Surveying External Electric's Users

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Abstract

This is a summary of the data collected after surveying Electric's users in the Google group called “Electric VLSI Editor”.

1 Introduction

After running the pilot survey project with Harvey Mudd (sml2008-0113), it was decided to run the same survey among Electric's users in the Google group called “Electric VLSI Editor” (*electricvlsi*). This group is used by professor Baker from Boise State University to communicate with his students. Mr. Baker and Boise State University are licensed users of Electric.

The survey was composed of 7 sections and some members of the VLSI group contributed with some questions. In the next sections, the results are shown in graphs and some notes were added.

1.1 Survey Population

The survey was announced on February 12th, 2008 and closed on March 16th. During that period 34 users took the survey and the answers are summarized in this memo. Among the 34 users, approximately only 23 (68%) responded all the questions.

They took the survey between February 13th and February 29th and some of their comments are including in this document. To distinguish their responses, the identifier “User<number>” is used.

1.2 Survey Resources

The survey was done using the services of SurveyMonkey, a company that provides online surveying tools not available at Sun.

1.3 Lessons Learned

In case of running another survey about Electric, here are few tips to consider while redesigning it.

- When asking about expertise with other VLSI CAD systems, we should have had to ask for systems and tools in separate questions because some people just mentioned the system but not the system tools.
- When asking for imports/experts they use most, we should make the difference between import/export utilities in Electric and/or other VLSI tools.
- All questions with options must be mandatory.
- More time could be spent and get correlation data within users and see how consistent they were. No time for that now.
- Users were not asked if they were running a 32bit or 64bit JVM.

2 Section: General

In this sections, users were asked general questions about Electric.

2.1 How would you rate

Users chose from: (1) poor, (2) could improve, (3) average, (4) good excellent and (5) no opinion. Note: All “no opinion” responses came from the same user, User3.

A Electric on Ease of Use

More than 75% of the users found Electric easy to use. Total number of responses: 34

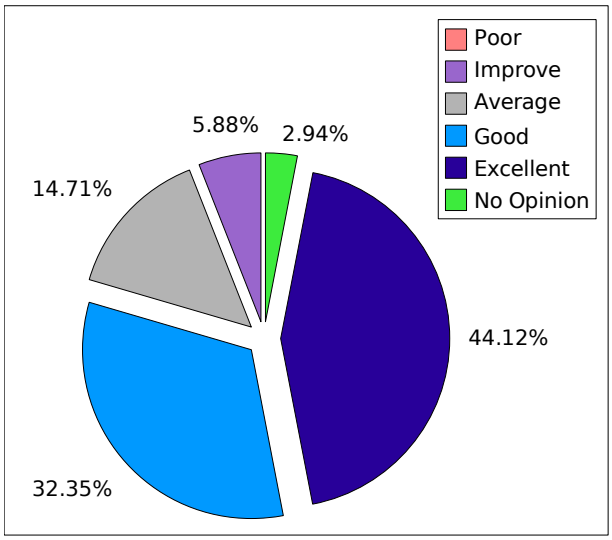

Figure 2.1: Ease of Use

B Electric's Features

More that 75% of users found the features good or better. This could be explained by the fact the users might be asked to run only certain well tested applications in Electric. Total number of responses: 34

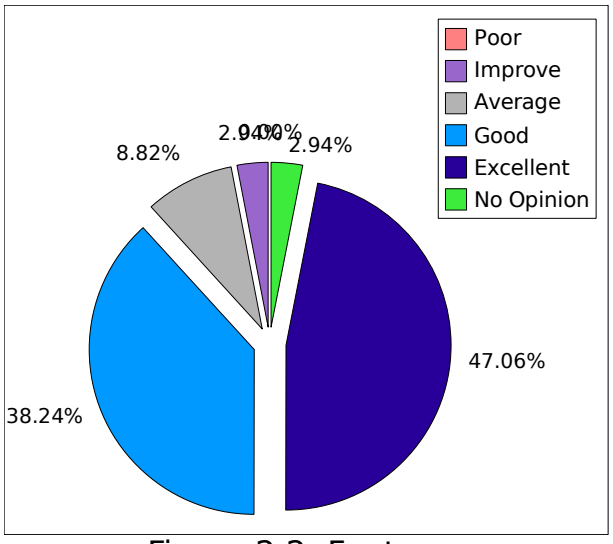

Figure 2.2: Features

C Electric's Documentation

More that 50% of users found the documentation standard or better. Total number of responses: 34

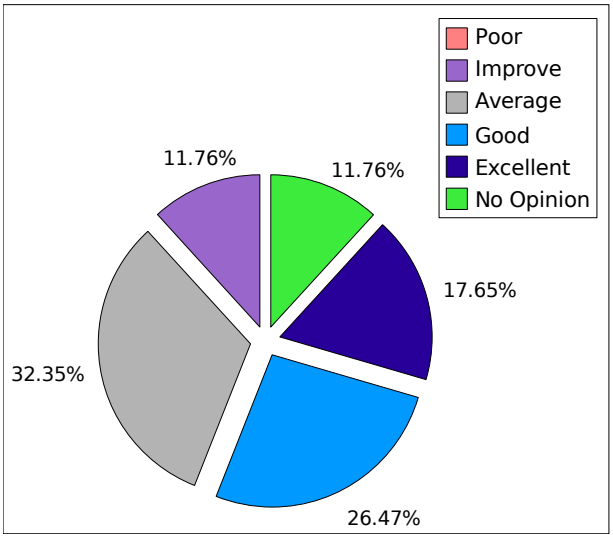

Figure 2.3: Documentation

D User's Expertise in Electric

20% of the users might need more training in Electric. Total number of responses: 34

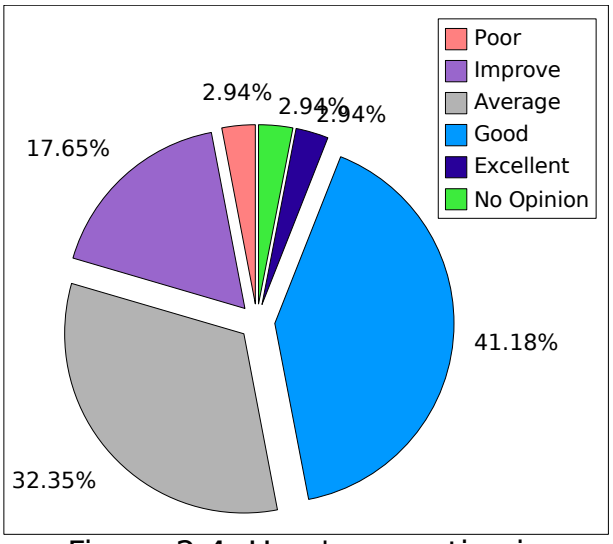

Figure 2.4: User's expertise in Electric

E Comments

If any response in this section was less than average, we asked to get feedback and the comments are below.

