



# **Technical Manual**

## **Interfaces**

### **GCU Broker 1.0**

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Access to the Web Interface of GCU Message Broker for all users is described in [chapter 2](#)

The various interfaces for RU companies are described in [chapter 3](#), the various interfaces for Keeper companies in [chapter 4](#).

Monitoring and Error Handling is described in [chapter 5](#).

## 1.4 GCU Message Broker Environments

There are two main GCU Message Broker environments available. The test environment can be used to test the interface to and from the GCU Message Broker.

As part of the test environment various simulation aims are available in order to simulate RU sender and Keeper receiver.

The production environment is reserved for productive use of the GCU Message Broker and can only be used after successful integration tests in the test environment.

## 2 GCU Message Broker Web Interface

	TEST	PROD
URL	<a href="http://www.gcubroker.org:8090">www.gcubroker.org:8090</a>	<a href="http://www.gcubroker.org">www.gcubroker.org</a>
Login, Password	Use Group or Company Administrator login and password provided by GCU	Use Group or Company Administrator login and password provided by GCU

## 3 Interfaces for RUs

### 3.1 Send WPM

#### 3.1.1 Connectivity

	TEST	PROD
Host	test.gcubroker.org	prod.gcubroker.org
URL 1	<a href="http://test.gcubroker.org:80/wpm/">http://test.gcubroker.org:80/wpm/</a>	<a href="http://prod.gcubroker.org:80/wpm/">http://prod.gcubroker.org:80/wpm/</a>
URL 2	<a href="https://test.gcubroker.org:1443/wpm/">https://test.gcubroker.org:1443/wpm/</a>	<a href="https://prod.gcubroker.org:443/wpm/">https://prod.gcubroker.org:443/wpm/</a>
WSDL	<a href="http://test.gcubroker.org:80/wpm?wsdl">http://test.gcubroker.org:80/wpm?wsdl</a>	<a href="http://prod.gcubroker.org:80/wpm?wsdl">http://prod.gcubroker.org:80/wpm?wsdl</a>
Login, Password	Will be provided by GCU	Will be provided by GCU

#### 3.1.2 Data Format

XML syntax see [Appendix A](#)

#### Location Coding

GCU Message Broker uses several global types of TAF TSI. LocationIdent is one of these types. It is used in WPM for optional elements StartLocation and EndLocation. Location codes of the CRD (central reference file database, <http://ccs.rne.eu/crd/>) have to be used as a rule. If such code for a specific location is not available in CRD an alternative coding using UIC location codes (e.g. DIUM) applies.

Alternative location coding with UIC codes:

- LocationPrimaryCode = 99999 (to tag the location as not in CRD)
- LocationSubsidiaryIdentification becomes mandatory
- LocationSubsidiaryName becomes mandatory

### 3.1.3 Workflow

This communication is asynchronous. When sending an xml-message to GCU Broker you get an immediate Receipt Confirmation (syntax see [Appendix D](#)) or a SOAP error message if the XML format is incorrect.

If WPMerror is set correctly, error messages can be received as xml-message on the specified URL (see [chapter 3.6](#)).

## 3.2 Send WDR XML

### 3.2.1 Connectivity

	TEST	PROD
Host	test.gcubroker.org	prod.gcubroker.org
URL 1	<a href="http://test.gcubroker.org:80/wdr/">http://test.gcubroker.org:80/wdr/</a>	<a href="http://prod.gcubroker.org:80/wdr/">http://prod.gcubroker.org:80/wdr/</a>
URL 2	<a href="https://test.gcubroker.org:1443/wdr/">https://test.gcubroker.org:1443/wdr/</a>	<a href="https://prod.gcubroker.org:443/wdr/">https://prod.gcubroker.org:443/wdr/</a>
WSDL	<a href="http://test.gcubroker.org:80/wdr?wsdl">http://test.gcubroker.org:80/wdr?wsdl</a>	<a href="http://prod.gcubroker.org:80/wdr?wsdl">http://prod.gcubroker.org:80/wdr?wsdl</a>
Login	Will be provided by GCU	Will be provided by GCU
Password	Will be provided by GCU	Will be provided by GCU

### 3.2.2 Data Format

XML syntax see [Appendix B](#)

#### Location Coding

GCU Message Broker uses several global types of TAF TSI. LocationIdent is one of these types. It is used in WDR XML for mandatory elements Origin, Destination and Damage Detection Location. Location codes of the CRD (central reference file database, <http://ccs.rne.eu/crd/>) have to be used as a rule. If such code for a specific location is not available in CRD an alternative coding using UIC location codes (e.g. DIUM) applies.

