



**C-MOBILE**

P.SCHMITTING / ERTICO /  
JOSE FERNANDEZ, ANDREA BECERRA  
AND PABLO MEJUTO / CTAG  
TESTFEST WEBINAR /  
14<sup>TH</sup> OCTOBER 2019



# TESTFEST WEBINAR 1

Co-funded by  
the European Union



# TESTFEST / Introduction

## / Moderator

/ **Peter Schmitting**                      ERTICO, TESTFEST Coordinator

## / Speakers

/ **Pablo Mejuto**                              Project Manager at CTAG

/ **Jose Fernandez**                          Manager for C2X & Mobility Services at CTAG

/ **Andrea Becerra**                          Manager for Cloud Computing at CTAG

# TESTFEST / Notes about webinar moderation

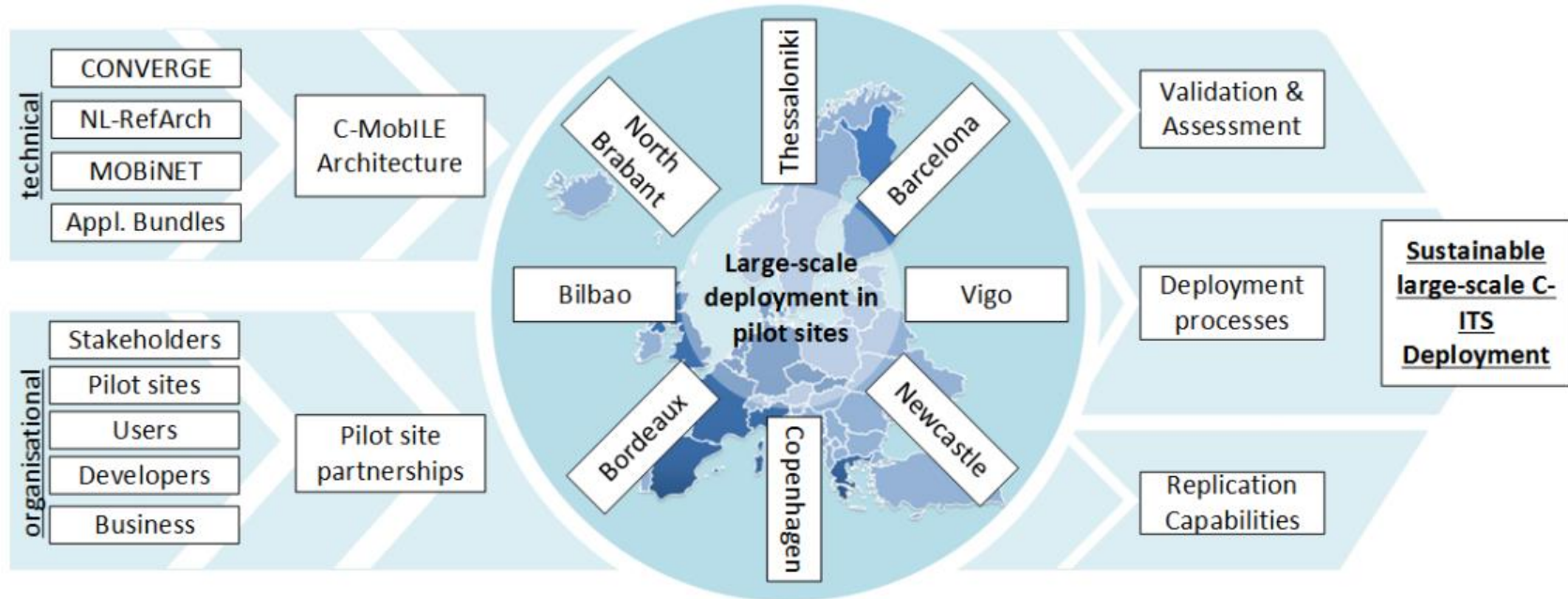
- / All participants are muted during the presentation
- / Participants can “Ask questions”
  - / Use the control panel to write your question during the presentation
  - / Ideally refer to a slide number in your question
  - / The moderator will review your question during the webinar and ask the speakers to answer them
- / Webinar will be recorded
  - / Recorded Webinar will be posted on the C-Mobile website
- / FAQs from the webinar will be captured and posted on the C-Mobile website

# TESTFEST / Content of webinar

- / Introduction to C-MoBILE (Peter Schmitting)
- / TESTFEST objectives (Peter Schmitting)
- / Where is it? (Pablo Mejuto)
- / Services deployed for testing (Jose Antonio)
- / Communication technologies (Andrea Becerra)
- / Geomessaging platform (Andrea Becerra)
- / Programme and schedule (Pablo Mejuto)
- / Preconditions for participation (Peter Schmitting)
- / Follow-up and contacts (Peter Schmitting)

# TESTFEST / Introduction to C-Mobile

C-Mobile (Accelerating C-ITS Mobility Innovation and depLoyment in Europe)



