



deegree coordinateCalculator v.2.5

lat/lon GmbH

Aennchenstr. 19
53177 Bonn
Germany
Tel ++49 - 228 - 184 96-0
Fax ++49 - 228 - 184 96-29
info@lat-lon.de
www.lat-lon.de

Dept. of Geography
Bonn University
Meckenheimer Allee 166
53115 Bonn

Tel. ++49 228 732098

Change log

Date	Description	Author
2010-02-16	Create new documentation	Judit Mays
2010-04-13	Support of Excel files and WPS for transformation	Lyn Büsching

Table of Contents

1 Introduction.....	4
2 Download / Installation.....	5
2.1 Prerequisites.....	5
2.2 deegree coordinateCalculator release.....	5
3 Architecture.....	6
3.1 Single Mode.....	6
3.2 Batch Mode.....	7
4 Main Configuration File.....	10
4.1 Configuration of Transformations and used reference systems .	10
4.1.1 Element <dcc:wpsConfiguration>	10
4.1.2 Element <dcc:ReferenceSystems>	10
4.2 Multipart form fields.....	11
4.3 Element <dcc:FileUpload>	12
4.3.1 Element <dcc:TempDirectory>	12
4.3.2 Element <dcc:ResultPage>	12
4.3.3 Element <dcc:ErrorPage>	12
4.3.4 Element <dcc:SheetSelectPage>	13
4.4 Element <dcc:BatchTransform>.....	13
4.4.1 Element <dcc:timeout>	13
4.4.2 Element <dcc:messageTemplate>	13
4.4.3 Element <dcc:tranformationResult>.....	14
4.4.4 Element <dcc:tempDir>.....	14
4.5 Element <dcc:Formatter>.....	15
4.5.1 Element <dcc:decimalSeparator>	15
4.5.2 Element <dcc:decimalFormat>	16

4.5.3 Element <dcc:outputDir>	16
4.5.4 Element <dcc:accessPath>	16
4.5.5 Element <dcc:format>	16
4.5.6 Element <dcc:KMLTemplate>	17
4.5.7 Element <dcc:ErrorLogTemplate>	18
4.6 KML specific parameters.....	18
4.7 E-mail validation.....	18
4.8 E-mail transmission.....	18
Appendix A Example Configuration File.....	20

Index of Tables

Table 1: input/output file formats for coordinateCalculator (batch mode).....	7
---	---

Illustration Index

Figure 1: coordinateCalculator – singleMode.....	6
Figure 2: coordinateCalculator – batchMode: select coordinate columns.....	7
Figure 3: target format KML.....	8
Figure 4: Provide email address for transformation result.....	8

1 Introduction

deegree is a Java Framework offering the main building blocks for Spatial Data Infrastructures (SDIs). Its entire architecture is developed using standards of the Open Geospatial Consortium (OGC) and ISO Technical Committee 211 – Geographic information / Geoinformatics (ISO/TC 211). deegree encompasses OGC Web Services as well as clients. deegree is Free Software protected by the GNU Lesser General Public License (GNU LGPL) and is accessible at <http://www.deegree.org>.

deegree2 is the new release of deegree supporting a number of features deegree1 was not able to handle. This documentation describes setup and configuration of deegree coordinateCalculator, a client implementation for OGC's Web Coordinate Transformation Service (WCTS) Draft Implementation Specification.

Besides coordinateCalculator, deegree comprises a number of additional services and clients. A complete list of deegree components can be found at:

<http://www.lat-lon.de> → Products

Downloads of packaged deegree components can be found at:

<http://www.deegree.org> → Download

2 Download / Installation

2.1 Prerequisites

For deegree2 coordinateCalculator to run you need:

- Java (JRE or JDK) version 1.5.x
- Tomcat 5.5.x

For installation of these components refer to the corresponding documentation at java.sun.com and tomcat.apache.org.

2.2 deegree coordinateCalculator release

deegree coordinateCalculator is not offered as a packaged download yet. You may download the sources from SVN and build the project using ant:

```
http://wald.intevation.org/plugins/scmsvn/viewcvs.php/apps/coordinate-calculator/?rev=22487&root=deegree#dirlist
```

An online demo is available at <http://demo.deegree.org>

3 Architecture

degree coordinateCalculator is a web based client software for converting spatial coordinates from a source coordinate reference system to a different target coordinate reference system.

The coordinateCalculator is realised as Java web application based on Java Servlets and Java Server Pages and covers two different use cases:

- Transformation of single pairs of coordinates from one to another coordinate reference system (single mode, chapter 3.1)
- Transformation of a bunch of coordinates in a given file from one to the other coordinate reference system (batch mode, chapter 3.2)

3.1 Single Mode

In single mode the user may enter a pair of coordinates to a web form, select the source coordinate reference system. Detailed info on the chosen coordinate reference system (like ellipsoid and datum) will be displayed automatically.

