

roadsAI

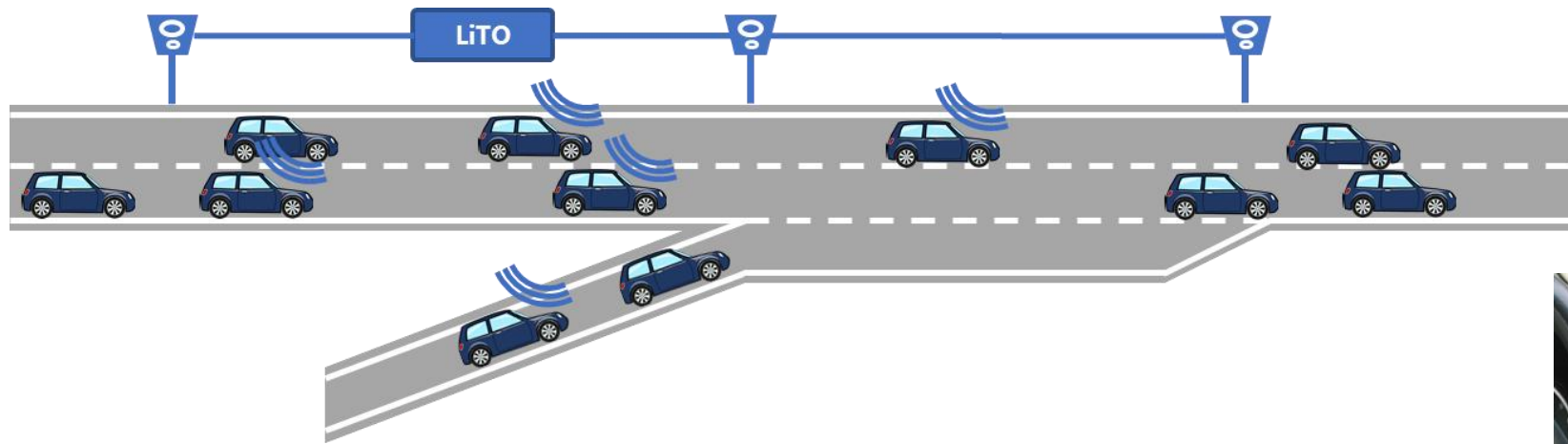
Docks the Future - Network of Excellence

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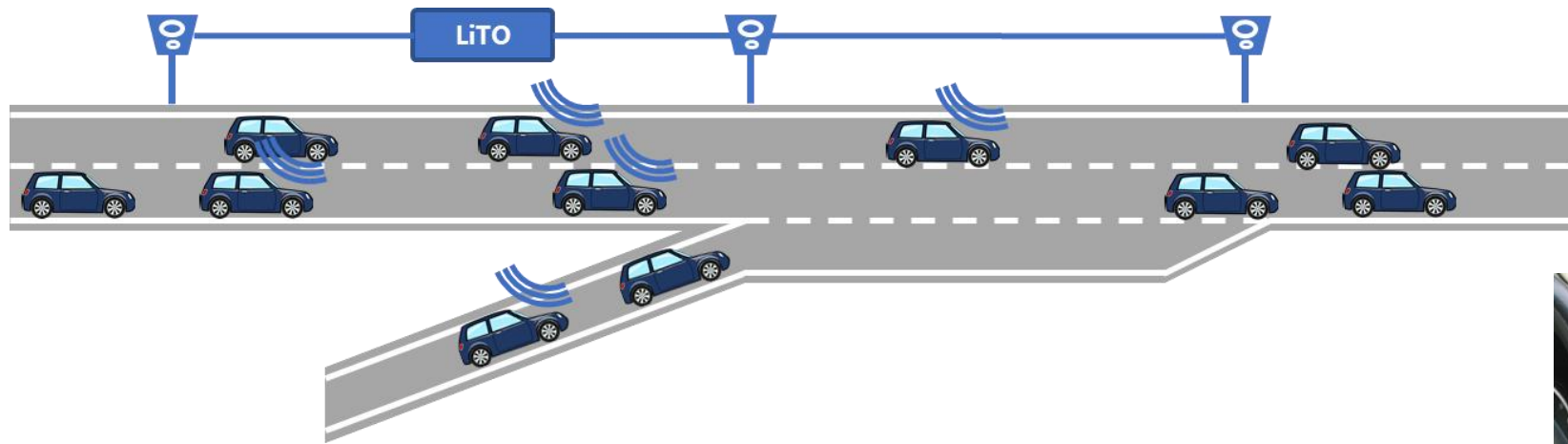
5G LOGINNOV

Local intelligent Traffic Orchestrator (LiTO)



- Builds traffic perception and situational awareness as an external observer
- Generates optimal driving decisions using AI tools
- Transmits tactical driving maneuvering recommendations (speed/lane) to specific vehicles

