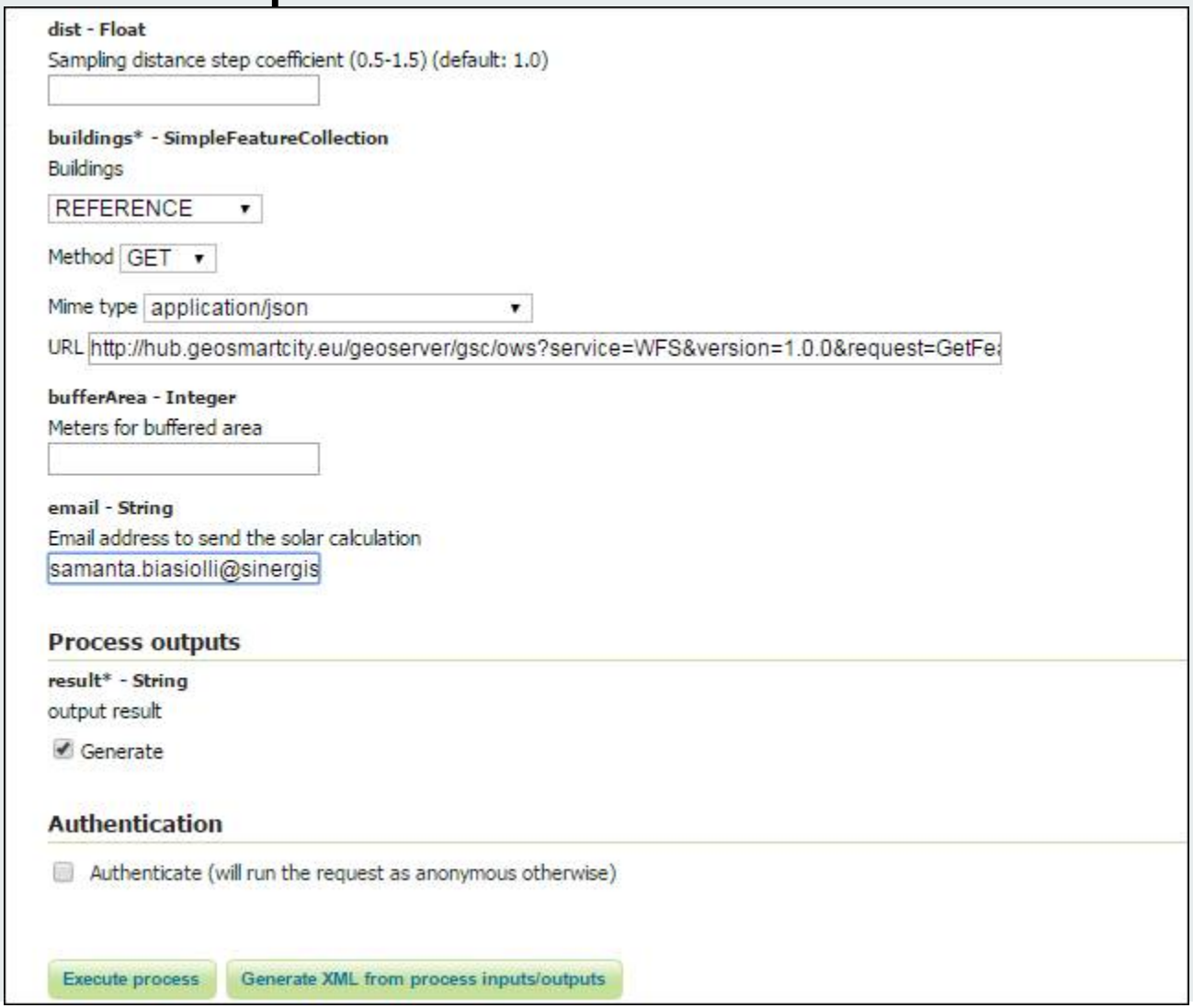

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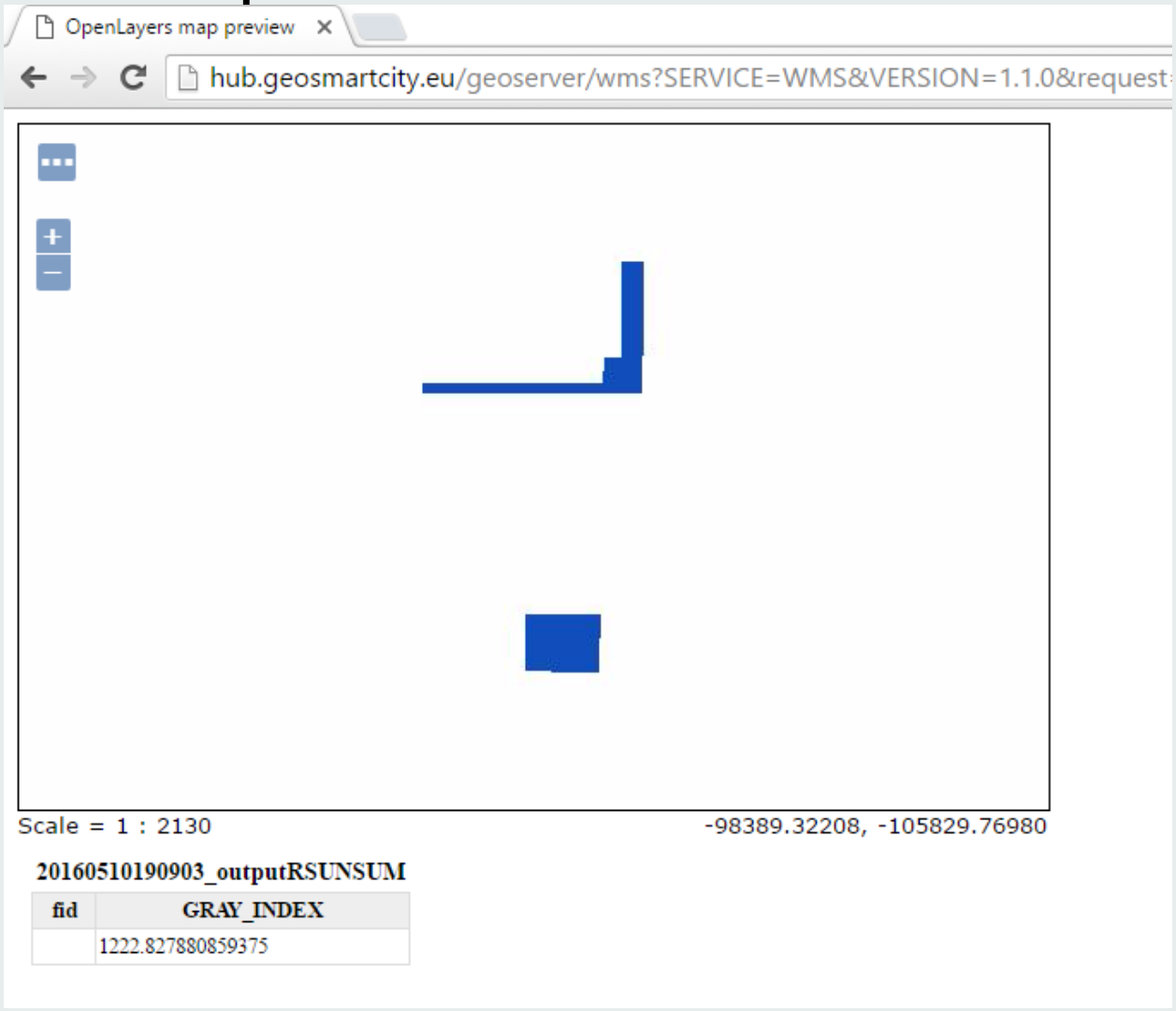

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- Zero-balance layer
  - aims to be a innovative planning tool
  - the result of a “difference” between the potential production of energy estimated by the “Solar potential” service and the estimated consumption of energy - aggregated at block of buildings level
  - operation will be performed again as a WPS interface
  - possible to manually enter estimated values for other sources of renewable energy, for instance, wind
  - output will be a WMS/WFS with predefined SLD styles

