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Road vehicles — Standardized access to automotive repair and maintenance information (RMI) —

Part 3: Functional user interface requirements

Véhicules routiers — Normalisation de l'accès aux informations relatives à la réparation et à la maintenance pour l'automobile (RMI) —

Partie 3: Exigences fonctionnelles relatives à l'interface utilisateur

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Contents

Page

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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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,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 301, *Road vehicles*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 18541-3:2014), which has been technically revised.

The main changes compared to the previous edition are as follows:

— document adopted to use cases updates taken in ISO 18541-1;

— editorial corrections.

A list of all parts in the ISO 18541 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

The ISO 18541 series includes the requirements to be fulfilled by repair and maintenance information (RMI) systems as applied by the European Commission — Enterprise and Industry Directorate-General, Consumer goods — Automotive industry EC mandate M/421 [9], dated Brussels, 21 January 2008.

This mandate relates to the EC type-approval system for vehicles falling into the scopes of Directives 70/156/EEC (replaced by 2007/46/EC [12]), 2002/24/EC [replaced by (EU) 168/2013] and 2003/37/EC [replaced by (EU) 167/2013] and, in particular, to requirements for access to vehicle repair and maintenance information by independent operators.

The purpose of the EC Mandate M/421 is to develop a standard or set of standards which specify the requirements to provide standardized access to automotive repair and maintenance information (RMI) for independent operators.

The ISO 18541 series only covers access to automotive repair and maintenance information for light passenger and commercial vehicles [see (EC) No 715/2007 [18], (EC) No 692/2008 [17] and (EU) No 566/2011 [14]] and heavy-duty vehicles [see (EC) No 595/2009 [16], (EU) No 582/2011 [15] and (EU) No 64/2012[13]] based on Directive 2007/46/EC [12] and for two-or three-wheel vehicles and quadricycles based on regulation (EU) 168/2013.

The information included in the ISO 18541 series derives from the legislative requirements on European level in the field of RMI and related security requirements and can be referenced by legislation in other countries.

Road vehicles — Standardized access to automotive repair and maintenance information (RMI) —

Part 3: Functional user interface requirements

1 Scope

This document includes functional user interface requirements related to automotive repair and maintenance information (RMI) systems in order to standardize access to RMI for independent operators.

This document specifies all functional user interface requirements related to a vehicle manufacturer's RMI system. These requirements will reflect the deriving needs from the use cases as specified in ISO 18541-1.

2 Normative references

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 18541-1:2021, *Road vehicles — Standardized access to automotive repair and maintenance information (RMI) — Part 1: General information and use case definition*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18541-1 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
artefact
one of many kinds of tangible by-products produced during the development of software

4 Abbreviated terms

AR	authorized repairer
FREQ-	functional user interface requirement
IO	independent operator

RMI repair and maintenance information

VCI vehicle communication interface

VM vehicle manufacturer

5 Conventions

This document is based on the conventions discussed in the OSI service conventions (ISO/IEC 10731).

6 Requirements overview and principles

6.1 Basic principles for requirements definition

The basic principles have been established as a guideline to define the requirements.

— BP1: the requirements stated in this document shall not specify any implementation details.

— BP2: requirements shall be expressed in terms of performance rather than design or descriptive characteristics. This approach leaves maximum freedom to technical development.

