IRF Regional conference North Africa & Mediterranean

Intelligent Transport Systems for Road Safety

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Presentation outline

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- ITS Intervention stages
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Introduction ITS

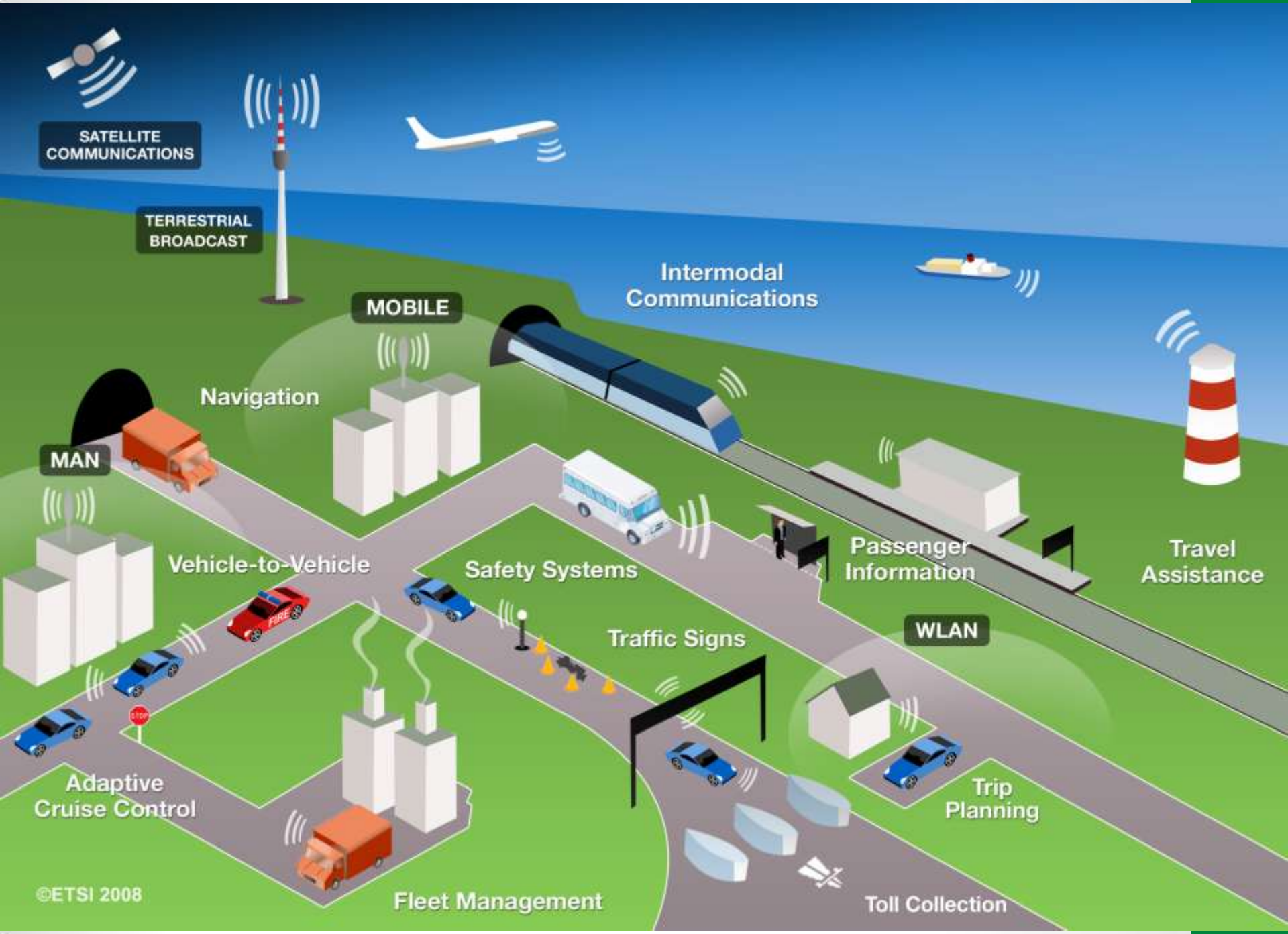
- Intelligent Transportation Systems (ITS) apply technologies such as **electronics**, **communications**, **sensoring** and **data processing** in order to improve safety, environmental friendliness, efficiency and convenience of the transportation system.

