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ITS in the United Kingdom

Road Safety, Casualty Reduction and Enforcement

Neal Skelton
Head of Professional Services
ITS United Kingdom



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Presentation - Overview

- **UK Road Environment**
- **ITS = 'Intelligent Transport' Systems**
- **Road Safety, Traffic Management and Control**
- **Drivers and Vehicles – Issues**
- **Enforcement Technologies**
- **The future for ITS**
- **ITS United Kingdom**

Government Casualty statistics

(Source – Road Casualties in Great Britain: Main results: 2007 – DfT 2008)

- **GB Road Casualties, 2007**
- **2,946 – Killed**
- **27,774 – seriously injured**
- **247,780 – casualties in total**

- **Vulnerable road users (pedestrian and pedal/motor cyclists) represent ~51% of KSI, with car users accounting for ~44%**
- **~52% of KSI occur on urban roads, ~4% on motorways.**

Government

Casualty reduction targets -2010

(Source – DfT 2007)

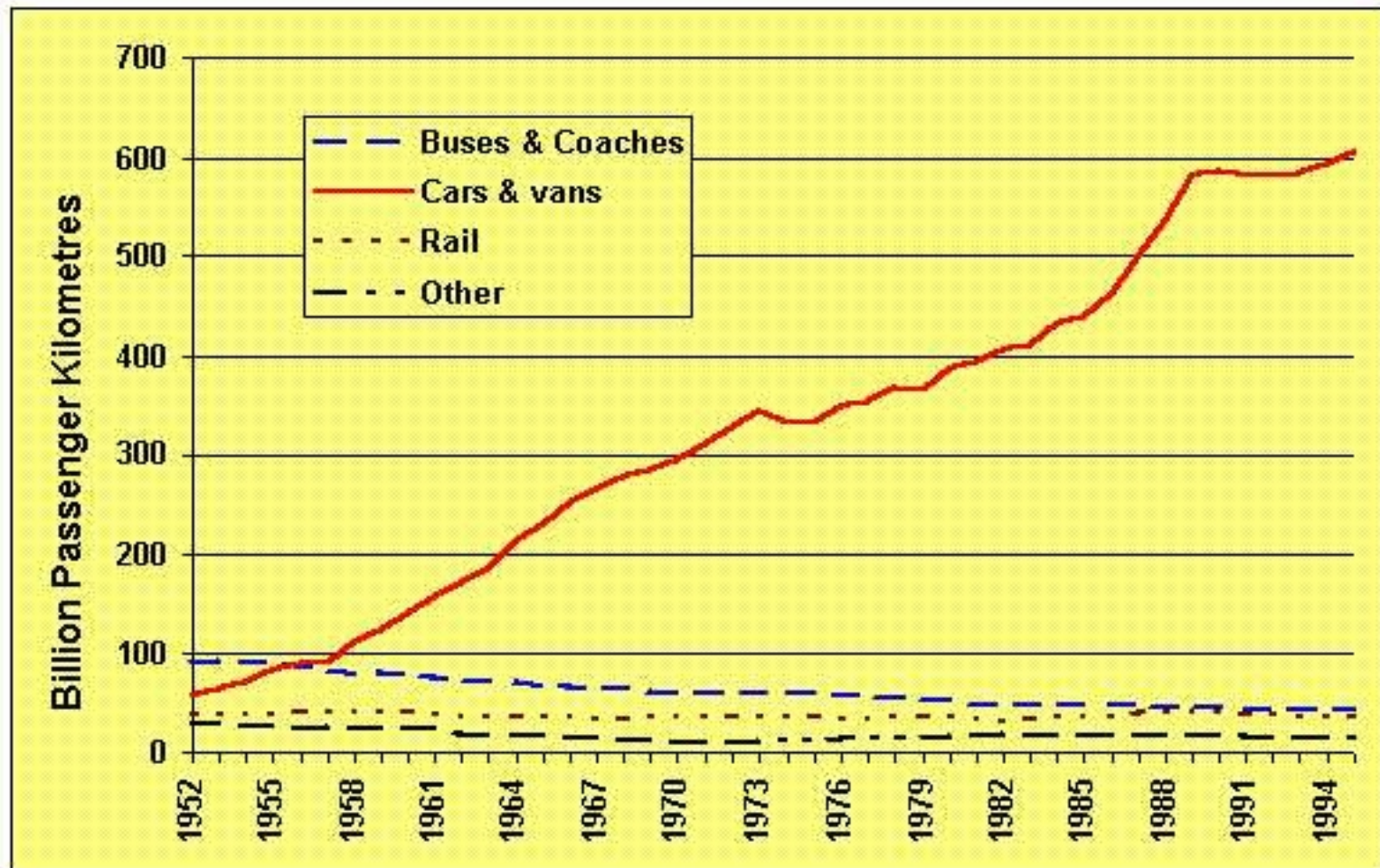
Target reductions from 1994-98 average figures:

