**Introduction:**

Reading through different websites I stumbled upon an article which talked about usability testing. As I was absorbing the main concept of what usability means, I was  surprised by the small amount of information given us by university professors in this particular topic.

Few days later I was informed by a friend of mine for the opportunities that outrechy program offers.

From all participants of this round, the "GNOME usability testing" seemed the perfect chance for "dipping my toes" into the subject.

So, what is usability testing and why is it important?

According to ISO 9241 definition, Usability means:
The effectiveness, efficiency and satisfaction with which specified users achieve specified goals in particular environments. [1]

*Effectiveness*: the accuracy and completeness with which specified users can achieve specified goals in particular environments.

*Efficiency:* the resources expended in relation to the accuracy and completeness of goals achieved.

*Satisfaction:* the comfort and acceptability of the work system to its users and other people affected by its use.

In my opinion usability is a wide definition which is hard to narrow down on a one solid statement. But each of these individual definitions brings us to a simple final point which is "the ease of use".

Usability testing is not just a collection of different opinions and research, instead it involves watching people trying to use the product to accomplish their tasks, at the same time it measures the product's capacity in accomplishing its intended purpose. Basically you have the chance to experience a "live feedback" from users.

Focusing on open source software programs, usability tends to become a problem since developers concentrate more in functionality of the software, often neglecting user interaction.

And here we can see the importance of usability testing as a tool to improve the general user experience. Usability testing should be a part of every cycle of software development, not just in the final product. That way we can make sure that developers are not developing for only for people who consider themselves "techies", instead we can simplify it to the point that the product becomes "grandma-friendly".

**Methods:**

For the usability test, I am running GNOME version 3.18.1 on top of  Fedora 23 operating system, without any modification that could possibly affect the participants overall experience during the test.

Considering the limited number of participants allowed to perform the test, I tried to make it as diverse as possible.  This usability test Includes: A 23 year old student of computer science, who uses open source software for about 8 years, a 27 year old female who identifies herself as an "average" user. As well as my little brother, who is 14 years old and has no previous experience in any open source software.

The participant's executed the test separately, using identical settings.
As some participants were not familiar with open source software, before starting the test I made sure that they understood some basic concepts of free software and open source software, then informed them about GNOME, and finally went through the usability test and its purpose, where I let them know that we are not evaluating participant's skills rather than evaluating user interface. I also encouraged testers to communicate their thoughts, so I can keep on track with their thinking process and take notes at the same time.
I provided each of them with a sheet of paper containing a list of 10 usability test scenario tasks, which I read out loud.

Since this is the first time I am performing a usability test, I did not feel comfortable on coming up with my own scenario tasks so I used  [usability scenarios from 2012](#) and Ciarrai's  [first contribution to usability testing](#) (from the appendix), as suggested by the mentor.
The duration of the test was about 40 minutes, so the testers won't feel the pressure of time.
Even though all participants managed to complete the tasks in less than 20 minutes.
I also translated the tasks in participant's native language (Albanian), so that they could concentrate on finishing their tasks rather than trying to not make any grammatical mistakes during the test, which would lead to confusion and incorrect test results.


**Results:**

What I found quite interesting and surprising is how the testers found completely different ways to accomplish some tasks and yet struggled at the same spots in other tasks.
In the other hand the speed of reacting to questions and correctness of completing the tasks starting from the more experienced user to the beginner was totally expected and not surprising at all. The more experienced user seemed to complete the tasks without any difficulties, also giving me some insights on what bothers him in everyday use of these particular programs and also in what way he would like them to be improved, which I will show later in more details.
For the "beginner" this process was more of a guessing game than "I know what I am doing " type of thing.

I also noticed how their reactions were associated with their personality.

For example the 27 year old female who I am referring as the "average" user expressed notes of impatience towards the fact that she had to second guess everything. She constantly made comparisons between the programs she was completing the tasks given and substituent programs she uses all the time.

The "beginner "showed excitement during the test considering it a new experience and asking more questions along the way, embracing the differences and trying to adopt to the environment as quickly as possible.

In general they were relaying in similarities between their day-to-day desktop environment and GNOME, instead of completing their tasks intuitively. But the point of the usability test it is testing how easy and intuitive is the software to use and then improve it, not to test how similar it is or should be.

I used [Jim Hall's heat map technique](), to summarize my usability test results.

Green blocks represent the ability of the participant to accomplish the tasks with little or no difficulty.

Yellow blocks indicate the tasks that the tester had significant difficulties in accomplishing.

Red blocks indicate that testers experienced extreme difficulty or where testers completed tasks incorrectly.

Black blocks indicate tasks the tester was unable to complete.

