

# UNL EXPLORER

Version1.0  
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UNL Center / UNDL Foundation

## 1. INTRODUCTION

The UNL Explorer is a UNL-based application allowing users or developers to view or to develop the UNL database such as the UNL Encyclopedia.

UNL database stores information in UNL, and the keys to the information in UNL database are UWs (Universal Words). UWs are stored in the UW dictionary, and every UW used in UNL expressions of information is also a key to further information.

Based on the UNL database, the UNL Explorer allows users to search for information using UWs or words of natural languages. The UNL Explorer will show the results in UNL or a desired natural language by accessing the UNL System. Deconverters of the UNL System deconvert the UNL expressions of information into the desired natural languages.

The UNL Explorer also provides functions for developers to add or modify information to the UNL database in their native languages. In this case, the UNL Editor is necessary for generating UNL expressions of information from natural languages. The details of the UNL Editor are explained in Related Documents [2]. This document explains how to use the UNL Editor and how the results are included or linked in the UNL database.

The architecture of the UNL database allows its development to be carried out by a wide range of developers from different languages and cultures. Such a database can provide a wealth of up-to-date information on various aspects of information and knowledge from all over the world.

## 2. Structure of the UNL Database

The UNL database consists of two parts: the UNL KB and the contents of information in UNL documents.

The UNL documents are documents written in UNL. In the UNL database, UNL documents describe information with respect to UWs. One UNL document is stored in one file to be located

in either a local computer or a central place. Each UNL document is linked to its corresponding UW by the relation ‘cnt’.

The UN LKB contains the UW System and possible relations between UWs. The UW System is a hierarchy of UWs built on property inheritance and replacement capabilities between UWs. As UWs of the UW System are entries to information, information can be navigated through the UW System, and users are also able to know the position of each concept of a UW in the conceptual hierarchy at the same time.

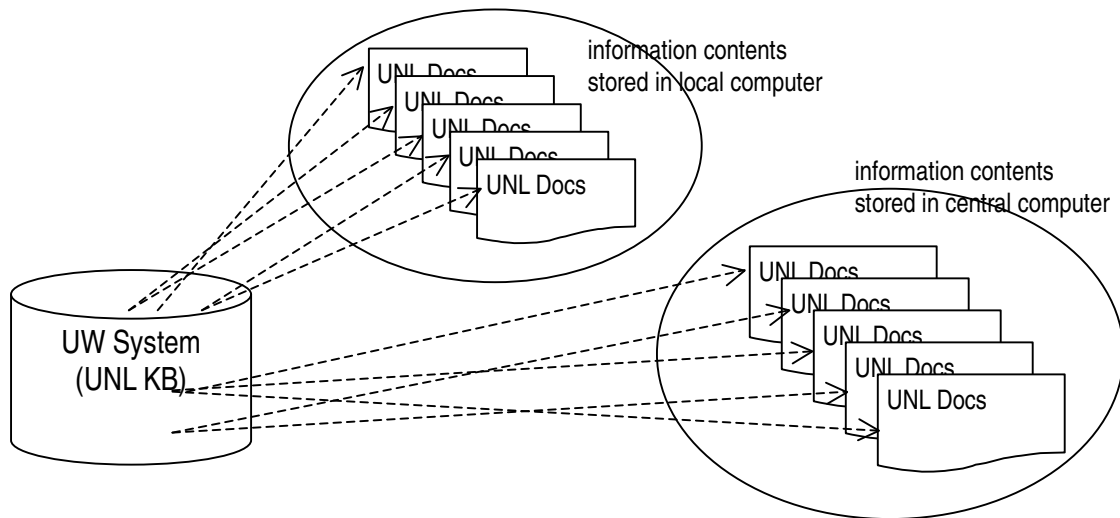


Figure 1. Structure of the UNL database  
Dotted arrows show the links between UWs and their information contents