User1: "*There are simply too many menu items and the concept of nodes and arcs is hard to grasp.*"

User3: "*Just learning how to use it.*"

User5: "*The set of several "Howtos" or tutorials would be very helpful. I had difficulties to implement a new technology.*"

User8: "*features, such as measurement text*"

User17: "*Expertise: I just began learning.*"

User20: "*Some of the documentation could use more examples to clarify a topic. For example, can you auto generate a layout from a Verilog source? If so, what should the Verilog netlist look like?*"

NOTE: Bugzilla report #1616 was added and analyzed. The Verilog request is not feasible.

User22: "*5 weeks of experience with electric.*"

User23: "*I'm just beginning to use it. So, I need the tutorial or starter guide.*"

User29 : "*sometimes I feel hard to customize/create special layout.*"

2.2 Have you ever used another VLSI CAD System?

The majority of the users have experience with other VLSI CAD systems. Among the most popular tools/systems are Cadence and LASI. Total number of responses: 34

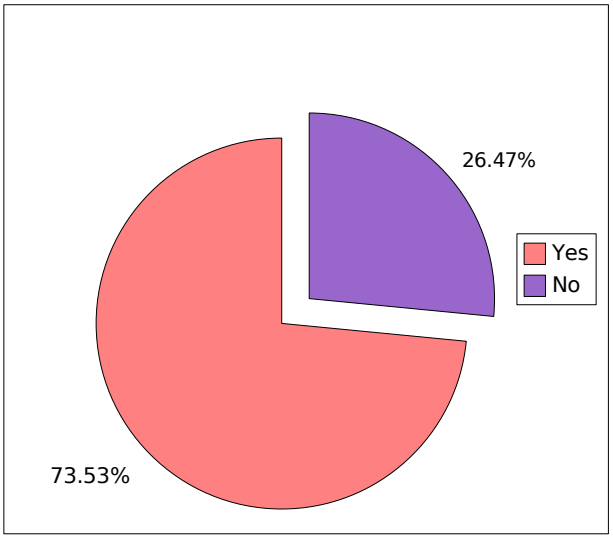

Figure 2.5: Experience with other VLSI CAD Systems/Tools

3 Section: Other VLSI CAD Tools

3.1 List other VLSI CAD tools you have used

User1: “*Everything from Cadence*”

User2: “*Cadence, Dolphin, Pspice*”

User4: “*Tanner EDA*”

User5: “*Daisy ;-) Mentor, Cadence*”

User7: “*Mentor Graphics's GDT*”

User8: “*gds1 digitizers, gds2 calma, cadence tools opus, Symbad, virtuoso, mentor graphics gdt. daisy station!*”

User11: “*Switcher CAD(LT spice), win spice*”

User16: “*ORCAD, EWB*”

User17: “*LASI*”

User20: “*Cadence Analog Artist*”

User21: “*Cadence, Lasi*”

User22: “*Cadence and LASI*”

User23: “*Cadence, Tanner Tool Pro*”

User24: “*Cadence Mentor*”

User25: “*Cadence ICFB*”

User29: “*Cadence*”

User31: “*LASI*”

User32: “*Cadence, L-Edit, LASI, Magic*”

User33: “*Cadence*”

User34: “*Caesar, "L"*”

3.2 How does Electric compare to other VLSI CAD tools with respect to

The users chose from: (1) much worse, (2) worse, (3) same, (4) better, and (4) much better. NOTE: From now only 23 in average were response until the

end of the survey.

