



SIP-adus workshop 2020 virtual conference

French and Europe V2X communication progresses

PRESENTATION PLAN

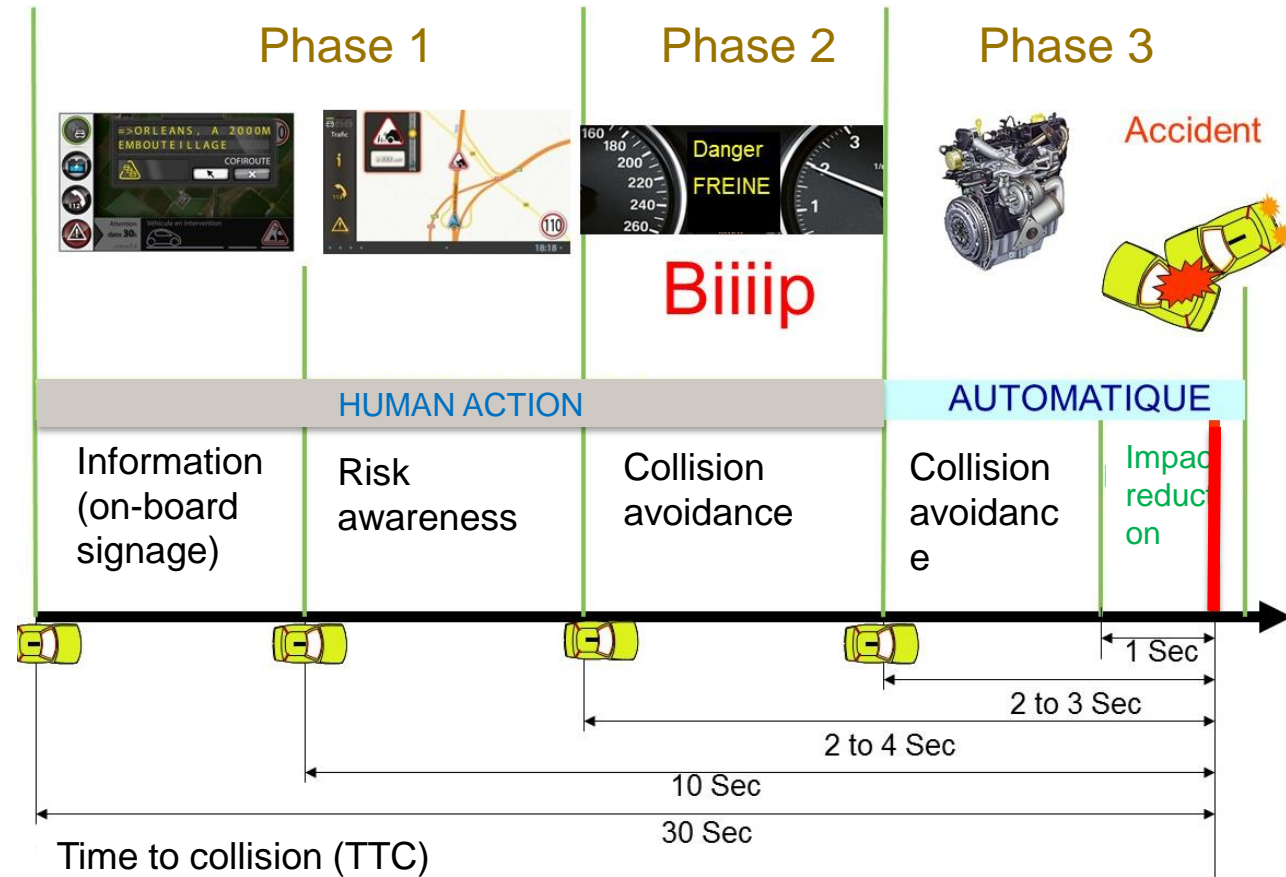
2 parts to present progresses of V2X connectivity in Europe

- 1. Presentation of PACV2X Project :**
Augmented Perception with V2X cooperation
- 2. Presentation of InDiD**
Tomorrow digital Infrastructure

Presentation of PACV2X Project :

