User’s Manual

TextGrid-Tools

Version 2009-10-25

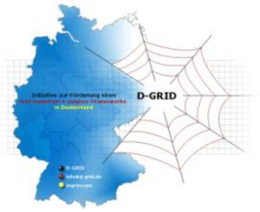
Work Package AP 2

Responsible Partners: TU Darmstadt, Saphor GmbH

TextGrid

Modular Platform for Collaborative Text Editing -

A Community Grid for the Humanities



Projekt: TextGrid

Part of D-Grid and the German e-Science Initiative

Funded by the German Federal Ministry of Education and Research (BMBF)

by Agreement 07TG01A-H

Project Duration: February 2006 - January 2009

Document status: abgeschlossen

Distribution: internal

Authors:

Wolfgang Pempe, Saphor

Thorsten Vitt, TU Darmstadt

Mirjam Blümm, Uni Würzburg

Jens Mittelbach, SUB Göttingen

Martin Haase, DAASI

Oliver Schmidt, Uni Trier

Thomas Stadtlander, Uni Würzburg

Andrea Zielinski, Christian Simon, IDS Mannheim

Table of Contents

Introduction

This user manual documents the different tools, services and applications of TextGrid from a user's perspective.

TextGrid focuses mainly on two components: *TextGridLab* (short for laboratory) as a single point of entry to the virtual research environment, provides integrated access to specialized tools, services and content, while *TextGrid Rep* (short for repository), a long-term archive for research data in the humanities, embedded in a grid infrastructure, will ensure availability and access to its research data as well as interoperability.

This report will be concerned with the former component.

The contents of this report is or will also be available in the TextGridLab's online help system.

1 The TextGridLab

TextGridLab is TextGrid's client application. It offers services and tools for specialists in the arts and humanities in a grid environment.

1.1 Download and Installation

The current beta version of the TextGridLab is available as a free download from www.textgrid.de/beta.html for various operating systems. Before you can use the software, you must install a Sun Java Runtime Environment (JRE, at least version 5)[1]. Aside from that, TextGridLab does not require installation: simply download and unpack the archive file and run the *textgridlab* application.

1.2 Your TextGrid account

A lot of functionality including read-only access to published information and working with local files is available without logging in. To be able to store your own data in the repository, however, you need to identify yourself and login. If your institution participates in the DFN Shibboleth federation, you may simply use your institutional login to do so, in any case you can request a specific TextGrid account from our web site at www.textgrid.de/beta/installation.html.

[1] Either your operating system provides means for installing a JRE, or you can download an appropriate version from http://java.com/download

1.3 User Interface Basics

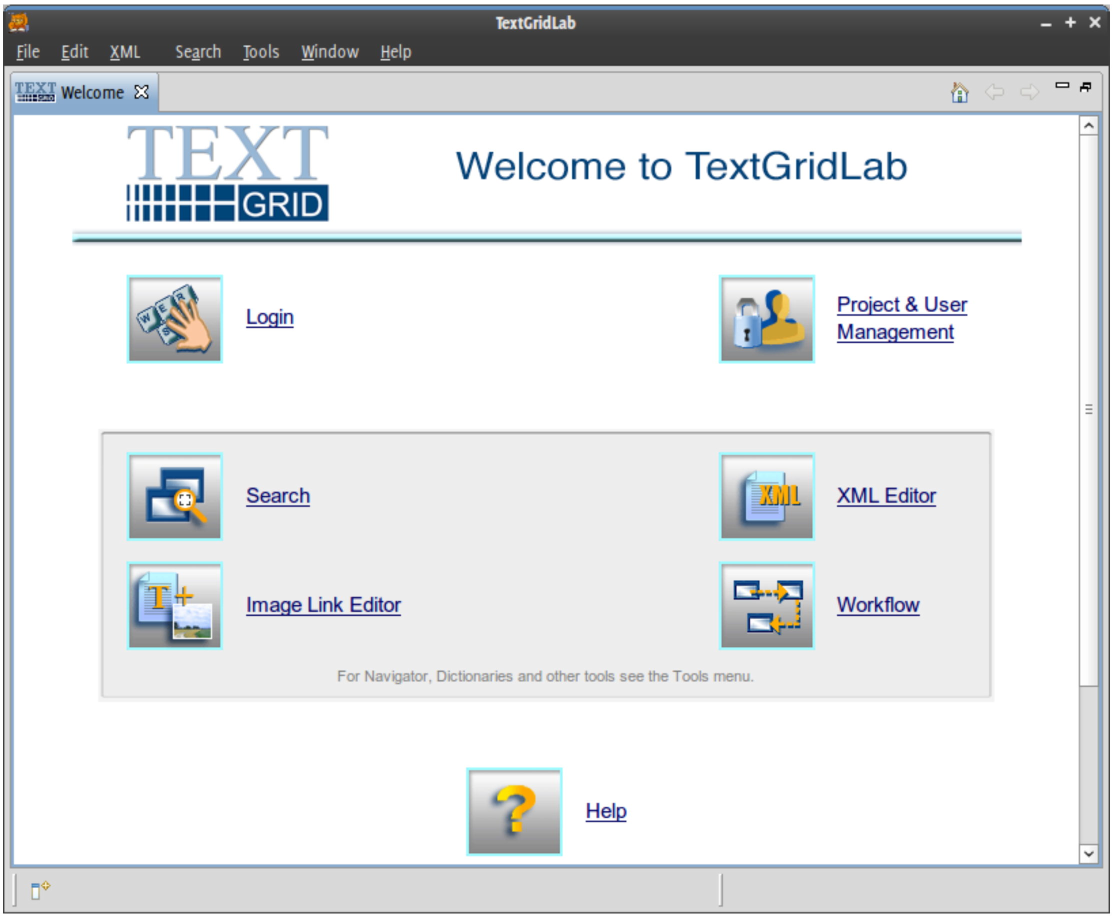

TextGridLab
File Edit XML Search Tools Window Help
Welcome
TEXT GRID
Welcome to TextGridLab
Login
Project & User Management
Search
XML Editor
Image Link Editor
Workflow
For Navigator, Dictionaries and other tools see the Tools menu.
Help

Figure 1: TextGridLab displaying the Welcome Screen.

Figure 1 shows what you see when you start the TextGridLab:

The main part of the application window is filled with the **Welcome Screen**, which provides links to the most important tools of the TextGridLab. You can login here (see p. 24, this part of the screen shows your user ID if you already have logged in), access the tool to search through TextGrid, switch to the XML editor or call the online help.

1.3.1 Managing User Interface Components

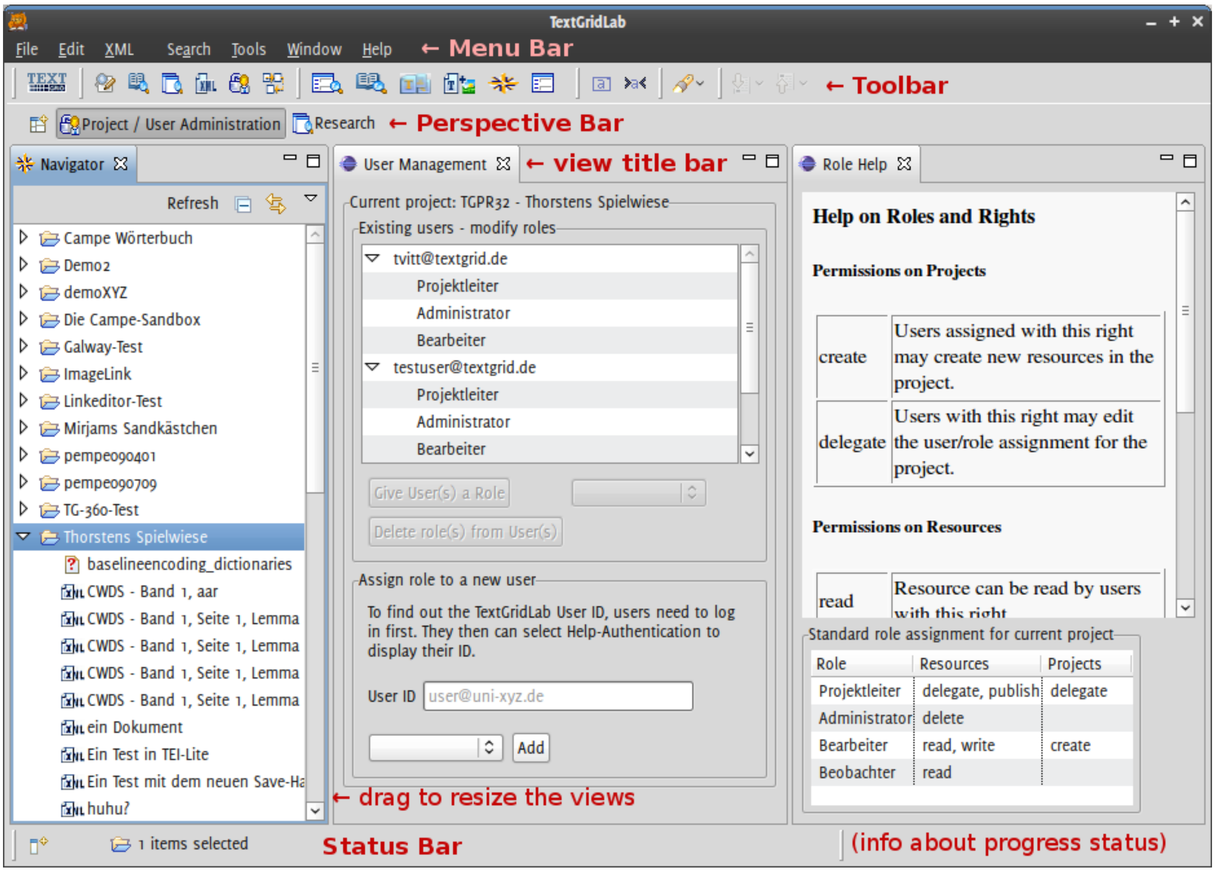
Figure 2 shows what you see when you click on the *Project & User Management* link on the welcome screen (this tool is described in detail in the section *Project and User Management* on p. 24 ff).[2]

The *menu bar* at the top of the screen offers hierarchical access to most of TextGridLab's functionality. The *toolbar* below offers quick access to the most used tools and components plus additionally some tool-specific functions.

Use the *perspective bar* below to switch between tools you already used in this session – the concept of perspectives is explained in more detail below.

The TextGridLab's user interface builds on the principle of re-use of components: There are rather small components with a specific functionality that are re-used in various tools.

[2] TextGridLab's UI is based on the principles of the Eclipse integrated development environment, if you are already familiar with Eclipse you may just flip through this section.



Current project: TGPR32 - Thorstens Spielwiese

To find out the TextGridLab User ID, users need to log in first. They then can select Help-Authentication to display their ID.

User ID user@uni-xyz.de

Help on Roles and Rights

Permissions on Projects

create	Users assigned with this right may create new resources in the project.
delegate	Users with this right may edit the user/role assignment for the project.

Permissions on Resources

read	Resource can be read by users with this right

Standard role assignment for current project

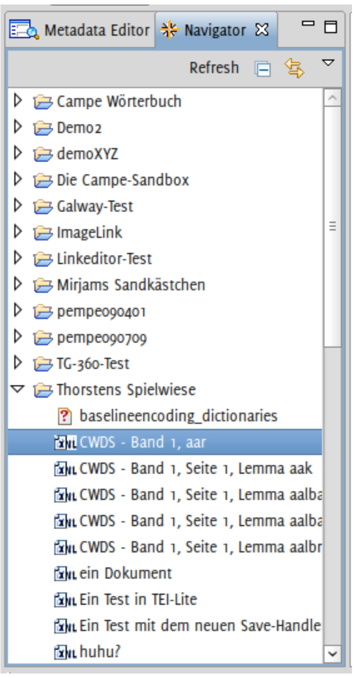
Role	Resources	Projects
Projektleiter	delegate, publish	delegate
Administrator	delete	
Bearbeiter	read, write	create
Beobachter	read	

Figure 2: TextGridLab's user interface components exemplified by the project administration tool.

For example, there is the *Navigator* (described in section Navigator on p. 22) that can be used to browse through projects and objects therein. This component is displayed in (e.g.) the project and rights management tool (as on the left side in Figure 2), the workflow editor and the text-image link editor. Building blocks like this are called **views**. The other views in Figure 2 are labeled User Management and Role Help.

The application screen is mainly an arrangement of these views, plus fixed components like menu, toolbar and status line. Each view has a *title bar*. You can move a view to another region of the screen by dragging its title bar with the mouse. Resize views by dragging the border between screen components, or temporarily maximize or minimize a view by clicking on the □ or – icons, respectively. Use the ✕ icon to remove a view from your screen – you can bring it up again using the respective menu item from the Tools menu.

Multiple views can be stacked on top of each other. If you do that, only the topmost one of these views is visible. Click on a background view's title bar to make it visible.



Campe Wörterbuch
Demo2
demoXYZ
Die Campe-Sandbox
Galway-Test
ImageLink
Linkeditor-Test
Mirjams Sandkästchen
pempe090401
pempe090709
TG-360-Test
Thorstens Spielwiese
baselineencoding_dictionaries
CWDS - Band 1, aar
CWDS - Band 1, Seite 1, Lemma aak
CWDS - Band 1, Seite 1, Lemma aalba
CWDS - Band 1, Seite 1, Lemma aalba
CWDS - Band 1, Seite 1, Lemma aalbr
ein Dokument
Ein Test in TEI-Lite
Ein Test mit dem neuen Save-Handle
huhu?

Figure 3: Navigator and Metadata Editor stacked.

1.3.2 Perspectives and Editors

A specific arrangement of user interface components can be saved as a *perspective*. TextGridLab uses perspectives for the various tools: E.g., there is a project management perspective that displays the navigator, the user management view and the role help (cf. Figure 2); and there is a link editor perspective (cf. section Image Link Editor on p. 44 ff.) that combines the navigator with views for image and text.

If you open an object in the XML editor, the user interface part that displays the XML content is an *editor*. Editors are close relatives to views, with (from a user's perspective) just a few differences: Unless re-arranged, all editors open in a central area typically in the middle of the screen as tabs on top of each other. While you typically have one view of a kind whose contents depends on the selected object, you'll open a separate editor for each object you want to edit. The editor will stay open until you explicitly close it or the software.

Editors can contain unsaved content, in this case their title is marked with an asterisk (*).

1.3.3 Selection and the Context Menu

Large parts of user interface's contents and functionality depend on the current *selection*. To select something in a list or tree, single-click it, to select multiple objects, control-click them (command-click on a Mac) or use shift-click to select a range of objects. You can also combine the control and shift keys with the cursor and space keys to select without using the mouse. In a text editor, you can select by simply dragging the mouse or using shift and the cursor keys.

E.g., the User Management view always shows the context information about the currently selected project, if you select another project, the view updates its contents.

2 Tools

2.1 *XML Editor*

The XML Editor is an interactive tool for viewing XML files and for creating new data or annotating text retrospectively in XML.

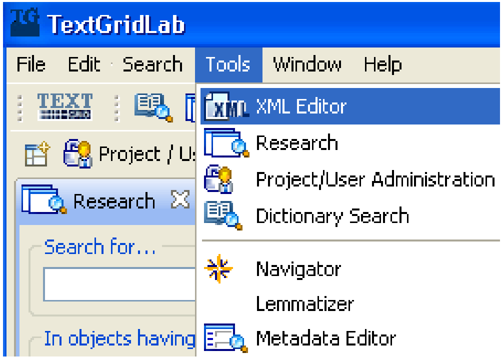
TextGrid's XML editor is based on the Eclipse Web Tools Platform Project[3] and Vex[4] by John Krasnay et al.

2.1.1 How to Open the XML Editor

The *XML Editor* can be opened

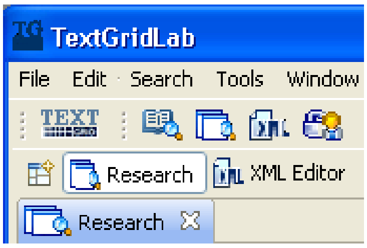
by clicking on the *XML* icon in the *Welcome Screen* of the *TextGridLab*;

or directly in the *TextGridLab* by selecting "Tools" from the menu bar and clicking on "XML Editor";



rsp. by clicking on the *XML* icon in the tool bar below;

Once the perspective has been opened, it can be easily accessed by clicking the "XML Editor" tab in the perspective switch bar, even if another perspective is active at the time.



2.1.2 Editing XML Files

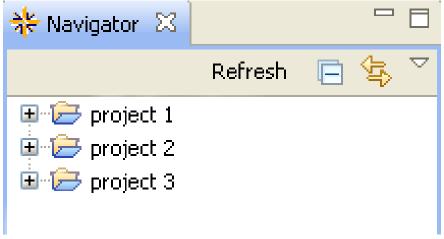
2.1.2.1 How to open XML files

To open an existing XML document in the *XML editor*

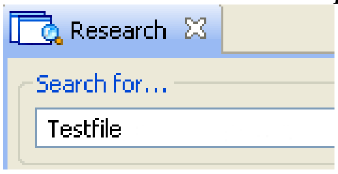
[3] http://www.eclipse.org/webtools

[4] http://vex.sourceforge.net/

either use the Navigator and choose a file from the listed projects,



or browse the *TextGridRep* with the Search Tool.



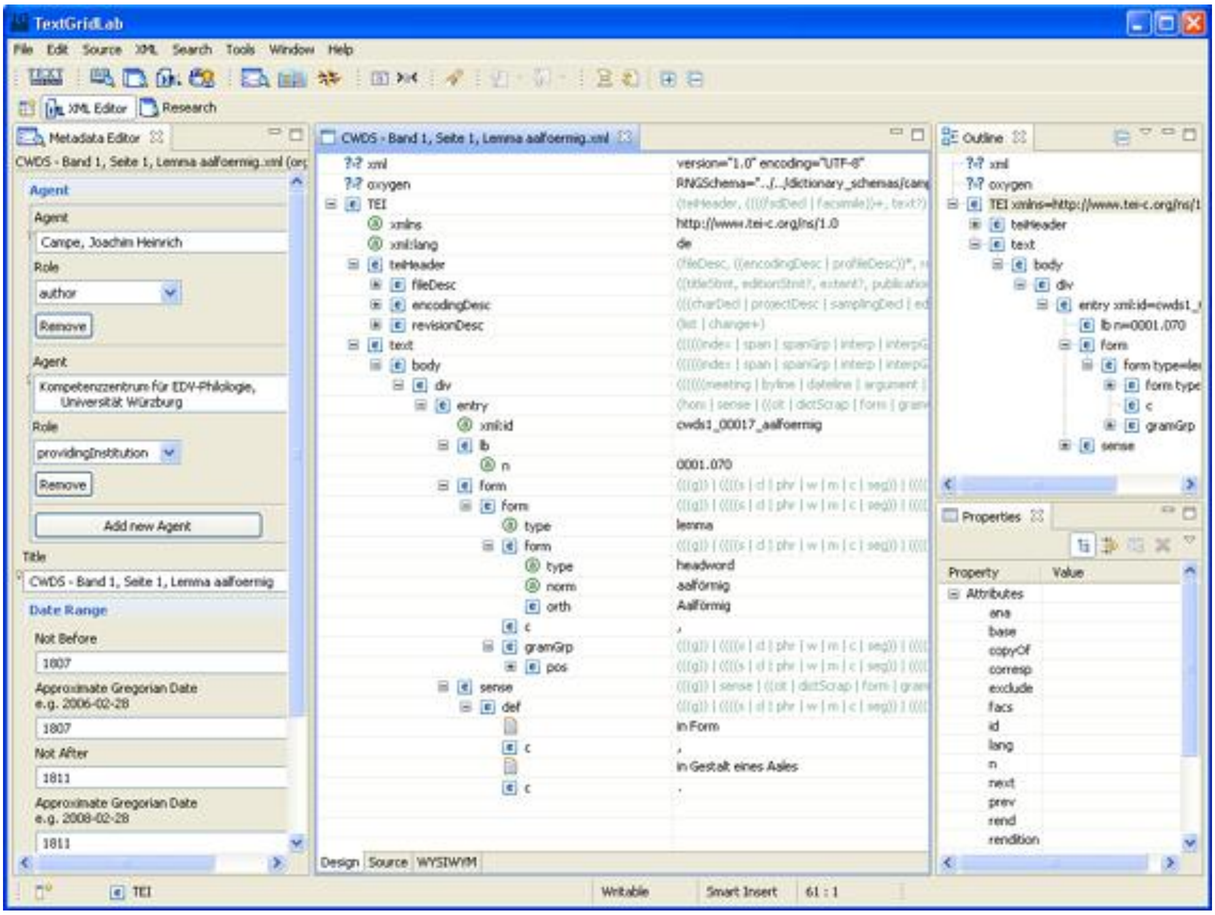
Search for...

Testfile

Note: In order to create a new document, see Managing (Adding, Copying, Publishing) Resources in a Project.

2.1.2.2 The Views of the XML editor *Perspective*

The document is displayed in the XML-Editor Perspective, which again is divided in several views.



CWDS - Band 1, Seite 1, Lemma aalfoermig.xml (org

Agent

Agent: Campe, Joachim Heinrich
Role: author
Remove

Agent: Kompetenzzentrum für EDV-Philologie, Universität Würzburg
Role: providingInstitution
Remove

Add new Agent

Title: CWDS - Band 1, Seite 1, Lemma aalfoermig

Date Range

Not Before: 1807
Approximate Gregorian Date e.g. 2006-02-28: 1807
Not After: 1811
Approximate Gregorian Date e.g. 2008-02-28: 1811

CWDS - Band 1, Seite 1, Lemma aalfoermig.xml

```
?-? xml                          version="1.0" encoding="UTF-8"
?-? oxygen                       RNGSchema="../../dictionary_schemas/cam
⊟ TEI                            (teiHeader, (((fsdDecl | facsimile))+, text?)
    xmlns                        http://www.tei-c.org/ns/1.0
    xml:lang                     de
  ⊟ teiHeader                    (fileDesc, ((encodingDesc | profileDesc))*, r
    ⊞ fileDesc                   ((titleStmt, editionStmt?, extent?, publicatio
    ⊞ encodingDesc               (((charDecl | projectDesc | samplingDecl | ed
    ⊞ revisionDesc               (list | change+)
  ⊟ text                         ((((index | span | spanGrp | interp | interpG
    ⊟ body                       ((((index | span | spanGrp | interp | interpG
      ⊟ div                      ((((meeting | byline | dateline | argument |
        ⊟ entry                  (hom | sense | ((oIt | dictScrap | form | gram
            xml:id               cwds1_00017_aalfoermig
          ⊟ lb
              n                  0001.070
          ⊟ form                 (((g)) | ((((s | d | phr | w | m | c | seg)) | ((((
            ⊟ form               (((g)) | ((((s | d | phr | w | m | c | seg)) | ((((
                type             lemma
              ⊟ form             (((g)) | ((((s | d | phr | w | m | c | seg)) | ((((
                  type           headword
                  norm           aalförmig
                  orth           Aalförmig
                c                ,
              ⊟ gramGrp          (((g)) | ((((s | d | phr | w | m | c | seg)) | ((((
                ⊞ pos            (((g)) | ((((s | d | phr | w | m | c | seg)) | ((((
          ⊟ sense                (((g)) | sense | ((oIt | dictScrap | form | gram
            ⊟ def                (((g)) | ((((s | d | phr | w | m | c | seg)) | ((((
                                 in Form
                c                ,
                                 in Gestalt eines Aales
                c                .
```

Outline

```
?-? xml
?-? oxygen
⊟ TEI xmlns=http://www.tei-c.org/ns/1
  ⊞ teiHeader
  ⊟ text
    ⊟ body
      ⊟ div
        ⊟ entry xml:id=cwds1_
            lb n=0001.070
          ⊟ form
            ⊟ form type=le
              ⊞ form type
                c
              ⊞ gramGrp
          ⊞ sense
```

Figure: The XML Editor perspective

On the left hand side, the Metadata Editor shows the metadata of the current document. (It can be closed while working with the XML Editor)

The three main views of the *XML editor* - the Design view, the Source view and the WYSIWYM view - are located in the centre. These views are used for editing an XML-file. You can switch between the single pages by clicking the appropriate tab on the bottom left side. Any changes you make in one view are also reflected in the other views.

The right side of the XML-Editor Perspective is again subdivided in to two smaller views, the Outline view and the Properties View below. The Outline View shows an outline of the structure in order to help facilitate XML development. You can also use the Outline view to insert and delete elements. To do so, right click the element and choose the action to be performed from the context menu. The Properties View overviews the properties of the elements. You can edit the value(s) of the properties by typing in the right column of this view.

2.1.2.3 How to Save XML files

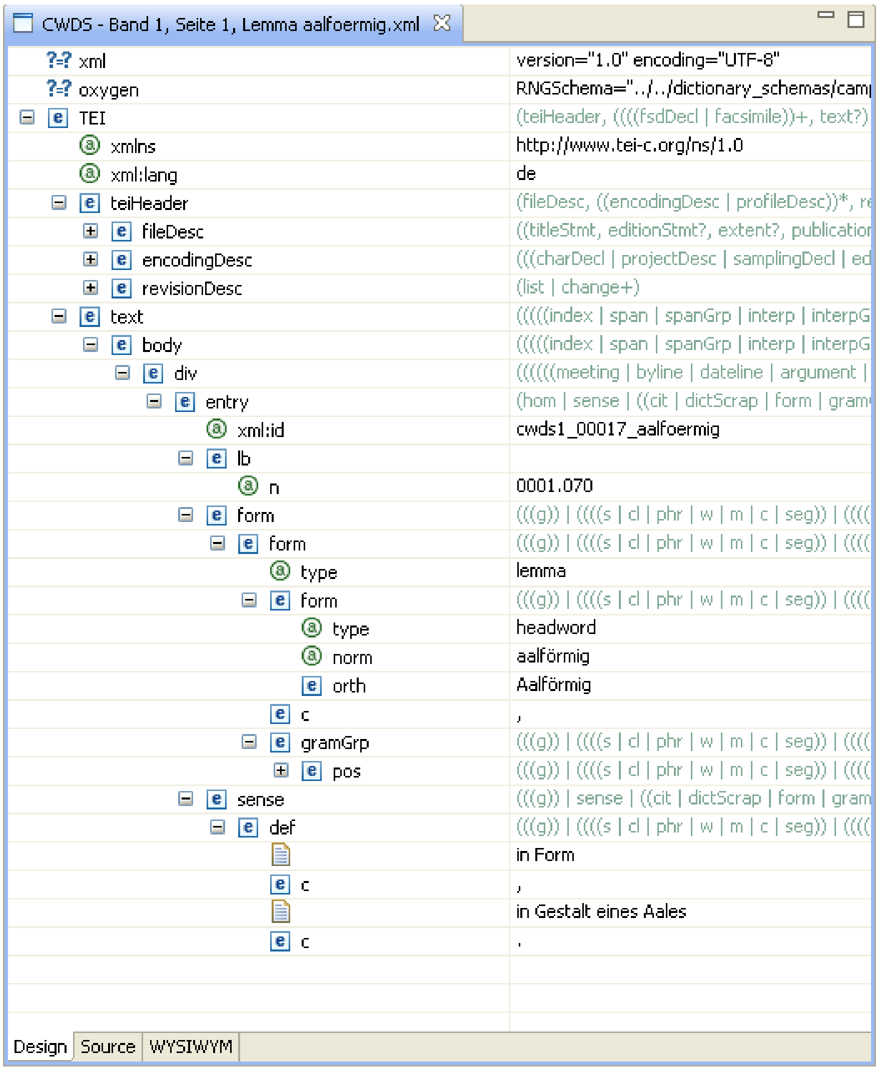
To save any changes you have made in your document, select "File" from the menu bar and choose one from the saving options.

Note: If you close a document without saving the modifications, a dialoge is brought up to remind you to save your file.

2.1.3 Editor Views

2.1.4 Design View

In the Design View, the XML file is represented as a tree, which is helpful to overview highly structured data.

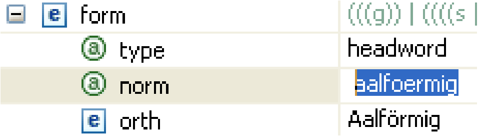


?-? xml	version="1.0" encoding="UTF-8"
?-? oxygen	RNGSchema="../../dictionary_schemas/cam
TEI	(teiHeader, ((((fsdDecl | facsimile))+, text?)
xmlns	http://www.tei-c.org/ns/1.0
xml:lang	de
teiHeader	(fileDesc, ((encodingDesc | profileDesc))*, re
fileDesc	((titleStmt, editionStmt?, extent?, publication
encodingDesc	(((charDecl | projectDesc | samplingDecl | ed
revisionDesc	(list | change+)
text	(((((index | span | spanGrp | interp | interpG
body	(((((index | span | spanGrp | interp | interpG
div	((((((meeting | byline | dateline | argument |
entry	(hom | sense | ((cit | dictScrap | form | gram
xml:id	cwds1_00017_aalfoermig
lb	
n	0001.070
form	(((g)) | ((((s | cl | phr | w | m | c | seg)) | ((((
form	(((g)) | ((((s | cl | phr | w | m | c | seg)) | ((((
type	lemma
form	(((g)) | ((((s | cl | phr | w | m | c | seg)) | ((((
type	headword
norm	aalförmig
orth	Aalförmig
c	,
gramGrp	(((g)) | ((((s | cl | phr | w | m | c | seg)) | ((((
pos	(((g)) | ((((s | cl | phr | w | m | c | seg)) | ((((
sense	(((g)) | sense | ((cit | dictScrap | form | gram
def	(((g)) | ((((s | cl | phr | w | m | c | seg)) | ((((
	in Form
c	,
	in Gestalt eines Aales
c	.

Figure: The Design View

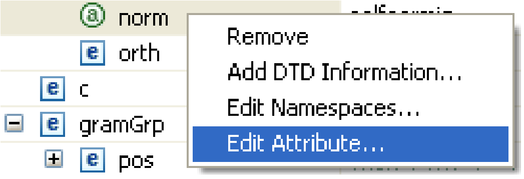
Content and attribute values can be edited

directly in the corresponding table cells of the right column,



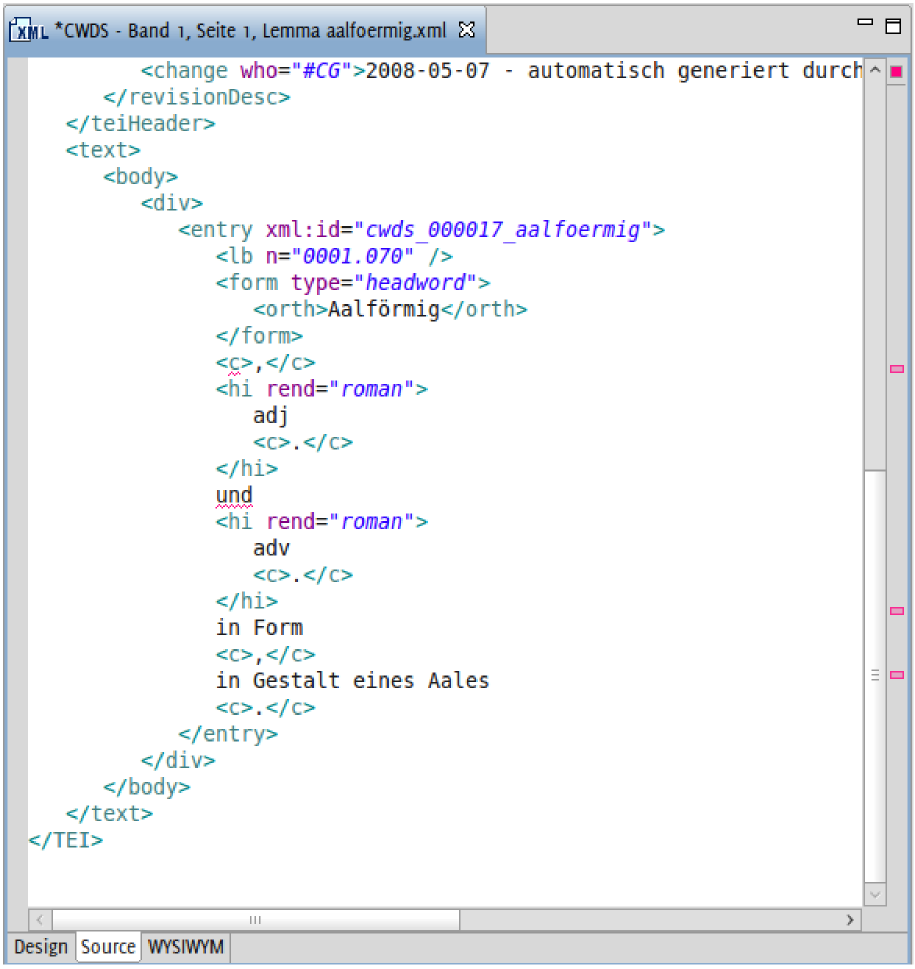
form	(((g)) | ((((s |
type	headword
norm	aalfoermig
orth	Aalförmig

or with the help of the context menu. Therefore right-click the item you wish to alter and choose the appropriate task from the menu.



