

**SupplyOn Problem Solver:**

**Interface Description for Suppliers**

2023-07-19

Your Supply Chain

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# Introduction

## History of the Document

|  |  |  |
| --- | --- | --- |
| **Date of change** | **Description of Version/Page (-s)** | **Done by** |
| 2012-03-13 | Initial Version | SupplyOn |
| 2012-03-26 | Updates/addition on several chapters, mainly on:* 5 “XML Format and Content”
* 6 “Processing Requirements and Restrictions”
* 7 “Messaging and Communication”
 | SupplyOn |
| 2012-04-02 | Renaming of “SO-Complaint”/”SO-Report8D” to “SO-ComplaintSupplier”/”SO-Report8DSupplier”Additions in chapter 5.5 “Message SO-Acknowledgement” (specification how message is processed, additions on list of message types)Wording correction in chapter 7 “Messaging and Communication” | SupplyOn |
| 2012-04-30 | Update in chapter:* 6.4 “Pre-defined Actions” (correction to ComplaintItem.PreDefinedAction.ExternalID)
* 7.2 “Push data communication” (more precise explanation on order of messages and timestamp)
* 7.6.3 “Incremental vs. non-incremental attachment handling” (Correction in example)
* 7.6.4 “Size and type restrictions” (addition of further allowed file types)
* In appendix, 1.1.1 “Down- and Upload” (inserted xsd files)
* In appendix, 1.1.2 “Backend integration” (replaced files “SO-ComplaintSupplier.xsd” and “ProSo Sell-Side Interface Field Description.xls”, as element *ComplaintItem.BuyerProductItemIdentification.Commodity* was not contained)
 | SupplyOn |
| 2012-06-01 | Update chapters:* 6.2 “Response Type” (added two further response types for future compatibility), following changes result from that change:
* In appendix, 1.1.1 “Down- and Upload” (replaced file “SO\_QDXComplaint.xsd”)
* In appendix, 1.1.1 “Down- and Upload” (renaming of file “QDXReport8D.xsd” to “SO\_QDXReport8D.xsd”)
* In appendix, 1.1.2 “Backend integration” (replaced file “SO-ComplaintSupplier.xsd”)
* In appendix, 1.1.2 “Backend integration” (File “ProSo Sell-Side Interface Field Description.xls” was exchanged: wording in two Description fields was changed)
 | SupplyOn |
| 2013-02-03 | Update chapters:* 5.5.1 “Codes and messages” (distinction in status “Waiting for Customer Review”)
* 6.1.1 “Complaint Id” (Added information how complaint Id is referenced in SO-Report8DSupplier)
* 6.4 “Pre-defined Actions” (Added information that node ComplaintItem.PreDefinedAction is also used for item review)
* 6.8 “Overview of Information to be provided” (correction in step D7)
* 7.5.1 “AS/2” (removed message encryption method “RC2”, as not recommended)

7.5.1.1 “Routing from SupplyOn to PartnerRouting from SupplyOn to PartnerFor routing complaint messages correctly from SupplyOn to partner, a defined “Subject” in http header is used. It indicates the intent of the request. It follows this logic:“SO-(Service):SO-(MessageType):(DUNS):(ExternalCommunicationSystemId):”. For Problem Solver this is:* SO-ProSo:SO-ComplaintSupplier:123456789:987:

For routing Acknowledgement messages correctly from SupplyOn to partner, a defined “Subject” in http header is used. It indicates the intent of the request. It follows this logic:“SO-(Service):SO-(MessageType):(DUNS):(ExternalCommunicationSystemId)::SO-(ParentProcess)”, where “ExternalCommunicationSystemId” is filled with the value as it was provided in field *ControlArea.PartnerInfo.ExternalCommunicationSystemId* in the Report8DSupplier message. For Problem Solver this is:* SO-Common:SO-Acknowledgement:123456789:987::SO-Report8DSupplier
* Routing” (AS/2 - corrected routing address)

7.5.2.1 “Routing from SupplyOn to PartnerRouting from SupplyOn to PartnerFor routing complaint messages correctly from SupplyOn to partner, a defined “SOAPAction” in http header is used. It indicates the intent of the request. It follows this logic:“SO-(Service):SO-(MessageType):(DUNS):(ExternalCommunicationSystemId):”. For Problem Solver this is:* SO-ProSo:SO-ComplaintSupplier:123456789:987:

For routing Acknowledgement messages correctly from SupplyOn to partner, a defined “SOAPAction” in http header is used. It indicates the intent of the request. It follows this logic:“SO-(Service):SO-(MessageType):(DUNS):(ExternalCommunicationSystemId)::SO-(ParentProcess)”, where “ExternalCommunicationSystemId” is filled with the value as it was provided in field *ControlArea.PartnerInfo.ExternalCommunicationSystemId* in the Report8DSupplier message. For Problem Solver this is:* SO-Common:SO-Acknowledgement:123456789:987::SO-Report8DSupplier
* Routing” (HTTPS - corrected routing address)

7.6.1 “General information regarding Multipart CommunicationGeneral information regarding Multipart CommunicationProblem Solver supports the Content-Types “Multipart/Mixed” as well as “Multipart/Related”. Therefore, in terms of attachment handling the supplier can decide which Content-Type should be used for Multipart Communication.In case “Multipart/Related” should be used for communication but the Content-Disposition header's optional filename parameter is also required by the supplier, the supplier must provide the DUNS number for each supplier location that should be enabled for the filename parameter. Afterwards, SupplyOn will configure all parameters accordingly for each supplier location based on the provided DUNS number.* Referencing attachments in Multipart Communication” (added chapter with description to link attachment information in xml payload and mime parts, for message types SO-ComplaintSupplier and SO-Report8DSupplier)
* In appendix, 1.1.1 “Down- and Upload” (replaced file “SO\_QDXComplaint.xsd”)
* In appendix, 1.1.1 “Down- and Upload” (renaming of file “QDXReport8D.xsd” to “SO\_QDXReport8D.xsd”)
* In appendix, 1.1.2 “Backend integration” (replaced file “SO-ComplaintSupplier.xsd”)
* In appendix, 1.1.2 “Backend integration” (File “ProSo Sell-Side Interface Field Description.xls” was exchanged: wording in two Description fields was changed)

General review (e.g. correction of spelling) | SupplyOn |
| 2013-03-01 | Update chapters:* 5.5.1 “Codes and messages” (filling missing entries)
* 6.1.2 “Item Id” (more detailed description on different Ids)
* 6.2 “Response Type” (adding which updates are possible)

7.6.1 “General information regarding Multipart CommunicationProblem Solver supports the Content-Types “Multipart/Mixed” as well as “Multipart/Related”. Therefore, in terms of attachment handling the supplier can decide which Content-Type should be used for Multipart Communication.In case “Multipart/Related” should be used for communication but the Content-Disposition header's optional filename parameter is also required by the supplier, the supplier must provide the DUNS number for each supplier location that should be enabled for the filename parameter. Afterwards, SupplyOn will configure all parameters accordingly for each supplier location based on the provided DUNS number.* Referencing attachments in Multipart Communication” (more detailed description)
* 7.6.3 “Incremental vs. non-incremental attachment handling” (adding information on the history within element “*MimeReference*”)

Correction of history entry of 2013-02-03, added changes of appendix.General review (e.g. correction of spelling). | SupplyOn |
| 2014-06-20 | Update chapters:* 5.5.1.11 “Attachments”: deleted message on identical file names
* 6.3.1.2 “Complaint Status set by Supplier”: added allowed change for status “Complete”

7.6.1 “General information regarding Multipart CommunicationProblem Solver supports the Content-Types “Multipart/Mixed” as well as “Multipart/Related”. Therefore, in terms of attachment handling the supplier can decide which Content-Type should be used for Multipart Communication.In case “Multipart/Related” should be used for communication but the Content-Disposition header's optional filename parameter is also required by the supplier, the supplier must provide the DUNS number for each supplier location that should be enabled for the filename parameter. Afterwards, SupplyOn will configure all parameters accordingly for each supplier location based on the provided DUNS number.* Referencing attachments in Multipart Communication”: order of *MimeReference* is relevant

New chapter with sub-sections:6.7 “Additional information within the 8D reportIndividual flexible fieldsAdditionally, to the fields that are defined within the VDA QDX standard, and to the SupplyOn specific fields, individual fields can be used by the customer, separately configured on complaint side and/or on header level of the 8D report. The fields and their unique ID, data type and field length are mutually defined between the customer and SupplyOn. During the transmission, each field is referenced by the unique ID.All individual fields are optional and can be of any data type. The number of fields is unlimited. Individual fields within the 8D report are only available on header level, not within a D-step/action/root cause etc.The specific configuration for the individual, flexible fields can be found in Appendix, chapter 1.3 “Individual flexible field configuration”.For the complaint, the information are provided in the following node:*SO-ComplaintSupplier.QDXComplaint.supplyon:ComplaintAdditions.supplyon:FlexFields* with repetitive elements:* *Field.TechId* (ID indicating the customer Id of the flexible field. If field ID was agreed with supplier, then: supplier Id.)
* *Field.Value* (Value of the field, provided by customer system)

For the 8D report, the information can be provided in the following node:*SO-Report8DSupplier.QDXReport8D.supplyon:ResponseAdditions.supplyon:FlexFields* with repetitive elements:* *Field.TechId* (ID indicating the customer Id of the flexible field. If field ID was agreed with supplier, then: supplier Id.)
* *Field.Value* (Value of the field, provided by supplier)

For the integration on supplier side, the following processes apply:* Download SO\_QDXComplaint: by default, the ID indicating the customer Id is provided. If an individual field ID was agreed with the supplier, then the Id from the supplier company is provided.
* Upload SO\_QDXReport8D: by default, the ID indicating the customer Id is requested to use during upload. If an individual field ID was agreed with the supplier, then the Id from the supplier company must be used.
* Download SO\_QDXReport8D: by default, the ID indicating the customer Id is provided. If an individual field ID was agreed with the supplier, then the Id from the supplier company is provided.
* SO-ComplaintSupplier message: by default, no fields are provided. If an individual field ID was agreed with the supplier, then the fields with reference to the Id from the supplier company are provided.
* SO-Report8DSupplier: by default, all information on individual fields are ignored. If an individual field ID was agreed with the supplier, then the fields with reference to the Id from the supplier company can be provided.
* Additional information within the 8D report”

In appendix, in both schema definitions -1.1.1 “Down- and Upload”1.1.2 “Backend integration”made the following changes for complaint information:* new optional node *QDXComplaint.supplyon:ComplaintAdditions.supplyon:RiskAssessmentBuyer* with two fields to transport customer comment on each risk assessment element
* new optional node *QDXComplaint.supplyon:ComplaintAdditions.supplyon:FailureReproductionBuyer* with one field to transport customer comment on the failure reproduction

In appendix, in both schema definitions -1.1.1 “Down- and Upload”1.1.2 “Backend integration”made the following changes for Report8D information:* new optional node *QDXReport8D.StepD3.DeliveryReference* with five fields to transport the clean date within D3 section
* new optional field *QDXReport8D.StepD3.ContainmentAction.EffectivenessDescription* to transport the validation description of each D3 action
* new optional field *QDXReport8D.StepD3.StepD4.RootCauseAnalysis.RootCause.StepD5.PlannedCorrectiveAction.PlannedEndDateTime* to transport the planned implementation date of each D5 action
* new optional node *QDXReport8D.StepD3.StepD4.RootCauseAnalysis.RootCause.StepD5.StepD6.ReturnDeliveryReferenceDocument* with one field to transport the clean date within D6 section
 | SupplyOn |
|  | * new optional node *QDXReport8D.StepD3.StepD4.RiskAssessment* with seven fields to transport information on individual risk assessments
* new optional node *QDXReport8D.supplyon:ResponseAdditions.supplyon:EnhancedRootCauseAnalysis.supplyon:RootCauseType* with two fields to transport the type (MRC, TRC) of each root cause.
* new optional field *QDXReport8D.supplyon:ResponseAdditions.supplyon:DrillWideAnalysis.ReasonDescription* to transport any reason in case no applicable item is found
* new optional node *QDXReport8D.supplyon:ResponseAdditions.supplyon:FailureReproduction* with five fields to transport information on the case of failure reproduction
* new optional node *QDXReport8D.supplyon:ResponseAdditions.supplyon:CancellationContainmentActions* with three fields to transport information when the containment actions can/could be cancelled due to implementation of corrective action(s) - and who is responsible for it.
* Formal correction in Excel list, tab for Report8D, within element *supplyon:DrillWideAnalysis*

General review (e.g. correction of spelling). |  |
| 2016-12-06 | Update chapters:* 2.2 “Special processes for Bosch”: Deleted status “Waiting for Customer Review”
* 3.1 “Process steps”: Added name of downloaded files
* 3.2 “Using the 8D Report Download”: Added name of downloaded files

New chapters, only for documentation:* 6.1.3 Contact Id (Added information how contact Id is referenced in SO-Report8DSupplier)
* 7.5.1.1 Routing from SupplyOn to Partner
* 7.5.2.1 Routing from SupplyOn to Partner

Deleted chapter 6.8.2 D2 Problem DescriptionDeleted chapter 6.8.4 Sequential processingIn appendix, in both schema definitions -1.1.1 “Down- and Upload”1.1.2 “Backend integration”made the following changes for complaint information:* new optional node *QDXComplaint.Header.SellerParty.Organization* with nine fields to transport information on suppliers contact (only relevant for download/upload, not used in backend integration)

In appendix, in both schema definitions -1.1.1 “Down- and Upload”1.1.2 “Backend integration”made the following changes for Report8D information:* new optional field *QDXReport8D.StepD2.ComplaintItemDescription* to transport the result/comment of the analysis of a recurring error. Field is mandatory if *RecurrenceIndicator* = “true” in complaint information.