A Ease of Use

Total number of responses: 20

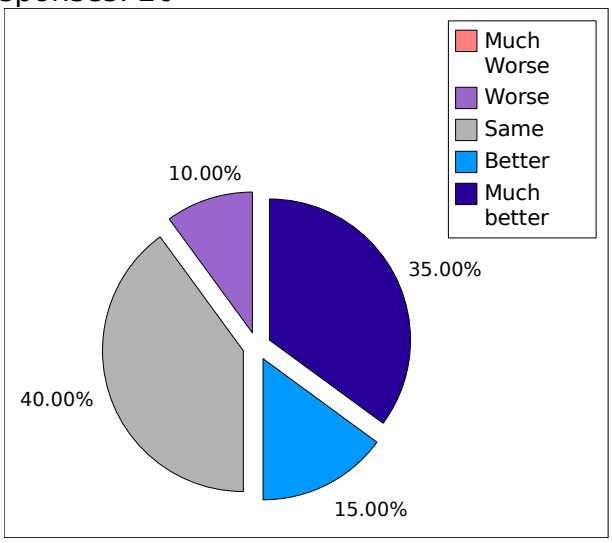

Figure 3.1: Electric v/s others: Ease of Use

B Features

Total number of responses: 20

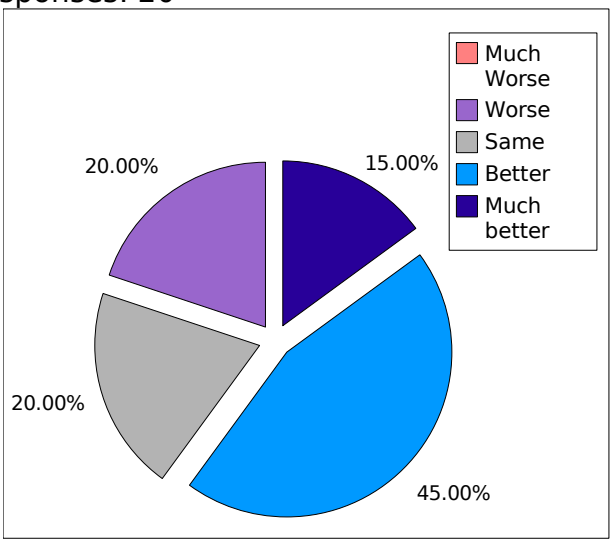

Figure 3.2: Electric v/s others: Features

C Performance

Total number of responses: 20

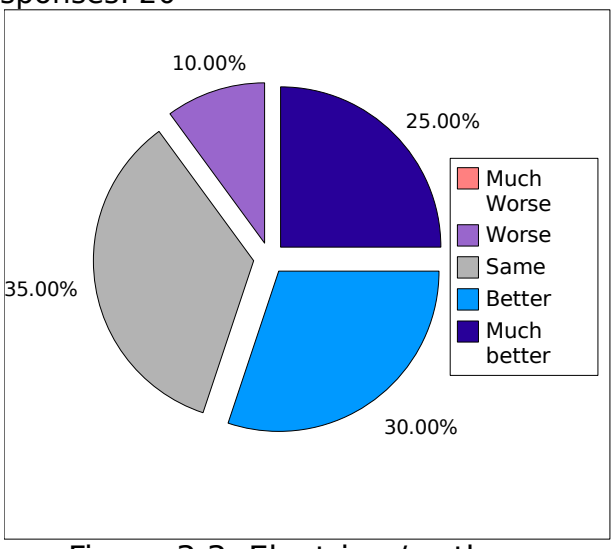

Figure 3.3: Electric v/s others: Performance

D Comments from questions in this section

User1: "*the bindkey concept of Cadence is simply solving most problems on use. On performance I just feel it take longer to get up to speed on the concept than I would like to coming from Cadence*".

NOTE: If relates to KeyBindings in Electric, should we tell the user to use the Cadence preference?

User8: "*example: arc wiring can be difficult to wire within cell structures. Need to have a true rubber band mode.*"

User 20: "*The other CAD tools seem to have more options and features, but this could just be from my inexperience.*"

User 24: "*Documentation of features could be improved*"

User 25: "*I don't like the tree view.*"

1.1 List Import Formats You Use Most

User1: "*gds, spice, spectre*"

User2: "*GDS,CDL*"

User5: "*GDSII,*"

User7: “*CIF,GDS*”

User8: “*gds2, project settings, preferences*”

User16: “*.jelib*”

User20: “*Do not use this feature at this time.*”

User22; “*asc and cif*”

User23: “*GDS, EDIF*”

User24: “*None*”

User33: “*gdsII,cif*”

3.3 List Export Formats You Use Most

User1: “*spectre, spectre, spectre, gds.*”

User2: “*GDS,CDL,Spectre netlist, Pspice netlist*”

User5: “*GDSII, SPICE*”

User7: “*CIF*”

User8: “*gds2*”

User16: “*.spi*”

User17: “*.gds*”

User20: “*Write spice deck and Write Verilog netlist*”

User22: “*gds*”

User23: “*SPICE, GDS, SDF*”

User24: “*Cif*”

User32: “*GDS and CIF*”

User33: “*gdsII, cif*”

3.4 Wish List of Missing Import/Export Formats

User1: “*spectre, spectre, spectre*”

User2: “*CDL*”

User5: “*SPICE-to Schematic Converter*”

User7: “*ZBA*”

User20: “*Do not have a wish list*”

User31: “*BMP/ JPEG to CIF or GDS2 formats*”

4 Section: Tools in Electric

4.1 What is the feature you like most?

User1: “*no difference between schematic and layout. Connection is immediate and always available.*”

User4: “*Being able to see a 3D view is pretty cool”*

User5: “*GDSII to electric connectivity. A better technology editor,e.g. error messages, documentation. An improved description of DRC-Tools. A Design Rule editor*”

User6: “*Spice deck simulation*”

User8: “*ascii database.*”

User10: “*Icon making, Array generator*”

User11: “*with electric we can do schematics, layouts and can compare them and can easily see how the schematic and layout look like.”*

User16: “*3D View*”

User20: “*That its free! =)*”

User21: “*java 3d, drag drop feature, DRC & LVS*”

User22: “*the ease at which one can get productive*”

User24: “*Easy for students to use...*”

User29: “connectivity”

User31: “*simplicity of use*”

User32: “*The way layout is done like schematic editing*.”

User33: “*3d view*”

4.2 List the tools in the “Tools” menu you use most

Users were allowed to list multiple options. Total number of responses: 16

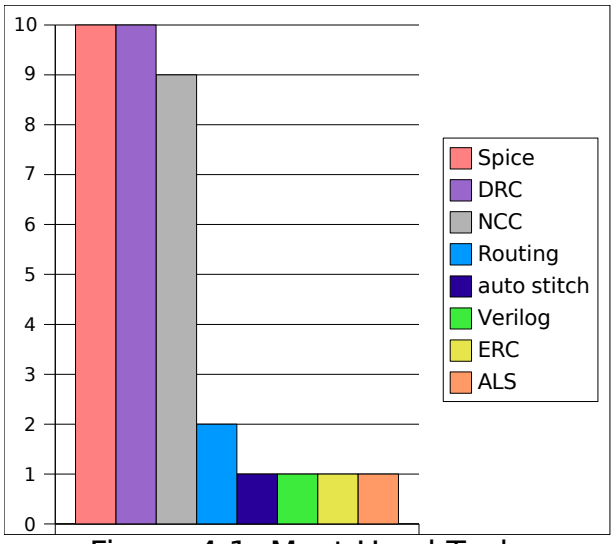

Figure 4.1: Most Used Tools

4.3 What is the most annoying feature in Electric?

First group directly affected or involved in the Technology Editor Wizard because they handle their own custom technologies. They are not precise where the exceptions are seen.

User1: "*Right-click to draw a connection.*"

User2: "*It is hard to define a new technology*"

NOTE: The new Technology Editor Wizard might be the solution.

User4: "*Getting Exception errors when DRC fails. Bug. Assuming would be fixed soon...*"

NOTE: They might have been fixed already.

User5: "*Error messages of the technology editor: This is because we do not use this tool on a day-to-base violation of stretching rules especially if ports are involved result in strange error messages. Sometimes layer information (type, color) get lost*"

User6: "*Exception caught. Spice feature is not enough*"

User8: "*1. New technology setup.*"

User10: "*moving text around*"

User10: "*right click for connecting cells*"

User11: "*some times java exception errors and can be resolved easily. But*

can be removed when we play around and understand the mistake made in the layout and the schematic"

User16: "*error log*"

User20: "*Interface seems too simple to me. Would like for it to have a more "polished" look and feel.*"

NOTE: Interesting observation. Does the user mean Electric's GUI is not standard?

