

Challenges for the Automotive in Urban Areas - Future mobility industries

Promoting sector transformation and new investments

Barcelona, 4th December 2018

- Catalonia, an **outstanding** automotive region ...



... In a **changing** world

- **Future mobility industries** in Catalonia. A diverse approach:

CAV CATALONIA

Connected - Autonomous

EV CATALONIA

Electric

MaaS CATALONIA

Shared - Combined

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Shared - Combined

- Some recent investments





Main objectives:

- **Cover all needs** for the development and testing of CAV technologies both on close scenarios and public roads
- **Investment attraction** and **talent creation** for CAV industry



- Diverse projects and services grouped under the umbrella of Catalonia Living Lab

**CAV testing on
public roads**

IDIADA and other
partners

**Mobility
telecom lab**

CELLNEX and other
partners

**C-Roads /
Inframix**

AUTOPISTAS and
other partners

**5G Barcelona
field & lab trials**

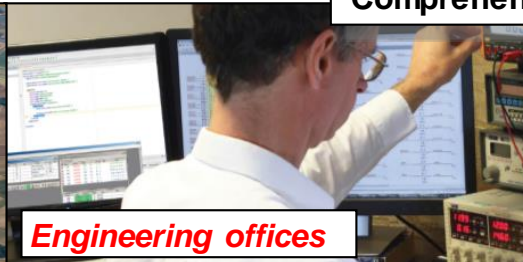
MWC and other
partners

Other Projects
...

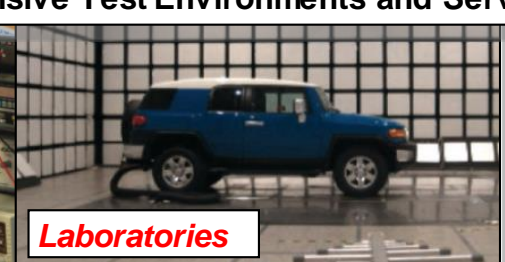
Comprehensive Test Environments and Services



Proving grounds



Engineering offices



Laboratories



Virtual simulation



Public roads

CAV Testing on public roads project defines procedure and test locations

Legal framework

Since 2015, a legal framework allows for public road testing of highly automated vehicles in Catalonia (L3, L4, L5)



Subject: Authorization for tests or research studies carried out with automated vehicles on roads open to general traffic.

INSTRUCTION 15/V.

Royal Decree 2822/1995 of 23 December, approving the General Vehicle Regulations (Reglamento 1976), in Article 47 granted the Directorate General of Traffic (Direcció General de Trànsit) the power to grant special authorizations for extraordinary tests or research tests conducted by manufacturers, institutions and official laboratories. Likewise, Instruction 10/V-00 set out the specific procedures for application to and granting of such authorizations.

However, technological progress in the automotive industry has enabled the design and development of devices and vehicles, which due to their nature and specifications, go beyond the current regulation. Some of these technologies propose different levels of automation, which at their fullest extent allow fully-automated driving.

In order to ensure the improvement possibilities that these tests will bring to road safety and safe and sustainable mobility in Spain, and at the same time to contribute to boosting the automotive industry and investment in research in our country, this instruction is aimed at regulating the granting of special authorizations for testing and research tests conducted with automated vehicles on roads open to general traffic.

CAV authorization: One-stop-shop

catalonialivinglab.com/

1. License plate application
2. Documentation & Plan
3. Additional requirements
4. Technical inspection
5. Dynamic check
6. Final decision

Catalan Traffic Authority (SCT)



Applus[®]
IDIADA

Fast track: Equivalent test authorization from other EU member states is valid

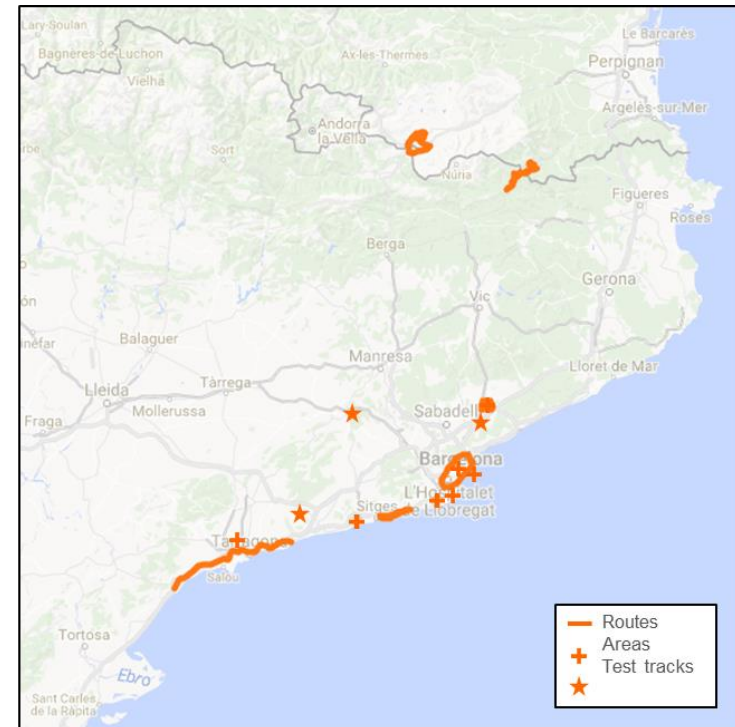


CAV Testing on public roads project defines procedure and test locations (ii)

