Handling XML documents with SAS

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Unifying **Clinical Data** and **Submission Strategy** for the **Global Life Sciences Industry**

Agenda

- What is XML
- SAS and XML
  - SAS XML libname engine
  - SAS XML Mapper
- Pharmaceutical application: **define.xml**

What is XML

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<heartofrockandsoul>
  <entry rank="938">
    <artist>Gino Washington</artist>
    <title>Gino is a coward</title>
    <producer>Sonny Saunders</producer>
    <writer>Ronald Davis</writer>
    <label>Ric Tic</label>
    <year>1963</year>
    <billboard>Did not make pop charts</billboard>
  </entry>
</heartofrockandsoul>
```

What is XML

- **XML** stands for e**X**tensible **M**arkup **L**anguage
- **XML** is a markup language much like HTML, with tags, elements and attributes
- **XML** was designed to transport and store data, not to display data (display and content separated)
- **XML** does not DO anything
- **XML** tags are not predefined. You must define your own (self-descriptive!) tags

What is XML

- Like HTML, **XML** makes use of ***tags*** (words bracketed by '<' and '>') and attributes (of the form name="value")
- BUT ... , HTML specifies what each tag and attribute means, and often how the text between them will look in a browser
- **XML** uses the tags only to delimit pieces of data, and leaves the interpretation of the data completely to the application that reads it
- In other words, if you see "<p>" in an XML file, do not assume it is a paragraph. Depending on the context, it may be a price, a parameter, a person, (or maybe something that does not start with with a "p"?)

What is XML

There are 2 levels of correctness of an XML document:

- A **well-formed** XML document conforms to all of XML's syntax rules
- A **valid** XML document additionally conforms to certain semantic rules

What is XML

A **well-formed** XML file conforms to the rules of XML syntax:

- A single element (**root element**) contains all other elements in the document
- Elements have to be properly opened and closed
- Elements do not overlap, e.g. properly nested
- Attributes are properly quoted
- The document does not contain illegal characters.
  Example: if the left opening bracket “<“ is part of the content it should be substituted as “<”
- A conforming XML parser is not allowed to process an XML document that is not well-formed
- **Case** matters!!!

What is XML

root element

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<heartofrockandsoul>
 <entry rank="265">
  <artist>Nathaniel Mayer</artist>
  <title>Village of love</title>
  <producer>Producer not credited</producer>
  <writer>Nathaniel Mayer &amp;amp; Devora Brown</writer>
  <label>Fortune</label>
  <year>1962</year>
  <billboard>Did not make pop charts</billboard>
 </entry>
</heartofrockandsoul>
```

What is XML

- Predefined entities

Character	Entity
&	&amp;
<	&lt;
>	&gt;
"	&quot;
'	&apos

Entities **&** and **<** **MUST** be used within the text value of an element or attribute

What is XML

An XML file is **valid** if it conforms to certain semantic rules:

- An **XML schema** is a description of these semantic rules
- A Schema defines constraints on the structure and contents of documents of that type
- A Schema defines allowed elements and attributes, order of elements, overall structure, etc …
- A schema might describe that the content of a certain element, that contains a datetime value, is only valid if the value conforms to the ISO8601 standard
- A schema might describe that an attribute is only allowed a limited number of values

What is XML - XPath

- **XPath**: language for identifying particular parts of XML documents

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<heartofrockandsoul>
  <entry rank="938">
    <artist>Gino Washington</artist>
    <title>Gino is a coward</title>
    <producer>Sonny Saunders</producer>
    <writer>Ronald Davis</writer>
```

- Examples:

  /heartofrockandsoul/entry/artist selects **artist** element

  /heartofrockandsoul/entry/@rank selects **rank** attribute

Reading XML with SAS

The example XML file we use contains data from "**THE HEART OF ROCK & SOUL, the 1001 Greatest Singles Ever Made**"

by *Dave Marsh*.

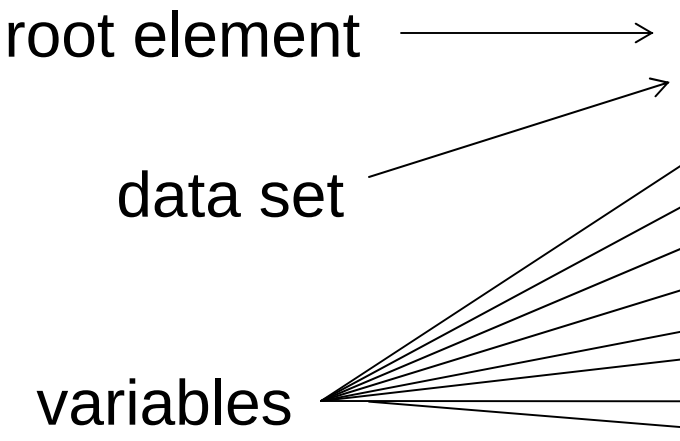
See also:

http://www.lexjansen.com/marsh

Reading XML files with SAS

- SAS can read generic XML files, that have the following characteristics:
  - The enclosing **root element** is comparable to a SAS **library**
  - A second-level element is translated to a **dataset** name
  - Other elements within that second level become SAS **variables**

Reading XML files with SAS




