TECHNICAL SPECIFICATION

ISO/TS 16951

First edition
2004-03-15

Road vehicles — Ergonomic aspects of transport information and control systems (TICS) — Procedures for determining priority of on-board messages presented to drivers

Véhicules routiers — Aspects ergonomiques des systèmes de commande et d'information du transport (TICS) — Modes opératoires pour la détermination de la priorité des messages embarqués présentés aux conducteurs

Reference number
ISO/TS 16951:2004(E)

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Published in Switzerland

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Foreword

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In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

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An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 16951 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 13, *Ergonomics applicable to road vehicles*.

Introduction

When multiple in-vehicle information systems are present, including both transport information and control systems (TICS) and non-TICS, various kinds of messages will be presented to drivers from these systems and displayed at various times. If these messages are not managed properly, drivers could fail to obtain critical information, which may degrade safety. This Technical Specification establishes two prioritization methods for TICS and other system-initiated or driver-requested messages presented to drivers while driving. Other prioritization methods are possible. The primary method given in this Technical Specification takes criticality and urgency ratings of such messages into consideration when calculating a priority index. An alternative method involving paired comparisons of all possible messages to form a priority matrix is presented in Annex A and its relative advantages and disadvantages are discussed.

Priority is one of the parameters to consider in determining when, where and how system messages are to be displayed. As TICS applications are deployed, the number and frequency of TICS messages presented to drivers can be expected to increase. This Technical Specification will provide road vehicle manufacturers and TICS suppliers with a consistent basis for the management of messages competing for the driver's limited information processing capability. This, in turn, will reduce the driver's workload and help ensure that the most important messages reach the driver. This Technical Specification complements ISO 15005 [3], a dialogue management standard.

This Technical Specification is intended for those involved in the design of message management systems that integrate in-vehicle messages. It describes how to establish message priorities. It also specifies criteria for message prioritization and, therefore, serves as an evaluation tool for TICS installed in vehicles as standard equipment and for after-market TICS devices.

Road vehicles — Ergonomic aspects of transport information and control systems (TICS) — Procedures for determining priority of on-board messages presented to drivers

1 Scope

This Technical Specification provides formal procedures and two, alternative, methods (users are advised to choose whichever of the two suits their individual requirements) for determining the priority of on-board messages presented to drivers of road vehicles by transport information and control systems (TICS) and other systems. It is applicable to the whole range of TICS in-vehicle messages, including traveller information, navigation, travel and traffic advisories, "yellow pages" information, warnings, systems status, emergency calling system information, and electronic toll/fee collection, as well as to messages from non-TICS sources such as telephone, warnings and telltales. Although applicable to systems that allow the free generation of messages, it neither provides guidance on how to use the messages deriving from its procedures nor is it applicable to mandatory or legally required messages.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
contents of message
information presented to a user by the TICS or other on-board system

EXAMPLE A message containing system status information, warnings or alarms presented using characters, symbols, figures, audible tones, voices or other means.

2.2
criticality
severity of the impact of the most likely accident or malfunction that can occur when the message is not received or is ignored by the driver

2.3
display
device that allows the presentation of visual, auditory, or haptic dynamic information to a driver

2.4
driving
activities undertaken by the driver to navigate, manœuvre and handle the vehicle to achieve lateral and longitudinal control

2.5
evaluator
person who judges the contents of a message from the point of view of criticality and urgency to the driver

2.6
examiner
person who manages and conducts the use of this Technical Specification for determining priority