- 40% of killed/seriously injured (KSI) in road accidents
- 50% of number of children KSI
- 10% of 'slight' casualty rate (per. 100M veh/kms)

Reductions achieved to end 2007

- 36% of all KSI
- 55% of child KSI
- 30% of slight casualty rate
- Achieved against a background of increased road traffic

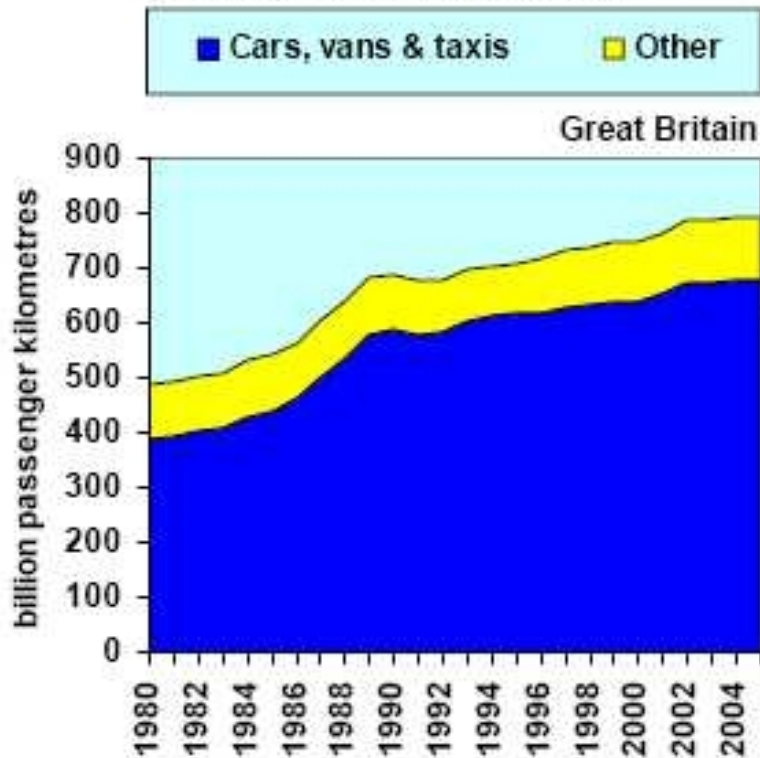
UK - Passenger Kilometres Statistics



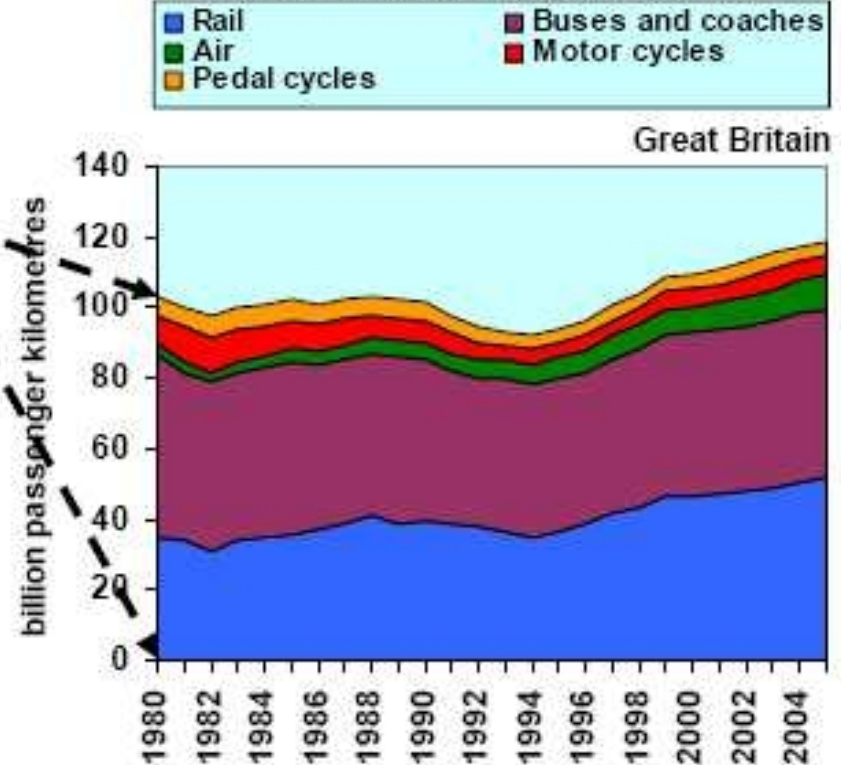
- Source - 'Integrated Transport' White Paper (1997) - Office of National Statistics

Travel Modes (1980 – 2005)

Trend 2.1a Passenger travel by car and other modes: 1980 to 2005



Trend 2.1b Passenger travel by mode other than car: 1980 to 2005



Source: DfT, ORR (rail) & CAA (air)