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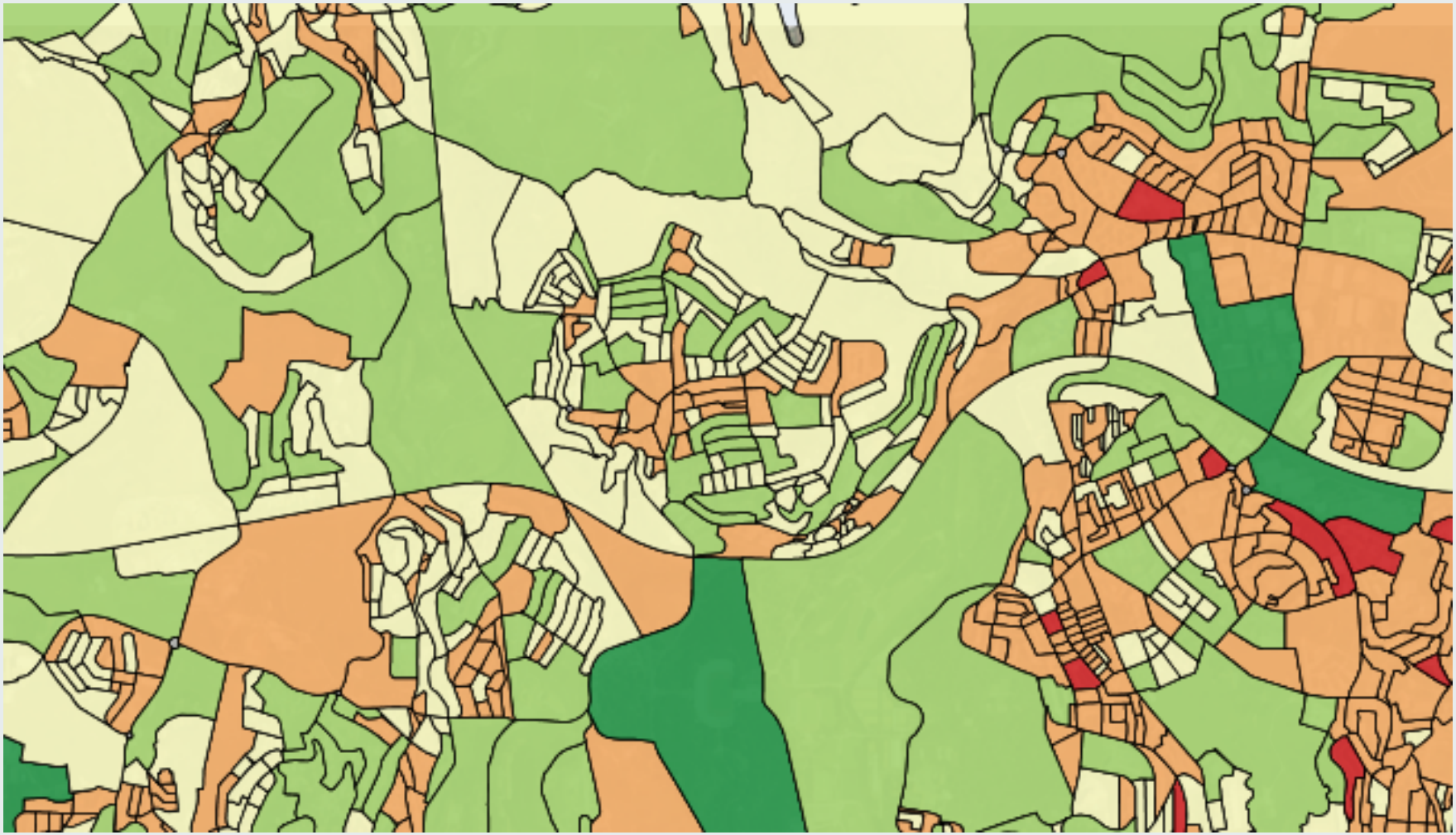
- Zero-balance layer



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- Zero-balance layer

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- Zero-balance layer

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- Underground Scenario Specialized Services
  - Geo crowd-sensing client (VGI)
  - Geo crowd-sensing mobile client (VGI)
  - Geo crowd-sensing platform management

Note: crowd-sensing term is used to mean “event notification from human or mobile devices” and crowd-sourcing for scenarios like collaborative mapping.

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- Geo crowd-sensing client (VGI)
  - actually a Volunteered Geographic Information tool
  - collaborative communication of events related to underground networks such as water pipe rupture, water leakages, bad water quality observation or sewage obstructions
  - in order to foster the use of the platform, authentication will not be required
  - submission should with minimum number of possible steps
  - suggestion of existing events near the location reported so the user may subscribe or add comments on existing events or submit a new event