General review (e.g. correction of spelling). | SupplyOn |
| 2019-01-31 | Update chapters:* 7.5.2.5 “Multipart Communication (with Attachments)”: “Content-ID” is mandatory for the XML payload

New chapters:* 6.6 “Individual flexible fields”
* 6.7.5 “Root cause categories”

In appendix, in both schema definitions –1.1.1 “Down- and Upload”1.1.2 “Backend integration”made the following changes for complaint information:* new optional node *QDXComplaint.supplyon:ComplaintAdditions.supplyon:FlexFields* with repetitive fields to transport individual, flexible fields for the complaint.
* new enumeration value “Logistics” in field *QDXComplaint.ComplaintItem.ComplainedQuantity.NonConformQuantity.PhaseCode*.

In appendix, in both schema definitions -1.1.1 “Down- and Upload”1.1.2 “Backend integration”made the following changes for Report8D information:* new optional node *QDXReport8D.supplyon:ResponseAdditions.supplyon:FlexFields* with repetitive fields to transport individual, flexible fields on header level of the 8D report.
* new optional node *QDXReport8D.supplyon:ResponseAdditions.supplyon:EnhancedRootCauseAnalysis.supplyon:RootCauseCategory* with five fields to transport root cause categories.

General review (e.g. correction of spelling). | SupplyOn |
| 2022-12-12 | Update chapter 6.1.2.Added a remark regarding the possibility of updating existing root causes with an ID range between 9000 – 9999. | SupplyOn |
| 2023-01-12 | Update chapter 6.2.2.Added a remark regarding the current logic of Drill Deep Categories for ProSo UI and XML information (backend messages). | SupplyOn |
| 2023-07-19 | Add new chapter 7.6.1Support of Content-Types “Multipart/Mixed” and “Multipart/Related” for attachments.Update chapter 7.6.4Size limit for all attachments adjusted (can be up to 200 MB). | SupplyOn |

## List of Abbreviations

|  |  |
| --- | --- |
| **Abbreviation** | **Description** |
| 3DES | Triple-DES (Data Encryption Standard) |
| 8D | 8 Disciplines |
| AES | Advanced Encryption Standard |
| ASCII | American Standard Code for Information Interchange |
| AS/2 | Applicability Statement 2 |
| CAQ | Computer Aided Quality |
| D-U-N-S, DUNS | Data Universal Numbering System |
| EDIINT | Electronic Data Interchange - Internet Integration |
| FMEA | Failure Modes and Effects Analysis |
| HTML | Hypertext Transfer Markup Language |
| HTTPS | HyperText Transfer Protocol Secure |
| ISO | International Organization for Standardization  |
| IT | Information Technology |
| MD5 | Message-Digest Algorithm 5 |
| MDN | Message Disposition Notification |
| MIC | Message Integrity Check |
| QDX | Quality Data Exchange (Format) |
| S/MIME | Secure Multipurpose Internet Mail Extension |
| SHA1 | Secure Hash Algorithm, variant 1 |
| SOAP | Simple Object Access Protocol |
| TZD | Time Zone Designator |
| UTC | Coordinated Universal Time |
| UTF | Unicode Character Set Transformation Format |
| VDA | “Verband der Automobilindustrie e.V.” (German Association of Automotive Industry) |
| XML | Extensible Markup Language |
| XSD | XML Schema Definition |
| ZLIB | z library |

## Document Overview

Scope of this document is to describe technical details about the process integration with a supplier system or a CAQ (Computer Aided Quality) system from software vendor with the SupplyOn Problem Solver.

Basic knowledge of XML technology is required.

Chapter 2 gives a general overview of Problem Solver business process, relevant for understanding the overall process.

Chapter 3 is relevant for using the Problem Solver down- and upload functionality. Also note the restrictions in chapter 6 “Processing Requirements and Restrictions”.

Chapter 4 is important for automated backend integration between a suppliers’ system and Problem Solver.

Chapter 5 refers to XML notation and XML message types relevant for both down- and upload function as well as backend integration.

Chapter 6 lists all customers’ requirements and restrictions for complaint and 8D report handling. This is relevant for both down- and upload function as well as backend integration.

Chapter 7 gives details on the message exchange and communication for automated backend integration. (Not relevant for upload/download.)

## Target Group

Complaint handling engineers and process owners for verification of all process requirements and enhancements.

IT Department for verification and implementation of communication infrastructure and complaint handling in supplier’s CAQ system.

# Business Process Overview

## General Overview

Processing of customer complaints is implemented in SupplyOn Problem Solver as follows:

**Customer creates complaint**

The customer initiates the process by creating a complaint in Problem Solver, where it can be processed online by the supplier or loaded into its own CAQ system.

The customer may also change the complaint at any point of time.

**Supplier sets status “Rejected by Supplier”**

In case the supplier has identified that they are not responsible for the complaint (e.g. because it was caused by the customer or no defect could be detected), they can set the complaint to status “Rejected by Supplier”. This implies a non-confirmation or non-acceptance of the complaint.

**Supplier creates 8D report**

The supplier creates the 8D report within SupplyOn Problem Solver (optionally with file attachments), from where it is transmitted to the customer’s system.

This can be done in multiple responses for different D-steps and to comply with the deadlines defined by the customer.

**Supplier reports implementation / validation of actions**

The implementation of actions (including the validation of effectiveness for the D6 actions according to the 8D methodology) may take a longer while. The supplier documents this by providing the “actual implementation dates” for D3, D6, and D7 actions as well as the validation information for D6 actions.

After an action has been reported as implemented or verified, it cannot be changed any more by the supplier.

**Supplier sets status “Complete”**

The supplier sets status “Complete” after he has populated all required information (steps D1 – D7, including “Basic Information”). Within this status, no new items may be created and for existing actions, the supplier can only report the implementation and – for D6 – the validation of effectiveness of these actions.

**Supplier sets status “Closed by Supplier”**

Once all required information is provided and all actions, defined in the 8D report (D3, D6, and D7), are implemented and the “Implemented Corrective Actions” (D6) is verified for effectiveness, the supplier closes the complaint (status “Closed by Supplier”). This is equivalent to the D8-step. After closing the complaint, the supplier cannot change it anymore.

**Customer review**

Triggered by the supplier setting status “Complete”, the customer may review the content of the 8D report, for example whether the correct actions have been defined.

If the customer agrees to the content, nothing happens. The complaint will just remain in status “Complete”. Of course, the customer may also review the 8D report upon any transmission from the supplier.

If the customer does not agree with the content of the 8D report, the customer will set the status back to “open”, which allows the supplier to edit their 8D report again. The supplier does the required changes and re-submits the 8D report again with status “Complete”.

**Customer sets status “Closed by Customer”**

After the supplier has closed the complaint (status “Closed by Supplier”), the customer can do a final review on the complaint. The customer can either close the complaint from their perspective or set it to status “Open” if rework by the supplier is required.

If the customer agrees to the results of the 8D report as entered by the supplier, they close the complaint by setting the status “Closed by Customer”. This brings the process to a conclusion. Of course, the customer may also close the complaint any time before. In addition, the customer may cancel the complaint any time, i.e. if the complaint was issued erroneously.

## Special processes for Bosch

For customer Bosch, following additional aspects need to be considered:

**States “Complete” and “Closed by Supplier”**

States “Complete” and “Closed by Supplier” are not available. Bosch will set the status “Closed by Customer”, after Bosch has approved the 8D report.

**Customer review**

Triggered by each supplier response, the customer reviews the content of the 8D report, for example whether the correct actions have been defined. If the customer agrees to the content, the customer will set the status to “Provisionally Accepted”. If the customer does not agree with the content of the 8D report, the customer will set the status to “Rejected by Customer”. Additionally, Bosch will give feedback on individual actions/root causes by providing a comment and setting a status for each action/root cause (see details in chapter 6.3.2.2 “Special Item States for Bosch”).

# Down- and Upload

To support a manual integration of data from and to a supplier CAQ system the Problem Solver provides a down- and upload interface based on the VDA QDX version 2.0.

(For more information on QDX, pls. refer to <http://www.vda-qmc.de/en/software-processes/qdx/qdx-documentation>).

Following functions are supported:

* Download of the customer’s complaint in XML format.
(See XML schema SO\_QDXComplaint.xsd)
* Upload of the supplier’s 8D report in XML format.
(See XML schema SO\_QDXReport8D.xsd)
* Download of supplier’s 8D report in XML format.
(See XML schema SO\_QDXReport8D.xsd)

Note, that the user may change uploaded information or add missing information after the 8D report has been uploaded and before it is submitted to the customer. Generally, the same business rules which apply during manual maintenance of the 8D report also apply for the upload. For more details, pls. refer to chapter 6 “Processing Requirements and Restrictions”.

## Process steps

Following steps show the regular process to exchange data between a supplier’s CAQ system and Problem Solver. As a prerequisite, the supplier’s CAQ system needs to support down- and upload of complaint and 8D data in the defined XML format.

1. If a new complaint has been provided by the customer the supplier logs onto the Problem Solver and downloads the complaint information as QDX XML file (XML message type QDXComplaint). The file name of the XML document is generated by Problem Solver, following the logic:

<Customer Name>\_Complaint\_<Complaint Number>\_<Date of download yyyy-mm-dd>.xml

File attachments, which may exist for the complaint, need to be downloaded separately.

2. The downloaded XML file must be uploaded into the supplier’s CAQ system. Afterwards the supplier can maintain the 8D report in their own system.

3. After finishing the 8D report or an interim 8D report, the supplier downloads the report from their own system into a QDX compatible XML file (XML message type QDXReport8D).

4. The 8D report can now be uploaded into the Problem Solver. Following restriction need to be considered:

* Attachments need to be uploaded manually.
* Submission of the 8D report and certain status changes need to be done manually. (See 6.3.1.2 “Complaint Status set by Supplier”)

5. After maintaining additional data within Problem Solver (if not part of the uploaded XML file) the complaint can be submitted to the customer.

## Using the 8D Report Download

If the supplier wants to replicate the complaint / 8D report with their internal system after finalization of the case within Problem Solver (e.g. complaint has been closed or cancelled), the supplier can use the download of the 8D report. (This requires, that the 8D report had been submitted at least once.)

In this case, the supplier works within the Problem Solver while the complaint is open. After closing the complaint by customer, the supplier downloads the complaint and 8D report one-time to upload the data in their own system. The file name of the downloaded XML document is generated by Problem Solver, following the logic:

<Customer Name>\_8DReport\_<Complaint Number>\_<Date of download yyyy-mm-dd>.xml

# Backend Integration

As an enhancement of down- and upload information (refer to chapter 3 “Down- and Upload”), automated backend integration establishes an end-to-end communication between a supplier’s CAQ system and the SupplyOn Problem Solver. Instead of manually down- and uploading the XML files, the data is transferred between both systems automatically. The supplier’s user can maintain 8D reports in their system without needing to log on to Problem Solver.

Usage of standardized internet technologies makes the interface independent from the supplier’s IT system. If the data format and process flow are supported by suppliers IT system it is irrelevant, which system is used. It could be an own developed solution as well as a standard software tool from a CAQ software vendor. Note, however, that the supplier is responsible for implementation of the interface in their system.

See chapter 7 for details on the messaging and communication.

# XML Format and Content

XML Schemes (XSD) and their explanations in Excel format for all message types can be found in Appendix, chapter 1.1 “XML Schema Definitions”.

## General explanations

### Explanations of XML notation

* XML tags are formatted in italics (e.g. *Header*)
* XML values are in quotes (e.g. *DocumentID* is “123456789”)
* Sub-elements are separated by dots (“.”) and assigned to elements in a higher level (e.g. *Header.Rc.Dn*)
* Attributes are assigned with an @-sign to the according element (e.g. *Rc@no*)

### Basic rules for the XML format

* The XML file should be validated against an XML Schema (XSD), which formally describes the structure of the XML file. This avoids probable problems during upload or using the backend integration based on not valid data structure. The schemes can be found within this document, see Appendix, chapter 1.1 “XML Schema Definitions”.
* The character set of the xml file must be UTF-8 and must be coded with UTF-8. The character set is defined in the XML prologue

<?xml version="1.0" encoding="UTF-8"?>

* Tabs or other formatting characters should not be used. Within a long text field (e.g. problem description) – the symbols for greater than “>” and lower than “<” must be masked in HTML style to avoid a parser error during import.

> = &gt;

< = &lt;

Example: “Malfunction occurs in temperatures &gt; 40 degrees”

Display: “Malfunction occurs in temperatures > 40 degrees”

If you want to format a long comment with line breaks it is possible to include a line feed (ASCII hex code 0A 0A) within the XML element.

