



Usability Study

Thunderbird Security Features

20th June 2018

A research study by **Ura Design**
Supported by **Open Technology Fund**

 **BY-SA**

About

Thunderbird

Thunderbird is an Email and messaging client used by 26 million users worldwide. It is produced by a self-governed team focused on stability, privacy and freedom. Thunderbird prides itself of creating a communications platform that “makes open standards first-class citizens”. On the security side, Thunderbird provides enterprise grade security such as TLS/SSL connections to IMAP and SMTP servers. It also offers native support for S/MIME secure Email (digital signing and message encryption using certificates).

Optional security protections also include disabling loading of remote images within messages, enabling only specific media types (sanitizer), and disabling JavaScript.

Ura Design

Ura is a digital agency which focuses on visual communication solutions tailored for Open Source and Internet Freedom projects. They are dedicated to improve Usability and Experiences by keeping a project’s unique community consensus model in mind. Ura was founded in 2016 in Albania to cater to the ever-rising demand for Usability and Design services in Open Source Software.

Ura has been involved in the recent redesign of Thunderbird, including its visual identity and User Experience.

Table of Contents

Introduction	3
Methods	4
Tasks	5
Account Setup	5
Sending encrypted/digitally signed messages	6
Master Passwords	7
Follow-up Questions	7
Demographics	7
Heat Map	8
Analysis	10
Conclusion	17
Design Considerations	18
Acknowledgments	19
Licensing	20

Introduction

Even nowadays, Thunderbird is one of the most used email clients. Latter can be accredited to its wide range of industry-grade features. Regardless of that, Usability of said features can influence how approachable Thunderbird is, considering the wide range of users from different backgrounds and various technical skills.

Usability Testing is a method for improving and measuring the ease-of-use of software. It focuses on how well users can learn to use a program to achieve their goals. The test we conducted here aims to reveal usability flaws of Thunderbird in order to pave the way in the future to make these features intuitive to use for users of any background.

The test will be mostly focused on features like email encryption, digital signing and master passwords. However it also includes general purpose tasks like writing an email, setting up an account and similar. Improving the usability has the benefit of reducing the users frustration while navigating through these features.

- In this paper we aim to:
 - Describe every potential usability issue noticed during the testing sessions
 - Provide constructive feedback
 - Provide design recommendations

We hope you find this usability study helpful towards further improving Thunderbird.

Methods

We created 9 tasks in total. Under each of them its purpose is written in *highlighted italic*. These were not included in the final scenario tasks papers which were handed to the participants and only serve for further explanations in this study.

We conducted 1:1 traditional usability testing, so only one participant at a time was taking the test. We were sitting next to the participant observing and taking notes. The test was conducted with 5 participants.

Each participant completed the tasks on a computer with Thunderbird already installed and prepared for testing.

1. Prerequisites
 - a. Thunderbird without any add-ons
 - b. Certificates, downloaded and ready to be imported because of time restrictions. (We used Comodo Email Certificate)

1. Pre-test questions
 1. Full name:
 2. Age:
 3. Gender:
 4. Is this the first time you are using Thunderbird?
 5. Are you familiar with the terms Digitally sign and Encryption?
(If they are not then explain briefly: Signing a message ensures that the message originated from the stated sender. Encrypting ensures that the message has not been read or altered during transmission. Give more explanation if necessary)
 6. Are you familiar with Thunderbird's Master Passwords feature?

We've had people of different background and technical expertise take the test. The test started with us explaining briefly what usability testing is and why it's important.

“Hi [Name], thank you for participating in this session of usability testing for Thunderbird. Usability testing is a method for improving and measuring the ease-of-use of a software.

We’ll give you the tasks one at a time. We aren’t “testing” you. The test is all about the software. If you have problems with parts of the test, that’s okay; that’s exactly what we are trying to find.

Don’t feel embarrassed if you have problems doing something and please do not feel pressured by time or anything else. If you can’t figure something out, that is perfectly okay and would still provide us with useful information for the test. If you have any questions about the tasks we will try to answer them, but the answers and feedback should come directly from you as much as possible so we will avoid anything that would lead you to a specific choice. Also, we’re going to take notes while you’re doing these tasks. It will help us if you talk out loud when you are doing something, so we can take notes.

Example: *If you’re looking for a Print button, just say “I’m looking for a Print button” and move the mouse to wherever you are looking on the screen, so we can see where you’re looking.”*

After that, participants were presented with 9 scenario tasks which they were expected to complete in 40-50 minutes. All the participants managed to complete the tasks in less than 40 minutes.

Tasks

Account Setup

1. You have decided to use Thunderbird as your every-day email application from now on. Please open a new account with the provided information:

email: usability.tb@gmail.com
password: usability

(The user will set up an account which is needed for the upcoming tasks. and we can also evaluate how easy it is for a new user to set up an account.)

