ASECAP DAYS

MILANO 2024

beira interior by globalvia

transmontana by globalvia

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C-ITS to enhance traffic management

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GLOBALVIA

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SPAIN
16 concessions
+ 1 high-speed rail

UNITED STATES
1 concession

PORTUGAL
2 concessions

IRELAND
3 concessions
+ Go-Ahead Group buses

COSTA RICA
1 concession

CHILE
5 concessions

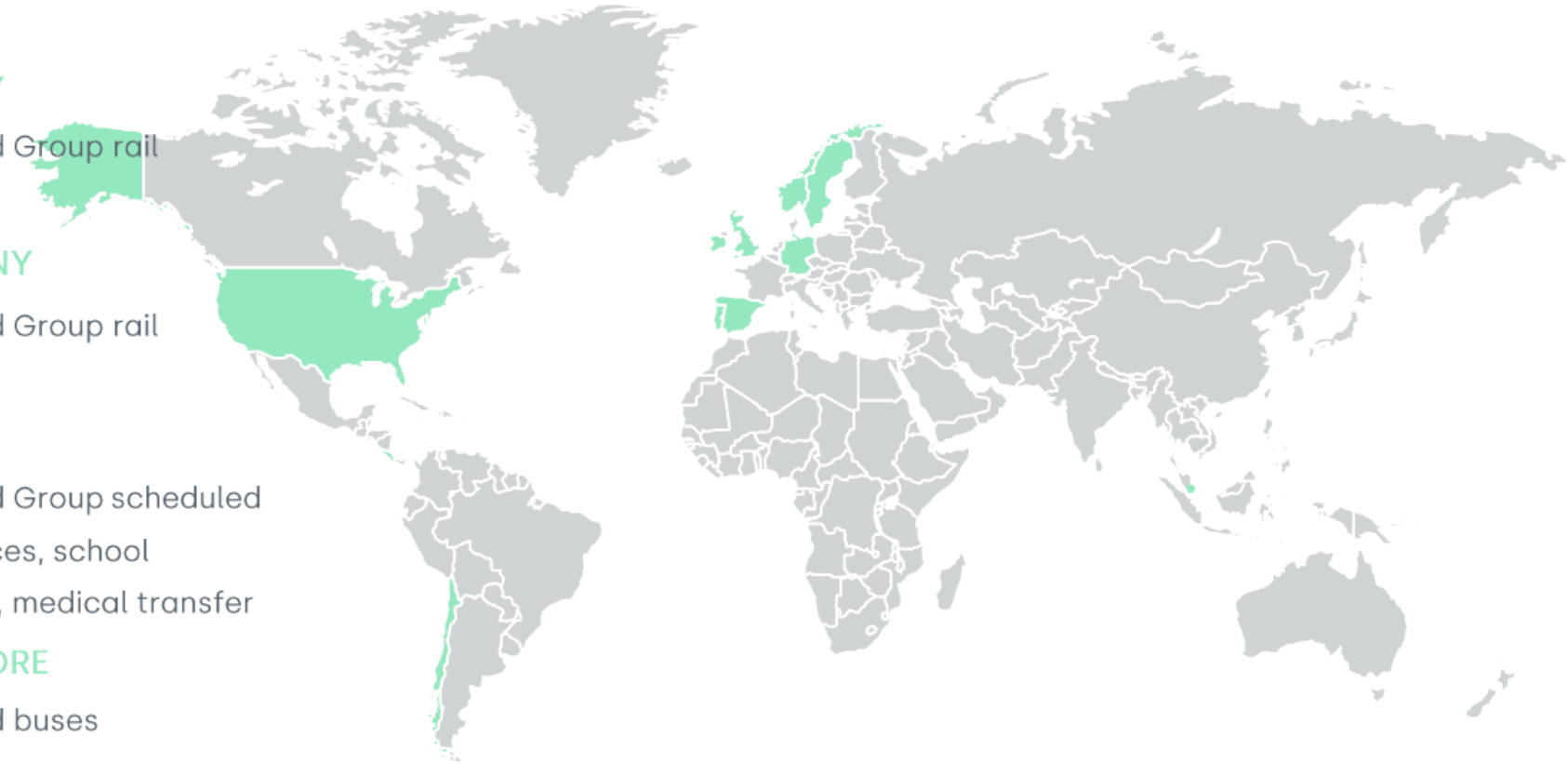
UK
Go-Ahead Group rails and buses

NORWAY
Go-Ahead Group rail services

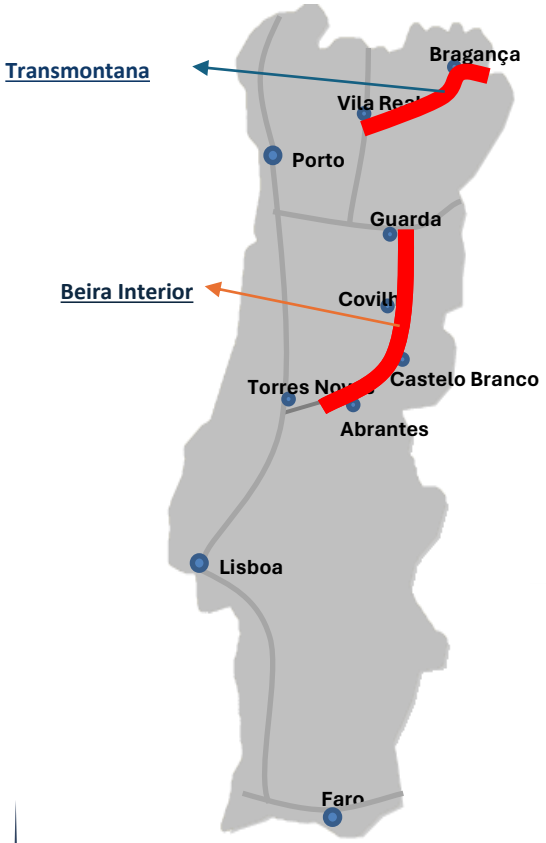