* A line feed can be inserted after every XML element for better readability.
* Tag formats:
	+ Date: yyyy-mm-dd (e.g. 2003-10-23)
	+ Time: All date/times need to be provided according to ISO 8601 in following format:

YYYY-MM-DDThh:mm:ssTZD, where TZD (time zone designator) is Z (Zulu time) or +hh:mm or -hh:mm (e.g. 2000-10-23T13:54:00Z or 2000-10-23T13:54:00-01:00). It is suggested to provide data converted to Zulu time.

* + Numeric format:

Groups of numbers/thousand must not be separated, as it is sometimes done during display. (wrong: “1.234.567”, “1 234 567”; correct: “1234567”).

Dot (“.”) must be used as decimal separator. (wrong: “1,23”; correct: “1.23”)

A value of “0” (zero) needs to be provided as “0”. (wrong: “”, correct “0”).

* + Unit of measures do not need to be provided. Instead, a given quantity by supplier will always refer to unit of measure defined by customer.
	+ Elements identified as “optional” do not necessarily need to be provided. If no value exists, they should not be contained in the XML file at all, as opposed to providing an empty tag.

E.g. if no part number (tag *Pt*) is provided:

Wrong: <Cm>C01</Cm>

<Pt></Pt>

<Dt>2003-12-31</Dt>

Correct: <Cm>C01</Cm>

<Dt>2003-12-31</Dt>

* + The Euro sign (€) and the email sign (@) are displayed as usual within the application. They can be processed as usual.

## General Structure of SupplyOn XML files

All SupplyOn XML files for backend integration have the generic nodes *ControlArea* and <*SO-Process>* after the root element *SO-ProSo*/*SO-Common*.

Within the *ControlArea* node general information (e.g. for message routing) are provided. All values provided by the supplier in the *ControlArea* are returned in the Problem Solver response (acknowledgement) back to the supplier.

Within element *<SO-Process>*, i.e. SO-ComplaintSupplier, SO-Report8DSupplier, SO-Acknowledgement, the information about the business object is contained.

Elements *SO-ComplaintSupplier* and *SO-Report8DSupplier* also correspond to the respective QDX element, *QDXComplaint* and *QDXReport8D*. These parts are also used for the manual upload/download (see section 3 “Down- and Upload”.)

## Message SO-ComplaintSupplier/QDXComplaint

The element *QDXComplaint,* which is part of message SO-ComplaintSupplier, contains all information provided by the customer regarding the complaint, including the complaint status. It can also contain information on predefined actions for 8D report as well as feedback on items (actions/root causes) of 8D report.

As for backend integration the message SO-ComplaintSupplier is sent from Problem Solver to supplier after it was received from customer.

As for download process the QDXComplaint file can be downloaded any time from Problem Solver UI.

### Referencing attachments

### Customer attachments of complaint will always be added on header level (valid for whole complaint), The reference can be found in element(s) *MimeReference*. For description how attachments are transmitted in messages, refer to chapters 7.5.1.5 “Multipart Communication (with Attachments)” (for AS/2) and 7.5.2.5 “Multipart Communication (with Attachments)” (for HTTPS), as well as 7.6.1 “General information regarding Multipart CommunicationGeneral information regarding Multipart Communication

Problem Solver supports the Content-Types “Multipart/Mixed” as well as “Multipart/Related”. Therefore, in terms of attachment handling the supplier can decide which Content-Type should be used for Multipart Communication.

In case “Multipart/Related” should be used for communication but the Content-Disposition header's optional filename parameter is also required by the supplier, the supplier must provide the DUNS number for each supplier location that should be enabled for the filename parameter. Afterwards, SupplyOn will configure all parameters accordingly for each supplier location based on the provided DUNS number.

Referencing attachments in Multipart Communication”.

## Message SO-Report8DSupplier/QDXReport8D

The message SO-Report8DSupplier contains all information provided by supplier on the 8D report of a specific complaint, including the status.

As for backend integration the message SO-Report8DSupplier is sent from Problem Solver to customer after it was received from supplier. If applicable, some additional information will be added to message by Problem Solver before it is forwarded to customer.

As for download/upload process the QDXReport8D file can be uploaded via the Problem Solver user interface.

### Referencing attachments

Attachments of the 8D report can be added on header level (valid for whole 8D report), Step D2, within Enhanced Root Cause Analysis (D4), within Drill Wide Analysis (D7) or specifically for certain actions/root causes. Adding attachments to general D-Steps/sections is not possible.

Attachments for Enhanced Root Cause Analysis (D4) and Drill Wide Analysis (D7) need to be referred to in nodes *supplyon:ResponseAdditions.supplyon:EnhancedRootCauseAnalysis.MimeReference* and

*supplyon:ResponseAdditions.supplyon:DrillWideAnalysis.MimeReference*.

For all other attachments the following is valid: to identify which area an attachment belongs to, the element *PurposeCode* in *QDXReport8D.MimeReference* can be used:

* If element not provided: for attachments on header level
* "StepD2" for attachments on D2 description.
* Respective Action Ids for attachments on actions D3, D5, D6 and D7 (always “*ID*”/”*ActionID*”)
* Respective Root cause Id for attachments on root cause D4 (“*RootCause.ID*”)

### For description how attachments are transmitted in messages, refer to chapters 7.5.1.5 “Multipart Communication (with Attachments)” (for AS/2) and 7.5.2.5 “Multipart Communication (with Attachments)” (for HTTPS), as well as 7.6.1 “General information regarding Multipart CommunicationGeneral information regarding Multipart Communication

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In case “Multipart/Related” should be used for communication but the Content-Disposition header's optional filename parameter is also required by the supplier, the supplier must provide the DUNS number for each supplier location that should be enabled for the filename parameter. Afterwards, SupplyOn will configure all parameters accordingly for each supplier location based on the provided DUNS number.

Referencing attachments in Multipart Communication”.

When using the manual XML upload process, attachments need to be uploaded manually.

## Message SO-Acknowledgement

After processing the content of message SO-Report8DSupplier, an acknowledgment is sent by Problem Solver to provide additional information about the processing of the XML message. Accordingly, after uploading the QDXReport8D file, a confirmation message will be displayed to give details about the status. It contains following types of feedback:

- Successful: all fields are processed

- Warning: all fields and information are processed except some that could not be processed.

- Error: whole content was not processed.

During processing of the 8D report, xml file validation will be done, as well as checking the content against process restrictions.

Examples for erroneous processing are:

* One field does not comply with data type.
* One mandatory field is missing.
* Some mandatory information is missing (e.g. 8DPlus information if requested by customer).
* A status change is not possible at this point of time.

The Acknowledgement/displayed message in case of XML upload can be used for supplier to identify reasons for a non-successful processing of 8D report. After reason had been found and error is corrected, the message SO-Report8DSupplier needs to be resent/QDXReport8D file needs to be uploaded again.

### Codes and messages

The element *MessageItem* specifies the success/warning/error incl. a unique code and description. By this, the supplier system is given a basis to map a specific code to a workflow, e.g. in case of a specific error, sending a notification to a certain person.

Following tables give details on codes and messages.

#### Success Messages

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| 8D report was sent with element *StopAutomaticProcessing* = “true”. | 201 | S | 8D report was saved as draft. | No information is submitted to customer. |
| 8D report updated with status "Open". | 203 | S | 8D report updated with status "Open". |  |
| 8D report updated with status "Rejected by Supplier" | 202 | S | 8D report updated with status "Rejected By Supplier", ID of generated D3 action is {0}. | {0} - ID of automatically created D3 action.See also 6.3.1.2 “Complaint Status set by Supplier” |
| 8D report updated with status "Complete" | 204 | S | 8D report updated with status "Completed by supplier". |  |
| 8D report updated with status "Closed by Supplier" | 205 | S | 8D report updated with status "Closed by supplier". |  |

#### Addressing and References

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| Supplier DUNS does not exist or match authorization information. | 1097 | E | Supplier company DUNS {0} does not exist. | {0} - DUNS |
| Combination of Customer DUNS and Complaint ID does not exist | 1100 | E | Combination of Customer DUNS and Complaint ID does not exist. |  |
| Referenced Contact ID does not exist (D3, D6, D7):*SellerParty.Organization.Contact.ID* is equal to *ResponsibleContactReference.ContactID* but is missing in StepD1 | 1111 | E | The responsible for the action with ID {0} is missing. | {0} - Action Id |
| Referenced Contact ID does not exist (D1, D3, D6, D7):ID from *StepD1* is equal to *ResponsibleContactReference.ContactID* but is missing in *SellerParty.Organization.Contact.ID* | 1139 | E | The contact ID referenced in one action does not exist. Please compare with section {0}. | {0} - xml element |
| Element *SellerParty.Organization.Contact.ID* is not unique. | 1125 | E | One of the elements "SellerParty.Organization.Contact.ID" is not unique. |  |
| Referencing an internal SO Id in Contact IDs that does not exist, | 1137 | E | The contact with the ID {0} does not exist. | {0} - ID of contact |
| Referencing an ID of an action, root cause, Ishikawa or Drill-wide entry that is not unique. | 927 | E | The XML file contains a not unique ID for an action, root cause, Ishikawa, or drill-wide entry. |  |

#### Complaint Status

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| Case status does not allow changes by supplier (status "Closed by Supplier", "Closed by Customer", "Cancelled", "Rejected by Supplier").8D report is not sent with draft flag, i.e. element *StopAutomaticProcessing* = “false”). | 1121 | E | The complaint has the status "{0}". Changes are therefore not possible. | Supplier's response is declined. |
| Status transition not allowed. |  | W |  | Supplier's response updated, but status change ignored. |
| Supplier sets a status, which is not supported by customer.(i.e. status "Complete" and "Closed by Customer" for Bosch) |  | W |  | Supplier's response updated, but status change ignored. |
| Update in status "Complete" |  | W |  | Only changes allowed in status "Complete" performed; others ignored. |

#### Actions/Root Causes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| ID for Action (created by supplier) is not unique within D-Step |  | E | The XML file contains duplicated action IDs (in same or different sections) for sections D3 to D7. Action IDs must be unique over all sections. Your data was not processed. |  |
| ExternalActionID for predefined Action does not exist |  | E |  |  |
| Some content is provided on predefined action in 8D report that was initially provided by customer.  | 1146 | W | Action (ID: {0}) is pre-defined by customer. Updates are partially skipped. | {0} - Action IdChanges on content that was provided by customer (Title and Planned Implementation Date) must not be changed by supplier. |
| Update of an action/root cause for a complaint with customer status “Cancelled”/”Closed by Customer”. | 1143 | W | Action/root cause (ID: {0}) is not editable due action status 'Cancelled' or 'Closed by Customer'. All updates skipped | {0} - Action IdSupplier's response updated, but action/root cause not cancelled (item status change ignored) |
| Root Cause is set to status "Cancelled"; other D5 or D6 actions not in status "Cancelled" (also considering information on currently processed XML file) refer to that Root Cause. |  | W |  | Supplier's response updated, but root cause not cancelled (item status change ignored) |
| Action/root cause provided but (mandatory) title is missing. | 1087 | E | Missing important information ({0}) for complaint {1} | {0} - Action Title(s){1} - Complaint ID |
| Action/root cause provided but (mandatory) description is missing. | 1109 | E | The description for the action or root cause with ID {0} is missing. |  |
| Action/root cause provided but (mandatory) effectiveness is missing. | 1110 | E | The effectiveness for the action or root cause with ID {0} is missing. |  |
| Action/root cause provided but (mandatory) responsible contact is missing. | 1111 | E | The responsible for the action with ID {0} is missing. |  |
| D6 validation info provided, but "Actual Implementation Date" not provided. | 1141 | W | For "{0}" action the date of validation cannot be saved with empty Actual implementation date. The validation block is not processed. | Validation information (validation date, description effectiveness) of that action not updated. |
| D6 validation not provided together (elements EffectivenessDegreeNumeric, ValidationDescription, ValidationDateTime) | 1142 | W | For action "{0}" you can only enter the validation data ("Date", "Effectiveness" and "Description") together (all 3 fields entered or none). These fields are not processed. | Validation information (validation date, description effectiveness) of that action not updated. |
| Changes on an action (D3, D6, D7) that has actual implementation date entered (and is locked since then). | 1145 | W | Since the actual implementation date was entered, the action with the ID {0} is locked. | {0} - Action Id |
| "Actual Implementation Date" of action (D3, D6, D7) in the future. | 1113 | W | Actual implementation date for action "{0}" is in future. Your entries were not processed. | {0} - Action titleActual Implementation Date of that action not updated. |
| "Validation Date" of action (D6) in the future. | 1140 | W | The validation date for action "{0}" is in future. Your entries are not valid. | {0} - Action titleValidation information (validation date, description effectiveness) not updated. |

#### Inspection Activities/Accepted Defective Quantity.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| ID of Inspection Activity does not exist. |  | E |  |  |
| Response contains inspection activity, for which Accepted Def. Qty. not to be entered by supplier. |  | W |  | Respective Inspection Activity not updated. |
| Response contains inspection activity with Accepted Def. Qty. greater than defective Quantity of corresponding Inspection Activity of Complaint. |  | E |  |  |
| "Accepted defective quantity" remains empty for inspection activity, although to be provided by supplier. (i.e. Complaint contains inspection activity with element *InspectionActivities.EnterBySupplier* = "true" and InspectionActivities.DefectiveQuantity is empty and not set via element supplyon:InspectionActivities.AcceptedDefectiveQuantity in supplier's response) | 919 | E | You must enter the defective quantities for inspection activities to submit the basic data. |  |
| Complaint contains inspection activities, but Response contains element AcceptedDefectiveQuantity. | 1118 | E | Customer requires Inspection activities, usage of StepD2.AcceptedDefectiveQuantity is not allowed. | Accepted Def. Qty. and Inspection Activities not updated. |
| Accepted Def. Quantity in response is greater than Complaint Quantity. | 903 | E | The accepted defective quantity must not be greater than the complaint quantity. |  |

