

5G Enabled CCAM at Greece – Turkey Cross-Border Corridor

EuCNC - 5G in the Era of Connected Cars

Panagiotis Demestichas, Kostas Trichias
WINGS ICT Solutions
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5GMOBIX



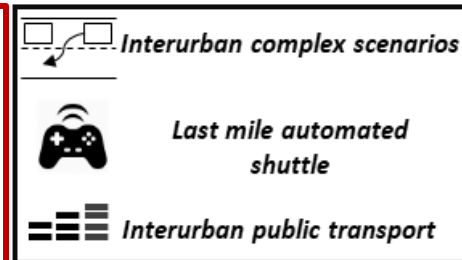
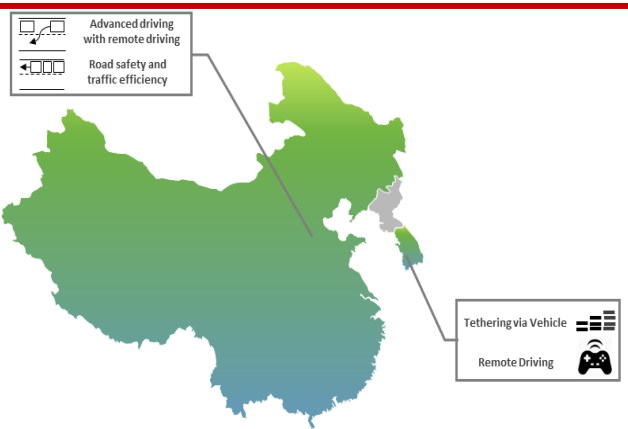
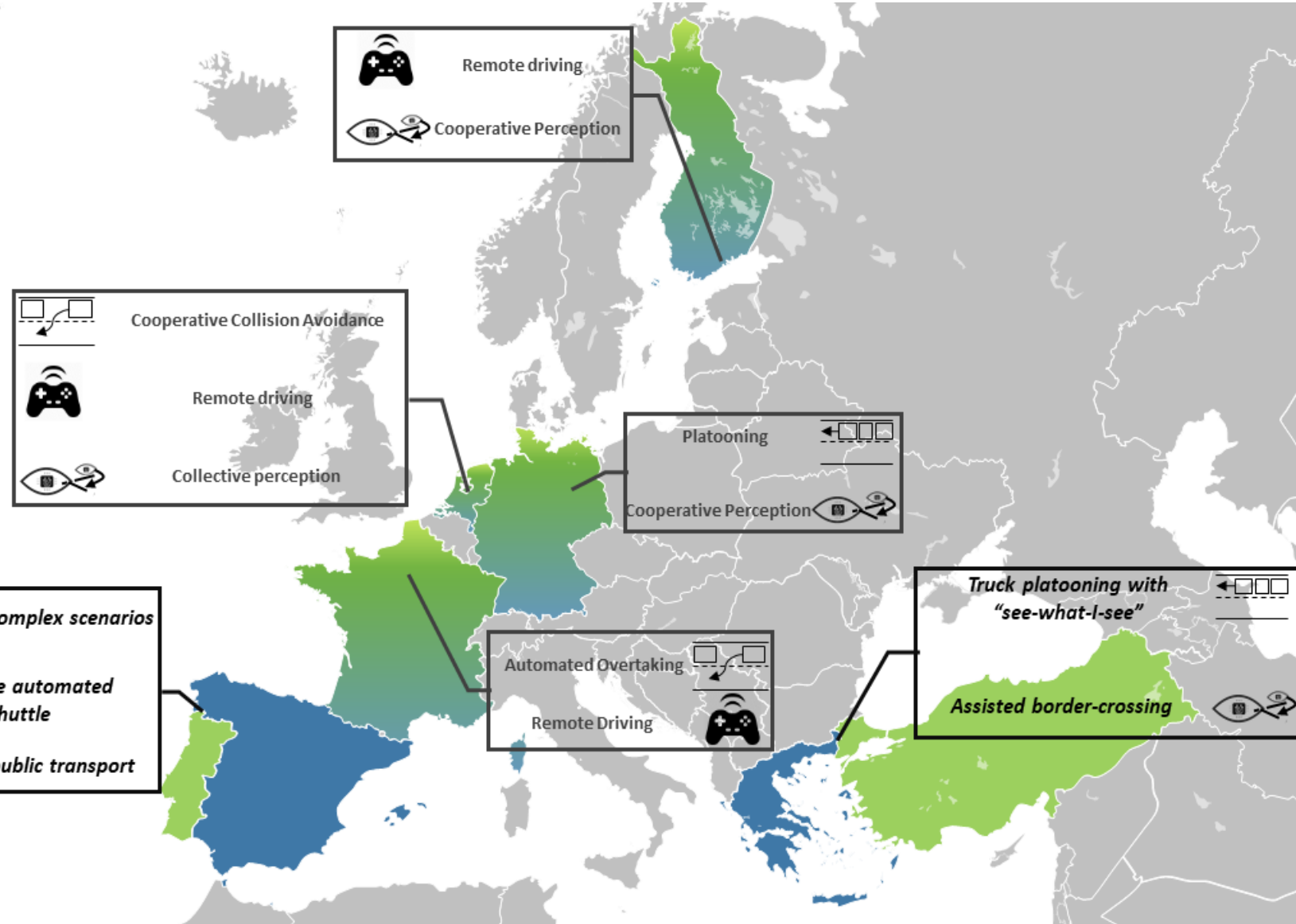
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 825496

