



BSI Standards Publication

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

Part 6: L-Category vehicle specific RMI use cases and requirements

National foreword

This British Standard is the UK implementation of EN ISO 18541-6:2018. It is identical to ISO 18541-6:2018.

The UK participation in its preparation was entrusted to Technical Committee AUE/20, Vehicle on-board diagnostics, repair and maintenance information.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

**Road vehicles - Standardized access to automotive repair
and maintenance information (RMI) - Part 6: L-Category
vehicle specific RMI use cases and requirements (ISO
18541-6:2018)**

Véhicules routiers - Normalisation de l'accès
aux informations relatives à la réparation et à
la maintenance pour l'automobile (RMI) - Partie
6: Exigences et cas d'usage RMI spécifiques aux
véhicules de catégorie L (ISO 18541-6:2018)

Straßenfahrzeuge - Standardisierter Zugang
zur Reparatur und Wartungsinformationen
(RMI) - Teil 6: Spezifische RMI Anwendungsfälle
und Anforderungen für L-Kategorie
Fahrzeuge (ISO 18541-6:2018)

This European Standard was approved by CEN on 14 December 2016.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

This document (EN ISO 18541-6:2018) has been prepared by Technical Committee ISO/TC 22 "Road vehicles" in collaboration with Technical Committee CEN/TC 301 "Road vehicles", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2018, and conflicting national standards shall be withdrawn at the latest by August 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 18541-6:2018 has been approved by CEN as EN ISO 18541-6:2018 without any modification.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

For an explanation 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.

This document was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 301, *Road vehicles* in collaboration with ISO/TC 22, *Road vehicles*, Subcommittee SC 31, *Data communication*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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

This corrected version of ISO 18541-6:2018 incorporates the following corrections:

- Figure 9 has been replaced with the correct figure.

Introduction

This document includes the requirements to be fulfilled by Repair and Maintenance Information (RMI) systems as applied by Reference [6].

This mandate relates to the EC type-approval system for vehicles falling into the scopes of Reference [9], Reference [7] and Reference [8] and, in particular, to requirements for access to vehicle repair and maintenance information by independent operators.

The purpose of Reference [6] 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.

This document covers the access to repair and maintenance information for L-category vehicles (two-wheel or three-wheel vehicles and quadricycles) based on Reference [11] and related delegated and implementing acts.

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.

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

Part 6:

L-Category vehicle specific RMI use cases and requirements

1 Scope

This document contains all elements (definitions, use cases, technical requirements, functional user interfaces requirements and conformance test cases) applicable for the standardized access to repair and maintenance information for two-wheeled and three-wheeled vehicles and quadricycles (L-category vehicles)

The development of this document has been based on [ISO 18541-1](#), [ISO 18541-2](#), [ISO 18541-3](#) and [ISO 18541-4](#). This document constitutes an adaptation of standardized access to RMI prescriptions for passenger cars to L-category vehicles keeping the objectives and principles of the mandate M/421 from the European commission.

This document references the usage of a Digital Annex of standardized search terms for RMI. The provision of such a Digital Annex will follow the process described in ISO 18542.

CEN will nominate a Registration Authority according to ISO 18542 for the creation and maintenance of an appropriate Digital Annex.

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 22900-2](#), *Road vehicles — Modular vehicle communication interface (MVCI) — Part 2: Diagnostic protocol data unit application programming interface (D-PDU API)*

SAE J2534-1¹⁾, *Recommended Practice for Pass-Thru Vehicle Programming*

SAE J2534-2¹⁾, *Optional Pass-Thru Features*

1) <http://store.sae.org/>

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions 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 <http://www.iso.org/obp>

3.1.1

access levels

one of the levels of access to RMI

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

EXAMPLE One can consider an access to RMI relevant to security and another one to RMI not relevant to security. They represent two different access levels.

3.1.2

accessories

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

3.1.3

alternate fuel

type of fuel that is either gaseous at atmospheric temperature and pressure or substantially non-mineral oil derived

3.1.4

alternative fuels retrofit systems

engine systems mounted on an already registered *vehicle* (3.1.54) for the purpose of operation with alternative fuels

3.1.5

alternative fuels system manufacturer

manufacturer (3.1.29) of an engine system operating with an alternative fuel

3.1.6

appropriate software level

applicable software version for the individual *vehicle* (3.1.54)

3.1.7

authorized repairer

AR

provider of repair and maintenance services for motor vehicles operating within the distribution system set up by a supplier of motor vehicles

Note 1 to entry: See Reference [10].

3.1.8

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* (3.1.18).

3.1.9

certificate

electronic document which uses a digital signature to bind a public key with an identity

3.1.10

complete vehicle

vehicle (3.1.54) which needs not to be completed in order to meet the relevant technical requirements for type-approval in the European Union

Note 1 to entry: Adopted from Reference [11].

Note 2 to entry: Requirements for European type-approval may be in Reference [11] or in any of the delegated or implementing acts adopted pursuant to this Regulation where those acts make express provision for so doing.

3.1.11

completed vehicle

vehicle (3.1.54), resulting from the process of multi-stage type-approval, which meets the relevant technical requirements for type-approval in the European Union

Note 1 to entry: A completed vehicle is also a *complete vehicle* (3.1.10).

Note 2 to entry: Adopted from Reference [11].

Note 3 to entry: Requirements for European type-approval may be in Reference [11] or in any of the delegated or implementing acts adopted pursuant to this Regulation where those acts make express provision for so doing.

3.1.12

component

device subject to the requirements for type-approval in the European Union or any of the delegated or implementing acts adopted pursuant to this Regulation, which is intended to be part of a *vehicle* (3.1.54) and which can be type-approved independently of a vehicle in accordance with this Regulation and the delegated or implementing acts adopted pursuant to this Regulation where those acts make express provision for so doing

Note 1 to entry: Adopted from Reference [11].

Note 2 to entry: Requirements for European type-approval may be in Reference [11] or in any of the delegated or implementing acts adopted pursuant to this Regulation where those acts make express provision for so doing.

3.1.13

detailed diagnosis

diagnostic process that identifies, with precision, potential malfunction causes

Note 1 to entry: A precise diagnosis may be achieved in several steps, whereby the user may be requested to perform test actions on the vehicle or to enter symptoms.

3.1.14

diagnostic information

description of an error or symptom and a list of potential causes or hints for further investigation to the same level and content as provided to AR

3.1.15

diagnostic trouble code

DTC

numeric or alphanumeric identifier which identifies or labels a malfunction[SOURCE: Reference [12], modified]

3.1.16

electronic maintenance history

digital *information package* (3.1.23) with virtual stamps that confirms the execution of the prescribed maintenance actions according to the VM's schedule

3.1.17

final manufacturer

manufacturer (3.1.29) responsible for the type approval of a *complete vehicle* (3.1.10) or *completed vehicle* (3.1.11) in a multi-stage type-approval

3.1.18

incomplete vehicle

vehicle ([3.1.54](#)) which undergoes at least one further stage of completion in order to meet the relevant technical requirements for type-approval in the European Union

Note 1 to entry: Adopted from Reference [[11](#)].

Note 2 to entry: The technical requirements for type-approval in the European Union may be in Reference [[11](#)] or in any of the delegated or implementing acts adopted pursuant to this Regulation where those acts make express provision for so doing.

3.1.19

independent operator

IO

undertakings other than authorized dealers and repairers which are directly or indirectly involved in the repair and maintenance of motor vehicles, in particular repairers, *manufacturers* ([3.1.29](#)) or distributors of repair equipment, tools or spare parts, publishers of technical information, automobile clubs, roadside assistance operators, operators offering inspection and testing services, operators offering training for installers, manufacturers and repairers of equipment for alternative fuel vehicles

Note 1 to entry: Undertaking is to be understood as the company or legal entity.

