

Free software tools in electronic design: a search and a preliminary selection

C. Medrano^a, I. Plaza^a, M- Castro^b, F. García-Sevilla^b, J.D. Martínez Calero^b, J. P. Félix, M. Corbalán (ctmedra@unizar.es)

^a EduQTech, E.U. Politécnica, Teruel, (Spain),

^b UNED, Madrid (Spain),

^c EUETIT- UPC, Terrassa, (Spain)

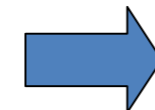


Goal: overview of free software tools in electronic design and preliminary selection

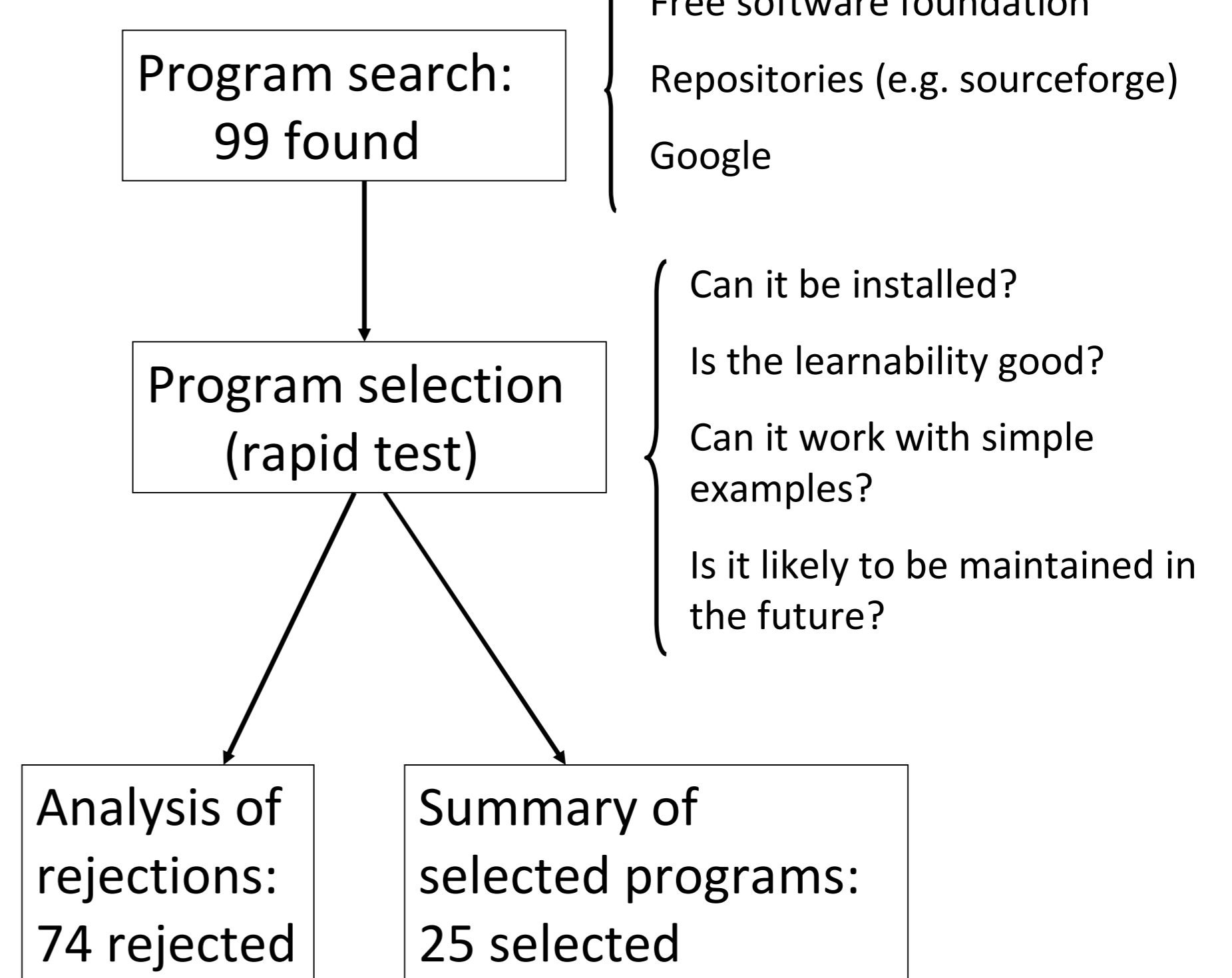
Long term goal: in deep analysis, points to be improved, selection for professional or educational use

INTRODUCTION

- “ Increasing relevance of free software
- “ Is free software useful in electronic design?
- “ Focus on:
 - ✓ Analog simulation (AS), including netlist generation, schematic capture, data visualization
 - ✓ Digital simulation (DS) from schematic capture
 - ✓ Schematic capture (SC)
 - ✓ Printed Circuit Board design (PCB)
 - ✓ Hardware Description Languages (HDL): compilation, simulation, waveform viewers

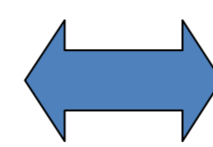


STEPS



Rejected programs:

Main problem	AS	DS	SC	PCB	HDL	Total
Abandoned	8	4	13	6	8	39
Does not install	1	0	1	0	3	5
Poor learnability	3	3	2	0	1	9
Failure to work with simple examples	2	0	1	0	1	4
Other	3	3	1	3	7	17
Total	17	10	18	9	20	74



Selected programs:

- “ AS:
 - o Simulation engines: gnuicap, ngspice
 - o Data visualization: gwaves, kjwaves
 - o Netlist generation: gschem + gnetlist, kicad
 - o Integrated tool: Qucs
- “ DS: Tkgate, LogiSim, Qucs
- “ SC: gschem, Kicad, Qucs, TinyCAD
- “ PCB: FreePCB, Pcb, Kicad
- “ HDL:
 - o Command line: Icarus, ghdl, veriwel, freehdl
 - o Integrated tools: Qucs, Signs
 - o Waveform viewers: GTKWave, Dinotrace

The GEDA project supports many of the previous tools for EDA

Conclusions and future work:



- “ Found tools in all the categories
- “ Improving



- “ Documentation is a weak point
- “ Many abandoned projects: so focus on existing ones
- “ Graphical interfaces should be improved

To be done

- “ In deep evaluation
- “ Attract new users