

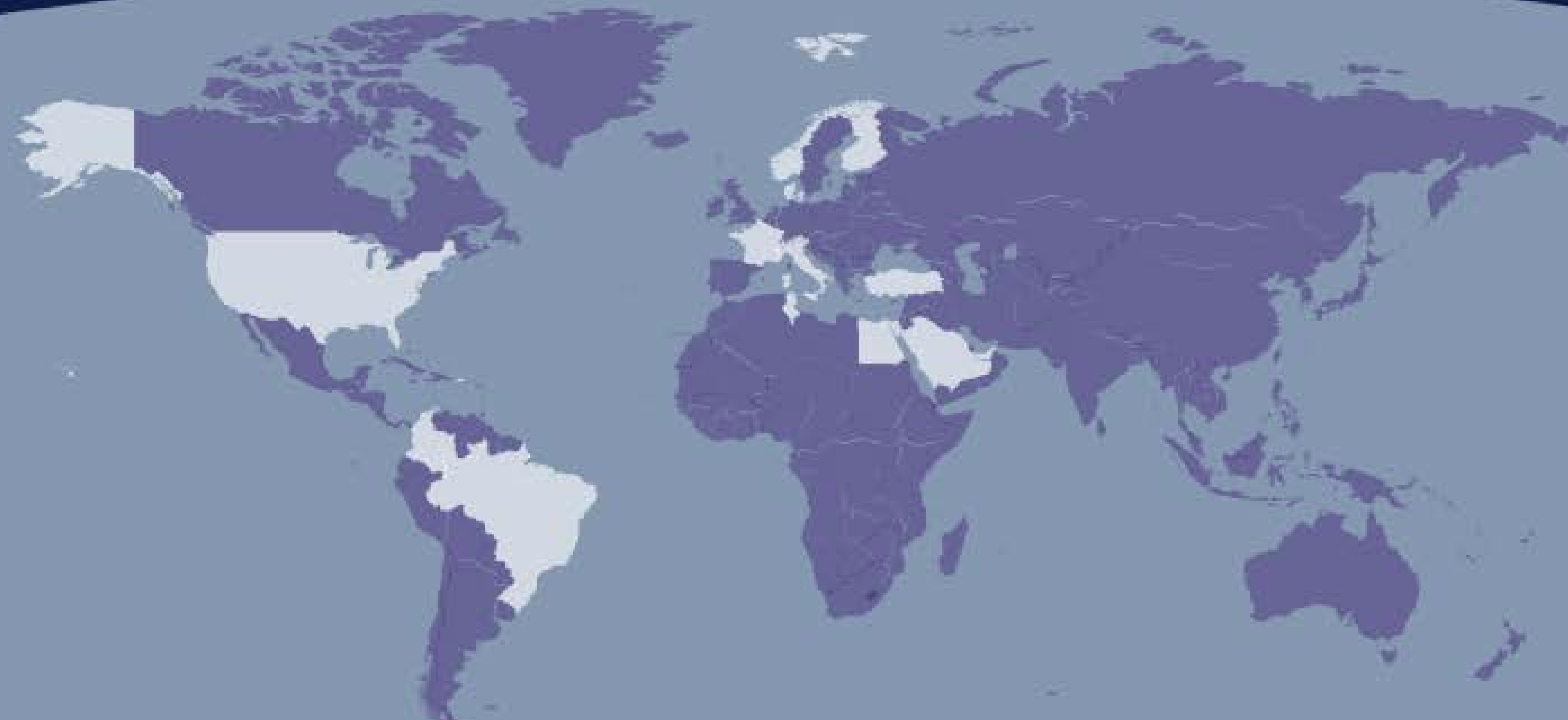


Architecture and C-ITS services

Chloe Hwang, Smart road / C-ITS Solution Manager,
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Almaviva Group

In 2022



Almaviva
Group

15 COUNTRIES

€1,096M

2022
REVENUES

30% INTERNATIONAL
MARKET
REVENUES

75 BRANCHES

46,000

PEOPLE

>25 TECHNICAL
LABORATORIES
& EXPERTISE
CENTERS

With our offerings, we are present in all areas of Transportation



RAIL

Traffic Planning & Management, Traffic Control, Passenger Information System, Smart Station, Smart Train



PUBLIC TRANSPORT

Multimodal Transport Planning & Management, Multimodal Control Room, Automated Vehicle Monitoring, Smart Vehicle, Automated Fare Collection, Travel Planner & Infomobility



