

# The SCHMITZM Java library

## Overview & Structure

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## II. Distributors & Contact

	Function	Contact
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## III. Structure and availability

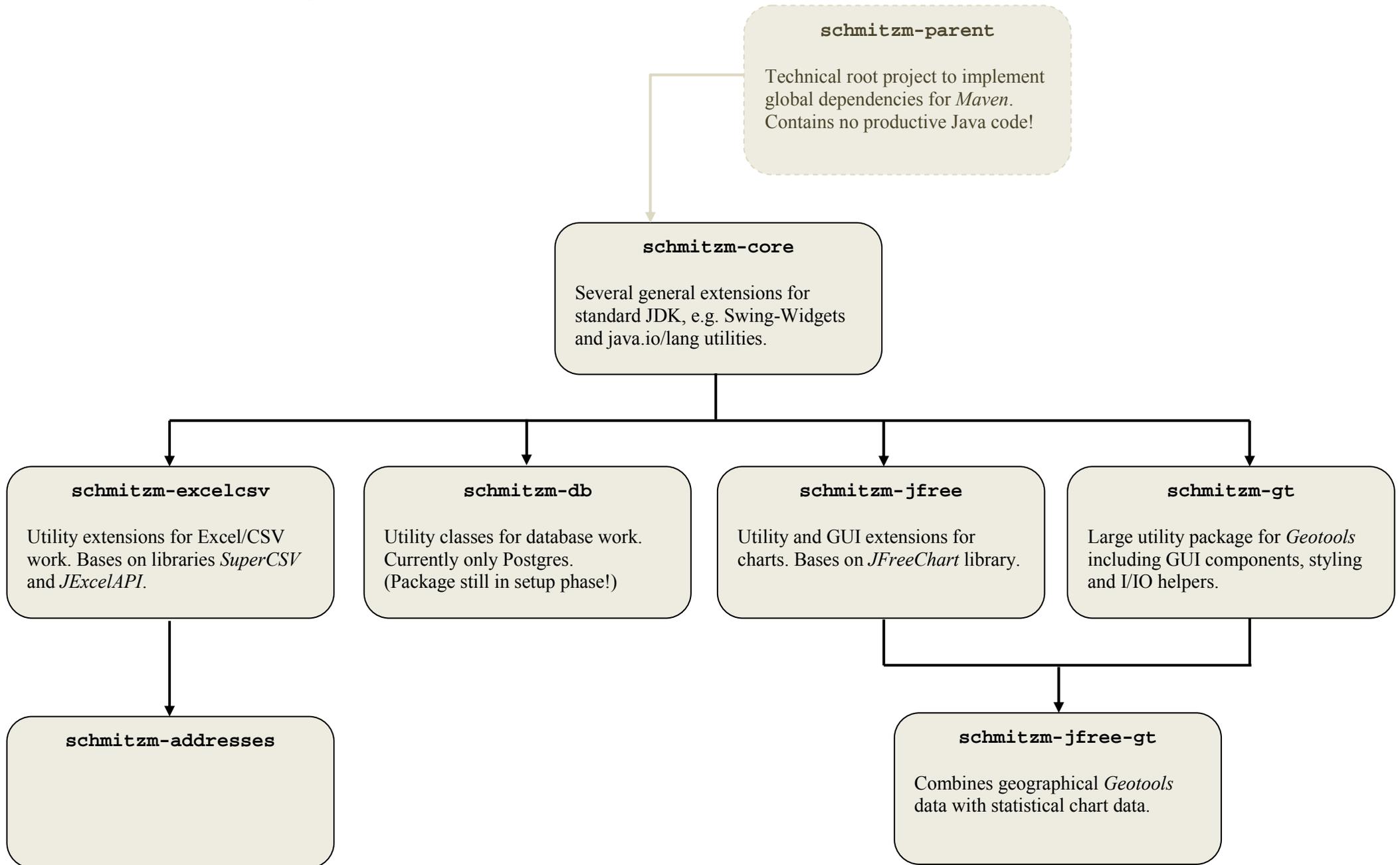
The SCHMITZM Java Library is not stand-alone application, but a collection of useful utility functions and modules, which extend the standard Java JDK as well as several third-party products (especially *Geotools* and *JFreeChart*).

Therefore the SCHMITZM Java Library is divided in several sub-projects (see next page).

The SCHMITZM library is available as SVN repository. For details see  
[http://wald.intevation.org/scm/?group\\_id=47](http://wald.intevation.org/scm/?group_id=47)

For just using the existing libraries the SVN access is anonymous.

