

ConT_EXt Figures

abstract

Within the T_EX community there is a widely used database for bibliographic references, BIBTEX, but not for figures. To manage figures ConT_EXt now supports a figures database. The database is setup in XML and converted to an interactive PDF figure library featuring ordered displays and a search mechanism. From the library, figures can be included easily in ConT_EXt documents as long as both the PDF and the XML files remain present.

Structure

Figures are described and maintained in an XML type file. Each figure is encapsulated in a `figure` element and the assembly of all figure elements is encapsulated in the main database element `figurelibrary`:

```
<figurelibrary language="en">  
  ...  
</figurelibrary>
```

The `figurelibrary` element has a `language` attribute to tell ConT_EXt which language is used in the included texts. Only one language can be specified for each figure database. The default language is english and need not be specified.

The database has comment fields to describe shared characteristics of the figures. They are encapsulated in a `description` element. Several sub-elements or fields in the element are supported and each field can be omitted, left empty or filled with many lines of text. The three dots ... signify this possibility.

```
<description>  
  <organization>...</organization>  
  <project>...</project>  
  <product>...</product>  
  <comment>...</comment>  
</description>
```

Each figure, as described in the figure element, has four fields of which two (`file` and `label`) are mandatory and must be completed, and two are optionally filled:

```
<figure>  
  <file>filename.png</file>  
  <label>symbolic name</label>  
</figure>
```

If a figure is available in several formats, such as PNG and JPG, and you don't supply the file's picture format in the file extension, ConT_EXt locates the most appropriate one automatically, given that the pdfT_EX compiler can handle PDF, PNG and JPG formats and METAPOST. To keep the database general purpose we advise you, however, to supply the file extension together with the file name as shown.

If the figure is not yet available, a placeholder can be substituted for the future file name by replacing the `file` by a dummy sub-element:

```
<figure>
  <dummy width="4cm" height="3cm">to be made</dummy>
  <label>mandatory symbolic name</label>
</figure>
```

Note the positions of the <> brackets. The label element associates a symbolic name with the figure, to be used later to recall the figure from the database.

Usage

The figure library is a PDF file generated from the XML specification file, say myfigs.xml, by processing it by T_EXexec (a PERL script in the ConT_EXt distribution available from Pragma ADE):

```
texexec --pdf --use=fig-make myfigs.xml
```

The first option (-pdf) tells T_EXexec to generate a PDF file. The second option (-use) invokes the style file fig-make¹ that comes with the ConT_EXt distribution. T_EXexec invokes ConT_EXt which calls PDFTEX with this style file.

The resulting PDF file receives the name myfigs.pdf. It is an interactive figure library for a PDF viewer such as ACROBAT or GHOSTVIEW. Up front in the library file are the individual figures shown at their natural size. At the rear in the file is a summary with the descriptions, a table of contents and an index. Figure 1 below shows the figures of the example given later.



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Figure 1 The first three pages of the figure library file.

Figure 2 shows the summary. In the summary the figures are shown first at a reduced height, second at their size with respect to A4 paper size, third with their descriptions.

At screen page bottom is a navigation menu to reach the table of contents or the alphabetically ordered index. Click on a figure to switch between full size and reduced size. Leave the viewer by clicking on close.

Instead of showing the figure relative to A4 paper size other sizes can be chosen with the T_EXexec -mode command line option:

```
texexec --pdf --use=fig-make --mode=letter
```

¹ fig-make is a synonym for x-fig-01

Figure collection

organization : PRAGMA ADE
project : ConTeXt
product : Beginners Manual
comment : Figures

1   *file* : hass01.png
label : mill
w×h : 113.7048pt×142.3719pt
copyright : PRAGMA ADE
comment : This mill was built in 1783.

2   *file* : hass02.png
label : gate
w×h : 142.3719pt×106.7187pt
copyright : PRAGMA ADE
comment : This gate was built in 1259.

