Milan as a living lab for mobility innovation

Unit Systems for innovation of urban mobility – Mobility Department

Organismo Intermedio – Città di Milano

Milano

What is a Living Lab?

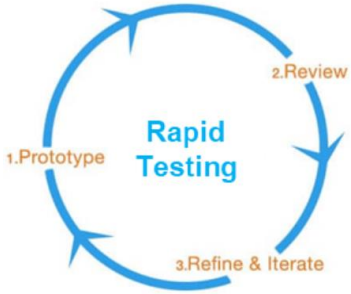
“ An open innovation ecosystems in real-life environments using iterative feedback processes throughout a lifecycle approach of an innovation to create sustainable impact ” ENoLL (European Network of Living Labs)

What is a Living Lab?

It provides,

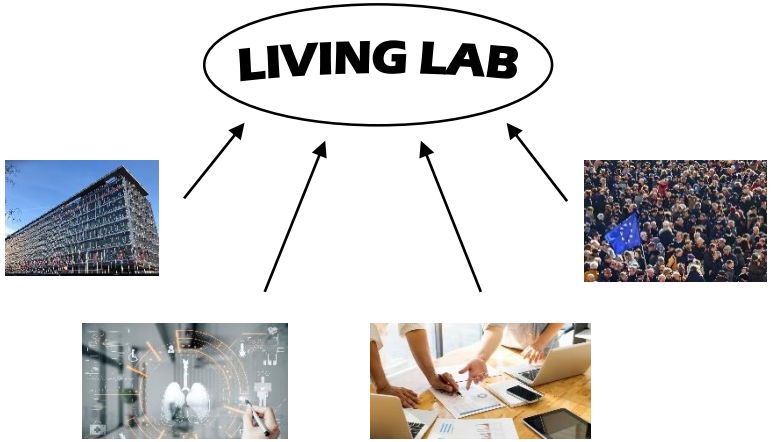
Co-Creation: Fostering collaborative creativity

Rapid Testing: Agile development for quick results



Scaling-Up Innovations & Businesses: Moving from concept to market

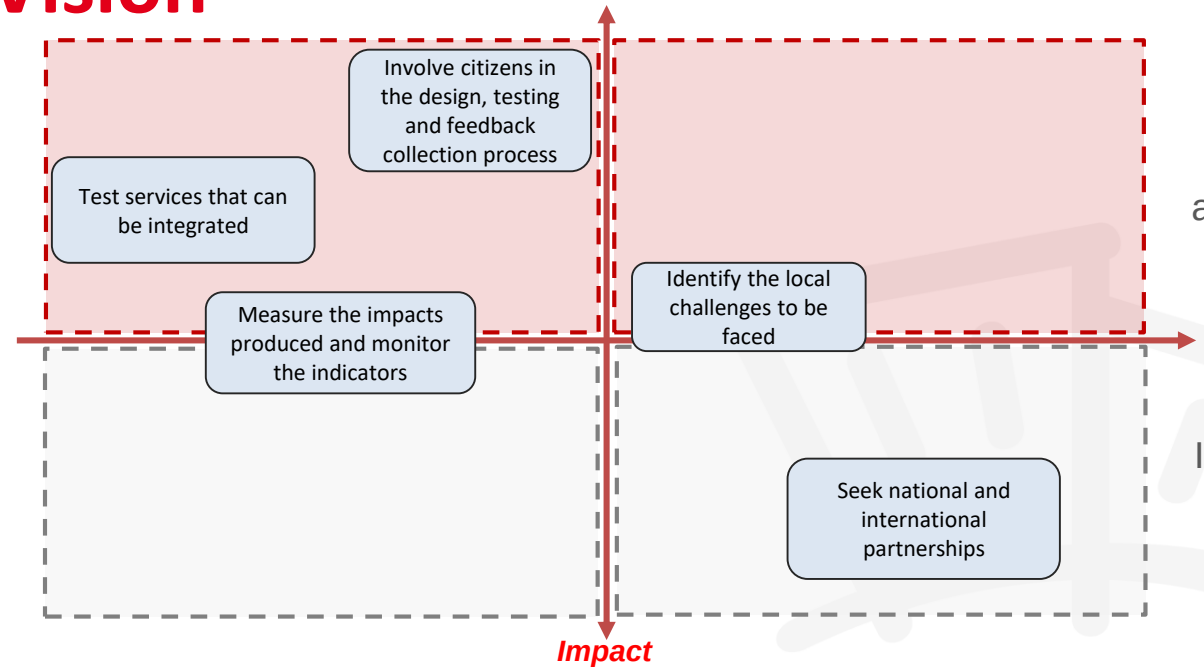
How does it work?



