

Prepared by the GCTools Team
Treasury Board of Canada Secretariat



GCTools Account Sign in Usability Testing Results

Digital Collaboration Division

2018

Table of Contents

RESEARCH OVERVIEW	1
EXECUTIVE SUMMARY	1
PARTICIPANTS	1
METHODOLOGY	1
DATA COLLECTED	1
TASK ANALYSIS	2
GCTOOLS ACCOUNT SIGN IN	2
TASKS AND SUBTASKS	2
SUMMARY OF FINDINGS	4
TASK COMPLETION RATES	4
USER INSIGHTS	7
OTHER COMMENTS.....	9
RECOMMENDATIONS	10
SIGN IN AND REGISTRATION	10
PROFILE	11
PASSWORD.....	12
TWO-FACTOR AUTHENTICATION	13
OTHER RECOMMENDATIONS.....	13
REFERENCES	15
APPENDIX.....	I
PLEASE CONTACT THE GCTOOLS TEAM FOR THE FULL REPORT AND ADDITIONAL INFORMATION: HELP / CONTACT US	I

Research Overview

Executive Summary

The aim of this research was to evaluate end-to-end experience of the GCTools users as they interact with the new Account Sign in and authentication system.

This research included a total of 5 participants and the usability testing sessions took place on February 7-9, 2018. One participant (1, 20%) was able to successfully complete all the tasks while the remaining participants (4, 80%) were able to successfully complete 8 out of 9 tasks (88.9%).

Through this study, empirical data on behavioural observations and insights into the current user experience were collected. Based on the research findings, this report will provide concrete recommendations for the following research questions:

- **Content and terminology** – Do our users understand the content and does it help them accomplish their tasks?
- **Navigation and information architecture** – How does the system structure support users' ability to accomplish their tasks? Can they navigate to where they want to go and accomplish their tasks quickly and efficiently? What pathways do they take?
- **Layout and visual design** – What are our users' impressions of the visual design?

Participants

The total number of individuals who participated in the study was 5.

Methodology

The task analysis and think-aloud protocol were used to produce the findings summarized in this report. Each participant was given a total of 9 tasks to complete. These given tasks were neutral and the amount of information given to the participants was restricted in order to minimize experimental bias. The facilitator asked participants to complete the broad tasks, while the corresponding subtasks were only available to the facilitator as a checklist.

For the script of the tasks, please refer to the texts in quotation marks in **Table 1, p. 2-3**.

Data Collected

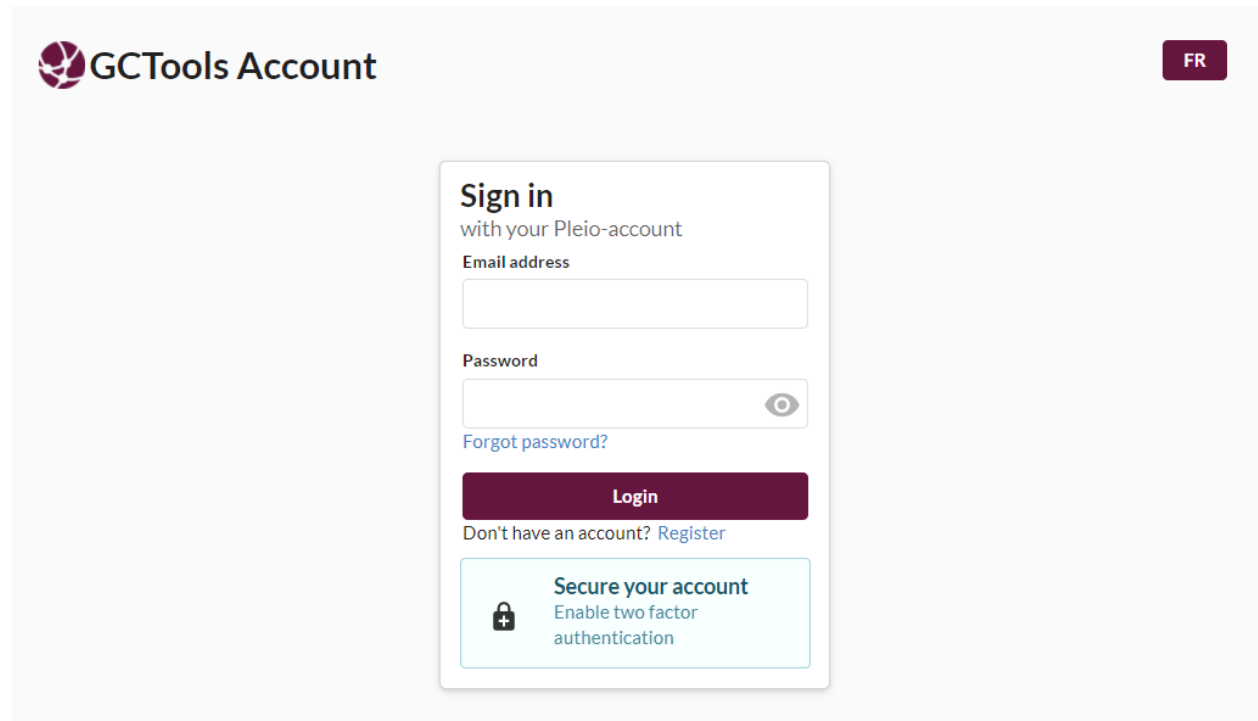
This research collected two forms of data:

- **Task completion rates:** Objective and behavioural performance that provides a usability baseline to measure future improvements
- **User insights:** Insights into design solutions on how to improve and strengthen the experience

Task Analysis

GCTools Account Sign in

The following figure illustrates the new GCTools Account Sign in prototype:



The image shows a web interface for GCTools Account Sign in. At the top left is the GCTools Account logo. At the top right is a language selector button labeled 'FR'. The main content area contains a 'Sign in' form with the following elements:

- Sign in** header with the subtext 'with your Pleio-account'.
- Email address** label above a text input field.
- Password** label above a text input field with an eye icon for toggling visibility.
- [Forgot password?](#) link below the password field.
- Login** button below the password field.
- Text: 'Don't have an account? [Register](#)'.
- A light blue box containing a lock icon, the text **Secure your account**, and the subtext 'Enable two factor authentication'.

Figure 1. GCTools Account Sign in prototype. <https://account.gccollab.ca/register/>

Tasks and Subtasks

The following table represents the 9 tasks and their corresponding subtasks that the participants were asked to complete in this study:

Table 1. GCTools Account Sign in tasks and subtasks.

#	Tasks	Subtasks
1	Register: "You would like to create a GCTools account, please show us how you would proceed, and tell us your thoughts while you're performing these tasks."	<ul style="list-style-type: none"> o Click 'Register' o Enter first and last name o Enter email o Enter password o Enter password (again) o Click general terms o Click 'Agree' o Click 'Register' o Navigate to email o Click link

2	Add an avatar: “Please complete your profile by adding a picture.”	<ul style="list-style-type: none"> o Add a picture
3	Change avatar: “You don’t like your picture, please choose another one.”	<ul style="list-style-type: none"> o Remove picture o Select new picture
4	Change password: “You would like to change your current password. Please show us how you would do that.”	<ul style="list-style-type: none"> o Click ‘Security’ o Enter old password o Enter new password and password (again)
5	Set up 2FA: “You would like to secure your profile more than with just an identification and password, please show us what you do to ensure this protection.”	<ul style="list-style-type: none"> o Enable Two-Factor Authentication (2FA) o Click one of the links (Google Authenticator or Authy) o Download mobile app <ul style="list-style-type: none"> o Enter cellphone (<i>Authy only</i>) o Account verification by text (<i>Authy only</i>) o Add account (<i>Authy only</i>) o Enable or skip backups (<i>Authy only</i>) o Scan QR code o Enter token
6	Log out: “You’re done with your session, please securely exit.”	<ul style="list-style-type: none"> o Log out
7	<p>Change password from login page: “You need to get back into your account.</p> <p>You forget your password because you just changed it, what measures would you take?”</p>	<ul style="list-style-type: none"> o Click forgot password o Enter email o Click ‘reset password’ o Navigate to email o Click link o Enter new password and password (again) o Click action button
8	Log in with new password: “Please access your account with your new password.”	<ul style="list-style-type: none"> o Return to log in o Enter new information o Log in o Enter two-factor authentication
9	Exit account: “Exit your account.”	<ul style="list-style-type: none"> o Log out