# TESTFEST / Introduction to C-Mobile

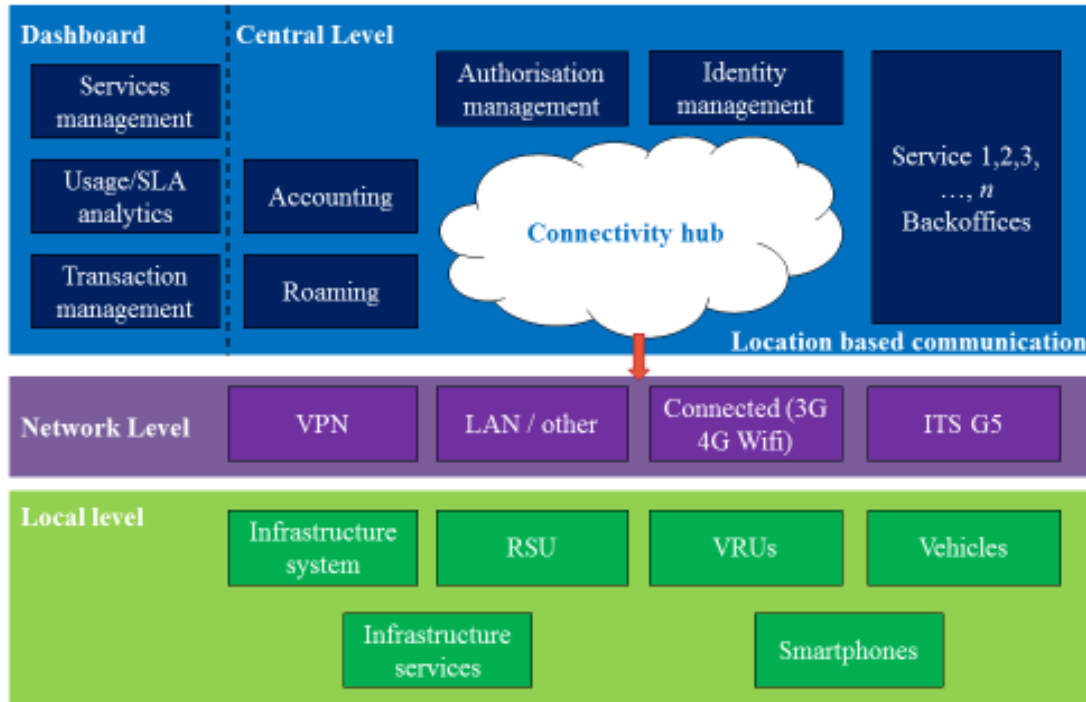
## C-Mobile factsheet

- EU-funded project  
Horizon 2020 RIA  
Grant Agreement No 723311
- Coordinator
  - Marcos Pillado, Applus+ IDIADA
- Period: 1 Jun 2017 / 30 Nov 2020
- Budget
  - total budget: € 15,059,453.42
  - total EC funding: € 12,575,000.05



# TESTFEST / Introduction to C-Mobile

## C-Mobile high level architecture





# TESTFEST / C-Mobile C-ITS SERVICES

## Bundle 1: Urban efficiency

- Rest time management
- Motorway parking availability
- Urban Parking availability

## Bundle 2: Infrastructure-to-vehicle safety

- **Road works warning**
- **Road hazard warning**
- Emergency Vehicle Warning
- Signal Violation Warning
- Warning system for pedestrian

## Bundle 3: Traffic efficiency

- Green priority
- **GLOSA) / Time To red - Time To Green**
- Cooperative traffic light for pedestrian
- Flexible infrastructure
- **In-vehicle signage**
- Mode & trip time advice
- Probe Vehicle Data

## Bundle 4: Vehicle-to-vehicle safety

- Emergency Brake Light
- Cooperative (Adaptive) cruise control (Urban ACC)
- **Slow or Stationary Vehicle Warning**
- Motorcycle approaching indication
- Blind spot detection / warning (VRUs)

# TESTFEST / Introduction to C-Mobile

## / Expected results of C-Mobile

- / C-ITS framework for proposing key deployment enabling solutions
- / Promotion of C-ITS deployments; lead towards automated transport
- / Assessment of benefits of bundling C-ITS applications and integrating multiple transport modes in the C-ITS ecosystem
- / Demonstrate an open secure large-scale C-ITS deployment
- / Provide an open platform towards C-ITS sources
- / Define/validate an operational process for C-ITS services deployment
- / Release testing methods to evaluate C-ITS architecture and effectiveness of the applications
- / Demonstrate the added value and economic viability

# TESTFEST / Objective and expected results

## / Objective

- / To check the actual interoperability of **all C-MobILE devices** intended to be used in the context of the large-scale pilots
- / To check the interoperability of devices from non-C-MobILE participants
- / Prove the correct transmission of service information through ITS-Gr and cellular channels

## / Expected Results

- / C-MobILE information is understood by all participating devices
- / Information from Vigo server is correctly understood by *other* applications

