

ITS CONGRESS 2019:  
**INNOVATION  
FOR SUSTAINABLE  
MOBILITY**



# CONNECTED VEHICLE INFRASTRUCTURE C-ROADS WALLONIA

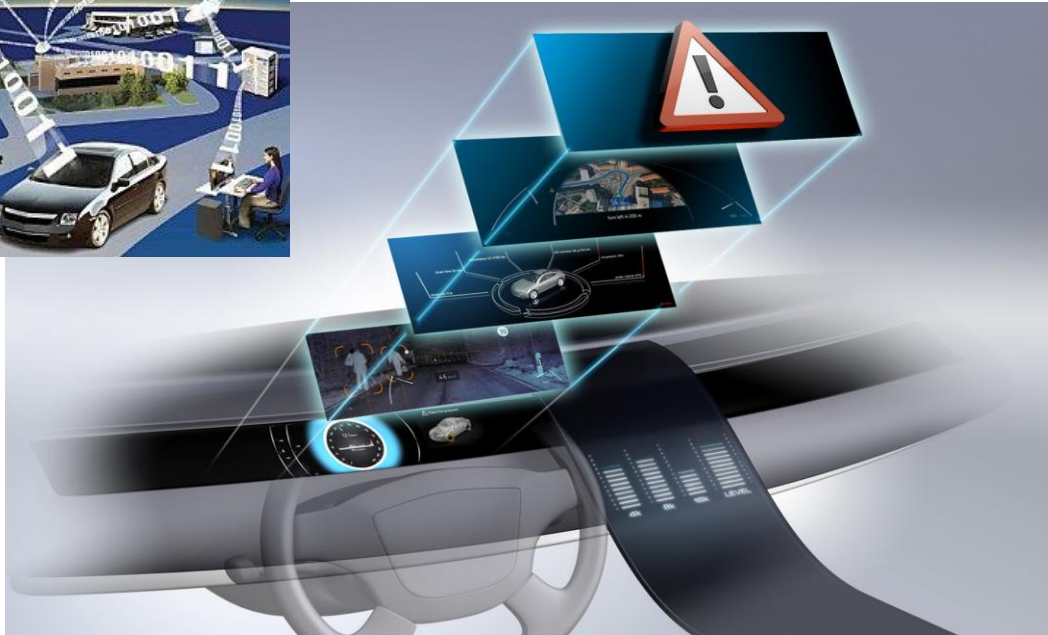
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# CONNECTED VEHICLES



## ITS COOPERATION !



Good idea but...

...need for :

