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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

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 39, *Ergonomics*.

This second edition cancels and replaces the first edition (ISO/TS 16951:2004), which has been technically revised.

The main changes compared to the previous edition are as follows:

— formulae and other errors corrected;

— editorial updates.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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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 document establishes two prioritization methods for TICS and other system-initiated messages or driver-requested messages presented to drivers while driving. Other prioritization methods are possible. The primary method given in this document takes criticality and urgency ratings of such messages into consideration when calculating a priority index. If the mathematical calculations are avoided for some reason, an alternative method presented in Annex A is applied. The alternative method involves paired comparisons of all possible messages to form a priority matrix. Its relative advantages and disadvantages are discussed in Annex A. Annex B presents one way of managing messages using the priority obtained by Annex A.

Priority is one of the parameters to consider in determining when, where and how system messages are displayed. As TICS applications are deployed, the number and frequency of TICS messages presented to drivers can be expected to increase. This document 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 document complements ISO 15005[3], a dialogue management standard.

This document 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.

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

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1 Scope

This document 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 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
contents of message
information presented to a user by the *TICS* (3.14) 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.

3.2
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

3.3
display
device that allows the presentation of visual, auditory, or haptic dynamic information to a driver

3.4
driving
activities undertaken by the driver to navigate, manœuvre and handle the vehicle to achieve lateral and longitudinal control

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