Layout

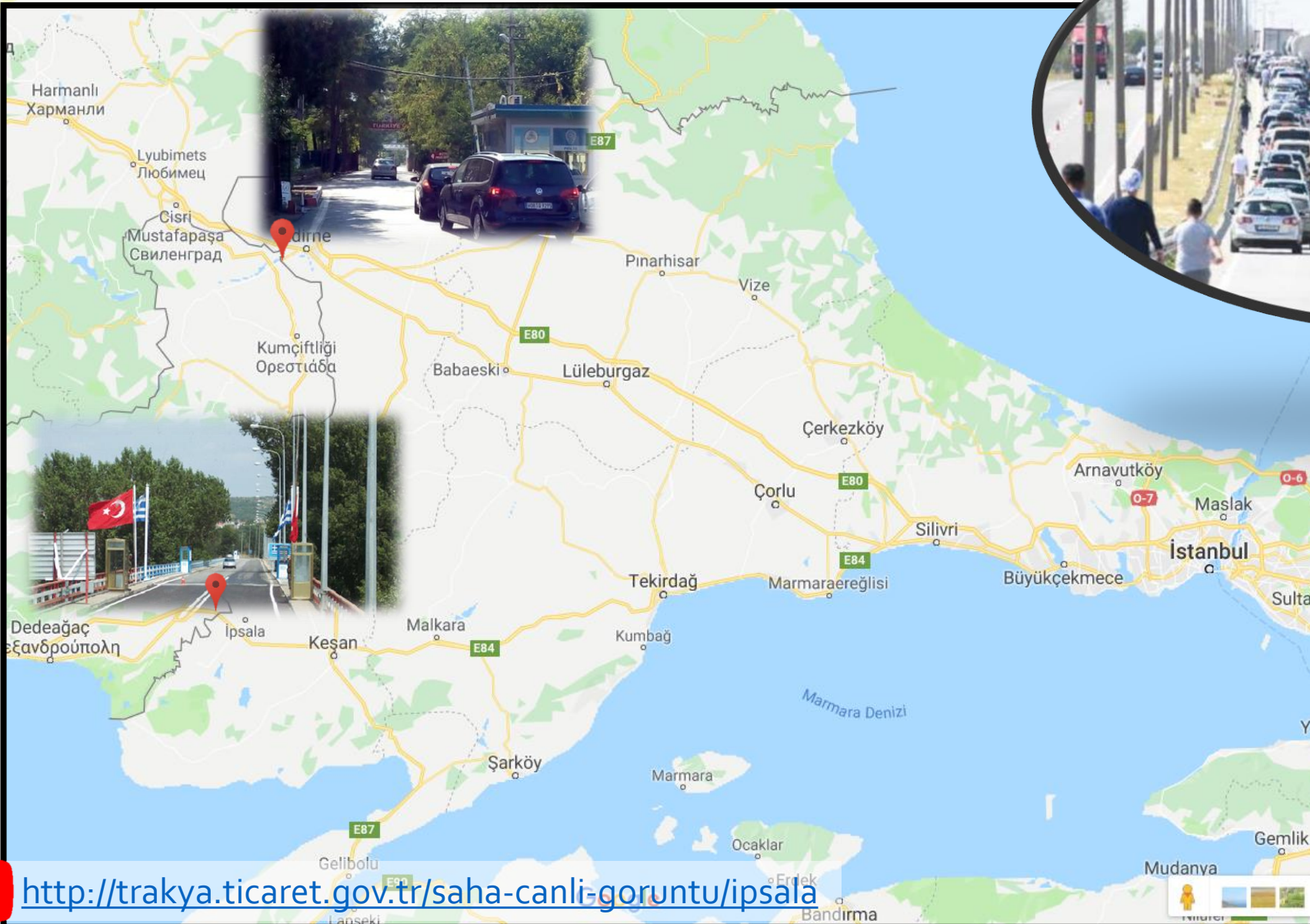
- 5G MOBIX Overview & use cases
- GR-TR borders & trial location
- GR-TR Use cases & consortium
 - UC2: Assisted zero-touch truck border-crossing & increased driver awareness
 - UC1: Truck Platooning with «see-what-I-see» functionality
- GR-TR E2E Architecture
- Ford F-MAX autonomous truck -Vehicles Specification
- Status and next steps