#### Submission of D-Steps

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| Some information for basic information (and possible further D-steps) is provided but no team member is provided. | 874 | E | You need to enter at least one team member to submit the basic data. |  |
| Some information is provided incl. D3 but mandatory information is missing. | 892 | E | You cannot send the D3 step: | Details for the reason are stated after the colon. |
| Some information is provided incl. D4 but mandatory information is missing. | 894 |  | You cannot send the D4 step: | Details for the reason are stated after the colon. |
| Some information is provided incl. D5 but mandatory information is missing. | 896 |  | You cannot send the D5 step: | Details for the reason are stated after the colon. |
| Some information is provided incl. D6 but mandatory information is missing. | 899 |  | You cannot send the D6 step: | Details for the reason are stated after the colon. |
| Some information is provided incl. D7 but mandatory information is missing. | 902 |  | You cannot send the D7 step: | Details for the reason are stated after the colon. |
| Some information is provided incl. General Actions but mandatory information is missing. | 897 |  | You cannot send the "General actions" step: | Details for the reason are stated after the colon. |
| D-Step submitted without action, which is not in status "Cancelled" (D3-D7) | 878 | E | At least one action/root cause in status "Sent" or "Draft" is required. (No internal action.) | This message is also indicated as reason for messages 892, 894, 896, 899, 902, 897. It then has no individual error code. |
| D-Step submitted and for at least one predefined action with D-Step, no data provided by supplier. (Unless action is in customer status "Closed by Cust.") (D3, D6, D7) | 909 | E | There is an entry that has the status "Created by customer". | This message is also indicated as reason for messages 892, 894, 896, 899, 902, 897. It then has no individual error code. |
| Some information is provided for certain D-step but information of previous step is incomplete/missing | 915 | E | You must enter the previous step. | This message is also indicated as reason for messages 892, 894, 896, 899, 902, 897. It then has no individual error code. |
| D2 submitted and no problem description (StepD2.ProblemProfileDescription) provided. | 886 | E | Please enter a D2 description. |  |
| Information on D-step D4/D5/D6/D7/Assessment had been provided but some mandatory information are still missing for submitting them. | 1153 | W | Section {0} was saved as draft as not all mandatory information for submitting it had been provided. | {0} - section, e.g. “D4” |

#### 8DPlus / Assessment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| D4 submitted and 8D+ requested by customer:Not at least one potential root cause for each Drill deep category(supplyon:AnalysisIshikawa is not provided for DrillDeepCategory=”Detection” or for DrillDeepCategory=“NonDetection” each) and no respective attachment is provided. | 905 | E | Your customer has requested an 8D Plus. Please enter at least one root cause for each Drill-Deep category to send the D4 root cause. |  |
| D4 submitted and 8D+ requested by customer:Not at least one 5Why analysis for each Drill deep category (supplyon:Analysis5Why is not provided for RootCauseID and IshikawaID for at least one drill deep category) and no respective attachment is provided. |  | E |  |  |
| D4 submitted and 8D+ requested by customer:For at least one potential root cause marked as “relevant”, no 5Why analysis exists.(For at least one element *supplyon:AnalysisIshikawa* with *RelevanceIndicator5Why* = “true”, an element with *supplyon:Analysis5Why* for same RootCauseID does not exist.) and no respective attachment is provided. | 1119 | E | You marked the potential root cause {0} as relevant for the 5-Why analysis. Please add a 5-Why analysis. |  |
| D4 submitted and 8D+ requested by customer:Not at least one root cause for each Drill Deep category(At least one element supplyon:RootCause is provided for DrillDeepCategory=”Detection” and for DrillDeepCategory=“NonDetection”) and no respective attachment is provided. | 921 | E | There must be at least one root cause per Drill-Deep category. |  |
| D7 submitted and 8D+ requested by customer: No drill-wide analysis provided and no respective attachment is provided. | 906 | E | The customer has requested a Drill-Wide analysis. | This message is also indicated as reason for message 902. It then has no individual error code. |

#### Setting status "Complete"

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| Status "Complete" or "Closed by Supplier" set: Changes on D1 team. | 1126 | W | D1 section is locked. You can't change anything. |  |
| Status "Complete" or "Closed by Supplier" set: Requirements for submission of Step D7 not fulfilled. |  | E |  | Error message, complaint is not updated |
| Status "Complete" or "Closed by Supplier" set: No "Parts Manufacturing Date" provided. | 923 | E | To set the status "Completed by supplier", please enter the production date under "Basic Data". | Error message, complaint is not updated |
| Status "Complete" or "Closed by Supplier" set and Complaint Qty. > 0 and no inspection activities included in complaint: No "Defective Quantity" provided. | 870 | E | To set the status "Completed by supplier" you must enter an accepted defective quantity under "Basic Data". | Error message, complaint is not updated |
| Status "Complete" or "Closed by Supplier" set and Complaint Qty. = 0 (or not provided) and no inspection activities included in complaint: "Defective Quantity" provided. |  | W |  | Supplier's response updated with status "Complete"/"Closed by Supplier". "Defective Quantity" is ignored. |

#### Setting status "Closed by Supplier"

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| Status "Closed by Supplier" set and any D3, D6 or D7 action exists, which is not in supplier status “cancelled” or customer status “Closed by customer” and which does not have an “actual implementation date”. | 872 | E | Please enter the actual implementation date for all actions to set status "Closed by Supplier". | Error message, complaint is not updated |
| Status "Closed by Supplier" set and any D6 action exists, which is not in supplier status “cancelled” or customer status “Closed by customer” and does not have validation data (Elements EffectivenessDegreeNumeric, ValidationDescription, ValidationDateTime) |  | E |  | Error message, complaint is not updated |
| Status "Closed by Supplier" set and an 8D report evaluation has been requested by customer: 8D report evaluation not provided | 1016 | E | An 8D report evaluation is required by your customer. Please enter the evaluation in step D8. | Error message, complaint is not updated |
| Status "Closed by Supplier" set and an 8D report evaluation has been requested by customer or it has been started by the supplier on voluntary basis: 8D report evaluation not fully provided | 1017 |  | You have not yet completed the 8D report evaluation. Please enter all entries to send the supplier's response. | Error message, complaint is not updated |

#### Miscellaneous

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| Manufacturing date is in the future | 879 | E | The production date may not be in the future. |  |
| ComplaintItemStatusCode="Accepted" and element *SO-Report8DSupplier.QDXReport8D.StepD2.Remark* provided, but corresponding field (Comment to Customer) deactivated for customer (Bosch) | 1115 | W | Comment to customer is deactivated. The value is ignored. | "Comment to customer" ignored. |
| Due date to be entered by supplier for section (SO\_ProSoComplaint...*Deadlines.TargetDatefromSellerIndicator* = “true”), but no deadline provided for that section. | 920 | E | You must enter the required due dates under "basic data" to submit the basic data. |  |
| 8D report is provided but no change compared to last version was done. | 913 | E | You cannot save and submit because nothing has been changed. | No data is processed. |
| Some information is missing that is not specified (yet). | 932 | E | Some information is invalid ({0}) for complaint {1} |  |

#### Attachments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| Adding a new attachment or deletion of an attachment to a closed action/root cause, or to a closed (by Supplier, by Customer)/cancelled complaint. | 1101 | W | No attachments will be added or removed for action/root cause with ID {1} (section {0}) because of the status of action/root cause or complaint. |  |
| A value was provided in MimeReference.PurposeCode that is different from expected values or does not match an existing action/root cause. | 1102 | W | No action/root cause with the following Ids “{0}” are found. MimeReferences with provided PurposeCodes are skipped. |  |
| File type not allowed for customer. | 673 | E | Exception during Attachments parsing. Internal exception: {0} | {0} - list of allowed file types, compared to provided file type |
| Multipart message provided but at least one Content-ID/Content-Description of http headers does not match the provided xml element *MimeReference.URI*. | 674 | E | Exception during Attachments parsing. Message does not contain file with contentDescription={0} | {0} - value from *MimeReference.URI* |
| Total size of attachments for complaint exceeds size allowed for customer. |  | E |  |  |
| Size of one individual attachment exceeds size allowed for customer. |  | E |  |  |
| Virus detected in attachment. |  | E |  |  |

#### Technical

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition | Code (element “*Code*”) | Type (element “*Type*“) | Message (element “*Description*”) | Comment |
| Later message (based on timestamp in element DateTimeCreation) already processed. | 200 | S | Report8D update/create was skipped because there were updates by subsequent messages. |  |
| Later message (based on timestamp in element DateTimeCreation) already processed, and incremental attachment handling used. | 1106 | E | Report8D cannot be updated, because there were updates by subsequent messages, and message was sent in Incremental attachments mode |  |
| XML file is not well formed. | 929 | E | The XML file is not well-formed. No data was processed. |  |
| XML file is not valid against the schema. | 928 | E | The XML file is not valid against the schema. {0} |  |
| Some element within XML is violating the restrictions | 544 | E | Message has the following errors. {0} | {0} - (Technical) Details on place of element and reason of violation. |

# Processing Requirements and Restrictions

In general, SupplyOn implemented the VDA QDX standard to exchange complaint notification and 8D reports. But due to process specific requirements of buy-side companies using Problem Solver some restrictions and enhancements must be considered.

Generally, by providing an 8D report from supplier’s internal CAQ system – independent if manually uploaded or via backend – the data are strictly checked by Problem Solver (same checks as during online usage of Problem Solver) and invalid files will be rejected depending on severity of occurred problem, or data are ignored (e.g. during write lock within Problem Solver).

Via configuration on SupplyOn side it is assured that only complaints will be sent for customers/supplier combination that agreed on backend integration.

## Referencing of Complaint Id, Item Id, and Contact Id

To identify the correct complaint and respective actions/root causes and team members, unique Ids are used.

### Complaint Id

The customer’s complaint Id is unique only in combination with one customer, i.e. two customers could potentially use the same complaint Id.

The complaint Id is provided in SO-ComplaintSupplier message (element *QDXComplaint.Header.DocumentProperties.DocumentID*) and needs to be referenced, together with customer Id (element *QDXComplaint.Header.DocumentProperties.DocumentAuthority.PartyReferenceID*), when uploading any 8D report for this specific complaint. For this case the following elements are necessary for the check:

Complaint Id in element *QDXReport8D.Header.DocumentProperties.DocumentID*, and customer Id in element *QDXReport8D.Header.BuyerParty.ID*.

### Item Id

For all actions and root causes within one 8D report SupplyOn Problem Solver expects, that the supplier’s system provides a unique *ID*/*ExternalActionID* respective *RootCause.ID* for each item within the supplier’s response. This ID needs to be unique for the complaint and needs to remain stable over the life cycle of the complaint.

Note, that if items are created…

* manually by supplier within Problem Solver (as parallel process) or
* actions are predefined by customer (see also chapter 6.4 “Pre-defined Actions”)

only a Problem Solver internal ID exists, with certain number range (between 9000 and 9999). This ID, always represented in element “*ExternalActionID*”, is leading instead of an assigned item Id by the supplier’s system.

Items created by supplier will always refer to elements of “*ID*”/”*ActionID*” respective “*RootCause.ID*”. These *ID*s/*ActionID*s have no restriction on data type.

Example 1:

Customer creates complaint and predefines a D7 action “Update FMEA”. This action is assigned Id 9000 in Problem Solver. In message SO-ComplaintSupplier (or complaint download) this action is indicated as:

<supplyon:ExternalID>9000</supplyon:ExternalID>.

When the supplier wants to fill this D7 action and sends it with message SO-Report8DSupplier (or wants to upload the 8D report) it needs to be referenced as:

<ActionID>SomeIdFromSupplierSystem</ActionID>

<ExternalActionID>9000</ExternalActionID>

Example 2:

Complaint is created and available on suppliers CAQ system. There the supplier creates a new D3 action with Id “D3\_100”. When submitting this information within message SO-Report8DSupplier (or within the uploaded 8D report) it needs to be referenced as:

<ID>D3\_100</ID>

Customer Bosch updates this D3 action and fills some comment/description. In message SO-ComplaintSupplier (or complaint download) forwarded to suppliers CAQ system this action is then referenced as:

<ID>D3\_100</ID>

Example 3:

If the supplier has created manually within Problem Solver a new D3 containment action and a new D4 root cause, the Problem Solver assigns the Ids 9003 and 9004. These Ids are visible within UI or can be detected in downloaded 8D report:

For D3 action:

<ID>9003</ID>

<ExternalActionID>9003</ExternalActionID>

For D4 root cause:

<ID>9004</ID>

If afterwards the supplier updates the internal CAQ system and wants to update this D3 action and D4 root cause with message SO-Report8DSupplier (or with 8D report to be uploaded), the CAQ system must refer to the Problem Solver Ids 9003 and 9004.