Single Mode

Here you have got the possibility to transform single coordinates.
Please select the coordinate system of your source coordinates (above) as well as the coordinate system for the target coordinates (below).
Then enter the coordinate values to transform and press the button "transform".

x-coordinate (longitude/easting)

y-coordinate (latitude/northing)

source coordinate system
DHDN, decimal degree (EPSG:4314) ▼

ellipsoid
Bessel 1841 (EPSG:7004)

map datum
german primary triangulation net (EPSG:6314)

x-coordinate (longitude/easting)

y-coordinate (latitude/northing)

target coordinate system
DHDN, decimal degree (EPSG:4314) ▼

ellipsoid
Bessel 1841 (EPSG:7004)

map datum
german primary triangulation net (EPSG:6314)

Figure 1: coordinateCalculator – singleMode

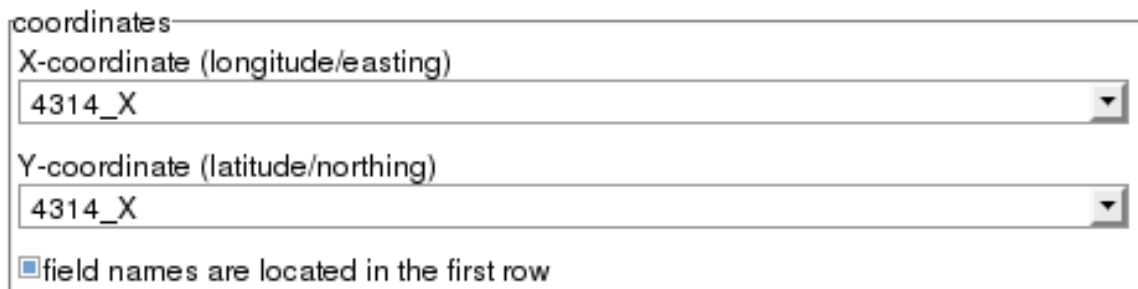
Then the user may select a target coordinate reference system and hit the "transform" button. The target coordinates will be displayed in the form. In case of an error, a red message will inform the user what caused the problem.

3.2 Batch Mode

In batch mode the user may upload a file of the following file format:

- Text, semicolon as separator (*.csv or *.txt)
- Text, tabs as separator (*.tab)
- Microsoft Excel 2003 (*.xls), where just one sheet is selectable

After uploading the file successfully, the user will be asked to indicate the columns containing longitude and latitude of the file. Therefore degree coordinateCalculator provides a drop-down list with possible field names. Additionally the user can indicate whether the field names can be found in the first row of the uploaded file. If an excel file with several sheets is used, the user will be asked to name the relevant sheet before selecting the field names.



coordinates

X-coordinate (longitude/easting)
4314_X

Y-coordinate (latitude/northing)
4314_X

field names are located in the first row

Figure 2: coordinateCalculator – batchMode: select coordinate columns

The selection of the source and target coordinate reference system follows the same procedure as in single mode.

The batch mode basically allows the following target formats:

- text with semicolon as separator (*.csv)
- ESRI shapefile format (*.shp)
- Google Earth KML (*.kml)
- MS Excel 2003 (*.xls)

The selection possibilities of the target format depend on the selected input format:

	output format			
input format	*.csv	*.shp	*.kml	*.xls
*.csv / *.txt	✓	✓	✓	✗
*.tab	✓	✓	✓	✗
*.xls	✗	✓	✓	✓

Table 1: input/output file formats for coordinateCalculator (batch mode)

If the option Google Earth KML (Keyhole Markup Language) has been selected, then there is only WGS 84 decimal degree available as target coordinate reference system. degree coordinateCalculator will automatically select the right coordinate reference system, if KML format is chosen.

Furthermore the following parameters must be defined for KML format:

- title of the document
- name of the node on the map and in the table of contents
- abstract in the table of contents

It is required, that the uploaded file have at least three columns, two data columns with x and y values and one more column indicating the last two parameters, which can be read from the same column.

target format

Google Earth KML

titel of the document

name of the node on the map and in the table of contents

25833_X

short description of the node in the table of contents

25833_Y

You chose KML as output format. For this EPSG:4326 (WGS84) has to be used as target coordinate system.

Figure 3: target format KML

Finally a valid email address has to be provided. A message, which contains a link for downloading the transformed data or, if necessary, an error message will be sent to this address.