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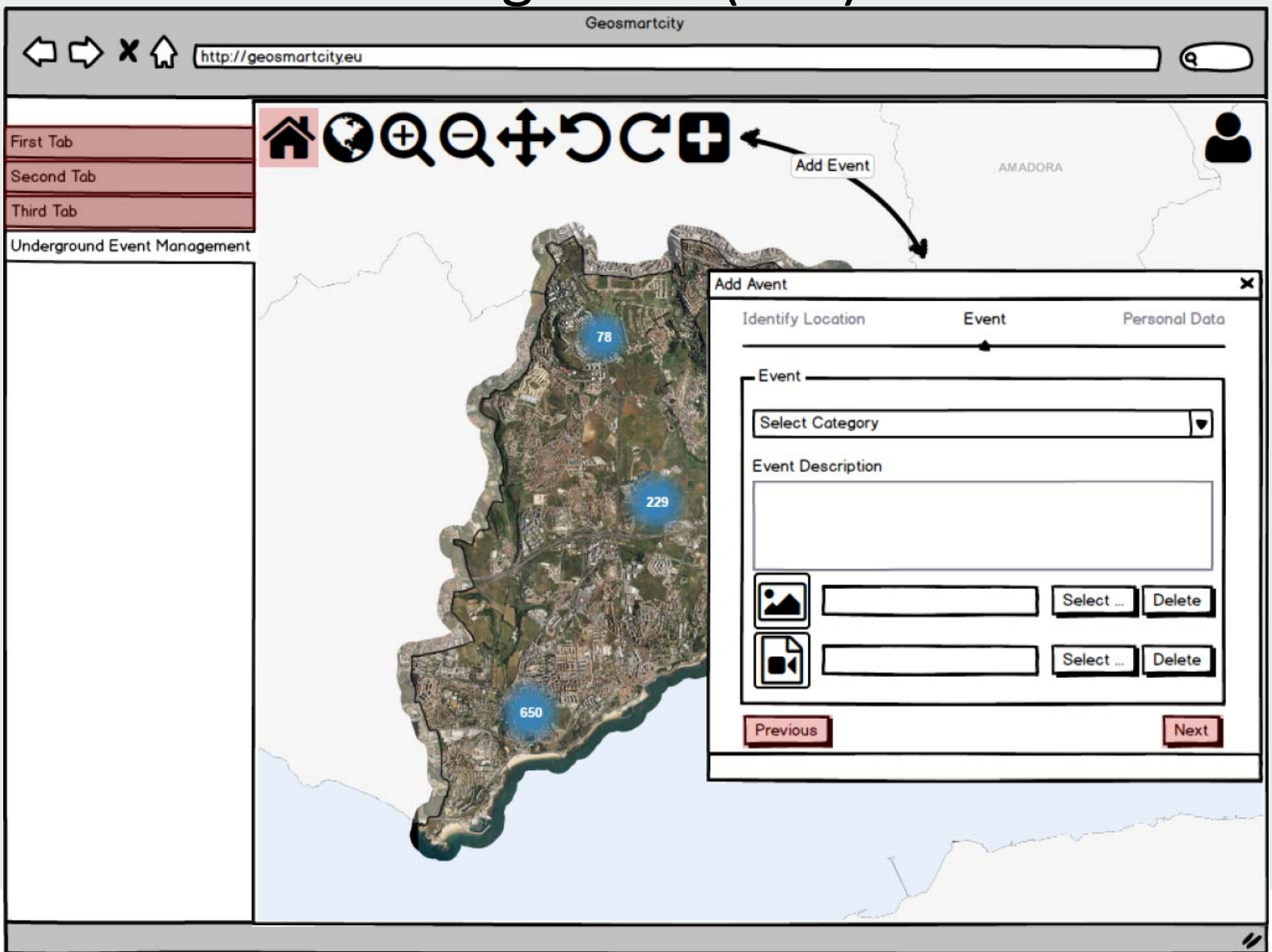
- Geo crowd-sensing client (VGI)



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- Geo crowd-sensing mobile client (VGI)
  - actually a Volunteered Geographic Information tool
  - specific interface tailored to mobile devices
  - will facilitate the submission of events, automating as much as possible
  - attach picture or video taken from the mobile camera
  - suggest location from GPS, Mobile network or metadata from the picture
  - record event description instead of writing
  - events stored locally in case of disconnection from mobile network, synchronized when network coverage is available

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- Geo crowd-sensing mobile client (VGI)