5G MOBIX Overview & use cases

- 2 Cross-Border corridors
- 4 Trial Sites
- 2 Asian sites (CH & KR)
- 5 Use case categories based on 3GPP TS 22.186
- 8 European MNOs
- 3 European OEMs



Greece-Turkey Border Crossing

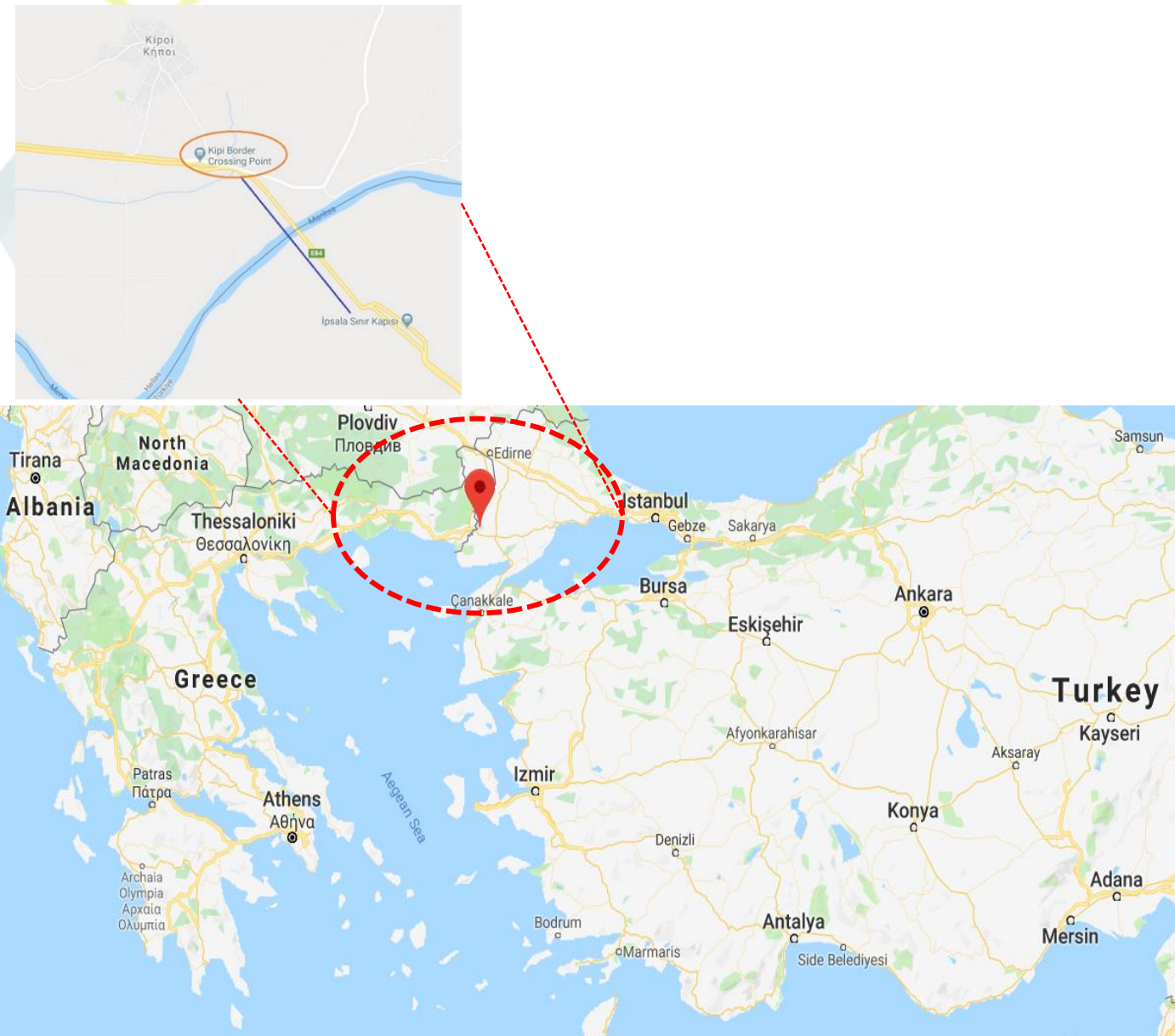


LIVE

<http://trakya.ticaret.gov.tr/saha-canli-goruntu/ipsala>



Cross-Border Trial Location



Ipsala (TR) – Kipoi (GR)



