

D.3 AttachedFile — AFE

Type:

External data

Description:

The AttachedFile XML element specifies a manufacturer proprietary file to be connected to the task data transfer files.

The file must reside in the same directory as the TASKDATA.XML. The filename of the attached files should follow the 8.3 naming convention and be all upper case.

If the attached file originates from another manufacturer, its contents shall be ignored by the TC. If the Preserve XML attribute has a value of 0, then the TC can omit the AFE XML element from the received data transfer file and delete the attached file immediately. A value of 1 for the Preserve XML attribute signals that the TC must preserve this XML element and the file and include these in the data transfer back to the FMIS.

Included by XML elements:

— ISO11783_TaskData

Table D.2 — AttachedFile attributes

Attribute	XML	Use	Type	Length/range	Comment
FilenameWithExtension	A	r	xs:ID	12	Unique name of the attached file. For predefined file types the file name may be fixed. Format according to 8.3 filename convention (e.g. "PROPDATA.BIN")
Preserve	B	r	xs:NMTOKEN	0 .. 1	0 = Task Controller does not need to preserve attached file. 1 = Preserve on TC and send back to FMIS
ManufacturerGLN	C	r	xs:anyURI	max. 32	Empty for attachments predefined by ISO-11783. The manufacturer's GS1 GLN (Global Location Number).
FileType	D	r	xs:unsignedByte	0 .. 254	Predefined types (ManufacturerGLN is empty): 1 = LINKLIST (fixed filename 'LINKLIST.XML', all uppercase). Note: a maximum of one LINKLIST.XML file can be referenced in the TASKDATA.XML. For a nonempty ManufacturerGLN it is up to the manufacturer to set an appropriate value.
FileVersion	E	o	xs:string	max. 32	File version number to create a unique relation between the TASKDATA.XML and the attached file
FileLength	F	o	xs:unsignedLong	0 .. (2 ³² -2)	Length of attached file in number of bytes

EXAMPLE

```
<AFE A="LINKLIST.XML" B="0" C="" D="1" E="3.2" F="6400"/>
```

```
<AFE A="CLAAEXT.DAT" B="0" C="urn:epc:id:sgln:4250285.50000.9" D="1"/>
```

```
<AFE A="PRESERVE.DAT" B="1" C="urn:epc:id:sgln:0614141.33254.1" D="7"/>
```

Annex A

Annex B

Annex C

Annex D

Kommentar [MS1]: Please ignore Annex A to D and continue with Annex E :-)

Annex E (normative)

Predefined ISO-11783 attachments

E.1 Link List

There are situations, where a FMIS and a MICS want to exchange additional key information about objects of the XML dataset. The predefined Link List attachment provides a standardised way to relate a XML element of the data transfer to one or more additional key values. An object ID attribute of the XML element is precondition.

The associations between the XML element object IDs and the key values are stored in a separate file, the link list file, with the name 'LINKLIST.XML' (all uppercase).

The link list file shall start with an XML identification section and shall be well formed. The following xml version specification shall be at the start of the link list file:

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

The link list file shall contain one root XML element in which all link definitions are contained.

E.2 ISO11783_LinkList

Type:

Root element

Description:

The XML element ISO11783_LinkList is the root XML element of the link list file and contains definitions about the construction of the XML file and the inclusion of the primary XML elements.

The FileVersion attribute shall be used to define a unique relation between the LINKLIST.XML and the TASKDATA.XML files.

The TASKDATA.XML file shall contain an AttachedFile (AFE) element, <AFE A="LINKLIST.XML" B="" C="1" D="1" F="12988"/>, to specify the transfer of the attached LINKLIST.XML file,

A maximum of one LINKLIST.XML file can be referenced in the TASKDATA.XML file.

