Cluster of Excellence
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UNIVERSITÄT
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HRA – Visual Resources | Tutorial

Manual for
VRA Core 4 Transform Tool

(Version 1.0.0 RC 1)

Contents

1. Introduction and project history

The *VRA Core 4 XML Transform Tool* converts descriptive image metadata from flat tables (.csv) to structured VRA Core 4 XML. It makes use of a template with predefined headers. Users may work with the tool in a simple or advanced mode. The transform tool performs XML validation and provides feedback in case of errors.

This manual covers the whole workflow of using the *VRA Core 4 XML Transform Tool* including descriptions of all its features:

- preparation of data
- uploading data
- adjusting usage settings
- data transformation
- data validation
- handling validation feedback
- downloading the XML files

It also covers the (still experimental) transformation to RDF XML and includes a number of appendices for further reference.

Development of the *VRA Core 4 XML Transform Tool* was based on an initiative by Susan Jane Williams and resulted in a successful application by Matthias Arnold for a Project Grant funded by the Visual Resources Association Foundation (VRAF) in fall 2014. Additional support was given by the Heidelberg Research Architecture (HRA) at the Cluster of Excellence "Asia and Europe in a Global Context", Heidelberg University. The goals of the collaborative project were described in the December 2014 issue of VRAF News:

> "Matthias Arnold, Heidelberg Research Architecture, University of Heidelberg, will use the award to support the development of the VRA Core 4 XML Transform Tool. This tool will enable any user who can supply descriptive image metadata in a standardized CSV form (comma separated values, e.g. via Excel) to create validating VRA Core 4 XML. Useful on its own, this XML also represents an important step for further transformations to other XML schemas, like RDF to support output of data as LOD (Linked Open Data). The tool is being developed in consultation with both the VRA Data Standards and the Core OC Committees, will be shared with the image management community during beta-testing for feedback, and will be open-source and freely available upon completion. Susan Jane Williams (Independent Cataloging and Consulting Services) will serve as coordinator for the mapping templates and will help create documentation, demonstrations (sample records and mappings), and further mapping help in use of the tool. We are confident that this tool will have broad value and impact within the visual resources community, and for the VRA Core 4 standard."
> "2014-2015 VRA Foundation Project Grant Winners Named", VRAF News & Events, December 19, 2014

The template csv files and the mappings to XML were developed by Susan Jane Williams, Greg Reser, and Matthias Arnold. Implementation and development of the tool was coordinated by the Heidelberg side, programming was conducted by HRA's senior developer Matthias Guth.

The tool is still in BETA version. Any feedback on issues, bugs or problems encountered is very much appreciated and may be directed to the developers (see section "Contact").

The *VRA Core 4 XML Transform Tool* is developed as Open Source, its source code can be found at: https://github.com/exc-asia-and-europe/csv2xml

Note: This user manual will be updated with every new feature or functionality. The latest version can be found on GitHub:
https://github.com/exc-asia-and-europe/csv2xml/tree/master/doc.

2. Data preparation

The *VRA Core 4 XML Transform Tool* uses **predefined headers** to identify data in the template in order to map the values to the correct elements (or attributes) in XML. These headers can be arranged in templates (for example in .xlsx or .ods format tables).

Any descriptive image metadata can be used for transformation, be it an export from your institution's Digital Asset Management System, metadata embedded in images, or a personal image database. You only need to do two things for preparation:

1. Use the predefined template headers
2. Export data to comma separated value (.csv) file

2.1. Predefined headers

The template offers 231 columns with fixed headers for your data. To be able to transform your .csv data into XML you have to use these headers.

These include references to your local system, like "IMAGE_Filename" or "IMAGE_LocalRepoName". In the list a number of elements are repeated to allow the transformation of multiple values, for example it offers up to three agents and up to eight subjects for the WORK record. The template also includes many columns for references to controlled vocabularies, like the name and Ref-ID of a subject in a vocabulary, and data types controlled by the VRA Core 4 schema.

For example, each of the eight subjects of a WORK record can be expressed in four columns:

WORK_Subject1
WORK_SubjectType1
WORK_SubjectVocab1
WORK_SubjectRefid1

The complete list of headers can be found in "*Appendix: Columns Full Template*" below.

IMPORTANT:

You do not need to fill each column with data. The sequence of columns (headers) may be changed and you can even delete columns you will not need.

It is, however, essential **not to change the headers** themselves, i.e. not their "text" or "values".

2.2. Repeated values

For some of the eighteen elementSet's of VRA Core 4 XML for WORK and IMAGE records elements can be repeated. These values usually are combined with other information, like references to authority files.

WORK

Agent:	3
CulturalContext:	2
Date:	2
Location:	2
Material:	4
Measurements:	8 (in 2 sets)
Relation:	2 (plus 1 work-image)
Style/Period:	4
Subject:	8
Technique:	4
Title:	2 (preferred/alternative)
Worktype:	3

IMAGE

Subject:	3

An expanded list of repeated elements can be found below, in "*Appendix: Elements, displays and repetitions*."

2.3. Display values

The template is designed to include data for each of the eighteen elementSet's of VRA Core 4 XML for WORK and most of the IMAGE records. For a large number of elementsSets structured (or "qualified") information can be transformed.

All elementSets may have a display element, with the exception of the following four IMAGE elementSets: CulturalContext, StateEdition, StylePeriod, and Textref. These are NOT included in the template.

For an overview of the elementSets, including information about which only contains display values and which also includes other elements and attributes please refer to "*Appendix: Elements, displays and repetitions*" below.

2.3.1. Auto-filling display values

The *VRA Core 4 XML Transform Tool* allows transforming both, structured data for sub-elements and attributes, as well as unstructured data for display values.

If users do NOT have <display> data in their .csv file, *VRA Core 4 XML Transform Tool* will automatically fill the content of the <display> element based on available data from the structured information.

For example, if the template contains

WORK_AgentDisplay	*[empty]*
WORK_Agent1NameType	personal
WORK_Agent1Name	Michelangelo Buonarroti
WORK_Agent1Role	painter
WORK_Agent1Attribution	school of

The following the display element is created:

<display>school of Michelangelo Buonarroti (painter)</display>

However, if users do provide data for the display element (in the example "WORK_AgentDisplay") these values will be used and NOT overwritten or changed.

2.4. Controlled data

VRA Core 4.0 in the restricted version uses controlled type lists and date formats.

2.4.1. *Data type values*

For the **type values** please refer to the VRA Core 4.0 Restricted Schema Type Values document.

2.4.2. *Date values*

For **date values** there is no individual documentation file. Vra-strict.xsd states for dateValueType:

> "…Defines a date which follows the ISO 8601 date format, and allows right truncation. […] In brief, the following formats are allowed:

present	
2006	(2006)
2006-12	(December, 2006)
2006-12-31	(31 December 2006)
-44	(44 BCE)
-44-03	(March, 44 BCE)
-44-03-15	(15 March, 44 BCE)
-10000000	(10 Million Years Ago)
-100000000000	(100 Billion Years Ago)"

Source: http://loc.gov/standards/vracore/vra-strict.xsd, last accessed December 12, 2015

2.4.3. *Controlled data in the Transform tool*

IMPORTANT:

To be able to convert your data into valid VRA Core 4 XML these type values must be used and date format rules must be followed.

The transform tool will assist you as far as possible.

For example, in <date> the sub-element <latestDate> must not be empty. But if you only entered <earliestDate> the tool will automatically fill <latestDate> with the <earliestDate> value.

If you accidentally mistyped a controlled type value, the validation will point you to this error in the validation results (see chapter "*Validation errors*" below).

3. Introducing the template

3.1. Downloading the template

The **full template** for *VRA Core 4 XML Transform Tool* is available for download at

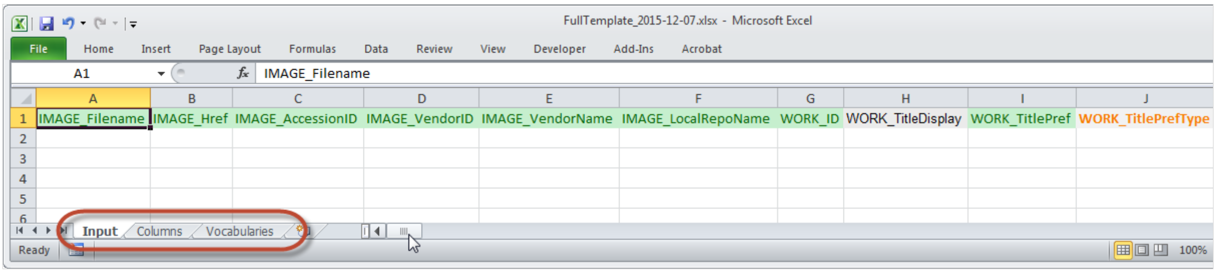
https://github.com/exc-asia-and-europe/csv2xml/tree/master/doc

in these formats:

- Comma-separated values textfile (.csv)
- Excel workbook (.xslx)
- OpenDocument spreadsheet (.ods)

3.2. The template explained

The template consists of three worksheets.



A1 = IMAGE_Filename

	A	B	C	D	E	F	G	H	I	J
1	IMAGE_Filename	IMAGE_Href	IMAGE_AccessionID	IMAGE_VendorID	IMAGE_VendorName	IMAGE_LocalRepoName	WORK_ID	WORK_TitleDisplay	WORK_TitlePref	WORK_TitlePrefType
2										
3										
4										
5										
6										

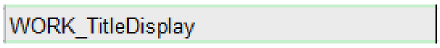
Figure 1: Full template - Input worksheet (in Excel)

The “**Input**” worksheet contains all the columns with their respective header in horizontal layout (colour coded), so that it can be used for editing data.

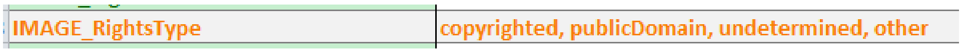
The “**Columns**” worksheet contains two columns. In the first, all headers are arranged vertically and colour coded, while in the second some hints to the content of the data are given.

The colour codes are included to provide visual feedback in case different types of data are expected for a “field”.

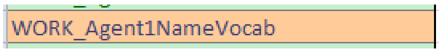
Display values, for which the tool will auto-fill content if no data was provided for display are shown in black on grey background.


WORK_TitleDisplay

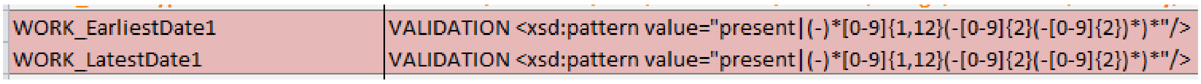
Type values are shown in orange on light grey. Allowed values are provided in the second column.


IMAGE_RightsType | copyrighted, publicDomain, undetermined, other

References to external vocabularies are shown in dark blue on orange background.

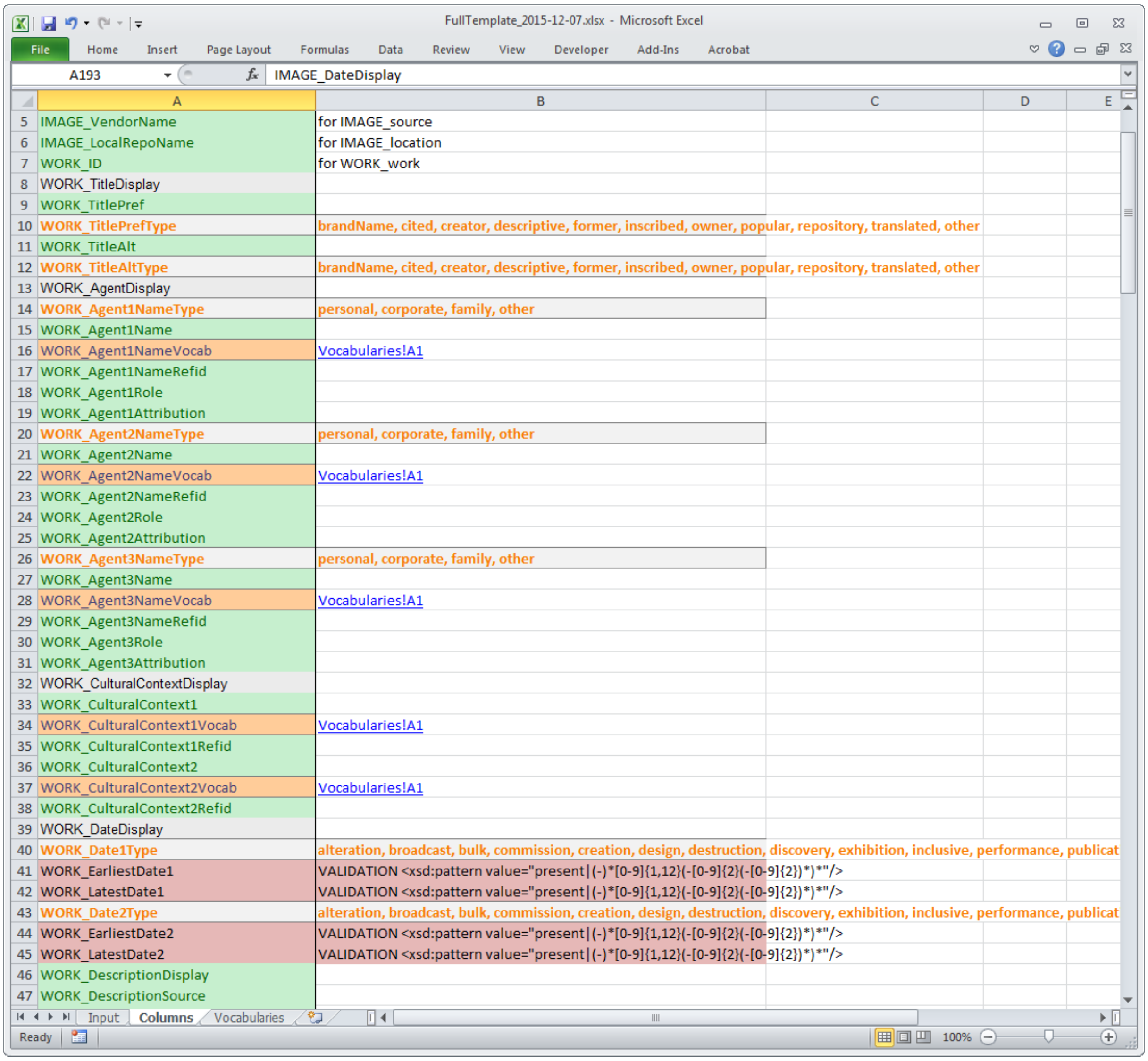

WORK_Agent1NameVocab

Special content relevant for validation is shown in black on red background, together with the validation rules. This is used for dates.



