The Italian Soft Mobility Atlas

A collaboration of the Italian Soft Mobility Alliance (AMODO) and Rete Ferroviaria Italiana (RFI)

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11th European Greenways Award
International Conference on Greenways and Sustainable Tourism
Rome, 20th November 2023

Members of the Alliance
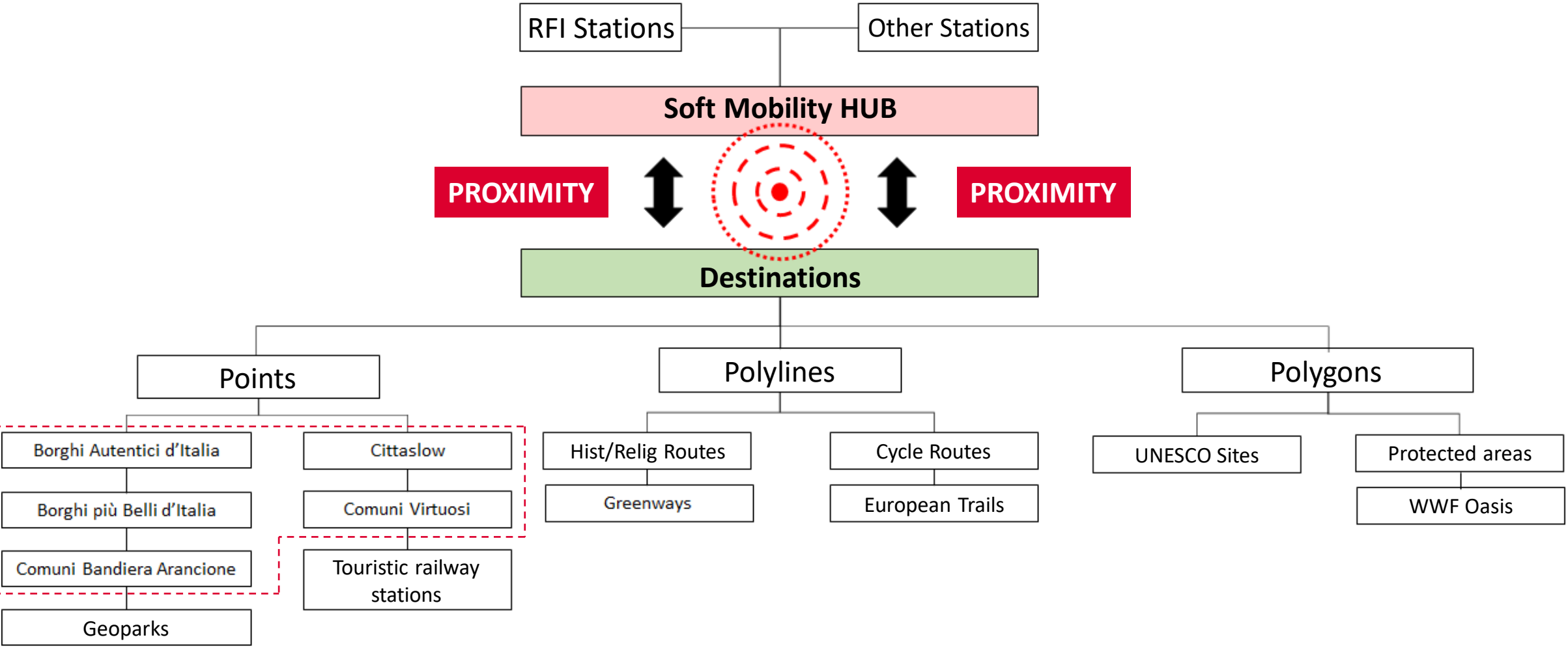
The Memorandum of Understanding

Goals

- To systematize information and knowledge on **soft mobility infrastructures** and on **destinations** in Italy
- To identify through spatial analysis techniques the possible **synergies** between the components of the system (**infrastructures and destinations**), as a tool for orienting and supporting decisions
- To define paths for the development and promotion of an **Integrated Soft Mobility System**
- To identify the **railway stations** that can be developed as **Soft Mobility HUBs**

Recipients

- **Institutions** and **Local Authorities**, to develop projects and solutions, as well as mobilize new resources to promote sustainable mobility and tourism
- End users (**citizens**), to disseminate and promote sustainable mobility and tourism

