Memorandum

Date: March 27, 2003
To: Leroy Steinbacher
From: Rolly Jones
Subject: LSGUI User Documentation End of Project Report

The purpose of this document is to inform you that our user documentation for LSGUI is complete and to explain the process it went through as a result of usability testing.

Introduction

One of our group members wrote a piece of software called LSGUI. This software will, in the future, be used in CS3421, a class taught in the Computer Science Department here at Michigan Tech. It is designed to make the student's assignments easier by adding a graphical user interface to the existing software that is in use. This interface will be brand new when the students in that class go to use it next semester, which means no students in the department will already know how it works. So, if students have a question about the program, it would have been difficult for them to find help. As a result, they would have had to waste time seeking help to learn the new software instead of concentrating on learning logic circuits.

In response to this problem our team has developed documentation in the form of a help file. The following paragraphs contain the results of our usability testing and the changes we made to the help file as a result of that testing.

Test Users

The target users of LSGUI will be about halfway through CS3421, in the beginning stages of learning how to create logic circuits, about week 6-7. However, it was impossible for us to find test users in this position, since we were well past week 6-7. Instead we used one person who was currently in the class and one person who had taken the class previously, keeping in mind that they were already advanced well beyond our target users.

Tests Conducted

The goal of our user testing was to determine if our documentation provides the user with enough information to be able to construct logic circuits within the GUI quickly and easily. Specifically, our tests attempted to answer the following questions:

1. "Can the user learn to draw even the most basic circuit quickly?"
2. "Can the user learn how to use the splitters and binders effectively?"

To answer the first question we showed our test users a diagram of a simple circuit and asked them to draw it in LSGUI. This was to specifically test the beginning section of our help file, "Placing and Deleting Components" under "Methods Required to Place and Connect Components." The diagram we showed the users can be found in the Appendix.

To answer the second question we asked the test users to draw another simple circuit, but this

circuit would utilize more complex features of LSGUI. This test specifically targeted the "Making Connections" section of our help file, also under "Methods Required to Place and Connect Components." We also wanted to see if the test users would find the techniques described in the "Meshing Input/Output Points" under "Advanced Topics: Working Quickly." The diagram we showed the users can be found in the Appendix.

Testing Conditions

Our tests were conducted in room 233 of Fisher Hall, a computer lab in the Computer Science department. There was regular student activity in the lab, which approximates the normal working environment of many of the target users of LSGUI. Two of the members from our team were at every test looking over the test users' shoulders, observing and taking notes.

Testing Methods

For our testing we used a combination of task-oriented tests and informal observations and interviews. The tasks we asked them to perform are described above in the "Tests Conducted" section. The test users were given an unlimited amount of time to conduct each test. Following the tasks, we asked the user if there were specific issues that caused them to stumble or if they have any general comments about the documentation.

We had LSGUI and our documentation already open when the users came in to do the testing. It was explained to the users the purposes of our testing – that we were not testing the program, but the documentation.

We asked the users to think aloud while trying to perform the tasks and voice any problems they were having. We assisted the user when they had problems and recorded what kind of assistance they needed. The information we collected while the users were performing the tasks was recorded in Observation Sheet tables like the one illustrated in **Figure 1**.

Action	***Result***	***Comments***

Figure 1. *Sample Observation Sheet table.*

Following are the questions we asked the users following completion of the tests:

- What, if anything, did you like about the help file?
- What, if anything, did you dislike about the help file?
- Did you have any problems trying to figure out how to use splitters and binders?
- Did you find anything lacking in the documentation? If so, what?
- What suggestions do you have regarding the help file?

You can find the raw data of the results from our tests and interviews attached in the Appendix.

Test Findings

From our observations and informal interviews these were the main problem areas that were revealed in our documentation:

1. There were no instructions on how to delete a connection. Both test users had problems with this. When they made a mistake trying to learn how to use the connections, they kept trying different techniques which only made matters worse. We gave them simple verbal instructions after they failed to find written instruction in our documentation.
2. LSGUI has two modes. Our document failed to explain these modes to the users. This resulted in confusion when the user tried to perform actions that were only possible in a different mode.
3. Between tasks, both users began tediously clicking on each component and connection to delete them individually. After noticing this we showed them the clear button, which was not documented in our help file.
4. LSGUI has a feature that makes connecting large components simple. The second task we gave the users (explained in "Tests Conducted" above) was meant to test our documentation on this feature. Both test users started making those connections the hard way, so we told them to look for an easier way. In both cases, however, they still failed to locate the instructions on this feature in our help file.

Conclusion

Based on the findings of our usability tests, explained in "Test Findings" above, we made the following changes to the documentation:

1. We added a new sub-section to the documentation that explained how to delete connections. We also renamed the section's main heading from "Making Connections" to "Making and Deleting Connections."
2. We added a short note about the modes that LSGUI uses at the top of both the "Placing and Deleting Components" and the "Making and Deleting Connections" sections. Every user of our documentation should see these notes, since they are at the very top of both sections that require changing modes. This should be enough to inform the users since the concept of modes is common in other computer drawing programs.
3. We added a new sub-section to "Placing and Deleting Components" that explains the clear button.
4. We changed the title of the section which explains the feature that easily connects large components from "Advanced Topics: Working Quickly" to just "Working Quickly." This was in response to one of our users comments that he considered it a "vital" topic, not an "advanced" topic. We also moved that section from the very bottom of the top-level hierarchy to the second from the top.