



Spotted

Satellite Open Data for Smart City Services Development

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Co-financed by the Connecting Europe
Facility of the European Union

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www.cef-spotted.eu

Overview



SPOTTED at a glance

Title

Satellite oPen data
fOr smarT ciTy
sErVices
Development



Topic

Public Open Data

ID
CEF-TC-
2020-2

Duration

36 months
Start Date
1/9/2021



Funding scheme

Connecting Europe
Facility (CEF) –
Telecommunicatio
ns Sector



Costs

EUR 1,863,298



Consortium

8 PARTNERS



Motivation



Call's Key Requirements/1

- *...address the generation of cross-border and/or cross-domain services re-using information made discoverable/available through the European Data Portal, in combination with other sources of information, where applicable;*
- *...actions must address as a priority datasets belonging to one or more of the following High Value Datasets categories: geospatial, earth observation and environment, meteorological, statistics, companies and company ownership, mobility;*
- *Datasets generated must be discoverable and available through one or more Member States' open data portals and through the European Data Portal;*



Call's Key Requirements/2

- *...Conditions for the publication and re-use of datasets generated by the proposed actions must be machine readable and compatible with open standard licences;*
- *...Application Programming Interfaces (APIs) must be used as far as possible for the data re-used and/or generated;*
- *Datasets generated must be harmonised, including the detailed description of the data ... the structure of the data, the data content and the semantics of the data;*



Call's Key Requirements/3

- *Concrete Key Performance Indicators (KPIs) must be proposed in order to evaluate the benefits of the implemented solution(s)...*;
- *Use cases must be included to demonstrate the appropriateness of the proposed solutions and how they will address economic and societal challenges;*
- *Relevant legal aspects concerning data use, adoption, sharing...additional to those related to ensuring GDPR compliance must be addressed;*
- *Deployment of a Context Broker solution, i.e. as an implementation of the NGSI-LD API technical specification*



Vision



What we want to do

1 Integrate

- Provide an innovative solution based on the integration and customized processing of massive open data collections, including Earth Observation data to monitor and support decision takers in the field of Green Areas management

2 Combine

- Combine artificial intelligence processes, cloud storage and cloud computing technologies, massive open data collection with customizable dashboards for automatically monitoring, classifying, managing, and predicting emerging land changes

3 Innovate

- Improve the current solutions and services and open new business avenues for novel applications based on Open Data libraries and enabling technologies such as EO, AI, Cloud and Big Data
- Use of integrated Open Data collections through Open Data infrastructures such as EU Portal, CEF Context broker and Copernicus Hub to empower customized services that optimized the use of data processes addressing them into different monitoring services

Objectives



Objectives

- *Pilot different cross-border services, in three different cities (Milan, Helsinki and Naples) in the field of green areas management and their impact evaluation in societal and economic aspects, demonstrating the added value of the technical solution*
- *Base the services on the combination of Earth Observation open data (e.g. Copernicus satellite images) that are included in the High Value Datasets category with open dataset provided by the cities and other sources (mostly HVD), in particular the European Data Portal.*
- *Make all produced datasets available through specific APIs for a simple and standard third party access compliant to most relevant standards for open data reuse and make available through the European Data Portal and national open data portals.*
- *Re-use specific data platforms with data semantic harmonisation capabilities (i.e. Digital Enabler platform) to ensure that the generated dataset will be harmonised also across different use case services*



Exploitable assets

- *SPOTTED technical framework: it is an integrated environment based on mature existent assets that will be able to collect information from heterogeneous open data sources, including satellite images combine them and provide data analytics through visual dashboard and maps*
- *Pilot service applications: in each pilot will be developed specific applications that will reuse open data and analytics provided by SPOTTED framework to perform analysis in particular related to the green areas management*
- *Impact assessment: the consortium will elaborate a methodology and framework for the assessment of the impact of the solution and data provided. Such framework will include a set of indicators and guidelines for execution, and will be tested on the pilots*
- *Lesson learned and guidelines: based on the piloting activity and impact assessment implemented, the consortium will elaborate a set of guidelines aimed at supporting public administrations in adopting the SPOTTED solution and services and/or implementing similar ones*



Platform and Digital Services

A photograph of several people holding hands in a circle, symbolizing unity and teamwork. The image is slightly blurred and has a warm, golden light. A dark blue horizontal bar is overlaid on the image, containing the text 'Platform and Digital Services' in white, bold, sans-serif font.