3.1.20

IO approval

process by which, upon payment of a reasonable and proportionate fee, the CAB sanctions or approves a legitimate commercial enterprise to engage in security-related RMI activities

3.1.21

IO authorization

process based on the inspection performed by the CAB that assesses an individual employee of an approved IO company is entitled to be given access to security-related RMI and to be provided with a secure hardware token containing a personal digital certificate and a PIN issued by a designated Trust Center

Note 1 to entry: As part of this authorization, the individual employee will be allocated, upon payment of a (reasonable and proportionate) fee, a secure hardware token containing a personal digital *certificate* ([3.1.9](#)) and a PIN that will be supplied by the Trust Centre.

3.1.22

IO legal representative

natural person empowered to legally represent the IO in all aspects of the access to vehicle RMI

3.1.23

information package

collection of information provided by the *MA RMI system* ([3.1.30](#)) in response to a specific request

3.1.24

information type

category, group or set of information

EXAMPLE *Workshop procedures* ([3.1.57](#)) (for body repair, temporary repair, periodic technical inspection), wiring diagrams, *technical service bulletins* ([3.1.52](#)), recall information and maintenance information.

3.1.25

integrated diagnostics

process which interprets via an integrated application the memory content of ECUs and provides a diagnostic and repair recommendation

Note 1 to entry: Diagnostic application and *MA RMI system* ([3.1.30](#)) cooperate online, so technical information is provided during the diagnostics process and used for the diagnostic steps.

3.1.26

IO employee

natural person employed by the *IO* ([3.1.19](#))

3.1.27

maintenance history

history of the performed, prescribed actions for maintaining a *vehicle* ([3.1.54](#))

EXAMPLE Oil changes and other periodic maintenance.

3.1.28

maintenance schedule

prescribed sequence of maintenance actions for a *vehicle* ([3.1.54](#)) following the requirements of the *manufacturer* ([3.1.29](#))

3.1.29

manufacturer

MA

any natural or legal person who is responsible to the approval authority for all aspects of the type-approval or authorisation process, for ensuring conformity of production and who is also responsible for market surveillance concerns for the *vehicles* ([3.1.54](#)), systems, *components* ([3.1.12](#)) and *separate technical units* ([3.1.49](#)) produced, whether or not the natural or legal person is directly involved in all stages of the design and construction of the vehicle, system, component or separate technical unit which is the subject of the approval process[SOURCE: Reference [\[11\]](#), modified]

3.1.30

manufacturer repair and maintenance information system

MA RMI system

information system by which the *manufacturer* ([3.1.29](#)) provides access to RMI through a website

3.1.31

multi-stage vehicle

complete vehicle ([3.1.10](#)) manufactured and type-approved in two or more stages by usually different *manufacturers* ([3.1.29](#)) per stage

3.1.32

on-board diagnostics

OBD

system on board of a *vehicle* ([3.1.54](#)) 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

3.1.33

p-code

standardized DTC for powertrain errors

Note 1 to entry: According to [ISO 15031-6](#).

3.1.34

partnered accessories

accessories ([3.1.2](#)) which have been tested, quality assured and certified by the *MA* ([3.1.29](#)) and for which the MA assumes product liability

3.1.35

potential repair descriptions

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

3.1.36

product identifier

manufacturer (3.1.29)-specific code or number to identify a system, *component* (3.1.12) or *separate technical unit* (3.1.49)

Note 1 to entry: Vehicle manufacturers identify their product by the *vehicle identification number (VIN)* (3.1.56).

3.1.37

product features

features of a specific *vehicle* (3.1.54) that may be used for navigation through the *MA RMI system* (3.1.30)

EXAMPLE Model name (CBR1000RR), model code (SC59), model year, ccm (1 000) engine type (two stroke cycle, four stroke cycle, etc.), transmission type (manual/automatic/CVT), final drive type (chain, shaft drive, belt, etc.).

3.1.38

product structure

inter-related set of units and sub-units in which a *vehicle* (3.1.54) can be divided

Note 1 to entry: The product structure is *manufacturer* (3.1.29)-specific.

3.1.39

periodic technical inspection service

PTI service

particular procedure for testing a *vehicle* (3.1.54) during a PTI

EXAMPLE Procedure for testing brake lights.

3.1.40

recall

process where a *MA* (3.1.29) notifies all owners of a specific *vehicle* (3.1.54) of a condition or defect that could affect safety, safe operation or environmental issues of the vehicle

3.1.41

redistributor

IO offering RMI within their own internal (closed) network

EXAMPLE RAC, ADAC, garage networks.

3.1.42

remanufacturing

process of overhauling an engine, major assembly or *component* (3.1.12), to return the engine, major assembly or component to the *MA* (3.1.29) original specification

3.1.43

repair and maintenance information

RMI

all information required for diagnosis, servicing, inspection, periodic monitoring, repair, re-programming or re-initialising of a *vehicle* (3.1.54) and which *manufacturers* (3.1.29) provide to their authorized dealers and repairers, including all subsequent amendments and supplements to such information

Note 1 to entry: That information includes all information required for fitting of parts and equipment on vehicles.

[SOURCE: Reference [11], modified]

3.1.44

republisher

IO who publishes RMI to an external network using the RMI of the *MA* (3.1.29)

3.1.45 security framework

set of processes, roles and technical devices for access to security-related RMI recommended by the EC Forum on Vehicle RMI to the EC as mandated in Reference [11]

Note 1 to entry: The framework is based on the approval and authorization of *independent operators* (3.1.19) by certified entities to access *security-related RMI* (3.1.46) at the *MA RMI system* (3.1.30). The physical access to the MA RMI system for security-related RMI is bound to a digital *certificate* (3.1.9).

3.1.46 security-related RMI

RMI subject to protection measures in the *security framework* (3.1.45)

3.1.47 security repair and maintenance information SERMI

de-facto association founded by *IO* (3.1.19) and *MA* (3.1.29) organisations to act as the owner for the process and scheme defined in the *EC Forum for Access to Vehicle RMI, Report on Access to security-related RMI, version 1.1*

3.1.48 selection methods

possible methods to select RMI

EXAMPLE Searches for a term in the document titles, *information type* (3.1.24), document ID or other criteria.

3.1.49 separate technical unit

device subject to the relevant technical requirements for type-approval in the European Union or any of the delegated or implementing acts adopted pursuant to this Regulation and intended to be part of a *vehicle* (3.1.54), which may be type-approved separately, but only in relation to one or more specified types of vehicle, where those acts make express provision for so doing

Note 1 to entry: Adopted from Reference [11].

Note 2 to entry: The technical requirements for type-approval in the European Union may be in Reference [11] or in any of the delegated or implementing acts adopted pursuant to this Regulation where those acts make express provision for so doing.

3.1.50 standardized non-proprietary VCI functionality

current standards for communication with a *vehicle* (3.1.54)

EXAMPLE [ISO 22900-2](#) and SAE J2534-1/-2.

3.1.51 system

assembly of devices combined to perform one or more specific functions in a *vehicle* (3.1.54) and which is subject to the requirements of the European Union or any of the delegated or implementing acts adopted pursuant to this regulation

Note 1 to entry: Adopted from Reference [11].

Note 2 to entry: The technical requirements for type-approval in the European Union may be in Reference [11] or in any of the delegated or implementing acts adopted pursuant to this Regulation where those acts make express provision for so doing.

3.1.52
technical service bulletin
TSB

bulletin issued by the *manufacturer* ([3.1.29](#)) detailing a fix for a known concern

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

3.1.53
temporary repair procedure

temporary solution to a problem that is usually made available to roadside services

EXAMPLE Change the brake light.

