# User Manual 2.0

GEFÖRDERT VOM

Bundesministerium
für Bildung
und Forschung

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Bug reports and feature requests may be created and monitored through our issue tracker

https://develop.sub.uni-goettingen.de/jira/browse/TG.

The current version of the developer and the user manual is available as a wiki on

https://dev2.dariah.eu/wiki/display/TextGrid/Main+Page

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# 1 Introduction

This introduction presents the advantages of using the TextGrid Laboratory and its features related to the TextGrid Repository (TextGridRep). The main elements of the Eclipse-based environment, such as perspectives, views, and basic tools like Search and Help, are also discussed.

# 1.1 Getting Started

In order to start working with TextGrid, you will need to download the software, register for a TextGrid account, and login.

### 1.1.1 The Mission of TextGrid

The primary mission of TextGrid is to provide a virtual research environment (VRE) for humanities scholars in which various tools and services are available for the creation, analysis, editing, and publication of texts and images. It consists of two main components: the TextGrid Laboratory (TextGridLab) and the TextGrid Repository (TextGridRep).The TextGrid Laboratory tools and services are designed to reflect the needs of text-based humanities disciplines such as philology, linguistics, musicology and art history. TextGrid also supports the storage and re-use of research data through the integration of the TextGrid Repository, in which research data is preserved and can be made available. The architecture of TextGrid is extensible, which means that additional tools and services can easily be added and expanded.

The underlying concept of TextGrid is quite simple: humanities researchers are no longer limited by the restrictions of their individual workspace but can work together collaboratively on projects with other researchers, independent of location, with the guarantee that their data is being stored in a secure and reliable environment according to guidelines for good scientific practice. The TextGrid Laboratory (Lab) is an open source software that can be started from any computer and provides integrated access to specialized tools, services and content. It offers a variety of tested tools, services, and resources, allowing for the complete workflow of, for example, generating a critical textual edition digitally. In addition to existing tools and services already available in the TextGridLab, external functions in the form of additional tools and services can be added. The TextGrid Repository (Rep) is an archive that enables the long-term storage and re-use of research data. Once documents are published in the TextGridRep, they cannot be removed or altered. Updates and new editions may be added, but the original documents will be maintained as published in order to follow responsible research practices. A Persistent Identifier (PID) service assigns a PID, a unique code consisting of a sequence of numbers and letters, to any item published in the Repository, guaranteeing quotability.

All in all, TextGrid addresses three main groups of users: humanities scholars working on research projects and digital editions, software developers creating and implementing new services and tools who would like to find an integrated open-source platform for their creations, and content providers (such as archives and research institutions) that would like to integrate their data into TextGrid in order to make it available to a wider audience.

### 1.1.2 Why use TextGrid?

The TextGridLab and TextGridRep were developed in cooperation with humanities researchers and reflect the needs of scholars who want to explore the research possibilities available through digital methods, either individually or within a community of geographically-dispersed researchers. Increasingly, many projects in the humanities dealing with complex research topics and large amounts of data involve scholars with different

backgrounds and expertise; interdisciplinary research and collaborative partnership are made easier by using an integrated workspace such as TextGrid in which project and user administration is an integral component. Using TextGrid, scholars can conveniently and productively work together in a secure environment in which research data is reliably and securely stored. The tools and services available in TextGrid are flexible, expandable, and adaptable to various research methods. In addition, these tools will be maintained and updated to ensure long-term access to and re-use of research data.

A virtual research environment such as TextGrid makes possible new forms of collaboration and research in a secure and reliable workspace. TextGrid offers the following features for facilitating humanities research:

**Administration and Workflow Organization**

These consist of core services to administer and organize projects:

- a sophisticated user management that oversees the assignment and administration of roles and access rights for different project partners.
- an efficient document management system that effectively manages projects and objects on different levels and reflects the complex relationships between them.
- a Workflow Tool which enables the semi-automatic processing of data.
- a version management to ensure that the work process is comprehensively documented via interim revisions. Documents that are "published" in a final form to the TextGrid Repository cannot be deleted; however, updates and new versions can be added.

**Decentralized Workspace**

Users can access the TextGridLab and TextGridRep independent of location and work together on complex research projects.

**Standardization**

The controlled metadata vocabulary and open standards facilitate the exchange of data, text retrieval, and digital archiving.

**Expandability**

TextGrid is extensible and enables users to enhance existing tools or to plug in new tools and services, either as external web services or as interactive tools using the Eclipse Rich Client Platform.

**Modularity**

The TextGridLab is modular in design, with the XML Editor serving as the core element on which the VRE is built. A large number of tools and services are associated with the XML Editor and can be arranged and combined according to the individual needs of the project. Some tools allow the insertion of elements into the source text of the XML Editor; others have a structural connection to the XML Editor. The open interface also allows for the

integration of new, specially developed applications. This modular structure facilitates work processes in the virtual research environment.

**Assignment of User Rights**

TextGrid provides a sophisticated role-based access control (OpenRBAC) system to manage access rights. Each TextGrid Project must have at least on Project Managed assigned to it, and this role has the right to delegate (assign and remove) additional roles to other users. Only users who have been assigned a role in a Project have access to its unpublished content. Using this system, user roles can also be assigned temporarily, such as when short-term participation is necessary in a Project to perform a specific task. In this way the Project Manager(s) can control the accessibility to the project data, thus guaranteeing secure and reliable teamwork and data storage in a research environment accessible worldwide.

**Distributed Storage**

The TextGrid Repository has distributed storage which consists of two main parts. The initial activation, creation, and editing of files is saved in the TextGridRep. The data is stored and secured in a search index and has no persistent identifier. The first search index (Search Index 1) is dynamic, which means that it contains data which can be only accessed by a TextGrid Lab user who has been assigned access rights by the Project Manager(s). This data can only be modified or deleted by those who have been assigned a role that allows them the authority to edit and delete.

After the Project Manager(s) decide to publish the data in its finalized format, the data is transferred to the second search index, Search Index 2. The data then disappears from Search Index 1 and is provided with a unique PID in order to be referenced uniquely. The files that have been transferred and "published" can no longer be changed or deleted. Later modifications to the data can only be carried out by copying and re-importing a file back to Index 1.

Search Index 2 is accessible to everyone with access to the World Wide Web. Its character is static, which means its data is unchangeable. Huge data amounts can also be uploaded from other archives or publication servers and made available through the TextGridRep. Both TextGrid Lab users and the general public can browse Search Index 2. After using the Search Tool in TextGrid Lab, the user receives a list of results. These search results are an accurate reflection of the TextGridRep inventory. They are presented in exactly the same order as the search results in the TextGridRep that appear after a search has been performed on the TextGridRep website that is available without logging in to the TextGridLab.

## 1.1.3 Download

The current version of the TextGridLab (TextGridLab Base) consists of the base components. The Lab is available as a free download from the TextGrid website: www.textgrid.de

German:

http://www.textgrid.de/2-0/download.html

English:

http://www.textgrid.de/en/2-0/download.html

for various operating systems. Before you can use the software, you must install a Java Runtime Environment (JRE) version 6 or higher. You can download the most recent version from the Java website:

http://java.com/download

## 1.1.4 Marketplace

The TextGridLab is available for download as a basic package which contains the most important components. The download of additional open source tools and services (free of charge) is possible via the Eclipse "Marketplace" interface within the TextGridLab via the menu bar at the top of the screen. Please select the icon 🌱 on the Welcome Screen or "Eclipse Marketplace ..." under the menu item "Help" in the menu bar. The number of tools here is extensible.

## 1.1.5 Account and Registration

Many functions are available without logging in, such as read-only access to published information and working with local files. To be able to store your own data in the TextGrid Repository, however, you will need to identify yourself and login. If your institution participates in the DFN Shibboleth federation, you may simply use your institutional login. Alternatively, you can register for a TextGrid account from the TextGrid website

German:

http://www.textgrid.de/1-0/registrierung.html

English:

http://www.textgrid.de/en/1-0/registrierung.html

After your registration has been confirmed, you will receive an e-mail containing your access information.

## 1.1.6 Welcome Screen and Login

After installing the TextGrid Laboratory, you will be able to start the software. The Welcome Screen provides several options:

- Login to the TextGridLab
- Use the Search and Dictionary Search (available without login).

Once you click "Login"', a new window opens. You will be able to login using your TextGrid account information (the user name and password you received via e-mail), or you may choose to login via DFN-AAI (= authentication and authorization infrastructure of the German National Research and Education Network). If you have forgotten your TextGrid account password, please use the button "Forgot Password?'' at the bottom of the screen.

After your first login, you will be asked to complete your user information and to accept the "TextGrid Terms of Use". If you select the option "Searchable'', other TextGrid users will be able to find you by searching for your name, institution, or e-mail-address. The fields with an * are mandatory. You can change your user information at any time via the "Help > Authentication'' in the menu bar of the Lab.



After you have successfully logged in, the Welcome Screen will appear with your TextGrid login in the center. Now you can begin to use all the tools displayed on the Welcome Screen:

Project & User Management

Search

Text Image Link Editor

XML Editor

Dictionary Search

Aggregations Editor

These tools are explained in separate chapters of the TextGrid manual and online help.

## 1.2 User Interface

In this chapter you will find information about the surface structure of the TextGrid Laboratory work bench. The Eclipse-based graphical user interface consists of general menu bars and tool-specific perspectives. For more information, see http://www.eclipse.org/documentation/.
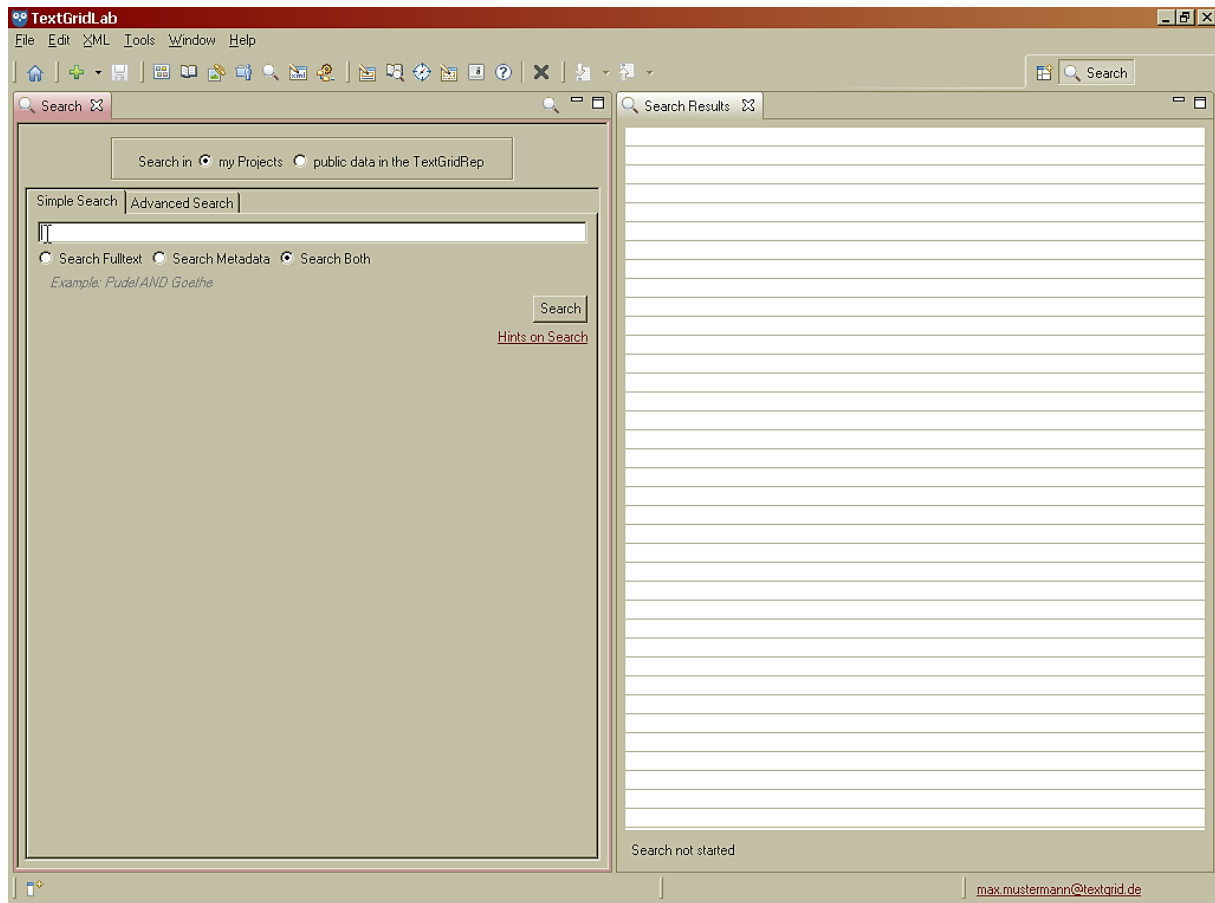


### 1.2.1 Bars

The menu bar at the top of the screen offers hierarchical access to most of the functions available in the TextGridLab. The toolbar below offers quick access to the most frequently used tools and components, plus some tool-specific functions. Use the perspective bar to the right of the toolbar to switch between tools you have already opened and using in this session. The title bar is explained in a later section (under "Views").



#### 1.2.1.1 Menu Bar

The menu bar at the top of the screen displays some of the menu items. It consists of the following items: **"File"**, **"Edit"**, **"XML"**, **"Tools"**, **"Window"**, and **"Help"**.

Under the item labelled **"File"** you can manage:

- manage Aggregations
- create, open, save, and close Projects, Objects, and local files
- manage Revisions
- Publish
- open an Object via its URI or copy the URI
- manage  Metadata
- Import 📥 and Export 📤
- hide network warnings
- restart ☀ or exit ⏻ the TextGridLab

If the oXygen XML editor is installed, a URL for a FTP or SFTP connection can be opened with the oXygen WebDAV support.

The item labelled **"Edit"** offers operations for the XML Editor and the Text Image Link Editor, such as "Undo", "Cut" and "Paste" or "Find and Replace".

Under the item labelled **"XML"** you can find functions for working with XML code in the XML Editor. Therefore, "XML" will be discussed more fully in the menu bar chapter about the XML Editor.

The item labelled **"Tools"** allows you to open the most important tools at any time. Using the sub-item "Show View" you can open the TextGrid views, i.e. the Navigator, the Dictionary Results View, the Metadata Editor and the Unicode Character Table (in addition to others that are, for the most part, described in the Eclipse documentation: http://www.eclipse.org/documentation/).

The item labelled **"Window"** enables you to open a new editor view if an editor is already open, using this icon (📄). Furthermore, it offers you options to aid in navigating the Laboratory, since you can

- define the appearance of "fast views" when opened using the sub-item "Navigation 🔗> Quick Access"
- open and switch between editors
- minimize and maximize open editors
- choose the previous perspective, editor, or view

In **"Window"** you can also change the preferences (⚙). Most of the possibilities are described in the Eclipse documentation (http://www.eclipse.org/documentation/), but some preferences will affect the TextGridLab directly:

- The "TextGrid Content Types and File Extension Mapping" configures the mapping between TextGrid Content Types (as regular expression matching the content type metadata field of objects) and the internal file extensions.
- In the "TextGridLab Dialog Settings" the user can choose if CRUD warnings should be shown to indicate database problems.

- In "TextGridLab Server and Proxy," the proxy server and compressed data transfer can be configured.

There are also some possibilities to change the preferences of different modules that might have been installed.

Under **"Help"** in the menu bar, you can

- open the Welcome Screen
- view and change your authentication data
- use the Help function
- report a bug and save the logfile
- view keyboard shortcuts by clicking "Key Assist..."
- handle software updates
- receive additional tools and services via the "Eclipse Marketplace"
- receive information about the current TextGrid version

Some modules like the oXygen XML editor also offer some features in the "Help" menu if installed.

### 1.2.1.2 Toolbar

Using the toolbar gives you access to the most frequently used tools and components, plus some tool-specific functions that are only enabled if special tools are opened. These specific functions are described in the following chapters about these tools (e.g. the Text Image Link Editor). Here are the permanent items of the TextGridLab toolbar, listed by icon and its corresponding function:

🏠 opens the Welcome Screen

➕ allows you to create new Projects and Aggregations

💾 saves the currently opened document

▦ opens the Aggregations Editor

📖 opens the Dictionary Search

🖌 opens the Text Image Link Editor

🗂 opens the Project and User Management

🔍 opens the Search

📄 opens the XML Editor

⚙ opens the Workflow Tool

🖼 opens the Metadata Editor

🖼 opens the Metadata Template Editor

🔡 opens the Unicode Character Table

❔ opens the Help

✖ closes the current open perspective

If other modules such as CollateX are installed, their icons will also appear in the Toolbar. These functions are discussed in the chapters about these specific tools.

### 1.2.1.3 Perspective Bar

The perspective bar is at the top of the screen on the right side, underneath the menu bar, unless the layout of the toolbars has been modified. The perspective bar allows access to perspectives that are currently open. It also provides a way to open a new perspective by clicking  . By right-clicking on one of the open tabs in the perspective bar, it is possible to customize the perspective.

### 1.2.1.4 Status Bar

The status bar at the bottom of the screen on the left side always displays the icon   to show views as "fast views". The user can choose custom "fast views" from a list. The right corner at the bottom of the screen displays the TextGrid User ID of the user currently logged in. There can be additional information visible in this status bar, such as the title and resource identifier of selected Projects or Objects. Depending on the views that are open, the status bar may also display other details.

### 1.2.1.5 Title Bar

For information about the title bar, please see the "Views" section.

## 1.2.2 Perspectives and Editors

A specific arrangement of user interface components is defined as a perspective. In general, a perspective always consists of several views. A perspective can be customized (saved, closed, and reset to its initial setting) by right-clicking on the open tab in the perspective bar. The icon   on the toolbar can be used to close a perspective.

Editors such as the XML Editor are closely related to perspectives, with a few differences:

- Unless re-arranged, all editors will open in a central area, typically in the middle of the screen, and will be visible as tabs stacked on top of each other.
- Editors must be part of perspectives or else they will be closed.
- While typically there is one view whose content depends on the selected Object, you can open a separate editor for each Object you wish to edit.
- The editor will stay open until you explicitly close it or the Laboratory itself.

When editors contain unsaved content, their tab is marked with an asterisk (*).

## 1.2.3 Views

Components with a specific functionality that are re-used in various tools are called views. A view (for example the Navigator View) can not be opened until a perspective is open, so there has to be a perspective open to contain the view. Views can be opened from icons in

the toolbar, by using the menu item "Show View" from the "Tools" menu, or as "fast views" from the status bar.

Each view has a title bar at the top. On the title bar, you can set several default options (via the context menu by right-clicking on the view). Here are some of the actions possible:

- Show a view as "fast view". By clicking this button, the view opens in the current perspective. As soon as you click outside that view, it will be hidden again.
- Detach a view so that it can be placed wherever needed.
- Restore a view.
- Move a view by dragging its title bar with the mouse or move a tab group after selecting this option under "Move".
- Resize views by dragging the border between screen components or selecting a border to change the size of the view.
- Minimize, maximize or close a view.

Multiple views can be stacked on top of each other. Only the topmost view is visible. Clicking on the title bar of a view that is underneath will make it visible by bringing it to the foreground. In the perspective of the XML Editor, for example, the Navigator, the Metadata Editor, and the Unicode Character Table are arranged in this way by default.

### 1.2.4 Selection and Context Menu

The contents and functions of the user interface depend on the current selection(s). To select a word or an Object in a list or tree, click on it once and it will be highlighted. To select multiple Objects, use the necessary keyboard-mouse combination depending upon your operating system (using a Microsoft computer, you can press the "Control" or "STRG" button and use the mouse to click on it, while on a Mac you can use the "command" button), or use the "shift" button with a mouse click to select a range of Objects. You can also combine the control and shift keys with the cursor and space keys to select items without using the mouse. In a text editor, you can select items to highlight by simply dragging the mouse, or by using the shift and the cursor keys.

The context menu of the TextGridLab contains various commands which differ depending upon which perspective(s) or view(s) are currently open. The following chapters will explain the expanded tool functions made possible through the context menu.

### 1.2.5 Shortcuts

A list of shortcuts can be found in the Lab by selecting the information on shortcuts in the "Help" menu or by clicking Crtl+Shift+L. Here are the main shortcuts:

| | |
|---|---|
| [Alt+-] | Show System Menu |
| [Alt+Shift+Q,Q] | Show View |
| [Crtl+3] | Quick Access |
| [Crtl+F6] | Next Editor |
| [Crtl+F7] | Next View |

| [Crtl+F8] | Next Perspective |
|---|---|
| [Crtl+F10] | Show View Menu |
| [Crtl+M] | Maximize Active Editor or View |
| [Crtl+S] | Save |
| [Crtl+Shift+F6] | Previous Editor |
| [Crtl+Shift+F7] | Previous View |
| [Crtl+Shift+F8] | Previous Perspective |
| [Crtl+Shift+E] | Switch to Editor |
| [Crtl+Shift+L] | Key Assist |
| [Crtl+Shift+S] | Save All |
| [Crtl+Shift+W] | Close All |
| [Crtl+W] | Close |
| [F12] | Activate Editor |

## 1.2.6 Preferences

Because TextGrid is programmed in Eclipse, the User Interface can be changed by using the preference dialog of Eclipse. It can be opened by selecting "Window" in the menu bar and "Preferences". The dialog is described in more detail on

http://help.eclipse.org/indigo/index.jsp

In this dialog you can also change some preferences that are important for TextGrid. For example: If you want to change the font size in the Source View of the XML Editor, you can select "General" in the preference dialog. Then you have to choose "Appearence" and afterwards "Fonts and Colors" in the tree structure on the left. Select "Basic" and "Text Font" in the dialog that appears in the center of the dialog. Click "Edit" to change the font size and "OK" and "Apply" to save the preferences.
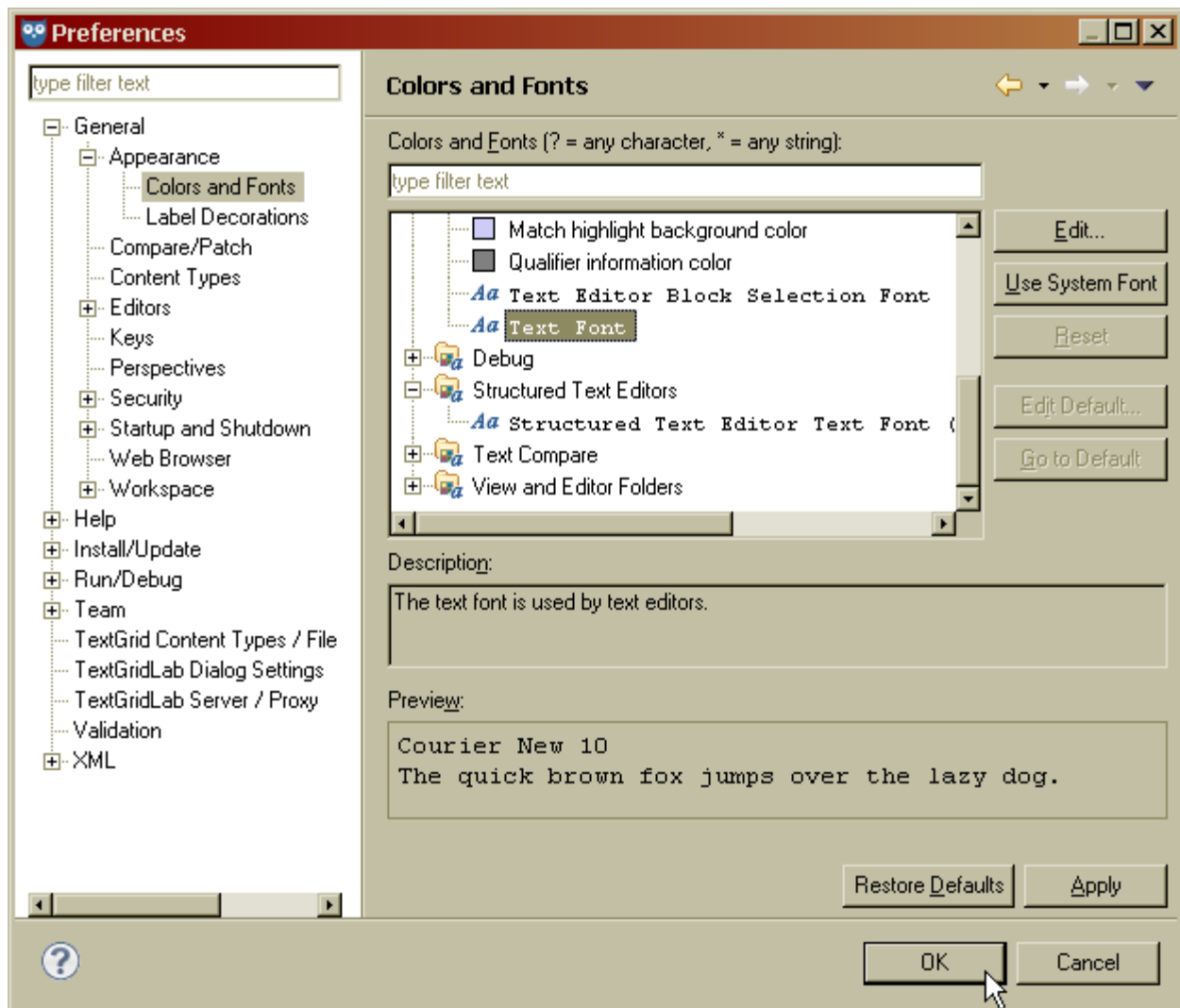
# 1.3 Search

The Search Tool allows you to search the contents (e.g. TEI-encoded documents) and the Object metadata in the TextGrid Repository simultaneously.

### 1.3.1 Open the Search Perspective

The Search Perspective can be opened in several different ways:

- Click the icon on the Welcome Screen
- Select "Tools > Search Tool" in the menu bar
- Click 🔍 on the toolbar

### 1.3.2 Search Perspective

The Search Perspective consists of two views: Search View and Search Results View.
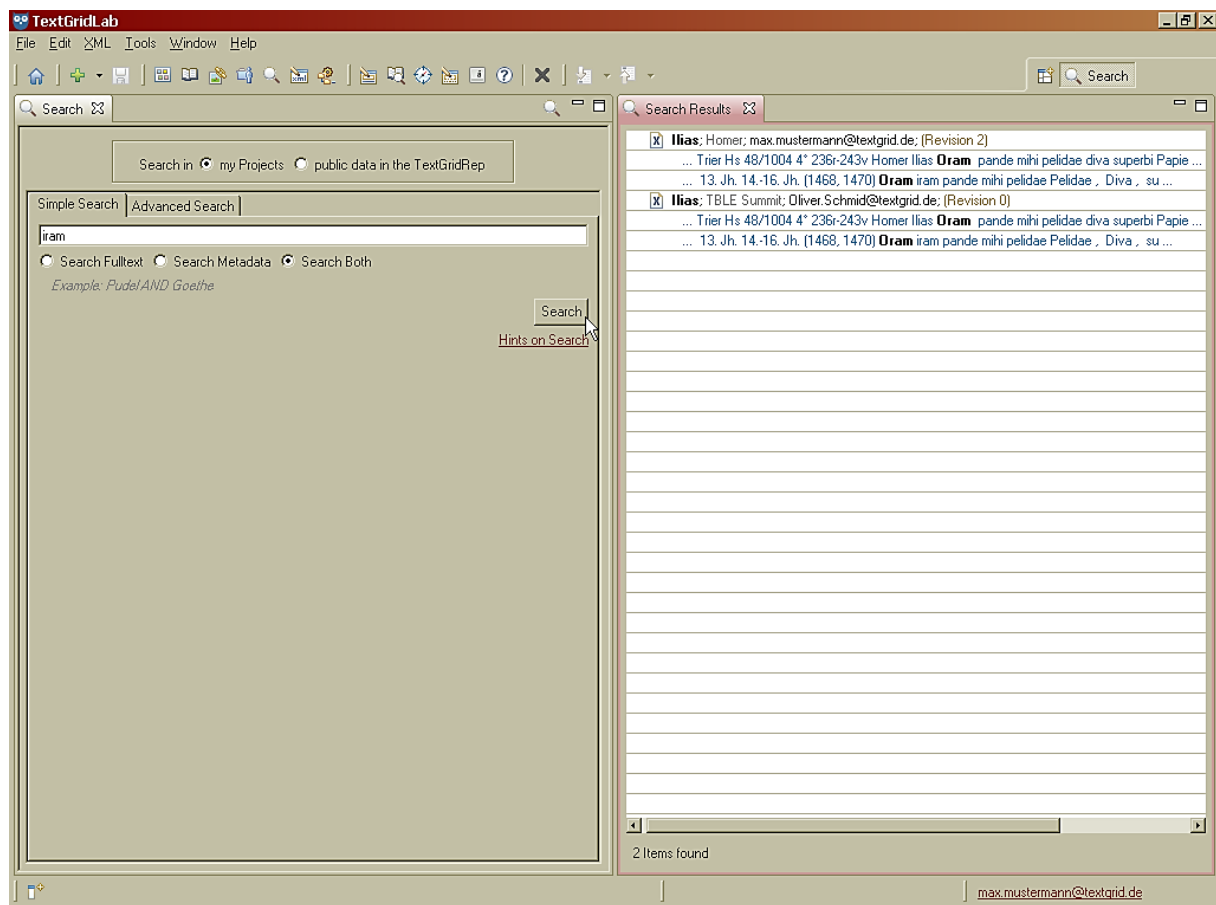


### 1.3.3 Search View

The Search View consists of a Search location option and a Simple or Advanced Search option.

The Search location option determines the location in which the search will be performed. The two possibilities are to perform a search in:

- "my projects": this search is carried out only in those projects in which you have been assigned a role that allows you to access the project contents. You can only access these projects after you have been authenticated and logged in to the TextGridLab.
- "public data in the TextGridRep": this search is carried out in the publicly-accessible TextGridRep, which contains all published Objects in addition to external data resources. The TextGridRep is also searchable without authentication.

To perform a search, click the button at the bottom of the Search View labelled "Search" or click the magnifying glass icon in the title bar of the View. If you click "Hints on Search," you will receive a short introduction to using the Search View. In both Simple and Advanced Search, wildcards can be used in the middle and at the end of a word: * for any number of characters, ? for exactly one character.

**1.3.3.1 Simple Search**

In the input field of the Simple Search (that is opened by default) you can enter your search terms. There are three different search modes:

- "Search Fulltext": only the full-text section of an Object is searched
- "Search Metadata": only the metadata section of an Object is searched
- "Search Both": both the full-text and the metadata section of an Object are searched

In the simple full-text search, the search strings can be combined using the terms "and" and "or". Words without these conjunctions are interpreted as "and".

The simple metadata search works in the same way as the full-text search. The search strings can be combined with "and" and "or". Another way to search for metadata results is to specify the type of metadata. The notation is: *metadata-tag:search-term*. All possible metadata tags can be used with this option.

**1.3.3.2 Advanced Search**

In the Advanced Search mode, you can perform a search with the help of the form provided. This form consists of three different sections: METADATA, FULLTEXT, and BASELINE ENC. Each section can be selected via checkbox. Selected sections are used for the search request. The metadata and the fulltext search can be combined by ticking both boxes, while the baseline encoding search can only be executed separately.

- In the advanced FULLTEXT search, only the text section of an Object is searched. In the input field you can enter the search term. If you fill in more than one word, the words will be "and" related for the search. By specifying the word distance you can declare whether the words should only be found in one document or whether they should occur within a specific word distance from each other.

- The METADATA section in the Advanced Search offers the possibility to search across different fields. This form is organized as a matrix. Each row represents the search for one metadata field. The field can be selected by a combo box at the beginning of the line. The search strings can be entered in the text boxes. These text boxes are "or"

related. The different lines are "and" related. The searchable metadata fields can be accessed via the drop down menu. They consist of:

- o Data Contributor: a person who submits data in TextGrid, identified by his or her user ID (e.g. testuser@textgrid.de)
- o Identifier: an identifier in a non-TextGrid context (e.g. a ISBN or ISSN, a shelfmark, a registration or an inventory number)
- o Notes: additional information concerning the Object
- o Project: the TextGrid Project to which the Object is assigned
- o Rights Holder: the person or organization who holds the copyright for an Item
- o TextGrid URI: the internal Uniform Resource Identifier of an Object
- o Title: the title of an Object

The expandable labels "Text types", "Content types" and "Languages" contain checkable tree controls, which can be used to define the Search closer. With the assistance of the "Date" you can be set a time frame.

- By using the BASELINE ENCODING search (→http://www.textgrid.de/ fileadmin/TextGrid/reports/baseline-all-en.pdf), only baseline encoded TextGrid Objects can be found. This search form is organized as a matrix. In the first text box of a line the search tag should be filled in. In the following text boxes of this line, the searched content can be filled in. The text boxes of a line are "or" related. The different lines, one below the other, are "and" related.

## 1.3.4 Search Results View

This view lists the search hits found after a search has been submitted. It initially shows the titles of the documents and the matches in their context. The title is given with additional information about the document type, the Project, the Revision, and the name of the editor.

The items in the list can be chosen via mouse-click. A double-click opens these with the default editor. Right-clicking allows for further actions to be applied to the document, e.g. selecting another open action, displaying its metadata, or copying its URI to the clipboard. The context menu is in most parts identical to that in the Navigator.

## 1.4 Help

The TextGridLab includes an integrated online help system, which can be opened en bloc and can be searched by keywords. The TextGrid Laboratory also offers you a context-sensitive help.

### 1.4.1 Static Help

The general, unspecialized help can be opened by selecting "Help" in the menu bar. You can also choose "Help Contents" ⑦, "Open Cheat Sheet" 🗂, "Dynamic Help" and "Keyword Search" 🔎 .

### 1.4.1.1 Help Contents

After clicking "Help Contents", the general help function is shown in a new window of your standard web browser. This new window contains a header in which you can enter a keyword for search. If you click "Scope", you can restrict the search to a specified area. In the default mode, all topics are searched.

The main window is separated into two parts. The left part is similar to the Navigator View. It shows a tree structure of all help contents. The right part shows the entries of the help content. In the toolbar of the left part you can choose different operations:

- Print 🖨 the selected topic with or without all subtopics.
- Click 🔎 to search for a keyword in the selected topic with or without all subtopics. The choice between searching in a topic with or without subtopics can be made after clicking the downward-pointing triangle for the drop down menu.
- Furthermore, you can collapse all nodes in the list below with ⊟, minimize and maximize the window.
- Clicking ⇆ keeps the navigation tree synchronized to the current topic (that means the tree structure shows those terms highlighted which were activated by following the links in the selected entry on the right)

The list below shows the contents in a tree structure. By clicking "+" or "-" button, the subcontents can be expanded or collapsed. After clicking a tree item, the corresponding content is shown in the window's right-hand area.

In the footer of the left part of the navigator you can select between

- a table of contents 📖
- a view to search the index 📇
- a listing of the search results 🔎
- a view of the bookmarks 📘 that can be deleted with 📑 (selected bookmarks) and 📑 (all bookmarks) in the toolbar of the view. The right-hand part of the "Help Contents" window shows you the selected entry of the help. The toolbar of this right part shows some icons:

- Use the backward and forward button to navigate and 🏠 to get back to the starting point.
- Click 🐾 to show the displayed topic in the table of contents in the left-hand part of the window, if the contents tree is collapsed.
- You can bookmark a document 🔖 or print the page 🖺.

### 1.4.1.2 Cheat Sheets

Cheat sheets can be designed to help a user complete a particular task, and they list the sequence of steps required. Currently no cheat sheets are provided for the TextGridLab. You have the possibility to select cheat sheets from a local file or an URL. For more information see

http://help.eclipse.org/indigo/index.jsp?topic=%2Forg.eclipse.platform.doc.user%2Freference%2Fref-cheatsheets.htm

### 1.4.1.3 Context-Sensitive Help

It is possible to initiate the "Dynamic Help", a type of context-sensitive help from the menu bar. A view opens with a forward and a backward button to navigate and a brief description of the view or editor that is currently open. If you change to another view, the content of the help view changes simultaneously.

### 1.4.1.4 Keyword Search

The Keyword Search can be started by a separate menu item. Enter one or more words in the input box and click "Go". Click the checkmark in the right corner of the input field to open a menu with the recent search terms that have been used. You can use wildcards (* for any string, ? for any single character and " " to demarcate a phrase) and logical operators (AND, OR and NOT).

- Click 📊 to show result categories
- Click ≡ to show result descriptions.
- Use ⇦ and ⇨ to navigate.

Click the downward triangle in the toolbar of the view to choose between different options available during the Keyword Search:

- If you select "Contents": The result is presented in a tree structure. Use the "+" and "-" button to open or close a branch. Click 🗖 in the toolbar to close them all.
- By clicking "Related Topics," entries are selected in which the view or editor that is currently open will be discussed.
- Click "Bookmarks" to browse your bookmarked entries.
- You can also search in the "Index".

The result of the search is listed below. You can click on the title of an entry to open it. If an entry in the help is opened, the toolbar of the view offers you the option

- to show it in an external window that will open in the "Help Contents".
- to see the item in the tree-structured table of contents
- to print and to bookmark it
- to highlight the search term in the entry by clicking
- to navigate with the forward and backward buttons

The footer of the "Help Contents" window provides you with the same options as in the header of the Keyword Search: "Contents", "Search", "Related Topics", "Bookmarks" and "Index".

## 1.4.2 Dynamic Help

In most views you will find a question mark icon to open the "Context Help". Alternatively, you can always open it via "Help > Dynamic Help" in the menu bar or by clicking on the "Help" symbol ⑦ in the toolbar. For example, the blue linked word "Help" in the User Management View leads you to information about handling role assignment. Additionally, the blue linked expression "Hints on Search" in the Search View leads the user to a context-sensitive help.

# 2. Object Management and Administration

In this section, the instruments for managing Projects, Objects and users are explained. In this context, there is information about the process of importing, exporting, aggregating, and publishing Objects and how to manage their metadata.

## 2.1 Navigator

The Navigator is a project browser giving the users access to all materials related to the Project folder on which they are working.
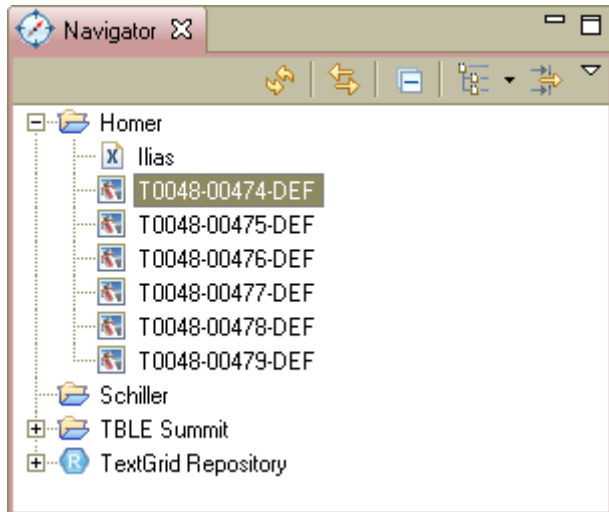


### 2.1.1 Open the Navigator

The Navigator is, by default, part of the Project & User Management module, the Workflow Tool, the XML, the Text Image Link Editor and the Aggregations Editor Perspective. The Navigator can be opened or re-opened in all perspectives, meaning that a perspective must be open to contain the Navigator. To open the Navigator:

- select "Tools" in the menu bar and then the items "Show View" and "Navigator"
- click on the Navigator icon ⊕ in the toolbar.

Using the Navigator View requires authentication. At least one perspective must be open to start the Navigator.