- Standardization
- Harmonization
- Regulation

# EU C-ROADS PLATFORM

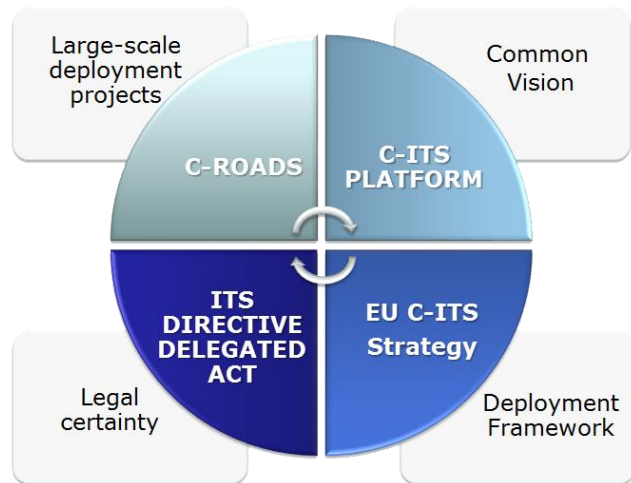
## C-ITS DEPLOYMENT IN EUROPE



**C-ITS Platform** →  
**Phase I (2014-2016)**  
**Phase II (2016-2017)**



**C-Roads Platform (2016) :** development of harmonized C-ITS specifications and intensive cross-border testing



**Total CEF funding for ITS: 443,482,461 EUR**  
**Including 121,497,176 for C-ITS**

C-Roads AT

C-Roads FR

C-Roads SI

C-Roads SI2

C-Roads BE Flanders

C-Roads BE Wallonia

C-Roads DE

C-Roads IT

C-Roads PT

C-Roads CZ

C-Roads HU

C-Roads ES

NORDICWAY

SCOOP@F

INTERCOR

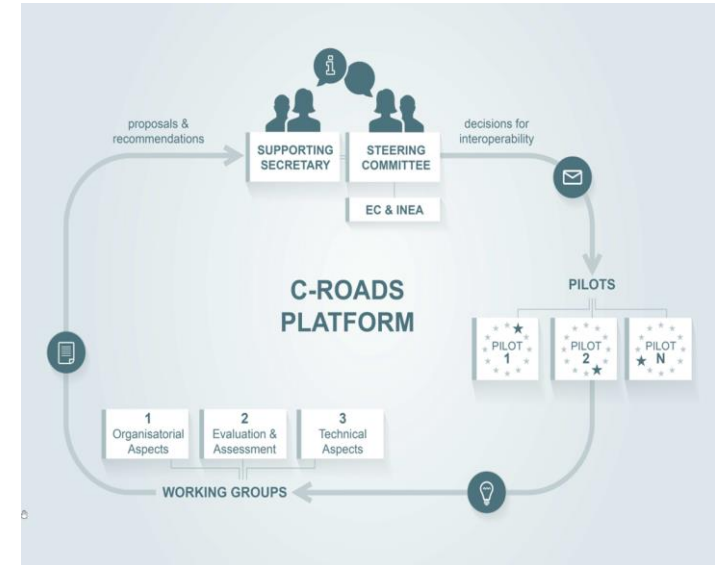
# EU C-ROAD PLATFORM

## HARMONIZATION



### Harmonization

- develop, share and publish common technical specifications (including the common communication profiles)
- focus on hybrid communication mix, which is a combination of ETSI ITS-G5 and existing cellular networks



# C-ROADS WALLONIA

## THE BELGIAN PILOT



- 1. Project objectives
- 2. Project implementation
- 3. Interoperability tests
- 3. Project evaluation



V2Wal

SIEMENS



# C-ROAD WALLONIA

## PROJECT OBJECTIVES



SIEMENS



### Enhance safety

- Improved provision of safety related and real-time traffic information to road users
- Direct interaction in between Traffic management center and road users
- Day-1 services
  - » HLN, RWW, IVS

### Improve mobility

- Seeing further than your eye-sight improves awareness, speed adjustment, wiser decision-making and prevents surprise induced behavior.
- Day 1,5 services
  - » Parking information/truck parking