Includes XML elements:

— *LinkGroup*

Table E.1 -- ISO11783_LinkList attributes

Attribute	XML	Use	Type	Length/ range	Comment
VersionMajor	VersionMajor	r	xs:NMTOKEN	4	List element release number (major), used to specify the version of ISO 11783-10 that this Link List file meets: 4 = The version of the second edition published as a final draft International Standard (R2.FDIS). Note: the ISO11783_LinkList is introduced in version4.
VersionMinor	VersionMinor	r	xs:NMTOKEN	0 .. 99	List element version number (minor) , used to refer to revisions of the XSD schema that this element complies to. See section 8.4 for the naming convention of the XSD schema.
ManagementSoftwareManufacturer	Management Software Manufacturer	r	xs:string	32	Name of management-software manufacturer
ManagementSoftwareVersion	Management Software Version	r	xs:string	32	Version of management software
TaskControllerManufacturer	TaskController Manufacturer	o	xs:string	32	Name of TC manufacturer
TaskControllerVersion	TaskController Version	o	xs:string	32	Version of TC software
FileVersion	FileVersion	o	xs:string	32	Version of the linklist file
DataTransferOrigin	DataTransfer Origin	r	xs:NMTOKEN	1	Describes the origin of the XML file: 1 = FMIS 2 = MICS
LinkGroup	GLP	r	xs:element		Includes a list of XML element <u>LinkGroup</u>

Kommentar [MS2]: @Jaap: please have a look at the Comment column of the ISO11783 element. There it often says 'Includes XML a list of element XYZ' instead of 'Includes a list of XML element XYZ'!

EXAMPLE

```
<ISO11783_LinkList VersionMajor="4" VersionMinor="0" TaskControllerManufacturer="FarmCtrl"
TaskControllerVersion="1.0" ManagementSoftwareManufacturer="FarmSystem"
ManagementSoftwareVersion="1.0" FileVersion="3.2" DataTransferOrigin="2">
<LGP A="LGP10" B="1" E="Sample Of UUID Links">
  <LNK A="FRM1" B="{1059B14E-929F-4C4C-BCD4-C4F52A6A076A}"/>
  <LNK A="PFD3" B="{92043685-072D-4CAA-B3A8-C1E9D23BDB31}" C="Headland"/>
  <LNK A="PDT19" B="{C89AA8C5-A9B3-4CA4-BE47-4449B9CD336E}"/>
  <LNK A="TSK-21" B="{EB689DCE-A287-400C-9F0A-E8777716DDE6}"/>
</LGP>
<LGP A="LGP31" B="3" D="urn:epc:id:sgtin:" E="Sample Of GS1 GTIN Links">
  <LNK A="PDT19" B="0764011.9854564"/>
  <LNK A="PDT20" B="0764012.9852311"/>
</LGP>
.....
</ISO11783_LinkList>
```

E.3 Link --- LNK

Type:

Coding data

Description:

The Link XML element defines a link between an XML element (object) in the ISO11783 data transfer and a key value. The format of the key value is dependant on the LinkGroupType defined in the parental LinkGroup. An optional designator for the link can be specified.

Included by XML element:

— *LinkGroup*

Table E.2 -- Link attributes

Attribute	XML	Use	Type	Length/Range	Comment
ObjectIDRef	A	r	xs:ID	min.4 .. max.14	Identifier of object, the scope of uniqueness of this identifier is the ISO11783 data transfer file.
LinkValue	B	r	xs:token	max. 255	Link value for the object.
LinkDesignator	C	o	xs:string	max. 32	Designator of Link

EXAMPLE

```

<ISO11783_LinkList VersionMajor="4" VersionMinor="0" TaskControllerManufacturer="FarmCtrl"
  TaskControllerVersion="1.0" ManagementSoftwareManufacturer="FarmSystem" ManagementSoftwareVersion="1.0"
  FileVersion="3.2" DataTransferOrigin="2">
  <LGP A="LGP10" B="1" E="UUIIDs">
    <LNK A="FRM1" B="{1059B14E-929F-4C4C-BCD4-C4F52A6A076A}"/>
    <LNK A="PFD3" B="{92043685-072D-4CAA-B3A8-C1E9D23BDB31}" C="Headland"/>
    <LNK A="PDT19" B="{C89AA8C5-A9B3-4CA4-BE47-4449B9CD336E}"/>
    <LNK A="TSK-21" B="{EB689DCE-A287-400C-9F0A-E8777716DDE6 }"/>
    <LNK A="PFD-3" B="{8D96B98A-62C2-44D0-9709-29467A4169F3}"/>
  </LGP>
  .....
  <LGP A="LGP20" B="3" D="urn:epc:id:sgtin:" E="GS1 GTIN Links">
    <LNK A="PDT19" B="0764011.9854564"/>
    <LNK A="PDT20" B="0764012.9852311"/>
  </LGP>
</ISO11783_LinkList>

```

E.4 LinkGroup --- LGP

Type:

Coding data

Description:

There are different aspects in relating elements of the ISO11783 data transfer to entities outside the scope of ISO11783. The type attribute of the LinkGroup (LGP.B) takes into account these different aspects. The LinkGroup XML element groups Link elements of the same type. It also holds data which is common to all embedded Link elements.