For D3 action:

<ID>SomeIdFromSupplierSystem</ID>

<ExternalActionID>9003</ExternalActionID>

For D4 root cause:

<ID>9004</ID>

**Remark:** The update of a root cause via referencing the “*ID*” 9004 is not possible with SO-Report8DSupplier (or with 8D report upload). Such an update only works when “*ExternalActionID*” is used which, however, is not existing for root causes. Instead of an update of the existing root cause with “*ID”* 9004, a new root cause is being created.

However, this issue only occurs in case a root cause has an “*ID*” within the range of 9000 – 9999; i.e., when a root cause has been created manually within Problem Solver and is then being updated via the CAQ system (8D report upload).

### Contact Id

For all team members of the D1 team, within one 8D report, SupplyOn Problem Solver expects, that the supplier’s system provides a unique *QDXReport8D.Header.SellerParty.Organization.Contact.Organization.Contact.ID* for each contact within the supplier’s response. This ID needs to be unique for the complaint (respective 8D report) and needs to remain stable over the life cycle of the complaint. During an update of the 8D report, this ID is used to address and, if desired – change the existing team members. Removing a contact from the team possible by omitting this contact from the subsequent upload/message transmission.

Note, that if team members are created manually by supplier within Problem Solver (as parallel process),

only a Problem Solver internal ID exists, with prefix “SO\_”. This ID is leading instead of an assigned contact Id by the supplier’s system.

## Response Type

Within XML element *ComplaintItem.RequiredResponse.ResponseTypeCode* the customer defines the expected response type. Defined values are:

­ “8DReport” (refer to section 6.2.1 “8DReport”)

­ “8DPlus” (refer to section 6.2.2 “8DPlus”)

­ “8DReportAssessment” (refer to section 6.2.3 “8DReportAssessment”)

For the purpose of backend integration, it can be assumed that response type “8DReport” is always included. The standard response type of 8D report can be replaced by enhanced “8DPlus”. Response type “8DReport Assessment” is optional, in addition to “8DReport”/“8DPlus”.

Because there are several combinations possible the element *ResponseTypeCode* can occur several times.

Following updates on the response type are possible for a complaint:

8DReport -> 8DPlus

8DReport -> 8DReport+Assessment

8DReport -> 8DPlus+Assessment

8DPlus -> 8DPlus+Assessment

A change back to the previously set response type is not possible (due to potential loss of already entered information).

As of now, customers Bosch and Continental use exclusively “8DReport”/“8DPlus” and/or “8DReportAssessment”. To be compliant with customers using the interface in future, complaints sent by customer may also contain following values for *ComplaintItem.RequiredResponse.ResponseTypeCode*:

* “ShortConfirmation” (instead of “8DReport”/”8DPlus”)
* “GENERAL\_ACTIONS” (optionally in addition to all response types)

### 8DReport

The customer expects a standard 8D report, which contains the steps D1 up to D7. Before finalizing the 8D report, interim 8D reports are allowed to report for example a first response with defined containment actions (D3).

It is possible to send the 8D report up to any D-Step, but all previous D-Steps also need to be included.

For the D1 team members included in message type QDXReport8D, all members will be replaced by list in upload file. For the D-steps included in message type QDXReport8D, all items (actions/root causes) need to be contained (as opposed to only newly created actions). Items not provided will remain unchanged.

Items not relevant any more can be cancelled, see section 6.3.2.1 “Item Status set by Supplier”

Example:

1) The supplier uploads a response with D3 action “A” and “B”

2) Afterwards the supplier uploads a changed response with only D3 action “A”

Result: Although within the supplier internal CAQ system action “B” has been deleted (not part of second upload) the action “B” still exists within Problem Solver.

### 8DPlus

For specific complaints the customer can require, in addition to the standard 8D report, via element *RequiredResponse.ResponseTypeCode*=”8DPlus” an enhanced analysis using Ishikawa-, 5-Why-analysis as well as drill-deep and wide as mandatory.

If requested, specific information on enhanced analysis needs to be provided in elements:

* When providing data of step D4 (root causes) first time, the structure *supplyon:ResponseAdditions.supplyon:EnhancedRootCauseAnalysis* needs to be filled, Necessary is at least:
	+ One potential root cause for each Drill deep category: *supplyon:AnalysisIshikawa* is provided for *DrillDeepCategory*=”Detection” and for *DrillDeepCategory*=“NonDetection”.
	+ One 5Why analysis for each Drill deep category: *supplyon:Analysis5Why* is provided for *RootCauseID* and *IshikawaID* at least once of each drill deep category. Furthermore, for each potential root cause (*IshikawaID*) marked as *supplyon:AnalysisIshikawa.RelevanceIndicator5Why* = “true”, a corresponding *supplyon:Analysis5Why* needs to be provided,
	+ One root cause for each Drill deep category:At least one element *supplyon:RootCause* is provided for *DrillDeepCategory*=”Detection” and for *DrillDeepCategory*=“NonDetection”.
	+ Instead of providing information in these three areas, an attachment can be provided.
* When providing data of step D7 first time, the structure *supplyon:ResponseAdditions.supplyon:DrillWideAnalysis* needs to be filled. Necessary is at least:
	+ One drill wide structure *DrillWideElement*.
	+ Instead of providing information in this element, an attachment can be provided.

Even if the customer has not requested “8DPlus”, the supplier can provide the information on an optional basis.

**Remark:** Due to legacy implementation, there is a discrepancy between the wording in ProSo UI and the corresponding XML information. The wording of the Drill Deep Categories on ProSo UI is compliant to the VDA standard. However, a corresponding adjustment of the XML information (backend messages) has not been done as this would have resulted in additional adjustments to customer backends since some have implemented a separate mapping logic. The current logic is described in the table below and visualized in Figure 1.

|  |  |
| --- | --- |
| XML information (backend messages) | ProSo UI |
| Detection | Non-Detection |
| Non-Detection | Occurrence |



Figure 1: Excerpt from schema „SO-Report8D.xsd“

It is a subject discussion (as of January 2023) to change the Drill Deep Categories to more generic values like “DrillDeepCat1”.

### 8DReportAssessment

For specific complaints the customer can require, in addition to the standard 8D report or 8DPlus, via element *RequiredResponse.ResponseTypeCode*=”8DReportAssessment” an 8D report evaluation by supplier as mandatory.

If mandatory, specific information on evaluation categories need to be provided in element *supplyon:ResponseAdditions.supplyon:ReportAssessmentSupplier* for all evaluation categories defined for the customer.

If element *RequiredResponse.ResponseTypeCode*=”8DReportAssessment” is not provided, 8D report evaluation can be provided optionally.

The calculation of total points and total percentage will be done by Problem Solver out of the provided results.

If an 8D report evaluation has been requested by the customer, it needs to be fully provided when setting status “Closed by supplier” at the latest.

If an 8D report evaluation has not been requested by the customer but the supplier provides 8D report evaluation anyway, it needs to be complete when setting status “Closed by supplier”. (I.e. no partial 8D report evaluation is allowed with status “Closed by Supplier”.)

Note, that for certain customers (currently ZF) the 8D report evaluation is deactivated. In this case, content of element *supplyon:ResponseAdditions.supplyon:ReportAssessmentSupplier* will be ignored by Problem Solver.

In return to a supplier evaluation, the customer may also process an evaluation on their side, based on the same evaluation categories. The results of the customer evaluation will be provided in node *supplyon:ReportAssessmentBuyer* in QDXComplaint.

The specific configuration for evaluation categories, descriptions and points can be found in Appendix, chapter 1.2 “Evaluation configuration”.

## Status Management

The Problem Solver uses different states to control the complaint management process on complaint and on item level.

Depending on the status write-locks exist and changes are restricted. In case of an existing restriction the Problem Solver does not update respective information, even if provided in the XML file. That means that the supplier is responsible to consider this in the 8D reporting and process. If an update is necessary – and allowed within the supplier CAQ system – but the status does not allow this within Problem Solver, the supplier must inform the customer to change the case status to allow further maintenance, or to create a new complaint.

Furthermore, the labelling of states could differ between Problem Solver and the supplier’s CAQ system. This is no problem, but the supplier must know the Problem Solver nomenclature and process meaning to communicate on operational level with customer on the same basis.

If a specific status, used by customers within Problem Solver, is not supported by the supplier CAQ system it is recommended to store the information as a textual note in the supplier system.

### Complaint Status

#### Complaint Status set by Customer

Following states are defined for the customer complaint and used depending on the customer process. Within *QDXComplaint* message the status is provided in element *ComplaintItem.BuyerProcessingStatus.*

|  |  |  |
| --- | --- | --- |
| **Status** | **XML value** | **Restrictions for Supplier Response after status was set** |
| **“Open”**This is the initial status set automatically by Problem Solver when the complaint is created by the customer. The customer can also reset a complaint from another status to “Open”, e.g. to re-open a complaint already closed, if rework is necessary. | “OPEN” | No restrictions of changeability due to this complaint status, but other restrictions may apply, e.g. due to item status. (See 6.3.2 “Item Status”) |
| **“Closed by Customer“** | “CLOSED\_BY\_CUSTOMER” | No changes allowed by supplier; the supplier response is not posted. |
| **“Cancelled“**Status “Cancelled” has similar functionality as “Closed by Customer”. However, it carries a different meaning. (Cancelled would be used, for example, if a complaint has been sent by error.) | “CANCELLED” | No changes allowed by supplier; the supplier response is not posted. |

Note, that the status information is contained in *QDXComplaint* message, together with all other available complaint information. (I.e. in case of status change by customer, all complaint information is re-sent.)

Along with a status change, the customer may provide a comment for reason of status change. Within *QDXComplaint* message the status is provided in element *QDXComplaint.FailurePreAnalysis.Remark*.

#### Complaint Status set by Supplier

Following states are defined for supplier response.

Within message *QDXReport8D* the status is provided in elements *QDXReport8D.StepD2.ComplaintItemStatusCode* and *QDXReport8D.StepD2.SellerProcessStatusCode.*

(During manual upload, the supplier needs to set the status in the application when submitting the 8D report.)

|  |  |  |
| --- | --- | --- |
| **Status** | **XML value** | **Restrictions for Supplier Response after status was set** |
| **“Rejected by Supplier”**A reason for rejection can be given in element *StepD2.Remark*. This text will then be inserted into the description field of a D3 action “Rejected by supplier”, which is automatically created by Problem Solver. (In this case, *StepD2.Remark* will consequently not be used for comment to customer) | *ComplaintItemStatusCode*=”NotAccepted”(In this case, *SellerProcessStatusCode* will be ignored.) | No changes are allowed for the supplier in this status. The 8D report is not posted and an error is printed out in the acknowledgment.To do changes, the customer needs to set the status to “Open”, ”Rejected by Customer” or “Provisionally Accepted” first. |
| **“Complete“** The supplier can set the case to “Complete” if all required information is provided. (See 6.8 “Overview of Information to be provided” for details.)If element *SellerProcessStatusCode* is not provided, Problem Solver detects if all necessary information were provided and sets this status automatically. | *SellerProcessStatusCode*=”complete” (in combination with *ComplaintItemStatusCode*=”Accepted”) | Only following changes allowed:- Update of actual implementation date of actions and validation information of D6 action- Addition of attachments (no deletion/change of existing attachments allowed)- Update of clean date within step D6- Update of cancellation of containment action(s) within step D6- if applicable, changes of 8D report evaluation |
| **“Closed by Supplier“**The supplier can set the status “Closed by Supplier” once all actions have been implemented and D6 actions validated for effectiveness. (See 6.8 “Overview of Information to be provided” for details.)If element *SellerProcessStatusCode* is not provided, Problem Solver detects if all necessary information were provided and sets this status automatically. | *SellerProcessStatusCode*=”closed” (in combination with ComplaintItemStatusCode=”Accepted”) | No changes are allowed for the supplier in this status. The 8D report is not posted and an error is printed out in the acknowledgment.To do changes, the customer needs to set the status to “Open” first. |

#### Complaint Status transitions

Following table shows which case status transitions are allowed. The lines show the original status (“from”) before the status change. Columns show the target status (“to”), after the status change. The cells indicate whether the transition from the original to the target status is allowed and how it is achieved. Empty cell means, that this status transition is not possible.



Figure 2: Complaint status transitions

#### Special Complaint States for Customer Bosch

Following additional complaint states set by customer are relevant for customer Bosch:

|  |  |  |
| --- | --- | --- |
| **Status** | **XML value** | **Restrictions for Supplier Response after status was set** |
| **“Rejected by Customer”**The customer did not agree to the supplier response. The customer indicates their review result with specific item status. (See chapter 6.3.2.2 “Special Item States for Bosch”) | “REJECTED” | See status “Open”. |
| **“Provisionally Accepted”**The customer agrees to the supplier response, but additional information from the supplier is required. Already finalized items or implemented actions are closed (depending on item status, also see chapter 6.3.2.2 “Special Item States for Bosch”) but the supplier can continue processing the 8D report (e.g. plan and implement preventive actions). | “REVIEWED” | See status “Open”. |

States set by supplier “Complete” and “Closed by Supplier” are not available.

### Item Status

The individual items of an 8D report (actions, root causes) can also carry a status.