- ITS applications are increasingly an indispensable part of any transportation infrastructure designed to promote **safety**, **mobility** and **economic development** and helps to reduce transport's **environmental footprint**.

ITS Scope

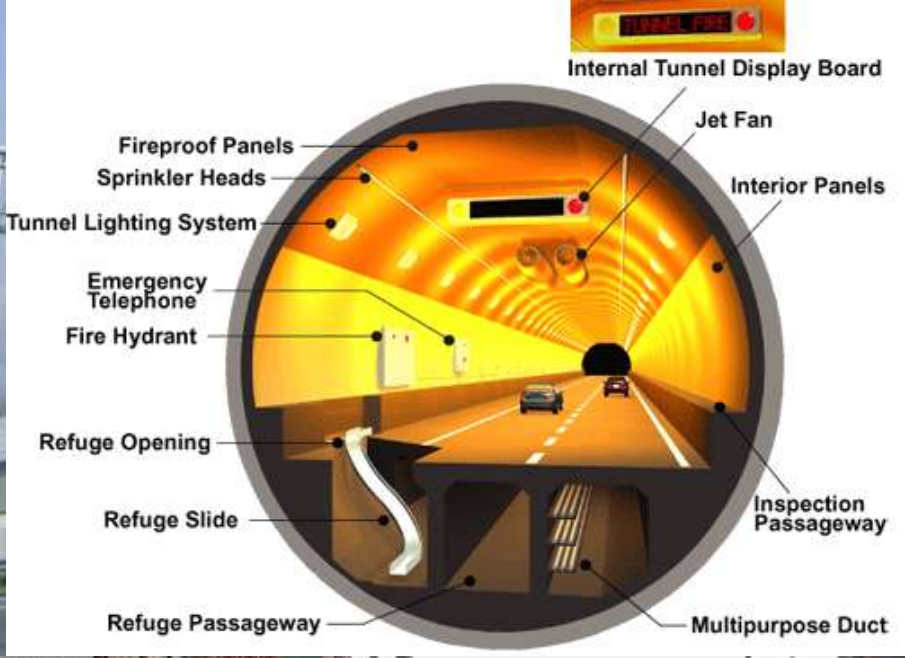
ITS are characterised by its wide and diverse scope:

- Multi- and transmodal: car, aircraft, bicycle, bus, ferry
- Infra, vehicle, user and driver oriented
- Multi-facility: station, airport, parking, tunnel, road
- Multi-user/benficary: child, aged, driver, passenger
- Multi-system: platforms and communication systems
- Multi-topic: safety, parking, flow, PT, society,
- environment, enforcement, statistics, navigation
- Local, regional and central government


SATELLITE COMMUNICATIONS
TERRESTRIAL BROADCAST
Intermodal Communications
MOBILE
Navigation
MAN
Vehicle-to-Vehicle
Safety Systems
Passenger Information
Travel Assistance
WLAN
Traffic Signs
Adaptive Cruise Control
Trip Planning
Fleet Management
Toll Collection
©ETSI 2008

Infra related ITS safety applications

- CCTV
- Enforcement applications (section control)
- Lane management and lane metering
- Tunnel safety
- Incident detection and advanced warning systems
- Dynamic speed limit setting
- Variable Message Signs (VMS)
- Infrastructure to vehicle communication
- Emergency & public vehicle priority systems
- Traffic light optimisation
- Traffic flow and travel time prediction


Internal Tunnel Display Board
Jet Fan
Fireproof Panels
Sprinkler Heads
Interior Panels
Tunnel Lighting System
Emergency Telephone
Fire Hydrant
Refuge Opening
Inspection Passageway
Refuge Slide
Refuge Passageway
Multipurpose Duct


