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Title: Draft BS ISO 20080 Amendment 1 - Road vehicles — Information for remote diagnostic support — General requirements, definitions and use cases.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

DRAFT AMENDMENT

ISO 20080:2019/DAM 1

ISO/TC 22/SC 31

Secretariat: **DIN**

Voting begins on:
2021-01-11

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2021-04-05

Road vehicles — Information for remote diagnostic support — General requirements, definitions and use cases

AMENDMENT 1

Véhicules routiers — Information pour support de diagnostic à distance — Exigences générales, définitions et cas d'utilisation

AMENDEMENT 1

ICS: 43.180

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 31, *Data communication*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Road vehicles — Information for remote diagnostic support — General requirements, definitions and use cases

AMENDMENT 1

Annex A

Replace Annex A with the following:

Annex A (informative)

Implementation based on ISO 20078 – Road Vehicles – Extended Vehicle (ExVe) – Web Services

A.1 Introduction

A.1.1 General

This annex contains a web service specification of the use cases listed in this document. The web service specification is based on the ISO 20078:2020[3] (all parts). All web services are defined as REST APIs, using JSON for the transfer of content.

20078:2020[3] (all parts) is indispensable for implementing web services according to Annex A.

A.1.2 Security

All REST APIs are using OAuth2 compatible framework for access control, OpenID Connect compatible framework for identification purposes and https for securing the transfer, see ISO 20078-3:2020 for details. The exact details of how to obtain access is described by each Offering Party.

A.1.3 Error codes

A.1.3.1 ISO 20078

The HTTP status codes (error codes) listed for each REST API are described in ISO 20078-2:2020[3].

A.1.3.2 General error conditions

General error conditions are valid for all use cases. This is the mapping of error conditions in clause 5.5 to REST API errors:

Error condition	HTTP status code	ExveErrorId	Example
Request currently not possible to perform by the ExVe	503	20080-1000	<pre>{ "dteReadout": { "id": "abcde-12345-ghjke-67474", "messageTimestamp": "2016-02-24T09:23:46Z", "exveErrorId": "20080-1000", "exveErrorMsg": "Request currently not possible to perform by the ExVe", "vehicleId": "12345678909876543" } }</pre>

A.1.3.3 Use case specific error conditions

Use case specific errors are mapped to HTTP status codes in each REST API.

A.2 Resources

A web service is exposing access to one or more resources. To be able to access a resource through a web service, access needs to be granted. This can be done either directly to the resource or through a container.

Table A.1 maps the ISO 20080 use cases to REST APIs and resources. In some cases, mapping of a use case to a REST API provides little standardization benefit, as it is highly offering party specific.

Table A.1 — Mapping of use cases to REST APIs

UC	Use case name	REST API	Resource(s)	Comment
01	Use case discovery	resourceReadout	Not applicable	
02	Identify ECUs installed in the vehicle	ecuReadouts	ECU Readout	
03	Read Diagnostic Trouble Codes (DTCs)	dtcReadouts	DTC Readout	
04	Read readiness codes	readinessCodeReadouts	Readiness Code Readout	
05	Read DTC snapshot data	dtcSnapshotReadout	DTC Snapshot Readout	
06	Read selected diagnostic parametric dynamic data	parameterReadout	Parameter Readout	
07	Read malfunction indicator status	malfunctionIndicatorReadout	Malfunction Indicator Readout	
08	Clear DTCs	clearDtcJob	Clear DTC Job	
09	Adjust the settings of a selected system	Not applicable / No standardized API due to differences between offering parties.	Not applicable	System setting input and result are offering party specific.
10	Activation of actuators	Not applicable / No standardized API due to differences between offering parties.	Not applicable	Actuator input and result are offering party specific.
11	Activate a self-test routine	Not applicable / No standardized API due to differences between offering parties.	Not applicable	Self-test input and result are offering party specific.

20078-2:2020 defines new syntax for resource versioning (used in Accept and Content-Type HTTP headers). Existing implementations of 20080 based on 20078:2018[1] version can still be used. For new implementations, support of 20078:2020[3] (all parts) is recommended.

