Functional view and Data flow

Jorge Suárez
ETRA I+D

Valencia, 30 November 2023

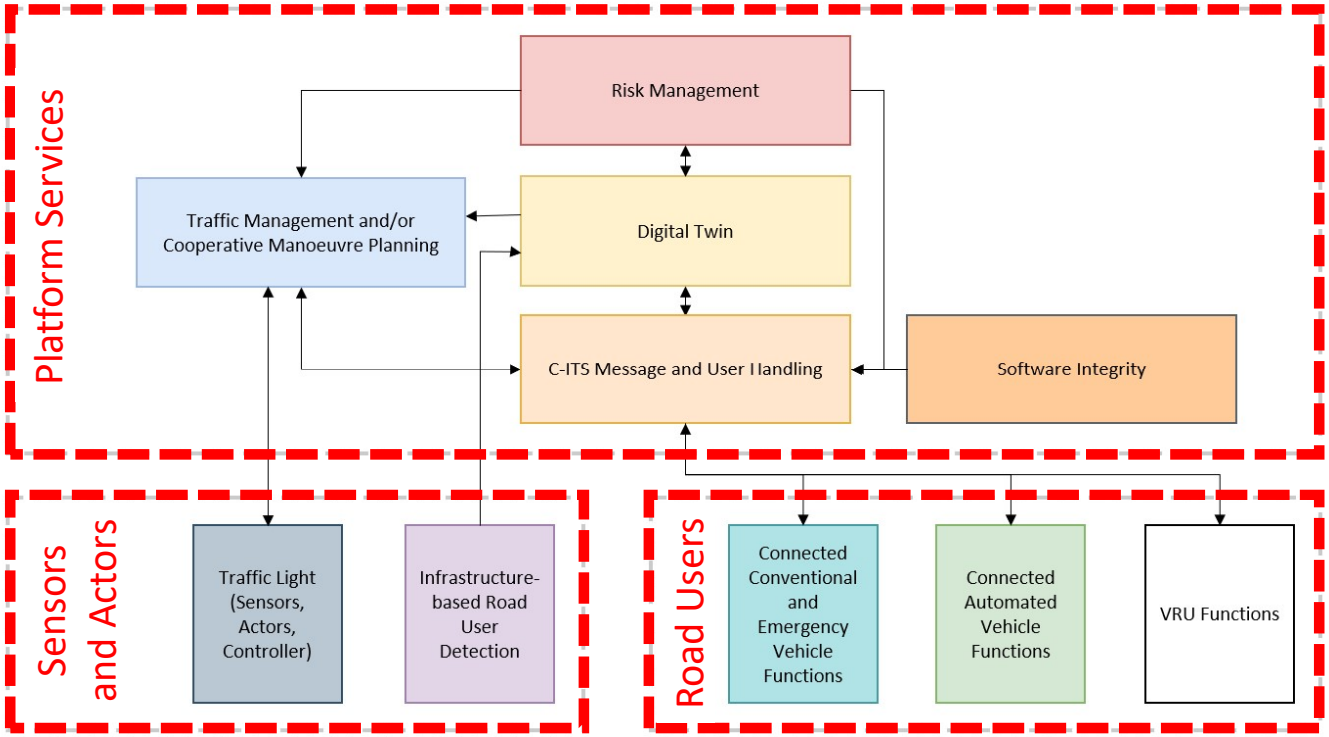
Co-funded by
the European Union

PODIUM

Functions interactions

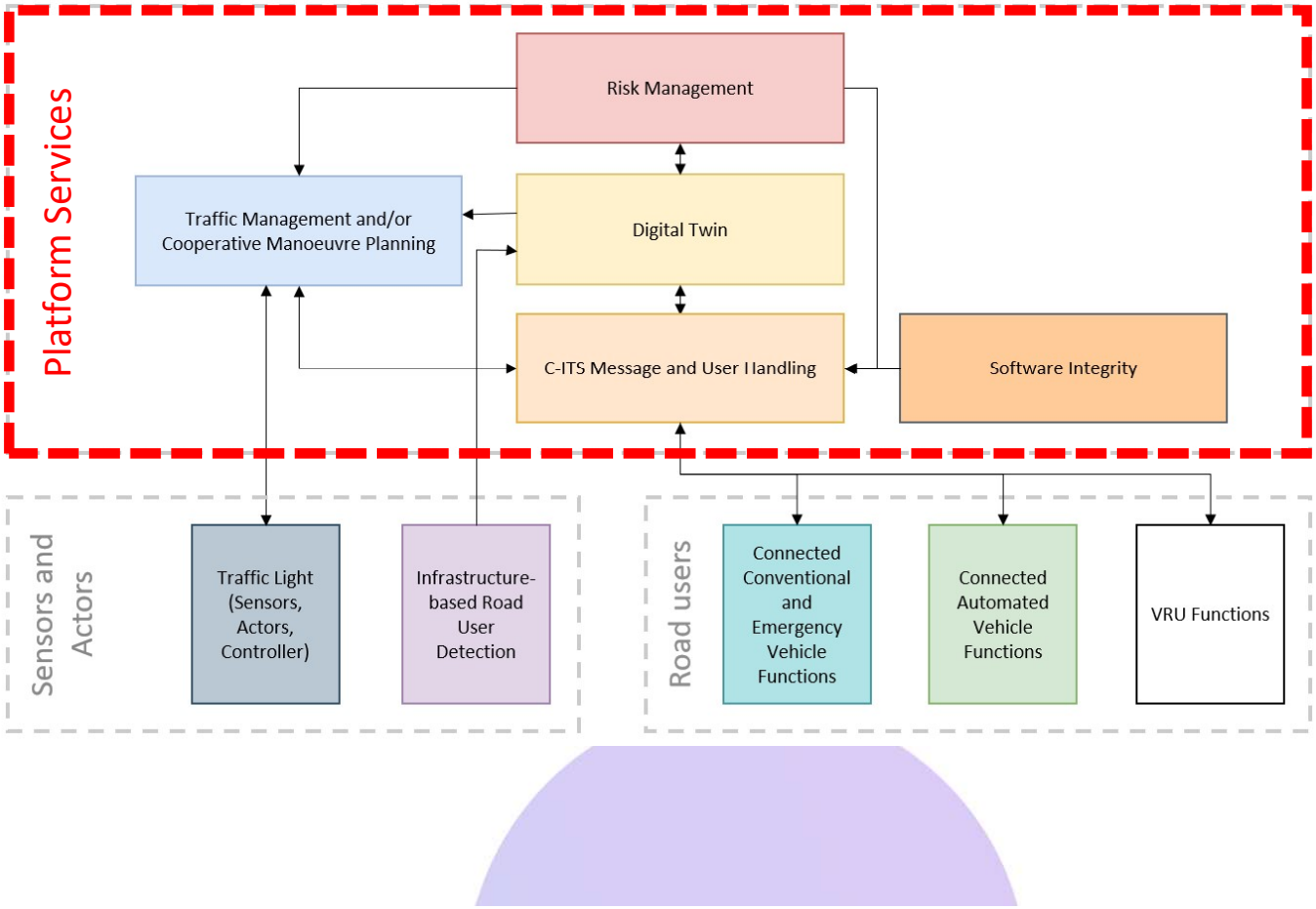
- Interaction between the different PoDIUM functions

- Functional view
  - High level common architecture
  - Each UC is particularizing this architecture based on its requirements
- Three major blocks:
  - Platform Services
  - Sensors and Actors
  - Road Users