- Source - 'Transport Trends 2006' - UK Department for Transport Publication

Road Traffic – Vehicle Types

<u>Year</u>	<u>Cars Taxis</u>	<u>Motor Cycles</u>	<u>Buses Coaches</u>	<u>Light vans</u>	<u>Goods vehicles</u>	<u>All motor vehicles</u>	<u>Pedal cycles</u>
1949	20.3	3.1	4.1	6.5	12.5	46.5	23.6
1975	181.6	5.1	3.2	23.5	18.3	231.7	4.4
1985	250.5	7.4	3.7	28.6	19.6	309.7	6.1
1995	351.1	3.7	4.9	44.5	25.4	429.7	4.1
2005	397.2	5.4	5.2	62.6	29.0	499.4	4.4

- Volumes - Billion vehicle kilometres
- Source – Department for Transport - Transport Statistics Great Britain (2006)

ITS = 'Intelligent Transport' Systems

- **ITS = Intelligent Transport Systems**
 - **Combined Information Technology & Telecommunications**
- **Applicable to road, rail, air and sea transport**
 - **Improves travel security and journey safety**
 - **Efficient transport using electronic systems to improve traffic control & enforcement of traffic regulations**
 - **Effective management of vehicle fleets**
 - **'On-line' information - bus/train passengers**



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Role of ITS in UK

- **Improve safety**
- **Extend traveller information**
- **Increase integration**
- **Manage congestion**
- **Improve journey time reliability**
- **Reduce vehicle emissions**
- **Aid crime reduction strategies**

Road Safety, Traffic Management and Control



(MIDAS) - Motorway Automatic Incident Detection

- Notifies congestion on motorways
- Aims to reduce collisions by 18%
- Messages automatically removed once normal traffic flow restored
- Ten-year plan to extend use of MIDAS to all congested motorways



Incident management

- Early Detection
 - CCTV, MIDAS
- Reaction
 - VMS, Media Report
 - Internet/WAP/3G
- Liaison
 - Emergency Services
 - Agencies
- 'Post-Event' analysis