Alternative location coding with UIC codes:

- LocationPrimaryCode = 99999 (to tag the location as not in CRD)
- LocationSubsidiaryIdentification becomes mandatory
- LocationSubsidiaryName becomes mandatory (used as location name in WDR PDF)

### 3.2.3 Workflow

This communication is synchronous. In the xml-response you get information about success or failure of the request immediately. The syntax of the Receipt Confirmation can be found in [Appendix D](#), the syntax of the error messages in [Appendix E](#).

If **RU WDR Notify Mail** is activated, the GCU Message Broker sends if the WDR could be delivered to the Keeper a mail to the address stored in the companies communication settings (see [chapter 3.6](#)) containing the WDR as PDF in the language of the sending RU company.

## 3.3 Send WDR ATTM

### 3.3.1 Connectivity

	TEST	PROD
Host	test.gcubroker.org	prod.gcubroker.org
URL 1	<a href="http://test.gcubroker.org:80/wda/">http://test.gcubroker.org:80/wda/</a>	<a href="http://prod.gcubroker.org:80/wda/">http://prod.gcubroker.org:80/wda/</a>
URL 2	<a href="https://test.gcubroker.org:1443/wda/">https://test.gcubroker.org:1443/wda/</a>	<a href="https://prod.gcubroker.org:443/wda/">https://prod.gcubroker.org:443/wda/</a>
WSDL	<a href="http://test.gcubroker.org:80/wda?wsdl">http://test.gcubroker.org:80/wda?wsdl</a>	<a href="http://prod.gcubroker.org:80/wda?wsdl">http://prod.gcubroker.org:80/wda?wsdl</a>
Login	Will be provided by GCU	Will be provided by GCU
Password	Will be provided by GCU	Will be provided by GCU

### 3.3.2 Data Format

#### REST

Key	Value
transaction	Unique key of the transaction
fileName	Filename in the syntax described below
fileReport	Selected attachment file to be delivered

#### fileName Syntax

```
UserRUID_WDRID_ewdratt_WGNO_timestamp.pdf
```

Description of file name parts:

UserRUID	4 digit company code (applicable to all GCU signatories)
WDRID	ID of the damage protocol as stated in the protocol and defined by the User RU

<code>ewdratt</code>	specification that the file is an attachment
<code>WGNO</code>	12 digit wagon number (no spaces or hyphen)
<code>Timestamp</code>	time stamp of the creation of the file: "yyyymmddhhmmss"

### 3.3.3 Workflow

This communication is asynchronous. When sending an xml-message to GCU Broker you get an immediate Receipt Confirmation (syntax see [Appendix D](#)) or a SOAP error message if the XML format is incorrect.

If **WDRerror** is set correctly, error messages can be received as xml-message on the specified URL (see [chapter 3.6](#))

If **RU WDR Notify Mail** is activated, the GCU Message Broker sends in case of a successful delivery to the Keeper a mail to the address stored in the company's communication settings (see [chapter 3.6](#)) containing the attachments.

## 3.4 Get RU WDR Notify Mail

The GCU Message Broker sends a mail notification to the mail address specified in the communication settings of the company every time, a WDR message is successfully delivered to the Keeper.

This mail acts as a confirmation for the sending RU company, that the WDR message was received by the Keeper.

The mail address has to be set in the communication settings of the GCU Message Broker (see [chapter 3.6](#)). The corresponding setting is called **RU WDR Notify Mail**.

## 3.5 Get Error Messages for RUs

The GCU Message Broker sends error messages via SOAP for asynchronous XML messages (WDRa and WPM).

The URL where these messages can be received by the RU company has to be set in the communication settings of the GCU Message Broker (see [chapter 3.6](#)). The corresponding settings are called **WPMerror** and **WDRerror**.

For further information see also [chapter 5.4](#)











## 3.6 Communication Settings for RUs

These communication settings are also described in the User Manual of the GCU Message Broker (see chapter 6.6 Change Communication Paths).



In order to modify these settings in the GCU Broker, you have to have access as user of type Company Administrator to the GCU Message Broker Web Interface (see chapter 6 Configure GCU Message Broker as Company Administrator)

Once you are logged in as Company Administrator into the GCU Message Broker, you can select **Communications** on the main menu, the various communication paths for the company can be managed.


Communication Channels				
Type	Output Channel	Output Address	Active	Action
WPM	SOAP			
WDR XML	SOAP			
WDR ATTM	REST			
WDR PDF	SMTP	test@test.ch		
RSDS	SOAP			
RU WDR Notify Mail	SMTP			
Keeper WDR Notify Mail	SMTP			
Keeper Notify Mail	SMTP			
WPMerror	SOAP			
WDRerror	SOAP			

The number of entries varies depending on the type of company (RU and/or Keeper)

The following communication paths have to be set for an RU company:

Message Type	Communi-cation	Explanation
<b>RU WDR Notify Mail</b>	Mail	Communication details for reception of notifications about transmission of WDR messages to GCU Message Broker
<b>WPMerror</b>	SOAP/CI	Communication details for the reception of errors during the transmission of asynchronous SOAP communication for WPMs.
<b>WDRerror</b>	SOAP/CI	Communication details for the reception of errors during the transmission of asynchronous SOAP communication for WDR Attachments.



by clicking on the  button for a specific communication path in the list of communications, the settings for this communication can be changed.