```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<heartofrockandsoul>
 <entry>
   <rank>556</rank>
   <artist>The Sheppards</artist>
   <title>Tragic</title>
   <producer>Bunky Sheppard</producer>
   <writer>Kermit Chandler &amp;amp; O.C. Perkins</writer>
   <label>Apex 7762</label>
   <year>1961</year>
   <billboard>Did not make pop charts</billboard>
 </entry>
 <entry>
   <rank>938</rank>
   <artist>Gino Washington</artist>
   <title>Gino is a Coward</title>
   <producer>Sonny Saunders</producer>
   <writer>Ronald Davis</writer>
   <label>Ric Tic</label>
   <year>1963</year>
   <billboard> Did not make pop charts</billboard>
 </entry>
</heartofrockandsoul>
```

A "rectangular" XML file

Reading XML files with SAS

```
* Exercise01-A_ReadXML.sas ;

FILENAME rocksoul "&WorkShop\xml\heartofrocknsoul-1.xml";
LIBNAME rs xml XMLFILEREF=rocksoul;

PROC CONTENTS DATA=rs._ALL_ VARNUM;
RUN;

DATA work.RocknSoul1;
 SET rs.entry;
RUN;

PROC CONTENTS DATA=work.RocknSoul1 VARNUM;
RUN;

PROC PRINT DATA=work.RocknSoul1;
RUN;
```

Reading XML files with SAS

The CONTENTS Procedure

Data Set Name	RS.ENTRY	Observations	.
Member Type	DATA	Variables	8
Engine	XML	Indexes	0
Created	.	Observation Length	0
Last Modified	.	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	Default		
Encoding	Default		

Variables in Creation Order

#	Variable	Type	Len	Format	Informat	Label
1	BILLBOARD	Char	23	$23.	$23.	BILLBOARD
2	YEAR	Num	8	F8.	F8.	YEAR
3	LABEL	Char	14	$14.	$14.	LABEL
4	WRITER	Char	44	$44.	$44.	WRITER
5	PRODUCER	Char	29	$29.	$29.	PRODUCER
6	TITLE	Char	36	$36.	$36.	TITLE
7	ARTIST	Char	28	$28.	$28.	ARTIST
8	RANK	Num	8	F8.	F8.	RANK

Reading XML files with SAS

& transformed to &

```
WRITER

Norman Whitfield & Barrett Strong
Chuck Berry
James Brown
Brian Holland, Lamont Dozier & Edc
Isaac Hayes & David Porter
Nolan Strong and The Diablos
Nathaniel Mayer & Devora Brown
Dan Penn & Spooner Oldham
Arlester (Dyke) Christian
Chips Moman & Dan Penn
Fred Parris
Isaac Hayes & David Porter
Kermit Chandler & O.C. Perkins
Dickey Lee
Ronald Davis
```

```
<entry>
  <rank>556</rank>
  <artist>The Sheppards</artist>
  <title>Tragic</title>
  <producer>Bunky Sheppard</producer>
  <writer>Kermit Chandler &amp;amp;  O.C. Perkins</writer>
  <label>Apex 7762</label>
  <year>1961</year>
  <billboard>Did not make pop charts</billboard>
</entry>
```

Reading XML files with SAS

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<heartofrockandsoul>
 <entry>
   <rank>556</rank>
   <artist>The Sheppards</artist>
   <title>Tragic</title>
   <producer>Bunky Sheppard</producer>
   <writer>Kermit Chandler &  O.C. Perkins</writer>
   <label>Apex 7762</label>
   <year>1961</year>
   <billboard>Did not make pop charts</billboard>
 </entry>
 <entry>
   <rank>938</rank>
   <artist>Gino Washington</artist>
   <title>Gino is a Coward</title>
   <producer>Sonny Saunders</producer>
   <writer>Ronald Davis</writer>
   <label>Ric Tic</label>
   <year>1963</year>
   <billboard> Did not make pop charts</billboard>
 </entry>
</heartofrockandsoul>
```

Reading XML files with SAS

```
* Exercise01-B_ReadXML.sas ;

FILENAME rocksoul "&WorkShop\xml\heartofrocknsoul-2.xml";
LIBNAME rs xml XMLFILEREF=rocksoul;

DATA work.RocknSoul2;
 SET rs.entry;
RUN;

PROC PRINT DATA=work.RocknSoul2;
RUN;
```

Reading XML files with SAS

```
29    * Excercise01-B_ReadXML.sas ;
30
31    FILENAME rocksoul "&WorkShop\xml\heartofrocknsoul-2.xml";
32    LIBNAME rs xml XMLFILEREF=rocksoul;
NOTE: Libref RS was successfully assigned as follows:
      Engine:        XML
      Physical Name:
33
34    DATA work.RocknSoul2;
35     SET rs.entry;
ERROR: There is an illegal character in the entity name.
       encountered during XMLMap parsing
       occurred at or near line 8, column 31
ERROR: XML describe error: Internal processing error.
36    RUN;

NOTE: The SAS System stopped processing this step because of err
WARNING: The data set WORK.ROCKNSOUL2 may be incomplete.  When t
         observations and 0 variables.
NOTE: DATA statement used (Total process time):
      real time           0.03 seconds
      cpu time            0.01 seconds
```

Reading XML files with SAS

- Characters like the ampersand (&) and the left angle bracket (<) must be escaped: **&** and **<**
- To import an XML document that contains non-escaped characters, you can specify the **XMLPROCESS=RELAX** option on the LIBNAME.