#### Item Status set by Supplier

Within *QDXReport8D* message the supplier’s item status is provided in element *ActionStatusCode* respective *RootCauseStatusCode*.

|  |  |  |
| --- | --- | --- |
| **Status** | **XML value** | **Restrictions for Supplier Response after status was set** |
| **“Submitted”**By this status, supplier provides any new/updated data on items. | “valid” | All fields of action/root cause are editable.(\*)Restriction: if the “Actual Implementation Date” is set for an action - and/or for D6 action the validation information is entered - the action cannot be changed any more. Any change on the action/root cause will be ignored by Problem Solver during processing of the 8D report. |
| **“Cancelled”**If an item is no longer relevant, the supplier can set the status “Cancelled”. (Deletion of items not possible; see 6.2.1 “8DReport”)Cancelling of a root cause is not supported if it is referenced by a D5 or D6 action. Cancelling of an action is not supported, if the action has been already implemented (actual implementation date is set).Cancelling of an action or root cause is also not possible if changes are restricted due to complaint status. | “cancelled” | The item cannot be changed any more by the supplier. Specifically, it is not possible the change the status of the item to “valid” again. Any change on the action/root cause will be ignored by Problem Solver during 8D processing. |

(\*) Unless restricted by case status – see 6.3.1 “Complaint Status”.

Also note regarding D6 actions:

* Validation information (*ValidationDescription*, *ValidationDateTime*, *EffectivenessDegreeNumeric*) all need to be completely provided, or not at all.
* To provide validation information, the “Actual Implementation Date” needs to be maintained.

#### Special Item States for Bosch

When sending feedback for the supplier’s response, Bosch provides for each action/root cause a status (element *PreDefinedAction.ActionStatusCode* in message type *QDXComplaint* (item reference assured by *ID*)). The status controls changeability of the item and should be considered by the supplier’s system.

Additionally, Bosch provides in element *PreDefinedAction.Description* a comment on the item.

|  |  |  |
| --- | --- | --- |
| **Status** | **XML value** | **Restrictions for Supplier Response after status was set** |
| **“Open by customer”**This status is set by the customer upon creation of an item by the customer, or in case of rejection of an item by the customer (e.g. the customer does not agree to the action described by the supplier). | “RESET” | All fields of action/root cause are editable (whether Actual Implementation Date is set or not). (\*) |
| **“Accepted by customer”**The customer agrees to the content of the action, but the action still needs to be implemented by the supplier. | “RELEASED” | Field “Actual Implementation Date” of actions is editable (whether Actual Implementation Date is set or not). (\*) For D6 action also validation information can be edited by the supplier. (\*) Other changes are ignored during processing. |
| **“Closed by customer”**No additional activities are required regarding this item from the customer’s perspective. | “CLOSED” | No field of action/root cause is editable. Changes are ignored during processing. |

(\*) Unless restricted by case status – see 6.3.1 “Complaint Status”.

For customer Bosch, cancelling of actions by the supplier is not allowed.

## Pre-defined Actions

The customer can optionally provide actions the supplier has to process. If provided, the data are contained in XML node *ComplaintItem.PreDefinedAction*. Predefined actions can be defined for D3, D6 and D7. For example, the customer defines verification of FMEA as a D7 predefined action.

The correct reference must be used when providing the supplier response – in case of predefined action the element *ComplaintItem.PreDefinedAction.ExternalID* is leading.That means the supplier response (message type QDXReport8D) must refer to these actions using the same ID within response action element *ExternalActionID*.

*Title* and Planned Implementation Date (*DueDateTime*, if provided by customer) cannot be changed by the supplier - this information will be ignored by Problem Solver.

A D-step cannot be submitted by the supplier without providing information for all predefined actions of that D-step. (If e.g. a predefined D7 action exists, the supplier cannot submit an 8D-report with D7 information without providing information for this predefined action.)

Additionally, the node *ComplaintItem.PreDefinedAction* (with elements *ActionStatusCodeCode* and *Description*) will be used by Bosch for reviewing actions/root causes. This includes actions predefined by customer as well as actions/root causes created by supplier (i.e. for D3, D4, D5, D6, D7 and GA (General Actions)). Refer also to 6.3.2.2 “Special Item States for Bosch”.

## Section Due Date

### Section due date set by customer

For some sections (D-steps)/states the customer may set a due date by when this section needs to be submitted at latest by supplier. The information can be found in elements *ComplaintItem.RequiredResponse.ResponseTypeCode* (identifying the respective section/status) and *ComplaintItem.RequiredResponse.DueDateTime* (if different from value “9999-12-31T23:59:59Z” - i.e. elements *RequiredResponse* with *DueDateTime* = “9999-12-31T23:59:59Z” can be ignored). Problem Solver will send e-mail reminders if the due dates are passed.

Example:

<RequiredResponse>

<ResponseTypeCode>D3</ResponseTypeCode>

<DueDateTime>2012-10-17T12:00:00Z</DueDateTime>

</RequiredResponse>

The customer expects a response to step D3 with due date 17th October 2012 at 12:00 UTC.

### Section due date set by supplier

For some sections (D-steps)/states the supplier may be requested by the customer to provide a target date for submitting this section/status: Basic Information, D3-D7, status “Complete”, status “Closed by Supplier”.

If requested by the customer, the information can be found in elements *ComplaintItem.RequiredResponse.ResponseTypeCode* (identifying the respective section/status) and *ComplaintItem.RequiredResponse.supplyon:TargetDatefromSellerIndicator* = “true”. The target date can be provided with element *supplyon:Sections.TargetDateTime* in *QDXReport8D*.

The supplier may provide due dates for all relevant sections/states (e.g. based on standard response times); Problem Solver will only consider the ones for sections/states for which C*omplaintItem.RequiredResponse.supplyon:TargetDatefromSellerIndicator* = “true”.

## Individual flexible fields

Additionally, to the fields that are defined within the VDA QDX standard, and to the SupplyOn specific fields, individual fields can be used by the customer, separately configured on complaint side and/or on header level of the 8D report. The fields and their unique ID, data type and field length are mutually defined between the customer and SupplyOn. During the transmission, each field is referenced by the unique ID.

All individual fields are optional and can be of any data type. The number of fields is unlimited. Individual fields within the 8D report are only available on header level, not within a D-step/action/root cause etc.

The specific configuration for the individual, flexible fields can be found in Appendix, chapter 1.3 “Individual flexible field configuration”.

For the complaint, the information are provided in the following node:

*SO-ComplaintSupplier.QDXComplaint.supplyon:ComplaintAdditions.supplyon:FlexFields* with repetitive elements:

* *Field.TechId* (ID indicating the customer Id of the flexible field. If field ID was agreed with supplier, then: supplier Id.)
* *Field.Value* (Value of the field, provided by customer system)

For the 8D report, the information can be provided in the following node:

*SO-Report8DSupplier.QDXReport8D.supplyon:ResponseAdditions.supplyon:FlexFields* with repetitive elements:

* *Field.TechId* (ID indicating the customer Id of the flexible field. If field ID was agreed with supplier, then: supplier Id.)
* *Field.Value* (Value of the field, provided by supplier)

For the integration on supplier side, the following processes apply:

* Download SO\_QDXComplaint: by default, the ID indicating the customer Id is provided. If an individual field ID was agreed with the supplier, then the Id from the supplier company is provided.
* Upload SO\_QDXReport8D: by default, the ID indicating the customer Id is requested to use during upload. If an individual field ID was agreed with the supplier, then the Id from the supplier company must be used.
* Download SO\_QDXReport8D: by default, the ID indicating the customer Id is provided. If an individual field ID was agreed with the supplier, then the Id from the supplier company is provided.
* SO-ComplaintSupplier message: by default, no fields are provided. If an individual field ID was agreed with the supplier, then the fields with reference to the Id from the supplier company are provided.
* SO-Report8DSupplier: by default, all information on individual fields are ignored. If an individual field ID was agreed with the supplier, then the fields with reference to the Id from the supplier company can be provided.

## Additional information within the 8D report

### Delivery of correct parts (clean date)

Within D3 section and D6 section, a date/time can be provided optionally. It is to indicate the starting date by when the first “clean”/correct parts are delivered to the customer; after all corresponding actions (in D3, in D6) have been implemented.

For D3 step, the date/time can be provided in the following optional node:

*QDXReport8D.StepD3.DeliveryReference* with elements:

* *DeliveryNoteID* (default value “NA”)
* *LineItemID* (default value “NA”)
* *DeliveryDate* with sub-elements:
	+ *StartDateTime* (filled with date/time from D3 step)
	+ *EndDateTime* (identical to StartDateTime, filled with date from D3 step)
	+ *DeliveryTypeCode* (default value "Other")

For D6 step, the date/time can be provided in the following optional field:

*QDXReport8D.StepD3.StepD4.RootCauseAnalysis.RootCause.StepD5.StepD6.ReturnDeliveryReferenceDocument.IssueDateTime* (filled with date/time from D6 step)

The date/time needs to be duplicated for each node *StepD6*.

As soon as at least one D3 action, or D6 action, was implemented (i.e. actual implementation date filled), the date/time can be filled/provided. In case the date for “Correct parts delivered on” (can be in the past, today, or in the future) is provided, following checks need to be true:

* “Correct parts delivered on” within D3-step >= actual impl. date/time of the D3 action with the oldest actual impl. date
* “Correct parts delivered on” within D6-step >= actual impl. date/time of the D6 action with the oldest actual impl. date
* The check considers the “date” and “time” parts of the corresponding actual implementation date.

In case the actual implementation dates of the D3/D6 actions are changed so that the checks would be negative, there will be an error message during submission. The submission is not possible. It is necessary to correct the clean date.

It is not possible to reset, i.e. completely delete the entries after they had been submitted once. In case, in a following submission, the clean dates are not provided anymore, the clean dates stored in Problem Solver remain.

If the date/time is provided, after status “Complete” is set, the field within D3-step cannot be changed anymore. After status “Complete” is set, the field within D6-step is still editable. After status “Closed by supplier” is set, the field within D6-step cannot be changed anymore.

### Risk assessment

Within D4 section, a risk assessment can be provided optionally. I.e., the supplier can provide information on the potentially erroneous batches and quantities sent to customer.

The information can be provided in the following optional node:

*QDXReport8D.StepD3.StepD4.RiskAssessment* with elements:

* *ID*
* *supplyon:ProductionDate* with sub-elements *StartDateTime* and *EndDateTime* (all time parts are ignored)
* *supplyon:DeliveryDate* with sub-elements *StartDateTime* and *EndDateTime* (all time parts are ignored)
* *supplyon:AffectedQuantity*
* *RiskDescription*

The risk assessment can be filled several times. For that, the supplier can provide several nodes *RiskAssessment*. Following conditions on the dates need to be met:

* *supplyon:ProductionDate.StartDateTime*. <= *supplyon:ProductionDate.EndDateTime*
* *supplyon:DeliveryDate.StartDateTime* <= *supplyon:DeliveryDate.EndDateTime*

The UoM/unit of the affected quantity refers to the unit of the complaint quantity provided by customer. So, it is not necessary to provide it explicitly.

It is not possible to reset, i.e. completely delete the entries after they had been submitted once. In case, in a following submission, the node *RiskAssessment* is not provided anymore, the content of the risk assessment stored in Problem Solver remains.

The risk assessment cannot be changed (anymore) in following states:

* Complete
* Closed by Supplier
* Closed by Customer
* Canceled
* Rejected by Supplier

It is possible for the customer to enter an own comment (long text) on each item of the risk assessment. It will be provided in the following optional node within the complaint information:

*QDXComplaint.supplyon:ComplaintAdditions.supplyon:RiskAssessmentBuyer* with elements:

* *ID*
* *RiskDescription*

### Failure reproduction

Within D4 section, a failure reproduction can be provided optionally. I.e., the supplier can provide information if and when the failure could be reproduced on supplier side.

The information can be provided in the following optional node:

*QDXReport8D.supplyon:ResponseAdditions.supplyon:FailureReproduction* with elements:

* *IsReproduced*
* *ReproductionDateTime* (time part is ignored)
* *ResponsibleContactReference* with sub-elements *PartyID* and *ContactID*
* *ReasonDescription*

The elements need to be combined like the following:

* *IsReproduced* = true *(*Yes): at least *ReproductionDateTime* and *ResponsibleContactReference* are filled.
* *IsReproduced* = false (No): at least *ReasonDescription* is filled.

In case some invalid combination is provided, there will be an error message during submission.

It is not possible to remove an assigned user (for failure reproduction) from D1 Team. In such a case there will be an error message during submission.

It is not possible to reset, i.e. completely delete the entries after they had been submitted once. In case, in a following submission, the node *supplyon:FailureReproduction* is not provided anymore, the content of the failure reproduction stored in Problem Solver remains.

The failure reproduction cannot be changed (anymore) in following states:

* Complete
* Closed by Supplier
* Closed by Customer
* Canceled
* Rejected by Supplier

It is possible for the customer to enter an own comment (long text). It will be provided in the following optional element:

*QDXComplaint.supplyon:ComplaintAdditions.supplyon:FailureReproductionBuyer.ReasonDescription*.

### Cancellation of containment actions

Within D6 section, information on the cancellation of containment actions can be provided optionally. I.e., the supplier can provide information - after D6 actions were implemented - when the D3 containment actions can be cancelled. By this, it is documented that the failure is prevented on a long-term basis.

The information can be provided in the following optional node:

*QDXReport8D.supplyon:ResponseAdditions.supplyon:CancellationContainmentActions* with elements:

* *CancellationDateTime* (time part is ignored)
* *ResponsibleContactReference* with sub-elements *PartyID* and *ContactID*

Both fields need to be provided together. If only one field is provided, there will be an error message during submission.