### 2.1.2 Navigator View

The Navigator View is used for handling TextGrid Projects and Objects. All Projects the user is entitled to access are displayed by a folder icon in the tree view that can be expanded or collapsed by clicking on the nodes. There is also an icon ⓡ which represents the content of the TextGrid Repository in the Navigator. The contents are listed by the authors' names. The Navigator uses different icons for different types of Objects, e.g.:

🗒 XML document
🗒 MEI document
📄 Plain Text Object
🖼 Image Object
🖼 Text Image Link Object
📘 Edition

⬜ Work

📘 Collection

🔳 Aggregation

For "Edition", "Work", "Collection" and "Aggregation",  see Objects.

**2.1.2.1 Menu Bar of the Navigator View**

Some functions essential for managing Projects and Objects can also be found in the menu bar under the item "File":

- Click "New Object" to create a TextGrid Object and "New Project" to create a TextGrid Project.
- Objects can be opened with "Open Object" but also with "Open URI". This identifier can also be copied with "Copy URI".
- Projects can be deactivated, reactivated or deleted by users who have the necessary rights to do so.

**2.1.2.2 Toolbar of the Navigator View**

The toolbar of the Navigator offers you several functions. If someone else modifies the Repository contents, you might need to refresh the Navigator View manually. Click ⟳ at the top of the Navigator View to do so.

By using the other icons, you can collapse all nodes ⊟, or by clicking on the triangle next to ⬛, you can select between sorting the Projects and Objects by modification date, title, type or in their original order and if the sorting should be ascending or descending. ⇄ opens a filter dialog where you can define which Projects or Objects are shown in the Navigator. You can filter by Project roles or Object content types.

In the view menu, which drops down by clicking the white triangle, you can refresh and customize the view. The view can be customized by choosing a filter or selecting the content to be shown. You can also link it to an open editor.

**2.1.2.3 Context Menu of 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. The context menu is different for Projects and Objects and it varies depending on what kind of Object has been selected.

If a Project folder is preselected, you can deactivate, reactivate or delete it if you have the authority to do so. The Project will disappear from the Project list until it is reactivated. Its published resources will remain readable. You can also deactivate, reactivate, or delete a Project by choosing the items from "File" in the menu bar. The Project & User Management can be opened directly from here by right-clicking a Project.

To open an Object, double-click it or right-click it and select "Open". In accordance with its document type, the file will be opened in a default editor. Click "Open With" to choose

another editor. To remove an Object, right-click it and select "Delete". You must have the necessary access rights to do so. All Objects can be exported as files from here. Click "Show Revisions" to view the file's history. You can also open or reload the corresponding metadata or view the technical metadata. Please see the succeeding chapters for more information about the user rights management, the revision control and the application of metadata.

If an Edition, Collection or Aggregation is selected, the context menu offers the item "Edit". The Aggregations Editor opens if you click here. In the case of Editions and Collections, publication via context menu is possible as well.

The context menu of the Navigator allows you to associate an XML document with an adaptor. Images and XML documents can also be added to the Text Image Link Editor.

To import a copied Object into another Project, you can right-click an Object and select "Copy", then right-click a Project and select "Paste". You can also copy the URI (Uniform Resource Identifier) of a Project or Object to the clipboard so that it can be used by other applications different from TextGridLab. If you select "Show CRUD warnings", you can see if there are problems with the database. If SADE is installed, an Object can be published with SADE via the context menu of the Navigator.

## 2.1.3 Using the Navigator

Some of the main tasks of the Navigator View are featured in the following passages.

### 2.1.3.1 Create New Projects

To create a new Project, select "New > New Project" from "File" in the menu bar or from the context menu in the Navigator when a Project is marked. Alternatively, you can use the downwards directed arrow next to ✛ in the toolbar. The "Project Manager" role, the "Authority to Delete" and the "Editor" role will be assigned to you by using the Project & User Management.
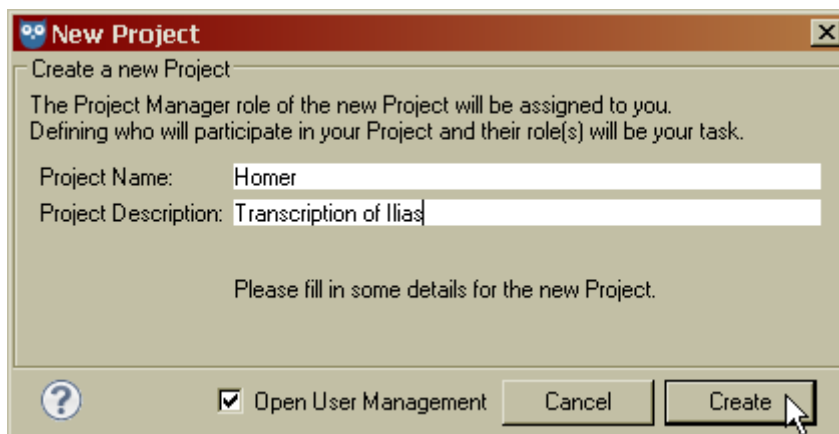


Enter a name and a description of the Project. By default, the Project & User Management will open after you have finished the process by clicking "Create". If you do not want to display this view, click the check box to remove the checkmark.

**2.1.3.2 Create New Objects**

Click "File > New Object" in the menu bar or "New Object" in the context menu of the Navigator when a Project is marked to create a TextGrid Object.
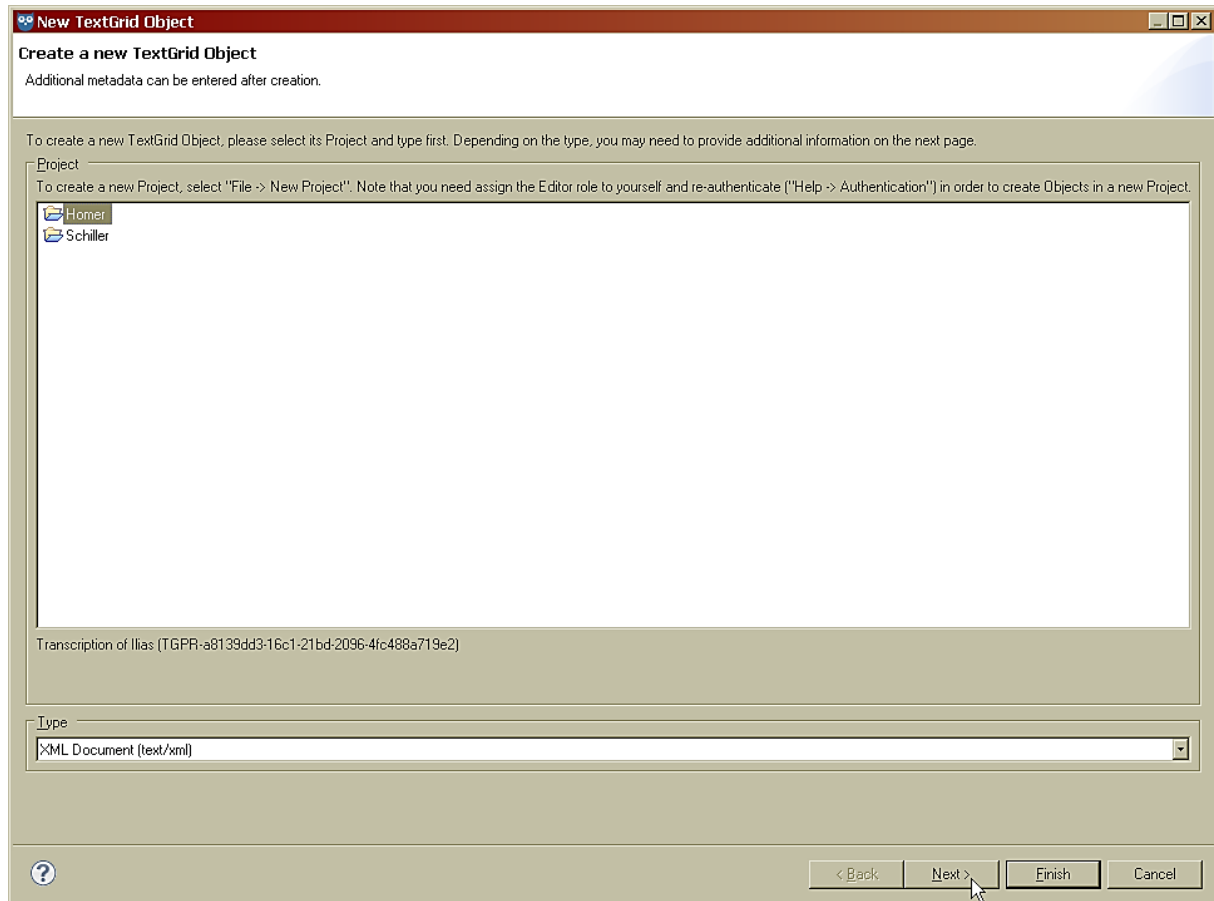


To create an Object, a Project folder and an Object type have to be chosen. If a Project was preselected in the Navigator, this Project is suggested in the "Create a New TextGrid Object" dialog box. After clicking "Next" the Metadata Editor interface will open. Complete the metadata and click "Next". Depending on the document type the following steps differ. If it is an XML document, you can select a schema. After all mandatory information is entered, click "Finish" to complete the operation.

**2.1.4 Interaction of the Navigator with Other Components**

Since the Navigator is a tool for managing Projects and Objects, it interacts with the Project & User Management, the Metadata Editor, and the Aggregations Editor.

The Project & User Administration can be opened directly from the context menu of the Navigator View. The Project & User Management will also be started by default after creating new Projects.

The Metadata Editor can be opened directly from the context menu of the Navigator View as well as metadata can be reloaded. The Metadata Editor interface is part of the dialog for creating new Objects.

The Navigator is, by default, part of the Aggregations Editor Perspective. It is used especially for creating references between Objects and Aggregations, such as Editions or Collections. If you right-click an Edition, a Collection, or another Aggregation and select "Edit", the Aggregation Composer will open.

If SADE is installed, an Object can be published with SADE via the context menu of the Navigator.

## 2.2 Project & User Management

The Project & User Management allows you to create and manage Projects, to add users to a Project, and to assign roles to them.

### 2.2.1 Open the Project & User Management

There are several possibilities to open the Project & User Management:

- Click "Project & User Management" in the Welcome Screen.
- Select the tool "Project/User Administration" from "Tools" in the menu bar
- Click the icon 📇 in the toolbar

### 2.2.2 Project & User Management Perspective

The Perspective is subdivided into two views. The Navigator is on the left, and the User Management View is on the right side.
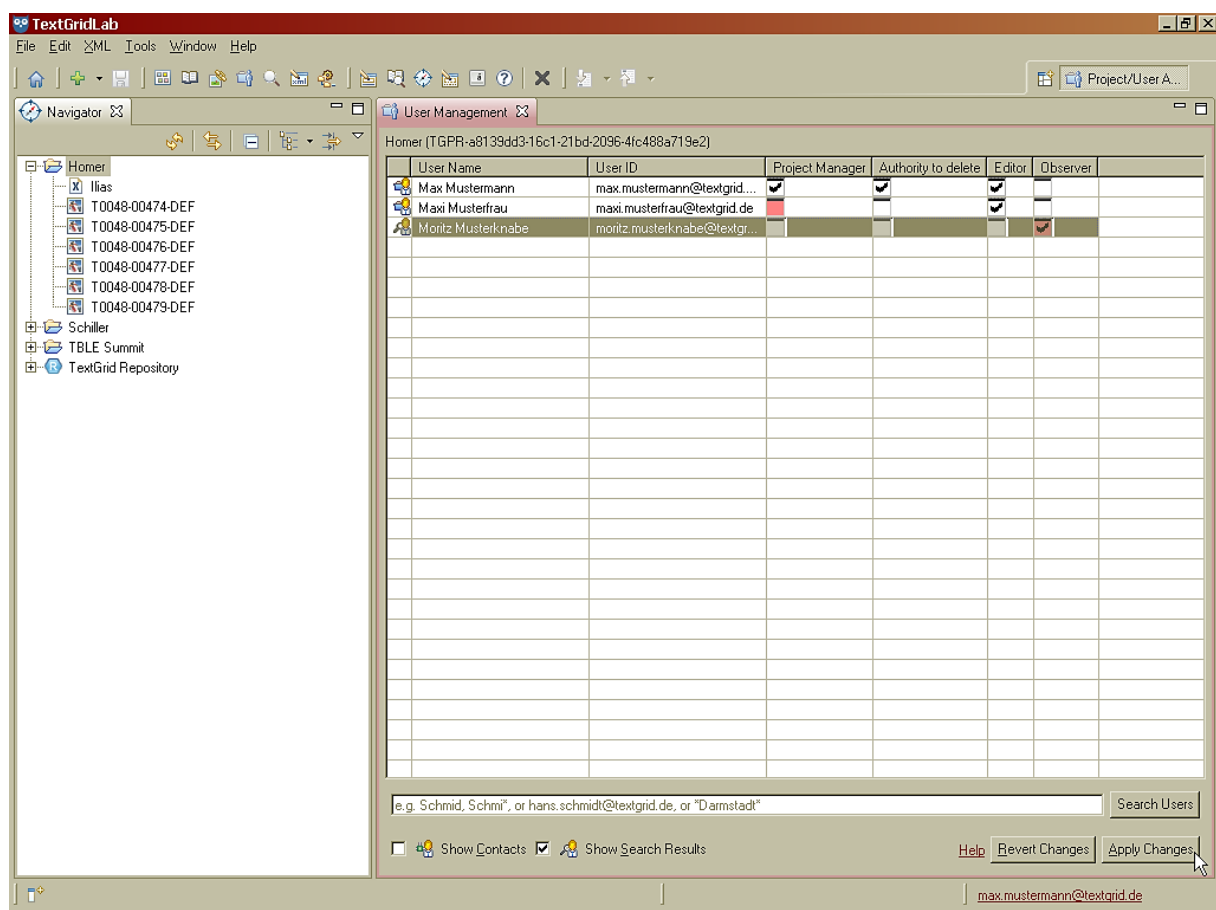


### 2.2.3 Navigator View as Part of the Project & User Management Perspective

Projects in TextGrid are used to manage access to Objects. All TextGrid Objects belong to a Project. Objects belonging to a Project are listed in the Navigator. To manage an existing Project, select it in the Navigator by left-clicking on it with the mouse. The users associated

with this Project are shown in the User Management View. To handle Objects and Projects, use the Navigator.

### 2.2.4 User Management View

When a new Project has been created, Project users can be added and roles can be assigned to them. To be selected users must previously have logged into TextGridLab at least once. There are four possible roles for users in TextGrid and every role has specified rights:

| | |
|---|---|
| Project Manager | delegate, create rights for Projects; delegate, publish rights for resources |
| Authority to Delete | delete rights for resources |
| Editor | read, write permission for resources |
| Observer | read only rights for resources |

| | Project Rights | Resource Rights |
|---|---|---|
| Delegate | edit the user/role assignment for the Project | modify rights for the resource |
| Publish | | publish a resource. The resource will be then world-readable and cannot be deleted or updated any longer |
| Delete | | delete unpublished resources |
| Create | Create new Projects | create new resources in the Project |
| Write | | write (i.e. update) unpublished resources |
| Read | | read resources in the Project |

Rights in TextGrid are non-hierarchical. If users are meant to have full rights, the roles "Project Manager", "Authority to Delete" and "Editor" must be assigned to them. Roles with their respective rights can be withdrawn from users by those with the authority to do so.

### 2.2.5 Using the Project & User Management

Here are the steps to add new members to your Project:

1. Search for new users by name, e-mail address or organization. * matches any letters. You can browse all registered and searchable users by filling in an asterisk * only. When clicking "Search Users" or pressing the enter key, the checkbox "Show Search Results" is automatically activated and the results are shown in the list of users above with the icon 👤. You can also look for new members by listing users you have worked with in previous Projects. Tick "Show Contacts" to do this. Your contact persons are marked with a special icon 👥.
2. Choose the roles for the prospective Project members by marking the boxes next to each user. Changes not yet applied are displayed in red boxes.

3. As soon as you click "Apply Changes" the background of the boxes becomes white and the icon in front of the names added to the Project changes into another symbol . The users are now members of your project. Click "Revert Changes" to remove changes that are not yet applied.

## 2.2.6 Interaction of the Project & User Management with Other Components

The User Management interacts with the Navigator that is mainly used for managing Projects and Objects. The Navigator View is part of the Projects and User Management Perspective. By right-clicking a Project in the Navigator the User Management can be started.

## 2.3 Import

The Import function is used to open and save files in TextGrid that were not originally created in the Laboratory, or Objects that are stored in the Repository and have to be imported into the Laboratory for editing. Other Objects have been previously exported from the Laboratory, so that they have to be re-imported for editing.

While files are identified using file names and paths, each TextGrid Object is identified by an URI (Uniform Resource Identifier) that will be generated during import. If a set of files that link to each other is to be imported, these links will have to be rewritten to use TextGrid URIs instead of file names to work. The TextGridLab comes with a set of configurations for common file types which you can choose in the Import and Export Tool.

### 2.3.1 Open the Import Tool

A perspective must be open to use this tool. Click "File" in the menu bar and choose the menu item "Import local files ...".
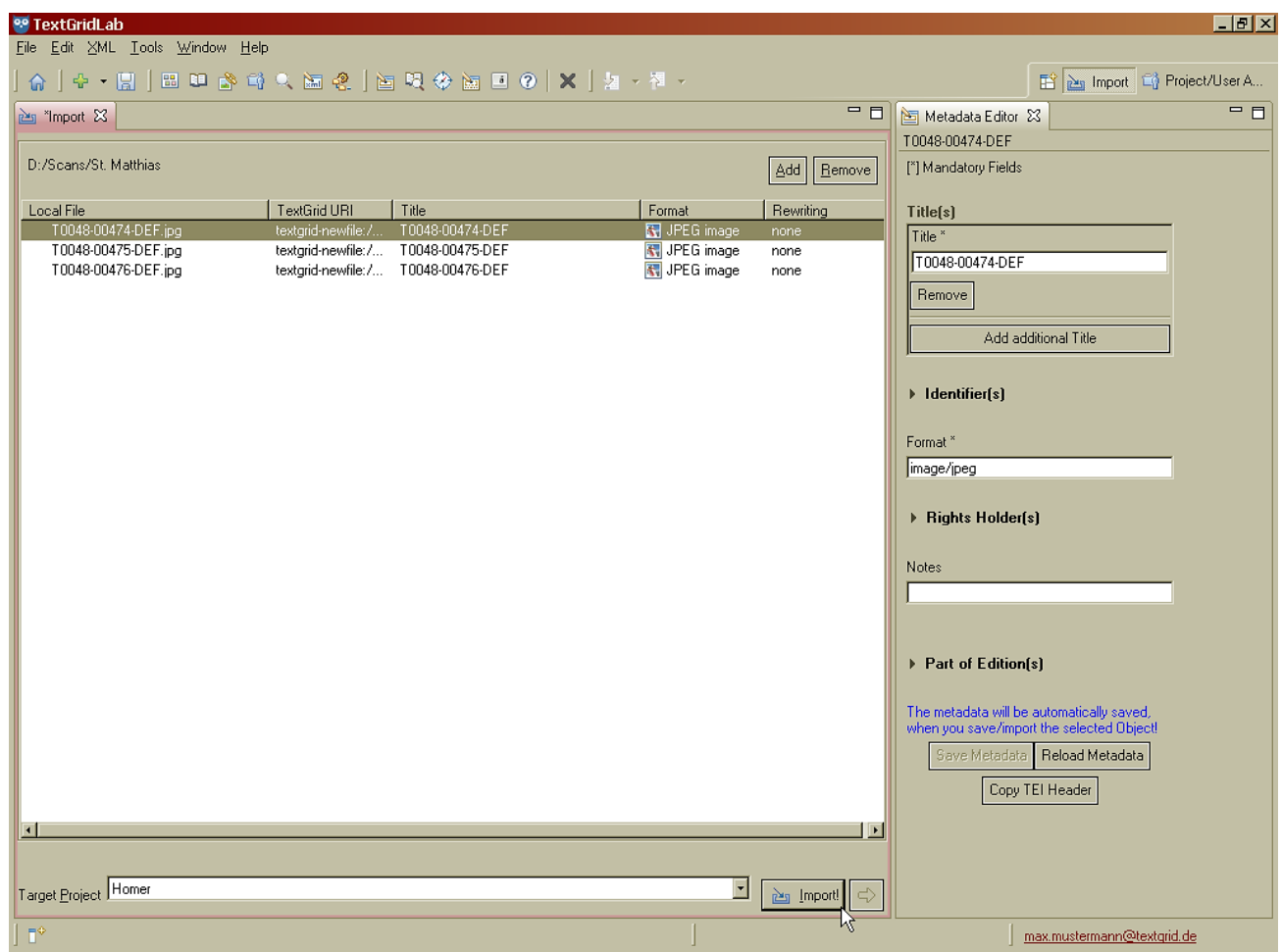


### 2.3.2 Using the Import Tool

The Import Tool can be used not only to import local files as TextGrid Objects but also to re-import them with or without their metadata afterwards.

### 2.3.2.1 Import Local Files

Import files from your local operating system or a storage medium into the TextGridLab:

1. Select a target Project into which the files should be imported in the drop down menu at the bottom of the tool.
2. Drag files or folders from the file management application of your operating system to the list in the Import Tool. As an alternative to dragging and dropping, click "Add" on the top of the Import View to replenish the list below with a file. Use the "Remove" button to remove a file from the list.
3. The Import Tool suggests a content type, Object title, and rewrite method. You can modify the proposed title, content type or rewrite method of an entry by directly clicking the appropriate entry in the table, or adjust additional metadata by selecting an entry in the list and using the Metadata Editor.
4. Click "Import" to finish. After the import has finished, a result screen will list all files that were imported, along with confirmation or warning and error messages if the import was unsuccessful.
5. You can optionally save the import specification (this is the list of original file names imported together with their associated TextGrid URIs and rewriting methods) in order to make it simple to re-export the same set of Objects later. The import specification can be saved as a TextGrid file or as a local file. Use the buttons at the bottom of the view.

### 2.3.2.2 Re-Import TextGrid Objects

You can re-import Objects that have previously been exported. During the export process, the file itself and another file including its metadata are saved on the external storage media. By choosing from the target Project dropdown box in the Import View, the Object can either be re-imported as a completely new Object with a new URI or as a new Revision of the Object previously exported.

**Re-import a file as a completely new Object**

Export the Objects from TextGrid first. After the export they will be saved as local files on your operating system.

1. Open the Import Tool via "File > Import local files ..." in the menu bar.
2. Choose the target project to which the previously exported TextGrid files will be re-imported. Then, click the button "Add" in the Import View or "File > Open local file ..." in the menu bar to select the files in your operating system to be re-imported. You can either simply select the files themselves or files together with their related metadata files and click "Open". They will now appear in the Import View. Adding files via drag & drop to the Import View is also possible. Every file added to the Import View will appear with details (local file name, TextGrid URI, title, and format) and is not yet re-imported. The new URI has not yet been generated. If you highlight the file in the Import View via left-click, its metadata will be opened. Here you can add additional metadata or change its title.
3. Click "Import" to finish the operation.

**Re-import a file as new Revision of the former Object**

Export the Object or Objects from your Project folder first. After the export they will be saved as local files on your operating system.

1. Open the Import Tool via "File > Import local files ..." in the menu bar.
2. Add the previously exported file(s) to the Import Tool View. You can do this by selecting the "Add" button or via drag & drop.
3. Select the original Project folder, from which the file(s) were exported, in the combo box below. Be sure that the selected Project folder is named "Project name - new Revisions". As soon as you select the folder, the former TextGrid URI(s) will be recognized.
4. Now click "Import" and the file(s) will be saved as new Revision(s) to the original Project.

## 2.4 Export

The Export function can be used to export TextGrid Objects and their metadata to a local hard disk or a storage medium. During the export process, the tool will create two files for every Object that has been exported to the target directory on the local operating system: one for the data named with the Object's URI and an additional file that contains the Object's metadata in XML form. For complex Objects like Editions, directories are created that list their contents.

### 2.4.1 Open the Export Tool

Click "File" in the menu bar and choose "Export from TextGrid" or select one or more Objects in the Navigator or Search Results View and choose "Export from TextGrid".

### 2.4.2 Using the Export Tool

1. Via the drag and drop function you can add Objects from the Navigator to the Export Tool dialog. If you add an Aggregation, all aggregated Objects will also be added to the list, and appropriate link rewriting options will be selected. Use the "Remove" button to take an Object out from the list. Below the list of Objects, the target directory has to be selected. Use "Browse" to specify the target directory.
2. Click "Export" to finish. After the export has finished, a result screen lists all files that were exported as well as warning or error messages if necessary. The Export Tool will create two files for every Object: one for the Object itself and one for its metadata (a META file, which can be opened with a simple text editor, e.g. Notepad from Windows). For complex Objects like Editions, directories are created that list their contents.
3. You can optionally save the export specifications (i.e. the list of all Objects exported together with the rewriting methods and file names used) from the result screen.
4. After a file has been exported, the exported file or Object will remain in the TextGrid Repository and therefore also in the Project from which it has been exported.

# 2.5 Revisions and Locking Mechanism

Revisions are a means to save a specific state of a document, e.g. as an interim result of a digital edition. New Revisions are explicitly created by the user, and all Revisions of the same base Object are in the same Project. TextGrid uses an mechanism to lock an Object if a user is working with it. A second user will receive a message when opening the same Object if the first user is still working on it. He or she has then only the right to read but not to change the document.

## 2.5.1 Using Revisions

A new Revision of an opened and changed document can be created by selecting "Save as new Revision" under the "File" item in the menu bar. If a user wants to save a file that has been changed by another user, TextGrid sends a warning. Then the user can save his or her new Version as a new Object or a new Revision.

All Revisions of an Object can be seen by right-clicking on the Object in the Navigator or the Search Result View and by selecting the context menu item "Show Revisions". A list appears with all Revisions, the title of the document, the corresponding Project, the contributor, and the creation date of the Revision. Every Revision can be referenced by an URI that contains the Revision number, i.e. the last digit of the character string (e.g. *textgrid:15k34.2*). To refer to the earliest available Revision, look for the URI without the Revision number (e.g. *textgrid:15k4*).

## 2.5.2 Interaction of Revisions with Other Components

In the cases of Editions, Collections and other Aggregations you can right-click these Objects and select "Edit". The Aggregations Editor will open. If you right-click the Object in question in the Aggregations Editor View and select "Revision" you have then the possibility to refer to the latest Revision, the Revision to which the selected Object corresponds, or to any other Revision from a list.

## 2.6 TextGrid Objects

TextGrid manages Objects and the types of relations between them. These relations express themselves in Aggregations, Editions and Collections, which are themselves TextGrid Objects. To create relations between Objects, every Object has to be identifiable. To make possible a further identification of the Objects and a cross-Project Search, the Objects have to be described by metadata.

### 2.6.1 Objects

Objects are the basic building blocks and smallest unit of data in TextGrid. If you store something in TextGrid - be it an XML document, an image, or any other kind of data -, it will be saved as one or more Objects.

An Object consists of a metadata record and content. Both will be handled together: When you edit an Object's content in an editor, you can always switch to the Metadata Editor to modify the Object's metadata, and the metadata record will be saved whenever you save the Object. You can view and edit mainly descriptive, bibliographic metadata using the Metadata Editor. All metadata for an Object can be reviewed in a dialog opened by the item "Show technical metadata" in the Object's context menu.

Each Object is identified by an URI (Uniform Resource Identifier) in a form such as *textgrid:74k0.1*. The URI is automatically generated when an Object is saved to the Repository for the first time. New Objects that have not yet been saved will be identified by a temporary URI. You can copy the URI to the clipboard using "Copy URI" from the Object's context menu, or you can review it in the "Show technical metadata" dialog. In addition, the URI of an Object is visible in the status bar when you select it in the Navigator so that it is highlighted.

Every Object has a format or content type: This is a required metadata field that specifies the (technical) format of the content. Examples are *text/xml* and *image/jpeg*, but there are also some special TextGrid-specific content types like *text/tg.aggregation+xml* . Each Object with a specific URI appears in exactly one Project. Projects are containers for the user rights management. Each TextGrid Object is either an Item , an Edition, a Work or a Collection - these Object classes have different metadata and semantics.

### 2.6.2 Items

Items are the simplest, but also most common entities in TextGrid. An Item may be a page scan or a chapter of an edition in the form of an XML document. A range of Items can be created via the green cross icon in the toolbar: XML documents, Text Image Link Objects, plain text documents, stylesheets and musical notation sheets. Items are dependent Objects: They can only be published as part of an Edition or Collection but not by themselves. Descriptive metadata for an Item generally consists of one or more titles of the file, its format, a rights holder, and the identifying technical metadata that is available for all Objects. To associate more sophisticated metadata such as an author or a source description with an Item, put it into an Edition and optionally associate a Work. For more information

about how to put Items into an Edition or to associate a Work to an Edition, please see the chapter "References between Objects".

### 2.6.3 Aggregations

An Aggregation is a TextGrid Object that consists of an ordered list of references to other TextGrid Objects which can also be Aggregations themselves. Aggregations are used to organize TextGrid Objects. They are used in a way similar to file system folders, but are more flexible: An Object can be referred to from multiple Aggregations, and you can collect Objects in your Aggregation that belong to other people and that you can only read. When you delete an Aggregation, the aggregated Objects will usually remain – unless you explicitly give the command to delete them. See the checkboxes in the delete dialog box.

There can be different kinds of Objects in an Aggregation differing in their semantics and their metadata, but all have the same sort of content: simple Aggregations, which just have Item metadata and can be used, e.g. to represent a chapter in a book, which is split across various files. Editions or Collections are also Aggregations defined by a characteristic set of metadata. Use the Aggregations Editor to arrange Objects in a nested set of Aggregations.

### 2.6.4 Works

A Work is an individual creation, for example a literary opus, which can be available in various editions, e.g. as a pocket edition, as part of a series of collected works, as a theatrical performance or as an audio book. An Edition is always a particular edition of a work. To describe a Work, TextGrid offers Work Objects: These are metadata-only Objects that contain work-specific metadata such as the uniform title, the date of creation or keywords describing the Work. By the time of publication, every Edition Object must be linked to a Work Object.

### 2.6.5 Editions

An Edition is the manifestation of a work. An Edition is a special kind of an Aggregation, and its metadata contains fields to describe, for example, the people and organizations involved in preparing the edition or the source (outside TextGrid, e.g. a book) that the electronic edition represents. An Edition is often associated with a Work in its pre-publication form and it must be associated with a Work for publication. The actual content of an Edition is stored in the Item Objects which the Edition aggregates. Editions can be published if they have correct metadata, are associated with a Work, and contain at least one Item. The Edition Object provides the precise structure for the publishing of Items.

### 2.6.6 Collections

The Collection is an accumulation of TextGrid Objects formed by the membership of a particular organisation and/or topic. Collections are intended for two use cases: In an organizational context, an Edition may be part of a Collection (e.g. the combination of editions from the Blumenbach project under the "Blumenbach" label or the combination of digitized prints of the 18th century under the label VD 18). Additionally, Collections can be

used to aggregate Items for which the Edition/Work concept is not applicable, i.e. digitizations of museum pieces. Collections are valid starting points for publication.

## 2.6.7 References between Objects

The user can create relations or references between certain kinds of Objects in two different ways.

1. To assign an Edition to a Work use the metadata form for the "Edition" Object. To open the mask for the metadata input, click on the Edition in the Navigator, right-click and choose "Open Metadata". The Metadata Editor will open. Now scroll down to the "Edition of" field and click on the "Browse …" button. Relevant Objects for this action are shown. If you choose a Work, its TextGrid URI will be shown in the input field. Now the relation between Work and Edition is established.

2. Creating a reference between Items and Editions or Collections is only possible via the Aggregations Editor. Right-click on an Edition or a Collection in the Navigator and choose "Edit". As soon as the Aggregations Editor opens, one or more Items can be dragged from the Navigator and dropped into the respective Edition or Collection. Users can see which Edition an Item belongs to in the Navigator tree or in the "Part of Edition(s)" field in the metadata application form of the Item. Open the metadata of the Item, in the way described above, to see if it is related to an Edition.

# 2.7 Aggregations Editor

With the Aggregations Editor, users are able to choose and put together Objects via drag and drop instead of looking for single Objects dispersed in several Projects. Objects relevant for a certain topic or research interest can be aggregated. They appear in the Navigator as an Aggregation, which can be edited, expanded and dissolved again without deleting the Objects within.

## 2.7.1 Open the Aggregations Editor

The Aggregations Editor can be opened via creating a new Aggregation or editing an already existing Aggregation, Edition, or Collection. The Editor will open

- after choosing "New" from "File" in the menu bar and creating a kind of Aggregation
- by clicking " ✚ > Aggregation" in the toolbar
- by right-clicking an Aggregation, Edition or Collection in the Navigator and selecting "Edit"

If "File > New" in the menu bar or ✚ are selected, then the "Create a new TextGrid Object" dialog box will open. Afterwards, the Aggregations Editor appears.

You can also open the Aggregations Editor in a separate perspective by using

- the item "Aggregations" on the Welcome Screen
- "Aggregations" from "Tools" in the menu bar
- the icon ▦ in the toolbar

In these cases, a perspective opens with the Navigator, the empty Metadata Editor and the empty Aggregations Editor. To add a new Aggregation, choose "New" from "File" in the menu bar or click ✚ in the toolbar. To edit an Aggregation, right-click it in the Navigator and select "Edit".

## 2.7.2 Aggregations Editor View

The Aggregations Editor is part of a perspective with the Navigator and the Metadata Editor. If an Aggregation is edited, the toolbar and the context menu of the Aggregations Editor can be used.
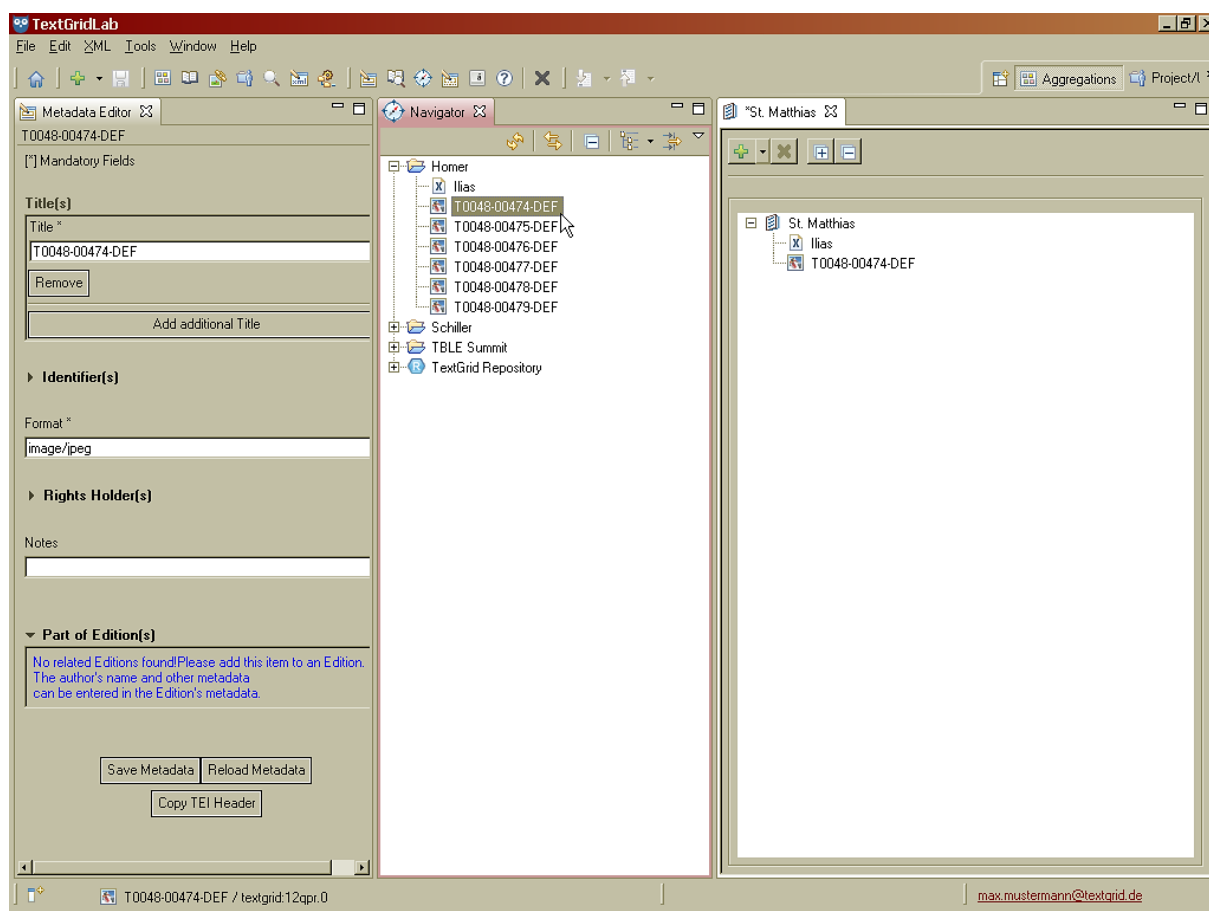
## 2.7.2.1 Toolbar of the Aggregations Editor

To manage Aggregations, the Aggregations Editor provides several functions in its toolbar:

- Click ✚ to create a new Aggregation, Edition or Collection that is subordinated to an existing one
- Click ✖ to remove a selected Object from the list below
- Click ⊞ or ⊟ to expand or collapse all branches

## 2.7.2.2 Context Menu of the Aggregations Editor

The context menu in the Aggregations Editor offers you the same options as the toolbar of the Editor plus two additional options:

- using "Rename Item", any Item can be renamed
- using "Revision", you can "refer to this Revision", to "the latest Revision", or to any other existing Revision

If you choose the last option, a new "Refer to Revision" window will open that lists all Revisions of an Object with the number of the Revision, the title, the corresponding Project, the data contributor, and the creation date. Select the Revision you want to revert to by clicking on its number and confirm with "OK" or double-click the desired item. After this, the Revision number appears behind the corresponding Object in the Editor.
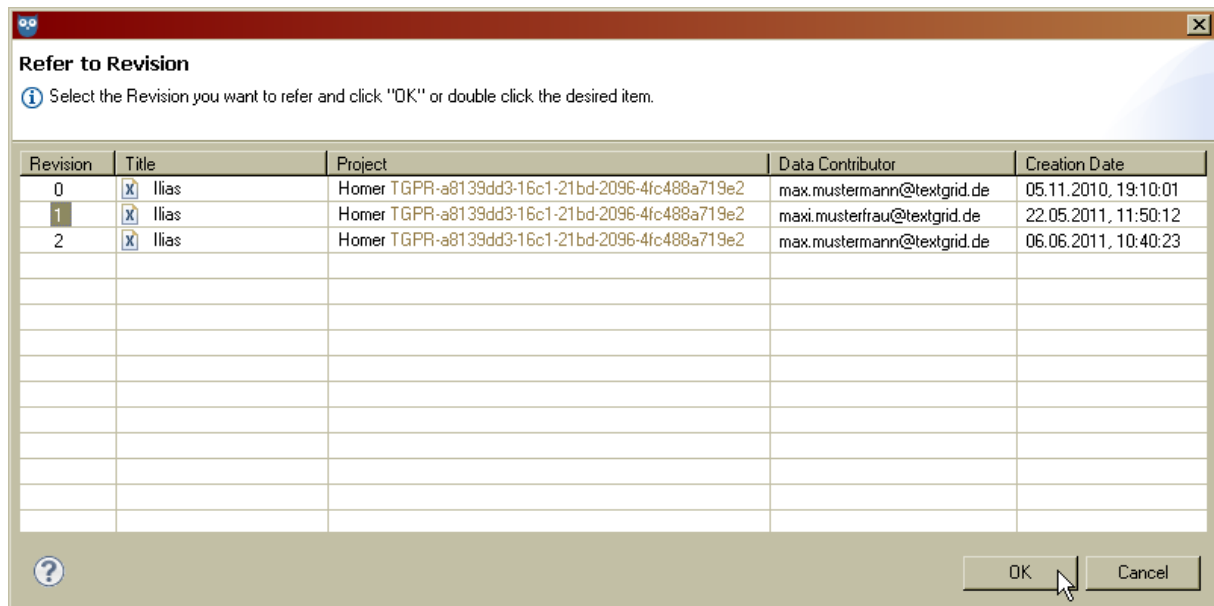
### 2.7.3 Using the Aggregations Editor

To create a reference to an Object in an Aggregation, Collection, or Edition, use the Navigator to drag it from there and drop it in the tree shown the Aggregations Editor. You can see which Edition an Item belongs to in the Navigator tree or in the "Part of Edition(s)" field in its metadata application form. Save the changes by using [Crtl+S], the 🖫 icon in the toolbar or "File > Save" in the menu bar. Otherwise a dialog box will open that reminds you to save changes if you quit the Aggregations Editor.