With the Quadruple Helix Model, the Living Labs foster the co-creation and open innovation among the four main actors:

Public actors, academic institutes, private actors, and users

The Vision


Involve citizens in the design, testing and feedback collection process
Test services that can be integrated
Identify the local challenges to be faced
Measure the impacts produced and monitor the indicators
Seek national and international partnerships
Complexity
Impact
Impact on Citizens and Public Authorities
Impact on Business and Research

The Objectives

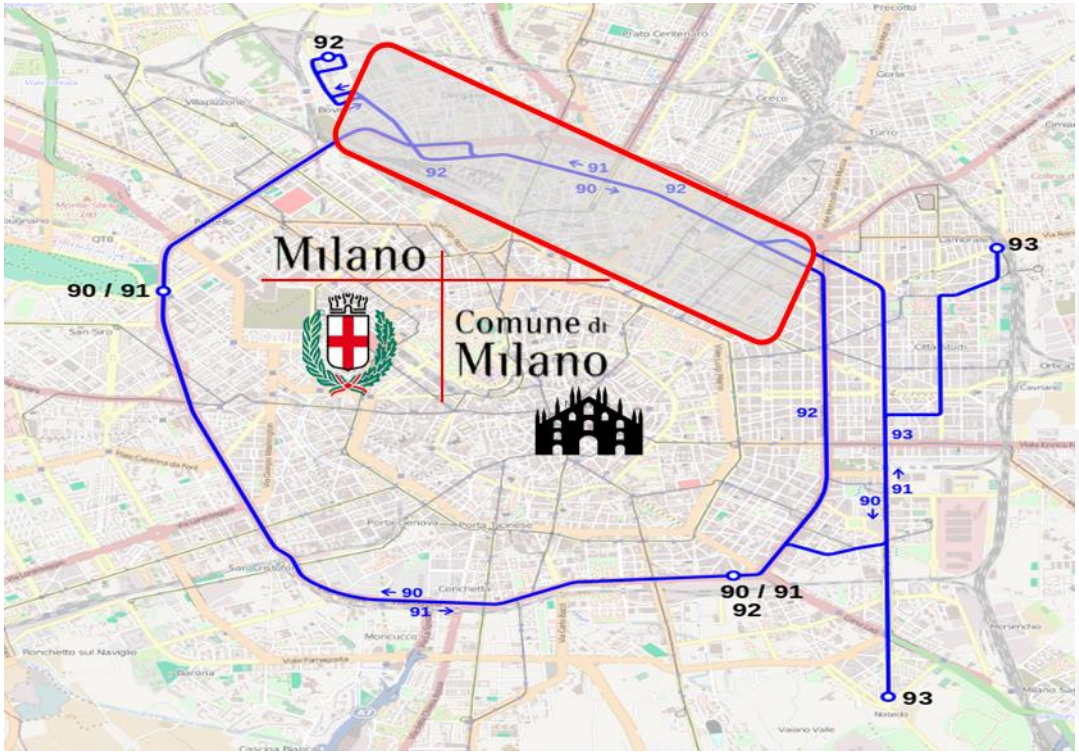
1. Respond to the real needs of citizens
2. Systematize local needs and offer innovation on the research and business side
3. Strengthen the technological infrastructure available
4. Test different service hypotheses and identify which ones to invest in
5. Involve citizens in co-design activities and effectiveness evaluations
6. Produce a concrete and measurable impact in terms of sustainability and safety

Living Lab Milan 2022 - 2026

- The Living Lab Milan will be a laboratory to test innovations in real conditions under proper infrastructure and services
- It aims to create an architecture for the development of a Multi-Space – Multi – Objective Laboratory
- Application of the quadruple helix of mobility to develop projects, identify needs, enable technology transfer, and create new enterprises

