EAGLE goes LaTeX
Version 1 *

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Abstract

This document exports via EAGLEs - User Program Language (ULP) a schematic drawing to LaTeX. If you can contribute to this document, please mail to m.haselberger@cti.ac.at

1 Introduction

To generate documents which includes a schematic drawing in an excellent quality, a picture drawing program which exports a vector graphic has to be used. Especially for electronic circuits, this program has to have a library for placing base components into the schematic.
Furthermore, a selectable grid snap function should avoid being offgrid. Next, a junction dot has to be placed on necessary net places. Finally, the names of the component should be meet American-Math-Association-Style (AMS) conventions.

All above mentioned demands are now available with the introduced converter EAGLELATEX.ULP.

1.1 Why not a standard drawing program?

I like to use DVI-Documents (LaTeX)for draft and alternately PDF-Documents (PDFLaTeX) for final release of document.
Therefore, a picture drawing program is needed, which exports same picture two times,

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first in an EPS-format for DVI-output and second a JPG- (or PDF-) format for PDF-output. The `\ifpdf` condition has to be used therefore.

There exists a lot of drawing programs for LaTeX. But all programs have more ore less annoying disadvantages to items listed in the introduction.

2   Realisation

EAGLE is a widely used schematic and board editor, because of reasonable price and a well function evaluation version. The export capabilities of EAGLE would meet the output formats like EPS and PDF. Unfortunately, the AMS convention is not visible. So, a OLP-Program is created for all the demands.

pic:test

Figure 1 is an example of a schematic drawing in EAGLE. To arrange component names in a funny way, you have to SMASH the component and MOVE and ROTATE the name. If you want to hide NAME, you have to delete literals (only numbers in NAME are suppressed to prevent printing PIN-Name, which are placed in same LAYER 95).
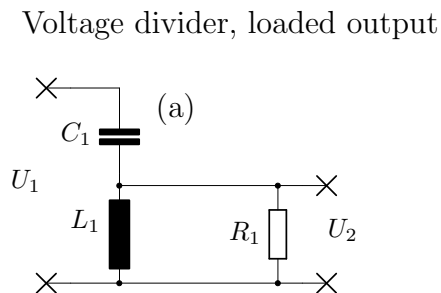
Voltage divider, loaded output

Figure 1: Voltage divider with (a)... Capacity C_1 `pic:test`

VALUE is not printed, because of overloading the schematic. VALUE have to be mentioned in the document, maybe as a table.

3   Implemetation

Thus LaTeX has very restricted capability of drawing pictures, packages like *epic* or *eepic* are fortunately available (pls. refer to manual "eepic.dvi" from Conrad Kwok, found in miktex environment). This packages have to be implemented by
`\includepackage{epic,eepic}`.
To include the generated picture in the document, a figure environment is used with the input
`\include{pictest.pic}`.
Thats all folks.

4   Conclusion

The introduced ULP is an easy way to implement mature figures. Future improvements could be done in case of scaling, converting the board too, implement particular symbols as voltage supplies, voltage arrows, current arrows.
Pls. feel free to improve existing ULP for better performance, but don't forget to upload it to CADSOFT for free access.