# TESTFEST / Where it is?

## / City of Vigo

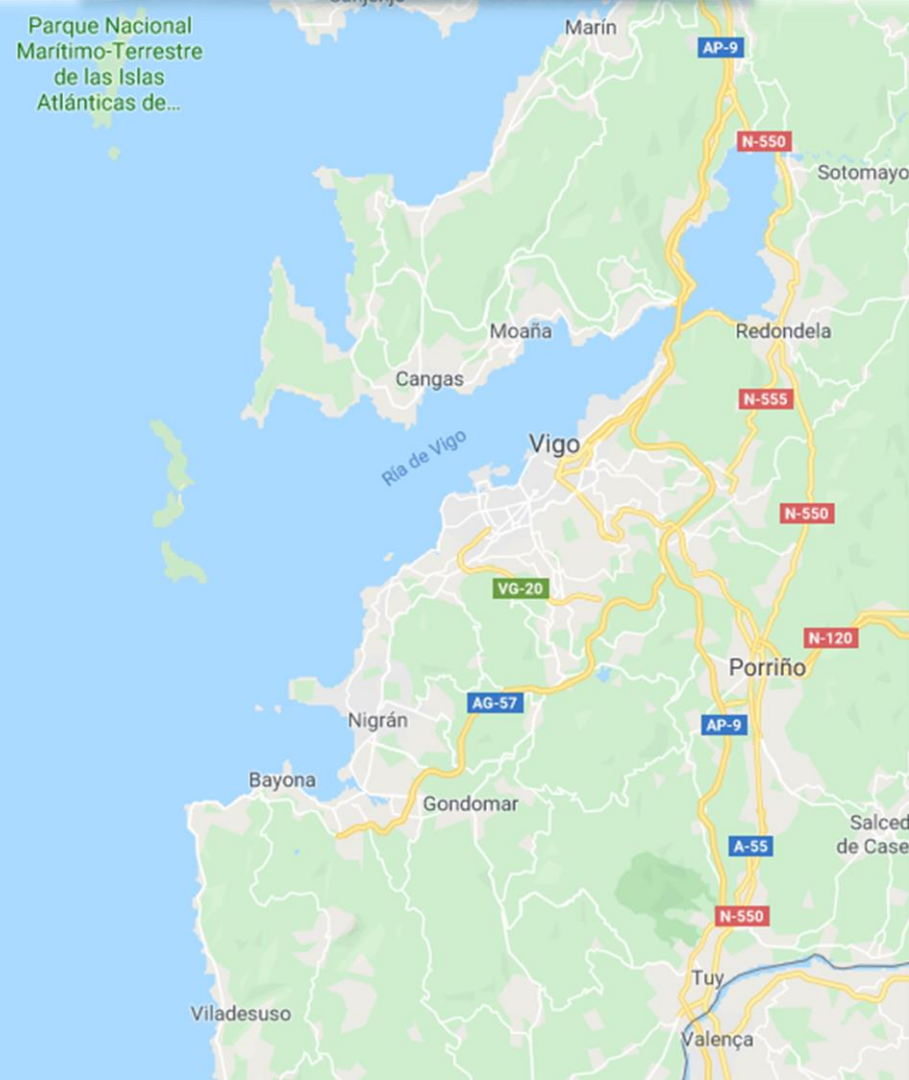
- / Noth west coast of Spain
- / > 300.000 inhabitants
- / Leads the shipbuilding sector in Spain
- / PSA factory and suppliers (Tier 1 and 2)
- / Connections via airport and touristic seaport.

## / Surroundings

- / 30km from Portugal
- / 120km from Santiago

## / How to go?

- / Polígono Industrial A Granxa Calle A, parcelas 249-250  
E-36475 Porriño(Pontevedra) Spain
- / Coordenadas GPS: N42° 06.13' W08° 37.05'