Please indicate your email address, to which the confirmation email, which contains the link to the worked on download file, will be send to, here

E-Mail

@

Figure 4: Provide email address for transformation result

Please send us an email (coordinate.calculator_at_degree.org) if you are experiencing problems of any kind.

degree coordinateCalculator is designed for multi-user environments and based on a multi-threading model. Thus even long batch processing will not block new transformation requests.

4 Main Configuration File

The main configuration file for degree coordinateCalculator is `webapps/coordcalc/WEB-INF/classes/configuration.xml`. The different parts of this configuration file will be described in the following sections.

4.1 Configuration of Transformations and used reference systems

The coordinateCalculator supports two kinds of transformations and source of reference systems. On the one hand the degree library can be used directly, in this case the used reference system must be configured in the element `<dcc:ReferenceSystems>`. On the other hand, the transformation can be processed by a special Web Processing Service (WPS), supporting the process with Name "TransformCoordinates". As reference systems all available coordinate reference systems from degree are used.

Which kind of transformation is used, depends on the configuration, if the element `<dcc:wpsConfiguration>` is set, a WPS transformation is triggered. If the element `<dcc:ReferenceSystems>` is configured the direct transformation is used. Only one of the elements should be set!

4.1.1 Element `<dcc:wpsConfiguration>`

The element `<dcc:wpsConfiguration>` contains the url of the WPS used for transformation.

```
<dcc:wpsConfiguration>http://localhost:8081/services/services</dcc:wpsConfiguration>
```

4.1.2 Element `<dcc:ReferenceSystems>`

The element `<dcc:ReferenceSystems>` contains a list of all coordinate reference systems (CRS) that are known to the client. If this element is set, the degree library is used to transform the data.

```
<dcc:ReferenceSystems>
  <dcc:CRS id="CRS_01" code="DHDN, decimal degree (EPSG:4314)"
    datum="german primary triangulation net (EPSG:6314)"
    ellipsoid="Bessel 1841 (EPSG:7004)" />
  <dcc:CRS id="CRS_02" code="DHDN, degree decimal minute (EPSG:4314)"
    datum="german primary triangulation net (EPSG:6314)"
    ellipsoid="Bessel 1841 (EPSG:7004)" />
  <dcc:CRS id="CRS_03" code="DHDN, degree minute second (EPSG:4314)"
    datum="german primary triangulation net (EPSG:6314)"
    ellipsoid="Bessel 1841 (EPSG:7004)" />
  <dcc:CRS id="CRS_04" code="DHDN / Gauss-Kruger zone 2 (EPSG:31466)"
    datum="german primary triangulation net (EPSG:6314)"
    ellipsoid="Bessel 1841 (EPSG:7004)" />
  <dcc:CRS id="CRS_05" code="DHDN / Gauss-Kruger zone 3 (EPSG:31467)"
    datum="german primary triangulation net (EPSG:6314)"
    ellipsoid="Bessel 1841 (EPSG:7004)" />
  <dcc:CRS id="CRS_06" code="DHDN / Gauss-Kruger zone 4 (EPSG:31468)"
    datum="german primary triangulation net (EPSG:6314)"
    ellipsoid="Bessel 1841 (EPSG:7004)" />
```

```

<dcc:CRS id="CRS_07" code="DHDN / Gauss-Kruger zone 5 (EPSG:31469)"
  datum="german primary triangulation net (EPSG:6314)"
  ellipsoid="Bessel 1841 (EPSG:7004)" />
<dcc:CRS id="CRS_08" code="ETRS89 / UTM zone 32N (EPSG:25832)"
  datum="European Terrestrial Reference System 1989 (EPSG:6258)"
  ellipsoid="GRS 1980 (EPSG:7019)" />
<dcc:CRS id="CRS_09" code="ETRS89 / UTM zone 33N (EPSG:25833)"
  datum="European Terrestrial Reference System 1989 (EPSG:6258)"
  ellipsoid="GRS 1980 (EPSG:7019)" />
<dcc:CRS id="CRS_10" code="WGS 84, decimal degree (EPSG:4326)"
  datum="World GeodeticSystem 1984 (EPSG:6326)"
  ellipsoid="WGS 1984 (EPSG:7030)" />
<dcc:CRS id="CRS_11" code="WGS 84, degree decimal minute (EPSG:4326)"
  datum="World GeodeticSystem 1984 (EPSG:6326)"
  ellipsoid="WGS 1984 (EPSG:7030)" />
<dcc:CRS id="CRS_12" code="WGS 84, degree minute second (EPSG:4326)"
  datum="World GeodeticSystem 1984 (EPSG:6326)"
  ellipsoid="WGS 1984 (EPSG:7030)" />
</dcc:ReferenceSystems>

```

Each reference system is characterized with the following information:

- an ID (prefix CRS_ with continuous numbering)
- a code (will be displayed in the web frontend for selecting the right CRS)
- a geographic datum and corresponding ellipsoid (will be displayed in the web frontend when a CRS is selected)
- the official EPSG code in brackets: (EPSG:4326)

There are twelve preconfigured CRS in deegree coordinateCalculator. The list may be extended to contain any of the many CRS references and EPSG codes that are part of the internal deegree configuration for coordinate reference systems.

