BMW eInvoicing
EDI Implementation Guideline

CONTAINERS **v.1.1**

Contents

Change History

Version	Summary of Changes	Date
1.0	MIG created / GoLive	09/01/2019
1.1	3.0 general rules – attachment quality (dpi) and full document size Zugferd v2.1 added	30/11/2019

1. INTRODUCTION

This document is a part of documentation of BMW eInvoicing Guideline. It shows how to use containers on eInvoicing platform to transfer attachments for formats like VDA4938, which cannot embed and transfer attachments itself.

The main purpose for using containers is ability to include attachments along with the invoice message file. Container is also a file which format and structure are defined in detail in this document. Containers can be used in both directions. Partner is allowed to send incoming messages to BMW and to receive outgoing messages from BMW in containers too.

2.CONTAINERS CONFIGURATION

Exchanging invoices in EDI format with attachments in container **is not a default setting** on eInvoicing platform. Partners who want to send invoices in EDI format with attachments via eInvoicing platform to BMW or receive invoices in EDI format with attachments via eInvoicing platform from BMW should configure this functionality during onboarding.

Regardless of whether the partner configured receiving containers functionality or not, downloading of invoices and attachments from eInvoicing platform is possible.

3. GENERAL RULES

Following formats of containers can be used on eInvoicing platform:

- PDF/A-3 (only for ZUGFeRD Standard version 1.0, 2.0, 2.0.1 and 2.1)
- VDA 4983 (only for VDA4938)
- zip (only for TEAPPS xml – Nordic)

Formats like fatturaPA (Italy), XRechnung (UBL2.1), PEPPOL (UBL2.1) can transfer attachments as embedded base64 string inside the xml structure and need no seperate container format.

General container rules:

- Only one invoice per container
- Number of attachments is limited to 9 (1 mandatory & 8 optional)
- Full size of the container file is limited to 10 MB
  In case the maximum file size will exceed 10 MB, please get in contact with the known BMW accounting contact to clarify how to transfer those big attachments.
  To minimize the size, please use the smallest possible dpi (dots per inch) for scanned documents. If possible, use gray scale instead of colour.
- Attachment files types are limited. See table 1 and table 2 (next page)
- Containers cannot include other containers e.g. ZIP embedded in PDF/A-3
- Allowed invoice file formats in a container:
    - VDA 4938 T2 in VDA4983 container
    - CII XML (ZUGFeRD - Cross Industry Invoice XML) in PDF/A3 container
    - TEAPPS xml in zip container
- Naming convention for incoming containers from Partners is not defined, however, Partner has to ensure uniqueness

Table 1 : Inbound VDA4983 supported attachments:

Document Type	Number of Documents	Mandatory/Optional	MIME Type
UN/EDIFACT INVOIC D07A	1	Mandatory	application/EDIFACT
PDF Document	Up to 9 maximum optional documents	Optional	application/pdf
Word Document		Optional	application/doc or docx
Excel Document		Optional	application/xls or xlsx
PowerPoint Document		Optional	application/ppt or pptx
Bitmap Image		Optional	application/bmp
Portable Network Graphics		Optional	application/png
Graphics Interchange Format		Optional	application/gif
JPEG Image		Optional	application/jpg or jpeg
Tagged Image File Format		Optional	application/tif or tiff
Text File		Optional	application/txt
CSV File		Optional	application/csv
Maximum Attachments	**10 (1 Mandatory and Up to 9 Optional)**		

Table 2 : Inbound ZUGFeRD - PDF/A3 supported attachments:

Document Type	Number of Documents	Mandatory/Optional	File Naming Convention
ZUGFeRD Invoice XML	1	Mandatory	ZUGFeRD-invoice.xml
PDF Document	Up to 9 maximum optional documents	Optional	*.pdf
Word Document		Optional	*.doc / *.docx
Excel Document		Optional	*.xls / *.xlsx
PowerPoint Document		Optional	*.ppt / *.pptx
Bitmap Image		Optional	*.bmp
Portable Network Graphics		Optional	*.png
Graphics Interchange Format		Optional	*.gif
JPEG Image		Optional	*.jpg / *.jpeg
Tagged Image File Format		Optional	*.tif / *.tiff
Text File		Optional	*.txt
CSV File		Optional	*.csv
Maximum Attachments	**10 (1 Mandatory and Up to 9 Optional)**		

