# Word to LaTeX

## User's Manual

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# Contents

# Chapter 1

# User's manual

## 1.1 Requirements and installation

- *Microsoft Windows 2000* or *XP* is required.
- *Microsoft .NET Framework Version 1.1* or higher is required. We strongly recommend *.NET Framework 1.1* because the convertor cannot be run as a Word addin with *.NET Framework 2.0.* Only the standalone version (which is much slower) can be run with *.NET Framework 2.0. .NET Framework 1.1* can be downloaded from Microsoft and it can be installed together with *.NET Framework 2.0* if you already have it.
- *Microsoft Word XP (2002)* or higher is required to be installed on your system.
- If you want to export mathematical equations not only as images, but also to LaTeX or MathML formats, you will have to install *Design Science MathType* (it's a commercial product).
- You must have a PostScript printer driver installed on your system to be able to export images to EPS format. You can try this printer.

After you have installed all the required software, close *Word* (if it's running), execute `setup.exe` in the `setup\Word-to-LaTeX` directory, and follow the instructions. You must have administrator privileges to install the whole application properly. Once the installation is finished, you will find a couple of files in your *Word-to-LaTeX* directory. Some of them are listed here:

- `word-to-latex.exe` – *Word-to-LaTeX* command-line convertor
- `word-to-latex-gui.exe` – *Word-to-LaTeX* graphic user interface
- `config.xml, XMLconfig.xml` – convertor configuration for LaTeX and XML output
- `html.xsl` – XSL file which transforms XML output to HTML
- `manual.pdf` – user's manual
- `eps2tif` – directory containing a batch file for converting EPS images to TIF format

## 1.2 Uninstallation

If you want to uninstall *Word-to-LaTeX* from your system, go to **Control Panel | Add or Remove programs** and select *Word-to-LaTeX*. Please close *Word* (if it's running) before uninstalling.

## 1.3 Configuration

All the program configuration is stored in an XML file with a public format which is defined using XML Schema in the `config.xsd` file. Before the conversion procedure starts, the configuration is validated against the schema, so you must be very careful when editing the file manually.

There are two predefined configuration files in your *Word-to-LaTeX* directory, `config.xml` for conversion to LaTeX and `XMLConfig.xml` for conversion to XML format.

Don't be afraid if XML is an unknown abbreviation for you. There is no need to know anything about XML technologies because you can customize the convertor also through the graphic interface which will be described in section 1.6.

Appendix B describes the XML structure of configuration files and possible values in each element and attribute.

## 1.4 Command-line convertor

When the command-line convertor (`word-to-latex.exe`) is executed without any parameters, the list of all possible options from table 1.1 will be printed.

```
word-to-latex.exe -i inputFile [-o outputFile] [-opt confFile]
```

| | |
|---|---|
| `-i` | input file name |
| `-o` | output file name |
| `-opt` | configuration file name |

Table 1.1: `word-to-latex.exe` options

The only required option is "`-i`". When the output file is omitted, the input file name appended with "`.tex`" extension is taken instead. If the configuration file is not specified, the default configuration stored in the `config.xml` file is used for the conversion.

After you run the program with correct options, it prints all the file names (input, output, configuration) and also your *Microsoft Word* version which can be useful when an error occurs. Then the conversion routine is started and you will be informed about the progress.

Please be patient when you are converting a large document, it can take a long time to convert it. Much more faster way of running the conversion will be described in section 1.7.

## 1.5 EPS to TIF image conversion

As not all images included in *Word* documents can be converted to bitmaps, I wrote a simple batch file (`eps2tif.bat` in the `eps2tif` directory) which converts EPS files to TIF format. It benefits from the fact that *Word-to-LaTeX* can export all images to EPS format.

This batch file requires *Ghostscript* program which is free for non-commercial use. The path to the *Ghostscript* executable must be specified at the top of the `eps2tif.bat` file.

When you want to export all images from a *Word* document to some bitmap format (PNG, JPEG, and so on), just run *Word-to-LaTeX* to have an EPS version of each image and then execute the `eps2tif.bat` file with the options described in table 1.2. Finally you can convert the output TIF files to the format you prefer (for example *Irfanview* does this very effectively).

```
eps2tif.bat inDir outDir
```

| | |
|---|---|
| `inDir` | directory from which the files with `.eps` extension are taken |
| `outDir` | directory where the `.tif` files will be saved |

Table 1.2: `eps2tif.bat` options

## 1.6 Graphic user interface

For most of users the graphic interface will be the most frequent way of using *Word-to-LaTeX* convertor. To run it, just click the icon on your Desktop or in the Start menu, or execute the `word-to-latex-gui.exe` file in your *Word-to-LaTeX* directory.

After executing the program, the configuration dialog will appear. All the six tabs will be described now.

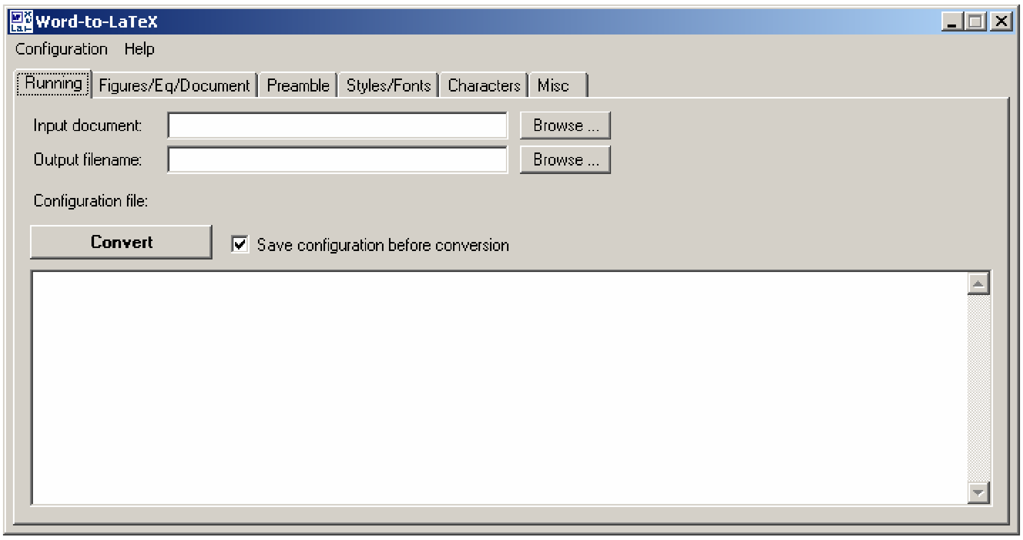
### 1.6.1 Running the conversion

Only the **Input document** is required to be selected. When the **Output file** is omitted, the **Input document** file name appended with "`.tex`" extension is taken instead.

Two configuration files can be found in your *Word-to-LaTeX* directory, `config.xml` for conversion to LaTeX and `XMLConfig.xml` for conversion to XML.

When the **Configuration file** is omitted, `config.xml` will be used instead. But be careful, it's recommended to customize the settings for each document you convert. **Save as . . .**, **Save** and **Load** commands in the **Configuration** menu can be used to load and save convertor configurations. Remember that the current configuration must be saved before it is applied during the conversion. You can check the option **Save configuration before conversion** to save the configuration automatically after pressing the **Convert** button.

When you press the **Convert** button, all the file names (input, output, configuration) and also your *Microsoft Word* version will be written to the text box



Input document:

Output filename:

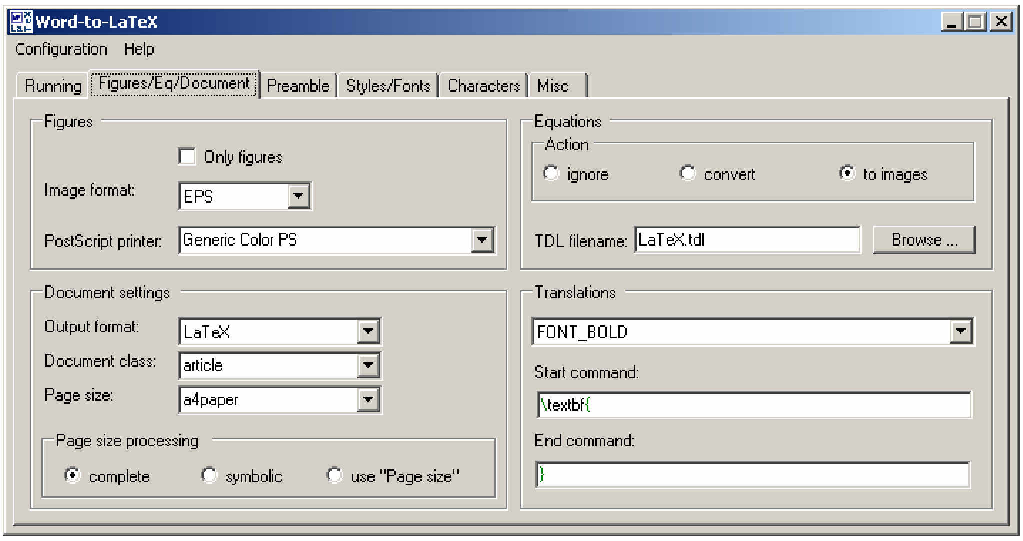
Configuration file:

☑ Save configuration before conversion

Figure 1.1: “Running” tab

below. This can be useful when an error occurs. Then the conversion routine is started and you will be informed about the progress in the text box. Please be patient when you are converting a large document, it can take a long time to convert it. Much more faster way of running the conversion will be described in section 1.7.