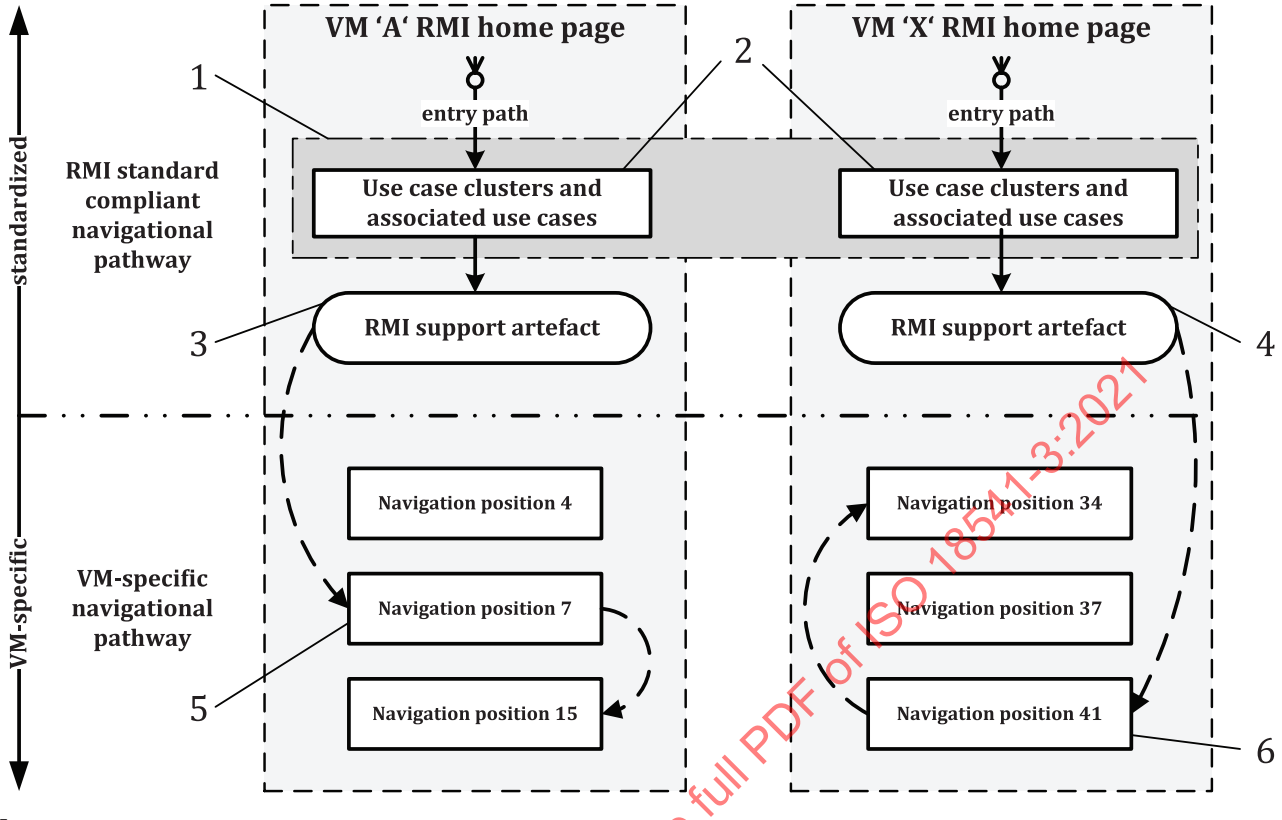
— BP3: the requirements shall allow for flexible navigational pathways for practical and state-of-the-art access to RMI in the VM websites.

— BP4: the requirements shall allow for concepts to be able to implement navigational principles to minimize the impact to the existing VM RMI systems.

6.2 Navigational pathway from standardized use cases to VM-specific navigation position

Figure 1 illustrates the navigational pathway from use cases to VM-specific navigation position. Each VM RMI system starts with the RMI home page. If the user selects the “standardized navigation” the RMI system navigates to the VM-specific use cases implementation (see Figure 1, key 2) as defined in ISO 18541-1. Figure 1, keys 3 and 4 illustrate the VM-specific RMI support artefact.

The navigational pathway will not only lead the user to a navigated position but also help the user to follow the implementation of the use case to obtain the output. The standardized use cases are logical use cases and shall not necessarily be implemented as a one-step transaction from input to output. A sequence of technical transactions may be needed to obtain the output. The complete input may not be required in the first transaction but could be a step by step transaction sequence.



Key

1 common part for all VM RMI systems

2 VM-specific implementation of use cases as defined in ISO 18541-1

3 VM 'A' specific implementation of RMI support artefact guiding the IO from the standardized use cases map to the VM-specific entry points

4 VM 'X' specific implementation of RMI support artefact guiding the IO from the standardized use cases map to the VM-specific entry points

5 VM 'A' specific implementation to navigation position 7

6 VM 'X' specific implementation to navigation position 41

Figure 1 — Navigational pathway from standardized use cases to VM-specific navigation position

6.3 VM RMI system standardized navigation

This subclause explains the key numbers in Figure 2. Figure 2 depicts the different entry points for RMI offered to a user in the VM RMI home page (key 1).