LOGISTICS

Yard Management, Shunting Management, Intermodal Systems



ROAD

Smart Road & Connected Vehicle, Integrated Control Room, Traffic Control & Command, Structural Health Management



AIRPORTS

Smart Airport, Entry-Exit System, Passenger Information System

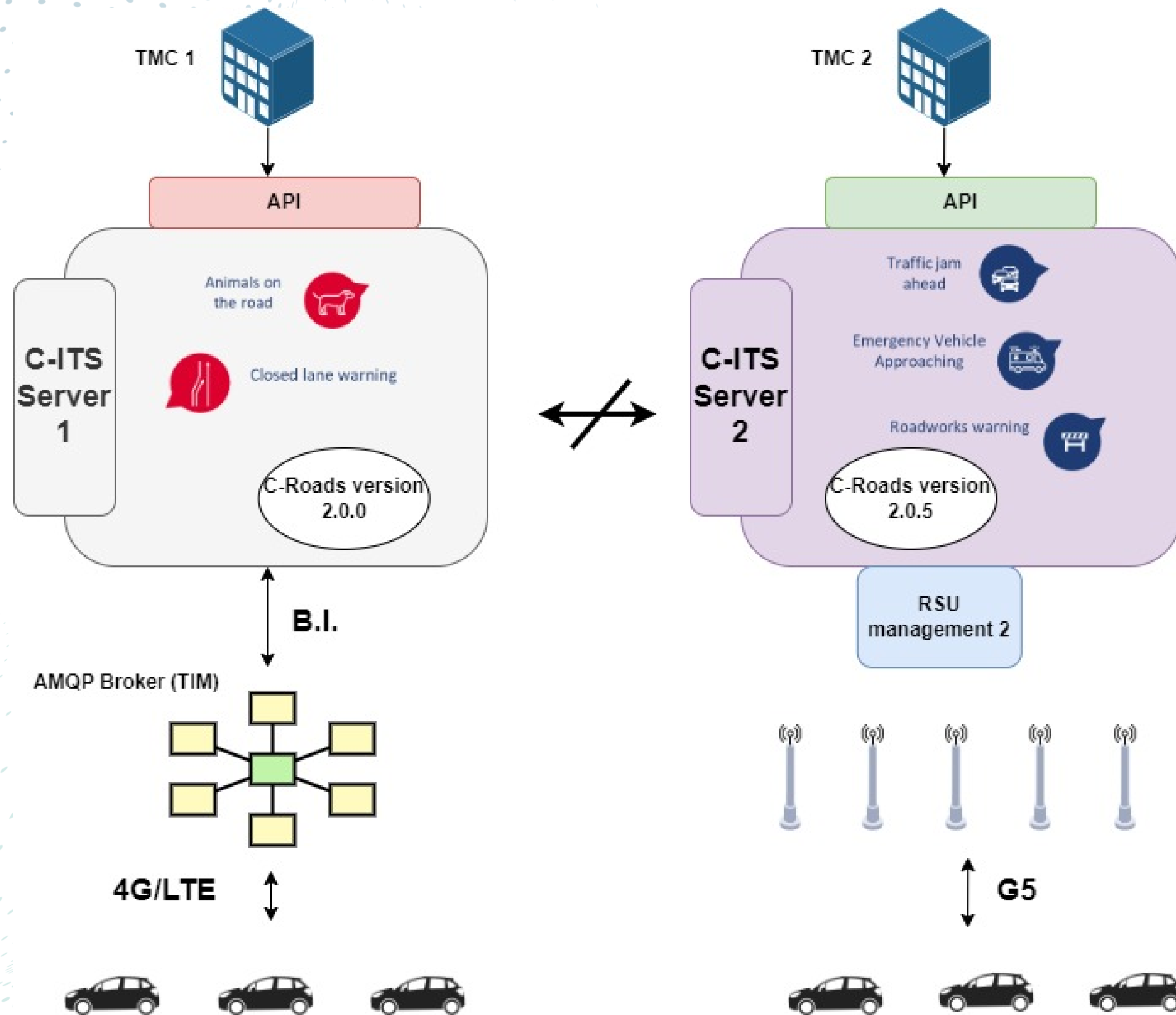


PORTS

Smart Port, Port Community System, Entry-Exit System, Yard & Shunting Management

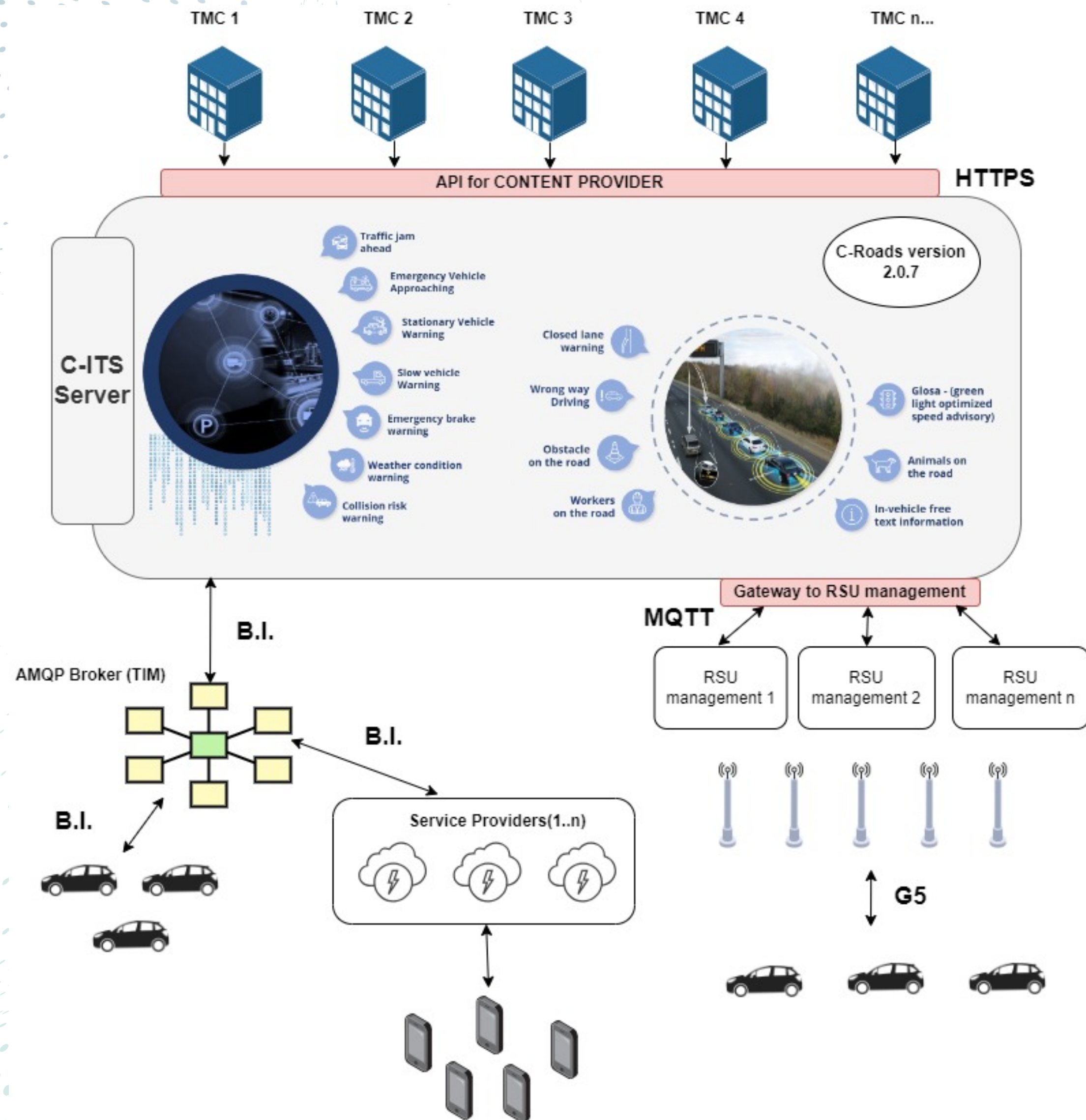
Plug-and-Play, Scalable Architecture Centralized C-ITS Server