### 1.6.2 Figures, Equations and Translations



Figures

□ Only figures

Image format: EPS

PostScript printer: Generic Color PS

Equations

Action

○ ignore ○ convert ● to images

TDL filename: LaTeX.tdl

Document settings

Output format: LaTeX

Document class: article

Page size: a4paper

Page size processing

● complete ○ symbolic ○ use "Page size"

Translations

FONT_BOLD

Start command:

\textbf{

End command:

}

Figure 1.2: “Figures/Eq/Document” tab

## Figures

Check **Only figures** to convert only figures and ignore the text content of the input document. *Word-to-LaTeX* exports images (including embedded objects like *Excel* graphs) in two formats – vector Encapsulated PostScript (**EPS**) or bitmap **PNG**. If you want to export images to EPS format, you must specify the **PostScript printer**. This topic was mentioned in section 1.1.

EPS format is recommended because EPS images can be easily integrated into LaTeX documents and moreover some images included in *Word* documents (e.g. *Word* drawings) cannot be exported as bitmaps. If this occurs, the convertor will give you a notice and after it finishes, you can export all images to EPS format and use `eps2tif` program described in section 1.5 to have a bitmap version of each image.

## Equations

If you have *MathType* installed on your system, you can check **convert** and all equations inserted through *Equation Editor*, *MathType* and *Word* `EQ` fields will be converted. Otherwise you have to select **ignore** to ignore all equations or **to images** for exporting equations to images.

When the **convert** option is selected, the output format of converted equations depends on the translation file defined in the **TDL filename** box. See the `Translators` subdirectory of your *MathType* directory for possible values. You can edit or add new files to this directory if you want to customize the conversion of equations.

## Document settings

As the convertor performs a few special actions depending on the **Output format**, you must select **LaTeX** or **XML**. But remember that it doesn't change any **Translations**.

The `@WL-DOC_CLASS` macro used in the document preamble will be replaced with the value of the **Document class** option. The `@WL-PAGE_SIZE` macro will be replaced with a value depending on the **Page size processing** option as shows table 1.3.

| **Option name** | `@WL-PAGE_SIZE` **will be replaced with** |
|---|---|
| **complete** | the complete definition of the page size matching the page size of the input document |
| **symbolic** | the convertor will try to translate the symbolic page size (e.g. A4) of the input document to an appropriate LaTeX size (e.g. `letterpaper`) |
| **use "Page size"** | the value of the **Page size** option |

Table 1.3: **Page size processing** options

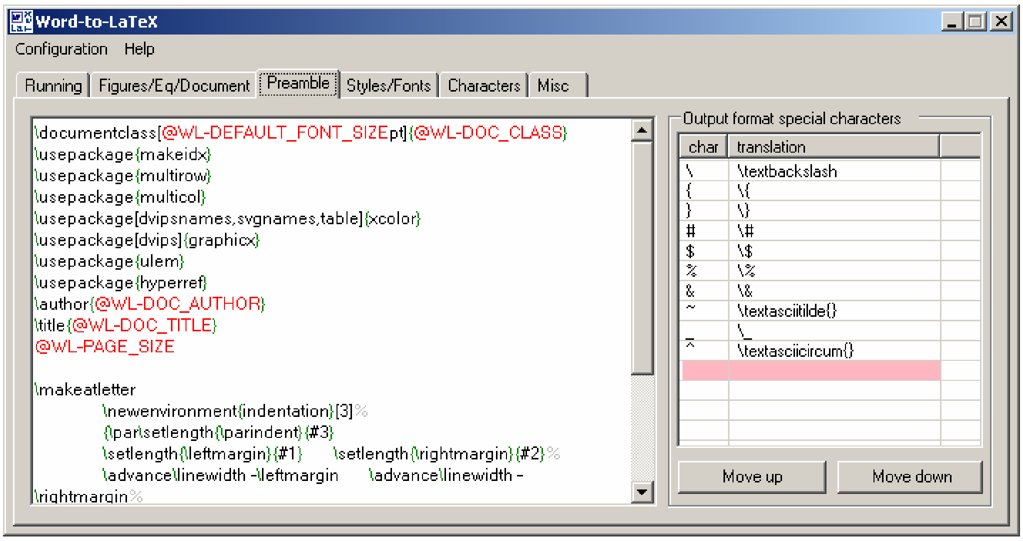
## Translations

The translation mappings between input document elements and LaTeX commands are defined here. It comprises of headings, font styles, footnotes, tables, alignments, colors, and so on. Each element has a **Start command** which is inserted before the element itself and an **End command** inserted after the element.

One example: Let "*some text*" appear in the document and the `FONT_ITALIC` mapping is "`\textit{`" for the start command and "`}`" for the end command. Then "`\textit{Some text}`" will be written to the output file.

The complete overview of translated elements with the default mappings for LaTeX and XML output can be found in section B.2.

### 1.6.3 Document preamble



```
\documentclass[@WL-DEFAULT_FONT_SIZEpt]{@WL-DOC_CLASS}
\usepackage{makeidx}
\usepackage{multirow}
\usepackage{multicol}
\usepackage[dvipsnames,svgnames,table]{xcolor}
\usepackage[dvips]{graphicx}
\usepackage{ulem}
\usepackage{hyperref}
\author{@WL-DOC_AUTHOR}
\title{@WL-DOC_TITLE}
@WL-PAGE_SIZE

\makeatletter
        \newenvironment{indentation}[3]%
        {\par\setlength{\parindent}{#3}
        \setlength{\leftmargin}{#1}     \setlength{\rightmargin}{#2}%
        \advance\linewidth -\leftmargin     \advance\linewidth -
\rightmargin%
```

| char | translation |
|---|---|
| \ | \textbackslash |
| { | \{ |
| } | \} |
| # | \# |
| $ | \$ |
| % | \% |
| & | \& |
| ~ | \textasciitilde{} |
| _ | _ |
| ^ | \textasciicircum{} |

Figure 1.3: "Preamble" tab

Document preamble, inserted at the top of output files, can be easily edited in this dialog. Table 1.4 shows the list of macros that can be used in the preamble.

The translations of **Output format special characters** (e.g. "\" in LaTeX or "<" in XML) are defined in the right part of this dialog. Don't forget to fill in these characters in the right order because some special characters can be used for the translation of other special characters (e.g. "\" must be at the top for LaTeX output). New characters can be added double-clicking the pink row.

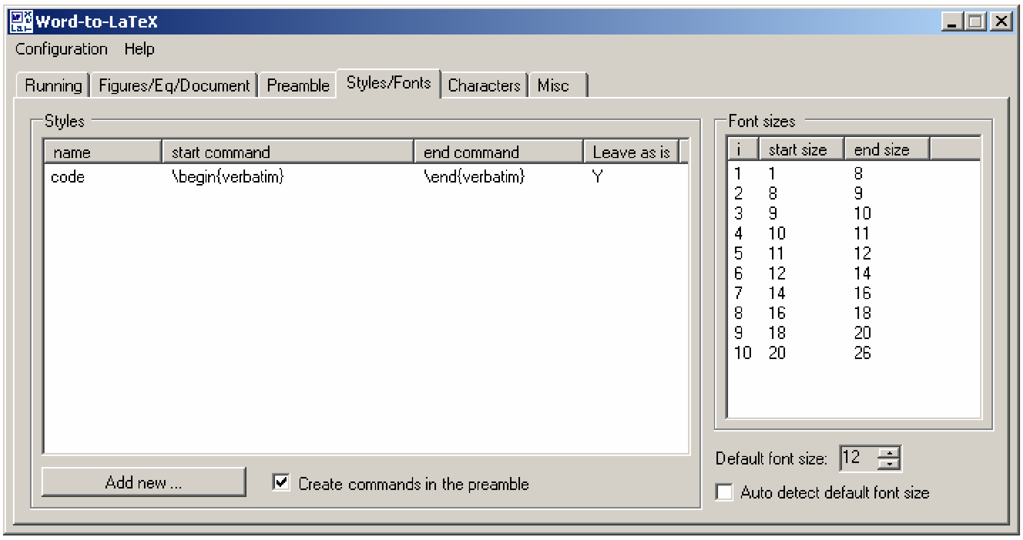
### 1.6.4 Special characters

Special characters are divided into groups according to their Unicode [1] positions. Each character can have a **translation** used in regular text context and a **math translation** used in math context. Currently when a character has both translations defined, the text translation is always used. If it has only a math translation, the character is inserted as a simple inline equation. If no translation is defined, the character is inserted "as is" (in UTF-8 encoding).