For the full list of supported CRS in deegree you may check the crs configuration `org.deegree.crs.configuration.deegree.deegree-crs-configuration.xml`. You may also use the shell/batch scripts `SupportedSRS[.sh|.bat]` from the scripts folders or the tool itself (`org.deegree.tools.srs.SRSInfo.java`).

4.2 Multipart form fields

The configuration also contains information for CRS that need more than one input field in the web form (e.g. degree, minute, second).

Currently there are:

- CRS_02 and CRS_03 for DHDN
- CRS_11 and CRS_12 for WGS84

CRS_02 and CRS_11 both need two input fields (`<dcc:DoubleFormFields>`) for degree and decimal minute, while CRS_03 and CRS_12 need three input fields (`<dcc:TripleFormFields>`) for degree, minute, second.

```

<dcc:DoubleFormFields>degree decimal minute</dcc:DoubleFormFields>
<dcc:TripleFormFields>degree minute second</dcc:TripleFormFields>

```

It is important to use exactly the same string as in the element attribute `dcc:CRS@code` (see 4.1.2 for details) to establish a relationship between these elements.

4.3 Element `<dcc:FileUpload>`

The element `<dcc:FileUpload>` defines parameters which are evaluated for uploading files in batch mode.

```
<dcc:FileUpload>
  <dcc:TempDirectory>WEB-INF/upload</dcc:TempDirectory>
  <dcc:ResultPage>modules/batch/batchMode.jsp</dcc:ResultPage>
  <dcc:SheetSelectPage>modules/batch/sheetSelect.jsp</dcc:SheetSelectPage>
  <dcc:ErrorPage>error.jsp</dcc:ErrorPage>
</dcc:FileUpload>
```

4.3.1 Element `<dcc:TempDirectory>`

Files that are uploaded by the user will be stored for further processing. The path to this directory may be provided with relative or absolute path in the element `<dcc:TempDirectory>`. A relative path begins at the root node of the web application.

The uploaded files will not be deleted automatically as these files to make it easier to find out what may have caused errors in the transformation process. It is recommended to delete them on a regular basis for example by using a cron job.

4.3.2 Element `<dcc:ResultPage>`

The user interface for collecting information on the columns to transform as well as source and target CRS is referenced in the element `<dcc:ResultPage>`. The path is given relative to the root node of the web application. By changing the reference, the GUI may be replaced to change layout or user guidance.

4.3.3 Element `<dcc:ErrorPage>`

If uploading a file causes a fundamental error making it impossible to begin the transformation process, the user will be informed accordingly. It is possible to configure which JSP page will present the error message to the user by changing the referenced file in the element `<dcc:ErrorPage>`. This element is optional. If the element is missing, the page `error.jsp` will be used as default.

4.3.4 Element `<dcc:SheetSelectPage>`

The user interface for selecting the sheet of the excel file to transform. The path is given relative to the root node of the web application. By changing the reference, the GUI may be replaced to change layout or user guidance.

4.4 Element <dcc:BatchTransform>

The element <dcc:BatchTransform> contains a group of options that are only needed for the configuration of batch mode transformations. The transformation of files and spread sheet tables is done asynchronously and can handle files of hundreds of thousands of lines and file sizes of several MB easily.

```
<dcc:BatchTransform>
  <dcc:timeout>7200</dcc:timeout>
  <dcc:messageTemplate>
Dear Sir or Madam,

your file $SOURCEFILE$ was processed successfully.

additional information:

startet: $BEGIN$ finished: $END$

$RESULT$

$SUCCESSCOUNT$ from $ALLCOUNT$ data sets were transformed successfully.
  </dcc:messageTemplate>
  <dcc:tranformationResult>org.deegree.coordcalc.batch.FileCachedTransformati
onResult</dcc:tranformationResult>
  <dcc:tempDir>../tmp</dcc:tempDir>
</dcc:BatchTransform>
```

4.4.1 Element <dcc:timeout>

The element <dcc:timeout> restricts the time (in seconds) that a single file transformation process may take. After the amount of seconds set in this element, the processing will be aborted. This element is optional. If it is missing, then a default value of 7200 seconds is assumed.

