

Road Safety and Intelligent Transport Systems: Are they Related?

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Objective

- Do Intelligent Transport Systems have an impact on Safety?
- Which IT systems?
- What impact?



Outline

- ITS in general
- Relevant ITS classification
- Possible Impact of ITS on Road Safety
- Examples of ITS Impact on Road Safety



ITS in general (1/2)

- Definition

Application of advanced sensor, computer electronics, and communication technologies and management strategies – in an integrated manner – in order to increase the safety and efficiency parameters of the transportation system.



ITS in general (2/2)

- ITS Assessment

- ❖ Development: Idea, Prototype, Fully developed
- ❖ Implementation: None, Implemented, Evaluated
- ❖ Evaluation: Simulation, Laboratory, Field tests

- Needs for ITS

- ❖ Improving Traffic Conditions
- ❖ Improving Road Safety
- ❖ Reducing Environmental Pollution



Relevant ITS classification (1/4)

- Type of IT System

- ❖ Driver Assistance Systems (DAS)
- ❖ Advanced Driver Assistance Systems (ADAS)
- ❖ Advanced Traveller Information Systems (ATIS)
- ❖ Other



Relevant ITS classification (2/4)

- Driver need addressed
 - ❖ Information
 - ❖ Perception
 - ❖ Convenience
 - ❖ Monitoring
- Vehicle need addressed
 - ❖ General vehicle control
 - ❖ Collision avoidance
 - ❖ Monitoring



Relevant ITS classification (3/4)

- Type of human-machine interface
 - ❖ Provision of plain information
 - ❖ Provision of advice
 - ❖ Provision of warning message
 - ❖ Communication with the environment
 - ❖ Capability of proceeding to a specific action



Relevant ITS classification (4/4)

- In respect to the accident phase
 - ❖ Pre-crash (collision warning, driver monitoring, vehicle control etc)
 - ❖ Crash (airbag inflation according to parameters, other)
 - ❖ Post-crash (alerting systems)



ITS Impact on Road Safety (1/3)

- DAS
 - ❖ ABS → Better Vehicle Control while braking
 - ❖ Other



ITS Impact on Road Safety (2/3)

- ADAS

- ❖ Lane change and merge collision avoidance → Collision warning
- ❖ Parking and reversing aim → Collision Warning
- ❖ Driver vigilance/health monitoring → Driver Monitoring and Warning
- ❖ Adaptive Cruise Control (ACC) → General Vehicle Control



ITS Impact on Road Safety (3/3)

■ ATIS

- ❖ Weather forecast → Prohibit from driving under extreme weather conditions or change of driving parameters (speed)
- ❖ Road Surface conditions → Change of driving parameters (accordingly)
- ❖ Routing, position → Possible reduction of cognitive overload

Examples of ITS Impact on Road Safety

CONDITION	No fog		Fog	
	No snowplows	Snowplows	No snowplows	Snowplows
None	97,7	91,1	86,2	83,7
IVU	98,1	92,7	82,7	79
VMS	97,2	90,1	82,1	77,8
Both	87,5	76,2	74,5	70,4

Road Safety and Intelligent Transport Systems: Are they Related?

A decorative graphic on the left side of the slide, featuring a vertical black line and a horizontal black line intersecting at the origin. The background behind the lines is a gradient of colors: blue at the top, red on the left, and yellow at the bottom.

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