The math translation does not influence the conversion of equations. which is completely defined in a TDL file (see section 1.6.2 for details).

| Macro | Replaced with |
|---|---|
| `@WL-DOC_CLASS` | the **Document class** option from the previous dialog |
| `@WL-DOC_AUTHOR` | the input document's author (retrieved from the document's properties) |
| `@WL-DOC_TITLE` | the input document's title (retrieved from the document's properties) |
| `@WL-PAGE_SIZE` | see the **Document settings** in the previous section |
| `@WL-DEFAULT_FONT_SIZE` | the default font size; details in section 1.6.5 |
| `@WL-STYLE_COMMANDS` | the commands created from paragraph and character user styles, see the **Styles/Fonts** tab in section 1.6.5 for details. |

Table 1.4: Document preamble macros



| name | start command | end command | Leave as is |
|---|---|---|---|
| code | \begin{verbatim} | \end{verbatim} | Y |

☑ Create commands in the preamble

| i | start size | end size |
|---|---|---|
| 1 | 1 | 8 |
| 2 | 8 | 9 |
| 3 | 9 | 10 |
| 4 | 10 | 11 |
| 5 | 11 | 12 |
| 6 | 12 | 14 |
| 7 | 14 | 16 |
| 8 | 16 | 18 |
| 9 | 18 | 20 |
| 10 | 20 | 26 |

Default font size: 12

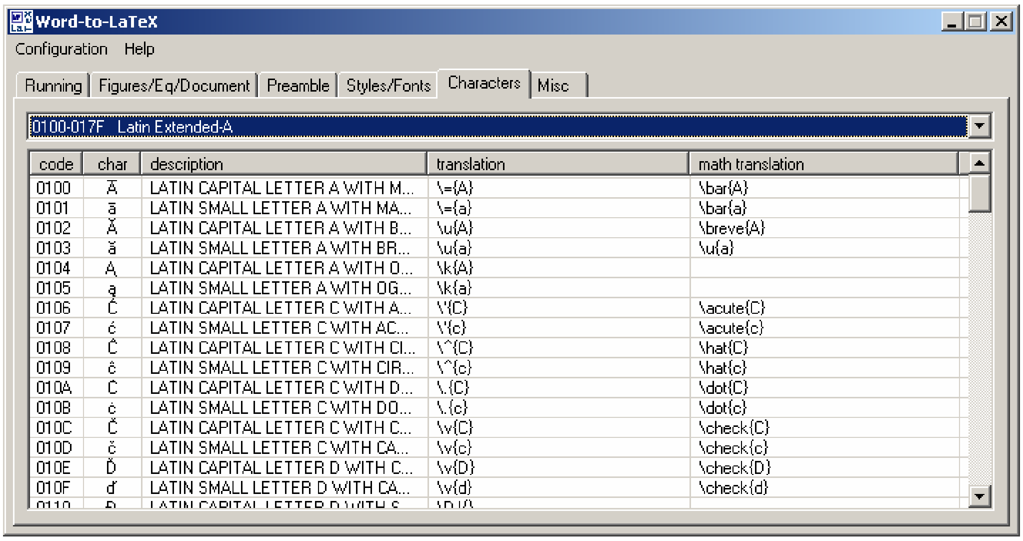
□ Auto detect default font size

Figure 1.4: "Characters" tab

Default translations can be changed double-clicking the field you want to edit. The encoding of output files is UTF-8 which covers all national characters, so there is no need to define translations for Latin extended characters (e.g. “á”) or Cyrillic ones. Just make sure that you have appropriate commands in the document preamble, for example:

```
\usepackage[T2A]{fontenc}
\usepackage[utf8]{inputenc}
```

### 1.6.5 Styles and Font sizes



| code | char | description | translation | math translation |
|---|---|---|---|---|
| 0100 | Ā | LATIN CAPITAL LETTER A WITH M... | \={A} | \bar{A} |
| 0101 | ā | LATIN SMALL LETTER A WITH MA... | \={a} | \bar{a} |
| 0102 | Ă | LATIN CAPITAL LETTER A WITH B... | \u{A} | \breve{A} |
| 0103 | ă | LATIN SMALL LETTER A WITH BR... | \u{a} | \u{a} |
| 0104 | Ą | LATIN CAPITAL LETTER A WITH O... | \k{A} | |
| 0105 | ą | LATIN SMALL LETTER A WITH OG... | \k{a} | |
| 0106 | Ć | LATIN CAPITAL LETTER C WITH A... | \'{C} | \acute{C} |
| 0107 | ć | LATIN SMALL LETTER C WITH AC... | \'{c} | \acute{c} |
| 0108 | Ĉ | LATIN CAPITAL LETTER C WITH CI... | \^{C} | \hat{C} |
| 0109 | ĉ | LATIN SMALL LETTER C WITH CIR... | \^{c} | \hat{c} |
| 010A | Ċ | LATIN CAPITAL LETTER C WITH D... | \.{C} | \dot{C} |
| 010B | ċ | LATIN SMALL LETTER C WITH DO... | \.{c} | \dot{c} |
| 010C | Č | LATIN CAPITAL LETTER C WITH C... | \v{C} | \check{C} |
| 010D | č | LATIN SMALL LETTER C WITH CA... | \v{c} | \check{c} |
| 010E | Ď | LATIN CAPITAL LETTER D WITH C... | \v{D} | \check{D} |
| 010F | ď | LATIN SMALL LETTER D WITH CA... | \v{d} | \check{d} |
| 0110 | Đ | LATIN CAPITAL LETTER D WITH S... | [illegible] | |

Figure 1.5: “Styles/Fonts” tab

The translations of paragraph and character user styles can be defined in this dialog. Press **Add new ...** and fill in the **name** of a style, the **start command** inserted before the text content of the style and the **end command** inserted after the text content. When you omit the definition of some style, appropriate commands will be created automatically on the basis of the style properties. *Word* built-in styles are skipped.

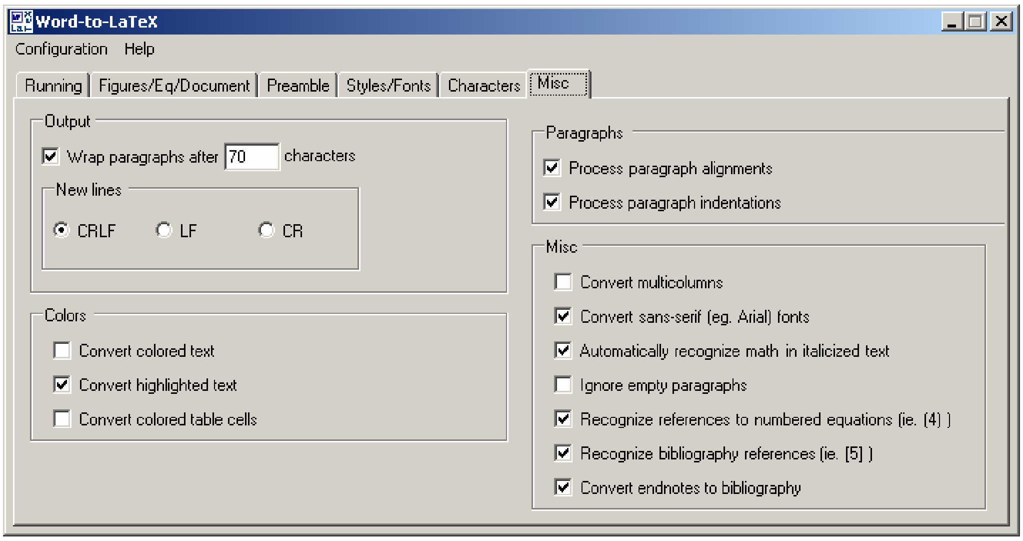
You can edit the list of styles double-clicking any of the fields. Write **Y** (or **N**) to the **leave as is** field if you don’t want to make any changes (character translations, wrapping) in the text content of the style. It’s suitable for styles that are translated to the `verbatim` environment.

Check **Create commands in the preamble** to make a special command for each style in the document preamble. It’s recommended to enable this option because it makes output files much more maintainable. For example, if you have a style named “code”, `\stylecode` command will be created and when you decide to change the definition of the style, you will do it only in one place.

Font sizes are split into 10 groups which are converted to the commands defined in **Translations** (see 1.6.2 for details). Each group has a point range of sizes that it covers – from the **start size** (exclusively) to the **end size** (inclusively). You can edit the default settings double-clicking the **end size** field of a group you want to change. Start sizes are counted automatically.

The portions of text that have the **Default font size** won't be marked with any command defining the font size. Therefore it's very important to have a correct value in this field to avoid a lot of unnecessary font size commands in the output file. Check **Auto detect default font size** to retrieve the default size from the *Word* built-in *Normal* style.

### 1.6.6 Miscellaneous options



Output

☑ Wrap paragraphs after 70 characters

New lines

● CRLF ○ LF ○ CR

Colors

□ Convert colored text

☑ Convert highlighted text

□ Convert colored table cells

Paragraphs

☑ Process paragraph alignments

☑ Process paragraph indentations

Misc

□ Convert multicolumns

☑ Convert sans-serif (eg. Arial) fonts

☑ Automatically recognize math in italicized text

□ Ignore empty paragraphs

☑ Recognize references to numbered equations (ie. (4) )

☑ Recognize bibliography references (ie. [5] )

☑ Convert endnotes to bibliography

Figure 1.6: "Misc" tab

## Output

Check **Wrap paragraphs** and insert an integer number to wrap the paragraphs in the output text file. The following line separators can be used in output files: **CRLF** (Windows), **LF** (Unix), **CR** (Macintosh).

## Paragraphs

Check **Process paragraph alignments** and **Process paragraph indentations** to take them into account. Sometimes it's better to ignore *Word* alignments and indentations because LaTeX can make them automatically and better.

## Colors

Check **Convert colored text** to convert colored portions of text using `xcolor` package. But be very careful when checking this option because it takes a lot of time to find and convert the colored text.

The same package is used when you check **Convert highlighted text** (marked with the *Word* **Highlight** tool) and **Convert colored table cells**.

When any option is unchecked, it only means that commands defining colors won't be inserted into the output file. The whole text content will be, of course, converted.

## Misc

Check **Convert multicolumns** to convert multicolumn sections inserted through **Format** | **Columns**. Sans-serif fonts like *Arial* or *Verdana* are converted to appropriate commands only when **Convert sans-serif fonts** is checked.