WORK_EarliestDate1	VALIDATION <xsd:pattern value="present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-9]{2})*)*"/>
WORK_LatestDate1	VALIDATION <xsd:pattern value="present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-9]{2})*)*"/>

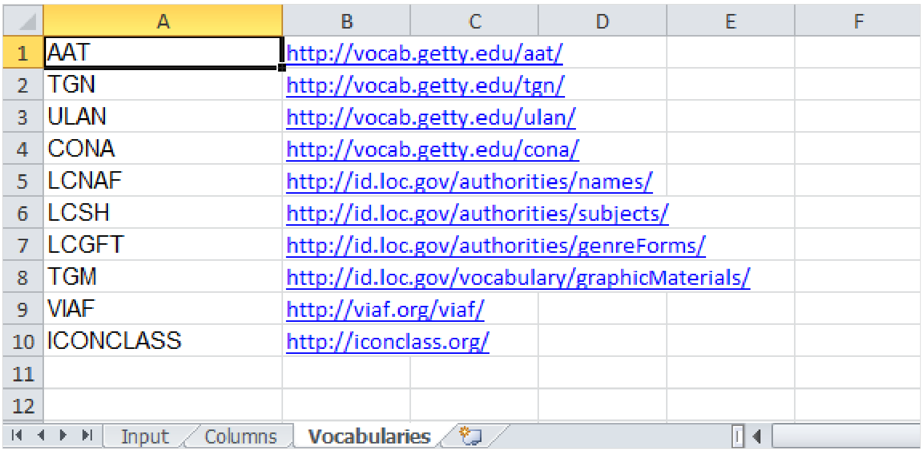
The “normal” columns are shown in dark green on lighter green.



	A	B	C	D	E
5	IMAGE_VendorName	for IMAGE_source			
6	IMAGE_LocalRepoName	for IMAGE_location			
7	WORK_ID	for WORK_work			
8	WORK_TitleDisplay				
9	WORK_TitlePref				
10	WORK_TitlePrefType	brandName, cited, creator, descriptive, former, inscribed, owner, popular, repository, translated, other			
11	WORK_TitleAlt				
12	WORK_TitleAltType	brandName, cited, creator, descriptive, former, inscribed, owner, popular, repository, translated, other			
13	WORK_AgentDisplay				
14	WORK_Agent1NameType	personal, corporate, family, other			
15	WORK_Agent1Name				
16	WORK_Agent1NameVocab	Vocabularies!A1			
17	WORK_Agent1NameRefid				
18	WORK_Agent1Role				
19	WORK_Agent1Attribution				
20	WORK_Agent2NameType	personal, corporate, family, other			
21	WORK_Agent2Name				
22	WORK_Agent2NameVocab	Vocabularies!A1			
23	WORK_Agent2NameRefid				
24	WORK_Agent2Role				
25	WORK_Agent2Attribution				
26	WORK_Agent3NameType	personal, corporate, family, other			
27	WORK_Agent3Name				
28	WORK_Agent3NameVocab	Vocabularies!A1			
29	WORK_Agent3NameRefid				
30	WORK_Agent3Role				
31	WORK_Agent3Attribution				
32	WORK_CulturalContextDisplay				
33	WORK_CulturalContext1				
34	WORK_CulturalContext1Vocab	Vocabularies!A1			
35	WORK_CulturalContext1Refid				
36	WORK_CulturalContext2				
37	WORK_CulturalContext2Vocab	Vocabularies!A1			
38	WORK_CulturalContext2Refid				
39	WORK_DateDisplay				
40	WORK_Date1Type	alteration, broadcast, bulk, commission, creation, design, destruction, discovery, exhibition, inclusive, performance, publicat			
41	WORK_EarliestDate1	VALIDATION <xsd:pattern value="present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-9]{2})*)*"/>			
42	WORK_LatestDate1	VALIDATION <xsd:pattern value="present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-9]{2})*)*"/>			
43	WORK_Date2Type	alteration, broadcast, bulk, commission, creation, design, destruction, discovery, exhibition, inclusive, performance, publicat			
44	WORK_EarliestDate2	VALIDATION <xsd:pattern value="present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-9]{2})*)*"/>			
45	WORK_LatestDate2	VALIDATION <xsd:pattern value="present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-9]{2})*)*"/>			
46	WORK_DescriptionDisplay				
47	WORK_DescriptionSource				

Figure 2: Full template - Columns workbook (in Excel)

The “**Vocabularies**” worksheet contains a list of external authorities or controlled vocabularies. It is by no means comprehensive. The values of the “vocab” attribute are not controlled by the VRA Core 4 schema, but it is strongly recommended to make sure the content is consistent within your data set. This is especially of interest if you intend to transform your data to RDF and use it as Linked (Open) Data.



	A	B
1	AAT	http://vocab.getty.edu/aat/
2	TGN	http://vocab.getty.edu/tgn/
3	ULAN	http://vocab.getty.edu/ulan/
4	CONA	http://vocab.getty.edu/cona/
5	LCNAF	http://id.loc.gov/authorities/names/
6	LCSH	http://id.loc.gov/authorities/subjects/
7	LCGFT	http://id.loc.gov/authorities/genreForms/
8	TGM	http://id.loc.gov/vocabulary/graphicMaterials/
9	VIAF	http://viaf.org/viaf/
10	ICONCLASS	http://iconclass.org/
11		
12		

Figure 3: Full template - Vocabularies workbook (in Excel)

3.3. Creating a .csv file

Export records from your local system directly into .csv files if you can include the template headers.

Alternatively, use your preferred spreadsheet software (e.g. Microsoft Excel, OpenOffice Calc, or LibreOffice Calc) as intermediary to adjust the headers and export from there into .csv files. In the doc folder on GitHub an Excel (.xslx) version of the template is available.

IMPORTANT:

Only .csv files can be transformed so make sure you convert spreadsheets (e.g. from Excel or Calc) to .csv text files before transformation.

Use UTF-8 as encoding to conserve possible special characters in your data.

For a guide on how to convert Microsoft Excel files into comma separated value (.csv) files see the file "*Converting .xslx file to .csv using OpenOffice Calc*" available in the documentation folder on GitHub.

[To be covered:
Other data sources: EMWG export-import tool]

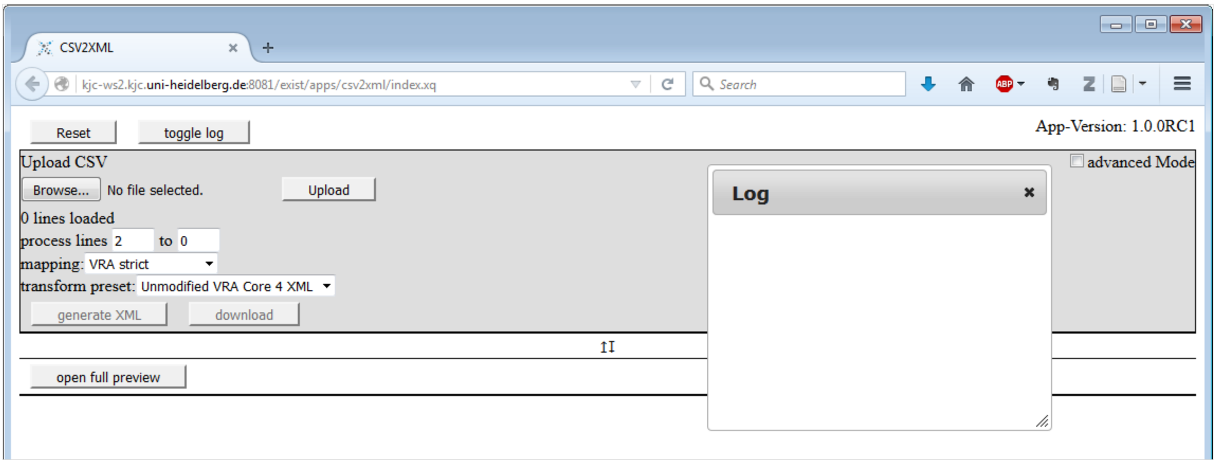
4. Accessing the transform tool online

At the moment, the *VRA Core 4 XML Transform Tool* can be accessed online for testing at http://kjc-ws2.kjc.uni-heidelberg.de:8081/exist/apps/csv2xml/index.xq

Please note this is a server dedicated to testing software and developments.

4.1. The basic user interface

The *VRA Core 4 XML Transform Tool* interface offers a Simple and an Advanced Mode.



kjc-ws2.kjc.uni-heidelberg.de:8081/exist/apps/csv2xml/index.xq

App-Version: 1.0.0RC1

Upload CSV

No file selected.

0 lines loaded

process lines 2 to 0

mapping: VRA strict

transform preset: Unmodified VRA Core 4 XML

□ advanced Mode

Figure 4: User interface - Simple mode.

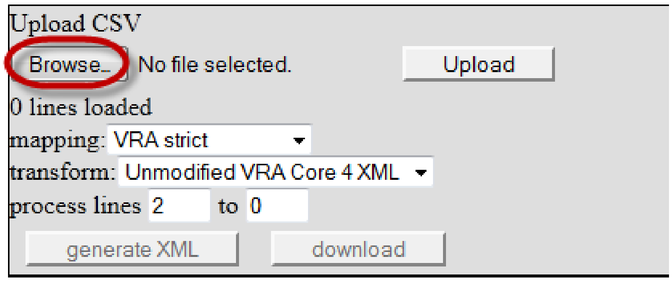
In simple mode the XML generation and validation are processed in one step finishing with the optional download of the XML files.

The advanced interface provides additional functionalities for the advanced user including the possibility to apply additional transformations.

Both interfaces offer a “Log” window which is visible by default. While being used, the tool displays messages here, for example which record is currently processed. It can be switched off/on using the “toggle lock” button.

5. Uploading a file

To transform data you need to upload it first. Click the "Browse" button:



Upload CSV

No file selected.

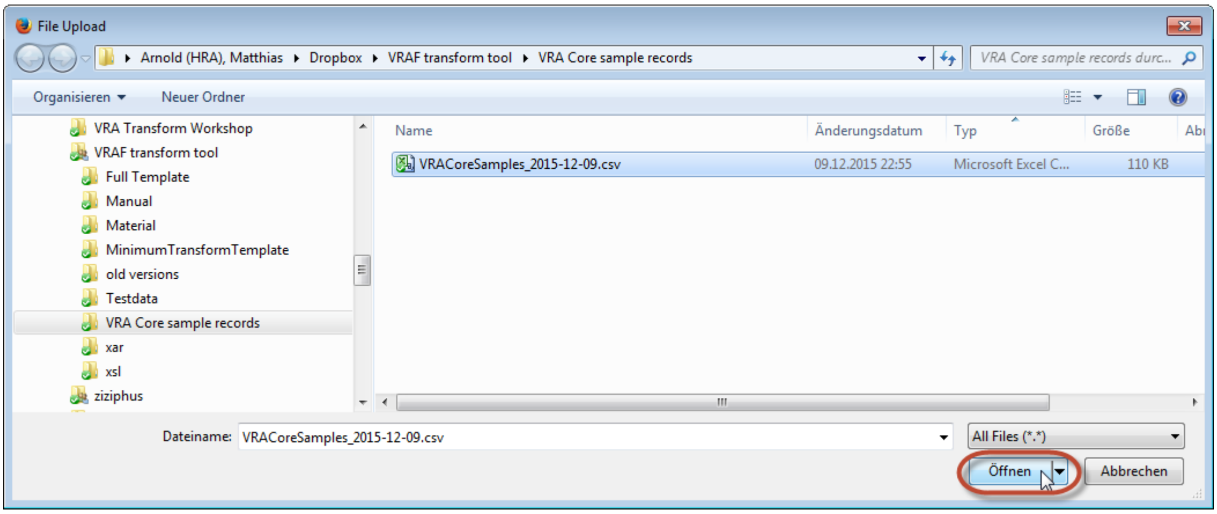
0 lines loaded

mapping: VRA strict

transform: Unmodified VRA Core 4 XML

process lines 2 to 0

Select the .csv file on your computer and click "Open".



