

# AUTO C-ITS

Regulation Study for Interoperability in the  
Adoption of Autonomous Driving in European  
Urban Nodes

**Pedro Serra**  
**Instituto Pedro Nunes**



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



**AUTO  
C-ITS**

## Pilot Overview - Portugal

**Road:** Lisbon Cruise Terminal and Sta. Apolónia Station  
**Length:** 0,5 km

### Traffic condition

1) Controlled traffic conditions



### Vehicles involved

- Autonomous shuttle: 2 vehicles

### C-ITS Day 1 services

- Service 1: Notification of slow or stationary vehicles
- Service 2: Weather information service

## SHUTTLE SCENARIOS

### C-ITS Day 1 service

- Service 1: Notification of slow or stationary vehicles
  - Stationary vehicle due to a stopped public transport

### Actions

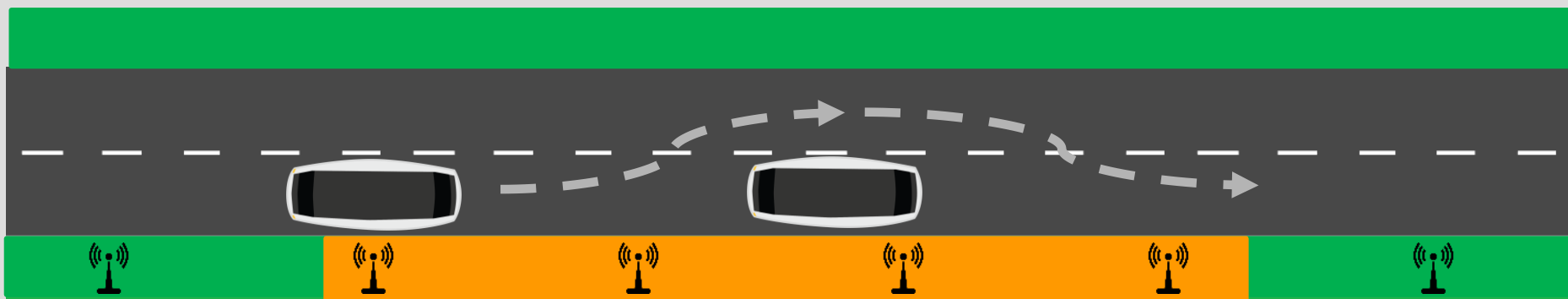
- Change lane

### C-ITS Day 1 service

- Service 2: Weather information service
  - Low visibility due to Heavy Rain
  - Low road adhesion due to ice on the road

