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

Part 5: Heavy duty specific provision

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

Partie 5: Dispositions particulières pour les véhicules utilitaires lourds

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

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A list of all parts in the ISO 18541 series can be found on the ISO website.

Introduction

This set of standards 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[1]

"MANDATE TO THE EUROPEAN STANDARDIZATION ORGANISATIONS FOR STANDARDIZATION IN THE FIELD OF VEHICLE OBD, REPAIR AND MAINTENANCE INFORMATION"

dated Brussels, 21 January 2008.

This mandate relates to the EC type-approval system for vehicles falling into the scopes of Directives 2007/46/EC[4], 2002/24/EC[2], 2003/37/EC[3] and, in particular, to requirements for access to vehicle repair and maintenance information by independent operators.

The ISO 18541 series covers the access to automotive repair and maintenance information for light passenger and commercial vehicles[1)] and heavy duty vehicles[2)] based on Directive 2007/46/EC[4].

The purpose of the EC Mandate M/421[1] is to develop a standard or set of standards which specify the requirements to provide "standardized access to repair and maintenance information (RMI)" for independent operators.

The information included in this document derives from the legislative requirements on European level in the field of repair and maintenance information and related security requirements and can be referenced by legislation in other countries.

1) REGULATION (EC) No 715/2007 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information[5], COMMISSION REGULATION (EC) No 692/2008 of 18 July 2008 implementing and amending Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information[6] and COMMISSION REGULATION (EC) No 566/2011 of 08 June 2011 implementing and amending Regulations (EC) No 715/2007 and (EC) 692/2008 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information[6].

2) REGULATION (EC) No 595/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 June 2009 on type-approval of motor vehicles with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information[8], COMMISSION REGULATION (EU) No 582/2011 of 25 May 2011[9]. implementing and amending Regulation (EC) No 595/2009 of the European Parliament and of the Council with respect to emissions from heavy duty vehicles (Euro VI), and COMMISSION REGULATION (EU) No 64/2012 of 23 January 2012[10] amending Regulation (EU) No 582/2011 2011 implementing and amending Regulation (EC) No 595/2009 of the European Parliament and of the Council with respect to emissions from heavy duty vehicles (Euro VI).

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

Part 5:
Heavy duty specific provision

1 Scope

This document focus on the access to automotive repair and maintenance information for

— heavy duty motor vehicles as defined in regulation (EC) 595/2009 Article 2;

— engines and after-treatment systems (family) if they are type-approved as a separate technical unit, e.g. according to Directive 2007/46/EC.

This document includes a transposition of the standards ISO 18541-1:2014, ISO 18541-2:2014, ISO 18541-3:2014, and ISO 18541-4:2015 to these vehicle types and systems. The standards ISO 18541-1:2014, ISO 18541-2:2014, ISO 18541-3:2014, and ISO 18541-4:2015 focus on the access to automotive repair and maintenance information for passenger cars and light commercial vehicles.

Remote Diagnostic Support is a specific requirement for Access to RMI for heavy duty vehicles. It will be addressed separately in a future standard.

The standardized RMI terminology is contained in a 'Digital Annex' developed and maintained according to the complementary standard ISO 18542.

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 18541-1:2014, *Road vehicles — Standardized access to automotive repair and maintenance information (RMI) — Part 1: General information and use case definition*

ISO 18541-2:2014, *Road vehicles — Standardized access to automotive repair and maintenance information (RMI) — Part 2: Technical requirements*

ISO 18541-3:2014, *Road vehicles — Standardized access to automotive repair and maintenance information (RMI) — Part 3: Functional user interface requirements*

ISO 18541-4:2015, *Road vehicles — Standardized access to automotive repair and maintenance information (RMI) — Part 4: Conformance test*

ISO 18542 (all parts), *Road vehicles — Standardized repair and maintenance information (RMI) terminology*

TMC RP1210B. *Recommended practice*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18541-1:2014, ISO 18541-2:2014, ISO 18541-3:2014 and ISO 18541-4:2015 and the following apply.

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

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

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

3.1.1
base vehicle
type-approved motor vehicle used at the initial stage of a multi-stage type-approval process

Note 1 to entry: A base vehicle may be a complete or an incomplete vehicle.

3.1.2
body identification number
BIN
number given by the manufacturer to identify a body or a vehicle adaptation

3.1.3
complete vehicle
vehicle which does not need to be completed in order to meet the relevant technical requirements for type-approval according to Directive 2007/46/EC

3.1.4
completed vehicle
vehicle, resulting from the process of multi-stage type-approval, which meets the relevant technical requirements for type-approval according to Directive 2007/46/EC

Note 1 to entry: A completed vehicle is also a complete vehicle.

3.1.5
engine manufacturer
manufacturer responsible for the type-approval of an engine as separate technical unit

3.1.6
engine number
number given by the manufacturer to identify an engine

3.1.7
final manufacturer
manufacturer responsible for the type-approval of a complete or completed vehicle in a multi-stage type-approval

3.1.8
incomplete vehicle
vehicle which must undergo at least one further stage of completion in order to meet the relevant technical requirements of the Directive 2007/46/EC

3.1.9
manufacturer
person or body who is responsible to the approval authority for all aspects of the type-approval or authorization process and for ensuring conformity of production

Note 1 to entry: It is not essential that the person or body be directly involved in all stages of the construction of the vehicle, system, component or separate technical unit which is the subject of the approval process.

Note 2 to entry: Synonymous with vehicle manufacturer in this document.

3.1.10
multi-stage vehicle
complete vehicle manufactured and type-approved in two or more stages by usually different manufacturers per stage

3.1.11
previous manufacturer
manufacturer responsible for the type-approval of a vehicle that is completed by another manufacturer in a multi-stage type-approval

3.1.12
repair and maintenance information
RMI
<heavy duty> all information required for diagnosis, servicing, inspection, periodic monitoring, repair, re-programming or re-initialising of the vehicle or the remote diagnostic support of the vehicle and which the manufacturers provide for their authorized dealers and repairers, including all subsequent amendments and supplements to such information, which includes all information required for fitting parts or equipment onto vehicles

[SOURCE: Regulation (EC) 595/2009, 11, modified — second sentence converted to sub sentence]

3.1.13
separate technical unit
device subject to the requirements of a regulatory act and intended to be part of a vehicle, which can be type-approved separately, but only in relation to one or more specified types of vehicle where the regulatory act makes express provisions for so doing

3.1.14
vehicle
power-driven vehicle which is moved by its own means, having at least four wheels, being complete, completed or incomplete, with a maximum design speed exceeding 25 km/h

Note 1 to entry: In this document a vehicle is always a motor vehicle.

3.1.15
vehicle communication interface functionality
VCI functionality
<heavy duty> set of functions to provide communication between vehicle systems and a software application for diagnostics or reprogramming according to the requirements specified in this document

3.2 Abbreviated terms

The abbreviations of ISO 18541-1:2014, ISO 18541-2:2014, ISO 18541-3:2014 and ISO 18541-4:2015 apply unless explicitly redefined in the following list.

BIN Body identification number

TMC Technology and Maintenance Council of the American Trucking Association (ATA)

RP Recommended practice

4 Document overview and structure

The ISO 18541 document set provides an implementer with all documents and references required to support the implementation of a non-discriminating standardized access to automotive repair and maintenance information.

— ISO 18541-1:2014: General information and use case definitions

This part provides an overview of the document set and structure along with the use case definitions and a common set of resources (definitions, references) for use by all subsequent parts. The standardized access to Automotive RMI shall be implemented by the VMs in their RMI systems.

— ISO 18541-2:2014: Technical requirements

This part specifies all technical requirements related to a VM RMI system. These requirements will reflect the deriving needs from the use cases as specified in part 1.

The following are examples (not a complete list):

— access-related data administration;

— IT architecture;

— external interfaces;

— technical infrastructure recommendations;

— operations;

— ISO 18541-3:2014: Functional user interface requirements.

This part specifies all functional user interface requirements related to a VM RMI system. These requirements will reflect the deriving needs from the use cases as specified in part 1.

The following is an example (not a complete list):

— Navigational pathway and user guidance.

— ISO 18541-4:2015: Conformance test

This part specifies conformance test cases for a self-conformance test by the provider of the VM RMI system. The conformance test cases will follow the use case definition of part 1 as well as the requirements stated in parts 2 and 3.

The purpose of this part of the standard is to provide information to the VM RMI system provider to build and test the VM RMI system against the conformance test cases. This final step in the development process of the VM RMI system is an enabler for all providers that their VM RMI system meets a high degree of functional requirements expected by the end user.