Creation of thematic maps from data analysis

RFI Stations — Other Stations

Soft Mobility HUB

PROXIMITY ↕ ⊙ ↕ PROXIMITY

Destinations

Points
- Borghi Autentici d'Italia
- Borghi più Belli d'Italia
- Comuni Bandiera Arancione
- Geoparks
- Cittaslow
- Comuni Virtuosi
- Touristic railway stations

Polylines
- Hist/Relig Routes
- Greenways
- Cycle Routes
- European Trails

Polygons
- UNESCO Sites
- Protected areas
- WWF Oasis

Italian networks of historical Villages

Resources

STU	**383**	**Touristic railway stations (28 Lines, 1.618 Km)**
BOR	**900**	**Networks of historical villages** (Bandiere Arancioni, Borghi Autentici d'Italia, Cittaslow, Comuni Virtuosi, Borghi più Belli d'Italia)
MDP	**12 000**	**km of European Trails**
	84	**Historical/Religious Routes (24.000 km)**
AP	**1 661**	**Protected areas (100.000 Km²)**
UNE	**55**	**UNESCO Sites (5.700 Km²)**
MDB	**18 000**	**km di Cycle routes and greenways**
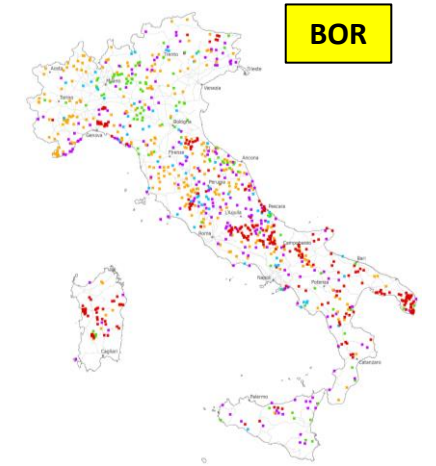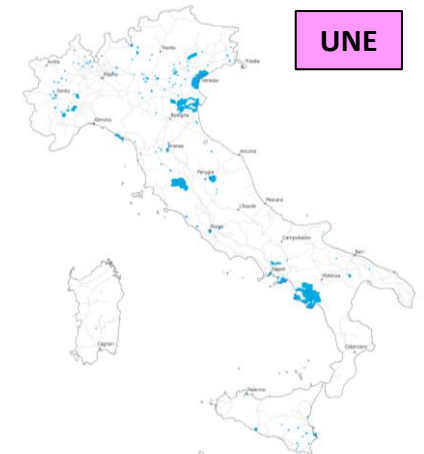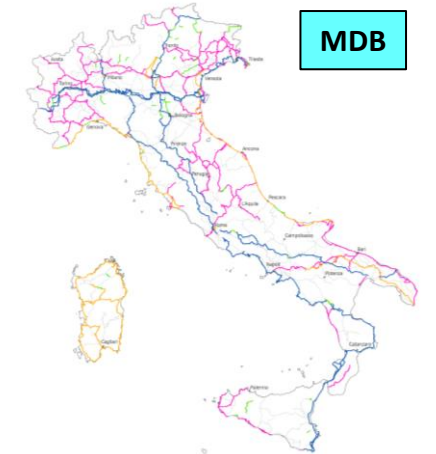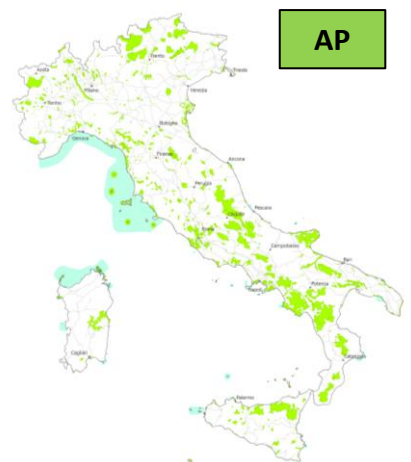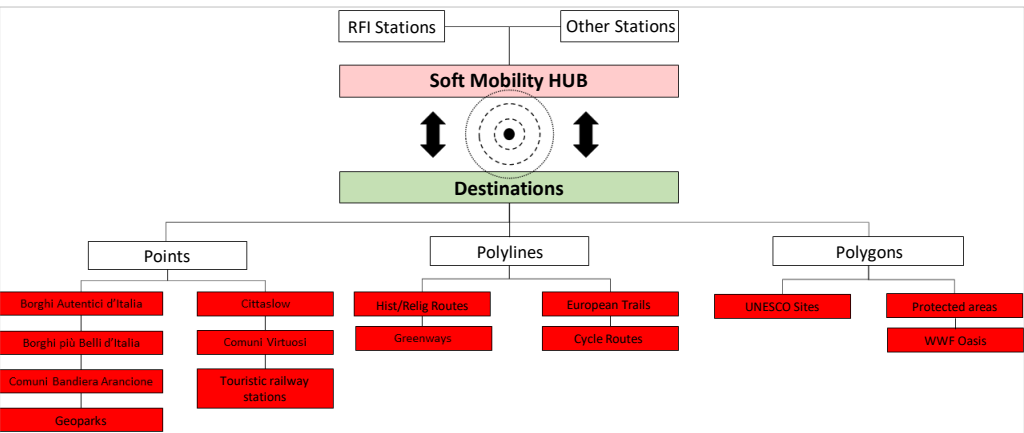
Railway stations