### 2.7.4 Interaction of the Aggregations Editor with Other Components

The Aggregations Editor is based on the conception of Objects and interacts with the schema that underlies the Metadata Editor. To enable linking Objects and Aggregations, the Navigator is opened with the Aggregations Editor by default.

## 2.8 Metadata Editor
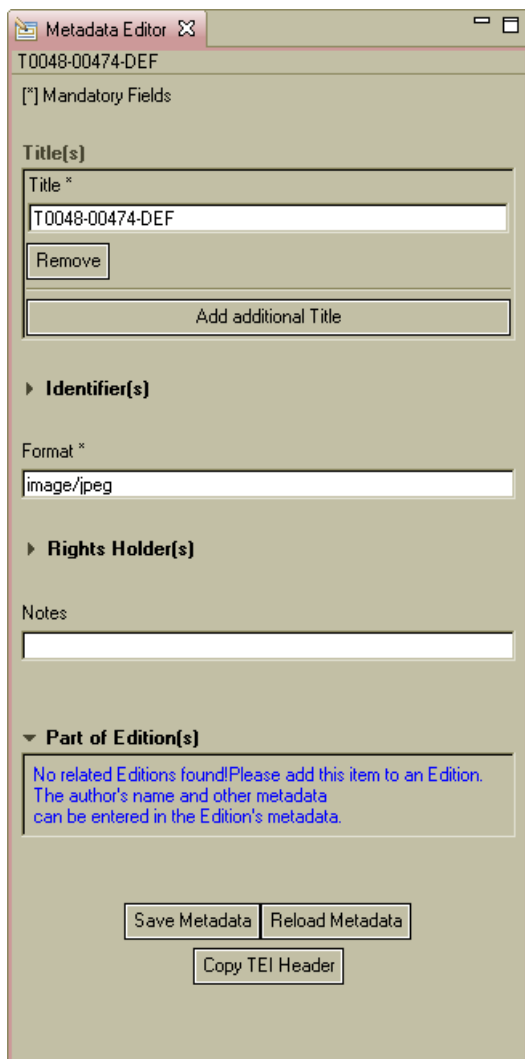
The Metadata Editor is used to create and manage the baseline metadata elements of TextGrid Objects. These metadata are used in TextGrid for cross-project searches. The metadata input form can be adjusted to individual needs with the Metadata Template Editor.

### 2.8.1 Open the Metadata Editor

The Metadata Editor is, by default, part of the XML Editor and the Aggregations Editor Perspective and can be accessed in other perspectives in several ways:

1. by selecting "Tools > Show View > Metadata" in the menu bar, or
2. by clicking on the Metadata Editor icon 📇 in the toolbar.

In order to load the Object's metadata into the Metadata Editor, you must authenticate and select a TextGrid Object for editing.

## 2.8.2 Metadata Editor View

Some fields in the Metadata Editor are generic, while others are specific to certain Objects: Items, Editions, Works and Collections. Depending on the Object selected, the fields displayed will vary. A few fields are shown collapsed. Click the black triangle in front of the element's name to open it. Some fields are repeatable. They can be opened by clicking the arrow beside the designation of the different groups. To add another field, click the "Add additional" button as appropriate. Entries that are not required can be removed by clicking the corresponding "Remove" button.

Each input field in the Metadata Editor belongs to one of the following groups: identifiers, keywords, dates, persons, or agents. These groups do not correspond to any individual field displayed but the fields of the elements belonging to one of these groups have the same structure.

Identifiers are of a special type and they have a characteristic value. Their input fields can be inserted with unrestricted terms. The type may be the ISBN, ISSN, URL or Kalliope (please see RNA: "Regeln zur Erschließung von Nachlässen und Autographen"). The value is the specific number code or address of the Object.

Keywords have an "id" (= identifying) attribute and a value. The "id" attribute is an identification in some controlled vocabulary, e.g. *pnd:13414032*. The value is the information that will be displayed.

Dates have the attribute "date" or the attributes "notBefore" and "notAfter". The attribute "date" is used for the information when an event occured. Additionally, the original form given in a document can be added in the second field. Click "Switch to Data Range" in order to use the attributes "NotBefore" and "NotAfter" for the start and the end of the era denoted. Use the "Switch to Approx Date" button to return. The mandatory "Approximate Gregorian Date" field needs to contain at least four numerals specifying a year. 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

Fields of the type person have the attributes "id" and "corporate body". Use "id" for an identifying URI, e.g. PND or FOAF. "Is corporate body?" can be chosen if wanted. The value to be inserted in the field is the person's name. There is an auto complete function for this. If you enter a name of a person, TextGrid will suggest you adequate PND entries. Select on of them and the PND number will be added automatically.

Agents are specified with their name as value and the attributes "role" and "id". "role" means a Dublin Core relator term you can choose from the drop down menu. The "id" attribute is used for an identifying URI like PND or FOAF.

# Bibliographic Metadata

**TextGrid**

## Item

**generic**
- provided
  - + title
  - • identifier
  - ? format — MIME type
  - ? notes
- ? generated

custom metadata
relations

**item**
- */+ rightsHolder

## Edition

**generic**
- provided
  - + title
  - • identifier
  - ? format = textfg.edition +tg.aggregation+xml
  - ? notes
- ? generated

custom metadata
relations

**edition**
- ?/1 isEditionOf
  - + agent
  - + source — object outside TextGrid
  - OR bibliographicCitation / objectCitation
- ? formOfNotation
- ? language
- ? license

## Work

**generic**
- provided
  - + title
  - • identifier
  - ? format = textfg.work+xml
  - ? notes
- ? generated

custom metadata
relations

**work**
- */+ agent
- * abstract
- dateOfCreation
- * spatial
- * temporal — descriptive keywords, ideally linked to controlled vocabularies
- * subject
- + genre — basic classification
- * type — detailed classification

## Collection

**generic**
- provided
  - + title
  - • identifier
  - ? format = textfg.collection +tg.aggregation+xml
  - ? notes
- ? generated

custom metadata
relations

**collection**
- + collector
- ? abstract
- * collectionDescription
- * spatial
- * temporal
- * subject

aggregates

---

### Generated Metadata
- created
- ? lastModified
- ? issued — date of publication in TextGrid
- textgridUri
- revision
- • pid
- • extent — size in bytes
- • fixity — checksum etc.
- dataContributor — TextGrid user
- project — TextGrid project
- * warning
- ? permissions
  - availability

*Automatically generated by TextGrid when writing data to the repository*

### Bibliographic Citation
- * author
- * editor
- + editionTitle
- * placeOfPublication
- * publisher
- ? dateOfPublication
- ? editionNo
- ? series
- ? volume
- ? issue
- ? spage
- ? epage
- ? bibIdentifier

*e.g., a book or journal article*

### Object Citation
- + objectTitle
- * objectContributor
- ? objectDate
- ? objectIdentifier

*e.g., an artifact in a museum*

### Identifiers
- @ type — e.g., isbn
- <value> — the actual identifier

### Keywords
- * id — ID in some controlled vocabulary
- value — display value

### Date
- @ date — when the event occurred[1]
- or
- @ notBefore — start of the era denoted[1]
- @ notAfter — end of the era denoted[1]
- <value> — verbal description

*[1] may be, e.g., 2011-01-20, 1990-04 or 1875*

### Agents
- @ role — DC relator term
- @ id — identifying URI (PND, FOAF)
- <value> — the agent's name

### Persons (role implicit for the field)
- @ id — identifying URI (PND, FOAF)
- @ isCorporateBody (true/false)
- <value> — the agent's name

### Cardinality
- • required, not repeatable
- ? optional, not repeatable
- + required, repeatable
- * optional, repeatable
- */+ required on publication, repeatable

**2.8.2.1 Generic Metadata**

The following metadata are generic. This means that they appear in the application forms of all TextGrid Objects:

1. Object's title
2. identifiers
3. format of Object
4. notes

The mandatory "**Title**" element should be used for the title and subtitles of the Object. Remove a title or add an additional title by clicking on the appropriate buttons.

Add some kind of identifier for the Object in some controlled vocabulary and choose between ISBN, ISSN, URL or Kalliope (= RNA) in the drop down menu. ISBN, ISSN, URL and Kalliope are common default values but other types can be added if wished. Further "**Identifier**" elements can be added or removed by clicking the corresponding buttons.

Use the "**Format**" element to fill in the required information about the MIME type (= Internet Media Type ). The field "**Notes**" can be used for every other kind of information.

**2.8.2.2 Item-specific Metadata**

In the application form of Items (and Aggregations) there are the following specific input fields:

1. Title(s)
2. Identifier(s)
3. Rights Holder(s)
4. Notes
5. Part of Edition(s)

In the case of Items, names of rights holders (e.g author, contributor, editor) can be attached. In the "**Rights Holder(s)**" field they can be identified with a name and an URI. Further rights holders can be added by clicking the appropriate button. Rights holders can be removed by clicking the corresponding button. Mark the box if it is a corporate body.

The input field with the name "**Part of Edition(s)**" displays the relation of the Item to an Edition Object. The field can not be filled with input by the user. The default entry is "no related Editions found" as long as there is no connection made to an Edition Object. This entry changes once a relation is defined via the Aggregations Editor.

**2.8.2.3 Work-specific Metadata**

Works are Objects that are essentially defined by their metadata. In contrast to Editions and Collections, they do not include other Objects. The metadata form of Works contains the following elements:

1. Title(s)

2. Identifier(s)
3. Agent(s)
4. Abstract
5. Date of Creation
6. Spatial(s)
7. Temporal(s)
8. Subject(s)
9. Genre(s)
10. Type(s)
11. Notes

The "**Agent**" element for Works is required on publication and it is repeatable. It consists of a role attribute for which a Dublin Core (DC) relator term can be chosen from the drop down menu. In the "id" attribute an identifying URI like PND or FOAF might be added. The agent's name can be given as the value for this element. The "**Abstract**" element is optional and repeatable. It is used for any comprehensive description of the work.

The "**Date of Creation**" element is mandatory. It must be entered on the form TextGrid supports. Spatial, temporal and subject keywords can be added. Their identifiers should be ideally linked to controlled vocabularies. Each of the three categories "**Spatial**", "**Temporal**", "**Subject**" has included a value field. With "Value" the display value can be influenced.

The "**Genre**" element is required and repeatable. It is used for basic classification. For a more detailed classification beyond "Genre", the "Type" element can be applied. It is optional and repeatable.

### 2.8.2.4 Edition-specific Metadata

When you create an Edition, the metadata form contains the following fields:

1. Title(s)
2. Identifier(s)
3. Edition of
4. Agent(s)
5. Source(s)
6. Form(s) of Notation
7. Language(s)
8. License/Copyright

The "**Edition of**" element names the related Work Object with a TextGrid URI. To assign an Edition to a Work use the "Edition of" field. Relevant Objects for this action are shown by using the „Browse" button. If you choose a Work, its TextGrid URI will be shown in the input field. Use the link to open the Object and the button to browse the Projects and select an appropriate Work Object for the Edition. Creating a reference between Items and Editions or Collections is only possible via the Aggregations Editor .

The "**Agent**" element is repeatable. Add further agents by clicking the "Add additional Agent" button. Type in the agent's name as the value and select the appropriate Dublin Core

role from the drop down menu. Agents are identified with an URI, e.g. PND or FOAF. Personal names should be typed in the form "surname, first name, middle name".

The "**Source**" element can be an object citation or a bibliographic citation. An object citation is used, for example, in the case of an artifact in a museum. Bibliographic citation is used, for example, for books (i.e. monographs and anthologies) or journal articles. Click one of the buttons to add this information. Use the corresponding buttons to remove source metadata.

**Object Citation**: An object citation can consist of a title, information about the contributor as well as about the date and a special identifier. "Title" is a required and repeatable element. The "Object Date" and the "Object Identifier" type are also required fields. The "Object Contributor" element follows the structure of all "Agent" elements; "Date" follows the structure of all "Date" elements; and object identifier the structure of all other identifiers.

**Bibliographic Citation**: A bibliographic citation consists of the elements

1. Author(s)
2. Editor(s)
3. Title(s) of Edition
4. Place(s) of Publication
5. Publisher(s)
6. Date of Publication
7. Edition Nr.
8. Series
9. Volume
10. Issue
11. StartPage
12. EndPage
13. Bibliographic Identifier

Only the "Title(s) of Edition" element, the "StartPage" field belonging to the "Date of Publication" element and the "Bibliographic Identifier" type are required. "Title(s) of Edition", "Author(s)", "Editor(s)", "Place(s) of Publication", "Publisher(s)" and "Series" are repeatable by clicking the "Add" button.

Author, editor and publisher are identified with an URI, e.g. PND or FOAF. Check the box if they are corporate bodies. Use the "Name" field for the person's name. Personal names should be typed in the form "surname, first name, middle name". Use the "Value" field for the name of the publication place. For the date of publication, all possibilities used for "Date" elements can be applied.

"Edition Nr.", "Series", "Volume" and "Issue" are free fields used like their bibliographic equivalents. "StartPage" is required but "EndPage" is not. "Bibliographic Identifier" is a repeatable element. Choose ISBN, ISSN or URL as type from the drop down menu. The value has to be inserted in the "Identifier(s)" field.

After having finished the input into all the input fields of the "Source" element, choose the notation from the drop down menu of "**Form(s) of Notation**". For cases with more than one writing style the element is repeatable.

The "**Language**" element is repeatable for documents with more than one language.

The license type or description can be specified in the "**License/Copyright**" field. The license itself can be identified with an URI.

### 2.8.2.5 Collection-specific Metadata

The metadata form for Collections contains the following elements:

1. Title(s)
2. Identifier(s)
3. Collector(s)
4. Abstract(s)
5. Collection Description(s)
6. Spatial(s)
7. Temporal(s)
8. Subject(s)
9. Notes

Use the "**Collector**" element for a DC relator term as role attribute, an identifying URI as "id" attribute and the agent's name as the value. The element is required and repeatable.

The "**Abstract**" element for comprehensive information about an Object is optional and not repeatable. The "Collection Description" field is optional and repeatable.

Spatial, temporal, and subject keywords can be added. They consist of an identifier ideally linked to a controlled vocabulary and a value as it should be displayed. These fields are repeatable by clicking the "Add additional Identifier" button.

## 2.8.3. Using the Metadata Editor

Open the context menu of any Object in the Navigator that you want to edit in the Metadata Editor. Select "Open Metadata". The respective input mask opens. Fill in all input fields with the requested or required metadata.

After having completed all required metadata, the record set can be saved by clicking on the "Save Metadata" button at the bottom of the Metadata Editor View. Reload all the entries by clicking the "Reload Metadata" button beside the "Save" button.

To copy the external metadata into the header of a TEI object, click the "Copy TEI Header" button at the bottom of the Metadata Editor View. The Header can be pasted into the source code presented in the XML Editor. The Metadata Editor can also be used to create references between certain Objects, namely Editions and Works.

## 2.8.4 Interaction of the Metadata Editor with Other Components

The Metadata Editor is part of the XML Editor. It shows the metadata of the Objects that are currently open. The structure of the metadata depends on the kind of Object it relates to. It can be adapted to special needs by using the Metadata Template Editor.

## 2.9 Metadata Template Editor

The Metadata Template Editor enables users to create their own new fields in the Metadata Editor for their Projects. You must have the "Project Manager" role in order to work with this editor.

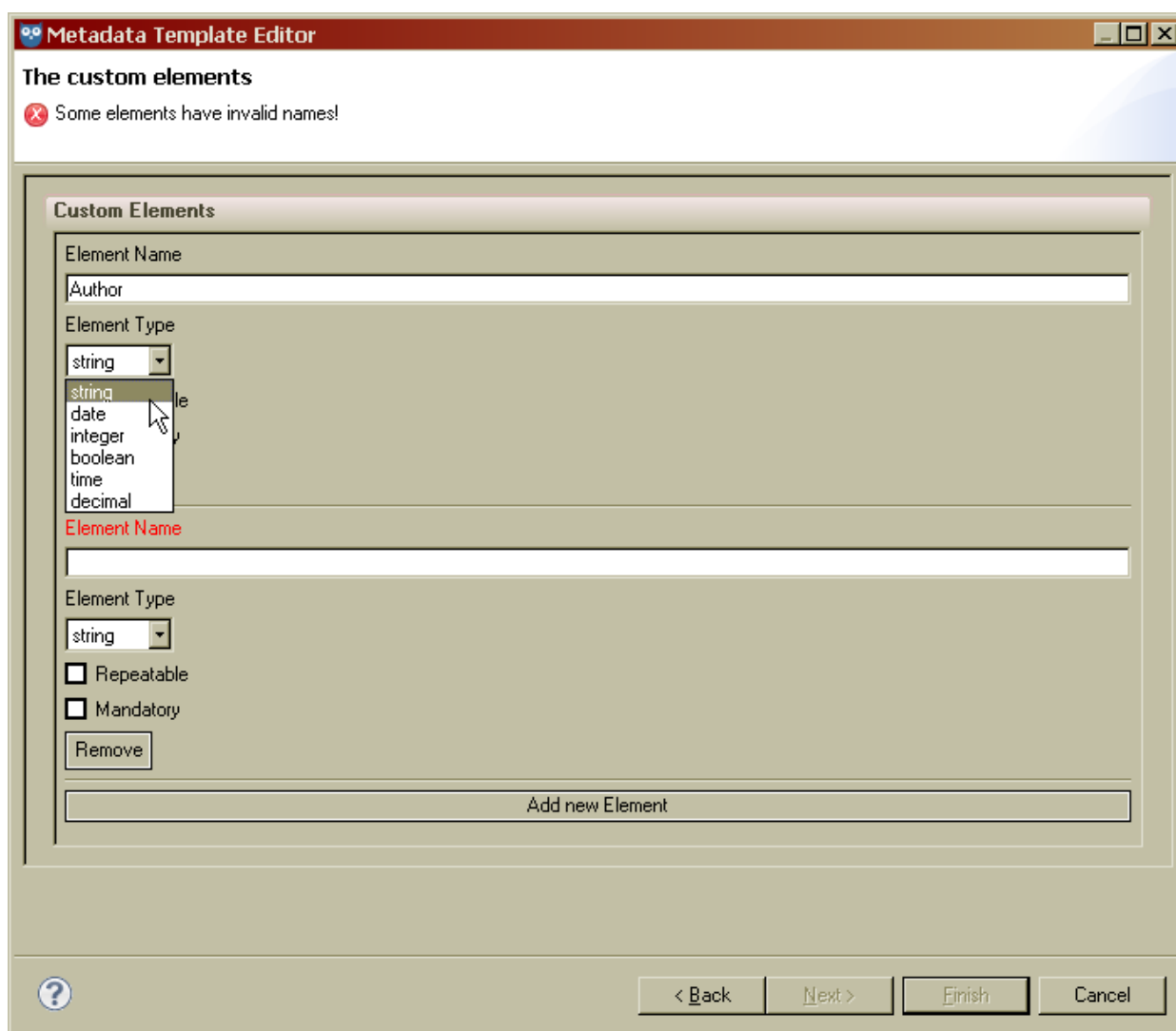### 2.9.1 Open the Metadata Template Editor

To open the Metadata Template Editor, select it from "Tools" in the menu bar. Alternatively, you can click on this icon in the toolbar. You can also right-click one of the Projects for which you hold the "Project Manager" role in the Navigator and select "Edit Metadata Description".

### 2.9.2 Using the Metadata Template Editor

Initially a Project must be selected. Click "Next" and "Add new Element". Then a new element name must be chosen that can consist of only one word. Now select a data type for this element from the drop down menu. The element can be

- a string: strings range from a single word or character to large blocks of text
- a date
- an integer
- Boolean: this means "false" and "true" values and must be written as "0" and "1"
- time
- decimal: must written with a decimal point (for example, "1.5")

Mark the checkboxes "Repeatable" or "Mandatory" if desirable. An element can be removed by clicking the corresponding "Remove" button. Another element may be added by clicking the "Add new Element" button. Click "Finish" to save your input or "Cancel" to close the editor. Click "Back" if you want to select another Project. After you have finished creating new input fields, they will appear in the Metadata Editor of all TextGrid Objects.

## 2.9.3 Interaction of the Metadata Template Editor View with Other Components

The Metadata Template Editor enables the user to adapt the metadata to the needs of a Project. The interface of the Metadata Editor changes according to the adjustments made in the Metadata Template Editor.

# 2.10 Publish

The TextGrid Publish tool allows users to permanently publish the files that they have used in the TextGridLab in the Repository. Only Editions and Collections can be published. Project Managers have the sole right to publish them.

When published, the metadata will be validated automatically. The Objects are freely accessible and searchable on [www.textgridred.de](http://www.textgridred.de) after publishing. All published Objects receive a persistent identifier and all data are migrated to a static storage with backups, duplicated, and long term archive services.

### 2.10.1 Open the Publish View

To publish an Edition or Collection, right-click it in the Navigator and select "Publish in TextGridRep". The Publish View will then open.

### 2.10.2 Publish View

The Publish View consists of several levels.

- The upper level informs you about the status of your Object(s). After initializing the view, it will notify you that the Edition or Collection can now be proved.
- The bottom level allows you to "Proof", to "Publish" (if proved), and to "Cancel". After clicking "Proof", the information visible in the upper level changes from "The Collection/Edition can be proved now" to "The Collection/Edition is not yet suitable for publication" or "The Collection/Edition is suitable for publication now".
- In the colored boxes on the middle level you can see how many o.k.'s (permissions), warnings, or errors have occurred. More details will be displayed below. The middle level is separated into three columns ("Name", "Status" and "Actions"). If a warning or error has occurred, more detailed information can be found in the "Actions" column of the list directly underneath. By clicking on an entry in the field "Actions" of an error message, a "Call action" button appears. Click on it and you will be directed to the source of the error or warning.
- If no warnings or errors appear on the middle level, an "OK" will appear in the status column line and the "Publish" button on the bottommost level will be activated. Click "Publish" to finish the operation. This action is irrevocable, meaning that the publishing process can not be reversed.
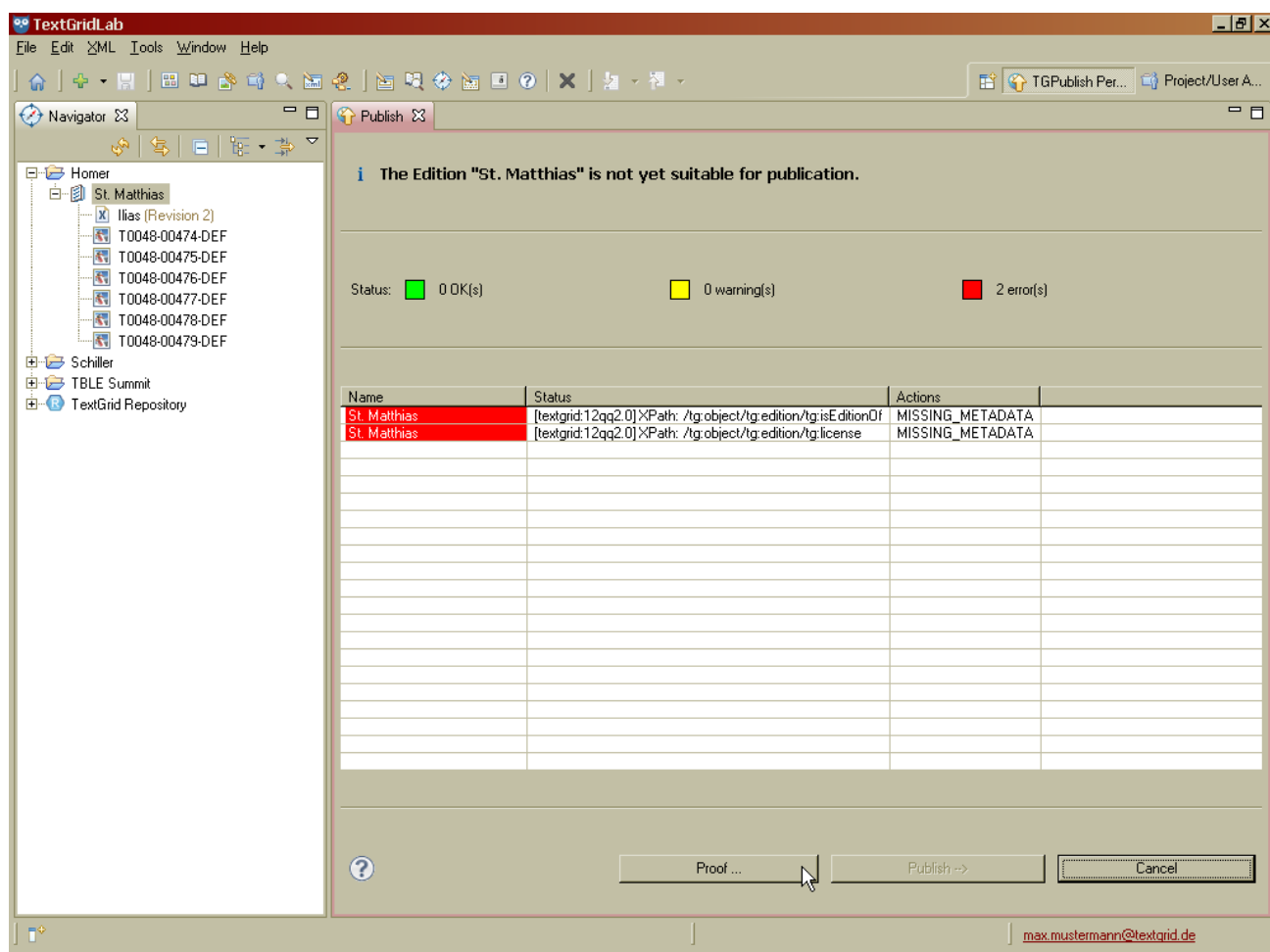
### 2.10.3 Using TextGrid Publish

Before you publish an Object, it is important to know that only Editions and Collections can be published. In order to be published, they must contain a TextGrid "Work". If an Edition is to be published, metadata fields that were previously optional for an Edition become mandatory: these fields are "Edition of" and "License".

If a Project with at least one Object to be published has been created in the TextGridLab, an Edition of this Object can be published by using the Aggregations Editor and the Metadata Editor:

1. Create and save a Work.
2. Create an Edition.
3. Copy the Object to be published and the Work with the metadata in the Edition.
4. Complete the metadata of the Edition: "Edition of" and "License" are required for publishing.
5. Save the Edition.
6. Publish the Edition.

This Edition is public now. This action is irreversible.

## 2.10.4 Interaction of TextGrid Publish with Other Components

The Publish View can be opened directly from the Navigator. "Publish" checks the information of the Project & User Management and the Object type as well as the metadata before a TextGrid Object is published in the Repository.

## 2.11 Publish Tool SADE

The SADE Publish Tool is a TextGridLab frontend for publishing data from within the Lab to individual SADE (http://www.bbaw.de/telota/projekte/digitale-editionen/sade) installations.

### 2.11.1 Install the Publish Tool SADE

To use the module, you must first install it from the Marketplace.

### 2.11.2 Open the Publish Tool SADE

Open the Publish Tool SADE in one of the following ways:

1. Select "Tools > SADE Publish" from the menu bar
2. Click 🌐 in the toolbar
3. Right-click an Object and choose "Publish to SADE"

### 2.11.3 Using the Publish Tool SADE

If no internet destination is defined, a message appears. Before the Publish Tool can be used, a SADE instance has to be defined. This can be done after selecting "Window > Preferences" in the menu bar and "Sade Publisher" is chosen. A form allows you to define the instance via URL and to save a user name and the password. Once this has been done, Objects can be published by clicking "Publish to SADE" in the context menu of an Object. For more information, please see

http://www.bbaw.de/telota/projekte/digitale-editionen/sade

### 2.11.4 Interaction of the Publish Tool SADE with Other Components

If installed, "Publish to SADE" can be started from the context menu of the Navigator, the XML Editor and, if installed, the oXygen XML Editor.

# 3 General Object Editing

This chapter provides an overview of the basic editing tools in TextGrid. During the editing process, they can be used for most of the necessary functions.

# 3.1 XML Editor

The XML Editor is an interactive tool for editing XML documents and for creating new data or annotating text in XML. XML is not a programming language like HTML. It is a markup language, which means that XML can work outside the world wide web and sets the meaning of the elements and (optionally) their presentation. XML is able to organize and classify data in a text. Therefore, XML is able to facilitate the exchange of data and information as well as to make it searchable. For more information about XML, please see

http://www.w3.org/XML/

TextGrid's XML Editor is based on the "Eclipse Web Tools Platform Project" and "Vex" by John Krasnay et. al.. For more information, please see

http://www.eclipse.org/webtools and http://wiki.eclipse.org/Vex

Please note that this Editor is still part of the TextGridLab, so you will be able to choose between the default XML Editor and the customized TextGrid XML Editor. This is important if the Preferences should be changed or a XML object is opened via the context menu of the Navigator.

The TextGrid Help explains the TextGrid XML Editor Perspective and its parts in detail and provides several examples for using the XML Editor.

## 3.1.1 Open the XML Editor

You can open the XML Editor by

- clicking "XML Editor" on the Welcome Screen of the TextGridLab.
- clicking the symbol [xml] in the toolbar.
- selecting "Tools > XML Editor" in the menu bar.

## 3.1.2 XML Editor Perspective

As soon as you have opened the editor, you will see three main sections:

1. the Navigator and two hidden tabs on the left.
2. the Editor Field in the middle, which is blank till such time as an XML Item is opened or created.
3. a separate view on the right, which is split into two different tabs labelled 'Outline' and 'Properties'. These will be blank if no XML document is open.

### 3.1.2.1 Features of the XML Editor

The XML Editor in general offers certain features to make working with XML documents easier.

**Show Validation Errors**

Clicking "Show Validation Errors" 🖼️ under the item "XML" in the menu bar opens a new view in which error messages are listed with information about invalid XML and offset.

**Associate a Schema**

If an XML document is open, you can associate a schema to it. After clicking "Associate a Schema" 🅢 under the item "XML" in the menu bar, the "Select a new schema" dialog will open.



**Associate a Schema**

If the document is already associated to a schema, there will be a display of summary information above the list of schemas. You can choose one of the schemata listed with information about the schema name, the corresponding Project, its contributor and its creation date. Click a schema to select it and "OK" to associate it to the XML document.

If no schema is associated, the button "no explicit schema association" on the left below the list will be marked. The association of a schema with a document will only be made persistent when the document or its metadata is saved.

**Associate a Cascading Style Stylesheet (CSS)**

A Cascading Style Sheet (CSS) can be added to an XML document when it is opened and the option to "Associate a CSS Stylesheet" is selected from the item "XML" in the menu bar. The CSS will be used for displaying the XML document in the WYSIWYM View. You can select a

CSS from the list by clicking on it. By default, a TEI stylesheet built into the editor will be used. To reactivate this option, click the button below the list of CSS models.

**Associate an Adaptor**

An adaptor can be associated to translate the selected document to the TextGrid Baseline Encoding. To open it, please select "Associate an Adaptor..." under the item "XML" in the menu bar when a document is opened or choose this item in the Navigator's context menu of the preselected Object. A new dialog box will open.

In the upper list of the dialog, the selected Object(s) will be displayed with information about "Title", "Project", "Contributor" and "Creation Date". You can tick the box under this list to make the assignment persistent when clicking "OK".

In the lower list you can select the adaptor by clicking on it. Here you will also find additional information about the adaptors. To reverse your selection, you can mark the button "Associate with no adaptor" under this list.

**XML Editor Debugging**

The debugging function finds and reduces the number of problems. The XML Editor Debugging works with the WYSIWYM View. Using the "XML Editor Debugging" under "XML" in the menu bar, you can reload the WYSIWYM View. By selecting "Debug XML Document", you can save the WYSIWYM Debug Output. You can also open the WYSIWYM Debugging View by clicking "Layout Debugging".

**3.1.2.2 Menu Bar of the XML Editor Perspective**

When you open the XML Editor, certain items in the menu bar will be activated. Some of these items are located under "Edit", and some under "XML".

**Edit**

When the XML Editor is opened, options from "Edit" in the menu bar can be used, depending on the view that is open in the Editor Field. Most items are displayed if the XML file is opened in the Source View. These items are listed below:

- Undo and Redo : To undo or redo a change made to a document, click "Edit > Undo" or "Edit > Redo" in the menu bar.
- Cut , Copy and Paste : Use "Edit > Cut", "Edit > Copy" and "Edit > Paste" in the menu bar to arrange parts of the source code.
- Delete and Select All : For removing sections of code, use "Edit > Delete". Use "Edit > Select All" to mark all source code of an XML document.
- Find and Replace : To open the "Find and Replace" dialog box, click "Edit > Find and Replace" in the menu bar on top. You can specify text to search for and also to replace in this dialog box. You can determine:
  - o the search direction ("Forward" or "Backward" from the current cursor position)
  - o the scope (use "All" or "Selected lines" to search within a selected area)

- o whether or not your search should be "Case sensitive"
- o if the entire search string should be matched using "Whole word"
- o whether to "Wrap search" at the end of the file
- o if the editor focus should move to the first complete occurrence of the text you are typing, using "Incremental"
- o if the regular expressions mode should be activated using the "Regular expressions" checkbox. Type [Ctrl+Space] over the text field to receive content assistance that lists all possible expressions

- Expand selection to: For marking up passages in the Source View, the option "Expand selection to" allows you to select the enclosing, the next, or the previous element. In addition, you can restore the last selection.
- Content Assist: For more information, please see the explanation of the Source View.
- Show Tooltip Description: Displays tooltip description, where applicable. It shows the value of a hover that would appear at the current cursor location.
- Word Completion: Use this item to receive suggestions from the program for completing a word.
- Quick fix: For more information, please see the explanations of the Source View.
- Smart Insert Mode: For more information, please see the explanation of the Source View.

**XML**

The following operations can be started from the menu bar item "XML":

- Insert Elements : Shows a list of possible elements.
- Rename Current Element to...
- Source : Used for comment handling and code-formatting. You can also start a document cleanup here.
- Show Validation Errors
- XML Editor Debugging
- Associate a Schema
- Associate a CSS
- Associate an Adaptor
- Copy URI-Fragment : Clones an URI-Fragment for local addressing.

### 3.1.2.3 Toolbar of the XML Editor Perspective

When the XML Editor is open, additional functions in the toolbar will be active depending on the view that is currently selected.

**Show Block Markers / Show Inline Markers (WYSIWYM View)**

Click  to show block markers and click  to see all inline markers in the WYSIWYM View.

**Next Annotation / Previous Annotation (Source View)**

By clicking on  or , the next or the previous annotation in the source code can be found. By clicking the small triangle next to these icons a list of entities is presented that can

be checked. Only the marked kinds of objects will be found. You can select additions and changes as well as errors, warnings, and information. You have also the possibility to jump to the next or previous annotation.

**Turn Grammar Constraints on and off (Source View)**

When you edit an XML document that has a set of constraints or rules defined by a DTD or an XML schema, you can turn the constraints on and off by clicking ⬛ or 🖨. When the constraints are turned on, the XML Editor prevents you from inserting elements, attributes, or attribute values not permitted by the rules of the XML schema or DTD, and from removing necessary or predefined sets of tags and values.

**Reload Dependencies (Source View)**

If your XML document is associated with a DTD or XML schema that has changed, you can reload the dependencies by clicking 📄.

**3.1.2.4 Status Bar of the XML Editor Perspective**

When a document is opened in the XML Editor, the bar at the bottom of the view will inform the user if it is writable, if the smart insert mode is active, and lists the current coordinates of the cursor (Source View).

**3.1.2.5 Shortcuts of the XML Editor Perspective**

| | |
|---|---|
| [Alt+/] | Word Completion |
| [Alt+Shift+Down] | Restore Last Expanded Selection |
| [Alt+Shift+Left] | Expand Selection to Previous Element |
| [Alt+Shift+Up] | Expand Selection to Enclosing Element |
| [Alt+Shift+Right] | Expand Selection to Next Element |
| [Alt+Shift+W] | Show Passage in Navigator, Outline and Properties View |
| [Crtl+1] | Quick Fix |
| [Crtl+A] | Select All |
| [Crtl+C] | Copy |
| [Crtl+F] | Find and Replace |
| [Crtl+I] | Format Active Elements |
| [Crtl+Shift+/] | Add Block Comment |
| [Crtl+Shift+\] | Remove Block Comment |
| [Crtl+Shift+C] | Toggle Comment |
| [Crtl+Shift+F] | Format |
| [Crtl+Shift+Insert] | Smart Insert Mode |
| [Crtl+V] | Paste |
| [Crtl+X] | Cut |

| | |
|---|---|
| [Crtl+Y] | Redo |
| [Crtl+Z] | Undo |
| [Delete] | Delete |
| [F2] | Show Tooltip Description |

## 3.1.3 Editor Field

This section describes how to work with the Editor Field in the center when a document is open. At the bottom of the Editor Field, you can choose between three different editing views and one preview mode of the content: "Design", "Source", "WYSIWYM" and "Preview".

- The Design View shows the hierarchic structure of the document.
- The Source View shows the document in XML language. It allows you to access its structure and modify it.
- The WYSIWYM (="What You See Is What You Mean") View shows an example of the display and formatting of the content for the web.
- The Preview presents a HTML document after treating the XML Object with an adequate XSLT file.

You can switch between those editing views by clicking on the tabs at the bottom of the editor. The * in the title bar of the Editor Field shows that the file has not yet been saved.

### 3.1.3.1 Design View

The Design View provides an overview of the tree-structure of the document in the left column. The content column on the right side shows the content model of elements, the values of attributes, and text content.