- The area of interest is carried out on the outer ring road part of the 90/91 route between Piazzale Piola and Piazzale Lugano
- The route is featured by protected and mixed lanes
- The area is accessible to public and private transport
- The area is covered by a 5G network bandwidth

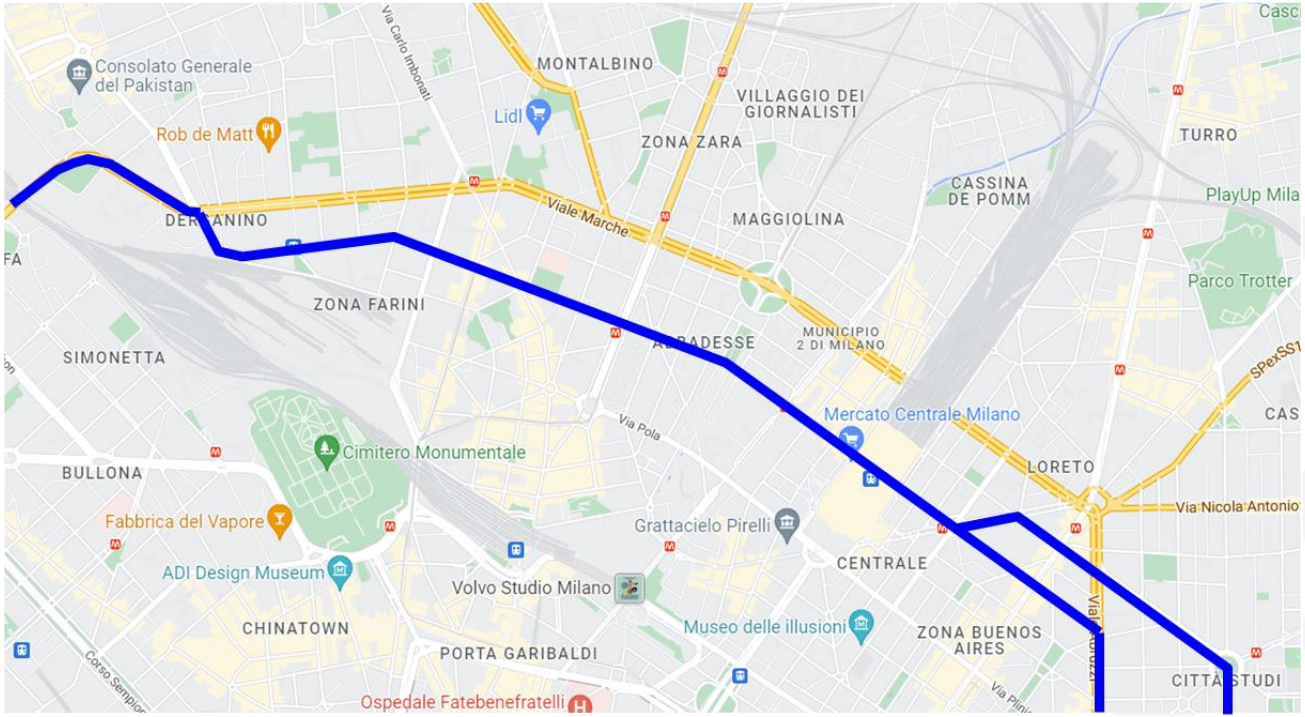
Area of Interest



Area of Interest

Characteristics

- 27 intersections
- 23 traffic light junctions
- 32 stops



The Objectives

1. Carry out pre-competitive tests of technologies, services, and "in-vivo" applications

2. Contribute to solving urban mobility problems through innovation

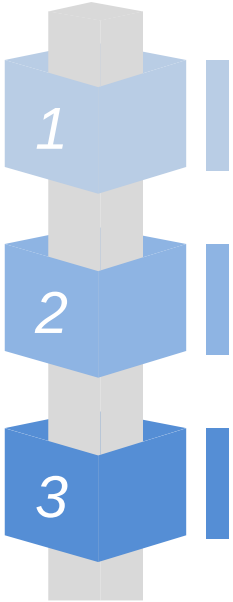
3. Promote access to the Living Lab for researchers, innovators, startups, and businesses to promote an open-innovation approach