3 029 railway stations

🔴 **2 057 RFI stations**

⭕ **972** Other stations

Diagram:

RFI Stations — Other Stations

Soft Mobility HUB

Destinations

Points	Polylines	Polygons
Borghi Autentici d'Italia	Hist/Relig Routes	UNESCO Sites
Cittaslow	European Trails	Protected areas
Borghi più Belli d'Italia	Greenways	WWF Oasis
Comuni Virtuosi	Cycle Routes	
Comuni Bandiera Arancione		
Touristic railway stations		
Geoparks		

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Calculation of proximity indices
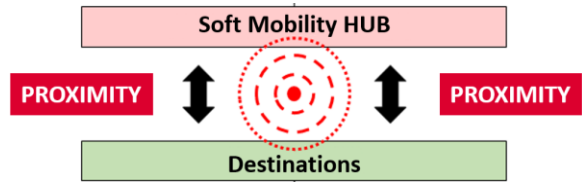
Area of influence (AI) - Based on the **average reference speed** and the time considered optimal (**30 minutes max**) for accessing the resources starting from the station.

Considering soft mobility as a type of active mobility for people with any skills and abilities, two reference speeds were assumed:

- 4 km/h for pedestrians → AI = **2 km**;
- 8 km/h for cyclists → AI = **4 km.**

Proximity indices calculated based on the distance between each element and the railway stations.

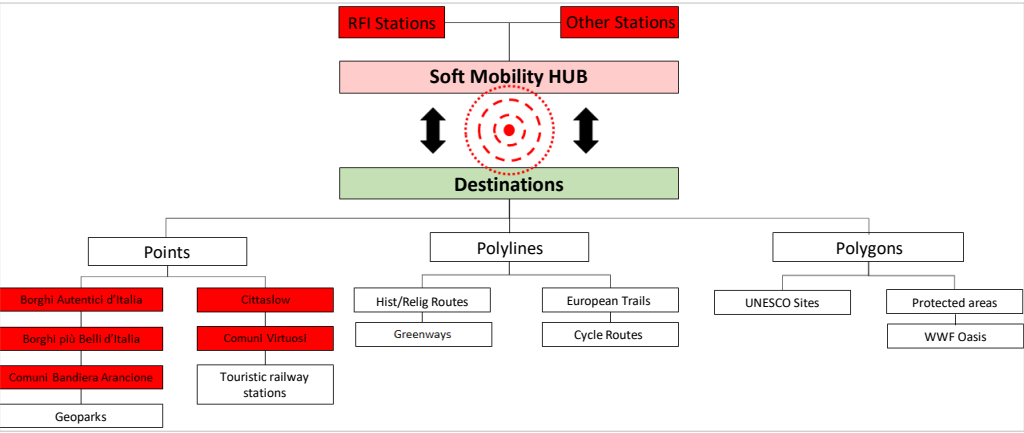$$I\_VIC_{i\,[0-1]} = \sum_i \frac{[1 - (Dist_{Infl} + Toll)}{Max_i}$$