Table 3 : Inbound zip supported attachments:

Document Type	Number of Documents	Mandatory/Optional	File extension
TEAPSXML	1	Mandatory	xml
PDF Document	Up to 9 maximum optional documents	Optional	pdf
Word Document		Optional	doc or docx
Excel Document		Optional	xls or xlsx
PowerPoint Document		Optional	ppt or pptx
Bitmap Image		Optional	bmp
Portable Network Graphics		Optional	png
Graphics Interchange Format		Optional	gif
JPEG Image		Optional	jpg or jpeg
Tagged Image File Format		Optional	tif or tiff
Text File		Optional	txt
CSV File		Optional	csv
Maximum Attachments	**10 (1 Mandatory and Up to 9 Optional)**		

Example of logical structure of container:

4. NAMING CONVENTION

Content files included in containers (invoice and attachments) are named according to following general naming convention rules (format specific naming rules are defined in chapter 5):

- All elements of the file name except the extension are separated with underscores "_".

    Example: 20160917102300_A1_10000310_{2d77768d-7378-7878-7878-787878787878}.xml

- Extension is preceded by dot and case insensitive. Extension of file depends on type of file.

    Example: 20160917102300_A1_10000310_{2d77768d-7378-7878-7878-787878787878}.xml

- Date and time - should be used only with digits and without separators.

    Example: 20160917102300_A1_10000310_{2d77768d-7378-7878-7878-787878787878}.xml

- Sender identifier - It depends on direction:

    o For incoming invoice it is partner number

    Example: 20160917102300_10000310_A1_{2d77768d-7378-7878-7878-787878787878}.xml

    o For outgoing invoice it is BMW Company Code

    Example: 20160917102300_A1_10000310_{2d77768d-7378-7878-7878-787878787878}.xml

- Receiver identifier - It depends on direction:

    o For incoming invoice it is BMW Company Code

    Example: 20160917102300_10000310_A1_{2d77768d-7378-7878-7878-787878787878}.xml

    o For outgoing invoice it is partner number

    Example: 20160917102300_A1_10000310_{2d77768d-7378-7878-7878-787878787878}.xml

- Each message is identified by MessageId - It is an identifier which depends on the direction of the sending invoice:

    o For incoming invoice Partner should generate unique identifier.

    o For outgoing invoice EInvoicing generates 32 characters globally unique identifier in curly brackets "{}" separated with hyphens "-"(GUID).

    Example: 20160917102300_A1_10000310_{2d77768d-7378-7878-7878-787878787878}.xml

- Each file in the container should be preceded with appropriate 3 characters long prefix:

Prefix	File type
ATT_n (1,2,…)	Attachment
SND	Invoice file in case of incoming invoices from partners to BMW
RCV	Invoice file in case of outgoing invoices from BMW to partners

Please note that special naming convention of container file sent by partners is not strictly required. Partner is obliged to provide uniqueness of container file names globally within EInvoicing platform. Nevertheless partners are able to use recommended naming convention of container file names defined in chapter 4.2

BMW sends containers with file names according to the rules defined in chapter 4.1.

4.1   Naming convention of outgoing container files from BMW to Partners

CONTAINER					
	Time stamp	Sender	Receiver	MessageId	Extension
Prefix in container name is omitted	CCYYMMDDHHMMSS (inherited from invoice file) • Only digits • No separators	BMWC ompany Code	partnerNo	32 characters globally unique identifier in curly brackets "{}" separated with hyphens "-"(GUID) (inherited from invoice file)	pdf, xml

Example: 20160917102300_A1_10000310_{2d77768d-7378-7878-7878-787878787878}.xml

Output format of the invoice message sent from BMW Company Code "A1" to Partner number "10000310" on 20160917102300

4.2 Recommended naming convention of incoming container

CONTAINER					
	Time stamp	Sender	Receiver	MessageId	Extension
Prefix in container name is omitted	CCYYMMDDHHMMSS (inherited from invoice file) • Only digits • No separators	partner No	BMWCompanyCode	Globally unique identifier generated by Partner	pdf, xml

Example:
20160917102300_10000310_A1_{unique_identifier_generated_by_Partner}.xml

Input format of the message sent from Partner number "10000310" to BMW Company Code "A1" on 20160917102300

5.CONTAINER FORMATS

5.1   PDF/A-3 (& ZUGFeRD)

PDF/A-3 file is a PDF visualization of an invoice with embedded invoice file in EDI format.