Table A.2 — Mapping of REST API resource representation used in 20080:2018 and 20080:2020 versions

UC	REST API	Resource version according to 20078-2:2018	Resource version according to 20078-2:2020
01	resourceReadout	application/x.exve.org.resourceReadout.v1+json	application/json; exve-resourceversion=resourceReadout.v1.0
02	ecuReadouts	application/x.exve.org.ecureadout.v1+json	application/json; exve-resourceversion=ecureadout.v1.0
03	dtcReadouts	application/x.exve.org.dtcReadout.v1+json	application/json; exve-resourceversion=dtcReadout.v1.0
04	readinessCodeReadouts	application/x.exve.org.readinesscodereadout.v1+json	application/json; exve-resourceversion=readinesscodereadout.v1.0
05	dtcSnapshotReadout	application/x.exve.org.dtcSnapshotReadout.v1+json	application/json; exve-resourceversion=dtcsnapshotreadout.v1.0
06	parameterReadout	application/x.exve.org.parameterReadout.v1+json	application/json; exve-resourceversion=parameterreadout.v1.0

Table A.2 (continued)

UC	REST API	Resource version according to 20078-2:2018	Resource version according to 20078-2:2020
07	malfunctionIndicatorReadout	application/x.exve.org.malfunctionIndicatorReadout.v1+json	application/json; exve-resourceversion=malfunctionindicatorreadout.v1.0
08	clearDtcJob	application/x.exve.org.cleardtcjob.v1+json	application/json; exve-resourceversion=cleardtcjob.v1.0

A.3 REST API information model

The rest API information model in Figure A.1 is compiled from the use cases in this document and used as a base for designing the REST APIs.

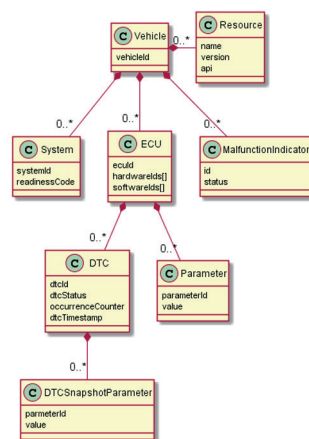


Figure A.1 — REST API information model

A.4 REST APIs

A.4.1 Use case 01 – resourceReadout

The resourceReadout API follows the asynchronous interaction pattern, as the processing time of the request can vary dependent on the offering party implementation. In some cases, it is possible to return the result immediately, whereas sometimes the accessing party needs to poll the API until the result is ready.

The accessing party starts by posting a resource readout request. If the result is available immediately, the result is returned directly. If the result is not available immediately, a status is returned instead of the readout. The accessing party is supposed to poll the request status until the processing is completed. When the processing is completed, the accessing party will receive the result.

The readout status and the completed readout will be available for a limited time after being created. This time is specified by the offering party.