[begin](#) [index](#) [list](#) [close](#) [go back](#)

page 4

3   *file* : buffer
label : river
w×h : 85.35826pt×113.81102pt
copyright : PRAGMA ADE
comment : The Zwarte Water (Black Water) river.

[begin](#) [index](#) [list](#) [close](#) [go back](#)

page 5

List of figures

1 mill
 2 gate
 3 river

[begin](#) [index](#) [list](#) [close](#) [go back](#)

page 6

Index of figures

gate 2	river 3
mill 1	

[begin](#) [index](#) [list](#) [close](#) [go back](#)

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Figure 2 The overview, table of contents and index of the figures that are present in the file.

The choices for `-mode` are `A4`, `letter` and `compact`, of which `A4` is default.

mode	meaning
letter	map the preview on letter size
compact	use an alternative presentation

An XML example

The XML database specification file for the example shown above in figures 1 and 2 is:

```
<figurelibrary language="en">
  <description>
    <organization>PRAGMA ADE</organization>
```

```

    <project>ConTeXt</project>
    <product>Beginners Manual</product>
    <comment>Figures</comment>
</description>

<figure>
  <file>hass01.png</file>
  <label>mill</label>
  <copyright>PRAGMA ADE</copyright>
  <comment>This mill was built in 1783</comment>
</figure>

<figure>
  <file>hass02.png</file>
  <label>gate</label>
  <copyright>PRAGMA ADE</copyright>
  <comment>This gate was built in 1259</comment>
</figure>

<figure>
  <file>buffer</file>
  <label>river</label>
  <copyright>PRAGMA ADE</copyright>
  <comment>The Zwarte Water (Black Water) river</comment>
</figure>
</figurelibrary>

```

A T_EX example

To apply the database to a ConT_EXt document the figure library processing module must be specified:

```
\usemodule[fig-base]
```

Next specify which database to use:

```
\usefigurebase[myfigs]
```

From this point, having both the XML and the PDF files available, you may place figures in your document file to be extracted from the (one or more) PDF libraries just specified:

```

\placefigure
  {A very old mill.}
  {\externalfigure[mill][width=4cm]}

```

Another example using more options of the `\placefigure` command is:

```

\placefigure
  [left] [fig:the gate] {This is an old city gate.}
  {\externalfigure[gate][height=4cm]}

```



Figure 3 This is an old city gate.

the result of which is shown in figure 3. A figure may also be included by its page number in the figure database:

```
\placefigure
  {This is an old city gate.}
  {\externalfigure[myfigs][page=2,
   width=.3\textwidth]}
```

This method is not recommended for a final document since updating the `myfigs` figure database may change the page number of a figure thus resulting in a document with errors.

Finally, it continues to be possible to load a figure directly from disk:

```
\externalfigure[myfigure][width=4cm]
```

or

```
\useexternalfigure[my not too large figure][myfigure][width=4cm]
\externalfigure[my not too large figure]
```

When the figure base module is loaded, ConT_EXt will first try to locate `myfigs` in the XML database. This file, therefore, must be kept and not deleted after construction of the PDF file. When the figure cannot be found there, ConT_EXt will search for a file with the name `myfigure` which may include a file name extension.

Apart from the already mentioned T_EX_{exec} `mode` option there are no other options that can be used.

Non-ConT_EXt users can access the database by means of an additional file. For this, you need to run T_EX_{exec} once more:

```
texexec --pdf --use=fig-fake yourfile.xml
```

The resulting file, `yourfile.fig`, can be loaded in your document in the normal way. The figures can then be accessed with:

```
\getfigurefile{label}
\getfigurepage{label}
```

Given that you have also loaded `supp-pdf.tex`, you can now include the figure file with:

```
\includefigurefile width 10cm height 4cm {label}
```

Don't use this method in ConT_EXt.

Documentation

ConT_EXt has many more options to include graphics in your document, including scaling, clipping, positioning, subtitling, grouping and general manipulating. These techniques and more are found in the ConT_EXt and MetaFun manuals available from our web site: www.pragma-ade.com.