Nodes can be opened and closed by clicking the "+" or "-" button in front of them. You can edit the values of attributes, the content of processing instructions, and the text-content of elements by typing directly in the appropriate text-field in the 'Content' column. You can change the position of XML objects by selecting the element, holding down the left mouse button, moving the cursor to the target, and releasing the button when the line marking the new position is highlighted.
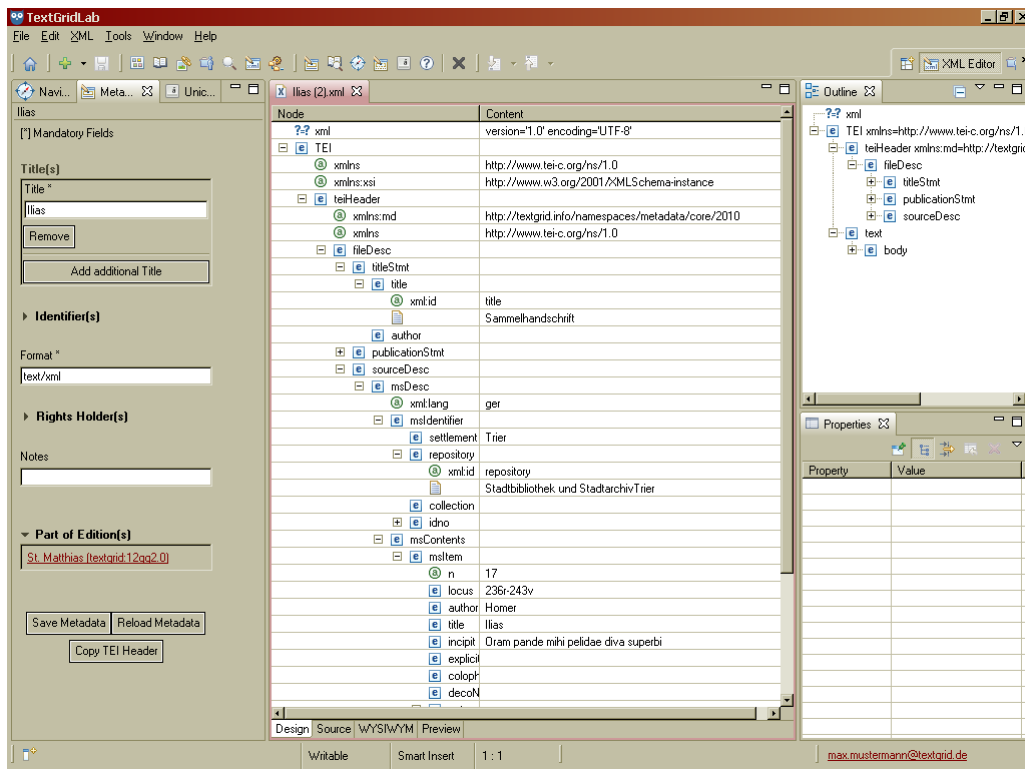
### 3.1.3.1.1 Features of the Design View

**Add and Edit DTD Information**

This menu item is currently not supported . You can convert your DTD to XML schema and associate it by using "XML > Associate a Schema ..." as a workaround.

**Add and Edit Schema Information**

A namespace can be chosen using the context menu in the Design View. Select "Edit Namespaces..." and the "Edit Schema Information" window will open. The Namespace Declarations consist of a prefix, the namespace name, and a location hint. Click "Add" to continue. In the "Add Namespace Declarations" window you can choose between selecting from a registered namespace or specifying a new one by using the radio buttons. Select registered namespaces by marking the boxes in front of them and clicking "OK". Alternatively, a new namespace can be specified.

The chosen namespace declarations will now be shown in the "Edit Schema Information" window. Please click "Edit...". Enter the required prefix and namespace URI for the namespace declaration. Click "Browse" for a location hint. The "Select File" window will open. Click "OK" or "Cancel" to finish and return to the "Add Namespace Declarations" window.

As soon as the namespace is specified, finish the operation with "OK". If no specified namespace should be added, click "Cancel". This will return you to the "Edit Schema Information" dialog in which the specified namespace that was previously added is now visible.

Use "Add" to add further namespaces. Select "Edit" to change already added namespaces. Use "Delete" to remove them. Finish the dialog with "Cancel" or "OK" . Once added, namespaces can be edited by right-clicking them and selecting "Edit Namespaces..." The namespace name can also be changed by left-clicking the corresponding field in the Design View.

**Add and Edit Processing Instructions**

Processing Instructions can be included by right-clicking the place where they should be added and selecting "Add Child", "Add Before" or "Add After" and afterwards "Add Processing Instruction". This is not possible when right-clicking on attributes in the tree structure. A processing instruction is specified with its target and its data. The "Target" field is used to identify the application to which the instruction belongs. The "Data" field contains the instructions. Click "OK" to add the instruction. An existing processing instruction can be worked on after right-clicking it and choosing "Edit Processing Instruction". The pop-up window has the same format as the "Add Processing Instruction" window. The data can also be changed by left-clicking the corresponding field in the content column.

**Add Elements**

Right-click the element under which a new element should be added. You must then choose if the new element should be added before or after the right-clicked element or if it should be its child element ("Add Before", "Add After", "Add Child"). Then click "New Element...". Enter the element's name and press "OK".

**Add and Edit Attributes**

Right-click an element and select "Add Attribute" and "New Attribute". Enter the name and the value of the attribute and click "OK". An existing attribute in the Design View Editor Field can be worked on after right-clicking it and choosing "Edit Attribute". The pop-up window has the same structure as the "Add Attribute" window. The value of the attribute can also be changed by left-clicking the corresponding field in the "Content" column of the Design View.

**3.1.3.1.2 Context Menu of the Design View**

The context menu of the Design View allows the user to use most of the view's features via right-click.

- To delete an XML Object, right-click it and select "Remove".
- To insert a DOCTYPE declaration in your document, right-click at any position in the editing view and select "Add DTD Information...".
- To add new or edit existing namespaces in the document, right-click at any position in the editing view and select "Edit Namespaces...".
- Processing instructions can be edited in a pop-up window after "Add Processing Instruction" has been selected.
- To add an element at a certain position relative to an element in the document, right-click it and choose one of the elements proposed. When selecting "Add Child", "Add Before" or "Add After", you can add the following elements:
  - a comment

- o   a processing instruction
- o   PCDATA 📄
- o   a CDATA section
- o   a new element [e]

- You can add attributes to an element by right-clicking it and selecting from the list proposed after selecting "Add Attribute"  .
- To edit attributes, right-click the attribute in the Design View and select "Edit Attribute...".

The lists of proposed elements and attributes are provided by Content Assist. Proposals come from a referenced content model if a schema is specified for the document, or through the XML catalog if a schema is not specified. This will give you "smarter" proposals, such as specific child element proposals within a given element, or required attribute proposals.

### 3.1.3.2 Source View

You can edit a document's source code in the Source View directly by manually editing, inserting or deleting elements and attributes. Lines can be opened and closed by clicking the +/- buttons on the left side. Schema-driven Content Assist will support you with a Hover Help and lists of proposals when adding new elements.
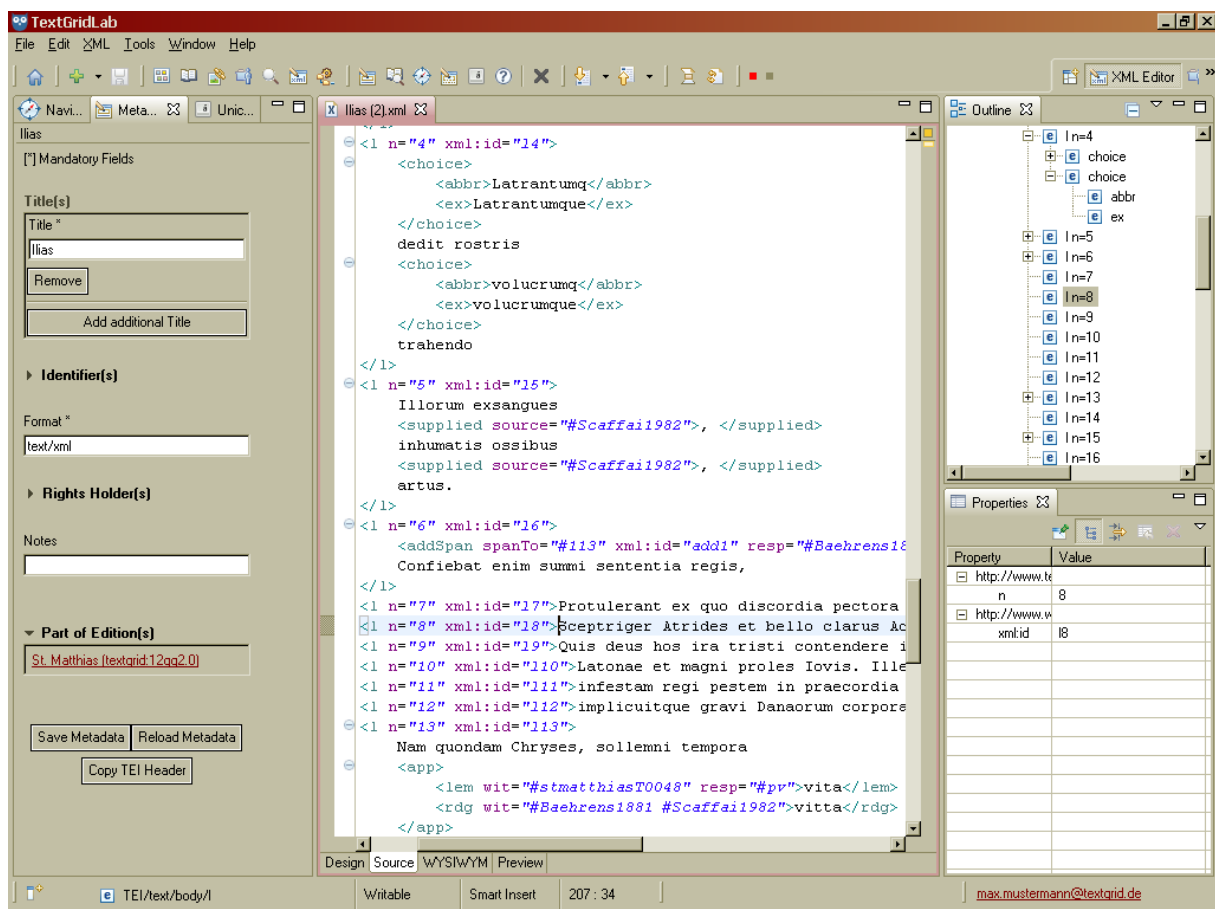
### 3.1.3.2.1 Features of the Source View

**Syntax Highlighting**

Tag elements (attributes, values, etc.) as well as comments in the Source View are highlighted differently to facilitate orientation in the source code and detection of syntax errors. You can customize the syntax highlighting in the editor-relevant preferences.

**Unlimited Undo and Redo**

To undo or redo a change made to a document, click "Edit > Undo" or "Edit > Redo" in the menu bar above. Alternatively, right-click in the Editor Field and select the corresponding entry "Undo Text Change". You can undo and redo every change made to a file for the entire editing session.

**Node Selection**

Depending on the position of the cursor in the editor, the node selection indicator highlights the corresponding tags as well as the lines that include a node in the vertical ruler in the left area of the Source View.

**Comment toggling and block commenting and uncommenting**

You can toggle an XML comment on and off by right-clicking and selecting "Source > Toggle Comment". To comment on a section of source code, right-click on the selected area and select "Source > Add Block Comment". To delete a comment, select "Source > Remove Block Comment".

**As-you-type Validation**

While editing the document, errors found in the general XML syntax (such as missing quotes, missing brackets, or missing end tags) as well as validation errors (if a schema is specified) are indicated by red wavy underlining. A red icon at the top of the vertical ruler in the right area of the Source View will appear if the Document contains any errors. To find a description of the error, move your mouse cursor over the red marks shown in the vertical ruler in the right area of the Source View. A yellow icon indicates a warning.
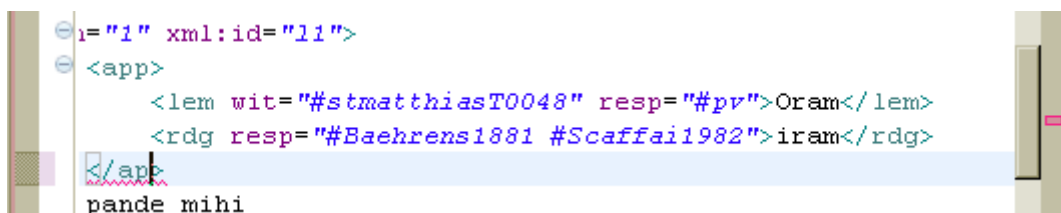


**Smart Insert**

Typing elements and comments is supported by a Smart Insert mode: When you type an element, Smart Insert automatically completes the corresponding closing tag. Similarly, when you type the beginning of an XML comment <! --, Smart Insert completes the ending of

the comment -->. The cursor is left in the middle of the comment tag so that you can proceed directly typing in the comment text. In the same line, opening quotes in attributes are completed with closing quotes while the cursor is left between them so you can directly start typing the value of the attribute. To toggle the Smart Insert mode on and off, click "Edit > Smart Insert Mode" in the menu bar and tick or untick the check mark.

**Hover Help**

Hover Help is displayed when users move the mouse cursor over an element or an attribute. It displays the content model of the current element or attribute and additional documentation information if included in the associated schema. Moving the mouse cursor over text that has been marked with red wavy underlining will display a description of the current problem. You can modify the Hover Help preferences in the relevant editor preferences.



**Content Assist**

When typing the opening bracket < of an element in the Source View field, Content Assist provides you with a list of suggested elements allowed at this position. You can activate Content Assist by clicking "Edit > Content Assist" in the menu bar at the top. When activating Content Assist while the cursor is at an attribute position, a list of suggested attributes allowed at this position is provided. Proposals come from a referenced content model if a schema is specified for the document or through the XML Catalog. You can modify the Content Assist preferences in the editor relevant preferences.

**Quick Fix**

Select "Edit > Quick Fix" in the menu bar on top to see a list of suggested corrections when positioning the cursor on a text section text that has been marked with red wavy underlining. Alternatively, right-click on the underlined text and select "Quick Fix". If there are no problems or warnings at the selected position, Quick Fix proposals are not available.

**Formatting**

To make the XML document easier to read and better for printing, you can change the formatting options in the editor relevant preferences. You can apply formatting to the whole document by right-clicking in a non-highlighted area in your document and selecting "Source > Format". To apply formatting to a highlighted area only, right-click in the selected area and select "Source > Format Active Elements".

**Cleanup**

Simple errors in the XML document such as missing required attributes, missing start or end tags, or unquoted attributes can be corrected with XML Cleanup. You can open the "Cleanup" dialog box by right-clicking in the Editor and selecting "Source > Cleanup Document". Alternatively, you can find it in the menu bar under "XML > Source > Cleanup Document". Afterwards, set your Cleanup preferences in the dialog box; you can further select 'Format source' in the box to apply formatting to the document.

**Team and Local History**

A local edit history of an XML document is maintained when you create or modify the document. This history is accessible via "Team > Show Local History" in the context menu. Each time you edit and save the file, a copy is saved so that you can replace the current file with a previous edit or even restore a deleted file. You can also compare the contents of all the local edits. You can also "Apply Patch(es)" after selecting "Team" in the context menu. Select the resource (clipboard, file, URL or workspace) where the patch was generated in the "Patch Input Specification" dialog. This resource should contain the same file revisions as the line-up on which the patch was generated. For more information, please see the Eclipse documentation http://www.eclipse.org/documentation/

**Preferences**

You can edit XML Editor-relevant preferences by right-clicking in the Source View editor and selecting "Preferences". The following preferences can be edited:

- Highlighting of the syntax elements: Expand the tree "XML > XML Files > Editor" on the left of the dialog box "Preferences" and select "Syntax Coloring".
- Hover Help: Expand the tree "General > Editors" to the left of the dialog box "Preferences" and then select "Structured Text Editors". In the "Structured Text Editors" dialog box, select the "Hovers" Tab and tick the requested modifier preferences.
- Content Assist: Expand the tree "XML > XML Files > Editor" on the left of the dialog box "Preferences" and select "Content Assist". There you can choose the appropriate settings.
- Formatting: Expand the tree "XML > XML Files" on the left of the dialog box "Preferences" and select "Editor". In this dialog box you can choose and check the respective settings of the formatting function.

For more information, please see the Eclipse documentation:

http://www.eclipse.org/documentation/

### 3.1.3.2.2 Context Menu of the Source View

The context menu of the Source View provides access to most of the view's features via right-click. Using this menu, you can

- Undo changes and revert the XML document to the last saved state, and save the current state
- Highlight the document or part of the document in the Navigator, Project Explorer, Outline View or Properties View by selecting "Show In"
- Select Cut, Copy and Paste
- Start Quick Fix
- Manage comments, format or clean up the source code by selecting "Source"
- Open the Properties View
- Use Eclipse's Subversion options by selecting "Team", "Compare With" or "Replace With"
- Associate an Adaptor
- Copy an URI or URI fragment, delete the document, show or reload metadata, and show Revisions and CRUD warnings that inform you about database problems
- Select editor-relevant preferences
- Look up a word in the dictionaries

With the context menu it is also possible to interact with other modules of the TextGridLab. By default, this is true for the Dictionary Search. It is also possible for the Lemmatizer, LEXUS, Cosmas II, ANNEX and SADE, if they have been installed.

### 3.1.3.3 WYSIWYM View

The WYSIWYM (="What You See Is What You Mean") Editing View provides a word processor-like interface and hides the raw XML tags from the user. It uses the TEI schema and a standard CSS stylesheet to define the document layout.

To edit other XML formats or define a custom layout you can use your own schema and CSS stylesheet. Your stylesheet should declare paragraph-type elements as "display:block".

If your document was not recognized as a TEI document, and no stylesheet association was found, you have the option to associate a stylesheet before proceeding. Use the Import Tool to import a CSS first or to proceed without associating a style sheet (not recommended).
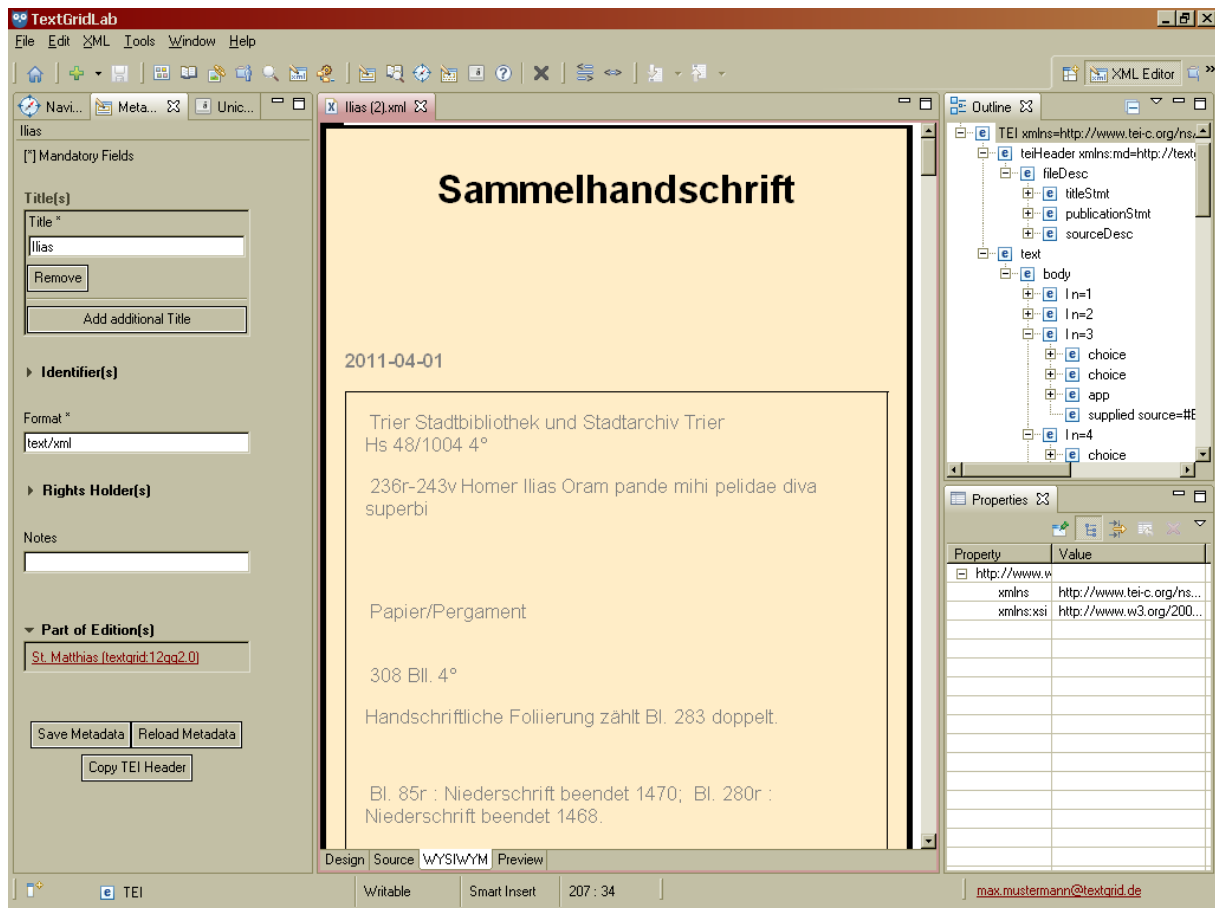
### 3.1.3.3.1 Features of the WYSIWYM View

**Block and Inline Markers**

In the default setting, no tags are displayed in the WYSIWYM Editing View. To display the Block Markers, which mark nested divisions of an XML file, select ⬚ in the main toolbar. To display the Inline Markers, which mark the single elements of an XML document, select ⬚ in the main toolbar.
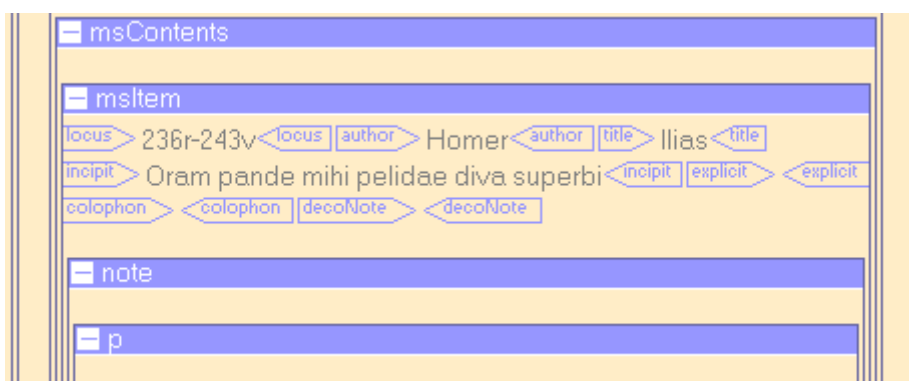


**Insert Elements**

You can insert new elements by right-clicking at a selected position in the editor and selecting "Insert Element" (or alternatively you can select "XML > Insert Elements" ⬚ in the

menu bar). Activating the "Show Inline Markers" button on the toolbar is recommended. If text is highlighted in the editor when selecting "Insert Element(s)", the new element will surround the highlighted text fragment. In both cases after selecting 'Insert Element(s)' a list of suggested elements allowed at this position will appear. You can use the Up ↑ and Down ↓ keys on your keyboard to select an element and press "return" to insert it or double-click on an element in the list. To insert an element not provided in the proposal list, enter the name of the element in the editing field and click "Insert New".

### 3.1.3.3.2 Context Menu of the WYSIWYM View

The context menu in the WYSIWYM View is similar to that in the Source View. However, some options are only found here: for example, adding elements to the WYSIWYM View. With the context menu it is also possible to interact with other modules of the TextGridLab. By default, this is true for the Dictionary Search. It is also possible for the Lemmatizer, LEXUS, Cosmas II, ANNEX und SADE, if they have been installed.

### 3.1.3.4 Preview

If you treat an XML Object with an adequate XSLT document, the Preview will show the HTML resulting from this operation. The context menu is the same as in your operating system.

## 3.1.4 Outline View

The Outline View facilitates navigation in large XML documents, providing an overview of the tree-structure of the document.
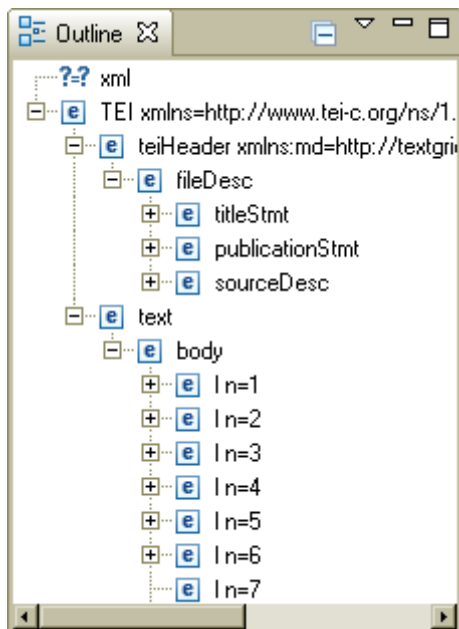


### 3.1.4.1 Title Bar of the Outline View

By clicking ⊟, you can collapse the nodes in the Outline View. Clicking the white downward triangle will open the view menu. It offers three operations: "Filters", "Link with Editor", and "Show Attributes". Use the two remaining icons to minimize and to maximize the view.

### 3.1.4.2 Context Menu of the Outline View

The context menu in the Outline View allows you to

- Associate an Adaptor 
- Copy an URI  or an URI fragment 
- Delete , show metadata (  and ), Revisions and CRUD warnings 
- Publish to SADE
- Carry out the operations that can be performed with the context menu of the Design View.

## 3.1.5 Properties View

The Properties View shows in two columns the attributes and the corresponding values. You can edit values by selecting an element in the Design, Source, or WYSIWYM Editing View or the Outline View and typing directly in the appropriate text field in the value column. Press "Enter" to confirm changes made to the attributes. It is recommended that you edit attributes in the Properties View when working in the WYSIWYM View, as attributes will not be displayed in the WYSIWYM Editing View.



### 3.1.5.1 Title Bar of the Properties View

The Title Bar of the Properties View offers you several icons to perform a range of operations:

- Click  to pin this Property View to the current selection.
- Click  to show categories like "Attributes" in the view.
- Click  to show advanced properties.
- Click  to restore the default value.
- Click  to remove the selected property.

- Click the white triangle to open the view menu. The view menu allows you to
  - open a new Properties View
  - pin a property to a selection
  - show categories and advanced properties
  - remove a selected property
  - define the width of the two columns "Property" and "Value" after clicking "Configure Columns…"

- Click the both remaining icons to minimize and maximize the view.

### 3.1.5.2 Context Menu of the Properties View

The context menu in the Properties View allows you to copy and to restore the value of a given property. If an element of the Outline View is selected and you then click in the text field of the Properties View's value column, the context menu is the same as in your operating system.

## 3.1.6 Using the XML Editor

Some of the main operations for which the XML Editor is intended are explained in the following sections.

### 3.1.6.1 Open XML Documents

To open XML documents from the Repository in the XML Editor, either double-click the document in the Navigator or right-click on the document in the Navigator and select "Open". Another possibility is to select the XML document in the Navigator and then use the menu bar to select "File > Open Object". To open XML documents from your local system in the XML Editor, click "File > Open Local File" and choose the document you want to open from the "Open File" dialog of your local system.

Once a document or file is opened,

- the Metadata Editor shows the metadata related to the document,
- in the Editor Field the document content is shown in XML language,
- in the separated Outline View on the right, the document is represented as a tree or hierarchic structure
- if you click on an element in the XML Editor Field or the Outline View, its attributes and their values are then listed in a table within the Properties View.

At the bottom of the Editor Field in the center you can choose between three different editing views of the document: Design View, Source View and WYSIWYM View. The Design View shows only the hierarchic structure of the document. The Source View shows the document in the XML language. It allows you to access its structure and modify it. The WYSIWYM View (= "What You See Is What You Mean" View) shows the final display and format of the content for the web. You can switch between the editing views by clicking on the tabs at the bottom of the Editor Field.

### 3.1.6.2 Create XML Documents

You can create a new XML document either by selecting "File > New Object" in the menu bar or via right-clicking a Project in the Navigator and selecting "New Object". In the opening dialog box "New TextGrid Object", select a target Project and the document type (XML document, XML schema, or XSLT stylesheet). Click "Next" and assign metadata in the metadata form. Metadata can also be added later. You can click "Next" to associate a schema with your XML document or click "Finish" to leave the dialog box. To save changes in the document, click "File > Save", use the 💾 in the toolbar, or right-click in the XML Editor field and select "Save".

### 3.1.6.3 Associate an XML Schema and Validating XML Files

It is possible to associate a schema with your XML document not only during the creation process of an XML document but also while working in the Source View. Please click "XML > Associate a Schema" in the menu bar on top and choose one of the schemas listed in the "Select Schema" dialog box. Click "OK" to associate the schema. For associating a schema, you can choose between schemas that are located in projects you have access to in the Repository or schemas from the built-in XML catalog. To import your own schema to the Repository, see Import. Currently only W3C Schemas are supported in the TextGridLab.

In the Source View, errors in the general XML syntax (such as missing quotes, missing brackets, or missing end tags) are indicated as well as validation errors (if a schema is specified) with red wavy underlining. To check if your XML document is well-formed and valid, you can validate it in any View by clicking "XML > Show Validation Errors" in the menu bar on top. The Validation Errors View will pop up below the Editor View showing an error message and identifying the invalid XML, if there is an error.

## 3.1.7 Interaction of the XML Editor with Other Components

The Navigator is used for opening and organizing Projects and Objects. Clicking on XML Items will open them by default in the XML Editor.

The Metadata Editor is used for organizing the metadata of Projects and Objects. For searching XML documents this information is helpful. The Metadata Editor is able to produce a TEI Header from the metadata that can be copied into your XML source code.

The Unicode Character Table View can be used to insert Unicode signs into an XML document.

The Text Image Link Editor allows you to combine images and texts. The text must be in XML and the XML Editor is used by default.

With the context menu it is also possible to interact with other modules of the TextGridLab. By default, this is true for the Dictionary Search. It is also possible for Lemmatizer, LEXUS, Cosmas II, ANNEX and SADE, if they have been installed.

## 3.2 oXygen

oXygen can be installed into the TextGrid Laboratory by downloading the plugin from the Marketplace. oXygen is an extern tool. A licence is necessary to use it. For more information about oXygen, please see

http://www.oxygenxml.com/doc/ug-editor/

### 3.2.1 Install oXygen

To install the oXygen XML Editor, use the Marketplace.

### 3.2.2 Open oXygen

The oXygen XML Editor can be opened by right-clicking an Object and select oXygen. If oXygen is set as default, double-clicking on the Object will have the same effect.

### 3.2.3 The oXygen XML Editor

The oXygen XML Editor is described in detail on

http://www.oxygenxml.com/doc/ug-editor/

If oXygen is open inside TextGrid, this will affect the menu bar and the toolbar of the TextGridLab.

#### 3.2.3.1 Menu Bar of the oXygen XML Editor

If the oXygen XML Editor is open, there will be a second "XML" option in the menu bar of the TextGridLab that corresponds to the features in from oXygen. In "Tools > Show Views > Others" there are also components of oXygen that can be opened by double-clicking. For more information about the oXygen XML menu and the components of the editor, please see

http://www.oxygenxml.com/doc/ug-editor/

#### 3.2.3.2 Toolbar of the oXygen XML Editor

If the oXygen XML Editor is open, elements for the toolbar of this editor will be added to the TextGridLab toolbar. For example, they can be used for validation and transformation. More details can be found on

http://www.oxygenxml.com/doc/ug-editor/

### 3.2.3.3 Context Menu of the oXygen XML Editor

If the oXygen XML Editor is open, the context menu of the TextGrid XML Editor will be replenished with elements from the context menu of the oXygen Editor. For more information about this element, please see

http://www.oxygenxml.com/doc/ug-editor/

## 3.2.4 Using oXygen

For more information about working with the oXygen XML Editor, please see

http://www.oxygenxml.com/doc/ug-editor/

The oXygen XML Editor can be used as an alternative to the TextGrid XML Editor.

## 3.2.5 Interaction of oXygen with Other Components

The oXygen XML Editor interacts with many TextGridLab components in a way similar to that of the XML Editor. By using the context menu of the oXygen XML Editor, the Lemmatizer, and the publish tool SADE, if installed, can be used. In contrast to the TextGrid XML Editor, the Dictionary Search, LEXUS, Cosmas II and ANNEX cannot be used with the oXygen XML Editor.

## 3.3 Text Image Link Editor

The Text Image Link Editor can be used to link text segments to image sections within TextGridLab. A typical application is to link a facsimile and transcriptions, but these texts can also be created during the linking process, which allows the use of further tools such as image annotations.

XML texts and images can be opened in their corresponding views. The corresponding components are then marked by pairs and the linkage is confirmed. The results can be saved as a new Object, the Text Image Link Object 📄, which contains the link information (the text and image coordinates, path of XML used and image Objects). Once an Object is saved, double-clicking it will reload XML texts, images, and links to continue editing.

### 3.3.1 Open the Text Image Link Editor

The Text Image Link Editor can be started

- by clicking its icon on the initial Welcome Screen, or
- as a tool from the menu bar in the TextGridLab, or
- by clicking its icon 📄 in the toolbar.

### 3.3.2 Text Image Link Editor Perspective

The editor contains the Navigator on the left whose context menu allows you to open images or texts - depending on the user rights in particular. On the right-hand are two views, one above the other, which are blank if no image or text is selected. As soon as an image is opened, it can be seen in the Image View, which is the upper view on the right side. You will also automatically see the Thumb View below the Navigator and the detached Toolkit. As soon as an XML document has been opened, it will be visible in the XML Editor below the Image View. In summary, this perspective consists of an Image View to see the facsimile and its selections, the XML Editor field to see its transcription, a Thumb View, and a Toolkit in addition to the generic Navigator:

- Image View shows the image or an image detail to be linked and enables the marking of image segments
- Thumb View shows a reduced version of the entire image and the active image detail which can easily be moved and zoomed and that is enlarged in the Image View
- XML Editor View allows you to open or create texts as well as to mark text parts and link them to the image
- Toolkit provides functions to work in the Image View
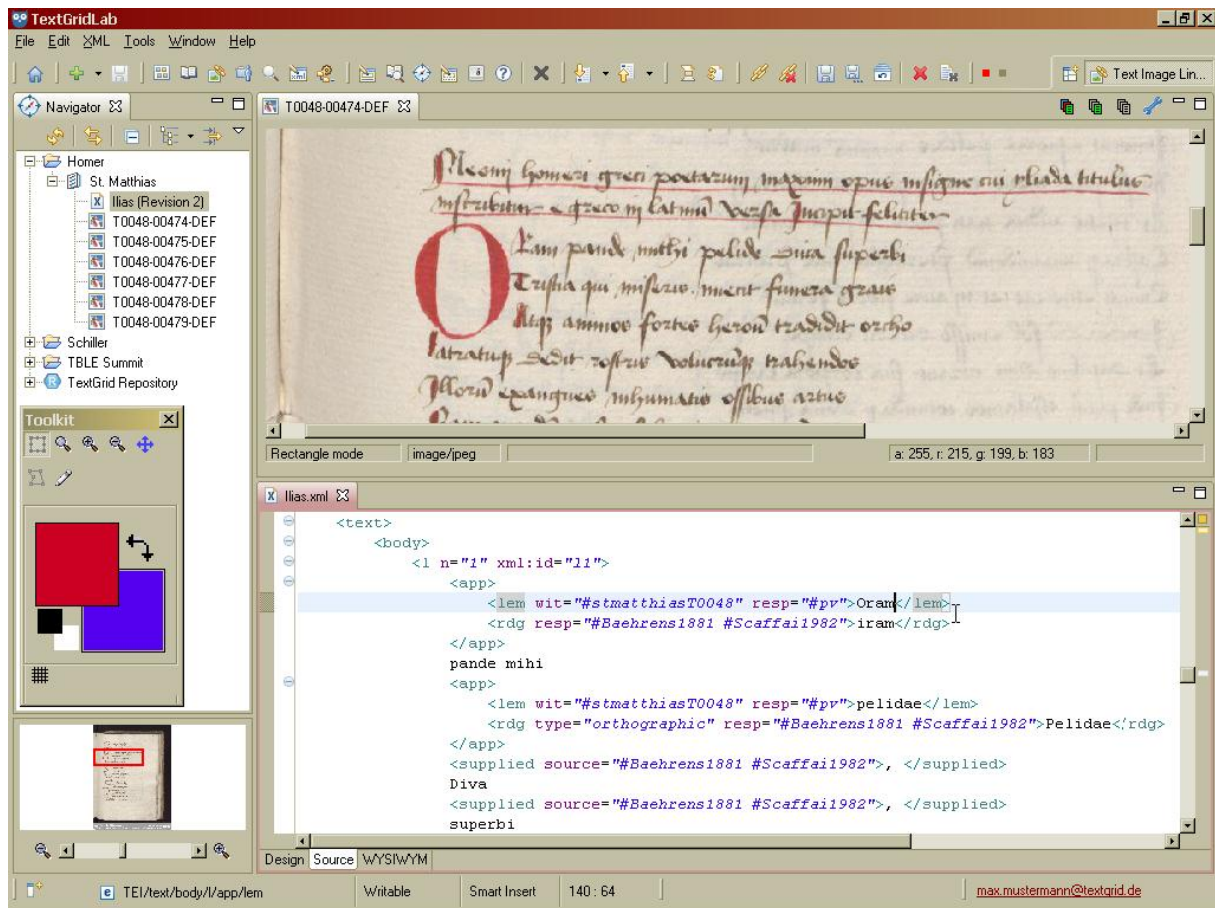
### 3.3.2.1 Menu Bar of the Text Image Link Editor Perspective

If the Image View is activated, the options "Undo" 🔄 and "Redo" 🔄 can be used under "Edit" in the menu bar. If the XML Editor is open in the background, all functions under this menu item will be enabled.

### 3.3.2.2 Toolbar of the Text Image Link Editor Perspective

If the Image View is activated, additional elements in the toolbar are usable:

- Click ✖ to delete active selections
- Click ⬜ to reset the Text Image Link Editor

If a file has also been opened in the XML Editor, more buttons in the toolbar will be activated:

- 🖊 links a selected text segment to a selected shape
- 🖊 unlinks selected link(s)
- 💾 (next to the linking icons) saves the Text Image Link Object
- 💾 saves the Text Image Link Object as...
- 📷 saves the Text Image Link Object as new Revision

### 3.3.3 Image View

The Image View is the TextGridLab workspace for editing images. Some of its functions are also used for connecting image and text elements.

#### 3.3.3.1 Features of the Image View

For editing images, the Image View provides you with several functionalities: selections, docking lines, writing mode, rotation function and the Layer Editor. Most are accessible via the context menu by right-clicking.

**Selections**

A main feature of the Image View is creating and handling different selections of an image. You can create two kinds of shape (rectangles and polygons) to select areas of a picture. A shape which is not yet linked to a text sequence is displayed with a dashed outline or frame. A solid line marks shapes in the image which are already linked with text sequences in the XML Editor View. An existing shape can be selected or activated by double-clicking it. Then its border will change its color. You can choose more than one selection by double-clicking the created shapes while pressing the [Ctrl] key.

**Docking Line Settings**

You can set docking lines as an optical help after selecting the docking line mode in the Toolkit. After a new docking line has been drawn, it can be aligned horizontally or vertically by [Shift+H] or [Shift+V] or via the context menu. Click [Ctrl+V] to duplicate a docking line. The appearance of docking lines can be modified by using the "Docking Line Settings":

1. Right-click in the Image View.
2. Select "Docking Lines".
3. Select "Settings".
4. You can choose various line styles: Dot, Solid, Dash, DashDot, DashDotDot.
5. There are five grades of line width for docking lines. The larger the number, the thicker the line.
6. The line spacing between cloned docking lines can be defined by selecting a new value between "10" and "150".