M25 Motorway Lane Signalling / Speed Control



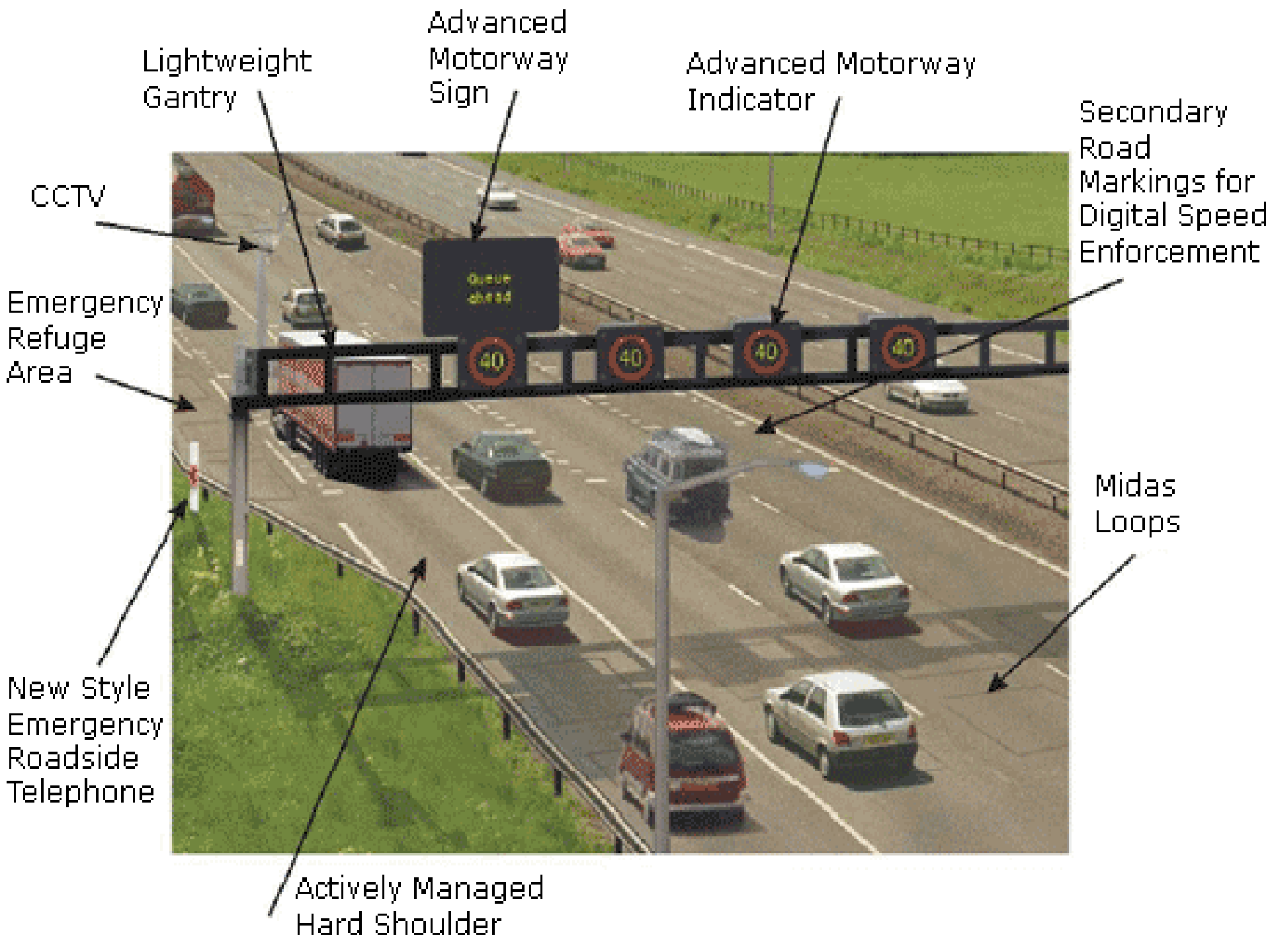
**Better use of Lanes
Improved Safety**

**Less driver stress
Reliable Journeys**

M42 Active Traffic Management

- Management
 - Infrastructure - safe and efficient road use
 - Real-time traffic monitoring - CCTV
- Tools
 - Access management (ramp-metering)
 - Lane signalling & speed control
 - Peak period - 'Hard shoulder running'
 - Integrated incident response





Vehicle Activated Signs

- Message to specific drivers
- Used re concerns of inappropriate speed
- Does not deal with excessive speed
- Simple message re road conditions
 - Bends
 - Junctions
 - Speed
- TRL Study - reductions at roundel signs



	Average Speed Before	Average Speed After
30mph roundel	34.5 mph	30 mph
40mph roundel	38.2 mph	35.1 mph
30/20mph change	31.1 mph	24.9 mph
40/30mph change	39.7 mph	30.8 mph
50mph roundel	52 mph	47.9 mph



National / Regional Traffic Management and Control Centres

- **Collect 'real-time' data - linked to Urban Traffic Management Control systems**
 - UTC, SCOOT, MOVA
- **Provides information to drivers**
 - Variable Message Signs (VMS)
 - Telephone, internet, media
- **Active monitoring**
 - 'Red Light' & 'Speed' Cameras
 - CCTV camera systems
- **'Park & Ride' schemes**
- **Decision support tools and traffic models re incident and post-incident analysis**



Total Journey Information

- **Value Added Service Providers (VASPs)**

- Traveller information via own market routes
- Pre-journey, En-Route, Destination

- **Travel Information**

- VMS (bilingual and pictorial information)
- Kiosks

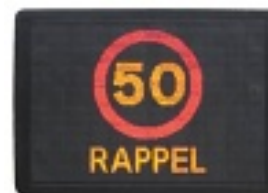
- **Internet Protocols**

- **Mobile Data**

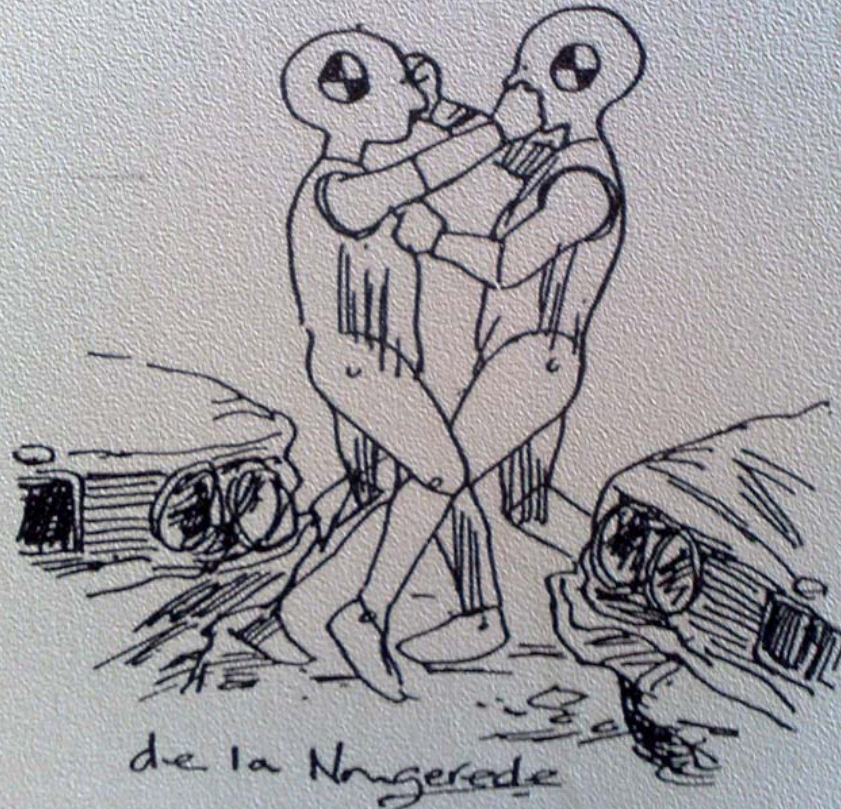
- In-vehicle systems
- WiFi /Wireline
- WAP/3G /4G terminals
- GSM