# C-ROAD WALLONIA

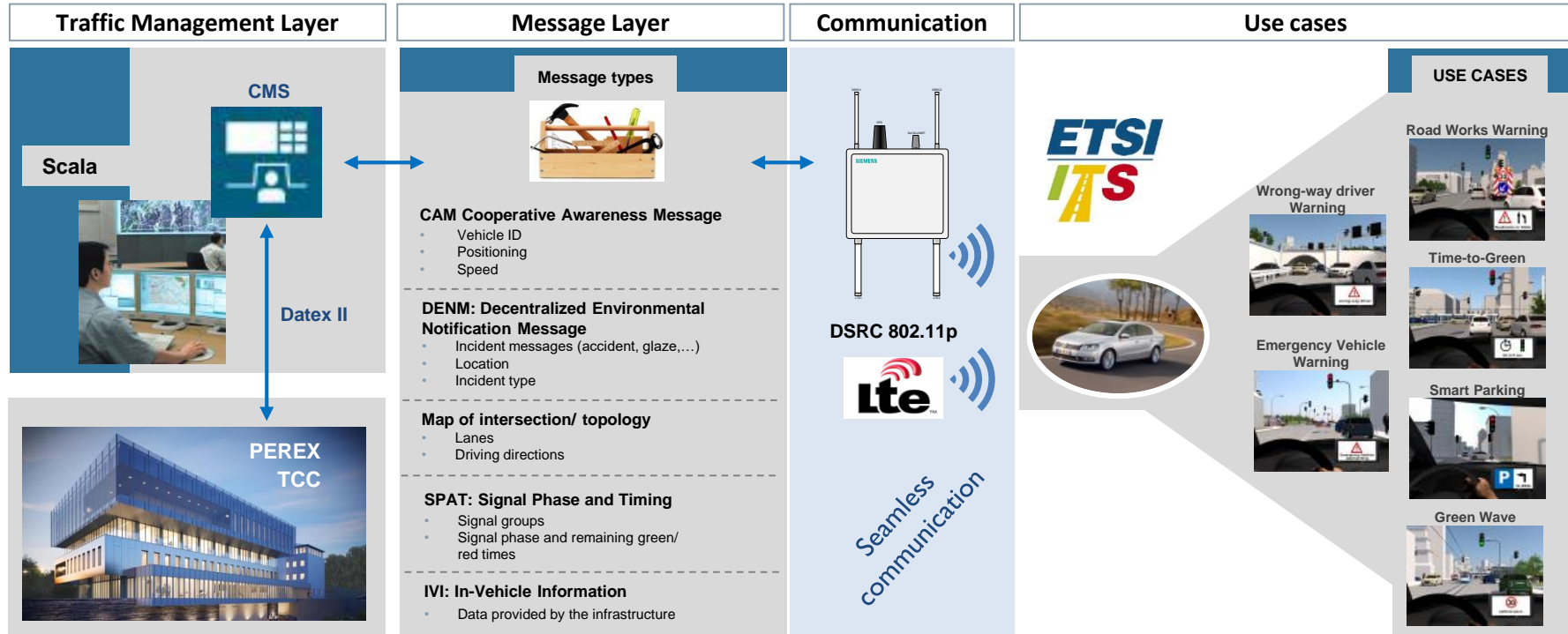
## THE IMPLEMENTED INFRASTRUCTURE

**SIEMENS** Sitrtraffic ESCoS

**ENGie**  
Fabricom

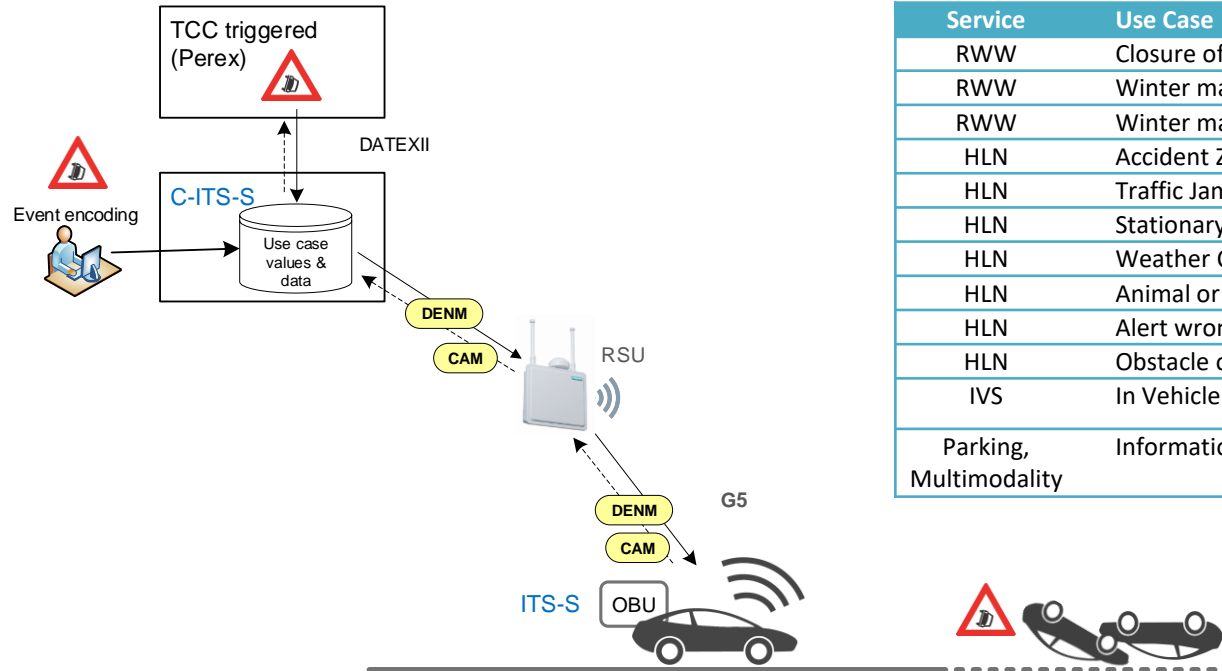
V2Wal

**SIEMENS**



# C-ROADS WALLONIA

## THE IMPLEMENTED USE CASES



Service	Use Case
RWW	Closure of part of a lane, whole lane, or several lanes
RWW	Winter maintenance – Salting in process
RWW	Winter maintenance – Snow removal in process
HLN	Accident Zone
HLN	Traffic Jam Ahead
HLN	Stationary Vehicle
HLN	Weather Condition Warning
HLN	Animal or Person on the Road
HLN	Alert wrong way driving
HLN	Obstacle on the Road
IVS	In Vehicle Signage: Dynamic Speed Limit Information
Parking, Multimodality	Information on parking lots location, availability and services



