

ISO/PAS 21448:2019-01 (E)

Road vehicles - Safety of the intended functionality

Contents	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Overview of this document's activities in the development process	6
5 Functional and system specification (intended functionality content)	11
5.1 Objectives	11
5.2 Functional description	11
5.3 Consideration on system design and architecture	12
6 Identification and evaluation of hazards caused by the intended functionality	13
6.1 Objectives	13
6.2 Hazard identification	14
6.3 Hazard analysis	15
6.4 Risk evaluation of the intended function	16
6.5 Specification of a validation target	16
7 Identification and evaluation of triggering events	17
7.1 Objectives	17
7.2 Analysis of triggering events	17
7.2.1 Triggering events related to algorithms	17
7.2.2 Triggering events related to sensors and actuators	18
7.3 Acceptability of the triggering events	19
8 Functional modification to reduce SOTIF related risks	19
8.1 Objectives	19
8.2 General	19
8.3 Measures to improve the SOTIF	20
8.4 Updating the system specification	22
9 Definition of the verification and validation strategy	22
9.1 Objectives	22
9.2 Planning and specification of integration and testing	23
10 Verification of the SOTIF (Area 2)	23
10.1 Objectives	23
10.2 Sensor verification	24
10.3 Decision algorithm verification	24
10.4 Actuation verification	25
10.5 Integrated system verification	25
11 Validation of the SOTIF (Area 3)	26
11.1 Objectives	26
11.2 Evaluation of residual risk	26
11.3 Validation test parameters	26

12	Methodology and criteria for SOTIF release	27
12.1	Objectives	27
12.2	Methodology for evaluating SOTIF for release	27
12.3	Criteria for SOTIF release	28
Annex A (informative) Examples of the application of SOTIF activities		30
Annex B (informative) Example for definition and validation of an acceptable false alarm rate in AEB systems		33
Annex C (informative) Validation of SOTIF applicable systems		41
Annex D (informative) Automotive perception systems verification and validation		43
Annex E (informative) Method for deriving SOTIF misuse scenarios		46
Annex F (informative) Example construction of scenario for SOTIF safety analysis method		49
Annex G (informative) Implications for off-line training		52
Bibliography		54