

# STROMA CE

## User's Guide

### Setup

First extract the zip archive containing STROMA. Before you can run STROMA together with the background knowledge repository SemRep, please make sure to download the SemRep resources to disk. You will find the necessary information about SemRep and the download link to the **resource files** on the SemRep website:

<http://dbs.uni-leipzig.de/de/semrep>

After you extracted the resource files, you need to specify this directory in the STROMA properties file. Please open *configuration.properties* in the *prog* directory and set the value *repository-directory* as illustrated in the screenshot. STROMA is then fully set up in its default configuration. It requires about 4 – 8 GB of RAM if it is used together with SemRep (default use). If too little RAM is granted, STROMA may become very slow, especially in the initialization phase when the semantic repository is loaded.

```
#  
# Specifies the mapping language (EN, DE).  
#  
language = EN  
#  
# General program settings:  
#  
undecided-as-equal = true  
stemming = true  
resources-directory = E:/RepositoryData  
#  
# Specifies the weight (impact) for each strategy (value between 0 and 1).  
#  
compound-head-strategy = 1.0  
compound-modifier-strategy = 0.5
```

# Introduction

STROMA is a mapping enrichment tool that obtains a conventional mapping (list of correspondences) as input and returns an enriched mapping with the semantic relation type attached to each correspondence. The following relation types are supported:

- *equal*
- *is-a / inverse is-a*
- *part-of / has-a*
- *related*

The type *related* is a specific relation type being identical to the co-hyponymy relation in linguistics. It is the most unspecific type and STROMA will generally attempt to find a more specific type for a given correspondence.



The basic workflow of STROMA is as follows:

- Import a mapping
- Enrich the mapping
- Export the mapping

As illustrated in the picture, the STROMA user interface is designed in accordance to

this workflow. A user usually imports a mapping, then carries out the enrichment, (possibly) regards the result in a CSV-like format and finally exports the mapping. After this, he closes the enriched mapping, which allows him to load a new mapping.

STROMA is no mapping tool, i.e., the user has to provide an already existing mapping. The tool provides importers for mappings that have been created by COMA 3.0 and an CSV importer for CSV-like mappings.

## Import

STROMA is closely related to the match tool COMA 3.0 CE and for this reason provides easy integration of mappings created with COMA. In general, two import formats are supported:

- COMA mappings using the COMA-specific notation
- Mappings in STROMA notation (a CSV-like format)

### COMA Mappings

COMA-mappings use the form

```
source path <-> target path: confidence
```

They can be obtained in COMA by clicking *View > Matchresult Correspondences*. If you want to use such a mapping as input, copy the mapping in the text area and select 'COMA' respectively. Please make sure that only the correspondences and no other (meta) information of the mapping are included. Otherwise an error message will pop up, though the import might still be successful.

### STROMA Notation

Additional, the following CSV-like format is supported:

```
source path :: target path :: confidence
```

Since commas can be part of a concept name, the separator consists of two colons. The confidence value is optional.

You can also load a sample mapping clicking the 'Sample' button in the input dialog. This example shows you what the CSV format should look like.

# Enrichment

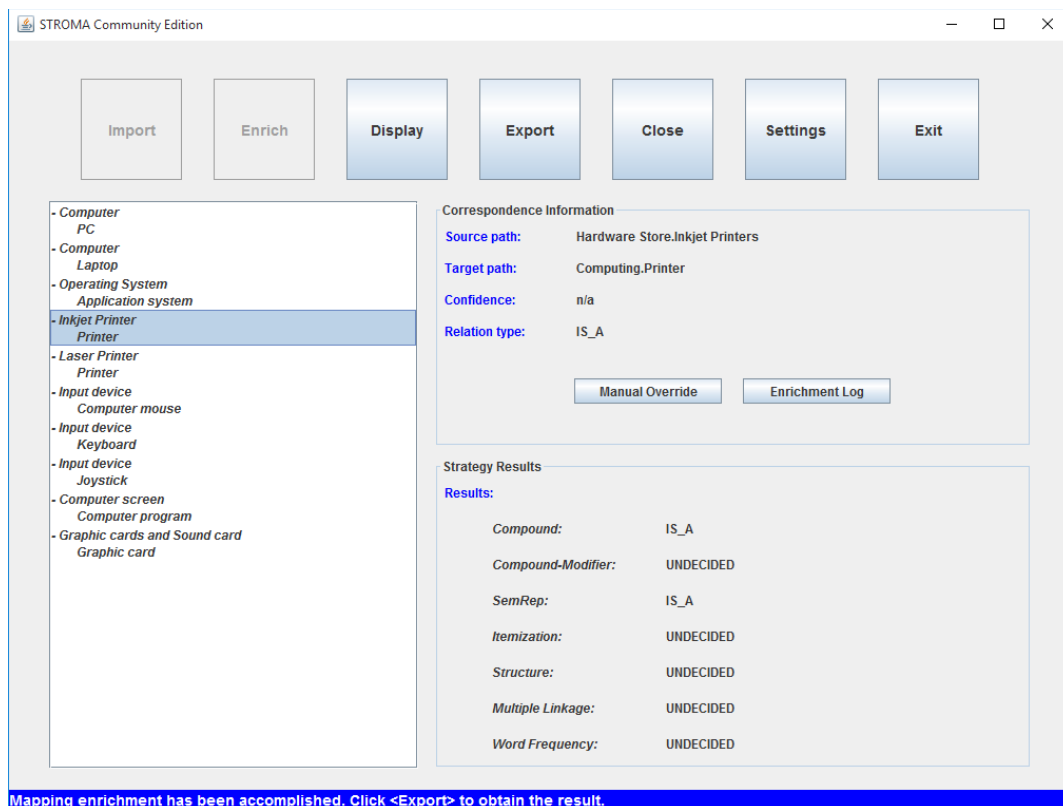
Once the mapping has been imported, click the 'Enrich' button to carry out the enrichment. According to the used configuration and the mapping size, this process should take between a few seconds and a few minutes.