- Note: **This is not recommended**.
  If an XML document consists of non-escaped characters, the content is **not well-formed**.
- A conforming XML parser is not allowed to process an XML document that is not well-formed

Reading XML files with SAS

```
* Exercise01-C_ReadXML.sas ;

FILENAME rocksoul "&WorkShop\xml\heartofrocknsoul-2.xml";
LIBNAME rs xml XMLFILEREF=rocksoul XMLPROCESS=RELAX;

DATA work.RocknSoul2;
 SET rs.entry;
RUN;

PROC PRINT DATA=work.RocknSoul2;
RUN;
```

Reading XML files with SAS

```
40    * Excercise01-C_ReadXML.sas ;
41
42    FILENAME rocksoul "&WorkShop\xml\heartofrocknsoul-2.xml";
43    LIBNAME rs xml XMLFILEREF=rocksoul XMLPROCESS=RELAX;
NOTE: Libref RS was successfully assigned as follows:
      Engine:        XML
      Physical Name:
44
45    DATA work.RocknSoul2;
46     SET rs.entry;
47    RUN;

NOTE: There were 16 observations read from the data set RS.ENTRY.
NOTE: The data set WORK.ROCKNSOUL2 has 16 observations and 8 variables.
NOTE: DATA statement used (Total process time):
      real time           0.09 seconds
      cpu time            0.07 seconds


48
49    PROC PRINT DATA=work.RocknSoul2;
50    RUN;

NOTE: There were 16 observations read from the data set WORK.ROCKNSOUL2.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds
```

Reading XML files with SAS

Let's make rank an attribute

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<heartofrockandsoul>
 <entry>
  <rank>556</rank>
  <artist>The Sheppards</artist>
  <title>Tragic</title>
  <producer>Bunky Sheppard</producer>
  <writer>Kermit Chandler &amp;amp;  O.C. Perkins</writer>
  <label>Apex 7762</label>
  <year>1961</year>
  <billboard>Did not make pop charts</billboard>
 </entry>
```

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<heartofrockandsoul>
 <entry rank="556" >
  <artist>The Sheppards</artist>
  <title>Tragic</title>
  <producer>Bunky Sheppard</producer>
  <writer>Kermit Chandler &amp;amp; O.C. Perkins</writer>
  <label>Apex 7762</label>
  <year>1961</year>
  <billboard>Did not make pop charts</billboard>
 </entry>
```

Reading XML files with SAS

```
* Exercise01-D_ReadXML.sas ;

FILENAME rocksoul "&WorkShop\xml\heartofrocknsoul-3.xml";
LIBNAME rs xml XMLFILEREF=rocksoul;

PROC CONTENTS DATA=rs._ALL_ VARNUM;
RUN;

DATA work.RocknSoul3;
 SET rs.entry;
RUN;

PROC CONTENTS DATA=work.RocknSoul3 VARNUM;
RUN;
```

Reading XML files with SAS

The CONTENTS Procedure

Data Set Name	RS.ENTRY	Observations	.
Member Type	DATA	Variables	7
Engine	XML	Indexes	0
Created	.	Observation Length	0
Last Modified	.	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	Default		
Encoding	Default		

Variables in Creation Order

#	Variable	Type	Len	Format	Informat	Label
1	BILLBOARD	Char	23	$23.	$23.	BILLBOARD
2	YEAR	Num	8	F8.	F8.	YEAR
3	LABEL	Char	14	$14.	$14.	LABEL
4	WRITER	Char	44	$44.	$44.	WRITER
5	PRODUCER	Char	29	$29.	$29.	PRODUCER
6	TITLE	Char	36	$36.	$36.	TITLE
7	ARTIST	Char	28	$28.	$28.	ARTIST

RANK ???

Reading XML files with SAS

- SAS can read generic XML files, that have the following characteristics:
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  - A second-level element is translated to a **dataset** name
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More complex XML hierarchy:

SAS needs a map to locate elements and attributes

Reading complex XML with the SAS XML Mapper

SAS XML Mapper

- XML files with a complex hierarchie need to be modeled to a **relational data model**
- Various tables (SAS datasets) that are related

- **SAS XML Mapper**:
  - tool that uses XPATH to create a **MAP** that describes how **XML** gets mapped to **SAS datasets**
  - free stand-alone Java client application available on the SAS product distribution disks