User21: "*some sudden java exception caught.....*"

User22: "*ignorant posts on the google group*"

User24: "*Parasitic extraction does not seem to be "right" in Spice.*"

NOTE: Maybe users are not aware of the 2 different levels in Electric?

User31: "*Exception caught error doesn't show the error.*"

User32: "*Nothing is annoying. I wish that more users would report bugs so that the little "Exception caught" messages would be fewer and farther in between.*"

User33: "*inconsistency saying exception caught*"

4.4 If you had a wish list for Electric what would be on the top of your list?

User1: "*spectre simulator interface. A block diagram editor function like visual HDL and friends. A configuration manager like the Cadence Hierarchy editor, but of course better.*"

User2: "*To have a tutorial which describes in details how to create a technology*"

NOTE: Bugzilla report #1617 "Tutorial about Technology Editor Wizard".

User5: "*A Design Rule Editor with a "boolean mask operation" feature.*"

User6: "*When moves the window, it responds slow*"

User20: "*Plenty of examples of layout (maybe a repository of user files and libraries?). Also, importing a design and auto-placement.*"

User21: "*1. it would be nice if electric message window automatically tiles up with main window when we press ctrl +T so that we need not do manually every time. 2. if arrays had more options such as to grow array from top to bottom (presently only have bottom to top option and left to right)*"

NOTE: User21 is a Windows user and Bugzilla report #1625 was added.

User29: “*No 3D view bugs*”

NOTE: Not aware of any particular issue reported by Baker' students.

User31: “*To standard inputs to components like DAC ADC etc. Like Verilog X*”

User32: “*Setups for other of the MOSIS offered processes, e.g., TSMC, IBM, etc. Having design rules for these processes would be very, very useful*.”

NOTE: This is not possible to due proprietary/legal issues unless they have got the appropriate licenses.

4.5 Which view do you use most?

Everyone said Schematics and Layout. No surprise at all.

Total number of responses: 25

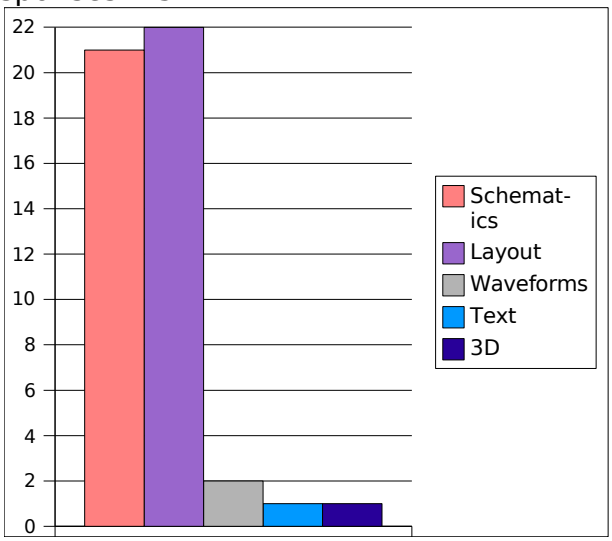

Figure 4.2: Most Used Views

4.6 Have you used/tried?

The users chose from: (1) use regularly, (2) tried once, (3) no, (4) Did not know about.

A Waveforms

Total number of responses: 23

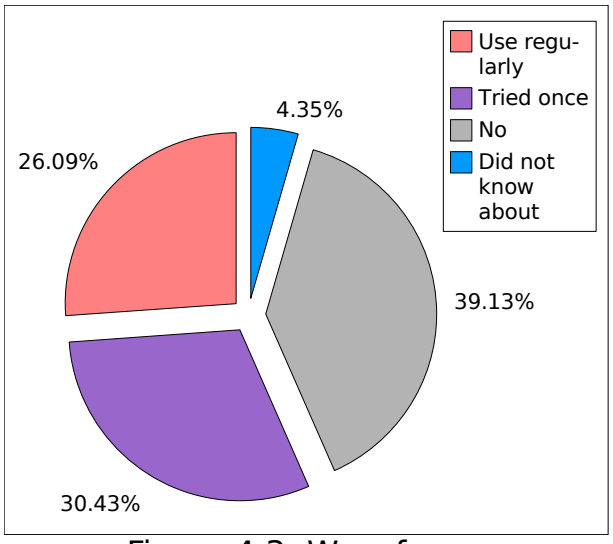

Figure 4.3: Waveforms

B 3D View

60% of the users said they use the 3D view, a high number compared with other surveys. This might be due to Professor Baker's tutorials. Total number of responses: 23