Summary of Findings

Task Completion Rates

A total of 5 individuals participated in the usability testing. The following table represents task completion rates:

- **User Completion** refers to the number and percentage of total participants that completed (Y) or did not complete (N) the tasks.
- The **Total Task Completed** and the **Total Subtask Completed** columns refer to whether or not all participants were able to complete each task and its corresponding subtasks.

Table 2. Task completion rates.

#	Tasks	Subtasks	User Completion				Total Subtask Completed	Total Task Completed
			N (#)	N (%)	Y (#)	Y (%)		
1	Register	o Click 'Register'	0	0	5	100	Y	Y
		o Enter first and last name	0	0	5	100	Y	
		o Enter email	0	0	5	100	Y	
		o Enter password	0	0	5	100	Y	
		o Enter password (again)	0	0	5	100	Y	
		o Click general terms	0	0	5	100	Y	
		o Click 'Agree'	0	0	5	100	Y	
		o Click 'Register'	0	0	5	100	Y	
		o Navigate to email	0	0	5	100	Y	
		o Click link	0	0	5	100	Y	
2	Add an avatar	o Add a picture	0	0	5	100	Y	Y
3	Change avatar	o Remove picture	3	60	2	40	N	Y
		o Select new picture	0	0	5	100	Y	
4	Change password	o Click 'Security'	0	0	5	100	Y	Y
		o Enter old password	0	0	5	100	Y	
		o Enter new password and password (again)	0	0	5	100	Y	
5	Set up 2FA	o Enable Two-Factor Authentication	0	0	5	100	Y	N
		o Click one of the links (Google Authenticator or Authy)	4	80	1	20	N	
		o Download mobile app	4	80	1	20	N	
		o Enter cellphone (Authy only)	5	100	0	0	N	
		o Account verification by text	5	100	0	0	N	
		o Add account	5	100	0	0	N	
		o Enable or skip backups	5	100	0	0	N	

		o Scan QR code	4	80	1	20	N	
		o Enter token/code	4	80	1	20	N	
6	Log out	o Log out	0	0	5	100	Y	Y
7	Change password from login page	o Click forgot password	0	0	5	100	Y	Y
		o Enter email	0	0	5	100	Y	
		o Click 'reset password'	0	0	5	100	Y	
		o Navigate to email	0	0	5	100	Y	
		o Click link	0	0	5	100	Y	
		o Enter new password and password (again)	0	0	5	100	Y	
		o Click action button	0	0	5	100	Y	
8	Log in with new password	o Return to log in	0	0	5	100	Y	Y
		o Enter new information	0	0	5	100	Y	
		o Log in	0	0	5	100	Y	
		o Enter two-factor authentication	4	80	1	20	N	
9	Exit account	o Log out	0	0	5	100	Y	Y

User Completion

One participant (1, 20%) was able to successfully complete all the tasks while the remaining participants (4, 80%) were able to successfully complete 8 out of 9 tasks (88.9%).

Total Task and Subtask Completed

For *Tasks 1, 2, 4, 6, 7, 9*, all participants (5, 100%) were able to successfully complete each task and their corresponding subtasks.