2.1.5 Source View

The *Source* view enables you to view and work directly with a file's source code.



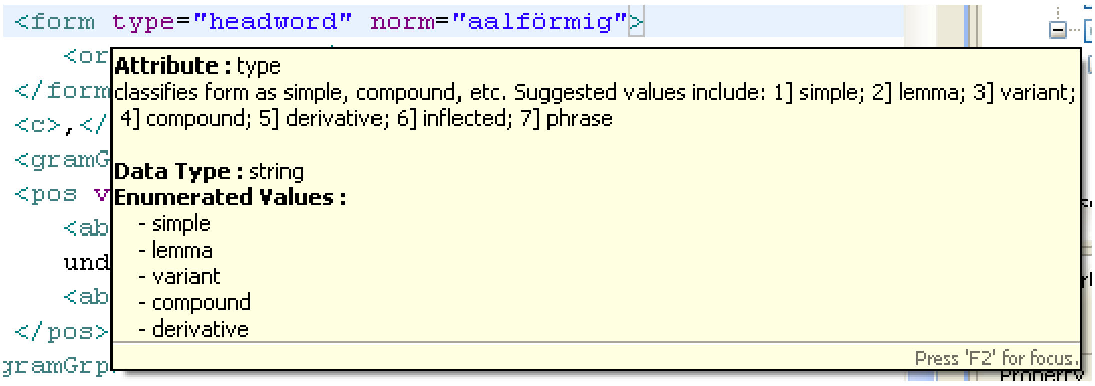
```
        <change who="#CG">2008-05-07 - automatisch generiert durch
      </revisionDesc>
    </teiHeader>
    <text>
      <body>
        <div>
          <entry xml:id="cwds_000017_aalfoermig">
            <lb n="0001.070" />
            <form type="headword">
              <orth>Aalförmig</orth>
            </form>
            <c>,</c>
            <hi rend="roman">
              adj
              <c>.</c>
            </hi>
            und
            <hi rend="roman">
              adv
              <c>.</c>
            </hi>
            in Form
            <c>,</c>
            in Gestalt eines Aales
            <c>.</c>
          </entry>
        </div>
      </body>
    </text>
</TEI>
```

Figure: The Source View

The *Source* view has many text editing features, such as:

- Syntax highlighting, i.e. each tag type is highlighted differently, enabling you to easily find a certain kind of tag for editing.
- Content assist, which helps you finish tags. The Content assist uses the information of the associated Schema to provide a list of acceptable continuations depending on where the cursor is located in an XML file, or what has just been typed. To select one of the proposed options just double-click it.
- Unlimited undo and redo, these options allow you to incrementally undo and redo every change made to a file for the entire editing session. For undo, press ctrl+Z, for redo press ctrl+Y or choose both options alternatively by selecting "Edit" in the menu bar.
- Node selection, based on the location of your cursor (or selection in the Outline view), the node selection indicator highlights the line numbers that include a node (for example, an element or attribute), in the vertical ruler in the left area of the Source view.
- "Smart" double-clicking behaviour. If your cursor is placed in an attribute value, one double-click selects that value, another double click selects the attribute-value pair, and a third double-click selects the entire tag. This makes it easier to copy and paste commonly used pieces of XML.

- Pop-up windows, which show the content model for elements and attributes



```
<form type="headword" norm="aalförmig">
```

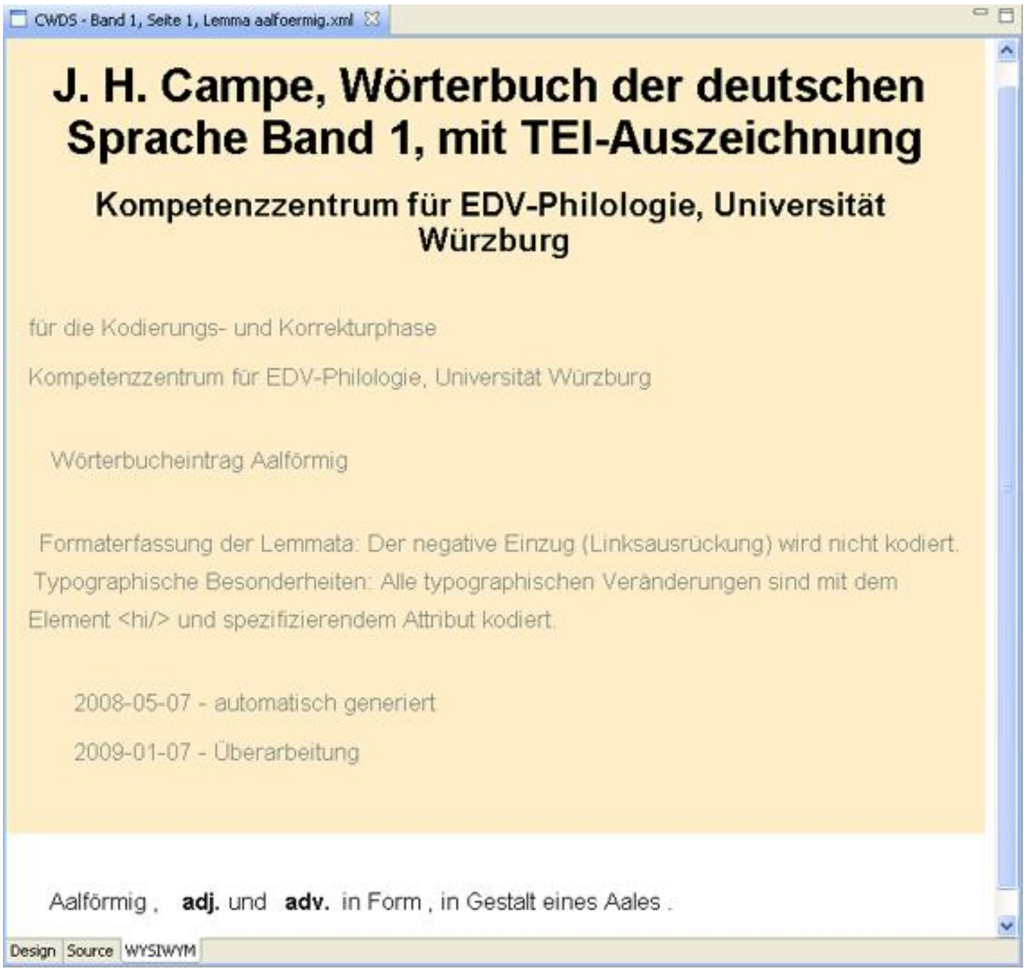
Attribute : type
classifies form as simple, compound, etc. Suggested values include: 1] simple; 2] lemma; 3] variant; 4] compound; 5] derivative; 6] inflected; 7] phrase

Data Type : string
Enumerated Values :
- simple
- lemma
- variant
- compound
- derivative

Press 'F2' for focus.

2.1.6 WYSIWYM View

The WYSIWYM (= "What You See Is What You Mean") View organises the contents of an xml-file in a structured way, according to their function. The appearance of the document is defined by a Cascading Style Sheet (CSS).



J. H. Campe, Wörterbuch der deutschen Sprache Band 1, mit TEI-Auszeichnung

Kompetenzzentrum für EDV-Philologie, Universität Würzburg

für die Kodierungs- und Korrekturphase

Kompetenzzentrum für EDV-Philologie, Universität Würzburg

Wörterbucheintrag Aalförmig

Formaterfassung der Lemmata: Der negative Einzug (Linksausrückung) wird nicht kodiert.
Typographische Besonderheiten: Alle typographischen Veränderungen sind mit dem Element <hi/> und spezifizierendem Attribut kodiert.

2008-05-07 - automatisch generiert

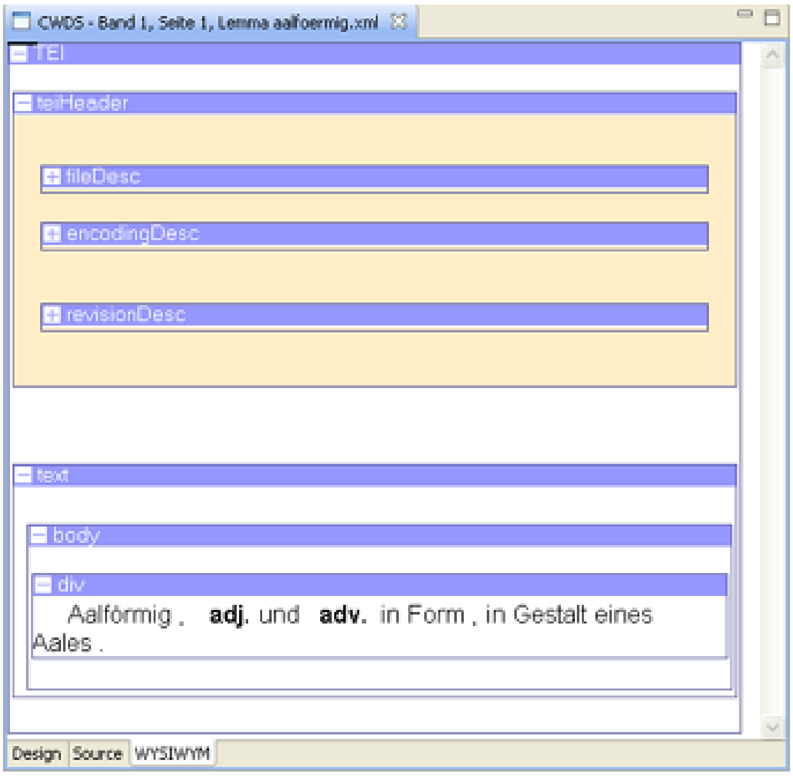
2009-01-07 - Überarbeitung

Aalförmig , **adj.** und **adv.** in Form , in Gestalt eines Aales .

Figure: The WYSIWYM View

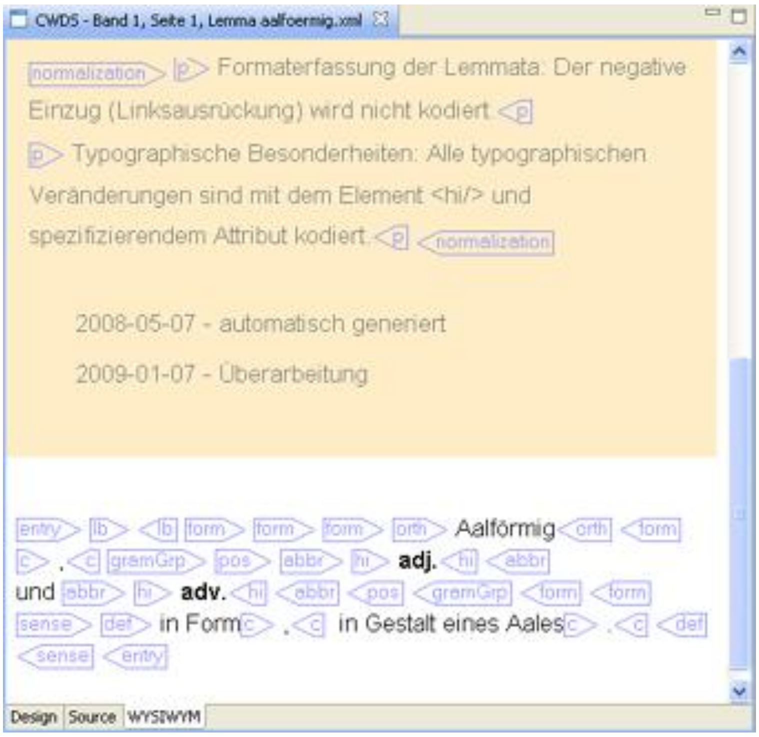
The structure of the document is visualised by two kinds of markers:

- Block Markers, which mark nested divisions of an XML-file.



Aalförmig , adj. und adv. in Form , in Gestalt eines Aales .

- Inline Markers, which mark the single elements of an XML-file.



Formaterfassung der Lemmata: Der negative Einzug (Linksausrückung) wird nicht kodiert

Typographische Besonderheiten: Alle typographischen Veränderungen sind mit dem Element <hi/> und spezifizierendem Attribut kodiert.

2008-05-07 - automatisch generiert

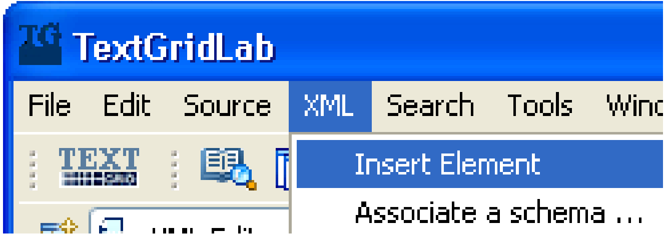
2009-01-07 - Überarbeitung

Aalförmig , adj. und adv. in Form , in Gestalt eines Aales .

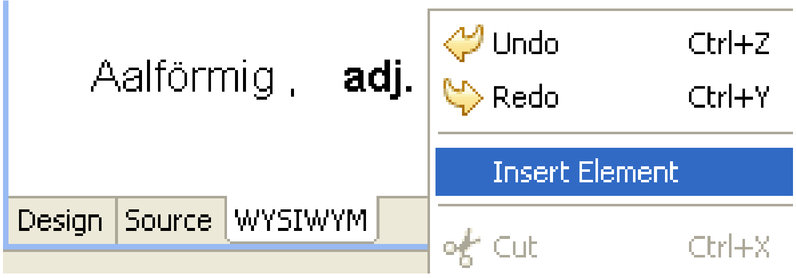
To show Block Markers, left-click the symbol a , to show Inline Markers, left-click the symbol >a< in the tool bar. To hide them, click the symbols again. Both types of markers can be activated at the same time.

Elements can be inserted by

- left-clicking "XML" in the menu bar and selecting "Insert Element",



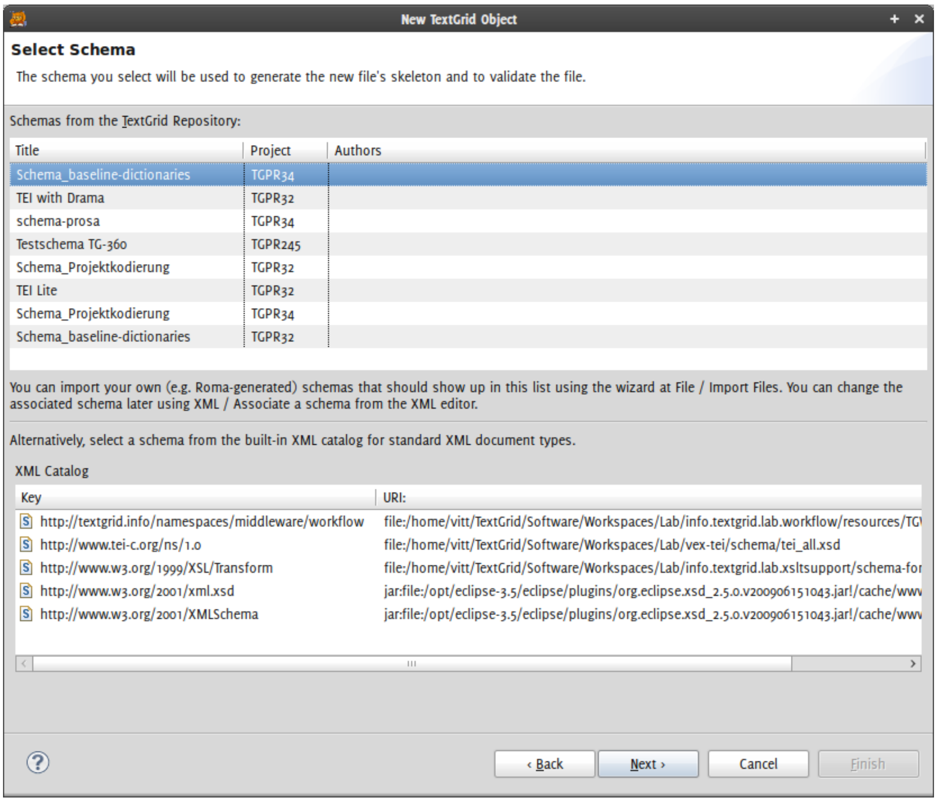
- or by right-clicking and selecting "Insert Element" in the context menu.



You can undo and redo every change made to a file for the entire editing session. For undo, press ctrl+Z, for redo press ctrl+Y or choose both options alternatively by selecting "Edit" in the menu bar or in the context menu.

2.1.7 Associating an XML Schema and Validating XML Files

A new object can be associated with a schema while it is being created. Therefor, select one of the Schemas of the TextGrid Repository or one of the build-in XML catalog.



New TextGrid Object

Select Schema

The schema you select will be used to generate the new file's skeleton and to validate the file.

Schemas from the TextGrid Repository:

Title	Project	Authors
Schema_baseline-dictionaries	TGPR34	
TEI with Drama	TGPR32	
schema-prosa	TGPR34	
Testschema TG-360	TGPR245	
Schema_Projektkodierung	TGPR32	
TEI Lite	TGPR32	
Schema_Projektkodierung	TGPR34	
Schema_baseline-dictionaries	TGPR32	

You can import your own (e.g. Roma-generated) schemas that should show up in this list using the wizard at File / Import Files. You can change the associated schema later using XML / Associate a schema from the XML editor.

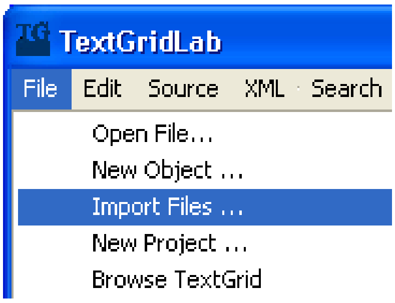
Alternatively, select a schema from the built-in XML catalog for standard XML document types.

XML Catalog

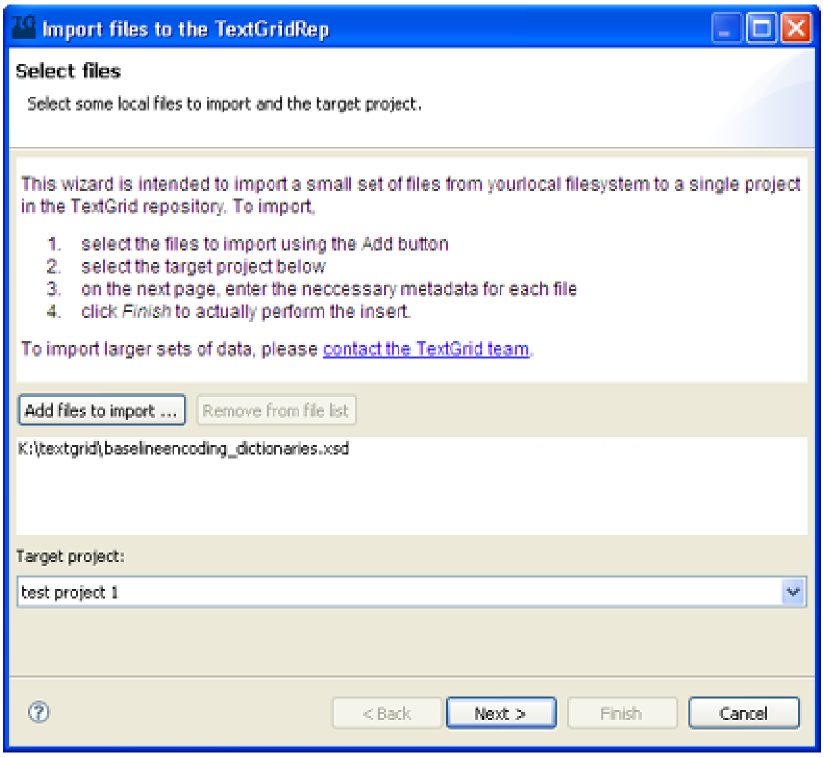
Key	URI:
http://textgrid.info/namespaces/middleware/workflow	file:/home/vitt/TextGrid/Software/Workspaces/Lab/info.textgrid.lab.workflow/resources/TG
http://www.tei-c.org/ns/1.0	file:/home/vitt/TextGrid/Software/Workspaces/Lab/vex-tei/schema/tei_all.xsd
http://www.w3.org/1999/XSL/Transform	file:/home/vitt/TextGrid/Software/Workspaces/Lab/info.textgrid.lab.xsltsupport/schema-for
http://www.w3.org/2001/xml.xsd	jar:file:/opt/eclipse-3.5/eclipse/plugins/org.eclipse.xsd_2.5.0.v200906151043.jar!/cache/www
http://www.w3.org/2001/XMLSchema	jar:file:/opt/eclipse-3.5/eclipse/plugins/org.eclipse.xsd_2.5.0.v200906151043.jar!/cache/www

Figure: Select a Schema for a new TextGrid object

If you want to associate your file against your own schema, you have to add your schema to the TextGrid Repository. In order to do so, select *Import Files* from the *File* menu,



then follow the instructions of the select files dialogue.



Select files

Select some local files to import and the target project.

This wizard is intended to import a small set of files from yourlocal filesystem to a single project in the TextGrid repository. To import,

1. select the files to import using the Add button
2. select the target project below
3. on the next page, enter the neccessary metadata for each file
4. click *Finish* to actually perform the insert.

To import larger sets of data, please contact the TextGrid team.

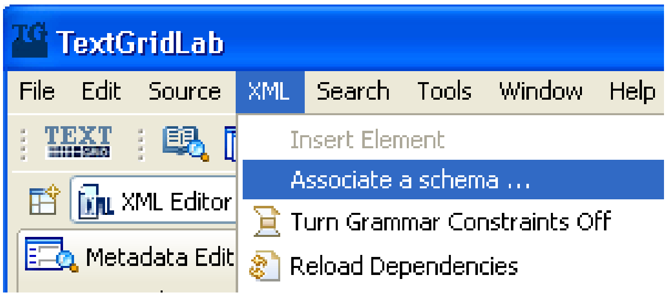
K:\textgrid\baselineencoding_dictionaries.xsd

Target project: test project 1

Figure: the select files dialogue

Note: Currently only W3C Schemas are supported in the TextGridLab[5]

To associate a Schema with an existing object, click on "XML" in the menu bar and select "Associate a schema ..."

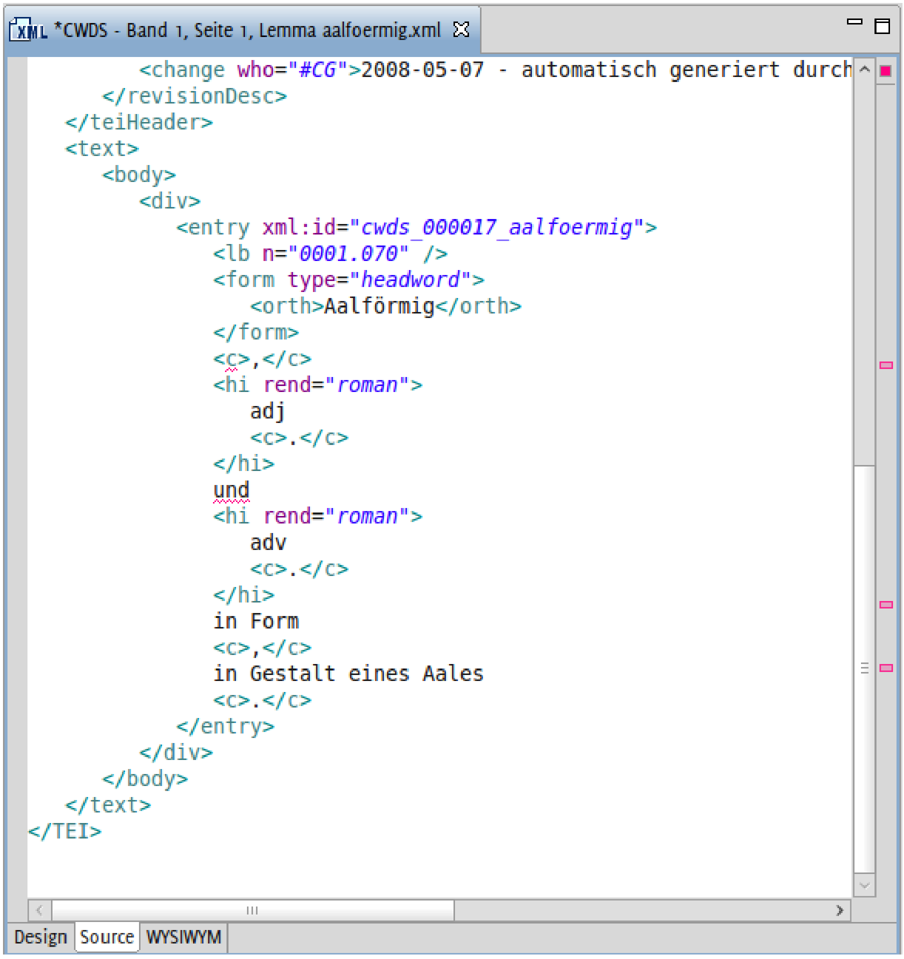


Choose one from the listed schemas and press the "OK" button.

[5] Support for DTDs and possibly Relax NG is planned.

To validate your schema, open the context menu in the *Source* view by right-clicking and select "validate".

Note: While you are working with your xml file, it is automatically validated against the associated schema. If your file is not valid, this is indicated by a red button on top of the vertical ruler in the right area of the Source view. The single errors are marked as red bars in the vertical ruler below.



```
         <change who="#CG">2008-05-07 - automatisch generiert durch
      </revisionDesc>
   </teiHeader>
   <text>
      <body>
         <div>
            <entry xml:id="cwds_000017_aalfoermig">
               <lb n="0001.070" />
               <form type="headword">
                  <orth>Aalförmig</orth>
               </form>
               <c>,</c>
               <hi rend="roman">
                  adj
                  <c>.</c>
               </hi>
               und
               <hi rend="roman">
                  adv
                  <c>.</c>
               </hi>
               in Form
               <c>,</c>
               in Gestalt eines Aales
               <c>.</c>
            </entry>
         </div>
      </body>
   </text>
</TEI>
```

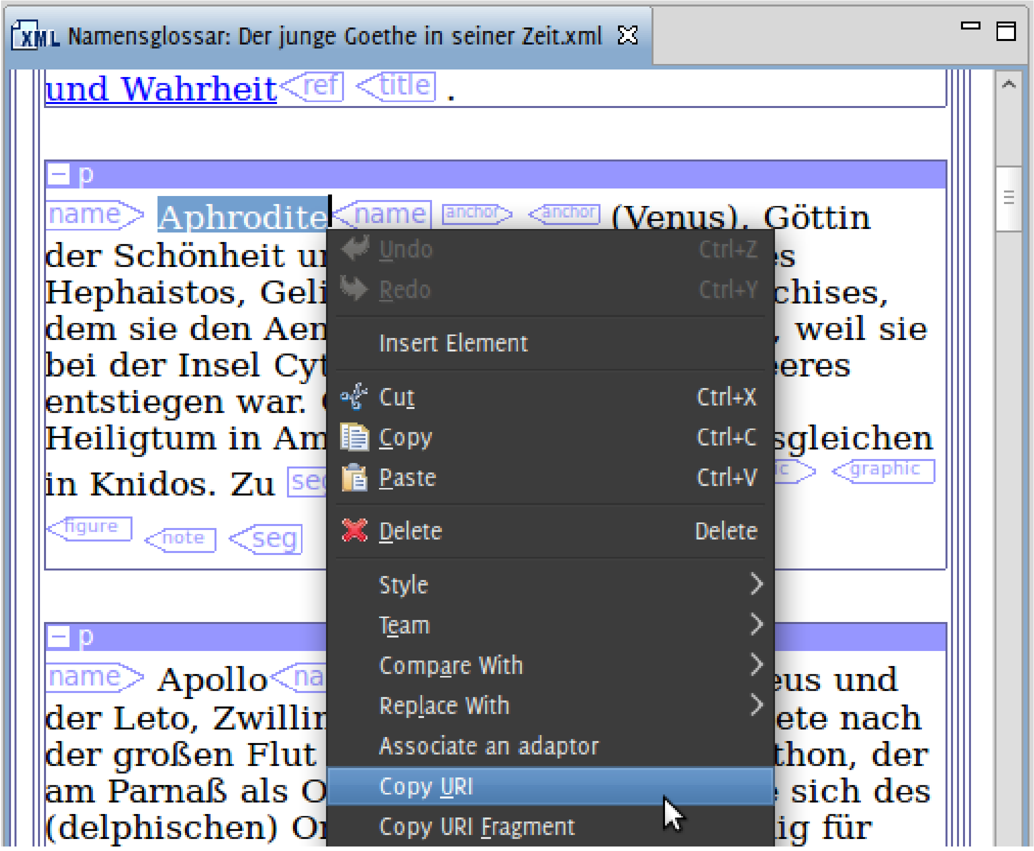
Click on the red bars to get to the location of the errors and correct them. As soon as your file is valid, the red button will disappear.

2.1.8 Text Link Editor

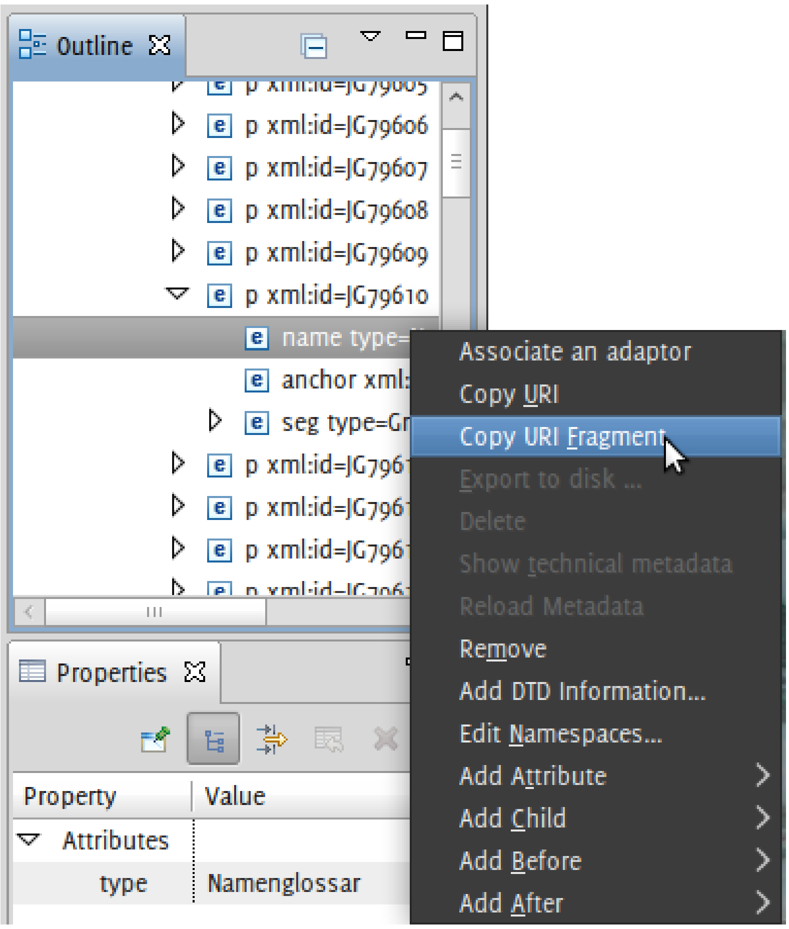
A common task in editing XML files is creating links between texts or parts of texts. For this, TextGridLab currently offers support via a versatile link and pointer generator.

In many places in the TextGridLab users can find the items *Copy URI* and *Copy URI Fragment* for this. They generate an URI, if necessary including an fragment identifier following the XPointer standard, and copy it to the clipboard.

E.g., a user might want to link to the entry for Aphrodite in a name glossary. The user can select it in the XML editor:



The same operation is also available anywhere else in the XML editor, e.g, in the source page or in the outline view:



The user can now insert the URI at the position where he wants to link to Aphrodite. The following line would be inserted in this specific case:

textgrid:Goethe-Testprojekt:Namensglossar%3A+Der+junge+Goethe+in+seiner+Zeit:20091023T174552:text%2Fxml:1#xpointer(id('JG79610')/name[1])

The URI consists of two parts: the document URI (before the #) is TextGrid's unique persistent identifier for the document in the editor, the *fragment* (after the #) indicates the position in the document.