# TESTFEST / Where it is?

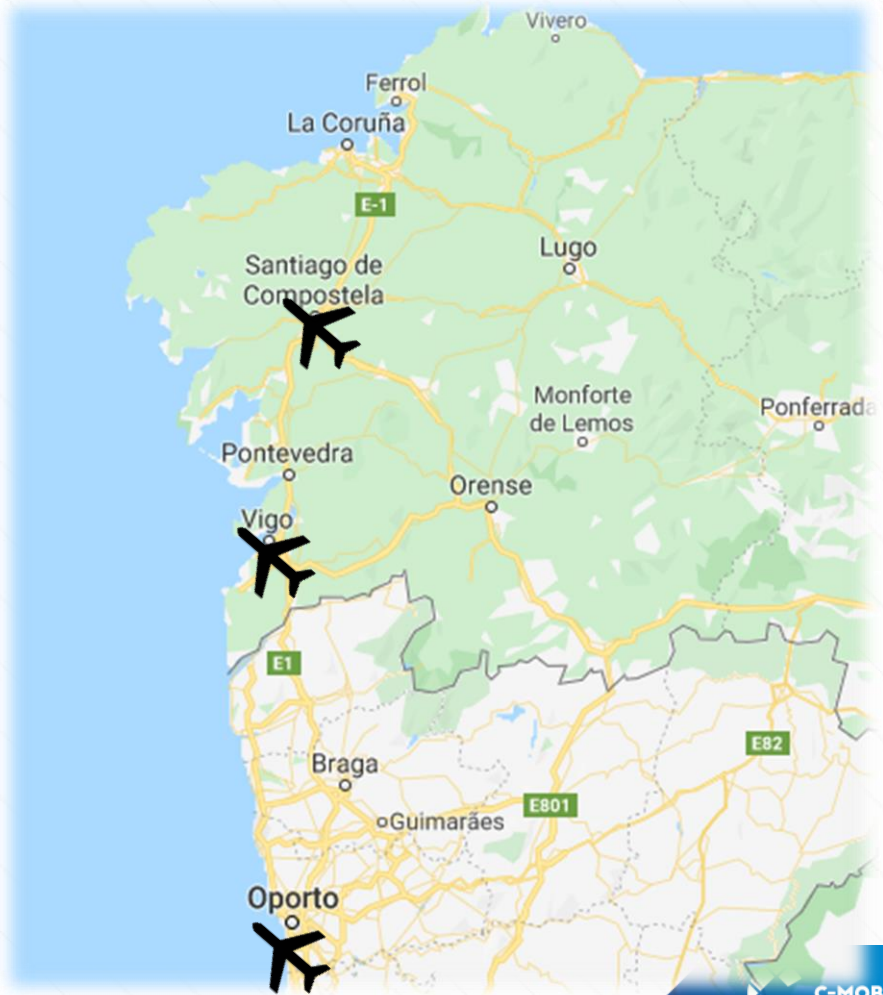
## / How to arrive to Vigo?