It is not possible to remove an assigned user (for cancellation of containment actions) from D1 Team. In such a case there will be an error message during submission.

It is not possible to reset, i.e. completely delete the entries after they had been submitted once. In case, in a following submission, the node *supplyon:CancellationContainmentActions* is not provided anymore, the content of the cancellation of containment actions stored in Problem Solver remains.

If the cancellation information is provided, after status “Complete” is set, the cancellation of containment action(s) is still editable. After status “Closed by supplier” is set, it cannot be changed anymore.

### Root cause categories

Business background: Within each root cause, a categorization/classification can be made. The supplier can select out of a previously configured list of values the category/area where this root cause belongs to. This list is based on the root cause catalogue published by the VDA standard. This helps the supplier and the customer to track and identify frequent types of root causes.

The classification is based on a set of categories with three levels. Each combination of levels is unique, and is mapped with a centrally defined ID.

The root cause catalog can be activated for each customer, each with potentially different content. The target is, however, to have a common catalog for all customers and their suppliers activated. The specific configuration for the root cause catalogs can be found in Appendix, chapter 1.4 “Root cause category configuration”.

If the catalog is activated for a customer, the entry of data is mandatory for the suppliers for working in the frontend, and for uploading the “SO\_QDXReport8D” file. For suppliers with a backend interface, providing the content for the root cause categories is optional by default. It can be made mandatory on request of and in coordination with the supplier (e.g. after adapting their system).

The information can be provided in the following node:

*QDXReport8D.supplyon:ResponseAdditions.supplyon:EnhancedRootCauseAnalysis.supplyon:RootCauseCategory* with elements:

* *RootCauseID* (reference to root cause)
* *Code* (contains the QDX ID from root cause catalog (Example: 010010001))
* *Level1* (optional, contains the first part of the category corresponding to code, in English language, ignored in incoming messages/upload)
* *Level2* (optional, contains the second part of the category corresponding to code, in English language, ignored in incoming messages/upload)
* *Level3* (optional, contains the third part of the category corresponding to code, in English language, ignored in incoming messages/upload)

## Overview of Information to be provided

Following table provides an overview of the information to be provided by the supplier when submitting information regarding certain sections/D-Steps or setting the complaint status. Note, that additional restrictions (e.g. regarding mandatory fields, data types, cardinalities, etc.) are contained in the XSD schema SO-Report8DSupplier.xsd (see also Appendix, 1.1 “XML Schema Definitions”).

|  |  |
| --- | --- |
| To submit D-step/section or set status… | Following information need to be provided: |
| Basic Information | * D1 Team
* Due dates to be set by supplier, if requested by customer.(See 6.5 "Section Due Date”)
* Accepted defective quantity for inspection activities, if requested by customer. (Bosch only; see 6.9.1 “Inspection Activities”)
 |
| D3 | In addition to Basic Information:* At least one D3 action included, which is not in status “cancelled”
* Data for all predefined D3 actions (unless in status “Closed by Customer”(1)) provided (See 6.4 "Pre-defined Actions”)
* Problem Description (D2) provided (element *StepD2.ProblemProfileDescription*)
 |
| D4 | In addition to step D3:* At least one root cause included, which is not in status “cancelled”
* A category for each root cause, if root cause categories are activated for customer and mandatory for supplier (See 6.7.5 Root cause categories)
* Enhanced root cause analysis provided, if “8D+” requested by customer. (See 6.2.2 “8DPlus”)
 |
| D5 | In addition to step D4:* At least one D5 action included, which is not in status “cancelled”
 |
| D6 | In addition to step D5:* At least one D6 action included, which is not in status “cancelled”
* Data for all predefined D6 actions (unless in status “Closed by Customer”(1)) provided (See 6.4 "Pre-defined Actions”)
* For each D6 action, a D5 action for same root cause exists
 |
| D7 | In addition to step D6:* At least one D7 action included, which is not in status “cancelled”
* Data for all predefined D7 actions (unless in status “Closed by Customer”(1)) provided (See 6.4 “Pre-defined Actions”)
* Drill-wide analysis provided, if “8D+” requested by customer.(See 6.2.2 “8DPlus”)
 |
| Status “Complete” | In addition to step D7:* Manufacturing date provided (element *StepD2.GeneralResponse.ManufacturingDateTime*)
* If complained quantity (element *QDXComplaint.ComplaintItem.ComplainedQuantity*) is greater than “0” (zero), element *QDXReport8D.StepD2.AcceptedDefectiveQuantity* must contain a value greater or equal “0” (zero).(Unless complaint contains inspection activities in case of customer Bosch; see 6.9.1 “Inspection Activities”)
* Steps until D7 submitted with all required information (see above)
 |
| Status “Closed by Supplier” | In addition to status “Complete”:* No D3, D6 or D7 exists, which is not in supplier status “cancelled” or customer status “Closed by Customer”(1) and which does not have an “actual implementation date”.
* No D6 action exists, which is not in supplier status “cancelled” or customer status “Closed by customer”(1) and does not have validation data (Elements *EffectivenessDegreeNumeric*, *ValidationDescription*, *ValidationDateTime*)
* If an 8D report evaluation has been requested by customer (see 6.2.3 "8DReportAssessment”) or it has been started by the supplier on voluntary basis, it needs to be fully provided when setting status “Closed by supplier”.
 |

(1) Item status “Closed by Customer” relevant for customer Bosch only

## Special requirements for customer Bosch

In addition to the standard process described above, some special requirements apply to complaints from customer Bosch. (Also see section 6.3.1.4 “Special Complaint States for Customer Bosch”)

### Inspection Activities

Instead of the complaint quantity, Bosch uses optionally inspection activities, to manage multiple defective quantities (resulting from different logistical activities regarding the complained parts). This information can be found in element *supplyon:ComplaintAdditions.supplyon:InspectionActivities* in message type QDXComplaint. If no Inspection Activity is provided by Bosch, the accepted defective quantity needs to be provided as usual in message type QDXReport8D in element *StepD2.AcceptedDefectiveQuantity*.

If at least one Inspection Activity is provided by Bosch, for inspection activities with element *supplyon:InspectionActivities.EnterBySupplier* = “true” in message type QDXComplaint, the *AcceptedDefectiveQuantity* is expected in message type QDXReport8D element *supplyon:InspectionActivities.AcceptedDefectiveQuantity* (with reference to *supplyon:InspectionActivities.ID*). Otherwise, the Accepted Defective Quantity provided by Bosch will be used, which is usually set by Bosch to the Reference Quantity.

### Disabled Comment to Customer

Field “Comment to Customer” is not editable (Element *StepD2.Remark* in message type QDXReport8D) in case complaint is accepted by supplier (*ComplaintItemStatusCode*=”Accepted”, see 6.3.1.2 “Complaint Status set by Supplier”). Element will be ignored by Problem Solver during processing of the supplier’s response.

# Messaging and Communication

This chapter describes the communication for an automated backend integration between SupplyOn and a supplier communication infrastructure.

## Asynchronous Communication

When exchanging complaints and 8D reports between SupplyOn and suppliers’ infrastructure, asynchronous communication is used. This means, supplier infrastructure will send a report8D message to SupplyOn, but the status of content processing will not be expected within the same communication session. The connection is closed after sending and receiving communication response. Then SupplyOn processes the data. If an acknowledgement is given back to the supplier SupplyOn will initiate a new connection to the supplier´s system.

After receiving a message within the http session, a synchronous response is sent back to the partner containing the status code of communication (http status code) on protocol level.

## Push data communication

If a partner has new information available, they will send/push this information actively to the other partner. This is valid for all defined message types. SupplyOn pushes the information in real-time, so any message will be sent instantly the time it arises. It can be agreed on the mode the partner sends messages to SupplyOn (either real-time or batch mode). If batch mode is chosen, further agreements must be done on potential load and limits. If messages get mixed, the timestamp within the message (xml element *ControlArea.ContentInfo.DateTimeCreation*) is leading. Always message with youngest timestamp will be processed, i.e. messages with older timestamp, processed later, will be declined with error message (see also 5.5.1 “Codes and messages”).

## Secure http via certificate

To ensure secure https communication certificates between SupplyOn and partners must be exchanged. There will be only one certificate per partner exchanged, not per partner and business use case. Details on each supported protocol see in respective chapters.

## Authorization

Generally, for all communication protocols, authorization needs to occur. These are in all cases username and password (basic authentication) - plus additional agreements depending on used protocol.

In addition to the standard http basic authentication securing communication between partners and SupplyOn each service proofs that content sent from a business partner really belongs to the business partner providing the message. For this process it will be checked if the http basic authentication user provided by the partner for the first basic authentication belongs to same D-U-N-S as provided by the data provider within the xml payload (element *PartnerInfo.DUNS*).

Passwords from partner to SupplyOn interface must meet the following complexity requirements according to the SupplyOn security policy:

* Password must not contain the username or parts of it (more than 2 characters together)
* Password length must be min. 8 digits
* Password must contain min. 3 from the following four categories:
	+ Upper case letters (A - Z)
	+ Lower case letters (a - z)
	+ digits (0 - 9)
	+ special characters (e. g. !, $, #, %)

## Supported protocols

From the supplier, depending on what they could deliver, SupplyOn accepts AS/2 and https/SOAP protocol.

### AS/2

AS/2 versions 1.1. and 1.2 are supported. For general information on the protocol refer to <http://www.ietf.org/rfc/rfc4130.txt> (v1.1) and <http://www.ietf.org/rfc/rfc6362.txt> (v1.2). AS/2 is based on http and S/MIME.

Generally, following features are offered. Within separate partner agreement, details on individual connection need to be made.

* Message signatures: MD5, SHA1
* Message encryption: 3DES (192 bit), AES (128, 192, 256 bit)
* Message compression with ZLIB
* Disposition notifications (MDN) - Non-repudiation of receipt (see also 7.5.1.3 “Message Disposition Notification (MDN)”)
* Filename Preservation

Certificate Exchange Messaging for EDIINT is not supported.

The AS/2 adapter uses two different message types:

* The actual payload XML message (for details on message structure see chapter 5 “XML Format and Content”)
* The Message Disposition Notification (MDN) (see chapter 7.5.1.3 “Message Disposition Notification (MDN)”)

#### Routing from SupplyOn to Partner

For routing complaint messages correctly from SupplyOn to partner, a defined “Subject” in http header is used. It indicates the intent of the request. It follows this logic:

“SO-(Service):SO-(MessageType):(DUNS):(ExternalCommunicationSystemId):”. For Problem Solver this is:

* SO-ProSo:SO-ComplaintSupplier:123456789:987:

For routing Acknowledgement messages correctly from SupplyOn to partner, a defined “Subject” in http header is used. It indicates the intent of the request. It follows this logic:

“SO-(Service):SO-(MessageType):(DUNS):(ExternalCommunicationSystemId)::SO-(ParentProcess)”, where “ExternalCommunicationSystemId” is filled with the value as it was provided in field *ControlArea.PartnerInfo.ExternalCommunicationSystemId* in the Report8DSupplier message. For Problem Solver this is:

* SO-Common:SO-Acknowledgement:123456789:987::SO-Report8DSupplier

#### Routing from Partner to SupplyOn

For routing report8D messages correctly from partner to SupplyOn, it is necessary to provide a defined “Subject” in http header. It indicates the intent of the request. It follows this logic:

“SO-(Service):SO-(MessageType)”. For Problem Solver this is:

SO-ProSo:SO-Report8DSupplier.

The URL that suppliers must address at SupplyOn for Problem Solver related messages is:

* <https://eai.integration.prd.supplyon.com/ProsoAS2?ls=SRM> (on the production system)
* <https://eai.integration.qas.supplyon.com/ProsoAS2?ls=SRM> (on the test system)

#### Message Disposition Notification (MDN)

All AS/2 messages will request an MDN from partner. This notification is used to acknowledge the receipt and its successful decryption or signature validation of the original message. An MDN contains machine-readable information on the delivery state of the payload message. E.g. it contains the message digest (MIC - message integrity check) of the payload message as calculated by the recipient.

The MDN can be returned in synchronous or asynchronous mode, preferred is asynchronous mode. In this case, the sender must indicate the MDN's destination address. The MDN will then be returned to the AS/2 message sender's server later over a different HTTP connection.

#### Plain Communication (without Attachments)

Refer to <http://www.ietf.org/rfc/rfc4130.txt>.

#### Multipart Communication (with Attachments)

Refer to <http://www.ietf.org/rfc/rfc6362.txt>.

### HTTPS

Communication can be done via https/SOAP protocol.

#### Routing from SupplyOn to Partner

For routing complaint messages correctly from SupplyOn to partner, a defined “SOAPAction” in http header is used. It indicates the intent of the request. It follows this logic:

“SO-(Service):SO-(MessageType):(DUNS):(ExternalCommunicationSystemId):”. For Problem Solver this is:

* SO-ProSo:SO-ComplaintSupplier:123456789:987:

For routing Acknowledgement messages correctly from SupplyOn to partner, a defined “SOAPAction” in http header is used. It indicates the intent of the request. It follows this logic:

“SO-(Service):SO-(MessageType):(DUNS):(ExternalCommunicationSystemId)::SO-(ParentProcess)”, where “ExternalCommunicationSystemId” is filled with the value as it was provided in field *ControlArea.PartnerInfo.ExternalCommunicationSystemId* in the Report8DSupplier message. For Problem Solver this is:

* SO-Common:SO-Acknowledgement:123456789:987::SO-Report8DSupplier

#### Routing from Partner to SupplyOn

For routing report8D messages correctly from partner to SupplyOn, it is necessary to provide a defined “SOAPAction” in http request header field. It indicates the intent of the SOAP http request. It follows this logic:

“SO-(Service):SO-(MessageType)”. For Problem Solver this is:

SO-ProSo:SO-Report8DSupplier.