Check the option **Automatically recognize math in italicized text** and simple math expressions like $i$ or $k < 30$ will be inserted as math text instead of text in italics.

The convertor can **Recognize references to numbered equations** if they match the pattern `([1-9]+)` or `([1-9]+.[1-9]+)` (e.g. `(3.15)`). A numbered equation must be inserted on a separate line and its label must be written at the right part of the same line. Any number of white space characters between the equation and its label is allowed.

Paragraphs not containing any text won't be converted when **Ignore empty paragraphs** is checked.

*Word-to-LaTeX* can **Convert endnotes into bibliography** items and **Recognize bibliography references** (citations) if they match the pattern `\[[A-Za-z0-9]+\]` (e.g. `[4]` or `[Ka76]`). But if you don't use endnotes for bibliography items, you will still have to edit the bibliography section manually.

## 1.7 Running Word-to-LaTeX from Word

The conversion will be at least 10 times faster if you press the button on the *Word-to-LaTeX* toolbar installed directly into your *Word* application. The convertor interface is completely the same as the one described in the previous section.

If you have problems with running the convertor from *Word*, please verify that you have **Medium** or **Low** option checked in the *Word* **Tools** | **Macro** | **Security** menu.

Figure 1.7: *Word-to-LaTeX* toolbar in *Word*

## 1.8 Conversion to XML, XHTML, MathML

The output of the convertor completely depends on the configuration. There is no need to convert documents only to LaTeX. The `XMLConfig.xml` configuration file, stored in the *Word-to-LaTeX* directory, is used for conversion to XML [2] which is a nice intermediate format that can be easily transformed to whatever format you need. You should be familiar with XML and related technologies to understand a short overview.

The best way to insert mathematical equations into XML documents is MathML language. *Word-to-LaTeX* uses *MathType* built-in capability to export equations to MathML format.

XML format is very strict – XML files must be so-called "well-formed". Sometimes the convertor produces a file that is not well-formed, but it's never difficult to correct such a file manually.

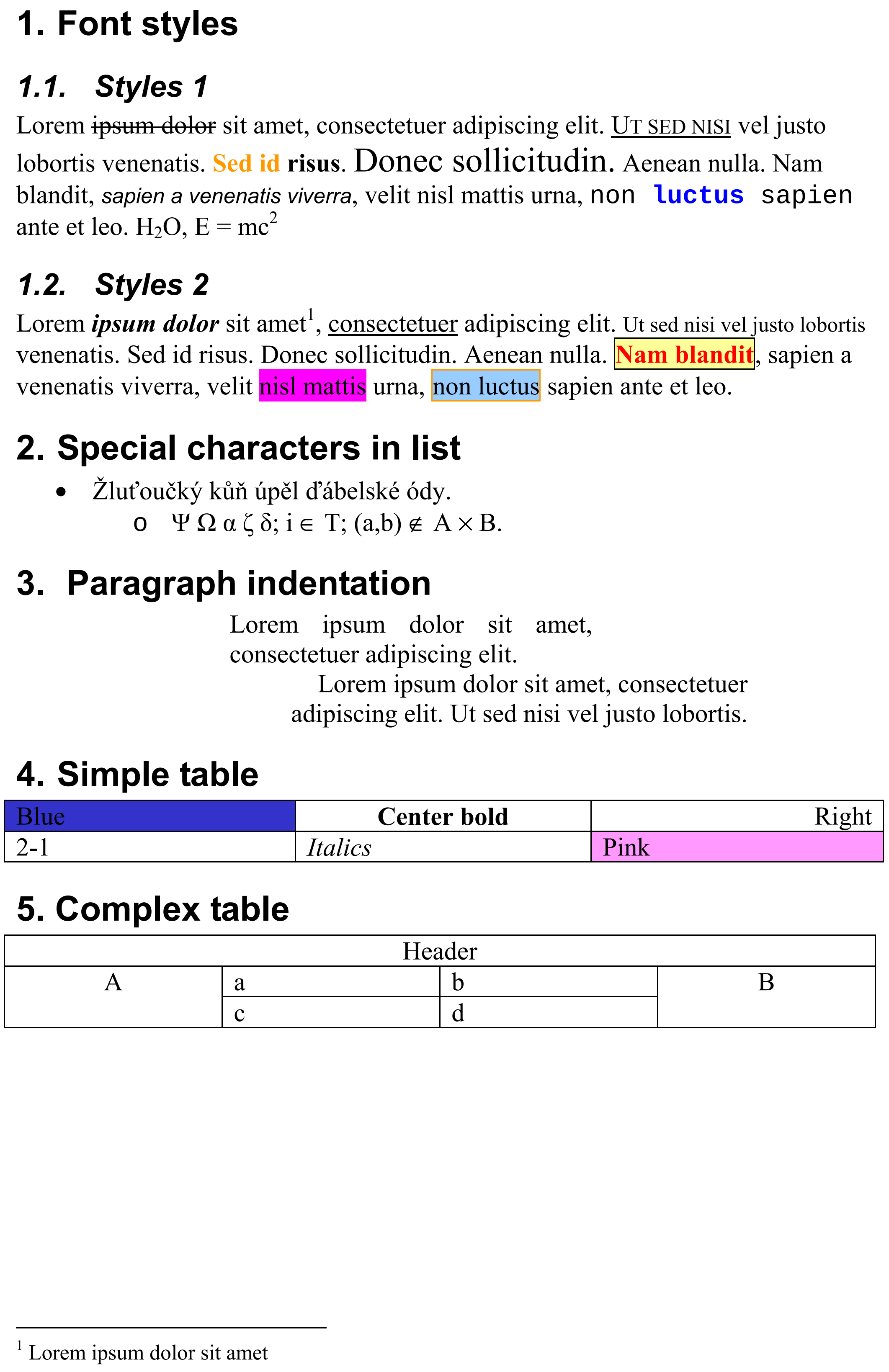
Once we have a well-formed XML file, an XSLT style [3] can be used to transform the file into the format we need. The `html.xsl` style, located in the *Word-to-LaTeX* directory, transforms the input file to XHTML format [4] combined with CSS [5]. This style was tested with *saxon* XSLT processor.

# Appendix A

# Sample documents

The following pages show two documents converted with *Word-to-LaTeX*.

Original *Word* document



# 1. Font styles

## *1.1. Styles 1*

Lorem ~~ipsum dolor~~ sit amet, consectetuer adipiscing elit. UT SED NISI vel justo lobortis venenatis. **Sed id** **risus**. Donec sollicitudin. Aenean nulla. Nam blandit, *sapien a venenatis viverra*, velit nisl mattis urna, non **luctus** sapien ante et leo. $H_2O$, $E = mc^2$

## *1.2. Styles 2*

Lorem ***ipsum dolor*** sit amet[1], consectetuer adipiscing elit. Ut sed nisi vel justo lobortis venenatis. Sed id risus. Donec sollicitudin. Aenean nulla. **Nam blandit**, sapien a venenatis viverra, velit nisl mattis urna, non luctus sapien ante et leo.

# 2. Special characters in list

- Žluťoučký kůň úpěl ďábelské ódy.
    - Ψ Ω α ζ δ; i ∈ T; (a,b) ∉ A × B.

# 3. Paragraph indentation

Lorem ipsum dolor sit amet, consectetuer adipiscing elit.

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut sed nisi vel justo lobortis.

# 4. Simple table

| Blue | **Center bold** | Right |
|---|---|---|
| 2-1 | *Italics* | Pink |

# 5. Complex table

| Header | | | |
|---|---|---|---|
| A | a | b | B |
| | c | d | |

[1] Lorem ipsum dolor sit amet

# LaTeX output compiled to PostScript

## 1 Font styles

### 1.1 Styles 1

Lorem ~~ipsum dolor~~ sit amet, consectetuer adipiscing elit. Ut sed nisi vel justo lobortis venenatis. **Sed id risus**. Donec sollicitudin. Aenean nulla. Nam blandit, *sapien a venenatis viverra*, velit nisl mattis urna, non luctus sapien ante et leo. $H_2O$, $E = mc^2$

### 1.2 Styles 2

Lorem ***ipsum dolor*** sit amet[1], consectetuer adipiscing elit. Ut sed nisi vel justo lobortis venenatis. Sed id risus. Donec sollicitudin. Aenean nulla. **Nam blandit**, sapien a venenatis viverra, velit nisl mattis urna, non luctus sapien ante et leo.

## 2 Special characters in list

- Žluťoučký kůň úpěl ďábelské ódy.
  - $\Psi\ \Omega\ \alpha\ \zeta\ \delta$; i $\in$ T; (a,b) $\notin$ A $\times$ B.

## 3 Paragraph indentation

Lorem ipsum dolor sit amet, consectetuer adipiscing elit.

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut sed nisi vel justo lobortis.

