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Road vehicles — Measurement of driver visual behaviour with respect to transport information and control systems —

Part 1: Definitions and parameters

Véhicules routiers — Mesurage du comportement visuel du conducteur en relation avec les systèmes de commande et d'information du transport —

Partie 1: Définitions et paramètres

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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. www.iso.org/directives

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 13, *Ergonomics applicable to road vehicles*.

This second edition cancels and replaces the first edition (ISO 15007-1:2002), of which it constitutes a minor revision.

ISO 15007 consists of the following parts, under the general title *Road vehicles — Measurement of driver visual behaviour with respect to transport information and control systems*:

— *Part 1: Definitions and parameters*

— *Part 2: Equipment and procedure* [Technical Specification]

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Introduction

Vision provides the primary source of information available to a driver. Information is gathered by looking at objects and events and this in turn affords control and navigation of the vehicle in the road traffic environment. Assessment of a driver's visual behaviour provides a method of quantifying the driver's visual allocation to the roadway or in-vehicle information sources (see Reference[1]).

Transport Information and Control Systems (TICS) applications for vehicles may have visual displays that can present a range of driver-selected information. If these visual displays have associated controls (e.g. to select a zoom level or menu option) then these associated hand-control activities may also be visually guided and become part of the visual behaviour associated with a display/TICS application. For this reason it may be important to consider not only the visual behaviour in relation to information display, but also the duration and frequency of glances following driver controlled actions.

Comparisons between specific vehicle systems have been made more difficult because the studies were conducted in different environments using different experimental techniques, different measurement definitions, and different analysis methods.

ISO 15007 has been developed to give guidance on the terms and measurements relating to the collection and analysis of driver visual behaviour data. This approach aims to assess how drivers respond to vehicle design, the road environment, or other driver-related tasks in both real and simulated road conditions. More specifically, the approach of this standard is based on the assumption that efficient processing of visual information is essential to the performance of the driving task.

ISO 15007-1 defines key terms and parameters applied in the analysis of driver visual behaviour focused on glance and glance related measurements. ISO 15007-2 gives guidelines on equipment and procedures for analysis of driver visual behaviour.

Practical assessments of drivers in real or simulated environments are conducted to quantify the allocation of visual behaviour to specified areas of interest. Visual behaviour may be quantified by the location, duration and frequency of glances to a specified area of interest in the visual scene (and, over time, between areas of interest). This approach often uses commonly available eye tracking and/or video-recording equipment. However, it does not preclude the use of more sophisticated technologies which may elicit additional driver visual behaviour information.

Results from such assessments should enable comparison of the relative influence of the TICS use with reference conditions.

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Road vehicles — Measurement of driver visual behaviour with respect to transport information and control systems —

Part 1: Definitions and parameters

1 Scope

This part of ISO 15007 defines key terms and parameters applied in the analysis of driver visual behaviour focused on glance and glance-related measures. These terms and parameters can be applied in environments from real-world driving experiments to laboratory-based driving simulator studies.

The procedures described in this part of ISO 15007 could also apply to more general assessments of driver visual behaviour without the introduction of TICS-specific systems. The parameters and definitions described below are intended to assist development of a common source of reference for driver visual behaviour data.

Minimum requirements for reporting the results of Transport Information and Control Systems (TICS) evaluations are provided.

Further guidance including the specification of how to analyse and present the results of studies of visual behaviour is available in other ISO publications (see, for example, ISO 2854 and ISO/TR 13425:2006). However, data collected and analysed according to this standard will allow comparisons to be performed across different TICS applications and experimental scenarios.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2854, *Statistical interpretation of data — Techniques of estimation and tests relating to means and variances*

ISO/TR 13425:2006, *Guidelines for the selection of statistical methods in standardization and specification*[1)]

ISO/TS 15007-2:2014, *Road vehicles — Measurement of driver visual behaviour with respect to transport information and control systems — Part 2: Equipment and procedures*

3 Terms and definitions

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

3.1
accommodation
adjustment of the lens of the eye to bring about focusing of an image of an object upon the retina

Note 1 to entry: The time for the eye to accommodate from one object to another depends on the distance between the objects.

1) Withdrawn.

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