4.4.2 Element <dcc:messageTemplate>

After successful transformation of a file or spread sheet table the user will be informed by e-mail. The e-mail will be sent with mime type text/plain. The content of the e-mail can be configured in the element <dcc:messageTemplate>. There are six variables available which are automatically filled with input from the transformation process:

- \$SOURCEFILE\$
name of file the user uploaded for transformation
- \$BEGIN\$
beginning of transformation (timestamp)
- \$END\$
end of transformation (timestamp)
- \$RESULT\$
HTTP link to the transformation result

- `$$SUCCESSCOUNT$`
number of successfully transformed rows or coordinate pairs
- `$$ALLCOUNT$`
number of all rows or coordinate pairs to transform.

4.4.3 Element `<dcc:tranformationResult>`

The element `<dcc:tranformationResult>` specifies a Java class that is used for further processing / formatting of the transformation results. The results need to be made accessible for the sever-side of the application. Two possible strategies have been realised so far:

- intermediate storage in main memory of the server
- intermediate storage in a temporary file.

Storage in the main memory of the server has the advantage of significantly better performance, but may cause problems if several large tables/files should be transformed simultaneously.

Storage in a temporary file constitutes the default behaviour, as it is independent of the number and size of simultaneous transformed files and tables. It is, however, significantly slower.

The first strategy is implemented in the following Java class:

```
org.deegree.coordcalc.batch.InMemoryTransformationResult
```

The second strategy is implemented by the Java class:

```
org.deegree.coordcalc.batch.FileCachedTransformationResult
```

Both Java classes implement the abstract class:

```
org.deegree.coordcalc.batch.AbstractTransformationResult
```

Therefore it is possible to realise different approaches for intermediate storage (e.g. in databases) in future enhancements of the application.

4.4.4 Element `<dcc:tempDir>`

Proceeding of major files needs creation of temporary files. The element `<dcc:tempDir>` configured the location storing these files. The path to this directory may be provided with an absolute path or relative to the location of this configuration file.

4.5 Element <dcc:Formatter>

The element <dcc:Formatter> provides all configuration possibilities regarding the final formatting of the transformation results. Some of those are bound to a specific output format.

```

<dcc:Formatter>
  <dcc:decimalSeparator>.</dcc:decimalSeparator>
  <dcc:decimalFormat crs="EPSG:4326">#.#####</dcc:decimalFormat>
  <dcc:decimalFormat crs="EPSG:4314">#.#####</dcc:decimalFormat>
  <dcc:outputDir>../../download/</dcc:outputDir>
  <dcc:accessPath>http://localhost:8080/coordcalc/download/</dcc:accessPath>
  <dcc:format name="CSV">
    <dcc:display>Text</dcc:display>
    <dcc:class>org.deegree.coordcalc.batch.csv.CSVOutputFormatter</dcc:clas
s>
  </dcc:format>
  <dcc:format name="SHP">
    <dcc:display>ESRI Shape</dcc:display>
    <dcc:class>org.deegree.coordcalc.batch.ShapeOutputFormatter</dcc:class>
    <dcc:prjDirectory>../conf/coordcalc</dcc:prjDirectory>
  </dcc:format>
  <dcc:format name="KML">
    <dcc:display>Google Earth KML</dcc:display>
    <dcc:class>org.deegree.coordcalc.batch.KMLOutputFormatter</dcc:class>
  </dcc:format>
  <dcc:format name="EXCEL">
    <dcc:display>Microsoft Excel 2003 (*.xls)</dcc:display>
    <dcc:class>org.deegree.coordcalc.batch.excel.ExcelOutputFormatter</dcc:
class>
  </dcc:format>
  <dcc:KMLTemplate>
    <dcc:kmlHeader><![CDATA[<kml
xmlns="http://earth.google.com/kml/2.1"><Document><Folder><name>$NAME$</name><open>
1</open>]]></dcc:kmlHeader>
    <dcc:kmlFooter><![CDATA[</Folder></Document></kml>]]></dcc:kmlFooter>
    <dcc:PlacementTemplate><![CDATA[<Placemark><name>$NAME$</name><Snippet
maxLines="4">$SNIPPET$</Snippet><description>$DESCRIPTION$</description><Point><coo
rdinates>$COORDS$</coordinates></Point></Placemark>]]></dcc:PlacementTemplate>
    </dcc:KMLTemplate>
    <dcc:ErrorLogTemplate>
      <dcc:header>Following errors have been thrown:</dcc:header>
      <dcc:footer>-</dcc:footer>
    </dcc:ErrorLogTemplate>
  </dcc:Formatter>

```

4.5.1 Element <dcc:decimalSeparator>

The element <dcc:decimalSeparator> defines the character that is used for decimal separation of the output. This element is optional, its default value is '.' (dot).