Tema/Indice	Elementi d'interesse	Geometria	Area d'influenza	Tolleranza
Soft Mobility Walking	Hist/Relig Routes	Polyline	2 km	+1 km
	European Trails			
	Italian National Trail			
Soft Mobility Cycling (routes > 10 km)	Greenways	Polyline	4 km	+1 km
	Eurovelo			
	Italian Touristic National Cycle Network			
	Italian National Cycle Network (Bicitalia)			
Italian networks of historical Villages	Bandiere Arancioni	Polygon (500 m within the point)	2 km	+0.5 km
	Borghi Autentici d'Italia			
	Cittaslow			
	Borghi più belli d'Italia			
	Comuni Virtuosi			
UNESCO Sites	Siti Unesco con ingresso	Point	2 km	+0.5 km
	Siti Unesco ampi con ingresso	Polygon	2 km	
	Siti Unesco ampi senza ingresso	Polygon	0.5 km	
Protected areas	EUAP Protected areas	Polygon	0.5 km	+0.5 km
	SCI (Site of Community Importance) and SPA (Special Protection Areas)			
	WWF Oasis			
	Geoparks	Point	2 km	+0.5 km
Touristic railways	Touristic railway stations	Point	0.5 km	+0.5 km

Stations and historical villages

3 029 stations (of which 2.057 RFI)

296 stations (10%) are close to a village

● **190 RFI stations** (of which 10 close to 2-3 villages)

○ **106 Other stations** (of which 17 close to 2-3 villages)

Diagram

RFI Stations		Other Stations
	Soft Mobility HUB	
	↕ ⊙ ↕	
	Destinations	

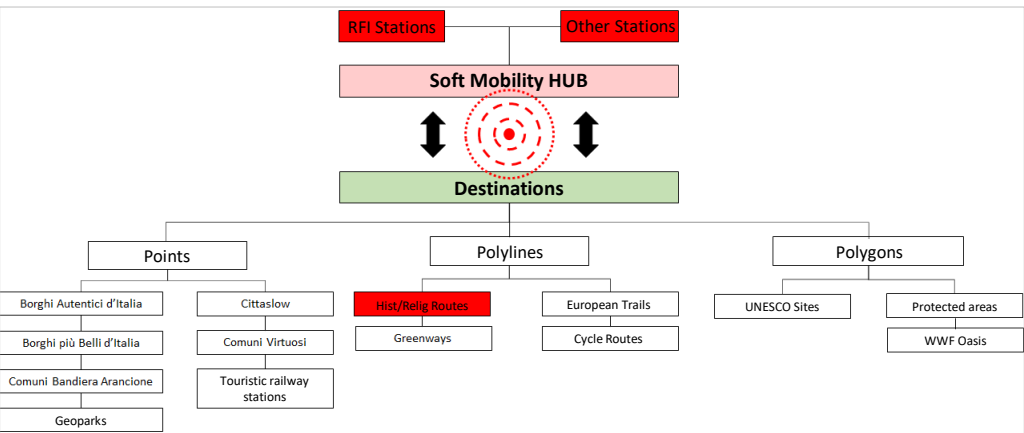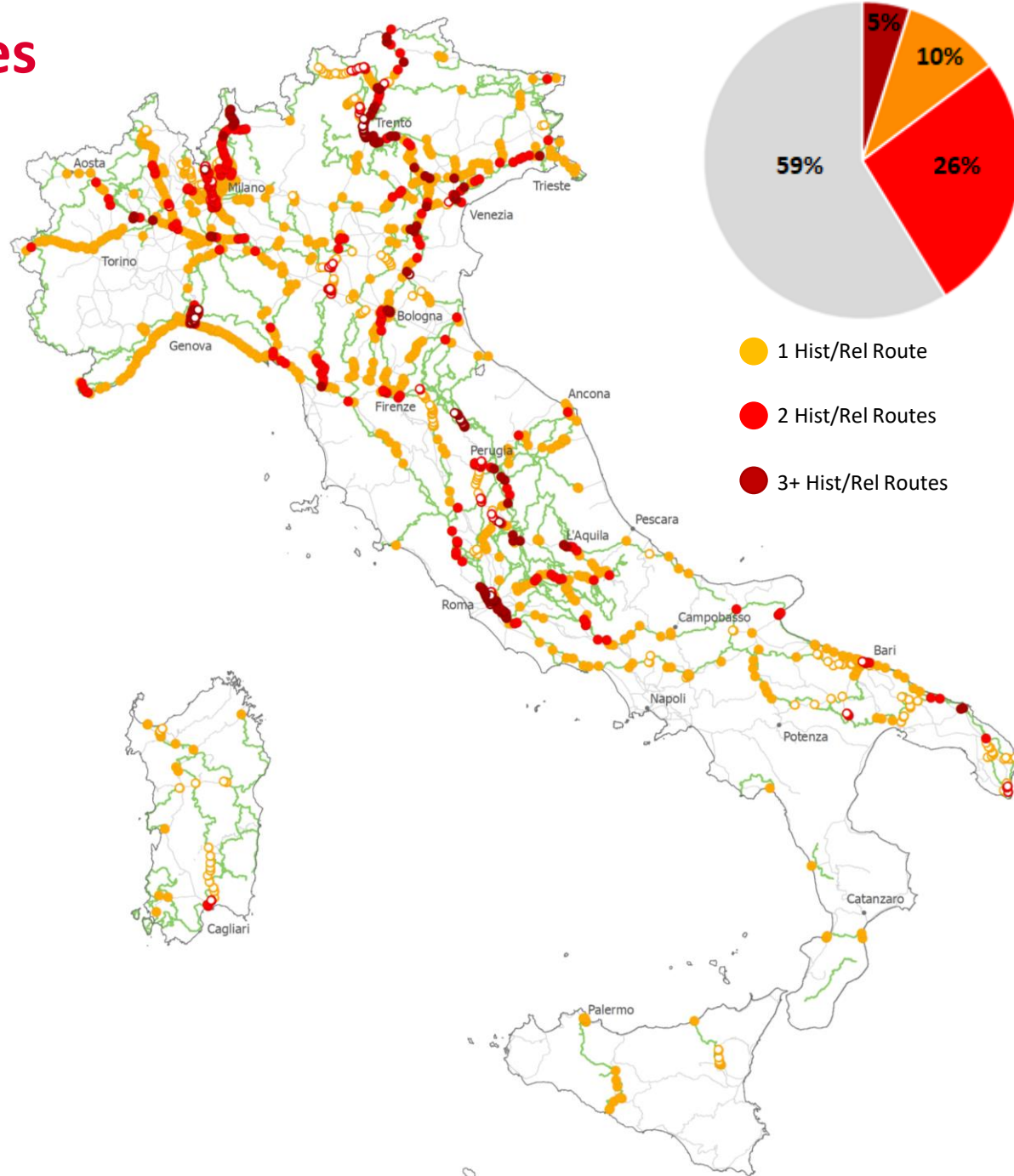| Points	Polylines	Polygons
Borghi Autentici d'Italia	Cittaslow	Hist/Relig Routes	European Trails	UNESCO Sites	Protected areas
Borghi più Belli d'Italia	Comuni Virtuosi	Greenways	Cycle Routes		WWF Oasis
Comuni Bandiera Arancione	Touristic railway stations				
Geoparks					