GERMANY
Go-Ahead Group rail services

SWEDEN
Go-Ahead Group scheduled bus services, school transport, medical transfer

SINGAPORE
Go-Ahead buses



GLOBALVIA PORTUGUESE CONCESSIONS



CONCESSIONS	
Locations	**Beira Interior** - A23 Abrantes – Guarda (177,5)
	Transmontana - A4 Vila Real – Bragança (134,7 km)
Total extension	312,2 Km
Grantor	Portuguese State

beira interior by globalvia

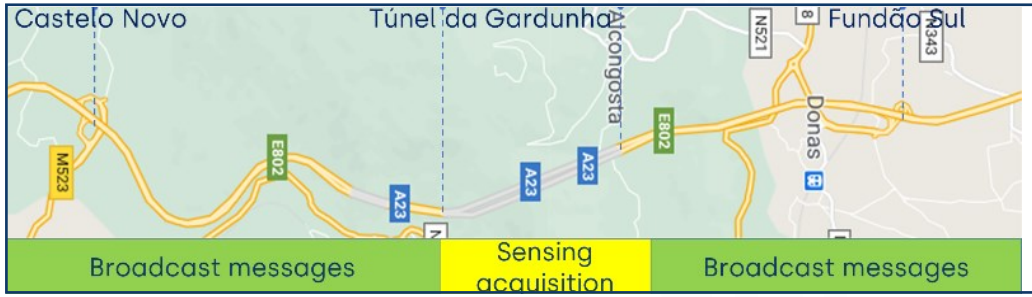
transmontana by globalvia

INFRASTRUCTURES	
Interchanges	53
Services Areas	7
Tunnels	4
Bridges	32
Structures	426
Maintenance depots	5
Traffic Control Center	2

