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**Agricultural vehicles — Standardized  
access to repair and maintenance  
information (RMI) —**

**Part 1:  
User interface requirements for web-  
based information systems**

*Véhicules agricoles — Accès normalisés aux informations relatives à  
la réparation et à l'entretien (RMI) —*

*Partie 1: Exigences relatives à l'interface utilisateur des systèmes  
d'informations sur le web*

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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](http://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](http://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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*.

A list of all parts in the ISO 22172 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](http://www.iso.org/members.html).

## Introduction

The safe operation of tractors and agricultural equipment requires the correct repair and maintenance by well-educated and trained operators using the technical information and specifications provided by the vehicle manufacturer. Depending on the vehicle complexity and the structure of the distribution system, the vehicle manufacturer may choose between various options how to provide authorized or independent operators with this repair and maintenance information (RMI). With respect to RMI use case-based information systems as one option, a guideline including basic principles, use case definitions and technical requirements, is helpful:

- for the vehicle manufacturer when establishing such an information system;
- for the operator when asking for RMI information for vehicles of different manufacturers.

This document is intended to facilitate the installation of information systems by the manufacturers and its use by operators. It does not cover hardware, software and communication protocol requirements related to the access to on-board diagnostic (OBD) systems of agricultural vehicles.

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# Agricultural vehicles — Standardized access to repair and maintenance information (RMI) —

## Part 1: User interface requirements for web-based information systems

### 1 Scope

This document specifies the standardized access to repair and maintenance information (RMI) systems to provide repair and maintenance information for vehicles used in agriculture and forestry. It provides

- general information and basic principles,
- use case definitions (functional requirements), and
- technical requirements

as guidelines for manufacturers intending to establish such an information system.

[Annex A](#) includes procedures to ensure the conformance of such information systems with the requirements specified by this document.

### 2 Normative references

ISO 22172-1:2020

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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 12934, *Tractors and machinery for agriculture and forestry — Basic types — Vocabulary*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12934 and the following 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/>

#### 3.1

##### access level

one of the levels of access to RMI ([3.21](#))

Note 1 to entry: Two access levels are defined by this document, one access to RMI relevant to security and another one to RMI not relevant to security.

#### 3.2

##### accessories

ex-factory supplementary features and parts selected by a vehicle owner to enhance safety, performance, comfort, etc. and whose fitting does not impact the vehicle approval

**3.3**  
**authorized repairer**  
**AR**

provider of repair and maintenance services for agricultural vehicles operating within the distribution system set up by the *vehicle manufacturer* (VM) (3.28)

**3.4**  
**component**

device subject to approval or any other related regulation, which is intended to be part of a vehicle and which may be approved independently of a vehicle

**3.5**  
**diagnostic trouble code**  
**DTC**

numeric or alphanumeric identifier which identifies or labels a malfunction

**3.6**  
**electronic maintenance history**

digital *information package* (3.10) with virtual stamps that confirms the execution of the prescribed maintenance actions according to the VM's (3.28) schedule

**3.7**  
**final manufacturer**

manufacturer responsible for the approval of a completed vehicle in a multi-stage approval

**3.8**  
**identification number**

number given by the manufacturer to identify a system or component (3.4)

**3.9**  
**independent operator**  
**IO**

company or legal entity other than an authorized dealer and repairer which is directly or indirectly involved in the repair and maintenance of agricultural and forestry equipment

EXAMPLE In particular a repairer, manufacturer or distributor of repair equipment, tools or spare parts, publisher of technical information, automobile club, roadside assistance operator, operator offering inspection and testing services, operator offering training for installers, manufacturer or repairer of equipment for alternative fuel vehicles.

**3.10**  
**information package**

collection of information provided by the VM RMI system

**3.11**  
**information type**

category, group or set of information

EXAMPLE Workshop procedures (for body repair, temporary repair, periodic technical inspection), wiring diagrams, technical service bulletins, recall information and maintenance information.

**3.12**  
**maintenance history**

history of the performed, prescribed actions for maintaining a vehicle

EXAMPLE Oil changes and other periodic maintenance.