- **Broadcast Media**

- Digital TV/Radio - RDS-TMC
- DAB



Drivers and Vehicles - Issues



Drivers – ‘Overload’ and ‘Underload’

- **Increased automated driving**
- **driver ‘underload’**
- **inattention leads to none or poor response**
- **Route Guidance – ‘Sat Nav’**
- **problems re drivers ‘blindly’ following ‘Sat Nav’ despite other roadside information**
- **e.g. large vehicles using inappropriate roads**



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Vehicles - Issues

- **Secondary Safety – Post-collision investigation**
 - Stats 19 (large sample)
 - CCIS (cars and injuries)
 - ‘Fatals’ database (legal/evidential)
- **Primary Safety - factors influencing collisions**
 - Innovative vehicle and/or infrastructure design
 - Intuitive (sensible to have braking and steering)
 - Evidence (is ABS a safety benefit?)
 - Current research
 - Electronic Stability Control
 - Intelligent Speed Adaptation
 - Speed Limit Database

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Electronic Stability Control

■ **Statistical Study**

- **52,000 injury accidents in UK reviewed**
 - (10,500 ESC-equipped & 41,500 non-ESC)

■ **Results**

- **Suggests ESC has significant safety benefits**
- **Confirms results of studies in other countries**
- **Report to be published shortly**

■ **Consideration**

- **Should it be mandated?**
- **What are the real costs?**

Intelligent Speed Adaptation

- DfT research re driver behaviour
- 20 cars, 1 M/cycle, 1 Truck ISA equipped for long term trials
- Driver capable of over-riding ISA system
- Speed limit database essential to enable automotive industry to voluntarily equip vehicles

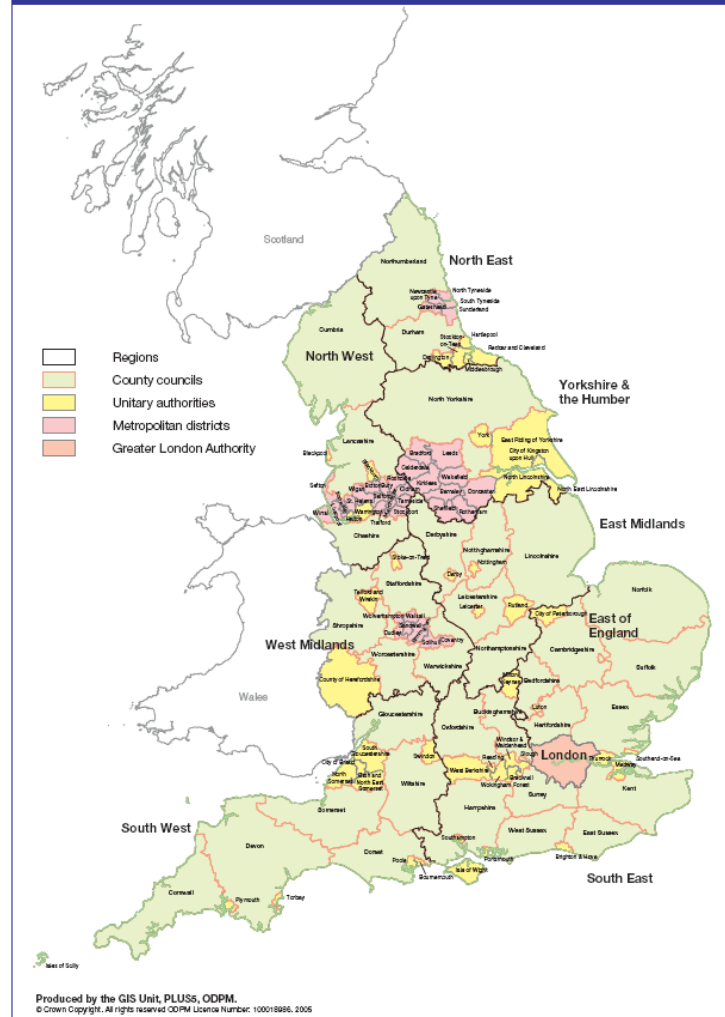


National Speed Limit Database

Survey underway

- 276,929 km of roads in England alone
- Only 3% owned / managed centrally
- 149 local traffic authorities
- No central database

