

gEDA

GPL Electronic Design Automation

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Agenda

What is EDA?

What is gEDA?

Why gEDA?

Tools

Demo

Circuit Simulation

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What is EDA?

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What is EDA?

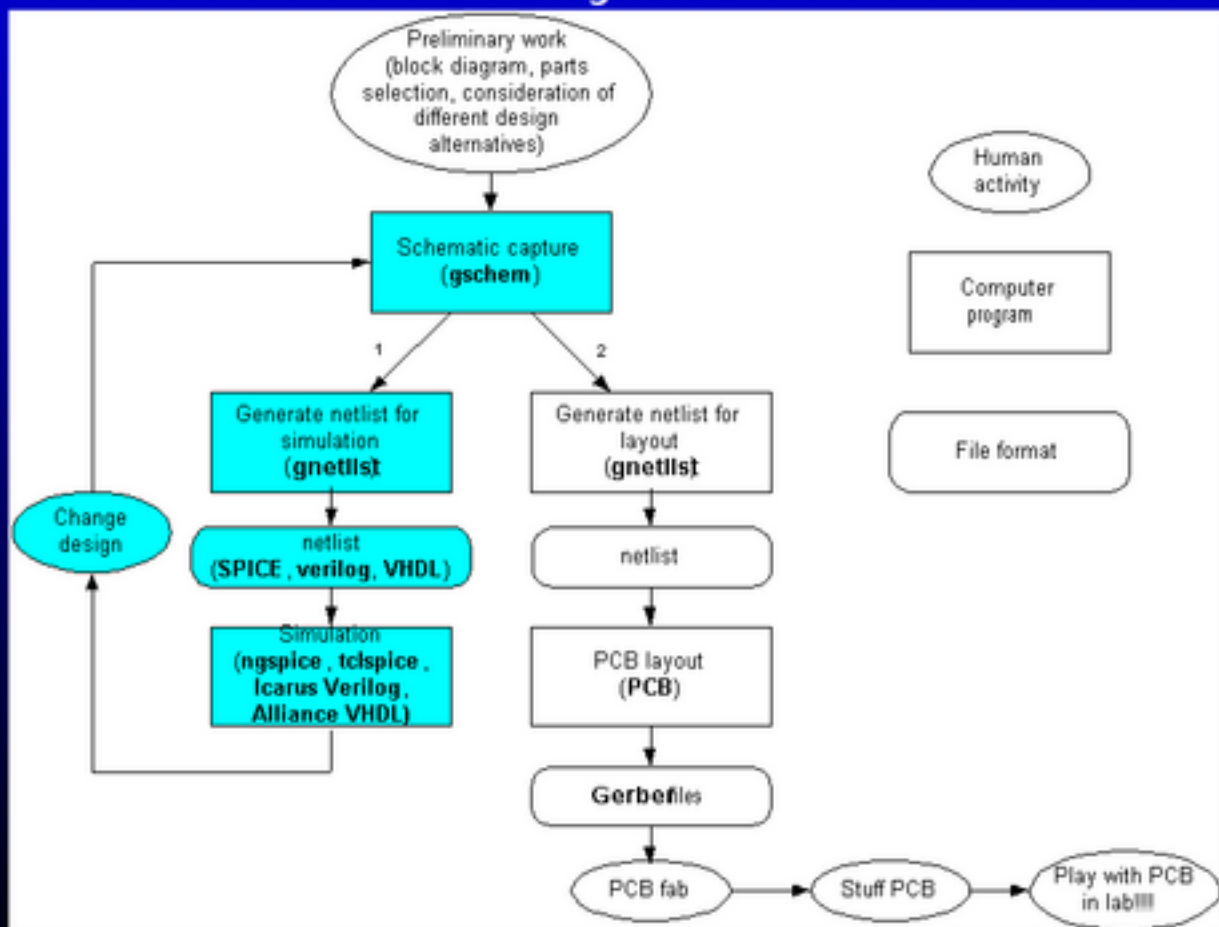
- EDA stands for Electronic Design Automation
- Tools for designing and producing electronic systems.
- Electronic Computer-Aided Design (ECAD)
- Desktop application used by circuit designers.