The colors of active and inactive docking lines can also be selected by clicking on the two colored squares in the "Docking Line Settings" dialog box. After clicking on the squares, a palette will pop up. Use the arrow to change the colors of active and inactive docking lines.
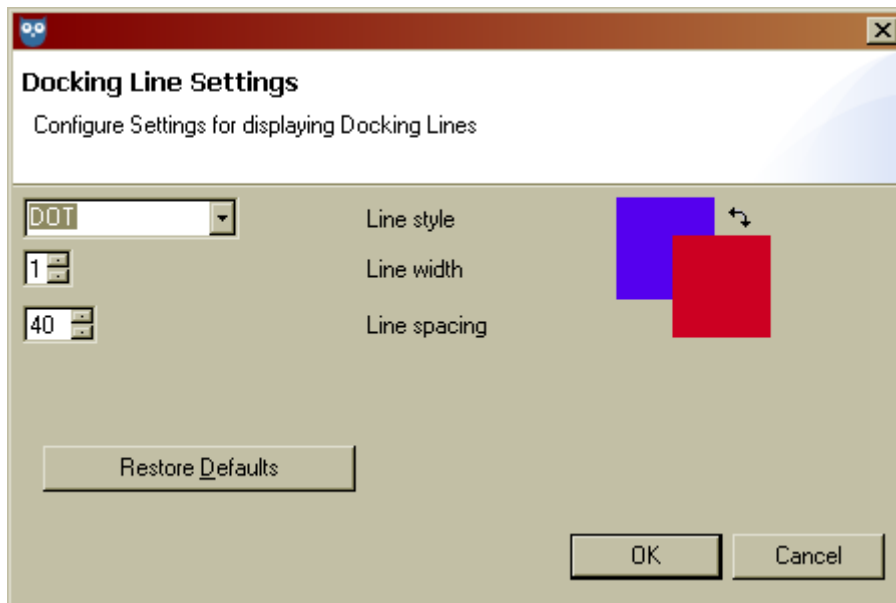
**Writing Mode**

In "Writing Mode", you can add information about the text direction to the selected sections on an image. Use [Shift+S]  to show or hide the writing mode of a selected shape. The writing mode for the active selection(s) or for the active document can be changed by right-clicking in the Image View. The following options can be chosen:

- none: this is the default value
- lr: from left to right
- lr-tb: from left to right and from top to bottom
- rl: from right to left
- rl-tb: from right to left and from top to bottom
- tb: from top to bottom
- tb-rl: from top to bottom and from right to left

If you want to set the writing mode for the whole document, then select "Writing Mode > Set writing mode for active document" before creating the shapes. This will change the writing mode for all selections which do not yet have a writing mode. All shapes created afterwards will use this value. If you want to set the writing mode for a selected shape only, please choose "Writing Mode > Set writing mode for active selection(s)".

**Set Rotation Angle**

There are two ways to rotate a rectangular shape around its middle axis: Via a dialog box or around a virtual axis by moving the mouse. The "Set Rotation Angle" dialog can only be opened  when a shape is selected by

- right-clicking in the Image View, selecting "Shape rotation" and "Set Shape rotation for active selection(s)"
- clicking the box with information about the rotation angle in the status bar of the Image View. The default setting is $0°$. Via context menu or [Shift+P] you can show or hide the rotation angle in the status bar of the Image View.
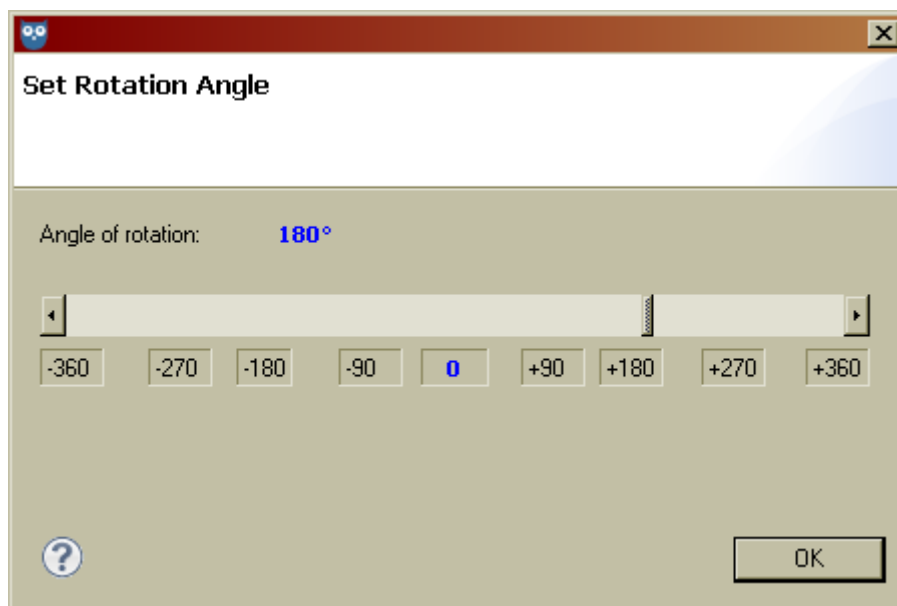
The angle can be set via the scrollbar. You can also rotate selected rectangle shapes with your mouse via the context menu under "Shape rotation > Activate/Deactivate Shape rotation mode" or by the shortcut [Shift+R].

**The Layer Editor**

It is possible to create logical groups of links (e.g. verses, comments) using the Layer Editor. By clicking the box with information about layers in the status bar at the far right of the Image View, you can open the Layer Editor. Alternatively, you can select "Text Layers" and "Edit Layers" from the context menu in the Image View.
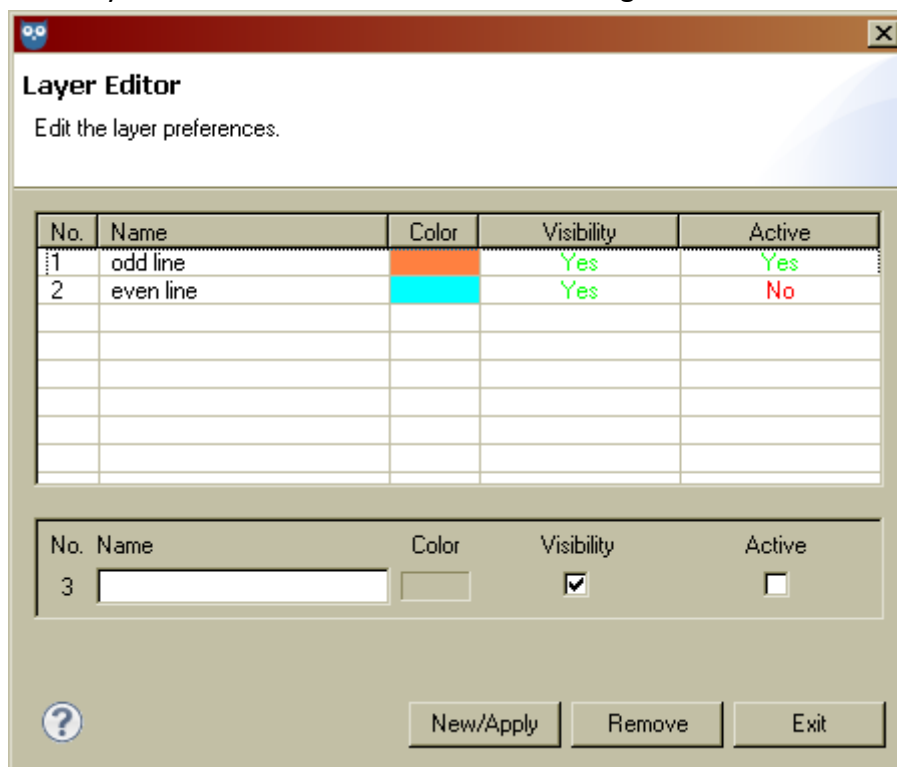
In the upper part of the editor, all existing layers are listed. In the lower part of the editor, new layers can be created. To create a new layer, click "New/Assume". The layer automatically receives a number. Click in the "Name" text field to add the name of the layer. By clicking "Color", a palette opens from which a color can be chosen. By default, this layer is visible. Tick the second box to activate the layer. Only one layer can be active at any time. To delete a layer, click the "Remove" button. You can hide or show layers via the title bar of the Image View. Press [Shift+L] to show all layers.
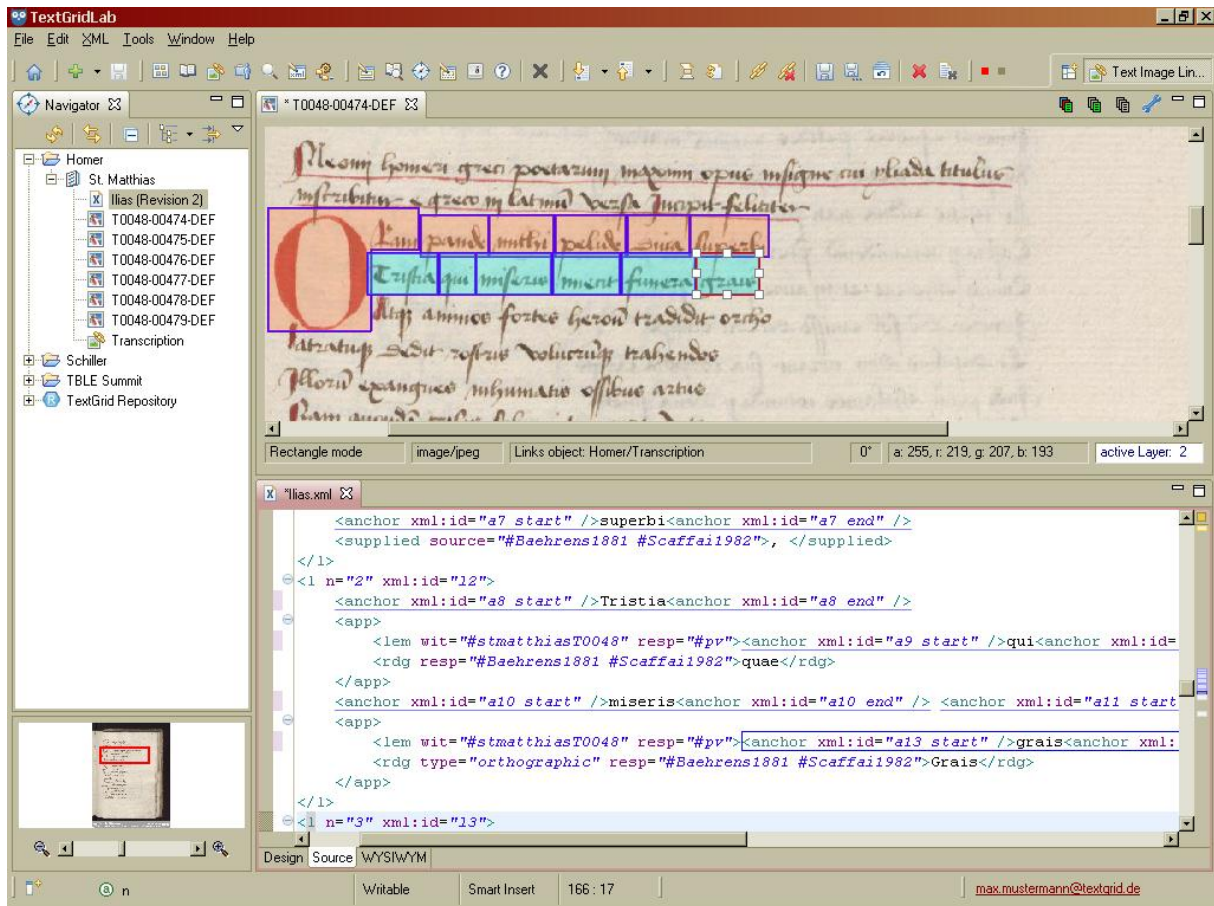


### 3.3.3.2 Menu Bar of the Image View

If the Image View is open, the operations "Undo" 🖕 and "Redo" 🖕 in the item "Edit" of the menu bar are activated. If the XML Editor is opened and focused, all other operations of that menu item will also be enabled.

### 3.3.3.3 Title Bar of the Image View

The * symbol in the title bar of the Image View means that changes are not saved yet. There are several buttons in the title bar of the Image View:

- 🖻 Show all Layers (if there are layers that were previously invisible)
- 🖻 Show Layers
- 🖻 Hide Layers
- 🔧 Open or Close the Toolkit

### 3.3.3.4 Status Bar of the Image View

The Image View status bar displays information on (from left to right)

- the activated mode
- the content type or Object format of the open image
- the name of the opened Text Image Link Object
- a warning signal ⚠ if there are still unlinked shapes/selections
- the rotation angle of the selected shape that can be changed in the "Set Rotation Angle" dialog after clicking this field.
- the coordinates of the mouse pointer in the Image View
- enabled or activated Layers. The Layer Editor opens after clicking this field

### 3.3.3.5 Shortcuts of the Image View

The following shortcuts are available:

| | |
|---|---|
| [Page Up]and [Page Down] | Move Image Up or Down |
| [+] | Zoom In |
| [-] | Zoom Out |
| [0] | Zoom Original |
| [C] | Clone Active Rectangle Horizontally |
| [Ctrl+A] | Select All Shapes |
| [Ctrl+T] | Open Or Close the Toolkit |
| [Ctrl+V] | Clone Active Docking Line |
| [Ctrl+Y] | Redo |
| [Ctrl+Z] | Undo |
| [Shift + C] | Clone Active Rectangle Vertically |
| [Shift + H] | Horizontal Alignment For Active Docking Line |
| [Shift + L] | Show All Text Layers |
| [Shift + P] | Show Or Hide Shape Rotation |
| [Shift + S] | Show Or Hide Writing Mode |
| [Shift + R] | Activate Or Deactivate Shape Rotation Mode |
| [Shift + V] | Vertical Alignment For Active Docking Line |
| [Space + Mouse-Left] | Move Image |
| [Tab] | Transverse Between Selections |

### 3.3.3.6 Context Menu of the Image View

The Context Menu of the Image View allows several operations:

- "Link text to selected shape": connects the selected parts of the image and the text
- "Unlink selected link(s)": disconnects the selected link between image and text
- "Delete active selection(s)": removes the current selections
- "Delete all shapes/links": removes all shapes and all links in an image

- "Jump to linked text": selects the corresponding part in the XML text
- "Clone (Rectangle) > Clone active rectangle horizontally": produces a copy of the active rectangle to the right.
- "Clone (Rectangle) > Clone active rectangle vertically": produces a copy of the active rectangle below it
- "Clone (Rectangle) > Clone active rectangle vertically (upwards)": produces a copy of the active rectangle above it
- "Clone (Rectangle) > Clone active rectangle horizontally (back)": produces a copy of the active rectangle to the left.
- "Docking Lines"
  - Alignment of active docking line
    - Horizontal: aligns the active docking line horizontally
    - Vertical: aligns the active docking line vertically
  - Save all lines: saves all docking lines
  - Delete all lines: removes all docking lines
  - Show or hide all lines: shows all docking lines if hidden or vice versa
  - Settings: opens the Docking Line Settings
- "Writing Mode"
  - Show or hide writing mode: shows writing mode if hidden or vice versa
  - Set writing mode for active selection(s): changes writing mode for selected object
  - Set writing mode for active document: changes writing mode for all selections which have no writing mode and for new created selections
- "Shape rotation"
  - Activate or deactivate shape rotation mode for rotating a shape with your mouse
  - Show or hide shape rotation mode in the status bar
  - Set shape rotation for active selection(s) via scrollbar
- "Text Layers"
  - Edit Layers: opens the Layer Editor
  - Edit Layers for selected shapes only: shifts a selection to another layer
  - Show all Layers: all layers will be visible
- "Image Size"
  - Show original: presents the image in original size
  - Fit Vertically: sets the height of the image to the height of the view
  - Fit Horizontally: sets the width of the image to the width of the view
  - Fit Window: sets the height and the width of the image to the height and the width of the view

### 3.3.4 XML Editor View

In order to link images and XML documents, the XML Editor must be open. It is part of the Text Image Link Editor perspective by default.

### 3.3.5 Thumb View

The Thumb View opens simultaneously with the Image View. It consists of a a slide control bar to adjust the zoom factor in Image View and a selection frame to navigate the active

detail in Image View by using the mouse. Click on the part of the image on which you want to focus.



### 3.3.6 Toolkit

The Toolkit can be opened and closed via the wrench icon in the title bar of the Image View. All functions of the Toolkit apply to the Image View.

- Magnifier 🔍 : click and drag to enlarge the selected screen area temporarily (the range can be modified with the Ctrl key)

- Magnifier 🔍 : clicking the desktop zooms in and centers the workspace at the selected position

- Magnifier 🔍 : zooms out

- The sliding tool ✛ allows you to move the workspace

- Rectangular Selection ⬚ : click and drag to select a rectangular area

- Polygonal Selection ⬭ : click and drag to create a Polygon. Its outline can be completed by double clicking

- ✏ changes to Docking Line Mode

- "Choose color": modifies the foreground (= selected, active marking) or background (= inactive marking) color of the Shape Selections. Both can be modified by clicking the big colored squares

- "Swap colors" ↳: interchanges the foreground and background colors

- "Reset color": clicking the smaller pair of squares resets foreground and background color to the default colors (black and white)

- Raster ▦ : activates the line raster in the Image View to facilitate the alignment of the marking
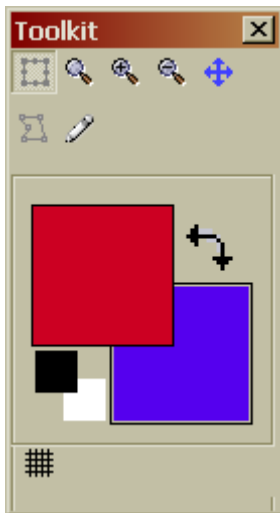
### 3.3.7 Using the Text Image Link Editor

The following chapter describes the linking of images and texts with the Text Image Link Editor.

#### 3.3.7.1 Open Image and Text

Double-clicking XML and image Objects in the Navigator opens the XML document in the XML Editor and the image in the Image View. Alternatively, XML documents can be opened by selecting "Add to Text Image Link Editor" in the context menu of the Navigator.

#### 3.3.7.2 Select Workspace

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.

#### 3.3.7.3 Create Selections in the Image

First, a part of the image must be selected. Any word, area, or sequence in the image can be selected in rectangular (default) or polygonal mode. In rectangular mode, clicking the image at one corner of the area to select will draw the rectangular selection if the left mouse button is pressed. In polygonal mode, a shape can be drawn by clicking and dragging. Releasing the left mouse button places the next corner of the polygon which can be completed by double clicking. A shape which is not yet linked to a text is displayed with a dashed frame.

#### 3.3.7.4 Create Links between Text and Image

Follow these steps to create links:

1. Select the shape you have created in the image by double-clicking it.
2. Select text in the XML Editor View by clicking and dragging or by double-clicking (if the link is to a single word), triple-clicking (if the link is to a whole line), or with one click on the XML tag to select the entire XML element. Text and image sections do

not have to be linked immediately. It is also possible to create a large quantity of image sections and then link them at a later stage.

3. Create a link by using the symbol ✎ in the toolbar. After a link between image selection and text sequence has been established, the polygonal or rectangular shape in the Image View which has been linked will be displayed with a solid line.

4. Save the result as a new Object 🖺, which contains the link information (the text and image coordinates, path of XML used, and image files). You can use the 🖫 button next to ✎ to save this new Text Image Link Object. Once a file is saved, double-clicking it will reload the XML texts, images and links to continue editing.
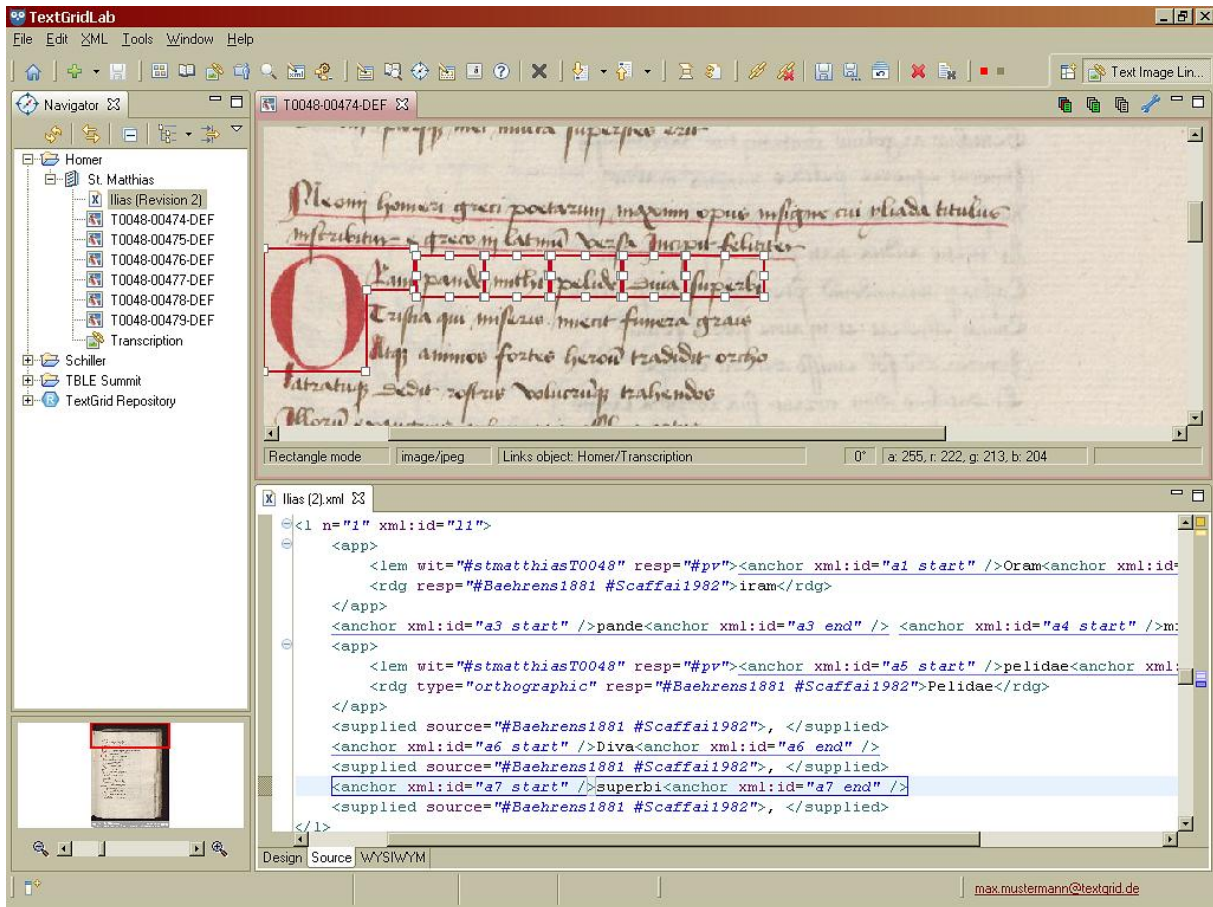


### 3.3.7.5 Correct and Delete Links between Text and Image

Links can be corrected or deleted later.

- In the Image View, linked shapes are displayed with a solid line.
- A link can be selected by double-clicking the shape in the image or the anchor in the text field.
- You can also correct shapes in the Image View. When moving over an active shape, the cursor and its icon change: In the center it will become a four way arrow that allows you to change the position of the shape by clicking and dragging. Close to the boundaries, it will allow you to reposition the edges (with a two-way arrow) or the corners (with a diagonal two-way arrow) in a similar way. Polygon changes can be performed in a similar manner, with the exception that single edges of polygons can not be moved and adjusted.

- Linked Objects (i.e. shapes in text and image and their link) can be removed by right clicking using the context menu "Unlink selected link(s)" or by clicking the ✂ button in the toolbar.

### 3.3.7.6 Open and Edit a Text Image Link Object

To open an new linked Object in the Navigator, right-click it and select 🔲"Open" or double click it with the left mouse button. You can also edit a Text Image Link Object via right-click > "Edit" in the Navigator. A new editor will open. It shows two columns which are named "References in the Object" on the left and "Replace with" on the right. The left column lists the image and XML document which are component parts of the Text Image Link Object. With the buttons in the category "Add new Object(s)" on the right side you can add new Objects or local files to the right column. These Objects will replace the old ones in the left-hand column. You can also remove Objects from the lists of both columns with the button "Remove selected Object". The position of a selected Object in the list can be changed via "Up" and "Down". All changes made to the Text Image Link Object can be applied by clicking on "Apply changes...".

## 3.3.8 Interaction of the Text Image Link Editor with Other Components

The Text Image Link Editor interacts primarily with the XML Editor, but it can also interact with the Navigator and the Metadata Editor.

As described above, texts, images and Text Image Link Objects can be opened in the Navigator.

The Metadata Editor is used to edit and save metadata for TextGrid Objects. Images as well as Text Image Link Objects must be associated with metadata to be searchable.

The XML Editor is by default a part of the Text Image Link Editor Perspective.

## 3.4 Unicode Character Table

The Unicode Character Table enables the user to search, to copy, and to insert symbols from the Unicode character set into the active editor or the system clipboard. Users can create their own custom sets of Unicode symbols for use in the Unicode Character Table.

### 3.4.1 Open the Unicode Character Table

The Unicode Character Table starts automatically as part of the default XML Editor Perspective. Additionally, it can be opened in one of the following ways:

- click [icon] in the toolbar.
- follow the path "Tools > Show View > Unicode Character Table" in the menu bar.

The Unicode Character Table also starts automatically together with the XML Editor and can be found as a hidden tab behind the Navigator on the left side.

### 3.4.2 Unicode Character Table View

The Unicode Character Table consists of a toolbar and a text box in the header, a table in the body, and an information field with function buttons in the footer.
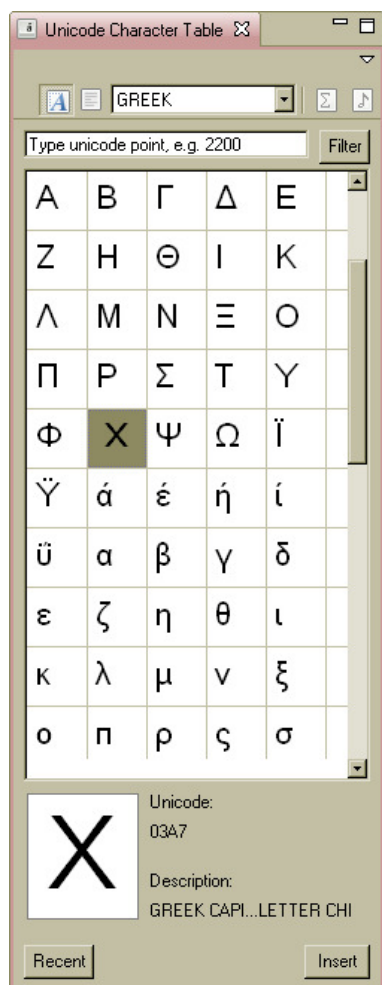
### 3.4.3 Toolbar and Header of the Unicode Character Table View

The toolbar in the header offers a selection range of all Unicode symbols sorted by association to blocks or scripts. By default, Unicode arranges groups of characters together in blocks. A script in Unicode is a collection of written signs used to represent textual information in one or more writing systems. For more information, please see

http://unicode.org/

For selecting the block range, press the button ![A] for the "Toggle Block Mode" in the toolbar and choose the intended entry in the combo box on the right-hand side of the toolbar. To select the script sector, press the "Toggle Script Mode" button ![icon]. If Windows XP is installed as your operating system, there may be problems with displaying the symbols.

To jump to a symbol at a known Unicode point, enter the code point into the textbox. Then press "Enter". As an additional feature, the user can enter a Unicode symbol into the textbox and the view will jump to its code point, which is helpful for identifying a symbol or accessing additional information on it.

Use ![Σ] for mathematical symbols and ![♪] for musical symbols. After you have opened the view menu of the Unicode Character Table View (using the white downward pointing triangle on the right), you can open the mathematical and musical symbols from a pull down menu. From here you can also initialize the "Custom Charset Editor" for creating and modifying user-defined character sets.

### 3.4.4 The Body of the Unicode Character Table View

The table in the body displays all symbols contained in the selected character set in boxes and enables the user to select any of them with a single mouse click. If Windows XP is installed as your operating system, there may be problems with the display and insertion of the symbols. Using a right mouse click on the selected symbol will open a context menu for copying the selected character into the operating system's clipboard.

### 3.4.5 The Information Field of the Unicode Character Table View

The information field at the bottom of the view shows the Unicode code point as well as the description text of the currently selected symbol and displays a magnified view of the selected symbol for a more detailed view. The "Insert" button on the right-hand side inserts the selected symbol into an open XML Editor document.The Information Field of the Unicode Character Table View.

### 3.4.6 Custom Charset Editor

This editor shows a list of currently existing character sets in the head area. The body contains a toolbar for inserting, deleting and saving the character sets. The footer displays the values of the currently selected character set and allows it to be modified using the following options:

- Click the ✛ button  to create a new set.
- To remove a set click  ▭   or right-click the set to remove it from the list.
- Use the ⟳  to refresh the list.
- Furthermore you can save the set outside TextGrid and import external sets by clicking 🖫 or 🗁.

The name and icon of the character set can be changed as well as the content, which consists of either a predefined Unicode blockset or a custom list of Unicode characters. These characters can be entered as a decimal Unicode character code point (e.g. "56789"), as a Unicode hexadecimal code point with a leading sign (e.g. "U+1D100"), or as a directly inserted symbol from the system clipboard. The selected signs must be separated by semicolons. Click "Close" to save the charset.
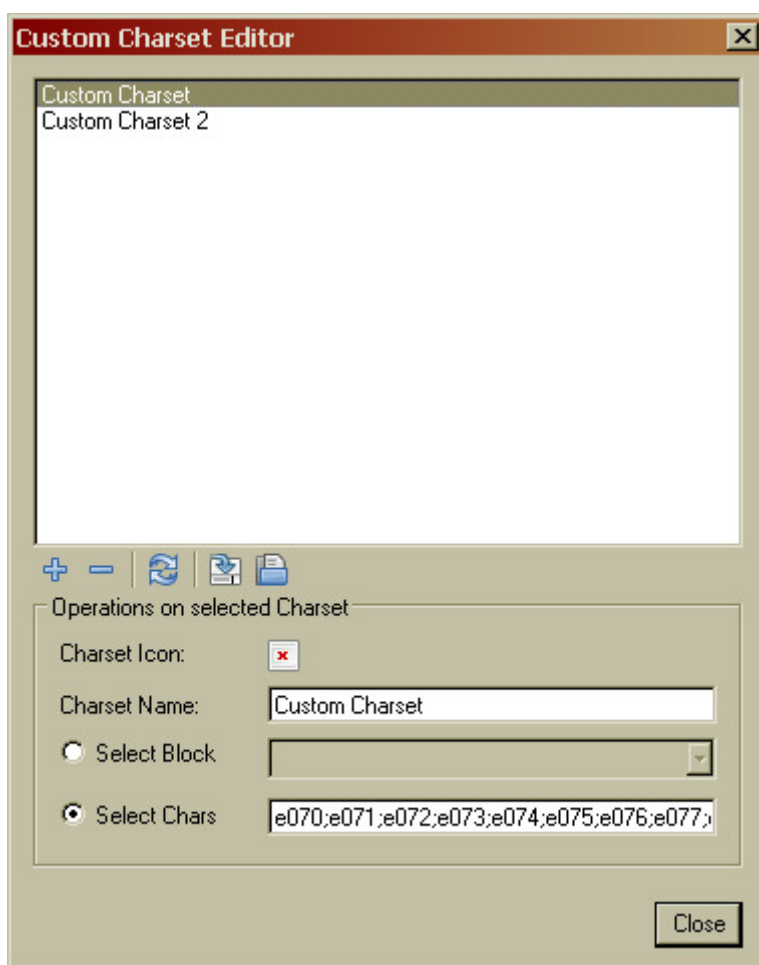


### 3.4.7 Using the Unicode Character Table

A typical case for using the Unicode Character Table would be to insert special characters, e.g. Σ (u+2211) in an XML document. One example of how to insert a Unicode character "Σ" into an XML document is described below:

1. Open the XML Editor Perspective in the TextGridLab.
2. Double-click the selected XML document in the Navigator to open it.

3. Click or double-click the hidden tab "Unicode Character Table" next to the Navigator and Metadata Editor to open the Unicode Character Table View.
4. Place the mouse pointer in the XML document where the special character is needed.
5. Select Σ from the table with mathematical operators and click "Insert".
6. Σ will be added to the XML document.

### 3.4.8 Interaction of the Unicode Character Table View with Other Components

The Unicode Character Table View is automatically opened when executing the XML Editor. In this manner symbols can be included in an XML text without opening a new view.

## 3.5 Workflow Tool

The Workflow Tool enables the automatic processing of data. A workflow is composed of Web Services which take data such as images, XML documents, or plain text as their input data and process them. The Workflow Editor ensures that TG-crud will be called to read these data from TextGridRep and supply them to the Web Service. At the end of a workflow, TG-crud creates new TextGridObjects in the TextGridRep from the output data of the Web Services.

Web Services available in the Internet can be made available for workflows by writing a Service Description for them. Service descriptions are created via the File->New dialogue and can be treated in the XML Editor. Currently, there are Service Descriptions available for the following services:

- OCR for Fraktur (blackletter) and modern typeface
- Named Entity Recognition (NER).

Services can be composed into a workflow by using the Workflow Creation wizard. The wizard can create new workflows (use the button "New..." in the Workflow Selection View) or modify existing workflows (use button "Edit..." after selecting a workflow from the list in that view). Complete workflows including configuration data are saved in TextGrid WorkFlow format (TGWF, Mime-Type text/tg.workflow+xml).

### 3.5.1 Open the Workflow Tool

The Workflow Perspective can be opened in two different ways:

1. By selecting "Workflow" from the "Tools" menu.
2. By clicking the respective icon 🐝 in the toolbar.

In addition to the Workflow Editor, the Search Results View will open.

### 3.5.2 Workflow Tool Perspective

The graphical user interface (GUI), implemented as an Eclipse perspective, contains an editor for the workflow documents with the "Input Documents for Workflow" View at the top left, the Workflow Selection View at the bottom left, a Job Management View at the bottom on the right, and a Workflow Results View at the top on the right.

### 3.5.3 "Input Documents for Workflow" View

In the "Input Documents for Workflow" View, you can select a TextGrid Workflow (tgwf) Object and add it to a workflow. The related TextGrid Objects will be displayed. Before you have created or selected a new workflow, this View will be empty.

After you have preselected a workflow in the Workflow Selection View, the "Input Documents for Workflow" View will change to show two columns with lines listed. Drag Objects from the Navigator or the Search Results View and drop them into the list of the

"Input Documents for Workflow" View. Use the button below the list to remove selected documents. If you right-click a document in the list, the context menu will be similar to the context menu in the Navigator.

Depending on the workflow used, there can be more than one input fields (boxes) in the view. The type of input fields, as defined in the Service Description used, can be one of the following two options:

- one by one: Documents in this box are processed in a queue and "consumed" in the order given until the last document has been processed. If there are more one-by-one boxes, they must contain the same number of documents, and are processed in parallel: first (box A document 1) and (box B document 1), then (box A document 2) and (box B document 2), and so on.
- pooled: Documents in this box will be processed all together in one service call. Example of a one-by-one box A and a pooled box B: first (box A document 1) and (box B documents 1,2,3,4), then (box A document 2) and (box B documents 1,2,3,4), and so on. Note that all documents in a pooled box will not be "consumed", but rather they are available for the next round.
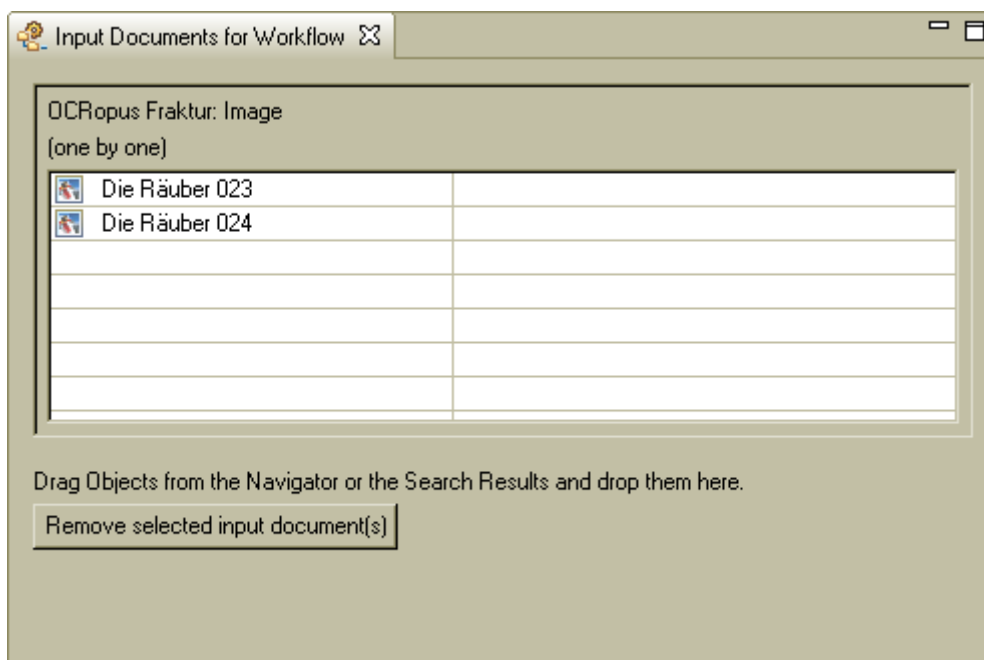


### 3.5.4 Workflow Selection View

Here the user can choose the target Project in which the resulting Objects will be created and initiate the execution of the workflow. The Workflow Selection View consists of a list of workflows, a drop down menu for selecting the target Project and a set of buttons. If you right-click a workflow in the list, the context menu will be similar to the context menu in the Navigator.

If no workflow has been added to the list, a new one can be created by using the "New …" button. A new dialog will open. Use the "Edit …" button to change a selected workflow. A dialog will open that is identical to the one for creating a new workflow. Use "Refresh" to update the list of workflows.

If a workflow is selected, a target Project must be chosen from the drop down menu. Use the "Input Documents for Workflow" View to select TextGrid Objects for the workflow. Click "Run" to start the workflow.
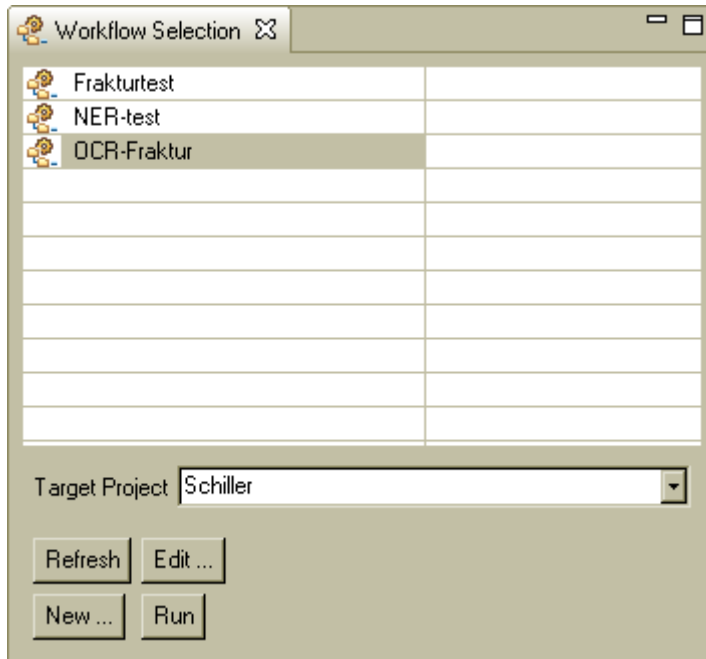


### 3.5.5 Job Management View

Here you can see the status of your running workflow jobs at the engine. The information consists of the name of the workflow run, the starting time, and the current status of the run ("active", "completed" or "terminated"). The Job Management View consists of three columns and a button below. Use "Abort and Remove" to stop the run of a workflow and to remove it from the list in the Job Management View. If the status of the run is "completed", you can select the workflow job by double-clicking. The results of the run are then presented in the Workflow Results View.
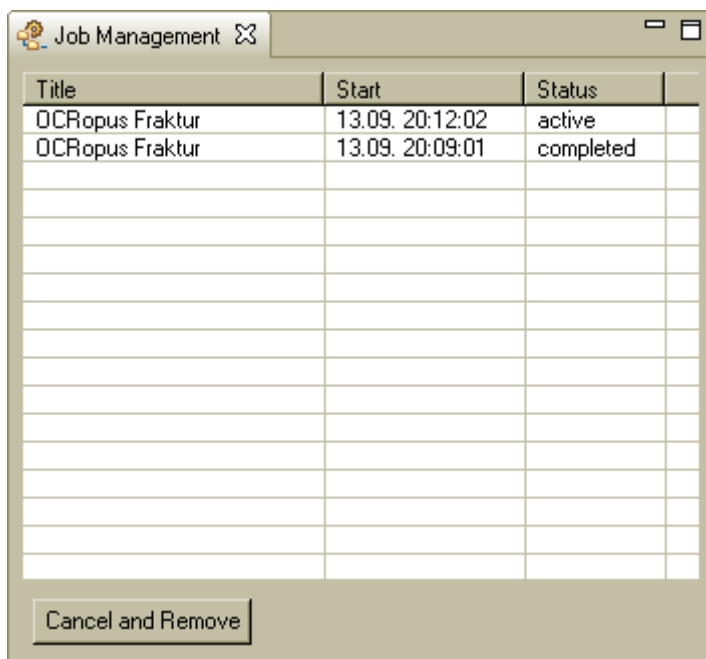
### 3.5.6 Workflow Results View

The Workflow Results View displays the list of resulting TextGrid Objects created. If you right-click a document in the list, the context menu will be similar to the context menu in the Navigator. Select "Open" or "Open With …" to check the results of the workflow.