Sending encrypted/digitally signed messages

1. You want to send John your bank account information for transferring money to your account.

Please send this email to johnexample.tb@gmail.com with the subject line: **“My information for wire transfer.”** The e-mail body must contain your personal information listed below:

Full Name: Country: IBAN: Account number:
--

(**NOTE:** These do not have to be the real numbers, you can randomly type any number for the purpose of demonstration.)

(Can users intuitively find the write button to start writing the email?)

2. Of course you want this message to arrive as safe as possible and you want John to know that you are the sender. You want to make sure that the message has not been read or altered during the sending process. That is why you need to sign and encrypt this message. To send or receive a signed or encrypted message, you should specify both a digital signing certificate and an encryption certificate. Please check to make sure you have both on your account.

(The challenge here is for the user to make sense where they can find the certificates. Is Account Settings/Security window easy and logical to navigate to?)

3. If you don't have any certificates listed then search on Desktop/Certificates, there you will find a certificate that is ready for use.

(In order to finish this task the tester needs to import the certificate that we already downloaded ready to be used)

4. The screen will show up a window that requires a password for the certificate. In this case use usability as a password.

5. Now that you have the certificates in place and your message written, you can proceed with encrypting and signing the email.

(Can users intuitively find the encryption option on the Security button on the toolbar or alternatively Options/Encrypt?)

6. Please check your information once again to see if everything is correct and then send the Message.

Master Passwords

1. Thunderbird can save passwords for each account, so you don't have to re-enter them when you check for new messages. This feature is called Master Passwords. With Master Passwords you can view all the passwords and remove the ones you don't use anymore. Thunderbird will require you to enter a master password in order to view or use the passwords you've told Thunderbird to remember. When you have a master password set, you'll only need to enter it once per session.

Please set up a master password for your account.

Set the password: `usability`

(The challenge here is to navigate through menus to set up a master password.)

2. Now that you have completed your account setup, you can go ahead and exit Thunderbird.

3. Imagine you forgot the password of the account usability.tb@gmail.com, that you set up earlier. Please open Thunderbird again and try to find this password through Master Passwords feature.

(The challenge here is to use the Saved Passwords window, to search a forgotten password.)

Follow-up Questions

We extended the testing time and asked questions about specific tasks that the tester found more difficult to use. Questions like:

- “What were you thinking while completing this task?”
- “Would it be more obvious for you to find this menu placed here?”
- “Where did you expect to find this icon/menu?”
- “How would it be more logical for you to accomplish this task?”

Demographics

For this part we are focusing on demographics. Hopefully it will create a clear picture of the testing process and will help to “get to know” the users and understand them better.

Five volunteers participated in this usability test, representing a mix of gender (slightly more men than women) and age ranges (mostly age 21-30.)

Gender:40% **Female**60% **Male****Age:**20% **15-20 years**60% **21-30 years**20% **31-50 years**

We had a healthy variety of backgrounds, some of them were students, some work in tech industry and the others in different fields. The majority of testers haven't used Thunderbird before, which proved to be a convenient aspect for our test setting.

The other participants who have used it before helped a lot with giving insights on their daily usage and gave a few suggestions on how these features could be more usable. Most of participants were familiar with terms like "Encryption" and "Digitally Signing" but almost all of them were not familiar with the term "Master Passwords".

Familiarity with Thunderbird Master Passwords80% **Unfamiliar with the term**20% **Familiar with the term****Familiarity using Thunderbird**20% **Use it daily**20% **Use it sometimes**60% **Never used it before**

Heat Map

We used a heat-map technique to summarize our usability test results. This method seemed fitting to see how users performed on each task. The heat map clarifies how easy or difficult it was for the participant to accomplish a certain task.

How to read the map:

2. Scenario tasks (from the usability test) are arranged in rows.
3. Test participants (for each tester) are arranged in columns.
4. The colored blocks represent each tester's difficulty with each scenario task.

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 the tasks incorrectly.

Black blocks indicate tasks the tester was unable to complete.

	P1	P2	P3	P4	P5
1. Set up an Account	Green	Yellow	Yellow	Green	Yellow
2. Write an Email	Green	Green	Yellow	Yellow	Green
3. Check the Certificates	Green	Red	Red	Red	Yellow
4. Install Certificates	Green	Red	Red	Yellow	Yellow
5. Sign and Encrypt the Email	Green	Green	Red	Yellow	Green
6. Send the Email	Green	Green	Yellow	Green	Green
7. Set up a Master Password	Red	Black	Black	Red	Red
8. Exit/Logout Thunderbird	Green	Green	Green	Green	Green
9. Show passwords from Master Passwords	Green	Yellow	Red	Yellow	Yellow

It's noticeable that green and yellow dominate the map which indicates that the tasks performed reasonably well in most cases. However red and black are concentrated in the center part of the map.

Tasks like setting up the certificates and signing and encrypting the message, show us where participants mostly struggled.