File Upload

Arnold (HRA), Matthias ▸ Dropbox ▸ VRAF transform tool ▸ VRA Core sample records

VRA Transform Workshop
VRAF transform tool
Full Template
Manual
Material
MinimumTransformTemplate
old versions
Testdata
VRA Core sample records
xar
xsl
ziziphus

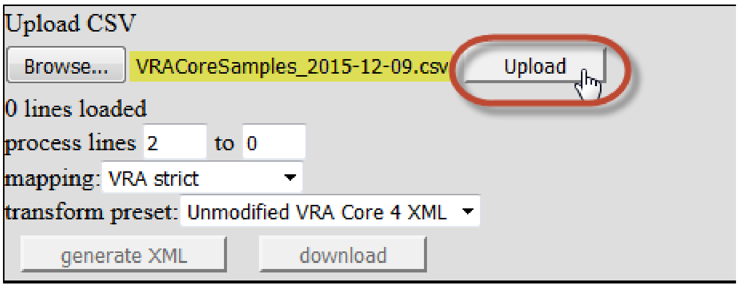
Name	Änderungsdatum	Typ	Größe	Abl
VRACoreSamples_2015-12-09.csv	09.12.2015 22:55	Microsoft Excel C...	110 KB	

Dateiname: VRACoreSamples_2015-12-09.csv

All Files (*.*)

The name of the .csv file will be displayed in the interface. In this example we use "VRACoreSamples_ 2015-12-09.csv" which contains data from the cataloging examples on the VRA Core support pages[1].

Now click on "Upload".



Upload CSV

VRACoreSamples_2015-12-09.csv

0 lines loaded

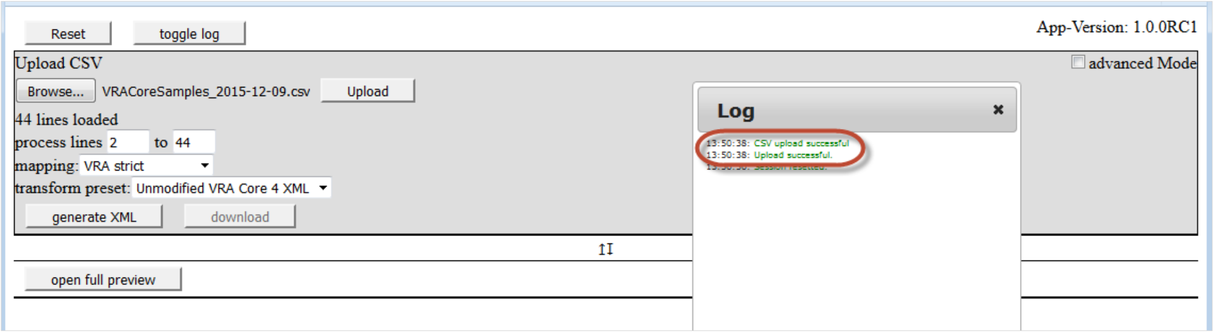
process lines 2 to 0

mapping: VRA strict

transform preset: Unmodified VRA Core 4 XML

Once the upload is finished you will see an message "CSV upload successful" in the log window.

[1] http://core.vraweb.org/vracore_examples.html



App-Version: 1.0.0RC1

Upload CSV

□ advanced Mode

VRACoreSamples_2015-12-09.csv

44 lines loaded

process lines 2 to 44

mapping: VRA strict

transform preset: Unmodified VRA Core 4 XML

```
13:50:38: CSV upload successful
13:50:38: Upload successful.
13:50:38: Session resetted.
```

6. Generating VRA Core 4 XML

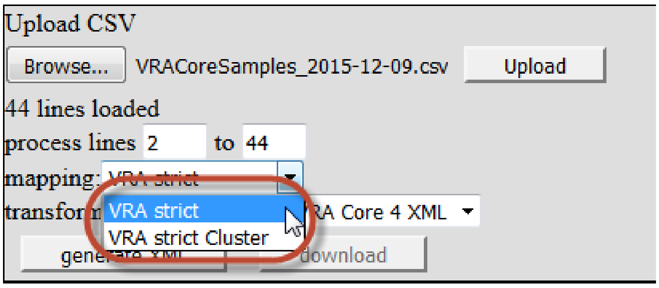
After uploading a .csv file to the *VRA Core 4 XML Transform Tool* you can just hit the "generate XML" button. This will proces all records into VRA Core 4 XML using the default settings (transform all records to VRA sctrict without any modifications).

However, even in Simple Mode you can manipulate how the XML is generated. You have three options:

- Select another mapping
- Select another transform
- Define the range of records to be processed

6.1. Selecting a mapping

The *VRA Core 4 XML Transform Tool* supports generating XML based on different mappings. For VRA Core, two variants are available: "VRA strict" and "VRA strict Cluster".



Upload CSV

VRACoreSamples_2015-12-09.csv

44 lines loaded

process lines 2 to 44

mapping: VRA strict

transform: VRA Core 4 XML

6.1.1. *VRA strict*

VRA strict is the **default mapping**. It is based on the VRA Core 4 restricted version (http://www.loc.gov/standards/vracore/vra-strict.xsd). It uses controlled values for type attributes and specifies date formats.

For more information please refer to http://www.loc.gov/standards/vracore/schemas.html.

6.1.2. *VRA strict Cluster*

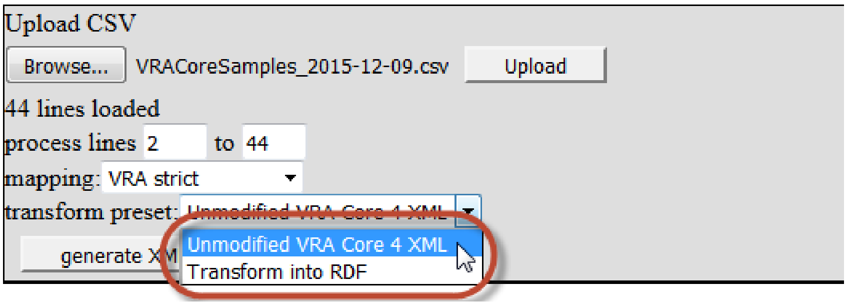
The VRA strict Cluster mapping is an expansion of the restricted VRA Core 4 version developed at the Cluster of Excellence "Asia and Europe in a Global Context", University of Heidelberg. It contains additional elements and attributes, for example, attributes for multilingual data, role attributes for agents, and an element for geo-coordinates (http://cluster-schemas.uni-hd.de/vra-strictCluster.xsd).

For more information please refer to the document "VRA Core – Extensions".

6.2. Selecting a transformation

The tool supports different transformations.

The current version of *VRA Core 4 XML Transform Tool* offers two built-in transformations. Additional .xsl files may to be added in the source code. In a future version, this may be changed (e.g. upload transformation stylesheets in the user interface).



Upload CSV

Browse... VRACoreSamples_2015-12-09.csv Upload

44 lines loaded

process lines 2 to 44

mapping: VRA strict

transform preset: Unmodified VRA Core 4 XML

Currently, two transformations are implemented:

- Unmodified VRA Core 4 XML
- Transform into RDF (explanations see below)

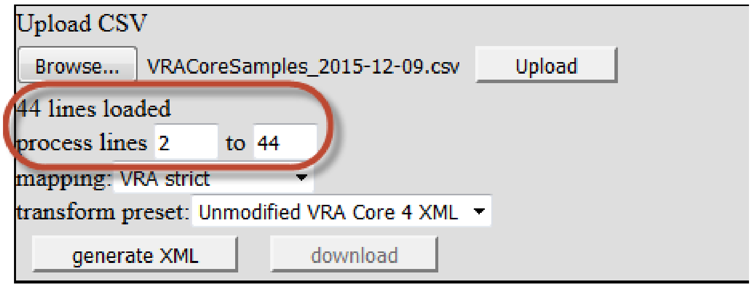
To transform the .csv data into VRA Core 4 XML choose "Unmodified VRA Core 4 XML".

6.3. Defining the records to be processed

By default, all records listed in the uploaded .csv file will be processed.

6.3.1. *Calculating records for processing*

Within the .csv file a record equals a line. In the template, the first record (first line) contains the column headers. Therefore, the *VRA Core 4 XML Transform Tool* will by default process data beginning with line #2 (i.e. record #1).



Upload CSV

Browse... VRACoreSamples_2015-12-09.csv Upload

44 lines loaded

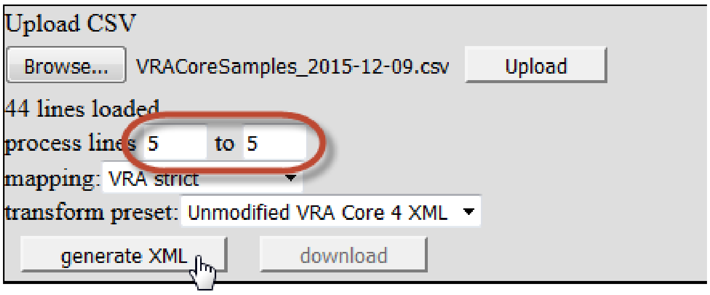
process lines 2 to 44

mapping: VRA strict

transform preset: Unmodified VRA Core 4 XML

6.3.2. *Defining a range of records*

The *VRA Core 4 XML Transform Tool* also allows you to define the range of records to be processed. This is very helpful if you want to check a smaller range of records or even individual ones, look at their xml and test if they validate.



Upload CSV

VRACoreSamples_2015-12-09.csv

44 lines loaded

process lines 5 to 5

mapping: VRA strict

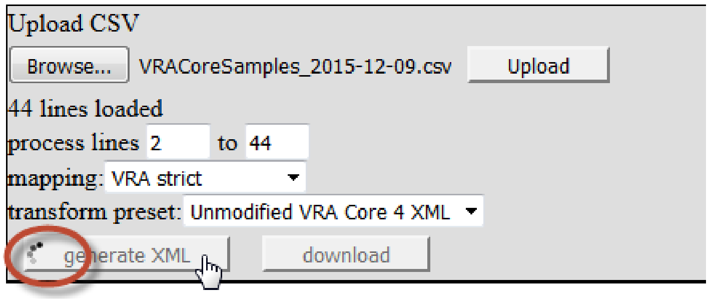
transform preset: Unmodified VRA Core 4 XML

In this example, only line 5 (i.e. record #4) will be processed.

6.4. Generating XML

If all settings are made, click the “generate XML” button.

The tool will start generating the XML. You can monitor the progress in the “Log” window.