5.1.1   Incoming PDF/A-3 container content naming convention

Incoming invoice message with attachment(s) sent in a container from Partner number "10000310" to BMW Company Code "A1" on 20160917102300

PDF/A-3 CONTAINER CONTENT:					
INVOICE					
Prefix	Time stamp	Sender	Receiver	MessageId	Extension
SND	CCYYMMDDHHMMSS • Only digits • No separators	partnerNo	BMWCompanyCode	Globally unique identifier generated by Partner	.edi .xml
Example: **SND**_20160917102300_10000310_**A1**_{unique_identifier_generated_by_Partner}.edi					
ATTACHMENT					
Prefix	Time stamp	Sender	Receiver	MessageId	Extension
ATT_n e.g. ATT_1 ATT_2 …	CCYYMMDDHHMMSS • Only digits • No separators	partnerNo	BMWCompanyCode	Globally unique identifier generate	Various e.g. .xls

	d by Partner

Example:
ATT_1_20160917102300_10000310_**A1**_{unique_identifier_generated_by_Partner}.xls

5.1.2 Outgoing PDF/A-3 container content naming convention

Outgoing invoice message with attachment(s) sent in a container from BMW Company Code "A1" to Partner number "10000310" on 20160917102300

Example: **RCV**_20160917102300_ **A1**_10000310_{2d77768d-7378-7878-7878-787878787878}.edi

ATTACHMENT					
Prefix	Time stamp	Sender	Receiver	MessageId	Extension
ATT_n e.g. ATT_1	CCYYMMDDHHMMSS	BMW Comp	partner No	32 characters globally	Various e.g. .xls

| ATT_2 ... | • Only digits
• No separators | anyC ode | unique identifier in curly brackets "{}" separated with hyphens "-"(GUID) |

Example: **ATT_1**_20160917102300_ **A1**_10000310_{2d77768d-7378-7878-7878-787878787878}.xls

5.1.3 ZUGFeRD

ZUGFeRD is the specific instance of PDF/A-3 container.

The PDF/A-3 container is used for all supported ZUGFeRD versions v1.0, v2.0, v2.0.1 and v2.1.

Data relationship of the outgoing/incoming invoice has to be set to Alternative. This data relationship is expressed by the AFRelationship tag. In case of sending ZUGFeRD Cross Industry Invoice (CII) XML:

- For v1.0 the file of outgoing/incoming invoice has to be named exactly **"ZUGFeRD-invoice.xml"** and its MIME Type is always text/xml

- For v2.0 and v2.0.1 the file of outgoing/incoming invoice has to be named exactly "**zugferd-invoice.xml**" and its MIME Type is always text/xml

  For more details please review also the general ZUGFeRD documentation published by XOEV - https://www.xoev.de

- For v2.1 the file of outgoing/incoming invoice has to be named exactly "**facture-x.xml**" and its MIME Type is always text/xml