The fragment's syntax follows the XPointer standard[6]. The fragment is generated for robustness:

(1) If the element to address has an XML ID, the fragment is simply *#id*

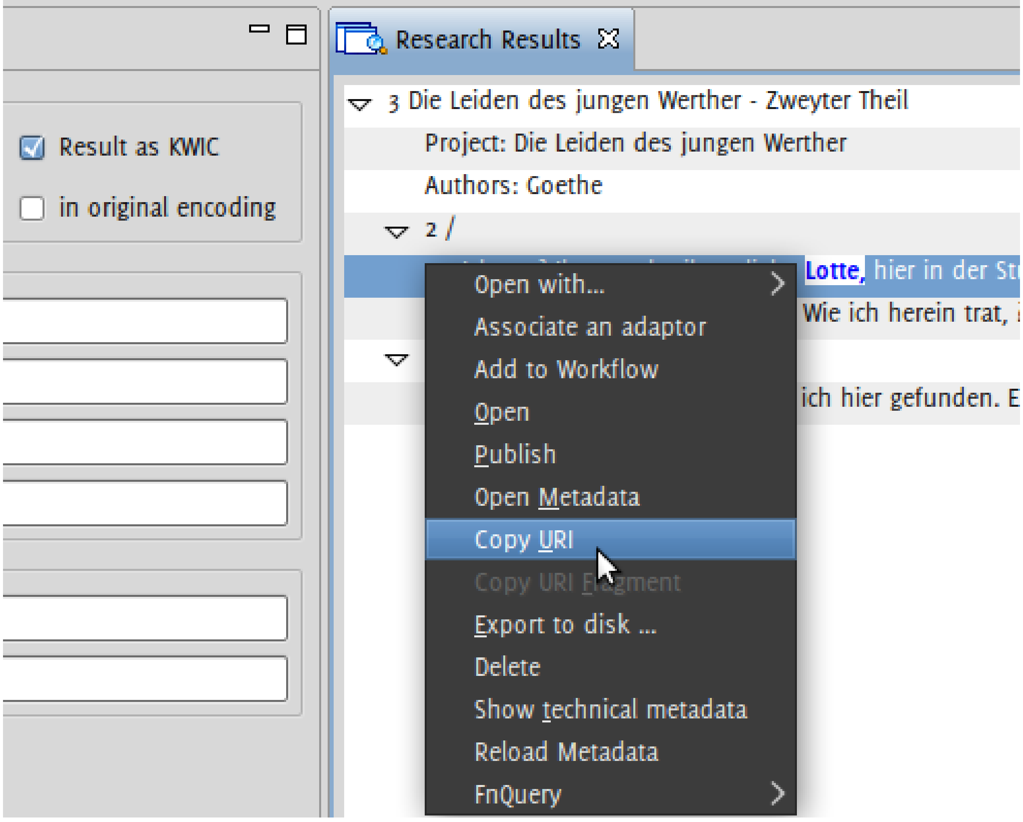
(2) Otherwise, it is an XPath from the nearest ancestor that has an ID.

2.1.8.1 Copy URI fragment: Internal Links

The *Copy URI* menu item is accompanied by the *Copy URI Fragment* command that is useful for internal links inside a document: It copies only the fragment part starting with the # sign to the clipboard. This is useful for internal links in a document that should not contain the document's URI.

2.1.8.2 Links outside the XML editor

The functionality of the link editor is not limited to the XML editor. It is available everywhere where there are TextGrid objects: e.g., in the navigator or the search results view. Applied on whole TextGridObjects, e.g., in the Navigator, users can copy the document's URI. In the search tool's KWIC view, the fragment pointing to the search result's section will be included with the URI.



[6] http://www.w3.org/TR/xptr-xpointer/

2.2 *Management/Administration*

2.2.1 Navigator

2.2.1.1 Functions

The *Navigator* is a project browser giving the users easy access to all materials related to the project they are working at. Being always present, the *Navigator* can be a starting point in TextGridLab.

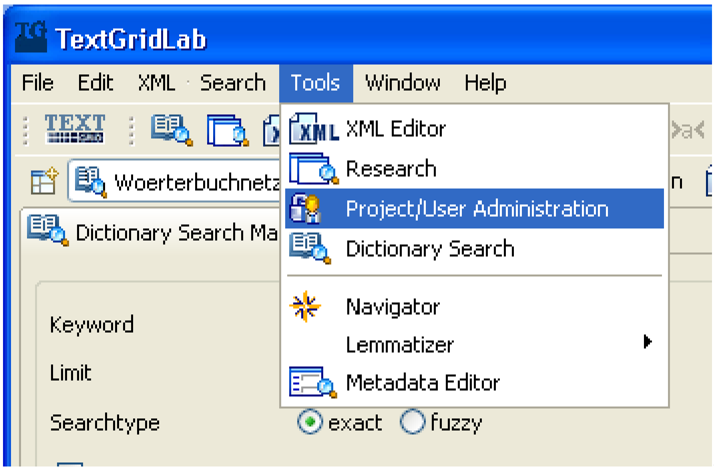
2.2.1.2 Opening the Navigator

The *navigator* is, by default, part of the *Project and User Management Module* and can be accessed:

by clicking on the *Project & User Management* icon in the *Welcome Screen*:

or, when the *Welcome Screen* is not active, by clicking on the *Project and User Management* icon in the tool bar of *TextGridLab*.

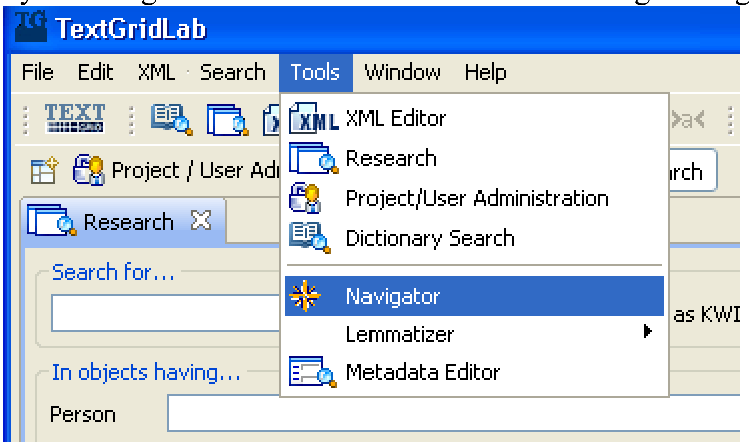
or, when the *Welcome Screen* is not active, by selecting "Project/User Management" in the menu bar of *TextGridLab*:



.

The *Navigator* can be opened in perspectives other than the *Project and User Management Module* or, if closed, re-opened:

by selecting “Tools” in the menu bar and selecting “Navigator”:

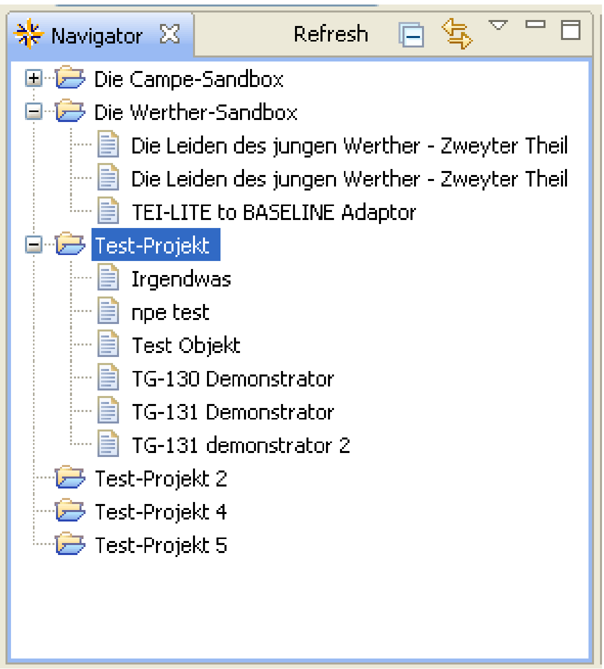


by clicking, when the *Welcome Screen* is not active, on the *Navigator* icon in the tool bar.

Note: Using the *Navigator* view requires authentication (cf. Authentication).

2.2.1.3 Browsing Your Projects

The *navigator* is used for browsing the objects of the projects that a user has rights to access. Browsing is easy and intuitive. All projects the user is entitled to access are displayed in a tree view that can be expanded or collapsed by clicking on the nodes.

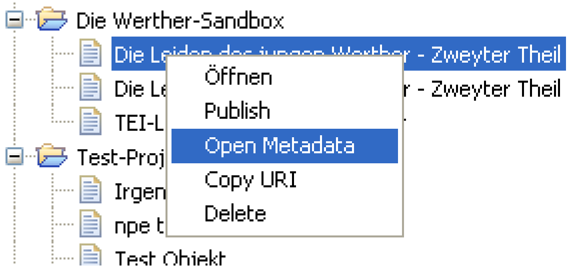


.

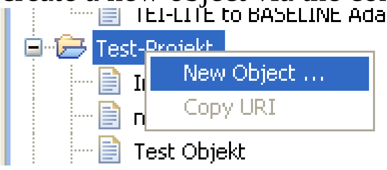
Figure: The Navigator view

Context menus will pop up when right-clicking a project or an object in the object tree. This allows a user to manage objects or create new ones:

manage objects via the context menu:



create a new object via the context menu:



Note: If someone else modifies repository contents, you might need to refresh the *Navigator* view manually. Click on "Refresh" at the top of the *Navigator* view to do so.

2.2.2 Project and User Management

2.2.2.1 Functions

2.2.2.1.1 Authenticate

TextGrid uses *Shibboleth* for authentication purposes. The Shibboleth authentication and authorization architecture allows for cross-domain single sign-on and removes the need for content or service providers to maintain user names and passwords. Users are authenticated via identity information stored with their home IdP (identity provider).

2.2.2.1.2 Create and Manage Projects

Projects in TextGrid are used to manage access to *objects* (e.g. TEI/XML texts, XSLT adaptors, images). Any TextGrid object belongs to a project. TextGrid users can start a new project in order to create or copy objects. Objects belonging to a project are listed in the *Navigator View*. Currently projects, once created, cannot be deleted.

2.2.2.1.3 Add Users to Projects and Assign Roles

The creator of a project can select other TextGrid users, associate them with the project and assign specific *roles* to them. Users to be selected must previously have logged in to TextGridLab at least once.

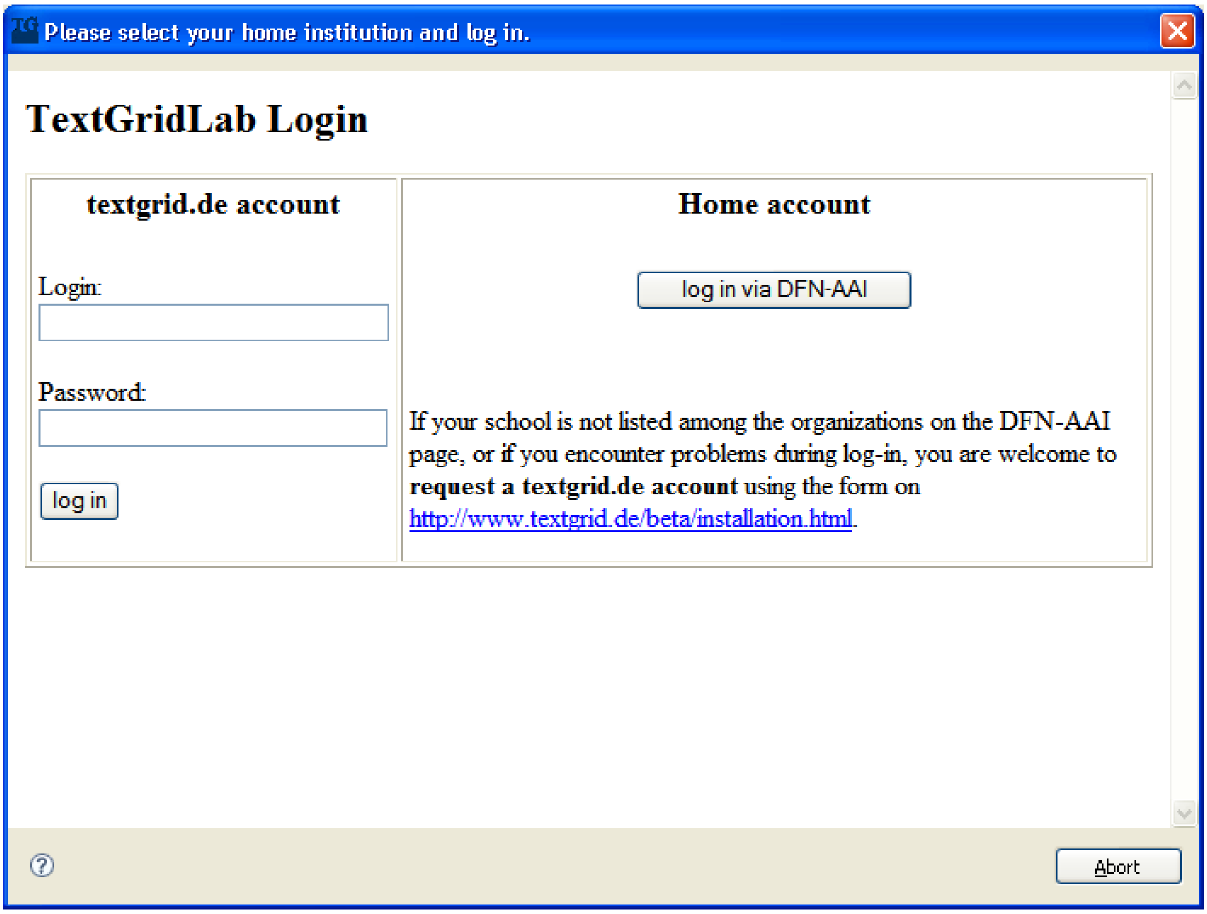
2.2.2.2 Authentication

The authentication dialogue can be brought up by:

- clicking on the *Login* icon in the *Welcome Screen* of *TextGridLab*:

- selecting a function or view that requires authentication (e.g. creating a new project, creating a new object, opening the *Navigator*),

TextGrid uses Shibboleth for single sign-on authentication purposes. In the Shibboleth model, the individual user’s home organisation (identity provider, IdP) is responsible for authenticating them – that is, (a) for checking that the credentials (a username/password combination) the user presents are correct, and (b) for passing on necessary identity information to service providers. The organisational infrastructure Shibboleth depends on has not yet been fully implemented in Germany. For this reason, the identity information of TextGrid users is, at this stage, provided by a virtual home organisation *TextGrid Community IdP*.


Please select your home institution and log in.

TextGridLab Login

textgrid.de account

Login:

Password:

Home account

If your school is not listed among the organizations on the DFN-AAI page, or if you encounter problems during log-in, you are welcome to **request a textgrid.de account** using the form on http://www.textgrid.de/beta/installation.html

Figure: Authentication dialogue

Users who have a TextGrid account with *TextGrid Community IdP* can authenticate using their individual username/password combination. You can obtain a TextGrid account using a web form at www.textgrid.de/beta/installation or sending an email with your contact details to register@textgridlab.org.

Users who do not have a TextGrid account and want to authenticate via their home organisation should click on the button *Log in via DFN-AAI*. They can then select their identity provider and log in to TextGridLab using the credentials of their home organisation.

When a user has successfully logged in, their login status and *TextGridLab User ID* are displayed on the *Welcome Screen*.

Users who have directly registered with TextGrid and are not authenticated via another IdP can change the password for their TextGrid account and update their email address. Select “Help” in the menu bar and left-click “Authentication”. An authentication information dialogue is shown that displays the user’s User ID. Click on the *Change Password* button. For safety reasons, a dialogue appears that requires you to re-authenticate. Type in your username and current password and click on *Login*. You can now update your email address and choose a new password.

In some cases it may be necessary to start a new session in *TextGridLab*. This can be achieved by re-authentication. Select “Help” in the menubar and leftclick “Authentication” for the authentication information dialogue to appear. Clicking on the *Re-Authenticate* button brings up the authentication dialogue. You can now select your identity provider “TextGrid Community IdP” in the dropdown menu. Refresh your authentication by clicking on the *Select* button.

To log out, just quit or restart the TextGridLab application or use the corresponding button in the dialog at Help / Authentication.

Note: The authentication procedure can only be executed properly if the web browser *TextGridLab* uses for displaying HTML content is set to accept cookies. Under Microsoft Windows, TextGridLab uses the rendering engine of Internet Explorer regardless of which application is the system's standard web browser. Adjust your settings using the Windows Control Panel. Select "Internet Options" and set the privacy level to "Medium" or "Medium High".

2.2.2.3 Creating a New Project

Users can create new projects at any time in *TextGridLab* by selecting "File" in the menu bar and left-clicking "New Project ...".

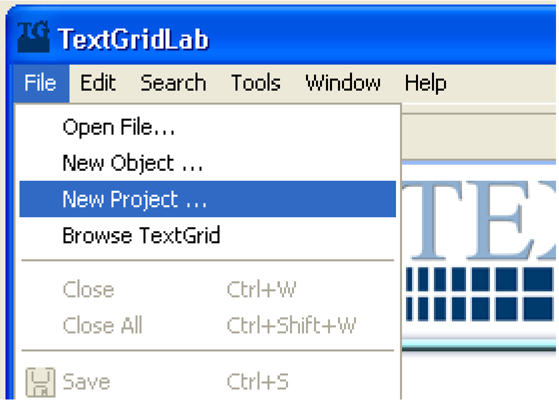
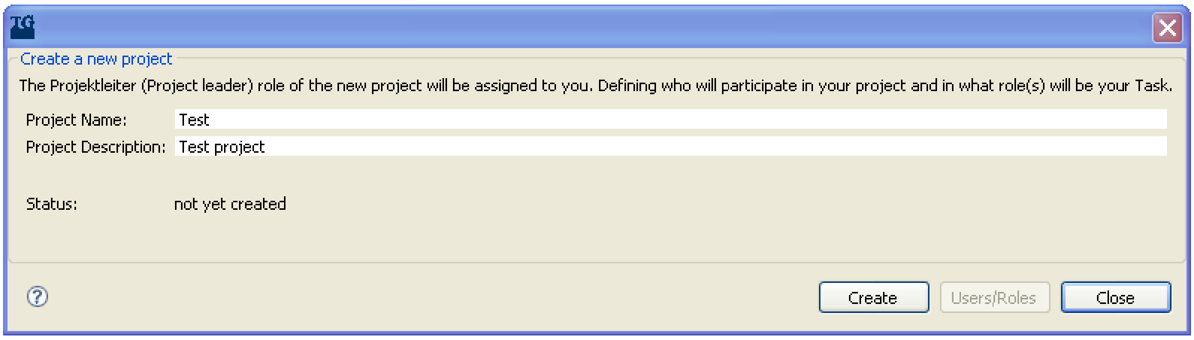


Figure: Creating a new project

A dialogue is opened. Enter a project name and a description and click on the *Create* button. If you have not logged in yet, you will now be required to authenticate (cf. Authentication). The creator is assigned the role of *Project Leader* for the new project by default (cf. Adding Users and Assigning Roles).



Create a new project

The Projektleiter (Project leader) role of the new project will be assigned to you. Defining who will participate in your project and in what role(s) will be your Task.

Project Name: Test

Project Description: Test project

Status: not yet created

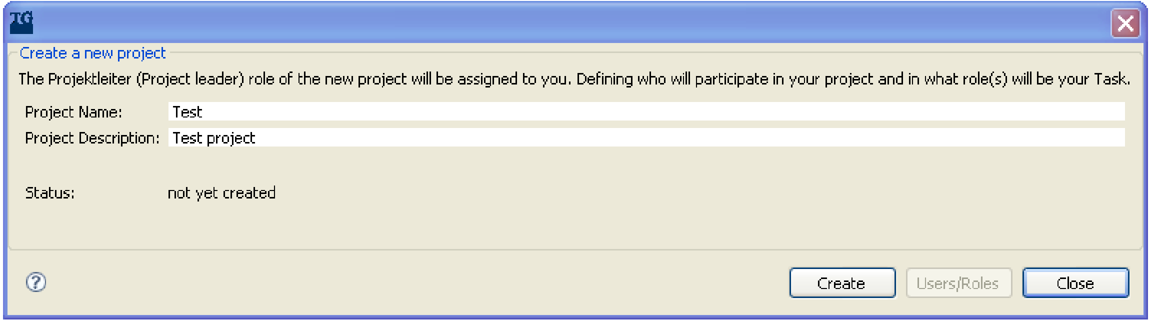
Figure: Create project dialogue

2.2.2.4 Adding Users and Assigning Roles

When a new project has been created, project users can be added and roles can be assigned to them.

The *User and Project Management* module can be accessed:

by clicking on the *Users/Roles* button in the create project dialogue (cf. Creating a New Project):



Create a new project

The Projektleiter (Project leader) role of the new project will be assigned to you. Defining who will participate in your project and in what role(s) will be your Task.

Project Name: Test

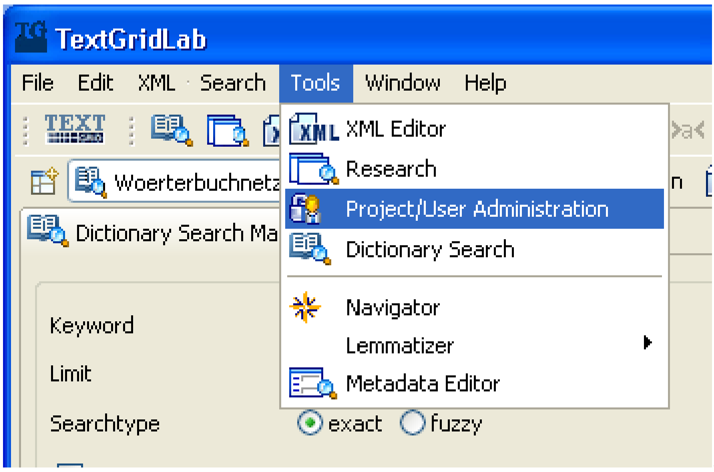
Project Description: Test project

Status: not yet created

by clicking on the *Project & User Management* icon in the *Welcome Screen*:

or, when the *Welcome Screen* is not active, by clicking on the *Project and User Management* icon in the tool bar of *TextGridLab*: .

or, when the *Welcome Screen* is not active, by selecting "Project/User Management" in the menu bar of *TextGridLab*:



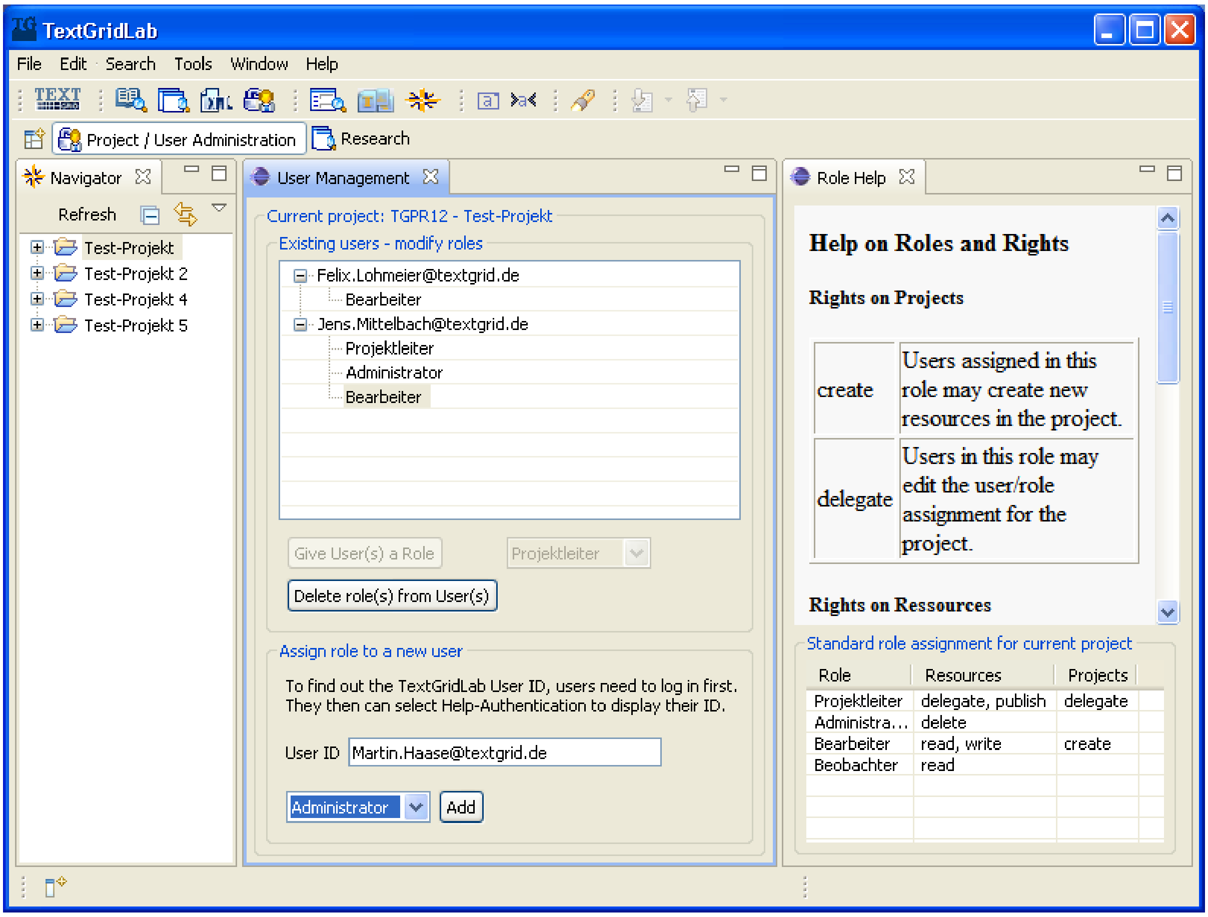
.

In the *User and Project Management* module, three *views* are enabled by default:

the *Navigator* view lists all projects the current user is entitled to view or edit,

the *User Management* view lets you add users and assign roles,

the *Role Help* view provides help on roles and access rights attached to them.



Current project: TGPR12 - Test-Projekt

Existing users - modify roles

- Felix.Lohmeier@textgrid.de
  - Bearbeiter
- Jens.Mittelbach@textgrid.de
  - Projektleiter
  - Administrator
  - Bearbeiter

Assign role to a new user

To find out the TextGridLab User ID, users need to log in first. They then can select Help-Authentication to display their ID.

User ID: Martin.Haase@textgrid.de

Administrator

Help on Roles and Rights

Rights on Projects

create	Users assigned in this role may create new resources in the project.
delegate	Users in this role may edit the user/role assignment for the project.

Rights on Ressources

Standard role assignment for current project

Role	Resources	Projects
Projektleiter	delegate, publish	delegate
Administra...	delete	
Bearbeiter	read, write	create
Beobachter	read	

Figure: TextGridLab - Project and User Management module

Note: The workspace can be adapted to individual needs. For disabling, enabling and arranging views or resetting the arrangement of views within a perspective see Editors and Views in the Workbench documentation.

In order to manage a project, select it in the *Navigator* view by left-clicking. The users associated with this project are shown in the *User Management* view. Add a new user by filling the TextGrid User ID in the field *User ID*.

Note: Please refer to the users you want to add to your project for their User IDs. The TextGrid User ID is shown in the *Welcome Screen* after logging in. It can also be retrieved by selecting "Help" in the menubar and left-clicking "Authentication".

Note: Users to be selected must previously have logged in to *TextGridLab* at least once.

There are four possible roles for users in TextGrid. Each role is invested with a set of non-hierarchical rights regarding resources and projects in TextGrid:

Project Leader → Delegate, create rights for projects; delegate, publish rights for resources (*Project Leader* is the default role for the creator of a new project).

Administrator → Delete rights for resources.

Editor → Read, write rights for resources.

Observer → Read rights for resources.

	Project Rights	**Resource Rights**
Delegate	Edit the user/role assignment for the	Modify rights for the resource.

	project.	
Publish		Publish a resource. The resource will be then world-readable and cannot be deleted or updated anymore.
Delete		Delete unpublished resources (currently not implemented).
Create	Create new projects.	Create new resources in the project.
Write		Write (i.e. update) unpublished resources.
Read		Read resources in the project.

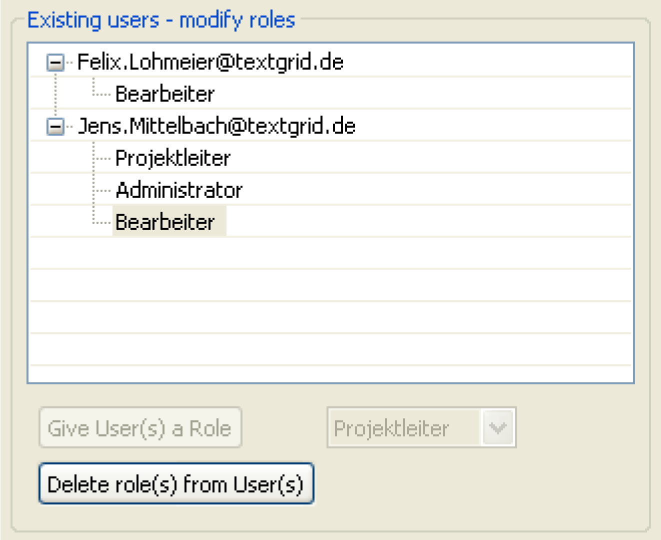
Diagram: Rights in TextGrid

Select a role for the new user in the dropdown menu below the *User ID* field and click on the *Add* button. The user can now be assigned additional roles. Select the user in the list of existing users, choose a role from the dropdown menu below the list and click on the button *Give User(s) a Role.*

Note: Rights in TextGrid are non-hierarchical. Thus, if users are meant to have full rights they must be assigned the roles *Project Leader*, *Administrator* and *Editor*.

2.2.2.5 Deleting Roles from Users

Roles with their respective rights can be withdrawn from users. Select at least one role of the user in question in the list of existing users and click on the button *Delete Role(s) from Users.*



Existing users - modify roles

- Felix.Lohmeier@textgrid.de
  - Bearbeiter
- Jens.Mittelbach@textgrid.de
  - Projektleiter
  - Administrator
  - Bearbeiter

Figure: Deleting roles from users

Note: More than one role can be selected by pressing the Ctrl key in MS Windows or Linux or the Command (⌘) key in Mac OS while leftclicking the list entries.

Removing all roles from users cancels their affiliation with a project.

The role of *Project Leader* is the default role for the creator of a project. This role can also be assigned to other users. Project creators can remove their affiliation with a project by deleting all their roles. However, at least one *Project Leader* must remain with the project. When the creator of a project cancels affiliation with it, re-authentication is necessary in order to update the project list in the *Navigator* (cf. Authentication).

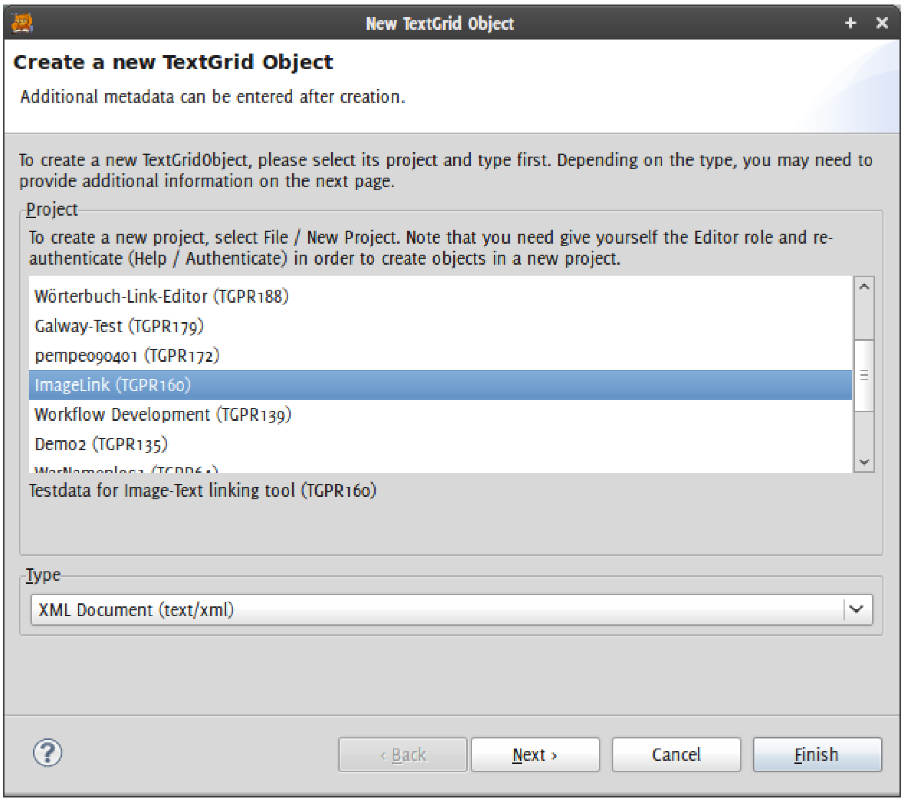
2.2.2.6 Managing (Adding, Copying, Publishing) Resources in a Project

When the new project has been created, TextGrid objects (e.g. TEI/XML texts, XSLT adaptors, images) can be added or an existing object belonging to another project can be copied into the new project.