If you also want to commit your modifications to the SVN, it is necessary to create an account at <http://wald.intevation.org> and join the project.



## IV. Dependencies to third-party projects

Besides the standard JDK the SCHMITZM Java library bases on several other Java projects and libraries:

Package / Sub-Projects	Additional Dependency / Reference (besides the SCHMITZM hierarchy)
<b>All Project</b> schmitzm-parent	<ul style="list-style-type: none"> <li>JUnit - <a href="http://www.junit.org/">http://www.junit.org/</a></li> <li>Log4J - <a href="http://logging.apache.org/log4j/1.2/">http://logging.apache.org/log4j/1.2/</a></li> </ul>
schmitzm-core	<ul style="list-style-type: none"> <li>JRE/JDK 1.6+ <a href="http://www.oracle.com/technetwork/java">http://www.oracle.com/technetwork/java</a></li> <li>JAI plus ImageIO (if not already included in your JRE/JDK)</li> <li>JavaX-Mail <a href="http://www.oracle.com/technetwork/java/javamail/index.html">http://www.oracle.com/technetwork/java/javamail/index.html</a></li> <li>JNLP <a href="http://www.oracle.com/technetwork/java/javase/javawebstart/index.html">http://www.oracle.com/technetwork/java/javase/javawebstart/index.html</a></li> <li>JINI (jini-ext-2.1.jar)</li> <li>Apache Log4j - <a href="http://logging.apache.org/log4j/">http://logging.apache.org/log4j/</a></li> <li>Apache Commons CLI - <a href="http://commons.apache.org/cli/">http://commons.apache.org/cli/</a></li> <li>Apache Commons IO - <a href="http://commons.apache.org/io/">http://commons.apache.org/io/</a></li> <li>Apache Commons Lang - <a href="http://commons.apache.org/lang/">http://commons.apache.org/lang/</a></li> <li>Apache Lucene - <a href="http://lucene.apache.org/solr/">http://lucene.apache.org/solr/</a></li> <li>JDom - <a href="http://www.jdom.org/">http://www.jdom.org/</a></li> <li>MigLayout - <a href="http://www.miglayout.com/">http://www.miglayout.com/</a></li> <li>JCalendar - <a href="http://www.toedter.com/en/jcalendar/">http://www.toedter.com/en/jcalendar/</a></li> </ul>
schmitzm-excelcsv	<ul style="list-style-type: none"> <li>JExcelApi - <a href="http://jexcelapi.sourceforge.net/">http://jexcelapi.sourceforge.net/</a></li> <li>SuperCSV - <a href="http://supercsv.sourceforge.net/">http://supercsv.sourceforge.net/</a></li> </ul>
schmitzm-db	<ul style="list-style-type: none"> <li>PostgreSQL - <a href="http://jdbc.postgresql.org/">http://jdbc.postgresql.org/</a></li> </ul>
schmitzm-jfree	<ul style="list-style-type: none"> <li>JFreeChart - <a href="http://www.jfree.org/jfreechart/">http://www.jfree.org/jfreechart/</a></li> </ul>
schmitzm-gt	<ul style="list-style-type: none"> <li>Geotools 2.7.5 - <a href="http://www.geotools.org">http://www.geotools.org</a></li> <li>Colt - <a href="http://acs.lbl.gov/~hoschek/colt/">http://acs.lbl.gov/~hoschek/colt/</a></li> </ul> <p><u>Note:</u> Because gt2-2.7.x already includes <code>jai_codec-1.1.3.jar</code> and <code>jai_imageio-1.1.jar</code> it is recommended only to include from the following JARs from JAI:</p> <ul style="list-style-type: none"> <li><code>clipwrapper_jiio.jar</code></li> <li><code>jai_core.jar</code></li> <li><code>mliwrapper_jai.jar</code></li> </ul>
schmitzm-jfree-gt	<ul style="list-style-type: none"> <li>no additional dependencies, except these from <code>schmitzm-jfree</code>, <code>schmitzm-gt</code> and <code>schmitzm-core</code></li> </ul>
schmitzm-addresses	<ul style="list-style-type: none"> <li>no additional dependencies, except these from <code>schmitzm-core</code> and <code>schmitzm-excelcsv</code></li> </ul>

The SCHMITZM Java library supports MAVEN<sup>1</sup>, so that you can checkout and build the complete trunk from SVN repository. The dependencies are automatically downloaded to the local MAVEN repository as needed.