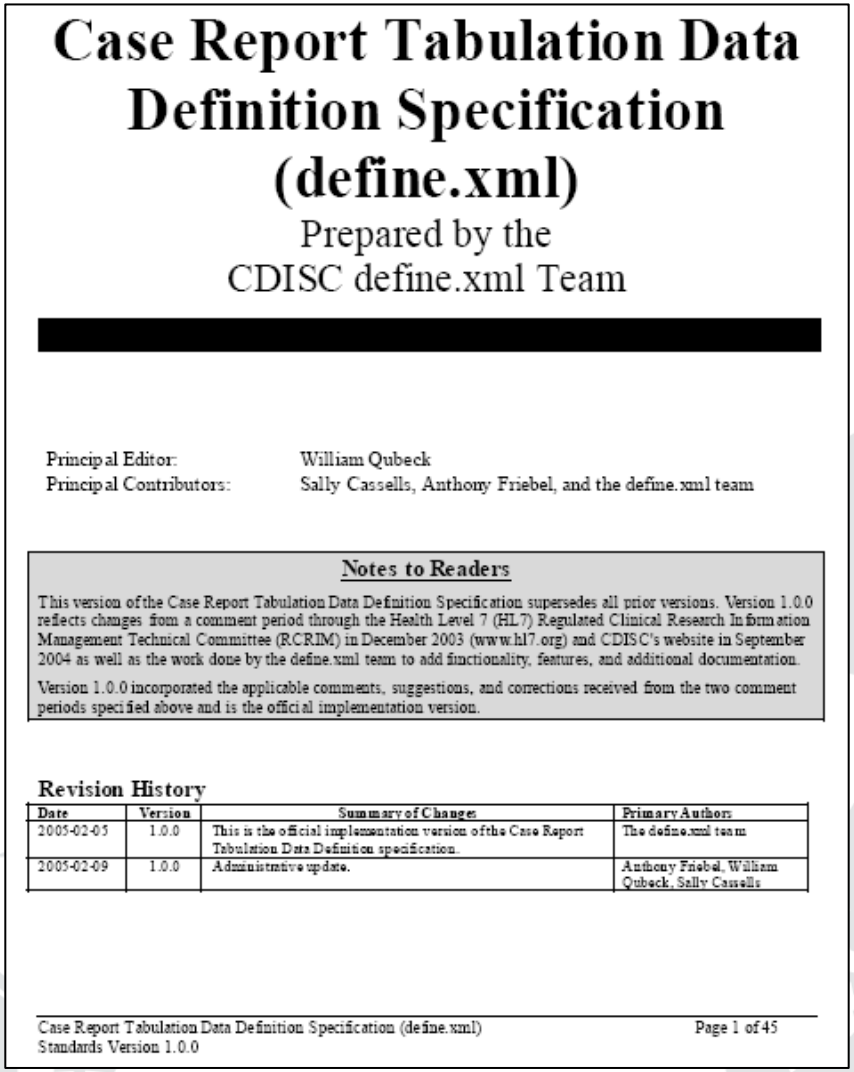
SAS XML Mapper

- Input for the **SAS XML Mapper**:
  - XML file
  - XML schema

- Before you start mapping you need to have an idea how your data model should look
- **SAS XML Mapper** does have an **AUTOMAP** feature, which may give you a **LOT** of SAS datasets that you still need to merge
- Or, you can map your datasets **manually** and have **control**

SAS XML Mapper

- Example: **define.xml**



Case Report Tabulation Data Definition Specification (define.xml)

Prepared by the
CDISC define.xml Team

Principal Editor: William Qubeck
Principal Contributors: Sally Cassells, Anthony Friebel, and the define.xml team

Notes to Readers

This version of the Case Report Tabulation Data Definition Specification supersedes all prior versions. Version 1.0.0 reflects changes from a comment period through the Health Level 7 (HL7) Regulated Clinical Research Information Management Technical Committee (RCRIM) in December 2003 (www.hl7.org) and CDISC's website in September 2004 as well as the work done by the define.xml team to add functionality, features, and additional documentation.

Version 1.0.0 incorporated the applicable comments, suggestions, and corrections received from the two comment periods specified above and is the official implementation version.

Revision History

Date	Version	Summary of Changes	Primary Authors
2005-02-05	1.0.0	This is the official implementation version of the Case Report Tabulation Data Definition specification.	The define.xml team
2005-02-09	1.0.0	Administrative update.	Anthony Friebel, William Qubeck, Sally Cassells

Case Report Tabulation Data Definition Specification (define.xml) Page 1 of 45
Standards Version 1.0.0