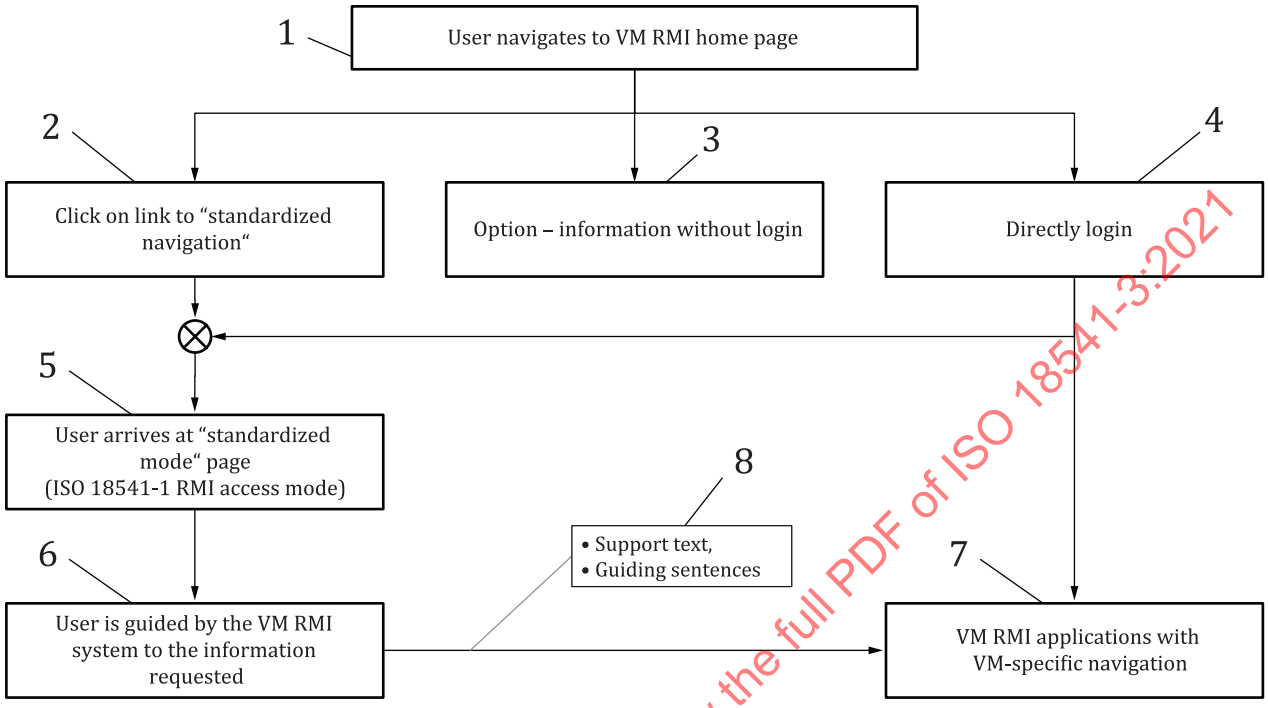
In addition to a direct login (key 4) for frequent and experienced users of the specific VM RMI website, there is an entry point (key 2) for navigation based on ISO 18541-1. Whereas the direct login leads the user directly to the applications, features and components of the specific VM RMI system and to the VM specific navigation there-in (key 7), the entry point/link for standard base navigation leads the user to a page (key 5) displaying the use cases of ISO 18541-1, the so called "use cases map" see Clause 8.

Usually the user will be requested to login, before the "use cases map" is displayed. The VM may alternatively not require a login for displaying the use cases map but require the login once a use case in the map is selected. The VM may optionally offer some information parts without login (key 3).

The selection of a use case in the "use cases map" activates the RMI support artefact (key 6) for this specific RMI website, which provides guiding information (key 8) – support text and guiding

instructions – to the applications, features and components of the specific VM RMI system and to the VM specific navigation there-in (key 7).