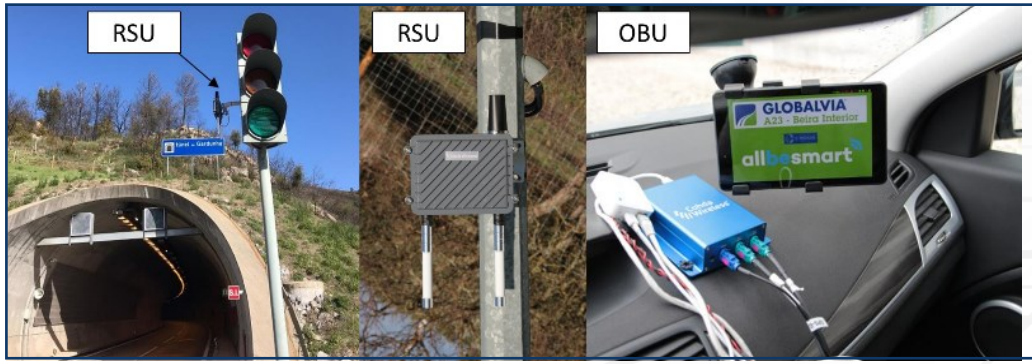
ITS	
VMS	52
Survelliance cameras	120
Electronic Signalling	77
IAD Cameras	78
Traffic Countings	55
SOS	391
Environment sensors	60
Ventilators	31
UPS/ Generators	14
Toll Sites (MLFF)	15

C-ITS Projects

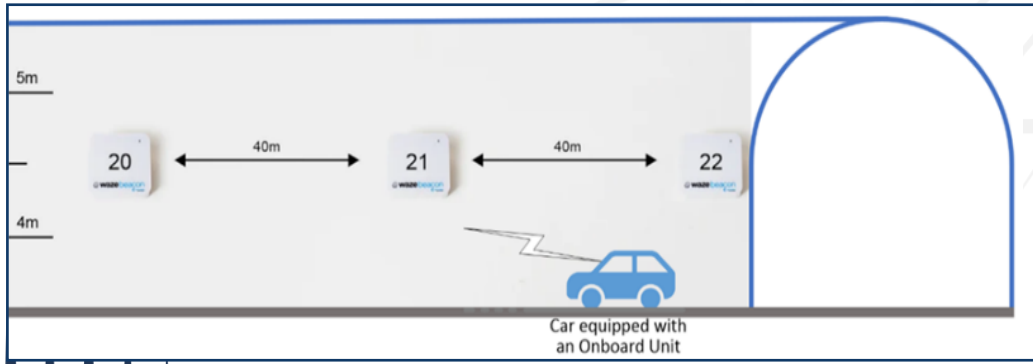
C-Roads Gardunha Tunnel Pilot



- **Consisted**:
  - Creation of a V2X (Vehicular-to-everything) communications network in the Gardunha Tunnel area in A23 Beira Interior Concession.



- **Involved**:
  - Installation of RSUs and OBUs equipments;
  - Software development for C-ITS services;
  - Interoperability testing and monitoring.



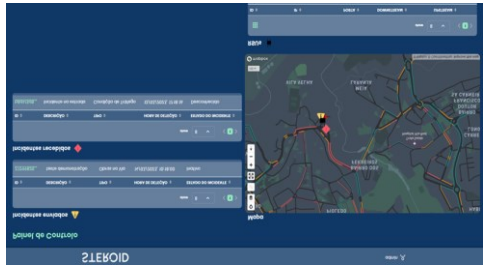
- **Additional**:
  - Installation and integration of Waze Beacons for the dissemination of GPS information inside the tunnel.

