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Road vehicles — Advanced automatic collision notification (AACN) systems — Methodology for creating and validating algorithms for injury level prediction

Véhicules routiers — Systèmes intelligents de notification automatique de collision — Méthodologie pour créer et valider les algorithmes de prédiction du niveau de blessure

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Foreword

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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).

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 36 *Safety and impact testing*.

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.

Introduction

This document provides guidance on advanced automatic collision notification (AACN) algorithms for injury level prediction and related parameters. Guidance on the evaluation of such AACN algorithms is also presented. This document does not establish a particular AACN injury level prediction algorithm or impose a specific input data set.

This document contributes to an appropriate implementation, overall, saving lives. Different parties (as listed below) will benefit from applying this document.

Benefits for implementors (e.g. OEMs, countries) listed below for implementor groups respectively:

— implementors currently not having an AACN algorithm: this document helps to efficiently develop and evaluate one, facilitating more rapid introduction;

— implementors having AACN algorithm already in a region: implementors can use this document to demonstrate appropriateness;

— implementors having an AACN algorithm and wanting to enter new market: this document helps to ensure and demonstrate appropriateness for new market.

Benefits for first respondents, doctors and paramedics:

— advance estimation of expected injury severities in the crash scene;

— unifying advance estimation increases the possibility of using algorithms providing similar estimations of injury severity;

— reduced time to start medical treatment and improved triage for injured road users involved in a crash.

Benefits for society:

— end users are all road traffic participants involved in a traffic accident. In a collision, car occupants and/or vulnerable road users can have a better chance to mitigate or survive injuries when there is an AACN injury level prediction algorithm to facilitate rapid response by dispatching appropriate emergency services.

Road vehicles — Advanced automatic collision notification (AACN) systems — Methodology for creating and validating algorithms for injury level prediction

1 Scope

This document outlines methodologies for creating and evaluating AACN algorithms, using suitable parameters, to predict the level of injury sustained by road users in a collision.

The injury prediction is used to facilitate emergency response after a collision occurs.

The methodology is based on onboard vehicle data and occupant-related information and applies to vehicle occupants and vulnerable road users.

This document is applicable to road vehicles having provisions for measuring and communicating crash related data.

This document provides neither a particular AACN injury level prediction algorithm, nor information on how to use the estimated probability of injury to decide on further suitable actions (rescue, medical, etc.).

Data format for sending vehicle information and communication protocol between the vehicle and the public service answering point (PSAP) is outside the scope of this document.

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 terminology databases for use in standardization at the following addresses:

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

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

3.1
advanced automatic collision notification system
AACN system
system that carries out automatic notification of traffic accidents, providing information measured by the vehicle aiming to predict the level of injury sustained by road users

Note 1 to entry: Additional information (not measured by the vehicle) available just after the *crash* (3.12) can be used for the prediction.

3.2
event data recorder
EDR
device or function in a vehicle that records the vehicle's dynamic, time-series data during the time period just prior to a crash event (e.g. vehicle speed versus time) or during a crash event (e.g. Δv versus time), intended for retrieval after the crash event

Note 1 to entry: For the purposes of this definition, the event data do not include audio and video data.