— ISO 18541-5:2018: Heavy duty specific provisions

This document specifies the applicability of the use cases, requirements and test cases of parts 1, 2, 3 and 4 to heavy duty vehicles. A majority of use cases, requirements and test cases are applicable without any modification. Otherwise the required modifications and additions are specified in detail.

5 General information

5.1 Overview

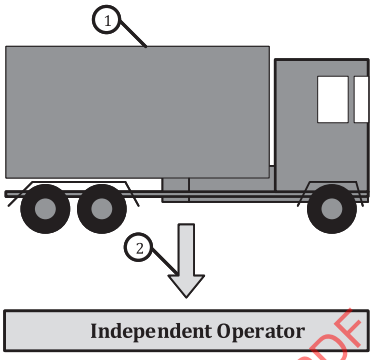
Specific provisions of this document are strongly related to the specifics of the production and type-approval in many stages by different vehicle manufacturers. This strongly contrasts with passenger

cars and light commercial vehicles where usually one single manufacturer is responsible for the type-approval and directly for the RMI of the complete vehicle.

5.2 Multi stage and RMI

Within the European Union all vehicles which are registered must have a vehicle type-approval or individual approval according to directive 2007/46/EC. A type-approval can be obtained in one or multiple stages depending on the vehicle's stage of completion.

Figure 1 depicts a one-stage situation. The vehicle is made in one stage by one manufacturer and is delivered with type-approval for the complete vehicle.



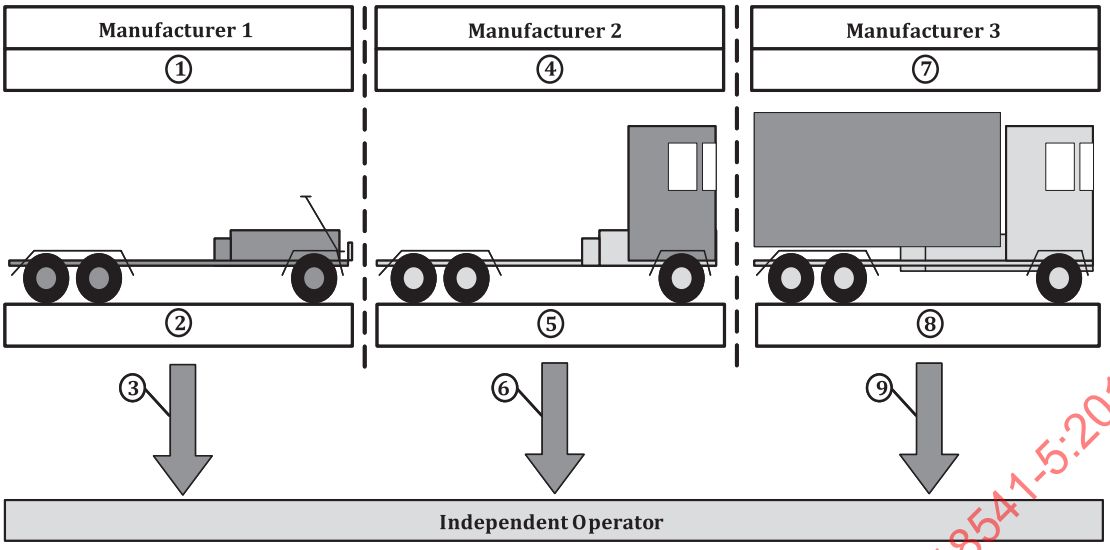
Key

1 one-stage vehicle

2 access to OBD-Info and RMI for the entire vehicle (incl. engine) provided by the single manufacturer

Figure 1 — One-stage situation

Figure 2 depicts a multi-stage situation. The first manufacturer delivers the powertrain and chassis with type-approval for the incomplete base vehicle. The second manufacturer adds a cab with type-approval for the complete vehicle. Another manufacturer adds the bodyworks and delivers the truck with type-approval for the completed vehicle.



Key

1 initial stage: base vehicle
2 drivable chassis "incomplete vehicle"
3 OBD Info, RMI for drivable chassis (incl. engine)
4 following stage: complete vehicle
5 roadworthy truck "complete vehicle"
6 OBD Info, RMI for Cab + Info about type-approval and website manufacturer 1
7 final stage: completed vehicle
8 truck with body "completed vehicle"
9 OBD-Info, RMI for body + Info about type-approval and website manufacturer 1 and 2

Figure 2 — Multi-stage situation

Each manufacturer responsible for a particular stage or stages of a motor vehicle type-approval is responsible for providing IO access to repair and maintenance information regarding the stage(s) of type-approval for which they are responsible for. This responsibility applies irrespective of the procedure followed to obtain the type-approval for this stage(s).

The final manufacturer of a multi-stage type approved vehicle shall provide links to the manufacturers´ web sites providing RMI for the previous stages.

6 Basic principles, use case and requirement overview

6.1 Basic principles

Basic principles have been established as guidelines to define the RMI use cases, requirements and conformance tests in this document.

6.2 Basic principles for use case definition

— BP1: RMI use cases describe the interaction between an independent operator and the VM websites for RMI access.

— BP2: The use cases in the RMI Standard define a common way to organize VM websites for RMI access.

— BP3: The content of the technical information provided by the VM website for RMI and the quality of the access implementation is the responsibility of the VM.

— BP4: Actors for the use cases are independent operators, VM RMI system and VM. Special roles for specific use cases may be defined and explained in Clause 7.

— BP5: Security use cases are a subset of RMI use cases.

— BP6: The primary purpose of the RMI standard is to support the existing relevant European legislation for access to RMI. In addition, it has been developed in a way that can be referenced by legislation in other countries.

— BP7: The VM is required to provide for the purposes of repair and maintenance the same information that it provides to its authorized repairers in a non-discriminatory manner. If the VM does not have authorised dealers or repairers, then the VM is required to provide RMI according to this document.

— BP8: The VM is only expected to provide the VM RMI system and information in the languages as provided to its authorized repairers.

— BP9: When a use case is classified as mandatory this means that the use case shall be implemented in the VM RMI system according to the defined requirements in the use case, except where the VM RMI does not exist, e.g. due to the nature of the product.

6.3 Basic principles for requirements definition

— BP1: The requirements stated in this part of 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: A requirement is identified by a TREQ-xx, where 'xx' is the requirement number. Each requirement consists of a "Main title", "Requirement definition", "Requirement description", "Explanatory / Example" and "Classification".

— BP4: The requirements in clusters 4 and 5 in this part of the standard have been formulated with the aim of minimizing the number of IO clients (PC, Laptop, etc.) required to access different VM RMI systems.

6.4 Basic principles for functional user interface requirements definition

— BP1: The requirements stated in this part of 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 web sites.

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

6.5 Basic principles for conformance test case definition

— BP1: The primary objective of the conformance test is to support a "VM assessment of self-conformance" of the VM RMI system. The conformance test is not limited to usage by VMs. Some test cases may not be performed by third parties due to the nature of the test cases. However, this does not limit its usage to VMs.

— BP2: The person performing the conformance test shall possess adequate skills i.e. test experience, knowledge about vehicle coverage in VM RMI system, familiarity and understanding of the relevant

ISO 18541 documents, and shall have a keen understanding of the business application of the VM RMI system.

— BP3: The conformance test addresses the access behaviour to automotive RMI and not the VM RMI system implementation.

— BP4: The conformance test is a positive test in order to test the proper functioning of the VM RMI system i.e., correct input data provides correct output data.

— BP5: The person performing the conformance test shall verify that the purpose of the use case is achieved following the descriptions of the VM regarding the implementation of the use case and the steps to enter the input and to obtain the output according to FREQ 5 in ISO 18541-3:2014.

— BP6: The name of the test case should be the same as the name of the use case (see ISO 18541-1:2014) or requirement (see ISO 18541-2:2014 and ISO 18541-3:2014).

— BP7: Each test case should have a preamble (setup state).

— BP8: Classification for each test case is included in order to support the classification criteria specified for use cases and requirements.

— BP9: A test case is only applicable if the use case or requirement is supported by the VM RMI system.

— BP10: Some test cases may require payment or a valid subscription before processing the next step.

6.6 Use case clusters

Figure 3 illustrates all use case clusters and the associated use cases that apply to heavy duty. The use case identification scheme follows the scheme in ISO 18541-1:2014. Use cases that apply for heavy duty in the same manner as for passenger cars have the same identifier as in ISO 18541-1:2014. The identifier of use cases in ISO 18541-1:2014 that do not apply to heavy duty do not appear in the figure and the following Table 1.

The detailed specification of each use case is defined in Clause 7.