The dialog is identical for all types of communications.

Communication Details

Type  
WPM

Output Channel  
SOAP

☐ Communication Active

Output Address\*

Authorisation Type  
NONE

Username

Password

Save Cancel

The **Type** of the communication cannot be changed.

The **Output Channel** shows the type of communication of this channel. It cannot be modified.

Enter the **Output Address** in the form of an URL or a Mail-Address depending on the type of communication, where the GCU Message Broker shall send the information to.

If you check the **Communication Active** check box, the communication channel is activated overnight and can be used as of the next day.

**Authorization type** set to **None** assumes, that the receiving system does not require authorization. When setting **Authorization type** to **Basic**, a **Username** and **Password** must be set, that the receiving system is expecting.

## 4 Interfaces for Keepers

### 4.1 Send WKM

Changes in the custody of wagons (WKM) can be sent to the GCU Message Broker as XML-message via SOAP.

#### 4.1.1 Connectivity

	TEST	PROD
Host	test.gcubroker.org	prod.gcubroker.org
URL 1	<a href="http://test.gcubroker.org:80/wkm/">http://test.gcubroker.org:80/wkm/</a>	<a href="http://prod.gcubroker.org:80/wkm/">http://prod.gcubroker.org:80/wkm/</a>
URL 2	<a href="https://test.gcubroker.org:1443/wkm/">https://test.gcubroker.org:1443/wkm/</a>	<a href="https://prod.gcubroker.org:443/wkm/">https://prod.gcubroker.org:443/wkm/</a>
WSDL	<a href="http://test.gcubroker.org:80/wpm?wsdl">http://test.gcubroker.org:80/wpm?wsdl</a>	<a href="http://prod.gcubroker.org:80/wpm?wsdl">http://prod.gcubroker.org:80/wpm?wsdl</a>
Login	Will be provided by GCU	Will be provided by GCU
Password	Will be provided by GCU	Will be provided by GCU

#### 4.1.2 Data Format

See [Appendix C](#)

#### 4.1.3 Workflow

This communication is asynchronous. The success of an upload can be checked in the GCU Admin GUI.

### 4.2 Receive Keeper Notify Mail

If the custody of a wagon of the Keeper changes, the CGU Message Broker can send a notification by mail to the affected Keeper. The mail address has to be set in the communication settings of the company (see [chapter 4.8](#), channel named **Keeper Notify Mail**).

### 4.3 Receive WDR and attachments as PDF (WDR Mail)

#### 4.3.1 Connectivity

A Keeper can receive WDR messages as well as WDR attachments as mails, containing either the WDR as PDF attachment or the attachment document itself.

The Keeper system must be able to receive these mails on the channel that is specified in the CGU Message Broker (see [chapter 4.8](#), channel named **WDR PDF**).

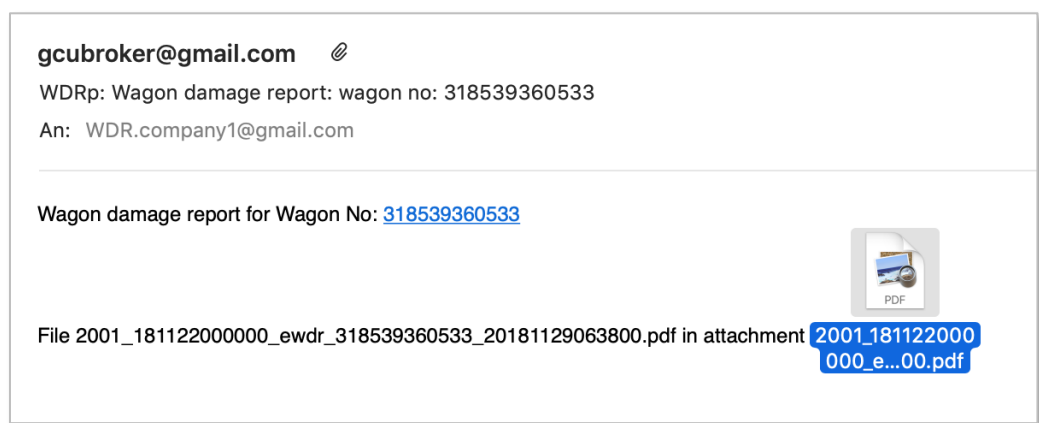
## Exceptions

If the Keeper system receives WDR messages as XML (see [chapter 4.5](#)), the WDR is not transmitted as PDF to this channel.