V2X AND ROAD SAFETY

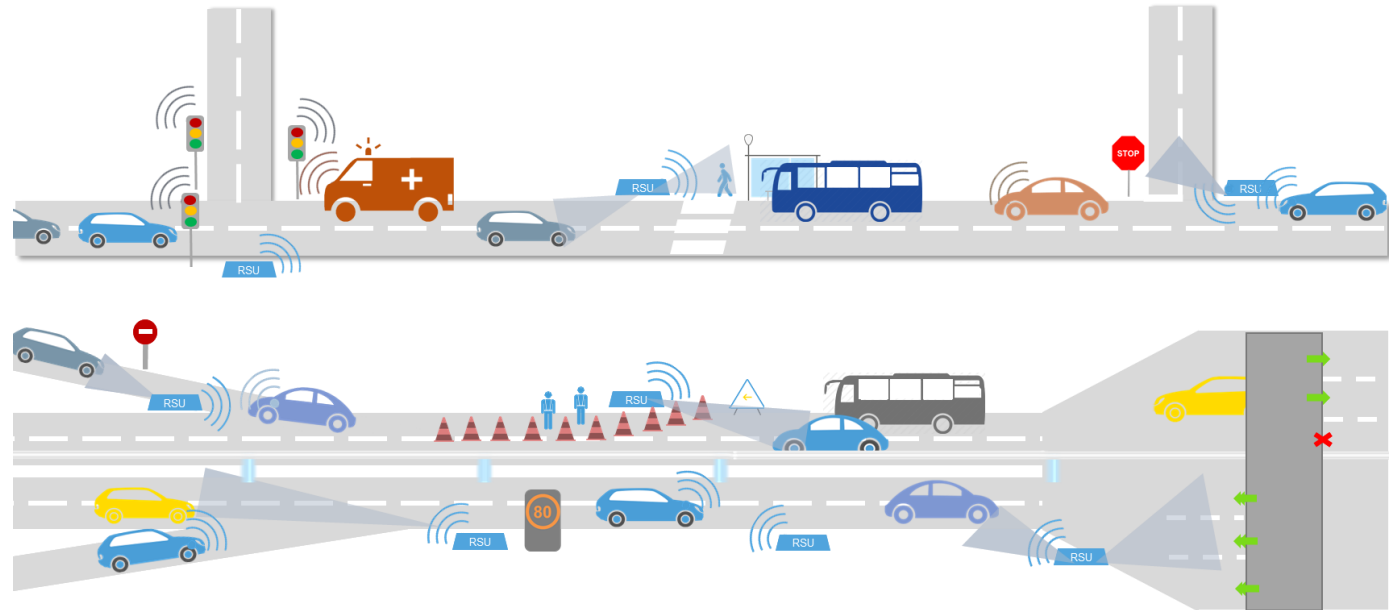
- Intelligent transport systems have to integrate the simultaneous use (presence on the road) of :
 - Cooperative vehicles,
 - Automated vehicles,
 - And non-equipped vehicles.
- PAC V2X, will focus on cooperative vehicles of phase 2 cohabitating with non-equipped vehicles.



Presentation of PACV2X Project :

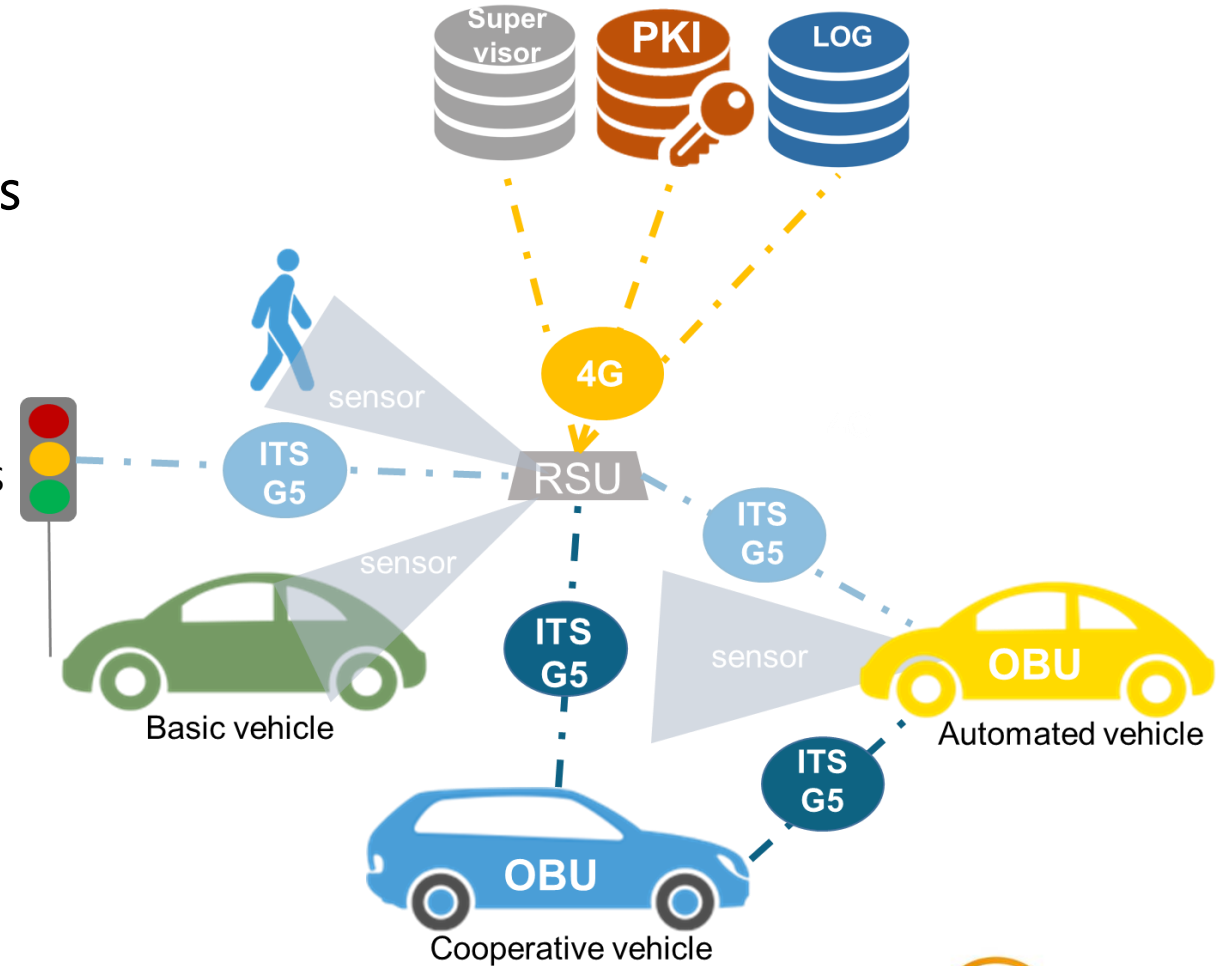
OBJECTIVES ▪ 1st September 2016 – 31 August 2019