Upload CSV

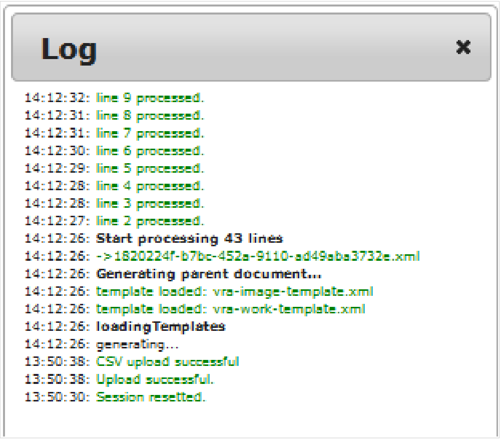
VRACoreSamples_2015-12-09.csv

44 lines loaded

process lines 2 to 44

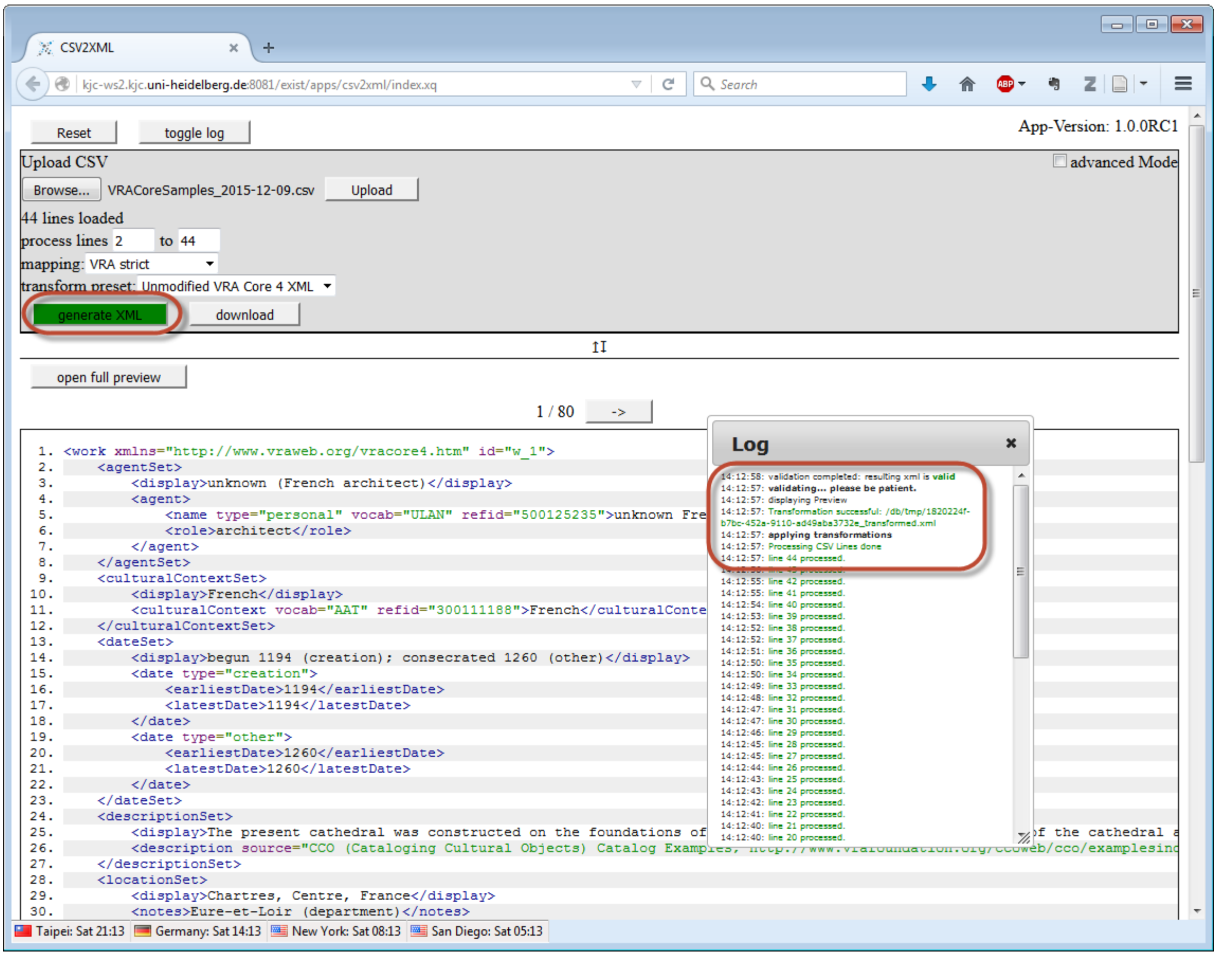
mapping: VRA strict

transform preset: Unmodified VRA Core 4 XML



```
14:12:32: line 9 processed.
14:12:31: line 8 processed.
14:12:31: line 7 processed.
14:12:30: line 6 processed.
14:12:29: line 5 processed.
14:12:28: line 4 processed.
14:12:28: line 3 processed.
14:12:27: line 2 processed.
14:12:26: Start processing 43 lines
14:12:26: ->1820224f-b7bc-452a-9110-ad49aba3732e.xml
14:12:26: Generating parent document...
14:12:26: template loaded: vra-image-template.xml
14:12:26: template loaded: vra-work-template.xml
14:12:26: loadingTemplates
14:12:26: generating...
13:50:38: CSV upload successful
13:50:38: Upload successful.
13:50:30: Session resetted.
```

After generating XML a preview of the code is displayed while the tool automatically runs a validation. When all is finished the “generate XML” button turns color.



App-Version: 1.0.0RC1

Upload CSV

□ advanced Mode

VRACoreSamples_2015-12-09.csv

44 lines loaded

process lines 2 to 44

mapping: VRA strict

transform preset: Unmodified VRA Core 4 XML

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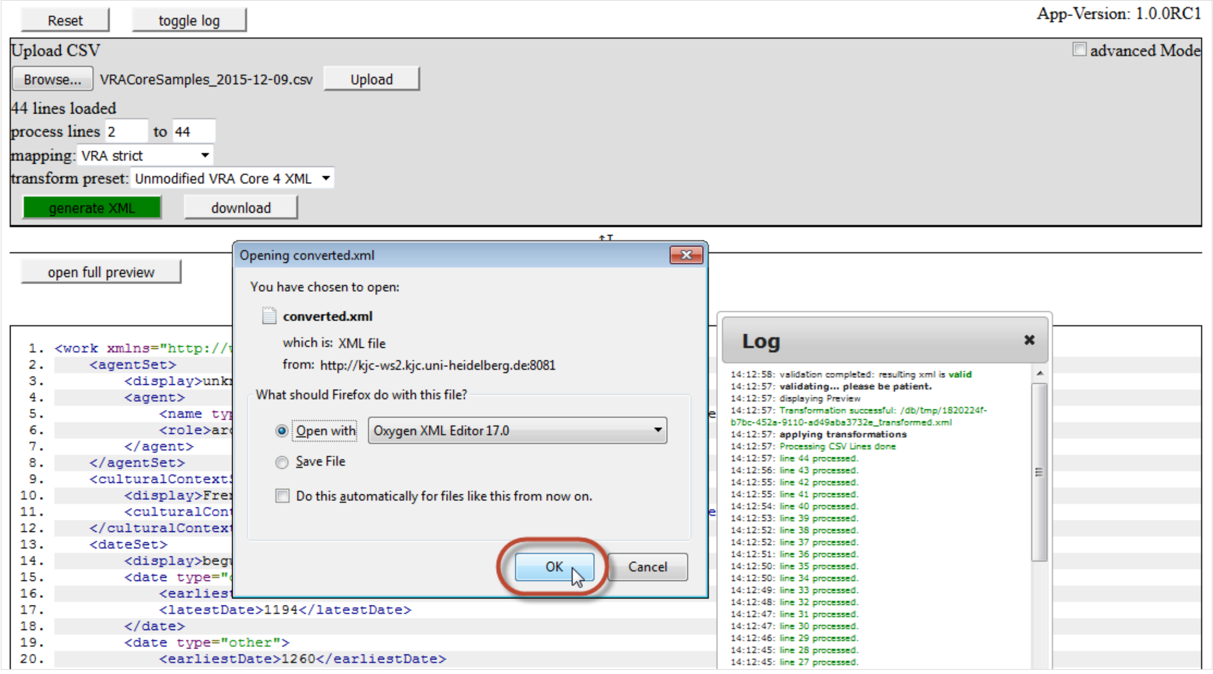
```
<work xmlns="http://www.vraweb.org/vracore4.htm" id="w_1">
    <agentSet>
        <display>unknown (French architect)</display>
        <agent>
            <name type="personal" vocab="ULAN" refid="500125235">unknown Fre
            <role>architect</role>
        </agent>
    </agentSet>
    <culturalContextSet>
        <display>French</display>
        <culturalContext vocab="AAT" refid="300111188">French</culturalConte
    </culturalContextSet>
    <dateSet>
        <display>begun 1194 (creation); consecrated 1260 (other)</display>
        <date type="creation">
            <earliestDate>1194</earliestDate>
            <latestDate>1194</latestDate>
        </date>
        <date type="other">
            <earliestDate>1260</earliestDate>
            <latestDate>1260</latestDate>
        </date>
    </dateSet>
    <descriptionSet>
        <display>The present cathedral was constructed on the foundations of      of the cathedral a
        <description source="CCO (Cataloging Cultural Objects) Catalog Examples, http://www.vrafoundation.org/ccoweb/cco/examplesinc
    </descriptionSet>
    <locationSet>
        <display>Chartres, Centre, France</display>
        <notes>Eure-et-Loir (department)</notes>
```

```
14:12:58: validation completed: resulting xml is valid
14:12:57: validating... please be patient.
14:12:57: displaying Preview
14:12:57: Transformation successful: /db/tmp/1820224f-b7bc-452a-9110-ad49aba3732e_transformed.xml
14:12:57: applying transformations
14:12:57: Processing CSV Lines done
14:12:57: line 44 processed.
14:12:56: line 43 processed.
14:12:55: line 42 processed.
14:12:55: line 41 processed.
14:12:54: line 40 processed.
14:12:53: line 39 processed.
14:12:52: line 38 processed.
14:12:52: line 37 processed.
14:12:51: line 36 processed.
14:12:50: line 35 processed.
14:12:50: line 34 processed.
14:12:49: line 33 processed.
14:12:48: line 32 processed.
14:12:47: line 31 processed.
14:12:47: line 30 processed.
14:12:46: line 29 processed.
14:12:45: line 28 processed.
14:12:45: line 27 processed.
14:12:44: line 26 processed.
14:12:43: line 25 processed.
14:12:43: line 24 processed.
14:12:42: line 23 processed.
14:12:41: line 22 processed.
14:12:40: line 21 processed.
14:12:40: line 20 processed.
```

You can browse the preview by clicking the arrow button. The preview shows generated WORK and IMAGE code in XML on separate pages.

You can also directly use the “download” link which will show the download dialog “Opening converted.xml”. Note that the default file name is “converted.xml”.



VRACoreSamples_2015-12-09.csv

44 lines loaded

process lines 2 to 44

mapping: VRA strict

transform preset: Unmodified VRA Core 4 XML

You have chosen to open:

converted.xml

which is: XML file

from: http://kjc-ws2.kjc.uni-heidelberg.de:8081

What should Firefox do with this file?

● Open with Oxygen XML Editor 17.0

○ Save File

□ Do this automatically for files like this from now on.

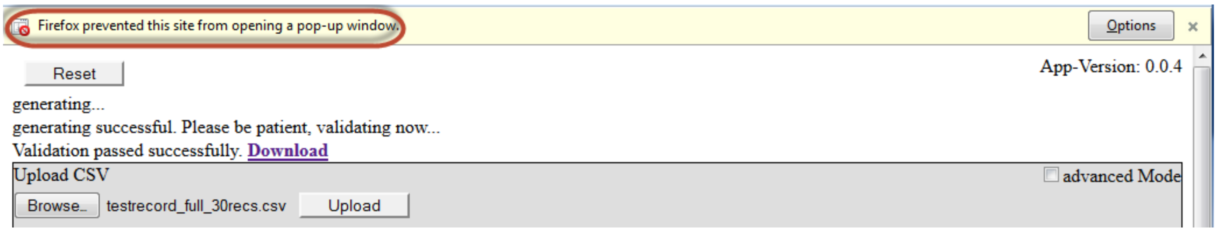
```
<work xmlns="http://
    <agentSet>
        <display>unk
        <agent>
            <name ty
            <role>ar
        </agent>
    </agentSet>
    <culturalContext
        <display>Fre
        <culturalCon
    </culturalContex
    <dateSet>
        <display>beg
        <date type="
            <earliest
            <latestDate>1194</latestDate>
        </date>
        <date type="other">
            <earliestDate>1260</earliestDate>
```

```
14:12:58: validation completed: resulting xml is valid
14:12:57: validating... please be patient.
14:12:57: displaying Preview
14:12:57: Transformation successful: /db/tmp/1820224f-b7bc-452a-9110-ad49aba3732e_transformed.xml
14:12:57: applying transformations
14:12:57: Processing CSV Lines done
14:12:57: line 44 processed.
14:12:56: line 43 processed.
14:12:55: line 42 processed.
14:12:55: line 41 processed.
14:12:54: line 40 processed.
14:12:53: line 39 processed.
14:12:52: line 38 processed.
14:12:52: line 37 processed.
14:12:51: line 36 processed.
14:12:50: line 35 processed.
14:12:50: line 34 processed.
14:12:49: line 33 processed.
14:12:48: line 32 processed.
14:12:47: line 31 processed.
14:12:47: line 30 processed.
14:12:46: line 29 processed.
14:12:45: line 28 processed.
14:12:45: line 27 processed.
```

You can save the file on a disk or open it in your preferred XML editor.

6.5. Allowing pop-ups

You can also click on the "open full preview" buton to the the whole XML in your browser. This will open a new tab. Depending on your local browser settings, opening the new tab may trigger a pop-up blocking tool. In Firefox it may look like this:

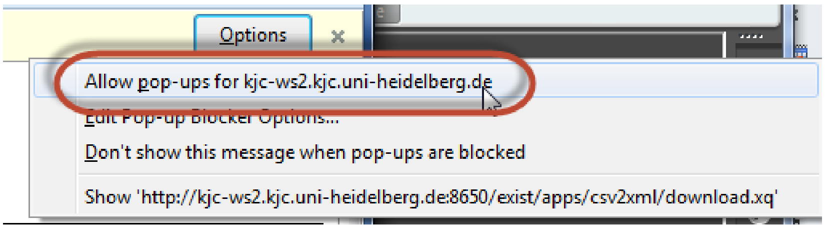


Firefox prevented this site from opening a pop-up window.

generating...
generating successful. Please be patient, validating now...
Validation passed successfully. Download

testrecord_full_30recs.csv

Choose "Allow pop-ups" from the "Options" menu.