If the Keeper system receives WDR ATTM messages via REST (see [chapter 4.6](#)), the WDR ATTM is not transmitted to this channel.

### 4.3.2 Data Format

The mail received looks as follows:



## 4.4 Receive WDR as XML (WDR XML)

### 4.4.1 Connectivity

A Keeper can receive WDR messages as XML-messages.

The Keeper system must be able to receive these XML-messages on the channel that is specified in the CGU Message Broker (see [chapter 4.8](#), channel named **WDR XML**).

## Exceptions

If the Keeper system receives WDR messages as XML (see [chapter 4.5](#)), there is no additional transmission of the WDR as PDF to the WDR Mail channel.

### 4.4.2 Data Format

The syntax of the received WDR XML is described in [Appendix B](#).

### 4.4.3 Workflow

This communication is synchronous. The GCU Broker expects a Receipt Confirmation (syntax see [Appendix D](#)) or an error message (see [Appendix E](#)) for the sent message.

## 4.5 Receive WDR ATTM via REST

### 4.5.1 Connectivity

A Keeper can receive WDR attachments via REST.

The Keeper system must be able to receive these messages on the channel that is specified in the CGU Message Broker (see [chapter 4.8](#), channel named **WDR ATTM**).

### Exceptions

If the Keeper system receives WDR attachments via REST, there is no additional transmission of the WDR attachment as mail to the **WDR PDF** channel.

### 4.5.2 Data Format

The attachment file name syntax looks as follows:

```
UserRUID_WDRID_ewdratt_WGNO_timestamp_no.xyz
```

Description of file name parts:

UserRUID	4 digit company code (applicable to all GCU signatories)
WDRID	ID of the damage protocol as stated in the protocol and defined by the User RU
ewdratt	specification that the file is an attachment to a protocol
WGNO	12 digit wagon number (no spaces or hyphen)
timestamp	time stamp of the creation of the file in the format "yyyymmddhhmmss"
no	2 digit random number to assure unique file name in case several attachments have to be transmitted
xyz	file extension (e.g. PDF, JPG, TXT,...)

## 4.6 Get Keeper WDR Notify Mail

The GCU Message Broker additionally sends a mail notification to the mail address specified in the communication settings of the Keeper every time, a WDR or WDR Attachment message is sent to the Keeper system.

This mail acts as a notification that you received a WDR message.

The mail address has to be set in the communication settings of the GCU Message Broker (see [chapter 4.8](#)). The corresponding setting is called **Keeper WDR Notify Mail**.

## 4.7 Communication Settings for Keepers

These communication settings are also described in the User Manual of the GCU Message Broker (see chapter 6.6 Change Communication Paths).

In order to modify these settings in the GCU Broker, you have to have access as user of type Signatory Administrator to the GCU Message Broker Web Interface (see chapter 6 Configure GCU Message Broker as Signatory Administrator)

Once you are logged in as Signatory Administrator into the GCU Message Broker, you can select **Communication** in the menu **Signatory**. The various communication paths for the company can be managed.

Type	Output Channel	Output Address	Active	Action
WPM	SOAP			
WDR XML	SOAP			
WDR ATTM	REST			
WDR PDF	SMTP	test@test.ch		
RSDS	SOAP			
RU WDR Notify Mail	SMTP			
Keeper WDR Notify Mail	SMTP			
Keeper Notify Mail	SMTP			
WPMerror	SOAP			
WDRerror	SOAP			

The number of entries varies depending on the type of company (RU and/or Keeper)

The following communication paths have to be set for a Keeper company:

Message Type	Communi-cation	Explanation
<b>WPM</b>	SOAP/CI	Communication details for reception of WPM messages
<b>WDR XML</b>	SOAP/CI	Communication details for reception of electronic WDR messages
<b>WDR ATTM</b>	REST	Communication details for reception of WDR attachments
<b>WDR PDF</b>	Mail	Communication details for reception of WDR protocol messages as PDF files
<b>RSDS</b>	SOAP/CI	Communication details for reception of RSDS messages
<b>Keeper WDR Notify Mail</b>	Mail	Communication details for reception of notifications about new WDR messages
<b>Keeper Notify Mail</b>	Mail	Communication details for the reception of notification mails in case the keeping of a wagon of the corresponding company changes



by clicking on the button for a specific communication path in the list of communications, the settings for this communication can be changed.

The dialog is identical for all types of communications.

Communication Details

Type  
WPM

Output Channel  
SOAP

☐ Communication Active

Output Address\*

Authorisation Type  
NONE

Username

Password

Save Cancel

The **Type** of the communication cannot be changed.

The **Output Channel** shows the type of communication of this channel. It cannot be modified.