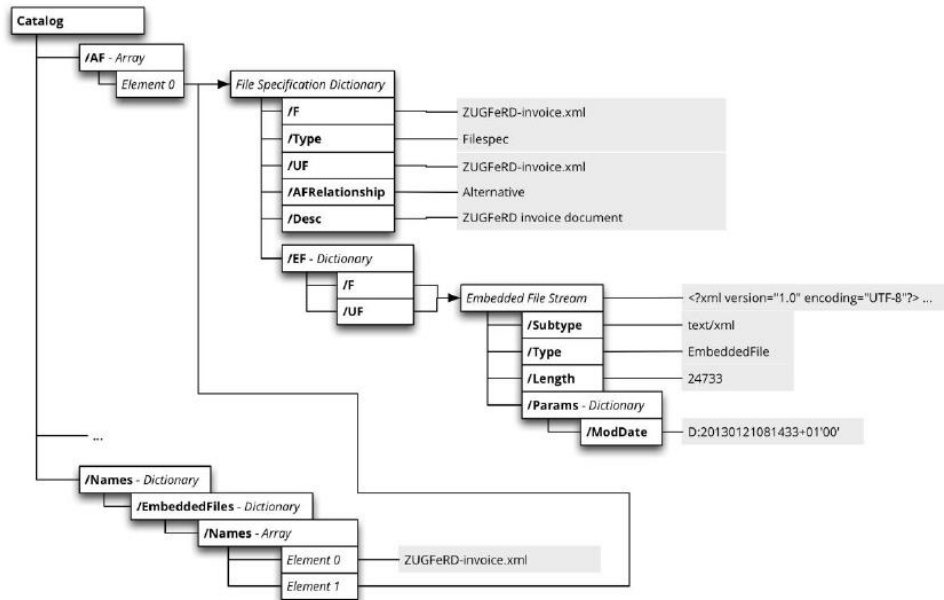 For more details please review also the general ZUGFeRD documentation published by XOEV - https://www.xoev.de

- incoming attachments from Partners can be named freely with ensuring uniqueness and their MIME Types have to be set accordingly to IANA (http://www.iana.org/assignments/media-types/)

The file name like "ZUGFeRD-incoice.xml" is used for routing identification. The wrong file name, lack, state of not readability or incompleteness of verified file interrupts processing and creating an system error.
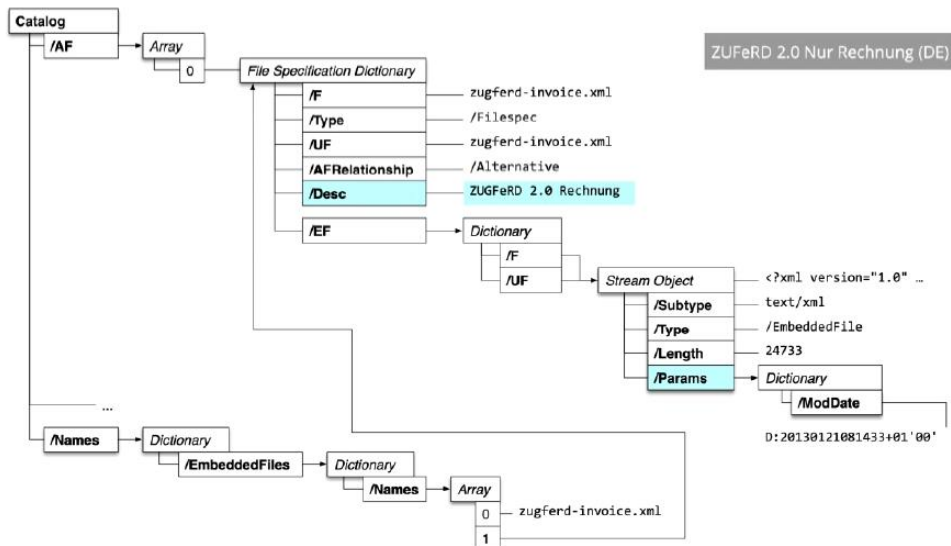
PDF/A-3 structure for embedding a ZUGFeRD XML file is shown by figure:
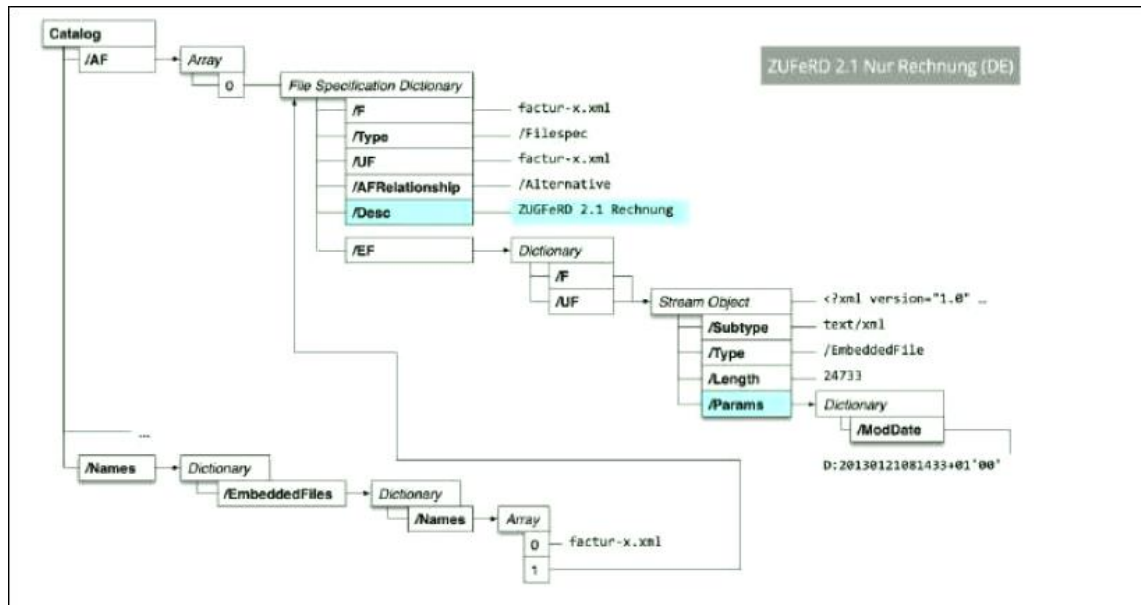
ZUGFeRD v1.0