I ordered them from the most experienced (left) to the beginner (right), so that it would be easier to make comparisons.
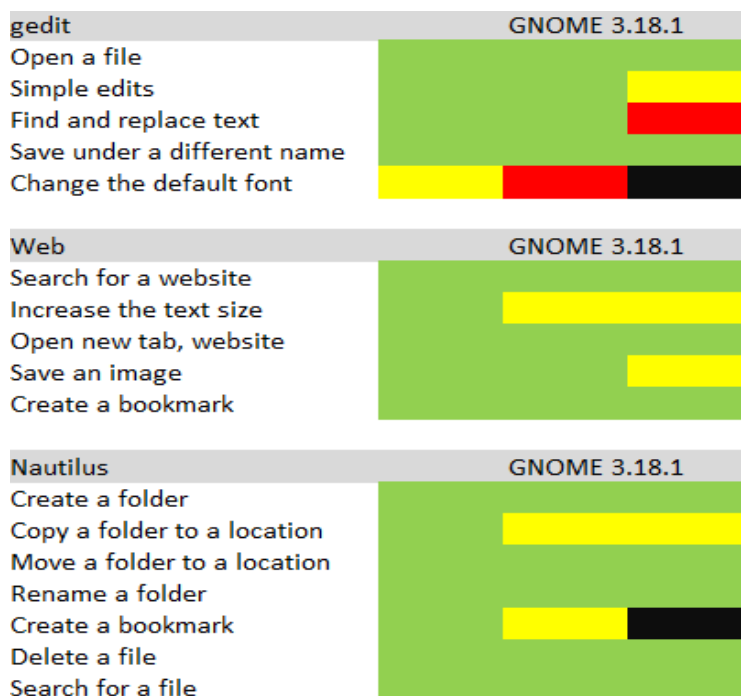
I also asked the three participants to rate the difficulty from 1 to 4, and if they would use these programs daily?

Participant 1: Programs were really easy to navigate, I do use them and will continue to use them daily (green).

Participant 2: They were relatively easy to use, yes I would use them daily (yellow).

Participant 3: I found them hard to use, no I would not like to use them daily (red).
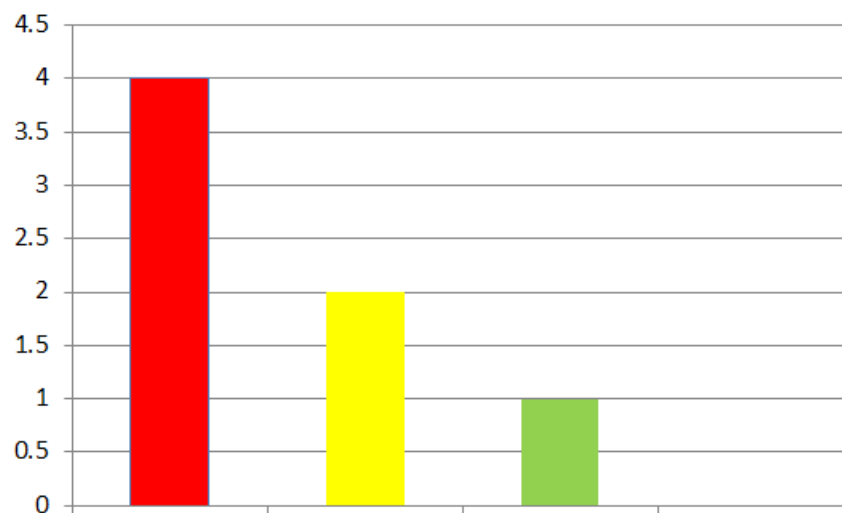


What areas of the software are easy to use?

As showed in the heat map, testers had no difficulty on accomplishing basic tasks like opening and editing a file in gedit.

Web tasks seemed to be the easiest to accomplish specially searching for websites, bookmarking them and opening new tabs or windows.

Same goes for nautilus, creating a new folder, moving, renaming and then deleting them were quickly done.

What parts are more difficult to use?

Comparing my results with the other outreachy past participants and the paperwork of Jim Hall [2], I noticed a high degree of similarity in the difficulty of accomplishing certain tasks, which leaves room for future improvements.

All participants found difficult changing the font in gedit. They were constantly looking for "fonts" in the gear menu, totally neglecting Application menus.

In the second task of Nautilus (GNOME File Manager): Files and folders are usually displayed as icons, but you can display them in other ways too. Change how the file manager displays files and folders, to show them as a list.
In this task the tester was confused, suggesting that the icon on the sub menu for displaying icons like a list should contain also a label with 'List display'.

Participants also suggested that the "sliders" should contain a (+) and (-) in each side, to indicate that they are used for changing the size of icons.

What worked well in the test?

Generally speaking, I think this usability test was successful on coming up with some targets that hopefully will help on improving GNOME usability.

The participants felt comfortable during the test and did not hesitate on communicating their thoughts, which helped me a lot. They were also open for future usability tasks.

What were the challenges?

The biggest challenge was keeping the testers sat down and be fully engaged. Maybe a short break every ten minutes would be effective in keeping them interested and also use that time to give more explanations for each specific program.

