

Schema Walker & Metadata Editor

An EML Web Design and Data Editor

developers

Raul Aguilar and Corinna Gries
Global Institute of Sustainability

Inigo San Gil
LTER Network Office, UNM, Albuquerque, NM

Giri Palanisamy, and Jerry Pan
Oak Ridge National Laboratory

Building an EML Data Edit Tool

- online metadata editor
- low code maintenance
- easy upgrade on a web server
- ease of use
- integrated with a data catalog and XML storage

Alternative Solutions

- Morpho an EML Editor by Jing Tao
- Metador
- ORNL has a Javascript FGDC metadata editor
- Use of vendor products XML Spy and Stylus Studio to generate web pages.
 - These products are expensive, proprietary, and fixed in functionality with design hits on widget constructions otherwise known as “fidgetware”.
- XMLBeans to introspect the EML Schema and build interactive classes to add and remove EML data.
 - The generated schema-correct Java classes have mangled method names and require API ‘hand code’.

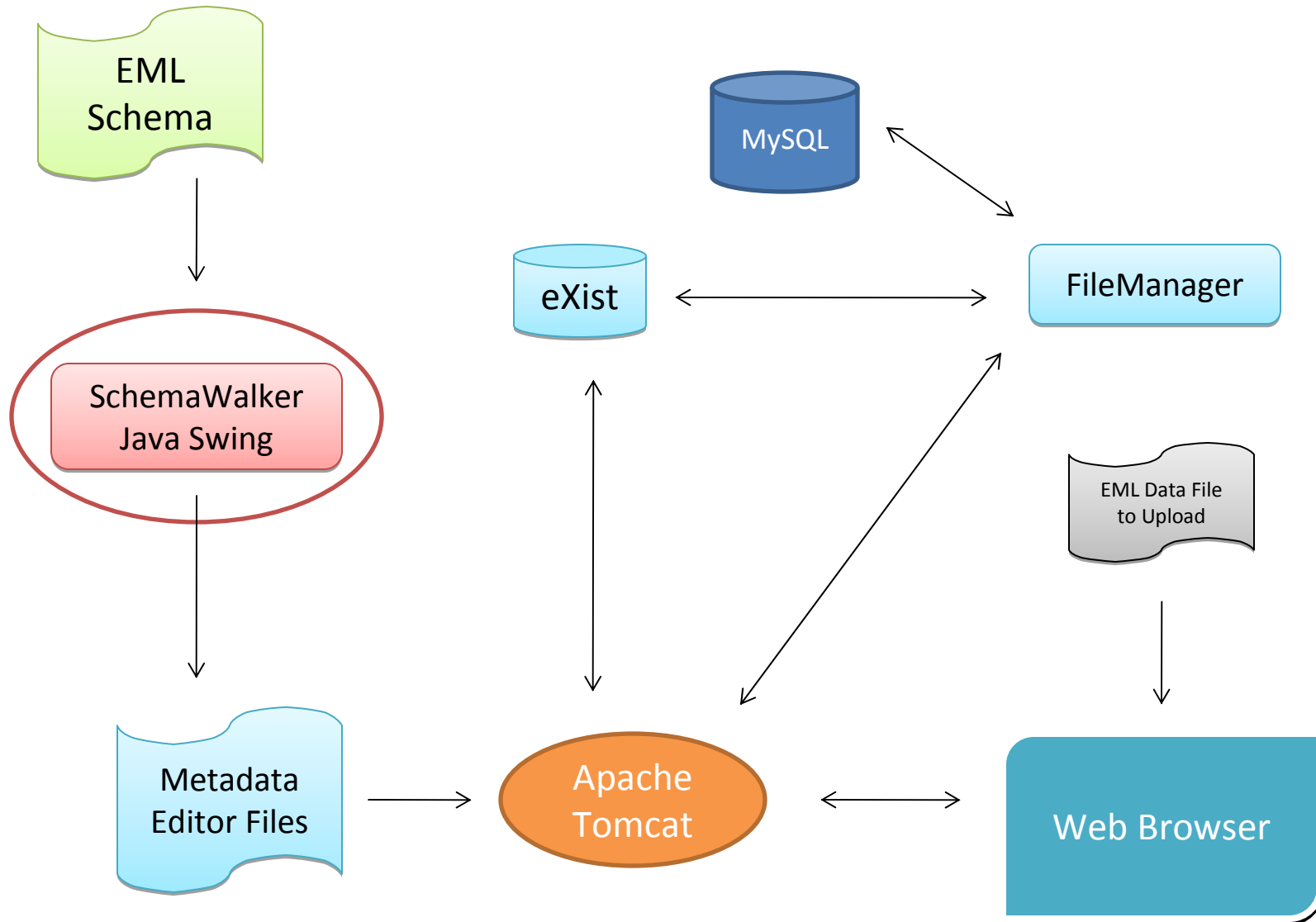
Alternative Solutions 2

- XSLT transformations to produce GUI pages
 - A Cambridge team developed a working model
- Using Java XMLDB with Xpath to read and write EML data nodes.
 - This led to code that was hard to manage due to the number of objects used to handle an XPath to an EML node.
 - The EML Schema describes some nodes recursively. In particular, the 'para' node has a 'para' grandchild.

Orbeon XForms

- is open source
- has a basic Model-View-Controller language
- operates as a Tomcat server side application
- natively handles XPath, XQuery, XUpdate, and XInsert with simple and responsive AJAX code
- reads and writes to the eXist XML repository
- authors Erik Bruchez and Alessandro Vernet
 - active engaged in a developer forum community
 - proactive in emerging XForms W3C standards

Metadata Editor Tools



SchemaWalker EML Page Design

The screenshot displays the SchemaWalker v0.4.0 interface. The left pane shows a tree view of an XML schema for EML, with the **positionName** element highlighted. The right pane contains configuration options for the selected node.