- Extending vehicles' perception via V2X cooperation exploiting sensor and Roadside Equipment installed at complex road sections.
- Use cases :
 - Collision risk alert including Traffic light violation and wrong way driving;
 - Lane merge assist including motorway access and roadwork area;
 - Lane change assist including overtaking with limited perception when bus is occluding the way;
 - Traffic control at high conflict zone including traffic scheduling assist at intersection and motorway tolling assist;
 - Contextual speed adaptation.

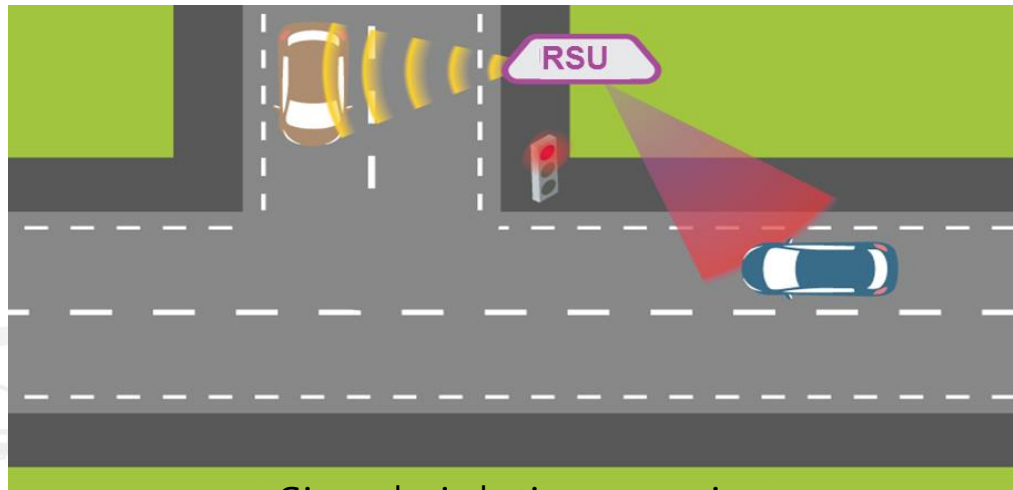


PAC V2X System

- PAC V2X System includes :
 - Sensors equipped Road Sides Units
 - 4 types of vehicles
 - **Basic vehicles:** no communication, no perception
 - **Cooperative vehicles :** standard communication capabilities (such as SCOOOP@F vehicles sets)
 - **PAC V2X cooperative vehicles :** communication with PAC V2X message
 - **PAC V2X automated vehicles:** perception and communication capabilities
 - Servers and supervision systems
 - Vulnerable road users