Within a LinkGroup any data transfer element should be referenced by a maximum of one Link element. There is one exemption to that: a LinkGroup of type 4 'Informational Resolvable URIs' may contain multiple Link elements referring to the same data transfer element.

Includes XML elements:

— *Link*

Table E.3 - LinkGroup attributes

Attribute	XML	Use	Type	Length/Range	Comment
LinkGroupId	A	r	xs:ID	min.4 .. max.14	Unique identifier of LinkGroup Format: (LGP LGP-)([0-9])+ Records generated on MICS have negative IDs.
LinkGroupType	B	r	xs:NMTOKEN	1 .. 4	Selection of one attribute: 1 - UUIDs Standardized UUIDs. All Link child elements in the group hold a valid UUID in attribute LinkValue (LNK.B). For newly created elements MIS and FMIS should create UUIDs using the ISO/IEC 9834-8 (technically compatible to RFC 4122). Within the standard the version 4 algorithm (Random) shall be used. 2 - Manufacturer Proprietary With attribute B set to 2, a valid GLN in attribute ManufacturererGLN is mandatory. 3 - Unique Resolvable URIs Type to link data transfer elements with GS1 codes for example. The complete link value is a concatenation of LinkGroupNamespace and LinkValue (LGP.D & LNK.B). 4 - Informational Resolvable URIs Type for a (loose) collection of informational links. This is the only group type allowing multiple links referring to the same data transfer element. The complete link value is a concatenation of LinkGroupNamespace and LinkValue (LGP.D & LNK.B).
ManufacturerGLN	C	o	xs:anyURI	max. 64	GS1 Global Location Number (GLN) of the manufacturer. For existing GLNs or to apply for a new one see http://www.gs1.org .
LinkGroupNamespace	D	o	xs:token	max. 255	For the resolvable URI types (3 and 4) this attribute holds a prefix

					value which is applied to all LinkValues of the contained Link elements In a LinkGroup of type 3 it shall hold the URI up to and including the last colon.
LinkGroupDesignator	E	o	xs:string	max. 32	Designator of Link Group
Link	LNK	o	xs:element		Includes a list of element Link

EXAMPLE

```

<LGP A="LGP10" B="1" E="UIDs">
  <LNK A="FRM1" B="{1059B14E-929F-4C4C-BCD4-C4F52A6A076A}"/>
  <LNK A="PFD3" B="{92043685-072D-4CAA-B3A8-C1E9D23BDB31}" C="Headland"/>
  <LNK A="PDT19" B="{C89AA8C5-A9B3-4CA4-BE47-4449B9CD336E}"/>
  <LNK A="TSK-21" B="{EB689DCE-A287-400C-9F0A-E8777716DDE6 }"/>
  <LNK A="PFD-3" B="{8D96B98A-62C2-44D0-9709-29467A4169F3}"/>
</LGP>
<LGP A="LGP31" B="3" D="urn:epc:id:sgtin:" E="GS1 GTIN/EAN">
  <LNK A="PDT19" B="0764011.9854564"/>
  <LNK A="PDT20" B="0764012.9852311"/>
</LGP>
<LGP A="LGP32" B="4" D="https://portal.bvl.bund.de/psm/jsp/DatenBlatt.jsp?kennr=" E="BVL Links">
  <LNK A="PDT103" B="024658-00"/>
  <LNK A="PDT104" B="024145-00"/>
  <LNK A="PDT105" B="004960-00"/>
  <LNK A="PDT106" B="024309-00"/>
</LGP>

```

E.4.1 LinkGroupType 1: Universally Unique Identifiers

The uniqueness of the object identifiers in the ISO11783 data transfer file is limited to the scope of the transfer file itself. To enable FMIS and MICS to synchronize objects over a wider system scope, a universally unique identifier (UUID) can be associated to each XML element with an object ID attribute.

If the MICS has the capability to create UUIDs, then the TC may add the new entries to the LINKLIST.XML file. Each newly created object identifier shall have the appropriate namespace letters followed by a negative decimal number.