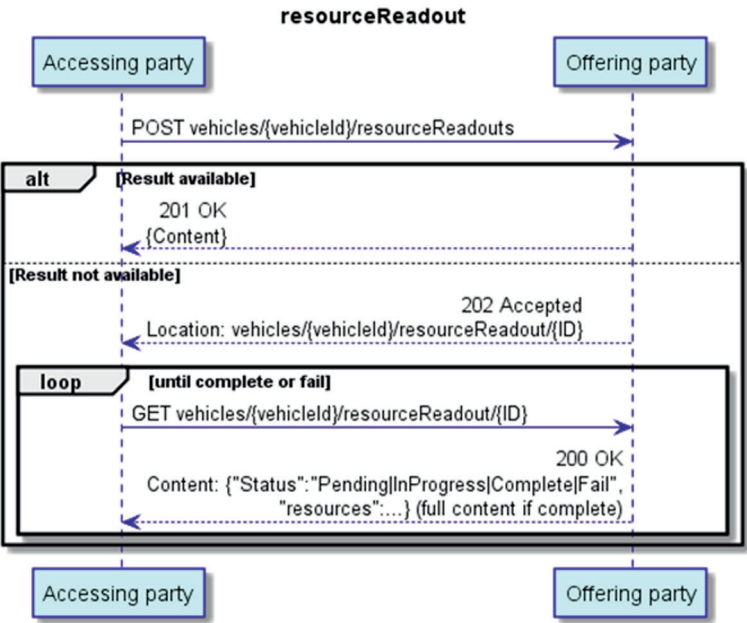


Figure A.2 — resourceReadout sequence diagram

POST vehicles/{vehicleId}/resourceReadouts			
Description	This API creates a readout of available resources to the accessing party for one vehicle. If the result is available immediately, the result is returned. If the result is not available, a location to the resource readout is returned. This location shall be polled until the result is available.		
Parameters	vehicleId	string	required The vehicle identifier of the vehicle to read from
Request Headers	Host	required	According to HTTP/1.1 RFC 2616
	Authorization	required	Bearer {token}
	Accept	required	application/x.exve.org.resourcereadout.v1+json;charset=utf-8
Response Headers	Location	Absolute URI of the /resourceReadouts endpoint	
Response (Success)	201	Example (result available immediately): { "resourceReadout": { "id": "abcde-12345-ghjke-67474", "asyncStatus": "Complete", "messageTimestamp": "2016-02-24T09:23:46Z", "vehicleId": "12345678909876543", "resources": [{ "name": "DTC Readout", "version": "1", "api": "https://example.org/vehicles/12345678909876543/dtcReadouts" }, { "name": "ECU Readout", "version": "1", "api": "https://example.org/vehicles/12345678909876543/ecuReadouts" }] } }	
	202	Result not available immediately. Location of resourceReadout will be returned, e.g. vehicles/{vehicleId}/resourceReadouts/{id}, see Location header.	
Error codes	400	Bad Request	
	401	Unauthorized	
	403	Forbidden	
	404	Not Found	
	406	Not Acceptable	
	500	Internal Server Error	
	501	Not Implemented	
	503	Service Unavailable	
	505	Version not supported	
Access	Any resource	Access to any resource will give access to this API	
JSON Schema	See A.5		

GET vehicles/{vehicleId}/resourceReadouts/{id}				
Description	This API returns a readout of available resources to the accessing party for one vehicle. The id of the readout is returned when posting the request. If the resource readout is not completed, the readout status is returned. If the resource readout is completed, the result is returned.			
Parameters	vehicleId	string	required	The vehicle identifier of the vehicle to read from
	id	string	required	Id of the DTC readout
Request Headers	Host	required	According to HTTP/1.1 RFC 2616	
	Authorization	required	Bearer {token}	
	Accept	required	application/x.exve.org.resourcereadout.v1+json;charset=utf-8	
Response Headers	Content-Type	application/x.exve.org.resourcereadout.v1+json;charset=utf-8		
Response (Success)	200	Example (result available): <pre>{ "resourceReadout": { "id": "abcde-12345-ghjke-67474", "asyncStatus": "Complete", "messageTimestamp": "2016-02-24T09:23:46Z", "vehicleId": "12345678909876543", "resources": [{ "name": "DTC Readout", "version": "1", "api": "https://example.org/vehicles/12345678909876543/dtcReadouts" }, { "name": "ECU Readout", "version": "1", "api": "https://example.org/vehicles/12345678909876543/ecuReadouts" }] } }</pre> Example (result not available): <pre>{ "resourceReadout": { "id": "abcde-12345-ghjke-67474", "asyncStatus": "InProgress", "asyncWait": 10000, "asyncEstimatedComplete": "2016-02-24T09:24:00Z", "messageTimestamp": "2016-02-24T09:23:46Z", "vehicleId": "12345678909876543" } }</pre>		
Error codes	400	Bad Request		
	401	Unauthorized		
	403	Forbidden		
	404	Not Found		
	406	Not Acceptable		
	500	Internal Server Error		
	501	Not Implemented		
	503	Service Unavailable		
	505	Version not supported		
Access	Any resource	Access to any resource will give access to this API		
JSON Schema	See A.5			

A.4.2 Use case 02 – ecuReadouts

The ecuReadout API follows the asynchronous interaction pattern, as the processing time of the request can vary dependent on the offering party implementation. In some cases, it is possible to return the result immediately, whereas sometimes the accessing party needs to poll the API until the result is ready.