3.1.54
vehicle

any vehicle falling under the categories L1 to L7

3.1.55
vehicle communication interface functionality
VCI functionality

set of functions to provide communication between vehicle systems and a software application for diagnostics or reprogramming according to the technical requirements specified in this document

3.1.56
vehicle identification number
VIN

unique 17 characters serial number, given by the vehicle *manufacturer* ([3.1.29](#)) to identify individual motor vehicles

3.1.57
workshop procedure

information provided by a *manufacturer* ([3.1.29](#)) describing a specific repair and maintenance

EXAMPLE Repair procedures, working advices or other instructions.

3.2 Abbreviated terms

API	application programming interface
AR	authorized repairer
BP	basic principle
CAB	conformity assessment body
CSP	certificate status protocol
DB	database
DLC	data link cable
DLL	dynamic link library
D-PDU	diagnostic – protocol data unit
DTC	diagnostic trouble code
DVD	optical disc storage media format
ECU	electronic control unit

FAQ	frequently asked questions
FREQ-	functional user interface requirement
GB	gigabyte
GHz	gigahertz
GMT	Greenwich mean time
GUI	graphical user interface
HMI	human machine interface
IO	independent operator
IR	independent repairer
IT	information technology
LAN	local area network
MA	manufacturer
MI	malfunction indicator
MVCI	modular vehicle communication interface
NAT	network address translation
OBD	on-board diagnostic
OCSP	online certificate status protocol
PC	personal computer
PIN	personal identification number
PKCS	public key certificate status
PTI	periodic technical inspection
PTT	pass-thru tool
RMI	repair and maintenance information
RP	recommended practice
RS232	recommended standard 232
SERMI	security repair and maintenance information
TC	trust centre
TMC	Technology and Maintenance Council of the American Trucking Association (ATA)
TREQ-	technical requirement
TSB	technical service bulletin
USB	universal serial bus

VAT No.	value added tax number
VCI	vehicle communication interface
VIN	vehicle identification number
VM	vehicle manufacturer
WWH-OBD	world-wide harmonized on-board diagnostics

4 Document overview and structure

This document provides an implementer with all specifications and references required to support the implementation of the requirements related to standardized access to L-category vehicles repair and maintenance information in accordance with the requirements set forth in Reference [6]. The standardized access to RMI shall be implemented by the vehicle manufacturers in their RMI systems.

— General information and basic principles

This clause provides an overview of the concepts and basic principles for the implementation of the standardized access to L-Category vehicles repair and maintenance information.

— Use case definitions (functional requirements)

This clause provides the functional requirements for a VM RMI system as a set of use case definitions

— Technical requirements

This clause specifies all technical requirements related to a VM RMI system. These requirements will reflect the deriving needs from the use cases.

The following are examples (not a complete list):

- access-related data administration;
- IT architecture;
- external interfaces;
- technical infrastructure recommendations;
- operations.

— Functional user interface requirements

This clause specifies all functional user interface requirements related to a VM RMI system. These requirements will reflect the deriving needs from the use cases.

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

- Navigational pathway and user guidance;

— 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, as well as the technical and functional user interface requirements.

The purpose of this document 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.

5 General information

5.1 Access to vehicle RMI

This document specifies use cases and requirements to be supported by VM RMI systems.

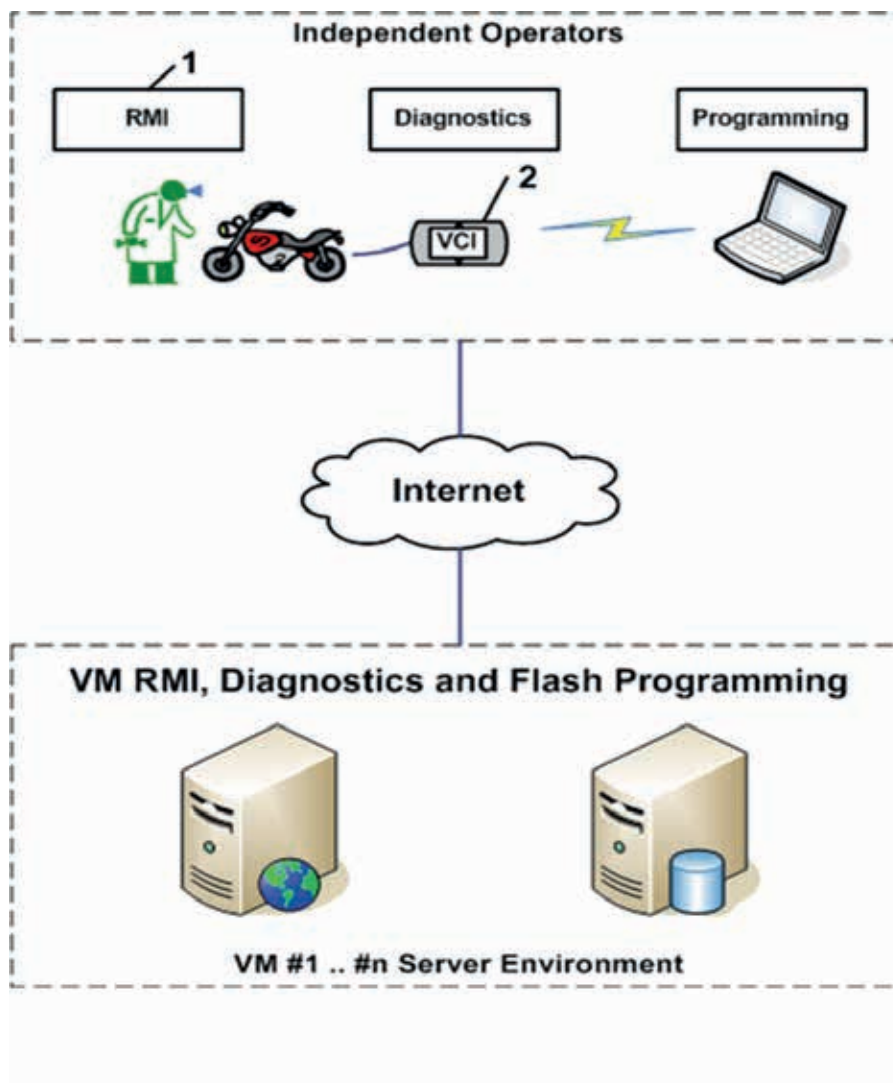
[Figure 1](#) illustrates a typical example of an implementation scenario of a VM RMI, Diagnostics and Flash Programming Web-based server environment. The Independent Operators use RMI clients which shall have access to the Internet.

Multiple VM RMI system configuration scenarios related to the server and client software architecture are possible and a purely online solution is not precluded. It is the VM's responsibility to support an RMI system configuration scenario which meets the requirements and objective of "Standardized Access to RMI for L-category vehicles" from a user's point of view.

VM RMI system configuration scenarios are described in [Clause 8](#). The following VM RMI system configuration scenarios are examples and should not be considered a complete list of possible configurations to satisfy the use cases and requirements.

- Configuration scenario #1 describes the following server and client installation.
 - Server(s): VM RMI Web system, VM Diagnostic software and configuration data for download by all clients, VM Flash Programming software and ECU files for download by all clients.
 - Client(s): Browser capable computing hardware platform, diagnostic software installation downloaded from the server, Flash Programming software installation downloaded from the server, VCI connected to vehicle and computing hardware platform with vehicle communication protocol support to retrieve data from the vehicle through the diagnostic connector, Diagnostics and Flash Programming executed on the client computing hardware platform.
- Configuration scenario #2 describes the following server and client installation.
 - Server(s): VM RMI Web system, VM Diagnostic software and configuration data for download by all clients, VM Flash Programming software and ECU files for download by all clients, Diagnostics and Flash Programming executed on the server for all clients.
 - Client(s): Browser capable computing hardware platform, Diagnostic software installation downloaded from the server, Flash Programming software installation downloaded from the server, VCI connected to vehicle and computing hardware platform with vehicle communication protocol support to retrieve data from the vehicle through the diagnostic connector, the Diagnostics and Flash Programming user interface is separated from the server applications and executed on the client computing hardware platform.