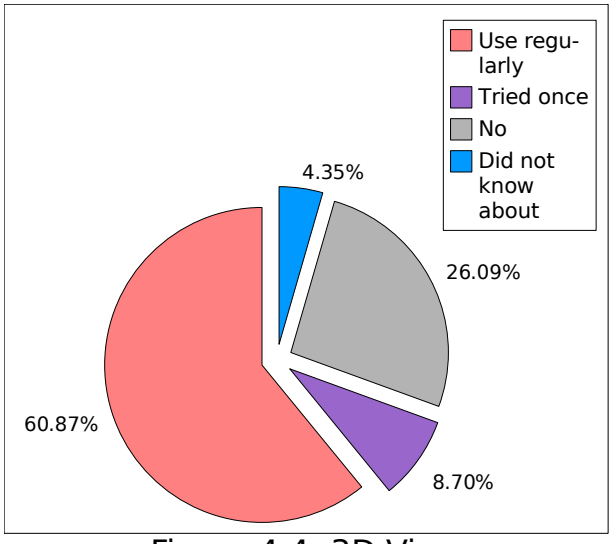

Figure 4.4: 3D View

C Cell versions

Total number of responses: 24

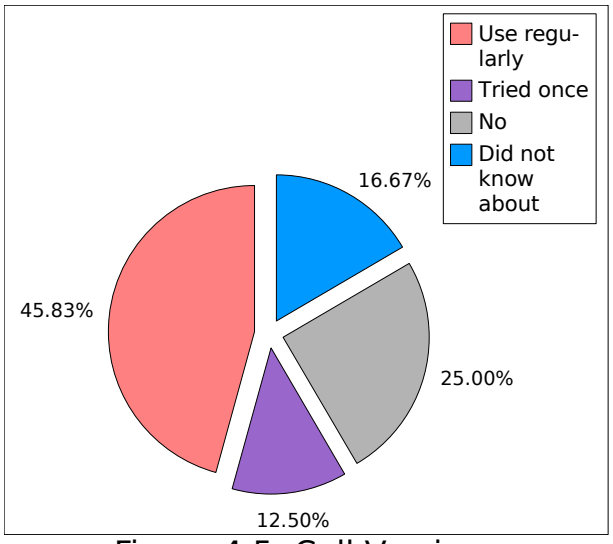

Figure 4.5: Cell Versions

D Project Management

Total number of responses: 23

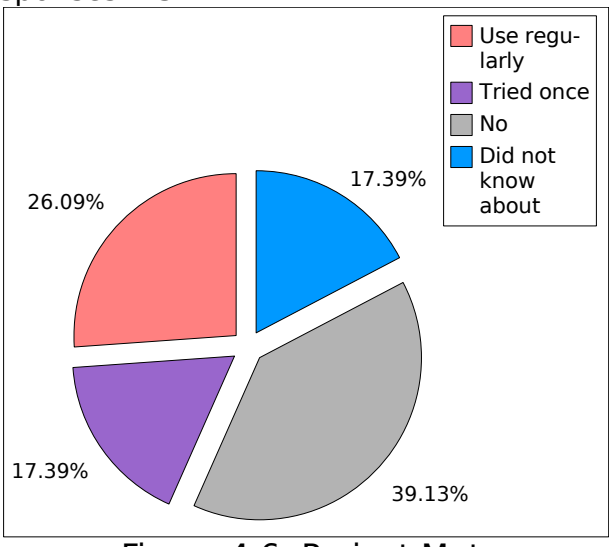

Figure 4.6: Project Mgt.

E Built-in CVS

Total number of responses: 22

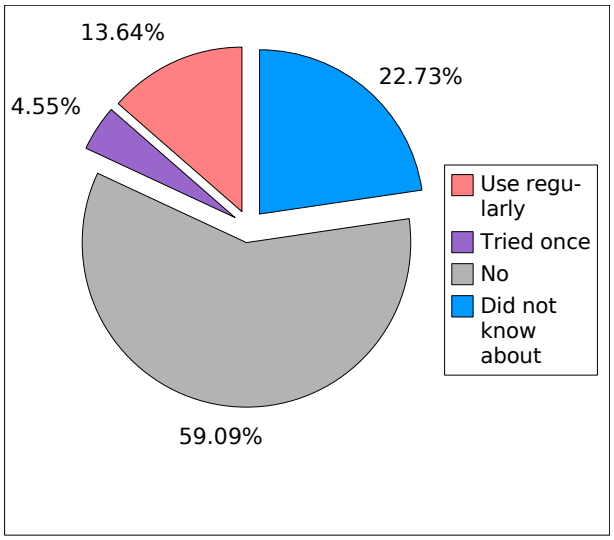

Figure 4.7: Built-in CVS

F Java Bean

The low number of users of Java Bean scripts might suggest they do work mostly from the GUI. Total number of responses: 21

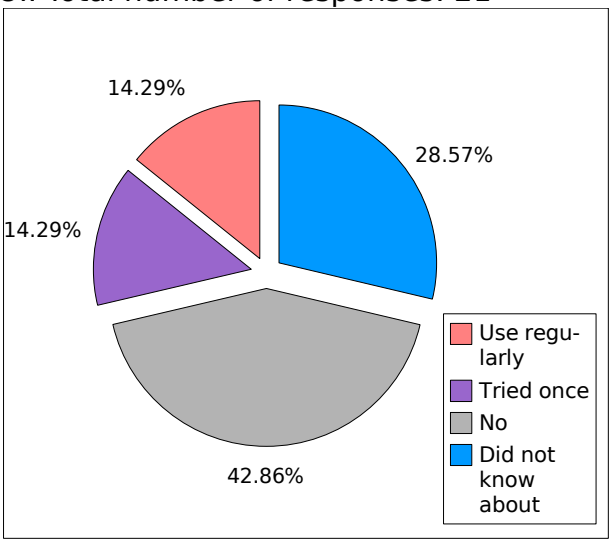

Figure 4.8: Java Bean

4.7 Which technologies do you use most?

This question gives us an idea which technologies are still in used even though the VLSI group not longer needs them. It does also reflect how many users are working with custom-built technologies. For those uses, the technology editor wizard could be a big help. Total number of responses: 24

Note: User2 selected “schematic” as the most used technology.

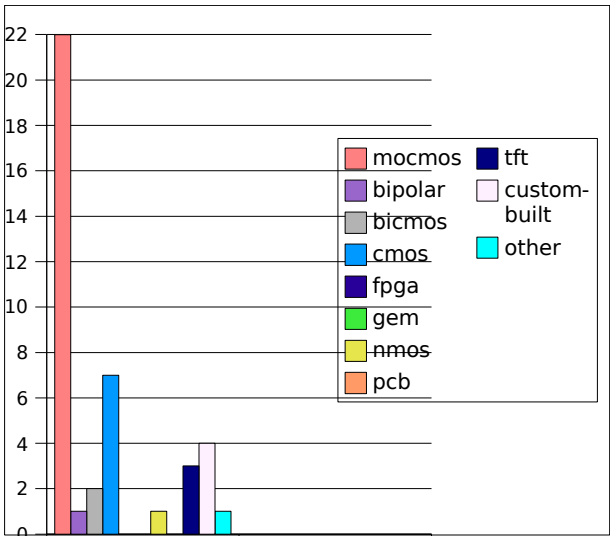

Figure 4.9: Technologies

4.8 Which flavor of Spice do you use?

Total number of responses: 24

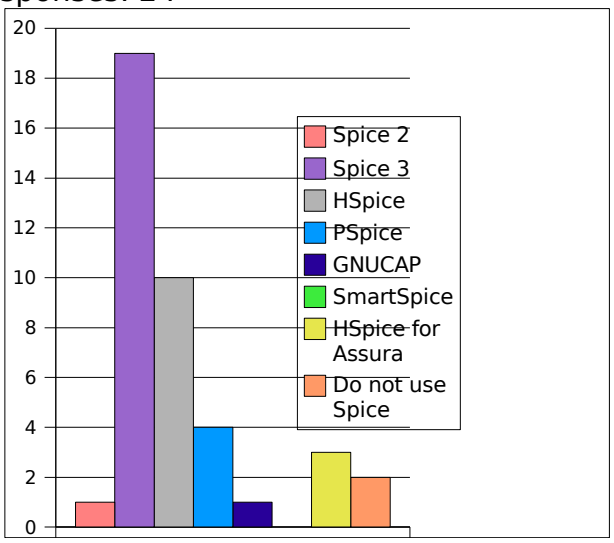

Figure 4.10: Spice Flavor

4.9 Which redisplay algorithm do you use?

It might be good to change the default redisplay algorithm to Layer so we could get more feedback from users. Total number of responses: 24