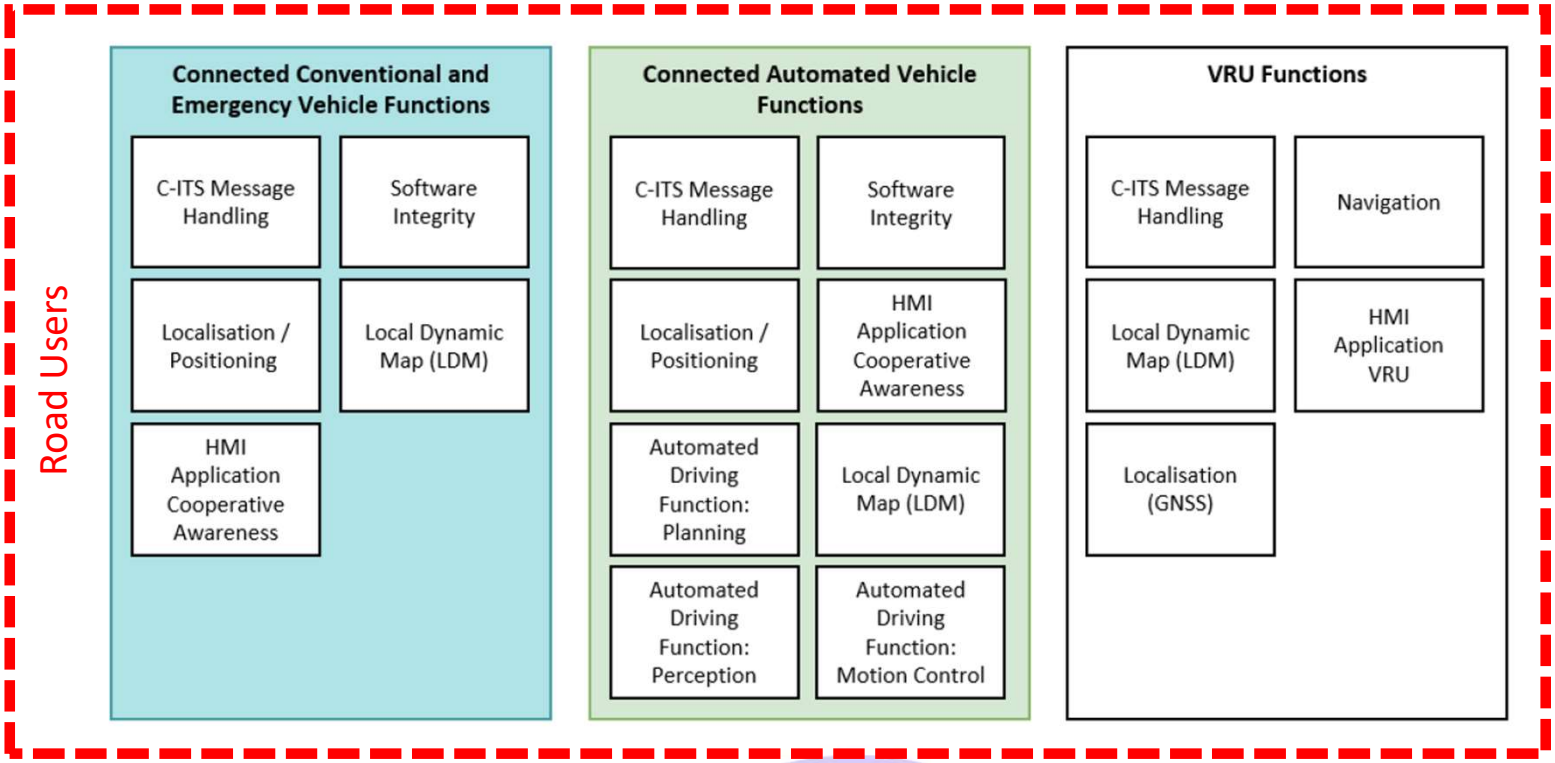
Functions interactions

Platform Services



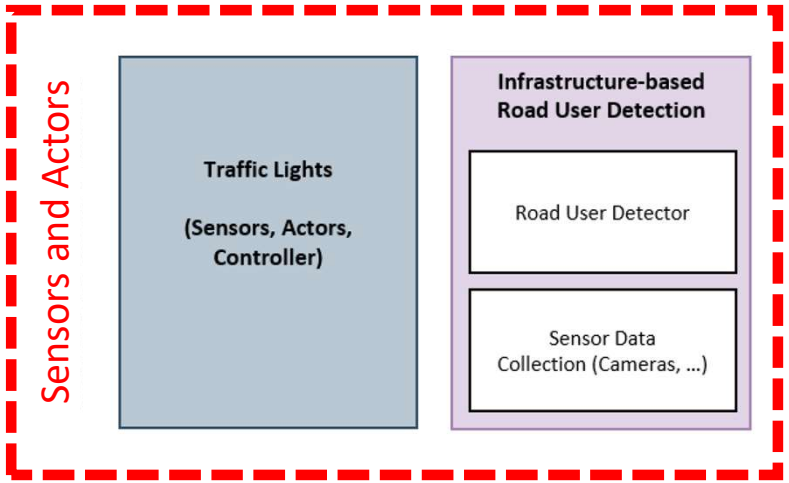
Functions interactions

Road Users



Functions interactions

Sensors and Actors