The UUIDs shall be created according to ISO/IEC 9834-8 (technically compatible to RFC 4122). Within this standard the random algorithm (version 4) shall be used.

The UUIDs of elements newly created on the MICS shall always be added to a type 1 LinkGroup with empty ManufacturerGLN. From within LinkGroups with empty ManufacturerGLN any XML element of the data transfer shall have a maximum of one Link element.

EXAMPLE

```

<LGP A="LGP10" B="1" E="UIDs Sample, Group 1">
  <LNK A="FRM1" B="{1059B14E-929F-4C4C-BCD4-C4F52A6A076A}"/>
  <LNK A="PFD3" B="{92043685-072D-4CAA-B3A8-C1E9D23BDB31}" C="Headland"/>
  <LNK A="PDT19" B="{C89AA8C5-A9B3-4CA4-BE47-4449B9CD336E}"/>

```

```

<LNK A="TSK-21" B="{EB689DCE-A287-400C-9F0A-E8777716DDE6 }"/>
<LNK A="PFD-3" B="{8D96B98A-62C2-44D0-9709-29467A4169F3}"/>
</LGP>
<LGP A="LGP20" B="3" D="urn:epc:id:sgtin:" E="GS1 GTIN Links">
  <LNK A="PDT19" B="0764011.9854564"/>
  <!-- The same object (PDT19) can be referenced once in each LinkGroup. Exemption -->
  <!-- to that rule are LinkGroups of type 1 with empty ManufacturerGLN. -->
  <LNK A="PDT20" B="0764012.9852311"/>
</LGP>
<LGP A="LGP11" B="1" E="UUIDs Sample, Group 2">
  <LNK A="FRM2" B="{84A46623-2D31-4427-BB4E-288FAC4A48AB}"/>
  <LNK A="PFD5" B="{F9B87F36-7F4A-445C-9083-C23D0F2492A8}"/>
</LGP>
<LGP A="LGP12" B="1">
  <!-- <LNK A="FRM2" B="{446278DF-4035-4101-92FD-47525D1AF077}"/> -->
  <!-- Not allowed! There shall be a maximum of one reference to the same XML -->
  <!-- element from within LinkGroups of type 1 with empty ManufacturerGLN! -->
</LGP>

```

E.4.2 LinkGroupType 2: Manufacturer Proprietary Link Values

It is not recommended to use manufacture proprietary data. If it's indispensable, manufacture proprietary link values can be specified within a Link Group of type 2. The sample shows mapping of Products to proprietary ID values.

Within a proprietary LinkGroup it is up to the manufacturer how to use the Link elements, provided that they pass the validation against the schema.

EXAMPLE

```

<LGP A="LGP29" B="2" C="urn:epc:id:sgln:0614141.33254.1" D="" E="Proprietary Product Codes">
  <LNK A="PDT103" B="19" C="fungicide"/>
  <LNK A="PDT104" B="20" C="fungicide"/>
  <LNK A="PDT105" B="21" C="herbicide"/>
  <LNK A="PDT106" B="19" C="crop variety"/>
</LGP>
...
<!-- A Link Group of Type 1 ( UUID). Has nothing to do with the sample. Just to make clear, that there may be -->
<!-- several Link Groups in one LINKLIST.XML file. -->
<LGP A="LGP30" B="1">
  <LNK A="PDT103" B="{84A46623-2D31-4427-BB4E-288FAC4A48AB}"/>
  <LNK A="PDT104" B="{F9B87F36-7F4A-445C-9083-C23D0F2492A8}"/>
</LGP>

```


E.4.3 LinkGroupType 3: Unique Resolvable URIs

Link Group type 3 relates XML an element of the data transfer file to a unique URI. Within a single group of type 3 there may be a maximum of one LNK element relating to a specific XML element of the data transfer file.

The URI value must uniquely identify the element and be consistent over time.

The URI values must be split at the last occasion of the colon. The first part including the colon goes into attribute D of the LinkGroup (LinkGroupNamespace). The second part is the LinkValue (LNK.B). The concatenation of LGP.D and LNK.B shall be a resolvable URI.

This way only related URIs are listed in a LinkGroup of type 3. Furthermore the content of the LinkGroup is programmatically recognizable.