Test locations

Location criteria from the industry:

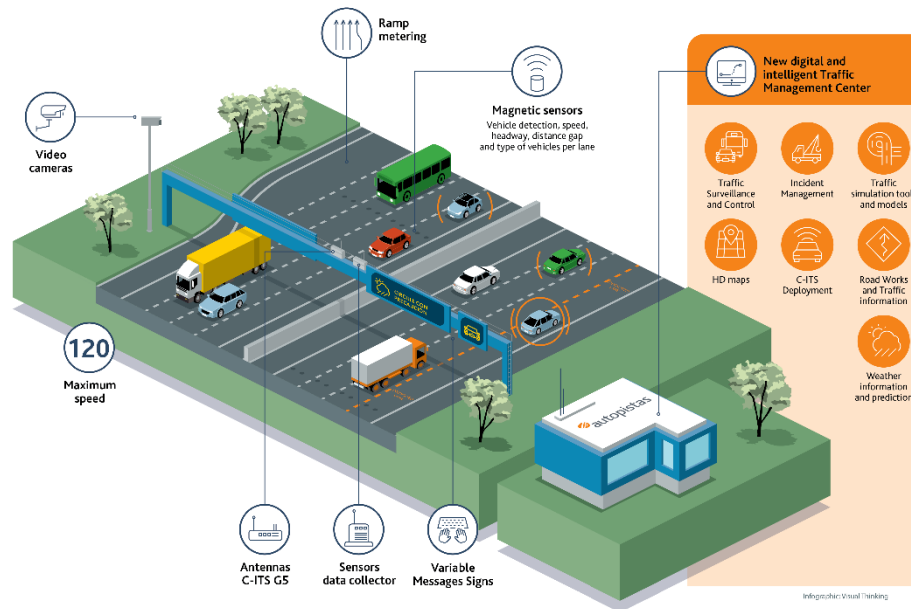
- Presence of sensor blockers
- Presence of sky blockers
- Presence of road obstacles
- Presence of communication issues
- High road user density
- High traffic sign density
- Varying road characteristics
- Different intersections
- Parkings
- High speed road entries and exits



Mobility telecom lab project implements innovative testing space for the development of Intelligent Transport Systems ITS technological solutions, particularly in the field of vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications



Inframix / C-Roads projects Autopistas Abertis has equipped a 20km section of public highway with the latest technologies in terms of communication (ITS-G5), sensing, traffic management 2.0 and data analytics. The test site is located in the Mediterranean Corridor (TEN-T Network) between Barcelona and the French Border. This service provides the opportunity to demonstrate any project related to CAV in a real traffic scenario supported by the latest technologies and the support of an experienced partner



Tour of an autonomous bus in 8 Catalan municipalities (ERICA project). The purpose of this tour is to see the interaction with the citizens and changes that cities will have to make to adapt to its operation



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- Some figures



- 11,162 FEV in Catalonia (June 2018)
- EV registrations in Catalonia: 1% plugged car, 9% hybrid car, 4% e-motorcycle
- Spain is the 2nd European market in e-motorcycles



- LIVE public-private platform for the deployment of the EV demand in Barcelona and Catalonia



- Government of Catalonia funds to reach 100 fast public EV charging stations by 2020 (for a 7 million population). Currently 61 stations are already available (June 2018)

- Some recent investments



- Some recent projects



- Presentation of the first prototype of e-minibus Strada e-City (7 meters large, 135 kWh battery, 10 years operation) that will start testing at street. As a result of a consortium of Catalan companies and tech center, under the initiative RIS3CAT (Catalonia Trade & Investment) that counts with European Funds support

- Research and technology transfer centers



- Focus on advanced functional (nano) materials
- Applications to electrochemical energy storage and superconductivity (amongst other)



- Electric traction drives, energy efficiency, high voltage systems, industrial electronics and mechatronics



EV Opportunities for Catalonia



Generalitat de Catalunya
Government of Catalonia

Experts' table on EV in Catalonia



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- A **public-private Forum** launched with the main goal to foster Mobility-as-a-Service deployment in Catalonia: vision definition and pilot projects

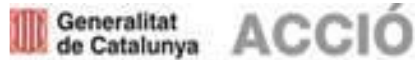


and more...

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