### Actions

- Reduction to 3 km/h



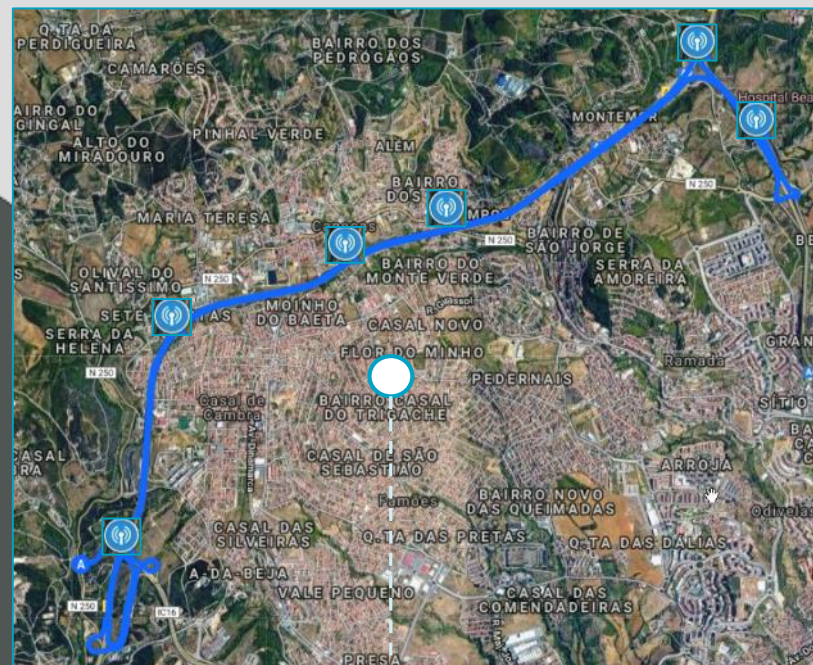
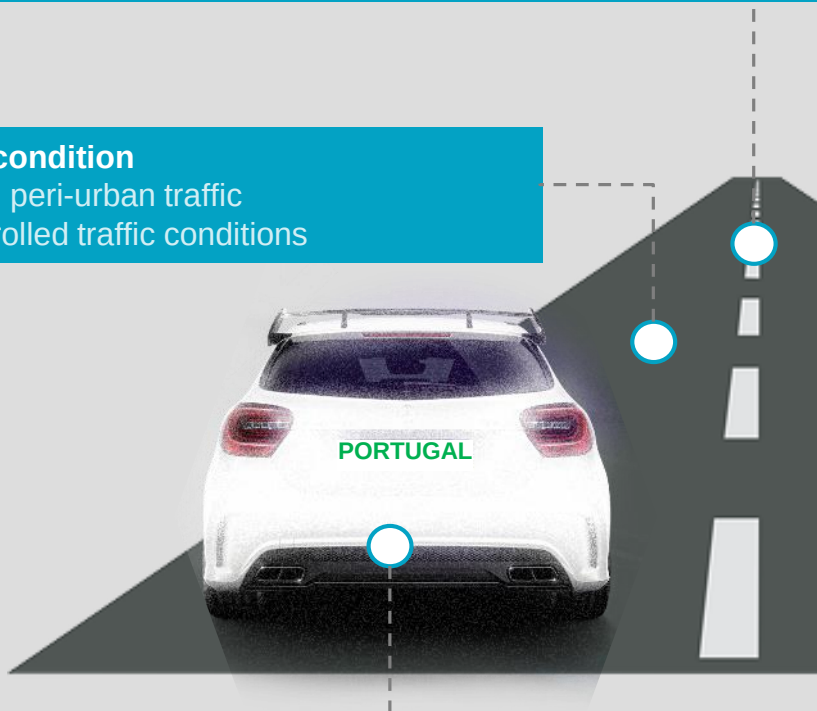


# Pilot Overview - Portugal

**Road:** A9-CREL Between Radial Pontinha and Radial Odivelas  
**Length:** 7 kms, 6 RSUs have been installed

## Traffic condition

- 1) Open peri-urban traffic
- 2) Controlled traffic conditions



## Vehicles involved

- Autonomous vehicles: 2 vehicles
- Connected vehicles: 2 vehicles

## C-ITS Day 1 services

- Service 1: Notification of slow or stationary vehicles
- Service 2: Weather information service
- Service 3: Other hazardous notifications

