CONFÉRENCE EUROPÉENNE DES MINISTRES DES TRANSPORTS
EUROPEAN CONFERENCE OF MINISTERS OF TRANSPORT

**STATEMENT OF PRINCIPLES OF GOOD PRACTICE
CONCERNING THE ERGONOMICS AND SAFETY OF IN-VEHICLE
INFORMATION SYSTEMS**

Introduction

Over the past 2-3 years there has been a rapid growth in the number of Driver Information Systems on the market or at the prototype stage. Many products use an in-vehicle display and Departments of Transport in ECMT countries have become increasingly concerned about the potential impact of these systems on driver behaviour, and thus road safety, and traffic management. In addition, many items of business equipment are now available as portable units which can be adapted for in-car use.

This document provides a series of statements on the key issues that should be considered if products, especially products incorporating displays, are to achieve the highest levels of efficiency, effectiveness and safety when they are used.

It is emphasised that this is an interim document because in a number of areas there is insufficient underpinning research to be able to specify clearly and unambiguously what constitutes a safe in-vehicle system. Many research establishments are studying this issue and several EC research projects are aiming to produce objective results needed for performance-based Standards. The Comité Européen de Normalisation (CEN) has begun work to develop such performance standards for the Man-Machine Interface (MMI) aspects of road transport telematics which is expected to take until 1998 to complete. This document is being made available now as a contribution to the general effort.

In summary the Statement:

- is issued as a contribution to general awareness about In-vehicle information systems, safety and usability;

- only applies to systems that will be used by the driver while driving;

- is not intended to replace existing National, European or International standards directives or regulations;

- is for guidance.

1.   The Scope of the Statement

1.1   This Statement details important safety related issues that should be addressed by the designers, manufacturers, suppliers and installers of in-vehicle information systems that could conceivably be used by drivers while driving. For the purposes of this document driving is defined as, when the vehicle is moving. Use of in-vehicle equipment while

stationary presents less of a safety concern, although some attention has still to be reserved to monitor external events whilst stopped in traffic.

1.2   It applies to all information systems except those solely giving information about the state of the vehicle or its equipment(e.g. speedometer, fuel gauges, etc).

1.3   Such systems include communications systems (such as telephones and radios), entertainment systems, traffic information systems, navigation systems mobile data terminals, portable personal computers and fax machines. With the rapid growth in new technologies at this time it is not feasible to list all the equipment which is covered by the Statement and so this list should not be viewed as exhaustive.

1.4   The Statement applies to equipment which may be used by the driver whilst the vehicle is being driven. It applies whether one or more IVIS are fitted. And it applies to equipment capable of multiple applications and multifunction displays.

2.   Who is Responsible for Safety?

2.1   Designers, manufacturers, suppliers and installers all have some responsibility for safety in relation to the construction and installation of in-vehicle information systems. Companies promoting any system, employers, hire companies and drivers all have some responsibility for the way in which the equipment is used.

3.   Responsibilities of the Designer and Manufacturer

General Issues

3.1   System controls should be designed to be securely fixed to vehicles interior where they can be safely used.

3.2   The system should be designed so that it does not unduly distract the driver, nor give rise to potentially dangerous driving behaviour by the driver or other road users.

3.3   Information systems should be compatible and consistent with existing vehicle equipment.

3.4   System functions not intended for use while the vehicle is being driven should be designed so that they cannot be activated when driving.

3.5   Use of the system should not result in the vehicle becoming unsafe to drive during normal use or during total or partial failure of the system.

3.6   Use of the system should not present an additional hazard to other road users.

3.7   The system should not present an electrical, chemical or mechanical hazard to vehicle occupants, during normal use and reasonably foreseeable misuse and should not increase risk of injury in the event of an accident.

3.8   This system should not present an electromagnetic hazard or any type of irradiation risk to the vehicle's control systems, its occupants or other road users.

3.9   The system should not present a hazard to the vehicle occupants or other road users as a result of unintended or naive use by inexperienced operators, or by children.

3.10   The system should comply with relevant National, European, or International Standards, Directives or Regulations.

4.   Driver/System Interaction

4.1   Any display should not aim to visually entertain the driver. It should not interfere with the driver's central or peripheral view.

4.2   The system should not produce patterns or sounds liable to unintentionally startle the driver.

4.3   The system should be easy to use and able to be switched off without adversely affecting the control of the vehicle.

4.4   Drivers should be able to control the volume of sounds generated by the system.

4.5   Audible information should not prevent reception of external warning sounds.

4.6   The system should not require the driver to make time-critical responses when providing inputs to the system. The driver should be able to dictate the pace of interaction with the system and still derive the benefits.

4.7   Information provided should, as far as reasonably practicable, be sufficiently timely and accurate to assist the driver. Route information should be given sufficiently in advance of the manoeuvre for it to be accomplished safely.