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Stations and Historical/Religious Routes

3 029 stations (of which 2.057 RFI)

1 249 stations (41%) are close to at least a Historical/Religious Routes

⬤◯ **800** stations close to 1 Hist/Rel Route

⬤◯ **301** stations close to 2 Hist/Rel Routes

⬤◯ **148** stations close to 3+ Hist/Rel Routes

- 🟠 1 Hist/Rel Route
- 🔴 2 Hist/Rel Routes
- 🔴 3+ Hist/Rel Routes

Pie chart: 59%, 26%, 10%, 5%

Diagram:

RFI Stations — Other Stations

Soft Mobility HUB

↕ ↕

Destinations

Points | Polylines | Polygons

- Borghi Autentici d'Italia
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RFI — RETE FERROVIARIA ITALIANA

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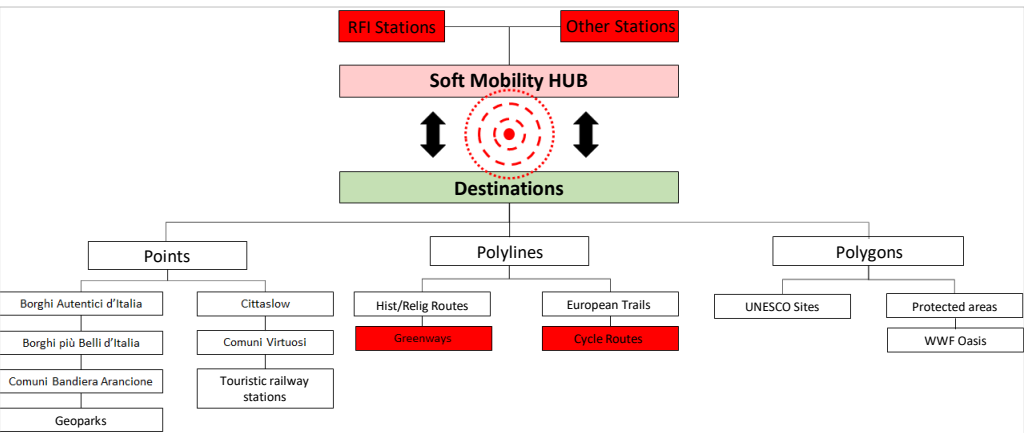# Stations, greenways and cycle routes