/ 3 airports

/ Vigo

/ Santiago de Compostela

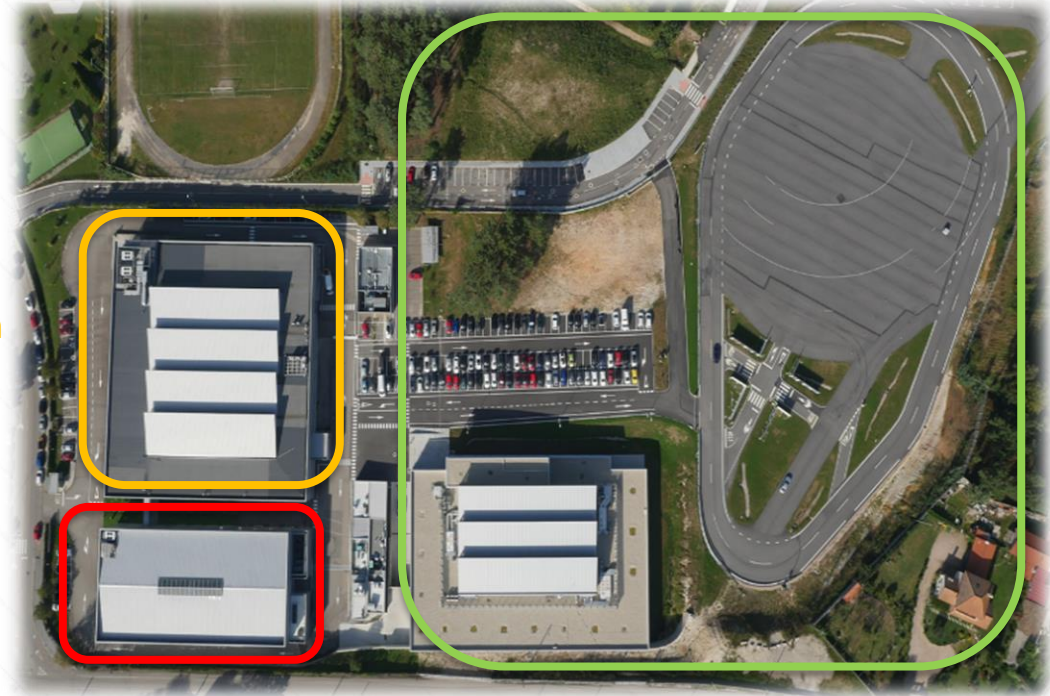
/ Oporto



# TESTFEST / Where is it?

## / CTAG

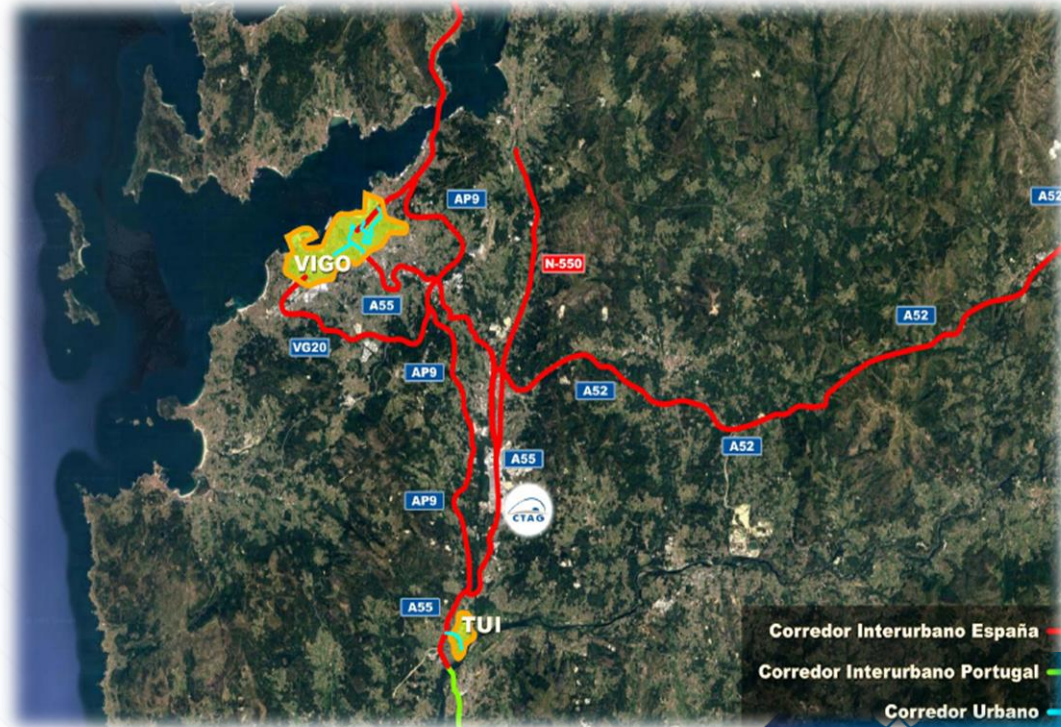
- / Focused on automotive field
- / More than 800 employees
- / 4 Divisions/Areas of Expertise
  - / NVH and Environmental Validation
  - / Structural and Interioring Engineering, and Process development
  - / Passive Safety
  - / Electronics & ITS



# TESTFEST / Where is it?

## / Corridor

- / >150 Km, Urban (Vigo) and Interurban roads (AP9, A52, A55)
- / 120 RSUs
- / Cellular and ITS/5G coverage
- / Connected with Portuguese C-ITS Corridor







# TESTFEST / Test centre and track

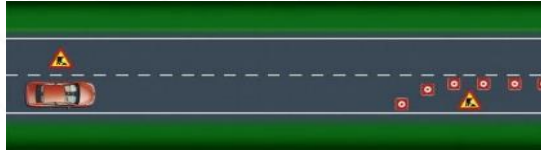
## / Private CTAG Test Track

- / Urban, Acceleration, Ring and Black lake areas
- / Urban environment with C-ITS equipment



# TESTFEST / Services deployed for testing

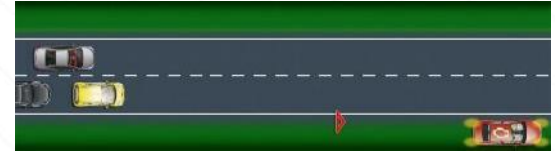
Road Works Warning (RWW)



Road Hazard Warning (RHW)



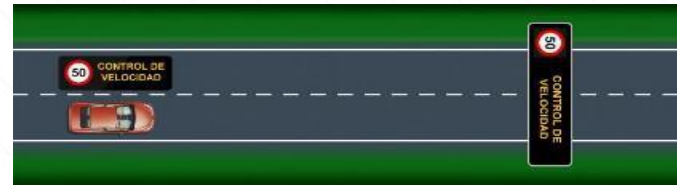
Slow or Stationary Vehicle Warning (SSVW)



Time To Red/Time To Green (TTR/TTG)



In Vehicle Signage (IVS)



# TESTFEST / Services deployed for testing

## / Description

Provision to road users of information about a zone on the road that contains, at some point, the neutralization of part of a lane or a lane closure (but without road closure) due to a planned mobile work site.

## / Objective/Benefits

Main objective is to get a more attentive and adjusted driving while approaching and passing a work zone or road operator vehicles in operation by providing in-car information and warnings about road works, changes to the road layout and applicable driving regulations, helping to avoid sudden braking or steering / swerving manoeuvres, thereby improving traffic safety as it reduces the severity of accidents.

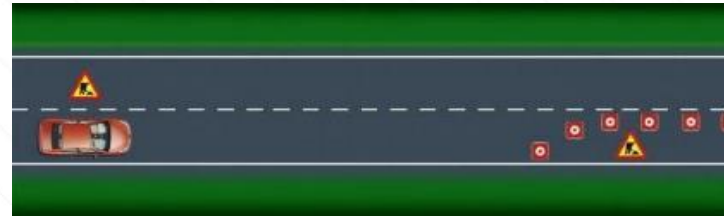
## / Communication channels

ETSI ITS G5 and cellular

## / Test environment

CTAG Surroundings

### Road Works Warning (RWW)



# TESTFEST / Services deployed for testing

## / Description

Provision to road users of information related to a series of potentially hazardous events on the road, where the approaching road users gets information and therefore warning about the location and type of hazard they are approaching.

