
**Road vehicles — Open Test sequence
eXchange format (OTX) —**

**Part 4:
Expanded extensions interface
definition**

iTeh STANDARD PREVIEW
*Véhicules routiers — Format public d'échange de séquence-tests
(OTX) —*
(standards.iteh.ai)
Partie 4: Définition de l'interface des extensions étendues

ISO 13209-4:2021

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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 31, *Data communication*.

A list of all parts in the ISO 13209 series can be found on the ISO website.

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

Diagnostic test sequences are utilized whenever automotive components or functions with diagnostic abilities are being diagnosed, tested, reprogrammed or initialised by off-board test equipment. Test sequences define the succession of interactions between the user (i.e. workshop or assembly line staff), the diagnostic application (the test equipment) and the vehicle communication interface as well as any calculations and decisions that have to be carried out. Test sequences provide a means to define interactive, guided diagnostics or similar test logic.

Today, the automotive industry mainly relies on paper documentation and/or proprietary authoring environments to document and to implement such test sequences for a specific test application. An author who is setting up engineering, assembly line or service diagnostic test applications implements the required test sequences manually, supported by non-uniform test sequence documentation, most likely using different authoring applications and formats for each specific test application. This redundant effort can be greatly reduced if processes and tools support the OTX concept.

The ISO 13209 series proposes an open and standardized format for the human- and machine-readable description of diagnostic test sequences. The format supports the requirements of transferring diagnostic test sequence logic uniformly between electronic system suppliers, vehicle manufacturers and service dealerships/repair shops.

This document extends the core of the ISO 13209 series with a set of additional, generally usable OTX extensions which are not part of ISO 13209-3, using the extension mechanism rules described in ISO 13209-2.

[Figure 1](#) gives an overview of the additional extensions related to the existing extensions in ISO 13209-3.

