



Adaptation of linear infrastructures to the new transport models

How can we build, adapt and operate roads that are safer, more attractive and ready for a sustainable and connected mobility?

Challenge context

Origins

In the last decade, the advancement of technology in the automotive sector, as well as the rapid adoption of sustainable and connected vehicles, has brought about a paradigm shift. This has triggered mobility players to adapt and improve current infrastructures, putting the user and new transportation models at the center.

The new transport models and the planet need technological solutions that help to adapt linear infrastructures to these new trends as quickly as possible.

Problem description

- Data exchange systems between users and current infrastructures are scarce, which prevents agile and transparent communication of important driving events and limits the value provided to the user.
- The growing number of sustainable and connected vehicles in circulation call for road corridors where they can circulate safely and be provided with energy supply.
- The degree of automation of operations within the sector can still be greatly improved, which would increase the safety of users and workers.
- The generation of information and use of real-time data on the state of the road and its traffic will enable greater safety for the user and more efficient operations.
- Roads are active elements that enable efficient and sustainable energy management and ensure the energy supply of electric vehicles in circulation.

Challenge goals

Identify and implement solutions that allow us to build and adapt our roads for sustainable and connected vehicles, in the following categories:

- **Systems for interaction and information exchange between users, vehicles and infrastructure.**
We seek innovative solutions that allow us to interact and exchange data actively between road users and our roads in order to generate value for all the agents involved.
- **Technologies and tools to promote the use of sustainable vehicles.**
We seek innovative solutions that allow us to guarantee the technical feasibility of the circulation of public and private users of sustainable and connected vehicles on our roads.
- **Intelligent operation and monitoring of linear infrastructures.**
We seek innovative solutions that allow us to obtain real-time information on the condition of our roads, enabling efficient and continuous monitoring of operations.
- **Lighting, beaconing and systems for improving user safety.**
We seek innovative solutions that allow us to increase user safety while reducing human intervention in traffic flow control.
- **Solutions to improve the management and use of renewable energy in our linear infrastructures.**
We seek innovative solutions that enable us to decarbonize our assets through the generation and management of renewable energy.

Aspects to be considered

We are looking for innovative solutions that:

- Improve user experience and safety based on information generated by users, vehicles and infrastructure.
- Optimize infrastructure monitoring and maintenance tasks.
- Help users to have better visibility on the real-time status of the road they are driving on.
- Enable infrastructure to adapt to the growing number of sustainable and connected vehicle users.
- Enable automated control of traffic flows through automated signaling and beaconing systems.

Target audience

This challenge has a global scope and is aimed at the entire professional innovation community such as startups, scaleups, technology centers, universities and established companies.

Expected impact

- Improving safety and the user's driving experience on our roads, regardless of the type of vehicle chosen.
- Having intelligent and automated signaling or beaconing systems that reinforce the safety of drivers and employees.
- Identifying new sources of data collection and know, in real time, the operating conditions of our assets.
- Enabling bidirectional communication channels between users and the infrastructure that allow the exchange of valuable information.
- Providing solutions to the generation, supply and charging of renewable energy to vehicles on our roads.

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