4.8   Nationally and/or internationally agreed standards for icons, symbols, words, acronyms or abbreviations should be used wherever possible.

4.9   The driver should be able to assimilate visually displayed information at a glance that must be brief enough not to affect driving safety. For example, a glance lasting no more than two seconds has been proposed as a reference in less visually demanding driving conditions (eg a straight motorway with little traffic and good visibility).

4.10   Text messages should be relevant to the driving situation, easily read, and limited in length. As a guide, a suggested maximum of seven words has been proposed for variable message signs.

4.11   Text input by keyboard should be minimised while driving. Long and repetitive sequences of actions should be avoided.

5.   System Instructions and System Literature

5.1   The system should have written instructions for use. These should cover all aspects of installation, use and maintenance.

5.2   Instructions should be correct, simple and clear and in the native language.

5.3   The system literature and instructions should clearly state the intended user groups and the intended use of the system.

5.4   The system literature and instructions should clearly state if specific skills or capabilities are required to use the system.

5.5   Instructions should be durable so that future owners will be able to learn about the system. Ideally they should also be integrated into the system; for example as a programmed tutorial.

6.   System Assessment[1]

6.1   The system should be assessed, preferably independently, against all aspects of this Statement of Principles or other rules which could be drawn up in its place. By agreement with appropriate authorities, self-assessment by established manufacturers may be carried out using widely accepted methods as soon as such methods have been defined by appropriate bodies.

6.2   The assessor should provide the manufacturer or designer with a written report describing the assessment method, an explanation as to why that method was considered appropriate and the results of the assessment. This report should also state the limitations of the methods selected and, accordingly, of the results obtained.

6.3   The designer or manufacturer should keep all information related to the assessment of the system.

6.4   Details of the assessment of the commercially available system should be made available to the appropriate authorities if requested.

7.   Responsibilities of the Supplier

7.1   Suppliers should ensure that any promotion (eg advertising) does not encourage unsafe use.

7.2   Suppliers should request advice or assessments from appropriate authorities or experts in order to avoid the promotion of systems which might result in unsafe use.

7.3   Suppliers should be sufficiently familiar with equipment offered in order to assist buyers at the time of purchase and to provide after-sales support.

8.   Responsibilities of the Installer

8.1   The system should not obstruct or interfere with existing vehicle controls or instrumentation, especially those required for safe control of the vehicle.

8.2   The system should not obscure the driver's view out of the vehicle.

8.3   The system should be located and fitted in accordance with the relevant standards for installing equipment in vehicles. The system should be easily usable from the driver's preferred seating position while wearing a seat belt.

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1.   The German Delegation has expressed a reservation on points 6.1 to 6.4 inclusive.

8.4   If the system is intended for use by a front seat passenger as well as the driver, it should be located such that reasonable use by the passenger does not interfere with the driver in any way.

8.5   The installation should be performed in accordance with the manufacturer's instructions.

8.6   Where more than one information system is installed within a vehicle the complete installation should be assessed for safety and usability in realistic situations. Expert help should be sought where necessary.

9.   Responsibilities of an Employer

9.1   As employers may make use of more than one system or require specific procedures of their staff while driving, the person responsible for having one or a number of information systems within a vehicle should assess the complete installation for safety and usability in realistic situations. Expert help should be sought where necessary.

9.2   Employers should be satisfied that anyone required to use the in-vehicle system whilst driving is capable of safely doing so.

9.3   Adequate training should be provided on all installed systems that drivers are required to use. A record of training should be retained and methods of assessing the effectiveness of the training should be considered.

9.4   A copy of the manufacturer's user instructions should be provided in every equipped vehicle. These should be retained and passed to subsequent owners of the system.

9.5   The Employer should ensure that the system is maintained in accordance with the manufacturer's instructions.

10.   Responsibilities of Vehicle Hire Companies

10.1   Drivers should be informed of the purpose of all information systems installed in the vehicle and should be offered instruction in their safe use.

10.2   A copy of the manufacturer's user instructions should be provided in every equipped vehicle. These should be retained and passed to subsequent owners of the system.

10.3   The company should ensure that the system is maintained according to the manufacturer's instructions.

11.   Responsibilities of the Driver

11.1   Ultimate responsibility for safe control of the vehicle rests with the driver. Drivers should only use in-vehicle information systems when it is safe to do so.

11.2   Drivers should ensure that they have access to the manufacturer's user instructions and should not use a system until they are content that they can do so safely. This may mean a period of training or familiarisation is required.

11.3   Information systems the controls to which are hand-held or placed on a seat should not be used while driving.

11.4   Communications equipment, even with hands-free operation should be used with care. Drivers should warn conversants that they are driving and may break off conversation to attend to driving tasks.

11.5   Drivers should ensure that the use of an information systems by a passenger does not interfere with safe operation of the vehicle.

11.6   All instructions associated with the in-vehicle equipment should be retained and passed to subsequent vehicle owners.