4.5.2 Element <dcc:decimalFormat>

By setting the element <dcc:decimalFormat> it is possible to define the formatting of numerical values. The attribute @crs defines the target coordinate reference system for which the setting shall be used. The element <dcc:decimalFormat> is optional, its default value for any CRS is ##.###. Every CRS that shall be displayed in a different format needs to be specified in its own

`<dcc:decimalFormat>` entry. A detailed description of valid patterns is provided in the API of Java class `java.text.DecimalFormat` at

<http://java.sun.com/j2se/1.5.0/docs/api/java/text/DecimalFormat.html>

4.5.3 Element `<dcc:outputDir>`

During formatting of the transformation output a file is created which is finally offered to the user for download via e-mail. The element `<dcc:outputDir>` specifies the folder in which the resulting files are stored. The path may be referenced either relative or absolute. Relative paths start at the location of this configuration file. The specified folder needs to be accessible for external clients under the URL of the web application.

4.5.4 Element `<dcc:accessPath>`

To download the file in `<dcc:outputDir>`, it will be accessed directly with the address under which the target folder is visible. This address is specified in the element `<dcc:accessPath>`. In future implementations it could be possible to specify a custom-build web application, so it would no longer be necessary to specify an `<dcc:outputDir>` which is accessible from the outside.

4.5.5 Element `<dcc:format>`

The element `<dcc:format>` is used to specify characteristics for the different supported output formats. The relevant format is referenced in the attribute `@name`. Currently there are four different output formats (CSV, SHP, KML, EXCEL). When using batch mode, the user may choose between these format. The Java class responsible for creating the chosen format is specified within this element `<dcc:format>`. Therefore it will be easy to add further output formats without changing the core part of the application. Also, if one of the supported outputformats shall not be made available to the user of the application, this format simply needs to be commented out of the configuration file.

The sub-element `<dcc:display>` defines the text which is shown to the user.

The sub-element `<dcc:class>` refers to the Java class responsible for the output formatting. Classes defined here need to implement the interface `org.degree.coordcalc.batch.OutputFormatter`

The sub-element `<dcc:prjDirectory>` is used for the **output format SHP** (ESRI shape files). It points to the location (folder) of the ESRI projection files. A relative path starting at the location of this configuration file needs to be specified. degree coordinateCalculator comes with 9 projection files. If more CRS should be supported, then these new projections need their prj-files to be added to the

projection folder. (Of course the projections are restricted to the CRS that deegree understands. Please refer to supported CRS in chapter 4.1.2 for details.)

Since the **output format KML** depends on additional configuration settings, it has its own element block, described in the following chapter.

In case KML shall not be supported as output format, then both elements `<dcc:format name="KML">` and `<dcc:KMLTemplate>` may be omitted.

4.5.6 Element `<dcc:KMLTemplate>`

The element `<dcc:KMLTemplate>` offers three different template fragments needed for creating the KML output document.

The first element (`<dcc:kmlHeader>`) contains the header, while the next element (`<dcc:kmlFooter>`) contains the footer of the KML documents. The contents of both elements need to be nested inside a CDATA block, as they represent XML fragments that should not be interpreted as part of the configuration.

The header element may contain the variable `$NAME$` which was set by the user in the web client and will be used as name for the final KML document.

The third element (`<dcc:PlacementTemplate>`) contains the main template for presenting the coordinate pairs of the transformation result. There are four variables available, their values being replaced by the users input during runtime of the programme:

- `$NAME$`
name of a placement, taken from a column of the file/table, as selected by the user
- `$SNIPPET$`
short description of a placement, taken from a column selected by the user
- `$DESCRIPTION$`
a full row of the transformation result, formatted as HTML table
- `$COORDS$`
the transformed coordinate pair

4.5.7 Element `<dcc:ErrorLogTemplate>`

If the user has chosen SHP (ESRI shape files) as output format, the application not only creates the shape files with the results, but also a log file with additional information. This log file contains one row for each coordinate pair that could not be transformed and the reason for the error.

The sub-elements `<dcc:header>` and `<dcc:footer>` contain text fragments for header and footer of the log file.

4.6 KML specific parameters

There are two KML specific elements (`<dcc:KMLTargetCRS>` and `<dcc:KMLMessage>`) that are only evaluated if KML support is not turned off (by commenting out the KML format element, see above).

```
<dcc:KMLTargetCRS>CRS_10</dcc:KMLTargetCRS>
<dcc:KMLMessage>You chose KML as output format. For this EPSG:4326 (WGS84) has
to be used as target coordinate reference system.</dcc:KMLMessage>
```

Element `<dcc:KMLTargetCRS>` contains the ID of the coordinate reference system used by default for KML files. This is WGS84, decimal degree. When KML is chosen as output format, then this target coordinate reference system is switched to this CRS-ID automatically. (The ID matches the value from the first section of the configuration file, see chapter 4.1.2).