**3.13**  
**maintenance schedule**

prescribed sequence of maintenance actions for a vehicle following the requirements of the VM (3.28)

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**3.14****multi-stage vehicle**

complete vehicle manufactured and approved in two or more stages usually by different VMs (3.28)

**3.15****on-board diagnostics****OBD**

system on board of a vehicle or engine which has the capability of detecting malfunctions and, if applicable, of indicating their occurrence by means of an alert system, of identifying the likely area of the malfunctions by means of information stored in computer memory and/or communicating that information off-board

**3.16****potential repair descriptions**

list of potential causes and possible actions recommended to fix a problem

**3.17****product features**

means for identifying a vehicle which may be used for navigation through the VM RMI system

EXAMPLE Engine type (stage IIIA/stage IIIB/stage IV, etc.), transmission type (manual/powershift/CVT, etc.), final drive type (chain, shaft drive, belt, etc.).

**3.18****product structure**

inter-related set of units and sub-units into which a vehicle can be divided

Note 1 to entry: The product structure is VM-specific.

**3.19****recall**

process where a VM (3.28) notifies all affected owners of a specific vehicle of a condition or defect that could affect safety, safe operation or environmental issues of the vehicle

**3.20****redistributor**

*independent operator* (3.9) offering RMI (3.21) within their own internal (closed) network, such as garage networks

**3.21****repair and maintenance information****RMI**

information needed to maintain the original configuration, or the manufacturer's latest required configuration, of a vehicle as placed on the market

EXAMPLE Information required for diagnosis, servicing, inspection, periodic monitoring and repair of the vehicle and which the manufacturer provides to their authorized dealers and repairers, including all subsequent amendments and supplements to such information.

**3.22****republisher**

*independent operator* (3.9) who publishes RMI (3.21) to an external network using the RMI of the VM

**3.23****selection methods**

possible methods to select RMI (3.21)

**3.24****system**

assembly of devices combined to perform one or more specific functions in a vehicle and which is subject to approval or any other relevant regulation

### 3.25

#### **technical service bulletin**

bulletin issued by the manufacturer detailing a fix for a known concern

Note 1 to entry: The bulletin is for informational purposes only.

### 3.26

#### **vehicle**

machine that is self-propelled or towed

EXAMPLE In the EU, this includes agricultural and forestry tractors (T and C), trailers (R), trailed implements (S) and self-propelled machines.

### 3.27

#### **vehicle identification**

##### **VI**

unique identification number given by the VM (3.28) to identify individual agricultural and forestry vehicles or equipment

### 3.28

#### **vehicle manufacturer**

##### **VM**

any natural or legal person who is responsible for market surveillance concerns for the vehicles, systems and *components* (3.4) produced, whether or not the natural or legal person is directly involved in all stages of the design and construction of the vehicle, system or component

### 3.29

#### **workshop procedure**

information provided by a VM (3.28) describing a specific repair and maintenance requirements, such as advice on best practice and other additional instructions

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## **4 General**

To allow the standardized access to repair and maintenance information systems, this document specifies the following (see also [Figure 1](#)).

- General information and basic principles: [Clause 5](#) provides an overview of the concepts and basic principles for the implementation of the access to repair and maintenance information.
- Use case definitions: [Clause 6](#) specifies the functional user interface requirements for a VM's RMI system.
- Technical requirements: [Clause 7](#) specifies all technical requirements related to a VM's RMI system; these requirements will reflect the deriving needs from the specified use cases.
- Conformance test: [Annex A](#) specifies procedures for a VM assessment of self-conformance of the VM's RMI system.

Navigation shall be provided by document structure or sitemap.

