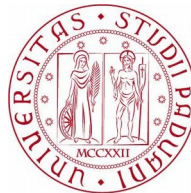




# URBAN GEOMatics for Bulk Information Generation, Data Assessment and Technology Awareness



**POLITECNICO**  
MILANO 1863



**UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA**



Consiglio Nazionale  
delle Ricerche



**POLITECNICO  
DI TORINO**



**SAPIENZA**  
UNIVERSITÀ DI ROMA

# PROJECT OBJECTIVE

The project aims to develop innovative GIS methodologies and tools to exploit the integration of:

- traditional geomatic data,
- Earth Observations (EO)
- statistics data
- new user-generated contents

for promoting a more effective management of urban resources and infrastructures.

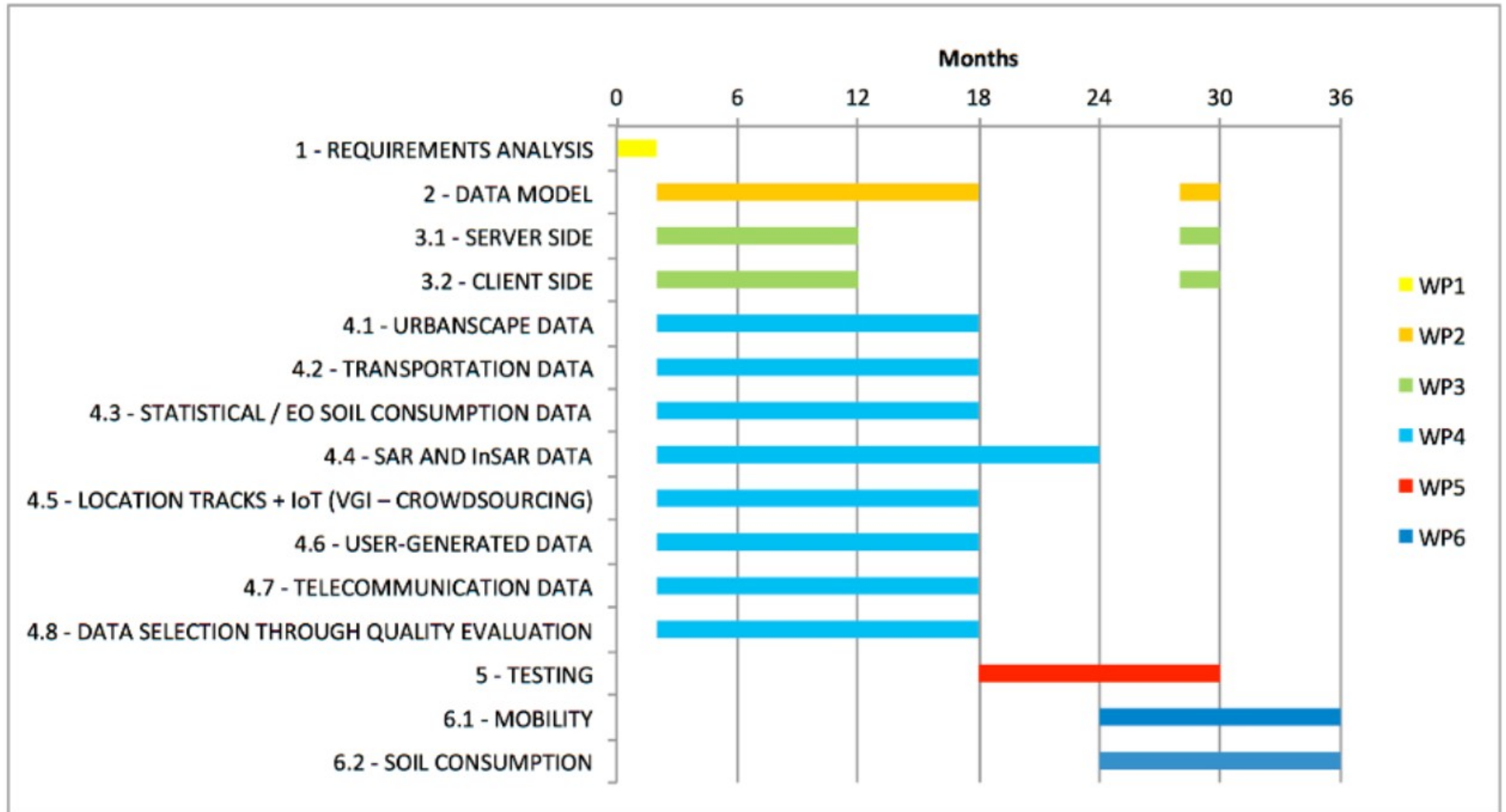
To evaluate the system practicability, two topical issues, among all the possible urban topics, will be considered as case studies:

- mobility
- soil consumption

# PROJECT WPs

WP	Sub-WP	RESPONSIBILITY	PARTICIPANTS	TIME SPANS (months)
1 - REQUIREMENTS ANALYSIS		POLIMI + CNR	UNIPD + All	T0 – T0+2
2 - DATA MODEL		UNIPD	POLIMI + All (for possible model tuning)	T0+2 – T+18, T0+28 – T0+30
3 - ARCHITECTURE DESIGN AND IMPLEMENTATION	3.1 - SERVER SIDE	POLITO + CNR	POLIMI, UNIPD	T0+2 – T0+12, T0+28 – T0+30
	3.2 - CLIENT SIDE	POLIMI	POLITO + CNR	T0+2 – T0+12, T0+28 – T0+30
4 - DATA COLLECTION, PROCESSING AND VALIDATION	4.1 - URBANSCAPE DATA	UNIPD		T0+2 – T0+18
	4.2 - TRANSPORTATION DATA	POLITO		T0+2 – T0+18
	4.3 - STATISTICAL / EO SOIL CONSUMPTION DATA	ISPRA		T0+2 – T0+18
	4.4 - SAR AND InSAR DATA	CNR		T0+2 – T0+24
	4.5 - LOCATION TRACKS + IoT (VGI (ACTIVE) - CROWDSOURCING (PASSIVE))	UNIRM	POLIMI	T0+2 – T0+18
	4.6 - USER-GENERATED DATA	POLIMI	UNIRM	T0+2 – T0+18
	4.7 - TELECOMMUNICATION DATA	POLITO	POLIMI	T0+2 – T0+18
	4.8 - DATA SELECTION THROUGH QUALITY EVALUATION	CNR		T0+2 – T0+18
5 - TESTING		UNIRM	POLITO + ISPRA + All	T0+18 – T0+30
6 - FUNCTIONALITIES (APPLICATIONS)	6.1 - MOBILITY	POLITO	POLIMI	T0+24 – T0+36
	6.2 – SOIL CONSUMPTION	ISPRA	POLIMI	T0+24 – T0+36

# GANTT OF THE ACTIVITIES



# EXPECTED RESULTS

- Software tools and procedures for urban landscape data representation and integration (UNIPD)
- Methodologies and procedures to harvest, collect and validate geomatic-related mobility data (POLITO)
- Guidelines related to communication (mobile phone) data analysis (POLITO, POLIMI)
- Methodologies and procedures to collect and validate existing VGI data (POLIMI)
- Apps and procedures to derive further useful information from VGI initiatives and social media/ telecommunication data (POLIMI)
- Realization and continuously updating of a positional accuracy map (indoors and outdoors) within the common data model, based on location tags, already existing open outdoor maps and possibly skeleton indoor maps, together with positions and navigation tracks (UNIRM)
- Selection/decisions about the outdoor/indoor positional and routing services (e.g. for emergency, assistance to disabled people, commercial centers, recreation activities) which can be supported in dependence on the location accuracy (UNIRM)
- Guidelines related to the concepts of geo-crowdsourced data privacy and ownership rights (POLIMI)

# EXPECTED RESULTS

- Temporal sequences of coregistered, geocoded SAR reflectivity maps, geocoded displacement velocity maps, geocoded InSAR deformation time series (CNR)
- Availability for the ingestion in the SDI of satellite, ancillary and statistic data to be used for the maps production (ISPRA)
- Extended 3D data model white sheet (UNIPD)
- Extended 3D data model dedicated web page (UNIPD)
- A distributed and acentric interoperable geo-spatial data infrastructure sharing on the Web the project's multi source heterogeneous geo-data (CNR, POLITO: server side design; POLIMI, UNIPD: client side design; every RU: implementation)
- An INSPIRE metadata record enriched with quality indicators for each GEO BIG DATA element managed by the SDI(CNR, UNIPD)
- A catalogue service for discovering the GEO BIG DATA by formulating quality-based selection conditions in the queries to the catalogue and retrieving ranked metadata (CNR)
- A collaborative platform for the management, cross-validation and integration of the VGI data (POLIMI)
- An interactive web platform for the multidimensional visualization, filtering and processing of project data (POLIMI)

# EXPECTED RESULTS

- Implementation code for integration with the virtual globe webgis (UNIPD)
- Specifications related to the usage of mobility data for added value information extraction (POLITO)
- Specifications related to innovative procedures for data integration and management (POLITO)
- deployment of the aforementioned data in a collaborative open source platform (POLITO)
- Land cover and soil consumption maps at multiple resolutions (high-medium 10-100 m) (ISPRA)
- Indicators of soil consumption, urban sprawl, landscape composition and fragmentation (ISPRA)
- INSPIRE metadata enriched with quality indicators for each dataset (ISPRA)