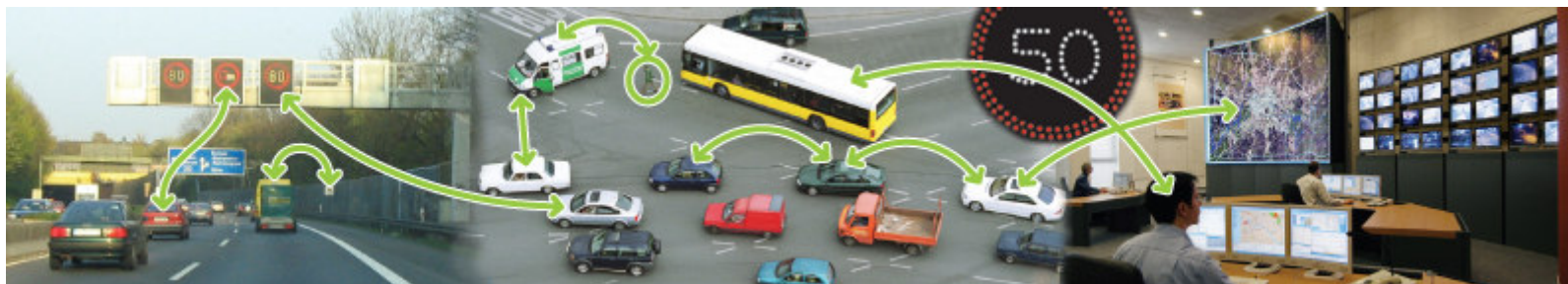




**VOLVO**

# Cooperative Freight & Fleet Applications

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# Key issues for commercial transports



- Questions for fleet managers
  - Where are my vehicles?
  - What are they doing?
  - How are they performing?
- The professional driver...
  - ... knows where to go, but not always the best route, or even the allowed route (size and cargo)
  - ... has a time slot to make the delivery – and has to respect the legal rest periods
  - ... moves across national borders every day – and needs to know the prevailing traffic regulations
  - ... needs to be always connected to the transport manager
  - ***... needs the current tools enhanced to get the job done in an even more efficient and safe way***



# State of the Art



- Fleet Management & Logistics systems – on-board and back-office centric
- Navigation systems – not yet fully adapted to commercial vehicles
- Traffic Information Collection and Broadcasting => one-way information, addressing all road users
- Research projects & pilots for monitoring HGV (heavy goods vehicles)
  
- CVIS selected areas and related projects
  - **Dangerous goods**
    - MITRA project (FP6)
    - GoodRoute project (FP6)
  - **Parking Zones reservation**
    - Optimising HGV Parking, Rheinland-Pfalz, Germany
  - **Access Control in sensitive areas**
    - SafeTunnel (FP5)



# Goals

- Increase safety and transport efficiency for commercial transports through selected sample applications, demonstrating new cooperative elements that extends existing systems and services
- Addressing the user needs and showing the benefits for several stakeholders; i.e. public authorities, drivers and transport companies





# Objectives



- **Monitoring and guidance of dangerous goods**
  - Safer transport of dangerous goods through:
    - Monitoring of dangerous goods vehicles
    - Route guidance adapted to vehicle dimensions and goods type and local preferences
    - Cooperative re-routing initiated by monitoring center in case of changes in the traffic situation (road conditions, accidents, congestion, temporary limitations)
- **Urban loading zone and highway parking slot management**
  - Safer traffic situation in busy urban business streets, through efficient booking of unloading zones and swift enforcement of illegal parking
  - More efficient traffic flow through less “search traffic” (instead: reserved slots, waiting vehicles can be directed to safe “holding zones”)
- **Access control to sensitive infrastructures**
  - Safer traffic inside a sensitive zone through careful monitoring of vehicle and driver performance inside the zone as well as before entering, denying access to vehicles / drivers not following with the rules
  - More efficient traffic flow into a sensitive zone, compared to manual inspections / gates



# CVIS innovation, CF&F



- **Cooperative dynamic management of dangerous goods transport, by**
  - dangerous goods vehicle navigation, based on locally defined preferences
  - monitoring and dynamic influence of local authorities on dangerous goods routing and guidance, including re-routing of dangerous goods vehicles after incidents or changed local conditions
- **Dynamic scheduling of loading bays and highway resting areas** for truck drivers through cooperation with road operator (booking, access control, monitoring).
- **Enabling of dynamic geo-fencing policies regulating sensitive area access** in dependence of time, place, vehicle status, driving style or other parameters (i.e. to verify vehicles/drivers compatibility with sensitive area dynamic characteristics).