What is EDA?

- Schematic capture
- Netlist generation
- Simulation
- Printed Circuit Board Layout
- PCB testing
- Production

What is EDA?

Design flow



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What is EDA?

What is gEDA?

Why gEDA?

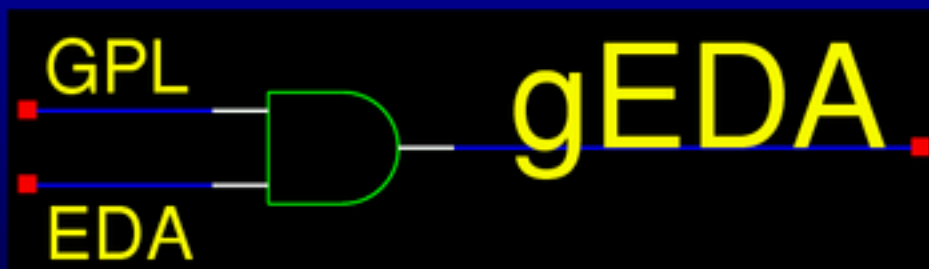
Tools

Demo

Circuit Simulation

What is gEDA?

- gEDA stands for:
GPL'd Electronic Design Automation



What is gEDA?

- GPL'd tools for doing EDA design
- Free Software project
- Collection of people working together
- gEDA pronounced "g-daahhh" or "gee-daahhh"

What is gEDA?

- gEDA unofficially started in the middle of 1997
- gEDA released first version on April 1st, 1998
- gEDA started as a one person show, but
 - now has ~dozen contributors
- gEDA consists of about 10 sub-projects
- My sub-project is called gEDA/gaf
 - (gschem and friends)

What is gEDA?

- Low to mid-level complexity circuit design
- Geared toward board level design
- Targeted at the following users:
 - Hobbyists
 - Academics
 - Small companies
- Favorite user: Free / Open Hardware projects
 - Ronja
 - Open Automaton Project

What is gEDA?

- Website: <http://geda.seul.org>
- gEDA is hosted by SEUL
- SEUL stands for Simple End User Linux
- SEUL provides (to Free Software projects):
 - Web hosting
 - ftp site
 - Mailing lists / archives
 - CVS access
 - IRC server
 - Bug reporting database

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Why gEDA?

General Free Software Advantages

- Free as in freedom
- Open Development
- Stability
- Cross platform
 - Linux / Unix
 - Mac OSX
 - Microsoft Windows

Why gEDA?

Especially good for engineering programs

- Free as in beer
- Open and documented file formats
 - ASCII format
- Legacy design protection
- Open design flow

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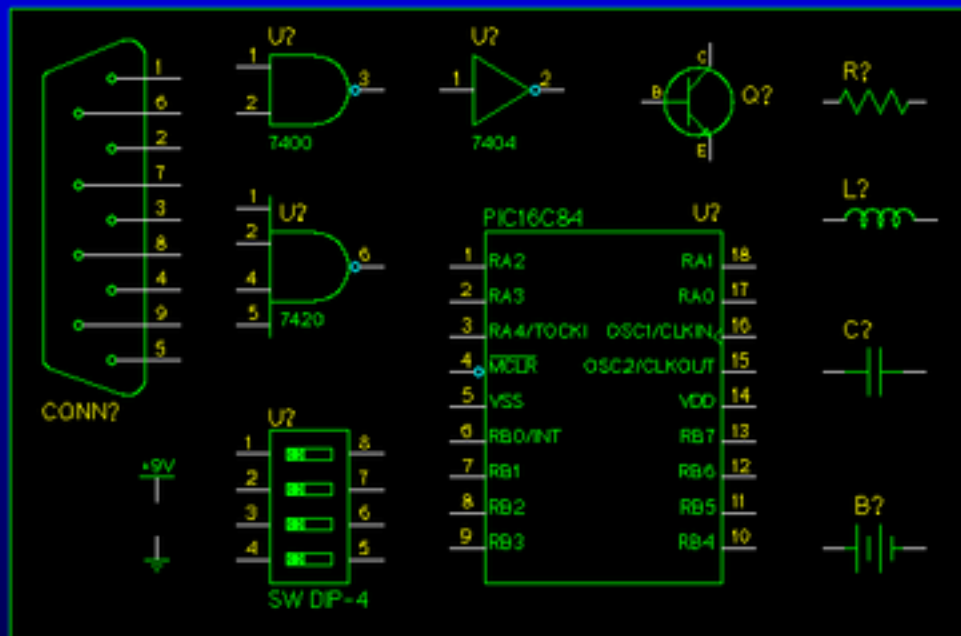
Circuit Simulation