**Recommendations**

- Increase the number of participants

Next time I would try to increase the number of participants so that I can make more specific conclusions. For instance I would test if the part where I concluded how participant's reactions were tightly connected to their personality, is it actually because of their personalities or is it because younger ages tend to adopt more quickly to different technologies?

- More scenario tasks

I plan on coming up with new scenario tasks since that introduces us to more user needs, which leads to a better usability.

- Record

It is a laughable mistake, I know. But It happened. I lost my notes file during the usability testing while the participant was interpreting the 4th task in gedit. So recording the testing process would be the best choice, of course if the testers agree.

**Appendix/Scenarios**

Gedit

1. You need to type up a quick note for yourself, briefly describing an event that you want to remember later. You start the Gedit text editor (this has been done for you).

Please type the following short paragraphs into the text editor:

Note for myself:

Jenny and I decided to throw a surprise party for Jeff, for Jeff's birthday. We'll get together at 5:30 on Friday after work, at Jeff's place. Jenny arranged for Jeff's roommate to keep him away until 7:00.
We need to get the decorations up and music ready to go by 6:30, when people will start to arrive. We asked everyone to be there no later than 6:45.

Save this note as party reminder.txt in the Documents folder.

2. After typing the note, you realize that you got a few details wrong. Please make these edits:

- In the first paragraph, change Friday to Thursday.
- Change 5:30 to 5:00.
- Move the entire sentence Jenny arranged for Jeff's roommate to keep him away until 7:00. to the end of the second paragraph, after no later than 6:45.

When you are done, please save the file. You can use the same filename.

3. Actually, Jeff prefers to go by Geoff, and Jenny prefers Ginny. Please replace every occurence of Jeff with Goeff, and all instances of Jenny with Ginny.

When you are done, please save the file. You can use the same filename.

4. You'd like to make a copy of the note, using a different name that you can find more easily

later. Please save a copy of this note as <u>Geoff surprise party.txt</u> in the <u>Documents</u> folder.

For the purposes of this exercise, you do not need to delete the original file.

5. You decide the font in the editor is difficult to read, and you would prefer to use a different font. Please change the font to <u>DejaVu Sans Mono</u>, 12 point.

6. You decide the black-on-white text is too bright for your eyes, and you would prefer to use different colors. Please change the colors to the <u>Oblivion</u> color scheme.

Firefox

1. You would like to see what's happening in the news. Your favorite news website is BBC News, but you don't remember the website's address.

Search for the BBC News website, and bring up the site.

2. You would like to bring up the BBC News website every time you start up the web browser. Please set the BBC News website as the default page.

3. You don't have your glasses with you, so it's hard to read the text on the BBC News website. Please make the text bigger on the BBC News website.

4. You now would like to see what's new with your favorite "open source" project, FreeDOS. The website's address is http://www.freedos.org/

However, you want to keep an eye on the news while you are looking at the FreeDOS website. In a new site, navigate to the FreeDOS website.

5. You would like to save a copy of the FreeDOS front page, so you can view it later on your laptop during your bus ride home tonight. Save a copy of the page to the <u>Documents</u> folder.

6. You decide to download a copy of the FreeDOS program screenshot, the sample program image on the right side, under "Welcome to FreeDOS". This image might come in handy for a document you are working on (writing the document is not part of this exercise).

Save a copy of this image as <u>freedos.png</u> in the <u>Pictures</u> folder.

7. You would like to visit the FreeDOS website later, but don't want to keep typing in the address every time. Create a bookmark for the FreeDOS website.

When you create the bookmark, name it simply <u>FreeDOS</u>.

Nautilus

1. You are about to start working on a new project, and you would like to keep all your files in

the same folder.

Please create a new folder called <u>My Project</u> in the <u>Documents</u> folder.

2. Oops! You realize that the files in your new project will be photos, so you prefer to keep them under the <u>Pictures</u> folder instead of <u>Documents</u>.

Please move the <u>My Project</u> folder from <u>Documents</u> to <u>Pictures</u>.

3. Your project now has a new name, so you decide to rename the project folder to use the new name.

Please rename the <u>My Project</u> folder to <u>Space Photo Project</u>.

4. As you work on your project, you expect to go back to the folder frequently. A shortcut or bookmark to the folder would be handy, rather than having to navigate to it each time.

Create a bookmark for <u>Space Photo Project</u>.

5. Do you remember the party reminder that you created earlier, in the text editor exercise? In that exercise, you created a copy of <u>party reminder.txt</u> as <u>Geoff surprise party.txt,</u> but did not delete the first file.

Please delete the <u>party reminder.txt</u> file in the <u>Documents</u> folder.

6. Do you remember the image that you downloaded earlier, in the web browser exercise? The filename was <u>freedos.png</u>, but you don't remember where you saved it.

**Related links:**

[1] <u>https://www.w3.org/2002/Talks/0104-usabilityprocess/slide3-0.html</u>

[2] <u>http://www.freedos.org/jhall/opensource-usability/opensource-usability.pdf</u>