The accessing party starts by posting an ECU readout request. If the result is available immediately, the result is returned directly. If the result is not available immediately, a status is returned instead of the readout. The accessing party is supposed to poll the request status until the processing is completed. When the processing is completed, the accessing party will receive the result.

The readout status and the completed readout will be available for a limited time after being created. This time is specified by the offering party.

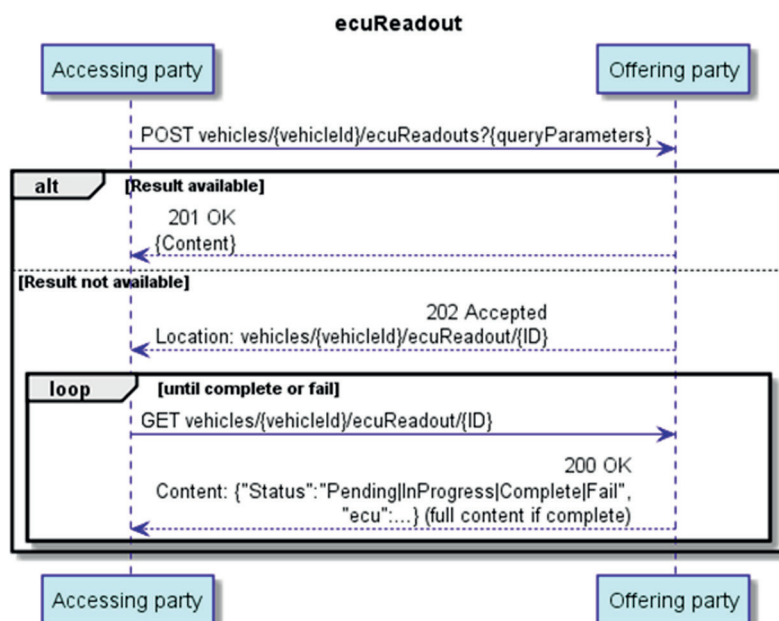


Figure A.3 — ecuReadout sequence diagram

POST vehicles/{vehicleId}/ecuReadouts?eculd={eculd}				
Description	This API creates a readout of ECUs for one vehicle. If the result is available immediately, the result is returned. If the result isn't available, a location to the ECU readout is returned. This location shall be polled until the result is available.			
Parameters	vehicleId	string	required	The vehicle identifier of the vehicle to read from
	eculd	string	optional	Return this ECU id only. Default: Return all ECUs.
Request Headers	Host	required	According to HTTP/1.1 RFC 2616	
	Authorization	required	Bearer {token}	
	Accept	required	application/x.exve.org.ecureadout.v1+json; charset=utf-8	
Response Headers	Location	Absolute URI of the /ecuReadouts endpoint		
Response (Success)	201	Example (result available immediately): { "ecuReadout": { "id": "abcde-12345-ghjke-67474", "asyncStatus": "Complete", "messageTimestamp": "2016-02-24T09:23:46Z", "vehicleId": "12345678909876543", "receivedTimestamp": "2016-02-24T09:23:46Z", "ecus": [{ "ecuId": "ABC", "hardwareIds": ["1234567"], "softwareIds": ["9876543"] }, { "ecuId": "DEF", "hardwareIds": ["2345678"], "softwareIds": ["8976543"] }, { "ecuId": "GHI", "hardwareIds": ["3456789"], "softwareIds": ["7896543", "7896555"] }] } }		
	202	Result not available immediately. Location of ecuReadout will be returned, e.g. vehicles/{vehicleId}/ecuReadouts/{id}, see Location header.		
Error codes	400	Bad Request		
	401	Unauthorized		
	403	Forbidden		
	404	Not Found		
	406	Not Acceptable		
	500	Internal Server Error		
	501	Not Implemented		
	503	Service Unavailable		
	505	Version not supported		
Access	ECU Readout	Full access to this API		
JSON Schema	See A.5			