### 3. Structure of the UNL Explorer

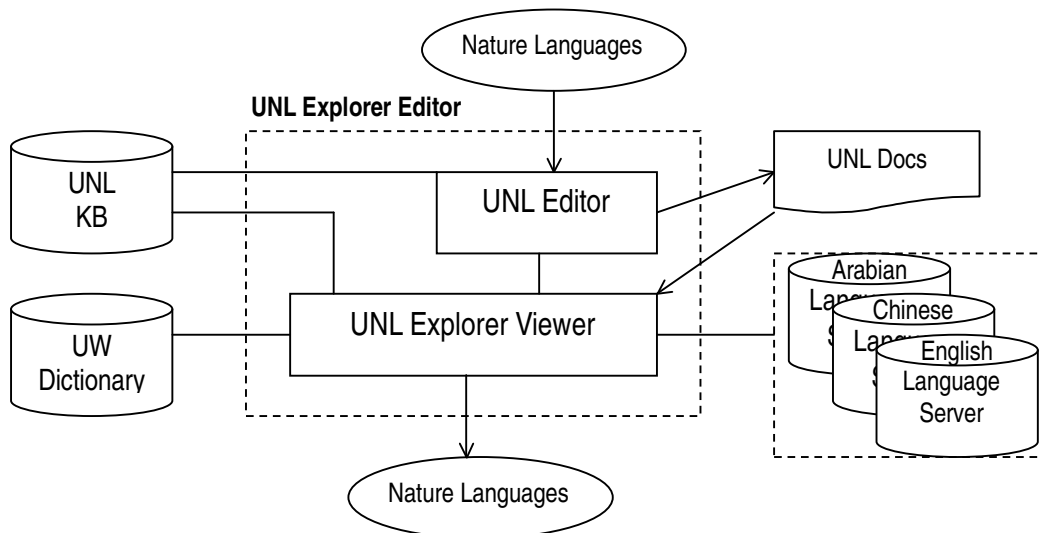


Figure 2. Structure of the UNL Explorer (Editor)  
Arrows show data flow, lines show access

There are two types of UNL Explorer: the UNL Explorer Editor and the UNL Explorer Viewer.

As shown in figure 2, the UNL Explorer Editor is different from the Viewer because it also includes the UNL Editor. The UNL Explorer Viewer is for users to view information stored in the UNL database. The UNL Explorer Editor has an additional function for allowing developers to register new information and generate UNL expressions (UNL Documents).

The role of each component of the UNL Explorer is the following:

### **The UNL KB**

The UN LKB contains the UW System and possible semantic relations between UWs.

In the UNL Explorer Viewer, the hierarchy of the UW System is shown in the left window navigating the information stored in the UNL database for users.

In the UNL Editor, the definitions of semantic relations between UWs are used for verifying UNL expressions of information contents.

### **The UW Dictionary**

The UW dictionary contains all the UWs linked to the corresponding words of natural languages. These natural language words are used for showing the UW hierarchy in a natural language when that language is selected.

### **UNL Documents**

UNL documents are documents with contents of information in UNL. These UNL documents are made by using the UNL Editor, and each of them is stored in a file and linked with its corresponding UW.

In the UNL Explorer Viewer, these UNL documents will be deconverted into a selected target natural language and shown in the info window (see Chapter 5) when the focus is placed on their corresponding UWs.

### **Language Servers**

UNL Language Servers are located in the Internet. When the deconversion of a language is requested, the UNL Explorer Viewer will access the language server for deconverting the UNL document into the selected language. However, a local deconverter of a language can also be used instead if such a deconverter is available in the local computer system.

### **The UNL Explorer Viewer**

The UNL Explorer Viewer shows the UW hierarchy and the contents of information of a focused UW in a selected language, including UNL. If a natural language is selected, the UNL Explorer Viewer will access the language server or a local deconverter of the selected language and show the results.

## The UNL Explorer Editor

In addition to the function of the Viewer, the UNL Explorer Editor also allows developers to register new information on a UW. New information can be provided in a natural language and then converted into UNL expressions using the UNL Editor. The developer can start the UNL Editor whenever he or she wants to register new information. The UNL Explorer Editor will store the results of edition as the UNL document of the new information in the UNL database.

## The UNL Editor

The UNL Editor is used to generate UNL documents. The details of the UNL Editor are explained in “UNL Editor, V1.0, 31 March 2004, UNL Center / UNDL Foundation”.

## 4. Installation

All files and directories, as shown in figure 2, must be stored under a directory by the name of “C:¥UNLExplorer”. If a different hard disk drive is used, “C” must be replaced with the name of that drive. In this case, “C” as in “C:¥UNLExplorer” indicated in all path names in “UNLExpE.ini” and “UNLExpV.ini” files must be also replaced with that drive name.