At the same time, the user is informed about this change of target CRS with the message contained in element `<dcc:KMLMessage>`.

4.7 E-mail validation

The batch mode of deegree coordinateCalculator may be restricted to users of certain e-mail addresses. The e-mail address provided by the user is checked against the values provided in the element `<dcc:ValidEmailExtension>`. Several address domains may be separated by a pipe "|". If the user's mail address does not match any of the configured address domains, the batch request is not processed.

```
<dcc:ValidEmailExtension>deegree.org|uni-bonn.de</dcc:ValidEmailExtension>
```

If a user should be able to use any e-mail address, then the element should be empty.

4.8 E-mail transmission

After both success or failure of a batch process, the user gets informed by e-mail. In case of a fundamental error which would prevent sending an e-mail to the user, an informative e-mail is sent to the administrator of the web application instead.

Therefore the element `<dcc:Mail>` contains a number of sub-elements that help configure the usual e-mail settings, such as sender, mail host server, administrator's e-mail address, and e-mail subject.

```
<dcc:Mail>
  <dcc:sender>coordcalc@deegree.org</dcc:sender>
  <dcc:mailHost>mail.lat-lon.de</dcc:mailHost>
  <dcc:adminAddress>you@example.org</dcc:adminAddress>
```

```
<dcc:subject>deegree coordinateCalculator - CRS Transformation  
Results</dcc:subject>  
</dcc:Mail>
```

Appendix A Example Configuration File

webapps/coordcalc/WEB-INF/classes/configuration.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- This file is part of deegree, for copyright/license information, please visit
http://www.deegree.org/license. -->
<dcc:Configuration xmlns:dcc="http://www.deegree.org/coordcalc">
  <!-- WPSConfiguration or ReferenceSystems must be set!
<dcc:wpsConfiguration>http://localhost:8081/services/services</dcc:wpsConfiguration
> -->
  <dcc:ReferenceSystems>
    <dcc:CRS id="CRS_01" code="DHDN, decimal degree (EPSG:4314)"
      datum="german primary triangulation net (EPSG:6314)"
      ellipsoid="Bessel 1841 (EPSG:7004)" />
    <dcc:CRS id="CRS_02" code="DHDN, degree decimal minute (EPSG:4314)"
      datum="german primary triangulation net (EPSG:6314)"
      ellipsoid="Bessel 1841 (EPSG:7004)" />
    <dcc:CRS id="CRS_03" code="DHDN, degree minute second (EPSG:4314)"
      datum="german primary triangulation net (EPSG:6314)"
      ellipsoid="Bessel 1841 (EPSG:7004)" />
    <dcc:CRS id="CRS_04" code="DHDN / Gauss-Kruger zone 2 (EPSG:31466)"
      datum="german primary triangulation net (EPSG:6314)"
      ellipsoid="Bessel 1841 (EPSG:7004)" />
    <dcc:CRS id="CRS_05" code="DHDN / Gauss-Kruger zone 3 (EPSG:31467)"
      datum="german primary triangulation net (EPSG:6314)"
      ellipsoid="Bessel 1841 (EPSG:7004)" />
    <dcc:CRS id="CRS_06" code="DHDN / Gauss-Kruger zone 4 (EPSG:31468)"
      datum="german primary triangulation net (EPSG:6314)"
      ellipsoid="Bessel 1841 (EPSG:7004)" />
    <dcc:CRS id="CRS_07" code="DHDN / Gauss-Kruger zone 5 (EPSG:31469)"
      datum="german primary triangulation net (EPSG:6314)"
      ellipsoid="Bessel 1841 (EPSG:7004)" />
    <dcc:CRS id="CRS_08" code="ETRS89 / UTM zone 32N (EPSG:25832)"
      datum="European Terrestrial Reference System 1989 (EPSG:6258)"
      ellipsoid="GRS 1980 (EPSG:7019)" />
    <dcc:CRS id="CRS_09" code="ETRS89 / UTM zone 33N (EPSG:25833)"
      datum="European Terrestrial Reference System 1989 (EPSG:6258)"
      ellipsoid="GRS 1980 (EPSG:7019)" />
    <dcc:CRS id="CRS_10" code="WGS 84, decimal degree (EPSG:4326)"
      datum="World GeodeticSystem 1984 (EPSG:6326)"
      ellipsoid="WGS 1984 (EPSG:7030)" />
    <dcc:CRS id="CRS_11" code="WGS 84, degree decimal minute (EPSG:4326)"
      datum="World GeodeticSystem 1984 (EPSG:6326)"
      ellipsoid="WGS 1984 (EPSG:7030)" />
    <dcc:CRS id="CRS_12" code="WGS 84, degree minute second (EPSG:4326)"
      datum="World GeodeticSystem 1984 (EPSG:6326)"
      ellipsoid="WGS 1984 (EPSG:7030)" />
  </dcc:ReferenceSystems>
  <dcc:DoubleFormFields>degree decimal minute</dcc:DoubleFormFields>
  <dcc:TripleFormFields>degree minute second</dcc:TripleFormFields>
  <dcc:FileUpload>
    <dcc:TempDirectory>WEB-INF/upload</dcc:TempDirectory>
    <dcc:ResultPage>modules/batch/batchMode.jsp</dcc:ResultPage>
    <dcc:SheetSelectPage>modules/batch/sheetSelect.jsp</dcc:SheetSelectPage>
    <dcc:ErrorPage>error.jsp</dcc:ErrorPage>
  </dcc:FileUpload>
  <dcc:BatchTransform>
    <dcc:timeout>7200</dcc:timeout>
    <dcc:messageTemplate>
```

Dear Sir or Madam,

your file \$SOURCEFILE\$ was processed successfully.

additional information:

startet: \$BEGIN\$ finished: \$END\$

\$RESULT\$

\$SUCCESSCOUNT\$ from \$ALLCOUNT\$ data sets were transformed successfully.