STALLED VEHICLE
AT HWY 280
IN ALL LANES


except buses and taxis
Bus lane cameras
BUS
TAXI

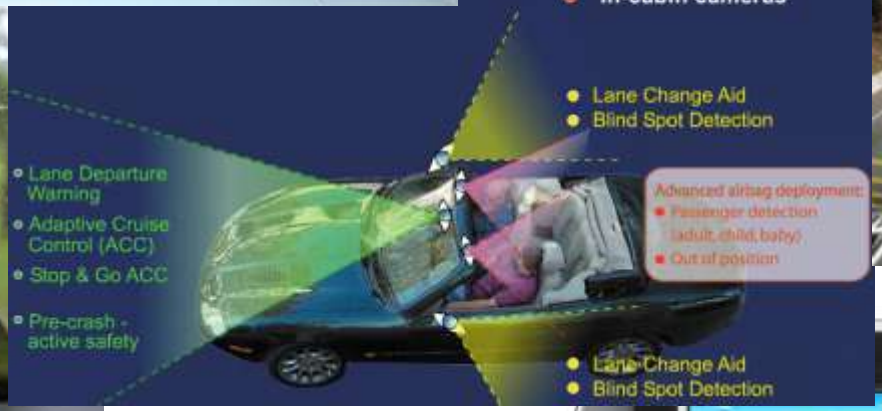
Vehicle related ITS Safety applications

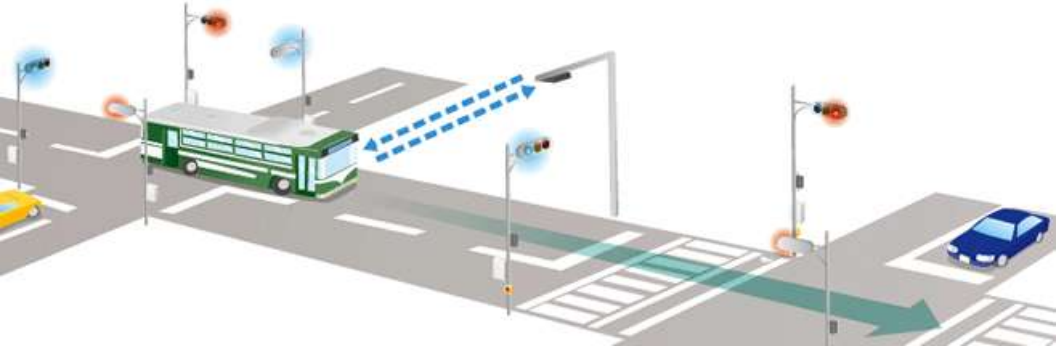
- Incident detection
- Vehicle black boxes
- Advanced warning systems
- Intelligent speed adaptation
- Advanced driver assistance systems
- Automatic emergency vehicle despatch (EU's e-Call)
- Navigation systems
- V2V - Vehicle to vehicle communication
- V2I - Vehicle to infrastructure communication
- V2D – Vehicle to device communication
- Emergency and public vehicle priority systems


eCall: The crashed car calls 112!
1
Emergency Call
A 112 emergency call (eCall) is made automatically by the car as soon as on-board sensors (e.g. the airbag sensors) register a serious accident. By pushing a dedicated button in the car, any car occupant can also make an eCall manually.
2
Positioning
Via satellite positioning and mobile telephony caller location, the accurate position of the accident scene is fixed and then transmitted by the eCall to the nearest emergency call centre. More information is given in the eCall, e.g. the direction of travel and the vehicle type.
3
Emergency call centre (PSAP)
The eCall's urgency is recognized, the accident's location can be seen on a screen. A trained operator tries to talk with the vehicle's occupants to get more information. If there is no reaction, emergency services are sent off without delay.
4
Quicker help
Due to the exact knowledge of the accident's location, the emergency services (e.g. ambulance, fire fighters, police) arrive much quicker at the crash site.
Time saved translates into lives saved.
112


CAUTION
AIR BAG SENSOR
H CAR


60


Forward looking camera
Side-mirror cameras
In-cabin cameras
Lane Change Aid
Blind Spot Detection
Lane Departure Warning
Adaptive Cruise Control (ACC)
Stop & Go ACC
Pre-crash - active safety
Advanced airbag deployment:
Passenger detection (adult, child, baby)
Out of position
Lane Change Aid
Blind Spot Detection




syrius PROLINE
GATSO
40
120yds
M56
M56
70
33
MPH
NW
PRINCESS PARKWAY
SNOOPER

ITS Intervention stages

- Supporting safe driver and safe driving behaviour – ISA, ASE
- Indicating that action is needed – weather, curve speed
- Warning of need for urgent action - CWS
- Intervening to prevent a collision or reduce its impact - BAS
- Preparing the vehicle's occupant systems for an impact – seat belt pre-tensioners
- Deploying occupant protection systems in an impact - Airbags
- Summoning assistance post-impact – e-Call