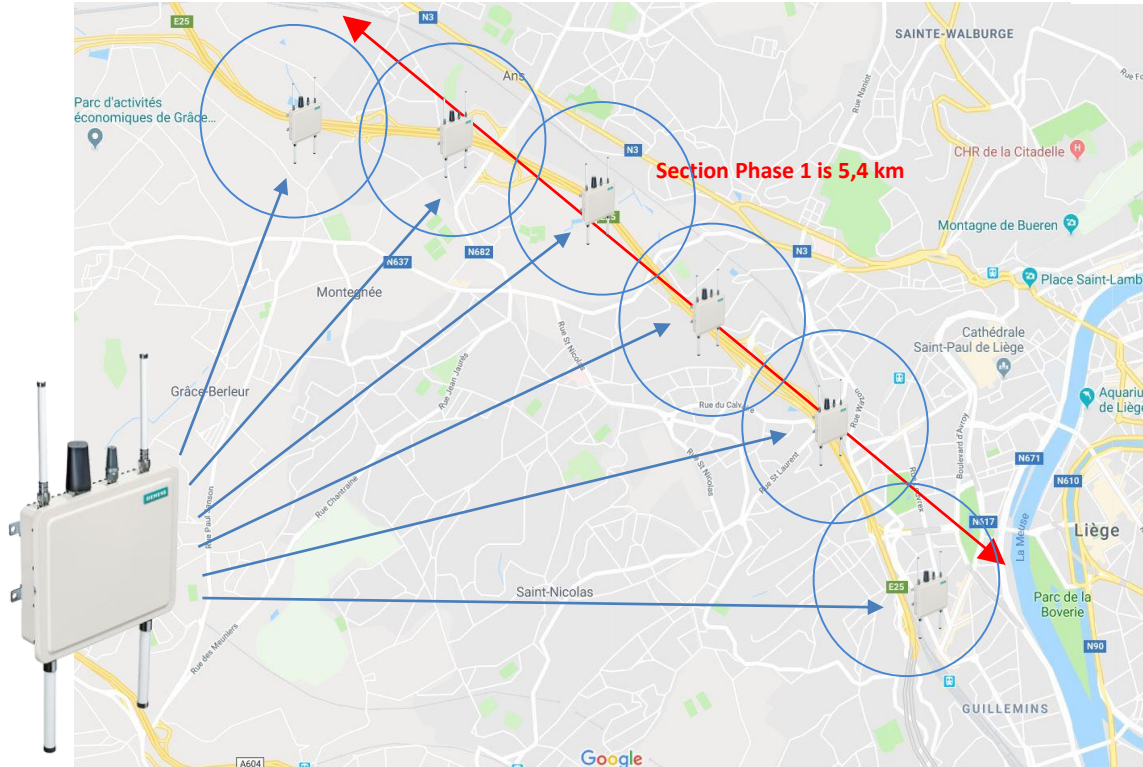
# C-ROADS WALLONIA

## FIRST PHASE IMPLEMENTATION

ENGIE  
Fabricom

V2Wal

SIEMENS



## C-Roads corridors



# C-ROADS WALLONIA

## FIRST PHASE IMPLEMENTATION

ENGIE  
Fabricom

V2Wal

SIEMENS




# C-ROADS WALLONIA

## INTEROPERABILITY TESTS



- 2020 cross border testing being organized
  - » Test cases written : preliminary testing prior to cross-border tests
  - » Test sites provided by all Member States
  - » Use case availability, equipment reference
  - » Test vehicle preparation
- Test OBUs in the other MS – test other MS OBUs at the pilot test site

 C-ROADS		TF5 Test-case result template
TC ID	Verdit	Comments
TC_CROADS_ITSG5_DENM_XXXX	Fail	Not Ok : fun ction not well implemented
TC_CROADS_ITSG5_SECU_YYYY	Pass	Ok
TC_CROADS_HYBRID_XXXX		Not tested yet
TC_CROADS_HYBRID_SECU_YYYY	Inconclusive	Could not be tested because...
TC_CROADS_RWW-RM_ITSG5-DENM_XXXX	Pass	Final run was inconclusive

# C-ROADS WALLONIA PROJECT EVALUATION



3 main questions:

- SYSTEM: What is the technical quality level (system service design)?
- USER: How does the user evaluate the service?
- SERVICE: Is C-ITS better than traditional ITS services?

System and service evaluation

- accuracy and reliability of warnings
- coverage and cross-border continuity
- end-to-end delay in between event and HMI warning



VIRB ULTRA30 system is installed to record HMI

User experience evaluation

- Acceptance: to what extent potential users are willing to use C-ITS systems



Questionnaire to target groups and integrated user feedback