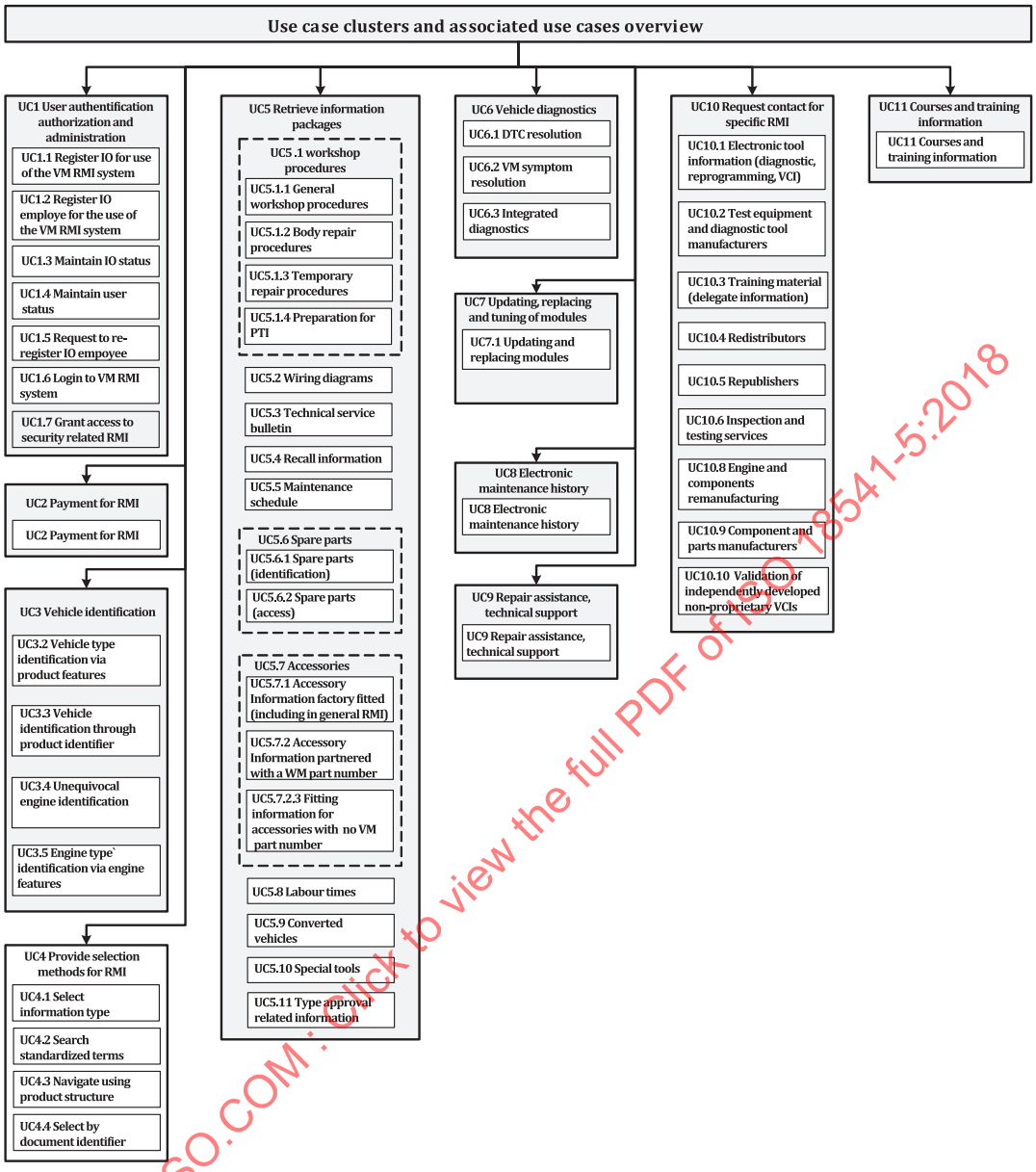


Figure 3 — Use case clusters and associated use cases overview

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 RMI system UC 1.2 Register IO employee for use of the VM RMI system UC 1.3 Maintain IO status UC 1.4 Maintain user status UC 1.5 Request to de-register IO employee UC 1.6 Login to VM RMI system UC 1.7 Grant access to security-related RMI
2	Payment for RMI	The use cases belonging to this cluster describe the handling of payments.	UC 2 Payment for RMI
3	Vehicle identification	The use cases belonging to this cluster describe how to identify a specific vehicle, vehicle summary and type of vehicle. The identification methods are — by VIN search, and/or — product feature.	UC 3.1 Vehicle identification through use of the VIN UC 3.2 Vehicle type identification via product features UC 3.3 Vehicle identification through product identifier UC 3.4 Unequivocal engine identification UC 3.5 Engine type identification via engine features
4	Provide selection methods for RMI	The use cases belonging to this cluster describe how to choose the preferred method to locate and select information. The VM RMI system presents a list of all selection methods supported by the system. A combination of methods shall be possible. The user can for instance request for a term in document titles of a single type. The different access methods are alternative ways to find the same documents in the VM system. The purpose of these use cases is to enable the user to find the required information. There shall be ways to find this information by at least one of the predefined selection methods (see 7.3). The selection methods supported are: — by information types, — by standardized terms, — by product structure, and — by document identifier.	UC 4.1 Select information type UC 4.2 Search by standardized terms UC 4.3 Navigate using product structure UC 4.4 Select by document identifier

Table 1 *(continued)*

#	Main title of use case cluster	Brief description	Use case reference
5	Retrieve information packages	The use cases belonging to this cluster describe the retrieval of selected repair and maintenance information packages. The user selects one of many documents in the search result list. The VM RMI system displays the selected package of information which are — workshop procedures (for body repair, temporary repair, periodic technical inspection), — wiring diagrams, — technical service bulletins, — recall information, — maintenance information, — etc.	UC 5.1 Workshop procedures UC 5.2 Wiring diagrams UC 5.3 Technical service bulletin UC 5.4 Recall information UC 5.5 Maintenance schedule UC 5.6 Spare parts UC 5.7 Accessories UC 5.8 Labour times UC 5.9 Converted vehicles UC 5.10 Special tools UC 5.11 Type-approval related information
6	Vehicle diagnostics	The use cases belonging to this cluster describe the support for — DTC resolution, — symptom resolution and — integrated diagnostics.	UC 6.1 DTC resolution UC 6.2 VM symptom resolution UC 6.3 Integrated diagnostics
7	Updating, replacing and tuning of modules (ECUs)	The use cases belonging to this cluster describe the support of the legitimate update or replacement of vehicle modules/ECUs to return to an operational state after repair or tuning with a VM application using approved and known VCIs which meet the standards required by legislation.	UC 7.1 Updating and replacing modules
8	Electronic maintenance history	The use cases belonging to this cluster describe how to get access and to update the history of VM prescribed maintenance actions.	UC 8 Electronic maintenance history
9	Repair Assistance, Technical Support	The use cases belonging to this cluster describe how to get advice from the VM if repair assistance or technical support is needed.	UC 9 Repair assistance technical support

Table 1 *(continued)*

#	Main title of use case cluster	Brief description	Use case reference
10	Request contact information	The use cases belonging to this cluster describe how to request contact information in order to receive information about — electronic tool, — diagnostics, — VCI, — training material, — etc.	UC 10.1 Electronic tool information (Diagnostic, Reprogramming, VCI) UC 10.2 Test equipment and diagnostic tool manufacturers UC 10.3 Training material (delegate information) UC 10.4 Redistributors UC 10.5 Republishers UC 10.6 Inspection and testing services UC 10.8 Engine and components remanufacturing UC 10.9 Component and parts manufacturers UC 10.10 Validation of independently developed non-proprietary VCIs
11	Courses and training information	The use cases belonging to this cluster describe how to get information regarding training course availability (online or Web-based training).	UC 11 Courses and training information

6.7 Requirements clusters

Figure 4 illustrates the technical requirements clusters. The figure provides an overview about all technical requirements clusters and the specific technical requirements. Each technical requirement is identified by the mnemonic "TREQ-" and an alpha-numeric number. The name of the technical requirement is descriptive for the area.