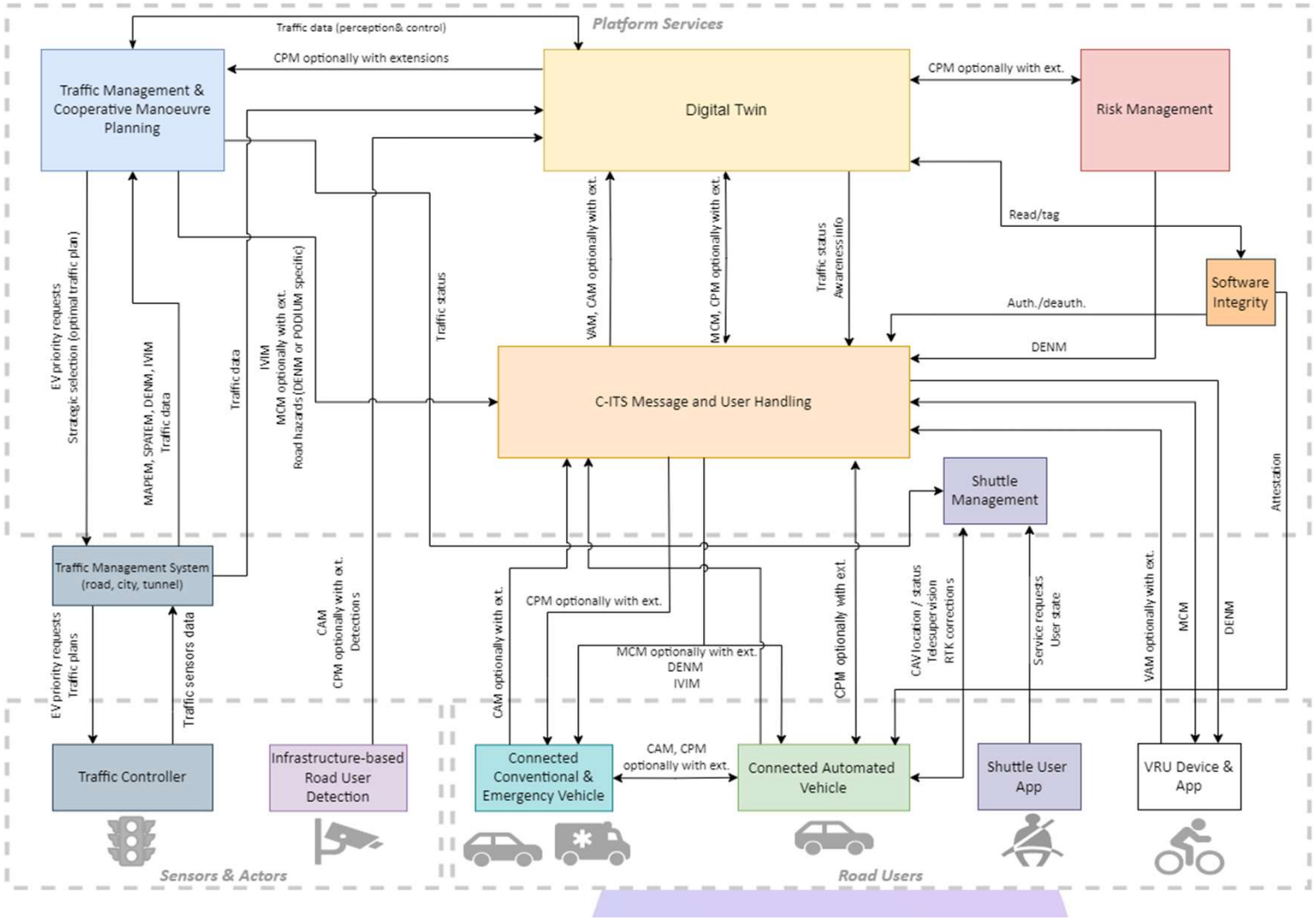
Data flow

- Standard-oriented approach used by the project:
  - Many data messages defined by ETSI standard
  - In some cases, there is a need of extending the standard

