

Speed management through vehicle measures/ Intelligent Transport Systems

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Speed and risk







- We already have compulsory electronic speed governors for medium and large trucks, minibuses and buses
 - Trucks are limited to 90 km/h
 - Minibuses and buses to 100 km/h
- So what about doing it more intelligently?
 - With a map in the vehicle, we can limit road speed to the prevailing speed limit
- That system is called "Intelligent Speed Adaptation" (or Intelligent Speed Assistance)
 - It is one of a range of electronic Advanced Driver Assistance Systems such as Forward Collision Warning, Lane Departure Warning, etc.



The vehicle manufacturers' vision of the future





How does Intelligent Speed Adaptation (ISA) work?



- Position: a GPSbased navigation system
- 2. Information: a digital road map with speed limits added
- **3. HMI:** Tell the driver the speed limit
- Control (if wanted): a link to the drivetrain

- Sounds horrible!
- Drivers are bound to hate it!
- And they are bound to go on to "autopilot"

This car obeys the speed limit

Where have real-world trials of ISA taken place?





And also:

- Australia
- Japan
- Canada

The four trials in ISA-UK



2 urban trials in Leeds (1 private motorists, 1 fleet)

 2 rural trials in Leicestershire (1 private motorists, 1 fleet)



The vehicles

- Voluntary system that limited speed to the prevailing limit (no acceleration beyond limit)
- Drivers could override at will
- Vibration on throttle pedal to prevent overthrottling













Total km:691,192With speed limit information:570,660For ISA active phase:352,108

All with data recorded at 10Hz







Mix of:

- Younger / older
- Male / female
- Speeding intenders / non-intenders



Speed distribution on 30 mph (50 km/h) roads



Speed distribution on 70 mph (112 km/h) roads UNIVERSITY OF LEEDS







Intention





At start of trial

- At end of Phase 2
- □ At end of Phase 3

Mean intention to speed



Method for estimating accident reductions with ISA



- Based on models from the literature of relationships between speed and crash risk (e.g. Kloeden et al., 2001, 2002)
- These models have been calculated from real-world data
- They are not drawn from the police reported contributory factors for accidents





Reduction in Injury Accidents with ISA

ISA Variant	Overall Reduction	
Advisory ISA	-2.7%	
Voluntary (Overridable) ISA	-12.0%	= -50%
Mandatory (Non-Overridable) ISA	-28.9%	for fatal
		0100100



Benefit to cost ratios



Implementation Scenario	BCR	Payoff Year
Market Driven	3.4	2025
Authority Driven	7.4	2025



What's on the market now?





* PC Connectivity Cables

* Safety camera Alerts

A UK offering







Speed Conscience Standard

Many people speed unintentionally, either due to not knowing the speed limit for the road they are driving on or their mind wanders or they become distracted. The Speed Conscience is software that will inform drivers of the speed limit of the road they are travelling along* together with their current speed.

Currently only available on:

Microsoft Windows Mobile

*where data available

What the Speed Conscience Can Do For You?

- Tells you what the speed limit is
- Tells you what your speed is
- Traffic light system warns when you're speeding
- You set the speed warning limit

Speed sign recognition – a kind of ISA UNIVERSITY OF LEEDS





Volvo Cars' vision of zero injury crashes by 2020





Volvo Cars aims for zero accidents

At the Volvo Car Corporation, the vision is to design cars that should not crash. In the shorter perspective the aim is that by 2020 no-one should be killed or injured in a Volvo. "We don't accept that people lose their lives in airplane accidents, so why should we regard car accidents as inevitable?" says Jan Ivarsson, head of Safety Strategy at the Volvo Car Corporation.

A small sign of progress







So...

When will a vehicle manufacturer offer the fitment of *Intervening ISA* in its voluntary form (i.e. with the possibility of driver override) as an option?





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When will local administrations follow the example of London and create a digital speed limit database that can be downloaded into Satnavs or smart phones?

And...





And what about adoption of ISA by fleets?





Thank you for your attention! o.m.j.carsten@its.leeds.ac.uk