## Stakeholders



## AUTONOMOUS VEHICLES



UPM



CTAG

## CONNECTED VEHICLE



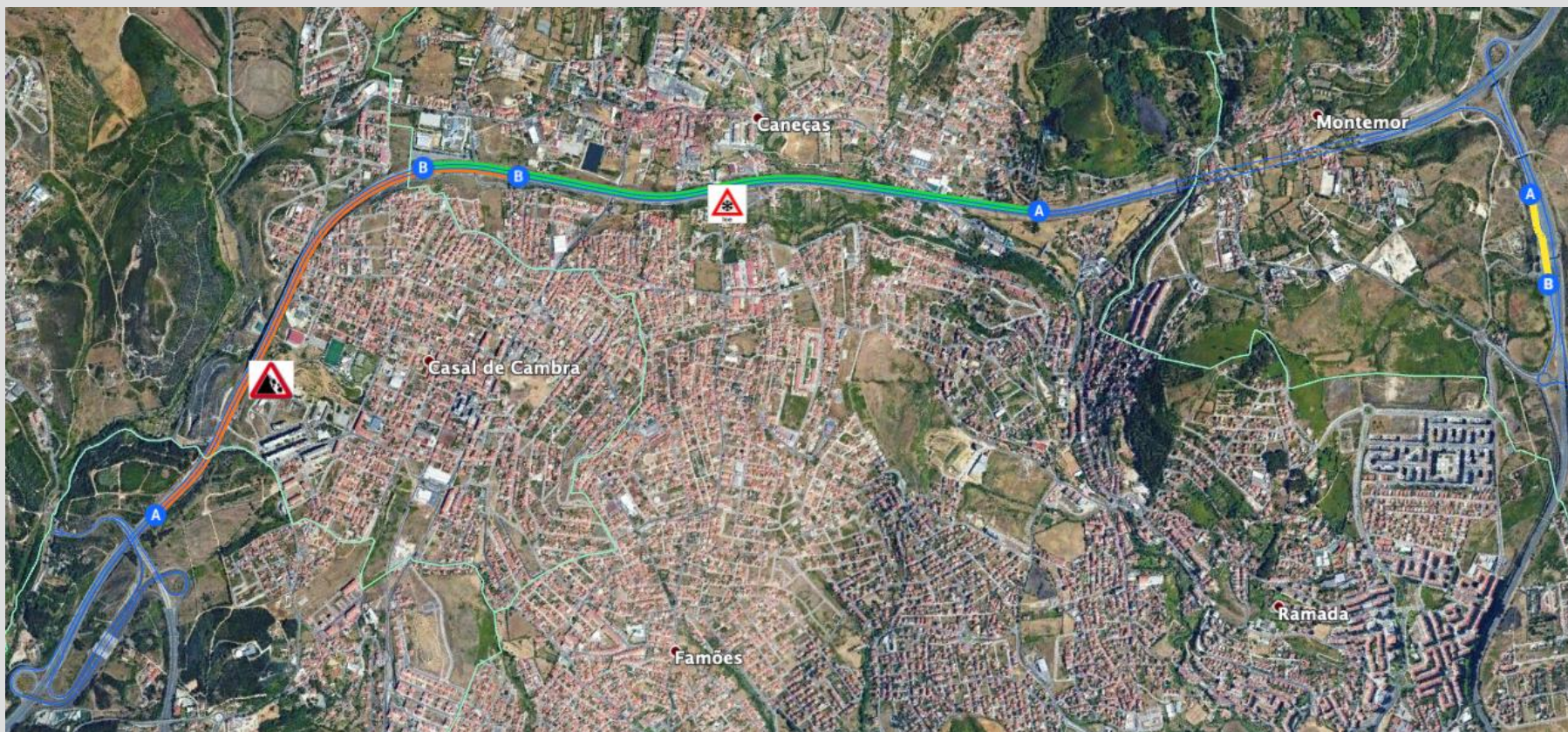
Bosch



A-to-Be



## Portuguese pilot – Tests areas



- The AVs was fully autonomous in 3 sections
- AVs change their behavior according the received event
  - Reduce speed
  - Change lane

# PORTUGUESE PILOT – TESTS SCENARIOS

## MOTORWAY SCENARIOS WITH ONE AV

### C-ITS Day 1 services

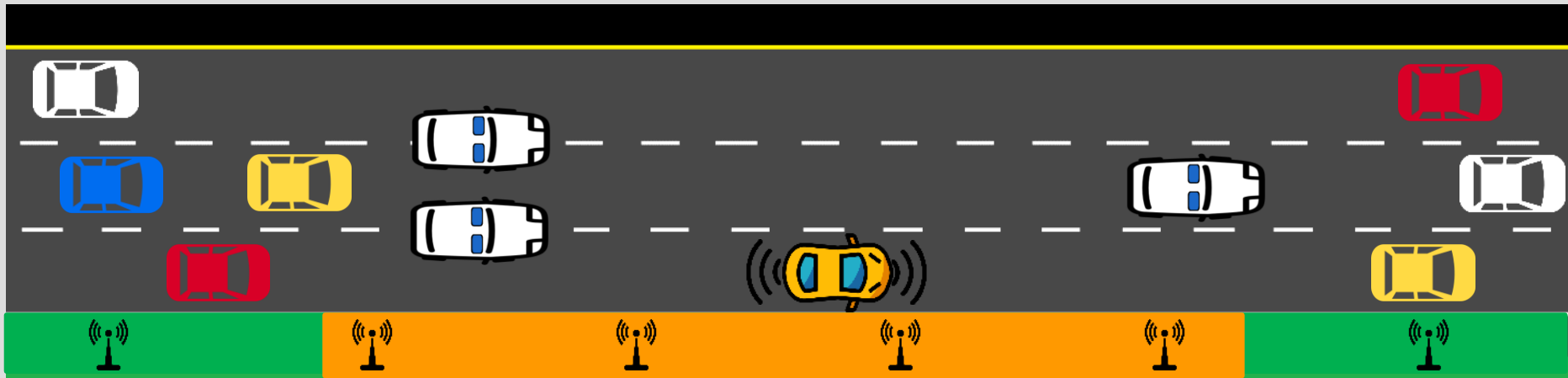
- Service 2: Weather information service
  - Ice on the Road
- Service 3: Other hazardous notifications
  - Rock falls on the road