3 029 stations (of which 2.057 RFI)

1 830 stations (60%) are within 5 km from a greenway or a cycle route

● **1 237** RFI stations   ○ **593** other stations

Among these, 1 478 (49%) are within 2.5 km from a greenway or a cycle route

● **1019** RFI stations   ○ **459** other stations

Stations, villages, routes and paths, greenways and cycle routes, prootected areas and Unesco sites

3 029 stations (of which 2.057 RFI)

124 stations (4%) are close to villages and soft mobility infrastructures

🟠 **82** RFI stations   ⭕ **42** other stations

47 of which are close to a protected area too

🔴 **35** RFI stations   ⭕ **12** other stations

3 of which are close to a UNESCO site too

🔴 **3** RFI stations   ⭕ **0** other stations

Scenic Railways

3 029 stations (of which 2.057 RFI)

1 076 stations (36%) are along scenic railways

🟠 **673** RFI stations   ⭕ **403** other stations

670 of which (22%) are situated in areas with a population less than 100 000 inhabitants and close to a soft mobility infrastructure

🔴 **419** RFI stations   ⭕ **251** other stations

The "**Scenic Railways**" are the **50 active railway lines** characterized by a high quality of the landscape crossed, visible directly from the train window.
These are the railway sections that pass within 300 m from protected natural areas, UNESCO sites, highly natural land uses, or within 100 m from the coastline.

Overall Soft Mobility Index (IMD$_{ST}$)

- **Proximity Calculation**

Touristic stations	**Italian networks of historical Villages** Bandiere Arancioni	Protected areas	UNESCO Sites	Italian National Trail	Greenways
	Borghi Autentici d'Italia	WWF Oasis		European Trails	Eurovelo
	Cittaslow	Geoparks		Hist/Relig Routes	Italian Touristic National Cycle Network
	Comuni Virtuosi				
	Borghi più Belli d'Italia				Bicitalia
ISTU Index	**IBOR Index**	**IAP Index**	**UNE Index**	**IMDP Index**	**IMDB Index**

3.029

- **Filtering for population**

Stations in municipalities with less than 100 000 Inhabitants	2.598
Proximity of soft mobility infrastructures (IMDP > 0 OR IMDB > 0)	1.888
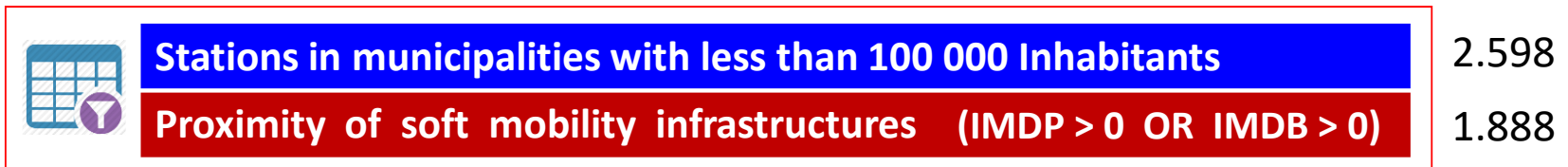
- **Scenic Railways** ➡ **Extra score**

- **Weighting**

P_ISTU = 0,….	P_IBOR = 0,….	P_IAP = 0,….	P_UNE = 0,….	P_IMDP = 0,….	P_IMDB = 0,….

$$IMD_{ST} = [(P_{ISTU} \times ISTU) + (P_{IBOR} \times IBOR) + (P_{IAP} \times IAP) + (P_{IUNE} \times IUNE) + (P_{IMDP} \times IMDP) + (P_{IMDB} \times IMDB)] + (V_{PAES[0-0,05]})$$