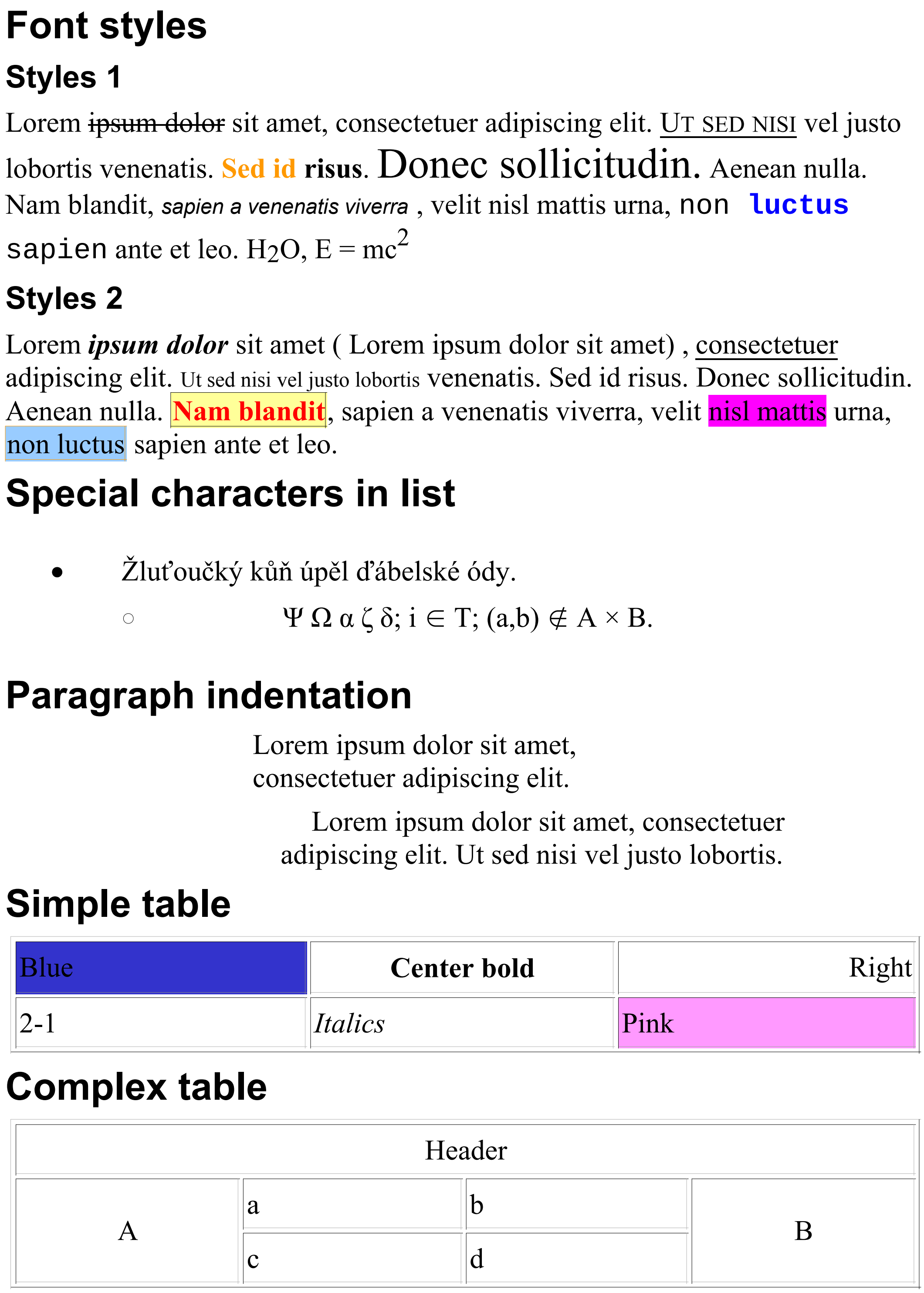
## 4 Simple table

| Blue | **Center bold** | Right |
|---|---|---|
| 2-1 | *Italics* | Pink |

## 5 Complex table

| Header | | | |
|---|---|---|---|
| A | a | b | B |
| | c | d | |

XML output transformed to HTML and rendered in *Mozilla*



# Font styles

## Styles 1

Lorem ~~ipsum dolor~~ sit amet, consectetuer adipiscing elit. UT SED NISI vel justo lobortis venenatis. **Sed id** **risus**. Donec sollicitudin. Aenean nulla. Nam blandit, *sapien a venenatis viverra* , velit nisl mattis urna, `non` **`luctus`** `sapien` ante et leo. $H_2O$, E = $mc^2$

## Styles 2

Lorem ***ipsum dolor*** sit amet ( Lorem ipsum dolor sit amet) , consectetuer adipiscing elit. Ut sed nisi vel justo lobortis venenatis. Sed id risus. Donec sollicitudin. Aenean nulla. **Nam blandit**, sapien a venenatis viverra, velit nisl mattis urna, non luctus sapien ante et leo.

# Special characters in list

- Žluťoučký kůň úpěl ďábelské ódy.
  - Ψ Ω α ζ δ; i ∈ T; (a,b) ∉ A × B.

# Paragraph indentation

Lorem ipsum dolor sit amet,
consectetuer adipiscing elit.

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut sed nisi vel justo lobortis.

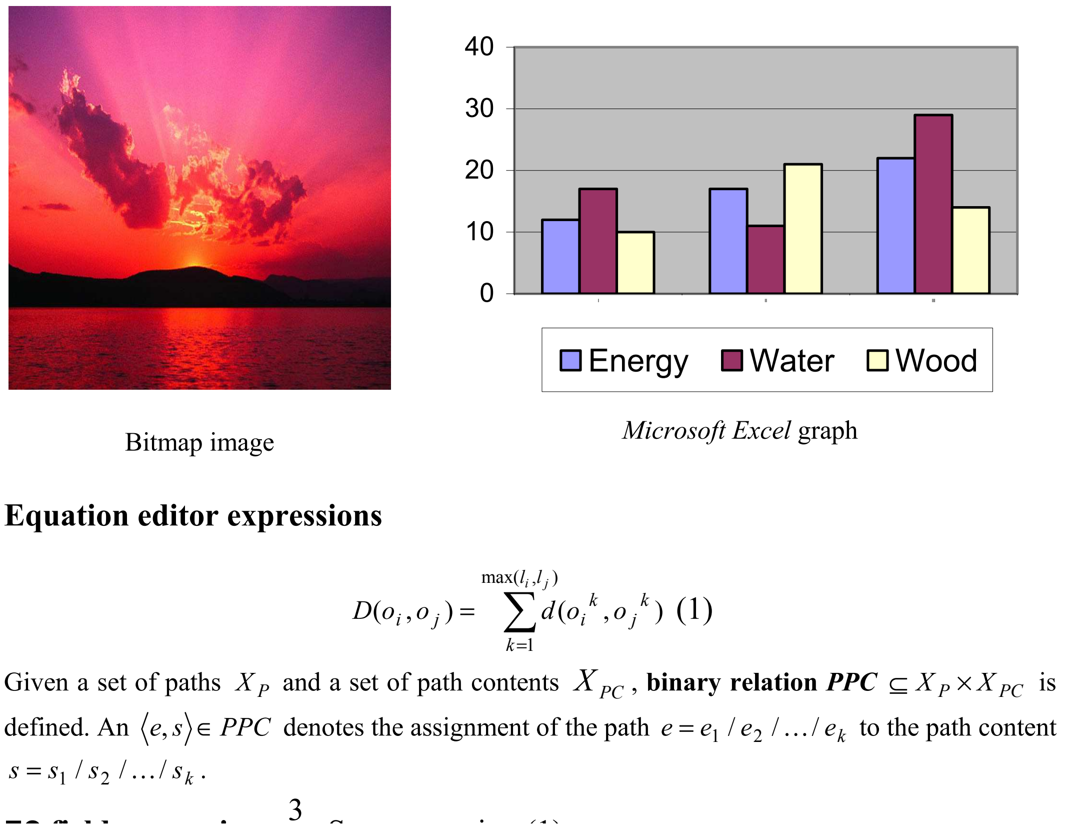
# Simple table

| Blue | **Center bold** | Right |
|---|---|---|
| 2-1 | *Italics* | Pink |

# Complex table

<table>
<tr><td colspan="4">Header</td></tr>
<tr><td rowspan="2">A</td><td>a</td><td>b</td><td rowspan="2">B</td></tr>
<tr><td>c</td><td>d</td></tr>
</table>

## Original *Word* document at the top, LaTeX output compiled to PostScript at the bottom



Bitmap image

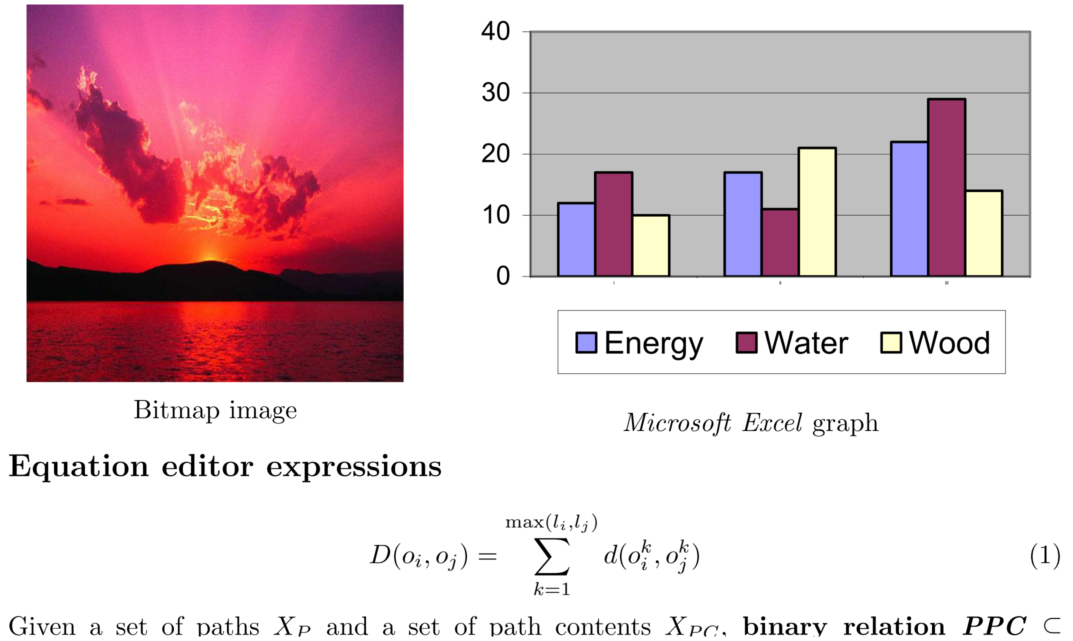
*Microsoft Excel* graph

### Equation editor expressions

$$D(o_i,o_j) = \sum_{k=1}^{\max(l_i,l_j)} d(o_i{}^k,o_j{}^k) \quad (1)$$

Given a set of paths $X_P$ and a set of path contents $X_{PC}$, **binary relation *PPC*** $\subseteq X_P \times X_{PC}$ is defined. An $\langle e,s \rangle \in PPC$ denotes the assignment of the path $e = e_1 / e_2 / \ldots / e_k$ to the path content $s = s_1 / s_2 / \ldots / s_k$.