- 
- **The SPOTTED Platform**
 - **The SPOTTED Digital Services**
 - **Helsinki Pilot: sustainable tourism and urban planning**
 - **Naples Pilot: monitoring urban regeneration and planification**
 - **Insights from the SPOTTED Pilots**



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The SPOTTED Platform



User Friendly



Hub for centralised and harmonised satellite and geospatial data



Monitoring and analysis of satellite and geospatial data



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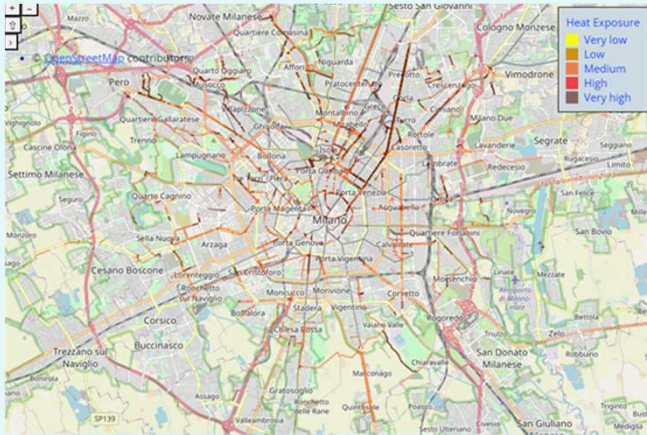
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SPOTTED Smart Digital Services

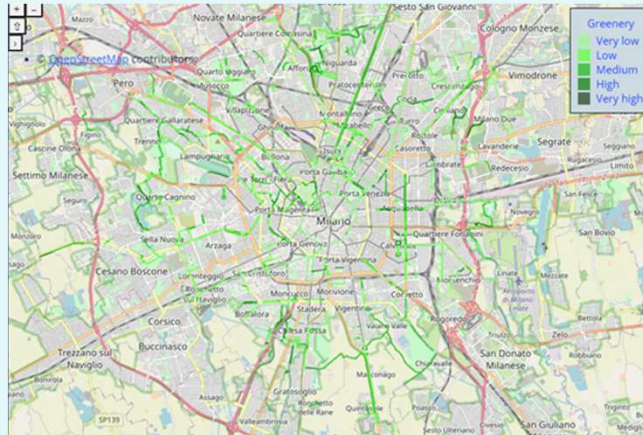
The Platform will be accessible online at <http://portal.cef-spotted.eu/>

Three digital services under development:



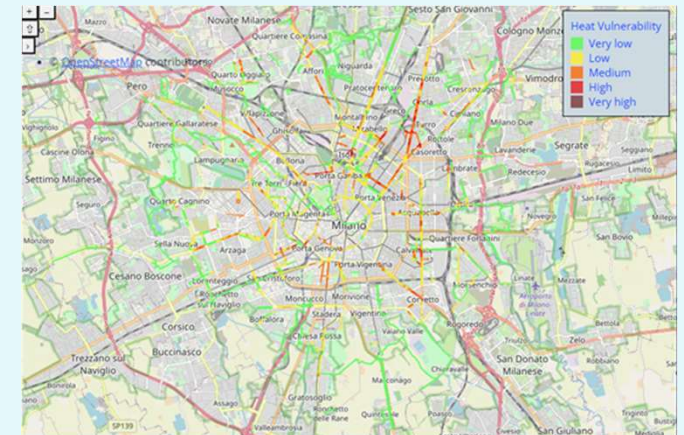
Urban Heat Exposure

To calculate heat exposure for different urban areas/objects.



Urban Green Index

To calculate the absolute and relative quantity of green areas/greenery.



Urban Heat Vulnerability

To calculate heat exposure in relation to vulnerable populations and/or critical services.