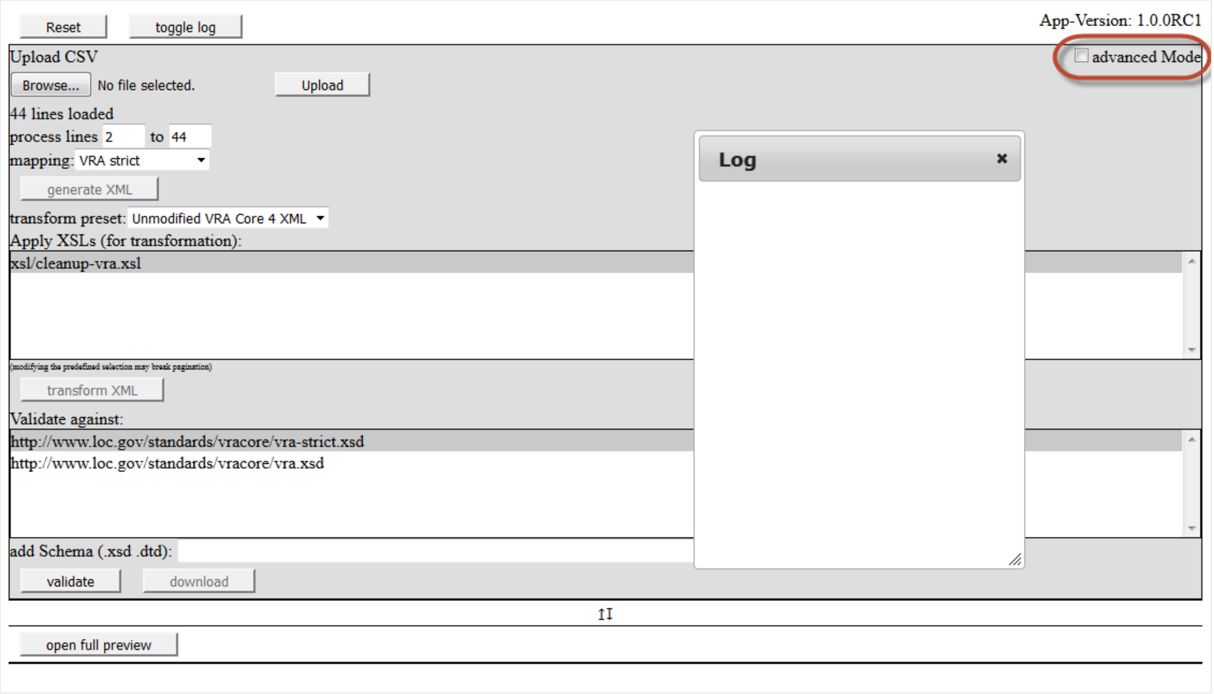
Options
Allow pop-ups for kjc-ws2.kjc.uni-heidelberg.de
Edit Pop-up Blocker Options...
Don't show this message when pop-ups are blocked
Show 'http://kjc-ws2.kjc.uni-heidelberg.de:8650/exist/apps/csv2xml/download.xq'

7. The interface in Advanced Mode

In the Advanced mode it is possible to

- apply XSL transforms
- choose a schema against which you wish to validate your XML file
- upload your own schema file

It also separates XML generation from validation.



App-Version: 1.0.0RC1

Upload CSV

□ advanced Mode

No file selected.

44 lines loaded

process lines 2 to 44

mapping: VRA strict

transform preset: Unmodified VRA Core 4 XML

Apply XSLs (for transformation):

xsl/cleanup-vra.xsl

(modifying the predefined selection may break pagination)

Validate against:

http://www.loc.gov/standards/vracore/vra-strict.xsd
http://www.loc.gov/standards/vracore/vra.xsd

add Schema (.xsd .dtd):

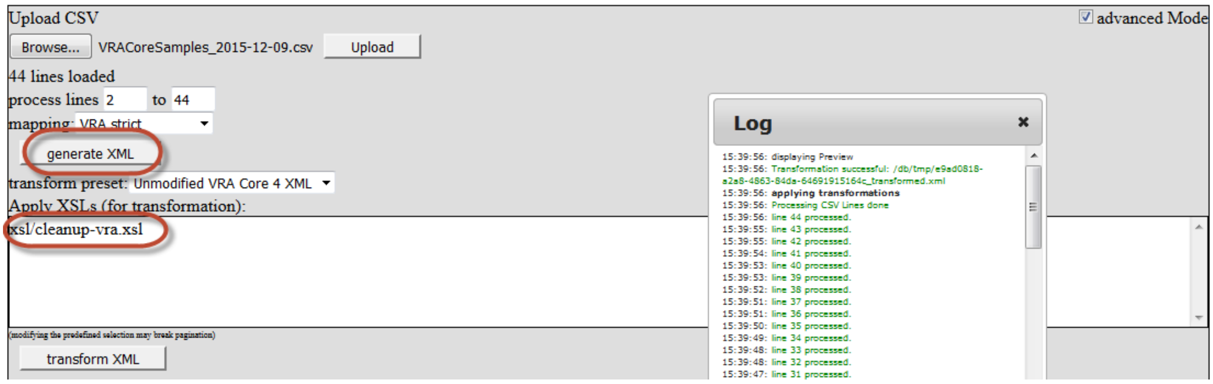
Figure 5: User interface - Advanced mode.

7.1. Applying XSLs

During the default generation of “Unmodified VRA Core 4 XML” a transformation script “cleanup-vra.xsl” will be automatically applied. It removes empty attributes and elements and keeps the resulting XML file slim and clean. It is possible to deselect it here. You should note, however, that without running “cleanup-vra.xsl” the resulting XML code may not validate.

If you choose “Transform into RDF” as transform preset the “VRA2RDF.xsl” will be loaded and applied by default. For more information about RDF transformation see chapter “*Generating RDF*” below.

It is possible to add other .xsl files in the source code. In a future version of *VRA Core 4 XML Transform Tool* this may be changed.



Upload CSV

☑ advanced Mode

Browse... VRACoreSamples_2015-12-09.csv Upload

44 lines loaded

process lines 2 to 44

mapping: VRA strict

generate XML

transform preset: Unmodified VRA Core 4 XML

Apply XSLs (for transformation):

xsl/cleanup-vra.xsl

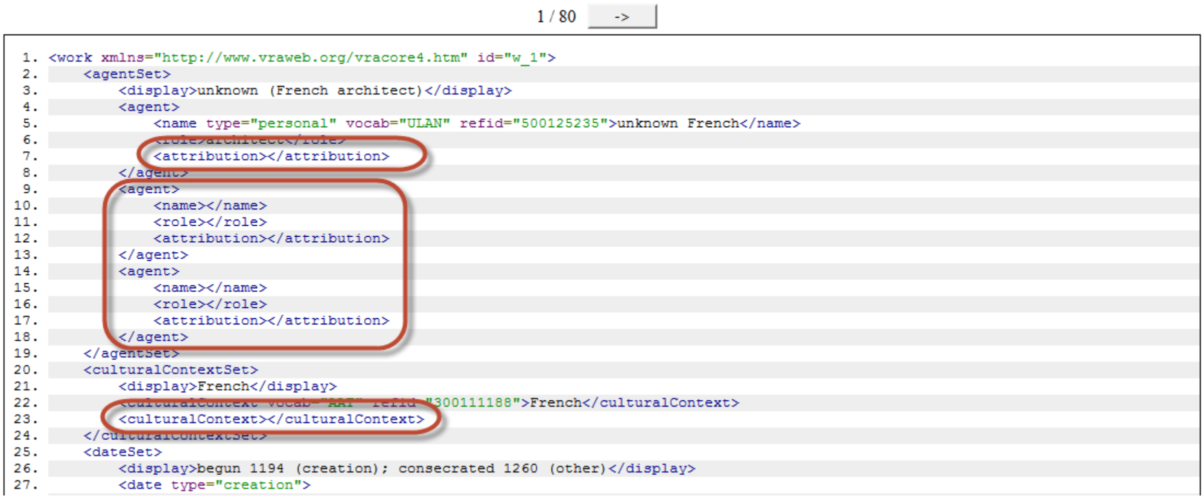
(modifying the predefined selection may break pagination)

transform XML

Log

```
15:39:56: displaying Preview
15:39:56: Transformation successful: /db/tmp/e9ad0818-
a2a8-4863-84da-64691915164c_transformed.xml
15:39:56: applying transformations
15:39:56: Processing CSV Lines done
15:39:56: line 44 processed.
15:39:55: line 43 processed.
15:39:55: line 42 processed.
15:39:54: line 41 processed.
15:39:53: line 40 processed.
15:39:53: line 39 processed.
15:39:52: line 38 processed.
15:39:51: line 37 processed.
15:39:51: line 36 processed.
15:39:50: line 35 processed.
15:39:49: line 34 processed.
15:39:48: line 33 processed.
15:39:48: line 32 processed.
15:39:47: line 31 processed.
```

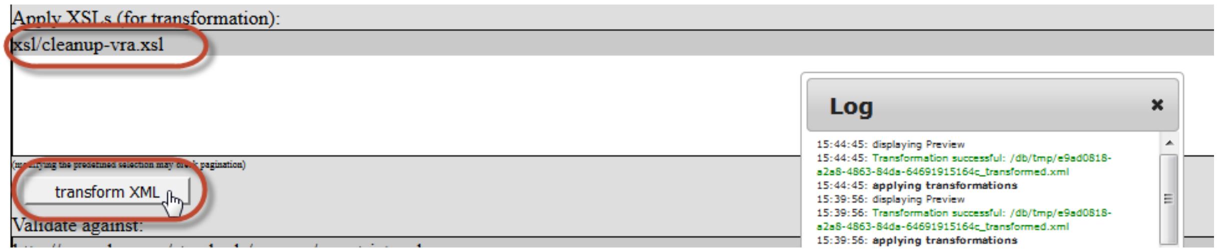
Figure 6: Advanced Mode - XML generation without additional transformation



1 / 80 ->

```
<work xmlns="http://www.vraweb.org/vracore4.htm" id="w_1">
    <agentSet>
        <display>unknown (French architect)</display>
        <agent>
            <name type="personal" vocab="ULAN" refid="500125235">unknown French</name>
            <role>architect</role>
            <attribution></attribution>
        </agent>
        <agent>
            <name></name>
            <role></role>
            <attribution></attribution>
        </agent>
        <agent>
            <name></name>
            <role></role>
            <attribution></attribution>
        </agent>
    </agentSet>
    <culturalContextSet>
        <display>French</display>
        <culturalContext vocab="AAT" refid="300111188">French</culturalContext>
        <culturalContext></culturalContext>
    </culturalContextSet>
    <dateSet>
        <display>begun 1194 (creation); consecrated 1260 (other)</display>
        <date type="creation">
```

Figure 7: Preview of XML without clean-up



Apply XSLs (for transformation):

xsl/cleanup-vra.xsl

(modifying the predefined selection may break pagination)

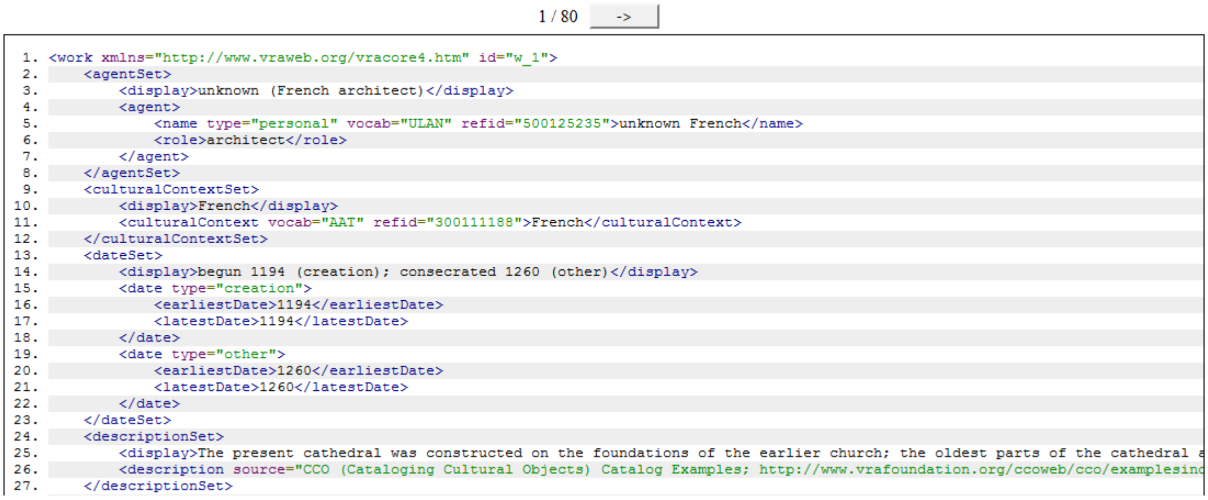
transform XML

Validate against:

Log

```
15:44:45: displaying Preview
15:44:45: Transformation successful: /db/tmp/e9ad0818-
a2a8-4863-84da-64691915164c_transformed.xml
15:44:45: applying transformations
15:39:56: displaying Preview
15:39:56: Transformation successful: /db/tmp/e9ad0818-
a2a8-4863-84da-64691915164c_transformed.xml
15:39:56: applying transformations
```

Figure 8: Starting the clean-up manually



```
<work xmlns="http://www.vraweb.org/vracore4.htm" id="w_1">
    <agentSet>
        <display>unknown (French architect)</display>
        <agent>
            <name type="personal" vocab="ULAN" refid="500125235">unknown French</name>
            <role>architect</role>
        </agent>
    </agentSet>
    <culturalContextSet>
        <display>French</display>
        <culturalContext vocab="AAT" refid="300111188">French</culturalContext>
    </culturalContextSet>
    <dateSet>
        <display>begun 1194 (creation); consecrated 1260 (other)</display>
        <date type="creation">
            <earliestDate>1194</earliestDate>
            <latestDate>1194</latestDate>
        </date>
        <date type="other">
            <earliestDate>1260</earliestDate>
            <latestDate>1260</latestDate>
        </date>
    </dateSet>
    <descriptionSet>
        <display>The present cathedral was constructed on the foundations of the earlier church; the oldest parts of the cathedral a
        <description source="CCO (Cataloging Cultural Objects) Catalog Examples; http://www.vrafoundation.org/ccoweb/cco/examplesind
    </descriptionSet>
```

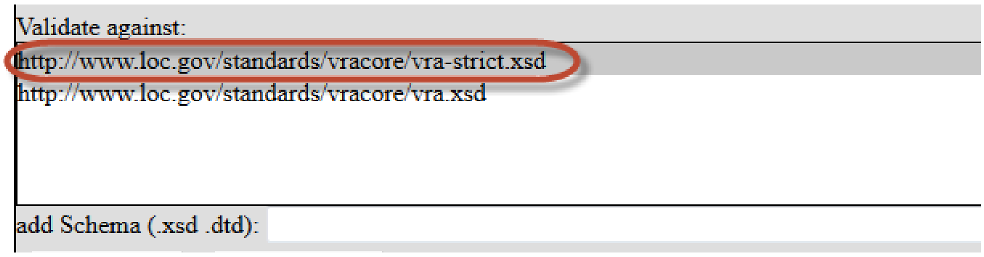
Figure 9: Preview of XML after clean-up

7.2. Validating the XML

Transforming data from .csv to XML does not *per se* guarantee a valid XML result. This is because the restricted VRA Core schema defines a number of fixed values. If the values in the .csv document do not match the values expected by the schema, validation will fail. We therefore strongly recommend validating the generated data in advanced mode.