Tools

- **Component / Symbol library**
- **Schematic Capture**
 - gschem
- **Netlist generation**
 - gnetlist
- **GUI Manager**
 - geda (gManager)

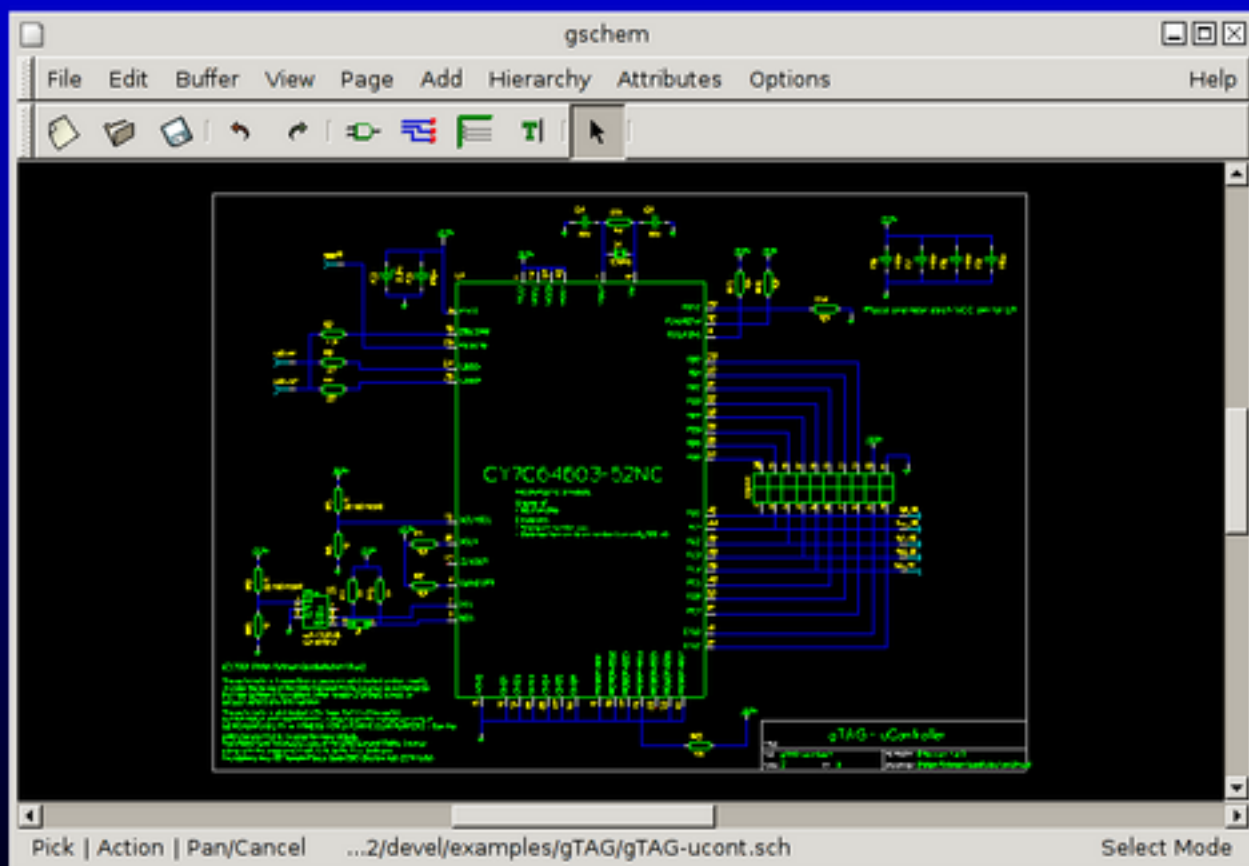
- **Simulation**
 - gnucap
 - ngspice
 - Icarus Verilog
- **Waveform visualization**
 - gwave
 - gtkwave
- **Printed Circuit Board Layout**
 - PCB
 - gerbv