ZUGFeRD v2.0

ZUGFeRD v2.1

5.2 VDA 4983

VDA 4983 Container is an XML file specified in technical specification of UN/CEFACT "Standard Business Document Header" Version 1.3 (SBDH XML).
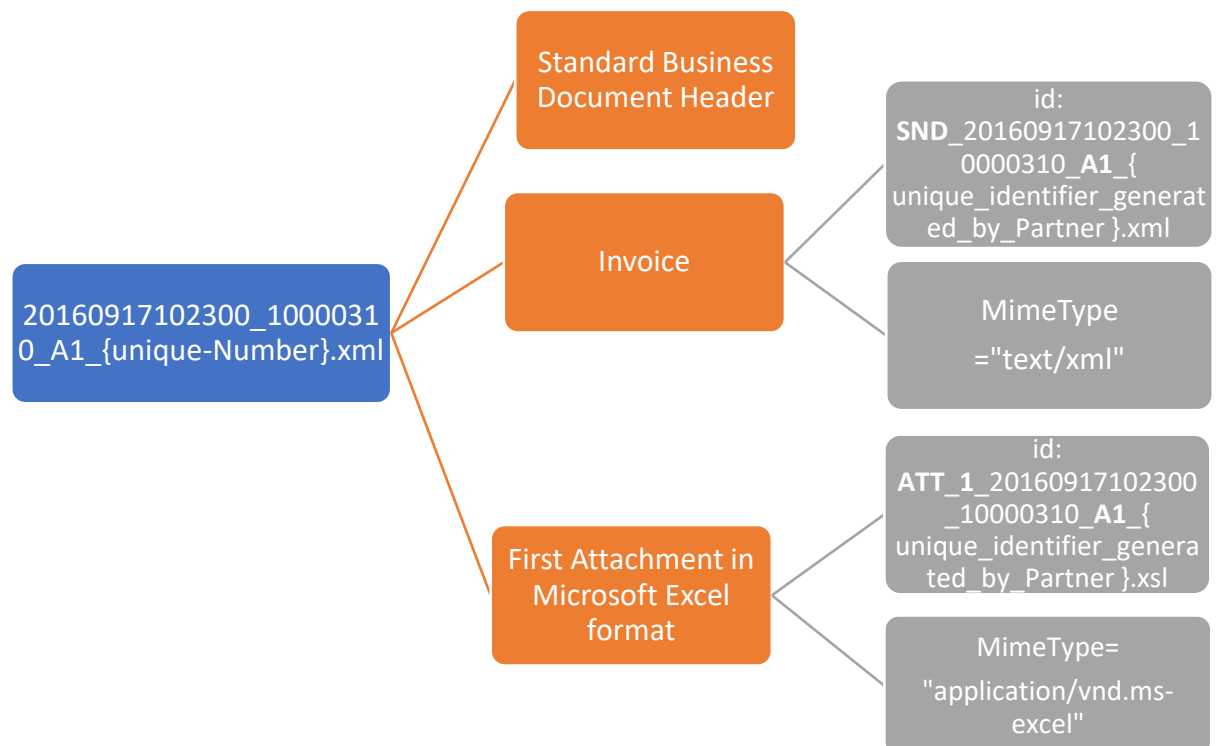
VDA 4983 standard is provided by VDA organization under:

https://www.vda.de/en/services/Publications/4983-recommendation-on-the-transmission-of-attachments-and-signat.html

Please note VDA 4983 containers have to be created according to following rules in order to make the container compatible with EInvoicing platform.

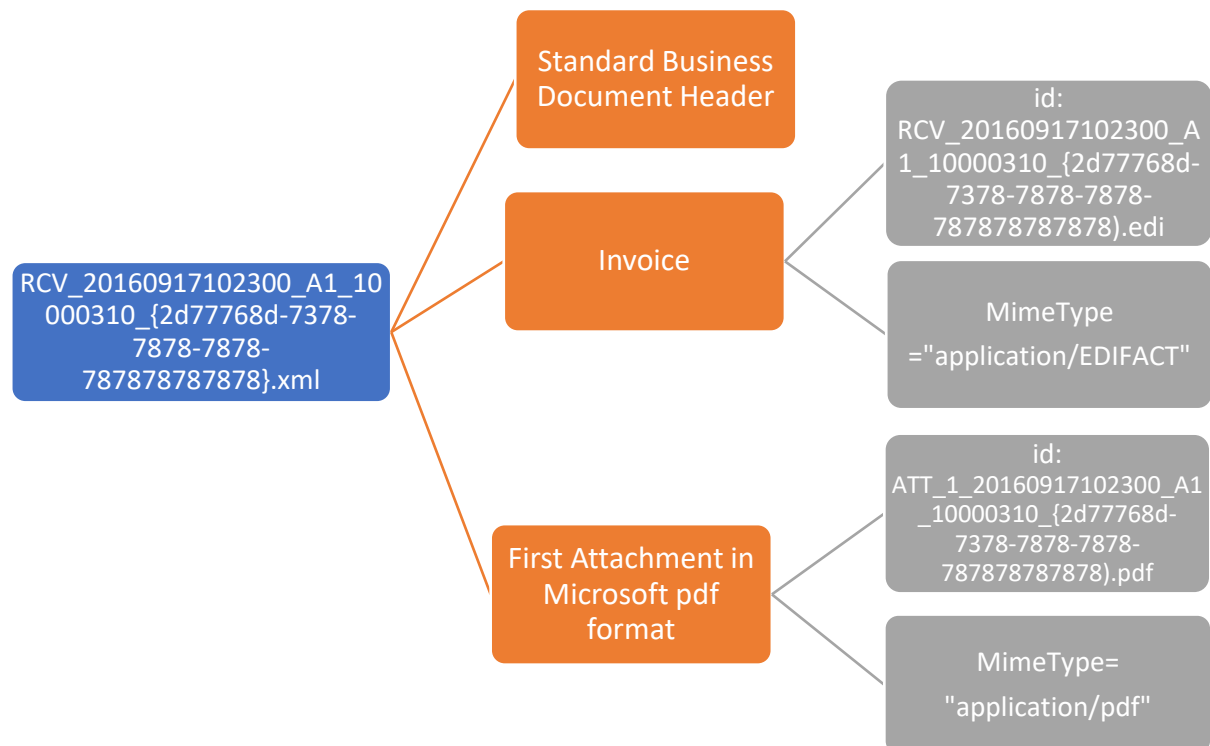## 5.2.1   Incoming VDA 4983 example structure

Incoming invoice message with attachment(s) sent in a container from Partner number "10000310" to BMW Company Code "A1" on 20160917102300

5.2.2 Outgoing VDA 4983 example structure

Outgoing invoice message with attachment(s) sent in a container from BMW Company Code "A1" to Partner number "10000310" on 20160917102300

5.2.3 VDA 4983 container routing information

Due to fact VDA 4983 container is a SBDH XML, it requires to provide routing information. Party identifiers in SBDH XML have to be exactly the same as identifiers of the invoice message included in the container. However, VDA 4983 does not specify qualifier definition, therefore qualifiers are not verified.