### Initial conditions

- Speed 90 km/h

### Actions

- Speed reduction of 20 km/h



# PORTUGUESE PILOT – TESTS SCENARIOS

## MOTORWAY SCENARIOS WITH ONE AV AND ONE CV

### C-ITS Day 1 services

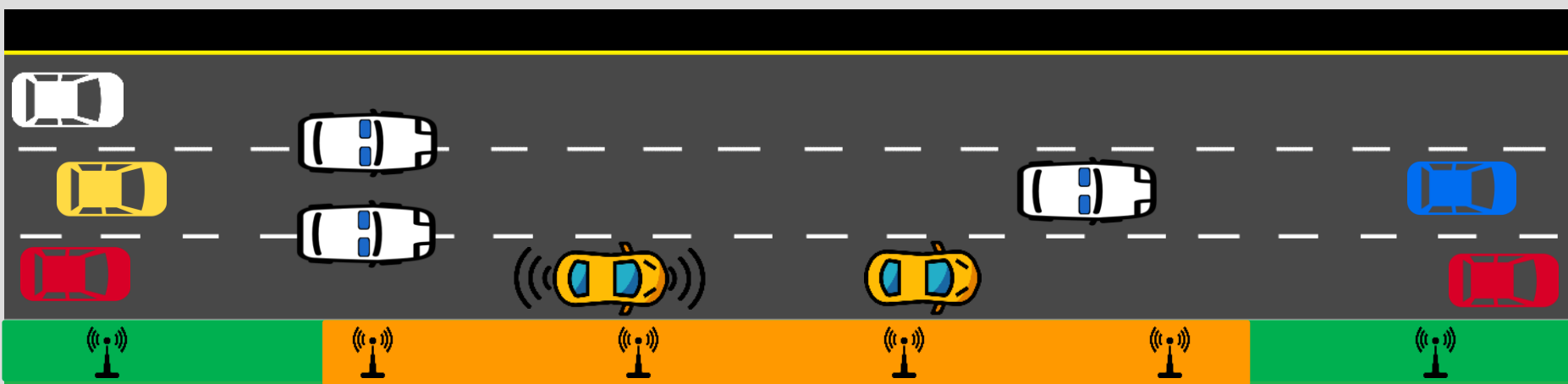
- **Service 1:** Notification of slow or stationary vehicles
  - Accident
  - Slow driving maintenance vehicle
- **Service 2:** Weather information service
  - Heavy rain
  - Ice on the road
- **Service 3:** Other hazardous notifications
  - Rock falls on the road
  - Big objects on the road

### Initial conditions

- Speed 100 km/h

### Actions

- Speed reduction of 20 km/h





## PORTUGUESE PILOT – TESTS SCENARIOS

### MOTORWAY SCENARIOS WITH TWO AVS

#### C-ITS Day 1 services

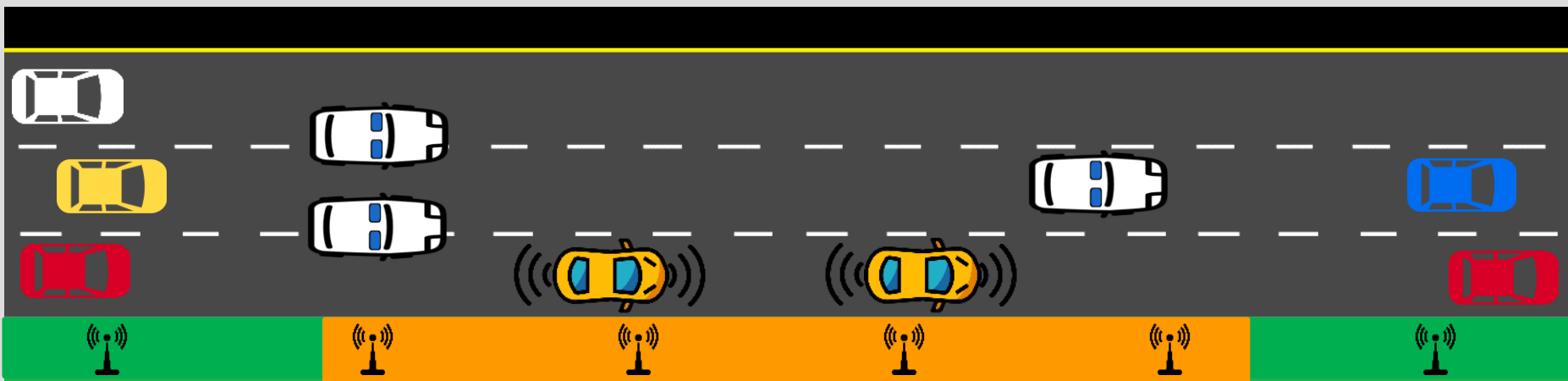
- **Service 1:** Notification of slow or stationary vehicles
  - Accident
  - Slow driving maintenance vehicle
- **Service 2:** Weather information service
  - Heavy rain