## / Objective/Benefits

Main objective is to get a more attentive driving while approaching and passing a hazardous location by providing in-car information about these hazards, including location and type of hazard, remaining distance to location, duration of the events creating the hazard and lane and speed advice, minimizing risk to collisions/accidents then enhancing overall road safety and resulting in less incidents / injuries / fatalities amongst road users.

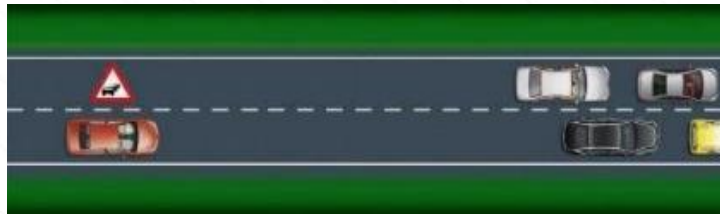
## / Communication channels

ETSI ITS G5 and celular

## / Test environment

CTAG surroundings

## Road Hazard Warning (RHW)



# TESTFEST / Services deployed for testing

## / Description

Provision to road users of information related to slow or stationary/broken down vehicles ahead which may represent obstacles in the road.

## / Objective/Benefits

Main objective is to get a more attentive driving while approaching to a zone where slow or stationary/broken down vehicles are detected by providing in-car information about these vehicles, minimizing risk to collisions/accidents (mostly rear-end) the enhancing overall road safety and resulting in less incidents / injuries / fatalities amongst road users.

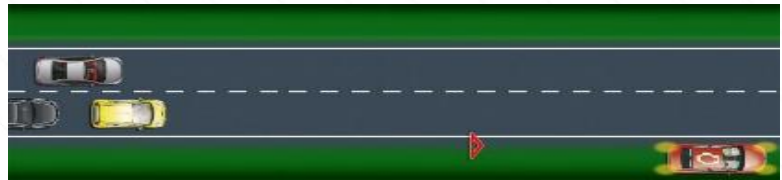
## / Communication channels

Cellular

## / Test environment

CTAG Surroundings

### Slow or Stationary Vehicle Warning (SSVW)



# TESTFEST / Services deployed for testing

## / Description

Provision to road users approaching and passing traffic light controlled intersections, on the current phase as well as upcoming phase(s) and the moment these are expected to start and end.

## / Objective/Benefits

Main objective is to enable road users to adapt their approach speed due to left time till next phase of the incoming traffic light then minimizing sudden stops, acceleration and deceleration for better safety and sustainability.

## / Communication channels

ETSI ITS G5 and celular

## / Test environment

City of Vigo and CTAG Test Track

## Time To Red/Time To Green (TTR/TTG)



# TESTFEST / Services deployed for testing

## / Description

Provision to road users of information related to actual, static or dynamic (virtual) road signs via in-car systems (virtual VMS or free text).

## / Objective/Benefits

Main objective is to increase attentive driving by augmenting awareness for road signage as they are provided directly in the vehicles where it can potentially be displayed throughout its entire validity, targeting information to specific vehicle types or to individual vehicles.

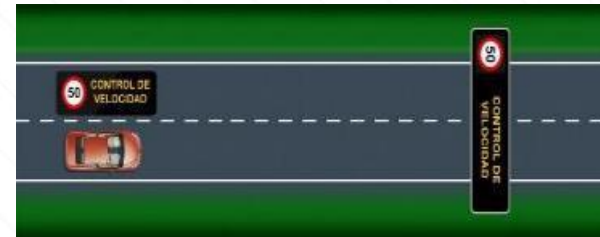
## / Communication channels

ETSI ITS G5 and celular

## / Test environment

CTAG Surroundings

### In Vehicle Signage (IVS)



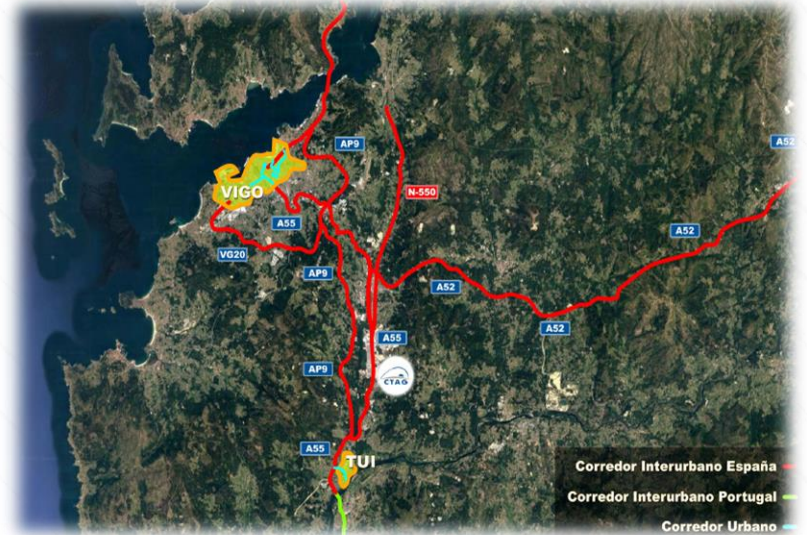
# TESTFEST / Communication technology

## / ITS-G5

- / SISCOGA Corridor
  - / Urban: City of Vigo
  - / CTAG Surroundings
  - / CTAG Testrack