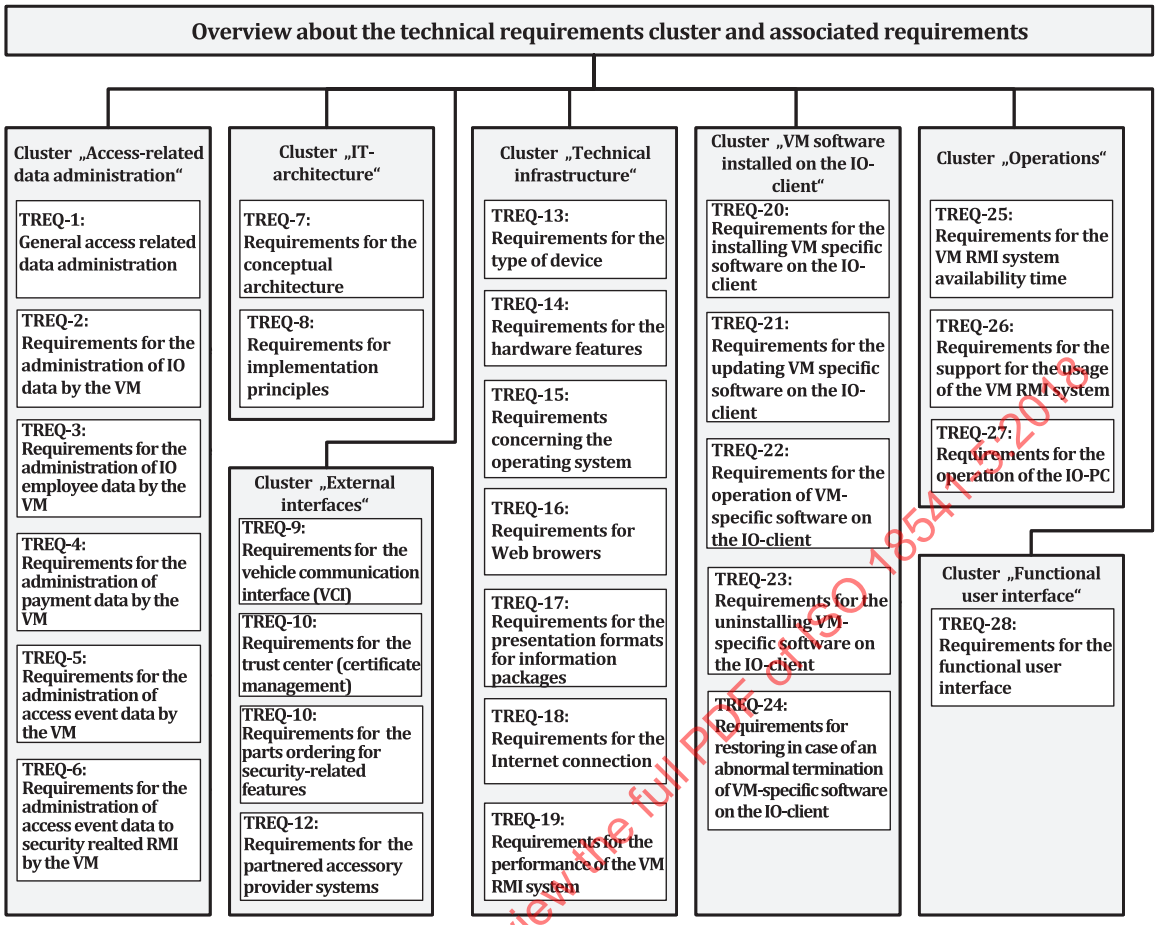


Figure 4 — Overview about the technical requirements clusters

Table 2 provides an overview of the main categories of standardized access to automotive RMI requirements.

Table 2 — Main requirements clusters

# — Main title of cluster	Brief description	Technical requirements [TREQ] reference
1 – Access-related data administration	Describes the main data types to be administered by the VM RMI System and the requirements for the appropriate management procedures in order to comply with the standardized access to RMI. RMI requirements related to cluster access-related data administration are — requirements for the administration of IO data by the VM, — requirements for the administration IO employee data by the VM, — requirements for the administration of payment data by the VM, — requirements for the administration of access event data by the VM, — requirements for the administration of access event data to security-related RMI by the VM.	[TREQ-1] General access-related data administration [TREQ-2] Administration of IO data by the VM [TREQ-3] Administration of IO employee data by the VM [TREQ-4] Administration of payment data by the VM [TREQ-5] Administration of access event data by the VM [TREQ-6] Administration of access event data to security-related RMI by the VM
2 – IT architecture	Describes requirements for the main IT components and interfaces at the different IT architectural levels. RMI requirements related to cluster IT architecture are — requirements for the conceptual architecture, — requirements for the implementation principles.	[TREQ-7] Conceptual architecture [TREQ-8] Implementation principles
3 – External interfaces	Describes the requirements for communication interfaces other than the user interface. RMI requirements related to cluster external interfaces are — requirements for the vehicle communication interface (VCI), — requirements for the trust centre (certificate management), — requirements for the parts ordering for security-related features, — requirements for the partnered accessory provider systems.	[TREQ- 9] Vehicle communication interface (VCI) [TREQ-10] Trust centre (certificate management) [TREQ-11] Parts ordering for security-related features [TREQ-12] Partnered accessory provider systems

Table 2 *(continued)*

# — Main title of cluster	Brief description	Technical requirements [TREQ] reference
4 – Technical infrastructure	Compatibility conditions, minimum requirements for components and Internet connection parameters to give an acceptable performance. This cluster intends to define minimal development guiding rules that shall be followed by the VM in order to ensure compatibility between VM RMI systems. Compatibility issues that may occur shall be managed by the Forum SERMI. This requirements cluster specifies the technical infrastructure recommendations which are — requirements related to type of device, — requirements related to hardware features, — requirements related to operating systems, runtime languages, libraries, — requirements related to Web browsers, — requirements related to presentation formats for information packages, — requirements related to internet connection, — requirements related to performance of the VM RMI system.	[TREQ-13] Type of device [TREQ-14] Hardware features [TREQ-15] Operating systems [TREQ-16] Web browsers [TREQ-17] Presentation formats for information packages [TREQ-18] Internet connection [TREQ-19] Performance of the VM RMI system
5 – Co-existence of VM software on IO client	This requirements cluster specifies the co-existence of VM software on the IO client. — requirements for installing VM-specific software on the IO client, — Requirements for updating VM-specific software on the IO client, — Requirements for the operation of VM-specific software on the IO client, — Requirements for the uninstalling of VM-specific software on the IO client, — Requirements for restoring in case of an abnormal termination of the VM-specific software on the IO client. The VM software shall be developed according to acknowledged quality criteria for the co-existence of VM applications installed on the client side.	[TREQ-20] Requirements for installing VM-specific software on the IO client [TREQ-21] Requirements for updating of installed VM data and applications on the IO client [TREQ-22] Requirements for the operation of VM-specific software on the IO client [TREQ-23] Requirements for the uninstalling of VM-specific software on the IO client [TREQ-24] Requirements for restoring in case of an abnormal termination of the VM-specific software on the IO client
6 – Operations	This requirements cluster specifies the RMI requirements related to the cluster operations are — requirements related to the VM RMI system availability time, — requirements related to the support for the usage of the VM RMI system, — requirements related to the operation of the IO PC.	[TREQ-25] VM RMI system availability time [TREQ-26] Support for the usage of the VM RMI system TREQ-27] Operation of the IO PC
7 – Functional user interface	This requirement cluster includes the reference to the functional user interface of the VM RMI system.	[TREQ-28] Requirements cluster "functional user interface"

6.8 Functional user interface requirements clusters

Figure 5 illustrates the functional user interface requirements clusters. The figure provides 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.

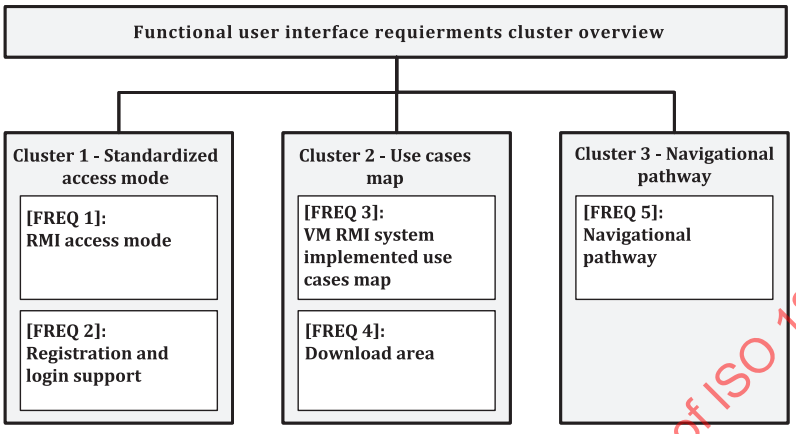


Figure 5 — Overview about functional user interface requirements clusters

Table 3 provides an overview of the main categories of standardized access to automotive RMI requirements.

Table 3 — 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 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. 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

6.9 Main conformance test case clusters

Table 4 defines the main conformance test case clusters.