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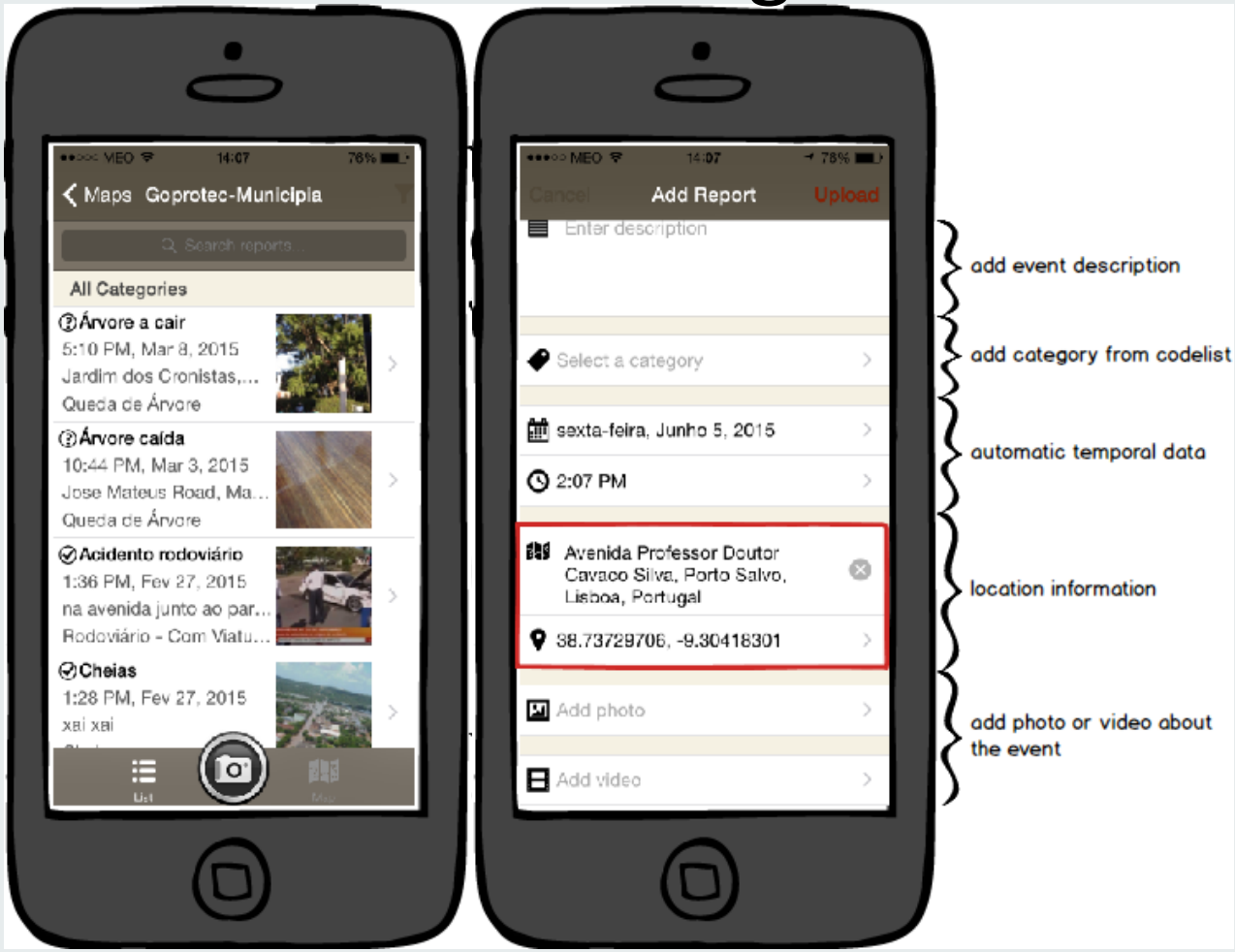

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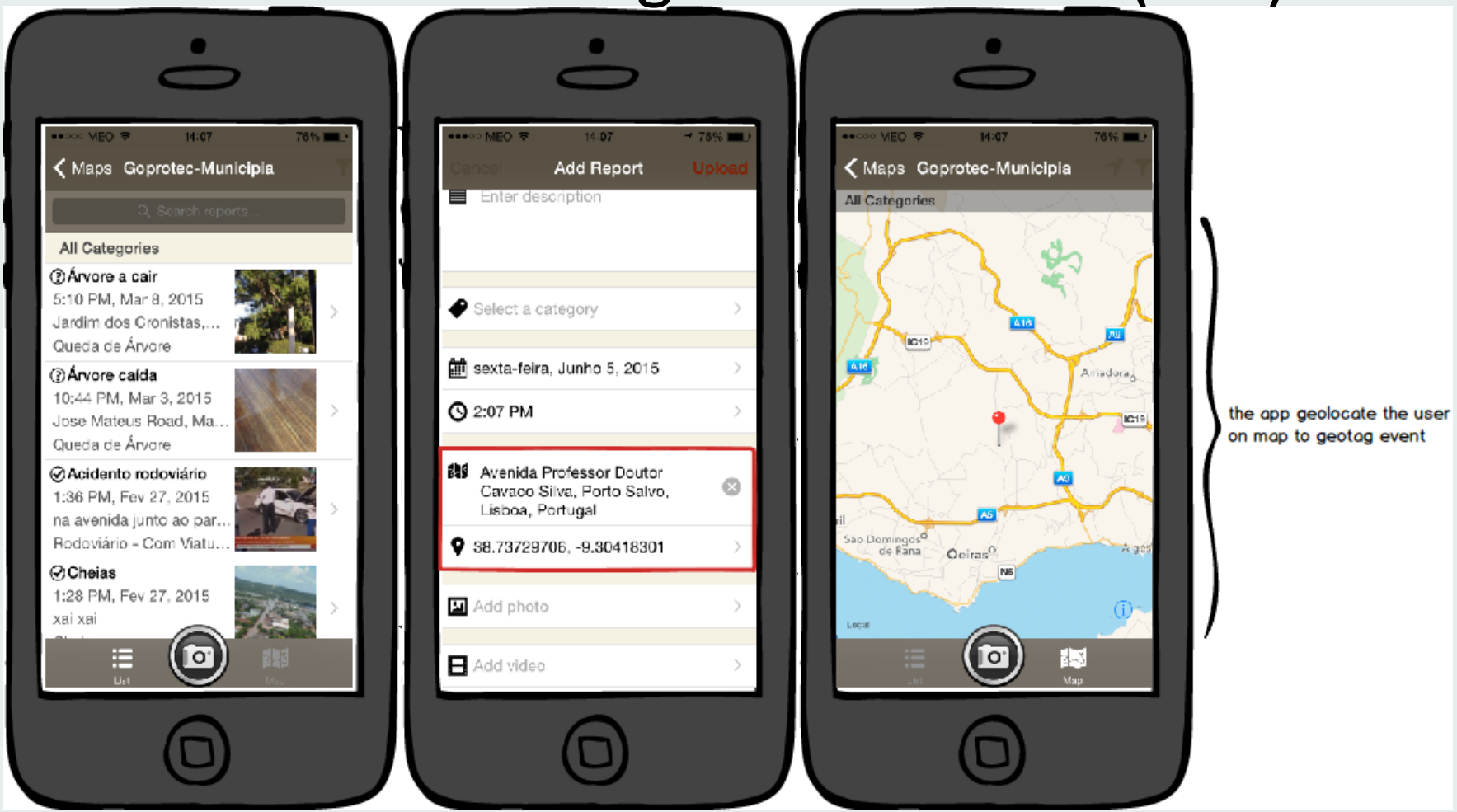