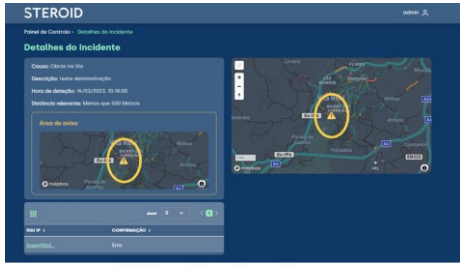
C-Roads Gardunha Tunnel Pilot was part of the C-Roads Portugal consortium (led by IMT)

Co-financed by the Connecting Europe Facility of the European Union

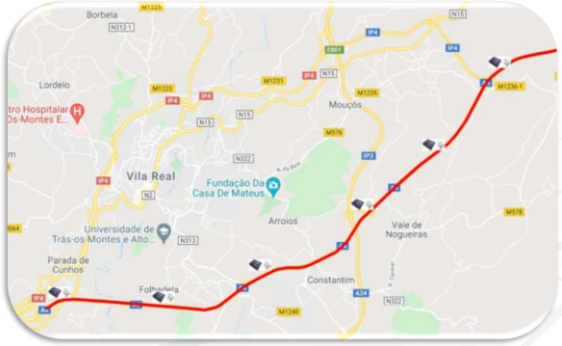
C-ITS Projects

Steroid

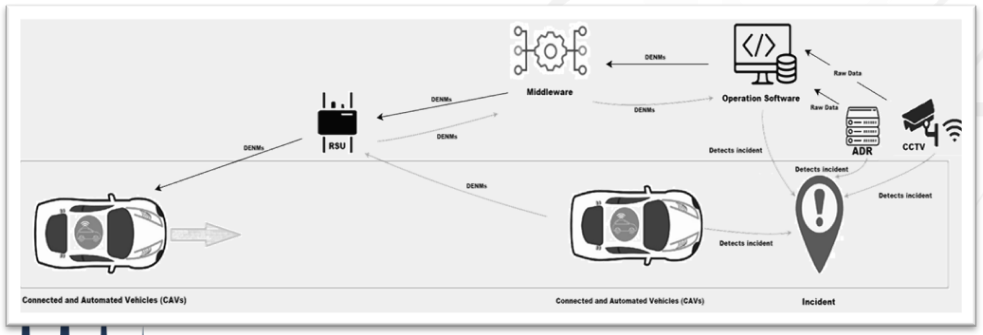




- **Consisted**:
  - Creation of a V2X with the protocol ITS-G5 communications network in the A4 Transmontana Concession (15 Km Length).



- **Involved**:
  - Installation of RSUs and OBUs equipments;
  - Software development for C-ITS services;
  - Integration with AI CCTV to detect road incidents;

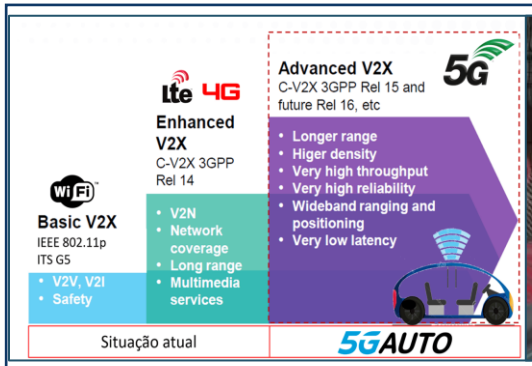


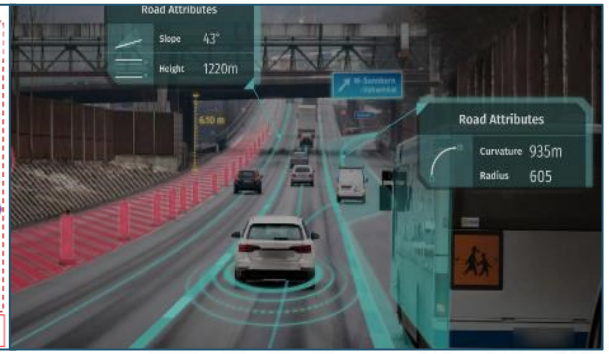
- **Additional**:
  - Use cases to detect road incidents with legacy ITS (Traffic Counting Stations and Meteos).