Create a new object either by selecting “File” in the menu bar and left-clicking “New Object ...” or by right-clicking anywhere in the Navigator window and selecting “New Object ...” from the context menu.

Note: If you want to create a new object using the menu bar and have not logged in yet, you will now be required to authenticate (cf. Authentication). Also make sure that you have appropriate rights for creating objects (cf. Adding Users and Assigning Roles).

A dialog opens:



New TextGrid Object

Create a new TextGrid Object

Additional metadata can be entered after creation.

To create a new TextGridObject, please select its project and type first. Depending on the type, you may need to provide additional information on the next page.

Project

To create a new project, select File / New Project. Note that you need give yourself the Editor role and re-authenticate (Help / Authenticate) in order to create objects in a new project.

- Wörterbuch-Link-Editor (TGPR188)
- Galway-Test (TGPR179)
- pempe090401 (TGPR172)
- ImageLink (TGPR160)
- Workflow Development (TGPR139)
- Demo2 (TGPR135)

Testdata for Image-Text linking tool (TGPR160)

Type: XML Document (text/xml)

Figure: Create object wizard

If the project that is to contain the new object is not pre-selected in the create object dialogue, left-click it now. Select the object type in the dropdown menu *Type* and click on the button *Next* for assinging metadata (cf. Creating Metadata) and a schema (cf. Associating an XML Schema and Validating XML Files) to the new object.

Note: Metadata and a schema can be added later. You can click on the button *Finish* at any time.

After finishing the *Create Object* wizard, click on the button *Finish*. A new perspective is opened showing the *Metadata Editor* and the *XML Editor*. Now you can start editing the object (cf. documentation of Metadata Editor and XML Editor).

Copying an object from another project is to be a standard function of TextGridLab. At this stage, however, it has not yet been implemented.

Objects can be published in order to be readable for the general public. Published objects in TextGrid cease to be editable and cannot be deleted any longer. Publish an object by right-clicking it in the *Navigator* or in the *Search Results* view of the *Search* module (cf. documentation of Search module) and selecting “Publish”.

Although a role invested with delete rights (Administrator) has been defined within the roles and rights concept of TextGrid, at this stage deleting objects is not possible.

2.2.3 Metadata Editor

2.2.3.1 Functions

2.2.3.1.1 Create and Update Metadata for Objects

The *Metadata Editor* is used to create and manage the baseline metadata elements of TextGrid objects. This metadata is used in TextGrid for cross-project searches. The metadata input form can be easily adjusted to individual needs.

2.2.3.1.2 Export Metadata to the TEI Object File

There is no automatic export of metadata created with the *Metadata Editor* to the respective TEI object file. However, the metadata can be exported manually to the header of a TEI file by a single click.

2.2.3.2 Opening the Metadata Editor

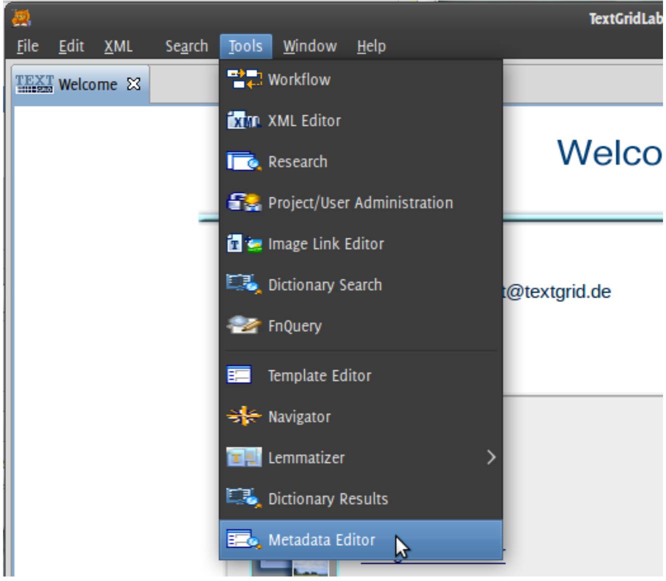
The *Metadata Editor* is, by default, part of the *XML Editor* perspective and can be accessed:

1. by clicking on the *XML Editor* icon in the *Welcome Screen*, or, when the *Welcome Screen* is not active, in the toolbar of *TextGridLab*:

2. by creating a new object (cf. documentation of *Project and User Management*, ch. Managing (Adding, Copying, Publishing) Resources in a Project).

The *Metadata Editor* can be opened in other perspectives than the *XML Editor* or, if closed, re-opened in the *XML Editor* perspective:

1. by selecting “Tools” in the menu bar and selecting “Metatdata Editor”:



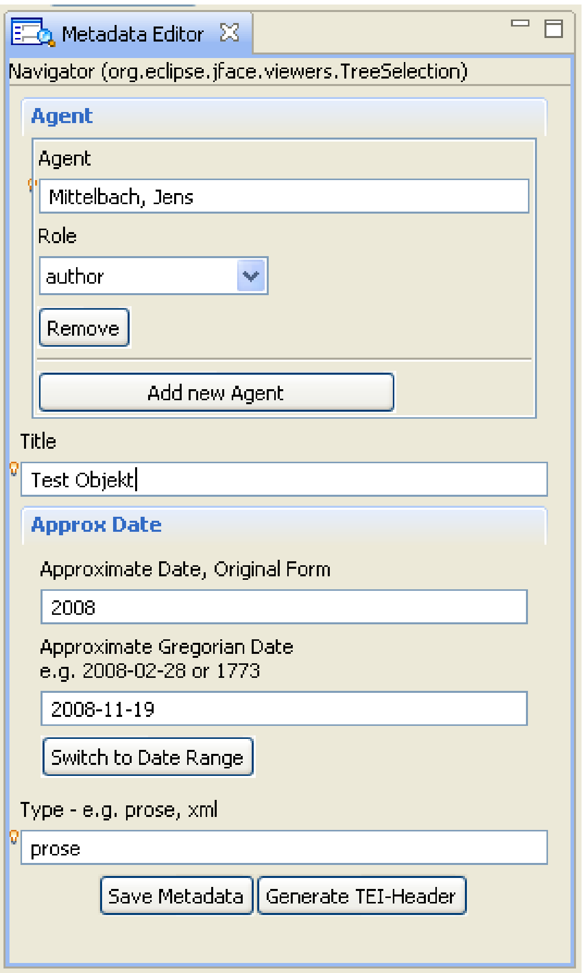
2. by clicking, when the *Welcome Screen* is not active, on the *Metadata Editor* icon in the tool bar:

Note: In order to load object metadata into the *Metadata Editor* you must authenticate and select a TextGrid object for editing (cf. Authentication).

2.2.3.3 Creating Metadata

In the *Metadata Editor* view, the following baseline metadata can be attached with TextGrid objects:

1. names of agents and their roles (author, contributor, editor, illustrator, translator, providing institution, other) (repeatable element),
2. object title,
3. date or date range of object,
4. text type of object.



Metadata Editor

Navigator (org.eclipse.jface.viewers.TreeSelection)

Agent: Mittelbach, Jens

Role: author

Title: Test Objekt

Approximate Date, Original Form: 2008

Approximate Gregorian Date e.g. 2008-02-28 or 1773: 2008-11-19

Type - e.g. prose, xml: prose

Figure: Metadata Editor view

The *Agent* element is a repeatable metadata element. Add further agents by clicking on the *Add New Agent* button. Type in the agent's name and select the appropriate role for the agent in the respective dropdown menu *Role*.

Note: Personal names should be typed in the form *surname, first name middle name*.

The *Title* element should be used for the title and subtitle(s) of the object.

You can specify dates or date ranges for an object. The first date field *Approx Date* in can be used for non-standard date specifications or text strings (e.g. "The Ides of March"). This field is optional. The second date field is mandatory. At least a year must be specified as a four-digit number.

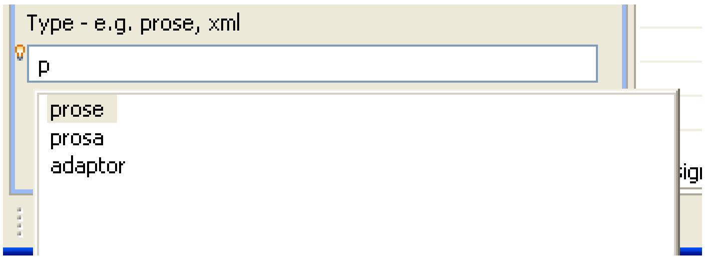
Click on the button *Switch to Date Range* for date range fields. Again, the optional first and third date fields (*Not before*, *Not After*) are for non-standard date specifications or text strings whereas the mandatory *Approximate Gregorian Date* fields need to contain at least four numerals specifying a year.

Note: Possible values for *Approximate Gregorian Date* fields:

- year (four digits)-month (two digits)-day (two digits), e.g. 2009-01-21;
- year (four digits)-month (two digits), e.g. 2009-01;
- year (four digits), e.g. 2009.

The *Type* element should be used for indicating the text class or text type of the object.

Note: The elements *Agent*, *Title* and *Type* are auto-complete fields. Type in some characters to obtain auto-complete suggestions, then select an appropriate suggestion by double-clicking or using the cursor and return keys



After completing all required metadata the record set can be saved by clicking on the *Save* button at the bottom of the *Metadata Editor* view.

2.2.3.4 Exporting Metadata to TEI Object Files

The metadata edited in the *Metadata Editor* is not stored within the respective data object (TEI object) but in an external metadata database. The header metadata of the TEI object may or may not be identical with the external metadata. In some cases – e.g. if a new object is created – it might be desirable to copy the external metadata into the object header. This can be done by clicking on the *Generate TEI Header* button at the bottom of the *Metadata Editor* view.

2.3 Workflow Component

Workflows are useful when a certain process (i.e. an ordering of tasks) is to be made repeatable and permanent. In TextGrid, workflows can be applied to a list of TextGridObjects that are to be processed in a batch. A second use is for Web Services that are to be made accessible in the TextGridLab, which, however, do not have their own graphical user interface (GUI). These services can be specified in a workflow and be enacted upon execution of the workflow.

2.3.1 Overview

The workflow solution for TextGrid consists of the following parts:

- A workflow **engine** which receives workflow documents and executes them on demand (the **GWES** Engine)
- An optional **monitoring interface** for the workflow engine (both web-based and log files)
- An **XSD schema** that describes and documents the syntax of TextGrid Workflow (*tgwf*) documents that users will edit
- An **XSLT stylesheet** that transforms *tgwf* documents into *GridWorkflowDL* documents accepted by the GWES
- An **API** for workflow jobs representations in the TextGridLab. It offers facilities to
    - read the contents of a TextGridObject representing the *tgwf* workflow
    - merge various parameters known in the TextGridLab into the *tgwf* document (instantiate it) such that the user does not have to care for them
    - execute the job at the machine and query for results
- A **GUI** implemented as an Eclipse Perspective, consisting of an editor area (for the *tgwf* document or input/result objects) and the following views:
    - Workflow preparation:
        - select a *tgwf* Workflow document,
        - display input TexGridObjects,
        - choose the target project where resulting objects are to be created
    - initiate the execution of the workflow
    - Job Management: query for the status of the user's wokflow jobs at the engine
    - Result viewer: displays the list of resulting TextGridObjects created anew

An overview of the interplay of these components is given in the following figure.

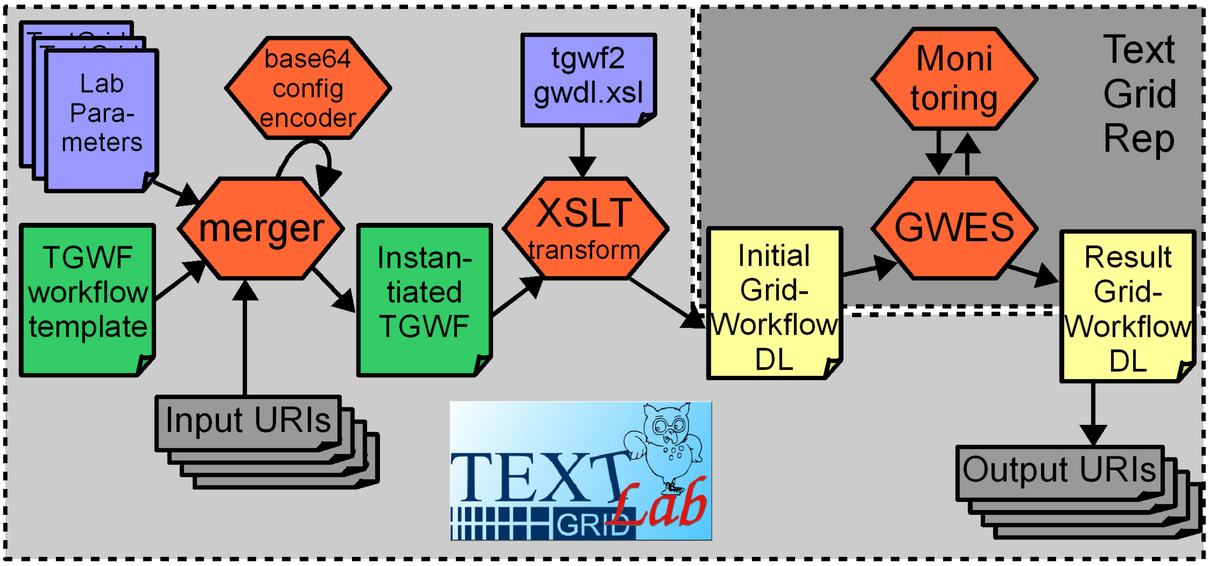


Figure 1: architecture of the workflow component

Please see also some slides http://sugi.d-grid.de/fileadmin/user_upload/sugi_storage//0000/309/07_Haase.pdf and a video http://sugi.d-grid.de/fileadmin/user_upload/sugi_storage//0000/309/07_haase.html (22 minutes) of a presentation of this system (in German).

2.3.2 Workflow Editor Graphical User Interface

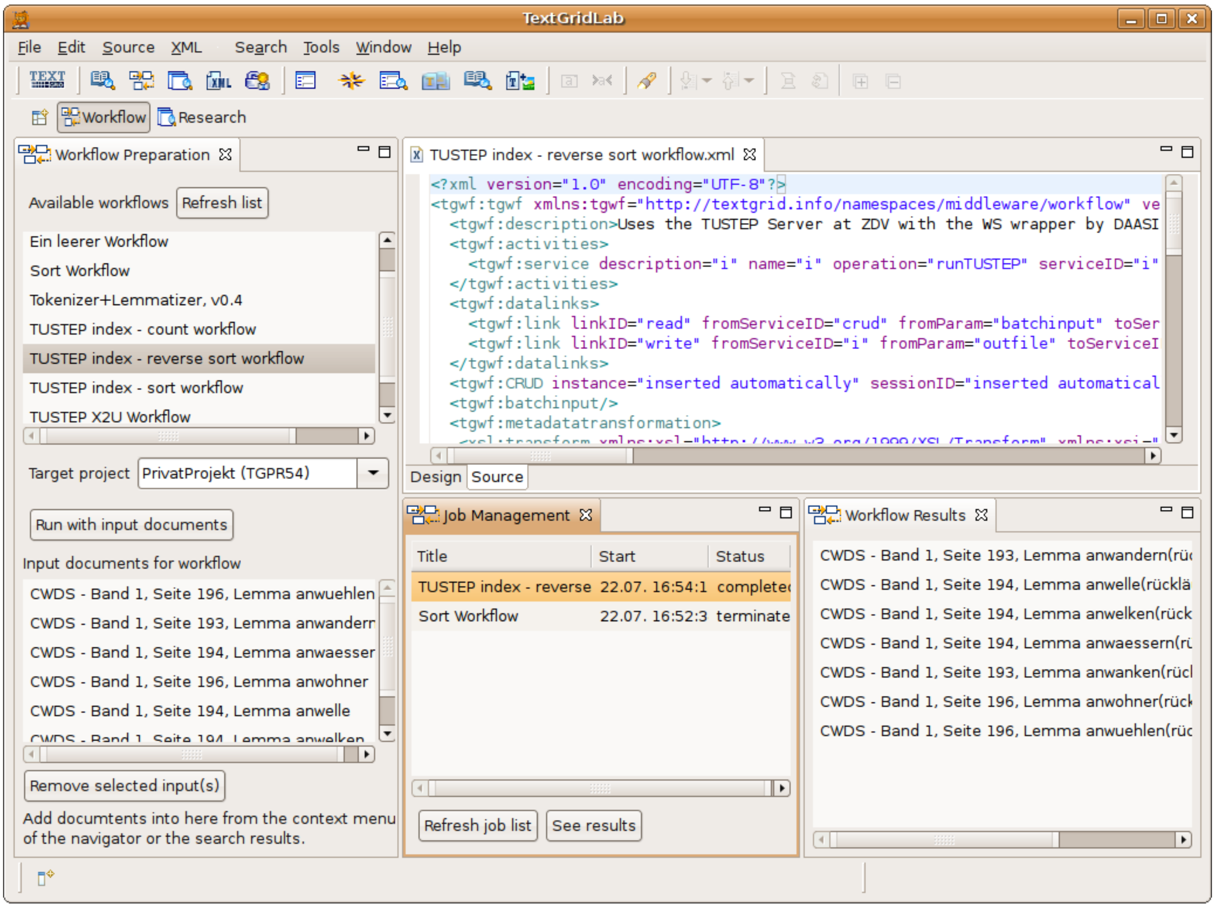
The Workflow **GUI** is implemented as an Eclipse perspective, consisting of an editor area (for editing the *tgwf* workflow document or input/result objects) and the following views:

Workflow preparation: here you can select a *tgwf* Workflow document, display input TexGridObjects, choose the target project where resulting objects are to be created, and initiate the execution of the workflow

Job Management: query for the status of the user's wokflow jobs at the engine

Result viewer: display the list of resulting TextGridObjects created anew

The following figure shows the interface; more details on how to use the GUI will be explained below.



Ein leerer Workflow
Sort Workflow
Tokenizer+Lemmatizer, v0.4
TUSTEP index - count workflow
TUSTEP index - reverse sort workflow
TUSTEP index - sort workflow
TUSTEP X2U Workflow

CWDS - Band 1, Seite 196, Lemma anwuehlen
CWDS - Band 1, Seite 193, Lemma anwanderr
CWDS - Band 1, Seite 194, Lemma anwaesser
CWDS - Band 1, Seite 196, Lemma anwohner
CWDS - Band 1, Seite 194, Lemma anwelle
CWDS - Band 1, Seite 194, Lemma anwelken

Add documtents into here from the context menu of the navigator or the search results.