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- Geo crowd-sensing platform management
  - management of the crowd-sensing platform
  - features to be configured:
    - approval policy (workflow)
    - events assignment
    - events solving
    - information to display on map

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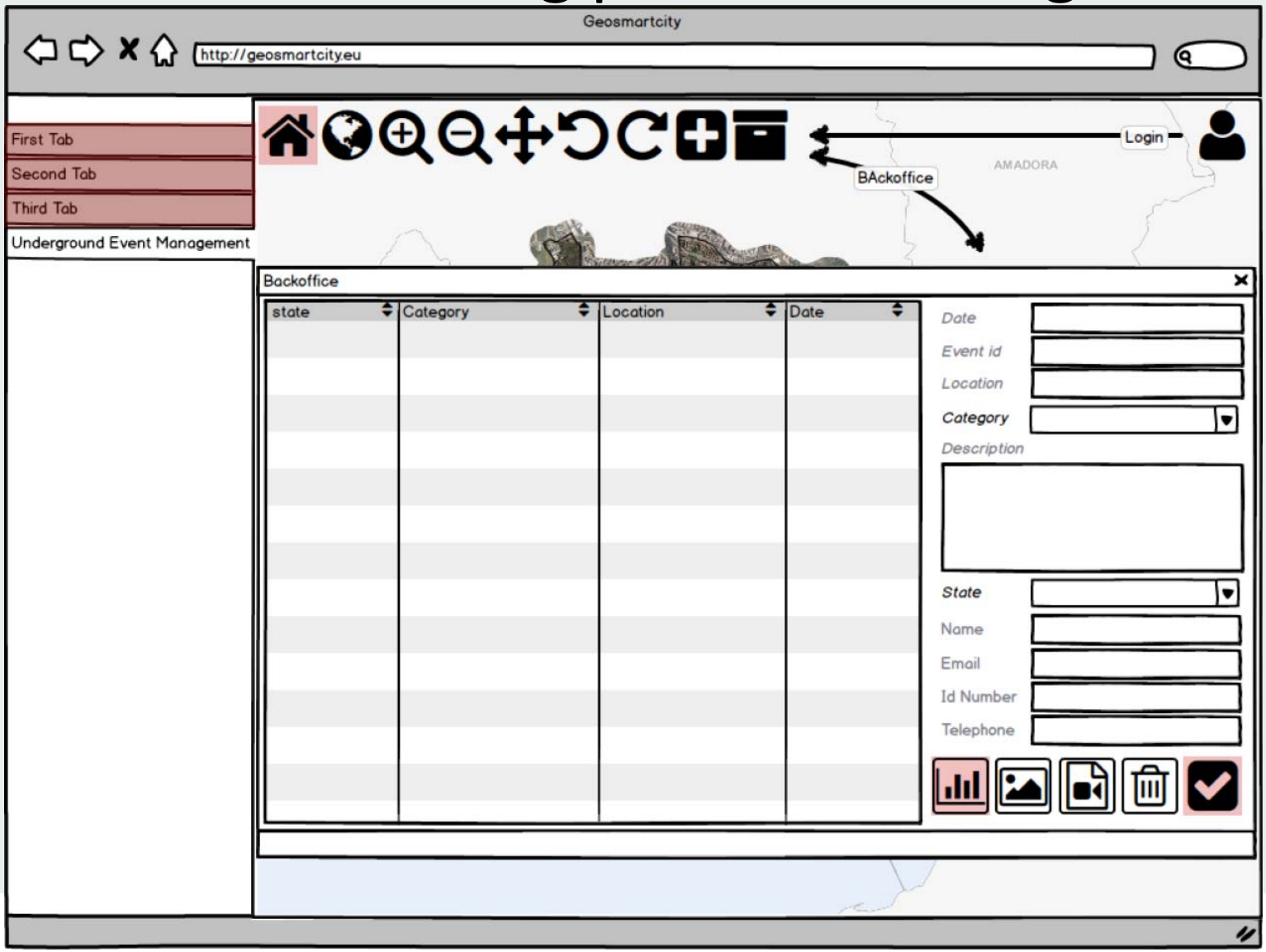
- Geo crowd-sensing platform management