GR-TR Use cases & consortium

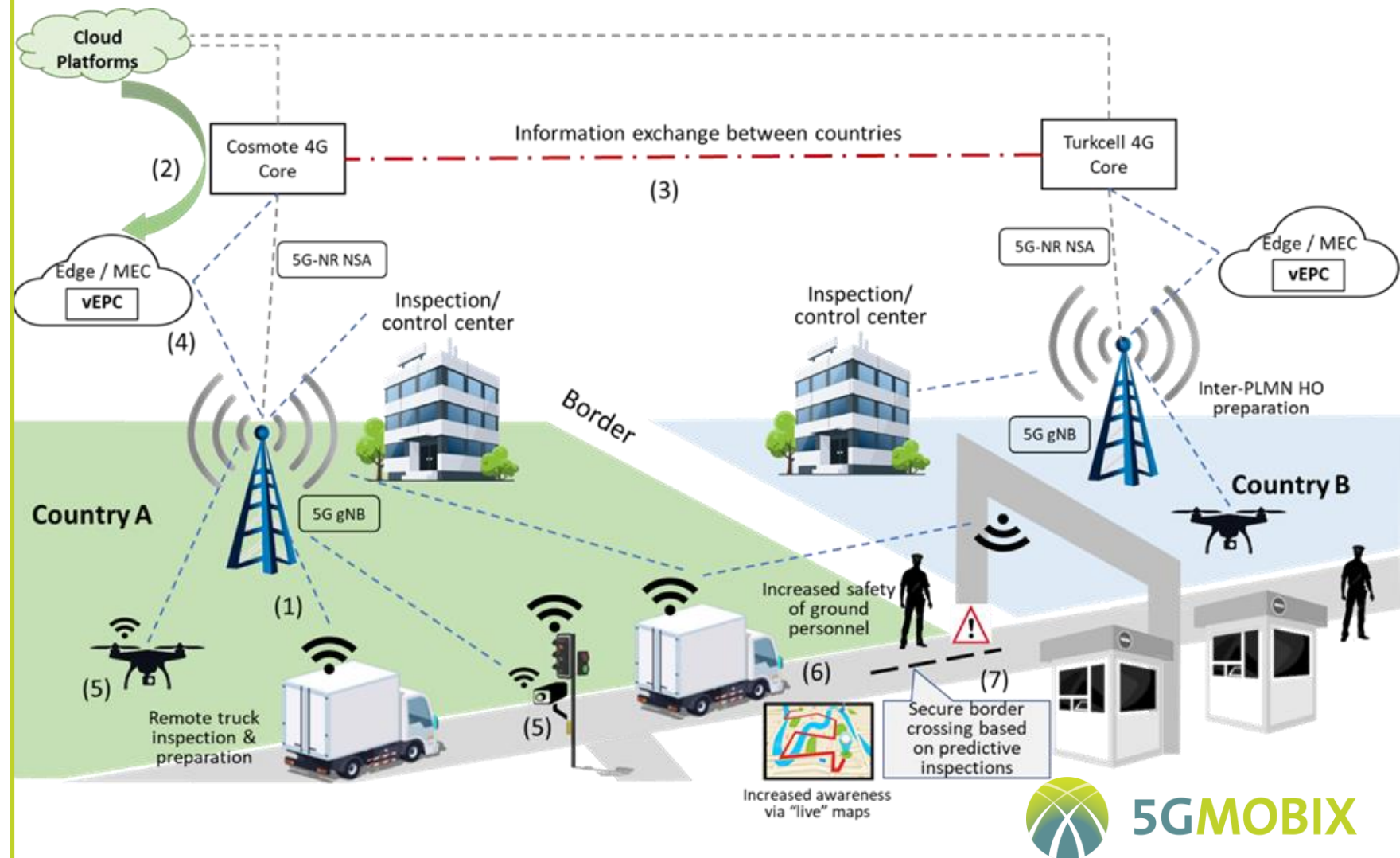
2 Main Use cases addressed

- Truck Platooning with «see-what-I-see» functionality
- Assisted –zero touch- truck border crossing & increased driver awareness