There are two black blocks on the map which indicate that two participants couldn't manage to setup a master password and gave up on this task.

We will go through each task individually and explain in detail each usability flaw encountered during the testing sessions.

It's noticeable that green and yellow dominate the map which indicates that the tasks performed reasonably well in most cases. However red and black are concentrated in the center part of the map.

Tasks like setting up the certificates and signing and encrypting the message, show us where participants mostly struggled.

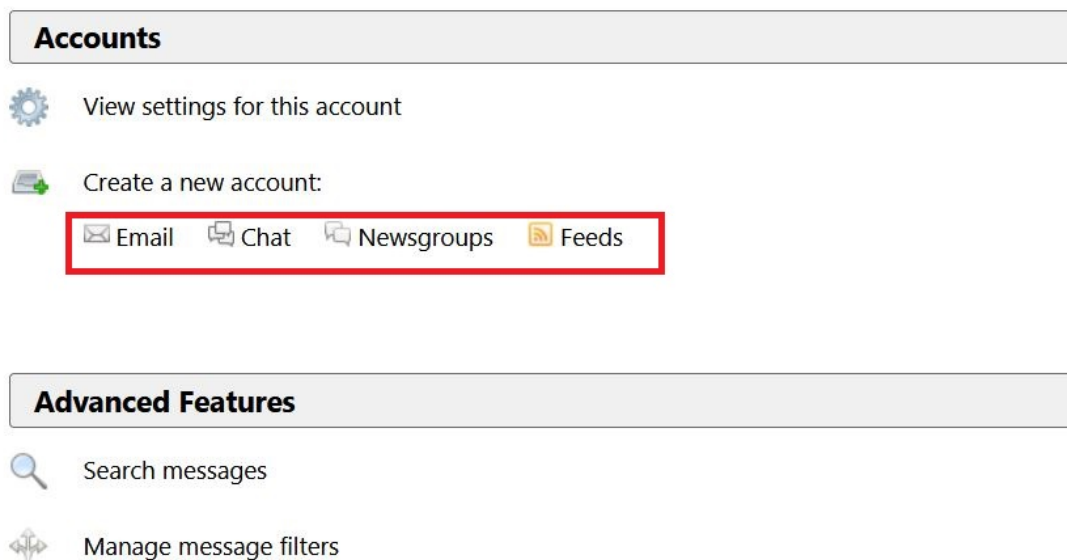
There are two black blocks on the map indicating that two participants couldn't manage to set up a master password and gave up on that task.

We will go through each task individually and explain in detail each usability flaw encountered during the testing sessions.

Analysis

1. Set up an account

Thunderbird Mail - Local Folders



There was a little confusion with creating a new account. *The Email, Chat, Newsgroups and Feeds* icons were not as obvious for the users. They thought they are not clickable and expected visible buttons.

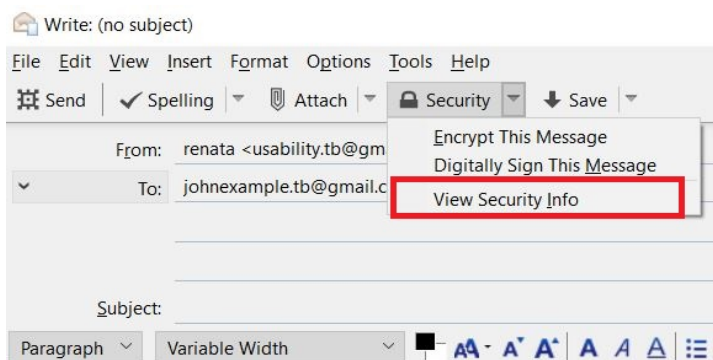
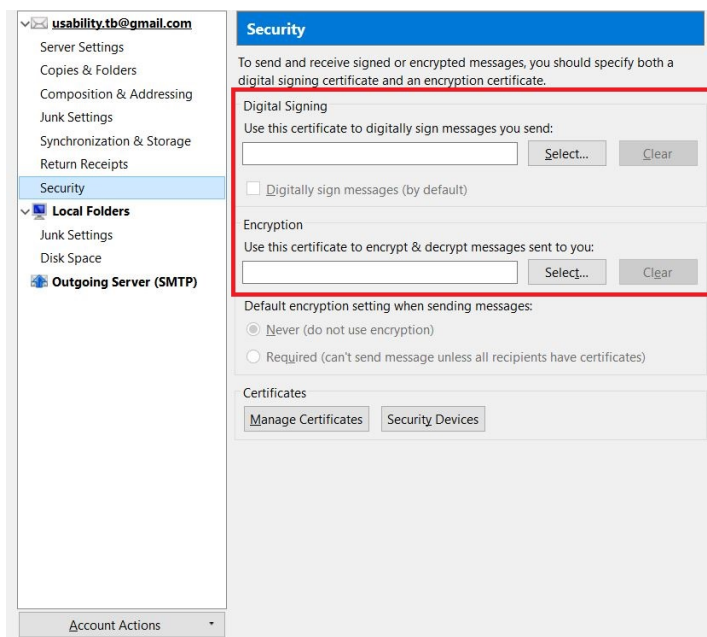
→ **Recommendation:** Having a button for *Create a new account* could be an alternative to this pattern. This could lead to a new window where they could find the other options listed. Alternatively having visible buttons for each, would help equally.