Content: 06 element name=positionName type=xs:string minOccurs=1 maxOccurs=1

Current Node

- included
- Label:
- Entry Type: inputbox textarea
- Entry Size: width height

Generate Pages

- Page Name:
- Filename:
- pageMenu:
-

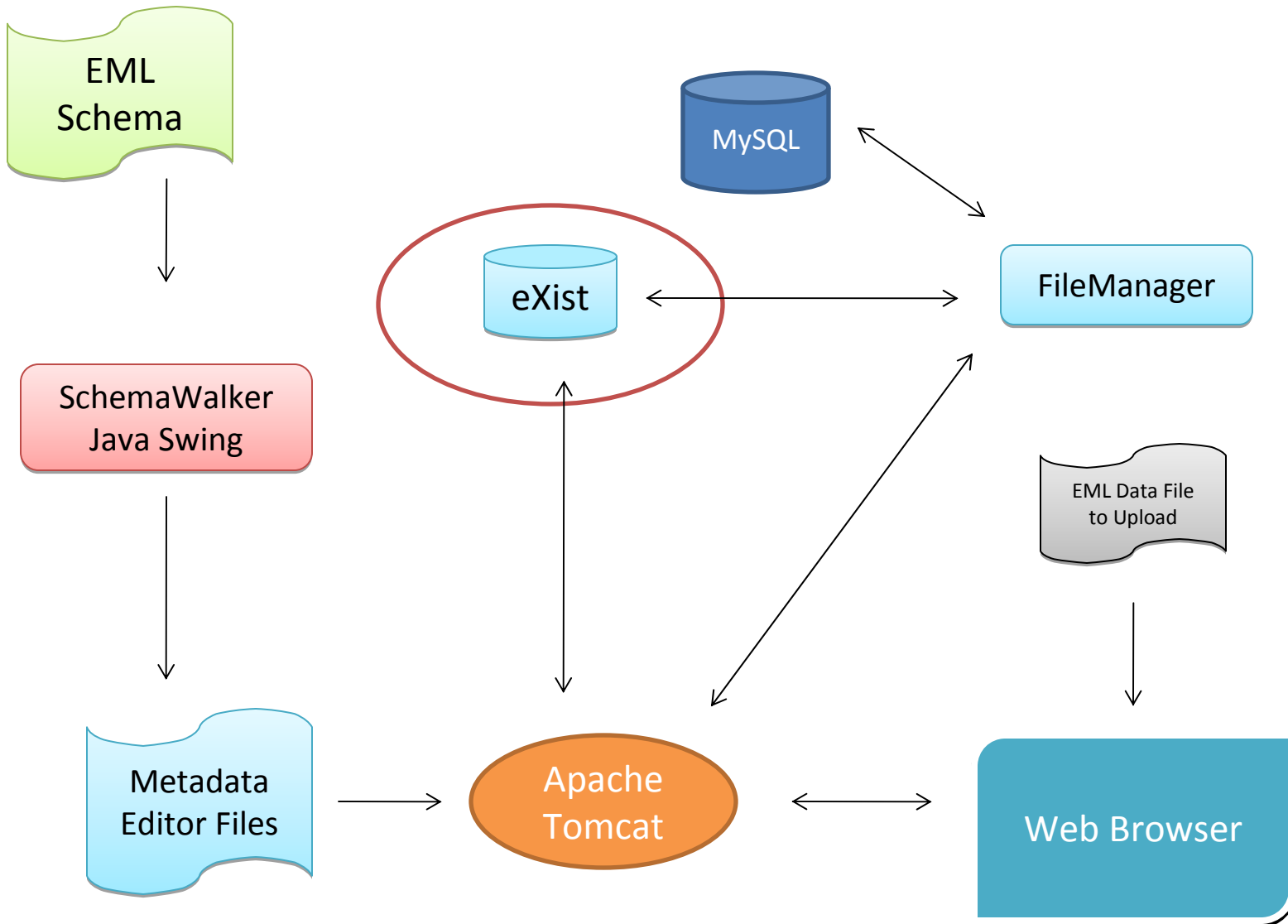
Page List Selected Nodes

title and creator	main
abstract	main
abstract-keywordSet	main
access	main
contact	main
coverage	main
dataTable attributelist	datatable
dataTable constraint	datatable
dataTable physical	datatable
distribution	main
maintenance	main
methods	main

SchemaWalker Generated Xforms Code

```
<!-- abstract-repeat start -->
<xforms:repeat nodeset="abstract" id="abstract6-repeat">
  <div>
    <table width="100%"><tr><td>
      <xforms:group ref=".[exists(preceding-sibling::abstract)]">
        <!-- display a clear alpha image for spacing only -->
        <xforms:trigger class="eml-level-2 eml-node" style="text-decoration: none;
color: #000000;" appearance="minimal">
          <xforms:label>abstract</xforms:label>
        </xforms:trigger>
      </xforms:group>
    </td><td align="right">
      <xforms:group ref=".[exists(preceding-sibling::abstract)]">
        <!-- abstract show -->
        <xforms:group ref=".[./@show='y']">
          <xforms:trigger appearance="xxforms:image">
            <xforms:label/>
            <xxforms:img src="/apps/forms/images/up_arrow.gif"
xmlns:xxforms="http://orbeon.org/oxf/xml/xforms"/>
          </xforms:group>
        </xforms:group>
      </td>
    </tr></table>
  </div>
</xforms:repeat>
```