The URL that suppliers must address at SupplyOn for Problem Solver related messages is:

* <https://eai.integration.prd.supplyon.com/Proso?ls=SRM> (on the production system)
* <https://eai.integration.qas.supplyon.com/Proso?ls=SRM> (on the test system)

#### SOAP Protocol

The SOAP standard is used for http communication. The SOAP message is an XML document that consists of a mandatory SOAP envelope and a mandatory SOAP body. The payload XML is part of the SOAP body. The root element of the payload is the basic node following the SupplyOn application/service (for details on message structure see chapter 5 “XML Format and Content”). Regarding SOAP, SupplyOn does currently not use any optional element. Only the envelope structure is used.

SupplyOn does support the SOAP standard versions 1.1 as well as 1.2 (see <http://www.w3.org/TR/soap12-part1> and <http://www.w3.org/TR/2000/NOTE-SOAP-20000508>). As no optional features of SOAP are used the differences between the SOAP versions are only the values of SOAP envelope attribute.

Structure for SOAP version 1.1:

<?xml version="1.0" encoding="UTF-8"?>

<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">

 <SOAP-ENV:Body>

 XML payload

 </SOAP-ENV:Body>

</SOAP-ENV:Envelope>

Structure for SOAP version 1.2:

<?xml version="1.0" encoding="UTF-8"?>

<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://www.w3.org/2003/05/soap-envelope/">

 <SOAP-ENV:Body>

 XML payload

 </SOAP-ENV:Body>

</SOAP-ENV:Envelope>

#### Plain Communication (without Attachments)

In case of a communication without attachments, Content-Type must be set as “application/soap+xml” because of used XML payload including the SOAP envelope. Content Length contains the length of the message in byte.

Following example shows an incoming file from the partner to SupplyOn:

POST /receiver\_address/ HTTP/1.0

Accept: \*/\*

Host: https://eai.integration.prd.supplyon.com/Proso?ls=SRM # (if incoming from partner)

Authorization: Basic YWhvcmxhY2hlcjpkaSF9I21scw==

Message-Id: <62e3485d-85e6-4cfc-9bd1-ef5ade31cbbe>

SOAPAction: "SO-ProSo:SO-Report8DSupplier" # Used for routing

Content-Type: application/soap+xml

Content-Length: 15451

<?xml version="1.0" encoding="UTF-8"?>

<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">

<SOAP-ENV:Body>

<SO-ProSo>

 <ControlArea>

...

 </ControlArea>

 <SO-Report8DSupplier>

...

 </SO-Report8DSupplier>

</SO-ProSo >

</SOAP-ENV:Body>

</SOAP-ENV:Envelope>

#### Multipart Communication (with Attachments)

If one or more attachments are provided from the supplier or sent from SupplyOn to the supplier, http multipart / mime is used in combination with a defined SOAP envelope.

An http multipart message separates the overall data stream in a main http header and one part header for each message part. The main header defines a unique boundary and each part is separated from the other via this boundary.

Part one follows after the main header, part two to n follows separated via the boundary.

### This example shows the transmission of an XML payload and two PDF attachments. Because of necessary metadata for each attachment in any case always the XML payload is needed (see chapter 5 “XML Format and Content”) and always transmitted as part 1. Note that the “Content-ID” is mandatory for the XML payload. For description how attachments are referenced in messages, refer to 7.6.1 “General information regarding Multipart CommunicationGeneral information regarding Multipart Communication

Problem Solver supports the Content-Types “Multipart/Mixed” as well as “Multipart/Related”. Therefore, in terms of attachment handling the supplier can decide which Content-Type should be used for Multipart Communication.

In case “Multipart/Related” should be used for communication but the Content-Disposition header's optional filename parameter is also required by the supplier, the supplier must provide the DUNS number for each supplier location that should be enabled for the filename parameter. Afterwards, SupplyOn will configure all parameters accordingly for each supplier location based on the provided DUNS number.

Referencing attachments in Multipart Communication”.

POST /receiver\_address/ HTTP/1.0

Accept: \*/\*

Host: https://eai.integration.prd.supplyon.com/Proso?ls=SRM # (if incoming from partner)

Authorization: Basic YWhvcmxhY2hlcjpkaSF9I21scw==

Message-Id: <62e3485d-85e6-4cfc-9bd1-ef5ade31cbbe>

SOAPAction: "SO-ProSo:SO-Report8DSupplier" # Used for routing

Content-Type: multipart/related boundary=SAP\_7082c8a1-aa26-11db-c0f2-00144f00f3b6\_END; type="application/soap+xml; charset=utf-8"

Content-Length: 58451

--SAP\_7082c8a1-aa26-11db-c0f2-00144f00f3b6\_END

Content-ID: 12345.A@supplyon.com

Content-Type: text/xml; charset=utf-8

<?xml version="1.0" encoding="UTF-8"?>

<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">

<SOAP-ENV:Body>

<SO-ProSo>

 <ControlArea>

...

 </ControlArea>

 <SO-Report8DSupplier>

...

 <QDXReport8D>

...

 <MimeReference>

...

 <URI>cid:12345.B@supplyon.com</URI>

...

 </MimeReference>

...

 <MimeReference>

...

 <URI>cid:12345.C@supplyon.com</URI>

...

 </MimeReference>

...

 </QDXReport8D>

...

 </SO-Report8DSupplier>

</SO-ProSo>

</SOAP-ENV:Body>

</SOAP-ENV:Envelope>

--SAP\_7082c8a1-aa26-11db-c0f2-00144f00f3b6\_END

Content-ID: 12345.B@supplyon.com

Content-Type: application/pdf

%PDF-1.3

%....

--SAP\_7082c8a1-aa26-11db-c0f2-00144f00f3b6\_END

Content-ID: 12345.C@supplyon.com

Content-Type: application/pdf

%PDF-1.3

%....

## Attachment handling

### General information regarding Multipart Communication

Problem Solver supports the Content-Types “Multipart/Mixed” as well as “Multipart/Related”. Therefore, in terms of attachment handling the supplier can decide which Content-Type should be used for Multipart Communication.

In case “Multipart/Related” should be used for communication but the Content-Disposition header's optional filename parameter is also required by the supplier, the supplier must provide the DUNS number for each supplier location that should be enabled for the filename parameter. Afterwards, SupplyOn will configure all parameters accordingly for each supplier location based on the provided DUNS number.

### Referencing attachments in Multipart Communication

To link the position during transmission within xml payload and the respective attachment (mime part) following mechanism is used in complaint/8D report message. Each node “*MimeReference*” contains an ID in field “*URI*” (with prefix “cid:”) that is referred in http header of each mime part, field “Content-ID” or “Content-Description”. The ID needs to be unique over all attachments during transmission.

Example for complaint message:

* XML payload (SO-ComplaintSupplier)
	+ SO-ComplaintSupplier.QDXComplaint.MimeReference.URI: **cid:0001**
* http header of mime part
	+ Content-ID (or Content-Description): **0001**

Example for 8D report message:

* XML payload (SO-Report8DSupplier)
	+ SO-Report8DSupplier.QDXReport8D.MimeReference.URI: **cid:0001**
* http header of mime part
	+ Content-ID (or Content-Description): **0001**

Additionally, the order of elements *MimeReference* is important as it indicates the order of attachments within one action / root cause.

Further information provided in node “*MimeReference*” for respective file:

* *MimeTypeCode*: MIME type of the attachment according to RFC 1341. This field is leading, Content Type of http header of each mime part is ignored during processing.
* *URL*: File name without path, but with file extension, e.g. picture.jpg. This field is leading, file name included in http header of each mime part is ignored during processing.
* *AlternativeDisplay*: Contains a unique ID for each attachment if incremental attachment handling is used. Not necessary for non-incremental attachment handling. For further details please refer to 7.6.3 “Incremental vs. non-incremental attachment handling”.
* *PurposeCode*: Indicates which level/item file belongs to: "StepD2" or dedicated action/root cause Id. If not provided, file will be attached to header level. For further details please refer to 5.4.1 “Referencing attachments”.

Here is a general overview where filename, MIME/content type of each file and Encoding is necessary/optional to be provided:

|  |  |  |
| --- | --- | --- |
| Object / Message Type | SO-ComplaintSupplier | SO-Report8DSupplier |
| File name | Provided in payload xml, element *MimeReference.URL*.Optionally, it is possible to include it in each http header. It can furthermore be decided if to provide plain file name or encode it as URL or MIME:Content-Type: image/jpg; name=picture.jpgContent-Disposition: attachment; filename=picture.jpgThis option can be configured (if to include/skip and what encoding) for each supplier system. | Taken from payload xml, element MimeReference.URL.Optionally, it can be provided in each http header. |
| MIME/content type | Provided in payload xml, element MimeReference.MimeTypeCodeProvided in “Content-Type” in each http header:Content-Type: image/jpg | Taken from payload xml, element MimeReference.MimeTypeCode.Optionally, it can be provided in each http header. |
| Encoding | Provided in “Content-Transfer-Encoding” in each http header. It is for all mime parts “binary”:Content-Transfer-Encoding: binary | Provided in “Content-Transfer-Encoding” in each http header. It is for all mime parts “binary”:Content-Transfer-Encoding: binary |

Figure 3: Overview where to provide file name/MIME type in multipart message

### Incremental vs. non-incremental attachment handling

Following modes are supported regarding sending of attachments:

* Non-Incremental: With each message (SO-ComplaintSupplier or SO-Report8DSupplier) all relevant attachments are sent, i.e. the list of sent attachments replaces all previous attachments.
* Incremental: With each message, only the attachments are sent which have been added since the last transmission of the respective complaint/8D report.

 Only in case of a successful transmission of message with attachment the attachment can be considered as transmitted. If transmission fails the attachment needs to be resent within next message.

 Note, that incremental handling does NOT consider deletion of attachments.

Example:

* 1. message SO-Report8DSupplier: Attachments A and B are included
* 2. message SO-Report8DSupplier for same complaint: Attachments A and C are included
* Result in non-incremental mode: Attachments A and C are stored on complaint Problem Solver
* Result in incremental mode: Attachments A, A, B, C are stored on complaint in Problem Solver

Logic in the supplier’s system should be correspondingly for message SO-Report8DSupplier.

For message SO-ComplaintSupplier (sent from SupplyOn to the supplier), incremental vs. non-incremental attachment handling is configured by SupplyOn for the supplier. The element “*MimeReference*” lists all attachments (incl. previously and transmitted ones). Only for the physical attachments of the actual transmission the element “*URI*” is included. The element “*AlternativeDisplay*” may be used for identification of each attachment.

For message SO-Report8DSupplier (sent from the supplier to SupplyOn), this is controlled with XML element *IncrementalAttachments* in the node *ProcessingInfo* within the *ControlArea*:

*IncrementalAttachments* = “true”: incremental attachment handling

*IncrementalAttachments* = “false”: non-incremental attachment handling.

### Size and type restrictions

The size of each individual attachment as well as the total size of all attachments for an 8D report[[1]](#footnote-1) is limited by each customer (see examples in the table below). If the size limit is exceeded, the 8D report is rejected. The size limit for each individual attachment as well as the size limit for all attachments can be configured per customer. The recommended size limit for all attachments should not exceed 200 MB.

The file type of attachments is restricted for each customer. They can only be uploaded if they meet with requirements of whitelist (see table below).

Defined limits on attachments as of date of Interface Description:

|  |  |  |
| --- | --- | --- |
|  | Bosch | Continental |
| Limit on each file (MB) | 20 | 100 |
| Limit on all files (MB) within an 8D report | 20 | 100 |
| Allowed file types | .DOC, .DOCX, .GIF, .JPG, .PDF, .PPT, .PPTX, .TXT, .XLS, .XLSX | .DOC, .DOCX, .JPG, .PDF, .PNG, .PPT, .PPTX, .TIF, .TIFF, .TXT, .XLS, .XLSX |

Figure 4: File size and type restrictions

Furthermore, all attachments exchanged are scanned for viruses.

# Supplier Connection

Details on connectivity data are exchanged during the integration project. They will be collected in the separate partner agreement.

# Appendix

## XML Schema Definitions

The schema is always the leading technical document. The excel file with all elements as list is just for documentation.

### Down- and Upload





Excel file with elements as list and explanations:



### Backend integration







Excel file with elements as list and explanations:



## Evaluation configuration



## Individual flexible field configuration

[currently not defined by any customer]

## Root cause category configuration

* The following catalogue is defined with Bombardier, Robert Bosch, Schaeffler and ZF. It equals the standard catalogue provided by the VDA:
	+ English version (leading):



* + German version:



* The following catalogue is defined with Continental. It equals the standard catalogue provided by the VDA, but with some additional category entries (highlighted in yellow):



1. In case of incremental attachment handling: Not the attachments of the message, but the total size of supplier attachments for the complaints - including the current message - are relevant. [↑](#footnote-ref-1)