[Figure 1](#) depicts a typical example of the access to vehicle RMI.



Key

- 1 repair and maintenance information
- 2 vehicle communication interface

Figure 1 — Typical example of access to vehicle RMI

5.2 Standardized access to RMI benefit examples

5.2.1 Independent operators

The following benefits are applicable to the independent repairers:

- similar functional GUI for all vehicle brands;
- same functional RMI search terminology;
- functionally equivalent RMI navigational pathway;
- single PC connected to Internet to access RMI of all vehicle brands.

5.2.2 Vehicle manufacturers

The following benefits are applicable to the vehicle manufacturer service department and repair shops:

- improved sales of RMI to Independent Operators;
- streamlines access to RMI to a single method;
- standard may simplify RMI future system development;
- standard may provide a consistent interface between RMI, diagnostics and other information.

5.3 L-Category and subcategories

The vehicles in the L-Category present a broad spectrum of characteristics.

In the type-approval regulations, a classification into subcategories is made to cope with the substantial differences among the vehicles. The applicability of RMI access requirements will need to also consider the subcategories.

The provisions of this document for most sub-categories strongly resemble the provisions for passenger cars and light commercial vehicles where one single vehicle manufacturer is responsible for the type-approval and directly for the RMI of the complete vehicle.

However, for sub-categories for which a multi-stage type-approval is allowed, the prescriptions will be more analogous to the ones for heavy duty vehicles and are described in the next section.

5.4 Multi stage and RMI

Within European Union, all L-vehicles which are registered have a vehicle type-approval or individual approval according to Reference [11].

For specified sub-categories, a type-approval can be obtained in one or multiple stages depending on the vehicle's stage of completion. The multi-stage approval is allowed for the sub-categories referred to in Reference [11], Article 25, paragraph 6, namely L2e -U, L4e, L5e-B, L6e-BU and L7e-CU.

Figure 2 depicts a typical one-stage situation. The vehicle is made in one stage by one manufacturer and is delivered with type-approval for the complete vehicle.

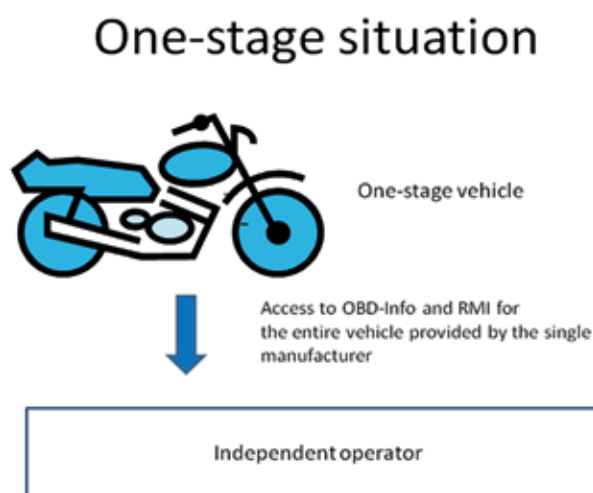


Figure 2 — Example for a typical one-stage situation

Figure 3 depicts a typical multi stage situation. A typical example for a multi-stage vehicle is a commercial tricycle. The first manufacturer delivers the driveline, cab and chassis under its brand name with

type-approval for the incomplete base vehicle. Another manufacturer (or many manufacturers) adds additional equipment and delivers the resulting vehicle with type-approval for the completed tricycle.

Typical multi-stage situation

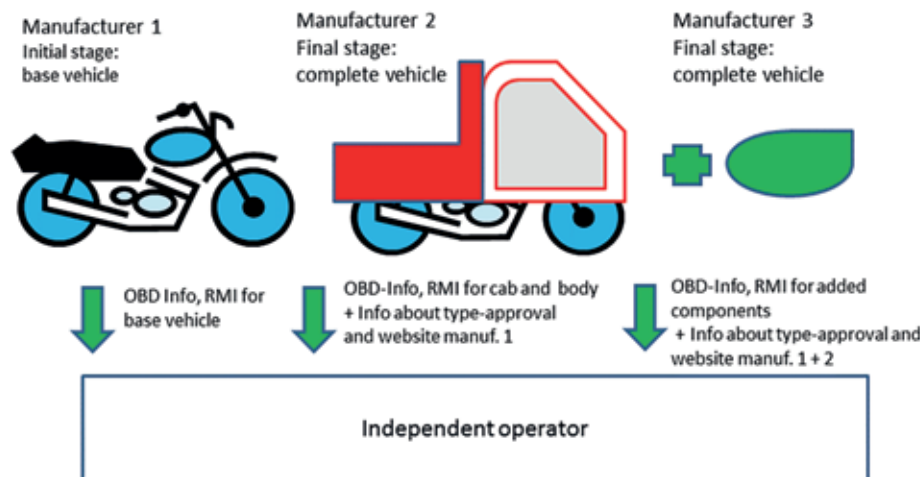


Figure 3 — Example for a typical multi-stage situation

Each manufacturer responsible for a particular stage or stages of a vehicle type-approval is responsible for providing to IO access to repair and maintenance information regarding the stage(s) of type-approval for which he is 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 has to provide links to the manufacturers' websites 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, technical requirements, functional user interface requirements and conformance test cases.

6.1.1 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 as defined in Reference [12] VM RMI system and VM.
- 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 authorized dealers or repairers, then the VM is required to provide RMI according to Reference [11].
- 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.
- BP10: Applicability for L subcategories needs to be specified in use cases and requirements.
- BP11: Elements adopted from [ISO 18541-1](#), [ISO 18541-2](#), [ISO 18541-3](#) and [ISO 18541-4](#) shall be considered at any revision of this document to ensure consistency with revised versions of the [ISO 18541](#) referenced parts.

6.1.2 Basic principles for requirements definition

- BP12: The technical requirements shall not specify any implementation details.
- BP13: Requirements shall be expressed in terms of performance rather than design or descriptive characteristics. This approach leaves maximum freedom to technical development.
- BP14: 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".
- BP15: The requirements in clusters 4 and 5 in this document have been formulated with the aim of minimizing the number of IO clients (PC, Laptop, etc.) required to access different VM RMI systems.

6.1.3 Basic principles for functional user interface requirements definition

- BP16: The requirements shall allow for flexible navigational pathways for practical and state of the art access to RMI in the VM websites.
- BP17: The requirements shall allow for concepts to be able to implement navigational principles to minimize the impact to the existing VM RMI systems.

6.1.4 Basic principles for conformance test definition

- BP18: 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.
- BP19: The person performing the conformance test shall be qualified, 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.
- BP20: The conformance test addresses the access behaviour to automotive RMI and not the VM RMI system implementation.
- BP21: 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.

- BP22: 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 [Clause 9](#).
- BP23: The name of the test case should be the same as the name of the use case (see [Clause 7](#)) or requirement (see [Clause 8](#) and [Clause 9](#)).
- BP24: Each test case should have a preamble (setup state).
- BP25: Classification for each test case is included in order to support the classification criteria specified for use cases and requirements.
- BP26: A test case is only applicable if the use case or requirement is supported by the VM RMI system.
- BP27: Some test cases may require payment or a valid subscription before processing the next step.

CAUTION — The person performing the conformance test is responsible for entering valid data and correctly executing necessary actions in order to maintain integrity of the VM RMI system and the vehicle.