NOTE 1 Regardless of the entry point chosen by the user, the finally accessed RMI content and applications set is always the same.



Key

1-8 see explanations in 6.3

Figure 2 — VM RMI home page system entry point navigation

Figure 3 illustrates the entry points the VM system shall offer in the VM RMI home page, a select box for login and a select box, link or button for the entry into the standard based navigation.

NOTE 2 Figure 3 is an illustration of the required content. Look-and-feel, position and other design attributes will follow the style guides of the specific VM RMI website.

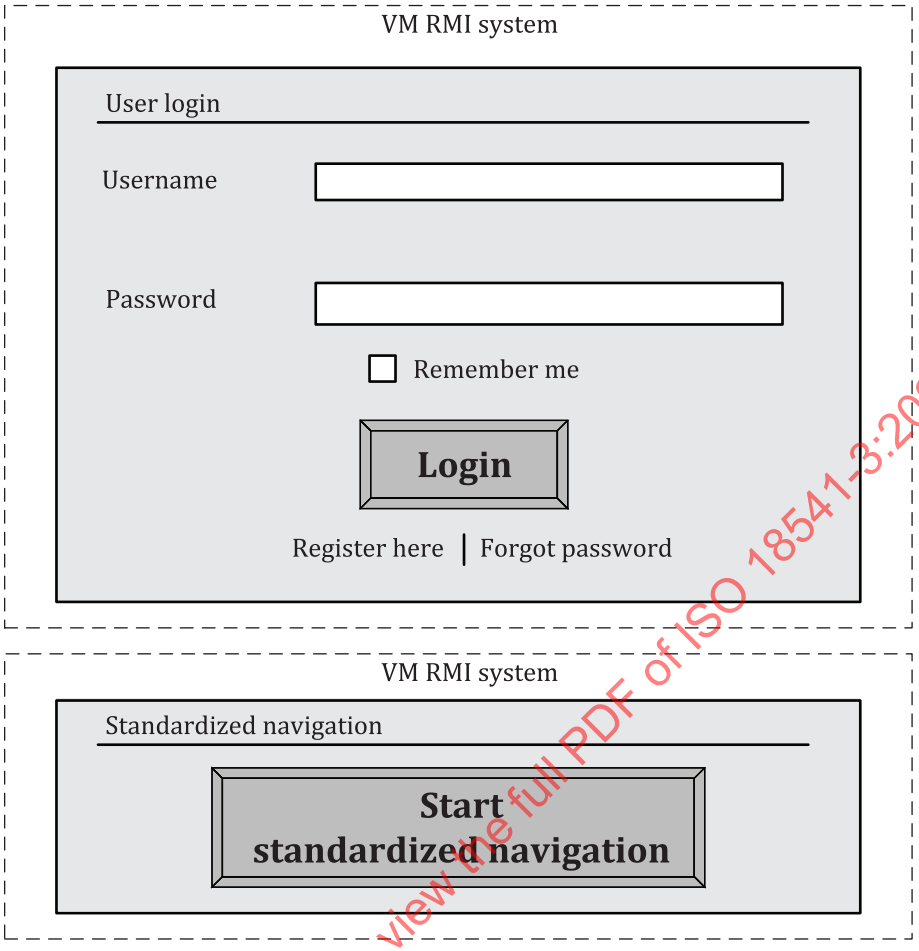


Figure 3 — VM RMI system with login and standardized navigation

6.4 Requirements clusters

Figure 4 illustrates the functional user interface requirements clusters. The figure shall provide an overview about all functional user interface requirements clusters and the specific functional user interface requirements. Each functional user interface requirement is identified by the mnemonic "FREQ-" and an alpha-numeric number. The name of the functional user interface requirement is descriptive for the area the requirement is related to.