### 3.5.7 Using the Workflow Tool

This chapter explains how to create and run workflows in general as well as the use of approved services like NER and OCR.

#### 3.5.7.1 Create a Workflow

1. Open the workflow creation dialog via clicking „New …" in the Workflow Selection View.
2. First, choose one or more services from the list of services by selecting them (Hold CTRL while clicking for multiple services).
   o You can choose either only approved services (automatically activated) or services from the list of all services you have read permissions for.
   o If you edit an existing workflow or if the wizard has already assigned a structure to the workflow, the checkbox "Keep given services" is automatically activated in order to keep the user from unintentionally resetting the structure. Uncheck this checkbox if you want to use different services. Caution: in this case the link structure and other configuration data of the workflow is lost.
3. In the next step, you can order the selected services, duplicate, (i.e. let the service run in another instance a second time) or remove them by selecting them and using the buttons.
4. The selected service appears in a service chain with the service description on the next window. If possible, an input and output can be selected from a pull-down

menu. This is necessary if the workflow consists of more than one step. By clicking "Clear Assigned Associations", these connections can be reset.

5. Some services offer configuration options. Use the pull-down menus and the buttons to change them.
6. In the window for metadata transformation for every step of the workflow, you can defined which input box metadata should be transferred from and which output (result) box metadata should be transferred to .
   o If there is more than one choice of input boxes, each output box offers a selection via a drop down menu to choose the input box for the metadata. Use the "Configure …" button to edit the title and the format of the output files. A pop up dialog will open.
   o Use "title.append" and "title.prepend" if the output files should be named like the input files with an suffix or prefix.
   o The default XSLT stylesheet also allows for the parameters "format.exact" and "title.exact" for a fixed format and title in the metadata.
   o When editing the workflow directly (i.e. without the wizard), a user-contributed stylesheet can be used instead.
   o Click "Cancel" to remove your changes or "Finish" to save them.
7. Finally, select a name for the new workflow and the Project in which it should be saved.
8. Use "Finish" to complete this process.

In the Workflow Selection View, use "New …" to create another workflow or "Edit..." to change an existing one.

### 3.5.7.2 Run a Workflow

1. Select an existing workflow from the list in the Workflow Selection View. This workflow must have been already created.
2. Drag and drop an Object from the Navigator or Search Results View into the input box of the "Input Documents for Workflow" View (for example image scans in case of running the OCR service and XML documents in case of running the NER service).
3. Select a target Project from the menu in the Workflow Selection View. The result will be saved there.
4. Click „Run". The progress is documented in the Job Management View.
5. To stop or remove a job, click "Cancel and Remove".
6. The "status" column changes to "completed" as soon as the workflow has finished. Double-click the name of the job and the output Objects will be displayed in the Workflow Results View.
7. Select "Open" or "Open With ... > Text Editor/XML Editor" to check the result.
8. To save the result (e.g. a plain text document) on your local system click "File > Save Copy as Local File" in the menu bar.

### 3.5.7.3 Writing a Service Description

**Purpose and Usage**

For TextGrid 2.0, a special XML-based Service Description language has been developed. Established service description languages like WSDL or WADL both contain too many details and are not sufficient for the purposes of TextGrid. Some points for motivation:

- WSDL/WADL can contain more than one operation. However, in a workflow setting, the service must be launched with a certain operation specified
- There is no semantic distinction between input data and configuration parameters. However, in TextGrid, batch processing on input data and fixed configuration parameters are requirements
- WSDL uses XSD-based types for parameters, however, TextGrid uses a Mime-Type based model
- From a WSDL, a user only knows the type (e.g. "xsd:string") but not the possible values of a parameter (e.g. "UTF-8"). These need to be guessed or documented by separate means. However, having some of the possible values in a service description makes usage easier
- English names for input and output parameters and specific configuration values are desirable
- descriptive metadata, information about a license, etc., for a service are desirable

Additionally, REST-based services might not have any WSDL or WADL description at all. In this case, a service description that notes its usage is inevitable.

This is the usage pattern:

1. A web service exists and either its developer or another TextGrid developer would like to make it available in TextGrid
2. The developer writes a TextGrid service description for that service. Since there is not yet a GUI, an XML or plain text editor should be used. The necessary steps include:
   1. identify descriptive metadata about the service
   2. point to a WSDL service description (soap) or a service endpoint (rest)
   3. identify the service's operation to be used
   4. separate the inputs proper from configuration parameters
   5. give some details about each input, configuration, and output parameter
   6. provide possible example values for the configuration parameters, either inline or using a URI pointing to a TextGridObject
3. The service description will be saved as a TextGridObject document in one of the developer's projects
4. Verify the correctness of the service description by creating a workflow that contains it and running this workflow
5. Once the service proves stable and usable, the description can be published and the TextGrid core team can be asked to list it among the approved services

During the creation of a workflow, many settings of a service description are evaluated by the workflow wizard. The TextGridURIs of the service descriptions will be included into the TGWF workflow document. They will be retrieved again upon submission of the workflow

job, influencing the structure and the data of the Petri Net (GWDL document) that the workflow engine accepts.

**Creation**

1. Go to File - New - Element - XML Document.
2. In the following dialogue, select a project and type "TextGrid Service Description (text/tg.servicedescription+xml)", click "Next", enter a title, click "Finish".
3. The TextGrid XML Editor will open with a service description skeleton
4. Fill in the skeleton provided. You can use both the XML Editor's Design view and the Source view. However, choosing the Source view will allow you to to use the documentation annotation of the underlying Schema file which pops up when the mouse pointer rests on an XML tag.

**Technical Details**

XSD: The XML Schema file includes documentation annotation and can be found here: https://develop.sub.uni-goettingen.de/repos/textgrid/trunk/lab/base/info.textgrid.lab. workflow/ resources/ServiceDescription.xsd

Element Details: In addition to the documentation in the XSD file, more details about the contents of a Service Description are listed here.

- During workflow composition, only data in service/descriptivedata/name, service/inputs, service/outputs and service/configparameters are being evaluated
- During workflow submission, both these data and service/technicaldata are being evaluated
- Since CRUD is returning TextGrid documents Base64-encoded, all input and output values MUST be of type xsd:base64Binary
- service/technicaldata:
  - type: can be currently one of "soap" or "rest"
  - operation:
    - for soap, the name of the desired operation out of the operations as listed in the WSDL.
    - for rest, one of GET or POST (currently the only supported operations)
  - descriptionlocation: the "uri" attribute must be filled with
    - for soap, the address of the WSDL. Note: the WSDL must be self-sufficient, i.e. the workflow engine will address the service endpoint listed therein and there is no possibility to pass the engine a different endpoint. Both the WSDL and the service location within the WSDL must be accessible from the workflow engine.
    - for rest, the invariable service endpoint. It usually has a form such as "http://server.example.org/service/operation?". It can contain placeholders marked with an "@" sign for parameters, such as "http://example.org/items/@id/show?"
  - targetnamespace: this applies for soap services and describes the target namespace of the XML schema associated with the service.

- ▪ Set the usetns attribute to true to tell the Workflow Engine that the message parameters should be prepended with the targetNamespace given by the uri attribute.
  - ▪ Hint: set usetns 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 should perhaps be false.
- service/inputs is for the proper input parameters for the service, i.e. the parameters that are variable depending upon the actual objects being processed
  - o @multiple
    - ▪ "false" would mean that the this input took one data block/URI at a time and consumed them in a queue. In the GUI, this is called "one by one".
    - ▪ "true" means that the service takes possibly many arguments at once, as in a collate service. Those arguments will not be consumed by the engine and are ready each time the service is being called. In the GUI, this is called "pooled"
    - ▪ There MUST be at least one input with multiple="false" such that the engine has a finite queue to process.
  - o @crud="true" would mean that the service knew how to read/readmetadata from TG-crud and this input param accepted a URI
  - o @param is the name of the element / parameter as given in the service description document
  - o @name is a human-readable string which will be displayed so that users will know what this parameter is about
  - o @mimetypes are the mime type(s), separated by commas, of the documents accepted by this service for this parameter
  - o @optional: set to true if this parameter can be omitted
  - o for rest, one special input can have the name "POSTBODY". This will then be handed to the server unchanged in the POST call
- service/outputs are the output parameters from the Service.
  - o Every output parameter must produce some result, i.e. there will either be a new TextGridObject document if the service is the last one in the workflow chain, or must be connected to an input parameter of some service further down the chain.
  - o @crud="true" would mean that the service knew how to create a new TGO via Crud and this output param returned a URI
  - o for the meaning of the rest, see inputs
- service/configparameters are those input parameters that are constant throughout the workflow
  - o Each parameter will have some example values which can be used directly or serve as a starting point for modification by the user
  - o @needsB64encoding="true" tells the editor to encode the text given by the user in Base64 before handing it over to the service
  - o for the meaning of the rest, see inputs
  - o there MUST be at least one <examplevalue> sub-element for each <configparameter>

- o the list of example values is meant as a hint to the user and not as an exclusive list, i.e. it can be extended by users in their workflows
- o Attributes of example values:
  - ▪ @id will be used by the workflow editor to remember this value in workflow documents
  - ▪ @name is a human readable name for display, e.g. "The FooMatic value"
  - ▪ @default=true if this is the default value for this configuration parameter. Please specify EXACTLY ONE default value (this will not be checked by the schema)
  - ▪ @inline
    - ▪ true if the element's content is to be used directly as value
    - ▪ false to specify a TextGridObject URI in the element's content
  - ▪ Inline parameter values will be written as-is, i.e. as strings. If they are XML, please provide some namespace such that they do not inherit the servicedescription namespace.

### 3.5.7.4 Named Entity Recognition (NER)

The Named Entity Recognition Service was developed by TEXTvre at King's College in London (http://textvre.cerch.kcl.ac.uk/). This service takes as their input an XML document (typically TEI XML) transmitted in binary form and returns the same document with additional XML tags for the named entities. It is described in more detail on

http://textvre.cerch.kcl.ac.uk/?m=201011

### 3.5.7.5 Optical Character Recognition (OCR)

The Optical Character Recognition (OCR) workflows allow you to translate scanned images of printed "Fraktur" (blackletter) and "Antiqua" texts into machine-encoded text. The results generated will enable you to edit the text in TextGrid, browse it, or to do text mining. The OCR service of TextGrid is based on ocropus. The service is optimized for special types of fonts and some training maybe needed. For more information, please see

http://code.google.com/p/ocropus/

If there is no Project, a new one must be created. After refreshing the Navigator, the created Project will be displayed there and must be selected in order to import images to it. Next, open the "File" menu and select "Import local files" to import the images there. After refreshing the Navigator again, it will display the imported images. Open the workflow. On the right side, the views "Input Document for Workflow", "Workflow Results", "Workflow Selection" and "Job Management" will appear, which will be relevant during the next steps.

First a new workflow is needed. It can be created in the Workflow Section. OCRopus Fractur or Modern can be chosen as services and afterwards the default values are kept. In the last window the workflow can be named and assigned to a specific Project.

After refreshing the Workflow Section, the newly created workflow becomes visible. After double clicking it, an empty list is displayed in the "Input Document for Workflow" View. The images to execute can simply be dragged there from the Project on the left.

Now, select the workflow in the Workflow Selection View and assign a "Target project". Clicking "Run" will now start the image recognition and while it is running, the status will be displayed in the Job Management View.

After finishing, the result will be displayed in the Workflow Results View and can be opened by right-clicking "Open with > Text editor".
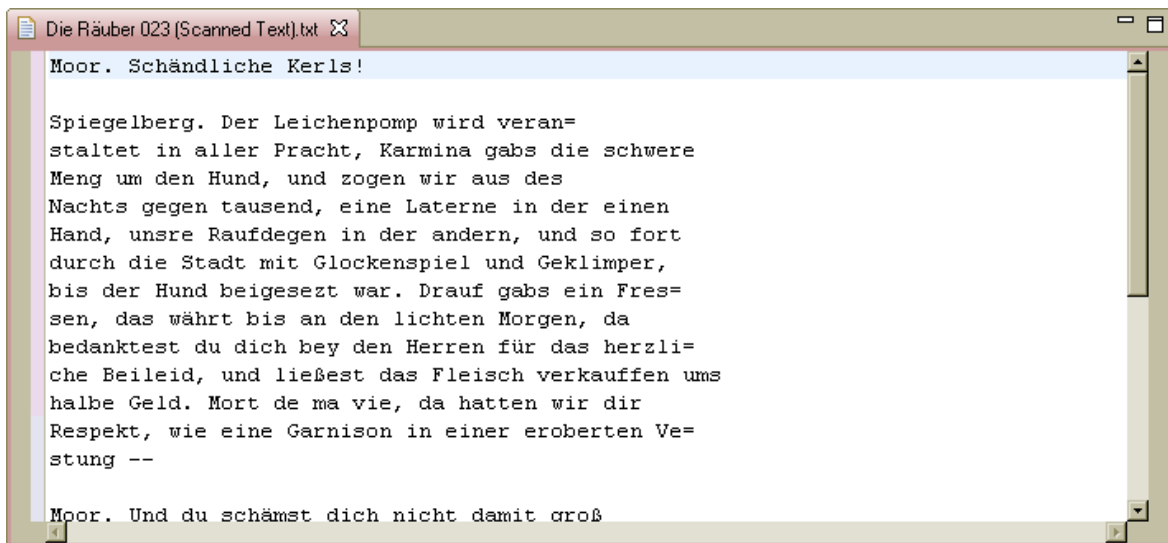


### 3.5.8 Interaction of the Workflow Editor with Other Components

To add Objects to workflows, you must drag them from the Navigator or the Search Results View. The special workflow Objects (tgwf documents) can be edited in the XML Editor; however, usage of the graphical workflow wizard is recommended.

# 4 Subject-specific Tools and Services

Tools for special research requirements are explained in this part.

# 4.1 Linguistic Tools

This chapter offers a compilation of tools for textual analysis. With these tools and future additions, users can use the TextGridLab to perform research on linguistic and grammatical phenomena, such as content analysis, contextual evaluation (the use contexts of vocabulary, single phrases, etc.), indexing, annotation, segmentation, and classification of text and word units as well as morphological studies.

## 4.1.1 Dictionary Search

The Dictionary Search tool allows users to browse the dictionary network

http://www.woerterbuchnetz.de

at the Center for Digital Humanities at the University of Trier. The following dictionaries may be browsed:

- General dictionaries: German Dictionary by Jacob and Wilhelm Grimm; Grammatical-Critical Dictionary of the High German Dialect by Johann Christoph Adelung
- Author's dictionaries: Goethe Dictionary
- Dialect dictionaries: Dictionary of the Alsatian Dialect by Ernst Martin and Hans Lienhart; Dictionary of German-Lorrainese Dialects by Ferdinand Follmann; Dictionary of the Palatine Dialect by Ernst Christmann et al.; Rhenish Dictionary; Supplement to the Rhenish Dictionary
- Middle High German dictionaries: Middle High German Dictionary by Matthias Lexer; Middle High German Dictionary by Georg Friedrich Benecke, Wilhelm Müller and Friedrich Zarncke; Supplement to the Middle High German Dictionary by Matthias Lexer
- Luxembourgian dictionaries: Luxembourgian Dictionary, Dictionary of the Luxembourgian colloquial speech; Dictionary of the Luxembourgian dialect

### 4.1.1.1 Open the Dictionary Search

To open the Dictionary Search Perspective

- choose the Dictionary Tool from the Welcome Screen, or
- select "Tools" from the menu bar and click "Dictionary Search", or
- click the icon 📖 in the toolbar.

The Dictionary Search Results View, which is part of the Dictionary Search, can also be opened separately by

- selecting "Tools > Dictionary Search" in menu bar, or
- clicking 🔍 in the toolbar.

### 4.1.1.2 Dictionary Search Perspective

The Perspective is subdivided into three views: the Dictionary Search View on the upper left, the Dictionary Search Results View on the upper right and the Dictionary Grid View at the bottom.
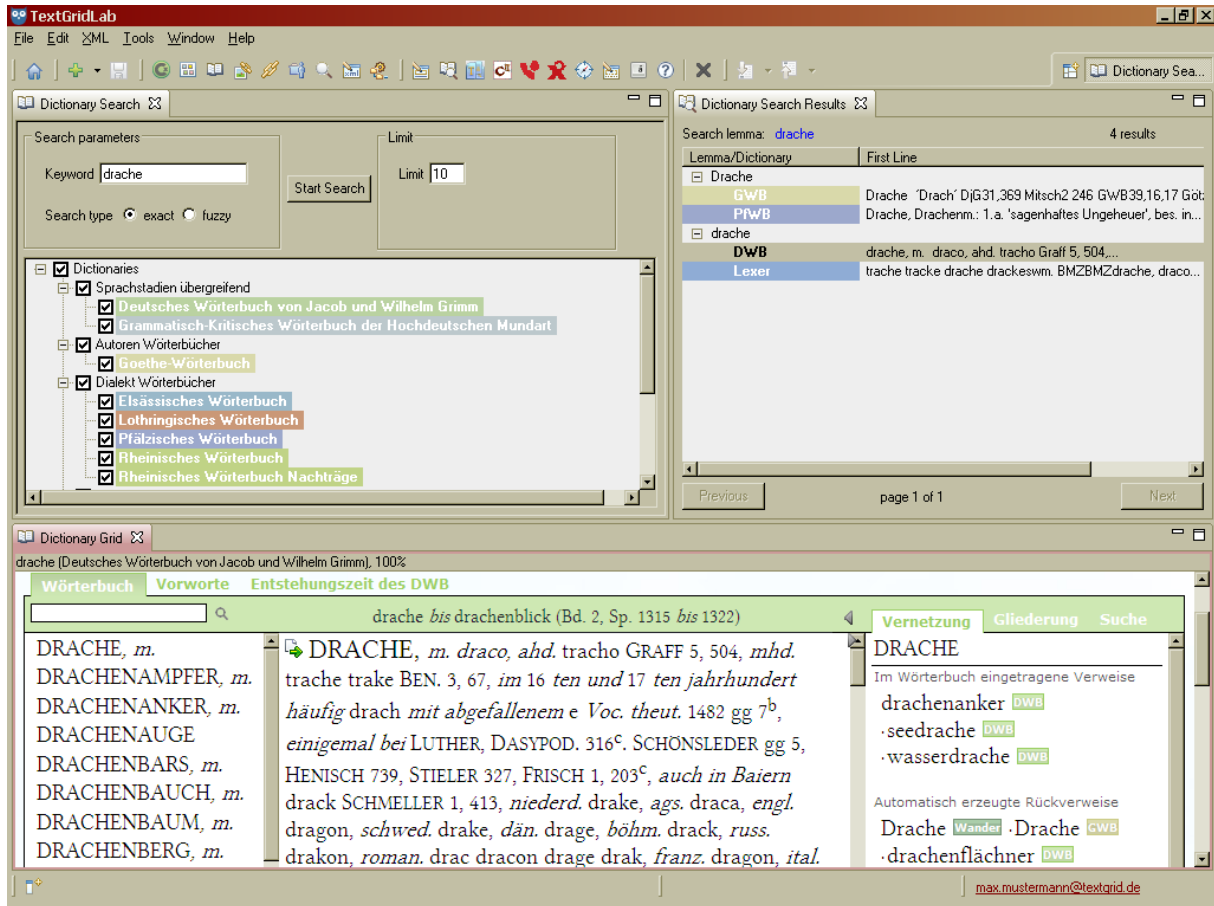


### 4.1.1.3 Dictionary Search View

To look up a word, fill in the Dictionary Search mask as follows:

- Type a keyword in the first input field. The search is not case sensitive.
- You can limit the number of results displayed. By default, the first 10 results will be displayed.
- Choose between exact or fuzzy search. In fuzzy search, similar strings will also be found.
- Mark the box or boxes of the dictionaries to be searched.
- To start the search, click the icon "Start Search".
- You can use wildcards. The asterisk (*) substitutes any zero or more characters, and the question mark (?) substitutes exactly one character. You can combine these search methods.

### 4.1.1.4 Dictionary Search Results View

You see the number of results in the upper right corner of the view. 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 results by clicking the "Next" or the "Previous" button.

### 4.1.1.5 Dictionary Grid View

To look up the entry in the dictionary, click the short form listed in the Dictionary Search Results View. The entry will open in the Dictionary Grid View. The tabs in the head of the Dictionary Grid View lead to further information about the online dictionary and the project into which the online dictionary is embedded. The field at the top of the left column is used for searching lemmas. This quick view starts with the article in question. It lists the following articles as well, depending on their length. You can use all options available in the online dictionaries to search in more detail. In this view, the context menu corresponds to the context menu of your operating system.

### 4.1.1.6 Using Dictionary Search

To look up a word, fill in the Dictionary Search mask as follows:

1. Insert a keyword in the first input field of the Dictionary Search View. The search is not case sensitive. Alternatively, you can double-click a word in the XML Editor if the Dictionary Search in open.
2. You can limit the number of results displayed. By default, the first 10 results will be displayed.
3. Choose between exact or fuzzy search. In fuzzy search similar strings will also be found.
4. Mark the box or boxes of the dictionaries to be searched.
5. To start the search, click the icon "Start Search".
6. You can use wildcards. The asterisk (*) substitutes any zero or more characters, and the question mark (?) substitutes exactly one character. You can combine these search methods.
7. The result is displayed in the Dictionary Search Results View and the selected result in the Dictionary Grid View.

### 4.1.1.7 Interaction of the Dictionary Search with Other Components

The functionality of the Dictionary Search tool can also be used while working on an XML document. Open the Dictionary Results View. Any word in the XML Source View can be looked up via context menu (right-click) > "Search in Dictionaries".

## 4.1.2 Lemmatizer

The Lemmatizer enables the user to retrieve the lemma relating to a given German wordform as well as to analyze the inflected wordform. The Lemmatizer is based on the German computational morphology SMOR

http://www.ims.uni-stuttgart.de/projekte/gramotron/PAPERS/LREC04/smor.pdf

and on morphological lexicon component MORPHISTO:

http://www1.ids-mannheim.de/lexik/TextGrid/morphisto/

**4.1.2.1 Install the Lemmatizer**

In order to use the Lemmatizer, you must first Install "Linguistic Tools" from the Marketplace.

**4.1.2.2 Open the Lemmatizer**

You can open the Lemmatizer in different ways:

1. Click "Tools > Show View" in the Menu Bar and select "Lemmatize Wordform" or "Lemmatize File".
2. "Lemmatize Wordform" can also be opened by clicking on 🔲 in the toolbar.
3. If a document is opened in the Source View or the WYSIWYM View of the XML Editor, the "Lemmatizer" can be selected in the context menu.

**4.1.2.3 The Lemmatizer Tool**

The Lemmatizer Tool consists of three elements: an input field, a configuration field, and a results field. If "Tools > Show View > Lemmatize Wordform" is chosen, the input field is dedicated to a German word form. If "Tools > Show View > Lemmatize File" is selected, the "BatchLemmatizer" for lemmatizing whole documents will open and you can choose between lemmatizing plain ASCII text, a German Wordform List, or tokenized TEI-conform XML depending on the format of your document. Click "Specify Input File" to select and upload your file from your computer. Make sure you have selected the corresponding file format.

In the configuration field the current form of the analysis is shown. Click "Make (Other) Configuration" to change it. A dialog opens in which you can change the output format and the lexicon. You can also set various options for the analysis: lemmatization, disambiguation, guesser for unknown word forms, fuzzy search, and ZLib Compression.

After clicking "Start Lemmatizer!", the results will be displayed in the results field below the configuration field. If you wish to save the result of lemmatizing a file, use the "Save Output" button at the bottom of the results field.

**4.1.2.4 Using the Lemmatizer**

You can either lemmatize a wordform or a document as a whole.

**Lemmatize a Wordform**

1. Open the Lemmatizer by selecting "Tools > Show View > Lemmatize Wordform" in the menu bar, or by clicking the icon 🔲 in the toolbar.

2.  Enter a wordform.
3.  Choose a configuration.
4.  Click "Start Lemmatize!". The result will be displayed in the results field below.

Alternatively, you can open the Lemmatizer via the context menu in the text editor, or in the XML Editor (in Source View as well as in WYSIWYM View).

1.  Mark the word and right-click on it. The context menu will open.
2.  Move your mouse over or click on "Lemmatizer".
3.  Select "Lemmatize Wordform" or "Get analysis". The result will be displayed in the results field below.

**Lemmatize a Document**

1.  Open the "BatchLemmatizer" by selecting "Tools > Show View > Lemmatize File" in the menu bar.
2.  Specify the input file and the configuration.
3.  Click "Start Lemmatize!"

**4.1.2.5 Interaction of the Lemmatizer with Other Components**

The Lemmatizer can be directly accessed from within the XML Editor and the oXygen XML Editor via the context menu.

## 4.1.3 LEXUS

LEXUS provides an environment for the creation of online lexica. Embedded in TextGrid, the tool allows you to use lexical resources provided by the Max Planck-Institute for Psycholinguistics in Nijmegen and by the Institute for German Language in Mannheim. For more information, please see

http://www.lat-mpi.eu/tools/lexus/

and http://www.owid.de/wb/elexiko/start.html.

**4.1.3.1 Install LEXUS**

In order to use LEXUS, you must first Install "Linguistic Tools" from the Marketplace.

**4.1.3.2 Open LEXUS**

You can open LEXUS in different ways:

1.  Click "Tools > Show View" in the menu bar and select "LEXUS".
2.  Click ♥ in the toolbar.
3.  If a document is opened in the Source View or the WYSIWYM View of the XML Editor, "Search in LEXUS" can be selected from the context menu.

**4.1.3.3 LEXUS Tool**

The LEXUS Tool consists of three elements: An input field, a section in which you can set various advanced search options, and a results field. Enter a word or phrase in the input field and click "Enter" or the "Search" button to start the query. The search is case-sensitive. You can also use the drop-down menu at the end of the input field to select a word or phrase for which you have searched earlier in this session.

You can set advanced options after opening the section below the input field by opening the line below the search term. A target lexicon can be selected. Currently data from the German dictionary elexiko (http://www.owid.de/wb/elexiko/start.html) from the Institute for German Language in Mannheim, Germany, is available, as well as a Wichita lexicon offered by Max-Plank-Institute for Psycholinguistics (http://www.lat-mpi.eu/tools/lexus/) in Nijmegen, the Netherlands.

The target data categories that can be chosen depend on the structure of the selected lexicon. Relating to the target data category, various search conditions can be set: "is", "contains", "begins with", and "ends with". In addition to these options, you can select "is negated" via a check box to filter your query.

The search results are presented in the results field below the options menu. Results of different queries are shown in different tabs. On the left side of the result you will find a tree of folders according to the structure of the selected lexicon. The lexicon entry itself is displayed on the right side.
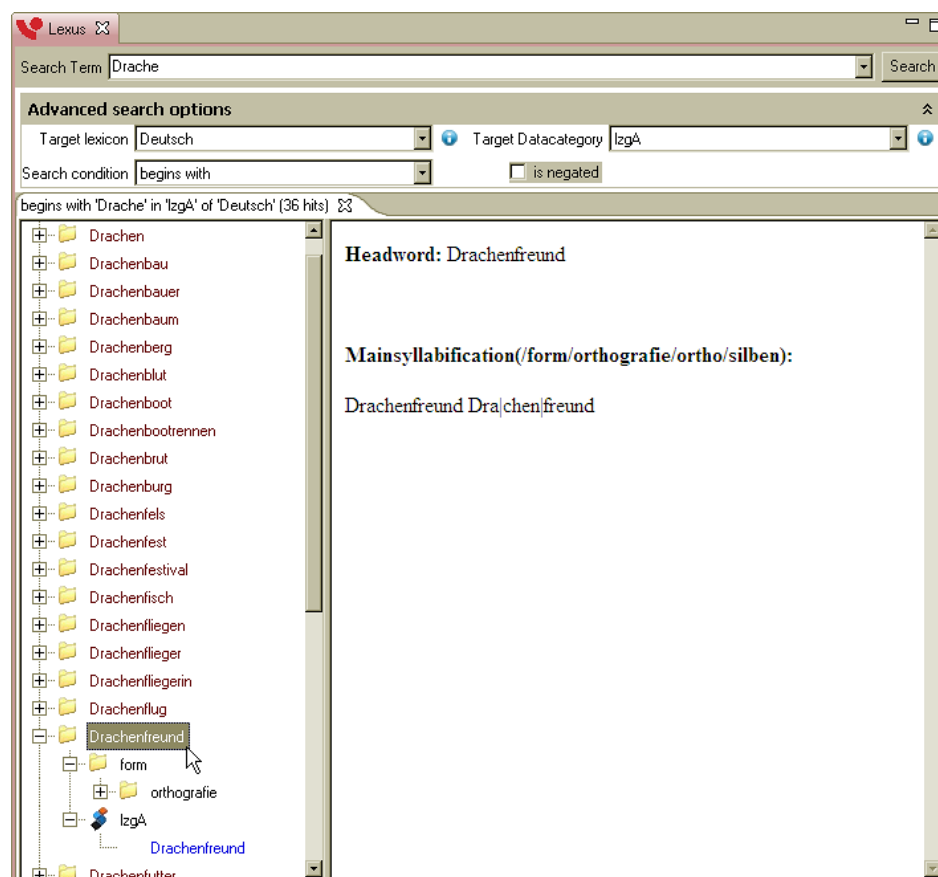
### 4.1.3.4 Using LEXUS

1. Open LEXUS by selecting "Tools > Show View > LEXUS" in the menu bar or the 🐞 in the toolbar. The LEXUS tool opens below the XML Editor.
2. Enter a word in the input field. You must have selected the appropriate lexicon. Currently, the German lexicon is the default setting.
3. Optionally, you can set advanced search conditions on the target data category. In the German lexicon the default category is "lzgA", which denotes the lemma itself; the default search condition is "is", i.e. only the exact lemma is retrieved from the lexicon.
4. Click "Search" to start browsing the lexicon.

Alternatively, you can open LEXUS via the context menu of the Source View or the WYSIWYM View in the XML Editor.

1. Mark the word in the XML Editor and right-click on it. The context menu will open.
2. Click on "Search in LEXUS". The LEXUS tool will open below the XML Editor, and your search will start immediately. The result will be displayed in the results field.

### 4.1.3.5 Interaction of LEXUS with Other Components

A search in LEXUS can be initialized directly within the XML Editor via the context menu of the Source View, the WYSIWYM View or the Preview.

## 4.1.4 Cosmas II

"Cosmas" stands for Corpus Search, Management and Analysis System. It is a full-text database for linguistically and lexicographically motivated queries in the corpora of the Institute for German Language (IDS). Queries can concern German words, word classes, word distance and position. Results can be sorted by time, country and topic as well as being analysed for usage patterns. The German Reference Corpus (Deutsches Referenzkorpus), which can be accessed through COSMAS, consists of about 3 billion words from German newspapers, magazines and books of various genres. For more information, please see

http://www.ids-mannheim.de/cosmas2/

At the time of this writing, accessing the corpus from within TextGridLab is restricted to a limited amount of texts due to copyright issues.

### 4.1.4.1 Install Cosmas II

In order to use Cosmas II, you must first install "Linguistic Tools" from the Marketplace.

### 4.1.4.2 Open Cosmas II

You can open Cosmas II in different ways:

1. Click "Tools > Show View" in the menu bar and select it.

2. Click [icon] in the toolbar.
3. If a document is opened in the Source View or the WYSIWYM View of the XML Editor, mark any word in the editor, and select "Search in Cosmas II" in the context menu.

### 4.1.4.3 Cosmas II Tool

The Cosmas II Tool consists of two elements: An input field and a results field. Enter a word or phrase in the input field and click "Enter" or the "Search" button to start the query, or click the downward pointed angle at the end of the input field to open a drop down menu and select a word or phrase you have searched for earlier in this session. The search is not case-sensitive.



The results are presented in the lower field with its source, a KWIC (Key Word in Context) View which shows the searched keyword in the context of the result, and a reference. Results of different queries are shown in different tabs. Use the context menu to copy selected results to the clipboard, to export them as a CSV file, or to select all results.

### 4.1.4.4 Using Cosmas II

1. Open Cosmas II by selecting "Tools > Show View > Cosmas II" in the menu bar, or the [icon] in the toolbar. The Cosmas tool opens below the XML Editor.
2. Enter a word or phrase in the input field.
3. Click "Search".
4. You can copy the results by right-clicking on them and click "Copy selected results to clipboard" or "Export selected results as CSV file" in the context menu. If you have copied the results to the clipboard, use "Paste" or "Ctrl+V" to include them in a document.

Alternatively, you can open Cosmas II via the context menu of the Source View or the WYSIWYM View in the XML Editor.

1. Mark the word in the XML Editor and right-click on it. The context menu will open.
2. Click on "Search in Cosmas II". The Cosmas tool will open below the XML Editor, and your search will start immediately. The result will be displayed in the results field
3. For copying or exporting the results, see point 4 above.

### 4.1.4.5 Interaction of Cosmas II with Other Components

Cosmas II can be opened directly within the XML Editor via the context menu of the Source View or the WYSIWYM View.

## 4.1.5 ANNEX

ANNEX is a Flash-based tool which allows users to watch video resources in sync with their annotations. It uses files created with ELAN (http://www.lat-mpi.eu/tools/elan/). In the ANNEX View, users can chose to display one or more of the annotation tiers and in different frame set-ups (views). Single segments of a video can be selected and played back. Rewinding and forwarding by seconds in a video tape is possible as well.

### 4.1.5.1 Install ANNEX

In order to use ANNEX, you must first Install "Linguistic Tools" from the Marketplace.

### 4.1.5.2 Open ANNEX

You can open ANNEX in two different ways:

1. Click "Tools > Show View" in the menu bar and select "ANNEX".
2. Click ![icon] in the toolbar.

### 4.1.5.3 The ANNEX Tool

The ANNEX workspace uses the data from the annotation file. In the upper left corner, the media file corresponding to the annotation is displayed through a QuickTime plugin. Further to the left is the first control panel with different options such as "Text", "Grid", "Subtitle" and "Timeline", plus "Waveform" and "Combined" which are not always present. On the right of the video file there is a panel with "Media Information". The lower part of the page is the main data frame.
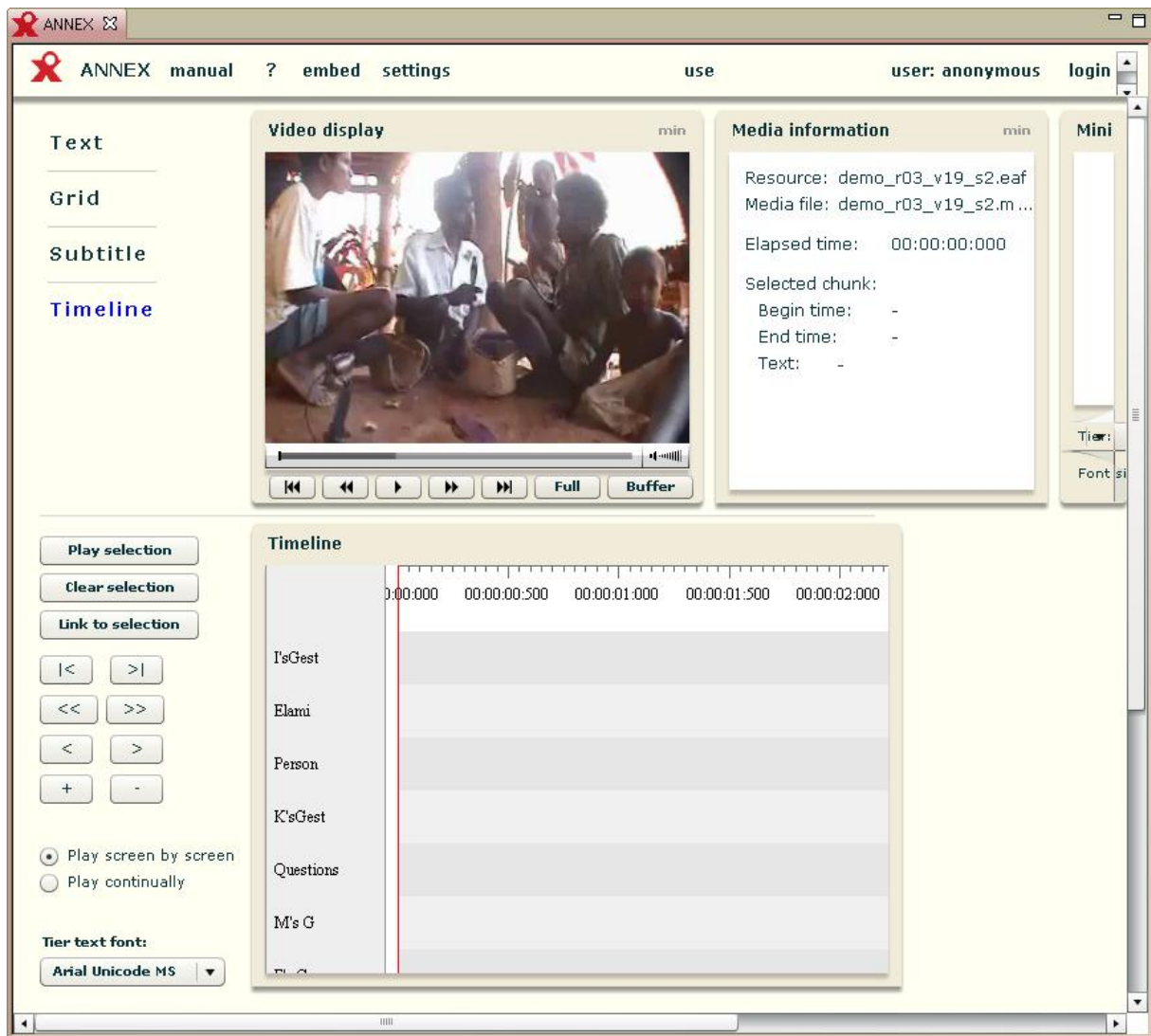
### 4.1.5.4 Media Player

Below the media, several controls are displayed, allowing users to adjust the volume, play or pause the video, forward, rewind, as well as change the Settings of the buffer time. To the right of the video display, media information is presented including resource, media file and elapsed time. If a selection of the video has been chosen, then the start and end time of the segment will be shown here as well. Both the media player and the information panel can be minimized.

### 4.1.5.5 Control Panels

The first control panel, on the left of the video display,usually has four buttons: "Text", "Grid", "Subtitle", and "Timeline". If the object also contains a waveform, two more options will be available: "Waveform" and "Combined". Depending on which data viewing mode is activated, the rest of the workspace will change accordingly to display the data in the appropriate mode.

**Text Mode**

This view shows a column for each of the selected tiers. In each column the annotations of a tier are displayed in lines. You can click on an annotation to play the corresponding part of the media file. When the recording is being displayed, the relevant parts of the annotations will be highlighted in red.