Component / Symbol library



- Approximately 1400 symbols
- ASCII file format
- Same format for symbols and schematics
- Online symbol library and upload
 - <http://geda.seul.org/symlibrary/index.html>

gschem - Schematic capture



gschem - Schematic capture

- Specialized drawing program for ECAD
- Key features:
 - Electrical connectivity awareness
 - Attribute association
 - Hierarchical design
- Library Requirements
 - glib and gtk+ 1.2.x or 2.2.x
 - guile 1.4.x or 1.6.x
 - libpng / libgdgeda / libstroke

gnetlist - Netlist creation

- Graphical to textual converter



```
*****
* Spice file generated b
* spice-sdb version 12.2
* provides advanced spic
* Documentation at http:
*****
VCC 10 0 DC 15V
RL 9 0 10K
C3 7 9 10 uF
RF 2 11 25K
CF 11 8 10 uF
RC2 10 7 6.8K
RE2 8 0 3.6K
C2 4 6 10 uF
R4 6 0 30K
RE1 5 0 3.6K
RS 12 2 150
C1 2 3 10 uF
R2 3 0 50K
R1 10 3 200K
```

- Library Requirements
 - glib 1.2.x or 2.2.x
 - guile 1.4.x or 1.6.x

gnetlist - Netlist creation

Allegro

BAE

Several Bill of Materials (BOM)

Couple Design Rule Checkers (DRC)