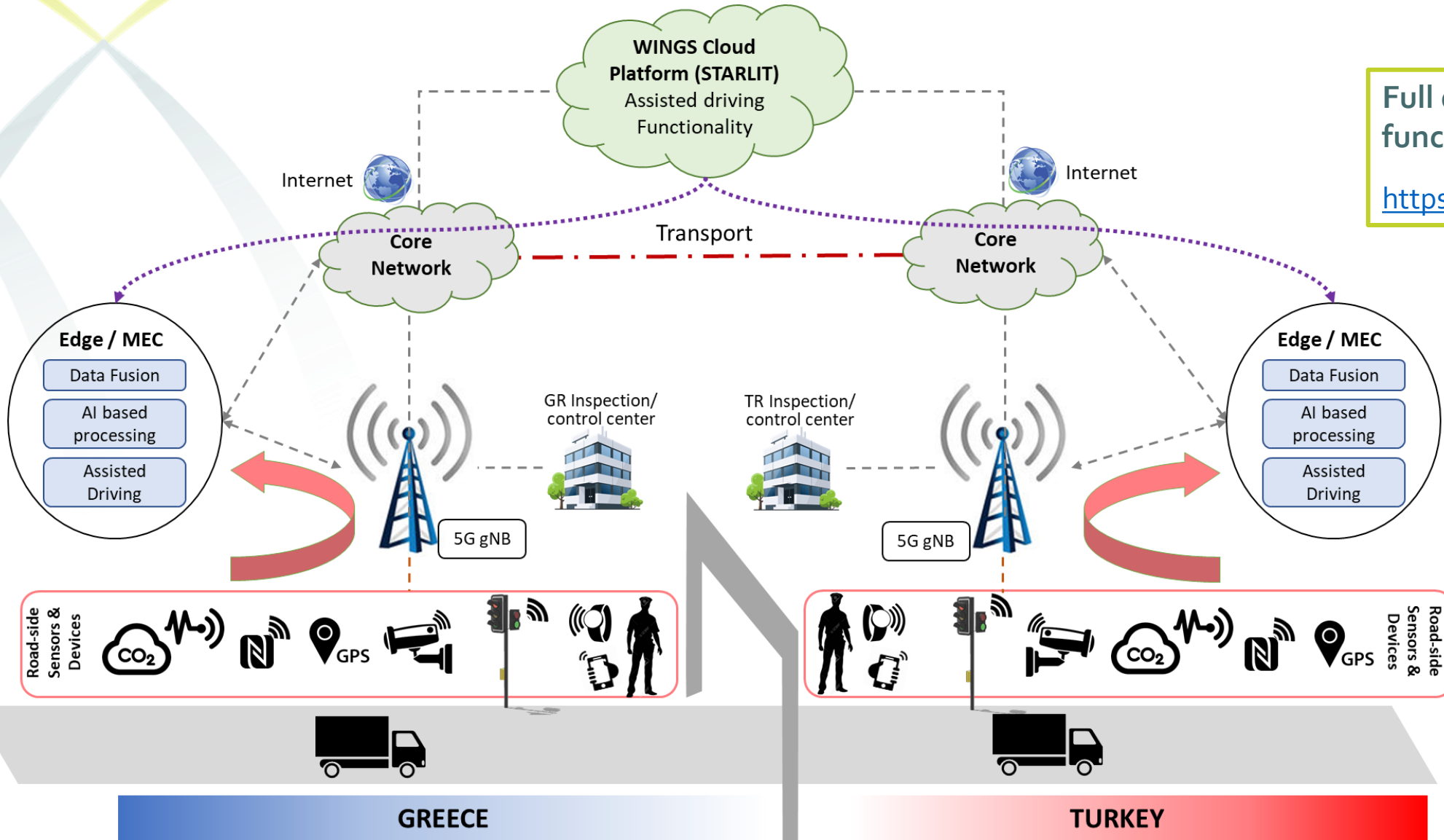
Partner	Role
 FORD OTOSAN	Truck Manufacturer
 imec	C-V2X Technology Developer
 TURKCELL TEKNOLOJİ	MNO, Network and Frequency Provider
 COSMOTE	MNO, Network and Frequency Provider
 INTRASOFT INTERNATIONAL	Technology Integrator & Software Developer
 VINGS	Software Tools Developer & IoT, AI Expert
ERICSSON  GR	5G Technology Provider
ERICSSON  TR	5G Technology Provider
 ICCS	CCAM / 5G Experts & KPI Evaluation Experts
 BİLGEM	Research institute
Hellenic Ministry of Infrastructure and Transport (GR)	
Ministry of Digital Policy, Telecommunications and Media (GR)	
Turkish Ministry of Transport and Infrastructure (TR)	