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SPOTTED Smart Digital Services

Data-driven urban planning:

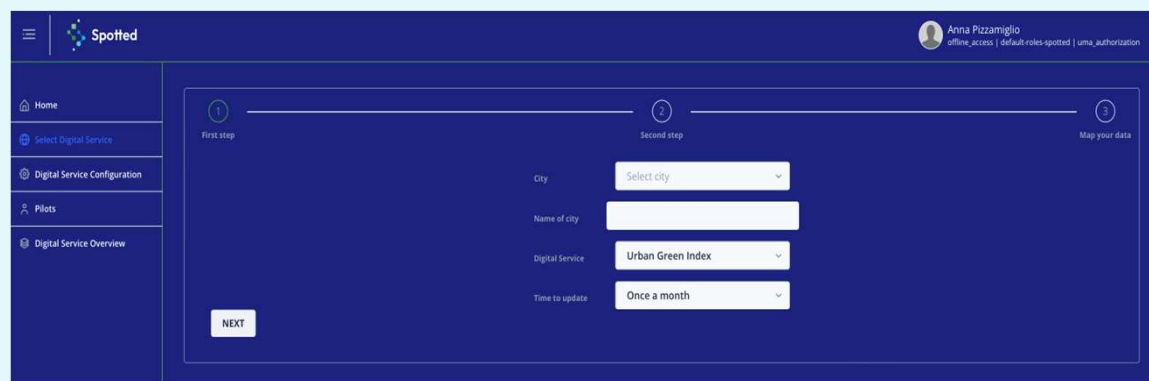
by providing urban planners with data-driven insights, the project enables informed decision-making regarding planning and management of urban green areas.

Preservation of green spaces:

through satellite data collection, policymakers gain insights into the potential effects of their policies on nature.

Climate resilience:

the project aims to mitigate climate change-related impacts and climate adaptation. By monitoring fluctuations in disaster indicators and negative effects of climate change, the project enhances awareness and preparedness.



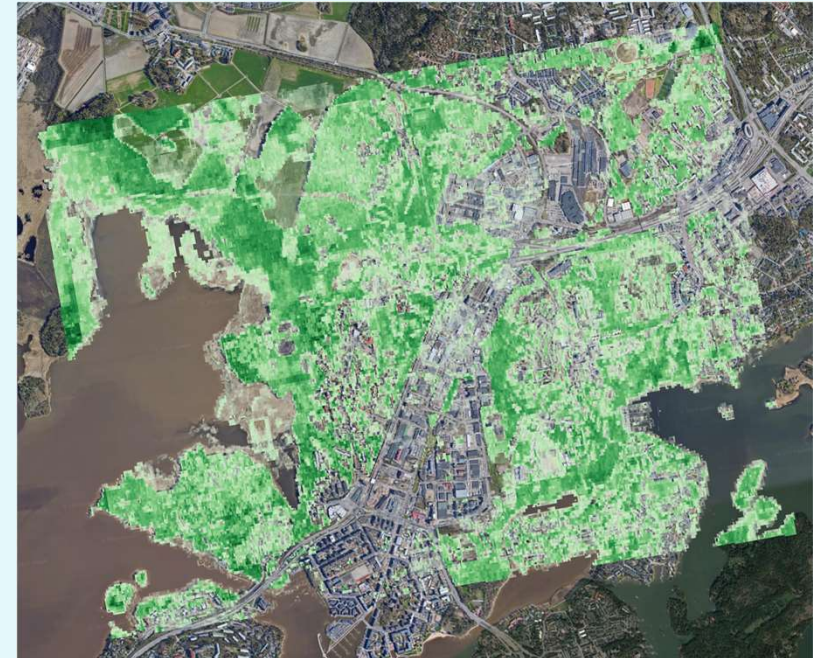
The screenshot displays the SPOTTED web application interface. The top navigation bar includes the SPOTTED logo and a user profile for Anna Pizzamiglio. A sidebar on the left contains navigation links: Home, Select Digital Service, Digital Service Configuration, Pilots, and Digital Service Overview. The main content area shows a three-step process: 1. First step (selected), 2. Second step, and 3. Map your data. The form fields include: City (dropdown menu), Name of city (text input), Digital Service (dropdown menu with 'Urban Green Index' selected), and Time to update (dropdown menu with 'Once a month' selected). A 'NEXT' button is located at the bottom left of the form area.