Independent Service Chain Architecture



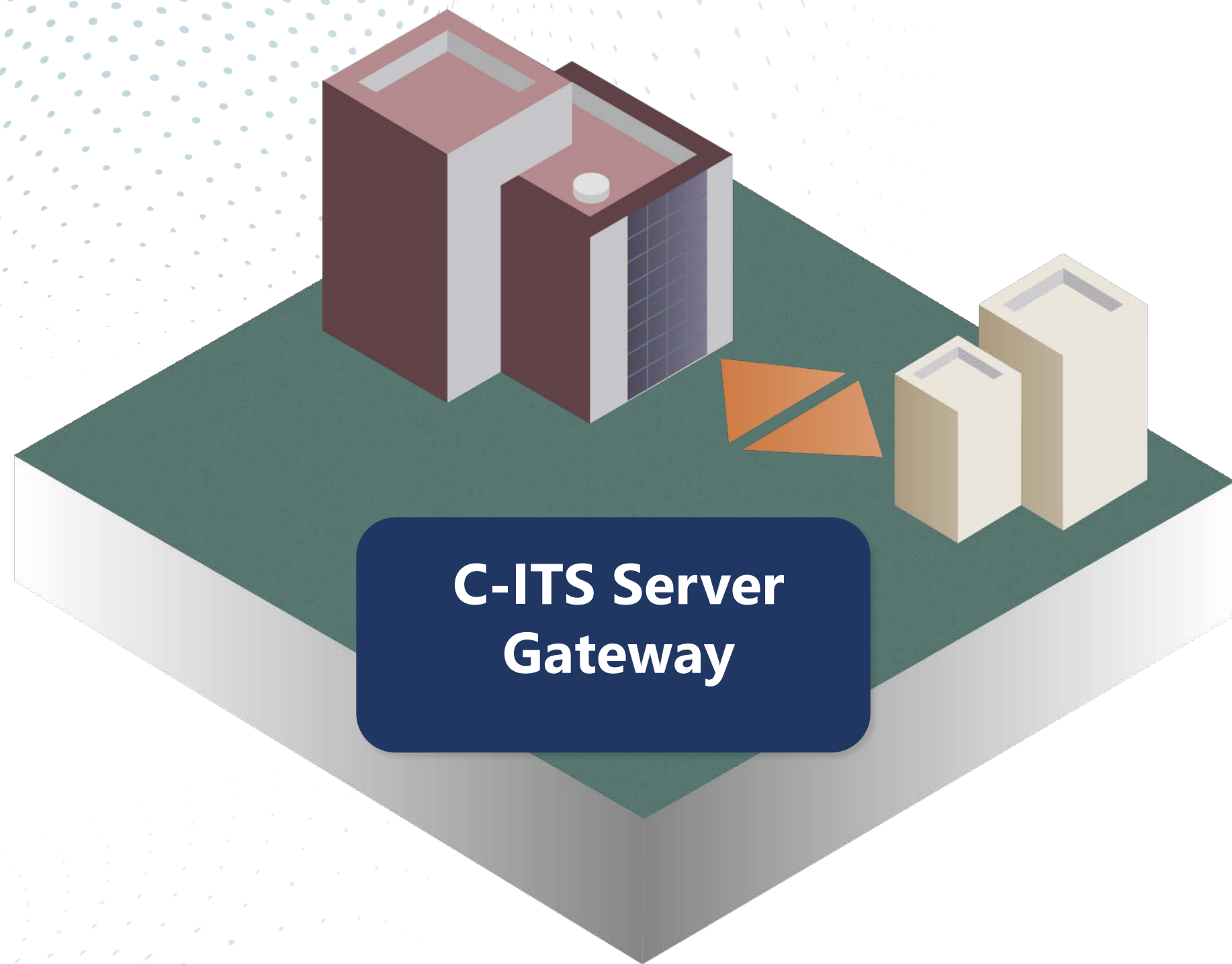
- **Not scalable:** each Road operator / TMC develops its own C-ITS server at their own pace
- **Separated / un-reusable Use cases:** implemented use case by 1 TMC cannot be instantly reused for other TMCs. Requires x times the effort for each
- **Interoperability:** Since C-Roads / standards evolve quickly over time, there are differences in the versions applied in each implementation
- **Hybrid:** each C-ITS server may implement G5 or 4G/LTE at a different time, making it hard to do a collective test in multiple sites using both channels