UC 2: Assisted –zero touch- truck border crossing & increased driver awareness

- Incoming **truck threat assessment** and classification
- **Remote license plate cross-check** and cargo inspection
- **Legitimacy of cargo** detection (e.g., NFC, and other tech.)
- **Human trafficking and/or livestock smuggling** detection (e.g., CO₂, thermal, etc.)
- **Enhanced safety of border personnel**
- “Zero-touch” border crossing upon verification of legitimate operation
- **Autonomous truck-driving instructions** based on its classification



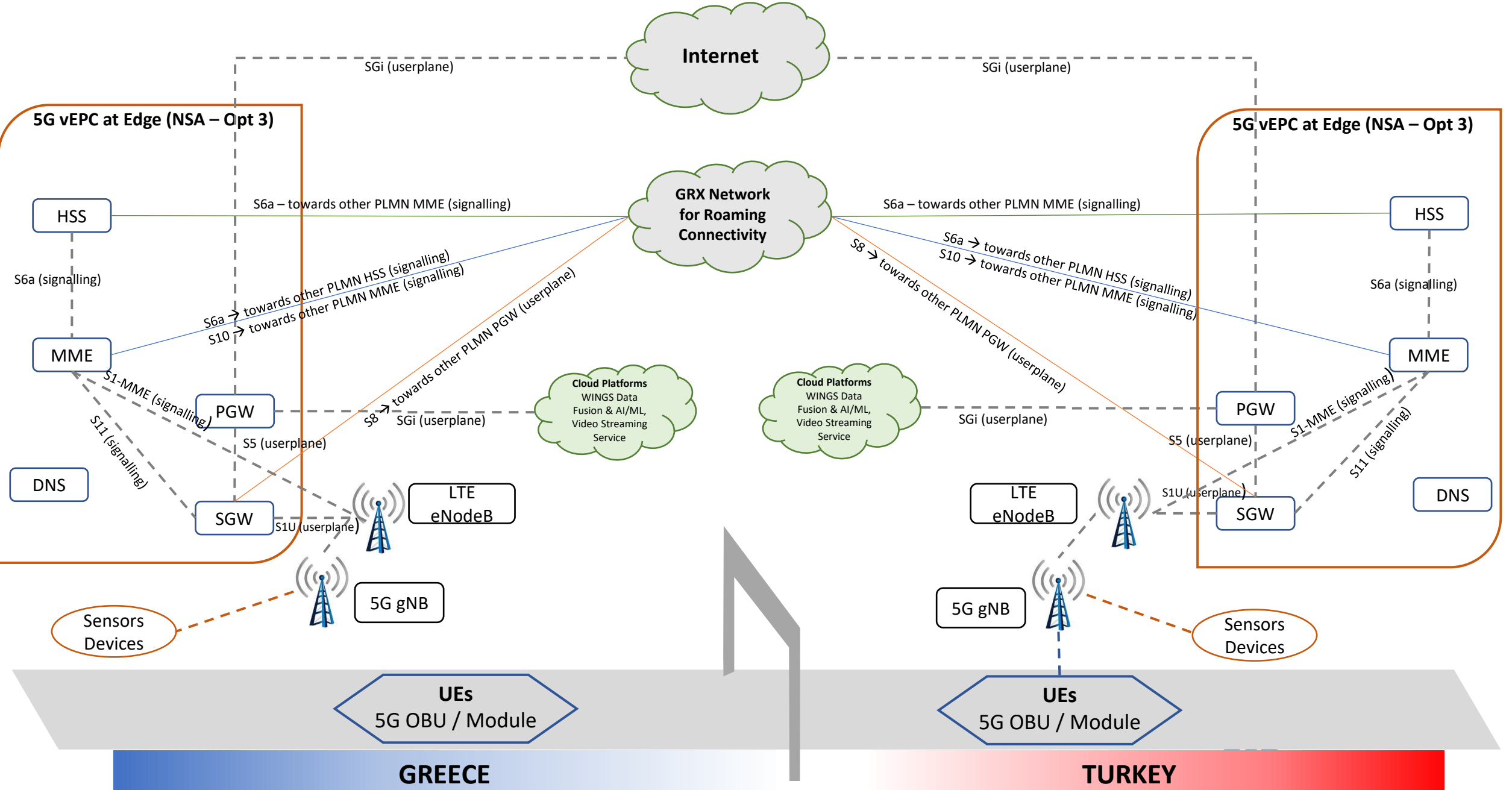
