PRODIS.*Server*

Feature Description for
REST API

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1 Introduction

1.1 Content Overview

This document describes the REST API of the PRODIS.Server to exchange data with external (i.e. not DSA) systems.

1.2 Definitions, Acronyms and Abbreviations

See DSA glossary „DSA glossary“.

2 Present Status and Objective

2.1 Objective

PRODIS.Server receives vehicle data from external (i.e. not DSA) systems and sends test result data to external systems. In production field, the external system is normally the MES system.

PRODIS.Server uses the REST API for these two kinds of data exchange.

2.2 Reception of Vehicle data

DSA needs production data as description for each vehicle for controlling the assembly process. There are two way for receiving vehicle data:

1. Forecast
   MES sends vehicle data in advance when/before vehicle enters production.
2. Data request
   If data for a vehicle is not available on the DSA system, DSA will query the data for that vehicle

The payload format for a single vehicle is the same for both ways.

2.3 Result data export

DSA sends the results for each vehicle test. There are two alternatives:

1. Result of current test.
2. Overall Result of all tests of that vehicle performed yet.

2.4 Context Diagram

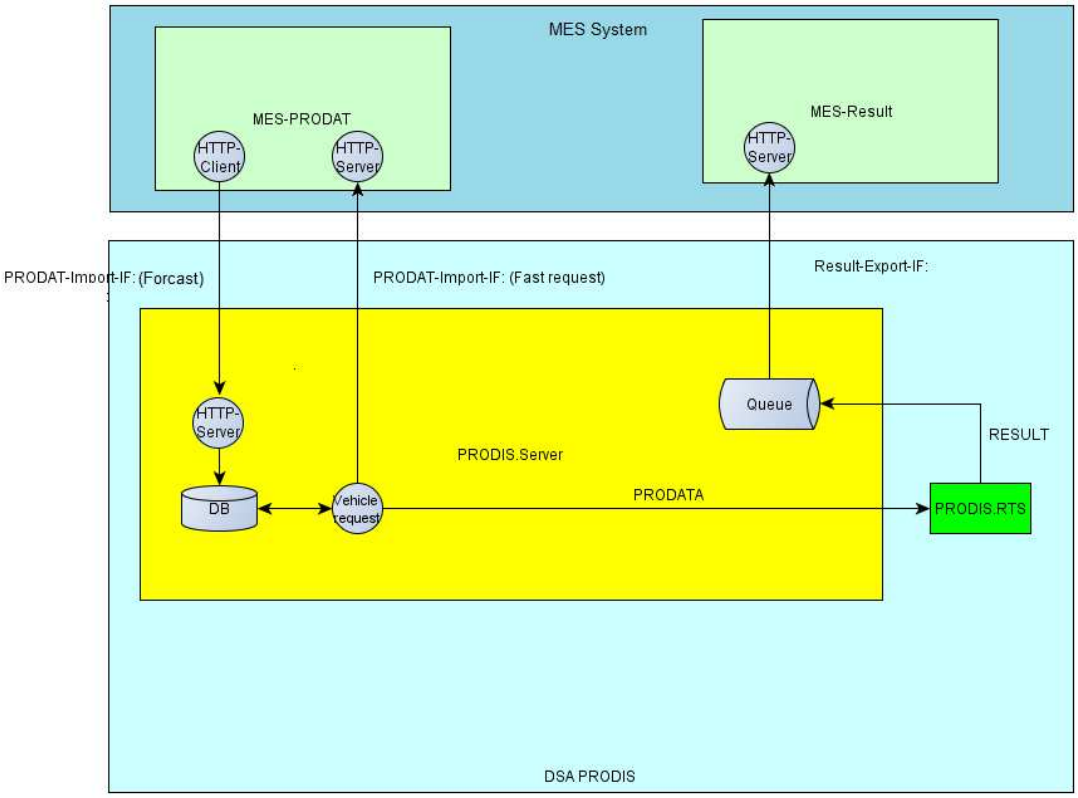

Figure 1: Context Diagram

2.5 Overview: External Interfaces

Table 1: External interfaces

Name	In/Out	Description
PRODAT-Import-IF: (Forcast)	In	Import of vehicle data from MES
PRODAT-Import-IF: (Fast request)	In/Out	Query MES for vehicle data of specific vehicle
Result-Export-IF	Out	Export test result data to MES

3 REST API

3.1 Restriction

3.1.1 HTTP Request Methods supported by PRODIS.Server

The RESTful Web Services of PRODIS.Server only support POST request. The GET, PUT, DELETE are not supported.