Helsinki: sustainable tourism and urban planning

Greenery as a strategic asset in Helsinki's City strategy 2021-2025:

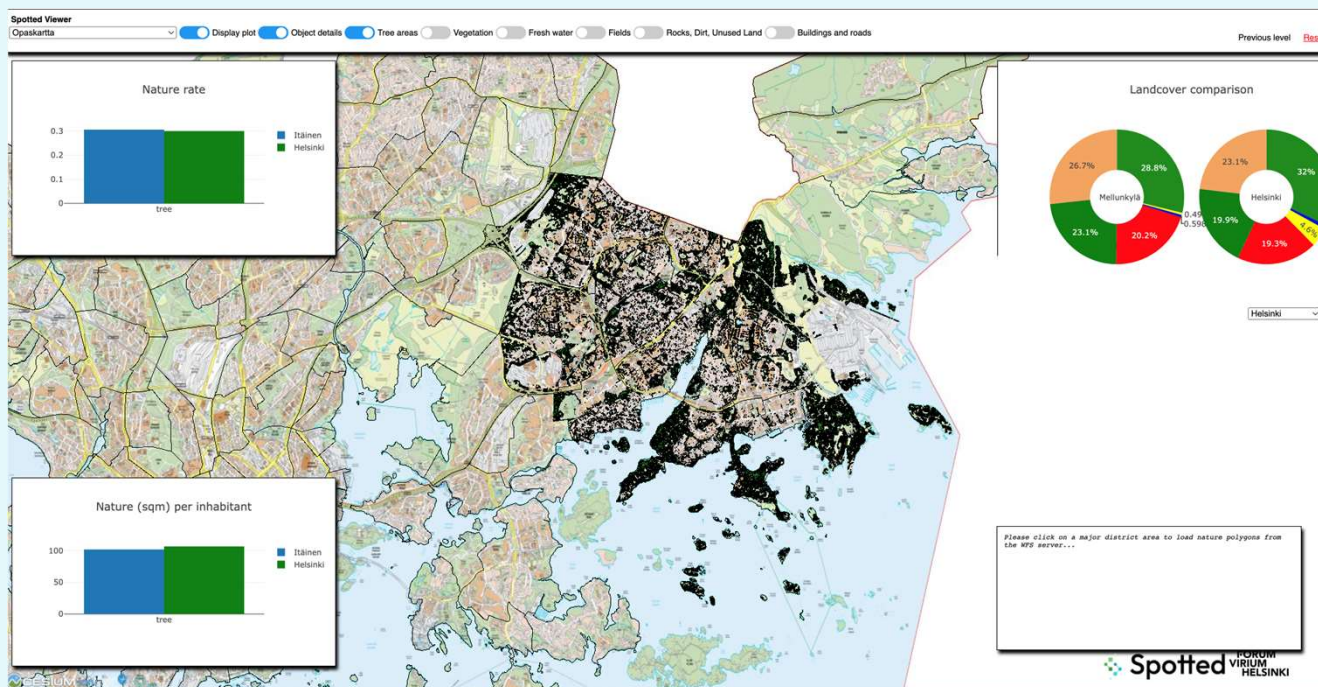
- Climate mitigation and adaptation
 - Citizens' well being
 - Coexistence of increasing tourism and nature
- NEED to maintain and expand the existing green areas
- NEED to monitor extreme phenomena, i.e., urban heat island effect



Helsinki: sustainable tourism and urban planning

Satellite data is key to carry on such activities:

- Provides data on location and condition of trees and forests
- Maps distribution of green areas at different city and regional levels
- Provides info on landcover and use



Naples: monitor urban regeneration and planification



Naples is working to regenerate the green capital of the city:

- Identification of targets requiring extra-ordinary maintenance due to their size in highly urbanised environments
- Monitor the results of specific singular-oriented maintenance on high-value veteran trees.

The City is also working to reduce the urban heat island effect:

- Need to map the suitable roads with free tree planting space and detect discontinuity



Naples: issue management

Satellite data is crucial also in:

- Monitoring of the tree crown effects of newly introduced pests and diseases.
- Tracking the expansion of their spatial ranges.

→ **timely intervention is crucial**





Insights from the SPOTTED Pilots

- **Co-creation with local stakeholders in Urban Greenery is KEY**
- **Putting the spotlight on satellite data in Urban decision-making**
- **Integration of satellite data with other Earth Observation Methods**
- **Leveraging satellite data for time series and wider spatial coverage**
- **Accessibility and utilisation of satellite data**



Thank you...any questions?

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<https://portal.cef-spotted.eu/pages/digitalservices>

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