UC2 functional architecture



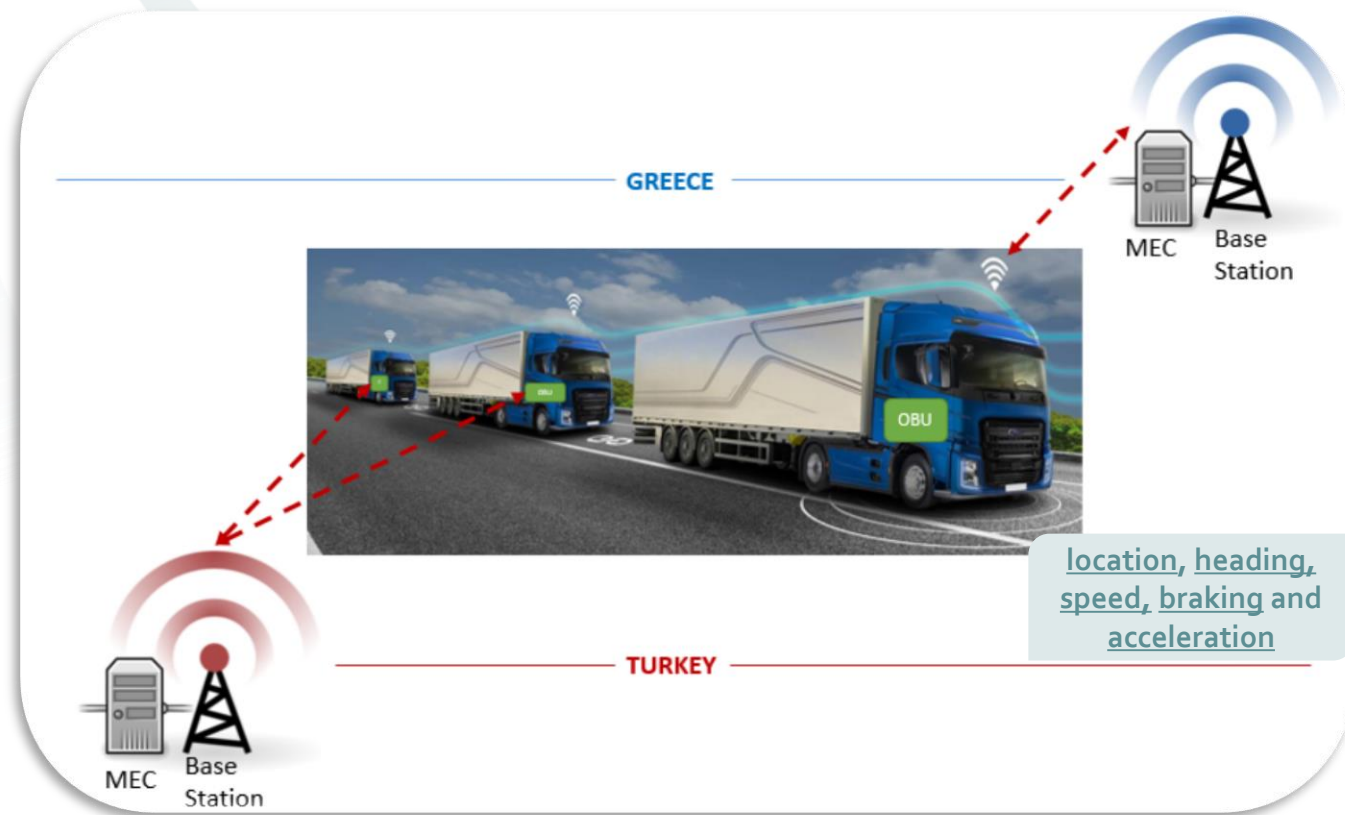
Full demo of the initial UC2 functionality available at:

<https://youtu.be/8YIPCXvLSUc>

GR-TR E2E Architecture



UC 1: Truck Platooning with «see-what-I-see» functionality



Truck platooning functionality with manoeuvre capability (C-V2V)

- Trucks with **autonomous acceleration/braking** capabilities
- **Automated inter-truck distance** based on sensor feedback

Vehicles share their location, heading and speed as well as their intentions such as braking and acceleration over C-V2V links