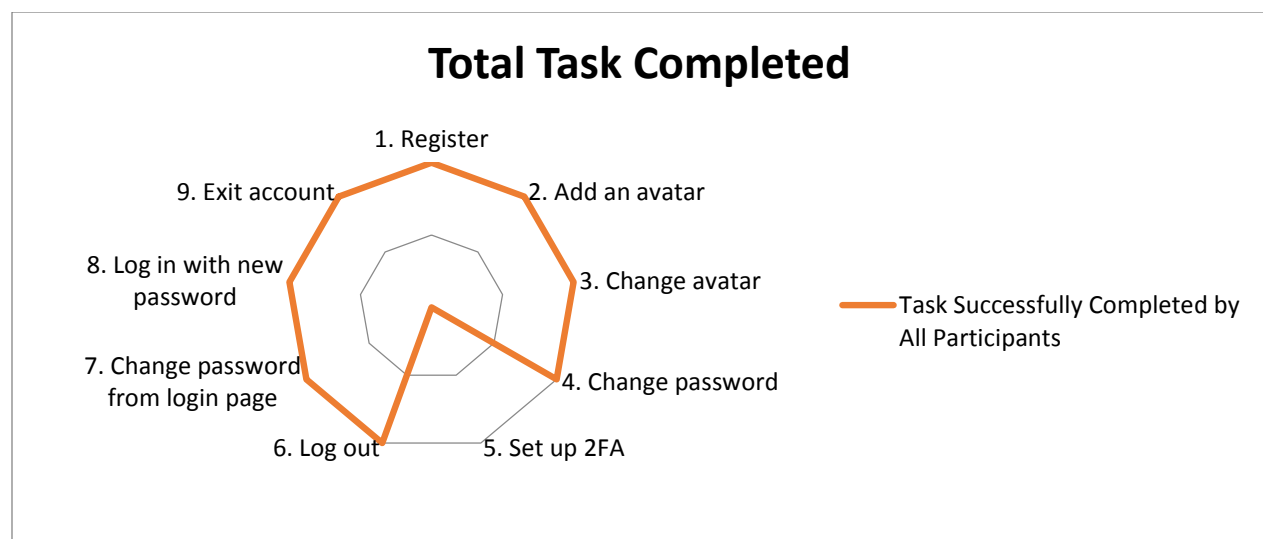


Figure 2. Total task completed.

For **Tasks 3 and 8**, all participants (5, 100%) were able to successfully complete each task. However, some participants were able to complete the major tasks without completing all the corresponding subtasks. For **Task 3**, only a few participants (2, 40%) “removed picture” prior to selecting a new picture. For **Task 8**, only one participant (1, 20%) was able to “enter two-factor authentication” when logging in with a new password.

For **Task 5**, only one participant (1, 20%) was able to “setup two-factor authentication” such as downloading the app, scanning the QR code and entering the verification code. It is important to note that the participant used Google Authenticator, which has fewer requirements than Authy and therefore fewer steps to setup the 2FA.