Basic principles (Clause 5)		
Use case definitions (Clause 6)		Technical requirements (Clause 7)
<b>UC 1 User authentication, authorization &amp; administration</b> <ul style="list-style-type: none"><li>- UC 1.1 IO registration</li><li>- UC 1.2 Maintain IO status</li><li>- UC 1.3 Request for de-registration</li><li>- UC 1.4 Login</li></ul>	<b>UC 6 Electronic maintenance history</b>	<b>Access-related data administration</b> <ul style="list-style-type: none"><li>- TREQ 1 Administration of IO data</li><li>- TREQ 2 Administration of payment data</li><li>- TREQ 3 Administration of access event data</li><li>- TREQ 4 General access related data administration</li></ul>
<b>UC 2 Payment</b>	<b>UC 7 request contact for Specific RMI</b> <ul style="list-style-type: none"><li>- UC 7.1 Redistributors</li><li>- UC 7.2 Republishers</li></ul>	
<b>UC 3 Vehicle identification</b> <ul style="list-style-type: none"><li>- UC 3.1 by VI, model or serial number</li><li>- UC 3.2 via product features</li></ul>	<b>UC 8 Courses &amp; training</b>	
<b>UC 4 Selection methods</b> <ul style="list-style-type: none"><li>- UC 4.1 Select information type</li><li>- UC 4.2 Navigation</li><li>- UC 4.3 Select by document identifier</li></ul>	<b>UC 9 Vehicle diagnostics</b> <ul style="list-style-type: none"><li>- UC 9.1 DTC resolution</li><li>- UC 9.2 VM symptom resolution</li></ul>	<b>Technical infrastructure</b> <ul style="list-style-type: none"><li>- TREQ 5 Presentation formats for information packages</li><li>- TREQ 6 Internet connection</li></ul>
<b>UC 5 Retrieve information</b> <ul style="list-style-type: none"><li>- UC 5.1 Workshop procedures</li><li>- UC 5.2 Wiring &amp; hydraulic diagrams</li><li>- UC 5.3 Technical service bulletin</li><li>- UC 5.4 Recall for announcements</li><li>- UC 5.5 Maintenance schedule</li><li>- UC 5.6 Spare parts</li><li>- UC 5.7 Labour times</li><li>- UC 5.8 Special tools</li><li>- UC 5.9 Safety related information</li></ul>	<b>Operations</b> <ul style="list-style-type: none"><li>- TREQ 7 System availability time</li><li>- TREQ 8 Support for usage</li><li>- TREQ 9 Operation of IO PC</li></ul>	
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Conformance procedures (Informative Annex A)		

Figure 1 — Overview of the structure and requirements of this document

## 5 General information and basic principles

### 5.1 General information

**5.1.1** The RMI requirements in this document for vehicles includes all configurations offered by the VM, which holds an approval.

**5.1.2** VM shall provide the same access to RMI for IO and AR relating to the systems, components and technical units that hold an approval.

**5.1.3** Manufacturers of systems, components and separate technical units shall provide access to RMI for IO relating to the systems, components and technical units that hold an approval as a separate technical unit to be used in a step-by-step or mixed vehicle approval.

## 5.2 Basic principles

### 5.2.1 General

Basic principles have been established as guidelines to define the RMI use cases and requirements.

### 5.2.2 Basic principles for use case definition

- RMI use cases describe the interaction between an IO and the VM RMI system for RMI access.
- RMI use cases define a common way to organize VM RMI system for RMI access.
- The content of the technical information provided by the VM RMI system for RMI is the responsibility of the VM.
- Actors for the use cases are an IO, VM RMI system and VM.
- The VM is only expected to provide the VM RMI system and information in the languages as provided to its authorized repairers.

### 5.2.3 Basic principles for requirements definition

- The technical requirements shall not specify any implementation details and leave maximum freedom to technical developments.

NOTE Implementation details refer to the VM RMI system and not to RMI data.

- A requirement is identified by a TRREQ-xx, where 'xx' is the requirement number. Each requirement consists of a "Main title", "Requirement definition", "Requirement description", "Explanatory/Example" and "Classification".
- The requirements have been formulated with the aim of minimizing the number of IO devices required to access different VM RMI systems.

### 5.2.4 Basic principles for functional user interface requirements definition

- The requirements shall allow for flexible navigational pathways to RMI in the VM RMI system, as appropriate.
- The requirements shall allow for concepts to be able to implement navigational principles to minimize the impact to the existing VM's RMI systems.

## 5.3 Use case clusters

[Table 1](#) provides an overview of the main RMI use cases. A main RMI use case cluster may have one or more use cases.

**Table 1 — Main use case clusters**

#	Main title of use case cluster	Brief description	Use case reference
1	User authentication, authorization and administration	The use cases belonging to this cluster describe how to obtain a license to use the VM RMI system, keep user data and access level up to date, protect RMI against misuse and how to get access to the VM RMI system.	UC 1.1 Register IO for use of the VM's RMI system UC 1.2 Maintain IO status UC 1.3 Request to de-register IO UC 1.4 Login to VM's RMI system