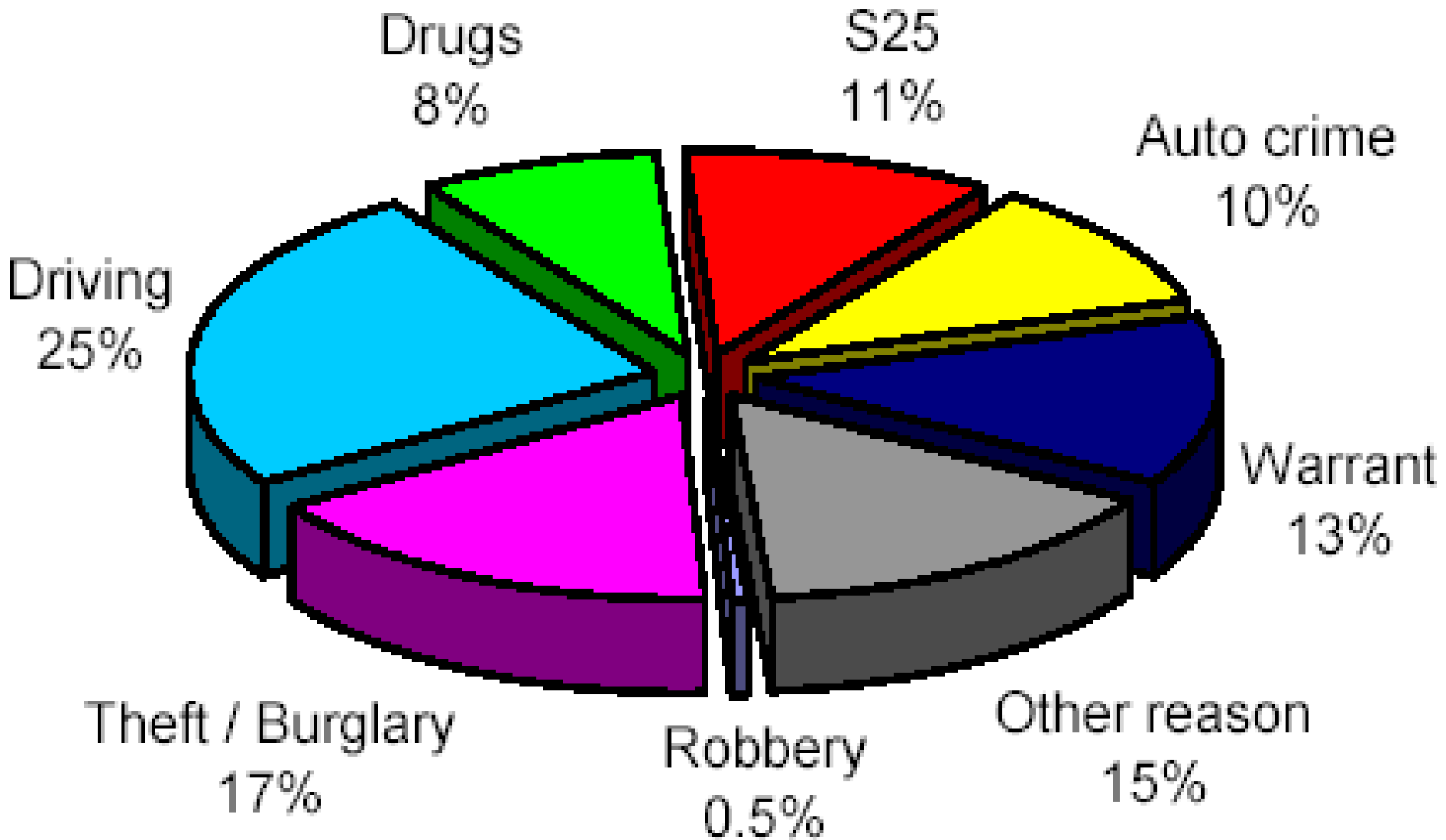
Map A1a: Government office regions; shire counties (upper tier), metropolitan districts and unitary authorities in England



Enforcement Technologies



ANPR – Enforcement Categories



ITS Technologies

- ANPR = Automatic Number Plate Recognition
 - Terrorism/Crime/Intelligence
- EVI = Electronic Vehicle Identification
 - Crime Reduction/Road User Charging
- CCTV = 'intelligent' CCTV/EPOS/
Facial Recognition/VoIP/WiIP