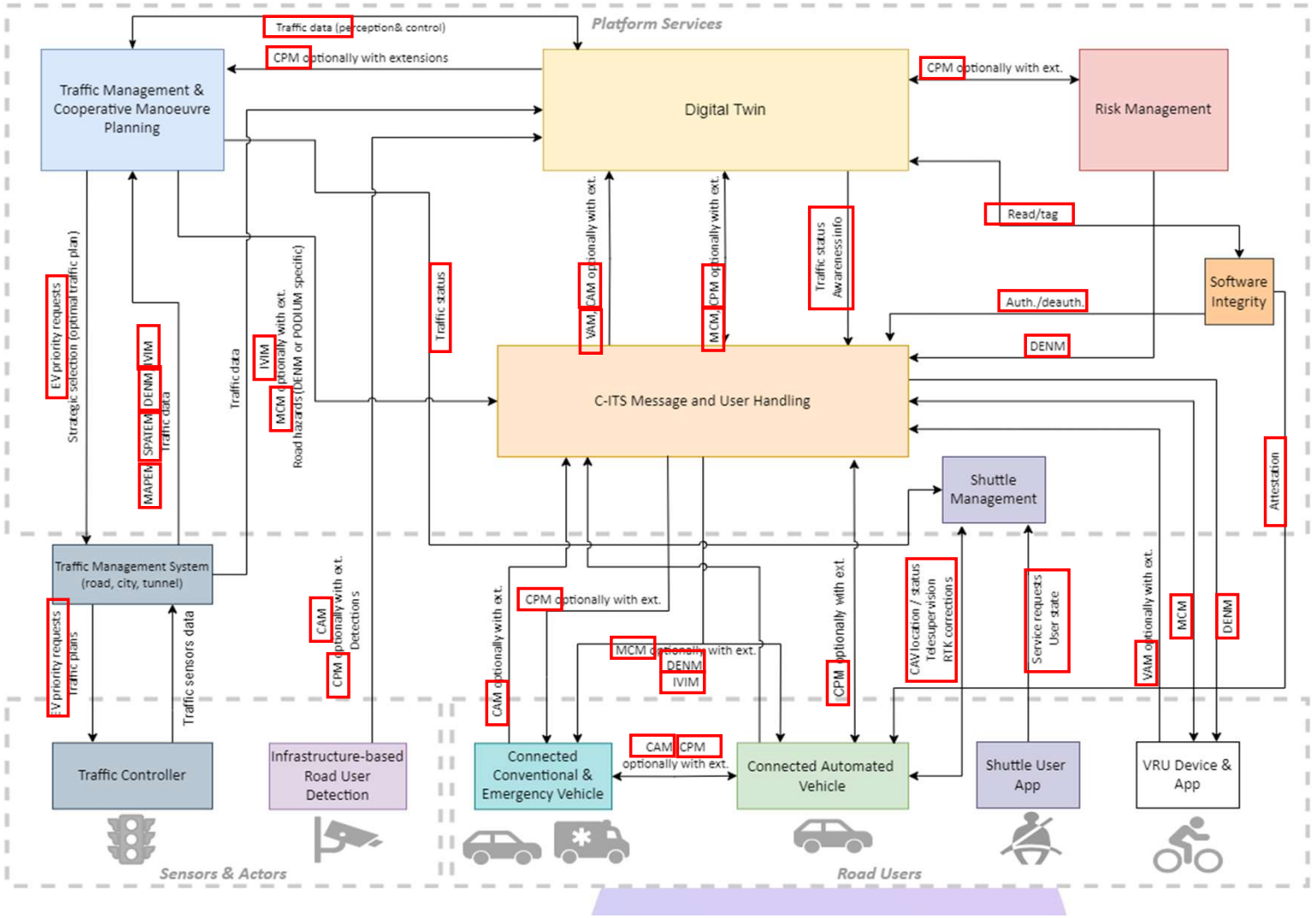
- Semantic interoperability aspects:
  - Issues when we are proposing a deviation from the standard:
    - Motivation
    - Possible impact
    - Mitigation strategy

- Data View ⇨ common data management architecture
  - Global picture of the management of information within the PoDIUM architecture
  - Inspired by the previous functional view
  - Each UC is particularizing this architecture based on its requirements

Data flow


Platform Services
Traffic data (perception& control)
CPM optionally with extensions
Traffic Management & Cooperative Manoeuvre Planning
Digital Twin
CPM optionally with ext.
Risk Management
Read/tag
Software Integrity
Auth./deauth.
DENM
C-ITS Message and User Handling
Shuttle Management
Attestation
EV priority requests
Strategic selection (optimal traffic plan)
MAPEM, SPATEM, DENM, IVIM
Traffic data
Traffic data
IVIM
MCM optionally with ext.
Road hazards (DENM or PODIUM specific)
Traffic status
VAM, CAM optionally with ext.
MCM, CPM optionally with ext.
Traffic status
Awareness info
Traffic Management System (road, city, tunnel)
EV priority requests
Traffic plans
Traffic sensors data
CAM
CPM optionally with ext.
Detections
CAM optionally with ext.
CPM optionally with ext.
MCM optionally with ext.
DENM
IVIM
CPM optionally with ext.
CAV location / status
Telesupervision
RTK corrections
Service requests
User state
VAM optionally with ext.
MCM
DENM
Traffic Controller
Infrastructure-based Road User Detection
Connected Conventional & Emergency Vehicle
CAM, CPM optionally with ext.
Connected Automated Vehicle
Shuttle User App
VRU Device & App
Sensors & Actors
Road Users

Data flow



CAM Cooperative Awareness Message

CPM Cooperative Perception Message

DENM Decentralized Environmental Notification Message

IVIM In-vehicle Information Message

MCM Manoeuvre Coordination Message

VAM VRUs Awareness Message

MAPEM MAP Extended Message

SPATEM Signal Phase and Timing Extended Message

OTHERS
- EV priority requests
- Traffic information
- Software integrity
- Shuttle management

Thank you!

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PoDIUM Project

podium-project.eu

Jorge Suárez

Project Manager

ETRA I+D

e-mail: jsuarez.etraid@grupoetra.com