Co-financed by the Connecting Europe Facility of the European Union

C-ITS Projects

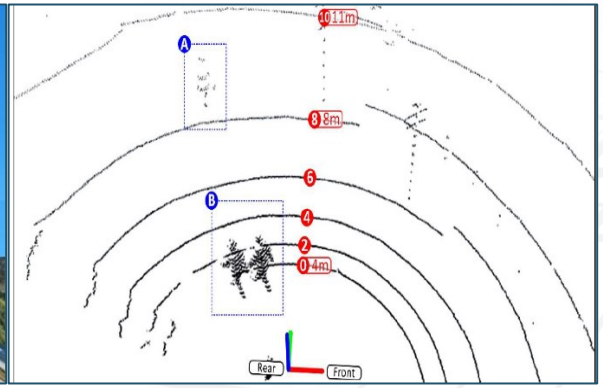
5GAuto





- **Consisting of**:
  - Investigate, develop and test hardware and software solutions to support C-ITS services over 5G V2X radio telecommunications infrastructure. The project took place in A23 Beira Interior Concession.

RSU 5G V2X in A23

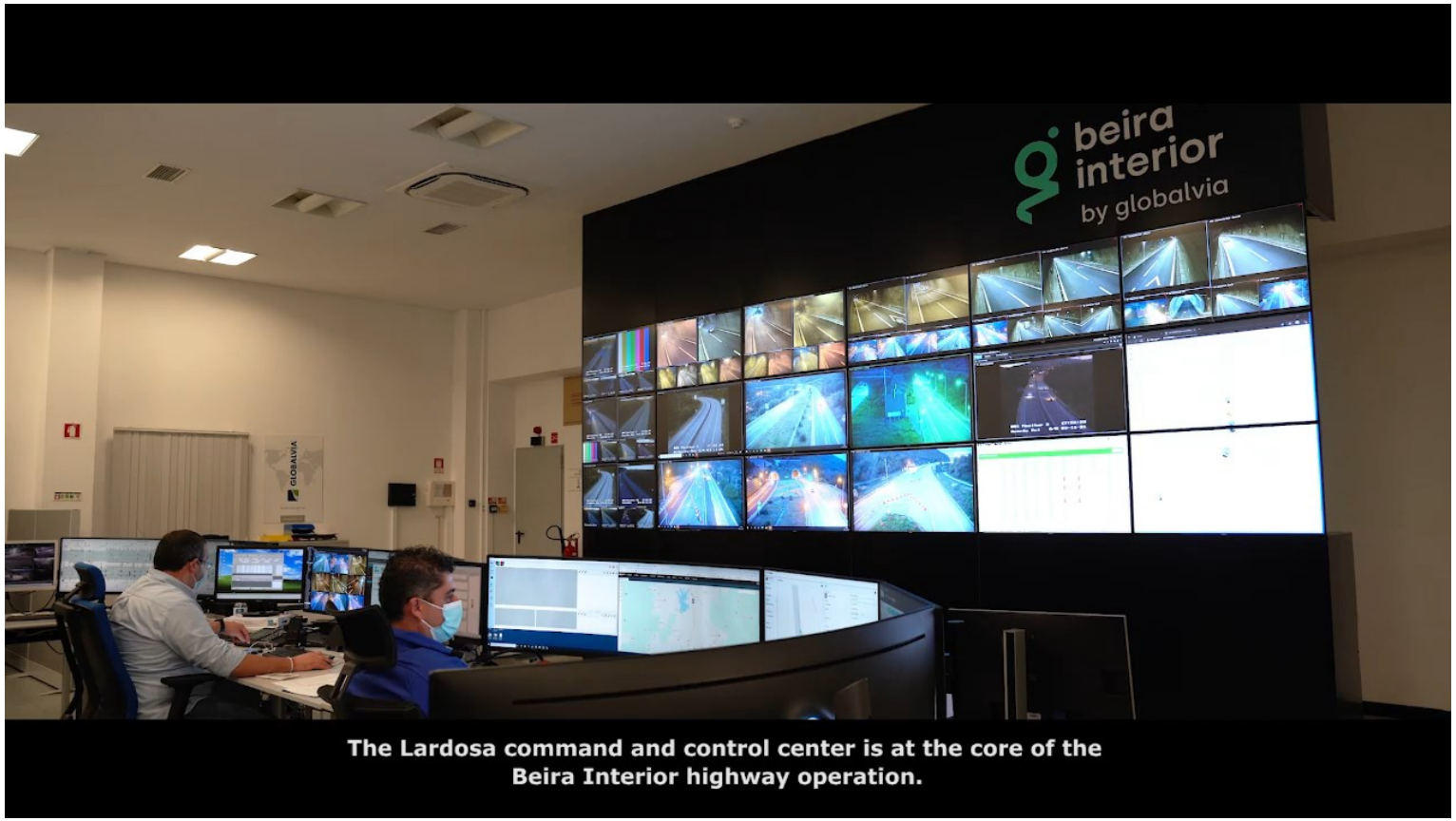


LIDAR technology for people and obstacles detection through AI

- **Involved:**
  - Develop radio equipment to support vehicular communication and autonomous driving;
  - Explore and apply MEC technology over 5G;
  - Investigation of AI algorithms;
  - Development of C-ITS service management platform.

Cofinanciado por:
COMPETE 2020 PORTUGAL 2020 UNIÃO EUROPEIA Fundo Europeu de Desenvolvimento Regional

C-ITS to enhance traffic Management



The Lardosa command and control center is at the core of the Beira Interior highway operation.

With the development of the various projects, we had the opportunity to test in practice several use cases that help to enhance traffic management.

By centralizing all command in the Control Center, operators can monitor the status of Road Units and configure and send road alerts for various traffic situations, directly to the incident zone.

C-ITS to enhance traffic Management

Uses Cases

Road Works Warning

Vehicles driving towards the road works event get warning messages as previously configured in C-ITS Platform.

Vehicles driving towards the road works event get warning messages, as previously configured in the C-ITS Platform

C-ITS to enhance traffic Management

Uses Cases

Emergency Vehicle Approaching

Vehicles inside the tunnel receive Emergency Vehicle Approaching messages, inviting drivers to slow down and drive with caution.

In this use case, an emergency vehicle is getting into the Gardunha tunnel.

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C-ITS to enhance traffic Management

Uses Cases

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Road Accident Warning

A Road Accident Warning message is received before the accident becomes visible to the driver.

In this use case, a Road Accident Warning message is received before the accident becomes visible to the driver.

C-ITS to enhance traffic Management

Uses Cases

See-through

In this use case, a vehicle has direct access to the camera of the van that is ahead, contributing towards safe overtaking manoeuvres.

C-ITS to enhance traffic Management

Uses Cases

Tolling information

Broadcast of tolling related information.