Enter the **Output Address** in the form of an URL or an Mail-Address depending on the type of communication, where the GCU Message Broker shall send the information to.

If you check the **Communication Active** check box, the communication channel is activated overnight and can be used as of the next day.

**Authorization type** set to **None** assumes, that the receiving system does not require authorization. When setting **Authorization type** to **Basic**, a **Username** and **Password** can be set, that the receiving system is expecting.



## 5 Monitoring and Error Handling

### 5.1 Message Types

GCU Broker uses TAF message types for the XML communication

The following message types are used:

5500	Wagon Performance Message
5502	Wagon Damage Report
5503	Wagon Keeper Message
2007	ReceiptConfirmationMessage
9xxx	Error Message

### 5.2 Error Codes

#### Error Code Structure

<Code>\_<MessageType>

#### <Code>

```
nnnn
  n.1: 9
  n.2: x = type of route
  n.3: y = origin
  n.4: z = specific
```

#### x = type of route

```
0 = WPM
1 = WDR XML
2 = WDR ATTM
3 = WDR PDF
4 = RSDS
5 = WKM
8 = UPSTREAM
9 = GUI
```

#### y = origin

```
2 = inflow error
4 = reference error
6 = transform error
8 = outflow error
```

#### z = specific

```
x = 2: WDR ATTM
  2 = UserRU length not correct
  3 = WDRID has non numeric parts
  4 = fix part not correct
  5 = wagon length not correct
  6 = date time length not correct
  7 = number has non numeric parts
  8 = segments are not correct
y = 2: inflow error
  0 = general error
  1 = sender and login not matching
  2 = sender not known
  3 = receiver not known
  4 = date not valid
y = 4: reference error
  0 = general error
  2 = no company entry in db
  4 = no wagon entry in db
y = 6: transform error
```

```

0 = general error
2 = transformation not possible
y = 8: outflow error
0 = general error
7 = technical send error
8 = receiver not reached
9 = answer not correct

```

## 5.3 Error Handling in the GUI

When uploading information through the GUI of the GCU Message Broker, the entries in the joblist of the corresponding information type show the errors. This is valid for Wagon Keeper Messages (WKM), WPM, WDR PDF and WDR ATTM.

## 5.4 Error Handling for RU

### 5.4.1 WPM

Since the transmission of WPM via SOAP from an RU to the GCU Message Broker is **asynchronous**, the RU system gets an immediate ReceiptConfirmation (see [Appendix D](#)) or XML Syntax Error Message to the SOAP call. This only indicates, that the message was accepted by the GCU Broker or not. It does not indicate whether the message could be handed over to the responsible Keeper or not.

If the whole transaction was not successful the GCU Broker sends an XML ErrorMessage (see [Appendix E](#)) through the channel **WPMerror**.

In the communication settings of the RU in the GCU Message Broker, the channel **WPMerror** has to be set as described in [chapter 3.6](#).

The link between sent WPM message and ReceiptConfirmation or ErrorMessage is established through the messageId received in the SOAP response of the WPM XML.

### 5.4.2 WDR ATTM

Since the transmission of WDR attachments via SOAP from an RU to the GCU Message Broker is **asynchronous**, the RU system gets an immediate ReceiptConfirmation (see [Appendix D](#)) or XML Syntax Error Message to the SOAP call. This only indicates, that the message was accepted by the GCU Broker or not. It does not indicate whether the message could be handed over to the responsible Keeper or not.

If the whole transaction was not successful the GCU Broker sends an XML ErrorMessage (see [Appendix E](#)) through the channel **WDRerror**.

In the communication settings of the RU in the GCU Message Broker, the channel **WDRerror** has to be set as described in [chapter 3.6](#).

The link between sent WDR ATTM message and ReceiptConfirmation or ErrorMessage is established through the messageId received in the SOAP response of the WPM XML.

### 5.4.3 WDR XML

Since the transmission of WDR messages via SOAP from an RU to the GCU Message Broker is **synchronous**, the RU system gets an immediate ReceiptConfirmation (see [Appendix D](#)) or ErrorMessage (see [Appendix E](#)) indicating whether the WDR message could be handed over to the responsible Keeper or not.

## 6 Onboarding

All required documents and links for the onboarding process for RUs and Keepers can be found in the GCU Broker when logged in as Company Administrator.