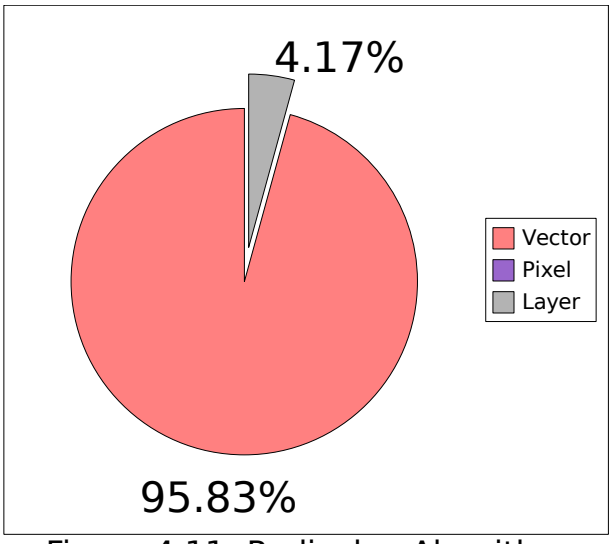

Figure 4.11: Redisplay Algorithm

4.10 Which color Schemes do you prefer?

People can choose from: (1) default colors, (2) black background, (3) white background, (4) Cadence colors and (5) other. Total number of responses: 24

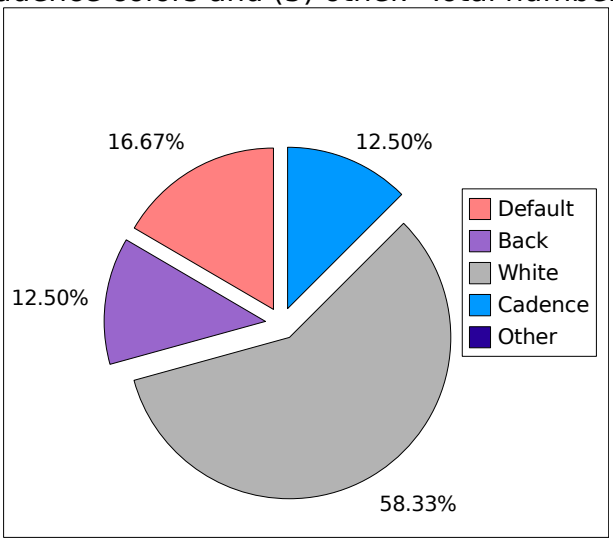

Figure 4.12: Color Schemes

5 Section: Deployment

5.1 How do you access Electric

People can choose from: (1) already installed on machine, (2) download from GNU, (3) distributed on CD-ROM and (4) download from elsewhere. Total number of responses: 22

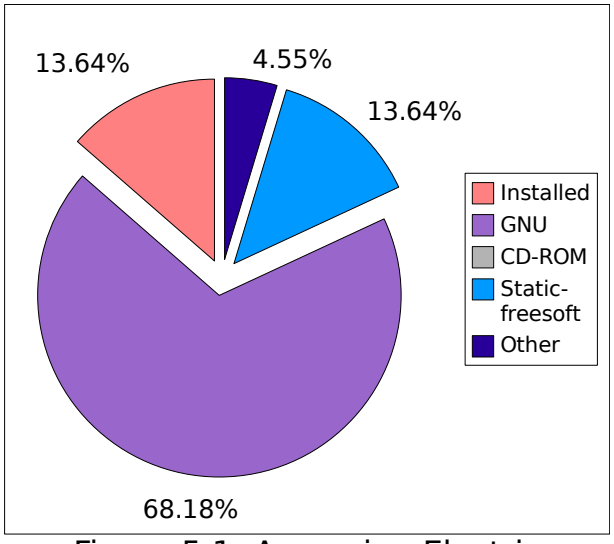

Figure 5.1: Accessing Electric

5.2 Which version of Electric are you using?

Total number of responses: 23

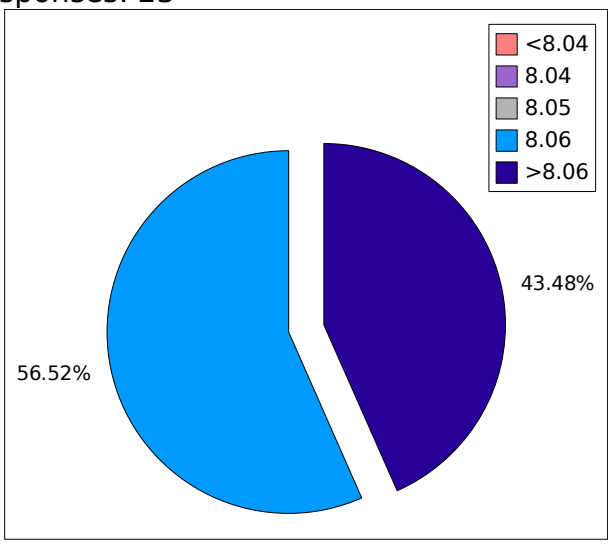

Figure 5.2: Electric's Version

5.3 Which operating system do you work on?

People chose from: (1) Solaris, (2) Linux, (3) MacOS, and (4) Windows. Total number of responses: 23