4. Highlight the technologies developed within the Living Lab and the demand for innovative mobility services

5. Coordinate the value chain, ensuring interoperability between services, products, systems, and infrastructures created by different entities

6. Increase the state of maturity of the technology from level 4 to level 9 (from laboratory testing to market testing)

The Utilized Technologies



Advanced Driver Assistance Systems (ADAS)

A smart sensor, implemented at intersections, enhances driver performance and reduce human error by utilizing vehicle-to-infrastructure (V2I) and vehicle-to-vehicle (V2V) communication

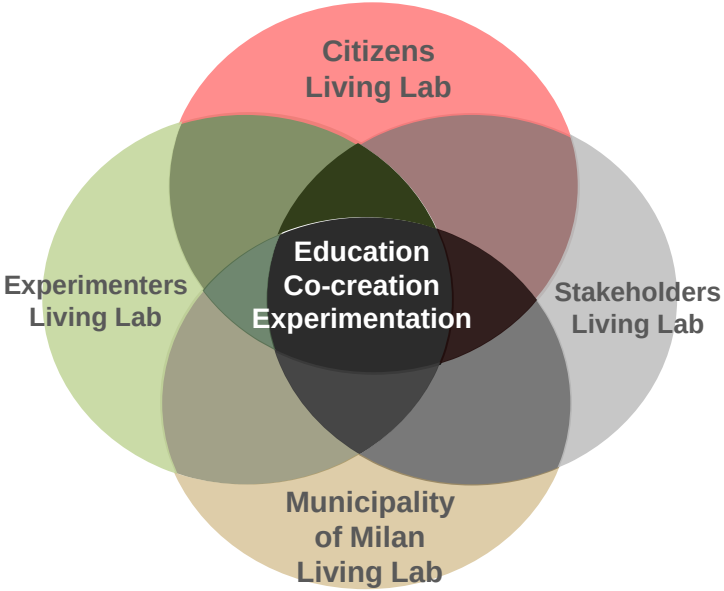
Green Light Optimal Speed Advisor (GLOSA)

A system that provides drivers the optimal speed to maintain when approaching an intersection. The smart sensor includes a series of AI-equipped cameras that measures traffic flow at intersections

Simulator

Utilizing the static and dynamic data obtained from sensors, it reproduces the urban environment of the experimental route (digital twin), with the aim of testing assisted and autonomous driving logic in a realistic virtual environment

Involved Partners



1

Citizen Laboratory

- Inform and educate citizens about technologies supporting autonomous driving
- Create awareness about their respective opportunities and advantages
- Gather insights, feedback and opinions

2

Stakeholder Laboratory

- Involve stakeholders in autonomous, connected and intermodal mobility in the process of co-creating innovative services in response to the needs that emerged from the Citizen Participatory Laboratory

3

Experimenters Laboratory

- Test and validate possible solutions that exist to date
- Identify new perspectives and ideas that are useful for the further study of issues related to autonomous driving
- Create greater awareness of existing technological scenarios related to the topic

The Pathway

Connection

Development of the connected vehicle-infrastructure-user system/infrastructure

- Adaptation of traffic light nodes
- Installation of smart systems for traffic management
- Fleet monitoring and vehicle occupancy
- Data delivery

Intermodality

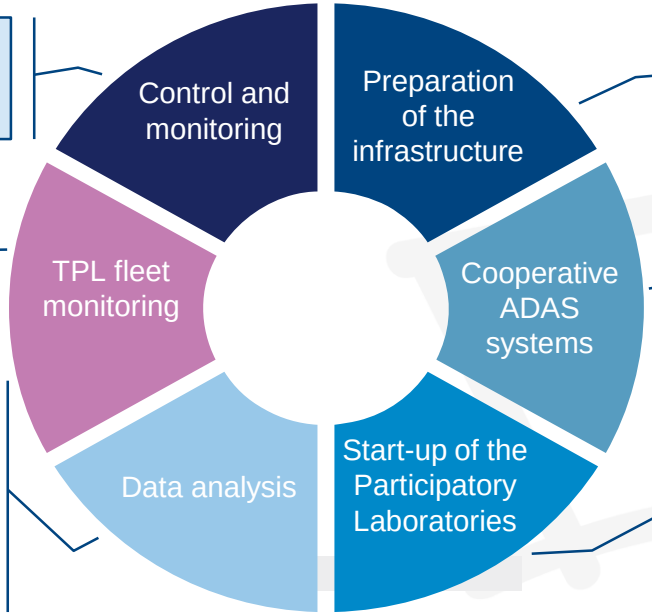
Integration of the system with other urban transport modes/services