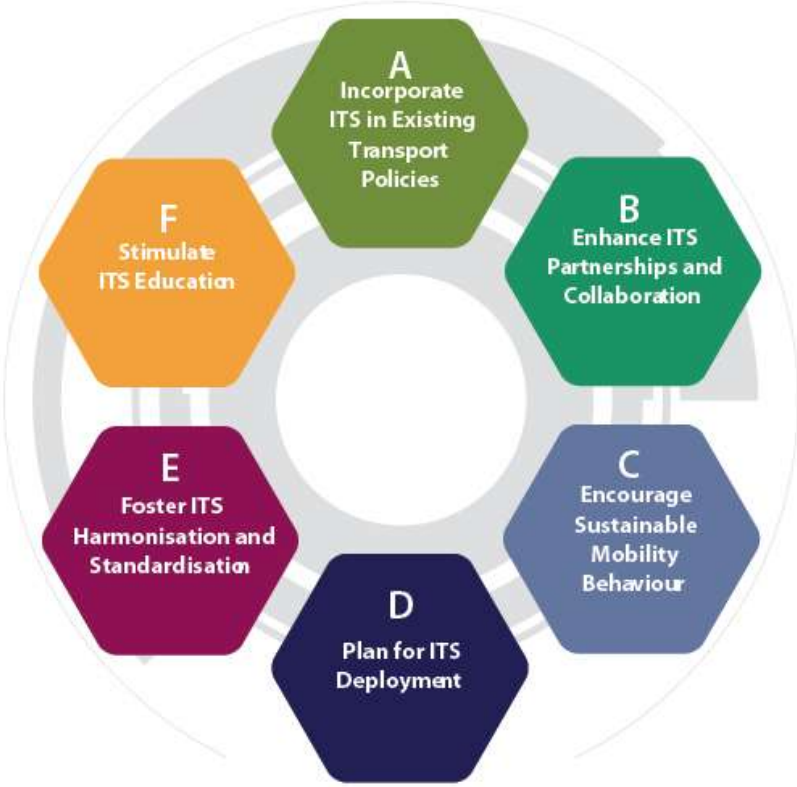
IRF Vienna manifesto definition of ITS

- Intelligent Transportation Systems (ITS) apply information and communication technologies (ICT) that support and optimise all modes of transport by cost effectively improving how they work, both individually and in cooperation with each other.
- Infrastructure related ITS
- Vehicle related ITS
- User related ITS
- Industry related ITS
- Infrastructure to Vehicle and Vehicle to Vehicile related ITS
- ITS back-office systems

ITS Policy recommendations

Politicians and government officials need to embrace a structured approach to devise policies which maximise the societal benefits of ITS.

The way forward with ITS calls for further and complete integration ITS into overall transport policies.



ITS Government role

A key question for governments with respect to ITS applications: Make, buy, partner, withdraw, regulate or laisser-faire, promote, standardise ?

Relate ITS solutions to country specific cost-benefit conditions*.

Case study Road Safety ITS in France

- Political commitment road safety by President Chirac in 2002
- Interdepartmental Road Safety Committee (CISR) adopts comprehensive plan
- Installation of nationwide network of ANPR based automatic speed enforcement systems
- Fully automated enforcement chain for driving offences
- Speeding curtailed by means strategic mix of fixed, mobile and in-vehicle enforcement systems
- Efficient processing of the violations notices and the effective fine collection process
- 40% drop in the number of road deaths and injuries
- Extensively documented in publications by Laurent Carnis.

Closing remark

ITS road safety benefits

will come from

“cars driving us”

instead of

us driving cars.

Conclusion

Together with continued focus on the 3E's of road safety, a well-balanced ITS strategy will offer governments a good opportunity for cost-effective road safety improvements subject to country-specific cost-benefit analysis.

* Austroads publication: Reviewing ITS Technologies and Road Safety Opportunities (AP-T157/10)

Thank you for your attention