Designed for 5G network



- Low latency
- Multi-edge computing
- Slicing

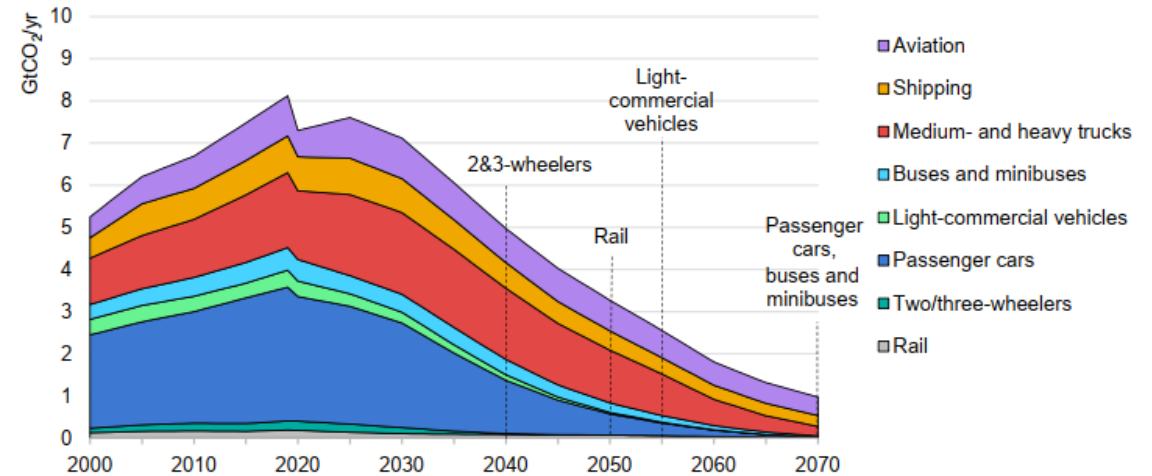


Freight trucks carbon emission in corridors

A major challenge of ports (and their adjacent cities)



Projected global transportation CO₂ emissions



Relevant in the coming decades

Project aims

Demonstrate the potential of the LiTO system using real traffic data:

- Obtain traffic data that meets the criteria of the system
- Develop a predictive model to be able to detect traffic flow disturbances before they occur
- Generate an advisory to the drivers to countermeasure and suppress the predicted disturbances
- Demonstrate the impact of advisories transmitted to drivers on road efficiency and carbon emission

Selected road segment

Highway 101, Los Angeles, CA



Length – 700m

Time: 7:30-8:15

Predictive detection of traffic jams

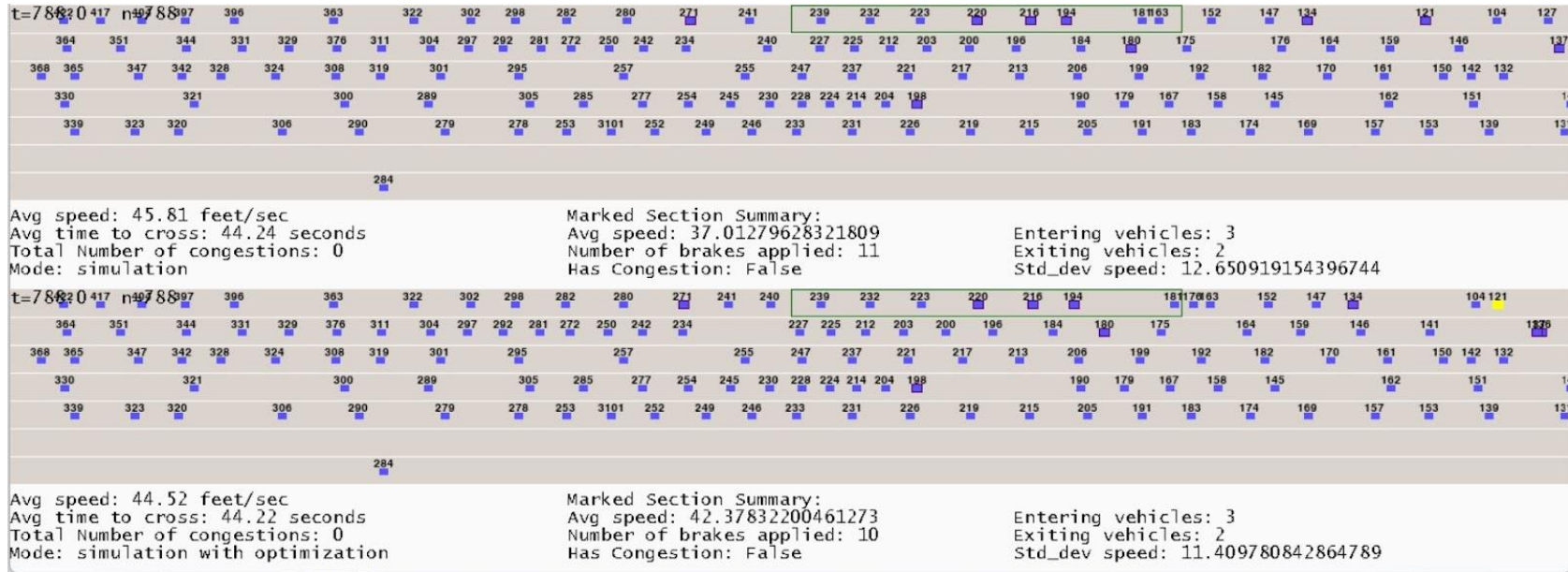


Traffic jam – 3 consecutive vehicles with speed lower than 15km/h

Deep learning algorithm:

85% correct prediction of 10 seconds ahead

Advisory optimization



Driving behavior model:

- Developed by roadsAI
- Car following model
- Includes lane changing and merging

Results

Traffic improvement

- 10% reduction of aggressive brakes
- 10% improvement of travel time

Carbon emission

- ISO 23795-1:2022
Intelligent transportation systems – Extracting trip data using nomadic and mobile devices for estimating CO2 emissions
- Related to 5G-Loginnov use cases:
 - UC 8, 9 – floating vehicle emission data
 - UC 11 – sustainable traffic management

Reduction of 60kgCO₂/km/hour

Next steps and lesson learned

Exploitation of the results from this project to projects with 5G/6G focus

- Urban environment – 6G sensing
- Connection to automated vehicles - autopilot

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