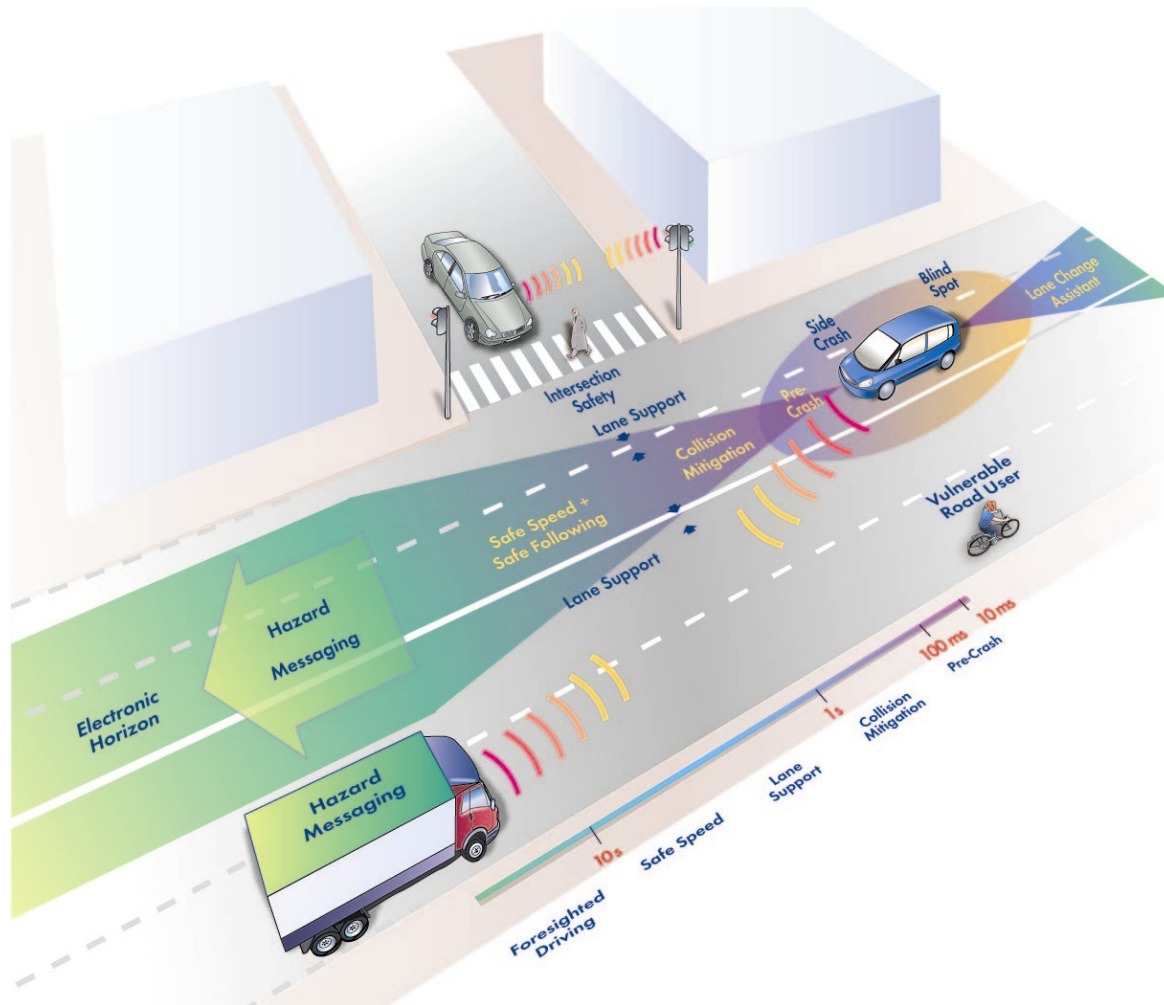




Technology Convergence

- **ANPR** - **Urban, Inter-Urban & Rural Roads**
 - Road Safety
 - 'Deny criminality the use of the roads'
 - Congestion Charging
- **EVI** - **Urban, Inter-Urban & Rural Roads**
 - Non-visual identification – ANPR relies on visual 'read'
 - Can be co-located on existing Roadside infrastructure
 - Can use existing ANPR databases
- **CCTV** - **Urban and Rural Locations and Roads**
 - Public Safety / Visual road overview / commercial scenes
 - Can incorporate ANPR & other CCTV enhancements

The future for ITS



The future for ITS

Co-operative Vehicle Highway Systems (CVHS)