**Grid Mode**

This view shows all annotations with their start and end times from the tiers selected in the media information panel. The annotations are displayed in chronological order. You can click on an annotation to play the corresponding part of the media object. As the video progresses, the relevant parts are highlighted. In addition, to the left of the grid, you can choose the type of tier from a drop down list.



**Subtitles Mode**

This view shows the annotations as if they were subtitles while playing the video.

**Timeline mode**

This view is similar to the timeline viewer in ELAN. It displays the tiers and their annotations, and each annotation corresponds to a specific time interval. Above the tiers, a timescale is displayed. During playback, a red vertical bar, the crosshair, moves through the annotations and indicates the current point in time. Furthermore, whenever you select a time interval, it will be marked with a blue rim. The corresponding start time, end time, and duration are displayed in the media information panel.

When you select a specific segment, three more options will become available (see the left side of the timeline):

- Play selection: the video display will play only the selected segment
- Clear selection: the blue rim will disappear, along with the information about the start and end times, etc., that is contained in the media information panel on the right of the video display
- Link to selection: when you select this option, a message will appear informing you that the address of the selected segment has been copied to the clipboard

In addition, to the left of the timeline, there are further options which are unique to the Timeline, Waveform, and Combined modes:

>| and |< (Move timeline view to the end/beginning)

>> and << (Move timeline view forward/backward)

> and < (Move timeline view slowly forward/backward)

+ and - (Zoom timeline view in/out)

The Timeline can also be played in two different modes:

1. Play screen by screen, in which the crosshair (red vertical bar) will move to the right of the screen and change every time or
2. Play continually, where the crosshair will remain in the center of the screen and the annotations in the tiers will move.

Below these two view modes, there is the option to change the tier text font. Finally, to the right of the Media Information Panel, there is another window which allows users to view particular tiers in isolation. As the video progresses, the relevant part of the text from the selected tier will be highlighted in red.
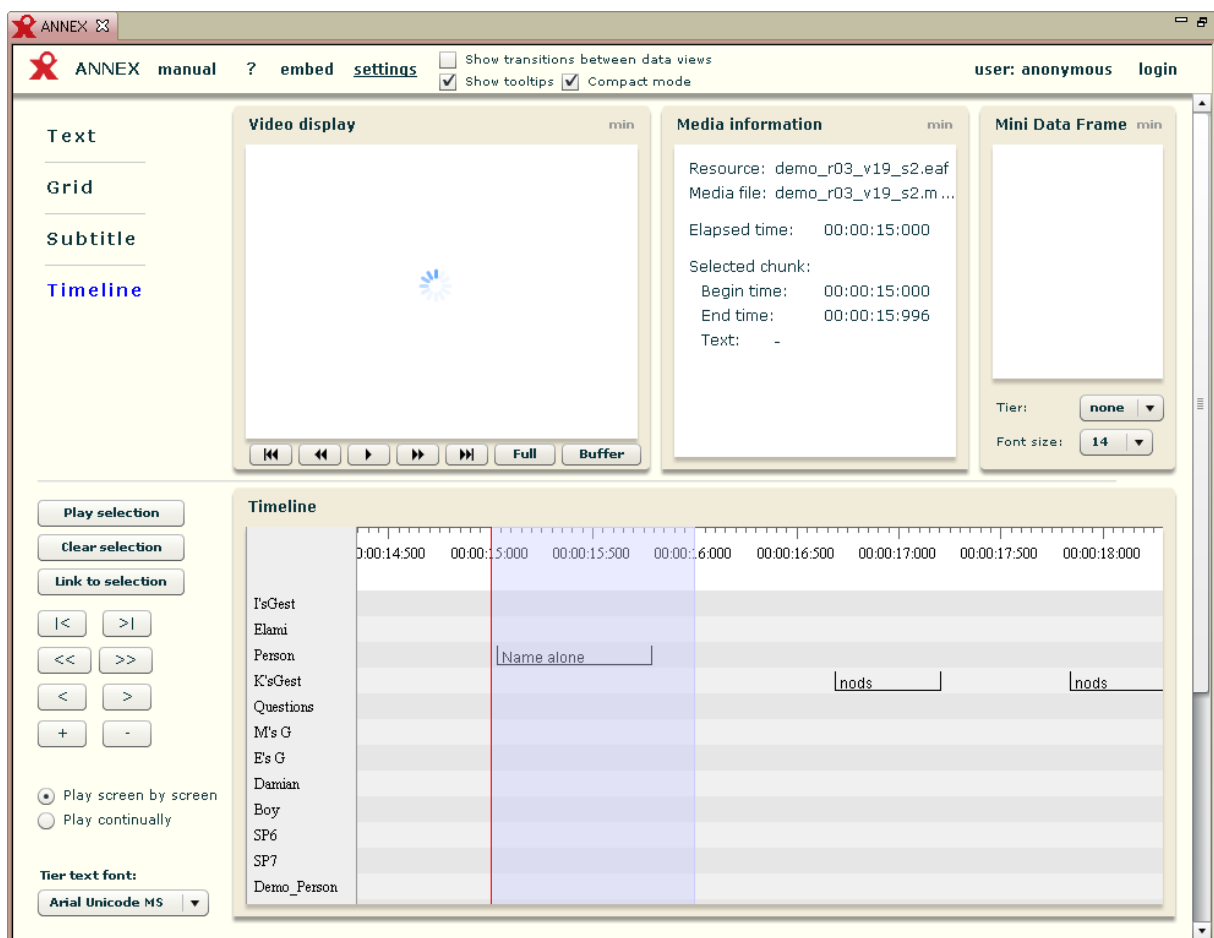
**Waveform and Combined**

If there is a waveform in the document, it can be viewed in the Waveform mode. You can also combine the waveform and the timeline view modes in one screen with the combined mode.

**4.1.5.6 Using ANNEX**

For more information on creating and working with audiovisual documents with ELAN and ANNEX, please see

http://www.lat-mpi.eu/tools/elan/

http://www.lat-mpi.eu/tools/annex/

**4.1.5.7. Interaction of ANNEX with Other Components**

ANNEX can be directly started via the context menu of the XML Editor.

# 4.2 CollateX

CollateX is a Java software for collating textual sources, for example, to produce a critical apparatus. It was developed jointly by several partner institutions and individuals under the umbrella of the European initiative "Interedition". For more information, please see

http://collatex.sourceforge.net/

### 4.2.1 Install CollateX

In order to use CollateX, you must first install it from the Marketplace.

### 4.2.2 Open CollateX

CollateX can be opened in different ways:

1. Choose CollateX from "Tools" on the menu bar.
2. Click 🅖 on the toolbar.
3. Double-click a collation set or an equivalence set in the Navigator or the Search Results View
4. Right-click a collation set or an equivalence set in the Navigator or the Search Results View and select CollateX from the option "Open With…"

### 4.2.3 The CollateX Perspective

The CollateX Perspective consists of two components. The first one lists the collation and equivalence sets, and the second shows the results of the collation.

When CollateX is opened, four new icons will appear on the TextGrid toolbar:

1. 📄 for creating new collation sets.
2. 📄 for creating new equivalence sets.
3. ▶ to collate texts.
4. ❌ to delete active selections in the equivalence set.

## 4.2.4 Collation Set and Equivalence Set Component

In the upper part of the CollateX Perspective, collation and equivalence sets will be shown by default. If these sets are not selected, the upper part will be empty. If you wish to create a collation set, you can click on ⬛ on the toolbar to open the collation set list and drag and drop TextGrid Objects from the Navigator or Search Results View into the list. The collation set is the set of all text witnesses the collation should take into account. The texts must be given as plain text (.txt). To create an equivalence set, click on ⬛ in the toolbar to open the equivalence set list and drag and drop tokens from the Collation Result Component into the list. The equivalence set defines all items that should be treated as identical. Variance between them will be ignored by the tool.

## 4.2.5 Collation Result Component

If a collation has been completed, the result will be displayed in the lower part of the CollateX Perspective. This component presents the result in three different ways:

1.  The Alignment Table ⬛ shows every element of a text and compares it with the text passage in the other texts. Every variance is highlighted.

2. The variants are also illustrated in a graph  that can be seen after clicking on the second tab of the component. Drag an element with your mouse if you want to move it.
3. The results are also presented in the form of TEI-conformant XML.

## 4.2.6 Using CollateX

CollateX can be used for collating existing text Objects as well as for standardizing the readings of the texts.

### 4.2.6.1 Collating Texts

1. In order to collate texts, a collation set has to be defined by opening the collationer and clicking on  in the toolbar.
2. Select a Project and a title as well as further metadata for the set in the dialog that opens now.
3. Drag text Objects from the Navigator or the Search Results View and drop them into the collation set list. Currently, only plain text (.txt) can be collated in this way.
4. Save the collation set by clicking Crtl+S.
5. Click  in the toolbar.
6. The results are shown in a table that aligns all text elements, in a graph of all variants, and in the form of TEI-conformant XML.

### 4.2.6.2 Standardize the Collation Result

1. After you have collated different texts, special readings can be defined as equivalent.
2. Click  or use the link at the bottom of the collation set list to open the equivalence set list.
3. Select a project and a title as well as further metadata for the set in the dialog that will appear.
4. Drag elements from the Alignment Table and drop them into the equivalence set list. Tokens that should be treated as equivalent must be dropped in the same line by placing the cursor in that line. To delete selected lines, click the icon  in the toolbar.
5. In the second column of the equivalence set list, you can define if this equivalence should only be local or global for the whole collation. Click on "Global" or "Local" to change this setting.
6. By clicking the "..." button, existing equivalence sets can be used.
7. By clicking the "X" button, existing associations with equivalence sets can be removed.
8. Save the equivalence set via Ctrl+S and restart the collation if desired.

## 4.2.7 Interaction of CollateX with Other Components

The CollateX collationer interacts with the Navigator and the Search Results View. Objects can be dragged from there to be added to the collation set. The XML result can be copied and edited with oXygen or the XML Editor.

## 4.3 MEI Score Editor (Musical Note Editor)

The MEI Score Editor (MEISE) is a dedicated viewer and in particular a graphic editor for the internationally developed MEI notation format, which was designed to satisfy the special requirements of musicologists that are unsupported by existing music notation formats. The focus of the editor is the creation and modification of MEI documents on a network connected client. One of the assets of the editor is the homomorphism of its internal data structure to the MEI schema tree, allowing for native support of the note setting process. Unique features of the Note Editor arise from the editorial field, such as the visualization of variants.

Basic knowledge of musical notations and terms is a prerequisite for using the MEI Score Editor.  For more information, please see

http://music-encoding.org/documentation/tutorial

http://music-encoding.org/documentation/tagLibrary

### 4.3.1 Install the MEI Score Editor

MEISE must be installed subsequently to the Lab via the Marketplace.

### 4.3.2 Open the MEI Score Editor

A perspective must be open to contain the Note Editor. The only way to start the Score Editor is by opening or creating an MEI document as described below:

- Create a new MEI note sheet via the toolbar ➕▾ > Item > MEI Notesheet". Select a Project in the "Create a new TextGrid Object" dialog box. Click "Finish" or "Next" to select a title for the new Object. Pressing the button "Finish" will open the Note Editor with a simple unnamed MEI document, together with the XML Editor's Outline and Properties View.
- Click on an existing MEI Item in the Navigator View and the editor will open.
- Via the context menu: Open the XML Editor Perspective. Choose an MEI Item in the Navigator. Right-click it, choose "Open with..." > and select "MEI Score Editor".
- In this way, you can also open an MEI Item with the XML Editor in order to work with the source code.

### 4.3.3 MEI Score Editor Perspective

The MEI Score Editor Perspective consists of four views:

1. The Musical Score View on the left.
2. A Palette which appears simultaneously on the right side of the Score View when a document is opened. The Palette can be closed and opened separately via the white triangle at the top.
3. The Outline View in the upper right area.

4. The Properties View on the lower right. The Navigator View from which the Note Editor has been started after an MEI Object has been opened appears as a hidden tab behind the Properties View.

The Outline and Properties Views are only opened when an MEI document is created or opened or if the XML Editor is open in the background. Both views make it possible to edit an MEI Object.

### 4.3.3.1 Menu Bar of the MEI Score Editor Perspective

When you open the Note Editor and make changes in the current document, certain items in the menu bar will be activated.

**Edit**

**Undo and  Redo**: To undo or redo a change made to a document, click "Edit > Undo" or "Edit > Redo".

**Delete**: Use "Delete" to delete all selected elements from the document.

**Select All**: This item works like Crtl+A and all elements in the Outline View will be selected or highlighted. This function is enabled only when no changes have been made.

**Window**
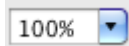
**New Editor**: creates a second Score View which opens in a second tab behind the current editor field.

**Navigation**: allows you to activate and switch between editors. Activated editors can be minimized and maximized. You can choose the previous perspective, editor, or view.

**Preferences**: Here you can also change preferences for MEISE under "Meise Preferences", e.g. to require the Lab to use the MEISE perspective when opening a MEI document.

### 4.3.3.2 Toolbar of the MEI Score Editor Perspective

The MEI Score Editor has certain specific functions in its toolbar. This toolbar displays more items for editing the MEI note sheet on the left side of the general TextGrid toolbar.

- "Undo and Redo": Choose  or  to undo and redo changes made in the document.

- "Zoom Factor box": 100% shows the zoom factor (in percentage) of the notes. You can change the dimension from 25% to 300%. Please note: The extent of the Score View does not automatically fit the level of the zooming factor. To change this setting, there are three options: "Page" adapts the size of the note sheet to the size of the Score View. "Height" extends the musical notes to the height of the Score

View. "Width" sets the width of the music sheet to the width of the field. The zoom in and zoom out icons  serve to increase or reduce the size of staves, notes, and all musical symbols shown in the Score View. Please note: The extent of the Score View does not automatically change with the level of the zooming factor.

- "Insert Measures":  allows the user to insert a number of prepared measures into the MEI document. Up to 100 measures can be inserted. The user can also define if a new section for the new measures should be created or if new staves and layers within the new measures should be created.

- "Insert Staffdefs":  allows the user to insert specified StaffDefs into the MEI document. In a table, all criteria for the StaffDefs can be defined previously, such as, for example, the shape of the clef, the key signature and the time signature.

- "Score Image Export": Use the photo camera symbol  to create an image of the visible section or the whole score. Export your score image as a screenshot (.png .jpeg or .gif) to a folder on your operating system.

- "MEI-prune model":  allows you to save the current variant configuration of the MEI into an unambiguous MEI file without variants to the hard disk. Please select the parent folder in the list of the dialog box "Save As".

- "Manage Sources":  creates and edits sources in the current MEI document.

### 4.3.3.3 Shortcuts in the MEI Score Editor Perspective

| Del | Deletes All Currently Selected Elements From the Document |
|---|---|
| Strg+Shift+1 | Starts the "Insert Measures" Tool |
| Strg+Shift+2 | Starts the "Insert Staffdefs" Tool |
| Strg+Shift+4 | Starts the "Score Image Export" Tool |
| Strg+Shift+5 | Starts the "MEI-prune model" Tool |
| Strg+Shift+6 | Opens the "Manage Sources" Dialog |

## 4.3.4 Musical Score View

At least one perspective must be open to contain the Musical Score View. As soon as an MEI Object has been created or opened, the view will appear. In this area the musical scores that you can open from the TextGrid Repository, or create and modify with the Palette and the Outline View, will be displayed.

The encoded note text is displayed in a WYSIWYM View to display the encoding properly. All changes in the document can be made in this WYSIWYG-style. The Score View is primarily meant for the two-dimensional display of the rendering, as drag & drop operations are disabled. Elements in the note sheet should be modified with the assistance of the Editor's

Palette  and the Outline and Properties View . Single elements in the Score View as notes or rests can be selected and appear in blue by left-clicking on them.

More complex interventions in the source code of an MEI document will require the XML Editor. To open the source code of an MEI Object, please use its context menu in the Navigator and choose "Open with > XML Editor".
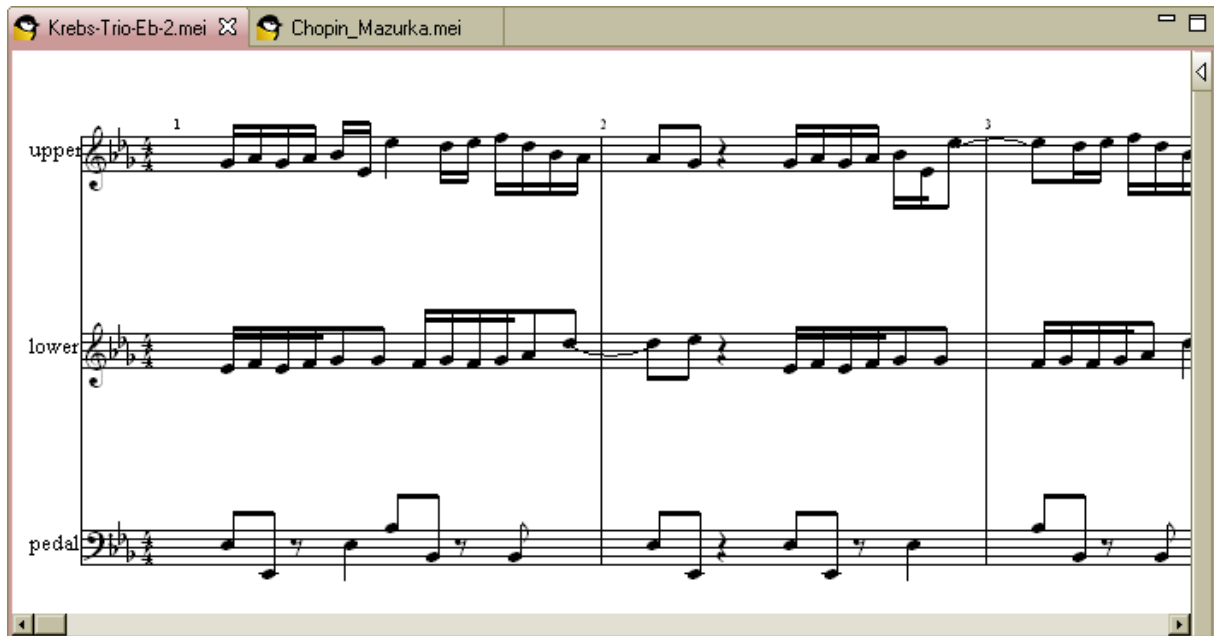


**MEISE Musical Score View**

The context menu is enabled on the Score View, but direct user manipulation via drag & drop is disabled. It offers the following options:

- Undo 🔙 and Redo 🔜 changes .
- If single elements are selected in the Score View, they can be deleted with ✖.
- The user can duplicate preselected elements with "Clone" ⌷.
- "Run as > Run Configurations…" opens a new window. There the user will be able to create new configurations for the launch and define the settings.
- You can validate your MEI document by clicking "Validate".
- Use some Eclipse-specific options by selecting "Team", "Compare With", or "Replace With".
- To associate an adaptor to your document, please select "Associate an Adaptor...". An associated adaptor can translate the given documents to the TextGrid Baseline Encoding. In the new dialog box the selected file is presented with information about title, project, contributor, and creation date. You can mark the box below to make the assignment persistent when clicking "OK". In the lower list you can select the adaptor by clicking on it. Here you can also receive additional information. To reverse your selection, you can mark the button under this list.
- To save your changes, click 💾 on the bottom of the context menu.

## 4.3.5 Palette

The Palette will open every time the Score View is activated. It consists of the instruments and items which you can use in the Outline View. Practical instructions for using these instruments (drag & drop onto the Outline View), are described in the section about "Using the MEI Score Editor". You can hide the Palette by clicking the white triangle at the top right or by moving it to the other side of the Score View by dragging it like a view.
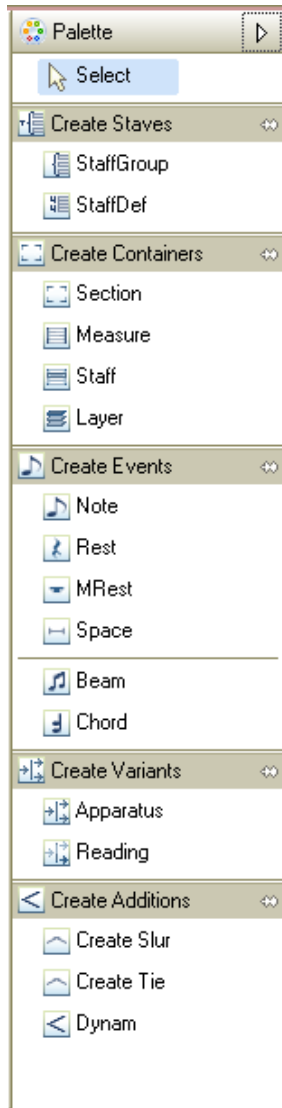


### 4.3.5.1 Features of the Palette

The Palette  includes a range of icons divided into several groups:

- Control Group: With the "Select" tool  it is possible to go to any position in the note sheet.

- "Create Staves":  creates a new group of bracketed or braced right hand and left hand staves.  creates a new staff definition, i.e. a container for

staff meta-information which includes meta-information about the clef's pitch, the key signature, the label (right hand or left hand), and the time signature.

- "Create Containers": "Section" ⬚ , "Measure" ▤ , "Staff" ▤ and "Layer" ▤ : this group creates new containers in the note sheet which are themselves able to contain other data types. All comprised data in a container results in a meaningful whole.
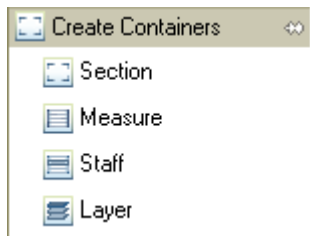


- "Create Events": "Note" ♪ , "Rest" ♩ , "MRest" ▬ , "Space" ⊢⊣ , "Beam (group)" ♫ , "Chord (group)" ♩ : this group contains the minimum unit of elements which can be created within a musical score in the Score View.
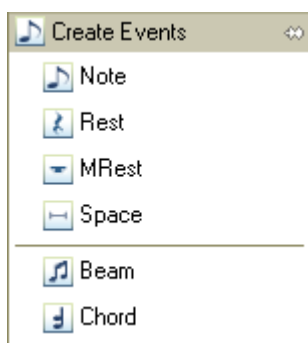


- "Create Variants": "Apparatus" ↱ / "Reading" ↳ : this group enables the encoding of variants, a specialty of the editor for musicological use.



- "Create Additions": "Create Slur" ⌒ "Create Tie" ⌒ "Dynam" < : with this element group, useful music notation symbols can be added to the score.
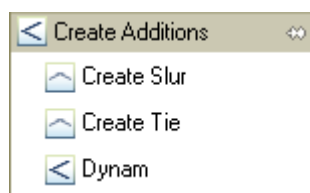


The pin function on each of the units ("Pin open", "Unpin") allows you to maintain the Palette state even after restarting the TextGridLab.

For more details about the application of the Palette, please see the chapter "Using the MEI Score Editor".

**4.3.5.2 Context Menu of the Palette**

The context menu of the Palette offers several commands:

- To arrange the workspace layout of the Palette, select "Layout >". The list arrangement of all icons is preselected. You can also choose between an arrangement in columns, a display of the icons only, or a list arrangement of all icons with details included.

- If you select "Use Large Icons" the palette actions will use large-scale icons where available.

- You can change some predefined settings of the Palette's icons: Click "Customize…" and a new dialog box will open. All five units and their elements contained in the Palette are listed on the left in a tree structure. The bar at the top of the tree structure enables you to change the position of the entries in the Palette ("Move Down", "Move Up"). You can also delete single elements from the list. The "New" button allows you to create a new drawer. The settings of the Control Group and its components cannot be changed. For the other groups there are several possibilities to change their preferences. Please tick the boxes to hide the whole unit or just single elements of it. For a single unit, you can open the drawer at start-up or pin the drawer open at start-up. It is also possible to create or modify the names and descriptions of groups and elements. Click "Apply" to apply your changes.

- To change the settings of the Palette itself, click "Settings…" and a new dialog will open. If you click "Change…" you can change the font, its style, color, and the font size of the icon captions in a separate window. Otherwise, the default settings will be restored. You can choose between different layouts ("Columns", "List", "Icons only", "Details") via buttons or use large icons by ticking a checkbox. There are also options for the drawers of the Palette: The default setting is that the drawer will be closed if there is not enough workspace. Furthermore, you can decide whether it should be closed when opening another drawer or if it should remain open.

**4.3.6 Outline View of the MEI Score Editor**

The Outline View in MEISE has three different functions. First, it facilitates navigation in large MEI documents by providing an overview of the document's tree-structure. Second, as in the Properties View it is essential for editing a document because you can build your hierarchical MEI tree using drag and drop in this area, and the graphical results are shown in the Musical Score View. Finally, it offers a quick switch between the sources in the MEI document (if they exist). More detailed information is provided in the section on "Using the MEI Score Editor". Every time you select an element (Measure, Note, Rest, Beam, Tie, Slur) in the Outline View via left-clicking, the corresponding element in the Score View will be highlighted in blue so that the user always knows the current location within the document.
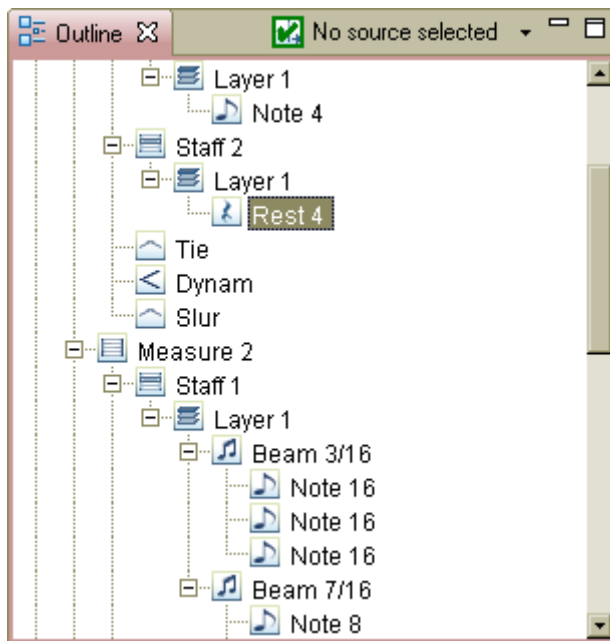
### 4.3.6.1 Title Bar of the MEISE Outline View

The Outline View title bar contains a button which enables switching between different previously declared sources. These sources themselves define different variants which can been seen in the Musical Score View while switching. See "Musical Variants". The Filter function of the title bar is located in the downward triangle.

### 4.3.6.2 Context Menu of the MEISE Outline View

The MEISE Outline View provides the following commands for editing the document:

- "Undo" and "Redo" to reverse and restore changes in the document.

- "Delete" removes the selection from the document.

- The "Insert Container/Variant/Event/Additions" operations are only available when valid in the selected area (e.g. events can only be inserted into a layer - see the MEI schema) and offer quick access to frequently used elements.
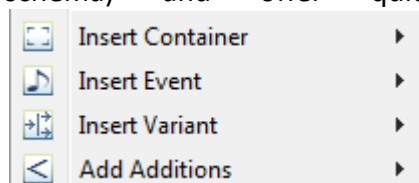


- The Measure elements can be relabeled by right-clicking them and selecting "Relabel Measures" .

- The "Clone" command duplicates the selected element with default initial values.

- To save your changes, click "Save" on the bottom of the context menu. This button is only active if there have been changes since the last save.

## 4.3.7 Properties View of the MEI Score Editor

This view shows the modifiable properties of the elements from the Outline View in two columns (i.e. attributes of selected elements in the Outline View and their appropriate values).

The information displayed in the Properties View will change depending on the preselected (highlighted) element in the Outline View. The properties "ID" and "N" (number) are basic and static but their values depend on the preselected element type. If you make changes in the Value column, the modifications will be displayed immediately in the Score View. To validate all modifications in the Value columns, please click anywhere in the Score View.
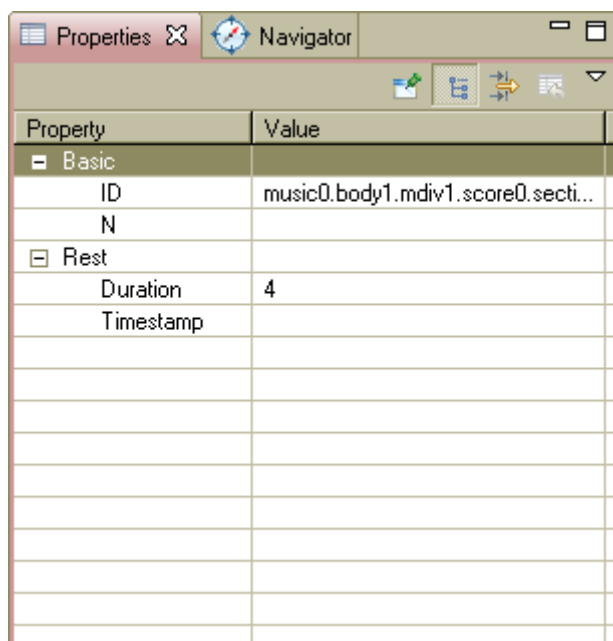


### 4.3.7.1 Features of the Properties View

Changes in the following value categories have an impact on the editing process:

| | |
|---|---|
| (All elements) | color of visual representation (default is black)<br><br>identificator of the element (read-only)<br><br>notes on the element: A string for commentary thoughts |
| ScoreDef | quick access to the properties "Label" and "Notes" of all contained Staff Definitions |
| StaffGroup | definition of a **symbol** that appears at the beginning of the staves. The choices are: none, brace, bracket, and line |
| StaffDef | the pitch of the **clef** can be chosen (G, F, C, GG, PERC, TAB), as well as the clef line (1-5)<br><br>the **key signature** can be determined (0, 1-7sharp symbols, 1-7flat symbols) |

| | |
|---|---|
| | the **time signature** can be determined: Meter Count/Meter Unit (for example, three-quarter time)<br><br>choose as a time signature symbol: none, common time, or cut time to override the numeral display<br><br>the **label** of the declared staff (e.g. "piano") |
| Measure | definition of the right and left **bar rendition**: dashed, double, doubledashed, doubledotted, dotted, end bar, invisible, repeatboth, repeatend, repeatstart, and single |
| Note | various forms of **accidentals** can be chosen like s=sharp or f=flat<br><br>the **articulation,** like acc or stacc. This can be defined via a properties dialog box which will open when you click [] > … in the Value column besides the property "Articulation".<br><br>Check or uncheck the intended DataARTICULATION properties in the box. The articulation affects the transition or continuity on a single note or between multiple notes.<br><br>the number of **dots** can be specified.<br><br>the note's value can be specified with "**Duration**" ("1" for "full note", "2" for "half note" and so on)<br><br>in the "**Octave**" line the note can be transposed up or down by an octave (levels range from 1 to 8)<br><br>define the pitch of the note by the category "**Pitchname**" (a, b, c, d, e, f, g)<br><br>the **direction of the note's stem** can be set upwards or downwards<br><br>the **length of the note's stem** can be defined by number<br><br>a **timestamp** for the event, if not currently being evaluated by the system for placement<br><br>a **syllable** for song text |
| Rest | the **duration** of the rest can be defined by number, see "Note"<br><br>a **timestamp** for the event, see "Note" |
| Space | the **duration** of the event (see "Note")<br><br>the **timestamp** of the event (see "Note") |
| Chord | the **articulation** can be defined |

| | |
|---|---|
| | the number of **dots** can be specified<br><br>the chord's value can be specified with "**Duration**"<br><br>**Note count** is static (default setting "2")<br><br>the **direction of the chord's stem** can be set upwards or downwards<br><br>the **length of the chord's stem** can be defined by number |
| Apparatus | the selected **source** that should be displayed |
| Reading | a set of **sources connected** to this reading |
| Slur / Tie | the **curve direction** can be set above or below<br><br>the **timestamp** can be defined |
| Dynam | a place where the **dynamic definition** should be displayed (above, below, or within the system)<br><br>a timestamp, see "Note"<br><br>a **value**, defining the content of the dynamic definition; some key phrases (e.g. "pp") receive a special display. |
| Unknown Element | the name of the **element type** that is currently not yet supported |

### 4.3.7.2 Title Bar of the MEISE Properties View

The Title Bar of the MEISE Properties View offers you several icons to perform a range of operations:

- Click to pin this property view to the current selection
- Click to show all properties of the preselected element in the view (including the properties in the "Basic" category)
- Click to show advanced properties
- Click to restore the default value of a selected property

- Click the white triangle to open the view menu. The view menu allows you to open a new Properties View , pin a property to a selection and show categories and advanced properties to define the width of the two columns "Property" and "Value" after clicking "Configure Columns…"

- Click the remaining icons to minimize and maximize the view

There is also a context menu in the title bar that is identical to all view title bar context menus in Eclipse.

### 4.3.7.3 Context Menu of the MEISE Properties View

The context menu in the Properties View allows you to copy and to restore the value of a given property. If you click in the text field of the value column, the context menu will be borrowed from your operating system.

## 4.3.8 Using the MEI Score Editor

The following text describes how to work with the MEI Score Editor. For this purpose, the use of the items of the Palette will be demonstrated and  the properties of the elements from the Outline View will be mentioned. Since the MEI Score Editor creates and modifies MEI documents, this subchapter follows the hierarchical structure of an MEI document.

Please note: The manipulation of the score is done in the Outline View or, respectively, with the context menu of the Score View. Creation of new elements can be achieved either by dragging new elements from the Palette into the Outline View for creation or by using the context menu of an element in the Outline View/Score View. When you have marked an element in the Outline View, you can also delete it using the context menu or modify its properties using the Properties View.

### 4.3.8.1 Create and Modify MEI Documents

A newly-created MEI Item will already display a music sheet in four-four time with only one measure and no notes within it. The Outline View and the Properties View will appear, showing the structure of the MEI document. For more information about how to open a new MEI document, please see "Open the MEI Score Editor". Now you can create new elements for your score.

**Staff**

"ScoreDef" is a default element and not deletable. Under the "ScoreDef" element you can create the score declarations "StaffGroup" and "StaffDef".

Start with a "StaffGroup", which is a group of bracketed or braced staves. A "StaffGroup" contains lines with clef and time signature. Left-click on a "StaffGroup" element in the Palette in the „Create Staves" section and drag it into the "ScoreDef" element in the Outline View while pressing the left mouse button. After performing this action, you will see no visible results like scores or staves in the Musical Score View since you have not yet entered a musical event such as a note or rest.
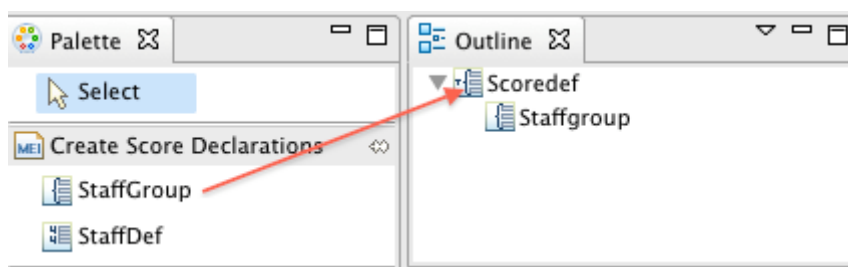
Now you can drag a "StaffDef" element, which is a container for staff meta-information, from the Palette on the "StaffGroup" element in the Outline View. In the figure below three, "StaffDef" elements have been added and named Staffdef 1, Staffdef 2 and Staffdef 3. This figure also demonstrates how to name a staff and other possible options to change or initialize properties of the single "StaffDef" in the Properties View.
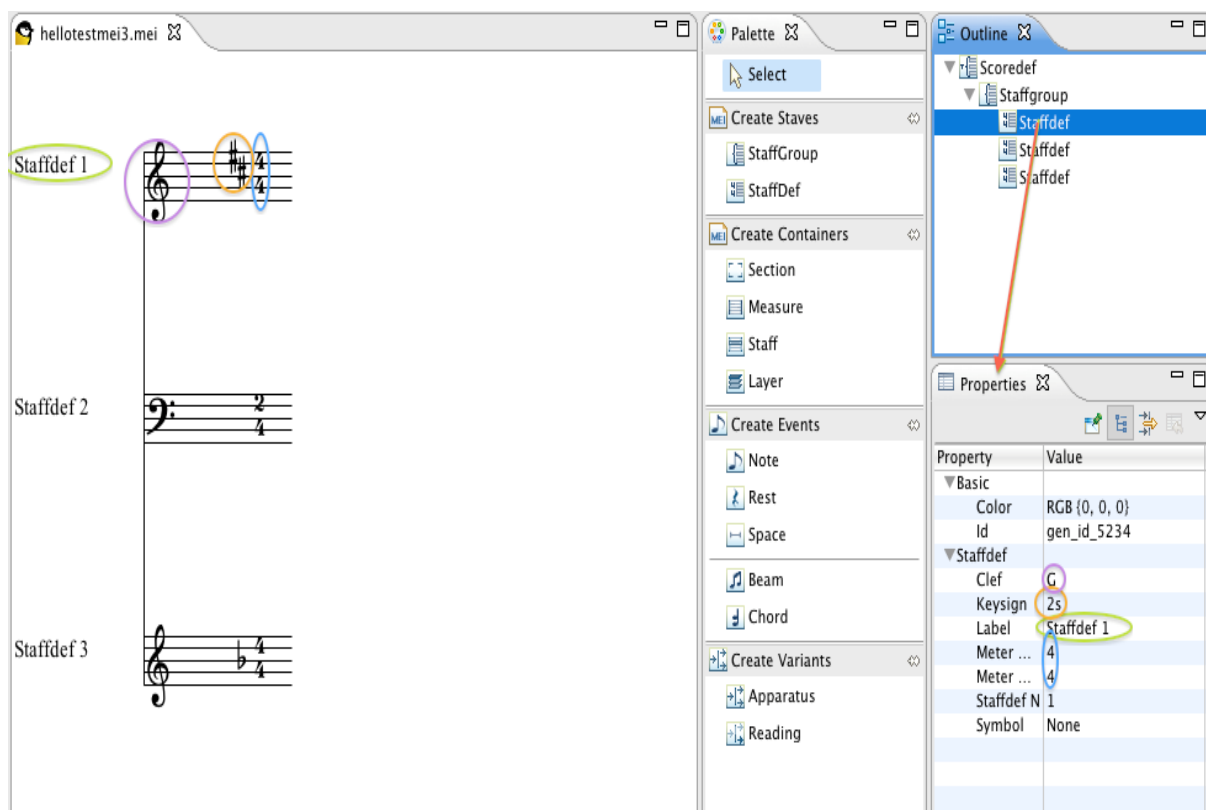


**Container Creation**

The "Section" element is a container for actual music data. "Section" is not a subelement from "ScoreDef", so you do not need to drag it to the "ScoreDef" element. Drag it instead into the white space underneath the "ScoreDef/StaffGroup/StaffDef" section. Since it is a container and not an event, no visible results will be shown in the Musical Score View.

Dragging the "Measure" element into the "Section" element in the Outline View will have the same (invisible) effect because it is just a container of the content for a measure.

After dragging a "Staff" element from the Palette on the "Measure" element in the Outline View, you see the measure with its staff on the left. In the screen shot below, there are the three "Staffdefs" and four measures, called Measure 1-4. To illustrate the fact that the staves belong to their measure, the different measures have different numbers of staves. Before you start creating notes and rests, a container for those kind of events is required.