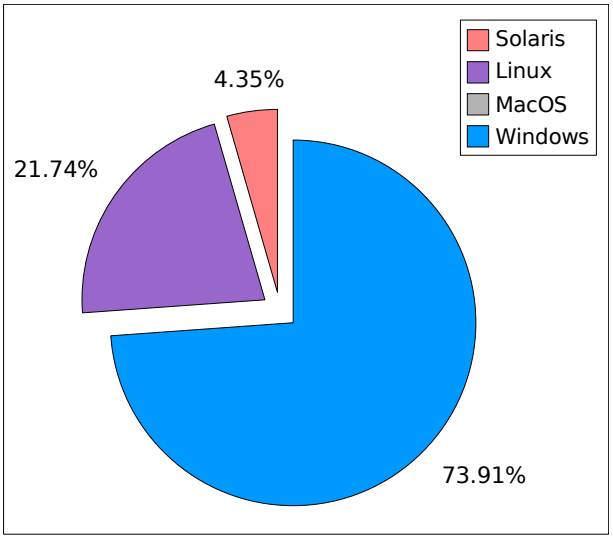

Figure 5.3: Operating System

5.4 Are you satisfied with the ".jar" distribution of Electric?

Total number of responses: 23

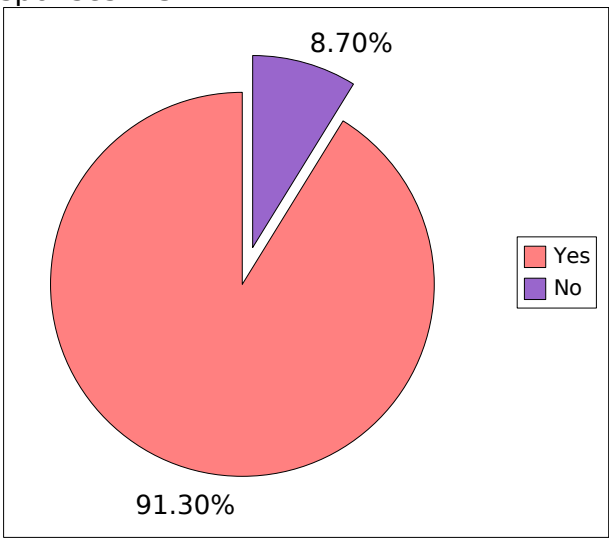

Figure 5.4: Satisfied with Java distribution

User7 said no because he/she prefers “blastwave”, an OpenSource package system for Solaris and sponsored by Sun. More information in

http://www.blastwave.org/. The issue was added into Bugzilla (#1622) in case we have a chance to apply to the OpenSparc release.

User23 said no because he/she prefers Win32 as release mechanism.

5.5 Which Java version do you run on?

Most of the users are running Java1.6 and it might be a good idea we at least run our regression with Java1.6. Total number of responses: 23

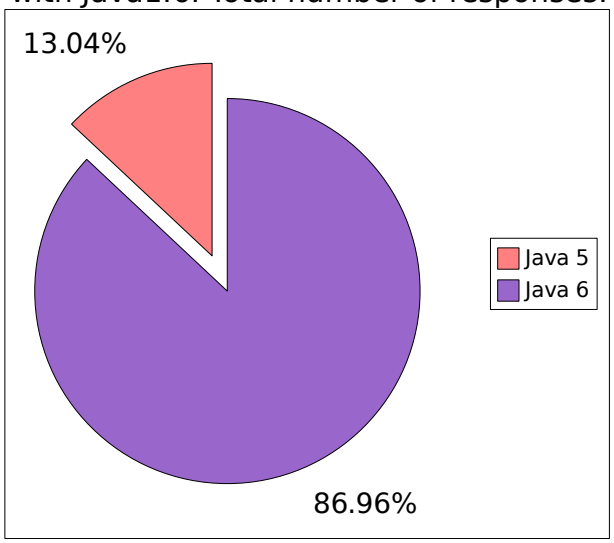

Figure 5.5: Java Version

6 Section: Documentation and Help

6.1 Documentation access

The online option refers to the online manual available in staticfreesoft.com. User2 said he/she uses Mr. Baker documentation and User24 also uses the C version of the manual. Total number of responses: 25

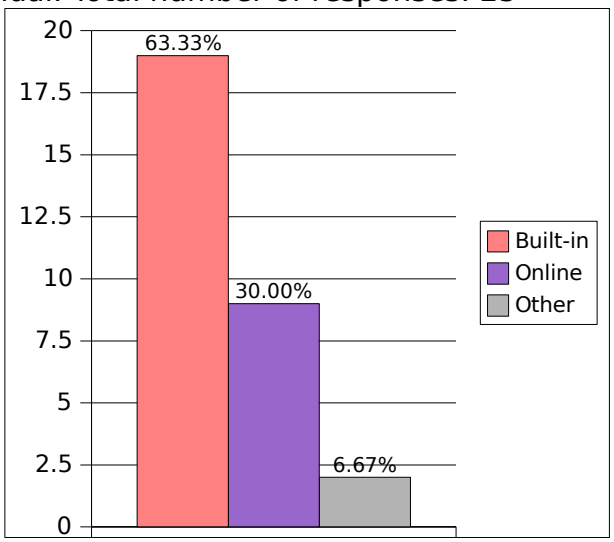

Figure 6.1: Documentation Access

6.2 Would you access online support if available?

Total number of responses: 23

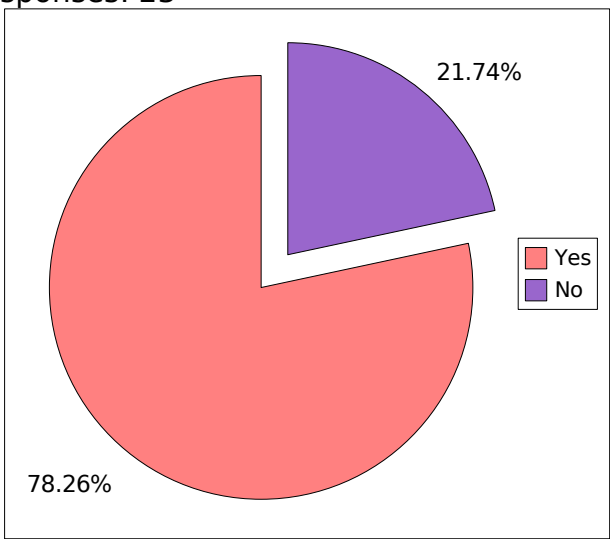

Figure 6.2: Access Support Online

6.3 Are you aware "electricvlsi", the external forum?

The exact same users responded Question 6.2 and this question and there is a correlation between the two questions. All the users who said no in Question 6.2 agreed on saying yes in this question. Based on above, one could conclude they do not need another external forum.

The only person (User16) who said no to this question said yes to Question 6.2. This seems a contradiction because this survey was posted only at the electricvlsi forum.