When the enrichment has been accomplished, the correspondences and each relation type are shown in the list on the left. For the sake of a better legibility, only the concept names of the correspondences are shown.

You can click each correspondence in order to show more specific information, i.e., the full path of the source and target concept, the confidence value (if available) and the relation type. For advanced usage you will also see which type each implemented strategy returned.

**Enrichment Log:** For advanced usage, this feature shows you elementary log information generated by each executed strategy. It may help to decide why a specific strategy determined a specific relation type (or why not).

**Manual Override:** This feature allows you to set the relation type manually.



## Display and Export

The *Display* feature is used to provide the user a standardized, textual representation of the mapping for further processing. Its format is very similar to the CSV input format.

The *Export* feature is used to export the enriched mapping in an XML-format to display it in COMA 3.0 BE. This feature is designed for advanced usage and to provide a higher degree of interoperability between COMA and STROMA. Note that STROMA needs the source and target ontology of the mapping to generate this file.

### Exporting the Mapping

In order to export the mapping, you need:

- The *source* and *target ontology* of the mapping, which must be valid OWL-files using the RDF/XML format. They must not contain auto-generated IDs, but their IDs must use the #-label-notation.
- A directory where the mapping file should be saved.

In the export menu, please specify the source and target ontology and a save directory. Then click 'Export'. A message dialog will tell you whether the export was successful or not.

If the export was unsuccessful, there might be at least one of the following reasons:

- Source and target ontology are in an unsupported format which cannot be parsed by the OWL parser.
- Source and target ontology might not be in accordance with the mapping.

**NOTE:** A successfully exported mapping in STROMA is no guarantee that it can be successfully loaded in COMA 3.0 BE. After all, the COMA ontology and mapping parsers are responsible to load and display the enriched mapping.

## Closing the Mapping

In order to load a new mapping, you have to close an already opened mapping. Please make sure that you save the enriched mapping, if necessary, as closing a mapping will delete the enriched mapping for good.

# Settings

STROMA does not possess a full-fledged configuration menu, but allows the user to edit the properties file containing all basic parameters to tailor STROMA to a specific input mapping.

Most important parameters are:

- The language of the mapping (German or English)
- How correspondences of type “undecided” are treated
- What thresholds are to be used for each strategy (this allows, for instance, to promote background knowledge)
- Which background knowledge resources are to be regarded (this allows, for instance, to only use UMLS or WordNet)

The parameters used in the configuration file are most frequently self-explanatory and partly commented. To describe their meaning and effect on mappings would go beyond this guide and will thus be omitted. They are well-described in “Semantic Enrichment of Ontology Mappings” (dissertation), though.

You can click the 'Reset' button in order to load the default settings again. If you save a configuration, the changes will be immediately applied.

## SemRep Configuration

SemRep is a rather independent background knowledge manager that is used for the mapping enrichment. STROMA allows to configure the behavior of SemRep using the additional properties file *semrep.properties* in the *prog* directory. This file can only be edited manually and will be loaded when STROMA is launched. For this reason, STROMA needs to be restarted to make the changes available. Please read the SemRep user's guide in order to obtain advanced information about the meaning of the different parameters.

## Loading an Enriched Mapping in COMA 3.0 BE

An enriched mapping can be imported and displayed in COMA 3.0 BE. To achieve this, an enriched mapping must be first successfully exported using the Export-Function in STROMA. As a result, STROMA produces an XML file 'alignment.xml', which contains the necessary information to display the mapping in COMA 3.0 BE.

Subsequently, launch COMA 3.0 BE and select *Repository > Match Result > Import Enriched Mapping (mapping.xml)*. A dialog will pop up and you have to enter four values:

- (1) The source ontology. \*
- (2) The target ontology. \*
- (3) The mapping file (alignment.xml).
- (4) A unique name for the mapping (as it is stored in the database).

\* Those must be the same files as already specified in the Export dialog in STROMA.

If the import was successful, the mapping should be now available in the mapping list of COMA. Double-click on the mapping to add it to the mapping area. The enriched mapping is now displayed.

**NOTE:** For COMA-related troubles please refer to the manual “COMA 3.0 Community Edition”, as it contains many information how to correctly load ontologies and mappings.

The feature described in this section is only available in the business edition of COMA (BE). You are unable to load such mappings with the free and open source version COMA 3.0 CE (Community Edition).