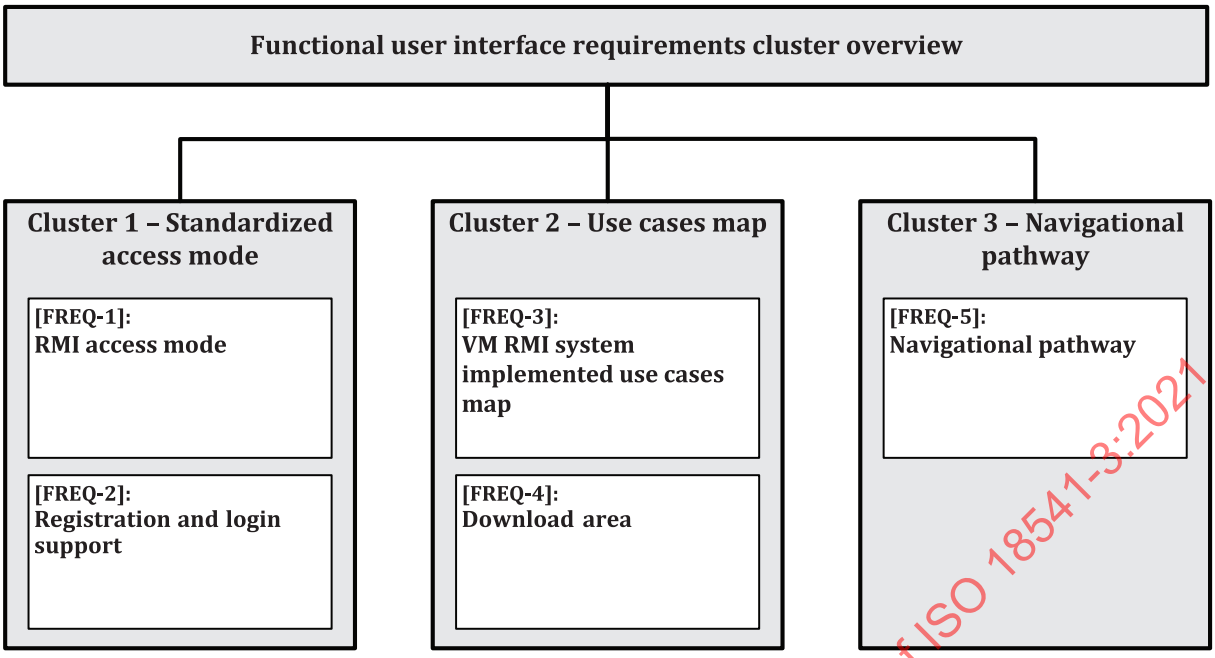


Figure 4 — Overview about functional user interface requirements clusters

Table 1 provides an overview of the main categories of standardized access to automotive RMI requirements. A requirement category shall have at least one requirement.

Table 1 — Main requirements clusters

# - Main title of cluster	Brief description	Functional user interface requirements [FREQ] reference
1 – Standardized access mode	This requirements cluster describes the functional user entry point for standard access to automotive RMI and registration and login support. Requirements related to cluster standardized access mode are: — requirements for the ISO 18541-1 RMI access mode, — requirements for the registration and login support.	[FREQ-1] RMI access mode [FREQ-2] Registration and login support
2 – Use cases map	This requirements cluster describes which use cases have been implemented within the VM RMI system and the requirements for the download area according to this document. Requirements related to cluster use cases map are: — requirements for the VM RMI system implemented use cases, — requirements for the download area.	[FREQ-3] VM RMI system implemented use cases map [FREQ-4] Download area
3 – Navigational pathway	This requirements cluster describes how the user is able to navigate to the implemented use cases including the desired information. Requirements related to cluster navigational pathway are: — requirements for the use case-based interactive navigation pathway.	[FREQ-5] Navigational pathway

7 Requirements cluster 1 — Standardized access mode

7.1 [FREQ-1] RMI access mode

Table 2 defines the requirements for the ISO 18541-3 RMI access mode.

Table 2 — [FREQ-1] RMI access mode

REQ #	FREQ-1
Main title	Requirements for the ISO 18541-3 RMI access mode
Requirement definition	VM RMI systems home page shall contain a link or button to ISO 18541-3 RMI access mode called "Standardized navigation".
Brief description	Since IOs could have less knowledge than ARs about a VM RMI system structure, a link will be provided to help them to navigate in a standardized mode, common to all VMs. This standardized access mode will be in addition to the regular access mode of that specific VM RMI system, if different, so that expert users can use both ways, as they choose their preferred method.
Classification	Mandatory

7.2 [FREQ-2] Registration and login support

Table 3 defines the requirements for the registration and login support.