6.2 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 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 product identifier UC 3.2 Vehicle type identification via product features

#	Main title of use case cluster	Brief description	Use case reference
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. 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
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 (temporary repair, periodic technical inspection), — wiring diagrams, — technical service bulletins, — recall information, — maintenance information, and — 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 Special tools UC 5.10 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 Updating and replacing modules (ECUs)
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

#	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, and — 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 10.7 Alternative fuels retrofit systems 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

[Figure 4](#) illustrates all use case clusters and associated use cases. The detailed definition of each use case is defined in [Clause 7](#).

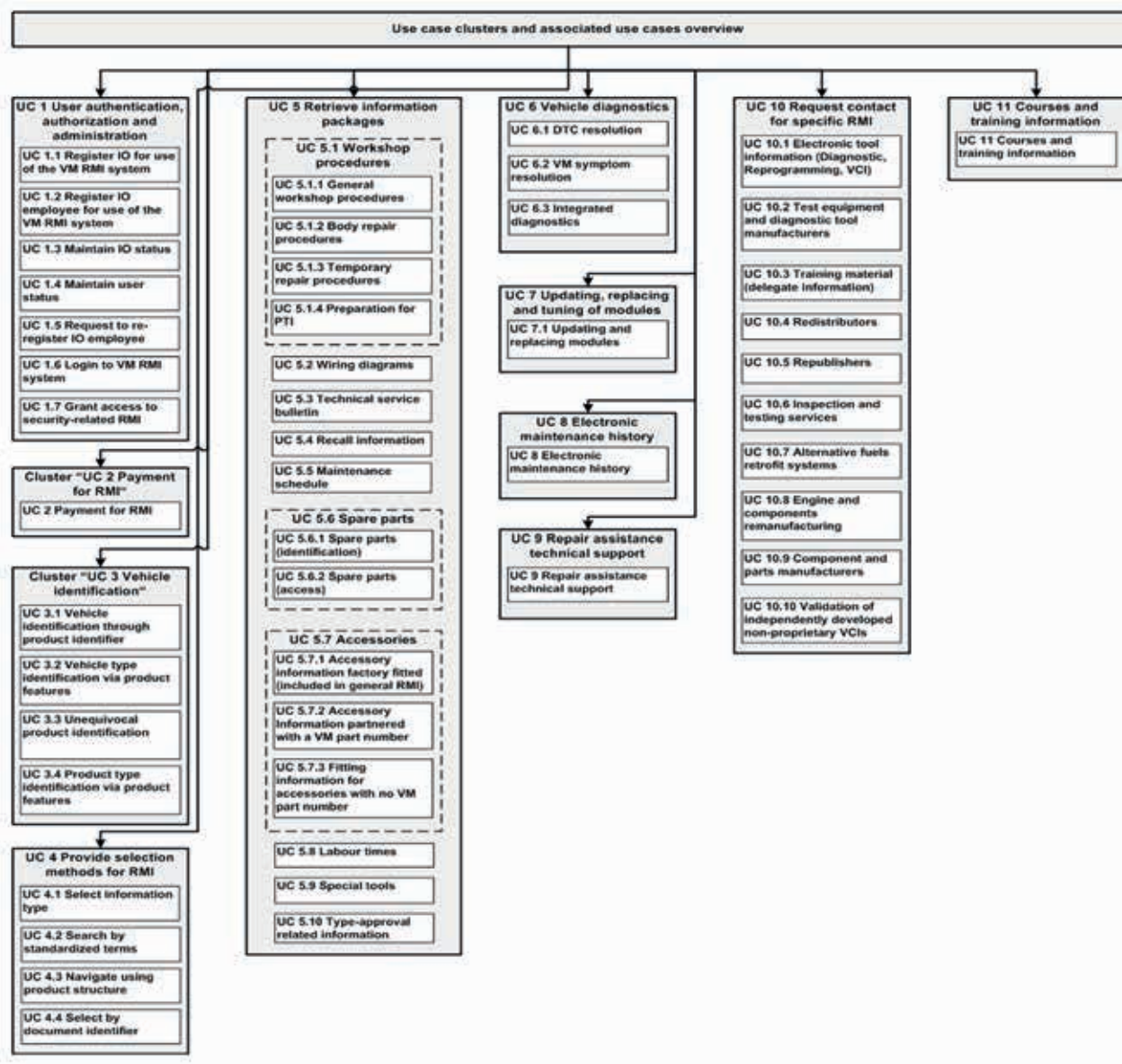


Figure 4 — Use case clusters and associated use cases overview

6.3 Requirements clusters

[Table 2](#) provides an overview of the main categories of standardized access to automotive RMI requirements. A requirement category shall have at least one requirement.

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, and — 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, and — 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, and — 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

# - 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 ISO 18541-3 functional user interface of the VM RMI system.	[TREQ-28] Requirements cluster 7 – Functional user interface

[Figure 5](#) illustrates the technical requirements clusters. [Figure 5](#) shall provide an overview of 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.

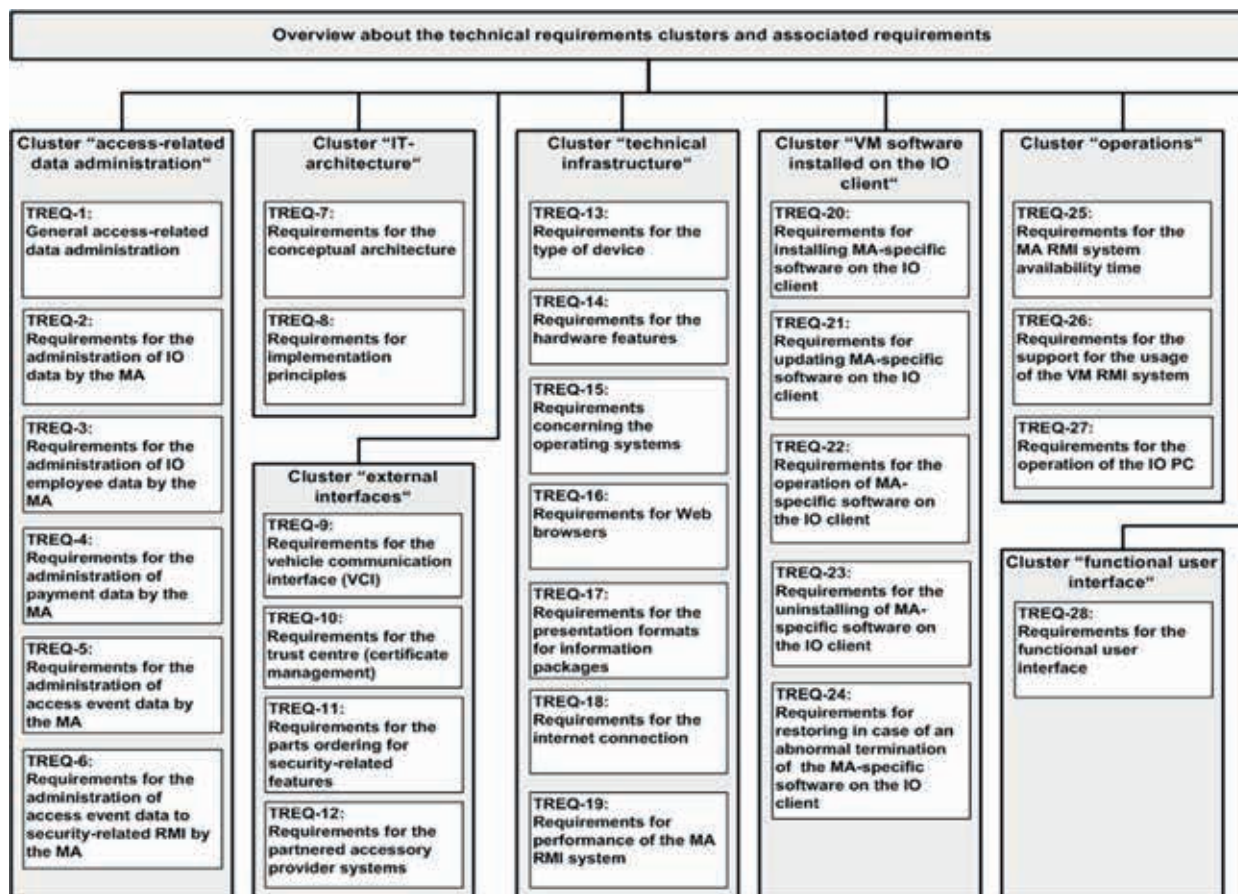


Figure 5 — Overview of the technical requirements clusters

6.4 Functional user interface requirements clusters

Table 3 provides an overview of the main categories of standardized access to automotive RMI requirements. A requirement category shall have at least one requirement.