2. Write an email



This task performed really well. Users didn't encounter any problem finding a way to write a message. Some used the *Write* icon on the toolbar and others did it through *Write a message* icon.

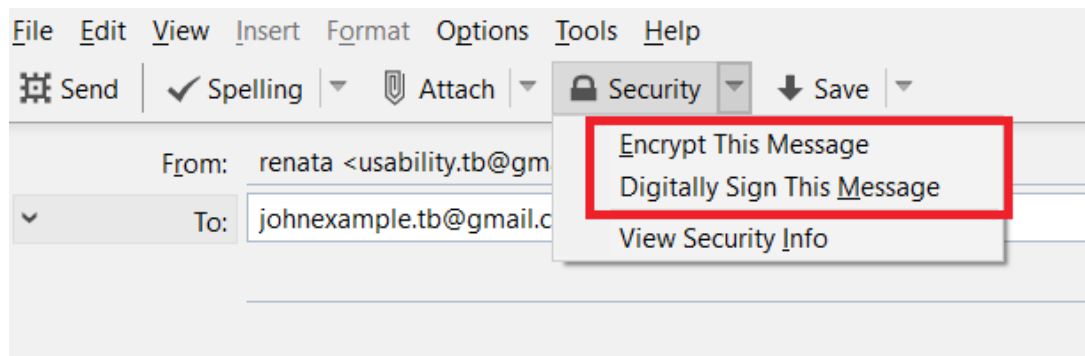
3 and 4: Check if you have the Certificates ready for use.



This task turned out to be quite confusing for many participants. They expected to find a way to select a certificate via the *View Security Info* option. When they realised it's not there, they started searching through every toolbar menu to find it.

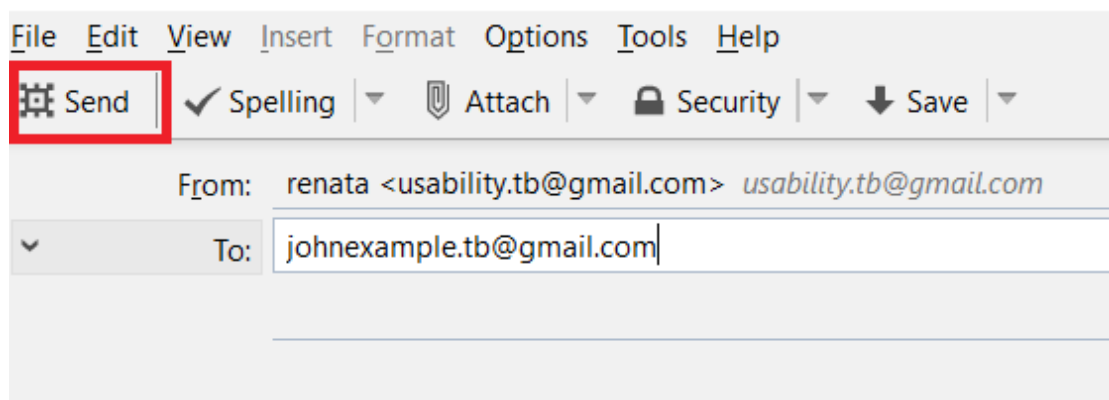
- **Recommendation:** It might be advisable to have everything related to email security in one place. Specifically, the options for managing the certificates which are currently placed on *Account Settings/Security* could be listed on the toolbar, on the *Security* menu. In that way users can easily manage certificates, digitally sign and encrypt an email, while also viewing security related information. All of this in one place.