7.2.1. *Choosing a schema for validation*

In the “Validate against” box you can choose a schema for validation. Depending on the selected mapping (see above) the respective default validation schema is automatically set.



Validate against:
http://www.loc.gov/standards/vracore/vra-strict.xsd
http://www.loc.gov/standards/vracore/vra.xsd

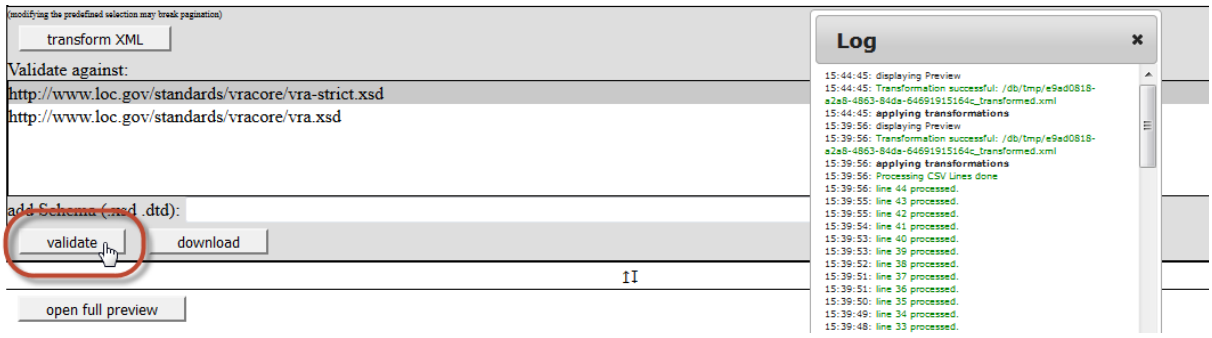
add Schema (.xsd .dtd):

For example, if you selected "VRA strict" as mapping, the corresponding schema http://www.loc.gov/standards/vracore/vra-strict.xsd will be set.

It is possible to choose different validation schemas. In a future version of the transform tool users may also upload their own schema.

7.2.2. *Starting the validation*

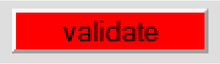
To start the validation process, click “validate”.


(modifying the predefined selection may break pagination)
transform XML
Validate against:
http://www.loc.gov/standards/vracore/vra-strict.xsd
http://www.loc.gov/standards/vracore/vra.xsd
add Schema (.xsd .dtd):
validate
download
open full preview
Log

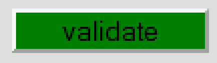
```
15:44:45: displaying Preview
15:44:45: Transformation successful: /db/tmp/e9ad0818-
a2a8-4863-84da-6469191516 4c_transformed.xml
15:44:45: applying transformations
15:39:56: displaying Preview
15:39:56: Transformation successful: /db/tmp/e9ad0818-
a2a8-4863-84da-64691915164c_transformed.xml
15:39:56: applying transformations
15:39:56: Processing CSV Lines done
15:39:56: line 44 processed.
15:39:55: line 43 processed.
15:39:55: line 42 processed.
15:39:54: line 41 processed.
15:39:53: line 40 processed.
15:39:53: line 39 processed.
15:39:52: line 38 processed.
15:39:51: line 37 processed.
15:39:51: line 36 processed.
15:39:50: line 35 processed.
15:39:49: line 34 processed.
15:39:48: line 33 processed.
```

7.2.3. *Getting the validation result*

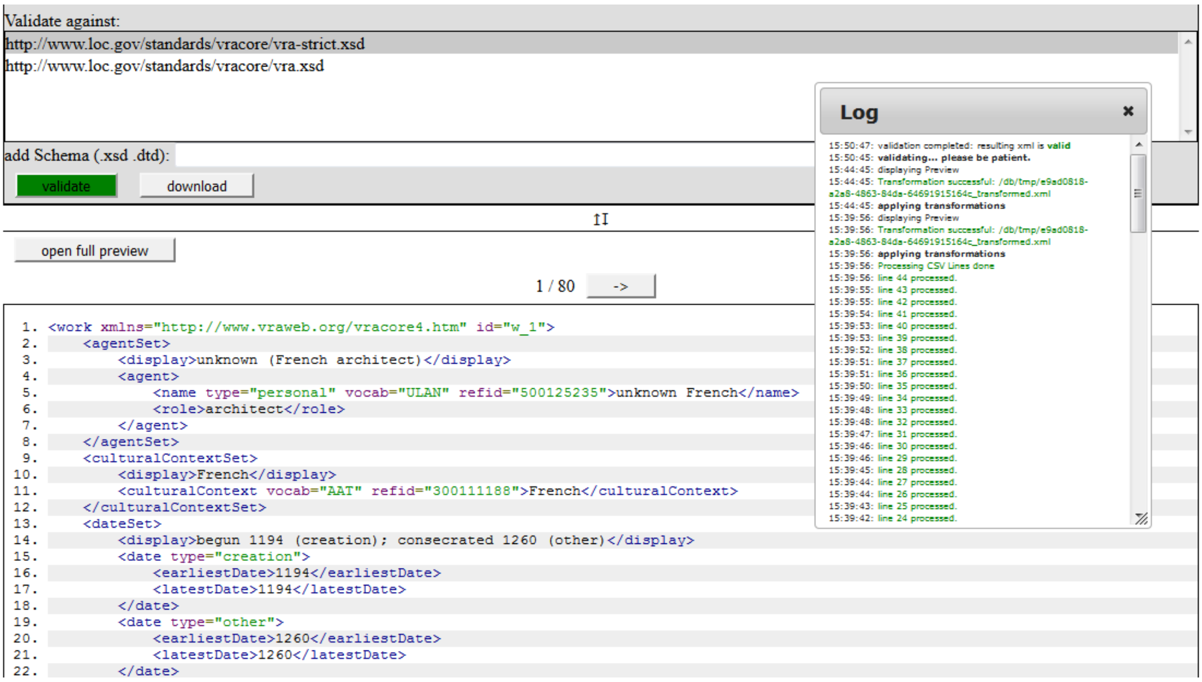
Once the validation is finished, a new browser tab will be opened with the validation result. In addition, the button’s color will change:



Result NOT VALID



Resul VALID


Validate against:
http://www.loc.gov/standards/vracore/vra-strict.xsd
http://www.loc.gov/standards/vracore/vra.xsd
add Schema (.xsd .dtd):
validate
download
open full preview
1 / 80
->
Log

```
15:50:47: validation completed: resulting xml is valid
15:50:45: validating... please be patient.
15:44:45: displaying Preview
15:44:45: Transformation successful: /db/tmp/e9ad0818-
a2a8-4863-84da-64691915164c_transformed.xml
15:44:45: applying transformations
15:39:56: displaying Preview
15:39:56: Transformation successful: /db/tmp/e9ad0818-
a2a8-4863-84da-64691915164c_transformed.xml
15:39:56: applying transformations
15:39:56: Processing CSV Lines done
15:39:56: line 44 processed.
15:39:55: line 43 processed.
15:39:55: line 42 processed.
15:39:54: line 41 processed.
15:39:53: line 40 processed.
15:39:53: line 39 processed.
15:39:52: line 38 processed.
15:39:51: line 37 processed.
15:39:51: line 36 processed.
15:39:50: line 35 processed.
15:39:49: line 34 processed.
15:39:48: line 33 processed.
15:39:48: line 32 processed.
15:39:47: line 31 processed.
15:39:46: line 30 processed.
15:39:46: line 29 processed.
15:39:45: line 28 processed.
15:39:44: line 27 processed.
15:39:44: line 26 processed.
15:39:43: line 25 processed.
15:39:42: line 24 processed.
```

```
<work xmlns="http://www.vraweb.org/vracore4.htm" id="w_1">
    <agentSet>
        <display>unknown (French architect)</display>
        <agent>
            <name type="personal" vocab="ULAN" refid="500125235">unknown French</name>
            <role>architect</role>
        </agent>
    </agentSet>
    <culturalContextSet>
        <display>French</display>
        <culturalContext vocab="AAT" refid="300111188">French</culturalContext>
    </culturalContextSet>
    <dateSet>
        <display>begun 1194 (creation); consecrated 1260 (other)</display>
        <date type="creation">
            <earliestDate>1194</earliestDate>
            <latestDate>1194</latestDate>
        </date>
        <date type="other">
            <earliestDate>1260</earliestDate>
            <latestDate>1260</latestDate>
        </date>
```

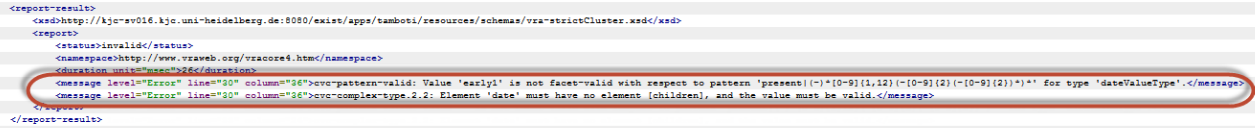
Figure 10: The tool generated valid VRA Core 4 XML.

8. If validation fails

VRA Core 4 in the restricted version uses controlled type lists and date formats. If your data does not match the prescribed rules, your XML will not validate.

In case of problems with the validation, the error messages will be displayed in a separate tab. The messages will indicate both line and column of the respective generated XML document. This is displayed in the interface.

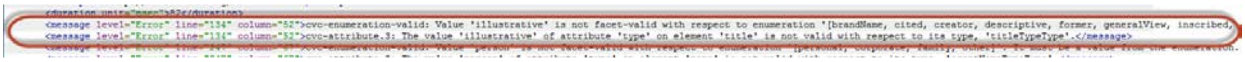
Error messages usually come in pairs. The first line will name the invalid value based on an enumeration in the schema (e.g. type values defined by vra-strict). The second line will indicate the parent element.



```
<report-result>
    <xsd>http://kjc-sv016.kjc.uni-heidelberg.de:8080/exist/apps/tamboti/resources/schemas/vra-strictCluster.xsd</xsd>
    <report>
        <status>invalid</status>
        <namespace>http://www.vraweb.org/vracore4.htm</namespace>
        <duration unit="msec">26</duration>
        <message level="Error" line="30" column="36">cvc-pattern-valid: Value 'early1' is not facet-valid with respect to pattern 'present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-9]{2})*)*' for type 'dateValueType'.</message>
        <message level="Error" line="30" column="36">cvc-complex-type.2.2: Element 'date' must have no element [children], and the value must be valid.</message>
    </report>
</report-result>
```

8.1. Example 1 (element type):

Error message (screenshot):



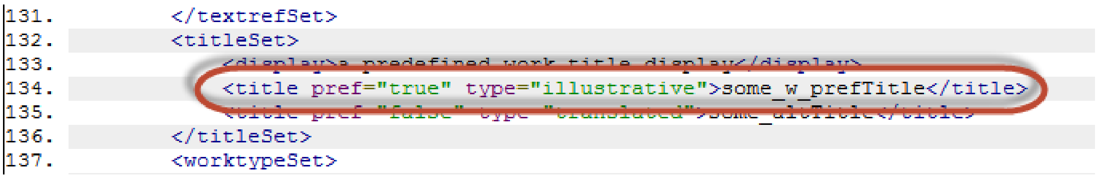
```
<message level="Error" line="134" column="52">cvc-enumeration-valid: Value 'illustrative' is not facet-valid with respect to enumeration '[brandName, cited, creator, descriptive, former, generalView, inscribed,
<message level="Error" line="134" column="52">cvc-attribute.3: The value 'illustrative' of attribute 'type' on element 'title' is not valid with respect to its type, 'titleTypeType'.</message>
```

Error message (transcribed):

```
<message level="Error" line="134" column="52">cvc-enumeration-valid: Value 'illustrative' is not facet-valid with respect to enumeration '[brandName, cited, creator, descriptive, former, generalView, inscribed, owner, partialView, popular, repository, translated, other]'. It must be a value from the enumeration.</message>
```

```
<message level="Error" line="134" column="52">cvc-attribute.3: The value 'illustrative' of attribute 'type' on element 'title' is not valid with respect to its type, 'titleTypeType'.</message>
```

The error message refers to `line="134" column="52"` in the XML:



```
131.        </textrefSet>
132.        <titleSet>
133.            <display>a predefined work title display</display>
134.            <title pref="true" type="illustrative">some_w_prefTitle</title>
135.            <title pref="false" type="translated">some_altTitle</title>
136.        </titleSet>
137.        <worktypeSet>
```

The first line of the message states that "illustrative" is not valid because it is not included in the list of possible values: "brandName, cited, creator, descriptive, former, generalView, inscribed, owner, partialView, popular, repository, translated, other".