## Appendices

### Appendix A: WPM XML

#### XML Version 2.18

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:ns1="http://gcubroker.org/wpm">
  <soapenv:Header/>
  <soapenv:Body>
    <ns1:WagonPerformanceMessage xmlns:ns1="http://gcubroker.org/wpm">
      <ns1:MessageHeader>
        <ns1:MessageReference>
          <ns1:MessageType>5500</ns1:MessageType>
          <ns1:MessageTypeVersion>2.1.8</ns1:MessageTypeVersion>
          <ns1:MessageIdentifier>fb69c587-1483-4532-2600-180522234931</ns1:MessageIdentifier>
          <ns1:MessageDateTime>2018-07-24T22:27:57.529+02:00</ns1:MessageDateTime>
        </ns1:MessageReference>
        <ns1:Sender>2180</ns1:Sender>
        <ns1:Recipient>4711</ns1:Recipient>
      </ns1:MessageHeader>
      <ns1:PerformanceData>
        <ns1:WagonNumberFreight>378478364839</ns1:WagonNumberFreight>
        <ns1:UserRU>2180</ns1:UserRU>
        <ns1:PeriodStart>2018-10-29T00:00:00.000+02:00</ns1:PeriodStart>
        <ns1:PeriodEnd>2018-10-29T00:00:00.000+02:00</ns1:PeriodEnd>
        <ns1:Country>NL</ns1:Country>
        <ns1:Kilometers>321</ns1:Kilometers>
        <ns1:TotalLoadWeight>90000</ns1:TotalLoadWeight>
      </ns1:PerformanceData>
    </ns1:WagonPerformanceMessage>
  </soapenv:Body>
</soapenv:Envelope>
```

PerformanceData      can be repeated (1...n)

Kilometers              range from 1 to 999

TotalLoadWeight      range from 1 to 99999

XML examples as well as WSDL files can be downloaded from the GCU Broker.

## Appendix B: WDR XML

### XML Version 2.18

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:wdr="http://gcubroker.org/wdr">
  <soapenv:Header/>
  <soapenv:Body>
    <wdr:WagonDamageReportMessage>
      <wdr:MessageHeader>
        <wdr:MessageReference>
          <wdr:MessageType>5502</wdr:MessageType>
          <wdr:MessageTypeVersion>2.1.8</wdr:MessageTypeVersion>
          <wdr:MessageIdentifier>fb69c587-1483-4532-2600-180522234932</wdr:MessageIdentifier>
          <wdr:MessageDateTime>2018-07-24T22:27:57.529+02:00</wdr:MessageDateTime>
        </wdr:MessageReference>
        <!--Optional:-->
        <wdr:MessageRoutingID>01</wdr:MessageRoutingID>
        <!--Optional:-->
        <wdr:SenderReference>2180</wdr:SenderReference>
        <wdr:Sender wdr:CI_InstanceNumber="01">2180</wdr:Sender>
        <wdr:Recipient wdr:CI_InstanceNumber="01">4711</wdr:Recipient>
      </wdr:MessageHeader>
      <wdr:ReportID>180902155201</wdr:ReportID>
      <wdr:UserRU>2180</wdr:UserRU>
      <wdr:ContactUserRU>
        <wdr:AdministrativeContactInformation>
          <wdr:Name>DB Cargo</wdr:Name>
          <!--Optional:-->
          <wdr:Email>info@dbcargo.de</wdr:Email>
          <!--Optional:-->
          <wdr:PhoneNumber>+492167891234</wdr:PhoneNumber>
          <!--Optional:-->
          <wdr:FaxNumber>+492167891234</wdr:FaxNumber>
          <!--Optional:-->
          <wdr:FreeTextField>free text</wdr:FreeTextField>
        </wdr:AdministrativeContactInformation>
      </wdr:ContactUserRU>
      <wdr:Keeper>4321</wdr:Keeper>
      <wdr:WagonNumberFreight>378007647563</wdr:WagonNumberFreight>
      <wdr:TransportInformation>
        <wdr:ConsignmentNumber>992288337744</wdr:ConsignmentNumber>
        <wdr:Origin>
          <wdr:CountryCodeISO>DE</wdr:CountryCodeISO>
          <wdr:LocationPrimaryCode>12983</wdr:LocationPrimaryCode>
          <!--Optional:-->
          <wdr:PrimaryLocationName>Bonn</wdr:PrimaryLocationName>
        </wdr:Origin>
      </wdr:TransportInformation>
    </wdr:WagonDamageReportMessage>
  </soapenv:Body>
</soapenv:Envelope>
```

```

        <!--Optional:-->
        <wdr:LocationSubsidiaryIdentification>
            <wdr:LocationSubsidiaryCode wdr:LocationSubsidiaryTypeCode="42">12321</wdr:LocationSubsidiaryCode>
            <!--Optional:-->
            <wdr:AllocationCompany>0080</wdr:AllocationCompany>
            <!--Optional:-->
            <wdr:LocationSubsidiaryName>Bonn Ost</wdr:LocationSubsidiaryName>
        </wdr:LocationSubsidiaryIdentification>
    </wdr:Origin>
    <wdr:Destination>
        <wdr:CountryCodeISO>DK</wdr:CountryCodeISO>
        <wdr:LocationPrimaryCode>12732</wdr:LocationPrimaryCode>
        <!--Optional:-->
        <wdr:PrimaryLocationName>Frederiksborg</wdr:PrimaryLocationName>
    </wdr:Destination>
    <wdr:DepartureDate>2018-07-24</wdr:DepartureDate>
    <wdr:LoadingStatus>0</wdr:LoadingStatus>
    <wdr:TrainIdentifier>
        <!--You have a CHOICE of the next 2 items at this level-->
        <wdr:TAF-Identifier>
            <wdr:ObjectType>TR</wdr:ObjectType>
            <wdr:Company>2180</wdr:Company>
            <wdr:Core>123456789021</wdr:Core>
            <wdr:Variant>01</wdr:Variant>
            <wdr:TimetableYear>2018</wdr:TimetableYear>
            <!--Optional:-->
            <wdr:StartDate>2018-09-01</wdr:StartDate>
        </wdr:TAF-Identifier>
        <wdr:OperationalTrainNumber>44782</wdr:OperationalTrainNumber> -->
    </wdr:TrainIdentifier>
</wdr:TransportInformation>
<wdr:DamageDetection>
    <wdr:Location>
        <wdr:CountryCodeISO>DE</wdr:CountryCodeISO>
        <wdr:LocationPrimaryCode>12321</wdr:LocationPrimaryCode>
        <!--Optional:-->
        <wdr:PrimaryLocationName>Bonn</wdr:PrimaryLocationName>
    </wdr:Location>
    <wdr:DetectedUponHandover>1</wdr:DetectedUponHandover>
    <!--Optional:-->
    <wdr:HandingOverCompany CompanyType="GCUsignatoryRU">
        <!--You have a CHOICE of the next 2 items at this level-->
        <wdr:Company>2183</wdr:Company>
        <wdr:CompanyName>DK Cargo</wdr:CompanyName> -->
    </wdr:HandingOverCompany>
    <wdr:DetectionDate>2018-07-25</wdr:DetectionDate>
</wdr:DamageDetection>
<!--Optional:-->
<wdr:ExistingLabels>
    <!--1 to 3 repetitions:-->
    <wdr:DamageLabel>R1</wdr:DamageLabel>
    <wdr:ReportingRU>
        <!--You have a CHOICE of the next 2 items at this level-->
        <wdr:Company>2180</wdr:Company>
        <wdr:CompanyName>DB Cargo</wdr:CompanyName> -->
    </wdr:ReportingRU>