TUSTEP index - reverse sort workflow.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<tgwf:tgwf xmlns:tgwf="http://textgrid.info/namespaces/middleware/workflow" ve
  <tgwf:description>Uses the TUSTEP Server at ZDV with the WS wrapper by DAASI
  <tgwf:activities>
    <tgwf:service description="i" name="i" operation="runTUSTEP" serviceID="i"
  </tgwf:activities>
  <tgwf:datalinks>
    <tgwf:link linkID="read" fromServiceID="crud" fromParam="batchinput" toSer
    <tgwf:link linkID="write" fromServiceID="i" fromParam="outfile" toServiceI
  </tgwf:datalinks>
  <tgwf:CRUD instance="inserted automatically" sessionID="inserted automatical
  <tgwf:batchinput/>
  <tgwf:metadatatransformation>
   <xsl:transform xmlns:xsl="http://www.w3.org/1999/XSL/Transform" xmlns:xsi="
```

Title	Start	Status
TUSTEP index - reverse	22.07. 16:54:1	complete
Sort Workflow	22.07. 16:52:3	terminate

CWDS - Band 1, Seite 193, Lemma anwandern(rü
CWDS - Band 1, Seite 194, Lemma anwelle(rücklä
CWDS - Band 1, Seite 194, Lemma anwelken(rück
CWDS - Band 1, Seite 194, Lemma anwaessern(rü
CWDS - Band 1, Seite 193, Lemma anwanken(rücl
CWDS - Band 1, Seite 196, Lemma anwohner(rück
CWDS - Band 1, Seite 196, Lemma anwuehlen(rü

figure 4: The workflow perspective

2.3.2.1 Opening the Workflow GUI

The workflow perspective can be opened in different ways:

- By clicking on the “Workflow” link/icon on the welcome screen
- By selecting “Workflow” from the “Tools” menu
- B clicking the ⇄ icon in the icon tray
- or, by right-clicking on one or more TextGridObjects in either the Research Results or the Navigator, and choosing “Add to Workflow” (see figure 5 below)

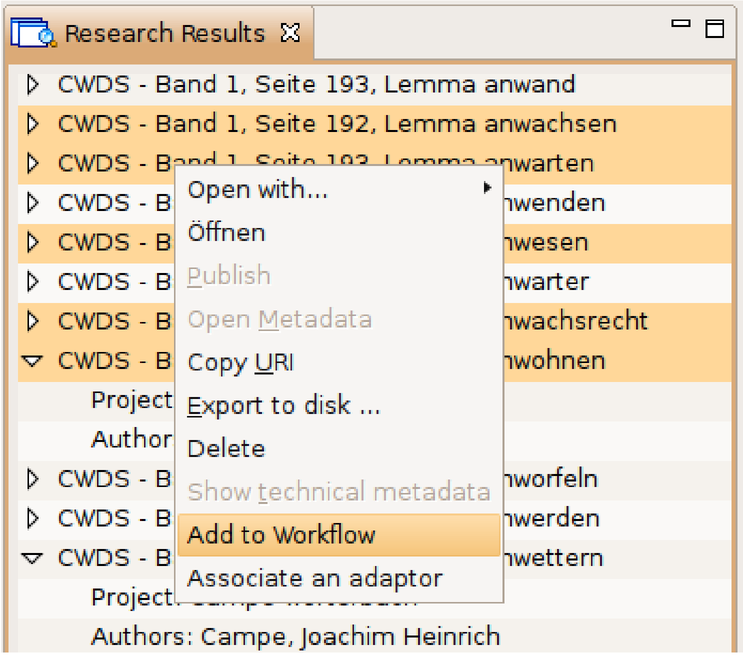


Figure 5: Adding input documents to a workflow

The first three options will be more useful if a user wants to *query* the status of her workflows, or if she just wants to jump to this *perspective*, or reset it. If on the other hand the user wants to *execute* an existing workflow with some input objects, the fourth option should be chosen.

2.3.2.2 Workflow Preparation

This is the left-hand side view of the workflow perspective. It contains:

A list of all available workflows. If the user is not logged in, only published workflows will appear here. In order to see your own ones, press the "Refresh list" button after logging in. Do this also if you just created a new workflow. It is possible to view, and, depending on your rights, edit the workflows by right-clicking in this list and choosing an appropriate editor.

The selection of the target project into which the newly created TextGridObjects (the result of processing your input TextGridObjects) are to be saved. You need to be logged in, such that the TextGridLab knows in which projects you have *create* permission (i.e. where you own the role *Bearbeiter* given the standard role assignment is active).

A list of the input documents scheduled for your workflow. Add new documents to the list by right-clicking on one or more TextGridObjects in either the Research Results or the Navigator, and choosing "Add to Workflow". Remove them from the list by selecting one or more entries and clicking the "Remove selected input(s)" button. It is possible to view, and, depending on your rights, edit the input documents by right-clicking in this list and choosing an appropriate editor.

And finally, the button "Run with input document", which will execute the workflow selected in the upper list, with the input documents from the lower list. The resulting documents will be stored in the project specified as the target project.

Once the workflow is started by the "Run..." button, it will be submitted to the GWES workflow engine and started there. It will be added to the Job Management view as "active".

2.3.2.3 Job Management

All jobs owned by the current user will be displayed in this list. If you expect to see some jobs here, check to see if you are not logged in yet. Every job is listed by its name, its time of submission, and its status. The status of the job can be one of:

initiated – the workflow has just been submitted but not started yet

running – state when the workflow has been started

active – if there are active transitions working

suspended – if a user (perhaps via the monitoring tool) paused the workflow

completed – if the workflow ended successful

terminated – if there was an error during execution

There are two buttons below the list: The “Refresh job list” button queries for the current status of the user's workflows at the workflow engine. The “See results” button has two meanings:

either, if the status of the selected job is *completed,* it will display the result documents of this job in the Workflow Results window.

or, if the status of the selected job is *terminated*, it will show an error message to the user and write the engine's error or warning output into the TextGridLab's error log file.

2.3.2.4 Workflow Results

This list is for the user's convenience. Instead of having to locate the resulting documents in the Navigator, or searching for them, all resulting TextGridObjects created as the output of the respective Workflow will be displayed here. It is possible to view, and edit these documents by right-clicking in this list and choosing an appropriate editor. Currently the user still has to select the workflow in the Job Management view and click “See results” first before they are displayed.

2.3.2.5 Writing a new Workflow from Scratch

A new TextGrid workflow is created similarly to any other TextGridObject: Choose “New Object...” from the File menu, then pick the project to save this workflow in, and select “TextGrid Workflow Document” as type of the new object. Th next step is to enter the metadata of the workflow, which is not different compared to other TextGridObjects – however, it is better to accept the pre-set type “workflow” here in order to search more easily later on.

After clicking on “Finish”, the TextGrid XML Editor will be opened with a template of an incomplete workflow. Use either the “Design” or the “Source” view. The editor knows the *tgwf* schema behind the workflow and will assist you with typing in. You may want to adapt contents of already existing workflows to your needs. If you are unsure about editing the *tgwf* XML or the XSL stylesheet contained therein (the rules for creating the new metadata of the resulting objects), please feel free to ask for support from the TextGrid community.

2.3.3 Background Information

2.3.3.1 GWES Workflow Engine[7]

We use the Grid Workflow Execution Service by Fraunhofer FIRST as the enactment engine in TextGrid. It is a webapp to be installed in a Servlet Conatiner such as Apache Tomcat. It accepts GridWorkflowDL documents that contain all information the engine needs, i.e. input data is also contained in a GridWorkflowDL document. The abstract formalism of GridWorkflowDL is High-Level Petri Nets, which is Turing-complete. Data is represented as structured tokens, and flows from places to transitions and from transitions to places. While a workflow is being executed, the GridWorkflowDL document is in permanent change, with data moving from one place over the transitions (which may be Web or Grid Services) to another. The workflow halts if there are no more enabled transitions, i.e. no transition that has all incoming places filled with at least one data token.

The engine can be configured to hold workflows in memory for a certain amount of time, e.g. one day. Further persistence is facilitated by storing the workflows in a database afterwards. Natively the GWES works with XML databases such as eXist.

Installation and configuration of the GWES is straightforward: download the gwes.war from FIRST (and optionally exist.war from its download site), move it into the webapp/ folder of a running Tomcat and let Tomcat unpack it. Afterwards, edit webapps/gwes/WEB-INF/classes/gwes.properties, mainly for timeout configuration, and conf/tomcat-users.xml to specify the user(s) that are allowed to login to the monitoring site.

2.3.3.2 Monitoring Interface

As soon as the GWES is installed, it is possible to query a number of things using its web interface. However, it must be made sure to protect these pages from unauthorized use, e.g. by setting a user/password combination in tomcat-users.xml, or by other means. Then it is possible to find the interface at http://host:port/gwes/servlet/GWESOverviewServlet. Here you can

- upload new workflow documents (in GridWorkflowDL format);
- get a list of all workflows currently in memory or database;
- see the details of a specific workflow with statistical and status information (warnings and errors that led to unsuccessful termination of the workflow will appear here);
- see a graph of the workflow, even animated when it is executing (c.f. figure 2 below)
- test if the GWES is alive and
- get documentation.

Furthermore, there are the Tomcat logs where GWES will log its messages, too. Depending on the settings in webapps/gwes/WEB-INF/classes/log4j.properties (e.g. set log4j.logger.net.kwfgrid.gwes.wsactivity to DEBUG for debug logging of Web Service jobs) one can find useful debugging information when something did not work as expected. See the file logs/catalina.out in Tomcat's installation folder.

[7] http://www.gridworkflow.org/kwfgrid/gwes/docs/, see also Andreas Hoheisel: Grid Workflow Execution Service – Dynamic and Interactive Execution and Visualization of Distributed Workflows. In Proceedings of the Cracow Grid Workshop 2006, Cracow, 2007, http://www.first.fraunhofer.de/owx_medien/pdf/3462_hohe2007.pdf

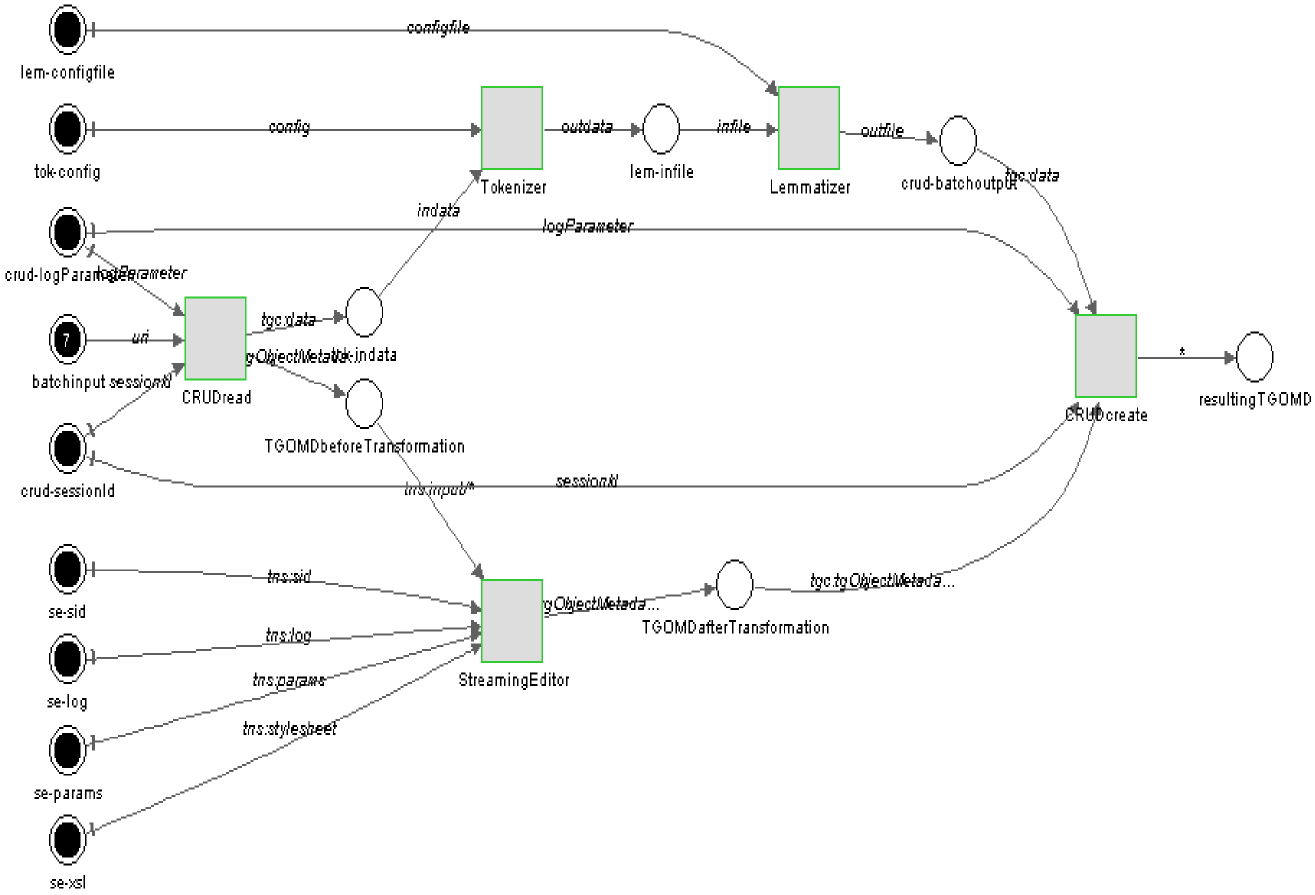


Figure 2: graph of the workflow displayed by GWES' web interface

2.3.3.3 tgwf XML schema

See Appendix 1.

2.3.3.4 tgwf2GridWorkflowDL stylesheet

We do not list the stylesheet *verbatim* here, however, the interested reader can find it in the TextGrid source code repository. Instead, we give a short summary of what the stylesheet does.

- Insert the header and footer a correct GridWorkflowDL document needs
- Format a place called "batchinput" with as many tokens as URIs were given in the *tgwf* document
- For each entry in the <inputconstants> section, format a place holding a single token with its contents. The place will be a read-only place, i.e. its tokens will not be consumed
- Format a number of default places every workflow has, e.g. for the CRUD's SessionID and LogParameter, input places for the StreamingEditor, and result places
- Format the places between the services proper, e.g. for each <link>
- Format a CRUDread transition: this will consume the URI and return data (to be handed over to the services proper) and metadata (to be given to the StreamingEditor).
- Format a transition for every service given under <activities>

- Format a transition for the StreamingEditor. The SE is used to create the metadata of the new TextGridObjects. It takes as input the old metadata and an XSLT stylesheet with rules.
- Format a CRUDcreate transition. It will take as input the processed (text) data and the new metadata and will return the real metadata of the new TextGridObjects (i.e. with real URIs).

To get a better understanding of the resulting GridWorkflowDL document, we show the same graph from figure 2 in the Monitoring section , but now annotated with the meanings of the various places and control flow in figure 3 below.

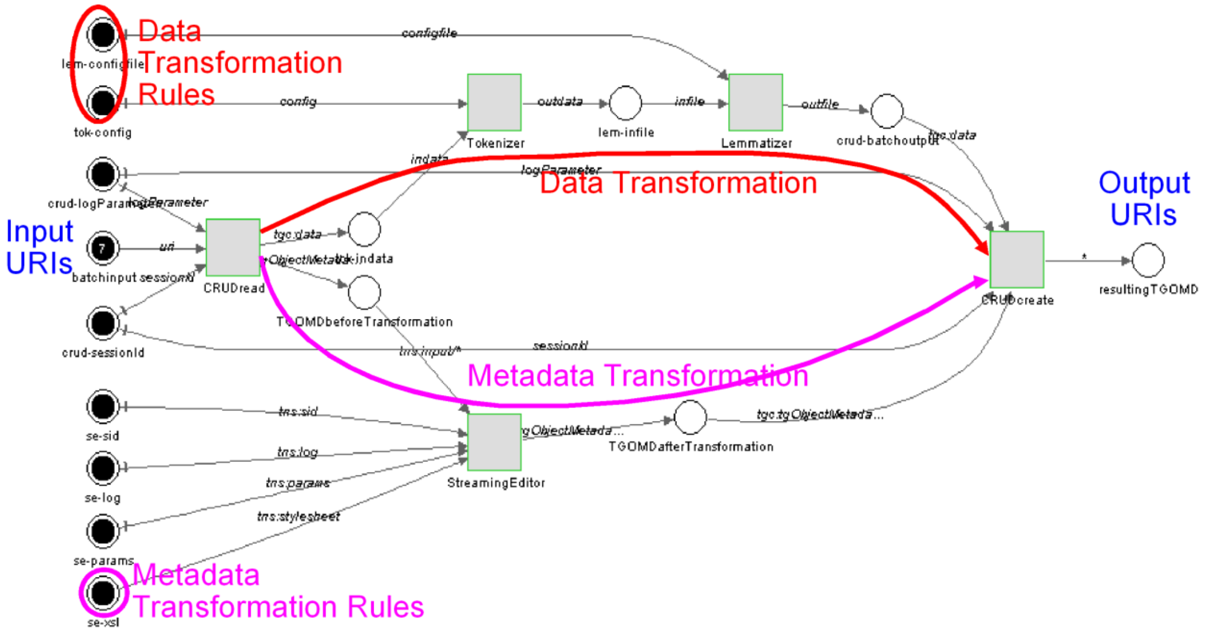


Figure 3: visualization of data flow in the workflow graph

2.3.3.5 API for workflow jobs

Here we describe what is done once a workflow is submitted by the users. A workflow job is represented by the class WorkflowJob. It does most of its work in the constructor:

The main constructor for a WorkflowJob takes three arguments:

- the TextGridObject (TGO) representing the uninstantiated Workflow (tgwf format)
- a String with the target project ID (e.g. TGPR123)
- an ArrayList containg the URIs of the input TGOs to be processed

After reading the contents of the Workflow TGO, any stale TGO URIs possibly present in the workflow will be cleared and the URIs of the input TGOs will be inserted.

For each configuration parameter, it is checked whether it has to be encoded in Base64 format (as specified in the tgwf), and the full content of the respective parameter will be replaced by its encoded string.

The algorithm tries to set the target project in the XSLT stylesheet for the new metadata. Specifically, it looks for the Path "tgwf:tgwf/tgwf:metadatatransformation/xsl:transform/xsl:template/tgc:tgObjectMetadata/tgmd:administrative/tgmd:client/tgmd:project" and replaces the projectId found there with the one given by the target project ID string. This might fail due to the nature of the stylesheet given. In this case the workflow will not be able to start.

Now further settings known in the TextGridLab will be inserted:

- CRUDs instance endpoint
- TextGrid SessionID of the user
- the logParameter for the loggingService
- the description of the Workflow (taken from the TGO's title given in its metadata).

Now that the tgwf workflow is fully instantiated, it is transformed by an XSL engine according to the rules in the XSLT stylesheet described above into GridWorkflowDL format, which is stored in a String variable for later execution.

If everything went well during instantiation of the tgwf workflow and its transformation, the public method start() can be executed, meaning it will be transferred to the GWES engine under the user's name (initiated), and started. The further life of the job can be observed in the JobManagement view in the GUI (see below).

There is another constructor which takes only a String with the workflowID known by the GWES engine. This one is used when querying the GWES engine for properties of the active, or terminated, or completed workflows. Various public functions will use the data retrieved by this constructor, see the API documentation for a full list of them.

2.4 Image Link Editor

The Graphical Link Editor can be used to link text segments to corresponding image components within TextGridLab. A typical application is the link of facsimile and transcription, whereas these texts can also be created during the linking process, which allows the use of further tools like e.g. image annotations.

2.4.1 Functionality

2.4.1.1 Linkage of existing texts

Text and image are opened in the corresponding Views, then the corresponding components are marked by pairs and the linkage is confirmed.

The results can be saved as a new object, which contains the text of the original file (but not its potential markup) and the link information (text and image coordinates, path of the image file). Once a file is saved double clicking it suffices to reload image, copied text and links to continue editing if desired. Changing this new file as well as the already linked text is possible at any time.

2.4.1.2 Creation and linkage of transcriptions

As described above, but with an initially empty text window into which the text can be inserted stepwise or at once.

2.4.2 Application and handling

Launch of the Graphical Link Editor in TextGridLab

The Graphical Link Editor can either be started by clicking its icon on the initial screen or be chosen directly as tool in TextGridLab.

In both cases the Perspective Image Link Editor which is used to manage the tool is opened. The editor amongst other things contains the navigator whose context menu allows to open images, texts or previously created annotations - depending on the user rights in particular.

2.4.3 Components of the perspective

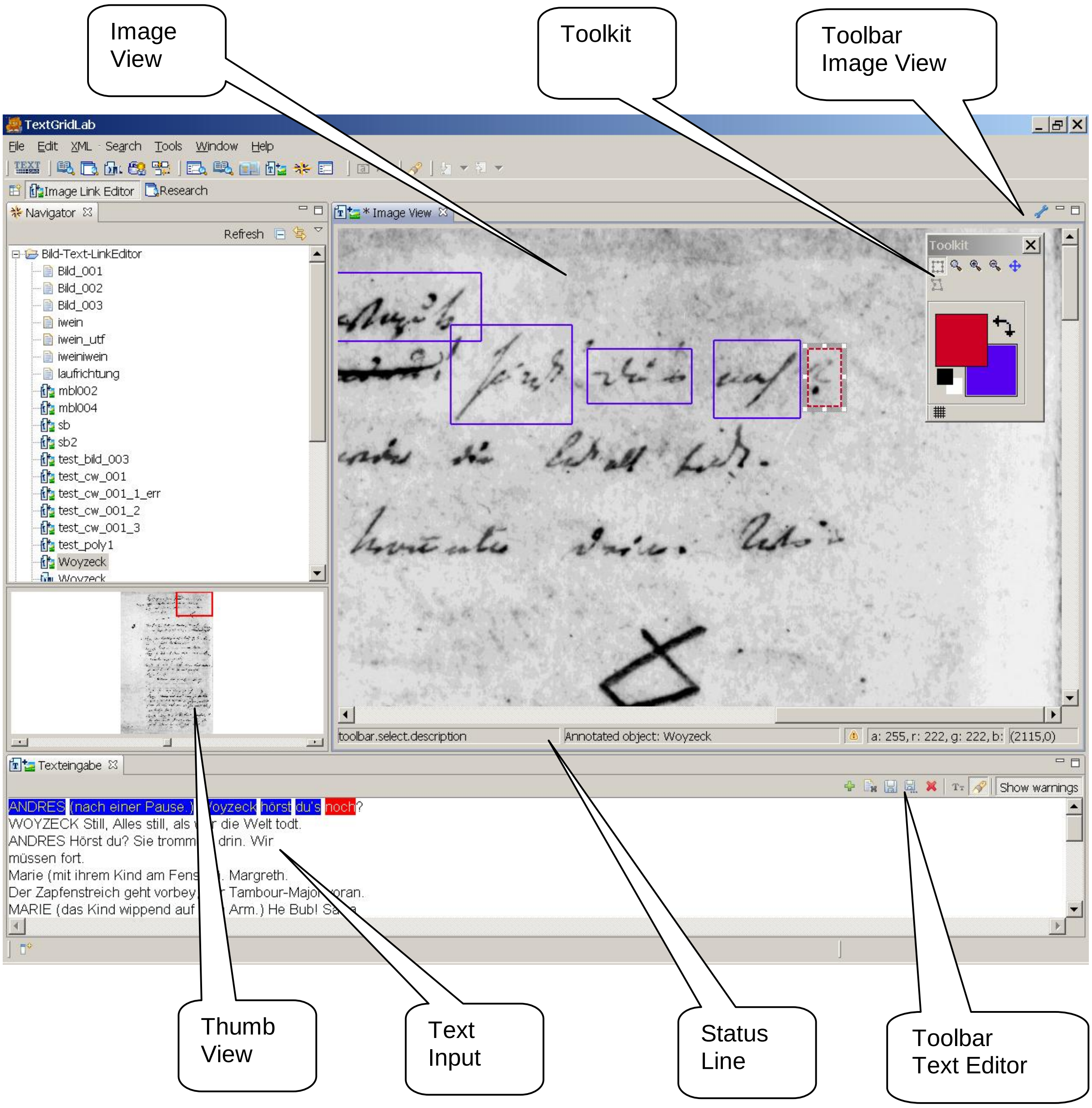
The perspective consists of a Toolkit and three specific Views in addition to the generic Navigator View:

Image View: shows the image or an image detail to be linked and enables the marking of image segments

Thumb View: used for navigation. Shows a reduced version of the entire image and the active image detail (which is enlarged in the Image View) which can easily be moved and zoomed

Text Editor: allows to open or create texts as well as the marking of text parts

Toolkit: provides functions to work in the Image View



ANDRES (nach einer Pause.) Woyzeck hörst du's noch?
WOYZECK Still, Alles still, als w r die Welt todt.
ANDRES Hörst du? Sie tromm drin. Wir
müssen fort.
Marie (mit ihrem Kind am Fens . Margreth.
Der Zapfenstreich geht vorbey, r Tambour-Major voran.
MARIE (das Kind wippend auf Arm.) He Bub! Sa

2.4.4 Functions

2.4.4.1 Buttons of Image View:

🔧 - Activates the Toolkit (shortcut: Tabulator)

<u>Shortcuts</u>		
	[+]	Zoom +
	[-]	Zoom –
	[0]	Zoom original
	[Tab]	Opens the Toolbox
	[Space+MouseLeft] Move Image	

2.4.4.2 Buttons of the Text Editor

- Create a link between the marked segments

- Delete the entire text

- Save the annotated text in the active object

- Save the annotated text in a new object (plain text + link information)

- Delete the selected link (Marking in text and image including reference)

- Dialogue for font editing

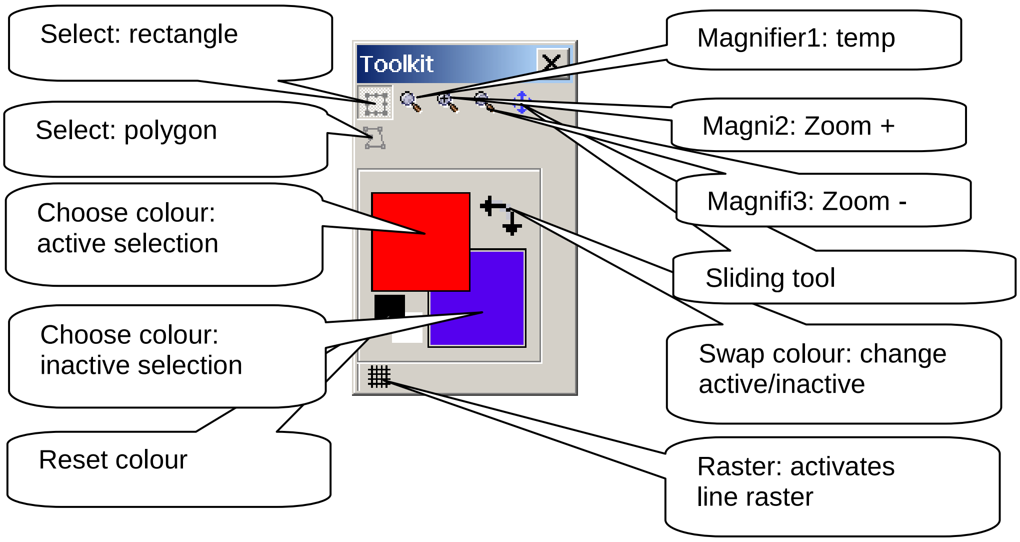
- Show/hide marking of linked text

2.4.4.3 Thumb View:

Slide control to adjust the zoom factor in Image View

Selection frame to navigate the active text detail in Image View

2.4.4.4 Toolkit (all functions apply to Image View):


Select: rectangle
Select: polygon
Choose colour: active selection
Choose colour: inactive selection
Reset colour
Toolkit
Magnifier1: temp
Magni2: Zoom +
Magnifi3: Zoom -
Sliding tool
Swap colour: change active/inactive
Raster: activates line raster

Magnifier1: Click and drag to enlarge the selected screen area temporarily (the range can be modified with the Ctrl key)

Magnifier2: Clicking the desktop zooms in and centres the work space at the selected position

Magnifier3: zooms out

Sliding tool: moves the work space

Rectangular selection: Click and drag to select a rectangular area

Polygonal selection: Click and drag to create the edge of a polygon which can be completed by double clicking

In both modes existing markings can be edited (see below)

Raster: activates a line raster to facilitate the alignment of the marking

Choose colour: modifies foreground (= selected, active marking) or background (= inactive marking) colour, both can be modified by clicking the coloured square

Swap colours: interchanges fore- and background colour

Reset colour: resets fore- and background colour to default colours black and white

2.4.5 Example of use:

Open an image:

- Double clicking an image file in the navigator opens the image

Open a text:

- Right clicking a text file in the navigator and choosing the menu item "Edit with Image Link Editor" opens the text, potentially existing markup will not be adopted

Selection of work space:

- The displayed detail can be selected with the selection rectangle in the Thumb View and the scrollbars, the zoom factor can be changed using the slide control in the Thumb View or the magnifier tools

Creation of links:

- The selection in the image can be effected in rectangular (default) or polygonal mode. In rectangular mode clicking the image at one corner of the area to select suffices to draw the rectangular selection keeping the left button pressed. In polygonal mode an edge can be drawn by clicking and dragging, releasing the left button determines the next corner of the polygon which can be completed by double clicking. A marking which is not yet linked to a text is displayed with a dashed border.
- Text can be selected by clicking and dragging or by double clicking (single word) respectively triple clicking (whole line).
- The creation of a link can be effected using the ✚ symbol.
- The marking in text and image does not have to be effected alternating. It is also possible to mark a larger quantity of image segments and link them successively.

Correction/deletion of links:

- Existing links can be displayed in the text field by clicking the ✎ button.
- The selection of a link can be effected by double clicking both in the graphic and in the text field.
- Selected links or markings are labelled red, inactive are labelled blue. (in the Image View they are displayed in the potentially modified fore- and background colour)
- Selected links (i.e. markings in text and image and their link) can be deleted by right clicking using the context menu or by clicking the ✖ button.

- Markings in the Image View can be edited subsequently. When moving over an active marking the cursor and its icon change: In the centre it becomes a sliding tool (four way arrow), which allows to change the position of the marking by clicking and dragging. Close to the boundaries it allows to reposition the edges (two-way arrow) or the corners (diagonal two-way arrow) in a similar way. For polygons changes can be realized analogically with the exception that single edges of polygons can not be moved.
- Linked text cannot be edited, if the cursor is inside a selected area and the selection is not active (= red) as a whole. Linked text can not be deleted completely.

2.4.6 Status bar:

-* Symbol in tab of the Text- or Image View: Changes are not saved yet.

Annotated object: Woyzeck

- Annotated object: Shows the name of the edited object.

⚠ -Warning sign: The image area contains unlinked markings

2.4.7 Interaction with other components

As described above, texts, images and linking objects are opened in the navigator which is explained in an independent documentation.

2.5 Search – Searching for Documents in TextGridRep

The *Search Module* allows for searching across the contents (e.g. TEI-encoded documents) and the object metadata in the TextGrid Repository. It serves as a front-end to *Tg-Search*, TextGrid's search service.

The Research perspective is the default perspective when the *TextGridLab* starts and the *Welcome Screen* is closed. It consists of two sub-windows, or views: *Research* and *Research Results*.

2.5.1.1 Research

Specify here what you are looking for:

- *Text* contained in the document, and whether this text should be presented as KWIC format in the *Research Results,* i.e. as **K**ey **W**ord **I**n **C**ontext.
- *Metadata* describing the document, e.g. title, author, genre.
- *Refine* your search to certain tags of the *TextGrid baseline encoding* (see below) and specify whether you want all results at once or in successive portions.

2.5.1.2 Research Results

This view initially shows the titles (as in the document's metadata). However, if you would like to see more information, you might want to

- flip open (a single document), or
- push the *Expand* button (for all documents). This can be repeated until all levels of the tree are shown, including the KWICs.

2.5.2 How to Open the Research Perspective

The Research perspective is the default perspective when the *TextGridLab* starts. However, it may be hidden by the *Welcome Screen*, and, sometimes, by the *Authentication Dialogue*. Once these elements are closed, the Research View will be visible.

During work in the TextGridLab, there are three ways to open the *Research* perspective:

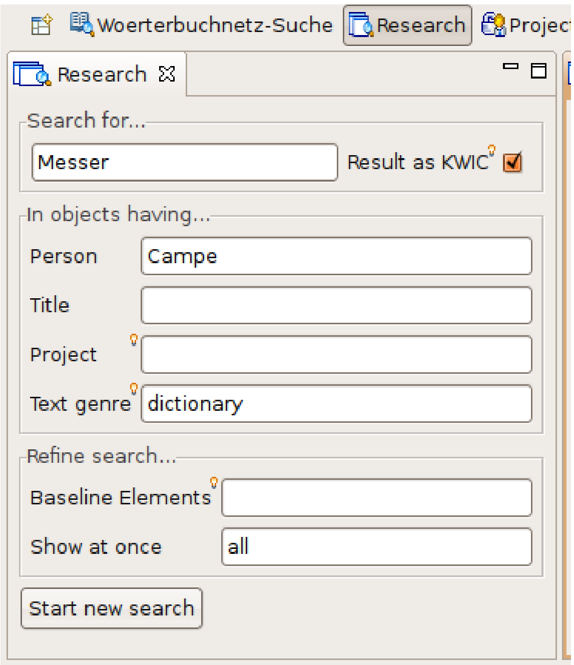
a) Select “Tools” from the menu bar and click on “Research”

b) Push the small button in the menu bar.

c) Click on the button labelled "Research" in the perspective switch bar (i.e. in the same row where the small button is located) once the Research perspective had been opened before, but was covered by another perspective in the meantime. N. b.: this allows you to switch between the perspecives that have been opened by now.

2.5.3 What Can Be Searched for?

The *Research* view is shown in the following picture, together with some example values filled in the form.



Search for...
Messer
Result as KWIC ☑

In objects having...
Person: Campe
Title:
Project:
Text genre: dictionary

Refine search...
Baseline Elements:
Show at once: all

Figure: Research view

The form is separated into three areas: the **text** area, the **metadata** area and the **refine** area. These will be described in turn.

2.5.3.1 Text Area

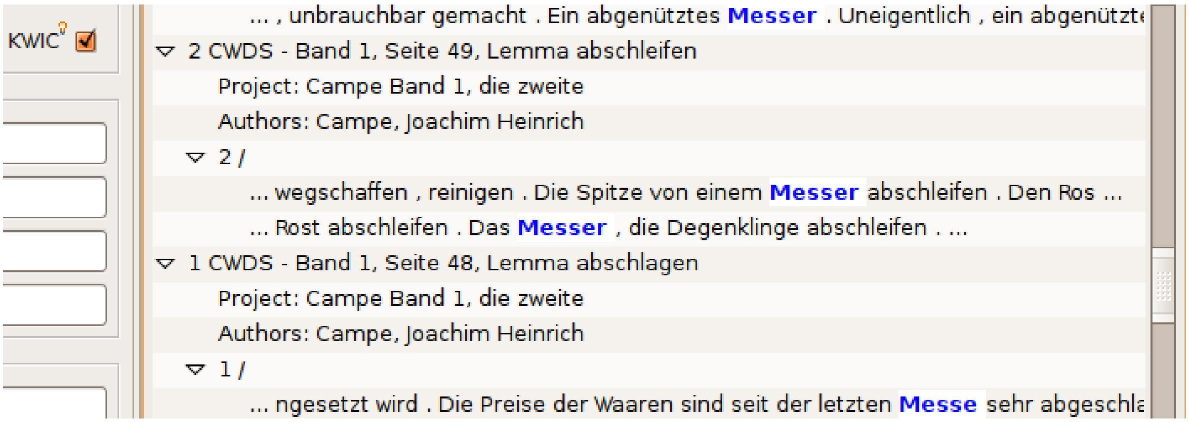
This area is labelled *Search for...*

2.5.3.1.1 Text input field

Here you can specify one or more words to be searched for. If searching for *several words* , they are to be separated by blank space and will be joined by AND, i.e. all words have to occur in the document. *Wildcards* are allowed, e.g. the term "**Mess***" will find all words starting with "Mess" such as "Messer", "Messers", "messen", "Messias", or "Messung".

2.5.3.1.2 KWIC

Check this box if you would like to see your results in the KWIC format (**K**ey **W**ord **I**n **C**ontext). The search term then will be highlighted as in the following figure.


KWIC ☑

... , unbrauchbar gemacht . Ein abgenütztes **Messer** . Uneigentlich , ein abgenützte
▽ 2 CWDS - Band 1, Seite 49, Lemma abschleifen
Project: Campe Band 1, die zweite
Authors: Campe, Joachim Heinrich
▽ 2 /
... wegschaffen , reinigen . Die Spitze von einem **Messer** abschleifen . Den Ros ...
... Rost abschleifen . Das **Messer** , die Degenklinge abschleifen . ...
▽ 1 CWDS - Band 1, Seite 48, Lemma abschlagen
Project: Campe Band 1, die zweite
Authors: Campe, Joachim Heinrich
▽ 1 /
... ngesetzt wird . Die Preise der Waaren sind seit der letzten **Messe** sehr abgeschla

Figure: KWIC search results

As the term can occur several times in a document and in several XPaths (the structural location within an XML document), the KWIC entries will be shown as indirect children of the title node. This means the nodes have to be *expanded* in order to reveal the KWICs. Either directly flip open the document in question or use the *Expand Button* twice until the KWICs appear.

2.5.3.2 Metadata Area

This area is labelled *In objects having...* Whereas the Text Area looks at the *contents* of a document, the Metadata Area can be used for all TextGrid objects, as every object in TextGrid has its set of metadata.

2.5.3.2.1 The Person field

This corresponds to the *agent* tag in the metadata. Specify a name or part of the name of the persons (or institutions) which play a role in creation, edition, transcription etc. of the document.

2.5.3.2.2 The Title field

This corresponds to the *title* tag in the metadata. Specify substrings of the title of the documents you are looking for.

2.5.3.2.3 The Project field

This corresponds to the *project* tag in the metadata. There are two ways of naming a project: either with parts of its display name, or with its name known by *Tg-Auth**, e.g. TGPR123. The latter string can be found in the users and project management perspective.

2.5.3.2.4 The Text Genre field

This corresponds to the *type* tag in the metadata, and could be e.g. "dictionary" or "prose". If you are unsure about the available genres, type some letter(s) and wait a moment to see a suggestion of the existing genres that contain these letter(s).

2.5.3.3 Refine Area

This area is labeled *Refine search...*

2.5.3.3.1 The Baseline Elements field

Every TEI document - like dictionaries, drama, letters, critical editions, or language corpora - is represented *twice* in the TextGridRep:

Once in its original encoding with possibly document-specific TEI tags, and once in the TextGrid *baseline encoding*, which defines a subset of common elements for each text type.

When uploaded into the TextGridRep, every TEI document refers to an adapter that will be used by *Tg-Crud* to map from the original encoding to the baseline encoding. Thus the researcher does not need to know about document-specific encodings when specifying a structural search.

The elements of the baseline encoding can be entered into this field, e.g. "p", "div", or "head". The semantics of this is: when some tag was given in this field, then the text specified in the *Text Area* must occur within this tag in the document's baseline encoding. *Thus entering something in here without giving a search term in the text area is not intended and will keep the search from starting.*

2.5.3.3.2 The Show At Once field

You can specify whether you want all results at once or in successive portions of a fixed size. In the first case, use the string "all" as in the default configuration. In the latter case, type in a number to specify the size of the desired portion, e.g. 10.

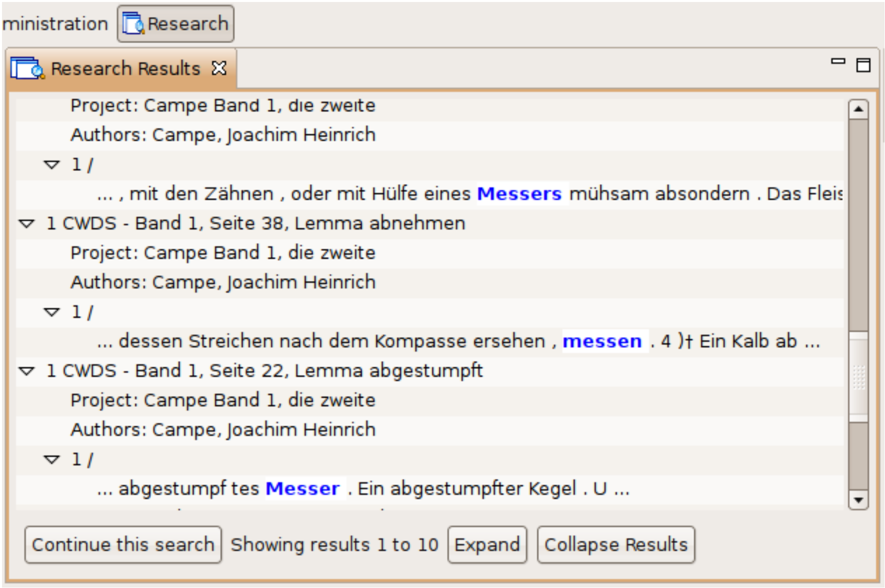
This field is there for performance reasons: If you expect your search result to be numerous, the TextGridLab tends to slow down. Specifying a portion of e.g. 50 will remedy this.

2.5.4 How to search?

Just click the button at the bottom of the Research view labelled "*Start new search*". Remember that this can take some time if the search result is large. The specified fields will be *joined by AND*, which means that every condition (e.g. text, title, AND genre, if those three fields are filled in) must be met.

2.5.5 The Research Results View

The *Research Results* view is shown in the following picture, together with some example content.



Project: Campe Band 1, die zweite
Authors: Campe, Joachim Heinrich
▽ 1 /
... , mit den Zähnen , oder mit Hülfe eines **Messers** mühsam absondern . Das Fleis
▽ 1 CWDS - Band 1, Seite 38, Lemma abnehmen
Project: Campe Band 1, die zweite
Authors: Campe, Joachim Heinrich
▽ 1 /
... dessen Streichen nach dem Kompasse ersehen , **messen** . 4)† Ein Kalb ab ...
▽ 1 CWDS - Band 1, Seite 22, Lemma abgestumpft
Project: Campe Band 1, die zweite
Authors: Campe, Joachim Heinrich
▽ 1 /
... abgestumpf tes **Messer** . Ein abgestumpfter Kegel . U ...

Figure: Research Results view

2.5.5.1 The results list

The documents that are returned by *TG-search* will be displayed here. Initially you can see a list of their titles, prepended by a count of how many matches of the search term there were. However, clicking on the small symbol at the left of each document will cause it to expand to a tree-like structure with more details showing, including the project, the author, and the context if the KWIC options had been checked.

The items in the list can be clicked. Double-click opens them (at least on Windows and Linux) with the default editor. This may take some time. Right-clicking (on Windows and Linux) allows for further actions to be applied to the document, e.g. selecting another Open action, displaying the metadata, copying the URI to the clipboard, or publishing the document.

2.5.5.2 The buttons at the bottom

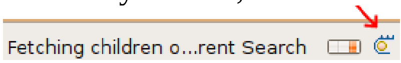
Continue this search - This button can only be used when the *Show at Once* field in the research view contained a number representing the size of the result portions. When clicked, it will retrieve the next portion of documents if there are further ones.

Expand / Collapse Results - Click these buttons if you want to expand or collapse the documents all at once instead of clicking at every single one. It might be necessary to click on "Expand" several times if the KWIC entries are to be shown or the whole list is still loading.

2.5.6 Search Hints (FAQ)

My search results are too numerous, now the result view does not stop loading! How can I cancel this search run?

Try the following: At the lower right corner of your Lab, there should be a button that shows the progress of the search operation: Click it. This will open the *Progress* view that shows all background tasks. Select the item "Fetching children of current Search" and click on the ■ button to cancel it. Note: *This will preserve your search results that were displayed until now.*


Fetching children o...rent Search

If you do not like this solution, you can do a more cautious search next time: specify a number in the *Show at once* field, e.g. 10 or 50, and iterate manually through the results using the *Continue this search* button.

Last time I saw these text snippets with the search term in blue, where are they now?

Check two things:

Did you enter a search term in the *text area* and checked the KWIC box?

Did you expand the results deep enough?

What can I enter as Baseline Elements?

See the documentation of the TextGrid Baseline Encoding[8]

[8] http://www.textgrid.de/fileadmin/TextGrid/reports/baseline-all-en.pdf

2.6 Dictionary Search

The *Dictionary Search Tool* allows for searching the dictionary network “LexWeb” (www.woerterbuchnetz.de) at the Competence Centre for Electronic Publishing and Information Retrieval in the Humanities of the University of Trier.

2.6.1 Which Dictionaries Can Be Searched?

2.6.1.1 General dictionaries

DWB Deutsches Wörterbuch von Jacob und Wilhelm Grimm
German Dictionary by Jacob and Wilhelm Grimm

2.6.1.2 Author’s dictionaries

GWB Goethe-Wörterbuch
Goethe Dictionary

2.6.1.3 Dialect dictionaries

EWB Elsässisches Wörterbuch
Dictionary of the Alsatian Dialect by Ernst Martin and Hans Lienhart

LWB Lothringisches Wörterbuch
Dictionary of German-Lorrainese Dialects by Ferdinand Follmann

PfWB Pfälzisches Wörterbuch
Dictionary of the Palatine Dialect by Ernst Christmann et al.

RhWB Rheinisches Wörterbuch
Rhenish Dictionary

NRhWB Rheinisches Wörterbuch Nachträge
Supplement to the Rhenish Dictionary

2.6.1.4 Middle High German dictionaries

LEX Mittelhochdeutsches Handwörterbuch von M. Lexer
Middle High German Dictionary by Matthias Lexer

BMZ Mittelhochdeutsches Wörterbuch von G.F. Benecke, W. Mueller und F. Zarncke

Middle High German Dictionary by Georg Friedrich Benecke

FiB Findebuch zum mittelhochdeutschen Wortschatz
Middle High German Word List Supplement by Kurt Gärtner et al.

NLEX Nachträge zum Mittelhochdeutschen Handwörterbuch von M. Lexer
Supplement to the Middle High German Dictionary by Matthias Lexer

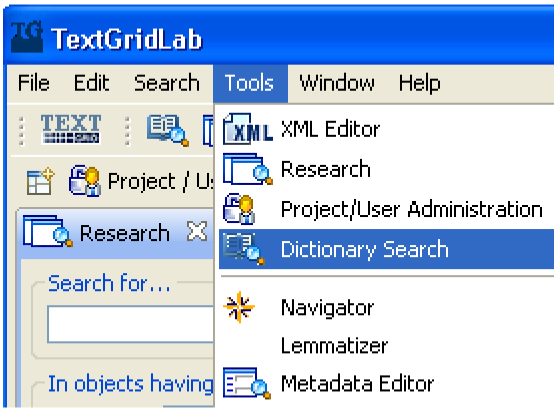
2.6.1.5 Luxembourgian dictionaries

LLU Wörterbuch der Luxemburger Umgangssprache
Dictionary of the Luxembourgian colloquial speech

WLM Wörterbuch der Luxemburger Mundart
Dictionary of the Luxembourgian dialect

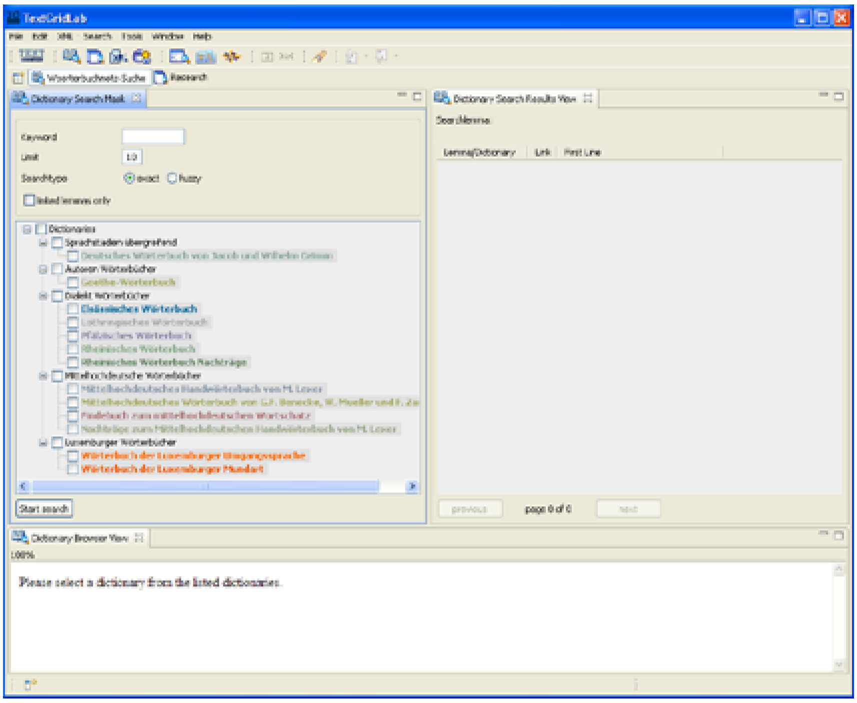
2.6.2 How to Open the Dictionary Search

To open the *Dictionary Search* perspective select "Tools" from the menu bar and click on "Dictionary Search"



or click on the icon in the tool bar below.

The perspective is subdivided in three views. The *Dictionary Search Mask* on the left, the *Dictionary Search Results* view on the right and the *Dictionary Browser* view at the bottom.


TextGridLab
File Edit XML Search Tools Window Help
Woerterbuchnetz-Suche
Research
Dictionary Search Mask
Keyword
Limit
10
Searchtype
exact
fuzzy
linked lemmas only
Dictionaries
Sprachstufen übergreifend
Deutsches Wörterbuch von Jacob und Wilhelm Grimm
Autoren Wörterbücher
Goethe-Wörterbuch
Dialekt Wörterbücher
Elsässisches Wörterbuch
Lothringisches Wörterbuch
Pfälzisches Wörterbuch
Rheinisches Wörterbuch
Rheinisches Wörterbuch Nachträge
Mittelhochdeutsche Wörterbücher
Mittelhochdeutsches Handwörterbuch von M. Lexer
Mittelhochdeutsches Wörterbuch von G.F. Benecke, W. Mueller und F. Za
Findebuch zum mittelhochdeutschen Wortschatz
Nachträge zum Mittelhochdeutschen Handwörterbuch von M. Lexer
Luxemburger Wörterbücher
Wörterbuch der Luxemburger Umgangssprache
Wörterbuch der Luxemburger Mundart
Start search
Dictionary Search Results View
Searchlemma
Lemma/Dictionary
Link
First Line
previous
page 0 of 0
next
Dictionary Browser View
100%

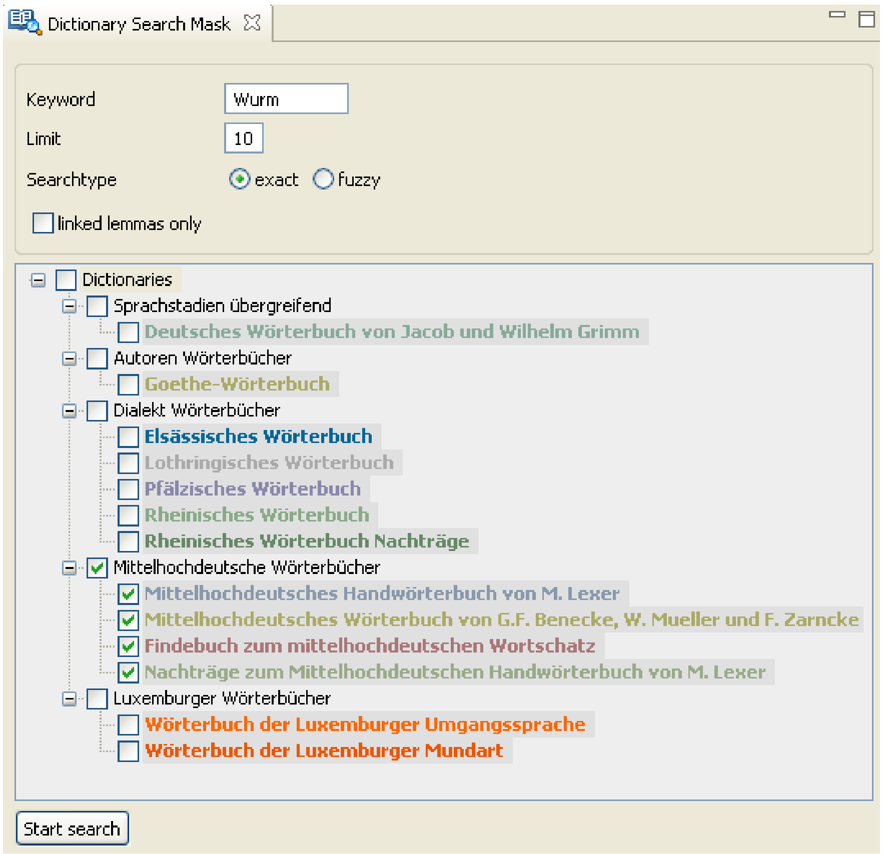
Please select a dictionary from the listed dictionaries.

Figure: The Dictionary Search Perspective

2.6.3 The Dictionary Search Mask

In order to look up a word in *LexWeb*, fill out the *Dictionary Search Mask* as follows:

- Insert your keyword in the first slot (the search is not case sensitive).
- You can limit the number of results. By default, the first 10 results will be displayed.
- Choose between exact or fuzzy search.
- If you want only lemmas displayed that are linked in the dictionary network, tick the box “linked lemmas only”.
- Tick the box or boxes of the dictionaries to be searched:
- If you want all dictionaries to be searched tick the box “Dictionaries”, all the boxes will be activated automatically.
- If you just want to search a special group of dictionaries, e.g. Middle High German dictionaries, tick the box “Mittelhochdeutsche Wörterbücher”. The boxes of the four dictionaries of this group will be activated.
- If you want to search in single dictionaries tick the individual boxes.
- You can also combine searching a group and a single dictionary of another group.
- To start the search click the icon “Start search”.



Dictionary Search Mask

Keyword: Wurm

Limit: 10

Searchtype: ● exact ○ fuzzy

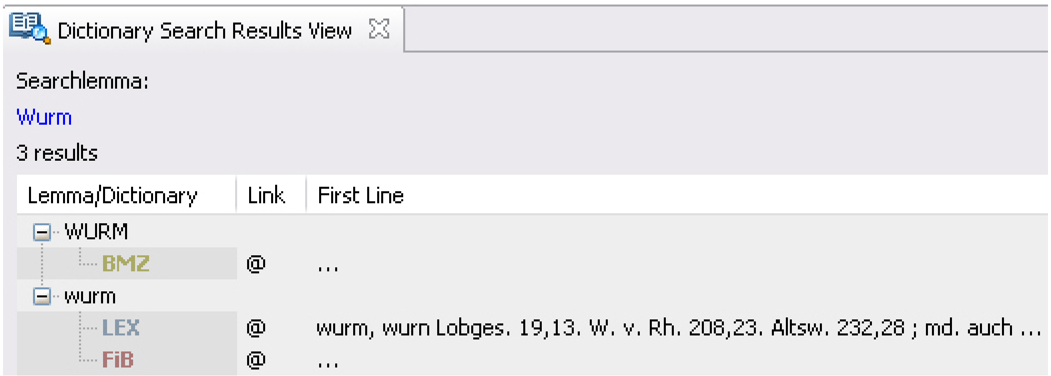
□ linked lemmas only

- □ Dictionaries
  - □ Sprachstadien übergreifend
    - □ Deutsches Wörterbuch von Jacob und Wilhelm Grimm
  - □ Autoren Wörterbücher
    - □ Goethe-Wörterbuch
  - □ Dialekt Wörterbücher
    - □ Elsässisches Wörterbuch
    - □ Lothringisches Wörterbuch
    - □ Pfälzisches Wörterbuch
    - □ Rheinisches Wörterbuch
    - □ Rheinisches Wörterbuch Nachträge
  - ☑ Mittelhochdeutsche Wörterbücher
    - ☑ Mittelhochdeutsches Handwörterbuch von M. Lexer
    - ☑ Mittelhochdeutsches Wörterbuch von G.F. Benecke, W. Mueller und F. Zarncke
    - ☑ Findebuch zum mittelhochdeutschen Wortschatz
    - ☑ Nachträge zum Mittelhochdeutschen Handwörterbuch von M. Lexer
  - □ Luxemburger Wörterbücher
    - □ Wörterbuch der Luxemburger Umgangssprache
    - □ Wörterbuch der Luxemburger Mundart

Figure: The Dictionary Search Mask

2.6.4 The Dictionary Search Results View

A search for “Wurm” in the Middle High German dictionaries, for instance, will turn up the following results:



Dictionary Search Results View

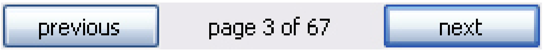
Searchlemma:
Wurm
3 results

Lemma/Dictionary	Link	First Line
WURM		
BMZ	@	...
wurm		
LEX	@	wurm, wurn Lobges. 19,13. W. v. Rh. 208,23. Altsw. 232,28 ; md. auch ...
FiB	@	...

Figure: The Dictionary Search Results View

There are three hits in total, one in the *Middle High German Dictionary* by Georg Friedrich Benecke (BMZ) for the spelling with a capital, and two more for the lemma in lower case in the *Middle High German Dictionary* by Matthias Lexer (LEX) and the *Middle High German Word ListSupplement* by Kurt Gärtner et al. (FiB). For orientation, the first line of the article (up to 13 words of the lemma) is displayed.

If the number of results exceeds the display limit, you can view the remaining hits by clicking on the *next* or the *previous* button.

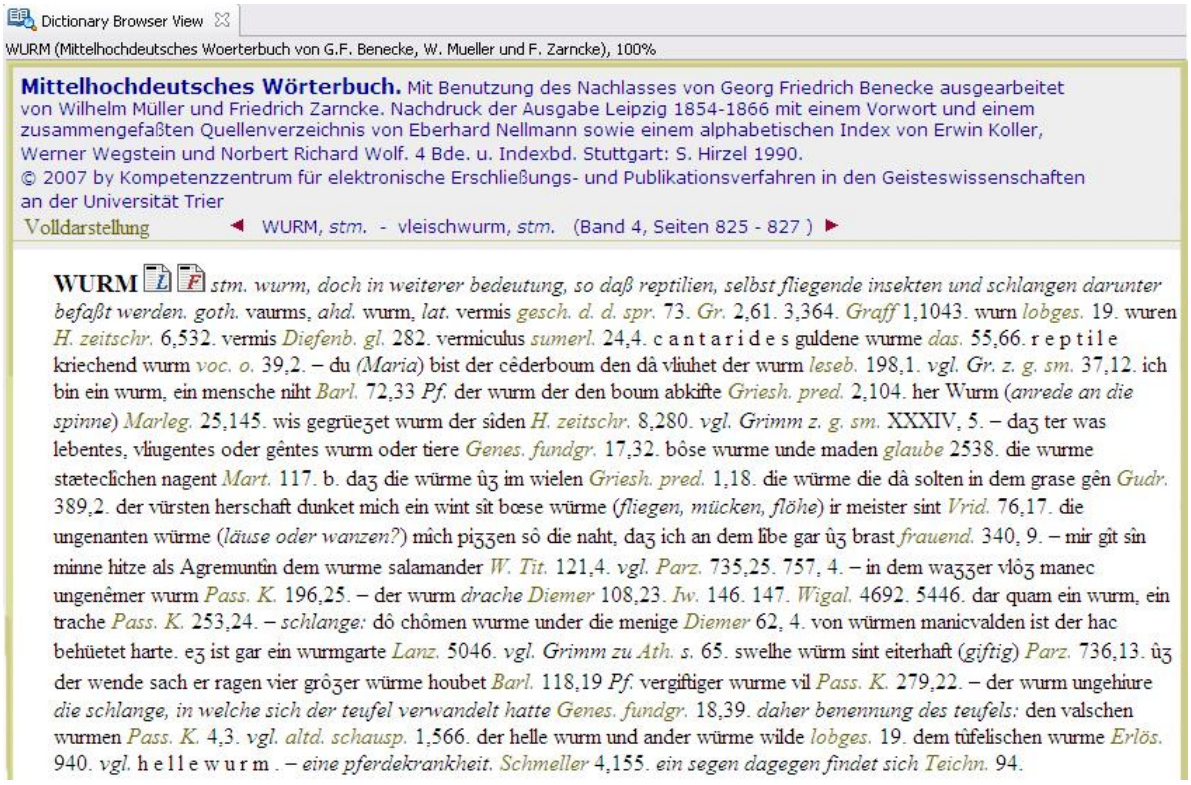


All three hits of the actual search are linked to the entries in the dictionary network, which is indicated by the symbol @, next to the short form.

Note: In order to specify your search, you can also use wildcards. The asterisk (*) substitutes any zero or more characters, and the question mark (?) substitutes exactly one character. You can combine these search methods. For instance to look up all words beginning with the characters "Wur", followed by any characters and ending on "e" plus one more character, the search term to be used is "Wur*e?".

2.6.5 The Dictionary Browser View

In order to look up the entry in the dictionary click on the short form. If you click on BMZ for instance, the Dictionary Browser View will show you the entire entry for "Wurm".



WURM (Mittelhochdeutsches Woerterbuch von G.F. Benecke, W. Mueller und F. Zarncke), 100%

Mittelhochdeutsches Wörterbuch. Mit Benutzung des Nachlasses von Georg Friedrich Benecke ausgearbeitet von Wilhelm Müller und Friedrich Zarncke. Nachdruck der Ausgabe Leipzig 1854-1866 mit einem Vorwort und einem zusammengefaßten Quellenverzeichnis von Eberhard Nellmann sowie einem alphabetischen Index von Erwin Koller, Werner Wegstein und Norbert Richard Wolf. 4 Bde. u. Indexbd. Stuttgart: S. Hirzel 1990.
© 2007 by Kompetenzzentrum für elektronische Erschließungs- und Publikationsverfahren in den Geisteswissenschaften an der Universität Trier

Volldarstellung ◄ WURM, *stm.* - vleischwurm, *stm.* (Band 4, Seiten 825 - 827) ►

WURM *stm. wurm, doch in weiterer bedeutung, so daß reptilien, selbst fliegende insekten und schlangen darunter befaßt werden. goth.* vaurms, *ahd.* wurm, *lat.* vermis *gesch. d. d. spr.* 73. *Gr.* 2,61. 3,364. *Graff* 1,1043. wurn *lobges.* 19. wuren *H. zeitschr.* 6,532. vermis *Diefenb. gl.* 282. vermiculus *sumerl.* 24,4. cantarides guldene wurme *das.* 55,66. reptile kriechend wurm *voc. o.* 39,2. – du *(Maria)* bist der cêderboum den dâ vliuhet der wurm *leseb.* 198,1. *vgl. Gr. z. g. sm.* 37,12. ich bin ein wurm, ein mensche niht *Barl.* 72,33 *Pf.* der wurm der den boum abkifte *Griesh. pred.* 2,104. her Wurm (*anrede an die spinne*) *Marleg.* 25,145. wis gegrüeȝet wurm der sîden *H. zeitschr.* 8,280. *vgl. Grimm z. g. sm.* XXXIV, 5. – daȝ ter was lebentes, vliugentes oder gêntes wurm oder tiere *Genes. fundgr.* 17,32. bôse wurme unde maden *glaube* 2538. die wurme stæteclichen nagent *Mart.* 117. b. daȝ die würme ûȝ im wielen *Griesh. pred.* 1,18. die würme die dâ solten in dem grase gên *Gudr.* 389,2. der vürsten herschaft dunket mich ein wint sît bœse würme (*fliegen, mücken, flöhe*) ir meister sint *Vrid.* 76,17. die ungenanten würme (*läuse oder wanzen?*) mich piȝȝen sô die naht, daȝ ich an dem lîbe gar ûȝ brast *frauend.* 340, 9. – mir gît sîn minne hitze als Agremuntîn dem wurme salamander *W. Tit.* 121,4. *vgl. Parz.* 735,25. 757, 4. – in dem waȝȝer vlôȝ manec ungenêmer wurm *Pass. K.* 196,25. – der wurm *drache Diemer* 108,23. *Iw.* 146. 147. *Wigal.* 4692. 5446. dar quam ein wurm, ein trache *Pass. K.* 253,24. – *schlange:* dô chômen wurme under die menige *Diemer* 62, 4. von würmen manicvalden ist der hac behüetet harte. eȝ ist gar ein wurmgarte *Lanz.* 5046. *vgl. Grimm zu Ath. s.* 65. swelhe würm sint eiterhaft (*giftig*) *Parz.* 736,13. ûȝ der wende sach er ragen vier grôȝer würme houbet *Barl.* 118,19 *Pf.* vergiftiger wurme vil *Pass. K.* 279,22. – der wurm ungehiure *die schlange, in welche sich der teufel verwandelt hatte Genes. fundgr.* 18,39. *daher benennung des teufels:* den valschen wurmen *Pass. K.* 4,3. *vgl. altd. schausp.* 1,566. der helle wurm und ander würme wilde *lobges.* 19. dem tûfelischen wurme *Erlös.* 940. *vgl.* hellewurm. – *eine pferdekrankheit. Schmeller* 4,155. *ein segen dagegen findet sich Teichn.* 94.

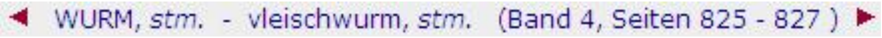
Figure: The Dictionary Browser View

This quick view starts with the article in question. However, it lists the following articles as well, depending on their length.

There are several options to go into more detail:

You can look up the searchlemma in the Middle High German Dictionary by Matthias Lexer (LEX) by clicking on the icon and the Middle High German Word ListSupplement by Kurt Gärtner et al. (FiB) by clicking on the icon .

You can browse the dictionary by clicking on the left or right arrow.


◄ WURM, *stm.* - vleischwurm, *stm.* (Band 4, Seiten 825 - 827) ►

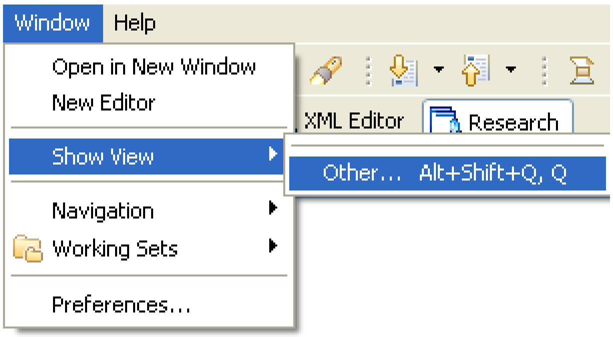
The option "Volldarstellung" will open up the complete functionality of the dictionary network, which comprises:

- browsable lemma search list,
- browsable display of articles,

- full-text search,
- lemma search,
- linked entries,
- citable references,
- structured entry-views (depending on the dictionary),
- links within the dictionary entry (in the Middle High German dictionaries),
- maps (in the Dialect dictionaries).

2.6.6 How to Combine Text Searches with Dictionary Search

The functionality of the *Dictionary Search Tool* can also be used while working on a text document. Open the *Search Result* view by clicking on the item “Window” in the menu bar, and select “Show View”, “Other” and “Dictionary Search”.

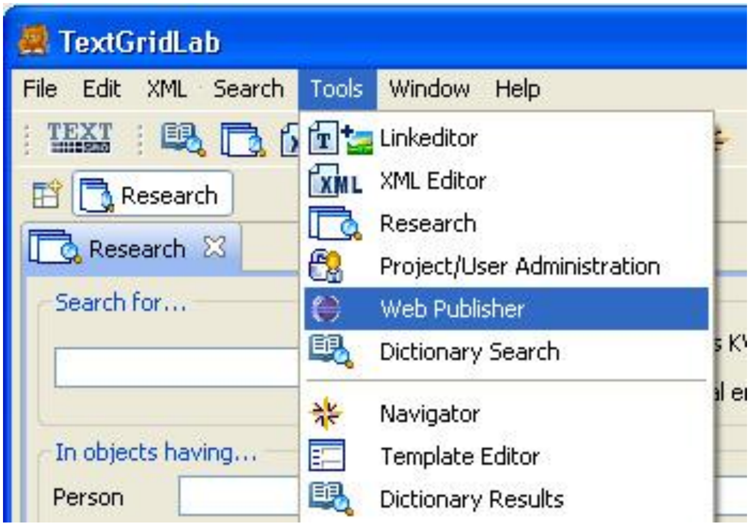


You can look up any word of your text by double clicking it.

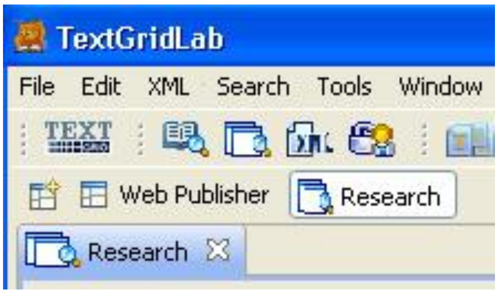
2.7 *Web Publisher*

2.7.1 How to open the Web Publisher

To open the Web Publisher select „Tools” from the menu bar and click „Web Publisher“.

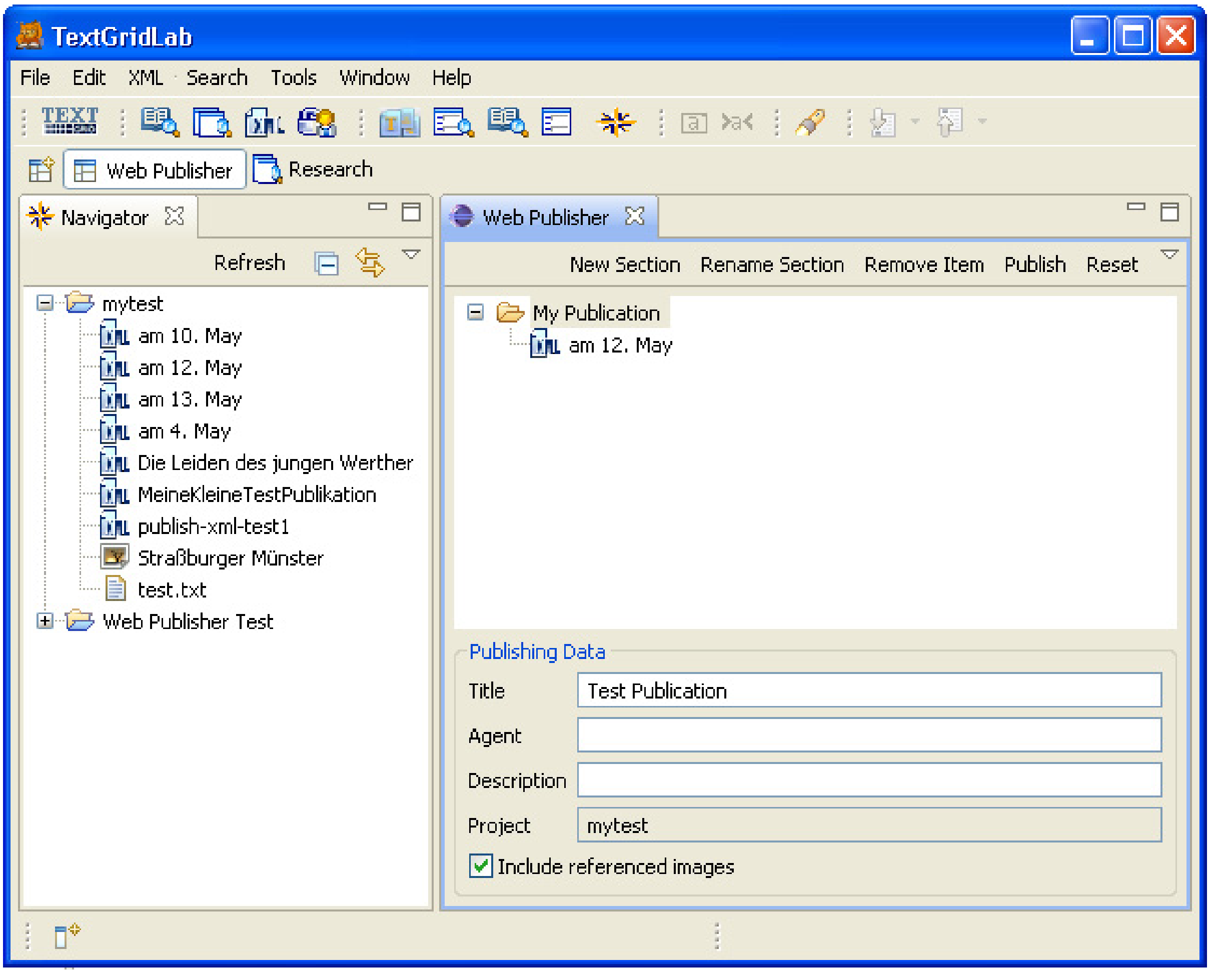


Once the perspective has been opened, it can be easily accessed by clicking the “Web Publisher” tab in the perspective switch bar, even if another perspective is active at the time.



2.7.2 How to create a publication

The Web Publisher perspective consists of the Web Publisher view and the Navigator. In the Web Publisher view Sections can be created by clicking “New Section” and renamed by clicking “Rename Section”. TextGrid-Objects can be dragged from the Navigator and dropped on the Web Publisher view. Both, Sections and TextGrid-Objects can be rearranged via Drag and Drop or removed by clicking “Remove Item”.



Title: Test Publication

Agent:

Description:

Project: mytest

☑ Include referenced images

Before publishing at least a title and an agent have to be entered, the description is optional.

A publication is associated to a project. Only TextGrid-Objects belonging to its associated project can be added to a publication. The publication itself is stored as a TextGrid-Object belonging to its associated project.

The associated project of a publication is determined by the first TextGrid-Object dropped on the Web Publisher view. To reset the associated project all TextGrid-Objects have to be removed from the publication tree.

2.8 Lemmatizer

2.8.1 Morphisto Lemmatizer Module: Functions

The *Lemmatizer* module “Morphisto” is used to perform a morphological analysis on German wordforms. The user can lemmatize complete files with the function *Lemmatize file*, or interactively use the tool *Lemmatize Wordform* for a single word analysis. The command S*earch Historic* is used to manage and search morpho-syntactic information of historic wordforms.

2.8.1.1 Lemmatize Wordform

TextGrid uses *SFST (Stuttgart Finite State Library)* for the morphological analysis of New High German words. For any given single wordform, Morphisto returns the corresponding lemma form, or, even a more complex morphological analysis with information concerning the morpho-syntatic features of the word (number, gender, case, mode, and person). The tool is used interactively and can be configured according to the user's needs.

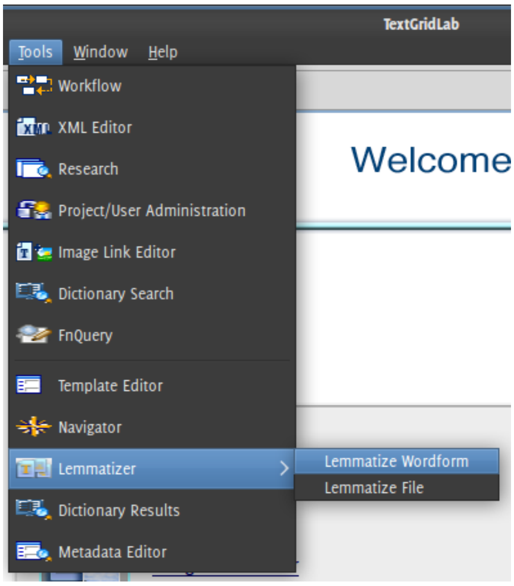
2.8.1.2 Lemmatize File

The command *Lemmatize File* is similar to *Lemmatize Wordform* but is used in batch mode to manage whole files. UTF-8 encoded files in one of the following formats are supported: PLAIN ASCCI texts, tokenized wordform lists, or, TEI/XML texts.

2.8.2 How to open the Lemmatizer Module Morphisto

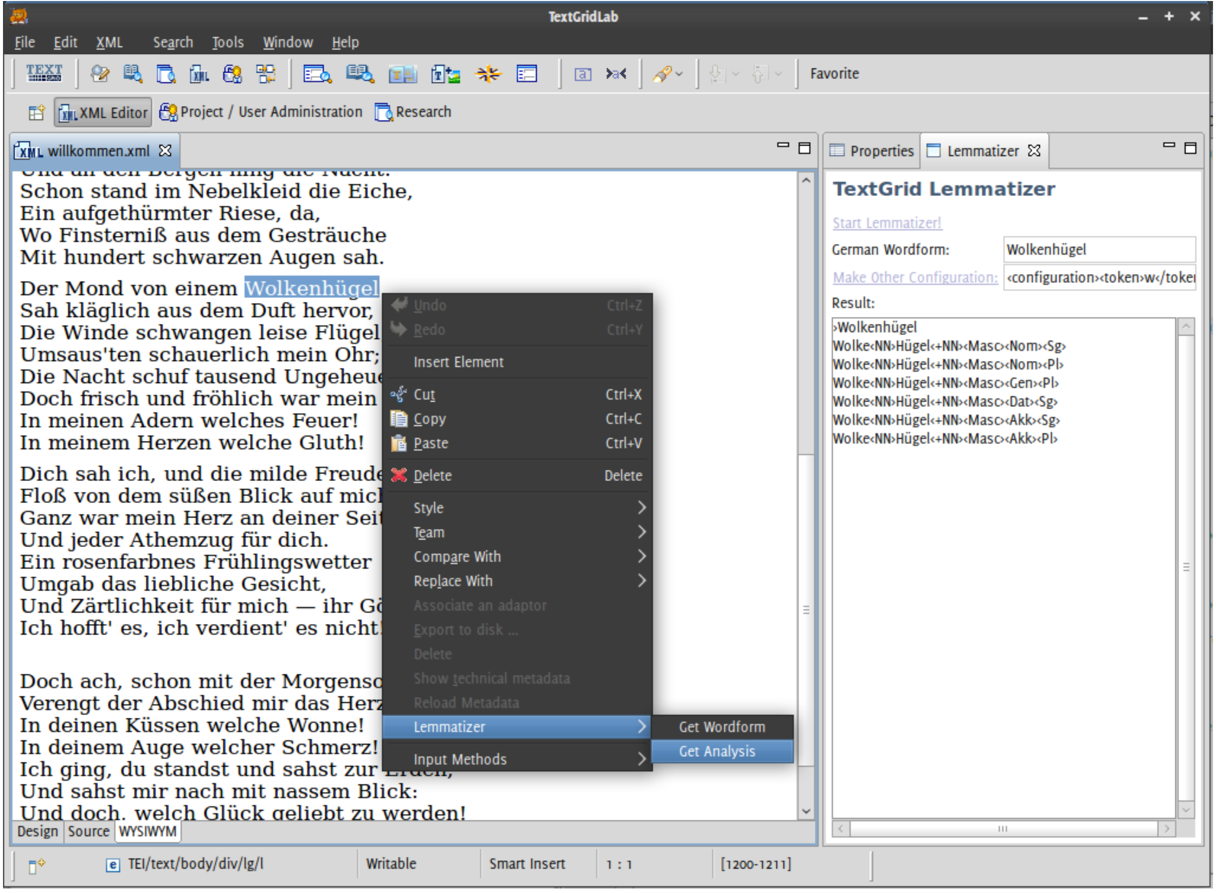
The *Lemmatizer* Module can be accessed from the tools menu of the TextGridLab.

Please select first “Tools” in the menu bar and then choose “Lemmatizer”:



Alternatively, the *Lemmatizer* can be opened by clicking on the Lemmatizer icon in the tool bar of TextGridLab:

You can look up any word from within an editor by marking the word, right-clicking it, and selecting a lemmatizer function from the pop-up menu that appears:



Und an den Bergen hing die Nacht.
Schon stand im Nebelkleid die Eiche,
Ein aufgethürmter Riese, da,
Wo Finsterniß aus dem Gesträuche
Mit hundert schwarzen Augen sah.

Der Mond von einem Wolkenhügel
Sah kläglich aus dem Duft hervor,
Die Winde schwangen leise Flügel
Umsaus'ten schauerlich mein Ohr;
Die Nacht schuf tausend Ungeheu
Doch frisch und fröhlich war mein
In meinen Adern welches Feuer!
In meinem Herzen welche Gluth!

Dich sah ich, und die milde Freude
Floß von dem süßen Blick auf mic
Ganz war mein Herz an deiner Sei
Und jeder Athemzug für dich.
Ein rosenfarbnes Frühlingswetter
Umgab das liebliche Gesicht,
Und Zärtlichkeit für mich — ihr Gö
Ich hofft' es, ich verdient' es nicht

Doch ach, schon mit der Morgenso
Verengt der Abschied mir das Herz
In deinen Küssen welche Wonne!
In deinem Auge welcher Schmerz!
Ich ging, du standst und sahst zur
Und sahst mir nach mit nassem Blick:
Und doch, welch Glück geliebt zu werden!

TextGrid Lemmatizer

Start Lemmatizer!

German Wordform: Wolkenhügel

Make Other Configuration: ‹configuration›‹token›w‹/toke

Result:

```
›Wolkenhügel
Wolke‹NN›Hügel‹+NN›‹Masc›‹Nom›‹Sg›
Wolke‹NN›Hügel‹+NN›‹Masc›‹Nom›‹Pl›
Wolke‹NN›Hügel‹+NN›‹Masc›‹Gen›‹Pl›
Wolke‹NN›Hügel‹+NN›‹Masc›‹Dat›‹Sg›
Wolke‹NN›Hügel‹+NN›‹Masc›‹Akk›‹Sg›
Wolke‹NN›Hügel‹+NN›‹Masc›‹Akk›‹Pl›
```

2.8.3 The Morphisto User Interface

2.8.3.1 Lemmatize Wordform:

To lemmatize a single German wordform with the command *Lemmatize Wordform*, please type in a word in the field German Wordform. Choose your favorite configuration option and click on the icon Start Lemmatizer. The result is presented in the text window below.

2.8.3.2 Lemmatize file:

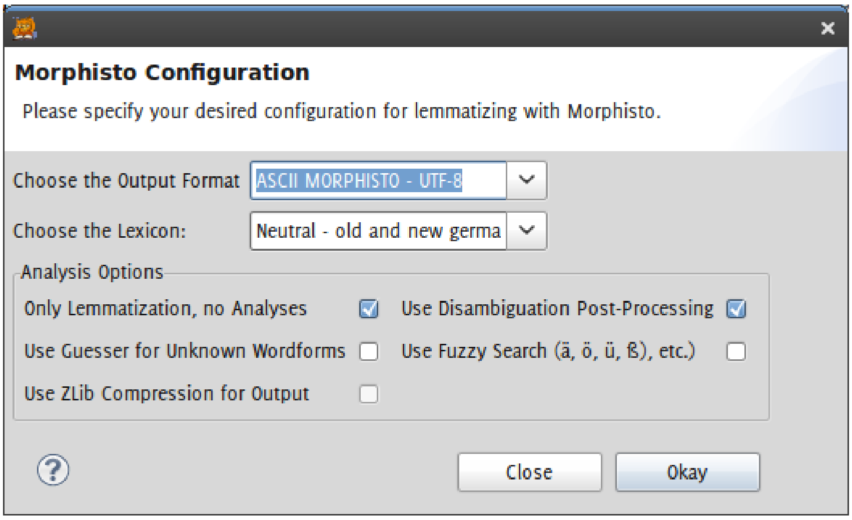
The command *Lemmatize file* is used in batch mode for UTF-8 encoded files. Please first choose between the modes plain text, TEI/XML-encoded file and German Wordfom List. The last option is for files which are already tokenized. The result is presented in the window below.

2.8.3.3 Search Historic:

The command *Search Historic* is used to manage and search morpho-syntactic information of historic wordforms. Please type in a historic wordform in the field Search Term and click on the icon Search Item to find the corresponding lemma. The result is presented in the text window Found Lemmas. If you would like to see all wordforms pertaining to the selected lemma, you can double-click on the respective lemma. The results are shown in the text window Included Wordforms.

2.8.4 The Morphisto Configuration Mask

If you click on *Make Configuration*, a dialogue field pops up where you can specify your desired configuration for lemmatizing with *Morphisto*.



Morphisto Configuration

Please specify your desired configuration for lemmatizing with Morphisto.

Choose the Output Format: ASCII MORPHISTO - UTF-8

Choose the Lexicon: Neutral - old and new germa

Analysis Options

- Only Lemmatization, no Analyses ☑
- Use Disambiguation Post-Processing ☑
- Use Guesser for Unknown Wordforms □
- Use Fuzzy Search (ä, ö, ü, ß), etc.) □
- Use ZLib Compression for Output □

Figure: The Configuration Mask

You can specify whether your input file corresponds to the new (NDR) or old (ADR) German spelling conventions. You can also select in a popup menu a liberal mode, where both writings are equally accepted (Neutral).

The option Only Lemmatization, No Analysis is activated by default, and returns the lemma information for a corresponding wordform. If you want to get the full morphological analysis, you can deactivate this option.

The option Use Guesser For Unknown Wordforms can be used to consider also partial word formation analysis. Often a successful lemmatization can be derived even if part of a compound or derivation is not listed in the lexicon.

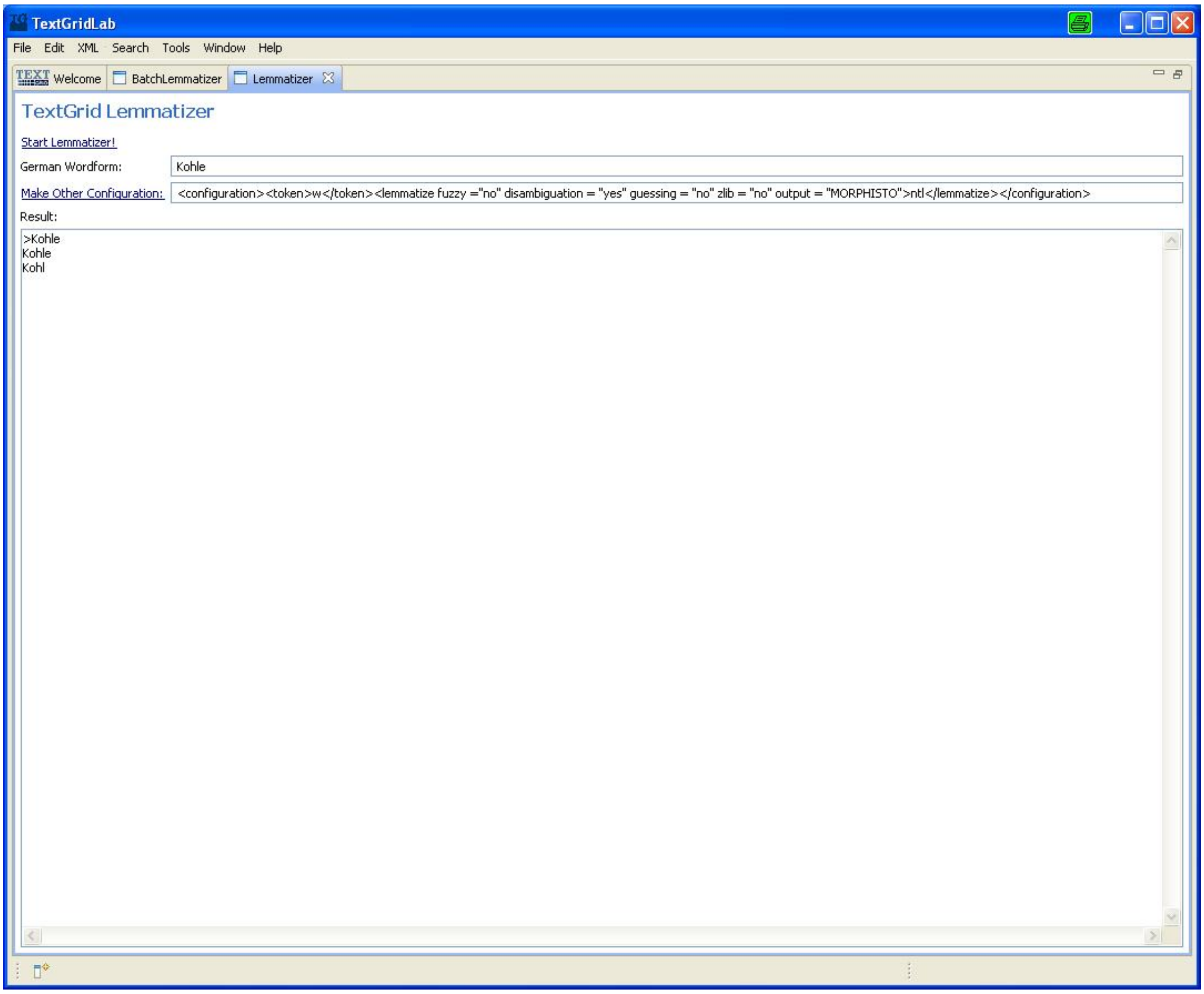
You can further reduce the number of analyses by choosing Use Disambiguation Post-Processing . As composition is a very productive process in German, often a large number of possible but unlikely analyses are produced; therefore, it is highly recommended to activate this option.

The option Use Fuzzy Search should be used if your input text contains non-standard words spellings (e.g., particularly Umlaute and 'ß, 'ue' instead of 'ü' and 'ss' instead of 'ß').

You can use the option UseZLib Compression For Output if you want to speed up the transfer of the resulting output file via the net. This option is recommended for large input files or whenever a complete morphological analysis is requested.

2.8.5 Presentation of the Morphisto Results

A search for “Kohle” in *Morphisto* with the standard configuration, for instance, will turn up the following results:



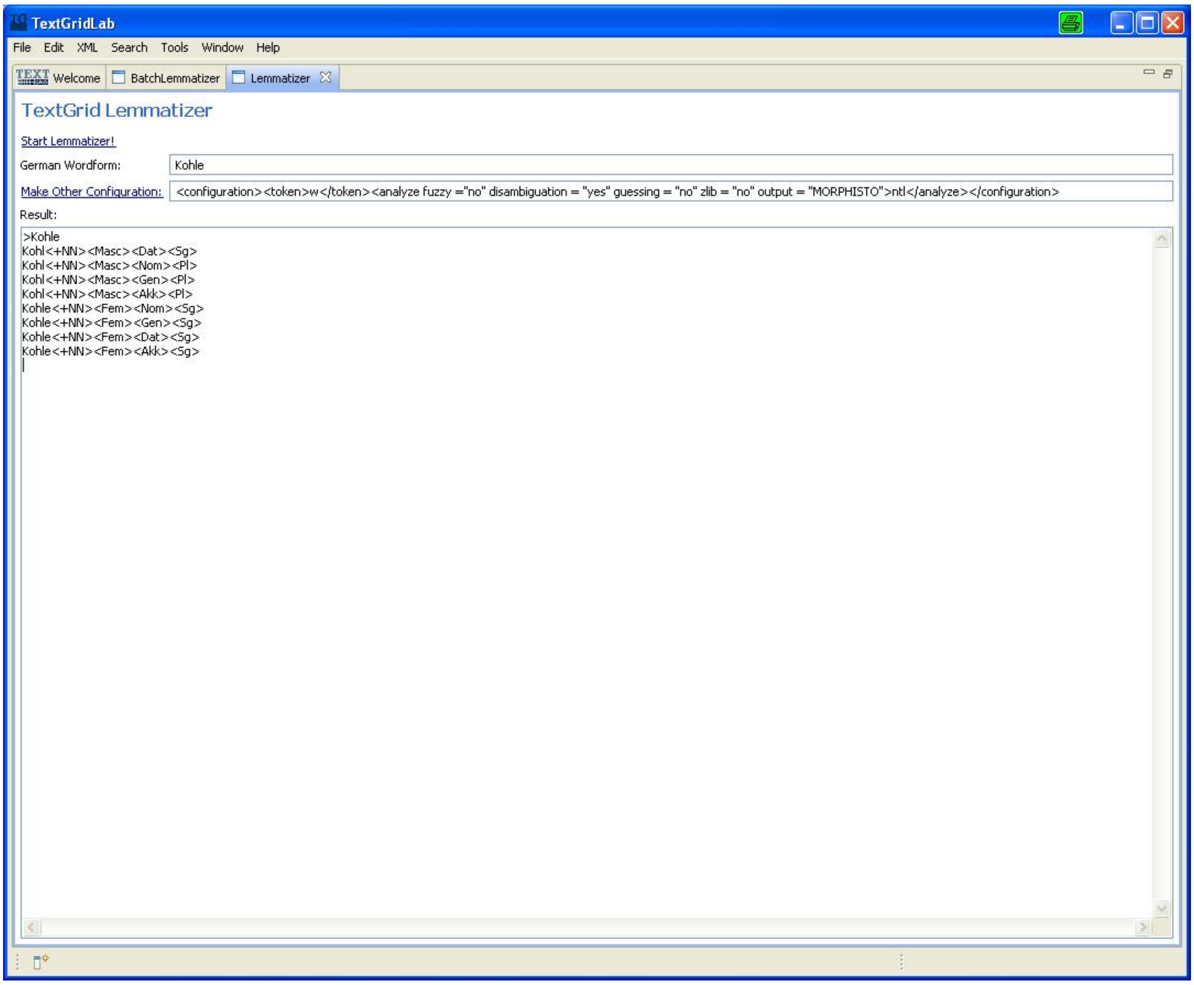
German Wordform: Kohle

