
**Road vehicles — Human performance
and state in the context of automated
driving —**

**Part 1:
Common underlying concepts**

*Véhicules routiers — Etat et performance humaine dans le contexte
de la conduite automatisée —*

Partie 1: Concepts fondamentaux

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Foreword

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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/TR 21959-1:2018), which has been technically revised. The main changes compared to the previous edition are as follows:

- editorial modifications to the format of the figures;
- corrections of the references to clause numbers (Clause 7 is now Clause 8);
- corrections to redundant descriptions.

A list of all parts in the ISO 21959 series can be found on the ISO website.

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Introduction

Although automation technology is advancing at a very fast pace, the majority of automated driving levels (as defined by SAE) still require a human to fulfil specific remaining (driving related) tasks while being in automated driving mode. The basic requirements with respect to the driver strongly depend on the level of automation and are subject to human factors research all over the world. The SAE standards SAE J3016^[70] ^[71] and SAE J3114^[72] have already introduced working definitions of key concepts in this field. This document puts an emphasis on common underlying concepts of driver performance and state in the context of automated driving.

Driver performance includes driver's activities in transitions both from manual driving to automated driving and from automated to manual driving, as well as interaction behaviour while using the system. Driver state here means driver's internal conditions that may affect performance including knowledge of and attitudes toward driving automation systems.

Concepts on driver performances in transition from manual to automated driving and from automated to manual driving are described in [Clause 5](#). Concepts on driver state related to the transition are described in [Clause 6](#) and a specific concept "readiness/availability" that refers to driver state that predicts the intervention performance is described in [Clause 7](#). Concepts for driver's experiences and attitudes that may affect driver performance and state in the context of automated driving are described in [Clause 8](#).

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