#### Initial conditions

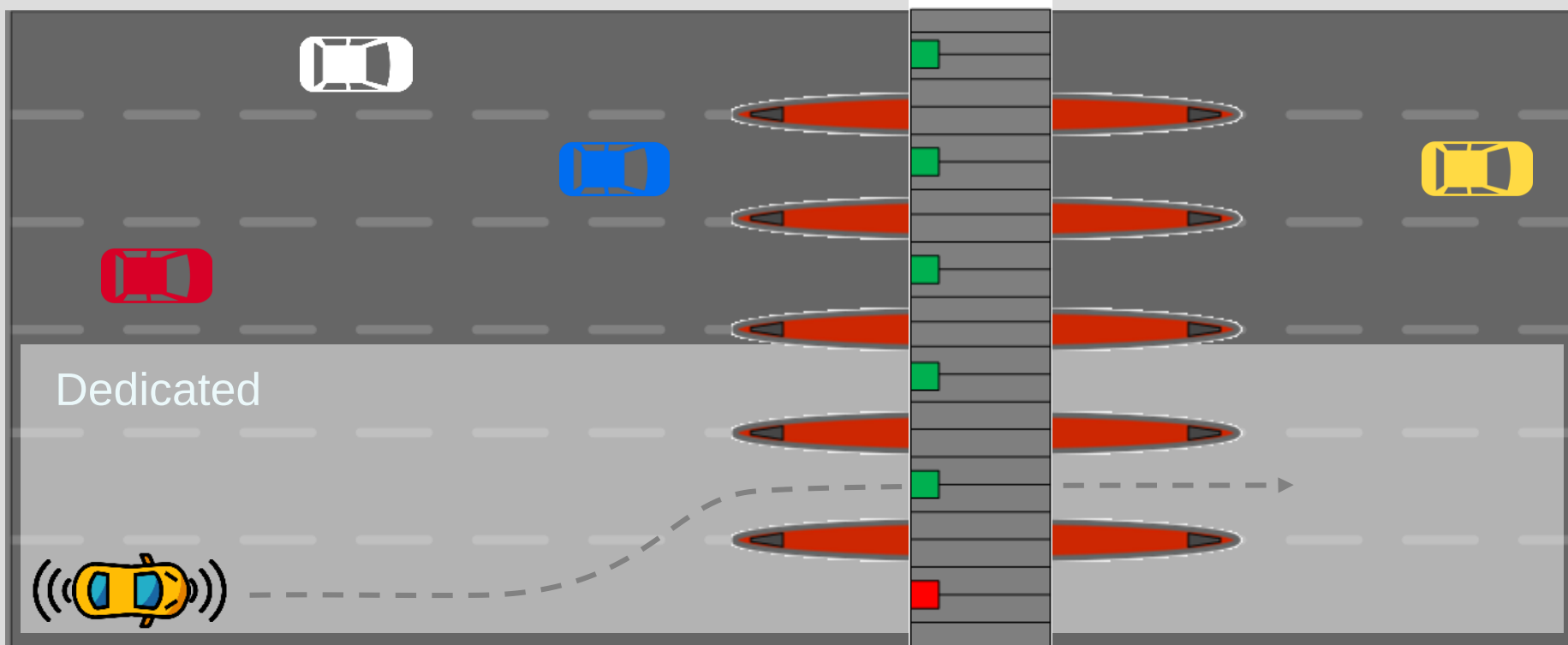
- Speed 90 km/h

#### Actions

- Speed reduction of 20 km/h



## TOLL SCENARIO WITH ONE AV



Lane 2 available for tolling performed by the CTAG autonomous vehicle







*Thank you!*

*Regulation Study for Interoperability in  
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European Urban Nodes*

**indra**



[www.autocits.eu](http://www.autocits.eu)

Project **AutoC-ITS** is co-financed by the European Union's Connecting Europe Facility (CEF)



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