Sender identifier XPath:

/StandardBusinessDocument/StandardBusinessDocumentHeader/Sender/Identifier

Receiver identifier XPath:

/StandardBusinessDocument/StandardBusinessDocumentHeader/Receiver/Identifier

Example:

SBDH XML Outgoing Container (from BMW to Partner)

```xml
<StandardBusinessDocument>

        <cefact:StandardBusinessDocumentHeader>
                <cefact:Sender>
                    <cefact:Identifier>BMWGROUPA1</cefact:Identifier>
                </cefact:Sender>
                <cefact:Receiver>
                    <cefact:Identifier>BMWTP10213510</cefact:Identifier>
                 </cefact:Receiver>

        </cefact:StandardBusinessDocumentHeader>

</StandardBusinessDocument>
```

Included VDA 4938 T2 Invoice

UNB+UNOC:3+BMWGROUPA1:ZZZ+ BMWTP10213510:ZZZ+161130:1250+1000000232++++++1'

5.2.4 Encryption

XML attachments of VDA 4983 container are not encrypted (Encoding attribute is not used). All other types of attachments are encrypted with Base64.

Encoding="http://www.w3.org/2000/09/xmldsig#base64"

5.2.5 Encoding

UTF-8 is used and required for encoding of VDA 4983 XML container by EInvoicing.

5.2.6 Signature

If a digital signature is explicitly mandated by government legislation (e.g. domestic invoices Turkey, Mexico, Brazil etc.) the VDA 4983 XML container will be digital signed by TrustWeaver in accordance with the W3C recommendation "XML Signature Syntax and Processing (Second Edition)", known as XMLDsig.2.

5.3   zip (TEAPPS xml)

Besides the composed TEAPPSXML-data file, the uploaded or downloaded zip-file can include attachment files, which could be normal attachment file of invoice created by payee or picture files generated by payee, other operator or own service provider.

Referenced attachment and the invoice file have to have exactly same name. Characters in both names are case sensitive. Each invoice should have own attachment file with unique name. Attachment names have to be unique in each invoice batch and also between different batches. One way to generate unique attachment names is to use method where name consists of free part, unique batch number and unique invoice number inside the batch. Attachment file name body allows numbers 0-9, capital letters A-Z, normal letters a-z and period (.), hyphen (-) and low line (_). Other characters are not allowed for e.g. space sign in attachment should not be used. Long attachment names are not recommended, for example 50 characters should be enough.

TEAPPSXML-specification supports several attachment format. Receiving system or receiver used message format may have more strict restrictions. Preferred attachment file type is always basic pdf which is best supported format in receiving systems and print services. As an exception to this is portfolio pdf, which is not supported as attachment format. Use of other format in attachments has to be discussed and agreed in deployment projects.

For more information how to handle attachments for TEAPPSXML, please review the TEAPPSXML v3.0 implementation Guide too.

6. Appendix

6.1   PDF/A-3 Example

An example of eInvoicing compatible PDF/A-3 container from BMW to Partner is in the folder sample_container of the guideline zip package.

📄 sample.ZUGFeRD1.pdf
📄 sample.ZUGFERD2.pdf

6.2   VDA 4983 Example

An example of eInvoicing compatible VDA 4983 container from BMW to Partner is in the folder sample_container of the guideline zip package.

A1.4983.container.incoming.Sample.xml
A1.4983.container.outgoing.Sample.xml

6.3   zip Example

An example of eInvoicing compatible zip container from BMW to Partner is in the folder sample_container of the guideline zip package.

8230073439_00.zip