EXAMPLE

```
<LGP A="LGP31" B="3" D="urn:epc:id:sgtin:" E="GS1 GTIN/EAN">
  <LNK A="PDT19" B="0764011.9854564"/>
  <!-- Completes to urn:epc:id:sgtin:0764011.9854564 -->
  <LNK A="PDT20" B="0764012.9852311"/>
</LGP>
<LPG A="LGP32" B="3" D="urn:epc:id:sgln:" E="GS1 GLN">
  <LNK A="CTR9" B=" 4260159.94000.8"/>
  <LNK A="CTR10" B=" 4014689.00000.4"/>
  <LNK A="CTR11" B=" 4399901.95917.0"/>
  <!--<LNK A="CTR11" B=" sglIn: 4399902.00257.9"/> -->
  <!-- It is not allowed to have more than one reference to "CTR11" within the same LinkGroup of type 3! -->
</LPG>
```

E.4.4 LinkGroupType 4: Informational Resolvable URIs

The purpose of a Link Group of type 4 is to provide a location to store links. This could be the homepage of a manufacturer, farm, a product information sheet or similar.

Type 4 is suitable for volatile internet pages. Type 4 Links may not be used for identification or mapping. The concatenated value of LGP.D and LNK.B shall be a resolvable URI.

Within Link Groups of type 4 there may be more than one Link element referring to the same XML element of the data transfer file. This is unique to type 4!

A type 4 Link Group can make use of the LinkGroupNamespace. If the LinkGroupNamespace is nonempty, the URI value is a concatenation of LGP.D and LNK.B. There is no regulation where to split the URI.

EXAMPLE

```
<LGP A="LGP29" B="4">
  <LNK A="PDT9" B="http://www.bayer.de/products?234234"/>
  <LNK A="PDT19" B="http://www.monsanto.com/7832637abc"/>
  <LNK A="PDT27" B="http://www.kemira.com/service/products/info#6733a93"/>
  <LNK A="PDT27" B=" https://portal.bvl.bund.de/psm/jsp/DatenBlatt.jsp?kennr=024658-00 "/>
  <LNK A="CTR22" B="http://www.gut-schrockwede.de/start.jsp"/>
  <LNK A="WKR7" B="http://www.facebook.com/max.muster?fref=ts" C="facebook"/>
  <LNK A="WKR7" B="http://www.max-muster.de" C="personal homepage"/>
</LGP>
<LGP A="LPG30" B="4" D=" http://en.wikipedia.org/wiki/">
```

Kommentar [MS3]: Samples for URIs:
de.wikipedia.org
user@example.com:8080
192.0.2.16:80
[2001:db8::7]

Splitting at the last colon doesn't always work :-)

Change to URN instead? Samples for URNs:
urn:isbn:0451450523
urn:isan:0000-0000-9E59-0000-O-0000-0000-2
urn:issn:0167-6423
urn:ietf.rfc:2648
urn:mpeg.mpeg7:schema:2001
urn:oid:2.16.840

```
<LNK A="CTP209" B="Soybean"/>
<LNK A="CTP210" B="Maize"/ >
<LNK A="CTP211" B="Wheat"/ >
<LNK A="CTP212" B="Oat"/ >
</LGP>
<LGP A="LGP31" B="4" D="https://portal.bvl.bund.de/psm/jsp/DatenBlatt.jsp?kennr=" E="BVL Links">
  <LNK A="PDT103" B="024658-00"/>
  <!-- Complete Link: https://portal.bvl.bund.de/psm/jsp/DatenBlatt.jsp?kennr=024658-00 -->
  <LNK A="PDT104" B="024145-00"/>
  <LNK A="PDT105" B="004960-00"/>
  <LNK A="PDT106" B="024309-00"/>
</LGP>
<!-- LGP31 is LinkGroupType 4 because: -->
<!-- (a) LGP.D refers to an existing web site. So it's a URL depending on the existence of https://portal.bvl.bund.de -->
<!-- -->
```

Kommentar [MS4]: Do you agree? Does anyone have further differentiations between 3 and 4?

Bibliography

- [1] SAE J1939, *Recommended Practice for a Serial Control and Communications Vehicle Network*

ICS 35.240.99; 65.060.01

Price based on 101 pages

Fehler! Verweisquelle konnte nicht gefunden werden.