Table 3 — [FREQ-2] Registration and login support

REQ #	FREQ-2
Main title	Requirements for the registration and login support
Requirement definition	The VM RMI system shall support the user to register and to login to the system.
Brief description	After the first registration the VM RMI system allows the user to choose a username and assigns a first password to login to the system according to UC 1.1 (see ISO 18541-1). If the username is already in use the user needs to select an alternative. The username and password need to meet a minimum of requirements (e.g. minimum number of digits, one capital letter, one number). The user shall be allowed to change the password(s) to his choice. For security reasons it is allowed to have an expiry mechanism on the password. If the VM RMI system consists of applications that require a separate registration, the VM RMI system shall inform the user of the subsequent registration(s) for the specific application(s) required in a compact way. The registration requirements are as defined in use case 1.1 – use case input (see ISO 18541-1).
Classification	Mandatory

8 Requirements cluster 2 — Use cases map

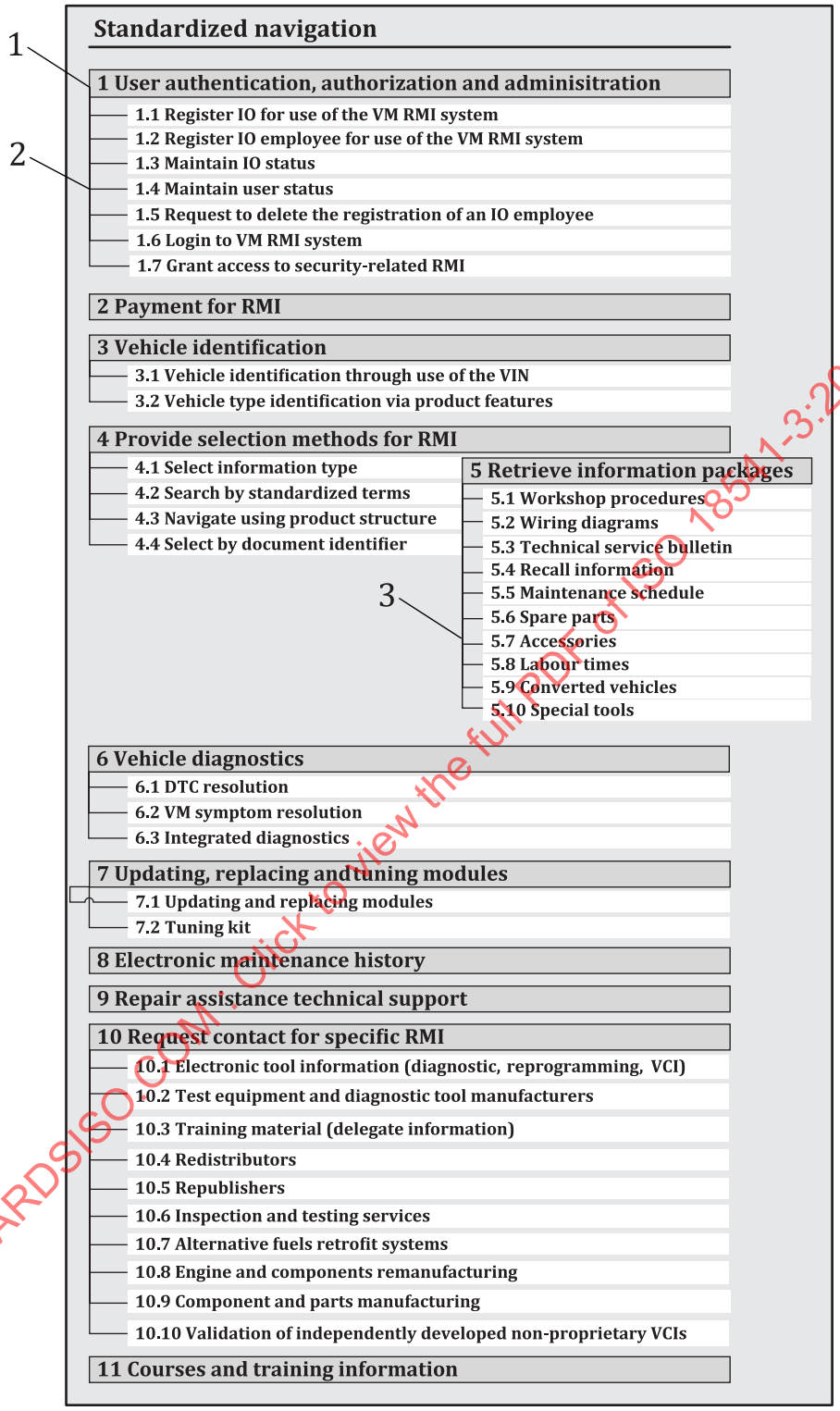
8.1 [FREQ-3] VM RMI system implemented use cases map