SAS XML Mapper

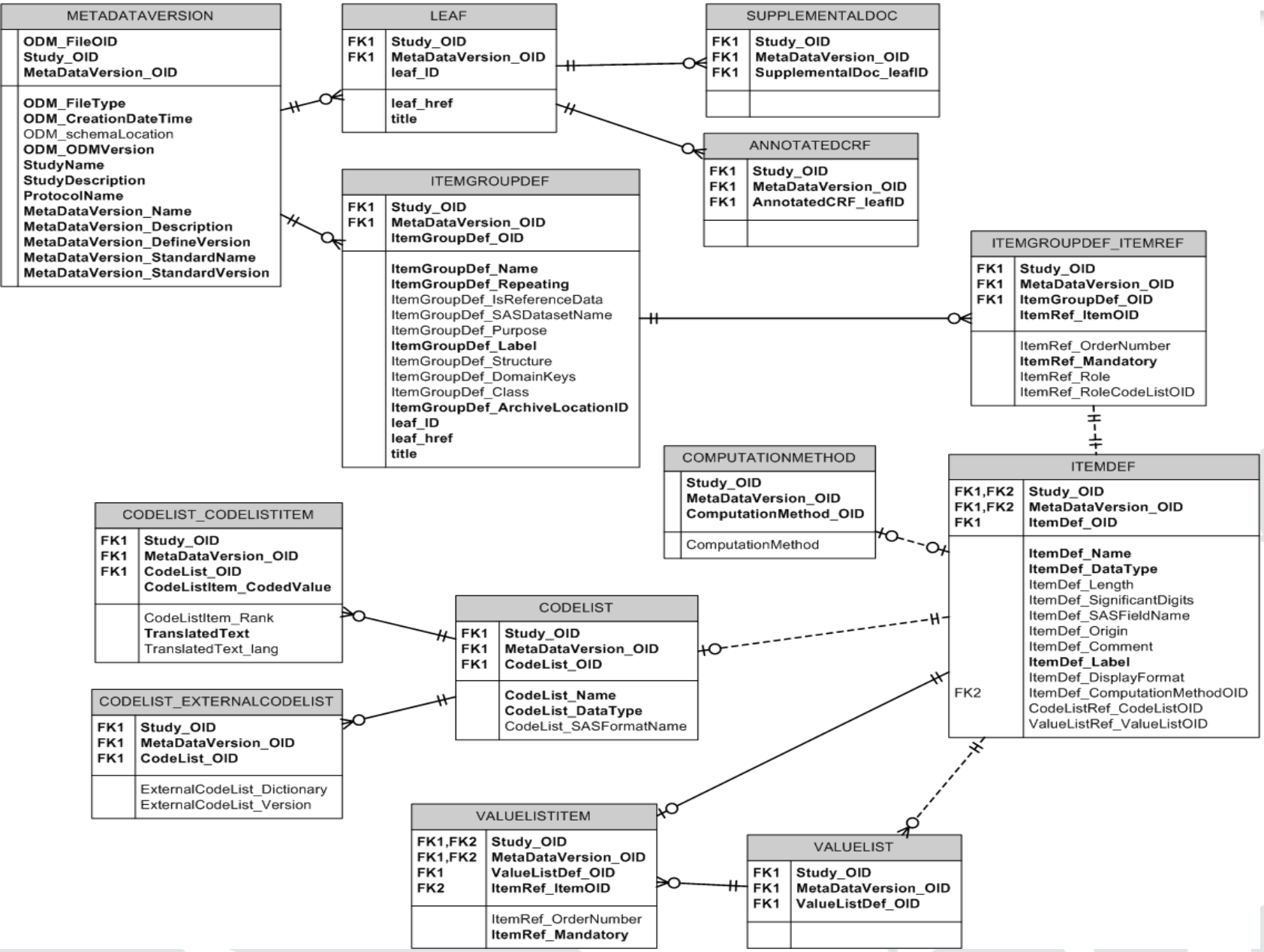
```
<ItemGroupDef
      OID="IG.MH"  Name="MH" Repeating="Yes"
      IsReferenceData="No"
      SASDatasetName="MH"
      Purpose="Tabulation"
      def:Label="Medical History"
      def:Structure="One record per medical history event per subject"
      def:DomainKeys="STUDYID, USUBJID, MHCAT, MHTERM, MHSTDTC"
      def:Class="EVENTS"
      def:ArchiveLocationID="Location.MH">

  <ItemRef ItemOID="I.STUDYID"
           OrderNumber="1" Mandatory="Yes" Role="IDENTIFIER" />
  <ItemRef ItemOID="I.DOMAIN"
           OrderNumber="2" Mandatory="Yes" Role="IDENTIFIER" />
  <ItemRef ItemOID="I.USUBJID"
           OrderNumber="3" Mandatory="Yes" Role="IDENTIFIER" />
 ...
  <ItemRef ItemOID="I.MHTERM"
           OrderNumber="8" Mandatory="Yes" Role="TOPIC" />
 ...

  <def:leaf ID="Location.MH" xlink:href="mh.xpt">
           <def:title>mh.xpt</def:title>
  </def:leaf>
</ItemGroupDef>
```