5. Digitally sign and Encrypt the message



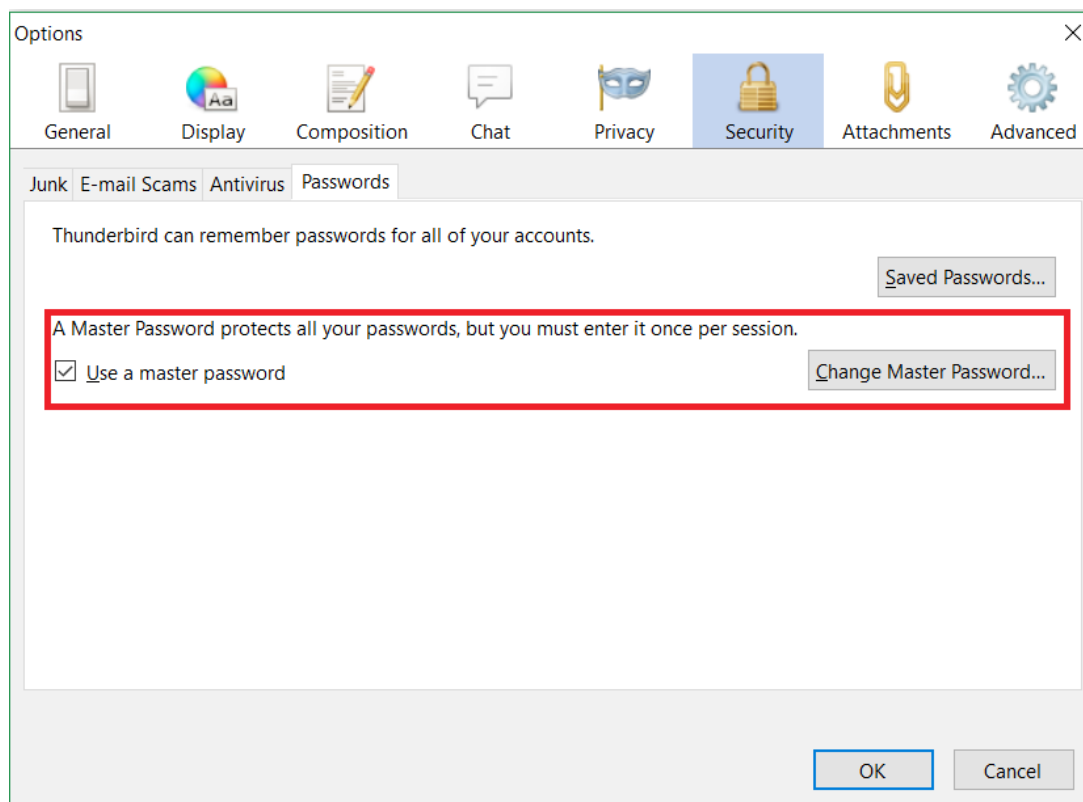
After having accomplished the previous task, this one was more intuitive and a lot easier to accomplish. The *Security* button paired with the lock icon appeared relatable to its content. A small feature that all participants considered as a good usability improvement is having two separated buttons on the toolbar for *Encrypt* and *Sign*.

6. Send the email



As expected this task was very straight forward, at this point every user has already finished the challenging tasks and ready to finalize this part of the test with sending the encrypted and signed message to its destination. Even though some participants encountered more difficulties with the previous tasks due to unfamiliarity with the software they all managed to successfully send the email both signed and encrypted.