Use Cases : Collision Risk Alert



Signal violation warning

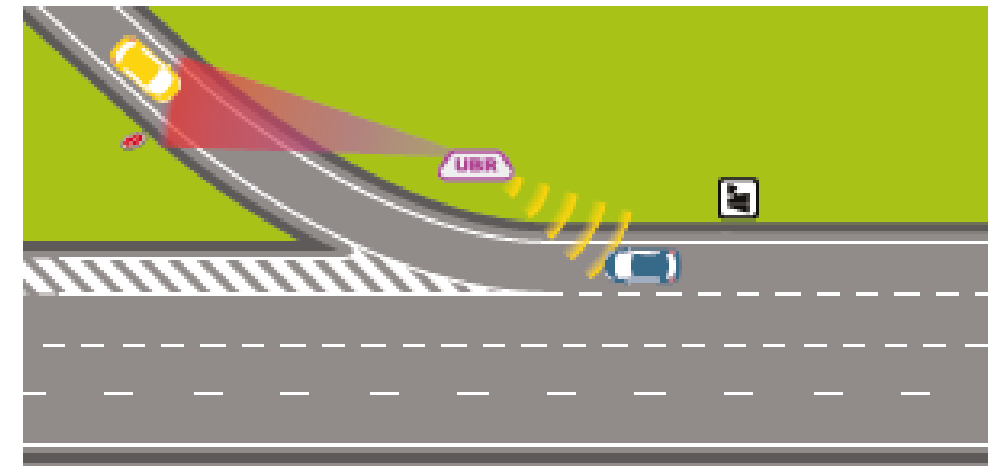


Functional description

- Object detection and tracking
- Collision risk analysis and alert

Messages sets: CAM, DENM

- Detect imminent collision risks and alert vehicles and supervision systems



Wrong way driving warning



Use Cases : Lane change/merge assist

- Detect traffic situations that necessitate lane change/merge, and guide vehicles for the appropriate manoeuvre.

Motorway access assist

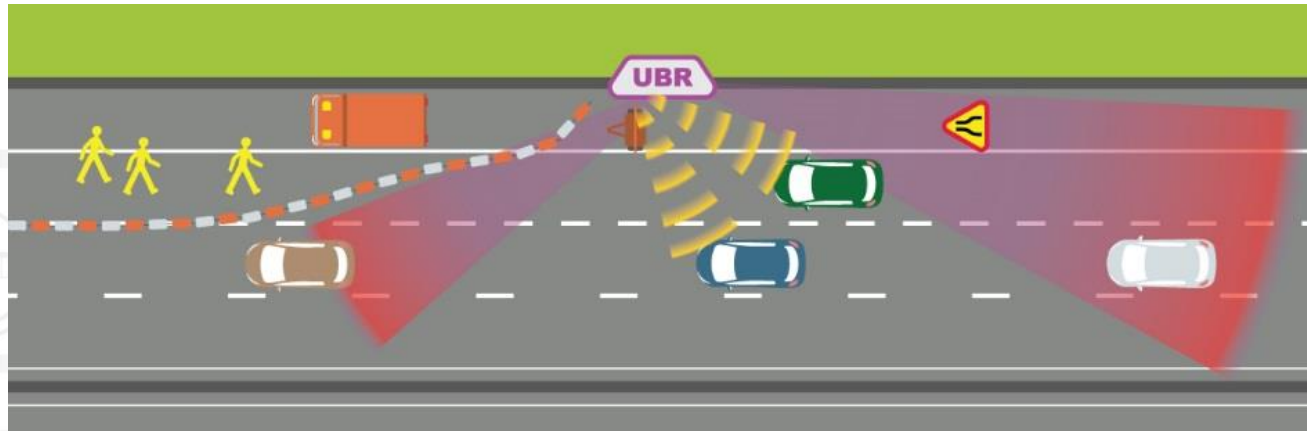


Functional Description

- Object detection and tracking: detecting vehicles (basic, cooperative...)
- Situation analysis : e.g., a vehicle want to enter in motorway when another vehicle comes
- Trajectory guidance: e.g., lane merge X,Y,Z at V velocity (or not lane merge)

Use Cases : Lane change/merge assist

- Detect traffic situations that necessitate lane change/merge, and guide vehicles for the appropriate manoeuvre.