Figure 2. Necessary files and directories under the “X:¥UNLExplorer” directory  
“X” shows the hard disk drive name under which “UNLExplorer” is located.

## 5. Functionalities of the UNL Explorer

The main programme of the UNL Explorer is “UNLEXP.E.exe”. “UNLEXP.V.exe” is a different type that can only be used as a viewer. Figure 3 show the image of the UNL Explorer in its initial state.

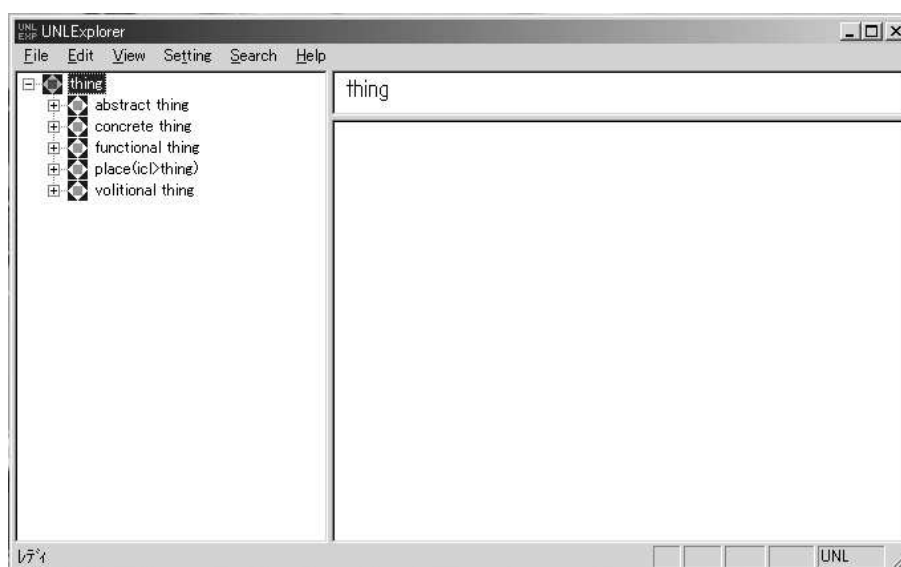


Figure 3. Image of the UNL Explorer in its initial state

The left window shows the UW hierarchy (a lattice structure) in a plain tree form. The right side of the upper window (hereinafter referred to as the “**title window**”) shows the selected UW. And the right side of the lower window (hereinafter referred to as the “**information window**” or “**info window**”) shows the contents of information. All these windows will be shown in a selected language, including UNL. For instance, if the Chinese language is selected, instead of UWs, their corresponding Chinese words will be shown in the left window, a Chinese word corresponding to the selected UW will be shown in the title window, and the contents of information will be shown in Chinese in the info window.

Explanation of the functionalities of the UNL Explorer operation.

### (1) Language Selection

When the UNL Explorer is started for the first time, UNL is selected by default. When UNL is selected, the UW hierarchy is shown in the left window, the selected UW is shown in the title window, and the UNL expressions of the contents of information linked to the selected UW are shown in the info window.

Figure 4 shows the image of the display of the UNL Explorer when a UNL language is selected and when the item ‘Convention on the Means of Prohibiting and Preventing the Illicit Import

Export and Transfer of Ownership of Cultural Property’ under UW ‘archive(ic>document)’ in the left window is selected. UNL expressions of the contents of this document are shown in the info window.