Table 4 — Main conformance test case clusters

# — Main title of cluster	Brief description	Test case reference
1 – Test technical infrastructure	This cluster describes the test cases that check the behaviour of the VM RMI system to support the technical requirements i.e., client hardware and software installation and configuration is correct, as stated in TREQ-10 – TREQ-22.	[RMI-CT_TREQ-13, 14, 15, 16, 18, Annex A] Test client configuration, [RMI-CT_TREQ-17] Test presentation formats for information packages;
2 – Test client's external interfaces	This cluster describes the test cases that check the behaviour of the VM RMI system to support the technical requirements i.e., client communication to the vehicle, as stated in TREQ-8.	[RMI-CT_TREQ-9] Test vehicle communication , [RMI-CT_TREQ-10] Test parts ordering for security-related features, [RMI-CT_TREQ-12] Test partnered accessory provider systems;
3 – Test user authentication, authorization and administration	This cluster describes the test cases that check the behaviour of the VM RMI system to obtain a user license, to keep user data and access level up to date, to protect RMI against misuse and to access to the VM RMI system.	[RMI-CT_UC1.1] Test to register IO for use of the VM RMI system, [RMI-CT_UC1.2_A] Test to register IO employee for use of the VM RMI system – Scenario A, [RMI-CT_UC1.2_B] Test to register IO employee for use of the VM RMI system – Scenario B, [RMI-CT_UC1.3] Test to maintain IO status, [RMI-CT_UC1.4] Test to maintain user status, [RMI-CT_UC1.5] Test to de-register an IO employee, [RMI-CT_UC1.6] Test login to VM RMI system, [RMI-CT_UC1.7] Test for granting access to security-related RMI;
4 – Test functional user interface implementation	This cluster describes the test cases that check the behaviour of the VM RMI system to support the requirements of the functional user interface.	[RMI-CT_FREQ-1] Test for RMI access mode, [RMI-CT_FREQ-2] Test for registration and login support, [RMI-CT_FREQ-3] Test for implemented use cases map, [RMI-CT_FREQ-4] Test for download area, [RMI-CT_FREQ-5] Test for navigational pathway;
5 – Test payment for RMI	This cluster describes the test cases that check the behaviour of the VM RMI system to support the handling of payments.	[RMI-CT_UC2] Test payment for RMI;
6 –Test for vehicle identification	This cluster describes the test cases that test the behaviour of the VM RMI system to support the identification of a specific vehicle and type of vehicle.	[RMI-CT_UC3.2] Test vehicle idäentification via product features, [RMI-CT_UC3.3] Test vehicle identification through product identifier, [RMI-CT_UC3.4] Test unequivocal engine identification, [RMI-CT_UC3.5] Test engine type identification via engine features;

Table 4 *(continued)*

# — Main title of cluster	Brief description	Test case reference
7 – Test selection methods for RMI	This cluster describes the test cases that check the behaviour of the VM RMI system to support the selection methods — by information types, — by standardized terms, — by product structure, and — by document identifier.	[RMI-CT_UC4.1] Test selection of information type, [RMI-CT_UC4.2] Test search by standardized terms, [RMI-CT_UC4.3] Test navigation using product structure, [RMI-CT_UC4.4] Test selection by document identifier;
8 – Test retrieval of information packages	This cluster describes the test cases that check the behaviour of the VM RMI system to support the retrieval of selected repair and maintenance information packages — workshop procedures (for body repair, temporary repair, periodic technical inspection), — wiring diagrams, — technical service bulletins, — recall information, and — maintenance information.	[RMI-CT_UC5.1.1] Test retrieval of general workshop procedures, [RMI-CT_UC5.1.2] Test retrieval of body repair procedures, [RMI-CT_UC5.1.3] Test retrieval of temporary repair procedures, [RMI-CT_UC5.1.4] Test retrieval of preparation for PTI, [RMI-CT_UC5.2] Test retrieval of wiring diagrams, [RMI-CT_UC5.3] Test retrieval of technical service bulletin, [RMI-CT_UC5.4] Test retrieval of recall information, [RMI-CT_UC5.5] Test retrieval of maintenance schedule, [RMI-CT_UC5.6.1] Test retrieval of spare parts (identification, [RMI-CT_UC5.6.2] Test retrieval of spare parts (access) [RMI-CT_UC5.7.1] Test retrieval of accessory information factory fitted (included in general RMI), [RMI-CT_UC5.7.2] Test retrieval of accessory information partnered with a VM part number, [RMI-CT_UC5.7.3] Test retrieval of fitting information for accessories with no VM part number, [RMI-CT_UC5.8] Test retrieval of labour times, [RMI-CT_UC5.9] Test retrieval of converted vehicle information, [RMI-CT_UC5.10] Test retrieval of special tool information, [RMI-CT_UC5.11] Test type-approval related information;

Table 4 *(continued)*

# — Main title of cluster	Brief description	Test case reference
9 – Test vehicle diagnostics	This cluster describes the test cases that check the behaviour of DTC resolution, symptom resolution or integrated diagnostics.	[RMI-CT_UC6.1] Test DTC resolution, [RMI-CT_UC6.2] Test VM symptom resolution, [RMI-CT_UC6.3] Test integrated diagnostics;
10 – Test updating, replacing and tuning of modules (ECUs)	This cluster describes the test cases that check the behaviour of the VM RMI system to support the legitimate update or replacement of vehicle modules/ECUs to return to an operational state after repair or tuning with a VM application using a known VCI and approved by the VM which meet the standards required by legislation.	[RMI-CT_UC7.1] Test updating and replacing modules information;
11 – Test electronic maintenance history	This cluster describes the test cases that check the behaviour of the VM RMI system to get access and to update the history of VM prescribed maintenance actions for a specific vehicle as identified by the VIN.	[RMI-CT_UC8] Test electronic maintenance history information;
12 – Test repair assistance, technical support	This cluster describes the test cases that check the behaviour of the VM RMI system to get advice from the VM if repair assistance or technical support is needed.	[RMI-CT_UC9] Test repair assistance technical support information;
13 – Test request for contact information	This cluster describes the test cases that check the behaviour of the VM RMI system to support the request contact information in order to receive information about — electronic tool, — diagnostics, — VCI, — training material, and — etc.	[RMI-CT_UC10.1] Test for retrieval of electronic tool information (Diagnostic, Reprogramming, VCI), [RMI-CT_UC10.2] Test for retrieval of test equipment and diagnostic tool manufacturers information, [RMI-CT_UC10.3] Test for retrieval of training material (delegate information), [RMI-CT_UC10.4] Test for retrieval of redistributor contact information, [RMI-CT_UC10.5] Test for retrieval of republisher information, [RMI-CT_UC10.6] Test for retrieval of inspection and testing services information, [RMI-CT_UC10.8] Test for retrieval of engine and components remanufacturing information, [RMI-CT_UC10.9] Test for retrieval of component and parts manufacturer information, [RMI-CT_UC10.10] Test for retrieval of validation of independently developed non-proprietary VCI information;
14 – Test courses and training information	This cluster describes the test cases that check the behaviour of the VM RMI system to get information regarding training course availability (online or Web based training).	[RMI-CT_UC11] Test for courses and training information;

Table 4 *(continued)*

# — Main title of cluster	Brief description	Test case reference
15 – Test data administration requirements	This cluster describes the test cases that check whether the behaviour of the VM RMI system is managing data correctly.	[RMI-CT_TREQ-1] , [RMI-CT_TREQ-2] Test administration of IO data by the VM, [RMI-CT_TREQ-3] Test administration of IO employee data by the VM, [RMI-CT_TREQ-4] Test administration of payment data by VM, [RMI-CT_TREQ-5] Test administration of access event data by VM, [RMI-CT_TREQ-6] Test administration of access event data to security-related RMI by VM;
16 – Test VM software installation on the IO client	This cluster describes the test cases that check the behaviour of the VM RMI system to check that the VM software installed on the "off-the-shelf" PC behaves as expected.	[RMI-CT_TREQ-20] Test for requirements for installing VM-specific software on the IO client, [RMI-CT_TREQ-21] Test for requirements for updating of installed VM data and applications on the IO client, [RMI-CT_TREQ-22] Test for requirements for the operation of VM-specific software on the IO client, [RMI-CT_TREQ-23] Test for requirements for the uninstalling of VM-specific software on the IO client, [RMI-CT_TREQ-24] Test for requirements for restoring in case of an abnormal termination of the VM specific software on the IO client;
17 – Test VM RMI operations	This cluster describes the test cases that check the behaviour of the VM RMI system to check that the VM RMI system is operational except for scheduled maintenance downtime and whether the VM offers support for the usage of the VM RMI system.	[RMI-CT_TREQ-25] Test for VM RMI system availability time, [RMI-CT_TREQ-26] Test for support for the usage of the VM RMI system;
18 – Test trust centre (certificate management)	This cluster describes the test cases that check the behaviour of the VM RMI system to check that the client has installed the software driver to support the digital certificate and that the infrastructure processes the certificate content.	[RMI-CT_TREQ-10] Test for trust centre (certificate management)

7 Use cases

7.1 UC 1 User authentication, authorization and administration

7.1.1 UC 1.1 Register IO for use of the VM RMI system

This use case applies as specified in ISO 18541-1:2014.