Active roadwork warning

Functional Description

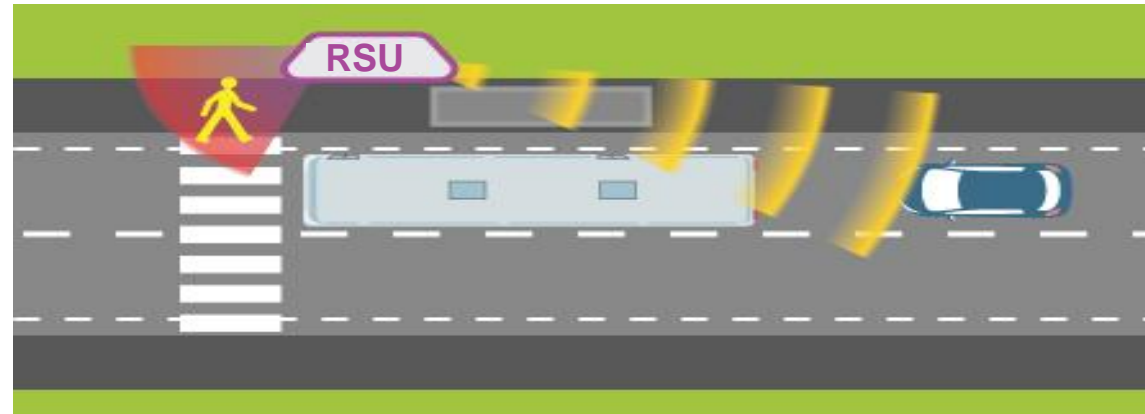
- Object detection and tracking: detecting vehicles (basic, cooperative..)
- Situation analysis: e.g., a vehicle have to lane change because of roadworks
- Trajectory guidance: e.g., lane change X,Y,Z at V velocity (or not lane change)



Use Cases : Lane change/merge assist

- Detect traffic situations that necessitate lane change/merge, and guide vehicles for the appropriate manoeuvre.

Overtaking with limited perception



Functional Description

- Object detection and tracking: detecting vehicles (basic, cooperative..), VRUs,...
- Situation analysis: e.g., a pedestrian is crossing the road in front of the bus
- Trajectory guidance: e.g., lane change X,Y,Z at V velocity (or not lane change)

Use Cases : Traffic control at high conflict zones

- Monitor the traffic at high conflict zones and guide vehicles for traffic safety and efficiency.

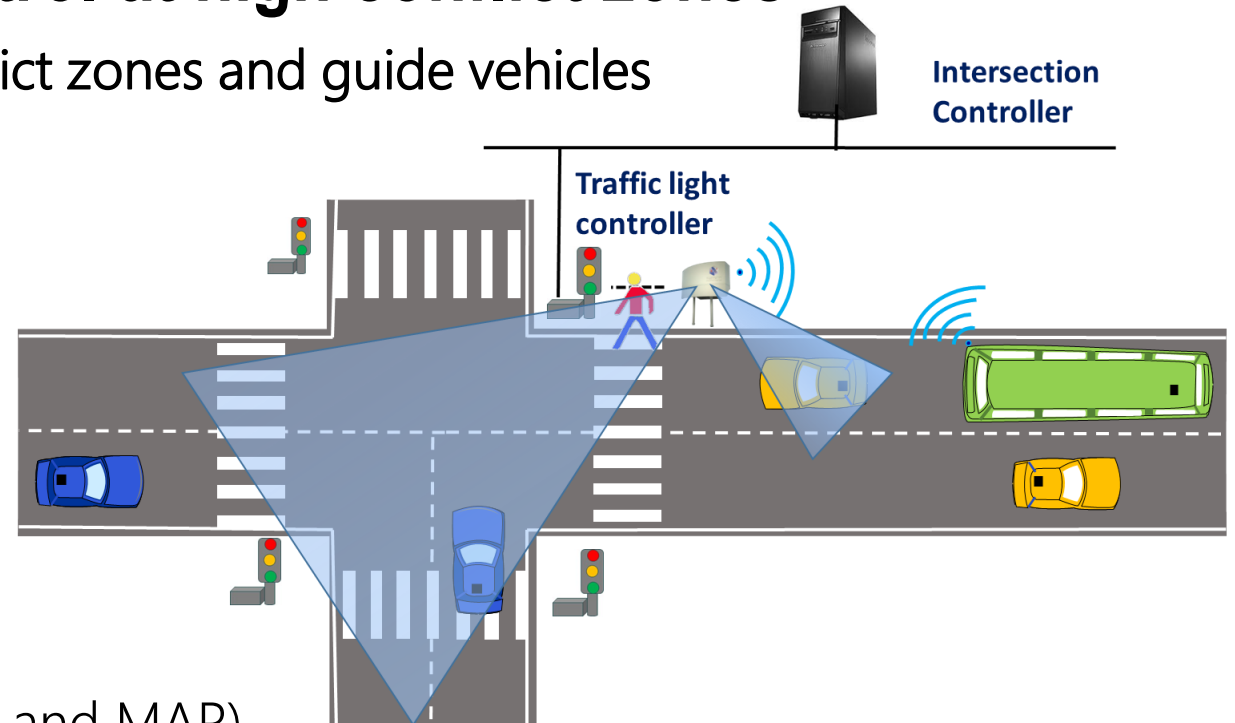
Traffic scheduling assist

Functional Description

- Provide local information (SPaT and MAP)
- Traffic scheduling for prioritized crossing (not absolute priority) for e.g., public transport

Messages

- Standards: SPaT, MAP, CAM, CPM



Use Cases : Traffic control at high conflict zones

- Monitor the traffic at high conflict zones and guide vehicles for traffic safety and efficiency.

