



# Benefits of Intelligent Transport Systems (ITS)

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# What is ITS? A communication infrastructure for mobility

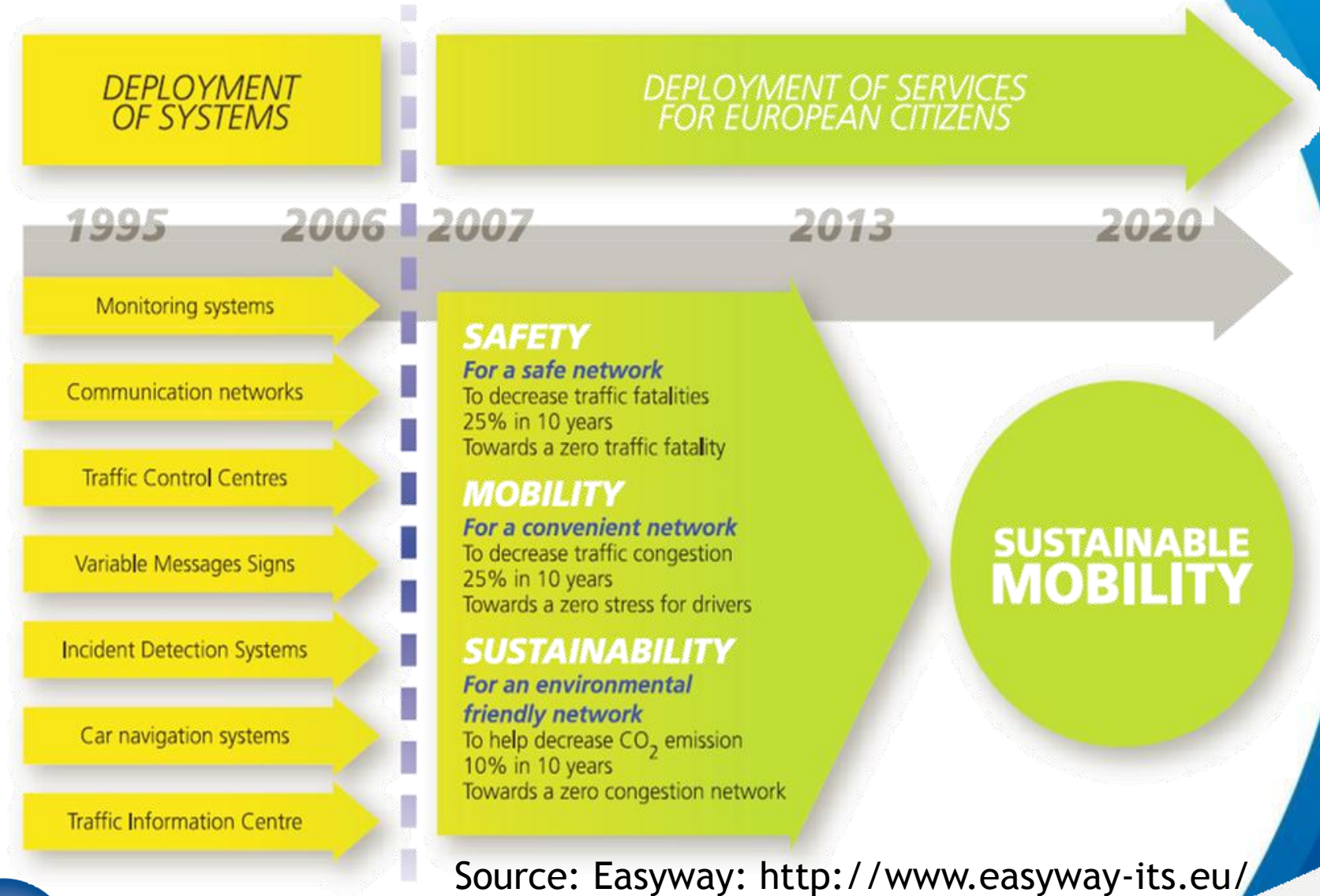


Source: ETSI, <http://www.etsi.org>

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# Deployment of ITS: from systems to services





# Role of ERTICO - ITS Europe

# What is ERTICO?

ERTICO is a Public-Private partnership gathering ITS stakeholders to bring Intelligence into Mobility for travellers and goods

- › Promote deployment of safe, smart and sustainable solutions for road transport through a technology push (ITS)
- › Work on standardised solutions for ITS
- › Interface with all modes of transport
- › Cooperate with all stakeholders





# Benefits of ITS: Report from iMobility Forum IRM WG

# iMobility priority systems

## Vehicle based systems

- Adaptive headlights
- Blind spot monitoring
- Eco-driving support
- Emergency braking
- Lane keeping support
- Obstacle and collision warning (including ACC)

## Infrastructure based systems

- eCall
- Dynamic navigation
- Dynamic traffic management
- Extended environmental information (extended FCD)
- Local danger warning (VMS)
- Real-time traffic and travel information
- Speed alert
- Eco-driving coaching

<http://www.imobility-effects-database.org/>

# Example application – Speed alert

<http://www.imobility-effects-database.org/>

**Mobility Effects Database** Home Applications FAQ Links

You are here: Applications > Speed alert

## Speed alert

**Description**

The system alerts the driver with audio, visual and/or haptic feedback when the speed exceeds the locally valid legal speed limit. The speed limit information is either received from transponders in speed limit signs or from a digital road map, requiring reliable positioning information. Some open questions exist such as:

- Voluntary or mandatory equipment of vehicles
- Type of speed limits to be included: General regulations, local speed signs, temporary speed limits (e.g. "70" between 07.00 - 10.00h), dynamic speed limits depending on traffic and other conditions
- Road categories to be included: motorways, rural highways, urban roads
- General deployment for selected road categories or equipment of specific parts of road networks, such as accident black spots, tunnels, bridges
- Types of vehicles to be equipped: all vehicles, passenger cars, lorries, hazardous goods transports, buses,
- Categories of road users to use speed alert: all drivers, young/aged drivers, drivers under rehabilitation, commercial companies/drivers, other specific groups
- Definition of architecture (e.g. dynamic speed limits require infrastructure link)
- Legal relevance of speed alert for e.g. enforcement
- Availability and update procedure for European-wide database of legal speed limits that is standardised, certified and reliable
- Business model for the system including its whole life cycle

**Impacts**

The reduced speeds due to the system decrease the risk and consequences of road crashes. Existing study evidence indicates that an obligatory speed alert system in all automobiles would reduce fatalities in urban areas by 20% and energy consumption as well as emissions considerably. Obligatory systems would most likely reduce the number of fatal accidents by 13-30% with full fleet penetration. The effects of a voluntary system are smaller and for the part of energy consumption and emissions, partly contradictory.

**Studies**

	Impacts of ISA on the number of different types of accidents were			
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Name of application

Description of application

Summary of impacts

Summaries of individual studies



# Summaries of individual studies

<http://www.imobility-effects-database.org/>

Summary of study results

Description of research method(s)

Author(s)

Year of publication

Publication details

Summary of study results	Description of research method(s)	Author(s)	Year of publication	Publication details
The paper analysed two scenarios: a market-driven scenario and authority-driven scenario. In the authority-driven scenario, ISA was predicted to reduce the number of fatal accidents by 30% and 25% serious accidents over the analysis period of 60 years. Voluntary ISA and mandatory ISA were also predicted to reduce CO2 emissions by respectively by 3.4% and 5.8% on 70 mph (113 km/h) roads.	Impacts of ISA on the number of different types of accidents were estimated on the basis of speed profiles measured in a field test and theoretical models which describe the relation between driving speed and accident risk. The speed profiles used in the analysis were obtained from the ISA UK trials which involved 20 identical vehicles and 79 drivers and supplemented with results from the French LAVIA project. Impacts on CO2 emissions were estimated by using an emissions model available from earlier research.	Lai, F., Carsten, D. and Tate F.	2011	How much benefit does Intelligent Speed Adaptation deliver? - Analysis of its potential contribution to safety and environment. Accident Analysis and Prevention, Article in press.
The study analysed the relative effects of informative and actively supporting ISA system on experienced and inexperienced drivers. The ISA systems seemed to be more effective at reducing speeds for experienced drivers on some road types. No evidence of negative behavioural adaptation or increased subjective workload levels was found in the study.	The results are based on tests carried out in a driving simulator. The study involved 30 test drivers divided into two groups (experienced and inexperienced). The simulated drives consisted of a familiarisation drive, a practise drive and nine test drives divided into three blocks: ISA system not active, informative ISA active and actively supporting ISA active.	Young, K. L., Regan, M. A., Triggs, T. J., Jontof-Hutter, K. and Newstead S.	2010	Intelligent speed adaptation - Effects and acceptance by young inexperienced drivers. Accident Analysis and Prevention, Vol. 42, pp. 935-943, 2010.

Priority systems	Accident type especially affected	Local results in specific conditions for effects on all accidents for vehicles or roads equipped based on research incorporating accident analysis
Obstacle & collision warning	rear-end crashes	-
Emergency braking	rear-end crashes	all fatalities EU -7% all injuries EU -7%
Blind spot monitoring	side collisions	
Adaptive head lights	accidents with pedestrians and cyclists on unlit roads	-
Lane keeping support	head-on or run-off-road, side collisions	injuries EU -2 to -6% all fatalities EU -5 to -10%
RTTI	accidents in adverse conditions, pile-ups	accidents in slippery conditions -5 to -15%
Dynamic traffic mgmt (VMS)	accidents in adverse conditions, pile-ups	all injury crashes -5 to -20% all fatal crashes -10 to -25%
Local danger warning	accidents in adverse conditions, pile-ups	all injury crashes -1 to -15%
Extended environmental information	accidents in adverse environmental conditions	-
eCall		all fatalities -2 to -15%; EU -6% severe injuries -3 to -15%; EU -6%
Speed Alert	accidents caused by exceeding speed limits	all injuries EU -6% * all fatalities EU -9% *
Dynamic navigation	all accidents	reduced exposure but increased accident rate due to driving on lower category roads
Eco-driving	accidents caused by exceeding speed limits	Similar effects as speed alert if the functionality includes that part

\* active accelerator pedal version

# Other sources of ITS benefits

- » <http://www.itsbenefits.its.dot.gov/>
  - › Huge work - Very comprehensive
  - › Many reports from real implementations
  - › Costs and Benefits
- » <http://www.its-toolkit.eu/> (from 2Decide)
- » <http://wiki.fot-net.eu>
  - › EuroFOT - TeleFOT see final results



# Thank you

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