Metadata Editor Tools

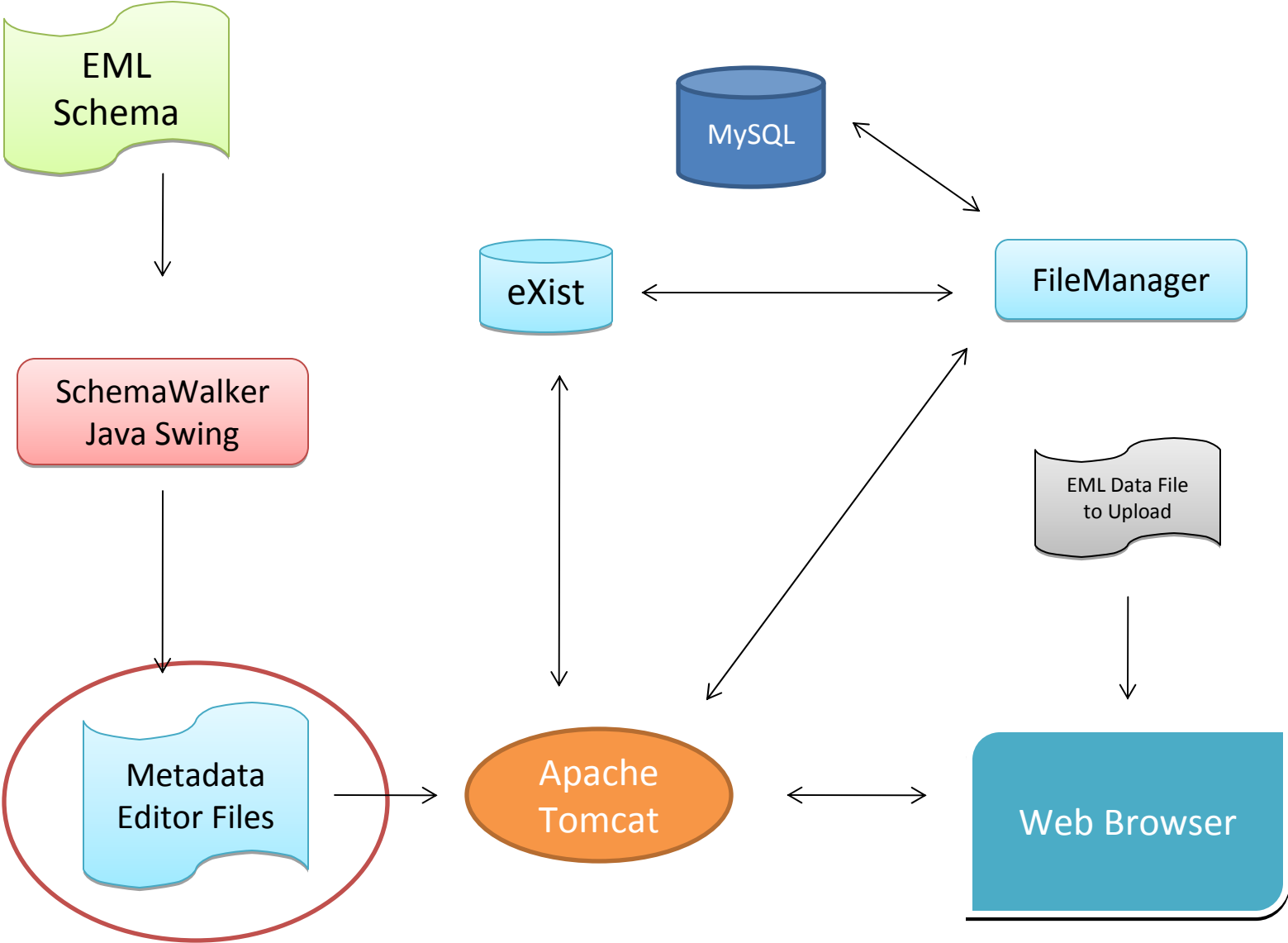


An Example EML Data File

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
- <eml:eml packageId="100" scope="system" system="ces_dataset" xsi:schemaLocation="eml://ecoinformatics.org/eml-2.0.1 http://capiter.asu.edu/home/eml2_0_1/eml.xsd">
- <dataset id="1" system="ces_dataset" show="y" stat="">
  <alternateIdentifier system="ces_dataset" show="y" stat="">1</alternateIdentifier>
  <title show="y" stat="">Landuse Classification 1912</title>
- <creator show="y" stat="">
  - <individualName show="y" stat="">
    <givenName show="y" stat="">Cherie</givenName>
    <surName show="y" stat="">Moritz</surName>
  </individualName>
  <address show="y" stat="">
  </address>
  </creator>
- <creator show="y" stat="">
  - <individualName show="y" stat="">
    <givenName show="y" stat="">Jana</givenName>
    <surName show="y" stat="">Hutchins</surName>
  </individualName>
  <positionName show="y" stat="">Research Specialist, Sr.</positionName>
  <organizationName show="y" stat="">Arizona State University</organizationName>
- <address show="y" stat="">
  <deliveryPoint show="y" stat="">POB 870101</deliveryPoint>
  <deliveryPoint show="y" stat="">Department of Information Technology- GIS</deliveryPoint>