Table 3 — Main requirements clusters

# - Main title of cluster	Brief description	Functional user interface requirements [FREQ] reference
8 – 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 chapter 7 RMI access mode; — requirements for the registration and login support.	[FREQ-1] RMI access mode [FREQ-2] Registration and login support
9 – 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 Clause 9. 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

# - Main title of cluster	Brief description	Functional user interface requirements [FREQ] reference
10 – 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

Figure 6 illustrates the functional user interface requirements clusters. Figure 6 shall provide an overview of 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.

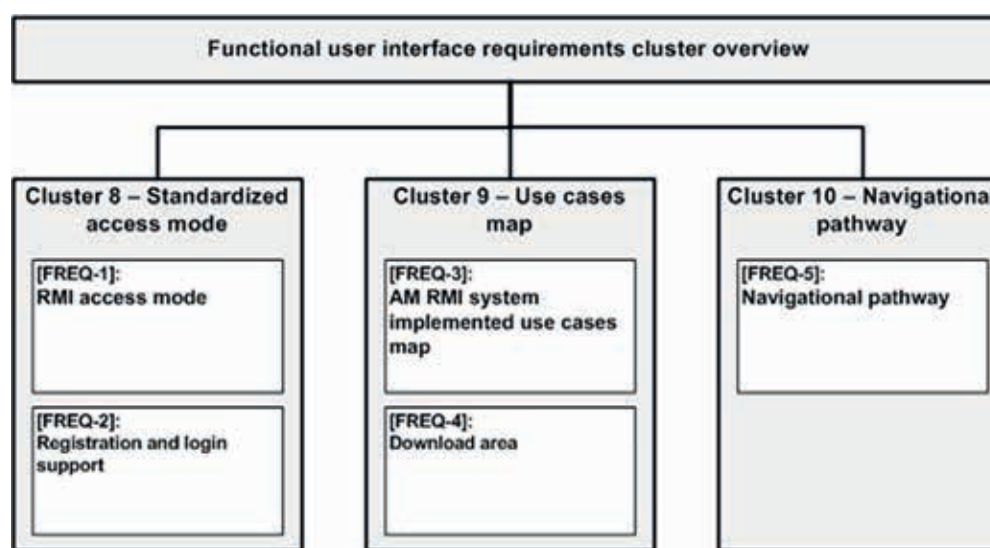


Figure 6 — Overview of functional user interface requirements clusters

6.5 Conformance test clustering

6.5.1 General

6.5.2 provides an overview of all conformance test clusters and the associated test cases for mandatory and optional use cases and requirements. Test cases for optional use cases and requirements will only be possible if the VM RMI system has implemented them. Each test case is assigned to one conformance test cluster. The clusters cover technical areas, where the assigned test case(s) apply.

Each test case is identified by the mnemonic “[RMI-CT_UCx.y], [RMI-CT_TREQ-m], [RMI-CT_FREQ-n]” combined with an alpha-numeric number. The name of the test case is descriptive.

6.5.2 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 Clause 8 .	[RMI-CT_TREQ-13, 14, 15, 16, 18, Annex B] 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 Clause 8 .	[RMI-CT_TREQ-9] Test vehicle communication interface (VCI) [RMI-CT_TREQ-11] 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 license to use, keep user data and access level up to date, protect RMI against misuse and to access the VM RMI system, as stated in Clause 7 .	[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 as stated in Clause 9 .	[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

Table 4 (continued)

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 as stated in Clause 8 .	[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 as stated in Clause 7 .	[RMI-CT_UC3.1] Test vehicle identification through product identifier [RMI-CT_UC3.2] Test vehicle identification via product features

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, as stated in Clause 7.	[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, as stated in Clause 7.	[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 special tool information

Table 4 (continued)

9 – Test vehicle diagnostics	This cluster describes the test cases that check the behaviour of DTC resolution, symptom resolution or integrated diagnostics as stated in Clause 7 .	[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 and replacing 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 as stated in Clause 7 using a known VCI and approved by the VM which meet the standards required by legislation.	[RMI-CT_UC7] 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 as stated in Clause 7 .	[RMI-CT_UC8] Test electronic maintenance history
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 as stated in Clause 7 .	[RMI-CT_UC9] Test repair assistance technical support

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., as stated in Clause 7.	[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_UC10.7] Test for retrieval of alternative fuels retrofit system 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
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Table 4 (continued)

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) as stated in Clause 7.	[RMI-CT_UC11] Test for courses and training information
15 – Test data administration requirements	This cluster describes the test cases that check the behaviour of the VM RMI system whether the managing of data are according to Clause 8.	[RMI-CT_TREQ-1] Test general access-related data administration [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 according to the requirement as specified in Clause 8 .	[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 as stated in Clause 8 .	[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 as stated in Clause 8 .	[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

[Table 5](#) specifies the applicable use case to meet the requirements.

Table 5 — UC 1.1 Register IO for use of the VM RMI system

Actor	IO legal representative
Goal	To register the IO for use of the VM RMI system

Use case input	IO data: — IO name; — IO postal address; — country; — postal address for invoicing if different from IO postal address; — inter-community VAT No.; — first name, family name of the IO legal representative; — e-mail address for communication with the IO legal representative in all aspects of the VM RMI system usage; — preferred language; — choice of an User ID and password of the IO legal representative (the User ID shall be unique in the VM system); — optionally, a confirmation of the IO approval, according to the SERMI scheme, if the IO wants to request access to security-related RMI; — optionally, in addition to the already accepted Terms and Conditions, an IO commercial re-user completes a declaration of intent (template). The declaration of intent is only applicable, if the VM RMI system does not offer navigation via product features. Further input may be requested in recognition of local legislation. Agreement to — terms and conditions, and — registration fee if applicable
Use case output	Notification of — contract agreement between IO and VM established or rejected, — IO legal representative registered or rejected, and — acceptance or rejection of the IO approval to access security-related RMI. Justification in case of rejection.
Brief description	The VM validates the identity and the legitimacy of the requester. The implemented validation mechanism is VM-specific and has to follow local legal requirements. If the data entered by the IO is incorrect or the identity and the legitimacy of the requester cannot be validated, then the VM has the right to reject the requested registration and the VM shall inform the requester of the reason in a prompt and traceable manner. In case of rejection, the IO has the right to remedy, rectify, correct or re-input the data according to the reason for rejection. If the IO wants to request access to security-related RMI, the VM checks the validity of the confirmation of IO's approval. — In addition to the previously accepted Terms and Conditions, the IO commercial re-user completes a declaration of intent (template). The IO commercial re-user then receives access via VIN (UC 3.1 Vehicle identification through product identifier) and Product Features (UC 3.2 Vehicle type identification via product features) to the website. — Based on the declaration of intent, an extended contract may be necessary for republishing. The contract details are negotiated and agreed between IO and VM. IO legal representative formally agrees with the Terms and Conditions for VM RMI system use. The VM accepts IO's legal representative as a user. The VM RMI system asks the user to choose a User ID and assigns a first password to the user or allows them to enter one that satisfies the VM's password security requirements. VM may charge a reasonable registration fee to the IO.
Classification	Mandatory

Applicability	This use case is applicable for all L subcategories
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7.1.2 UC 1.2 Register IO employee for use of the VM RMI system

[Table 6](#) specifies the applicable use case to meet the requirements.