```

```

<!--Optional:-->
<wdr:Date>2018-07-24</wdr:Date>
</wdr:ExistingLabels>
<wdr:NewLabels>
  <!--0 to 3 repetitions:-->
  <wdr:DamageLabel>K</wdr:DamageLabel>
  <wdr:WagonDetached>1</wdr:WagonDetached>
  <wdr:DispatchedToWorkshop>BeforeUnloading</wdr:DispatchedToWorkshop>
</wdr:NewLabels>
<wdr:DamageDescription>
  <!--Optional:-->
  <wdr:Remarks>free remark</wdr:Remarks>
  <!--1 to 3 repetitions:-->
  <wdr:Damage>
    <wdr:CodeDigit1>1</wdr:CodeDigit1>
    <wdr:CodeDigit2>2</wdr:CodeDigit2>
    <!--Optional:-->
    <wdr:CodeDigit3>3</wdr:CodeDigit3>
    <!--Optional:-->
    <wdr:CodeDigit4>4</wdr:CodeDigit4>
    <!--Optional:-->
    <wdr:OldDamage>1</wdr:OldDamage>
  </wdr:Damage>
  <wdr:Category>
    <wdr:DamageCategory>Wear</wdr:DamageCategory>
    <!--Optional:-->
    <wdr:Perpetrator>