  <city show="y" stat="">Tempe</city>
  <administrativeArea show="y" stat="">AZ</administrativeArea>
  <postalCode show="y" stat="">85287</postalCode>
</address>
  <phone phonetype="voice" show="y" stat="">(480) 965-9709</phone>
  <phone phonetype="fax" show="y" stat="">(480) 965-8698</phone>
  <electronicMailAddress show="y" stat="">jana.hutchins@asu.edu</electronicMailAddress>
</creator>
- <creator show="y" stat="">
  - <individualName show="y" stat="">
```

Metadata Editor Tools



[title and creator](#)[abstract](#)[abstract-keywordSet](#)[access](#)[contact](#)[coverage](#)[distribution](#)[maintenance](#)[methods](#)

title and creator

dataset

↑ ✕

alternateIdentifier

+ ↑ ✕

system ces_dataset

1

title

+ ↑ ✕

Landuse Classification 1912

creator

+ ↑ ✕

individualName

↑ ✕

salutation

+

What is your given name?

+ ↑ ✕

Cherie

surName

↑ ✕

Moritz

organizationName

+

positionName

+

[filemanager](#)[main](#)[datatable](#)[title and creator](#)[abstract](#)[abstract-keywordSet](#)[access](#)[contact](#)[coverage](#)[distribution](#)[maintenance](#)[methods](#)

abstract

dataset

↑ ✕

pubDate

↑ ✕



language

↑ ✕

abstract

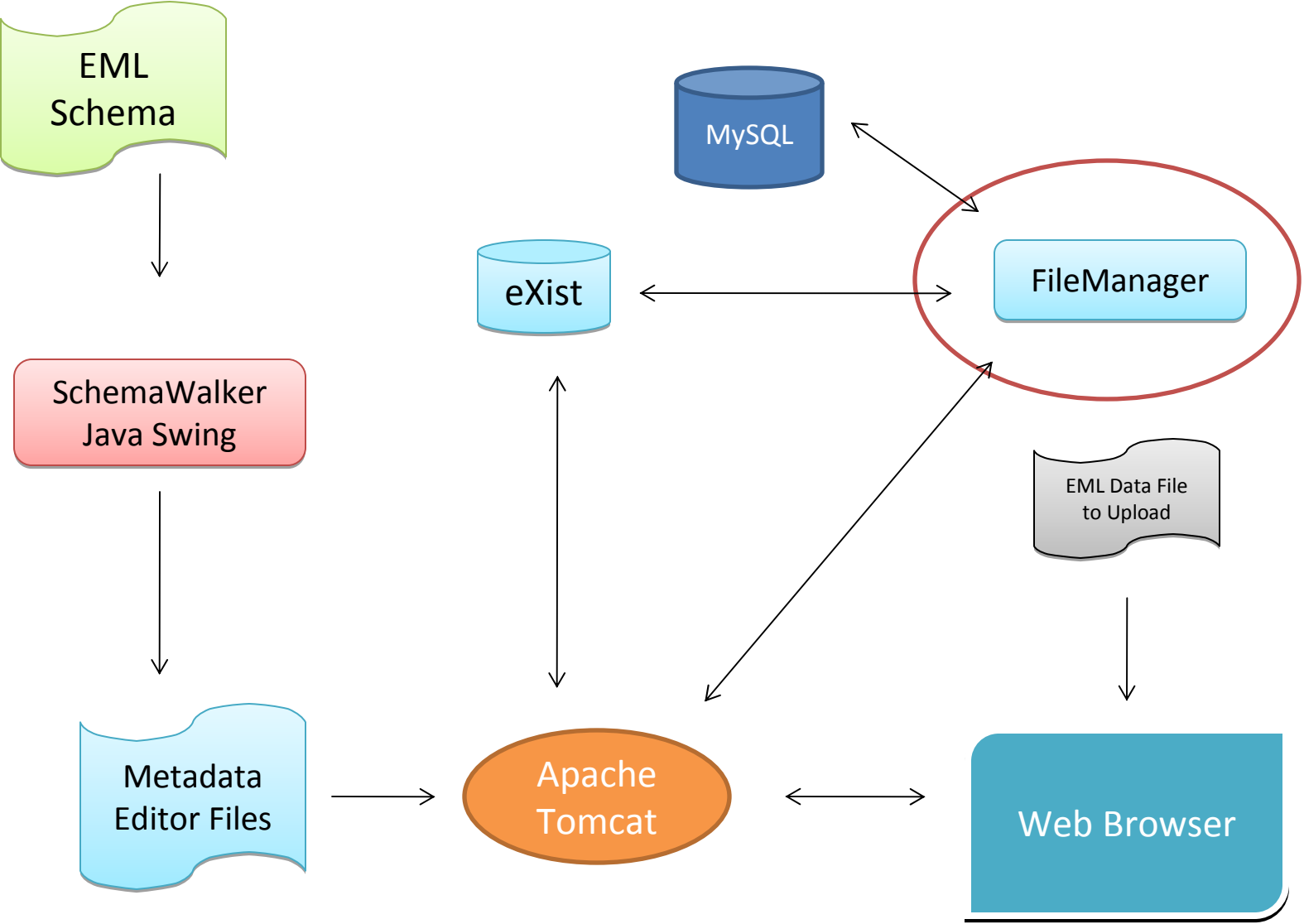
↑ ✕

para

Format Normal *I* x₂ x²  