## / Cellular

- / CTAG Geomessaging Platform: Geoserver channels





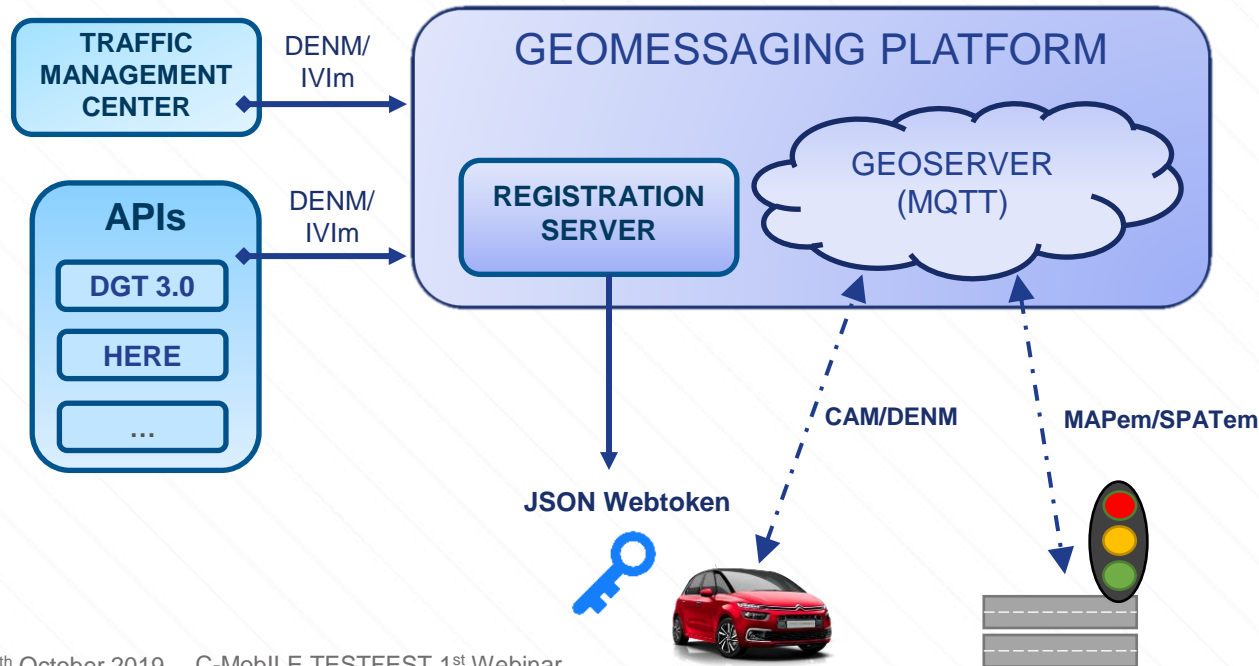
# TESTFEST / Communication technology

## ETSI STANDARDS

Communication Technology	CTAG Test Track & Test Circuit	Vigo City
<b>ETSI ITS-G5</b>	DENM-->ETSI EN 302 637-3 v1.2.1 CAM --> ETSI EN 302 637-2 v1.3.1 MAPEM/SPATEM/IVIM --> ETSI 103 301 v1.1.1	DENM-->ETSI EN 302 637-3 v1.3.1 CAM --> ETSI EN 302 637-2 v1.4.1 MAPEM/SPATEM/IVIM --> ETSI 103 301 v1.2.1 Security based on ETSI TS 102 941 1.3.1 and ETSI 103 097 1.3.1
<b>Cellular</b>	DENM-->ETSI EN 302 637-3 v1.2.1 CAM --> ETSI EN 302 637-2 v1.3.1 MAPEM/SPATEM/IVIM --> ETSI 103 301 v1.1.1 Security based on Authentication and Authorizacion by JWT (JSON Web Token)	DENM-->ETSI EN 302 637-3 v1.3.1 CAM --> ETSI EN 302 637-2 v1.4.1 MAPEM/SPATEM/IVIM --> ETSI 103 301 v1.2.1 Security based on Authentication and Authorizacion by JWT (JSON Web Token)