PADS

Several PCB

Protell

Couple Spice

Switcap

Tango

Verilog

VHDL

VHDL-AMS

VIPEC

Bartels

MAXASCII

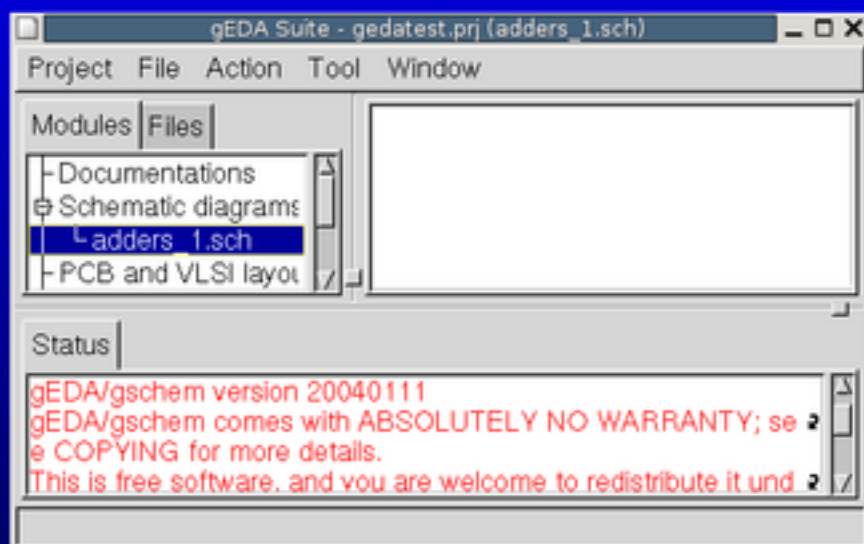
Futurenet2

SWITCAP

RF Cascade

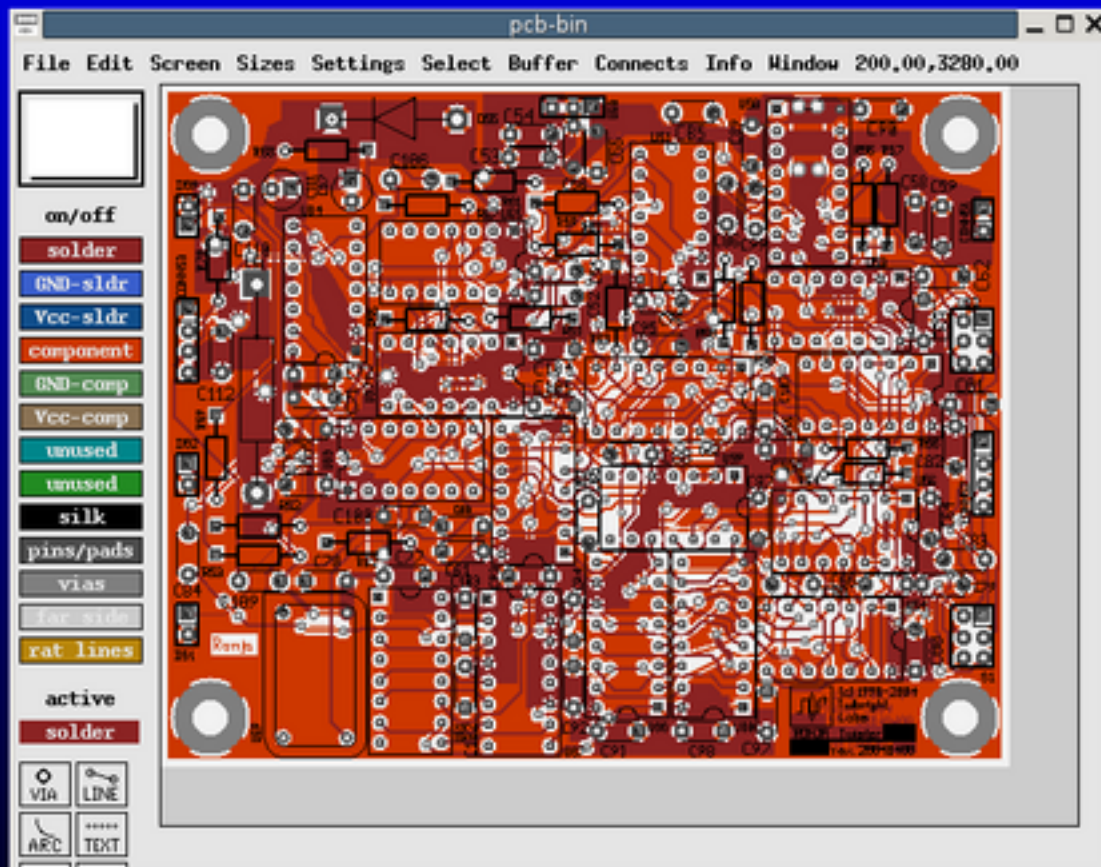
RACAL-REDAC

geda - GUI Manager



- Project browser
- Workspace
- Status area
- Library Requirements
 - glib and gtk+ 1.2.x

PCB - Printed Circuit Board



Utilities

- gattrib
- gsymcheck
- gschem2pcb / gsch2pcb
- gsymupdate / gschupdate
- garchive
- tragesym / gmk_sym
- sarlacc / olib
- Others...

Other tools

- Xcircuit
- Electric
- tclspice
- TkGate
- gpsim
- FreeHDL
- Others...

Open Collector
<http://www.opencollector.org>

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