define.xml

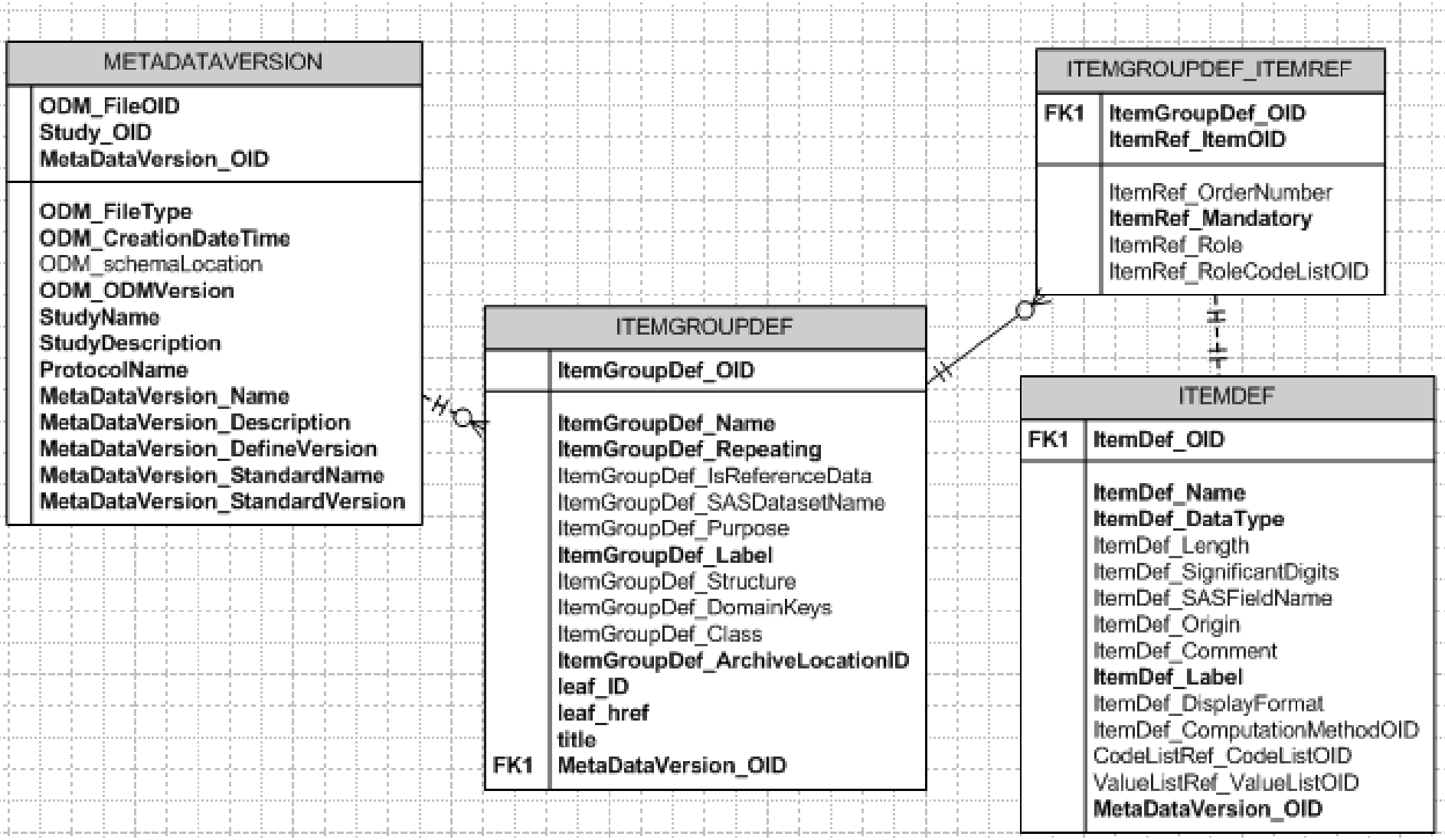
```
<ItemRef ItemOID="I.VSTESTCD" OrderNumber="6" Mandatory="Yes"
      Role="TOPIC" RoleCodeListOID="RoleCodeList" />

<ItemRef ItemOID="I.VSBLFL" OrderNumber="14" Mandatory="No"
      Role="RECORD QUALIFIER" RoleCodeListOID="RoleCodeList" />
```