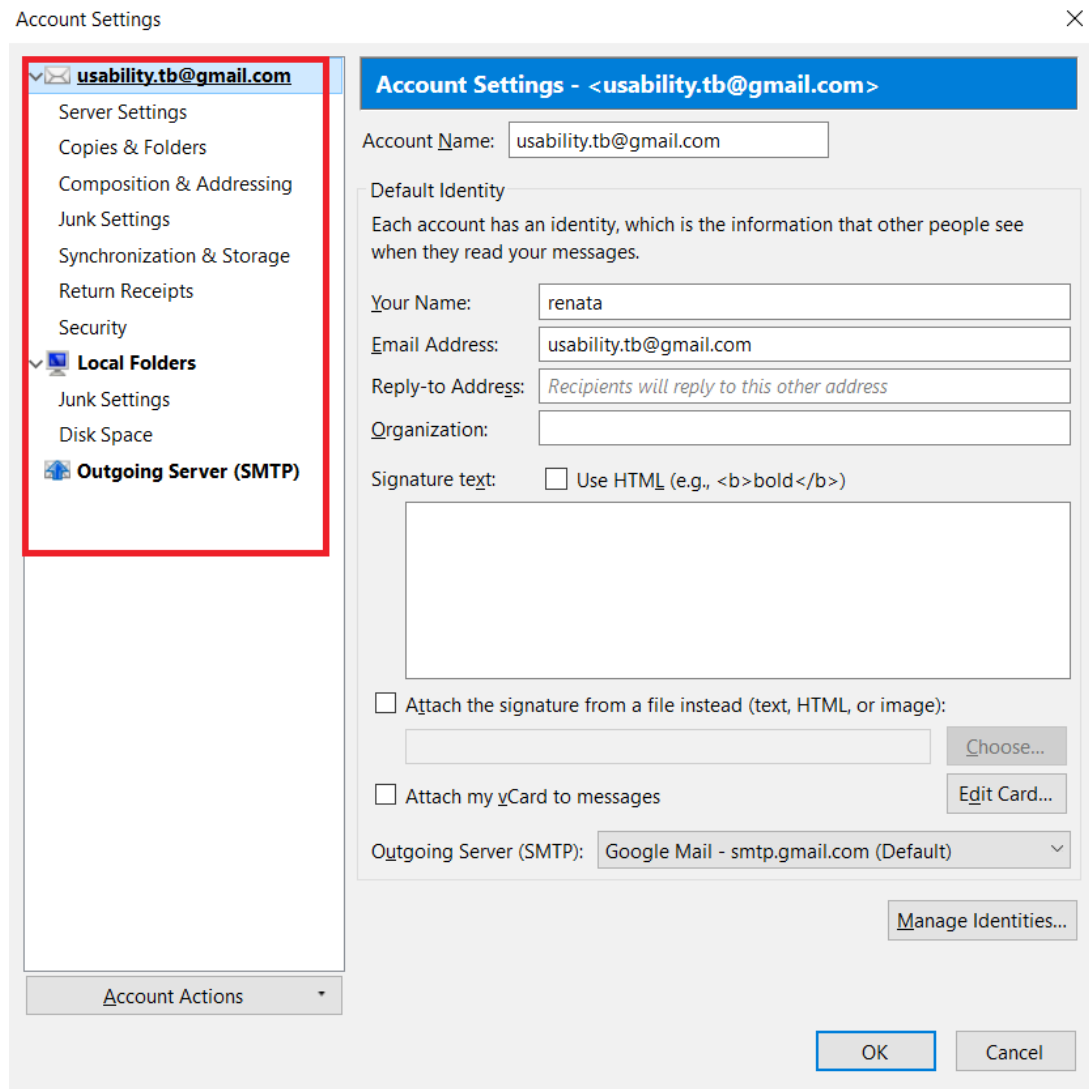
7. Set up a Master Password



As we can notice from the heat-map all participants struggled to setup a Master Password for their account. There are even two black blocks, meaning two participants spent a lot of time trying to find this feature and then gave up entirely on the task. The others needed more time and also hints on where this feature is placed. All participants had the exact same thought on where to find it, their first instinct led them to *Account Settings*, where they obviously couldn't find it.

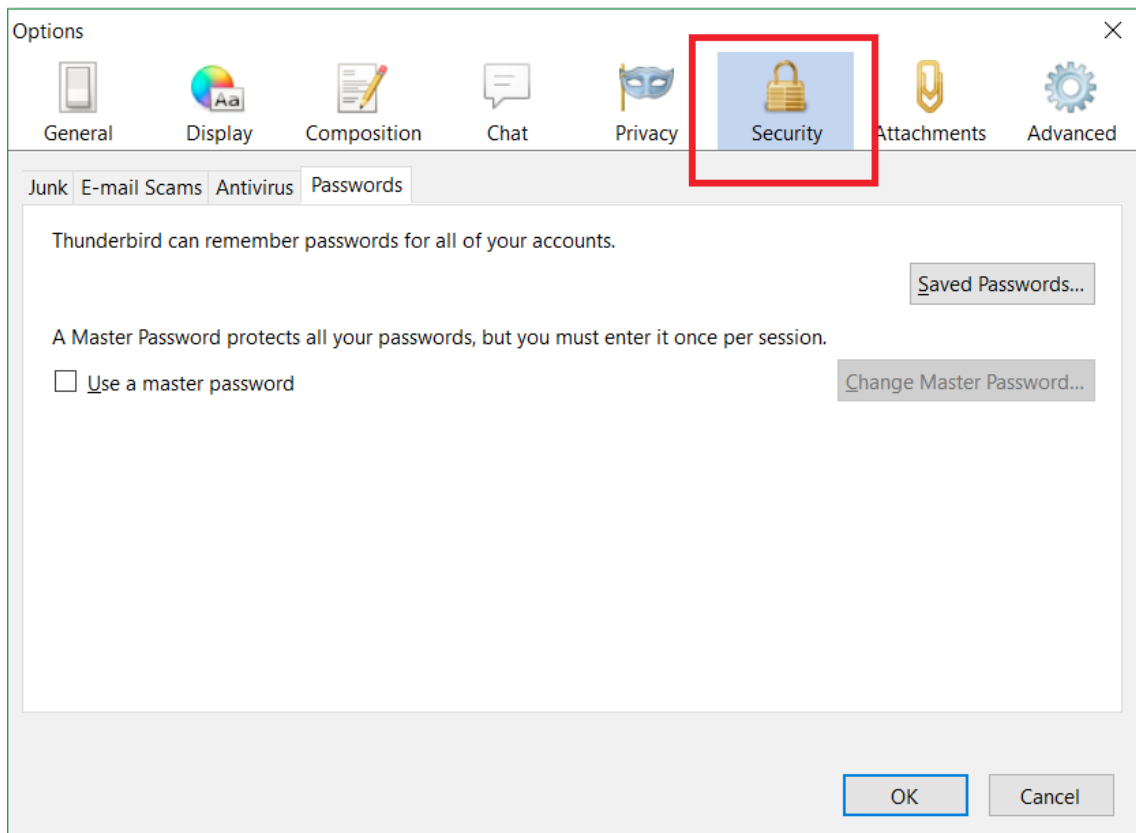
We asked each of them to explain their thought process, so we could understand where they expect to enable Master Passwords and the reason why they think it's there.