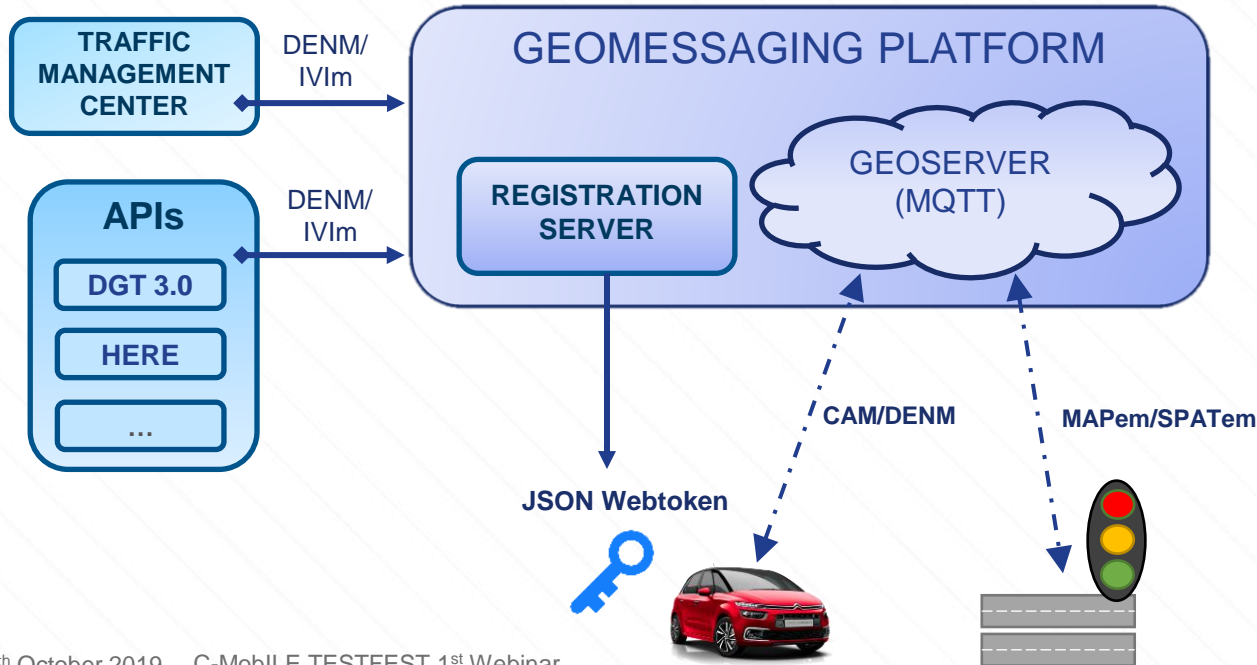
# TESTFEST / Geomessaging platform

- / **Events** such as Traffic Jams, Road Works, or any **Road Hazard** in general, are gathered from the Traffic Management Centers and External APIs.
- / **Events** are **encoded** and **published** by the Geoserver as **DENMs or IVIs** (to the ETSI Standard)



# TESTFEST / Geomessaging platform

- / Connected elements **access** to the **Geomessaging** platform by registering in the **Registration Server**.
- / A **JSON Webtoken** is provided in order to connect to the Geoserver.
- / Connected elements will **publish** and **subscribe** to the MAPem/SPATem/IVIm/DENM/CAM messages.



# TESTFEST / Programme and schedule

Hour	Monday December 2	Tuesday December 3	Wednesday December 4
08:30	Registration starts	Site open at 08:30	Site open at 08:30
09:00	Welcome, briefing, safety instruction	Briefing	Briefing
10:00	Test setup	Test session 3	Test session 5
11:00	Test session 1		
12:00			Final de-briefing and wrap up
13:00	Lunch break	Lunch break	Site closure at 13:00
14:00	Test session 2	Test session 4	
15:00			
16:00			
17:00	De-briefing	De-briefing	
18:00	Site closure at 18:00	Site closure at 18:00	

# TESTFEST / Preconditions for participation

- / Do we have to be present Monday till Wednesday?
  - / No. The safety instruction on Monday, December 2 however is mandatory. Plus we strongly advise to take part in the desk and lab-testing on Monday before entering open road testing (Monday afternoon - Wednesday).
- / We want to participate in the TESTFEST to test with our On Board Unit (OBU) and/or mobile device(s). Is it mandatory to bring our own test vehicle as well?
  - / We cannot provide test vehicles for participants. Participants can rent vehicles at local rental companies. However, if you come with OBU/mobile device only, you have to bring along all the needed equipment such as antenna, cables, adaptors, power supply, etc.
- / Is it mandatory to share out test data (like log files)?
  - / No. C-Mobile partners will however share their data. Any data from other participants will be very much appreciated. Logging specifications will be provided.

# TESTFEST / Follow-up and contacts

/ **New registration deadline!**

/ **Extended to October 31<sup>st</sup>**

/ **Next webinar**

/ November 4 @ 14:00

/ Tutorial on how to connect (cellular and ITS-G5)

/ Live connection to CTAG server for cellular communication

/ Log files for the ITS-G5 connection tests. Guidelines

/ **For contact**

/ p.schmitting@mail.ertico.com

/ [pablo.mejuto@ctag.com](mailto:pablo.mejuto@ctag.com)

/ [Andrea.Becerra@ctag.com](mailto:Andrea.Becerra@ctag.com)

/ Jose.Fernandez@ctag.com

/ **Further information**

/ C-Mobile: <http://c-mobile-project.eu/>



**C-MOBILE**

**THANK YOU**

P.SCHMITTING / ERTICO /  
P.MEJUTO / CTAG  
TESTFEST WEBINAR /  
14<sup>TH</sup> OCTOBER 2019

Co-funded by  
the European Union