3.1.2 Content-Type supported by PRODIS.Server

PRODIS.Server supports 'application/xml' as Content-Type.
(http://en.wikipedia.org/wiki/Internet_media_type).

3.2 PRODAT-Import-IF: (Forecast)

When a vehicle passes a specific trigger point, MES sends the production data of this vehicle to PRODIS.Server. PRODIS.Server stores the vehicle data in its database. The vehicle data is provided to the DSA test equipment.

Request

POST //prodisserver.dsa.de/prodisservice/prodat/prodatimp

Return Status Code

200 OK

Since PRODIS.Server does not create a resource URI for the imported data, Status code 200 is used instead of 201 (http://www.w3.org/Protocols/rfc2616/rfc2616-sec10.html)

In case of a failure, a HTTP status code different from 200 is returned. The error message is included in the content.

Example

Interface to transfer vehicle specific data to PRODIS.Server using HTTP.

Request:

```
POST /prodisservice/prodat/prodatimp HTTP/1.1
Host: prodisserver.dsa.de
Content-Type: application/xml;charset=UTF-8

<Telegram xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="telegram.xsd">
        <Header>
                ...
        </Header>
        <Body>
                <Data>
                        <VehicleData>
                                <BodyIdent plant="AC" productionid="EG123456" produc-
tionyear="2018"/>
                                <VehicleIdent vehicle_ident_number="WEE00122M6EF126388"/>
                        </VehicleData>
                        <OrderData>
                                <VehicleInfo model="Life" type="E1" modelyear="2018"/>
                                <OrderInfos>
                                        <OrderInfo name="drive" value="L"/>
                                        <OrderInfo name="motor" value="M1"/>
                                </OrderInfos>
                                <PartNumbers>
                                        <Part number="8K2907115Q"/>
                                        <Part number="06H909102E"/>
                                </PartNumbers>
                                <Parameters>
                                        <Parameter name="kcode">02 04 15 A1 55 20 20
FF</Parameter>
                                        <Parameter name="display">LCD color</Parameter>
                                </Parameters>
                                <Modules>
                                        <Module moduleid="AIR" sort="1234" />
                                        <Module moduleid="BCM" sort="6789" />
                                </Modules>                              ...
                        </OrderData>
                </Data>
        </Body>
</Telegram>
```

Response:

```
HTTP/1.1 200 OK
Content-type: text/html

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN">
<html>
        <head><title>DSA PRODIS SERVICE </title></head>
        <body>
                <h1>DSA PRODIS SERVICE</h1>
                <p>progressing data</p>
        </body>
</html>
```

3.3 PRODAT-Import-IF: (Data request)

When the vehicle data of a vehicle to be tested does not exist in the database of PRODIS.Server, PRODIS.Server will send a GET request to MES system to request the vehicle data of this vehicle immediately.

3.3.1 Payload format

The xml schema of the content is same as in PRODAT-Import-IF:(Forecast).

3.3.2 Query parameter

PRODIS.Server will use the PID (Production Id) or the VIN as query parameter for a Data Request.

3.3.3 Data Request REST API

The Data request REST API is provided by the MES system. Here describes an example that PRODIS.Server expects as reference.

Request

```
GET //www.mes.com/prodatcgipath/script?vin=WEE00122M6EF126388
```

Return Status Code

```
200 OK
```

HTTP status code 200 indicates success. In case of failure a HTTP status code different from 200 is sent.

Example:

Interface to retrieve vehicle specific data from MES using HTTP.