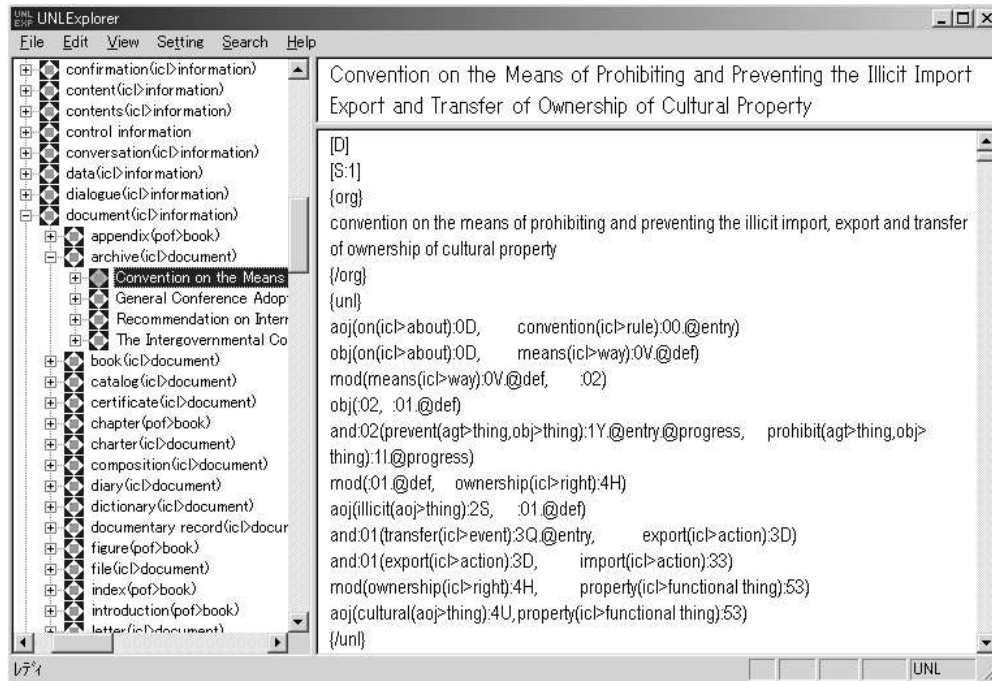


Figure 4. Display image when UNL is selected

A language is selected through the “setting” menu. Figure 5 shows the image on how to select a language, for instance “Japanese” is selected in this case.

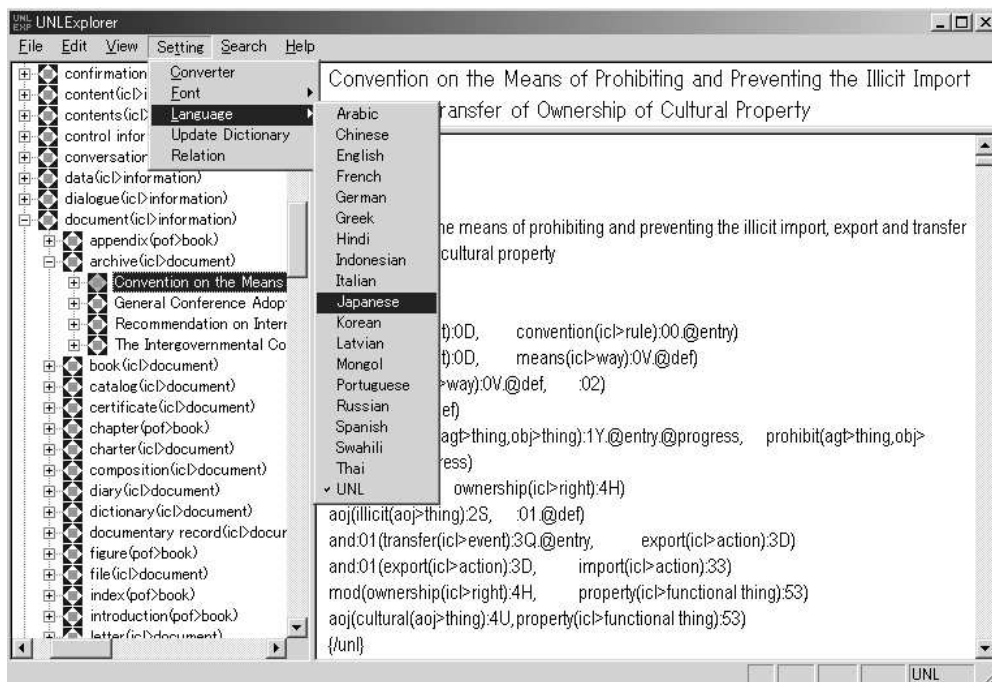


Figure 5. How to select a language

## (2) Deconversion

As soon as a language is selected, the hierarchy in the left window and the title in the title window will be changed to the selected language. And, if a language other than “UNL” is selected, a deconverter of the selected language will start to deconvert the UNL expressions into the selected language.