7.1.2 UC 1.2 Register IO employee for use of the VM RMI system

This use case applies as specified in ISO 18541-1:2014.

7.1.3 UC 1.3 Maintain IO status

This use case applies as specified in ISO 18541-1:2014.

7.1.4 UC 1.4 Maintain user status

This use case applies as specified in ISO 18541-1:2014.

7.1.5 UC 1.5 Request to de-register IO employee

This use case applies as specified in ISO 18541-1:2014.

7.1.6 UC 1.6 Login to VM RMI system

This use case applies as specified in ISO 18541-1:2014.

7.1.7 UC 1.7 Grant access to security-related RMI

This use case applies as specified in ISO 18541-1:2014 with one modification.

As some manufacturers will not have security-related features in the stage they are responsible for the classification is changed.

Modified Classification: Mandatory if security-related RMI exists.

7.2 UC 2 Payment for RMI

This use case applies as specified in ISO 18541-1:2014.

7.3 UC 3 Vehicle identification

7.3.1 UC 3.1 Vehicle identification through use of the VIN

This use case does not apply for vehicles and engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer. It is replaced by the use cases specified in Clauses 7.3.3, 7.3.4, and 7.5.11.

7.3.2 UC 3.2 Vehicle type identification via product features

This use case applies as specified in ISO 18541-1:2014 for manufacturers of vehicles with a modification. The use cases in footnote a of the use case UC 3.2 in ISO 18541-1:2014 that are not applicable to heavy duty vehicles according to this document are removed from the list.

This use case does not apply for manufacturers of engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer. For these manufacturers 7.3.5 applies.

7.3.3 UC 3.3 Vehicle identification through product identifier

Table 5 specifies the applicable use case to meet the requirements.

Table 5 — UC 3.3 Vehicle identification through product identifier

Actor	Independent Operator
Goal	Unequivocal vehicle identification and summary.
Use case input	— VIN — Body identification number (optional)

Table 5 *(continued)*

Use case output	— Vehicle or vehicle stage model — Product features — Factory fitted or later added vehicle options as documented in the manufacturer's system — Identified vehicle or vehicle stage for further RMI system use purposes
Brief description	After entering the VIN and optionally the body identification number for completed vehicles, the RMI system displays the output and memorizes the identified vehicle or vehicle stage for use in subsequent use cases during the session. If a VIN entered is not applicable then a notification to the user shall be provided. The following describes the use case output responsibility dependent on the vehicle type-approval method. Case 1: — The complete vehicle is type approved by a single vehicle manufacturer. This manufacturer shall take the responsibility for providing the use case output for the complete vehicle. Case 2: — The vehicle is type approved by more than a single vehicle manufacturer, multi-stage type-approval. Each manufacturer shall take the responsibility for providing the use case output for that manufacturers own type-approval stage.
Classification	Mandatory for a manufacturer of type-approved heavy duty vehicles

7.3.4 UC 3.4 Unequivocal engine identification

Table 6 specifies the applicable use case to meet the requirements.

Table 6 — UC 3.4 Unequivocal engine identification

Actor	Independent Operator
Goal	Unequivocal engine identification and summary.
Use case input	— Engine number — VIN (as an alternative to the engine number, if available to the engine manufacturer)
Use case output	— Engine type — Engine features — Identified engine for further RMI system use purposes
Brief description	After entering the engine number or alternatively the VIN (if available to the engine manufacturer), the RMI system displays the output and memorizes the identified engine for use in subsequent use cases during the session. If an engine number or VIN entered is not applicable then a notification to the user shall be provided.
Classification	Mandatory for a manufacturer of engines, type-approved as separate technical units, that are supplied to another next stage vehicle manufacturer

7.3.5 UC 3.5 Engine type identification via engine features

Table 7 specifies the applicable use case to meet the requirements.

Table 7 — UC 3.5 Engine type identification via engine features

Actor	Independent Operator
Goal	Identification of an engine type or types.
Use case input	Product features selection filter e.g. — Model — Power rating — Number of cylinders — Emission class
Use case output	Identified engine type or types according to selected features for subsequent VM RMI system use purposes.
[a] Information types accessible with Product Features and applicable to engines are specified in the following use cases: UC 5.1.1 General workshop procedures UC 5.1.3 Temporary repair procedures UC 5.2 Wiring diagrams UC 5.3 Technical service bulletin (if provided to AR via Product Features) UC 5.5 Maintenance schedule UC 5.6.1 Spare parts (identification) UC 5.6.2 Spare parts (access) UC 5.8 Labour times UC 6.2 VM symptom resolution (only if provided to the AR) [b] Information types that explicitly require engine number or VIN input are UC 5.4 Recall information UC 6.1 DTC resolution UC 6.3 Integrated diagnostics UC 7.1 Updating and replacing modules	

Table 7 *(continued)*

Brief description	The VM RMI system behaviour depends on the policy followed by the VM regarding engine feature support for authorised repairers. — For a VM RMI system that offers engine features The VM RMI system from a VM that offers engine features to its authorised repairers presents information types according to the selection filter set by the IO. The access shall be possible for the information types specified in the following use cases according to the use case classification, except for those use cases that explicitly require engine number or VIN inputb. The identified engine type or types is/are noted by the VM RMI system, so that in subsequent Use Cases the requested information can be provided for this engine type or types. — For a VM RMI system that does not offer engine features The VM RMI system from a VM that does not offer engine features to its authorised repairers enables access to information related to selected engine features for an IO that is registered as an IO commercial re-user and that has completed a declaration of intent (template). An extended contract may be needed for republishing of RMI in their products and services. The access shall be possible for the information types specified in the following use casesa according to the use case classification, except for those use cases that explicitly require engine number or VIN inputb. The offered mechanism to enable this access is VM specific. The identified engine type or types is/are noted by the VM RMI system, so that in subsequent Use Cases the requested information can be provided for this engine type or types.
Classification	Mandatory for a manufacturer of engines, type-approved as separate technical units, that are supplied to another next-stage vehicle manufacturer

[a] Information types accessible with Product Features and applicable to engines are specified in the following use cases:

UC 5.1.1 General workshop procedures

UC 5.1.3 Temporary repair procedures

UC 5.2 Wiring diagrams

UC 5.3 Technical service bulletin (if provided to AR via Product Features)

UC 5.5 Maintenance schedule

UC 5.6.1 Spare parts (identification)

UC 5.6.2 Spare parts (access)

UC 5.8 Labour times

UC 6.2 VM symptom resolution (only if provided to the AR)

[b] Information types that explicitly require engine number or VIN input are

UC 5.4 Recall information

UC 6.1 DTC resolution

UC 6.3 Integrated diagnostics

UC 7.1 Updating and replacing modules

7.4 UC 4 Provide selection methods for RMI

7.4.1 UC 4.1 Select information type

This use case applies as specified in ISO 18541-1:2014.

7.4.2 UC 4.2 Search by standardized terms

This use case applies as specified in ISO 18541-1:2014.

7.4.3 UC 4.3 Navigate using product structure

This use case applies as specified in ISO 18541-1:2014.

7.4.4 UC 4.4 Select by document identifier

This use case applies as specified in ISO 18541-1:2014.

7.5 UC 5 Retrieve information packages

7.5.1 UC 5.1 Workshop procedures

7.5.1.1 UC 5.1.1 General workshop procedures

This use case applies as specified in ISO 18541-1:2014.

7.5.1.2 UC 5.1.2 Body repair procedures

This use case applies as specified in ISO 18541-1:2014.

This use case does not apply for manufacturers of engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer.

NOTE In heavy duty the term body can be used in two different meanings: as cab, chassis and bodyworks, or as a set of components added to a vehicle as part of the multi-stage process.

This use case refers to the first meaning.

7.5.1.3 UC 5.1.3 Temporary repair procedures

This use case applies as specified in ISO 18541-1:2014 with one modification.

In the input the sentence is added after Vehicle identification: “alternatively engine identification for manufacturers of engines, type-approved as separate technical units that are supplied to a next stage vehicle manufacturer”.

7.5.1.4 UC 5.1.4 Preparation for PTI

This use case applies as specified in ISO 18541-1:2014.

This use case does not apply for manufacturers of engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer.

7.5.2 UC 5.2 Wiring diagrams

This use case applies as specified in ISO 18541-1:2014 with one modification.