As this feature is closely related to the each personal account, participants expected it to be placed on the left sidebar of *Accounts Settings* window.



The participants tried clicking every option on the sidebar and couldn't find the Master Password option. They mostly expected to find it on *Account Settings/Security* since they thought a master password is related to security of their account.

At this point participants were highly confused. Some of them just continued to go through the toolbar, and almost turned it into a "guessing game" since there was no other obvious place they deemed plausible to find it. Once they stumbled upon the *Options* window it became quite clear that they should look on the *Options/Security* tab.



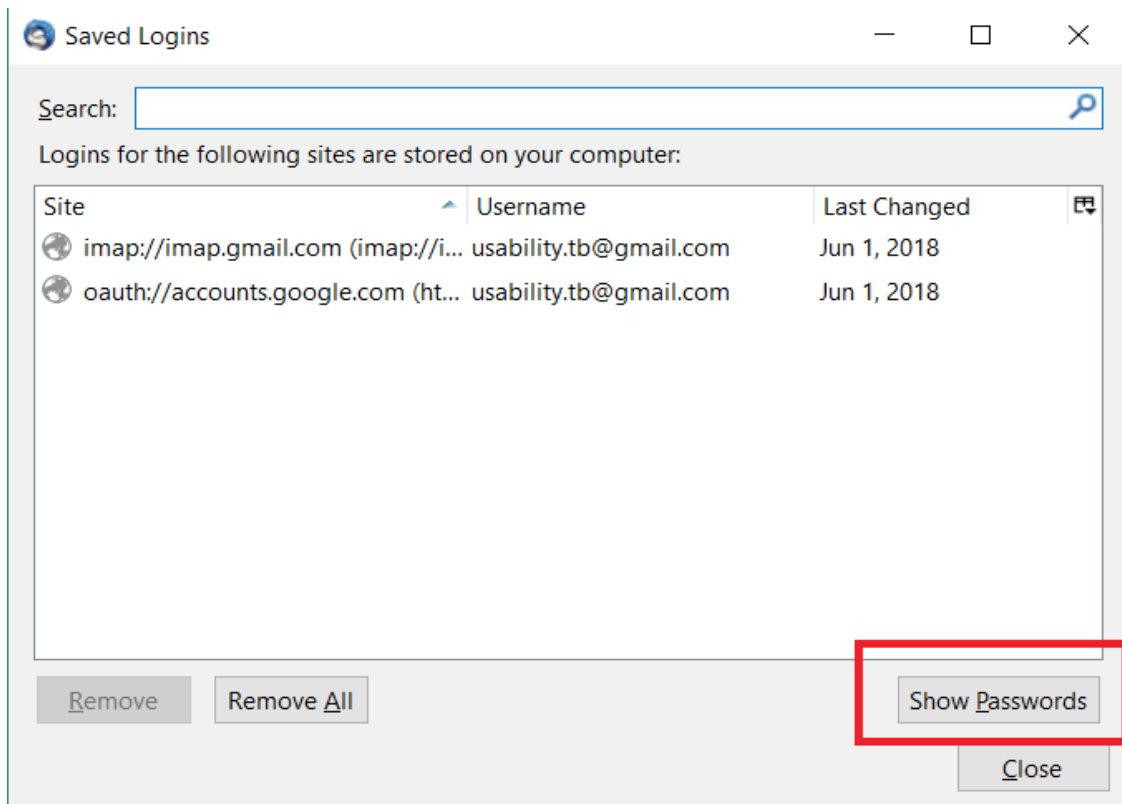
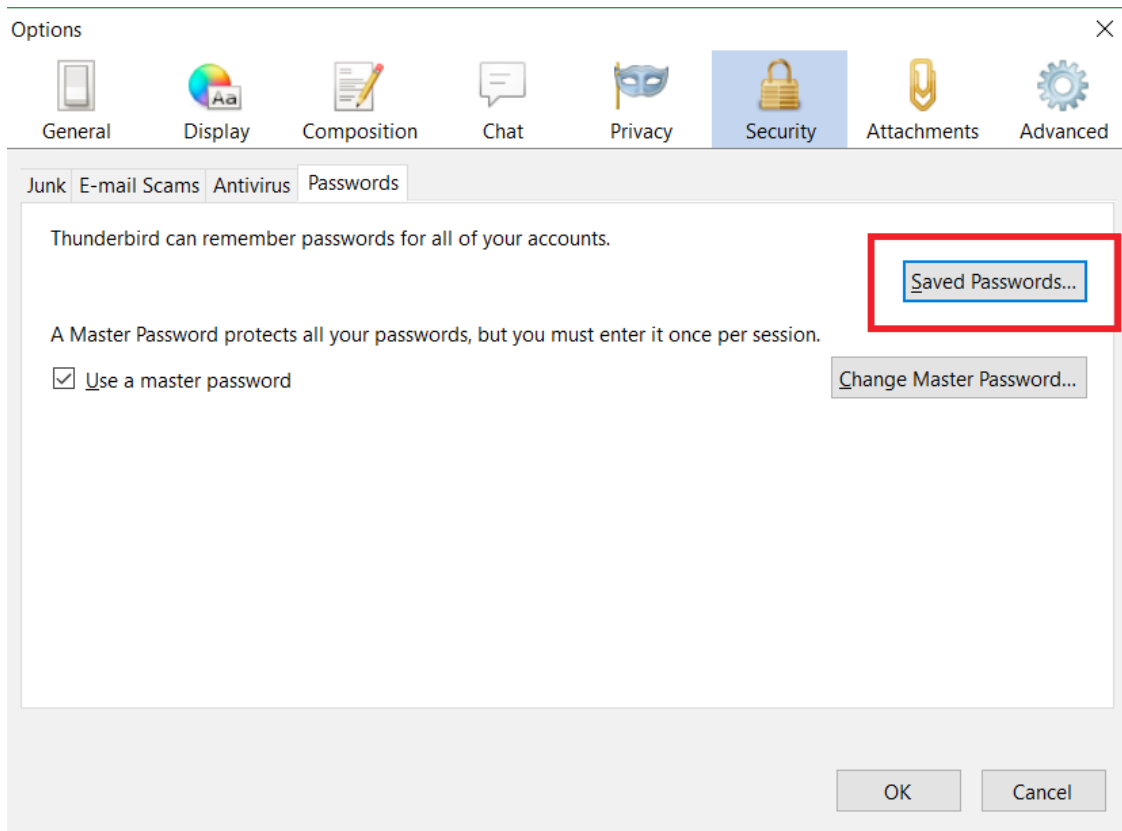
8. Exit/Logout Thunderbird