Deconversion of a language can be done using either a language server located in the Internet or a local deconverter. Users can choose from the deconverter setting window, as shown in figure 6, which can be opened by clicking on the item “Converter” in the “Setting” menu.

Figure 6 shows that a “local” deconverter of Japanese has been selected. In this case, the deconverter programme, dictionary, and deconversion rules that are located in the local computer to be used for the deconversion are shown in the “local setting” field, at the bottom of the window.

If “remote” in the “action” field is selected, the language server located in the address shown in the “remote setting” field will be used for the deconversion.

All information shown in the “remote setting” and “local setting” fields is defined in the initial file of “UNLExpE.ini” or “UNLExpV.ini”, under its language flag tag enclosed by “[“ and “]”. For instance, information for the Japanese deconverter is defined under “[jp]”.

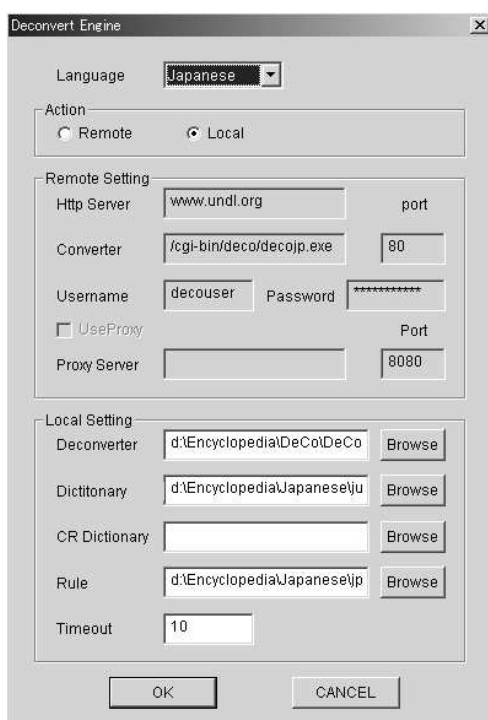


Figure 6. Image of a deconverter setting window

A progress window is shown while a local deconverter is working, as shown in figure 7.