The second line adds that the error occurred within attribute "type" of element <title>, and the provided value for "type" was not valid.

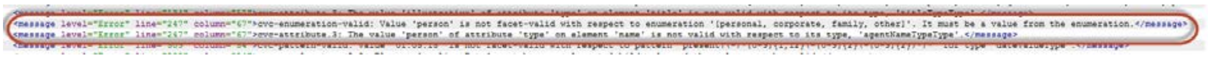
Result:

Values of **`<title type="">`** are controlled by the schema.

You need to delete “illustrative” and use of one of the allowed values, i.e. “brandName, cited, creator, descriptive, former, generalView, inscribed, owner, partialView, popular, repository, translated, other”.

8.2. Example 2 (element type):

Error message (screenshot):



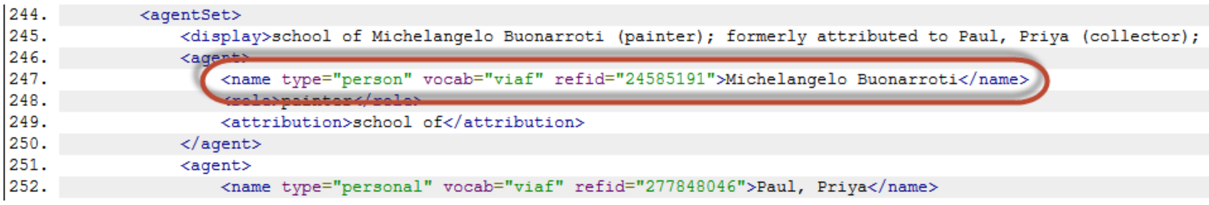
```
<message level="Error" line="247" column="67">cvc-enumeration-valid: Value 'person' is not facet-valid with respect to enumeration '[personal, corporate, family, other]'. It must be a value from the enumeration.</message>
<message level="Error" line="247" column="67">cvc-attribute.3: The value 'person' of attribute 'type' on element 'name' is not valid with respect to its type, 'agentNameTypeType'.</message>
```

Error message (transcribed):

```
<message level="Error" line="247" column="67">cvc-enumeration-valid: Value 'person'
is not facet-valid with respect to enumeration '[personal, corporate, family,
other]'. It must be a value from the enumeration.</message>
```

```
<message level="Error" line="247" column="67">cvc-attribute.3: The value 'person'
of attribute 'type' on element 'name' is not valid with respect to its type,
'agentNameTypeType'.</message>
```

The error message refers to `line="247" column="67"` in the XML:



```
244.        <agentSet>
245.            <display>school of Michelangelo Buonarroti (painter); formerly attributed to Paul, Priya (collector);
246.            <agent>
247.                <name type="person" vocab="viaf" refid="24585191">Michelangelo Buonarroti</name>
248.                ~~<role>painter</role>~~
249.                <attribution>school of</attribution>
250.            </agent>
251.            <agent>
252.                <name type="personal" vocab="viaf" refid="277848046">Paul, Priya</name>
```

The first line of the message states that “person” is not valid because it is not included in the list of possible values: “personal, corporate, family, other”.

The second line adds that the error occurred within attribute “type” of element <name>, and the provided value for “type” was not valid.

Result:

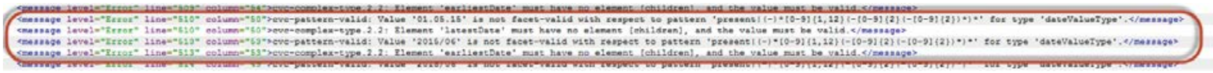
Values of **`<name type="">`** are controlled by the schema.

You need to delete “person” and use of one of the allowed values, i.e. “personal, corporate, family, other”.

8.3. Example 3 (date pattern):

This example consists of two similar problems:

Error message (screenshot):



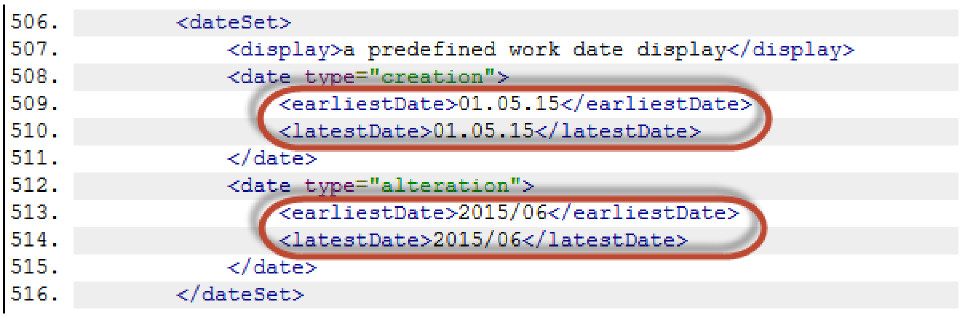
```
<message level="Error" line="509" column="54">cvc-complex-type.2.2: Element 'earliestDate' must have no element [children], and the value must be valid.</message>
<message level="Error" line="510" column="50">cvc-pattern-valid: Value '01.05.15' is not facet-valid with respect to pattern 'present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-9]{2})*)*' for type 'dateValueType'.</message>
<message level="Error" line="510" column="50">cvc-complex-type.2.2: Element 'latestDate' must have no element [children], and the value must be valid.</message>
<message level="Error" line="513" column="53">cvc-pattern-valid: Value '2016/06' is not facet-valid with respect to pattern 'present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-9]{2})*)*' for type 'dateValueType'.</message>
<message level="Error" line="513" column="53">cvc-complex-type.2.2: Element 'earliestDate' must have no element [children], and the value must be valid.</message>
```

Error message (transcribed):

```
<message level="Error" line="510" column="50">cvc-pattern-valid: Value '01.05.15'
is not facet-valid with respect to pattern 'present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-
9]{2})*)*' for type 'dateValueType'.</message>
<message level="Error" line="510" column="50">cvc-complex-type.2.2: Element
'latestDate' must have no element [children], and the value must be valid.</message>

<message level="Error" line="513" column="53">cvc-pattern-valid: Value '2015/06' is
not facet-valid with respect to pattern 'present|(-)*[0-9]{1,12}(-[0-9]{2}(-[0-
9]{2})*)*' for type 'dateValueType'.</message>
<message level="Error" line="513" column="53">cvc-complex-type.2.2: Element
'earliestDate' must have no element [children], and the value must be
valid.</message>
```

The error message refers to `line="510" column="50"` and `line="513" column="53"` in the XML:



```
506.         <dateSet>
507.             <display>a predefined work date display</display>
508.             <date type="creation">
509.                 <earliestDate>01.05.15</earliestDate>
510.                 <latestDate>01.05.15</latestDate>
511.             </date>
512.             <date type="alteration">
513.                 <earliestDate>2015/06</earliestDate>
514.                 <latestDate>2015/06</latestDate>
515.             </date>
516.         </dateSet>
```

The first lines of each message sat state that “01.05.15” and “2015/06” are not valid because they do not follow the predefined pattern for dateValues.

The second lines add that the error occurred within element <latestDate> (respective <earliestDate>), and the element must be valid.

Result:

Values of **`<earliestDate>`** and **`<latestDate>`** are pattern-controlled by the schema.

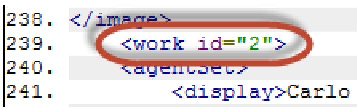
You need to write the dates in the correct format, i.e. “2015-05-01” or “2015-06”.

8.4. Example 4 (work/image ID):

Error message (transcribed):

```
<message level="Error" line="239" column="18">cvc-datatype-valid.1.2.1: '2' is not
a valid value for 'NCName'.</message>
<message level="Error" line="239" column="18">cvc-attribute.3: The value '2' of
attribute 'id' on element 'work' is not valid with respect to its type,
'ID'.</message>
```

The error message refers to `line="239" column="18"` in the XML:



```
238. </image>
239.     <work id="2">
240.     <agentSet>
241.         <display>Carlo
```

The first line of the message states that “2” is not a valid NCName, which stands for “Non-colonized” Names (cf. http://www.w3.org/TR/xmlschema-2/#NCName).

The second line adds that the error occurred within attribute “id” of element <work>, and the provided value was not valid.

Result:

Values of `<work id="">` are regulated by the schema. The “VRA Core4 Element Description” explains in a note: “The XML *id* attribute must begin with a character. The convention used here prefixes a numeric value with w_ for works, c_ for collections, and i_ for images.”

You need to provide a work ID that begins with “w_”.

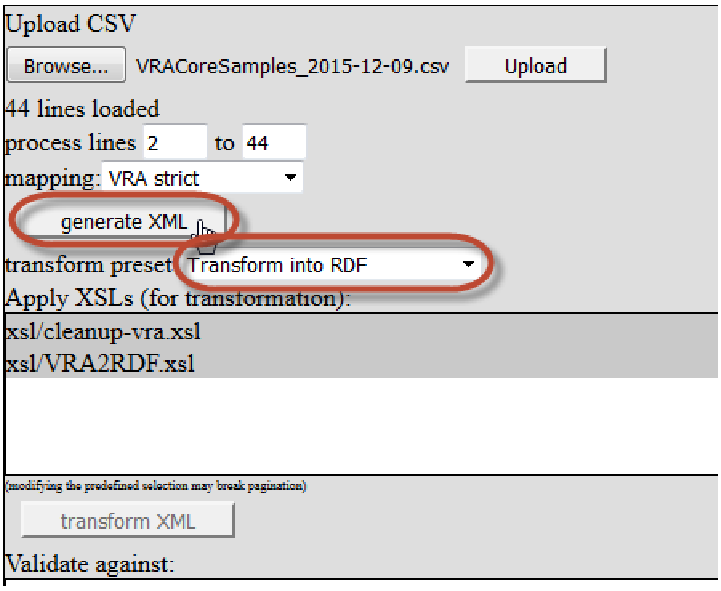
9. Generating RDF XML

In addition to generating VRA Core 4 XML it is possible to transform the data to RDF. At the moment, this feature is still experimental, meaning that only basic testing was performed and no output optimisation took place.

The tool makes use of the XSLT stylesheet as provided by the VRA-RDF-Project https://github.com/mixterj/VRA-RDF-Project.

To transform your data to RDF first make sure the .csv data will validate in VRA Core.

Then go back and select "transform into RDF" in the "transform" line. Note that the entry "xsl/VRA2RDF.xsl" appears in the "Applied XSL's" box.



Upload CSV

Browse... VRACoreSamples_2015-12-09.csv Upload

44 lines loaded

process lines 2 to 44

mapping: VRA strict

generate XML

transform preset Transform into RDF

Apply XSLs (for transformation):

xsl/cleanup-vra.xsl
xsl/VRA2RDF.xsl

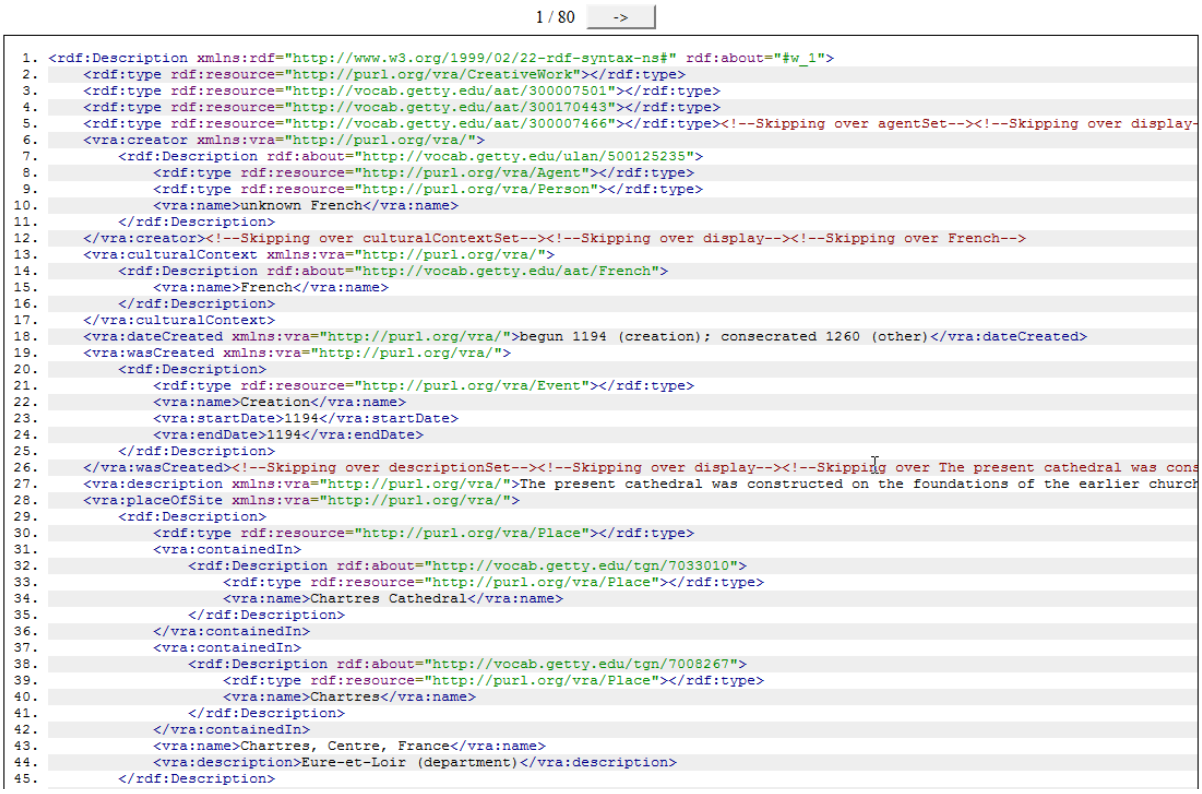
(modifying the predefined selection may break pagination)

transform XML

Validate against:

Now click "generate XML".