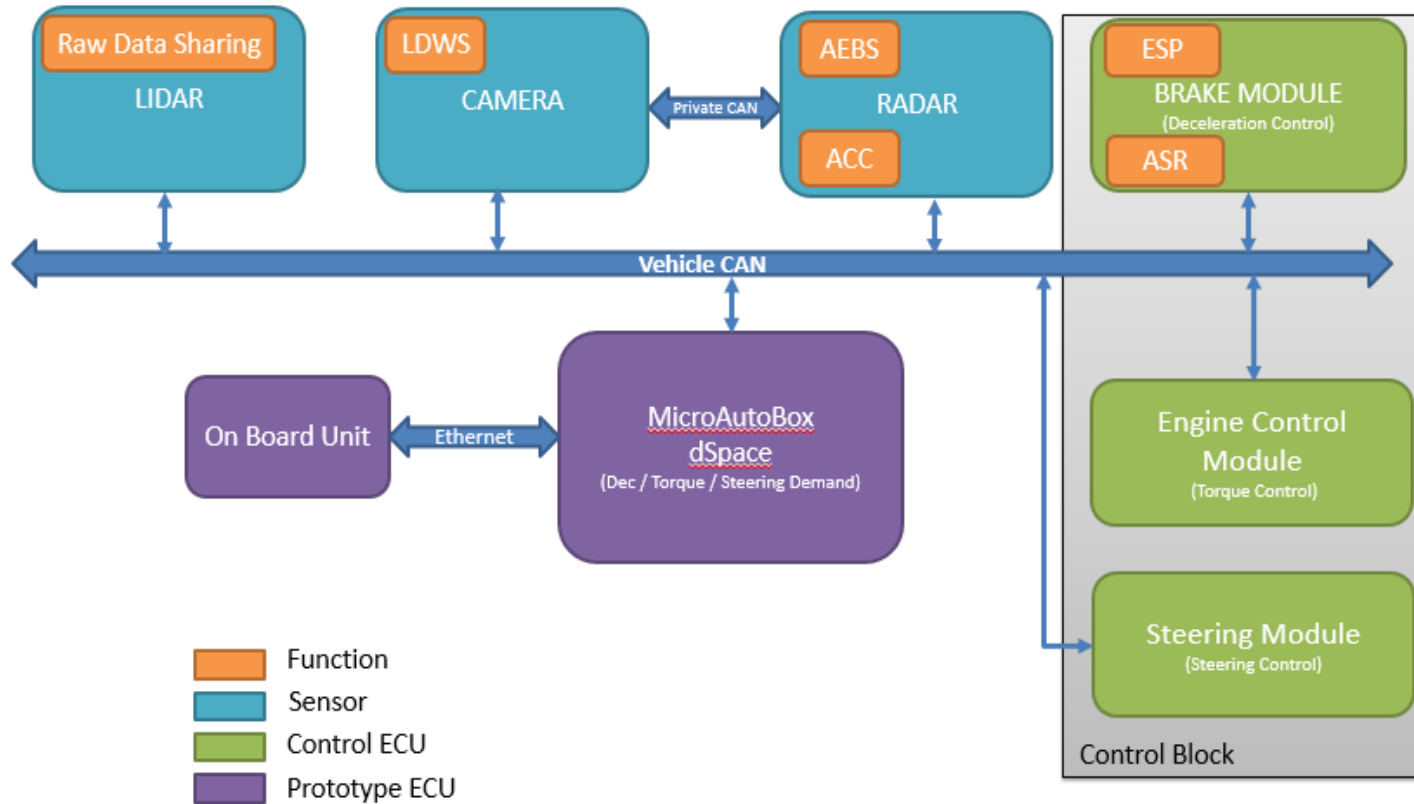
“See what I see” functionality (eMBB)

4K video streaming from the leading truck to all other trucks

Increased driver awareness & reduced anxiety levels



Ford F-MAX autonomous truck - Vehicles Specification



High level HW architecture of the F-MAX truck

Status and next steps

● Work so far

- E2E architecture consolidated
 - Major challenge: inter-PLMN interconnection for continuous service provisioning with low latency
- UCs enhanced and refined
 - Additional features (and partners) onboarded
- Initial functionality and SW components already developed
 - Demo available at **EuCNC 2019**

● Next steps

- Deployment and integration of GR and TR 5G networks
 - Trial site upgrade to 5G NSA Option 3X
- Road side infrastructure and automated trucks deployment at the GR-TR border
- Functionality enhancements and deployments
- Testing commences at M18 (April 2020)

Thank You



www.5g-mobix.com



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