This dataset is part of a time series of maps that encompasses the development of the entire 20th century. Landuse categories include Urban, Agriculture, Desert, and Recreation. The development of these maps is to describe the nature of the change of each category between years. Based upon available data, the years used for this dataset are 1912, 1934, 1955, 1975, and 1995. Data sources used include U.S. Soil Conservation Service air photos, USGS topographic maps, Glendale Historical Society, Salt River Project historical agricultural data, and Arizona Department of Water Resources historical agricultural data.

Metadata Editor Tools



Metadata Editor Filemanager v 0.4.0

[file](#) [home](#) [author-share](#) [user-in-group](#) [group-in-organization](#) [logout](#)

File

eXist collection

organization

group

- AZ Water Chem
- Riparian Migrate
- riparian vegetation

local file

exist alias

description or file reference list

published
 unpublished

Files									
user ↕	group ↕	organization ↕	file ↕	title ↕	description ↕	present ↕	published ↕		
guest	AZ Water Chem	AWI	1	Landuse Classification 1912		Y	N		<input type="checkbox"/>
guest	AZ Water Chem	AWI	19	Hispanic population as percentage of total population - 2000		Y	N		<input type="checkbox"/>
guest	AZ Water Chem	AWI	20	Population density, 2000, Greater Phoenix		Y	N		<input type="checkbox"/>