Once generated, the RDF XML will be displayed in the "Result" box and can be downloaded.



```
<rdf:Description xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" rdf:about="#w_1">
    <rdf:type rdf:resource="http://purl.org/vra/CreativeWork"></rdf:type>
    <rdf:type rdf:resource="http://vocab.getty.edu/aat/300007501"></rdf:type>
    <rdf:type rdf:resource="http://vocab.getty.edu/aat/300170443"></rdf:type>
    <rdf:type rdf:resource="http://vocab.getty.edu/aat/300007466"></rdf:type><!--Skipping over agentSet--><!--Skipping over display-
    <vra:creator xmlns:vra="http://purl.org/vra/">
        <rdf:Description rdf:about="http://vocab.getty.edu/ulan/500125235">
            <rdf:type rdf:resource="http://purl.org/vra/Agent"></rdf:type>
            <rdf:type rdf:resource="http://purl.org/vra/Person"></rdf:type>
            <vra:name>unknown French</vra:name>
        </rdf:Description>
    </vra:creator><!--Skipping over culturalContextSet--><!--Skipping over display--><!--Skipping over French-->
    <vra:culturalContext xmlns:vra="http://purl.org/vra/">
        <rdf:Description rdf:about="http://vocab.getty.edu/aat/French">
            <vra:name>French</vra:name>
        </rdf:Description>
    </vra:culturalContext>
    <vra:dateCreated xmlns:vra="http://purl.org/vra/">begun 1194 (creation); consecrated 1260 (other)</vra:dateCreated>
    <vra:wasCreated xmlns:vra="http://purl.org/vra/">
        <rdf:Description>
            <rdf:type rdf:resource="http://purl.org/vra/Event"></rdf:type>
            <vra:name>Creation</vra:name>
            <vra:startDate>1194</vra:startDate>
            <vra:endDate>1194</vra:endDate>
        </rdf:Description>
    </vra:wasCreated><!--Skipping over descriptionSet--><!--Skipping over display--><!--Skipping over The present cathedral was cons
    <vra:description xmlns:vra="http://purl.org/vra/">The present cathedral was constructed on the foundations of the earlier churc
    <vra:placeOfSite xmlns:vra="http://purl.org/vra/">
        <rdf:Description>
            <rdf:type rdf:resource="http://purl.org/vra/Place"></rdf:type>
            <vra:containedIn>
                <rdf:Description rdf:about="http://vocab.getty.edu/tgn/7033010">
                    <rdf:type rdf:resource="http://purl.org/vra/Place"></rdf:type>
                    <vra:name>Chartres Cathedral</vra:name>
                </rdf:Description>
            </vra:containedIn>
            <vra:containedIn>
                <rdf:Description rdf:about="http://vocab.getty.edu/tgn/7008267">
                    <rdf:type rdf:resource="http://purl.org/vra/Place"></rdf:type>
                    <vra:name>Chartres</vra:name>
                </rdf:Description>
            </vra:containedIn>
            <vra:name>Chartres, Centre, France</vra:name>
            <vra:description>Eure-et-Loir (department)</vra:description>
        </rdf:Description>
```

10. Contact

If you have problems or questions please contact Matthias Arnold at arnold@asia-europe.uni-heidelberg.de.

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Skype: matz-skype

Further links
Web-Portal of Heidelberg Research Architecture
http://hra.uni-hd.de/

Ziziphus VRA Core 4 XML editor:
https://github.com/exc-asia-and-europe/ziziphus
Ziziphus - guidelines and help files:
http://ziziphus-help.uni-hd.de

Office address
Karl Jaspers Centre, Room 005b

MediaLab
Karl Jaspers Centre, Room 005c

11. Appendix: Elements, displays and repetitions

WORK
[workID]

Agent display
3x nameType – name – nameVocab – nameRefid – role

CulturalContext display
2x culturalContext – vocab – refid

Date display
2x type – earliestDate – latestDate

Description display [display = description]
descriptionSource

Inscription display [display = text]

Location display
Location notes
2x type – Name – NameType – NameVocab – NameRefID – ObjType – ObjRefID – Geo – GeoVocab – GeoRefid

Material display
4x material – vocab – refid

Measurements display
2x extent – unit – value1-4 – type1-4

Relation display
2x relatedWork – type
[transform adds work-image link]

Rights display [display = text]

Source display

StateEdition display

Style/Period display
4x stylePeriod – vocab – refid

Subject display
8x subject – vocab – refid – type

Technique display
4x technique – vocab – refid

TextRef display

Title display
titlePref, titlePrefType, titleAlt, titleAltType

Worktype display
3x worktype – vocab – refid

IMAGE
[IMAGE_Href (-> href); Filename (-> refid)]

Agent display
1x nameType – name – nameVocab – nameRefid – role

Date display

Description display [display = description]

Inscription display [display = text]

Location display
[localRepoName, accessionID]

Material display

Measurements display

Relation display
[transform adds image-work link]

Rights display
Rights notes
1x type – holder – text

Source display
[VendorName, VendorID]
1x sourceType, sourceValue

Subject display
3x subject – vocab – refid – type

Technique display
1x technique – vocab – refid
[if not provided: <technique vocab="AAT" refid="300237903">digital imaging</technique>]

Title display
1x type, title

WorkType display
1x technique – vocab – refid
[if not provided: <worktype vocab="AAT" refid="300215302">digital images</worktype>]

12. Appendix: Columns Full Template

IMAGE_Filename
IMAGE_Href
IMAGE_AccessionID
IMAGE_VendorID
IMAGE_VendorName
IMAGE_LocalRepoName

WORK_ID
WORK_TitleDisplay
WORK_TitlePref
WORK_TitlePrefType
WORK_TitleAlt
WORK_TitleAltType
WORK_AgentDisplay
WORK_Agent1NameType
WORK_Agent1Name
WORK_Agent1NameVocab
WORK_Agent1NameRefid
WORK_Agent1Role
WORK_Agent1Attribution
WORK_Agent2NameType
WORK_Agent2Name
WORK_Agent2NameVocab
WORK_Agent2NameRefid
WORK_Agent2Role
WORK_Agent2Attribution
WORK_Agent3NameType
WORK_Agent3Name
WORK_Agent3NameVocab
WORK_Agent3NameRefid
WORK_Agent3Role
WORK_Agent3Attribution
WORK_CulturalContextDisplay
WORK_CulturalContext1
WORK_CulturalContext1Vocab
WORK_CulturalContext1Refid
WORK_CulturalContext2
WORK_CulturalContext2Vocab
WORK_CulturalContext2Refid
WORK_DateDisplay
WORK_Date1Type
WORK_EarliestDate1
WORK_LatestDate1
WORK_Date2Type
WORK_EarliestDate2
WORK_LatestDate2
WORK_DescriptionDisplay
WORK_DescriptionSource
WORK_InscriptionDisplay
WORK_LocationDisplay
WORK_LocationNotes
WORK_Location1Type
WORK_Location1Name
WORK_Location1NameType
WORK_Location1NameVocab
WORK_Location1NameRefID
WORK_Location1ObjType
WORK_Location1ObjRefID
WORK_Location1Geo
WORK_Location1GeoVocab
WORK_Location1GeoRefid
WORK_Location2Type
WORK_Location2Name
WORK_Location2NameType
WORK_Location2NameVocab
WORK_Location2NameRefID
WORK_Location2ObjType
WORK_Location2ObjRefID
WORK_Location2Geo
WORK_Location2GeoVocab
WORK_Location2GeoRefid
WORK_MaterialDisplay
WORK_Material1
WORK_MaterialVocab1
WORK_MaterialRefid1
WORK_Material2
WORK_MaterialVocab2
WORK_MaterialRefid2
WORK_Material3
WORK_MaterialVocab3
WORK_MaterialRefid3
WORK_Material4
WORK_MaterialVocab4
WORK_MaterialRefid4
WORK_MeasurementsDisplay
WORK_Measurements1Extent
WORK_Measurements1Unit
WORK_Measurements1Value1
WORK_Measurements1Type1
WORK_Measurements1Value2
WORK_Measurements1Type2
WORK_Measurements1Value3
WORK_Measurements1Type3
WORK_Measurements1Value4
WORK_Measurements1Type4
WORK_Measurements2Extent
WORK_Measurements2Unit
WORK_Measurements2Value1
WORK_Measurements2Type1
WORK_Measurements2Value2
WORK_Measurements2Type2
WORK_Measurements2Value3
WORK_Measurements2Type3
WORK_Measurements2Value4
WORK_Measurements2Type4
WORK_RelationDisplay
WORK_RelatedWork1
WORK_RelationType1

WORK_RelatedWork2
WORK_RelationType2
WORK_RightsDisplay
WORK_SourceDisplay
WORK_StateEditionDisplay
WORK_StylePeriodDisplay
WORK_StylePeriod1
WORK_StylePeriodVocab1
WORK_StylePeriodRefid1
WORK_StylePeriod2
WORK_StylePeriodVocab2
WORK_StylePeriodRefid2
WORK_StylePeriod3
WORK_StylePeriodVocab3
WORK_StylePeriodRefid3
WORK_StylePeriod4
WORK_StylePeriodVocab4
WORK_StylePeriodRefid4
WORK_SubjectDisplay
WORK_Subject1
WORK_SubjectType1
WORK_SubjectVocab1
WORK_SubjectRefid1
WORK_Subject2
WORK_SubjectType2
WORK_SubjectVocab2
WORK_SubjectRefid2
WORK_Subject3
WORK_SubjectType3
WORK_SubjectVocab3
WORK_SubjectRefid3
WORK_Subject4
WORK_SubjectType4
WORK_SubjectVocab4
WORK_SubjectRefid4
WORK_Subject5
WORK_SubjectType5
WORK_SubjectVocab5
WORK_SubjectRefid5
WORK_Subject6
WORK_SubjectType6
WORK_SubjectVocab6
WORK_SubjectRefid6
WORK_Subject7
WORK_SubjectType7
WORK_SubjectVocab7
WORK_SubjectRefid7
WORK_Subject8
WORK_SubjectType8
WORK_SubjectVocab8
WORK_SubjectRefid8
WORK_TechniqueDisplay
WORK_Technique1
WORK_TechniqueVocab1
WORK_TechniqueRefid1
WORK_Technique2
WORK_TechniqueVocab2
WORK_TechniqueRefid2
WORK_Technique3
WORK_TechniqueVocab3
WORK_TechniqueRefid3
WORK_Technique4
WORK_TechniqueVocab4
WORK_TechniqueRefid4
WORK_TextrefDisplay
WORK_TextrefName
WORK_TextrefNameType
WORK_TextrefRefid
WORK_TextrefRefidType
WORK_WorktypeDisplay
WORK_Worktype1
WORK_WorktypeVocab1
WORK_WorktypeRefid1
WORK_Worktype2
WORK_WorktypeVocab2
WORK_WorktypeRefid2
WORK_Worktype3
WORK_WorktypeVocab3
WORK_WorktypeRefid3

IMAGE_AgentDisplay
IMAGE_Agent1NameType
IMAGE_Agent1Name
IMAGE_Agent1NameVocab
IMAGE_Agent1NameRefid
IMAGE_Agent1Role
IMAGE_DateDisplay
IMAGE_DescriptionDisplay
IMAGE_InscriptionDisplay
IMAGE_LocationDisplay
IMAGE_MaterialDisplay
IMAGE_MeasurementsDisplay
IMAGE_RelationDisplay
IMAGE_RightsDisplay
IMAGE_RightsNotes
IMAGE_RightsType
IMAGE_RightsHolder
IMAGE_RightsText
IMAGE_SourceDisplay
IMAGE_SourceValue
IMAGE_SourceType
IMAGE_SubjectDisplay
IMAGE_Subject1
IMAGE_SubjectType1
IMAGE_SubjectVocab1
IMAGE_SubjectRefid1
IMAGE_Subject2
IMAGE_SubjectType2
IMAGE_SubjectVocab2
IMAGE_SubjectRefid2
IMAGE_Subject3
IMAGE_SubjectType3

IMAGE_SubjectVocab3
IMAGE_SubjectRefid3
IMAGE_TechniqueDisplay
IMAGE_Technique
IMAGE_TechniqueVocab
IMAGE_TechniqueRefid
IMAGE_TitleDisplay
IMAGE_Title
IMAGE_TitleType
IMAGE_WorktypeDisplay
IMAGE_Worktype
IMAGE_WorktypeVocab
IMAGE_WorktypeRefid