Individual needs

Offer of services customised to the needs of individual users

- Participatory workshops

Where are we and what's next?



Implementation of the control and monitoring center

Placement of traffic light nodes is completed

TPL fleet monitoring and information system for users

A public tender will be published for the service of development and testing of cooperative ADAS systems

- Advance traffic monitoring placement systems are ongoing
- Data analysis activities for the performance evaluation of video analysis systems will be done

A public tender procedure for the Service of Management of Laboratories for co-creation paths popularization and technology transfer within the framework of the Living Lab - Milan project is almost completed

The Involvement

Experimenter Strategy

- Innovative continuity experiments
- Experiments of technological solutions led and promoted by stakeholders
- Experimentation with national and international synergies for the implementation of innovative mobility regulations and plans

Developing, Testing, Validating

- Proprietary technologies for ground-based vehicle ride control and monitoring systems
- Regulatory and insurance aspects in a challenging context that includes mixed stretches

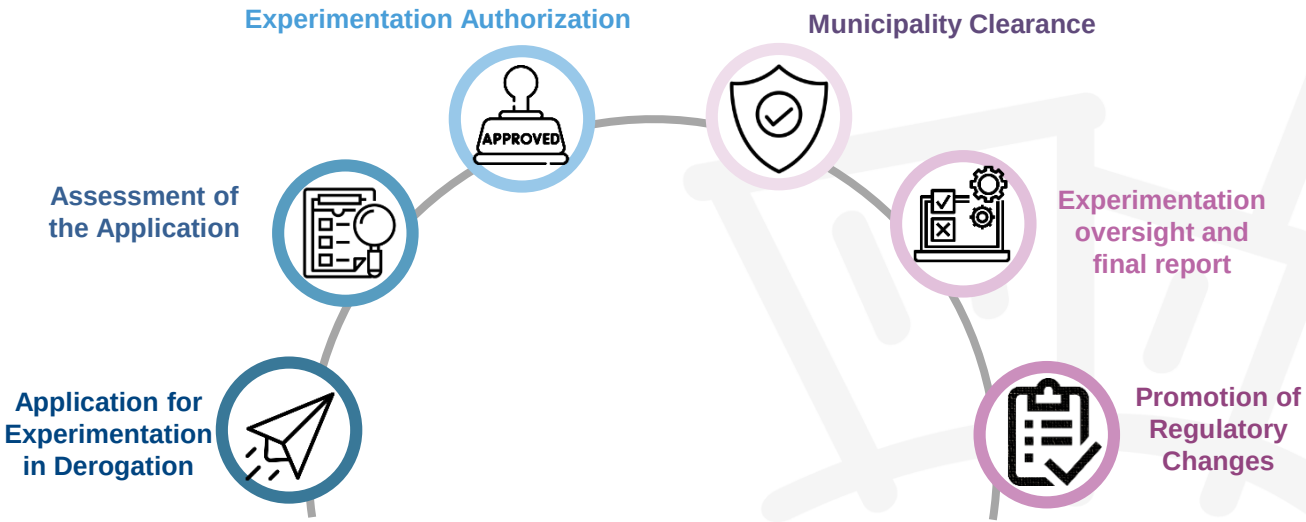
The Involvement

Participatory labs addressed to stakeholders and experimenters will explain

how to apply to join the project

Regulation sandbox

*Following the **"Sperimentazione Italia**" project guidelines*



Application for Experimentation in Derogation

The application form must be:

- Submitted by a certified e-mail address to the Department of Digital Transformation and Ministry of Economic Development
- Specify which in force regulations would prevent the experimentation
- Specify the characteristics of the experimentation in question (e.g. duration, purpose, expected benefits, etc.) by attaching a technical annex

Assessment of the Application

- The Ministry of Economic development reviews the application and prepares an investigation report within 30 days
- The Ministry of Economic development may ask the applicant for clarifications or additional information regarding the application
- If the requested information is not submitted by the deadline, the application will be deemed as having been rejected

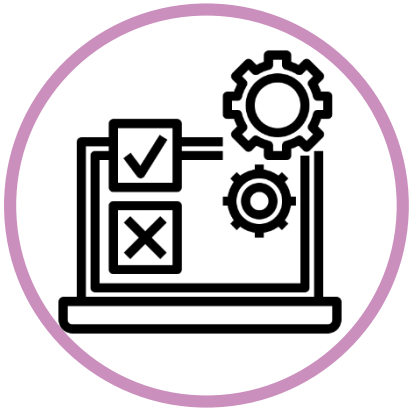
Experimentation Authorization

- The Department for Digital transformation, in agreement with the Ministry of Economic development, authorizes the experimentation for a duration not exceeding one year and extendable only once
- The authorization defines how the experimentation shall be carried out and the requirements deemed necessary to limit the associated risks

Municipality Clearance

The issuance of clearance of the Municipality to start the experimentation activity, as authorized by the Department for Digital Transformation, defines the scope of the experimentation

Experimentation oversight and final report



- Collection and analysis of trial data to attest to the impact and possibly promote regulatory changes
- Submission of a report to the responsible department and ministry presenting the results of the monitoring and experimentation, as well as the economic and social benefits achieved

Promotion of Regulatory Changes

Within 90 days, the regulatory change is promoted to bring the innovation into full effect, which can be adopted throughout the country

The Certainity of Time

The effectiveness of the rule is aided by the clarity of the timeframe

A

Investigation

30 days

B

Measuring

30 days

C

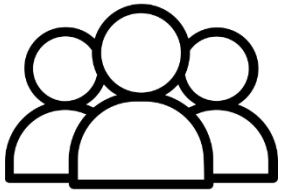
Promoting Regulatory Changes

90 days

Contact Information

Additional Information

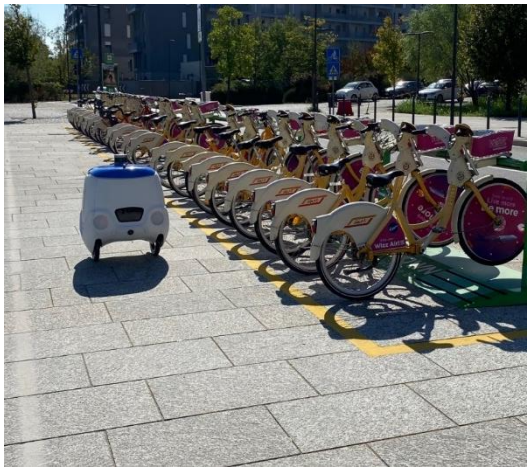
Explore more via the following
innovazione.gov.it/progetti/sperimentazione-italia/



Welcome Office

Request a meeting at
sperimentazioneitalia@innovazione.gov.it

Last mile delivery: Yape Experimentation

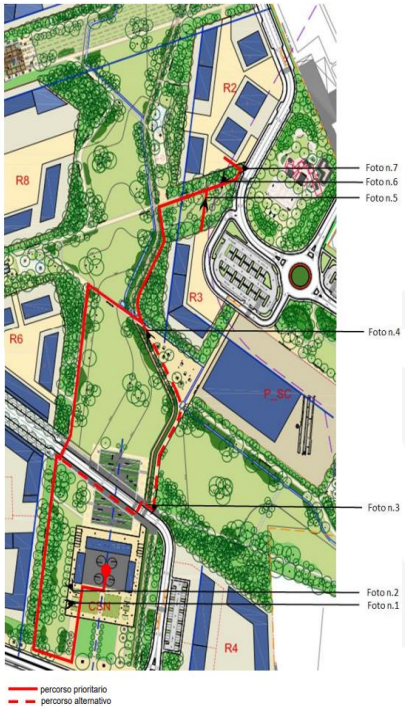


For **the first time in Italy**, the experimentation of a fleet of self-driving robots for last-mile deliveries is possible thanks to the **'Sperimentazione Italia' project**, the regulatory sandbox allow start-ups, companies, universities and research centers to experiment with innovative projects through a temporary exemption from current regulations.