```

</dcc:messageTemplate>
<dcc:tranformationResult>org.deegree.coordcalc.batch.FileCachedTransformati
onResult</dcc:tranformationResult>
</dcc:BatchTransform>
<dcc:Formatter>
  <dcc:decimalSeparator>.</dcc:decimalSeparator>
  <dcc:decimalFormat crs="EPSG:4326">#.#####</dcc:decimalFormat>
  <dcc:decimalFormat crs="EPSG:4314">#.#####</dcc:decimalFormat>
  <dcc:outputDir>../tmp/</dcc:outputDir>
  <dcc:accessPath>http://localhost:8080/coordcalc/tmp/</dcc:accessPath>
  <dcc:format name="CSV">
    <dcc:display>Text</dcc:display>
    <dcc:class>org.deegree.coordcalc.batch.CSVOutputFormatter</dcc:class>
  </dcc:format>
  <dcc:format name="SHP">
    <dcc:display>ESRI Shape</dcc:display>
    <dcc:class>org.deegree.coordcalc.batch.ShapeOutputFormatter</dcc:class>
    <dcc:prjDirectory>../conf/coordcalc</dcc:prjDirectory>
  </dcc:format>
  <dcc:format name="KML">
    <dcc:display>Google Earth KML</dcc:display>
    <dcc:class>org.deegree.coordcalc.batch.KMLOutputFormatter</dcc:class>
  </dcc:format>
  <dcc:format name="EXCEL">
    <dcc:display>Microsoft Excel 2003 (*.xls)</dcc:display>
    <dcc:class>org.deegree.coordcalc.batch.excel.ExcelOutputFormatter</dcc:
class>
  </dcc:format>
  <dcc:KMLTemplate>
    <dcc:kmlHeader><![CDATA[<kml
xmlns="http://earth.google.com/kml/2.1"><Document><Folder><name>$NAME$</name><open>
1</open>]]></dcc:kmlHeader>
    <dcc:kmlFooter><![CDATA[</Folder></Document></kml>]]></dcc:kmlFooter>
    <dcc:PlacementTemplate><![CDATA[<Placemark><name>$NAME$</name><Snippet
maxLines="4">$SNIPPET$</Snippet><description>$DESCRIPTION$</description><Point><coo
rdinates>$COORDS$</coordinates></Point></Placemark>]]></dcc:PlacementTemplate>
  </dcc:KMLTemplate>
  <dcc:ErrorLogTemplate>
    <dcc:header>Following errors have been thrown:</dcc:header>
    <dcc:footer>-</dcc:footer>
  </dcc:ErrorLogTemplate>
</dcc:Formatter>
<dcc:KMLTargetCRS>CRS_10</dcc:KMLTargetCRS>
<dcc:KMLMessage>You chose KML as output format. For this EPSG:4326 (WGS84) has
to be used as target coordinate reference system.</dcc:KMLMessage>
<dcc:ValidEmailExtension></dcc:ValidEmailExtension>
<dcc:Mail>
  <dcc:sender>coordcalc@deegree.org</dcc:sender>
  <dcc:mailHost>mail.lat-lon.de</dcc:mailHost>
  <dcc:adminAddress>you@example.org</dcc:adminAddress>
  <dcc:subject>deegree coordinateCalculator - CRS Transformation
Results</dcc:subject>
</dcc:Mail>
</dcc:Configuration>

```