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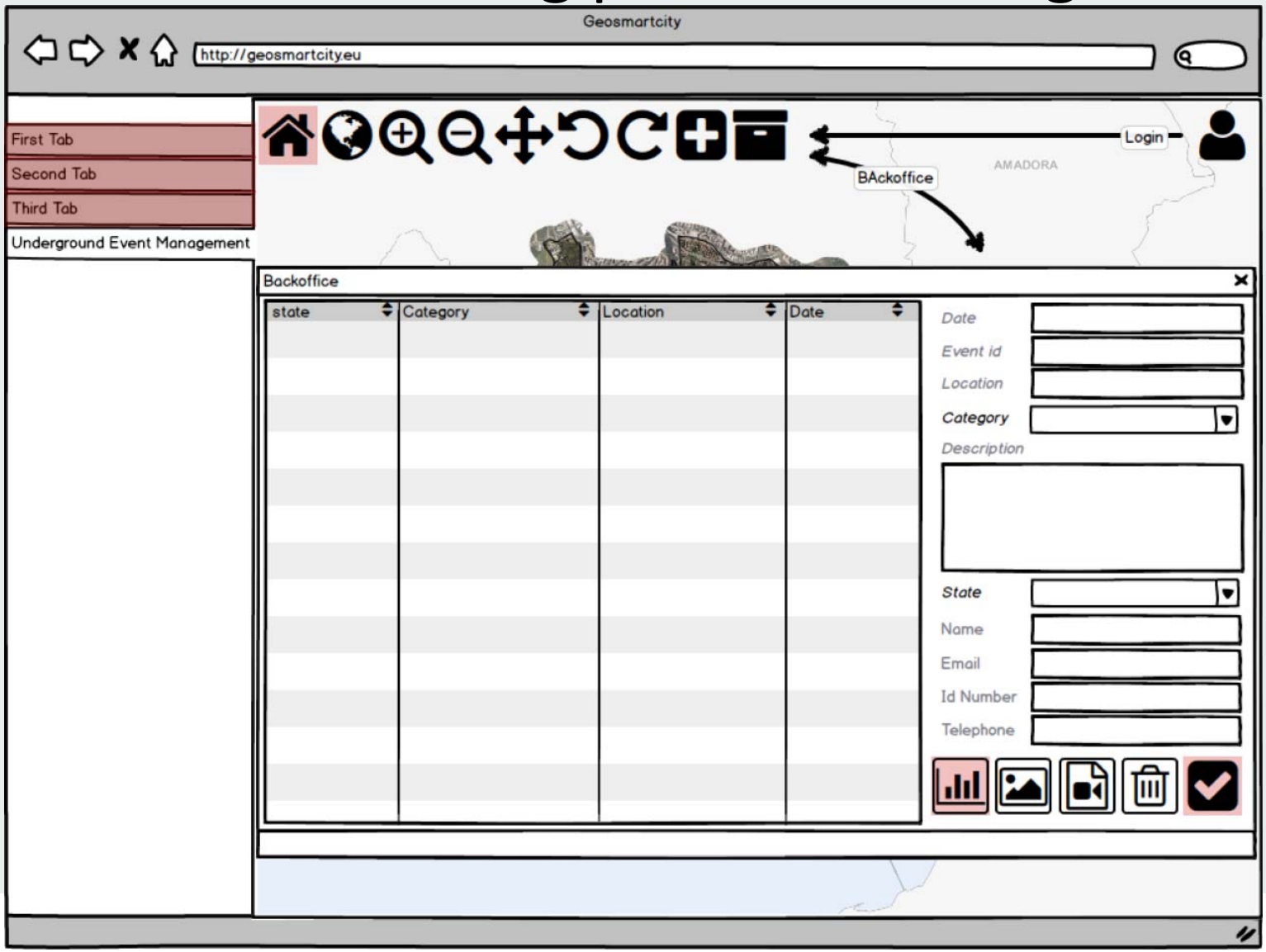
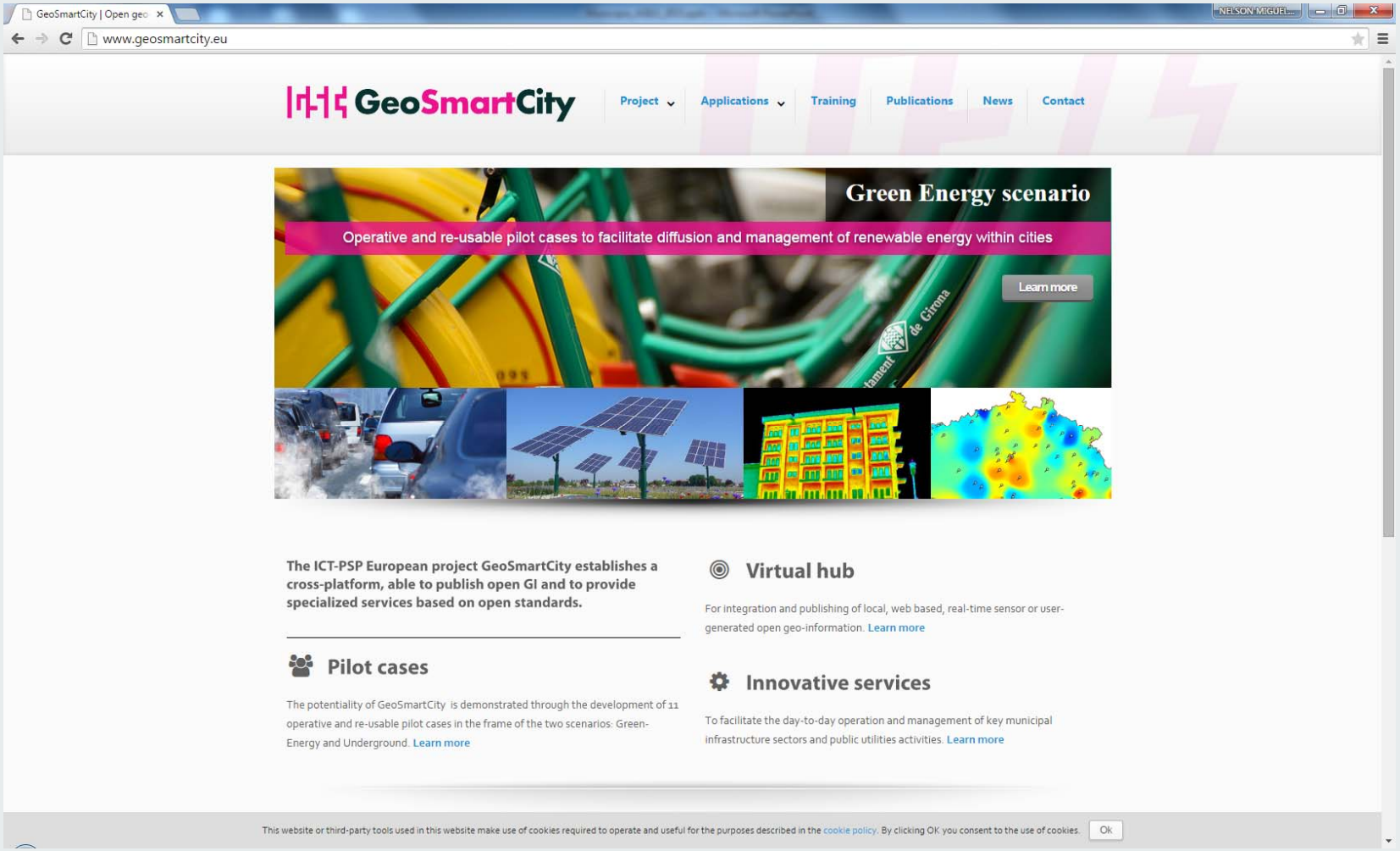


Obrigado!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Green Energy scenario
Operative and re-usable pilot cases to facilitate diffusion and management of renewable energy within cities
Learn more
The ICT-PSP European project GeoSmartCity establishes a cross-platform, able to publish open GI and to provide specialized services based on open standards.
Virtual hub
For integration and publishing of local, web based, real-time sensor or user-generated open geo-information. Learn more
Pilot cases
The potentiality of GeoSmartCity is demonstrated through the development of 11 operative and re-usable pilot cases in the frame of the two scenarios: Green-Energy and Underground. Learn more
Innovative services
To facilitate the day-to-day operation and management of key municipal infrastructure sectors and public utilities activities. Learn more
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