3



Bitmap image

*Microsoft Excel* graph

### Equation editor expressions

$$D(o_i,o_j) = \sum_{k=1}^{\max(l_i,l_j)} d(o_i^k,o_j^k) \qquad (1)$$

Given a set of paths $X_P$ and a set of path contents $X_{PC}$, **binary relation *PPC*** $\subset$

# Appendix B

# Structure of configuration files

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration xmlns='http://kebrt.cz/word-to-latex'
      xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'>
    <variousOptions>
    <option name="OUTPUT_FORMAT" value="latex" />
        <option name="EQUATIONS" value="toimages" />
                    ...
    </variousOptions>
    <translationTable>
        <docElement name='FONT_BOLD'
                    start='\textbf{' end='}' />
        <docElement name='HEADING1' start='\part{' end='}' />
                    ...
    </translationTable>
    <specialChars>
        <latexChar char='\' convertTo='\textbackslash ' />
                    ...
</specialChars>
</configuration>
```

Figure B.1: Fragment of the `config.xml` configuration file

All the configuration is stored in an XML file with the `<configuration>` root element which contains three subelements:

| | |
|---|---|
| `<variousOptions>` | various options applied during the conversion (output format, PostScript printer name, ...) |
| `<translationTable>` | table containing mappings between input document elements (sections, paragraphs, footnotes, and so on) and LaTeX commands |
| `<specialChars>` | translation mappings between special (and national) characters and LaTeX commands |

## B.1 Conversion options

All the options, listed in table B.1, belong to the `<variousOptions>` parent element. Each of the them is inserted into the `<option>` element with two attributes, `name` and `value`.

| Option name | Description and possible values |
|---|---|
| `ONLY_IMAGES` | Convert only images and ignore text content.<br>• `yes` × `no` |
| `PRINTER_NAME` | The name of a PostScript printer which is used for exporting images in EPS format. The printer driver has to be installed on your system.<br>• e.g. `Generic Color PS` |
| `IMAGE_FORMAT` | The output format of images.<br>• `eps` for EPS vector format; requires a PostScript printer<br>• `png` for PNG bitmap format; not all the images can be exported as bitmaps |
| `TDL_FILENAME` | The translation file used for the conversion of equations. See the `Translators` subdirectory of your *MathType* directory for possible values (remember that *MathType* must be installed on your system to be able to convert equations). You can edit or add new files into this directory if you want to customize the conversion of equations.<br>• e.g. `LaTeX.tdl` |
| `EQUATIONS` | The conversion of equations, covers *Equation Editor*, *MathType* and `EQ` fields equations.<br>• `ignore` – do not convert<br>• `convert` – convert using the translation file specified in the `TDL_FILENAME` option<br>• `toimages` – convert to images |
| `CREATE_COMMANDS_`<br>`FOR_STYLES` | The convertor will create (or not) new commands for paragraph and characters user styles in the preamble. Output text files are more maintainable if commands like `\code` are used instead of for example `\texttt`.<br>• `yes` × `no` |
| `DOC_CLASS` | The `@WL-DOC_CLASS` macro used in the preamble will be replaced with the value of this option.<br>• e.g. `article` |

Table B.1: Conversion options

| **Option name** | **Description and possible values** |
|---|---|
| OUTPUT_FORMAT | The format of output files. Please remember that all translations mappings described in B.2 should be set to match this output format. The convertor performs a few special actions depending on two possible values:<br>• latex<br>• xml |
| PAGE_SIZE | The @WL-PAGE_SIZE macro used in the document preamble will be replaced with the value of this option (only if the PAGE_SIZE_PROCESSING option is set to my).<br>• e.g. a4paper |
| PAGE_SIZE_ PROCESSING | Specifies how the page size will be processed, possible values are:<br>• complete – the @WL-PAGE_SIZE macro used in the document preamble will replaced with the complete page size definition matching the page size of the input document<br>• symbolic – the convertor will try to translate the symbolic page size of the input document (e.g. A4) to an appropriate LaTeX size (e.g. letterpaper)<br>• my – see the previous option |
| DEFAULT_FONT_SIZE | Defines the default font size of the input document. The portions of text having this size won't be marked with any font size command in the output file. Only integer numbers are allowed.<br>• e.g. 12 |
| PARAGRAPH_ ALIGNMENTS | Convert paragraph alignments.<br><br>– yes × no |
| PARAGRAPH_ INDENTATION | Convert paragraph indentations.<br><br>– yes × no |
| COLOR_TEXT | Use special commands for colored text.<br>• yes × no |
| COLOR_BG | Use special commands for text with colored background.<br>• yes × no |
| COLOR_TABLE | Use special commands for table cells with colored background.<br>• yes × no |

Table B.1: Conversion options

| **Option name** | **Description and possible values** |
|---|---|
| `AUTO_DETECT_DEFAULT_FONT_SIZE` | Detect the default font size of the input document automatically or not. The font size of the *Word* built-in *Normal* style will be taken as the default one if this option is set to `yes`.<br>• `yes` × `no` |
| `MULTICOLUMN` | Convert multicolumn sections.<br>• `yes` × `no` |
| `WRAP_PARAGRAPHS` | A positive value causes paragraphs to be wrapped into lines after each $x$ characters. Any other value forces the convertor not to wrap paragraphs.<br>• e.g. `80` |
| `NEW_LINE` | Defines the line separator, possible values are:<br>• `crlf` – Windows line separator<br>• `cr` – Macintosh line separator<br>• `lf` – Unix line separator |
| `SANS_SERIF` | Use special commands for sans-serif fonts.<br>• `yes` × `no` |
| `AUTO_RECOGNIZE_MATH` | Recognize math expressions written in italics (e.g. $i$).<br>• `yes` × `no` |
| `IGNORE_EMPTY_PAR` | Ignore paragraphs not containing any text.<br>• `yes` × `no` |
| `RECOGNIZE_NUMBERED_EQ_REF` | Recognize references to numbered equations marked with labels like “(5)” or “(5.2)”.<br>• `yes` × `no` |
| `ENDNOTES_TO_BIBLIO` | Convert endnotes to bibliography items.<br>• `yes` × `no` |
| `RECOGNIZE_BIBLIO_REF` | Recognize in-text citations (references to bibliography items, e.g. “[4]”).<br>– `yes` × `no` |
| `FONT_SIZE[1-10]` | These options define ranges for each converted font size group. The range for the $i$-th group is from `FONT_SIZE(i-1)`+1 to `FONT_SIZE(i)` (inclusive). The first group (`FONT_SIZE1`) starts with the size 1. Only integer numbers are allowed.<br>• e.g. `11` for the `FONT_SIZE4` option and `12` for the `FONT_SIZE5` option when the default font size is 12 |

Table B.1: Conversion options

## B.2 Conversion mappings

Table B.2 shows the complete list of conversion mappings between input document elements (sections, paragraphs, lists, and so on) and *Word-to-LaTeX*. Each mapping has a start command (S:) which is inserted before the element and most of them have also an end command (E:) inserted after the element. Some elements like tabulators doesn't have any content, others hold some kind of content (text, equation, another element) which is inserted between the start and end command.

Names of macros that are specific to each element begin with "#", macros common to all elements begin with "@".

- @WL-NL new line
- @WL-TAB tabulator

Table B.2 also contains the default mappings for LaTeX and XML output. When E: is omitted, the end command is always ignored by the convertor, "—" stands for the empty translation command.

| | |
|---|---|
| FONT_BOLD | bold font |
| S: \textbf{<br>E: } | |
| S: <font type="bold"><br>E: </font> | |
| FONT_ITALIC | italic font |
| S: \textit{<br>E: } | |