```

## Appendix C: WKM XML

### XML Version 2.18

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:wkm="http://gcubroker.org/wkm">
  <soapenv:Header/>
  <soapenv:Body>
    <wkm:WagonKeeperMessage>
      <wkm:MessageHeader>
        <wkm:MessageReference>
          <wkm:MessageType>5503</wkm:MessageType>
          <wkm:MessageTypeVersion>2.1.8</wkm:MessageTypeVersion>
          <wkm:MessageIdentifier>fb69c587-1483-4532-2600-180522234932</wkm:MessageIdentifier>
          <wkm:MessageDateTime>2018-07-24T22:27:57.529+02:00</wkm:MessageDateTime>
        </wkm:MessageReference>
        <!--Optional:-->
        <wkm:MessageRoutingID>01</wkm:MessageRoutingID>
        <!--Optional:-->
        <wkm:SenderReference>2180</wkm:SenderReference>
        <wkm:Sender wkm:CI_InstanceNumber="01">2180</wkm:Sender>
        <wkm:Recipient wkm:CI_InstanceNumber="01">4711</wkm:Recipient>
      </wkm:MessageHeader>
      <wkm:WagonList>
        <wkm:WagonNumberFreight>818545520103</wkm:WagonNumberFreight>
        <wkm:Keeper>2185</wkm:Keeper>
      </wkm:WagonList>
    </wkm:WagonKeeperMessage>
  </soapenv:Body>
</soapenv:Envelope>
```

WagonList can be repeated (1...n)

XML examples as well as WSDL files can be downloaded from the GCU Broker.



## Appendix D: WDR Receipt Confirmation

### XML Version 2.18

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns1:ReceiptConfirmationMessage xmlns:ns1="http://gcubroker.org/wdr">
      <ns1:MessageHeader>
        <ns1:MessageReference>
          <ns1:MessageType>2007</ns1:MessageType>
          <ns1:MessageTypeVersion>2.1.8</ns1:MessageTypeVersion>
          <ns1:MessageIdentifier>fb69c587-1483-4532-2600-180522234932-15432336807700284-15432336807700284</ns1:MessageIdentifier>
          <ns1:MessageDateTime>2018-12-03T15:08:22.932+01:00</ns1:MessageDateTime>
        </ns1:MessageReference>
        <ns1:MessageRoutingID>1</ns1:MessageRoutingID>
        <ns1:SenderReference>2180</ns1:SenderReference>
        <ns1:Sender ns1:CI_InstanceNumber="1">2001</ns1:Sender>
        <ns1:Recipient ns1:CI_InstanceNumber="1">4000</ns1:Recipient>
      </ns1:MessageHeader>
      <ns1:RelatedReference>
        <ns1:RelatedType>111</ns1:RelatedType>
        <ns1:RelatedIdentifier>WDR_ID-perseus-1543233680770-0-284</ns1:RelatedIdentifier>
        <ns1:RelatedMessageDateTime>2018-12-03T15:08:22.932+01:00</ns1:RelatedMessageDateTime>
      </ns1:RelatedReference>
    </ns1:ReceiptConfirmationMessage>
  </soap:Body>
</soap:Envelope>
```

## Appendix E: WDR Error Message

### XML Version 2.18

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns1:ErrorMessage xmlns:ns1="http://gcubroker.org/wdr">
      <ns1:MessageHeader>
        <ns1:MessageReference>
          <ns1:MessageType>9000</ns1:MessageType>
          <ns1:MessageTypeVersion>2.1.8</ns1:MessageTypeVersion>
          <ns1:MessageIdentifier>fb69c587-1483-4532-2600-180522234932-15432336807700277-15432336807700277</ns1:MessageIdentifier>
          <ns1:MessageDateTime>2018-12-03T15:05:58.547+01:00</ns1:MessageDateTime>
        </ns1:MessageReference>
        <ns1:MessageRoutingID>1</ns1:MessageRoutingID>
        <ns1:SenderReference>2180</ns1:SenderReference>
        <ns1:Sender ns1:CI_InstanceNumber="1">2001</ns1:Sender>
        <ns1:Recipient ns1:CI_InstanceNumber="1">4000</ns1:Recipient>
      </ns1:MessageHeader>
      <ns1:MessageStatus>1</ns1:MessageStatus>
      <ns1:AdministrativeContactInformation>
        <ns1:Name>GCU Broker</ns1:Name>
      </ns1:AdministrativeContactInformation>
      <ns1:ErrorCauseReference>
        <ns1:MessageReference>
          <ns1:MessageType>9000</ns1:MessageType>
          <ns1:MessageTypeVersion>2.1.8</ns1:MessageTypeVersion>
          <ns1:MessageIdentifier>fb69c587-1483-4532-2600-180522234932-15432336807700277-15432336807700277</ns1:MessageIdentifier>
          <ns1:MessageDateTime>2018-12-03T15:05:58.547+01:00</ns1:MessageDateTime>
        </ns1:MessageReference>
      </ns1:ErrorCauseReference>
      <ns1:Error>
        <ns1:TypeOfError>1</ns1:TypeOfError>
        <ns1:Severity>1</ns1:Severity>
        <ns1:ErrorCode>7000</ns1:ErrorCode>
        <ns1:FreeTextField>Error</ns1:FreeTextField>
      </ns1:Error>
      <ns1:Error>
        <ns1:TypeOfError>1</ns1:TypeOfError>
        <ns1:Severity>1</ns1:Severity>
        <ns1:ErrorCode>8144</ns1:ErrorCode>
        <ns1:FreeTextField>Error no kv pair found for WagonRedisEntity:218523508942</ns1:FreeTextField>
      </ns1:Error>
    </ns1:ErrorMessage>
  </soap:Body>
</soap:Envelope>
```