11 Co-operative Driving on the Automated Highway

"The highway of the future will utilise intelligent infrastructure which interacts with the vehicles and people using it."

Long Term Goals

- Secure major safety and highway capacity benefits through promotion of technologies for co-operative driving and greater automation of the highway.
- Develop a politically acceptable deployment strategy for deploying these technologies.

Short Term Actions

- Carry out a comprehensive evaluation of the available co-operative driving and automated highway concepts, including a political risk assessment and identification of potential show-stoppers:
  - Social and political issues: perceived acceptance / public acceptability (e.g. only top of the market cars will have necessary systems to begin with; possible concerns from fleet owners)
  - Liability and health and safety issues in the event of failure
  - Standards (both vehicle and driver performance)
  - Hazard and operability assessment.
  - Performance in severe and exceptional operating conditions and/or an unfavourable traffic mix.
  - Maintenance arrangements and fail safe options for periods of inoperability
  - Levels of reliability in adverse weather conditions (ie the system can't stop and start - it needs to be consistent and reliable)
  - Effect of foreign vehicles, rogue drivers and inconsistent driving patterns (ie hazards from the public)
  - Enforcement and policing issues
  - Specialist freight requirements (e.g. abnormal loads)
  - Interface with non-automated highways and routes: entry/exit / interchange
- Track examples from other countries (e.g. California, Holland, Japan, France, etc)
- Identify suitable test / demonstration sites (UK or abroad) for trials, safety audits / failsafe considerations and user acceptance work
- Identify EU funding opportunities and develop joint projects (trials and demonstrations) with neighbouring countries (e.g. Netherlands, France)
- Create a national stakeholder forum (the UK Automated Highway Forum) and encourage UK participation in the international stakeholder forums
- Business case development: Cost benefit analysis / economic evaluation
- Clarify demarcation of Network Operator(s) and Vehicle Developer roles and stimulate appropriate vehicle development

- Focus on stepping stones and transitional steps towards co-operative driving and greater automation (e.g. engineering technology base such as dynamic lane management).
- Assess the target traffic mix; develop an appropriate infrastructure design, and user and vehicle standards (e.g. the motorway fit driver / vehicle)
- Develop the legal framework, enforcement methods and system of regulation.

Case for Network Operator Action

- Co-operative driving and greater automation of the highway (Cooperative Vehicle-Highway Systems - CVHS) have the potential for significant safety and capacity improvements and could help focus on a favoured traffic mix, such as freight convoys.
- Making better use of existing highway space without further land take is more publicly / politically acceptable than new build.
- CVHS may provide new options for the network operator to improve the level of service to the end user: predictable / reliable journey times and greater safety in adverse weather conditions.
- CVHS may make it easier to handle / accommodate road works (e.g. diversions) / maintenance programmes (e.g. access to lanes) / increased life of highway (e.g. avoid rutting).
- Cooperative vehicle-highway systems can only be implemented with the active involvement of the infrastructure owner and operator.

SUPPORTING INFORMATION

- Japan has a developed programme of research with a focus on safety, (Smart Way and Smart Cruise), with deployment planned to begin in 2003.
- The USA, and in particular California, have planned demonstrations in 2003 and are furthering research into CVHS supporting systems for delivery of both increased safety and congestion relief.
- The European Commission are actively supporting automated driving programmes, as well as individual country initiatives. Plans are developing for a major project in the 6th Framework Programme.
- The Netherlands have a well developed Automated Vehicle Guidance programme within their “Roads to the Future” initiative and France are embarking on a long term deployment strategy, “La Route Automatisse” of driver assistance for rural, freight, commuting and inter-city scenarios.
- The development and deployment of CVHS is dependent on the cooperation and collaboration of the Private and Public Sectors. The Private Sector, with their consumer based service provision requires the support of the public sector to enable the effective provision of services and to ensure a wider vision and satisfaction of societal needs.