Figure 5 illustrates the "use cases map". The use cases map displays the relevant use cases defined in ISO 18541-1. In case some optional use cases are not supported in the specific VM RMI system, the VM shall indicate this in the map. The map will reflect the structure of the use cases as defined in ISO 18541-1. The map can be offered at once containing all use cases in a single page or offered following the use case structure in different pages for ease-of-use purposes.

The use case numbering shall be according to the use case identification in ISO 18541-1 (see keys 1 and 2 in Figure 5).

The use case titles in cluster 5 are exactly the content and result of use case “4.1 Select information type”; this means an entry “5 Retrieve information packages” might not be displayed explicitly in the list. The use cases in cluster 5 might be attached to use case 4.1 (see key 3 in Figure 5).

NOTE Figure 5 is an illustration of the required content. Look-and-feel, position and other design attributes will follow the style guides of the specific VM RMI website.



Key

1-3 see figure description in 8.1

Figure 5 — VM RMI system implemented use cases map

Table 4 defines the requirements for the VM RMI system implemented use cases.

Table 4 — [FREQ-3] VM RMI system implemented use cases map

REQ #	FREQ-3
Main title	Requirements for the VM RMI system implemented use cases
Requirement definition	The standardized RMI access mode shall access to a page containing all use cases as defined in ISO 18541-1.
Brief description	In order to harmonize the navigational pathway of all VM RMI systems, the standardized RMI access mode will provide a link or context related navigation instructions to a use cases map. All relevant use cases, as defined in ISO 18541-1 shall be shown, with active link or context related navigation instructions to corresponding pages/applications within the VM RMI system. In case some optional use case is not implemented, according to ISO 18541-1, the map will reflect this information and no link will be present.
Classification	Mandatory

8.2 [FREQ-4] Download area

Table 5 defines the requirements for the download area.

Table 5 — [FREQ-4] Download area

REQ #	FREQ-4
Main title	Requirements for the download area
Requirement definition	The VM shall facilitate the download of applications to the IO client required for the usage of the RMI system.
Brief description	The VM RMI system shall provide either a general download area for applications and/or an application download as appropriate for a singular use case. The download functionality shall be in a clearly visible position on the appropriate page(s). The download functionality shall enable and support the user to download to the IO client all the applications required for the usage of the system.
Classification	Mandatory only if manual download and installation of applications to the IO client are required for the particular VM system.

9 Requirements cluster 3 — Navigational pathway

9.1 [FREQ-5] Navigational pathway

Table 6 defines the requirements for the VM RMI navigational pathway.

Table 6 — [FREQ-5] Navigational pathway

REQ #	FREQ-5
Main title	Requirements for the standardized VM RMI navigation support
Requirement definition	The user selects a use case he would like to access and the VM RMI system guides him through the navigation pathway that will fulfil the request.
Brief description	This requirement can be fulfilled in a number of ways. At a minimum the VM RMI system shall provide a use case sensitive help. A use case sensitive help will provide the order in which pre-requisite use cases shall be chosen in order to reach the target use case. An example of a more sophisticated solution would be an interactive use cases map (see FREQ-2). An interactive use cases map will guide a user through the pre-requisite use cases that shall be chosen in order to reach the target use case. In both instances, solutions may vary from VM RMI system to VM RMI system but will nonetheless facilitate the IO's navigation.