| S: <font type="italic"><br>E: </font> | |
| FONT_SMALLCAPS | small caps font |
| S: \textsc{<br>E: } | |
| S: <font type="smallcaps"><br>E: </font> | |
| FONT_HIDDEN | hidden font |
| S: @WL-NL%<br>E: @WL-NL | |
| S: <font type="hidden"><br>E: </font> | |

Table B.2: Conversion mappings

| | |
|---|---|
| `FONT_SUBSCRIPT` | subscript font |
| `S: $_{`<br>`E: }$` | |
| `S: <font type="subscript">`<br>`E: </font>` | |
| `FONT_SUPERSCRIPT` | superscript font |
| `S: $^{`<br>`E: }$` | |
| `S: <font type="superscript">`<br>`E: </font>` | |
| `FONT_COURIER` | courier font (e.g. Courier, Courier New) |
| `S: \texttt{`<br>`E: }` | |
| `S: <font type="courier">`<br>`E: </font>` | |
| `FONT_UPPERCASE` | uppercase font |
| `S: \uppercase{`<br>`E: }` | |
| `S: <font type="uppercase">`<br>`E: </font>` | |
| `FONT_UNDERLINE` | underlined font |
| `S: \uline{`<br>`E: }` | |
| `S: <font type="wave-underline">`<br>`E: </font>` | |
| `FONT_DOUBLE_UNDERLINE` | double-underlined font |
| `S: \uuline{`<br>`E: }` | |
| `S: <font type="double-underline">`<br>`E: </font>` | |
| `FONT_WAVE_UNDERLINE` | wavy-underlined font |
| `S: \uwave{`<br>`E: }` | |
| `S: <font type="wave-underline">`<br>`E: </font>` | |

Table B.2: Conversion mappings

| | |
|---|---|
| FONT_STRIKE | strikethrough font |
| S: \sout{<br>E: } | |
| S: <font type="strike"><br>E: </font> | |
| FONT_SANS_SERIF | sans-serif font (e.g. Arial, Verdana) |
| S: \textsf{<br>E: } | |
| S: <font type="sans-serif"><br>E: </font> | |
| FONT_SIZE1 | font size (group 1) |
| S: {\tiny<br>E: } | |
| S: <font-size value="1"><br>E: </font-size> | |
| FONT_SIZE2 | font size (group 2) |
| S: {\scriptsize<br>E: } | |
| S: <font-size value="2"><br>E: </font-size> | |
| FONT_SIZE3 | font size (group 3) |
| S: {\footnotesize<br>E: } | |
| S: <font-size value="3"><br>E: </font-size> | |
| FONT_SIZE4 | font size (group 4) |
| S: {\small<br>E: } | |
| S: <font-size value="4"><br>E: </font-size> | |
| FONT_SIZE5 | font size (group 5) |
| S: {\normalsize<br>E: } | |
| S: <font-size value="5"><br>E: </font-size> | |

Table B.2: Conversion mappings

| | |
|---|---|
| `FONT_SIZE6` | font size (group 6) |
| `S: {\large`<br>`E: }` | |
| `S: <font-size value="6">`<br>`E: </font-size>` | |
| `FONT_SIZE7` | font size (group 7) |
| `S: {\Large`<br>`E: }` | |
| `S: <font-size value="7">`<br>`E: </font-size>` | |
| `FONT_SIZE8` | font size (group 8) |
| `S: {\LARGE`<br>`E: }` | |
| `S: <font-size value="8">`<br>`E: </font-size>` | |
| `FONT_SIZE9` | font size (group 9) |
| `S: {\huge`<br>`E: }` | |
| `S: <font-size value="9">`<br>`E: </font-size>` | |
| `FONT_SIZE10` | font size (group 10) |
| `S: {\Huge`<br>`E: }` | |
| `S: <font-size value="10">`<br>`E: </font-size>` | |
| `HEADING1` | heading (level 1); headings have to be marked with the *Word* built-in styles; they can be defined up to level 9 |
| `S: \section{`<br>`E: }` | |
| `S: <heading level="1">`<br>`E: </heading>` | |
| `HEADING2` | heading (level 2) |
| `S: \subsection{`<br>`E: }` | |
| `S: <heading level="2">`<br>`E: </heading>` | |

Table B.2: Conversion mappings

| | |
|---|---|
| HEADING3 | heading (level 3) |
| S: \subsubsection{<br>E: } | |
| S: <heading level="3"><br>E: </heading> | |
| ALIGN_CENTER | paragraph alignment – centered |
| S: \begin{center}@WL-NL<br>E: @WL-NL\end{center} | |
| S: <align type="center" /><br>E: — | |
| ALIGN_LEFT | paragraph alignment – left |
| S: {\raggedright@WL-NL<br>E: @WL-NL} | |
| S: <align type="left" /><br>E: — | |
| ALIGN_RIGHT | paragraph alignment – right |
| S: {\raggedleft@WL-NL<br>E: @WL-NL} | |
| S: <align type="right" /><br>E: — | |
| TABLE_ALIGN_CENTER<br>• #WIDTH | table paragraph alignment – centered<br>table cell width (in points) |
| S: \parbox{#WIDTHpt}{\centering<br>E: } | |
| S: <align type="center" /><br>E: — | |
| TABLE_ALIGN_LEFT<br>• #WIDTH | table paragraph alignment – left<br>table cell width (in points) |
| S: \parbox{#WIDTHpt}{\raggedright<br>E: } | |
| S: <align type="left" /><br>E: — | |

Table B.2: Conversion mappings

| | |
|---|---|
| TABLE_ALIGN_RIGHT | table paragraph alignment – right |
| • #WIDTH | table cell width (in points) |
| S: \parbox{#WIDTHpt}{\raggedleft | |
| E: } | |
| S: <align type="right" /> | |
| E: — | |
| FOOTNOTE | footnote |
| S: \footnote{ | |
| E: } | |
| S: <footnote> | |
| E: </footnote> | |
| PAGE_BREAK | page break |
| S: \pagebreak{}@WL-NL@WL-NL | |
| S: <pagebreak /> | |
| EQUATION_INLINE | inline equation |
| S: \begin{math} | |
| E: \end{math} | |
| S: <equation type="inline"> | |
| E: </equation> | |
| EQUATION_NUMBERED | numbered equation |
| • #ORIG_LABEL | original equation label retrieved from the input document |
| S: \begin{equation} | |
| E: @WL-NL%#ORIG_LABEL@WL-NL\end{equation} | |
| S: <equation type="numbered" origlabel="#ORIG_LABEL"> | |
| E: </equation> | |
| EQUATION_LABEL | equation label inserted into the EQUATION_NUMEBERED element |
| • #NAME | auto-generated label (auto-incrementing counter is used) |
| S: \label{#NAME} | |
| S: <label name="#NAME"/> | |

Table B.2: Conversion mappings

| | |
|---|---|
| EQUATION_OUTLINE | equation displayed on a separate line |
| S: \begin{displaymath}<br>E: \end{displaymath} | |
| S: <equation type="outline"><br>E: </equation> | |
| INDEX_ENTRY | index entry (*Word* XE field) |
| S: \index{<br>E: } | |
| S: <index-entry><br>E: </index-entry> | |
| INDEX | index (*Word* INDEX field), LaTeX generates the whole index automatically |
| S: \printindex | |
| S: <printindex /> | |
| IMAGE_COMMAND | image |
| • #WIDTH | image width (in points) |
| • #FILENAME | auto-generated image filename (e.g. img1.eps) |
| • #TITLE | image title (if present) |
| S: \includegraphics[width=#WIDTHpt]{#FILENAME}@WL-NL | |
| S: <image width="#WIDTH" src="#FILENAME" title="#TITLE" /> | |
| IMAGE_CONTAINER | image container (used when the image has a title) |
| S: \begin{figure}[h]@WL-NL<br>E: \end{figure} | |
| S: —<br>E: — | |
| IMAGE_TITLE | image title inserted into the IMAGE_CONTAINER element |
| • #TITLE | title |
| S: \caption{#TITLE} | |
| S: — | |
| TOC | table of contents (*Word* TOC field), LaTeX generates the table of contents automatically as well as *Word* |
| S: \tableofcontents | |
| S: <table-of-contents /> | |

Table B.2: Conversion mappings

| | |
|---|---|
| HYPERLINK | hyperlink |
| • #HREF | hyperlink target; the macro can be used also in the end command |
| S: \href{#HREF}{<br>E: } | |
| S: <link href="#HREF"><br>E: </link> | |
| SPECIAL_COMMAND | LaTeX command(s) inserted into the document through the *Word* PRIVATE field whose content must begin with the case-insensitive string latex:, such a field may look like this: PRIVATE LaTeX: \indent (\indent will be inserted between the start and end command) |
| S: —<br>E: — | |
| S: —<br>E: — | |
| REFERENCE | bookmark reference |
| • #NAME | name of the bookmark that is being referenced |
| S: \ref{#NAME} | |
| S: <reference name="#NAME" /> | |
| MATH_REFERENCE | equation reference; the *Word* hard-coded reference (e.g. "(3)") will be the content of this element |
| • #NAME | name of the equation that is being referenced, it is generated for each numbered equation in the document (e.g. "eq3"). |
| S: (\ref{#NAME})@WL-NL%<br>E: @WL-NL | |
| S: <math-reference name="#NAME"><br>E: </math-reference> | |
| NOTE_REFERENCE | note reference; currently only endnotes are supported |
| • #NAME | name of the note (typically number) that is being referenced |
| S: \cite{ref#NAME} | |
| S: <note-reference name="#NAME" /> | |

Table B.2: Conversion mappings

| | |
|---|---|
| BIBLIO_REFERENCE | reference to a bibliography item (“citation”); the *Word* hard-coded citation (e.g. “[Ka75]”) will be the content of this element |
| • #NAME | name of the bibitem (e.g. “Ka75”) |