Request:

```
GET /prodatcgipath/script?vin=WEE00122M6EF126388 HTTP/1.1
Host: www.mes.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/xml;charset=UTF-8

<Telegram xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="telegram.xsd">
	<Header>
		...
	</Header>
	<Body>
		<Data>
			<VehicleData>
				<BodyIdent plant="AC" productionid="EG123456" produc-
tionyear="2018"/>
				<VehicleIdent vehicle_ident_number="WEE00122M6EF126388"/>
			</VehicleData>
			<OrderData>
				<VehicleInfo model="Life" type="E1" modelyear="2018"/>
				<OrderInfos>
					<OrderInfo name="drive" value="L"/>
					<OrderInfo name="motor" value="M1"/>
				</OrderInfos>
				<PartNumbers>
					<Part number="8K2907115Q"/>
					<Part number="06H909102E"/>
				</PartNumbers>
				<Parameters>
					<Parameter name="kcode">02 04 15 A1 55 20 20
FF</Parameter>
					<Parameter name="display">LCD color</Parameter>
				</Parameters>
				<Modules>
					<Module moduleid="AIR" sort="1234" />
					<Module moduleid="BCM" sort="6789" />
				</Modules>
			</OrderData>
		</Data>
	</Body>
</Telegram>
```

3.4 Result-Export-IF

3.4.1 Send test result data of each test station

PRODIS.Server will send the test result data to MES system at each test station. The test result data only contains all test result of current test station. If the vehicle is tested more than once in the same test station, the test result of this station will be sent in the same times.

3.4.2 Queue and Mail Notification

PRODIS.Server will queue the sending of test result data. When there is a failure sending, it will retry. If the queue size reach a predefined value which indicate a problem eg. network broken with MES, a notification mail will be sent to the system manager of PRODIS.Server to check the error.

3.4.3 Result Export REST API

The Result-Export REST API is provided by the MES system and described below. PRODIS.Server transfers XML result data using a POST request.

Request

POST //www.mes.com/resultcgipath/script

Return Status Code

200 OK

If MES will create a resource URI for the imported data, the return code will be 201. Otherwise, return code 200 is used.

In case of failure, the error message will be included in the content.

Example

Interface to receive vehicle specific result data using HTTP.

Request:

```
POST /resultcgipath/script HTTP/1.1
Host: www.mes.com
Content-Type: application/xml;charset=UTF-8

<Telegram xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="Telegram.xsd">
	<Header>
		...
	</Header>
	<Body>
		<VehicleData>
			<BodyIdent plant="AC" productionid="EG123456"
				produc-tionyear="2018"/>
			<VehicleIdent vehicle_ident_number="WEE00122M6EF126388"/>
		</VehicleData>
		<Data>
			<ResultData total_result="nok" complete="false">
				<TestResult device="mftc" inspectorid="0" location="FIN"
					number="7" release="1540571089" result="ok" station="17"
					test_time="2019-01-08T06:44:04+01:00">
					<TestBlock number="100" result="ok" text="Assembly Check">
						<TestStep datatype="A" error_code="0" number="10271"
							result="ok" seqnr="2880" stat_flag="SN"
							text="Assembly Check Compare HWNO">
							<StringResult format="ascii"
								nominal_value="08154711"
								value="08154711"/>
						</TestStep>
						<TestStep datatype="A" error_code="0" number="10272"
							result="ok" seqnr="2881" stat_flag="SN"
							text="Assembly Check Compare HWVER">
							<StringResult format="ascii"
								nominal_value="0246813579      "
								value="0246813579      "/>
						</TestStep>
					</TestBlock>
```

```
                                <TestBlock number="101" result="ok" text="ESP Clear DTC">
                                    <TestStep datatype="A" error_code="0" number="10280"
                                        result="ok" seqnr="3001" stat_flag="SN"
                                        text="Clear DTC Excution">
                                        <StringResult format="ascii"
                                            value="REQ=14 ff ff ff "/>
                                    </TestStep>
                                </TestBlock>
                            </TestResult>
                        </ResultData>
                    </Data>
                </Body>
</Telegram>
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/xml;charset=UTF-8

<Result>
        Successfully Import.
</Result>
```

4 References

4.1 List of Figures

Figure 1: Context Diagram 7

4.2 Further applicable Documents

Table 2: Further applicable documents, regulations and standards

No	Document	File name with link
1	DSA glossary	\\nas1a\doku\Doku\DSA-Prozesse\MU\DSA-Glossar.doc
2	Telegram.xsd	/repo/doc/development/1_product/PRODIS.Server/trunk/20_Product_Specification/PRODIS.Server-PDRS/PRODIS.Server/xmlinterface/Telegram.xsd