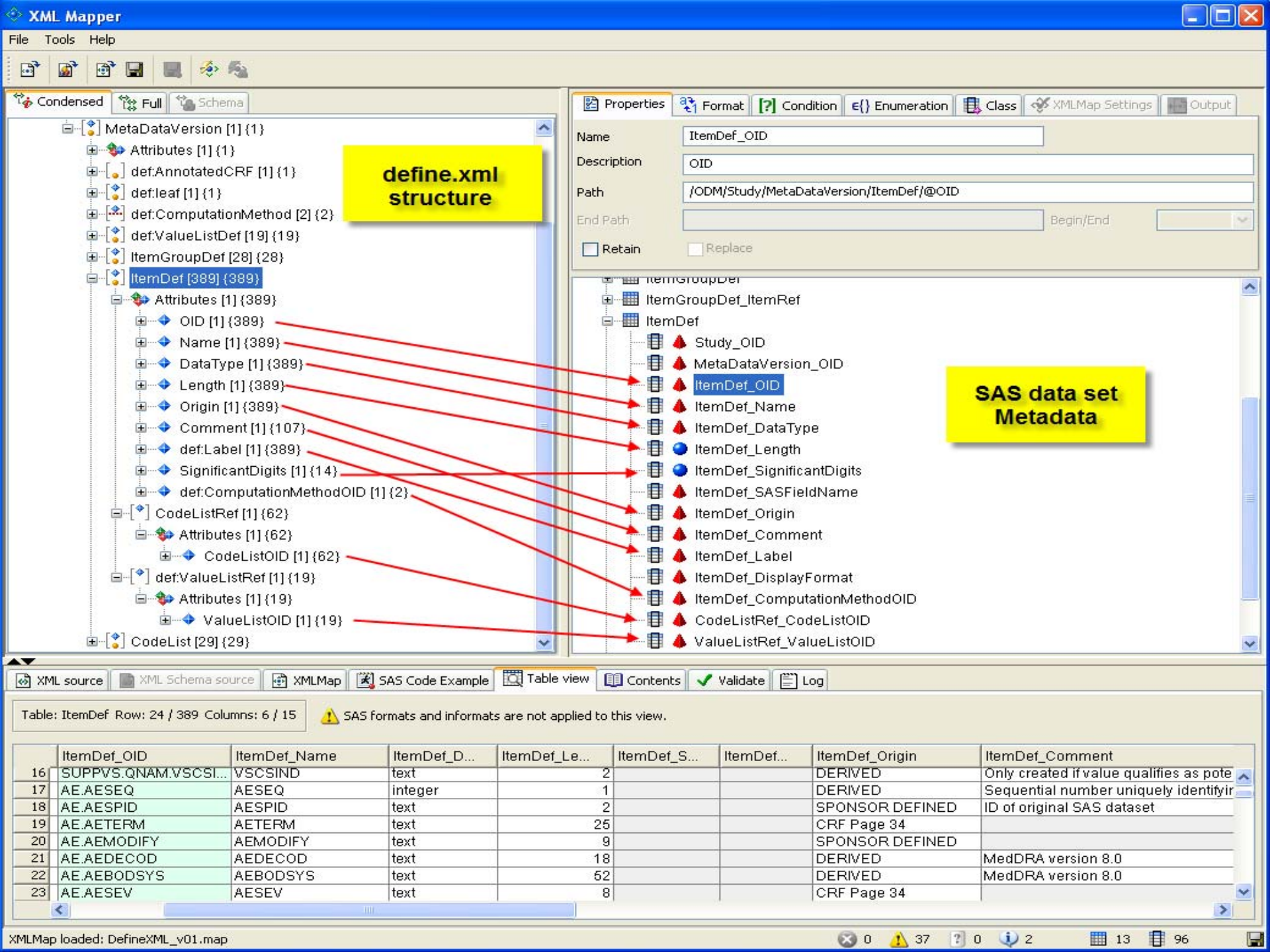
```
<ItemDef OID="I.VSTESTCD"
   Name="VSTESTCD" DataType="text"
   Length="8" Origin="CRF Page 9"
   def:Label="Vital Signs Test Short Name">
      <def:ValueListRef ValueListOID="VL.VSTESTCD" />
</ItemDef>
  ...

<ItemDef OID="I.VSBLFL" Name="VSBLFL" DataType="text" Length="1"
   Origin="DERIVED" Comment="Derivation of baseline: Safety patients only: VSBLFL=Y
   for last non missing record on or before the first dose date (RFSTDTC)."
   def:Label="Baseline Flag"
   def:ComputationMethodOID="CM.VSBLFL">
  <CodeListRef CodeListOID="CL.NY" />
</ItemDef>
```

define.xml


METADATAVERSION
ODM_FileOID
Study_OID
MetaDataVersion_OID
ODM_FileType
ODM_CreationDateTime
ODM_schemaLocation
ODM_ODMVersion
StudyName
StudyDescription
ProtocolName
MetaDataVersion_Name
MetaDataVersion_Description
MetaDataVersion_DefineVersion
MetaDataVersion_StandardName
MetaDataVersion_StandardVersion
LEAF
FK1 Study_OID
FK1 MetaDataVersion_OID
leaf_ID
leaf_href
title
SUPPLEMENTALDOC
FK1 Study_OID
FK1 MetaDataVersion_OID
FK1 SupplementalDoc_leafID
ANNOTATEDCRF
FK1 Study_OID
FK1 MetaDataVersion_OID
FK1 AnnotatedCRF_leafID
ITEMGROUPDEF
FK1 Study_OID
FK1 MetaDataVersion_OID
ItemGroupDef_OID
ItemGroupDef_Name
ItemGroupDef_Repeating
ItemGroupDef_IsReferenceData
ItemGroupDef_SASDatasetName
ItemGroupDef_Purpose
ItemGroupDef_Label
ItemGroupDef_Structure
ItemGroupDef_DomainKeys
ItemGroupDef_Class
ItemGroupDef_ArchiveLocationID
leaf_ID
leaf_href
title
ITEMGROUPDEF_ITEMREF
FK1 Study_OID
FK1 MetaDataVersion_OID
FK1 ItemGroupDef_OID
ItemRef_ItemOID
ItemRef_OrderNumber
ItemRef_Mandatory
ItemRef_Role
ItemRef_RoleCodeListOID
COMPUTATIONMETHOD
Study_OID
MetaDataVersion_OID
ComputationMethod_OID
ComputationMethod
ITEMDEF
FK1,FK2 Study_OID
FK1,FK2 MetaDataVersion_OID
FK1 ItemDef_OID
ItemDef_Name
ItemDef_DataType
ItemDef_Length
ItemDef_SignificantDigits
ItemDef_SASFieldName
ItemDef_Origin
ItemDef_Comment
ItemDef_Label
ItemDef_DisplayFormat
FK2 ItemDef_ComputationMethodOID
CodeListRef_CodeListOID
ValueListRef_ValueListOID
CODELIST_CODELISTITEM
FK1 Study_OID
FK1 MetaDataVersion_OID
FK1 CodeList_OID
CodeListItem_CodedValue
CodeListItem_Rank
TranslatedText
TranslatedText_lang
CODELIST
FK1 Study_OID
FK1 MetaDataVersion_OID
FK1 CodeList_OID
CodeList_Name
CodeList_DataType
CodeList_SASFormatName
CODELIST_EXTERNALCODELIST
FK1 Study_OID
FK1 MetaDataVersion_OID
FK1 CodeList_OID
ExternalCodeList_Dictionary
ExternalCodeList_Version
VALUELISTITEM
FK1,FK2 Study_OID
FK1,FK2 MetaDataVersion_OID
FK1 ValueListDef_OID
FK2 ItemRef_ItemOID
ItemRef_OrderNumber
ItemRef_Mandatory
VALUELIST
FK1 Study_OID
FK1 MetaDataVersion_OID
FK1 ValueListDef_OID