As some manufacturers will not have electric / electronic features in the stage they are responsible for the classification is changed.

Modified Classification: Mandatory if this RMI exists

7.5.3 UC 5.3 Technical service bulletin

This use case applies for heavy duty vehicles as specified in ISO 18541-1:2014 with two modifications.

In the input the sentence is added after VIN: “alternatively engine number for manufacturers of engines, type-approved as separate technical units that are supplied to a next stage vehicle manufacturer”.

As some manufacturers will not have technical service bulletins in the stage they are responsible for the classification is changed.

Modified Classification: Mandatory if this RMI exists.

7.5.4 UC 5.4 Recall information

This use case applies for heavy duty vehicles as specified in ISO 18541-1:2014 with one modification.

In the input the sentence is added after VIN: “alternatively engine number for manufacturers of engines, type-approved as separate technical units that are supplied to a next stage vehicle manufacturer”.

7.5.5 UC 5.5 Maintenance schedule

This use case applies as specified in ISO 18541-1:2014 with one modification.

In the input the sentence is added after VIN: “alternatively engine number for manufacturers of engines, type-approved as separate technical units that are supplied to a next stage vehicle manufacturer”.

7.5.6 UC 5.6 Spare parts

7.5.6.1 UC 5.6.1 Spare parts (identification)

This use case applies as specified in ISO 18541-1:2014.

7.5.6.2 UC 5.6.2 Spare parts (access)

This use case applies as specified in ISO 18541-1:2014.

7.5.7 UC 5.7 Accessories

7.5.7.1 UC 5.7.1 Accessory information factory fitted (included in general RMI)

This use case applies as specified in ISO 18541-1:2014.

This use case does not apply for manufacturers of engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer.

7.5.7.2 UC 5.7.2 Accessory information partnered with a VM part number

This use case applies as specified in ISO 18541-1:2014.

This use case does not apply for manufacturers of engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer.

7.5.7.3 UC 5.7.3 Fitting information for accessories with no VM part number

This use case applies as specified in ISO 18541-1:2014.

This use case does not apply for manufacturers of engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer.

7.5.8 UC 5.8 Labour times

This use case applies as specified in ISO 18541-1:2014.

7.5.9 UC 5.9 Converted vehicles

This use case applies as specified in ISO 18541-1:2014.

7.5.10 UC 5.10 Special tools

This use case applies as specified in ISO 18541-1:2014.

7.5.11 UC 5.11 Type-approval related information

Table 8 specifies the applicable use case to meet the requirements.

Table 8 — UC 5.11 Type-approval related information

Actor	Independent Operator
Goal	Access to type-approval related information
Use case input	— VIN or engine number — Request type-approval related information
Use case output	— Type-approval number of the product type the manufacturer is responsible for. A manufacturer responsible for a particular subsequent stage of a multi-stage type-approved vehicle shall provide in addition: — Website address of the manufacturer or manufacturers responsible for the previous stage or stages The final manufacturer of a multi-stage type-approved vehicle shall provide in addition: — Name and address of the manufacturer or manufacturers responsible for the previous stage or stages — Type-approval number of the previous stage or stages — Engine number (directly or via a link to the relevant previous manufacturer)
Brief description	The RMI system displays the type-approval related information relevant to the manufacturer's product.
Classification	Mandatory

7.6 UC 6 Vehicle diagnostics

7.6.1 UC 6.1 DTC resolution

This use case applies as specified in ISO 18541-1:2014 with two modifications.

In the input the sentence is added after VIN: "alternatively engine number for manufacturers of engines, type-approved as separate technical units that are supplied to a next stage vehicle manufacturer".

As some manufacturers will not have DTC in the stage they are responsible for the classification is changed.

Modified Classification: Mandatory if this RMI exists.

7.6.2 UC 6.2 VM symptom resolution

This use case applies as specified in ISO 18541-1:2014 with two modifications.

In the input the sentence is added after VIN: "alternatively engine number for manufacturers of engines, type-approved as separate technical units that are supplied to a next stage vehicle manufacturer".

As some manufacturers will not support symptoms in the stage they are responsible for the classification is changed.

Modified Classification: Mandatory if this RMI exists.

7.6.3 UC 6.3 Integrated diagnostics

This use case applies as specified in ISO 18541-1:2014 with one modification.

In the input the sentence is added after VIN: “alternatively engine number for manufacturers of engines, type-approved as separate technical units that are supplied to a next stage vehicle manufacturer”.

7.7 UC 7 Updating, replacing and tuning of modules (ECUs)

7.7.1 UC 7.1 Updating and replacing modules

This use case applies as specified in ISO 18541-1:2014 with the following modifications:

— In Use case input replace "VIN" with "VIN selection or engine number selection for manufacturers of engines, type-approved as separate technical units that are supplied to a next stage vehicle manufacturer";

— In Brief description replace "(As defined in Part 2 of ISO 18541)" with "as defined in 8.3.1 TREQ- 9 Vehicle communication interface (VCI)".

7.7.2 UC 7.2 Tuning kit

This use case does not apply for vehicles and engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer.

7.8 UC 8 Electronic maintenance history

This use case applies as specified in ISO 18541-1:2014.

This use case does not apply for manufacturers of engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer.

7.9 UC 9 Repair assistance technical support

This use case applies as specified in ISO 18541-1:2014.

7.10 UC 10 Request contact for specific RMI

7.10.1 UC 10.1 Electronic tool information (Diagnostic, Reprogramming, VCI)

This use case applies as specified in ISO 18541-1:2014.

7.10.2 UC 10.2 Test equipment and diagnostic tool manufacturers

This use case applies as specified in ISO 18541-1:2014.

7.10.3 UC 10.3 Training material (delegate information)

This use case applies as specified in ISO 18541-1:2014.

7.10.4 UC 10.4 Redistributors

This use case applies as specified in ISO 18541-1:2014.

7.10.5 UC 10.5 Republishers

This use case applies as specified in ISO 18541-1:2014.

7.10.6 UC 10.6 Inspection and testing services

This use case applies as specified in ISO 18541-1:2014.

7.10.7 UC 10.7 Alternative fuels retrofit systems

This use case does not apply for vehicles and engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer.

7.10.8 UC 10.8 Engine and components remanufacturing

This use case applies as specified in ISO 18541-1:2014 with one modification.

Modified Classification: Mandatory if this RMI exists.

7.10.9 UC 10.9 Component and parts manufacturers

This use case applies as specified in ISO 18541-1:2014.

7.10.10 UC 10.10 Validation of independently developed non-proprietary VCIs

This use case applies as specified in ISO 18541-1:2014.

This use case does not apply for manufacturers of engines that are type-approved as separate technical units and supplied to another next stage vehicle manufacturer.

7.11 UC 11 Courses and training information

This use case applies as specified in ISO 18541-1:2014.

8 Technical requirements

8.1 Requirements cluster — Access-related data administration

8.1.1 [TREQ-1] General access-related data administration

This requirement applies as specified in ISO 18541-2:2014.

8.1.2 [TREQ-2] Administration of IO data by the VM

This requirement applies as specified in ISO 18541-2:2014.

8.1.3 [TREQ-3] Administration of IO employee data by the VM

This requirement applies as specified in ISO 18541-2:2014.

8.1.4 [TREQ-4] Administration of payment data by the VM

This requirement applies as specified in ISO 18541-2:2014.

8.1.5 [TREQ-5] Administration of access event data by the VM

This requirement applies as specified in ISO 18541-2:2014.

8.1.6 [TREQ-6] Administration of access event data to security-related RMI by the VM

This requirement applies as specified in ISO 18541-2:2014.

8.2 Requirements cluster — IT architecture

8.2.1 [TREQ-7] Conceptual architecture

This requirement applies as specified in ISO 18541-2:2014.

8.2.2 [TREQ-8] Implementation principles

This requirement applies as specified in ISO 18541-2:2014.

8.3 Requirements cluster — External interfaces

8.3.1 [TREQ- 9] Vehicle communication interface (VCI)

This requirement applies as specified in ISO 18541-2:2014 with the following modifications:

— In the requirement definition, insert the additional standard "TMC RP1210B" before "ISO 22900-2 D-PDU API";

— In the requirement definition, replace "use case 6.3" with "clause 7.6.3".

8.3.2 [TREQ-10] Trust centre (certificate management)

This technical requirement applies as specified in ISO 18541-2:2014.

8.3.3 [TREQ-11] Parts ordering for security-related features

This technical requirement applies as specified in ISO 18541-2:2014.

8.3.4 [TREQ-12] Partnered accessory provider systems

This technical requirement applies as specified in ISO 18541-2:2014.