If you decide not to use MAVEN it is recommended not to checkout the complete trunk, but only the sub-projects of interest (from individual sub-folder) to avoid unnecessary dependencies and third-party library overhead!

<sup>1</sup> see <http://maven.apache.org/>

## V. Sub-project details

The following sections describe the features of the several SCHMITZM sub-projects.

### 1. schmitzm-core

This package contains many many general extensions and utility/helper functions for the standard JDK. In the following some highlight features:

- **ResourceProvider**  
Internationalisation by extended and simplified access to standard ResourceBundles. Avoid MissingResourceException, extend/override standard bundles (partly) with your own translation. Handle wildcards in translation strings.
- Several special **InputStreams** in `de.schmitzm.io`
- **XMLUtil**  
Many utility methods to interpret simple JDom Documents easier.
- **SequentialOrderedMap**  
Map which is ordered according to the sequence the elements were put in map.
- **de.schmitzm.data.Unit**  
Handle several distance, speed, time or temperature units with unit conversion (e.g. meter to yard or m/s to km/h, day to seconds).
- **ApplicationProps**  
Generic handling of application settings with automatic numeric or list conversion. Possibility to store values encrypted.
- Several Swing Widgets
  - **JPanel**  
acts like standard JPanel but propagates `setEnabled()`, `setEditable()` and `setBackground()` to all components
  - **ResourceProviderManagerFrame**  
Frame to show all ResourceBundles used in an application.
  - **MultipleOptionPane**  
Create question dialogs with multiple input fields simply by specifying some InputOptions (e.g. SelectionInputOption, ManualInputOption, BooleanInputOption, ...). Answer values are returned in an array.
  - **ButtonGroup**  
Acts like a standard ButtonGroup, but allows to reset set group so set no button is selected.
  - **LoggerFrame**  
Frame to activate/deactivate all Logger used in an application
  - **de.schmitzm.swing.table.\***  
Several reusable TableCellRenderer and TableCellEditors
  - **SelectableTable, SelectableTableModel**  
Extend the standard JTable/TableModel with a checkbox column to select rows individually (without using Strg-Key). Furthermore an alternating column color can be set, to make tables with many columns look clearer.
  - **SortableTable**  
Extends the standard JTable with automatic/generic column sort functionality.
  - **ExceptionDialog**  
Show an Exception in a compressed way with the option also to view the stack trace, copy stack trace to clipboard or mail the exception to an (statically defined) administrator.

- **MailAddressTextField, MailAddressPanel**  
Text-Field which automatically highlights the input if it does not define a valid mail address. The panel automatically provides a button to create an email to the address in the local standard email application.
- **URLAddressPanel**  
Text-Field to specify an URL which automatically provides a button to open the URL in the standard web browser.
- **WebFilesChooser, WebAndLocalFilesChooser**  
A FileChooser which allows navigating web directories.
- **YearLessDateChooser**  
DateChooser to only specify month and day.
- **OkCancelDialog**  
Reusable Super-Class for many Dialogs/Frames, which already implements the main GUI panel with the button handling.

You should take a look at the JavaDoc for individual details.

## 2. schmitzm-excelcsv

This package includes several utilities for the work with Excel and CSV files.

Besides utility functions in

- `de.schmitzm.csv.CsvUtil`
- `de.schmitzm.jxl.export.ExportUtil`

for import and export (simplify and support the work with the standard methods of JExcelApi and SuperCSV) the package `de.schmitzm.csv.gui` includes some nice swing components for a CSV-Preview-Panel (and dialog):

- `CSVPreviewPanel, CSVPreviewDialog`
- `CSVColumnAllocationPanel, CSVColumnAllocationDialog`

## 3. schmitzm-db

This package is still under development. Currently it contains some helper classes for the work with Postgres-Database.

See the individual JavaDoc for details.

## 4. schmitzm-gt

This sub-project contains several extensions for the *Geotools* library, which supports the maintenance and visualization of geographical data (raster and vector data, postgis).