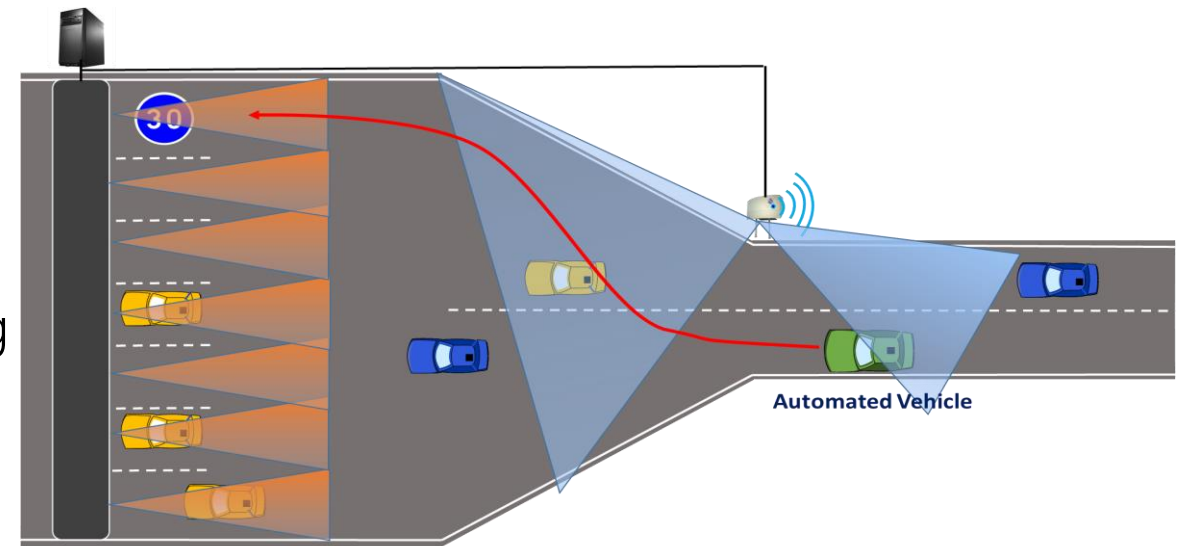
Motorway tolling assist

Functional Description

- Provide the information on tolling gate status and MAP
- Guide vehicles to the appropriate gates

Messages

- Standard: CAM (with additional info about vehicle autonomy level), CPM, DENM, MAP
- **A new message: TAM (Tolling announcement message) :**
 - tolling gate info: the state (closed, free) and particularities (means of payment, reserved only for trucks, the speed profile) etc.



Presentation of PACV2X Project :

Partners

- DIGIMOBEE : communication between transportation vehicles and infrastructure and test in simulated environment
- INRIA : Perception and automation
- LOGIROAD : mobile detection and their trajectories
- MARBEN : on-board software solutions for V2X
- SANEF : final user and test in real environment
- SVMS : Road equipment and road side units
- VEDECOM : communicating, autonomous vehicles and test in secure environment (test track)
- VICI : Cooperative vehicle expertise and standardisation

Research Institutes



Companies



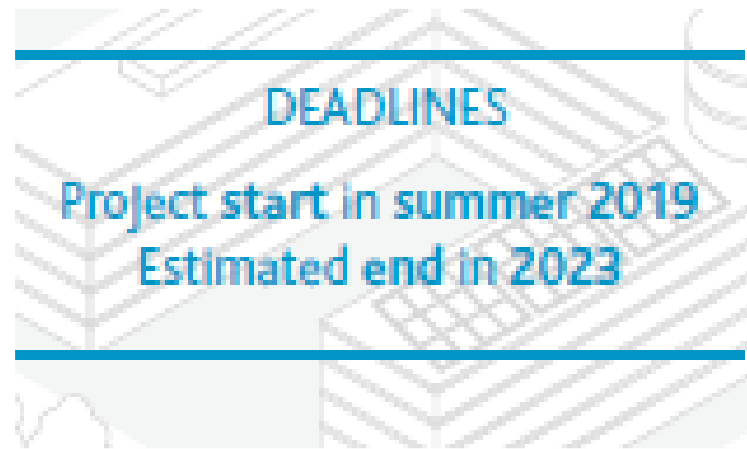
SMEs



2 Presentation of InDiD from a Transport French minister presentation

TOMORROW DIGITAL INFRASTRUCTURE

INDID IS A FRENCH PROJECT SELECTED BY THE EUROPEAN COMMISSION WITHIN THE FRAMEWORK OF THE CONNECTING EUROPEAN FACILITY (CEF). INDID FOLLOWS ITS PIONEERING C-ITS PROJECTS: SCOOP@FRANCE AND INTERCOR