8.4 Requirements cluster — Technical infrastructure

8.4.1 [TREQ-13] Type of device

This technical requirement applies as specified in ISO 18541-2:2014.

8.4.2 [TREQ-14] Hardware features

This technical requirement applies as specified in ISO 18541-2:2014.

8.4.3 [TREQ-15] Operating systems

This technical requirement applies as specified in ISO 18541-2:2014.

8.4.4 [TREQ-16] Web browsers

This technical requirement applies as specified in ISO 18541-2:2014.

8.4.5 [TREQ-17] Presentation formats for information packages

This technical requirement applies as specified in ISO 18541-2:2014.

8.4.6 [TREQ-18] Internet connection

This technical requirement applies as specified in ISO 18541-2:2014.

8.4.7 [TREQ-19] Performance of the VM RMI system

This technical requirement applies as specified in ISO 18541-2:2014.

8.5 Requirements cluster — Co-existence of VM software installed on IO client

8.5.1 [TREQ-20] Requirements for installing VM-specific software on the IO client

This technical requirement applies as specified in ISO 18541-2:2014.

8.5.2 [TREQ-21] Requirements for updating of installed VM data and applications on the IO client

This technical requirement applies as specified in ISO 18541-2:2014.

8.5.3 [TREQ-22] Requirements for the operation of VM-specific software on the IO client

This technical requirement applies as specified in ISO 18541-2:2014.

8.5.4 [TREQ-23] Requirements for the uninstalling of VM-specific software on the IO client

This technical requirement applies as specified in ISO 18541-2:2014.

8.5.5 [TREQ-24] Requirements for restoring in case of an abnormal termination of the VM-specific software on the IO client

This technical requirement applies as specified in ISO 18541-2:2014.

8.6 Requirements cluster — Operations

8.6.1 [TREQ-25] VM RMI system availability time

This technical requirement applies as specified in ISO 18541-2:2014.

8.6.2 [TREQ-26] Support for the usage of the VM RMI system

This technical requirement applies as specified in ISO 18541-2:2014.

8.6.3 [TREQ-27] Operation of the IO PC

This technical requirement applies as specified in ISO 18541-2:2014.

8.6.4 [TREQ-28] Requirements cluster "functional user interface"

This technical requirement does not apply as specified in ISO 18541-2:2014.

In the requirement definition “ISO 18541-3:2014” is replaced by “clause 9”.

8.7 ISO 18541-2:2014, Annex A

Applies as specified in ISO 18541-2:2014.

9 Functional user interface requirements

9.1 Requirements cluster 1 — Standardized access mode

9.1.1 VM RMI system standardized navigation

The VM RMI system standardized navigation applies as described in ISO 18541-3:2014, 5.3.

9.1.2 [FREQ-1] RMI access mode

This requirement applies as specified in ISO 18541-3:2014.

9.1.3 [FREQ-2] Registration and login support

This requirement applies as specified in ISO 18541-3:2014.

9.2 Requirements cluster 2 — Use cases map

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

Figure 6 illustrates the "use cases map". The use cases map displays the use cases defined in Clause 7. 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 Clause 7. 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 Clause 7.

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.

NOTE Figure 6 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.

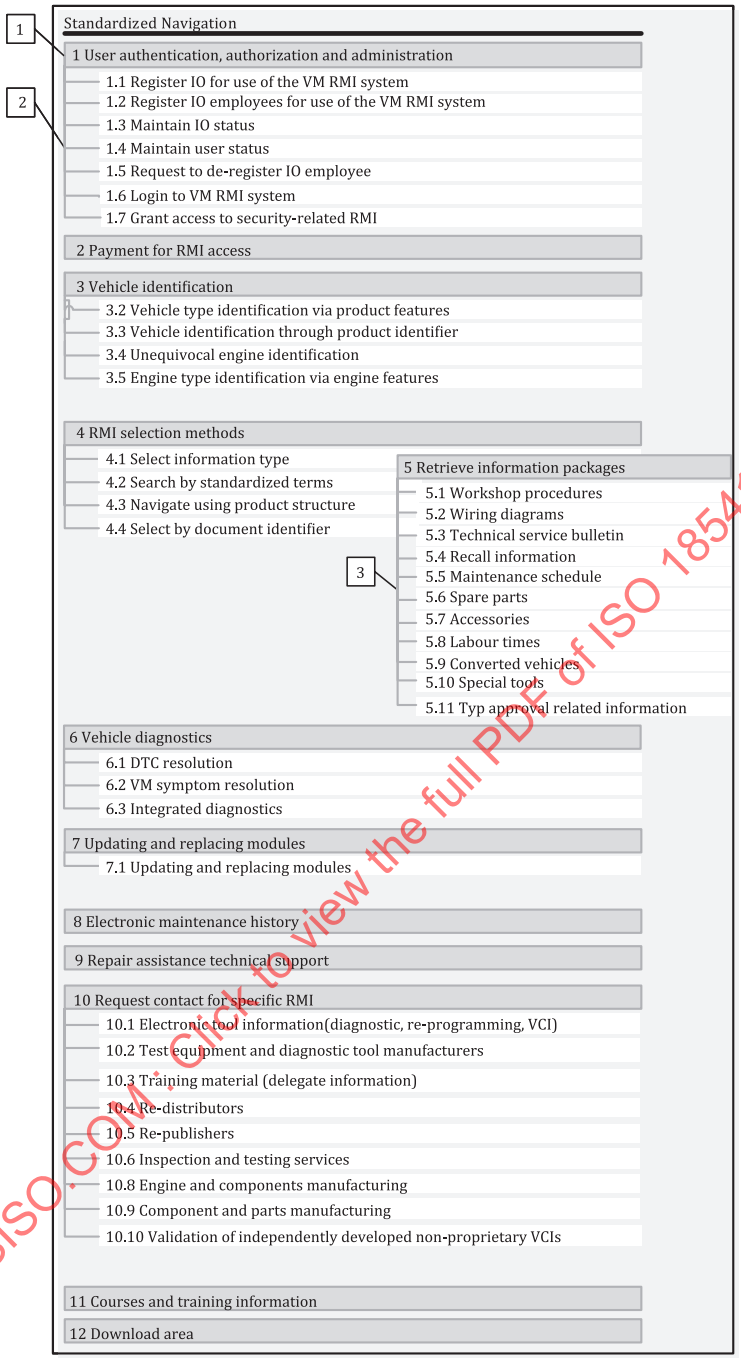


Figure 6 — VM RMI system implemented use cases map

9.2.2 [FREQ-4] Download area

This requirement applies as specified in ISO 18541-3:2014.

9.3 Requirements cluster 3 — Navigational pathway

9.3.1 [FREQ-5] Navigational pathway

This requirement applies as specified in ISO 18541-3:2014.

10 Conformance test cases

10.1 CT cluster 1 — Test technical infrastructure

10.1.1 [RMI-CT_TREQ-13, 14, 15, 16, 18, Annex A] Test client configuration

This test case applies as specified in ISO 18541-4:2015.

10.1.2 [RMI-CT_TREQ-17] Test presentation formats for information packages

This test case applies as specified in ISO 18541-4:2015.

10.2 CT cluster 2 — Test client's external interfaces

10.2.1 [RMI-CT_TREQ-9] Test vehicle communication interface

This test case applies as specified in ISO 18541-4:2015 using the details of the modified TREQ-9 in 8.3.1.

10.2.2 [RMI-CT_TREQ-11] Test parts ordering for security-related features

This test case applies as specified in ISO 18541-4:2015.

10.2.3 [RMI-CT_TREQ-12] Test partnered accessory provider systems

This test case applies as specified in ISO 18541-4:2015.

10.3 CT cluster 3 — Test user authentication, authorization and administration

10.3.1 [RMI-CT_UC1.1] Test to register IO for use of the VM RMI system

This test case applies as specified in ISO 18541-4:2015.

10.3.2 [RMI-CT_UC1.2_A] Test to register IO employee for use of the VM RMI system — Scenario A

This test case applies as specified in ISO 18541-4:2015.

10.3.3 [RMI-CT_UC1.2_B] Test to register IO employee for use of the VM RMI system — Scenario B

This test case applies as specified in ISO 18541-4:2015.

10.3.4 [RMI-CT_UC1.3] Test to maintain IO status

This test case applies as specified in ISO 18541-4:2015.

10.3.5 [RMI-CT_UC1.4] Test to maintain user status

This test case applies as specified in ISO 18541-4:2015.

10.3.6 [RMI-CT_UC1.5] Test to de-register an IO employee

This test case applies as specified in ISO 18541-4:2015.

10.3.7 [RMI-CT_UC1.6] Test login to VM RMI system

This test case applies as specified in ISO 18541-4:2015.