Area and Path

- **July 2022 – Dec 2022**
  Mapped potential navigation routes and tested algorithms for detecting obstacles along the route
- **Jan 2023 – Jun 2023**
  Actual Delivery Experimentation Implemented
- **Where**

  Cascina Merlata area



Features

- Two self-balancing wheels
- Equipped with sensors and cameras
- Transport up to 10 kilograms for up to 80 kms
- Speed regulation system won't exceed 6 km/h

The Target

1. Reduce Road Congestions

2. Achieve the EU Zero Pollution Action Plan 2030

3. Prioritize the optimization of delivery times

4. Achieve widespread utilization of emerging technologies to benefit citizens, businesses and public administration

5. Propose a regulatory change to allow innovations to become replicable throughout the country


yape

SMART ROAD Project

1

Overview

Smart Roads are created through a gradual process of digital transformation of an existing road network. It is expressed through the essential tools of innovation, integration, and inclusion of technologies and services throughout the country

2

Objective

- Introduce observation platforms and traffic monitoring
- Process models data and information
- Advance services to managers infrastructures, public administration, and users of the road

SMART ROAD Decree

Ministerial Decree, no. 70, Feb. 28/2018, as amended, known as “The SmartRoad Decree”

Regulates the digital transformation of road infrastructure

Authorizes the testing of technological solutions to adapt the Italian infrastructure network to new smart services and automated vehicles

The Aim

1

Create a favorable technological ecosystem for interoperability between infrastructures and new generation vehicles

2

Adaptation of infrastructures to satisfy mobility needs among travelers

3

Creation of innovative services for users of the road

4

Support vehicles connected and with more advanced levels of automatic driving assistance

5

Reduce road accidents and ensure continuity with European C-ITS services

How to apply?

1. *Authorization from the body that owns the road to execute the experiments on one or more road areas*
2. *Application evaluation from the Technical Support Observatory for Smart Roads committee*
3. *Authorization from Ministry of Infrastructure and Transport - Department for Transport, Navigation, General Affairs and Personnel*

Who can apply?

The authorization for testing on public roads can be requested, individually or jointly, by the **manufacturer of the vehicle** equipped with the automatic driving technologies, as well as by **university institutes** and **public and private research bodies** that conduct experiments on vehicles equipped with driving automation technologies

Duration of Experimentation

The authorization has a duration of one year and can be renewed at the owner's request. The renewal request must be submitted at least thirty days before the duration expires

Applicant Renewal Attachments

- **A** — Report on the experiments carried out
- **B** — Insurance contract for the new period
- **C** — Updated description of the vehicle's technology and performance
- **D** — Any request for extension to new area roads
- **E** — Updated list of automatically guided vehicles and drivers

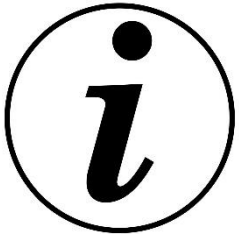
Key Points

Vehicle must already be type-approved in the non-automatic version

Authorization will be limited to the road areas identified, subject to the clearance of the road owning entity

The driving on the road in the trial phase will be entrusted to a supervisor who will have to ensure the control from the automatic mode to manual mode

Contact Information



Additional Information

To access the authorization forms and additional information, https://www.mit.gov.it/node/8274

Towards autonomous mobility: “1000-MAD” Project

The 1000 Miglia Autonomous Drive (1000-MAD), characterized under the SmartRoad project, is a Maserati MC20 Cielo equipped with **self-driving technology**, established by the Politecnico di Milano, tested on public roads along the 1000 Miglia race route on July 13-17, 2023, taking on certain parts completely autonomously.

The aim is to run the entire 1,500km length of the 2024 1000 Miglia in **autonomous mode**.

The Roadmap

Multiple Testing Rounds and Events

1000 Miglia 2024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