define.xml


METADATAVERSION
ODM_FileOID
Study_OID
MetaDataVersion_OID
ODM_FileType
ODM_CreationDateTime
ODM_schemaLocation
ODM_ODMVersion
StudyName
StudyDescription
ProtocolName
MetaDataVersion_Name
MetaDataVersion_Description
MetaDataVersion_DefineVersion
MetaDataVersion_StandardName
MetaDataVersion_StandardVersion
ITEMGROUPDEF
ItemGroupDef_OID
ItemGroupDef_Name
ItemGroupDef_Repeating
ItemGroupDef_IsReferenceData
ItemGroupDef_SASDatasetName
ItemGroupDef_Purpose
ItemGroupDef_Label
ItemGroupDef_Structure
ItemGroupDef_DomainKeys
ItemGroupDef_Class
ItemGroupDef_ArchiveLocationID
leaf_ID
leaf_href
title
FK1
MetaDataVersion_OID
ITEMGROUPDEF_ITEMREF
FK1
ItemGroupDef_OID
ItemRef_ItemOID
ItemRef_OrderNumber
ItemRef_Mandatory
ItemRef_Role
ItemRef_RoleCodeListOID
ITEMDEF
FK1
ItemDef_OID
ItemDef_Name
ItemDef_DataType
ItemDef_Length
ItemDef_SignificantDigits
ItemDef_SASFieldName
ItemDef_Origin
ItemDef_Comment
ItemDef_Label
ItemDef_DisplayFormat
ItemDef_ComputationMethodOID
CodeListRef_CodeListOID
ValueListRef_ValueListOID
MetaDataVersion_OID


XML Mapper
File Tools Help
Condensed Full Schema
MetaDataVersion [1] {1}
Attributes [1] {1}
def:AnnotatedCRF [1] {1}
def:leaf [1] {1}
def:ComputationMethod [2] {2}
def:ValueListDef [19] {19}
ItemGroupDef [28] {28}
ItemDef [389] {389}
Attributes [1] {389}
OID [1] {389}
Name [1] {389}
DataType [1] {389}
Length [1] {389}
Origin [1] {389}
Comment [1] {107}
def:Label [1] {389}
SignificantDigits [1] {14}
def:ComputationMethodOID [1] {2}
CodeListRef [1] {62}
Attributes [1] {62}
CodeListOID [1] {62}
def:ValueListRef [1] {19}
Attributes [1] {19}
ValueListOID [1] {19}
CodeList [29] {29}
define.xml structure
Properties Format Condition Enumeration Class XMLMap Settings Output
Name ItemDef_OID
Description OID
Path /ODM/Study/MetaDataVersion/ItemDef/@OID
End Path
Begin/End
Retain Replace
ItemGroupDef_ItemRef
ItemDef
Study_OID
MetaDataVersion_OID
ItemDef_OID
ItemDef_Name
ItemDef_DataType
ItemDef_Length
ItemDef_SignificantDigits
ItemDef_SASFieldName
ItemDef_Origin
ItemDef_Comment
ItemDef_Label
ItemDef_DisplayFormat
ItemDef_ComputationMethodOID
CodeListRef_CodeListOID
ValueListRef_ValueListOID
SAS data set Metadata
XML source XML Schema source XMLMap SAS Code Example Table view Contents Validate Log
Table: ItemDef Row: 24 / 389 Columns: 6 / 15
SAS formats and informats are not applied to this view.
ItemDef_OID ItemDef_Name ItemDef_D... ItemDef_Le... ItemDef_S... ItemDef... ItemDef_Origin ItemDef_Comment
16 SUPPVS.QNAM.VSCSI... VSCSIND text 2 DERIVED Only created if value qualifies as pote
17 AE.AESEQ AESEQ integer 1 DERIVED Sequential number uniquely identifyir
18 AE.AESPID AESPID text 2 SPONSOR DEFINED ID of original SAS dataset
19 AE.AETERM AETERM text 25 CRF Page 34
20 AE.AEMODIFY AEMODIFY text 9 SPONSOR DEFINED
21 AE.AEDECOD AEDECOD text 18 DERIVED MedDRA version 8.0
22 AE.AEBODSYS AEBODSYS text 52 DERIVED MedDRA version 8.0
23 AE.AESEV AESEV text 8 CRF Page 34
XMLMap loaded: DefineXML_v01.map
0 37 0 2 13 96

SAS XML Mapper demo

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