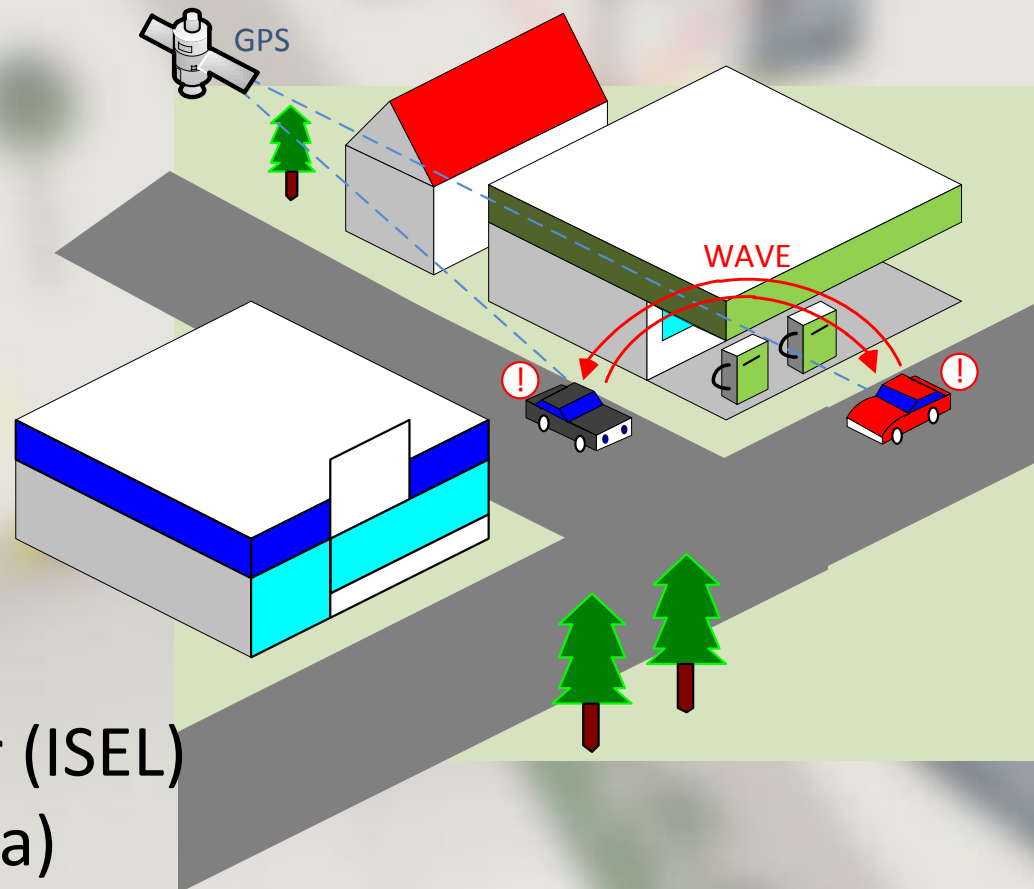


# Cooperative Intelligent Transportation Systems Safety Applications



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# Cooperative Intelligent Transportation Systems

"Road operators, infrastructure, vehicles, their drivers and other road users will **cooperate to deliver the most efficient, safe, secure and comfortable journey**. The vehicle-vehicle and vehicle-infrastructure cooperative systems will contribute to these objectives **beyond the improvements achievable with stand-alone system**"

3rd eSafety Forum, 25 March 2004



## Traffic Jam Warning

- The system detects a possible congestion, based on the speed and braking patterns of the cars and warns the drivers coming to the affected area of alternative routes, distributing the traffic load



## Road Works Ahead

- The driver of a vehicle approaching is alerted by the "Road Works Ahead Warning", so that they can adjust their route and driving speed in a timely manner



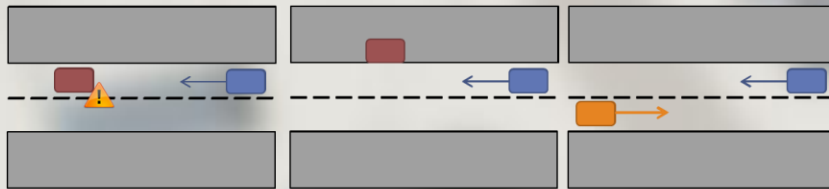
## Wrong Way Warning

- Based on information from sensors on particular road hot-spots, the system notifies the driver on a wrong way situation of its immediate danger. Additionally, other drivers on the highway will be warned

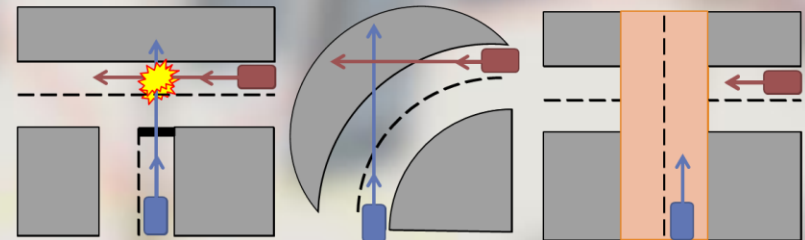
# Cooperative Intelligent Transportation Systems

## Some challenges to overcome:

### ○ Single Dimension Algorithms



### ○ Two Dimensions Algorithms



## Research Objectives:

- Develop safety applications to use on Cooperative Intelligent Transportation Systems (C-ITS), installed in road side units, onboard units and central coordination centers

## Background:

- More than 7 years working together in safety vehicular communications
- Several projects developed: Headway; Smartroad Sensors; ICSI

## Technologies:

- GNSS; IEEE 802.11p and WAVE communications

## Partners:

- Brisa Inovação
- ISEL
- ...