Total number of responses: 23

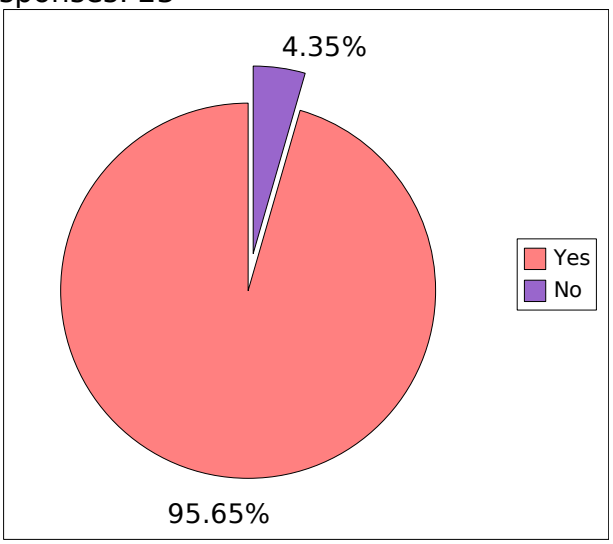

Figure 6.3: External Forum "electricvlsi"

7 Section: Programming

7.1 Have you programmed in Java before?

Total number of responses: 23

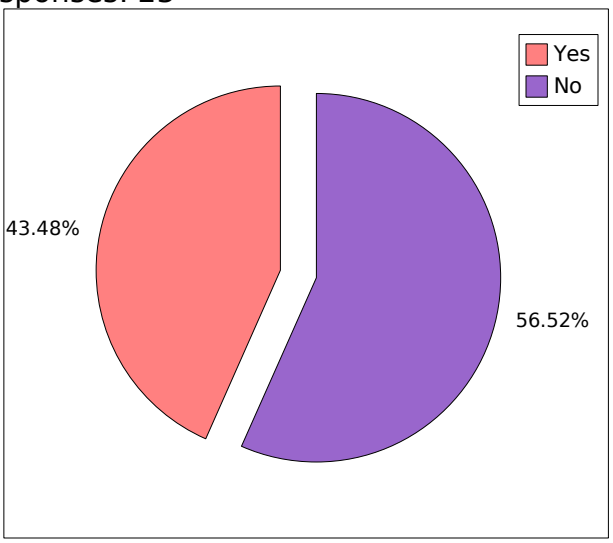

Figure 7.1: Know Java

7.2 Have you ever looked at Electric's source code?

Total number of responses: 23

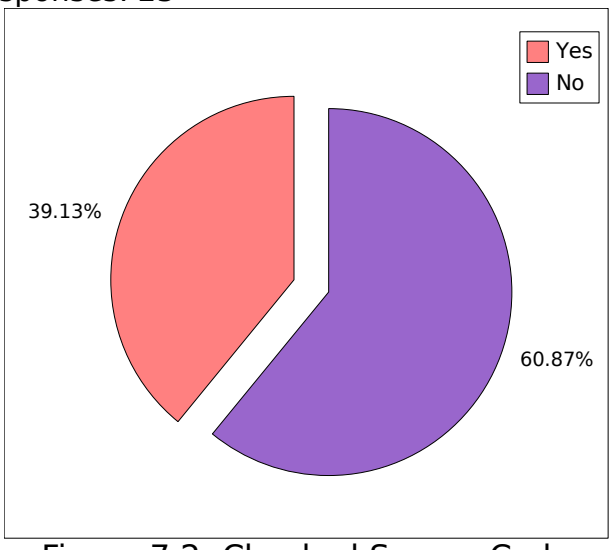

Figure 7.2: Checked Source Code

7.3 Have you tried to modify Electric's source code?

Even though the graph in this section is identical with the graph in Question 7.2 , the graphs were generated by different users. User20's responses are contradicting because she/he said no to Question 7.2 but yes to this one.

Total number of responses: 23

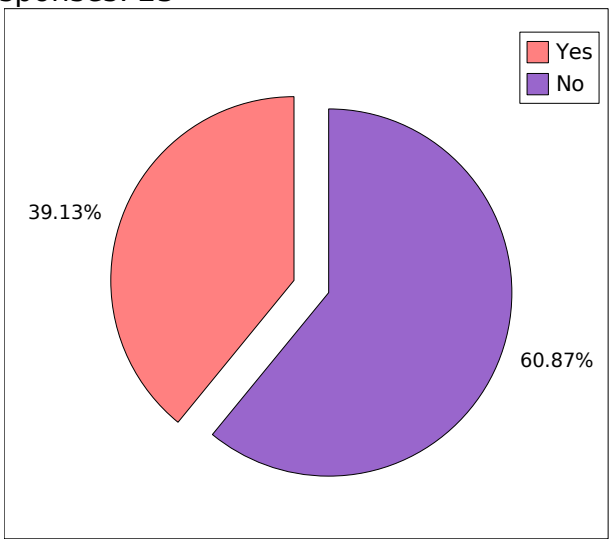

Figure 7.3: Modified Source Code

8 Section: Comments

Most of the comments are complementary and do not add too much value to the discussion. The Vista problem and LTSpice request were added into Bugzilla.

User1: "*The way schematic is edited is confusing for somebody coming from Cadence. But I learned about the cadence scheme through this survey. Thanks*"

User5: "*electric is a really fantastic tool. The only problem is documentation of tools not used every day (e.g technology editor).*"

User6: "*It's a great free VLSI tool, easy and simple to use. I like it.*"

User8: "*Keep it evolving..*"

User20: "*I think this is a GREAT tool, and one that needs to be supported in greater detail. Please keep up the excellent work!*"

User22: "*Ease of use and windows/ linux platform are geat items. The documetation could use a few more examples. Dr. Baker's video tutorials REALLY help a lot. If those were included as part of the help items that would*

go a long way towards improving the user experience."

NOTE: Possible action: Ask Dr. Baker for those tutorials and see if they could be included in Electric.

User24: "*I appreciate the fact that Steve (et al) has the time and resources to keep Electric up and running... For undergraduate students it is great!*"

User27: "*Good but some features are not executable with all systems.For eg windows vista*."

NOTE: Tarik already mentioned this so problem was added into Bugzilla (#1624).

User29: "*I wish I can call LTspice from Electric to run simulation."*

NOTE: Bugzilla report #1623 was added.

User31: "*Software is very good for startup learning in places where licensed softwares are costly and unaffordable. Specially 3D views provide a good imaagination for beginners.*"

User32: "*Electric is awesome! Please keep up the great work!"*

User33: "*Sometimes Electric says an exception memory limit reached even I tried to increase the memory from file preferences especially when running long simulations.*"

NOTE: This user is running Windows on a "pentium R 3Ghz 1.99GB RAM" with Java1.6. His/her problems could be related to the JVM32bit on Windows.