2 Presentation of InDiD from a Transport French minister presentation

INDID ACTIONS:

IMPROVING SAFETY AND PREPARING INFRASTRUCTURE FOR TOMORROW'S CARS



EXPANDING THE COVERAGE OF DAY 1 SERVICES DEPLOYED IN PREVIOUS PROJECTS (SCOOP@F, INTERCOR): EMERGENCY BRAKING, SLIPPERY ROAD, ROADWORKS, ...

DEVELOPING AND TESTING NEW USE CASES AND SERVICES:

- Day 1.5 services in urban area (multimodal transportation, road intersections, VRU protection)**
- Day 2 services particularly enhanced perception for autonomous vehicles**

2 Presentation of InDiD from a Transport French minister presentation

INDID: TRANSVERSAL STUDIES

- **TECHNOLOGY HYBRIDISATION (ITS-G5, LTE-V2X, 5G) FOR C-ITS**
- **HIGH DEFINITION DIGITAL MAPPING**
- **CYBERSECURITY (SECURITY OF MOBILE TERMINALS, DENIAL OF SERVICE ATTACKS, ETC.)**
- **IMPROVEMENT OF ROAD OPERATORS INFRASTRUCTURE (BACK-OFFICE ETC.)**

2 Presentation of InDiD from a Transport French minister presentation

A STRONG CONSORTIUM GATHERING 24 ACTORS OF INDUSTRY, MOBILITY AND DIGITAL

Coordinator: *Ministry of Ecological and Solidary Transition*

Collectivities: *Grenoble Metropolis, SMMAG, the City of Paris, Aix-Marsailles Metropolis, Isère department*

Inter-departmental road directorate: *DIRMED, DIFIF, DIRE, DIRCO, DIRSO, DIRA, DIRCE, DIRN, DIRO*

Highway service companies and other representatives: *APRR, SANEF, Vinci Autoroutes et l'ASFA*

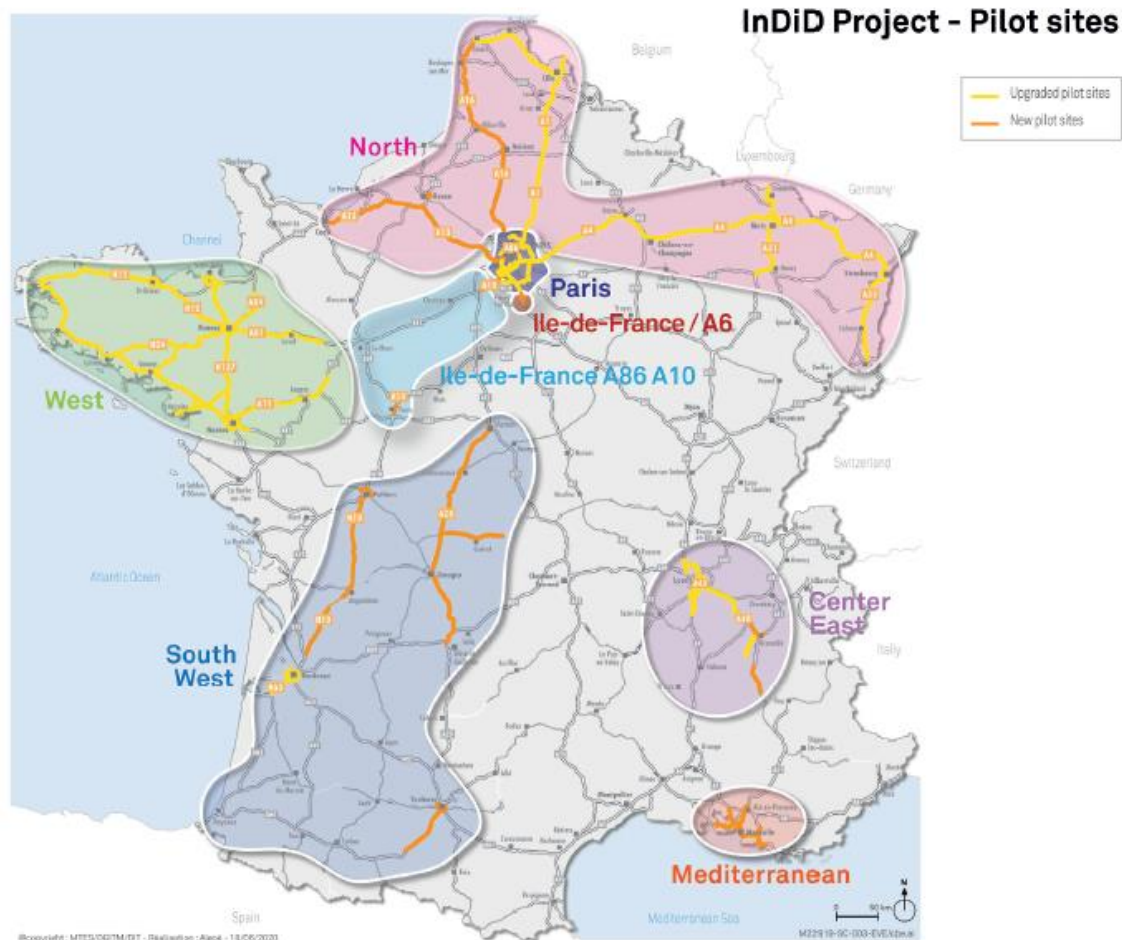
Academia: *University of Gustave Eiffel, University of Reims Champagne-Ardenne, le LAB, Bordeaux INP, University of Clermont Auvergne, Institute Mines-Telecom, University of Polytechnique Hauts de France, Eurecom, VEDECOM, le Cerema, and IGN*