| S: \cite{ref#NAME}@WL-NL%<br>E: @WL-NL | |
| S: <biblio-reference name="#NAME"><br>E: </biblio-reference> | |
| PAGE_REFERENCE | page reference |
| • #NAME | name of the bookmark that is being referenced |
| S: \pageref{#NAME} | |
| BOOKMARK_LABEL | bookmark |
| • #NAME | name of the bookmark |
| S: \label{#NAME} | |
| S: <bookmark name="#NAME" /> | |
| STYLE | paragraph or character user style |
| • #NAME | name of the style; all numbers in the name are replaced with words (e.g. “1” → “One”) |
| S: \#NAME{<br>E: } | |
| S: <style name="#NAME"><br>E: </style> | |
| STYLE_DEFINITION | container for a single user style definition; commands describing the style will be inserted into |
| • #NAME | name of the user style |
| S: \newcommand{\#NAME}[1]{<br>E: } | |
| S: <style-definition name="#NAME"><br>E: </style-definition> | |
| DOCUMENT_BODY | document body |
| S: \begin{document}@WL-NL<br>E: \end{document} | |
| S: <body><br>E: </body></document> | |

Table B.2: Conversion mappings

| | |
|---|---|
| LIST_ENUMERATE | enumerated list |
| S: | \begin{enumerate}@WL-NL |
| E: | \end{enumerate}@WL-NL@WL-NL |
| S: | @WL-NL<list type="enumerate"> |
| E: | </list>@WL-NL |
| LIST_ITEMIZE | itemized list |
| S: | \begin{itemize}@WL-NL |
| E: | \end{itemize}@WL-NL@WL-NL |
| S: | @WL-NL<list type="itemize"> |
| E: | </list>@WL-NL |
| LIST_ITEM | list item |
| S: | @WL-TAB\item |
| E: | — |
| S: | <list-item> |
| E: | </list-item>@WL-NL |
| PARAGRAPH | common paragraph |
| S: | — |
| E: | @WL-NL@WL-NL |
| S: | @WL-NL<para> |
| E: | </para>@WL-NL |
| TABLE_PARAGRAPH | paragraph in a table |
| S: | @WL-NL |
| E: | @WL-NL |
| S: | @WL-NL<table-para> |
| E: | </table-para>@WL-NL |
| LIST_PARAGRAPH | paragraph in a list |
| S: | — |
| E: | @WL-NL |
| S: | <list-para> |
| E: | </list-para> |
| LINE_BREAK | line break |
| S: | @WL-NL\\@WL-NL |
| S: | <linebreak /> |
| TAB | tabulator |
| S: | \hspace{15pt} |
| S: | <tab /> |

Table B.2: Conversion mappings

| | |
|---|---|
| TABLE_CELL | table cell |
| • #WIDTH | cell width |
| S: & | |
| E: — | |
| S: <table-cell width="#WIDTH"> | |
| E: </table-cell> | |
| TABLE_ROW | table row |
| S: — | |
| E: \\@WL-NL | |
| S: <table-row> | |
| E: </table-row> | |
| TABLE | table |
| • #TITLE | title of the table |
| S: @WL-NL\vspace{3pt} \noindent@WL-NL\begin{tabular} | |
| E: \end{tabular}\\@WL-NL\vspace{2pt}@WL-NL | |
| S: @WL-NL<table title="#TITLE"> | |
| E: </table>@WL-NL | |
| TABLE_CONTAINER | table container (used when the table has a title) |
| S: @WL-NL\begin{table}[h] | |
| E: \end{table}@WL-NL | |
| S: — | |
| E: — | |
| TABLE_TITLE | table title inserted into the TABLE_CONTAINER element |
| • #TITLE | title |
| S: \caption{#TITLE} | |
| S: — | |
| TABLE_MULTIROW | table cell with merged rows |
| • #ROWS | number of merged rows in the cell |
| S: \multirow{#ROWS}{*}{ | |
| E: } | |
| S: <table-multirow-cell multi="#ROWS" /> | |
| E: — | |

Table B.2: Conversion mappings

| | |
|---|---|
| TABLE_CELL_COLOR | command for the colored background of table cells; the #COLOR macro in the next element (TABLE_MULTI_COLUMN) will be replaced with this command |
| • #COLOR | background color in HTML notation (e.g. FF0000) |
| S: >{\columncolor[HTML]{#COLOR}} | |
| S: color="#COLOR" | |
| TABLE_MULTICOLUMN | table cell with merged columns |
| • #COLS | number of merged columns |
| • #LEFT_BORDER | "\|" if the cell has a left border |
| • #RIGHT_BORDER | "\|" if the cell has a right border |
| • #COLOR | see the previous element |
| • #ALIGN | cell content alignment; l (left), r (right), c (center) |
| S: \multicolumn{#COLS}{#LEFT_BORDER#COLOR#ALIGN#RIGHT_BORDER}{ | |
| E: } | |
| S: <table-cell multi="#COLS" left-border="#LEFT_BORDER" right-border="#RIGHT_BORDER" align="#ALIGN" width="#WIDTH" #COLOR> | |
| E: </table-cell> | |
| PAR_INDENT | paragraph indentation |
| • #LEFT_INDENT | left indentation (in points) |
| • #RIGHT_INDENT | right indentation (in points) |
| • #FIRST_LINE_INDENT | first line indentation (in points) |
| S: \begin{indentation}{#LEFT_INDENTpt}{#RIGHT_INDENTpt} {#FIRST_LINE_INDENTpt}@WL-NL | |
| E: @WL-NL\end{indentation} | |
| S: @WL-NL<par-indent left="#LEFT_INDENT" right="#RIGHT_INDENT" first-line="#FIRST_LINE_INDENT" />@WL-NL | |
| E: — | |
| MULTICOLUMN | multicolumn section |
| • #COLS | number of columns in the section |
| S: \begin{multicols}{#COLS} | |
| E: \end{multicols} | |
| S: <multicol count="#COLS"> | |
| E: </multicol> | |

Table B.2: Conversion mappings

| | |
|---|---|
| COLOR_TEXT | colored text |
| • #COLOR | color in HTML notation (e.g. FF0000) |
| S: \textcolor[HTML]{#COLOR}{ | |
| E: } | |
| S: <font-color color="#COLOR"> | |
| E: </font-color> | |
| COLOR_BG | text with colored background |
| • #COLOR | color in HTML notation (e.g. FF0000) |
| S: \colorbox[HTML]{#COLOR}{ | |
| E: } | |
| S: <font-background color="#COLOR"> | |
| E: </font-background> | |
| ENDNOTES_SECTION | container for endnotes, can be used for inserting the bibliography |
| S: \begin{thebibliography}{99}@WL-NL | |
| E: \end{thebibliography}@WL-NL | |
| S: <bibliography> | |
| E: </bibliography> | |
| ENDNOTE | endnote, this translation is used in the ENDNOTES_SECTION context, suitable for inserting a single bibliography item |
| • #NUMBER | number of the endnote |
| S: @WL-TAB\bibitem[#NUMBER]{ref#NUMBER} | |
| E: @WL-NL | |
| S: @WL-TAB<bib-item name="#NUMBER"> | |
| E: </bib-item> | |
| ENDNOTE_REFERENCE | endnote, this translation is used at the endnote's insertion point |
| • #NUMBER | number of the endnote |
| • #CONTENT | endnote's text content (can be used when translating endnotes to footnotes) |
| S: \cite{ref#NAME} | |
| S: <endnote-reference name="#NUMBER" /> | |

Table B.2: Conversion mappings

| | |
|---|---|
| `COLOR_BG_AND_BORDER` | text with colored border and background |
| • `#BORDER_COLOR` | border color, in HTML notation (e.g. `FF0000`) |
| • `#COLOR` | text color, dtto |
| `S: \fcolorbox[HTML]{#BORDER_COLOR}[HTML]{#COLOR}{`<br>`E: }` | |
| `S: <box border-color="#BORDER_COLOR" background-color="#COLOR">`<br>`E: </box>` | |
| `COLOR_BORDER` | colored border around text |
| • `#BORDER_COLOR` | border color, in HTML notation (e.g. `FF0000`) |
| `S: \fcolorbox[HTML]{#BORDER_COLOR}[HTML]{FFFFFF}{`<br>`E: }` | |
| `S: <box border-color="#BORDER_COLOR">`<br>`E: </box>` | |
| `BORDER` | black border around text |
| `S: \fbox{`<br>`E: }` | |
| `S: <box>`<br>`E: </box>` | |

Table B.2: Conversion mappings

## B.3 Special characters

The configuration of special characters is enclosed in the `<specialChars>` element. `<latexChar>` elements are used for defining characters that have a special meaning in the output format. They must be written in a correct order because one special character can be used for translating another special character which is illustrated in the following example.

```
<latexChar char='\' convertTo='\textbackslash ' />
<latexChar char='{' convertTo='\{' />
```

All the other special and national characters are defined in `<char>` elements. The `code` attribute contains the Unicode [1] number of each character. The details about the common context translation (`convertTo` attribute) and the math context translation (`mathConvertTo` attribute) can be found in section 1.6.4. A short example follows.

```
<char code="010C" convertTo="\v{C}" mathConvertTo="\check{C}" />
<char code="010D" convertTo="\v{c}" mathConvertTo="\check{c}" />
```

# Bibliography

[1] *Unicode Home Page*, `http://www.unicode.org/`

[2] *Extensible Markup Language (XML)*, `http://www.w3.org/XML/`

[3] *XSL Transformations (XSLT)*, `http://www.w3.org/TR/xslt`

[4] *XHTML 1.0 The Extensible HyperText Markup Language*, `http://www.w3.org/TR/xhtml1/`

[5] *Cascading Style Sheets*, `http://www.w3.org/Style/CSS/`