C-ITS TO ENHANCE TRAFFIC MANAGEMENT

USES CASES

Integration with third parties services

In this uses case we integrated with Copernicus Emergency Management Service

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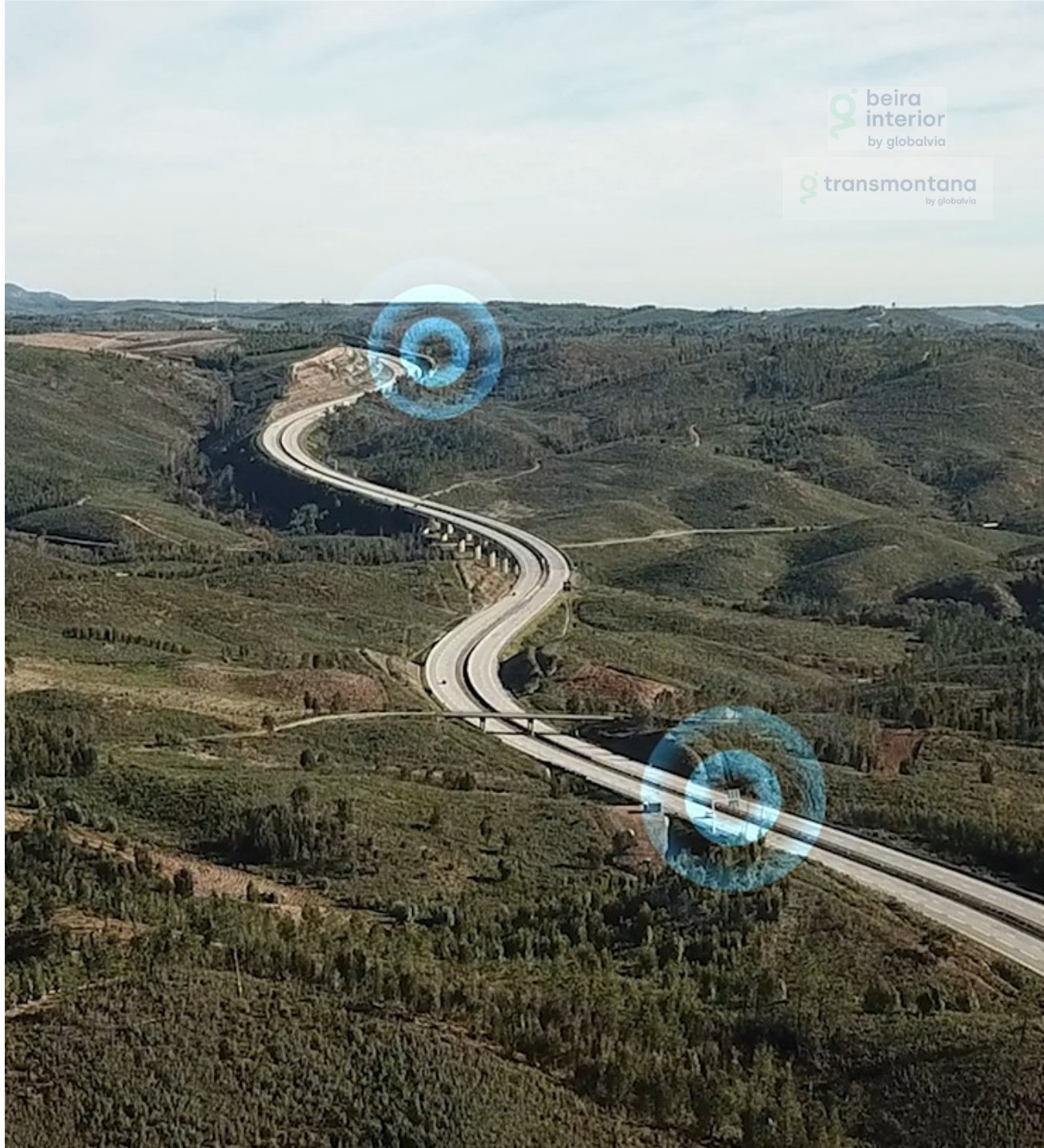
Final Notes

The C-ROADS and STEROID pilots has shown that the ITS-G5 communication technology has reached a level of maturity that now enables cooperative systems to roll out and operate in the field.

The 5G Auto project as allowed to test new connectivity standards 5G V2X and evolve in the complexity of use cases, demonstrating bigger possibilities;

C-ITS technology opens a direct communication channel between Globalvia and the highway users, with a lot of potential for innovative and useful applications, contributing to the safety of highway users and workers and helping to reduce polluting emissions.



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THANK YOU

GRAZIE / OBRIGADO

PAULO PEREIRA
ppereira@globalvia.com

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