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First edition
2023-02

Road vehicles — Software update engineering

Véhicules routiers — Ingénierie de mise à jour du logiciel



Reference number
ISO 24089:2023(E)

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Published in Switzerland

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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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 32, *Electrical and electronic components and general system aspects*.

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

Electronic control units and software of increasing complexity have become essential to the operation of road vehicles in recent years. This software is often updated to increase functionality and maintain the safety and cybersecurity of road vehicles.

Today, in-vehicle software is updated in a workshop by a skilled person or automatically over-the-air by the vehicle user. With the increased frequency of software update campaigns, it is important to have individual vehicle configuration information. Therefore, the establishment and application of software update engineering is important to ensure software quality, cybersecurity, and safety.

Software update engineering activities occur throughout the life cycle of vehicles.

This document provides terminology, objectives, requirements, and guidelines related to software update engineering as a foundation for common understanding throughout the supply chain. By applying requirements and recommendations in this document, the following benefits can be achieved for software update engineering:

- safety and cybersecurity are addressed in software update operations in road vehicles;
- establishment of processes, including goal setting, planning, auditing, process monitoring, process measurement, and process improvement;
- shared awareness of safety and cybersecurity among related parties.

[Figure 1](#) shows the overview of this document.

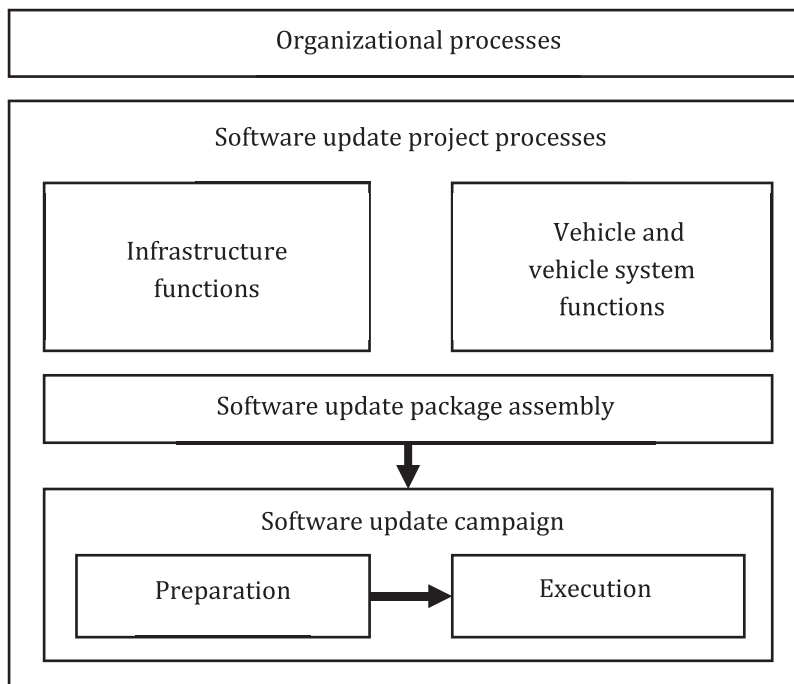


Figure 1 — Overview of this document

In this document, clauses are structured using the following approach:

- each process is defined and implemented before it is executed;
- each process is established, documented and maintained.

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This document describes the following activities:

- implementation of organizational level processes for software update engineering;
- implementation of software update project level processes for each software update project;
- definitions of functions for the vehicle and infrastructure to support the activities and processes of this document;
- assembly of software update packages using functions in the infrastructure;
- preparation and execution of software update campaigns using functions in the vehicle and infrastructure.