Weighting

3 029 stations (of which 2.057 RFI)

1.888 stations (62%) are in municipalities with less than 100 000 inhabitants and with IMDP or IMDB > 0

● **1.332** stazioni RFI   ○ **556** altre stazioni

IMD	Stations			
	RFI		Other	
0,2-0,4	●	82	○	33
0,1-0,2	●	365	○	119
< 0,1	●	885	○	404
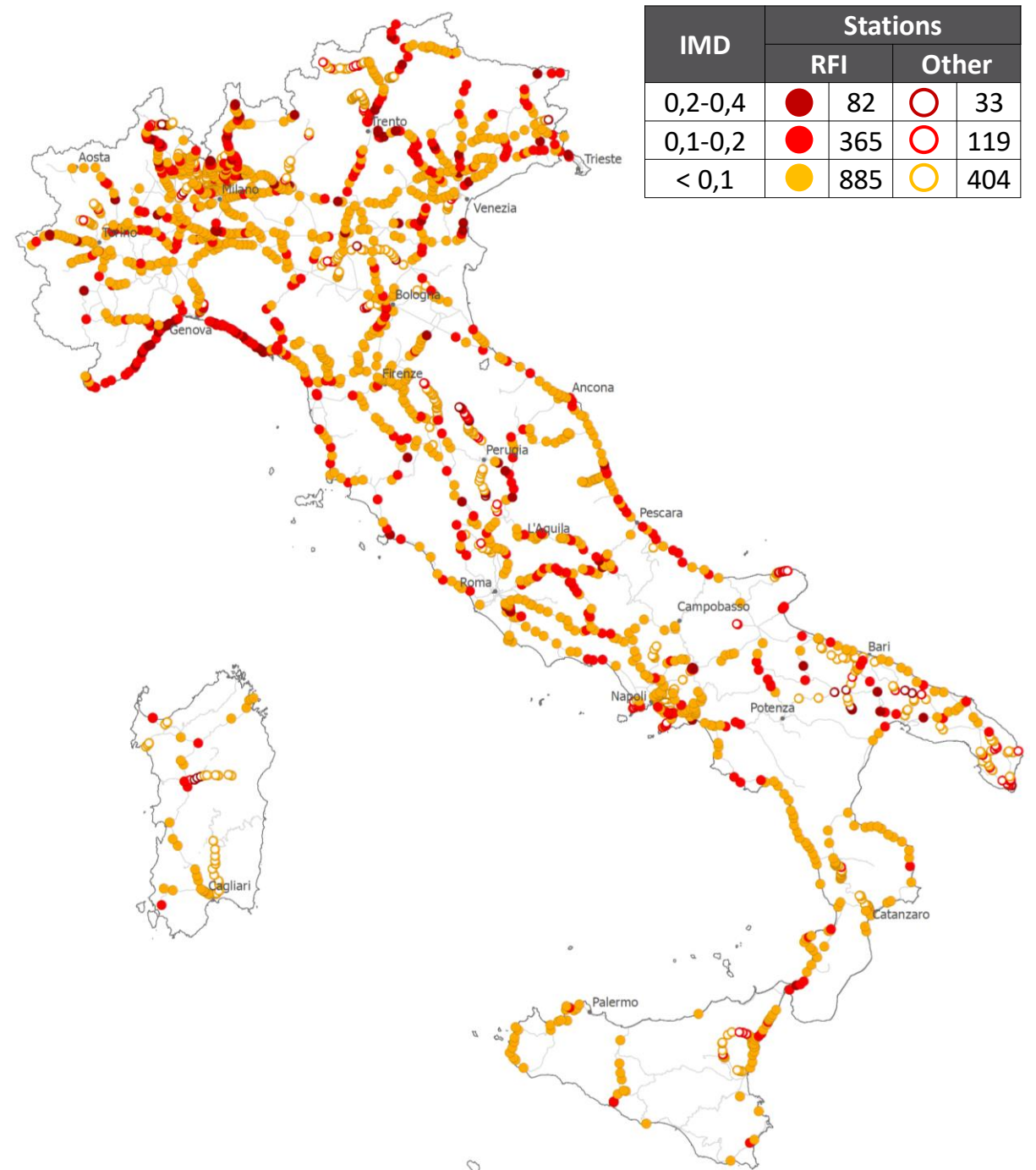
Web-GIS