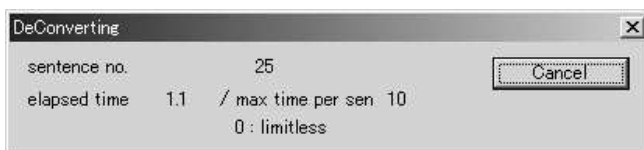


Figure 7. Progress window of a deconverter

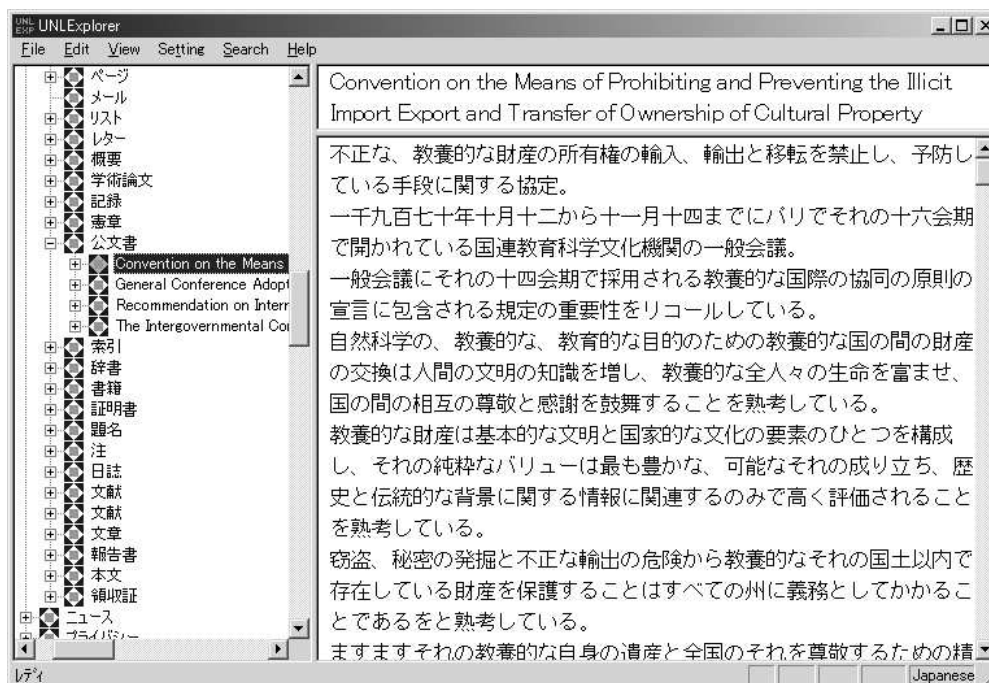


Figure 8. Deconversion results of Japanese

As soon as the deconversion is completed, its results in the selected language are shown instead of in UNL expressions or the previous language. Figure 8 shows the Japanese deconversion results from the UNL expressions of the document ‘Convention on the Means of Prohibiting and Preventing the Illicit Import Export and Transfer of Ownership of Cultural Property’, which were shown in figure 4.

Items in the hierarchy of the left window are sorted according to the character order of the selected language. The hierarchy in figure 8 is shown in Japanese character order. If no corresponding word of a UW exists, its English expression is shown instead.

### (3) Search for Information

In the initial state of the UNL Explorer, as shown in figure 3, the UW hierarchy with ‘thing’ as the topmost UW is shown in the left window. And the contents of information about ‘thing’ are shown in the info window.

To obtain information on a desired concept, users can either find the desired concept following the UW System structure, or use search functions.

## How to utilize the UW System structure

The hierarchy of the UW System is built up by taking into consideration property inheritance and replacement capability among UWs. In such a hierarchy, the higher the UWs, the more general they are. By utilizing such a hierarchy of UWs, similar concepts can be easily found from neighbours in the same group of UWs that come under the same upper UW. And a more general concept can also be easily found for a specific concept, and vice versa.

## How to use search functions

There are two kinds of search functions: “**search name**” and “**search information**”. These search functions are provided in the “search” menu.

“Search name” is for searching a concept in the left window using a UW or a corresponding headword of any natural language as a key. If the desired concept is found, the UW or the corresponding headword is shown and highlighted in the left window, and the contents of information about the desired concept are shown in the info window in the selected language.

“Search information” is for searching any information included in the texts in the info window.

## (4) Registration of Information

Registration of information is done by using the UNL Editor. Because of the architecture of the UNL database used in the UNL Explorer, every developer can register a different content of information on the same concept.

The procedure to register the contents of information on a concept is the following:

- o Find the UW or word of the target concept in the left window,
- o Click on it to bring it into focus, and
- o Start the UNL Editor from the menu of “edit”. For details of this operation please refer to the item “edit” of the “edit” menu in the chapter on “5 Menu” below.

## (5) Modification of Information

Modification of information can only be done on the contents registered by the same developer. He or she is not allowed to edit any contents of information registered by another developer.

The procedure to modify the contents of information on a concept is the following:

- o Find the UW or word of the target concept in the left window,
- o Click on it to bring it into focus, and

- o Start the UNL Editor from the menu of “edit”. For details of this operation, please refer to the item “edit” of the “edit” menu in the chapter on “5 Menu” below.

## (6) Deletion of Information

Deletion of information can only be done on the contents registered by the same developer. He or she is not allowed to delete any contents of information registered by another developer.

The procedure to delete the contents of information on a concept is the following:

- o Find the UW or word of the target concept in the left window,
- o Click on it to bring it into focus, and
- o Then click on this item

## 6. Menu

### [File]

#### Change Category

Change the top concept in the left window by inserting the UW of the desired concept or a corresponding headword of a native language.

#### Shift Up

Change the top concept shown in the left window to its upper concept.

#### Convert

Deconversion switch for contents of information. When this switch is checked off, the UNL Explorer will start deconverting the contents of information whenever a word or UW is chosen by clicking in the left window or searching. Otherwise the UNL Explorer will not do the deconversion.

#### Exit

Quit the work of the UNL Explorer.

### [Edit]

#### Copy

Copy the selected part of texts.

**Start Edit**

Start editing or generating UNL expressions of the contents of information on the concept of the selected word or UW using the UNL Editor. In the UNL Explorer different developers can create different contents for the same concept. However, editing of UNL expressions can only be done on contents created by the same developer.

For details of the UNL Editor functions, please refer to the “UNL Editor, V1.0, UNL Center/UNDL Foundation, 31 March 2004”.