In SCHMITZM we developed

- **StyledLayerInterface** (and several implementations)  
extended data type classes (raster, vector) with additional meta data for styling, labeling and internationalization (
- **RasterCalculator, RasterOperationTree**  
calculate user-defined mathematical operations (given by formula string) on each raster cell
- several GUI widgets, especially...
  - **XMapPane, SelectableXMapPane**  
Enhancement / Alternative to standard Geotools JMapPane to especially

- optimize rendering, define default/maximum extent, define tools for single mouse and window mouse selection (zoom, select).
- **MapActionControlPane**  
Panel to maintain the active mouse action tool for XMapPane
- **MapContextControlPane**  
List panel to control map layers (order, visibility, ...)
- **GridPanel, ScalePanel, RasterPositionLabel**  
Utility panel to show horizontal/vertical map grid, current map scale and current mouse position on map
- **GeoMapPane, LayeredMapPane**  
Combines XMapPane, hor./vert. GridPane, ScalePanel and RasterPositionLabel (+ MapContextControlPane)
- **FeatureFilterPanel**  
Feature filtering options with preview (by user-defined rules, specified by free formula string)
- **JMapPaneEditorPane**  
Panel to define simple Features from scratch (geometry and additional attributes)
- **StyledFeatureLayerSelectionModel, TableSelectionSynchronizer, StyledLayerSelectionModelSynchronizer**  
Keep user selection synchronized between a JTable/FeatureCollectionTableModel and a SelectableXMapPane.
- **GeoImportUtil, GeoExportUtil**  
Utility methods for import and export of several geographical data types.
- **GTUtil, JTSUtil**  
Several utility methods for coordinate reference conversion and Geotools/JTS conversion.
- **FeatureUtil**  
Several utility methods for Geotools (Simple)Features (e.g. feature type creation/extension, create default attribute values, FeatureCollection join, FeatureCollection sort)
- **FeatureOperationTreeParser, CQLFilterParser**  
Parser to create Feature filter from rule string.
- **FeatureTableModel, FeatureTypeTableModel**  
TableModel to show features or the attributes types in a JTable.

## 5. schmitzm-jfree

This sub-project contains several extensions for the *JFreeChart* library, which supports the maintenance, visualization and styling of chart data.

For the ChartStyle-XML-Schema there is a documentation in the /doc sub-directory.

In SCHMITZM we developed

- **JFreeChartUtil**  
several utilities to simplify the unique use of different types of plots and renderers (which do not implement a unique interface in *JFreeChart*).
- **ChartStyle** (and several implementations), **ChartStyleXMLFactory**  
Maintain several chart styling options in an separated object with the option to apply to multiple charts and to import/export XML format.
- **SelectableChartPanel**  
Extends the standard ChartPanel with the possibility to disable the zoom functionality and instead select (and highlight) data points in chart by mouse selection.
- **de.schmitzm.jfree.chart.selection.\***  
**de.schmitzm.jfree.chart.renderer.\***  
Several utility classes to implement selection maintenance and highlight rendering. The selection is connected to the individual rendering class. Because there is no consistent interface for the renderers in *JFreeChart*, there are new interfaces in SCHMITZM to maintain the selection and selection style:
  - DatasetSelectionModelProvider
  - SelectionRenderer
- **TableChartStyle**  
Abstract extension for chart styles defined on some kind of table data (preparation for the use of *Geotools* Features):
  - Define NoData values.
  - Define which attributes are connected to the axis.
  - Automatically evaluate arithmetical functions on table columns (attributes) to generate chart data<sup>2</sup>.
- **RegressionDataset**  
Special dataset for a regression line.

## 6. schmitzm-jfree-gt

This sub-project combined the chart functionalities of *JFreeChart* with geographical data of *Geotools*.

- **FeatureChartPanel**  
Chart panel which uses a special SelectionRenderer to map chart data points to *Geotools* features.
- **Feature2DatasetMapping** (and several implementations)  
Implements the mapping between Dataset entries and Features.
- **FeatureDataMetaData**  
Because Dataset does not provide a “user object” to hold the

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<sup>2</sup> group column values by value of other attribute

`Feature2DatasetMapping` we use the currently unused `DatasetMetaDataGroup` (of standard *JFreeChart* dataset interface) to hold the mapping in a dataset.

- **FeatureChartStyle** (and several implementations),  
**FeatureChartStyleXMLFactory**  
Implementation of `TableChartStyle` especially for *Geotools* `FeatureCollections` (as table).
- **FeatureChartUtil**  
Utility functions for `FeatureCollection` charts, especially to create several datasets from `FeatureCollection`.
- **ChartSelectionSynchronizer**  
Connects the selection of a chart panel with a `StyledFeatureLayerSelectionModel` to keep the selection automatically synchronized e.g. with a map and/or feature table.

## 7. schmitzm-addresses

Please contact Mr. Stefan Tzeggai ([tzeggai@wikisquare.de](mailto:tzeggai@wikisquare.de)) for details about this package.