Similar to the 6th task (Send the Email), this one is quite straightforward as well. No participant had any difficulties accomplishing it, mostly due to the similarity that it has with other software.

9. Show passwords

Because they already finished the 7th task (Setup a Master Password), participants already knew where to find the *Show password* feature.

They assumed it's related to the master password and that's where they searched for it. The reason participants had difficulties with this task was the fact they forgot where to find the Master Password option, as it was already very complicated for them in the task before.



Conclusion

In overall, the testing process went well without any unexpected blockers.

After the session, participants were asked to describe their experience using Thunderbird in a keyword or a short sentence.

Some of the keywords were:

- easy to get around
- straight forward
- little confusing
- too many menus

It must be noted however that all participants were convinced that if they would be given the same tasks again, they could accomplish them without any difficulties. This is reassuring, as memorability of software is a critical ingredient for usable software.

On a positive note, all participants concluded that if they would be given the tasks again they were pretty positive on their ability to accomplish them without any difficulties. This checks a big mark on usability, since memorability of a software (how easy it is to memorize) is a crucial point for a usable software.

Although the visual language of the Thunderbird interface might not be up-to-date to industry standards, it seemed to not have a major influence on usability compared to the blockers encountered with the menu placements.

Being one of the few de facto e-mail clients offering industry-grade security features, Thunderbird could benefit from a interface redesign, opening up its audience to a wider spectrum of users.

Design Considerations

These are some of the factors that we believed contribute to users struggling with the interface and how to take them to consideration.

Placement of menu items

The biggest issue for virtually all participants, was the placement of the menu items. Their function and purpose are oftentimes not predictable from the user. Even the participants who have been using Thunderbird in the past, found themselves searching through various menus while searching for a specific feature. It resembled a guessing game instead of an intuitive thought process.

Too many nested items

While Thunderbird offers a considerable amount of features out of the box, it's expected that some features might lose visibility to some degree. However there are various Usability issues mostly related with its information architecture. A great number of items were nested within options most users didn't expect them to be. Therefore it is advisable to review the information hierarchy and iterate on the item and menu placement.

Technical terms

We found that users struggle because the interface requires them to know technical terms. Assume users do not know technical concepts so have them briefly explained whenever possible.

Acknowledgments

We want to thank our contributors who worked on this study:

Renata Gegaj	Usability Researcher
Elio Qoshi	Creative Lead
Anxhelo Lushka	Frontend Designer
Redon Skikuli	Partnerships Coordinator

A special mention goes out to [Simply Secure](#) for providing feedback to our first usability study (this very one).

This research has been made possible by [Open Tech Fund](#) which financially supported this work.

This study has been conducted in **Tirana, Albania** and **Prishtina, Kosova**.

Licensing

Some rights reserved © 2018 Ura Design

This work is licensed under a [Creative Commons Attribution ShareAlike 4.0 International License](#).

You can find the [full license text here](#).

First published on 20th June 2018.