

## **C-Roads projects: connecting roads with vehicles to improve the traffic management**

The Final event of **C-Roads Italy 2** and **C-Roads Italy 3** projects entitled “*C-ITS systems applied to urban mobility and motorways*” took place in Verona on 23 November 2023.

I progetti **C-Roads Italy 2** e **C-Roads Italy 3**, coordinati dal Ministero delle Infrastrutture e dei Trasporti, con il supporto di North Italy Communications quale project management, sono co-finanziati dalla Commissione Europea attraverso il programma **Connecting Europe Facility (CEF)**, e hanno l’obiettivo di studiare, implementare e testare, in condizioni reali di traffico autostradale e urbano, i sistemi **C-ITS (Cooperative Intelligent Transport Systems)**.

**The C-Roads Italy 2 and C-Roads Italy 3 projects**, coordinated by the Italian Ministry of Infrastructure and Transport with the support of North Italy Communications as project management, are co-financed by the European Commission through the Connecting Europe Facility (CEF) program, and focused on studying, implementing, and testing C-ITS systems in real traffic conditions both on motorways and in urban areas.

C-ITS systems allow an exchange of data, through wireless technologies, between elements and actors of the transport system, i.e. between vehicles (V2V) and between vehicles and infrastructure (V2I), allowing a significant improvement in road safety, efficiency of traffic and driving comfort, helping the driver to make optimal decisions and adapt to real traffic situations, through a series of messages (Use Cases), displayed directly on the vehicle’s dashboard, making part of the “Day1” and “Day1.5” services defined by the European Commission.

As regards the Italian participation in the C-Roads Platform, it is important to underline the active and constant presence of the Italian experts of the national implementing bodies in all the Platform’s Working Groups and Task Forces in order both to share and discuss the experience gained in the national pilot testss and in national developments, and to contribute to the proposal of new Use Cases, new scenarios, and for the creation of the C-ITS messages profiles.

In particular, **C-Roads Italy 2** has implemented a series of services dedicated to the urban areas in the cities of Verona, Turin and Trento, namely:

- GLOSA - Green Light Optimal Speed Advisory (technology that allows to adjust the speed of the car to chase the green traffic light);
- Traffic signal priority request by designated vehicles (request for priority for some vehicles – ambulances, police cars, etc.);
- Signal violation/Intersection safety (alert message to the driver of the vehicle who is about to violate the red traffic light signal, or to alert the driver when another vehicle is about to violate the red traffic light signal);
- Off and On-street parking management & information (management and information on parking spaces);
- Traffic Information and Smart Routing (traffic information and indications on the best route).

Furthermore, a connection has been created between the Urban mobility center of Verona and Traffic control center of Brescia Verona Vicenza Padova motorway.

In the **C-Roads Italy 3 project**, the coverage of C-ITS services on motorway sections has been extended, involving other motorway concessionaires (Autostrade per l'Italia - ASPI) and the city Municipality of Rome as project partners, aiming at gaining field experiences for designing increasingly smart, safe and sustainable mobility for Italian roads. Further services linked to the management of winter mobility have been developed along the highways managed by Autostrada del Brennero, CAV and Autostrade Alto Adriatico (Autovie Venete).

Thanks to the contribution of all the national implementing bodies, each with their own specific skills, both projects achieved the objectives set at the beginning of the activities.

In particular, in addition to the partners who dealt with the development of the transmission and communication technologies' architecture, such as Almaviva, Movalia and Telecom Italia, and to Stellantis-CRF which equipped its cars with advanced technologies to allow connection with road infrastructure and has carried out multiple road test sessions, and to the two centers for data analysis and evaluation of related benefits such as Politecnico di Milano and TTS Italia, we recall the work carried out by roads infrastructure managers such as the Municipality of Verona, the Municipality of Turin, the Municipality of Trento and Roma Mobilità for the Municipality of Rome and the motorway concessionaires, namely, Autostrada Brescia- Verona- Vicenza- Padova, Autostrade per l'Italia, Autostrada del Brennero, Autovie Venete e Concessioni Autostradali Venete, which have installed equipment, devices and systems along their networks enabling communication with vehicles.

It should also be highlighted that the communication architecture was designed and developed as a "hybrid" solution, as defined by the European C-ITS strategy, i.e. through ITS-G5 technologies for short-range communication and via "cellular network" (IP) for long-range communication, applying the specifications and architectural profiles developed by the European C-Roads Platform.

The event's debate was highlighted and validated the progress achieved so far, as well as anticipated the next challenges linked to interconnected mobility and the advantages that can be achieved in terms of improved road safety and improved transport efficiency, as well as reduced energy consumption and lower negative effects on the environment.

A joint challenge which must now move rapidly from the experimental phase into the operational phase and which foresees Italian operators and companies at the forefront at continental level to provide highly innovative services to those the drivers travelling on the motorway but also to those travelling inside the urban areas, .

All this to provide more information to users, while coordinating and rendering the various public and private entities involved (and ones that could be involved in future) more efficient, without forgetting the possible economic benefits that can derive from it for the internal market and for the benefit of greater Italian competitiveness.