For this reason, you will need to create a "Layer" element on the staff in the Outline View, as shown in the next figure. You can only add events to a "Layer", since adding an event directly within a staff is not allowed.
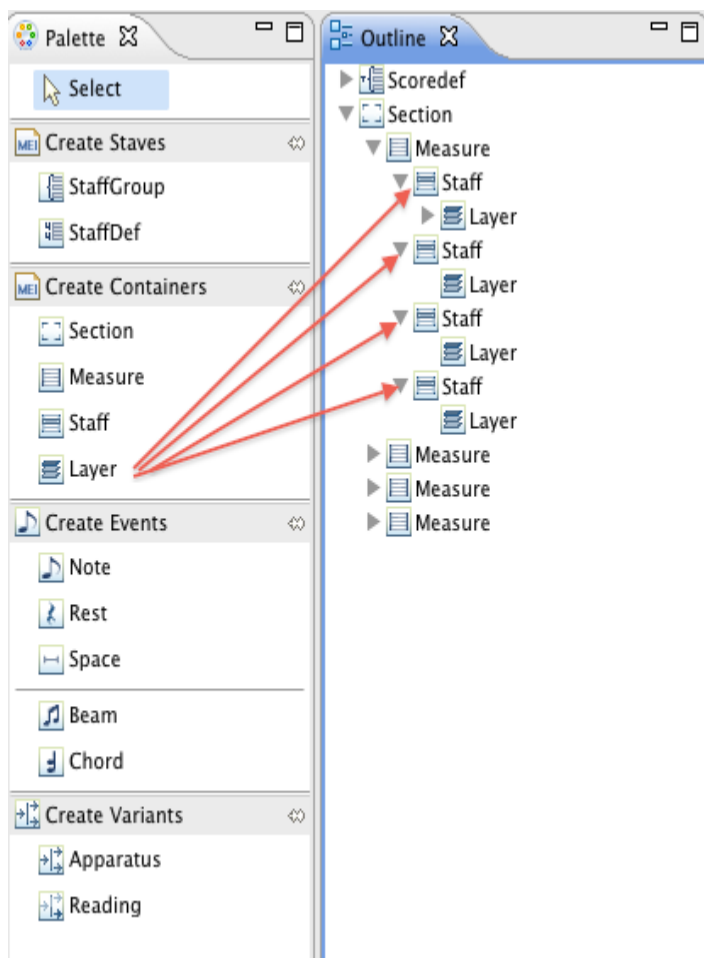
**Event: Note, Rest, Beam and Chord**

As described in the paragraph above, it is necessary to create a "Layer" before you will be able to add an event such as a quarter note.

To create a "Note", you must create a "Note" element on a "Layer" in the Outline View. The default properties (e.g. Duration and Octave 4, Pitchname c) of this note are shown in the Properties View. In the figure below the table some properties of the note in the second measure, which you can edit in the Properties View, are demonstrated. All editing possibilities are listed in the following table:

| Property | Explanation |
|---|---|
| N | Label for a note, only visible in the source code |
| Accidental | Accidental of the note, sharps (s), flats (f), neutrals (n), double sharps (x), double flats (ff) and other double accidentals; triple flats (tb), triple sharps (xs) and other less common combinations |
| Articulation | Articulations such as acc or stacc |
| Dots | Number of dots |
| Duration | 1 (whole note), 2, 4, 8, 16, 32, 64, 128 (duration of notes) |
| Octave | Octave of the note |
| Pitchname | A, B, C, D, E, F, G as pitchnames |

| StemDirection | Up or down |
|---|---|
| StemLength | Length of the stem (the default is 19) |
| Syllable | Lyrics under the note, visible in the musical score |
| Timestamp | a time stamp is defined in the form X.000 |
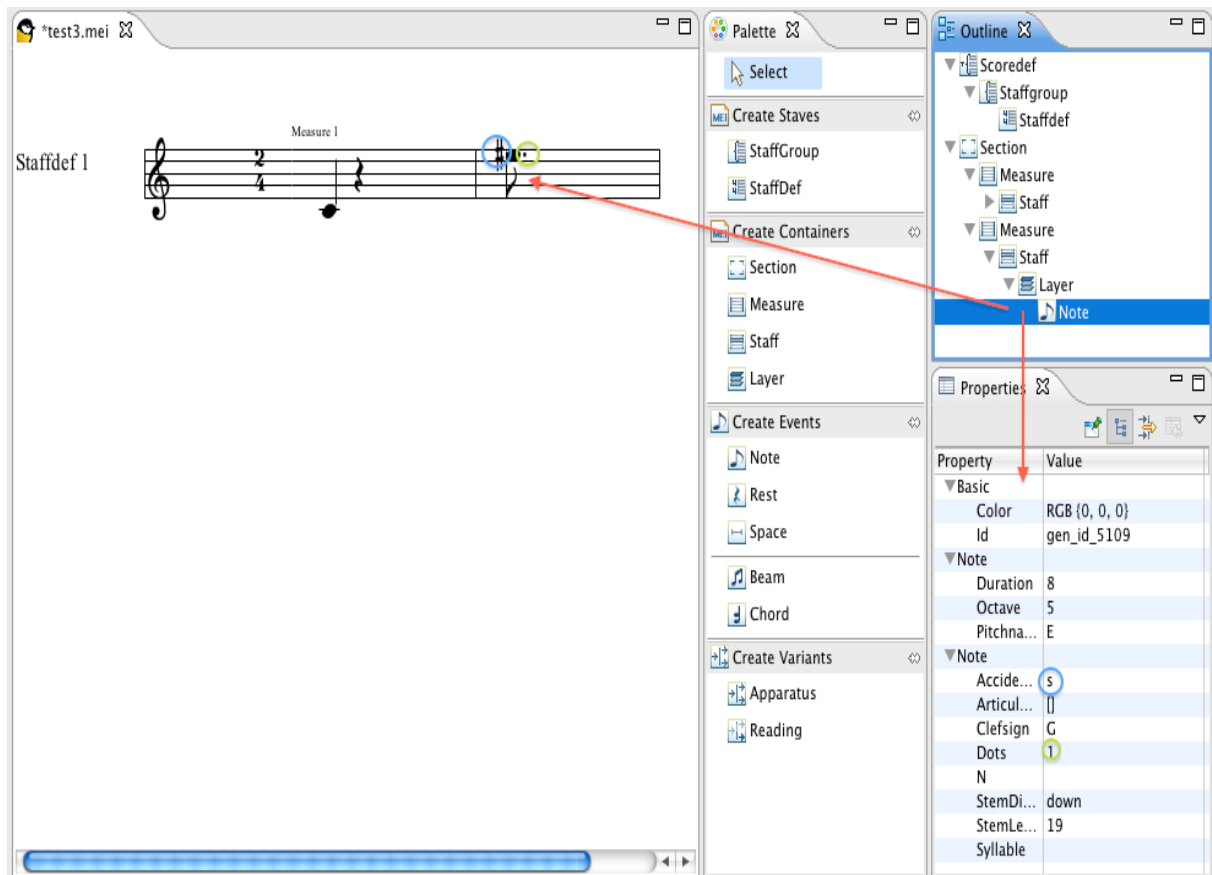


In the figure on the left  you can see the result of the use of the property "Syllable" (text under a note), which you can modify for every note. It is the beginning of a German Christmas song. The value of the property "Syllable" is displayed under the note, to which you added this element.  The figure on the right shows an excerpt of its corresponding source code in MEI, where you can see the usage of a "Syllable" element.



```
<measure n="1">
    <staff>
        <layer>
            <note pname="c" oct="4" dur="4" artic="">
                <verse>
                    <syl>Mor</syl>
                </verse>
            </note>
            <note pname="c" oct="4" dur="4" artic="">
                <verse>
                    <syl>gen</syl>
                </verse>
            </note>
        </layer>
    </staff>
</measure>
```

A "Rest" is created in the same way as a note. You will need to drag it onto the "Layer" of the "Staff" where you would like to place the rest. In the Properties View, you can change the duration of a rest.

A "Space" is created in the same way as a note or a rest. After adding a "Space" element, no visible result will be seen. This element is visible only in the context of use with other events because it acts as a placeholder between two events like two notes. The user can also define its duration.

The MEI Score Editor is not only able to show single notes, but also connected ones. For this purpose, you will need to drag a "Beam" or a "Chord" from the Palette onto a "Layer". Afterwards you can add notes on the "Beam" or "Chord" element in the Outline View. An example for the creation of a beam and a chord is given in the figure below. The editable properties of a chord are "Articulation", "Dots", "Duration", "Note count", "Stem direction", and "Stem length", and also "Timestamp".
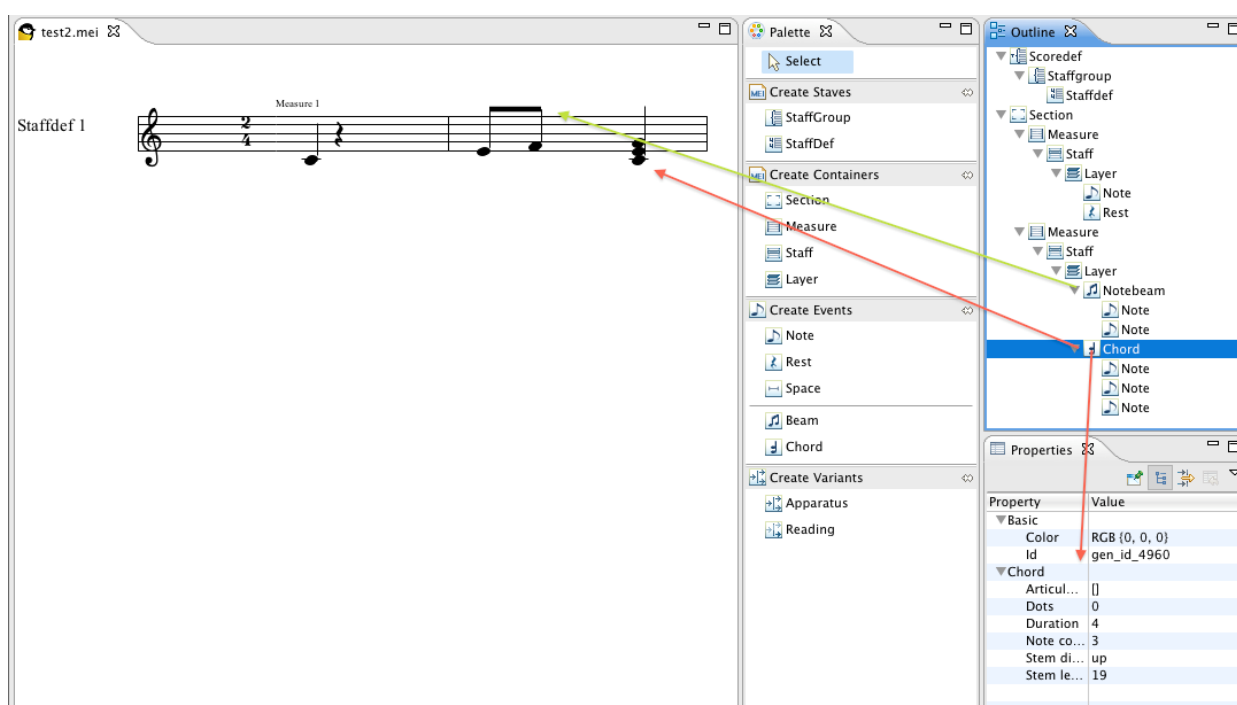


 Alternatively, you can use the context menu of the Outline View for the creation of new elements as children of an existing element. Please use the items "Insert Container/Variant/Event" and "Add Additions..." in the context menu depending where they appear. Since the MEI Schema has strict rules defining the allowed occurrences of elements and their use, the modification of the content must follow certain policies. To guide the user's workflow and reduce the learning curve for MEI, the context menu offers a convenient subset of the most frequently used elements that are valid for creation at the given location, as shown in the figure below. In Windows, adding child elements via context menu can only be done when the MEI Object is open in the XML Editor.
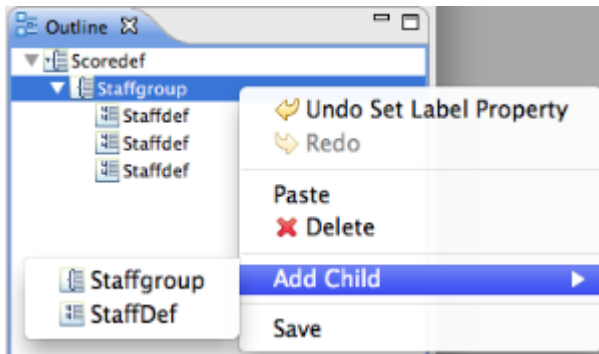
 When you open an existing MEI document that was not created with the MEI Score Editor, it is possible that there will be "Unknown Elements" displayed in the Outline View. Not every possible element and attribute from the Music Encoding Initiative data format has been implemented (yet) into the MEI Score Editor. These elements and attributes are not being erased or ignored by the editor, but instead they are represented as an object with a question mark titled "Unknown Element". Furthermore the name of this unknown element is shown as a property in the Properties View. For an example, please see the last figure below. In the source code of the MEI document, the four staves of the example have a fermata in measure 4, which can not (yet) be displayed by the MEI Score Editor.
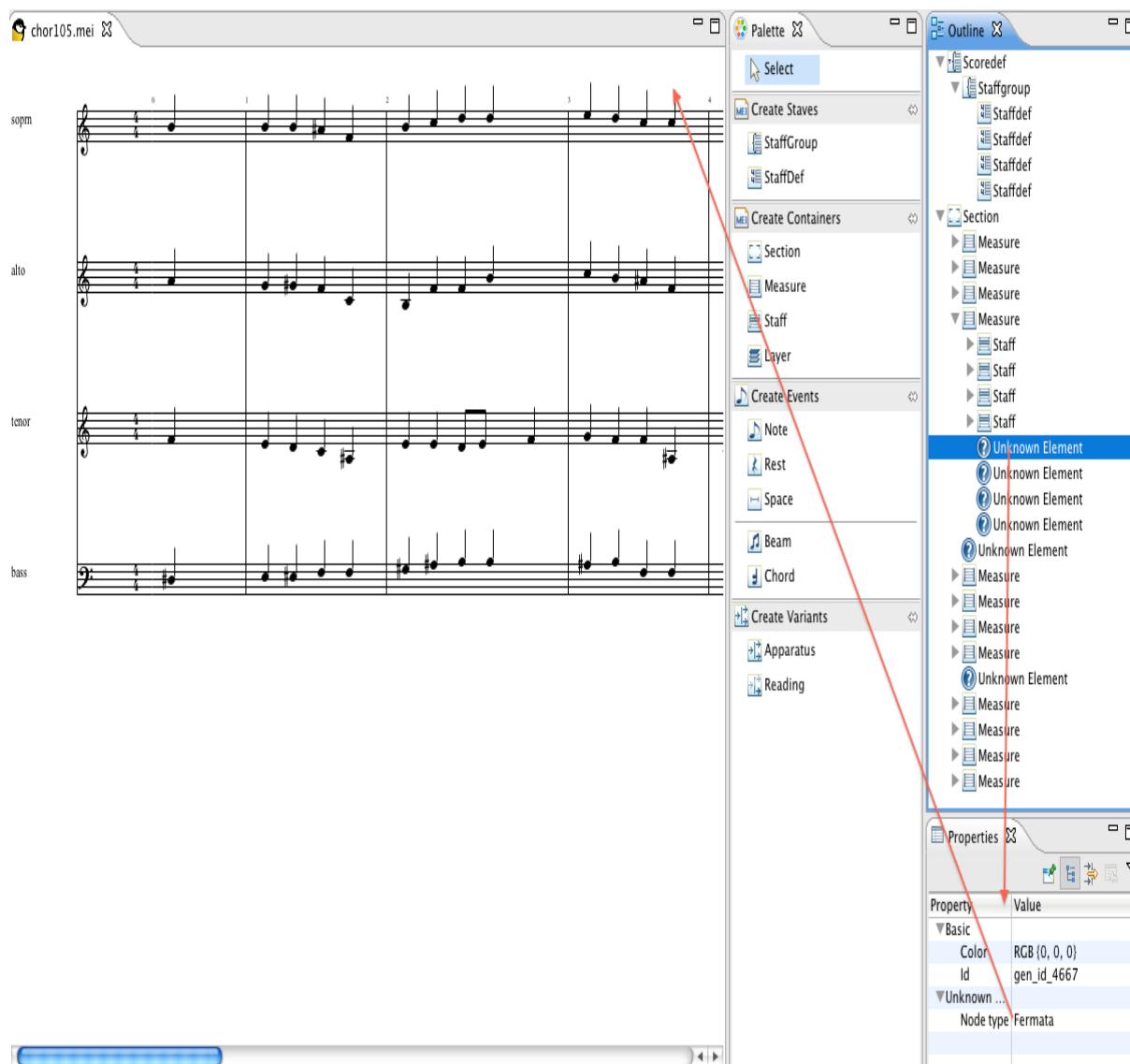
### 4.3.8.2 Musical Variants

The MEI Score Editor also provides a digital representation of musical variants. This is necessary because of the limits of the presentation of variants in printed media. While the MEI Score Editor offers the opportunity to switch between different variants, the encoding of variants should be done with the "Apparatus" and "Reading" elements.
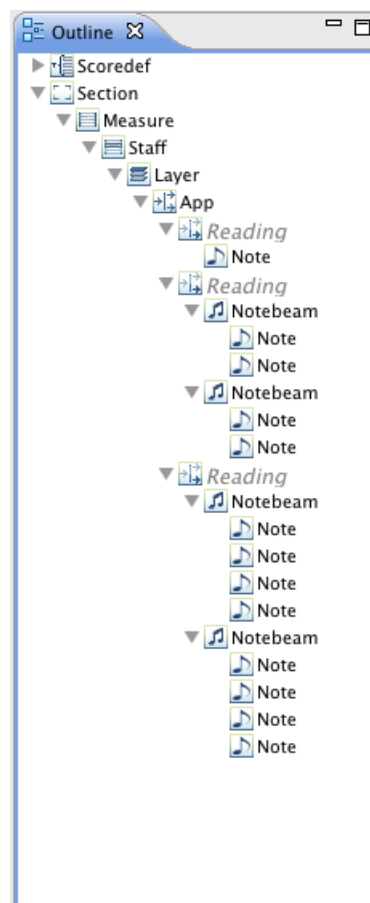
**Apparatus and Reading**

In the figure on the left the use of the *app* (Apparatus) and the *rdg* (Reading) elements are shown in the MEI source code and on the right the corresponding Outline View, where you can see how to insert the "Apparatus" and "Reading" elements into the hierarchical structure.

```
<measure>
    <staff>
        <app n="">

            <rdg source="SourceForReading1 SourceForReading1">
                <layer>
                    <note stem.len="19" pname="G" oct="4" dur="2" artic=""/>
                </layer>
            </rdg>

            <rdg source="SourceForReading2 SourceForReading2">
                <layer>
                    <beam>
                        <note stem.dir="down" pname="B" oct="4" dur="8" artic=""/>
                        <note stem.dir="down" pname="C" oct="5" dur="8" artic=""/>
                    </beam>
                    <beam>
                        <note pname="G" oct="4" dur="8" artic=""/>
                        <note pname="A" oct="4" dur="8" artic=""/>
                    </beam>
                </layer>
            </rdg>

            <rdg source="SourceForReading3">
                <layer>
                    <beam>
                        <note stem.dir="down" pname="B" oct="4" dur="16" artic=""/>
                        <note stem.dir="down" pname="A" oct="4" dur="16" artic=""/>
                        <note stem.dir="down" pname="B" oct="4" dur="16" artic=""/>
                        <note stem.dir="down" pname="C" oct="5" dur="16" artic=""/>
                    </beam>
                    <beam>
                        <note pname="G" oct="4" dur="16" artic=""/>
                        <note pname="F" oct="4" dur="16" accid="s" artic=""/>
                        <note pname="G" oct="4" dur="16" artic=""/>
                        <note pname="A" oct="4" dur="16" artic=""/>
                    </beam>
                </layer>
            </rdg>

        </app>
    </staff>
</measure>
```
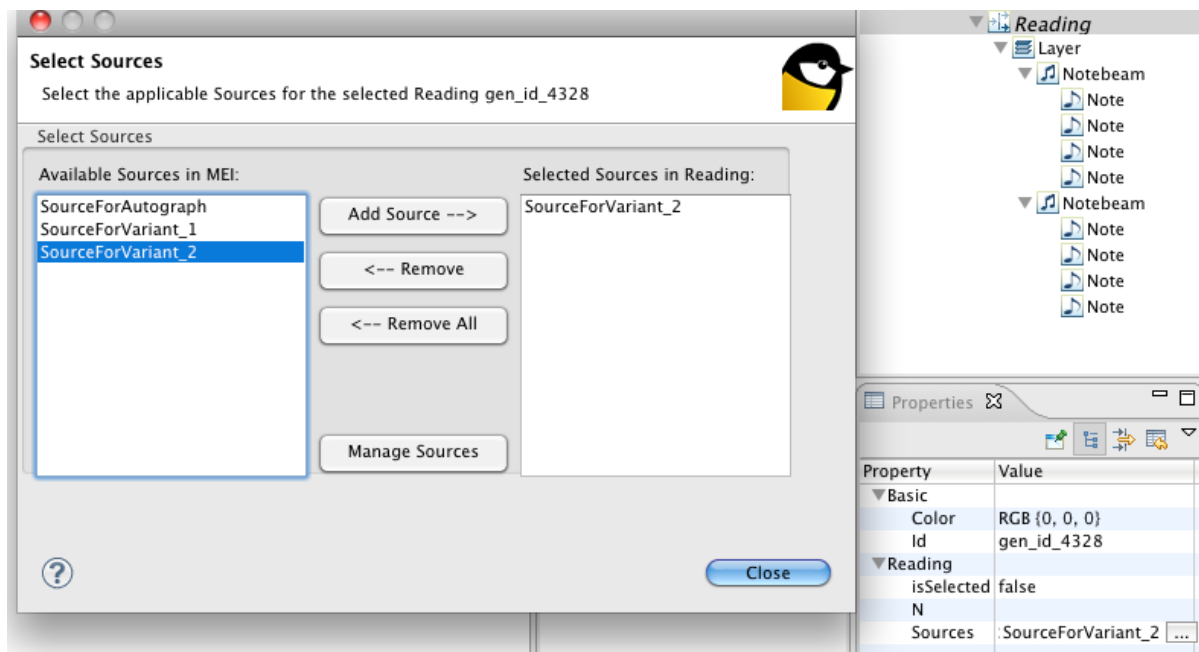
Outline

- Scoredef
- Section
  - Measure
    - Staff
      - Layer
        - App
          - *Reading*
            - Note
          - *Reading*
            - Notebeam
              - Note
              - Note
            - Notebeam
              - Note
              - Note
          - *Reading*
            - Notebeam
              - Note
              - Note
              - Note
              - Note
            - Notebeam
              - Note
              - Note
              - Note
              - Note

**Declare Sources**

To use the possibilities for presenting different variants, you will have to declare sources for the readings. The definition which "Reading" belongs to which source is already visible in the source code in the attribute of each *rdg* element. Before you will be able to define the sources, you must declare them in the following way: Click the "Manage Sources" button on the toolbar of the MEISE Editor, which was already mentioned in the "Toolbar" paragraph. A new dialog box will open, as shown in the figure below. Here you can create sources by clicking the "Create New" button. Now you can give your source a name or modify the "Label" and "N(otes)" attributes. After clicking the „Close" button, your sources will be saved.
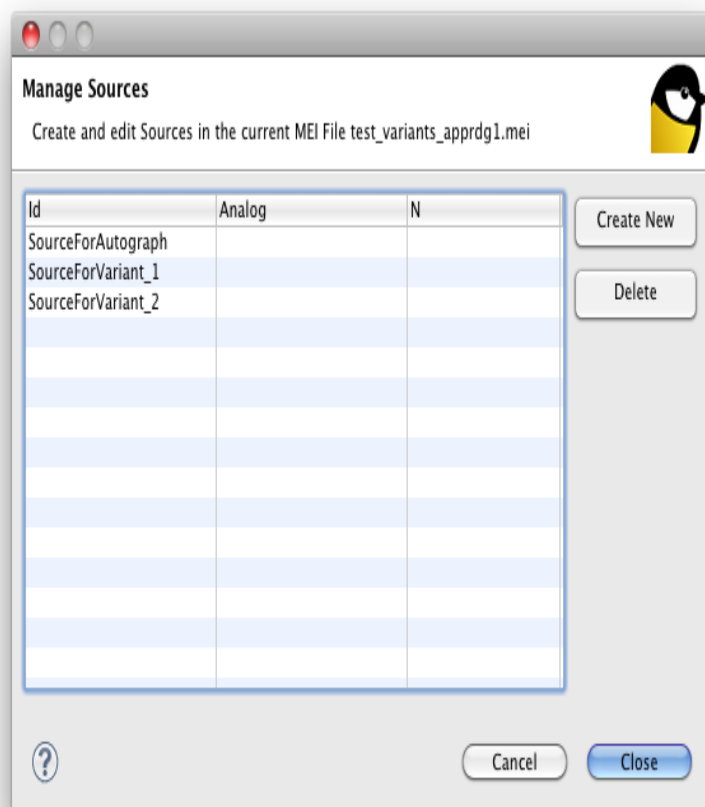
**Define Belongings**

The next step is to define which source belongs to which reading. For this purpose, click on a "Reading" element in the Outline View and then open the value of its property "Rdg Sources" in the Properties View. As soon as you click the properties editor in the value column, a new dialog will open. Select a source from the available sources you have declared and click the „Add Source" button. You can also add more than one source to a "Reading" element and you can also use the "Remove" or "Remove All" buttons. After clicking the „Close" button, your modifications will be saved. For an example, see the figure below : here, every "Reading" element has one corresponding source.

**Show different variants**

After you have added the sources to the readings, you can switch between the different variants. Click on the "Apparatus" element in the Outline View and select a source you want to see in the Properties View. In the last figure, the "SourceForVariant_2" is selected and displayed in the Score View. The selected source is also highlighted in green in the Outline View.
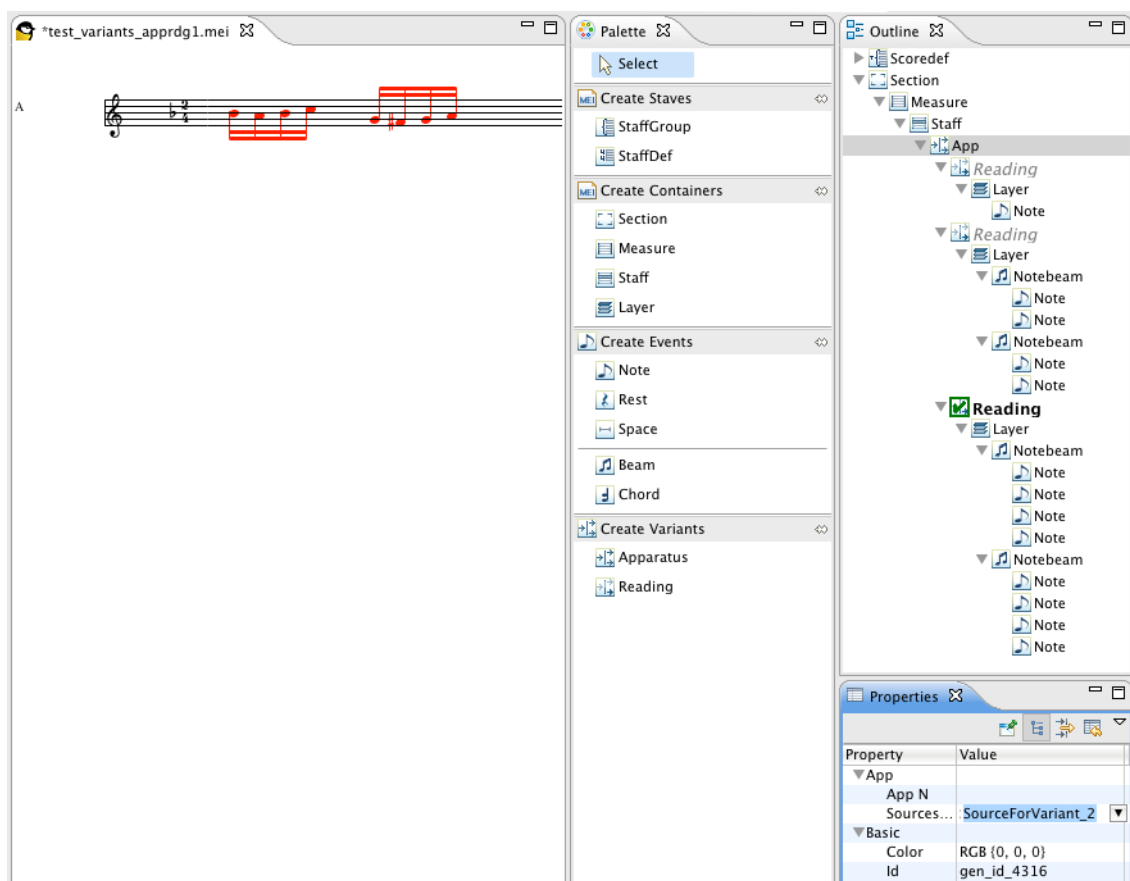
# 4.4 Digilib

Digilib (short for "digital image library") is an open software tool for the scholarly study of images via the internet. It was developed to enable the study and annotation of images. High resolution digital images are stored and processed on an image server and only a small visible part of the image is transferred over the internet.

The user can zoom, rotate, mirror, enhance, and annotate images in a persistent way without changing the original image data. The Digilib software facilitates two aspects of scholarly work with digital images: First, it provides a means of exploring and analyzing images in high-resolution detail. Second, it provides the opportunity to cite and reference research results with the aid of explanatory elements and references in the image or in image segments.

The Digilib plugin in the TextGrid Laboratory implements the functions for image display, zooming, scaling, rotation, and mirroring as well as color modification. The current zoomed, rotated, or mirrored view of the image can be saved as a Digilib View object and opened at any time.

For more information, please see

http://www.mpg.de/410783/forschungsSchwerpunkt1

http://zuccaro.biblhertz.it/dokumentation/digilib

http://digilib.berlios.de/

### 4.4.1 Install Digilib

In order to work with Digilib, you must first install it to the TextGridLab via the Marketplace.

### 4.4.2 Open Digilib

To open images in Digilib, select "Digilib" in the context menu of an image in the Navigator.

The image is now shown in the Digilib Editor. When the Digilib Editor is open, several buttons to modify the image will be shown in the toolbar.

For more advanced editing options, you will need to open the Properties View. You can either open it indirectly by starting the XML Editor in the background or select "Tools > Show View > Other… >" in the menu bar. As soon as the "Show View" dialog box opens, a row of folders will be displayed. Open the first folder named "General" and choose "Properties".

Click on the image in the Digilib Editor and the properties for editing will open. Now your workbench is complete.
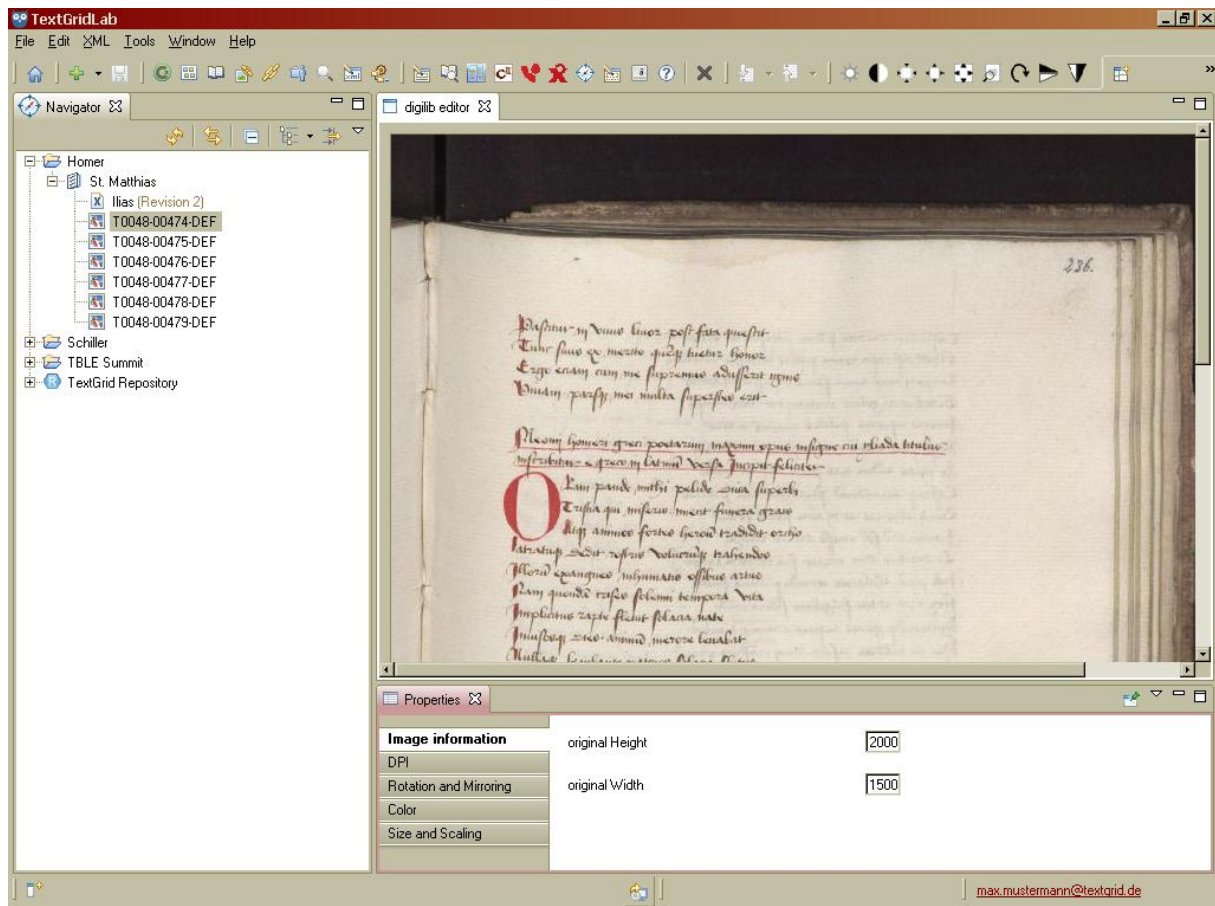
### 4.4.3 Components of Digilib

Digilib consists of the Scaler service and the Digilib Client.

**The Digilib Scaler Service**

The Digilib Scaler service is a webservice running on a TextGrid server that receives commands from the Digilib Client in the TextGridLab and communicates with the TextGrid Repository. The Digilib Client tells the service which image to display and which image operations to perform and the Digilib Scaler service returns the requested image.

**The Digilib TextGrid Client**

The Digilib TextGrid Client is a plugin module for the TextGridLab that lets the user display, modify, and annotate images. The Client communicates with the Digilib Scaler service.

### 4.4.4 Digilib Editor View

The Digilib Editor View shows the image in the size and resolution of your screen. When the Editor is open, you will also see additional Digilib Toolbar buttons in the Toolbar on top of the window

With the Toolbar buttons you can zoom in to inspect the image up to the highest resolution offered by the server or rotate or mirror the image or change its brightness or contrast.

On the toolbar of the TextGridLab GUI, a row of icons or buttons will be displayed as soon as the Digilib Editor is open.

- ScaleUp/ScaleDown: The image can be scaled down or up, meaning that the overall size can be reduced with ⬦ or enlarged with ⬦ .
- ZoomArea: after clicking the button ⬚ you can zoom into an area on the image by first clicking on the upper left corner of the area and then the lower right corner. After the first click, a red rectangle will appear and indicate the currently selected area. After the second click, the image will be replaced with a zoomed view of the selected area.
- ZoomFull: The button ⬚ zooms out and shows the whole image.
- Rotate: The button ↻ opens a slider control to rotate the image.
- Mirror Vertical: The button ▷ mirrors the image vertically (top-down)
- Mirror Horizontal: The button ▽ mirrors the image horizontally (left-right).
- Contrast: The button ◖ opens a slider to change the contrast of the image.
- Brightness: The button ☼ opens a slider to change the brightness of the image.

These buttons present the most important functionalities that can also be operated by the advanced controls in the Properties View.

The current state of the image in the editor can be saved as a Digilib Editor View Object in the TextGrid Repository and recalled at any later time.

### 4.4.5 Digilib Properties View

The Digilib Properties View offers a range of advanced facilities to work with an image.

- The "Image Information" property shows data items including the original height and width values of the image on the server. These values can not be changed.

- The "DPI" property provides the resolution settings of the client display. These properties are used for the original-size scaling feature only (put "osize" in mode flags under "Rotation and Mirroring". The default display resolution setting is -1. The values can be changed. Click the button "redraw" to set the changes in the Image Editor.

- "Rotation and Mirroring" is the next column. The flags for the mode of operation can be changed here. The default setting is "fit", which means that the image is scaled to fit the screen. Another value is "clip" which does not scale the image but only shows a cropped portion. The rotation angle of the image can also be set manually. Click the button "redraw" to see the changes in the Image Editor. The image is rotated clockwise by the respective angle in degrees.

- "Color" enables the user to change the colors, the brightness, and the contrast of the image. There are two ways to modify the color. Different numeric values in the three coordinates lead to changes in color intensity and color shade:
  - by addition (RGB): This property works like the brightness slider for each color channel and adds a value to each pixel color. The three coordinates stand for

the primary colors red, green and blue. The values can range from -255 to 255 (and larger if multiplication is used).

- by multiplication (RGB): This property works like the contrast slider for each color channel and multiplies the value of each pixel color. Here the user can vary the saturation level of the primary colors red, green, and blue in the image by modifying the coordinate numbers. The values can range from -8 to 8.

- The value of overall brightness can be modified by a numeric value also. This value is added to all pixel color values. Positive values will make the image lighter, and negative values darker. The values can range from -255 to 255 (and larger if contrast is used).

- The overall contrast can also be changed. This value is multiplied with all pixel color values. Positive values enhance the contrast, and negative values reduce the contrast. The values can range from -8 to 8. When you increase the contrast in this setting you must compensate for the increased overall pixel values by negative brightness values. The contrast slider in the Toolbar does this automatically.

- "Size and Scaling" offers several opportunities to change the zoom area (relative height, width and offset) and overall size of the image (destination height and width):
  - relative height of the zoom area as a fraction of image height. Value 0-1.
  - destination width of the image in pixels
  - additional scaling factor for the destination size which allows the user to enlarge the whole image
  - relative y offset of the zoom area as a fraction of image height. Value 0-1.
  - relative x offset of the zoom area as a fraction of image width. Value 0-1.
  - destination height of the image in pixels

The context menu is disabled in the Properties View. Click on the respective symbol on the toolbar to pin the selected Property View to the current selection. The downward triangle on the right offers the possibility to open a new Properties View or likewise to pin the Property View to the current selection.

### 4.4.6 Interaction of Digilib with Other Components

Digilib can be used to edit and save pictures before linking them to XML documents in the Text Image Link Editor.

# 5 Conclusion

This manual covers the basic information and support for working with TextGrid. Since TextGrid is designed to support continuous expansion and further development, guides and information about additional tools and services will be added as they are developed and integrated into the TextGridLab and Rep. Please contact us at [info@textgrid.de](mailto:info@textgrid.de) if you would like to provide comments, suggestions, or feedback about this manual or about TextGrid in general.

TextGrid is an open source project developed to suit the needs of humanities scholars working with text-based research. Since the priorities of TextGrid are to support collaborative digital research methods and to encourage reliable and secure data curation practices both now as well as into the future, our user community is essential in determining the future of TextGrid. We encourage you to participate in contributing to TextGrid. Our primary user groups consist of the following three categories:

- If you are a member of a research project, we are interested in working with research projects to develop additional applications that fit their requirements. Please contact us if you are interested in exploring the options available for your project.
- If you are a developer and have developed an application that you think would be suitable for use in TextGrid, please let us know. TextGrid strongly encourages the integration of external tools and services, and we will be happy to discuss the technical requirements and possibilities with you.
- If you are a content provider, such as an archive or research institution, and you are interested in making your content available in TextGrid, please contact us in order to explore the ways in which we can work together to enable access to your data through TextGrid.

Welcome to TextGrid!