Table 6 — UC 1.2 Register IO employee for use of the VM RMI system

Actor	IO legal representative or IO employee
Goal	To register IO employee for use of the VM RMI system as defined by the IO legal representative.
Use case input	Either: — request from the IO legal representative person to register a new IO employee, and — user id and password of the IO legal representative person, or — an IO employee's request, indicating that they are associated with an IO, and are requesting confirmation from the IO legal representative to complete registration. — in that case, company identification data are additionally required as input. Both: — an email-address for communication with the user in all aspects of the VM RMI system usage, — preferred language, and — choice of an User ID and a password (the User ID shall be unique in the VM system). Further input may be requested in recognition of local legislation.
Use case output	IO's employee registered as an authorized user in the VM RMI system.
Brief description	The VM requests the IO legal representative to confirm the validity of the IO data. The VM accepts IO's employee as a user and communicates this to the user. The VM RMI system asks the user to choose a User ID and either assigns an initial password to the user or allows them to enter one that satisfies the VM's password security requirements. VM may charge a reasonable registration fee to the IO.
Classification	Mandatory
Applicability	This use case is applicable for all L subcategories

7.1.3 UC 1.3 Maintain IO status

[Table 7](#) specifies the applicable use case to meet the requirements.

Table 7 — UC 1.3 Maintain IO status

Actor	IO legal representative
Goal	Keep IO data up to date.
Use case input	Request to change IO data.
Use case output	Updated IO data.
Brief description	On IO request, the VM RMI system or the VM administrator updates the IO data. Some changes may require a new validation or even a new registration of the IO (e.g. new company name and type). A clear policy statement on the conditions for a new validation or registration is reflected in the Terms and Conditions on the VM RMI system.
Classification	Mandatory
Applicability	This use case is applicable for all L subcategories

7.1.4 UC 1.4 Maintain user status

[Table 8](#) specifies the applicable use case to meet the requirements.

Table 8 — UC 1.4 Maintain user status

Actor	IO employee
Goal	Keep user data up to date.
Use case input	— Password — Preferred language — Email address
Use case output	Updated user data.
Brief description	Only changes of password, the preferred language and the user email address can be requested. The VM RMI system or the VM administrator updates the user data or rejects the request. Finally, the VM RMI system or the VM administrator communicates the result to the user. In case of rejection, the actor has the right to remedy, rectify, correct or re-input the data according to the reason for rejection.
Classification	Mandatory
Applicability	This use case is applicable for all L subcategories

7.1.5 UC 1.5 Request to de-register IO employee

[Table 9](#) specifies the applicable use case to meet the requirements.

Table 9 — UC 1.5 Request to de-register IO employee

Actor	IO legal representative
Goal	Request to de-register an IO employee
Use case input	IO legal representative requests to de-register an IO employee
Use case output	IO employee account(s) is de-activated
Brief description	The IO legal representative requests to de-register an IO employee account(s). The VM RMI system processes the request. The IO legal representative is notified of the result of the de-activation of the IO employee account(s).
Classification	Mandatory
Applicability	This use case is applicable for all L subcategories

7.1.6 UC 1.6 Login to VM RMI system

[Table 10](#) specifies the applicable use case to meet the requirements.

Table 10 — UC 1.6 Login to VM RMI system

Actor	Independent Operator (IO legal representative and/or IO employee)
Goal	Access to the VM RMI system.
Use case input	— User ID — Password
Use case output	Successful login into the VM RMI system.

Brief description	The VM RMI system offers the possibility to enter User ID and password. After a successful authentication, the first user-specific navigation level is displayed. Access to security-related information and operations requires an appropriate access level, which is bound to a certificate.
Classification	Mandatory
Applicability	This use case is applicable for all L subcategories

7.1.7 UC 1.7 Grant access to security-related RMI

[Table 11](#) specifies the applicable use case to meet the requirements.

Table 11 — UC 1.7 Grant access to security-related RMI

Actor	IO employee, IO legal representative
Goal	To obtain access to security-related RMI for an IO employee or an IO legal representative.
Use case input	— Request of a registered IO employee or IO legal representative for access to security-related RMI. — A digital certificate according to the SERMI scheme.
Use case output	Access level for security-related RMI is granted according to the presented digital certificate, and IO authorization for the IO employee or the IO legal representative. The request for access to security-related RMI shall only be accepted if the IO employee/IO legal representative is already registered for access to the VM RMI system, the IO authorization of the IO employee is valid, and the IO for which the requester is registered has a valid IO approval.
Brief description	The VM checks the IO approval of the IO for which the actor is registered, and the validity of the IO employee's certificate and IO authorization via request to the trust centre that issued the certificate. The access level is determined by the VM and communicated to the actor. In the case that the actor is not the IO legal representative, then the access level is also communicated to the IO legal representative. VM may charge a reasonable fee to the IO.
Classification	Mandatory if security-related RMI exists
Applicability	This use case is applicable for all L subcategories

7.2 UC 2 Payment for RMI

[Table 12](#) specifies the applicable use case to meet the requirements.

Table 12 — UC 2 Payment for RMI

Actor	Independent Operator
Goal	Handling of payments
Use case input	— Select subscription — Select payment arrangement — Payment-relevant data (card data, account id, etc.)
Use case output	— Subscription activated — Receipt — User can start using the VM RMI system

Brief description	The VM RMI system displays a page showing all valid subscriptions (hourly, daily, weekly, monthly and yearly access) to the different access levels and the VM-supported payment arrangements. In addition to time-based access, VMs may establish and make available fees per transaction. All payment shall be in accordance with the Terms and Conditions for the VM RMI system. The user selects the desired subscription and the preferred payment arrangement. The VM RMI system requests the user to enter the necessary data to process the payment arrangement. The VM RMI system validates the input, activates the corresponding subscription and issues a receipt.
Classification	Mandatory for VMs who charge for RMI
Applicability	This use case is applicable for all L subcategories

7.3 UC 3 Vehicle identification

7.3.1 UC 3.1 Vehicle identification through product identifier

[Table 13](#) specifies the applicable use case to meet the requirements.

Table 13 — UC 3.1 Vehicle identification through product identifier

Actor	Independent Operator
Goal	Unequivocal vehicle identification and summary.
Use case input	— VIN — Product identifier (optional)
Use case output	— Vehicle or vehicle stage model — Product features — Factory fitted optional equipment — Identified vehicle or vehicle stage for further RMI system use purposes
Brief description	After entering the VIN and optionally the product 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 vehicle 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, i.e. multi-stage type approval. Each vehicle manufacturer shall take the responsibility for providing the use case output for that manufacturers' own type approved stage and in addition the information according to UC 5.10.
Classification	Mandatory
Applicability	This use case is applicable for all L subcategories

7.3.2 UC 3.2 Vehicle type identification via product features

[Table 14](#) specifies the applicable use case to meet the requirements.