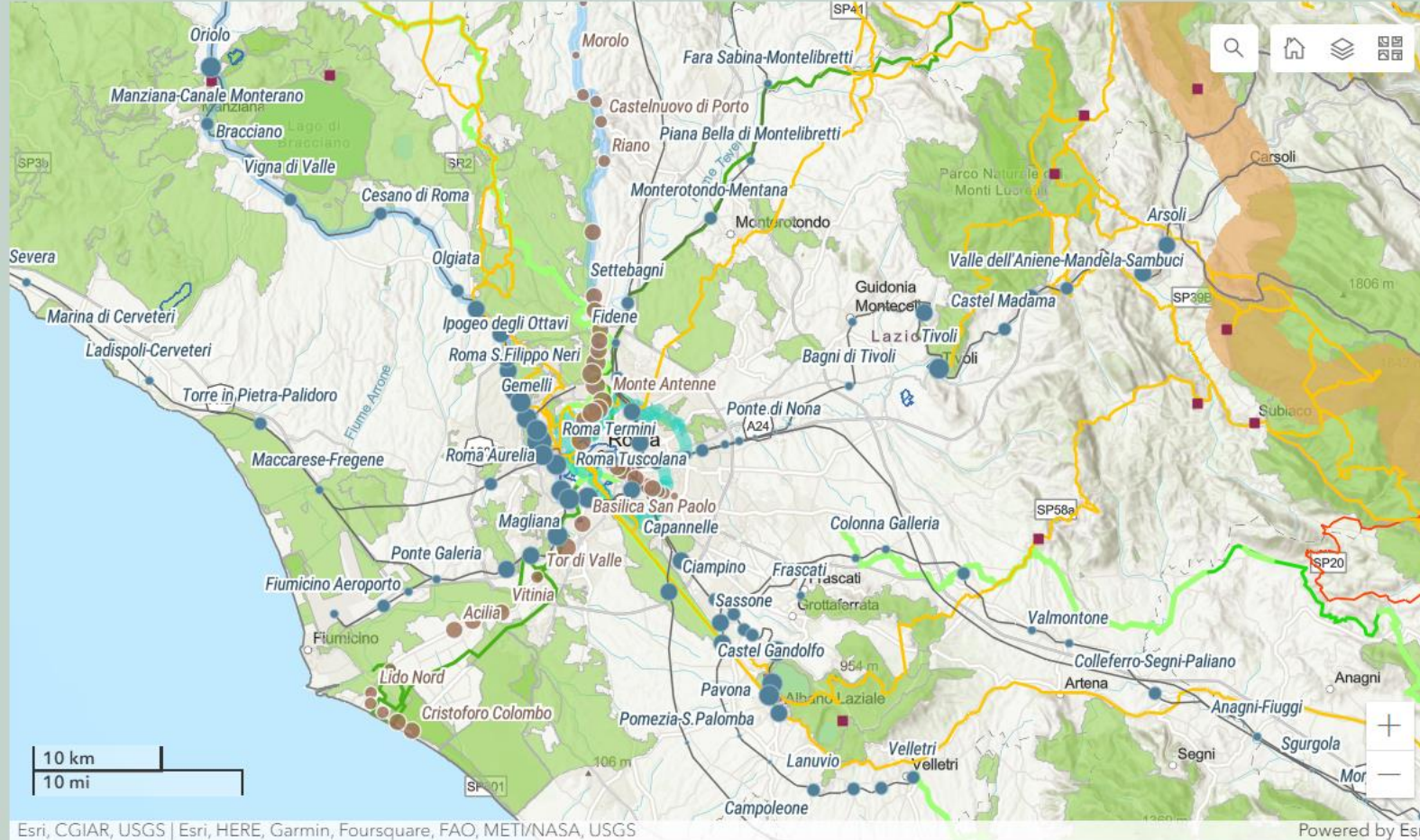The **Web-GIS** is available on the AMODO (www.mobilitadolce.net) and RFI (www.rfi.it) internet sites.

Organizations and people

Direzione Strategie e Pianificazione Sviluppo Infrastrutture di Polo
Strategie di sviluppo stazioni

Luigi Contestabile

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Stefano Fondi

Anna Donati   **Roberto Rovelli**

Giulio Senes   **Paolo Ferrario**

Alessandra Bonfanti   **Federico Riva**