# User Needs

## Dangerous Goods



- Road Operator needs to direct Dangerous goods transportation onto suitable and safe roads.
- Drivers wants to have route guidance at all times: route recommendation adapted to the vehicle / goods, suggestion of route change or parking areas in case of accident, fog, snow etc.
- Emergency Rescue operator / Traffic Police: In case of an accident, the emergency rescue services need information about DG accident (position, goods type, goods condition, surrounding traffic situation) to perform a timely and well-equipped rescue, as well as securing the vehicle/goods.



# User Needs Parking Zones

- The Road Operator needs to be able to manage the competing demands for street space and resting areas, to ensure efficient routing of freight vehicles and to reduce congestion around scarce parking resources.
- Fleet managers and Drivers need to be able to request a Parking Zone of the appropriate type / size, near the required location and at the required time for a required duration.
- The Driver needs local micro-routing information for guidance to the Parking Zone and / or a Holding Zone.





# User Needs

## Access Control



- Public Authorities want to define sensitive zones (i.e. urban pedestrian areas, school and hospital surroundings, ports, bridges, tunnels) by issuing specific access policies in order to enhance the level of road safety in special situations by preserving the traffic efficiency and respecting the environment.
- Road Operators need to monitor vehicles and collect information on vehicles type, size, weight, status, condition and driving style in order to properly manage and grant access to critical areas.
- Fleet Operators and drivers need to know the regulations and the rules for entering the zone in order to plan the route or to re-route, in case of access denial by the road operator.



# Use Cases



- CV-UC-SP3.3-0101 DG vehicle route guidance including registration and deregistration
- CV-UC-SP3.3-0102 DG vehicles monitoring
- CV-UC-SP3.3-0103 DG vehicle hand-over
- CV-UC-SP3.3-0104 DG preferred network management
  
- CV-UC-SP3.3-0201 Urban Parking Zones
- CV-UC-SP3.3-0202 Highway Resting Areas
  
- CV-UC-SP3.3-0301 Approaching Access Control Area
- CV-UC-SP3.3-0302 Decision making and information feedback



# Requirements Dangerous Goods



- CVIS on board system is able to register/deregister at a TMC/NSP for DG monitoring and routing
- CVIS on board system is navigating the driver by following the preferred DG network as given by the TMC/NSP
- DG monitoring service is actively informing about important DG vehicles status changes (accident) and DG preferred network violations
- The TMC/NSP hands over the responsibility for DG vehicles crossing borders to neighbouring TMC/NSP
- Application for the traffic supervisor is able to edit and change the DG preferred network



# Requirements Parking Zones



- The Fleet Operator (pre-trip) as well as the driver (on-trip) must have the ability to make requests for "Parking Slots", specifying the time of day required, the duration required, the type of vehicle and goods
- The Parking System must be able to process the parking request and to generate a list of possible parking zone with indication of available parking slot or an error response indicating that no Slot in the Parking Zone is available
- The Vehicle should identify when it is within a defined perimeter/ distance of the Parking Zone and inform the parking system
- The Parking System should identify the arrival of the Vehicle at the Parking Zone and activate any access mechanism to allow the Vehicle to park



# Requirements Access Control



- CVIS on board system should be connected to OEM device/platform in order to acquire vehicle characteristics, operating data and diagnostic parameters
- The infrastructure near the monitoring zone should alert all approaching vehicles about the sensitive zone limits and characteristics
- The vehicle should transmit to the road side infrastructure the information on vehicle characteristics immediately when a vehicle approaches the monitoring area surrounding a sensitive zone



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Thanks for your attention...

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