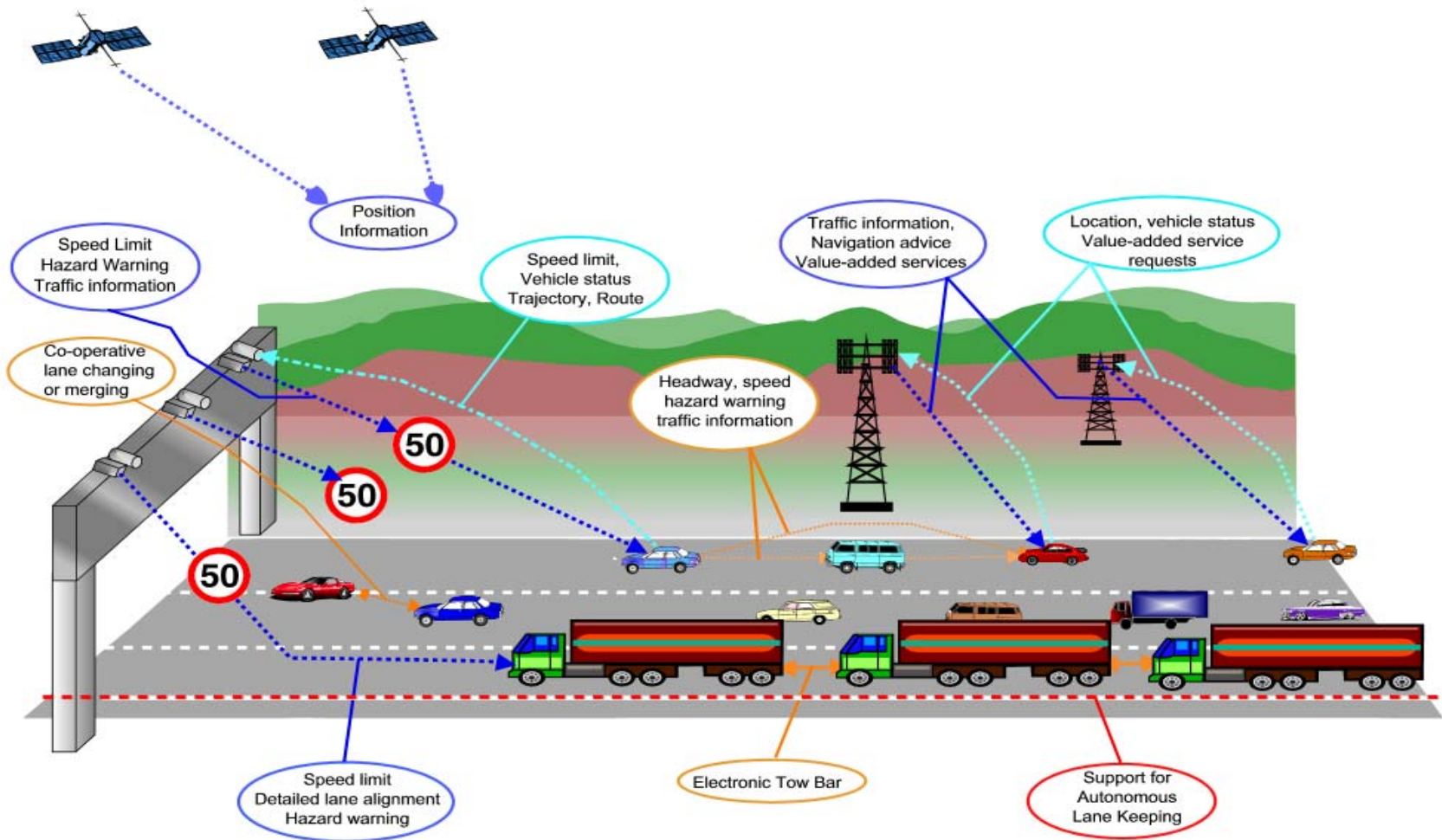
Dynamic data exchange between vehicles or a vehicle and infrastructure

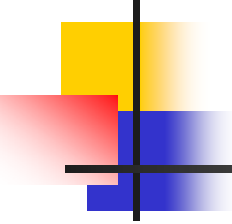
Key applications:

- ISA (variable speed limits)
- Collision warning/avoidance
- Electronic tow bar



The future for ITS



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ITS in the United Kingdom Contribution to Road Safety, Casualty Reduction and Enforcement

- **Implications for Policing - Intelligent Transport Systems - Publication No. 25/03**
- **<http://scienceandresearch.homeoffice.gov.uk/hosdb>**
- **Publication Search – Keyword - Intelligent Transport**




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HOSDB- ITS Publications

- <http://scienceandresearch.homeoffice.gov.uk/hosdb>
Publication Search - Intelligent Transport
- Intelligent Transport Systems (ITS) - A crime reduction tool -
Publication 21/02
- Intelligent Transport Systems (ITS) – a crime reduction tool -
Practical applications - Publication 25/02
- Implications for Policing - Intelligent Transport Systems -
Publication No. 25/03



ITS United Kingdom



 **ITS** United Kingdom

White Paper
Technology Options for Road Pricing in the UK
a guide to technologies, operations and related policy options for charging and enforcement in the UK

Executive Summary

October 2006

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Note
This document has been extracted from the full White Paper that will be available to all members of ITS (UK) at www.its-uk.org.uk. Contact ITS (UK) for more details.

Members' Handbook 2006

ITS UK

Composition / Membership

- **President – Steven Norris (former UK Government Minister for Transport)**
- **ITS UK Council:-**
 - Chairman, Vice Chairman, Directors
 - Secretariat
- **Membership**
 - Foundation, Corporate, Associate, Student
 - 179 Member organisations
 - 600+ active individuals

ITS UK

Composition / Activities

- **Interest Groups:-**

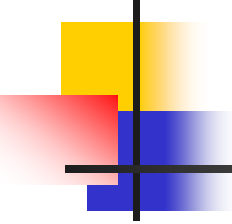
- Automotive, Cooperative Vehicle Highways Systems, Freight, Enforcement, Inclusive Mobility, International Standards, Local Authorities, Passenger Information, Public Sector Liaison, Road User Charging, Security, Smart Environment,

- **Government Consultations**

- **Media liaison**

- **Representing ITS UK abroad**

- **World and European ITS congresses**

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ITS in the United Kingdom Contribution to Road Safety, Casualty Reduction and Enforcement

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