Our approach – Shared Interoperable Architecture

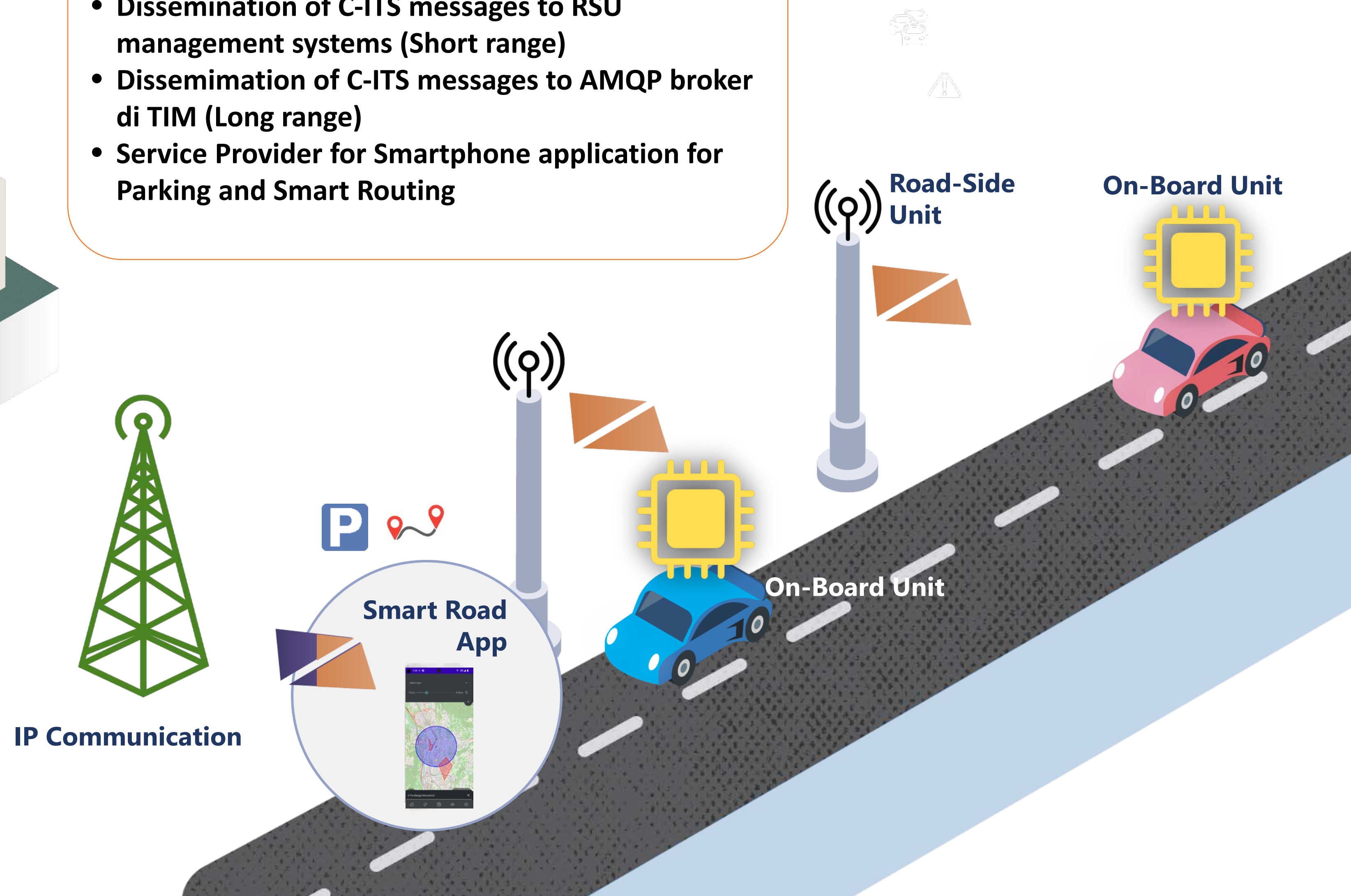


- **Plug-and-Play model:** requires only integration with various road operators and cities
- **Harmonized implementation** of C-ITS services (always updated to latest version for ALL connected road operators and Cities)
- **Reusable Use case:** once implemented -> available for ALL road operators & Cities
- **Highly scalable & centralized performance monitoring**
- **Hybrid:** Once plugged, use cases available for both G5 and IP channels immediately

Role of Almaviva



- Dissemination of C-ITS messages to RSU management systems (Short range)
- Dissemination of C-ITS messages to AMQP broker di TIM (Long range)
- Service Provider for Smartphone application for Parking and Smart Routing



Harmonization efforts (2019-2023)

Participation in WG2

- In all 5 Task Forces
- New use cases contribution
- Proposal of new ETSI message for parking use cases

Standardization

- Update to the latest C-Roads version every 3 months
- Follow up on latest changes in ETSI, Car2Car, ISO standards

Interoperability

- CBT 2022
- CBT 2023
- X-Hybrid test 2023

- **Guide / Compliance** to Croads WG2 requirements & issue resolution

- **Technical coordination and support** for implementation, deployment, testing

- **Organization of CBT** for the year 2022 (Ireland, Greece, Austria) and year 2023 (France, Austria)

THANK YOU FOR YOUR ATTENTION

For questions:

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