Companies: *Valeo, TomTom, ATOS, Green Communication, Transdev Autonomous Transport Systems, ATC France*

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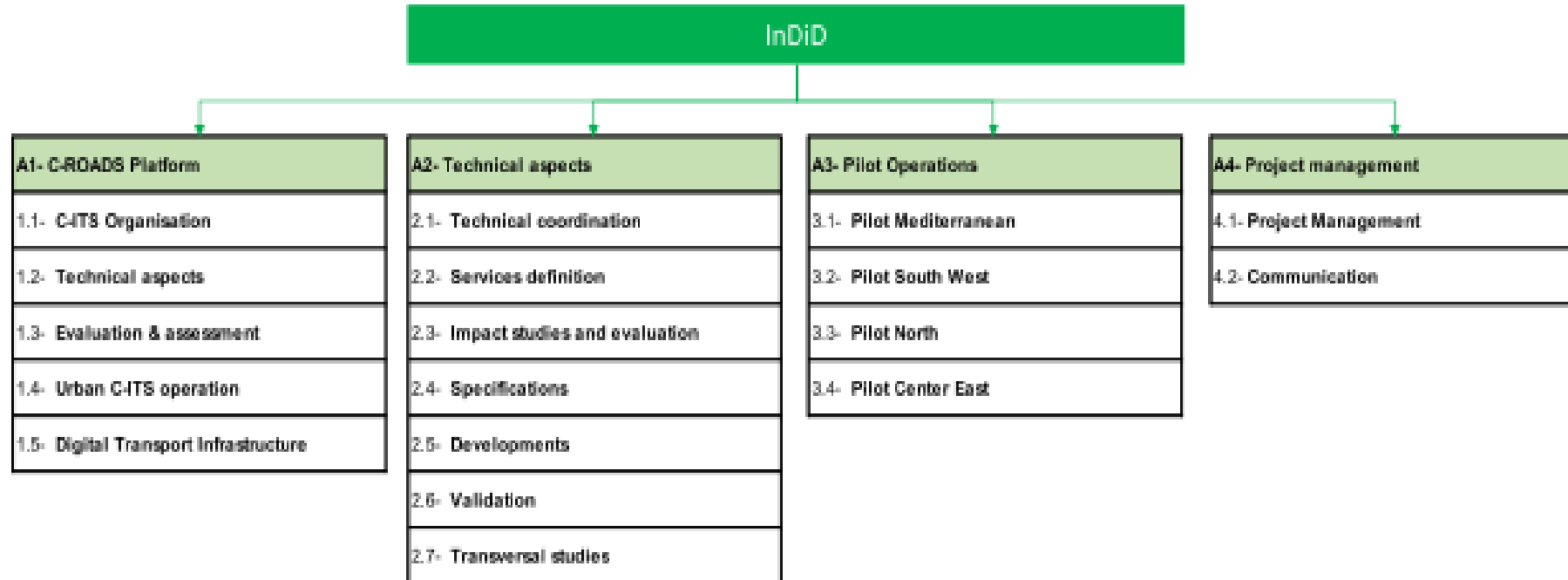
INDID PILOT SITES

- Deployment of C-ITS on new road experimentation sites in order to expand the service coverage offered by the infrastructure.
- Eight pilot sites are located on 4 main French geographic areas.



INDID WORK PACKAGES

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THANK YOU FOR YOUR ATTENTION