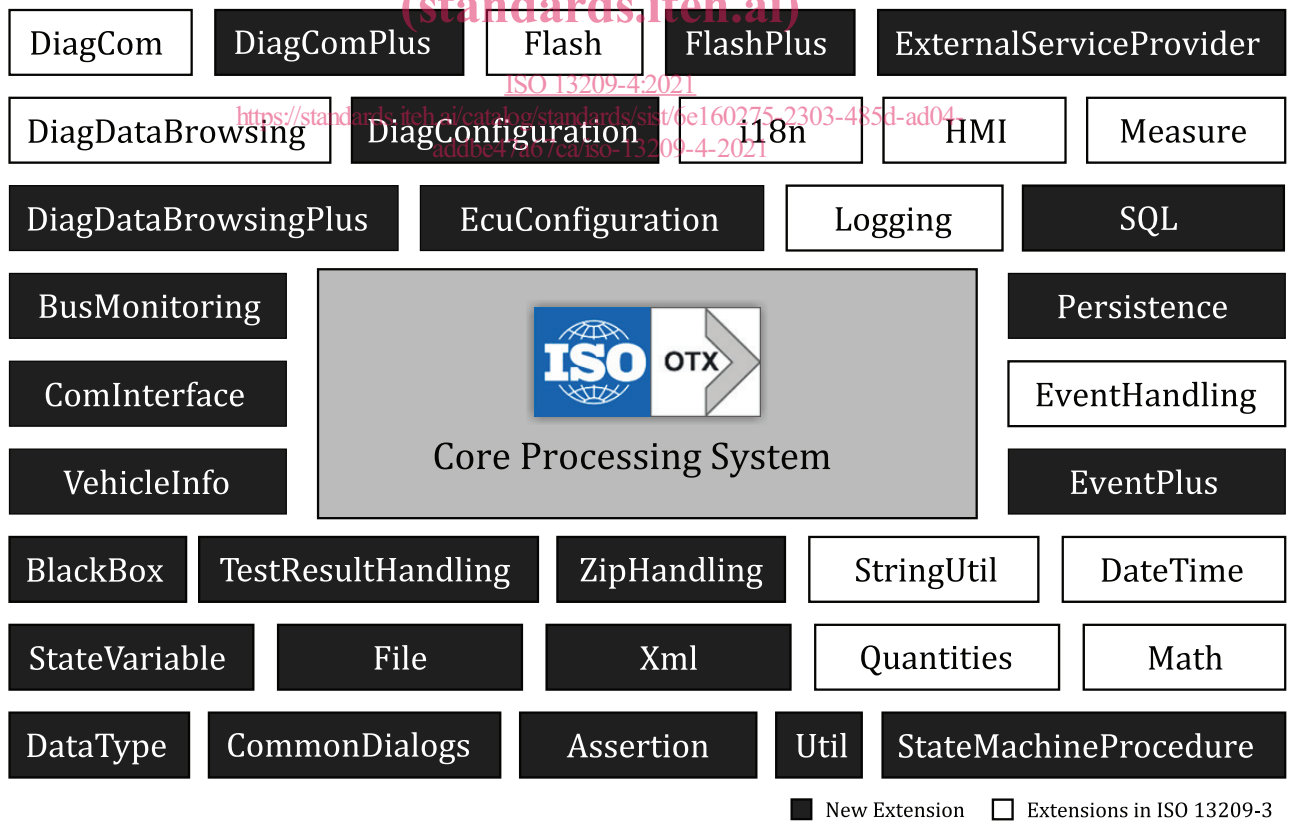


Figure 1 — OTX extensions overview

Besides these extensions a new container format, called PTX, is introduced (see [Annex B](#)).

ISO 13209-4:2021(E)

The main goals are:

- enlargement of the field of application,
- ensuring exchangeability between different tools and suppliers,
- improvement of OTX code quality,
- improvement of standard acceptance.

The following common requirements are covered:

- general read-write access to files,
- XML processing,
- declare data, whose internal properties are unknown,
- deep change monitoring in lists or maps,
- store arbitrary information on the current runtime,
- handling of user-defined data types: structure and enumeration,
- ensure correct implementation of OTX test sequences,
- support of DoIP,
- configuration tasks,
- browsing of ODX database,
- extend OTX to functionality that is encapsulated in external services, part of a system, a device, a database or a simple library, standards.iteh.ai/catalog/standards/sist/6e160275-2303-485d-ad04-addbe47a67ca/iso-13209-4-2021
- functional access to ECUs,
- capturing, evaluating and persisting results of test sequences,
- transport status information from inside a sequence to the environment,
- advanced convenience functionality,
- collection of communication data at runtime,
- select and modify project and vehicle information's foe MVCI systems,
- support of variant coding,
- enable late bound flashing of ECUs,
- access to SQL databases,
- evaluating test sequence results in a structured way,
- access to information about vehicle network architecture,
- state machine,
- compressed data exchange.

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Road vehicles — Open Test sequence eXchange format (OTX) —

Part 4: Expanded extensions interface definition

1 Scope

This document defines the Open Test sequence eXchange (OTX) additional extension requirements and data model specifications.

The requirements are derived from the use cases described in ISO 13209-1. They are listed in [Clause 4](#).

The data model specification aims at an exhaustive definition of all features of the OTX extensions which have been implemented to satisfy the requirements. This document establishes rules for the syntactical entities of each extension. Each of these syntactical entities is accompanied by semantic rules which determine how OTX documents containing extension features are to be interpreted. The syntax rules are provided by UML class diagrams and XML schemas, whereas the semantics are given by UML activity diagrams and prose definitions.

2 Normative references (standards.iteh.ai)

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13209-1:2011, *Road vehicles — Open Test sequence eXchange format (OTX) — Part 1: General information and use cases*

ISO 13209-2:—¹⁾, *Road vehicles — Open Test sequence eXchange format (OTX) — Part 2: Core data model specification and requirements*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13209-1, ISO 13209-2 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

1) Second edition under preparation. Stage at the time of publication: ISO/DIS 13209-2:2021.