Table 14 — UC 3.2 Vehicle type identification via product features

Actor	Independent Operator
Goal	Identification of a vehicle type or vehicle types.
Use case input	Product features selection filter, e.g. — model name (CBR1000RR), — model code (SC59), — model year, — capacity (ccm), — power (kW), — engine type (two stroke cycle, four stroke cycle, etc.), — transmission type (manual/automatic/CVT), and — final drive type (chain, shaft drive, belt, etc.).
Use case output	Identified vehicle type or vehicle types according to selected product features for subsequent VM RMI system use purposes.
a Information types accessible with Product Features are specified in the following use cases: — UC 5.1.1 General workshop procedures; — UC 5.1.2 Body repair procedures; — UC 5.1.3 Temporary repair procedures; — UC 5.1.4 Preparation for PTI; — 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 5.7.1 Accessory information factory fitted (included in general RMI); — UC 5.7.2 Accessory information partnered with a VM part number; — UC 5.7.3 Fitting information for accessories with no VM part number; — UC 5.8 Labour times; — UC 6.2 VM symptom resolution (only if provided to the AR). b Information types that explicitly require VIN input are as follows: — UC 5.4 Recall information; — UC 6.1 DTC resolution; — UC 6.3 Integrated diagnostics; — UC 7 Updating and replacing modules (ECUs); — UC 8 Electronic Maintenance history.	

Brief description	The VM RMI system behaviour depends on the policy followed by the VM regarding product feature support for authorized repairers. — For a VM RMI system that offers product features. The VM RMI system from a VM that offers product features to his authorized 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 VIN input. The identified vehicle type or vehicle types is/are noted by the VM RMI system, so that the requested information can be provided for this vehicle type or these vehicle types in subsequent Use Cases. — For a VM RMI system that does not offer product features. The VM RMI system from a VM that does not offer product features to his authorized repairers enables access to information related to selected product 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 cases according to the use case classification, except for those use cases that explicitly require VIN input. The offered mechanism to enable this access is VM specific. The identified vehicle type or vehicle types is/are noted by the VM RMI system, so that the requested information can be provided for this vehicle type or these vehicle types in subsequent Use Cases.
Classification	Mandatory
Applicability	Applicable for L subcategories allowing only a single-stage type-approval
a	Information types accessible with Product Features are specified in the following use cases: — UC 5.1.1 General workshop procedures; — UC 5.1.2 Body repair procedures; — UC 5.1.3 Temporary repair procedures; — UC 5.1.4 Preparation for PTI; — 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 5.7.1 Accessory information factory fitted (included in general RMI); — UC 5.7.2 Accessory information partnered with a VM part number; — UC 5.7.3 Fitting information for accessories with no VM part number; — UC 5.8 Labour times; — UC 6.2 VM symptom resolution (only if provided to the AR).
b	Information types that explicitly require VIN input are as follows: — UC 5.4 Recall information; — UC 6.1 DTC resolution; — UC 6.3 Integrated diagnostics; — UC 7 Updating and replacing modules (ECUs); — UC 8 Electronic Maintenance history.

7.4 UC 4 Provide selection methods for RMI

7.4.1 UC 4.1 Select information type

[Table 15](#) specifies the applicable use case to meet the requirements.

Table 15 — UC 4.1 Select information type

Actor	Independent Operator
Goal	Select relevant information types for the request.
Use case input	Ask for information types.
Use case output	Display of information types available for the identified vehicle, e.g.: — General workshop procedures; — Temporary repair procedures; — Preparation for PTI; — Wiring diagrams; — Technical service bulletin; — Recall information; — Maintenance schedule. Selected information type(s) is retained in the VM RMI system for subsequent use case(s).
Brief description	The VM RMI system issues a list of information types. This list varies by VM but is the same list as the VM offers to the AR. The user selects at least one information type. The selected information type(s) are retained in the VM RMI system for subsequent use case(s).
Classification	Mandatory
Applicability	This use case is applicable for all L subcategories

7.4.2 UC 4.2 Search by standardized terms

[Table 16](#) specifies the applicable use case to meet the requirements.

Table 16 — UC 4.2 Search by standardized terms

Actor	Independent Operator
Goal	Find information to a standardized term.
Use case input	One standardized term or a combination of standardized terms.
Use case output	All Information packages containing the term(s) in the title or in the tags.
Brief description	The VM RMI system searches all information packages titles and tags and not within documents for the requested terms and finally displays a list of all matching documents. Search by the standardized terms that are defined in a Digital Annex according to ISO 18542.
Classification	Mandatory
Applicability	This use case is applicable for all L subcategories

7.4.3 UC 4.3 Navigate using product structure

[Table 17](#) specifies the applicable use case to meet the requirements.

Table 17 — UC 4.3 Navigate using product structure

Actor	Independent Operator
Goal	Find information by navigating through the product structure.
Use case input	Select the items in the presented product structure.
Use case output	Either a next detail level in the product structure or finally a list of available information for the chosen component.
Brief description	The VM RMI system displays the different levels in the same product structure offered to the VM's AR and finally displays a list of existing information packages for the finally selected item.
Classification	Mandatory
Applicability	This use case is applicable for all L subcategories

7.4.4 UC 4.4 Select by document identifier

[Table 18](#) specifies the applicable use case to meet the requirements.

Table 18 — UC 4.4 Select by document identifier

Actor	Independent Operator
Goal	Find information by document identifier.
Use case input	Exact document identifier.
Use case output	Display document.
Brief description	The VM RMI system displays the requested document.
Classification	Optional but mandatory if provided by VM to VM AR.
Applicability	This use case is applicable for all L subcategories

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

[Table 19](#) specifies the applicable use case to meet the requirements.

Table 19 — UC 5.1.1 General workshop procedures

Actor	Independent Operator
Goal	Access to the workshop procedures
Use case input	Select the title of one of the workshop procedures:
Use case output	Display the selected workshop procedures:
Brief description	The user selects one of many workshop procedures in the search result list. The VM RMI system displays the selected package of information.
Classification	Mandatory
Applicability	This use case is applicable for all L subcategories

7.5.1.2 UC 5.1.2 Body repair procedures

[Table 20](#) specifies the applicable use case to meet the requirements.

Table 20 — UC 5.1.2 Body repair procedures

Actor	Independent Operator
Goal	Access to body repair procedures.
Use case input	Select the title of one of the body repair procedures.
Use case output	Display the selected body repair procedure. Examples: — information on correct removal of parts and systems.; — information on correct procedures for field replacement of parts including welding, and, chemical and mechanical bonding; — information for re-alignment; — information on reinstatement of corrosion resistance process.
Brief description	The VM is free to choose the place in the VM RMI system, where to provide this information. The user selects one of many body repair procedures in the search result list. The VM RMI system displays the selected package of information.
Classification	Optional but mandatory if the repair information exists.
Applicability	This use case is applicable for all L subcategories

7.5.1.3 UC 5.1.3 Temporary repair procedures

[Table 21](#) specifies the applicable use case to meet the requirements.

Table 21 — UC 5.1.3 Temporary repair procedures

Actor	Independent Operator
Goal	Affect a temporary fix to alleviate the customer's problem pending full repair.
Use case input	— Vehicle identification — Symptom — Complaint as above
Use case output	Instructions to affect a temporary fix or remote activation.
Brief description	The VM is free to choose the place in the VM RMI system, where to provide this information. The user selects one of many temporary repair procedures in the search result list. The VM RMI system displays the selected package of information.
Classification	Optional but mandatory if provided by VM to VM AR.
Applicability	This use case is applicable for all L subcategories

7.5.1.4 UC 5.1.4 Preparation for PTI

[Table 22](#) specifies the applicable use case to meet the requirements.

Table 22 — UC 5.1.4 Preparation for PTI

Actor	Independent Operator
Goal	To obtain information to prepare a PTI according to current legislation.
Use case input	Request for information for preparation of a PTI according to current legislation.
Use case output	Country-specific PTI information according to current legislation.
Brief description	The Independent Operator requests information for the preparation of a PTI according to country-specific legislation. The VM RMI system displays the requested information or offers access to PTI services.