```
<configuration><token>w</token><lemmatize fuzzy ="no" disambiguation = "yes" guessing = "no" zlib = "no" output = "MORPHISTO">ntl</lemmatize></configuration>
```

```
>Kohle
Kohle
Kohl
```

Figure: The Lemmatizer Results

There are two interpretations, the first one is the plural form of *Kohl*, and the second one is the singular form of the lemma *Kohle*. When the field *Full Analysis* is activated, the morpho-syntactic features are displayed as well.



German Wordform: Kohle

Make Other Configuration: <configuration><token>w</token><analyze fuzzy ="no" disambiguation = "yes" guessing = "no" zlib = "no" output = "MORPHISTO">ntl</analyze></configuration>

Result:

```
>Kohle
Kohl<+NN><Masc><Dat><Sg>
Kohl<+NN><Masc><Nom><Pl>
Kohl<+NN><Masc><Gen><Pl>
Kohl<+NN><Masc><Akk><Pl>
Kohle<+NN><Fem><Nom><Sg>
Kohle<+NN><Fem><Gen><Sg>
Kohle<+NN><Fem><Dat><Sg>
Kohle<+NN><Fem><Akk><Sg>
```

Figure: The Lemmatizer Results

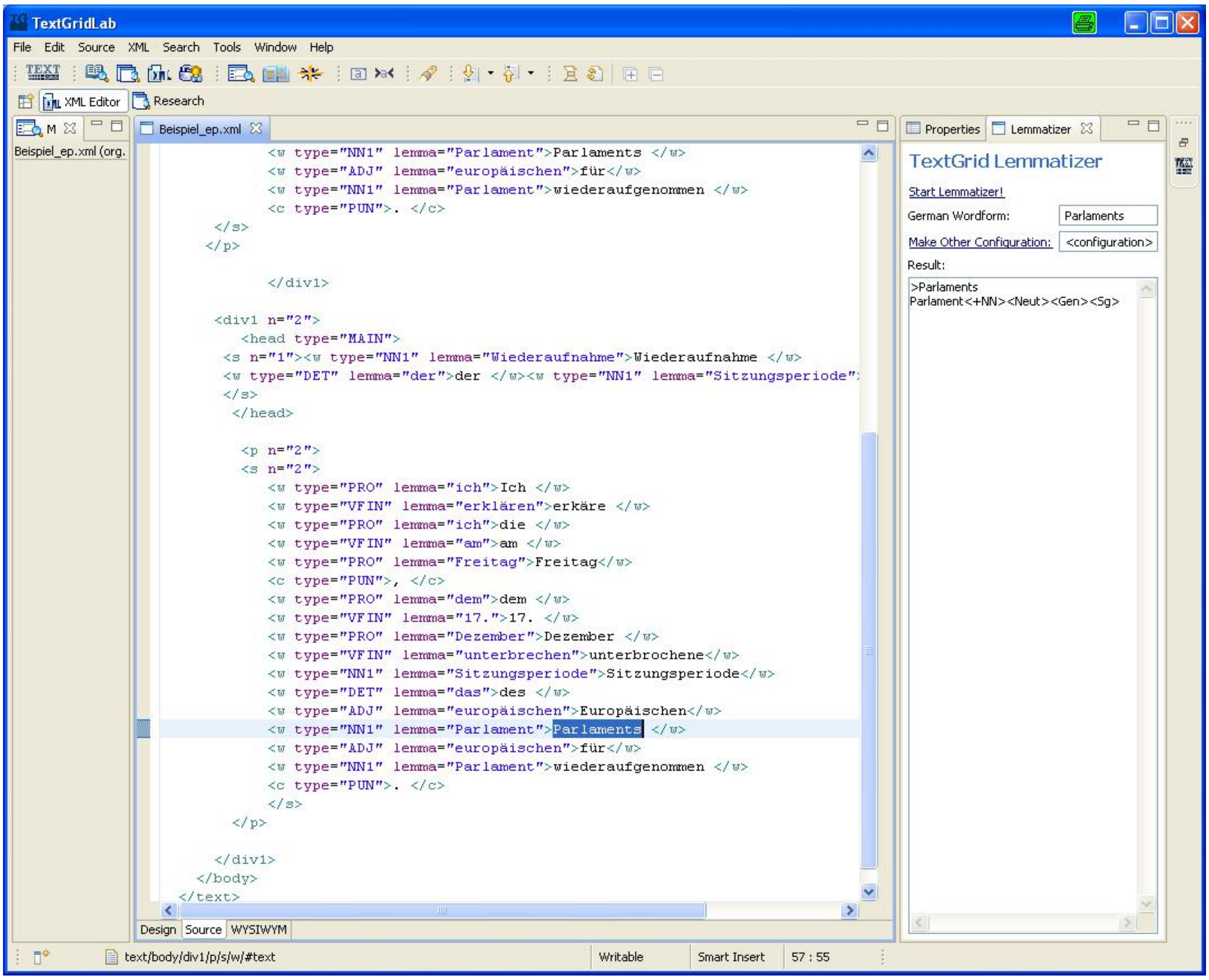
The linguistic annotation can also be integrated into a TEI/XML-encoded file. If the input file is tokenized and single tokens are enclosed in <w> tags, the lemmatizer adds the attributes *lemma* and *ana* within the <w> tag automatically, thus providing the lemma and part of speech information. The result is a valid XML file that can be used for further processing.

The results are displayed in a text window by default, but they can be stored in a separate file by clicking on the *Store Results* button.

2.8.6 How to access Morphisto from an Editor

The functionality of the *Lemmatizer* can also be used within the *XML-Editor* while working on a text document. Open the *Lemmatize Wordform* view and specify your configuration by selecting “Make Configuration”.

Then you can look up any word of your text by clicking it.



```
                <w type="NN1" lemma="Parlament">Parlaments </w>
                <w type="ADJ" lemma="europäischen">für</w>
                <w type="NN1" lemma="Parlament">wiederaufgenommen </w>
                <c type="PUN">. </c>
          </s>
         </p>

                </div1>

          <div1 n="2">
             <head type="MAIN">
           <s n="1"><w type="NN1" lemma="Wiederaufnahme">Wiederaufnahme </w>
           <w type="DET" lemma="der">der </w><w type="NN1" lemma="Sitzungsperiode":
           </s>
            </head>

             <p n="2">
             <s n="2">
                <w type="PRO" lemma="ich">Ich </w>
                <w type="VFIN" lemma="erklären">erkäre </w>
                <w type="PRO" lemma="ich">die </w>
                <w type="VFIN" lemma="am">am </w>
                <w type="PRO" lemma="Freitag">Freitag</w>
                <c type="PUN">, </c>
                <w type="PRO" lemma="dem">dem </w>
                <w type="VFIN" lemma="17.">17. </w>
                <w type="PRO" lemma="Dezember">Dezember </w>
                <w type="VFIN" lemma="unterbrechen">unterbrochene</w>
                <w type="NN1" lemma="Sitzungsperiode">Sitzungsperiode</w>
                <w type="DET" lemma="das">des </w>
                <w type="ADJ" lemma="europäischen">Europäischen</w>
                <w type="NN1" lemma="Parlament">Parlaments </w>
                <w type="ADJ" lemma="europäischen">für</w>
                <w type="NN1" lemma="Parlament">wiederaufgenommen </w>
                <c type="PUN">. </c>
                </s>
            </p>

          </div1>
        </body>
      </text>
```

text/body/div1/p/s/w/#text

TextGrid Lemmatizer

Start Lemmatizer!

German Wordform: Parlaments

Make Other Configuration: <configuration>

Result:

```
>Parlaments
Parlament<+NN><Neut><Gen><Sg>
```

Figure: Accessing Morphisto from an Editor

2.8.7 FAQ: Hints for Using the Lemmatizer Module Morphisto

Wrong format or encoding

In general, a pre-processing step is performed prior to morphological analysis. The *TextGrid Tokenizer* can be used to fulfill this task. If you like to use another tokenizer, please make sure that the characters are encoded in UFT-8 and the lines are separated in UNIX style, i.e. by means of the UNIX-specific line operator \n.

2.9 CollateX

CollateX is a tool for collating sources: fed with several witnesses it is able to align them and optionally annotate additions, deletions and transpositions that may have occurred between the various texts.

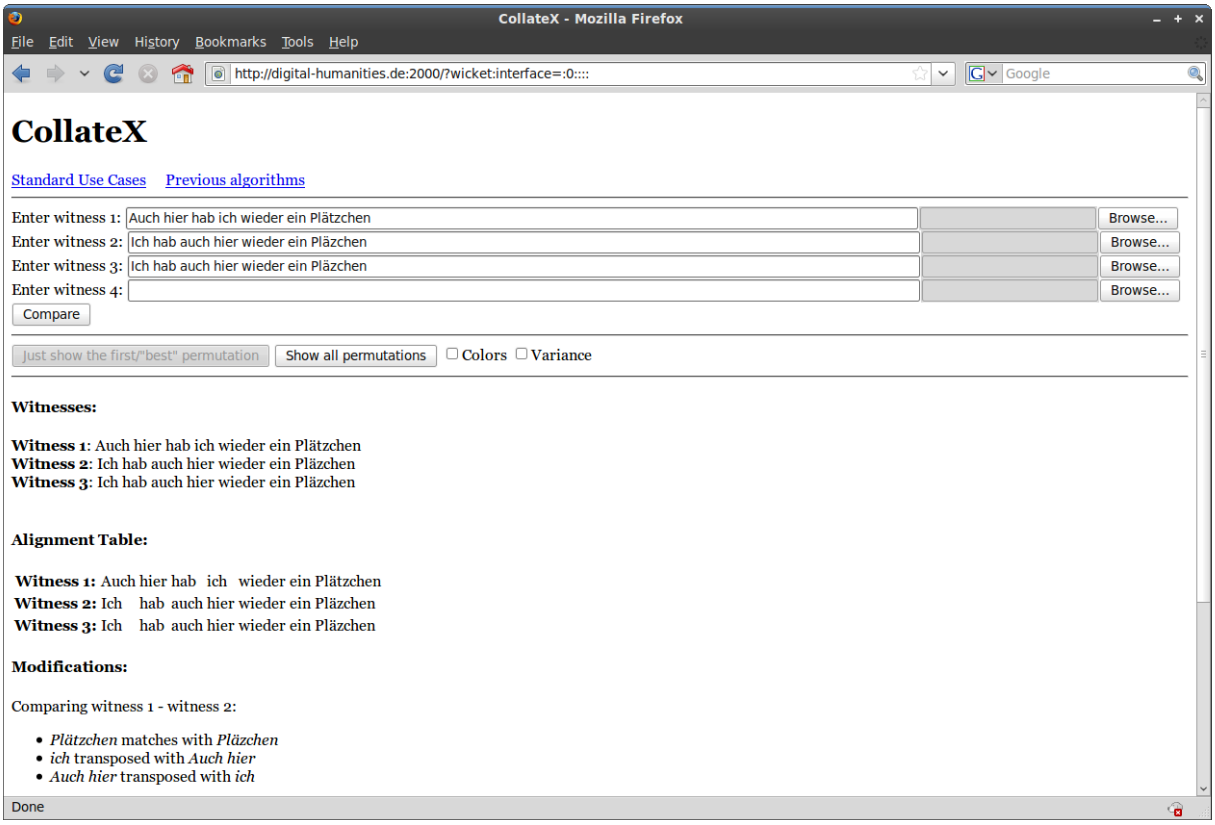
CollateX is developed together with the Huygens Instituut, Den Haag, among other institutions coordinated by the Interedition collaboration project[9].

2.9.1 State of development

CollateX consists of various modules that are designed for interoperability and use in various contexts: There is the core collation algorithm that performs the alignment, code for input and output of various formats, interchangeable distance functions, code to analyze the collation result and produce a set of potential additions, deletions and transpositions for the text, and user interface to control all of CollateX. Currently, the development focused mainly on the development of the algorithm and input formats, a GUI for inclusion in the Lab will be developed in the next project phase.

To experiment with the algorithm, there is a web based test user interface.

2.9.2 The Web based test GUI


CollateX - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://digital-humanities.de:2000/?wicket:interface=:0::::
Google

CollateX

Standard Use Cases Previous algorithms

Enter witness 1: Auch hier hab ich wieder ein Plätzchen

Enter witness 2: Ich hab auch hier wieder ein Pläzchen

Enter witness 3: Ich hab auch hier wieder ein Pläzchen

Enter witness 4:

Browse...
Browse...
Browse...
Browse...
Compare
Just show the first/"best" permutation
Show all permutations
□ Colors □ Variance

Witnesses:

Witness 1: Auch hier hab ich wieder ein Plätzchen
Witness 2: Ich hab auch hier wieder ein Pläzchen
Witness 3: Ich hab auch hier wieder ein Pläzchen

Alignment Table:

```
Witness 1: Auch hier hab  ich  wieder ein Plätzchen
Witness 2: Ich   hab  auch hier wieder ein Pläzchen
Witness 3: Ich   hab  auch hier wieder ein Pläzchen
```

Modifications:

Comparing witness 1 - witness 2:

- *Plätzchen* matches with *Pläzchen*
- *ich* transposed with *Auch hier*
- *Auch hier* transposed with *ich*

Figure 4: CollateX' web based test GUI.

The current web based user interface is illustrated in Figure 4. It is not the final state yet, for it is intended to allow philologists and developers to evaluate the algorithm rather than for production use.

[9] http://www.interedition.eu/

The user interface consists of several pages. On the first page, users can enter their test texts and push the *collate* button to perform a collation with the current algorithm. The other pages contain standard test cases.

A user interface for productive use will be developed in the next project phase.

2.10 Streaming Tools (i.e. non-interactive tools)

There are some streaming tools that do not have a dedicated user interface but are intended to be controlled via the Workflow Editor.

2.10.1 Sort

The Sorting Service is optimized for use with a fully functional streaming editor for XML transformations like the XSLT based streaming editor (see the next section). If the units to be sorted *(sort units)* and the sort key have not yet been marked up consistently, the user has to supply suitable markup before calling the sort service (and, optionally, remove that markup after the sorting process).

The sort service basically expects five arguments:

- *xmltree:* The XML document to sort. This document must be well-formed, will not be validated by the tool, however.
- *unitXPath:* An XPath expression (encoded as an *xs:string*) that selects the sort units. The path expression will be evaluated relatively to the root of *xmltree* and should return a nodeset of elements that will be sorted.
- *keyXPath*: An XPath expression (encoded as an xs:string) that selects the sort key within the sort unit. The expression will be evaluated relatively to each sort unit selected by the *unitXPath* and must return a string.
- *nsmap:* A map of XML prefixes to namespaces. Prefixes used in *unitXPath* or *keyXPath* must be declared here.
- *collator:* A description of the collation sequence to be used. There are two options:
    - a locale identifier. Specifying this will select the sort sequence for the locale as defined in ICU[10]
    - the collation sequence as a string[11]. If you follow the link to the ICU explorer you will find, as an example, "&ae << æ <<< Æ". These collation sequences are primarily based on ISO 14651.

The sort service identifies the sort units in the document and the sort keys therein using the XPath expressions *unitXPath* and *keyXPath*. XML prefixes in these expressions are resolved using *nsmap*. The sort units are then ordered in such a way that their respective sort keys monotonically increase according to the order defined by the collation sequence specified as *collator*. XML elements in the document that are not part of a sort unit aren't moved during this process, i.e. if there are *n* sort units before such a "neutral" element and *m* units afterwards in the source document, this will also be the case in the result document.

2.10.2 Streaming Editors

As streaming editors, i.e. general programmable text transformation tools, TextGrid provides two services: A XSLT based transformation service for working with XML source files and FnQuery, a prolog based transformation tool that can also handle non-XML input data.

[10] Cf. http://www.icu-project.org/userguide/locale.html and http://demo.icu-project.org/icu-bin/locexp

[11] Cf. http://www.icu-project.org/userguide/Collate_Intro.html and especially http://www.icu-project.org/userguide/Collate_Customization.html

2.10.2.1 XSLT

The XSLT transformation service is a simple web service wrapper (REST and SOAP)[12] around the Saxon B-(9.0.x) XSLT processor[13]. Besides the optional SessionID and log string (see above), the transformation service accepts three parameters:

- `input` (xs:anyType) – the XML data to be transformed
- `stylesheet` (xs:anyType) – the XSLT stylesheet
- params (xs:string) – key-value pairs defining XSLT parameters: `key1:value1|key2:value2| ...`

2.10.2.2 FNQuery

The *FnQuery* Module can be accessed from the tools menue of the TextGridLab.

1. Please select first “Tools” in the menu bar and then choose “FnQuery”:

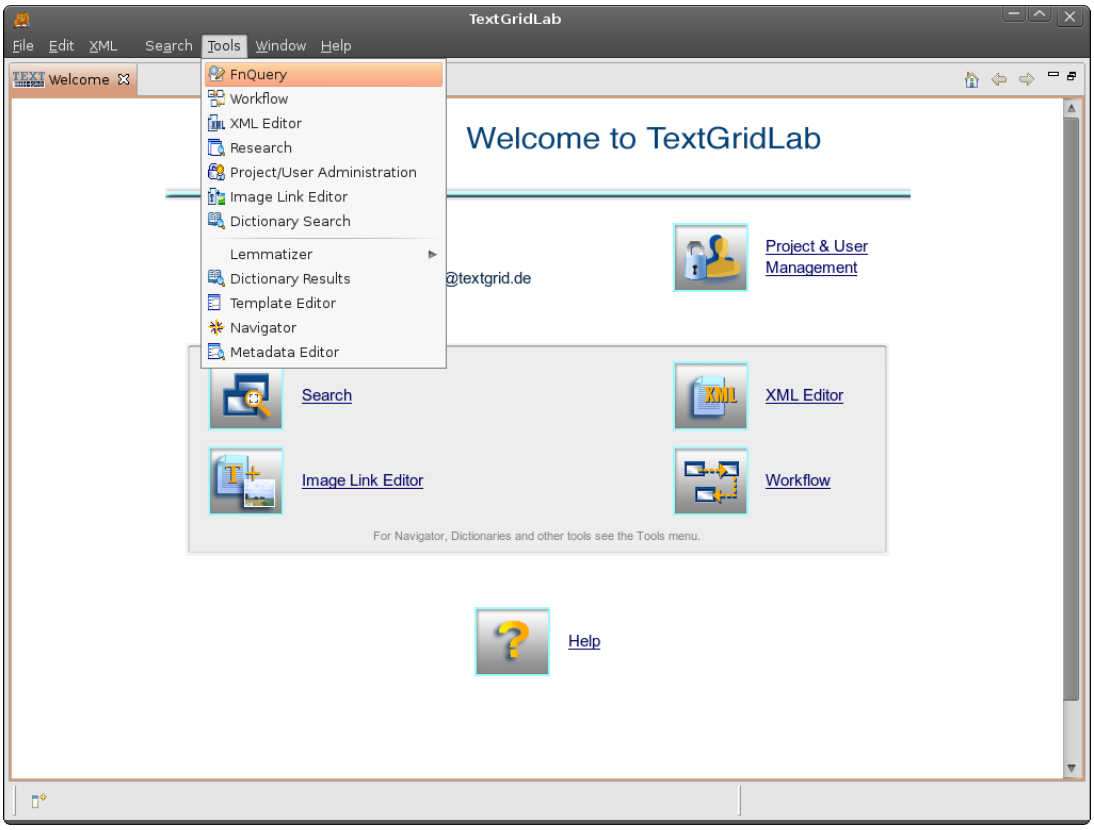
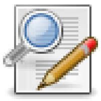


Figure: Accessing FnQuery

2. Alternatively, *FnQuery* can be opened by clicking on the FnQuery icon in the tool bar of TextGridLab :



[12] EPR: http://ingrid.sub.uni-goettingen.de:8081/axis2/services/StreamingEditorXSLT
[13] http://saxon.sourceforge.net

The FnQuery-Perspective has three Views. In the Navigator-View you can select the source- and program file. If both files were selected, you will see them in the Settings-View. Now you can start the Transformation or Selection. After that, the result will appear in the Result-View.

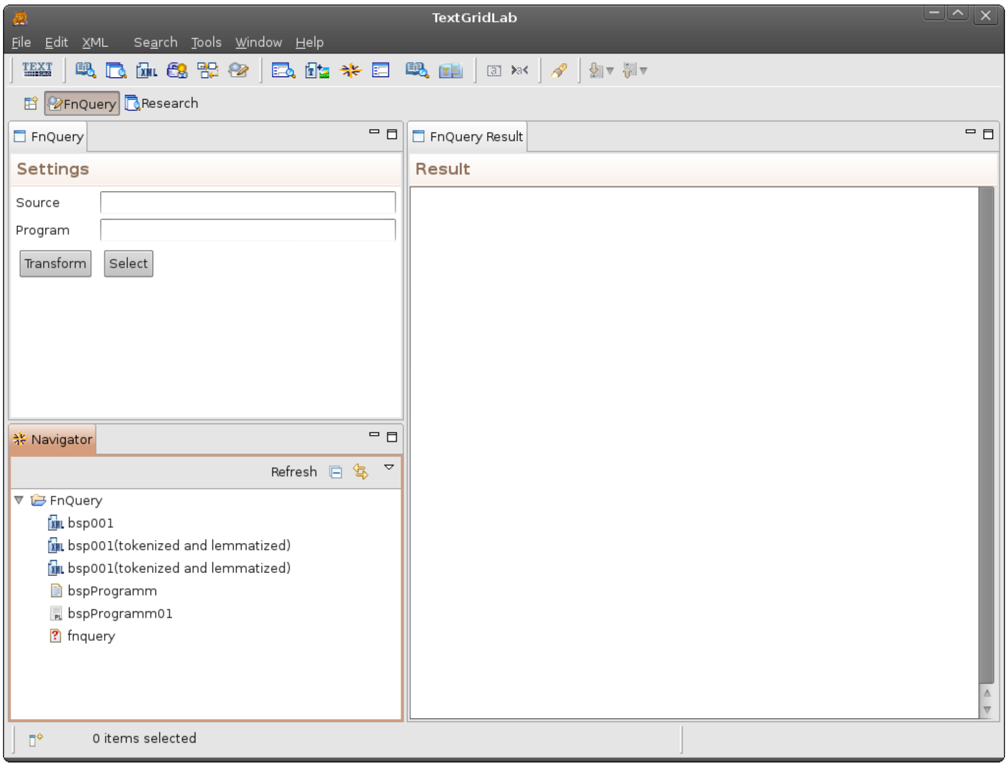


Figure: FnQuery Perspective

1. You need to select a source file. This can be a file of any type.

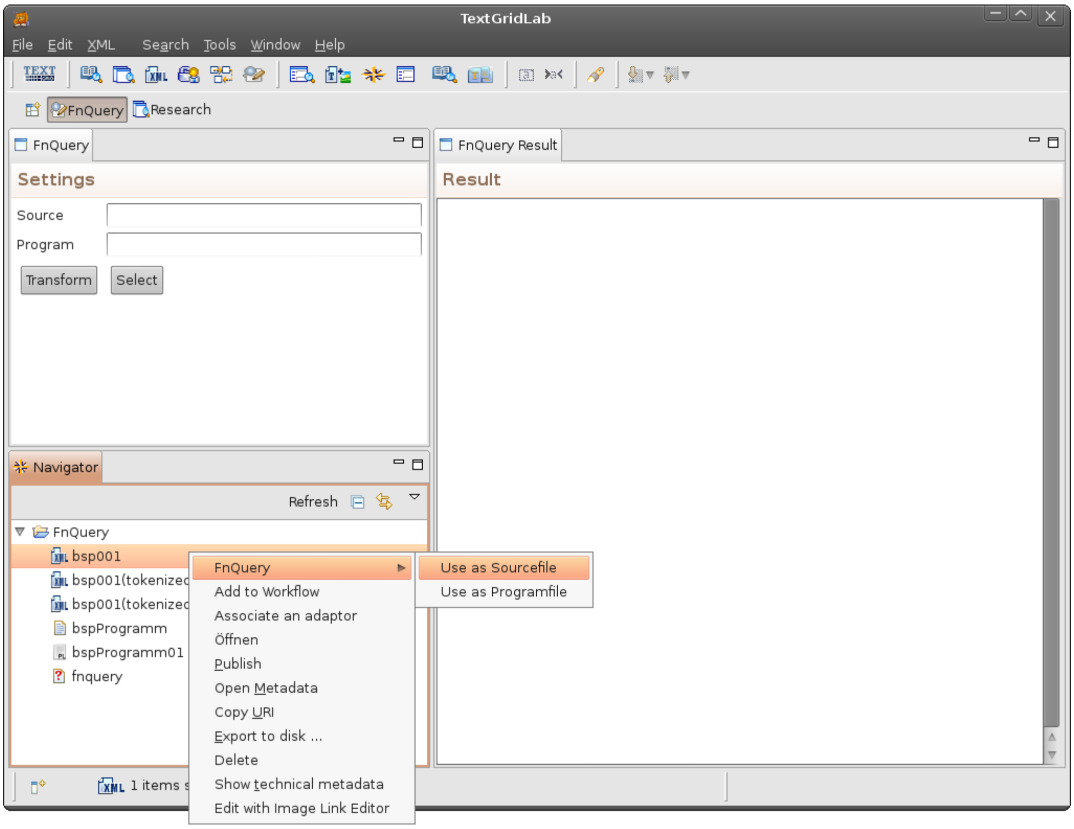


Figure: Select Source-File

2. You need to select a program file. This have to be a file of the type prolog. You can recognize this filetype by this icon PL.

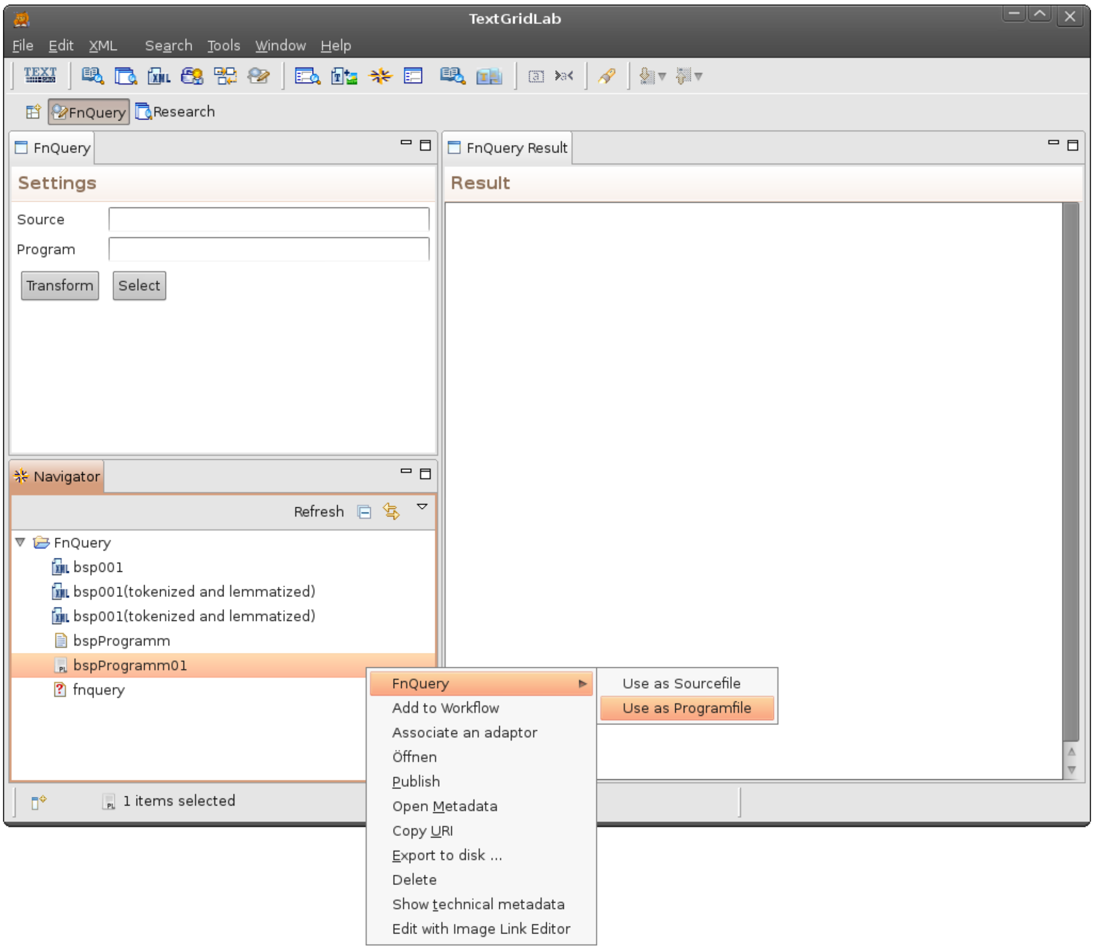
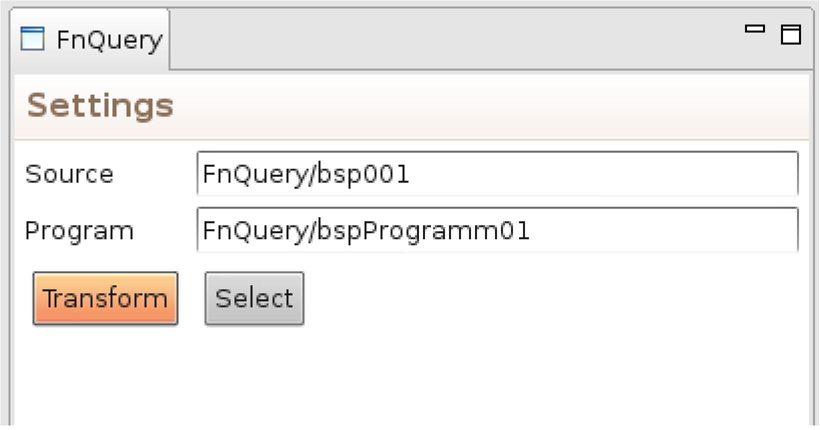


Figure: Select Program-File

3. If both files were selected, you can start the Transformation or Selection.



Source: FnQuery/bsp001

Program: FnQuery/bspProgramm01

Figure: Start Action

2.10.3 Tokenizer

The Tokenizer splits a text into logical units (tokens), i.e. in words and punctuation marks. These are marked by opening and closing tags. The Tokenizer implements the algorithm for determining word boundaries according to the guidelines of the Unicode Consortium[14]. The corresponding elements (for words and characters) as well as pre-defined tokens - for example abbreviations, proper nouns or regular expressions (e.g. for date specification) - can be defined in the tool-configuration. Tokenized texts can be processed further, for instance with the lemmatizer.

- The Tokenizer web service (SOAP)[15] accepts two parameters:
- indata (xs:string) – the XML encoded text data to be tokenized
- config (xs:string) – the configuration, in XML syntax:

```
<TokenizerConfig>
   <!—elements whose content should not be tokenized-->
   <IgnoreElements>
      <item>teiHeader</item>
   </IgnoreElements>
<MyTokens>
   <!—typed lists(s) of pre-defined tokens-->
   <category type="winter">
      <item>Advent</item>
      <item>Schneeflöcklein</item>
   </category>
   <category type="abbr">
      <item>Abk.</item>
      <item>e.g.</item>
   </category>
   <category type="NE">
      <item>Rufus T. Firefly</item>
      <item>Otis B. Driftwood</item>
   </category>
   <category type="date">
      <!--you can also use regular expressions-->
      <item>\d{1,2}\.\s?\d{1,2}\.\s?\d{4}</item>
      <item>\d{4}-\d{1,2}-\d{1,2}</item>
   </category>
</MyTokens>
<MyCharacters>
   <category type="">
   <!—typed lists(s) of characters to be tagged with the
      charelement (see below), note: some chars need to be escaped
      with the backslash-->
      <item>\.</item>
      <item>;</item>
      <item>,</item>
      <item>!</item>
      <item>\?</item>
      <item>\(</item>
      <item>\)</item>
      <item>\:</item>
      <item>&quot;</item>
   </category>
```

[14] http://www.unicode.org/reports/tr29/tr29-9.html#Word_Boundaries
[15] http://ingrid.sub.uni-goettingen.de/Tokenizer.wsdl

```
</MyCharacters>
<!--elements to be used for tagging tokens/words and characters-->
<tokenelement>w</tokenelement>
<charelement>c</charelement>
</TokenizerConfig>
```

Since there is no UI component, the tokenizer can only be used via the workflow tools. Here is an example workflow that calls tokenizer and lemmatizer:

```
<?xml version="1.0" encoding="UTF-8"?>
<tgwf:tgwf xmlns:tgwf="http://textgrid.info/namespaces/middleware/workflow" version="0.4">
 <tgwf:description>
           Lemmatizer Workflow with prepended Tokenizer (v0.4)
    </tgwf:description>
 <tgwf:activities>
  <tgwf:service description="TextGrid Tokenizer" name="Tokenizer" operation="Tokenizer64"
    serviceID="tok" targetNamespace="http://namespaces.textgrid.de/"
    wsdlLocation="http://ingrid.sub.uni-goettingen.de/Tokenizer.wsdl"/>
  <tgwf:service operation="LemmatizerTEIBatch64" wsdlLocation="http://ingrid.sub.uni-
    goettingen.de/lemmatizer_doc.wsdl" name="Lemmatizer" description="The TextGrid New German
    Lemmatizer" serviceID="lem" targetNamespace="http://namespaces.textgrid.de/"/>

 </tgwf:activities>
 <tgwf:datalinks>
  <tgwf:link linkID="read" fromServiceID="crud" fromParam="batchinput" toServiceID="tok"
    toParam="indata"/>
  <tgwf:link toServiceID="lem" fromParam="outdata" toParam="infile" fromServiceID="tok"
    linkID="Tok2Lem"/>
  <tgwf:link linkID="write" fromServiceID="lem" fromParam="outfile" toServiceID="crud"
    toParam="batchoutput"/>
 </tgwf:datalinks>
 <tgwf:CRUD instance="inserted automatically" sessionID="inserted automatically"
    logParameter="inserted automatically"/>
 <tgwf:batchinput/>
 <tgwf:metadatatransformation>
  <xsl:transform xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:ns1="http://textgrid.info/namespaces/middleware/tgcrud/services/TGCrudService"
    xmlns:tgomd="http://textgrid.info/namespaces/metadata/core/2008-07-24" version="1.0">
   <xsl:output method="xml" encoding="UTF-8" indent="no"/>
   <xsl:template match="/">
    <ns1:tgObjectMetadata
    xmlns:ns1="http://textgrid.info/namespaces/middleware/tgcrud/services/TGCrudService">
     <descriptive xmlns="http://textgrid.info/namespaces/metadata/core/2008-07-24">
      <xsl:for-each select="/ns1:tgObjectMetadata/tgomd:descriptive/tgomd:agent">
       <xsl:copy-of select="."/>
      </xsl:for-each>
      <agent role="other">empty</agent>
      <title>
       <xsl:value-of select="/ns1:tgObjectMetadata/tgomd:descriptive/tgomd:title"/>
       <xsl:text> (tokenized and lemmatized)</xsl:text>
      </title>
      <xsl:copy-of select="/ns1:tgObjectMetadata/tgomd:descriptive/tgomd:date"/>
      <xsl:copy-of select="/ns1:tgObjectMetadata/tgomd:descriptive/tgomd:type"/>
     </descriptive>
     <administrative xmlns="http://textgrid.info/namespaces/metadata/core/2008-07-24">
      <client>
       <project id="TGPRXXX"/>
       <xsl:copy-of select="/ns1:tgObjectMetadata/tgomd:administrative/tgomd:client/tgomd:format"/>
       <xsl:copy-of select="/ns1:tgObjectMetadata/tgomd:administrative/tgomd:client/tgomd:partNo"/>
      </client>
     </administrative>
     <xsl:copy-of select="/ns1:tgObjectMetadata/tgomd:custom"/>
    </ns1:tgObjectMetadata>
   </xsl:template>
  </xsl:transform>
  </tgwf:metadatatransformation>
  <tgwf:inputconstants>
    <tgwf:activity serviceID="tok">
      <tgwf:const name="config" needsB64encoding="true">
        <TokenizerConfig>
          <!-- Elemente, deren Inhalt nicht beruecksichtigt werden soll -->
          <IgnoreElements>
            <item>teiHeader</item>
            <item>vers2</item>
          </IgnoreElements>
          <!-- Hier angegebene Strings (jew. eine Zeile als String interpretiert) werden als jew. ein Token
        umgesetzt -->
          <MyTokens>
            <category type="winter">
              <item>Advent</item>
              <item>Schneeflöcklein</item>
              <item>
                                                                                                         Irgendein!StringMit;Trenn-
        zeichen:darin
                                                                                           </item>
            </category>
            <category type="abbr">
              <item>Abk.</item>
            </category>
            <category type="leer"/>
            <category type="NE">
              <item>Loriot</item>
            </category>
            <category type="Date">
              <item>\d{1,2}\.\s?\d{1,2}\.\s?\d{4}</item>
              <item>\d{1,2}\.\s?\d{1,2}\.\s?\d{2}</item>
              <item>\d{4}-\d{1,2}-\d{1,2}</item>
            </category>
          </MyTokens>
          <MyCharacters>
            <category type="">
              <item>\.</item>
              <item>;</item>
              <item>,</item>
              <item>!</item>
              <item>\?</item>
              <item>\(</item>
              <item>\)</item>
              <item>\:</item>
              <item>"</item>
            </category>
          </MyCharacters>
          <tokenelement>w</tokenelement>
          <charelement>c</charelement>
        </TokenizerConfig>
      </tgwf:const>
    </tgwf:activity>
    <tgwf:activity serviceID="lem">
      <tgwf:const name="configfile" needsB64encoding="true">
        <configuration>
          <token>w</token>
          <lemmatize fuzzy="no" disambiguation="yes" guessing="no" zlib="no"
        output="MORPHISTO">ntl</lemmatize>
        </configuration>
      </tgwf:const>
    </tgwf:activity>
  </tgwf:inputconstants>
</tgwf:tgwf>
```

3 Tools not developed in TextGrid

Some tools originally planned for TextGrid have not yet been implemented:

3.1 Bibliography Tool

The Bibliography Tool has not been developed within the first project phase of TextGrid, as a similar functionality will be provided by a service in eSciDoc. After integrating this service in TextGrid, it will be made accessible via a user interface in TextGridLab.

3.2 OCR

The development of an OCR module for Gothic print involved a far greater effort than expected. An implementation as TextGrid service is projected for the second phase of TextGrid. The University of Kaiserslautern as new TextGrid partner will be responsible for developing an OCR service for identification of Gothic type letters, integrating it in TextGrid and appropriating tools for working with OCR results.

3.3 Print Publisher

The Print Publisher has been outsourced for a similar reason: During the requirements engineering phase it turned out that developing a really useful and usable print publisher would involve far more resources than available for a TextGrid sub-module, thus it should be developed in an independent project. An accordant proposal was submitted at the Deutsche Forschungsgemeinschaft (German Research Foundation). It was granted in October 2009. TextGrid will cooperate with this project.

3.4 Registry

One of TextGrid's project partners, FH Worms, has developed the service registry *Isidorus* that is mainly targeted at the eGovernment community. It is currently on the way of being adopted in a way usable for TextGrid[16], and will finally be integrated with TextGrid in the second project phase.

[16] Lukas Gießmann, *Implementation of a Web 2.0 Interface and an RDF-Im/Exporter for the Topic Maps Engine "Isidorus"*. Bachelor Thesis, Worms 2009

4 Appendix 1 – The *tgwf* XML Schema

The *tgwf* schema is designed both to simplify the task of workflow authors not having to know the semantics of GridWorkflowDL or Petri Nets, which is far more complex, and to account for some specific requirements TextGrid workflows have. It will be transferred automatically by an XSLT stylesheet to GridWorkflowDL (see below).

In the following, we just reproduce the schema here (it has some documentation inline), and show an example tgwf document afterwards.

4.1.1 tgwf.xsd XML schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified"
xmlns:tgwf="http://textgrid.info/namespaces/middleware/workflow"
targetNamespace="http://textgrid.info/namespaces/middleware/workflow">
<xs:annotation>
<xs:documentation>
Defines a simplified Workflow document in TextGrid. A tgwf
document written by the user will be completed by the
TextGridLab Workflow component, then xsl-transformed into a
GridWorkflowDL document which can processed by the GWES Workflow
Engine.
</xs:documentation>
</xs:annotation>

<xs:element name="tgwf">
<xs:complexType>
<xs:sequence>
<xs:element ref="tgwf:description"/>
<xs:element ref="tgwf:activities"/>
<xs:element ref="tgwf:datalinks"/>
<xs:element ref="tgwf:CRUD"/>
<xs:element ref="tgwf:batchinput"/>
<xs:element ref="tgwf:metadatatransformation"/>
<xs:element ref="tgwf:inputconstants"/>
</xs:sequence>
<xs:attribute name="version" use="required" type="xs:decimal" fixed="0.5"/>
</xs:complexType>
</xs:element>
```

```
<xs:element name="description" type="xs:string">
<xs:annotation>
<xs:documentation>
Description will not be processed and is solely for the
writer. The title of the workflow will be taken from the title
of the TextGridObject holding this tgwf document.
</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="activities">
<xs:complexType>
<xs:sequence>
<xs:element maxOccurs="unbounded" minOccurs="0" ref="tgwf:service">
</xs:element>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="service">
<xs:annotation>
<xs:documentation>
The services proper that will process the _contents_ of the
TGOs. All data is transferred SOAP-inline, base64-encoded, so
the services will have to be compatible. CRUDread and
CRUDcreate for Grid access and StreamingEditor for metadata
transformation will be inserted automatically.
</xs:documentation>
</xs:annotation>
<xs:complexType>
<xs:attribute name="description" use="required"/>
<xs:attribute name="name" use="required" type="xs:NCName">
<xs:annotation>
<xs:documentation>
name for visualisation of workflow
</xs:documentation>
</xs:annotation>
</xs:attribute>
```

```
<xs:attribute name="operation" use="required" type="xs:anyURI">
<xs:annotation>
<xs:documentation>
the operation to be invoked from this wsdl
</xs:documentation>
</xs:annotation>
</xs:attribute>
<xs:attribute name="serviceID" use="required" type="xs:NCName">
<xs:annotation>
<xs:documentation>
this ID will be used throughout this tgwf document to
refer to this service
</xs:documentation>
</xs:annotation>
</xs:attribute>
<xs:attribute name="targetNamespace" use="required" type="xs:anyURI">
<xs:annotation>
<xs:documentation>
If the WSDL specifies a targetNamespace, its value can be
given here.
</xs:documentation>
</xs:annotation>
</xs:attribute>
<xs:attribute name="usetns" type="xs:boolean">
<xs:annotation>
<xs:documentation>
set to true to tell the Workflow Engine that the message
parameters should be prepended the targetNamespace
given. Hint: set to true if the schema definition part in
the WSDL has elementFormDefault="qualified". If you
interact with a Web Service written in a
namespace-ignorant language (such as PHP, Python, Perl, or
Tcl), usetns will perhaps better be false.
</xs:documentation>
</xs:annotation>
</xs:attribute>
```

```
<xs:attribute name="wsdlLocation" use="required" type="xs:anyURI"/>
</xs:complexType>
</xs:element>
<xs:element name="datalinks">
<xs:annotation>
<xs:documentation>
Determine how data flows from one service to another,
i.e. which output parameter in fromService yields the data and
which input parameter in toService will receive them. Use
crud/batchinput for fromServiceID/fromParam when the link
should lead to toServices that should receive the data as read
from the Grid. Similarly, the fromService that will serve the
final data must have a link to crud/batchoutput. Cave:
consistency checks will not be made yet, so possibly the
workflow might fail or loop.
</xs:documentation>
</xs:annotation>
<xs:complexType>
<xs:sequence>
<xs:element maxOccurs="unbounded" minOccurs="1" ref="tgwf:link"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="link">
<xs:complexType>
<xs:attribute name="linkID" use="required" type="xs:NCName"/>
<xs:attribute name="fromServiceID" use="required" type="xs:NCName">
<xs:annotation>
<xs:documentation>
the ServiceID as specified in the activities element for
the service that yields data
</xs:documentation>
</xs:annotation>
</xs:attribute>
<xs:attribute name="fromParam" use="required" type="xs:NCName">
<xs:annotation>
```

```
<xs:documentation>
the output parameter of the fromServiceID which serves the
data for this link
</xs:documentation>
</xs:annotation>
</xs:attribute>
<xs:attribute name="toServiceID" use="required" type="xs:NCName">
<xs:annotation>
<xs:documentation>
the ServiceID as specified in the activities element, of
the service that receives the data
</xs:documentation>
</xs:annotation>
</xs:attribute>
<xs:attribute name="toParam" use="required" type="xs:NCName">
<xs:annotation>
<xs:documentation>
the input parameter of the toServiceID which accepts
the data for this link
</xs:documentation>
</xs:annotation>
</xs:attribute>
</xs:complexType>
</xs:element>
<xs:element name="CRUD">
<xs:annotation>
<xs:documentation>
attribute values to be filled in automatically by the TextGridLab
</xs:documentation>
</xs:annotation>
<xs:complexType>
<xs:attribute name="instance" use="required" type="xs:string"/>
<xs:attribute name="logParameter" use="required" type="xs:string"/>
<xs:attribute name="sessionID" use="required" type="xs:string"/>
</xs:complexType>
</xs:element>
```

```
<xs:element name="batchinput">
<xs:annotation>
<xs:documentation>
input TextGridObject's URIs, to be filled in automatically by
the TextGridLab
</xs:documentation>
</xs:annotation>
<xs:complexType>
<xs:sequence>
<xs:element ref="tgwf:URI" maxOccurs="unbounded" minOccurs="0"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="URI" type="xs:anyURI"/>
<xs:element name="metadatatransformation">
<xs:annotation>
<xs:documentation>
This contains the XSL stylesheet for rule-based transformation
of the metadata, e.g. setting a new ProjectID, appending text
to the title, or adding an editor. Please consult an example
stylesheet for the current TextGridMetadata if you plan to
write a new one.
</xs:documentation>
</xs:annotation>
<xs:complexType mixed="true">
<xs:sequence>
<xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="inputconstants">
<xs:annotation>
<xs:documentation>
configuration parameters for the services used in this
workflow
</xs:documentation>
```

```
</xs:annotation>
<xs:complexType>
<xs:sequence>
<xs:element maxOccurs="unbounded" minOccurs="0" ref="tgwf:activity"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="activity">
<xs:complexType>
<xs:sequence>
<xs:element ref="tgwf:const" maxOccurs="unbounded" minOccurs="1" />
</xs:sequence>
<xs:attribute name="serviceID" use="required" type="xs:NCName">
<xs:annotation>
<xs:documentation>
the ServiceID as specified in the activities element
</xs:documentation>
</xs:annotation>
</xs:attribute>
</xs:complexType>
</xs:element>
<xs:element name="const">
<xs:complexType mixed="true">
<xs:sequence>
<xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
<xs:attribute name="name" use="required" type="xs:NCName">
<xs:annotation>
<xs:documentation>
the name of this input parameter
</xs:documentation>
</xs:annotation>
</xs:attribute>
<xs:attribute name="needsB64encoding" type="xs:boolean">
<xs:annotation>
<xs:documentation>
```

```
set to true if this parameter, as the content data, has
to be encoded in Base64 for the service
</xs:documentation>
</xs:annotation>
</xs:attribute>
</xs:complexType>
</xs:element>
</xs:schema>
```

4.1.2 Example *tgwf* document

This document defines a two-service pipe: TextGridObjects are being sent to the TextGrid Tokenizer, then to the Lemmatizer, then resulting TextGridObjects are being created. See figure XXX for a graphical representation of this workflow in GridWorkflowDL.

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

<tgwf:tgwf xmlns:tgwf="http://textgrid.info/namespaces/middleware/workflow"
version="0.5">

<tgwf:description>

Lemmatizer Workflow with prepended Tokenizer

</tgwf:description>

<tgwf:activities>

<tgwf:service description="TextGrid Tokenizer"

name="Tokenizer"

operation="Tokenizer64"

serviceID="tok"

targetNamespace="http://namespaces.textgrid.de/"

wsdlLocation="http://ingrid.sub.uni-goettingen.de/Tokenizer.wsdl"/>

<tgwf:service operation="LemmatizerTEIBatch64"

wsdlLocation="http://ingrid.sub.uni-goettingen.de/lemmatizer_doc.wsdl"

name="Lemmatizer"

description="The TextGrid New German Lemmatizer"

serviceID="lem"
```

```
targetNamespace="http://namespaces.textgrid.de/"/>
</tgwf:activities>
<tgwf:datalinks>
<tgwf:link linkID="read" fromServiceID="crud" fromParam="batchinput"
toServiceID="tok" toParam="indata"/>
<tgwf:link linkID="Tok2Lem" fromServiceID="tok" fromParam="outdata"
toServiceID="lem" toParam="infile" />
<tgwf:link linkID="write" fromServiceID="lem" fromParam="outfile"
toServiceID="crud" toParam="batchoutput"/>
</tgwf:datalinks>
<tgwf:CRUD instance="inserted automatically"
sessionID="inserted automatically"
logParameter="inserted automatically"/>
<tgwf:batchinput/>
<tgwf:metadatatransformation>
<xsl:transform> ... </xsl:transform>
</tgwf:metadatatransformation>
<tgwf:inputconstants>
<tgwf:activity serviceID="tok">
<tgwf:const name="config" needsB64encoding="true">
<TokenizerConfig>...</TokenizerConfig>
</tgwf:const>
</tgwf:activity>
<tgwf:activity serviceID="lem">...</tgwf:activity>
</tgwf:inputconstants>
</tgwf:tgwf>
```