**End Edit**

Finish the editing or generating of UNL expressions done by the UNL Editor. The results of the UNL Editor will be stored in a file using the user or developer’s name as the title.

**Cancel Edit**

Cancel the editing or generating of UNL expressions done by the UNL Editor.

**Delete Info**

Delete the current contents of information on the concept of the selected word or UW. The deletion only can be done on the contents created by the same developer.

**[View]****Status Bar**

Show the Status Bar at the bottom of the UNL Explorer display when this item is checked off. Otherwise it is hidden.

**[Setting]****Converter**

- o Select to use a remote deconverter of a language server located in the Internet or to use a local deconverter for a target language.
- o When a local deconverter is selected, information on the deconverter programme, dictionary and rules of the target language can be adjusted in the “local setting” fields.
- o When a remote deconverter is selected, information on the language server of the target language can be adjusted in the “remote setting” fields.

## Font

### Tree Font

Change font of characters in the left window.

### Title Font

Change font of characters in the title window.

### Info Font

Change font of characters in the info window.

### All

Change font of characters in all the windows on the left, the title window and the info window.

## Language

Select a language including UNL to display information in the left window, title window and info window. If the current contents (shown or to be shown in the info window) are not yet deconverted into the selected language, the deconverter of the selected language will start to work.

## Update Dictionary

Download the KB and UW dictionaries from the UNL Center.

It opens a dialogue window confirming whether the user wants to download the KB and UW dictionaries or not. The downloading will be started if “OK” is selected. Otherwise this request will be canceled and the operation returns.

As soon as the downloading is completed, the hierarchy of the UW System shown in the left window will be refreshed according to the updated dictionaries.

## Relation

Open a dialogue window for users to select relations to display the hierarchy of the UW System in the left window. The whole hierarchy of the UW System is built up using the set of relations ‘equ’, ‘icl’, ‘iof’ and ‘pof’. The user can choose relations from this set, so that a partial hierarchy of the UW System built up with only the selected relations will be shown in the left window.

In addition to the hierarchy, all possible relations, like ‘agt’, ‘aoj’, ‘gol’ and so on, defined between UWs in the UNL KB dictionary can also be shown together within the hierarchy.

There are two fields in the relation selection window: “invalid relations” and “valid relations”. “Valid relations” shows the set of relations that are used in the hierarchy display in the left window of the UNL Explorer, whereas “invalid relations” shows the set that are not used in the hierarchy display. Users can adjust the set of relations to be used by moving relations from one field to another. If any relation is moved, and when the user clicks the button “OK”, the hierarchy in the left window will be redisplayed according the renewed valid relation set.

### User Name

Register name of the developer or user. Every developer or user of the UNL Explorer needs to register his/her name when using the UNL Explorer. This name will play the following two roles:

- o To be used as the file when a new content for a concept is added by the developer.
- o If there are more than two contents files of information on a concept, this name will ensure that the modification of these contents only can be done on the file with the same name as the developer.

### [Search]

#### Search Name

Search a concept in the left window using a UW or a corresponding headword of any native language as a key. If the desired concept is found, the UW or corresponding headword is shown and highlighted in the left window, and the contents of information about the desired concept are shown in the info window in the selected language.

#### Search Information

Search information included in the texts in the info window.

### [Convert]

#### Deconvert

Deconvert the UNL expressions of contents in focus again. This function is useful when the dictionary, rules or UNL expressions are revised. Because the UNL Explorer keeps the results once they are completed by a deconverter, this function is useful when the results need to be updated.

### [Help]

## About UNL Explorer

Show information on the version and copyright of the UNL Explorer.

## Usage\*

Show usage of the UNL Explorer.

## Related Documents

- [1] UNL Encyclopedia, [www.undl.org/publications/UNLEncyclopedia-e.pdf](http://www.undl.org/publications/UNLEncyclopedia-e.pdf), UNL Center / UNDL Foundation, March 2004
- [2] UNL Editor, [www.undl.org/publications/UNLEditor-e.pdf](http://www.undl.org/publications/UNLEditor-e.pdf), UNL Center / UNDL Foundation, 2004
- [3] UNL System, [www.undl.org/unlsys/](http://www.undl.org/unlsys/), UNL Center / UNDL Foundation

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\* Shows the functions that are under development.