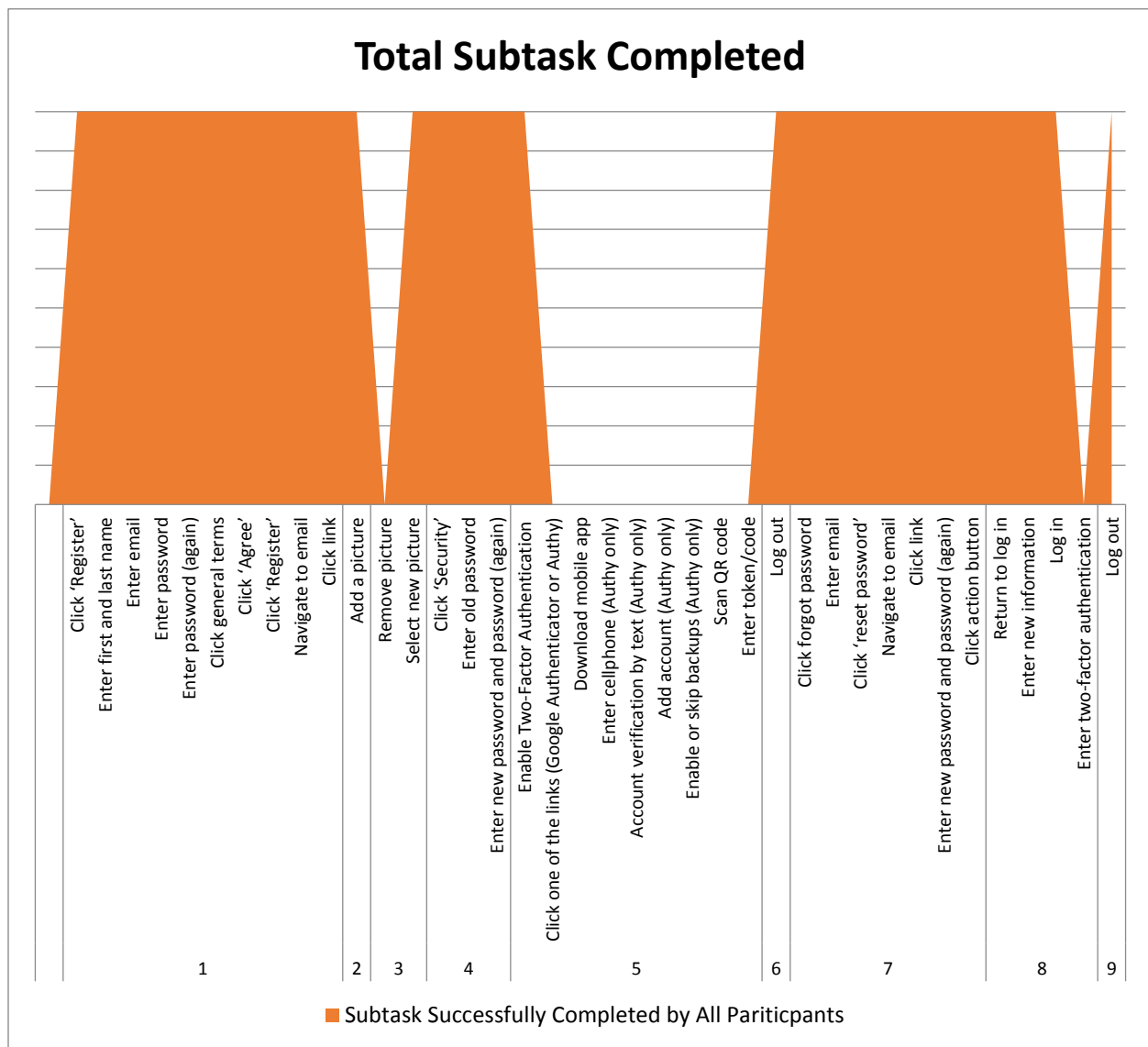


Figure 3. Total subtask completed.

User Insights

During the usability testing, participants were encouraged to perform think-aloud protocol, where they spoke out their thoughts while completing a set of specified tasks. Some of these responses gave us insights into design solutions on how to improve and strengthen the user experience of the new Account Sign in and authentication system.

The following table represents the summary of user insights:

Table 3. Summary of user insights.

#	Tasks	Common Insights
1	Register	<p>4 out of 5 participants (80%)</p> <ul style="list-style-type: none"> Pointed out that the 'Register' button was not clear or obvious. 2 participants (40%) proceeded to enter their email before clicking on 'Register'. <p>3 participants (60%)</p> <ul style="list-style-type: none"> Identified that users should be made aware of the password requirements right from the beginning of the registration process. A strength indicator should also be present. <p>2 participants (40%)</p> <ul style="list-style-type: none"> Suggested that the 'general terms' should be renamed to 'Terms & Conditions' Wanted clarification on where to go to verify their email address. 1 participant (20%) tried to sign in right after the registration process instead of going into their email account to confirm. <p>1 participant (20%)</p> <ul style="list-style-type: none"> Suggested that the email verification system should be present as soon as the user enters it into the field. Recommended that during the registration process, first and last name should be in two separate fields. Was confused with the eye view icon for password as it did not change when clicked on. Suggested that 'Password (again)' should be renamed. Proposed that users should be able to create their usernames. Liked that clicking on the verification link in the email brought the users to the 'Account Settings' screen. Concerned with too many email notifications. Suggested that the account should be accessible with government emails as some departments do not have a phone to receive email notifications from external email addresses.
2	Add an avatar	<p>1 participant (20%)</p> <ul style="list-style-type: none"> Liked that their picture was added to the profile as soon as they chose an image.

3	Change avatar	<p>3 participants (60%)</p> <ul style="list-style-type: none"> Automatically clicked on 'Choose an avatar' rather than clicking on 'Remove avatar'. <p>2 participants (40%)</p> <ul style="list-style-type: none"> Wanted the option to resize, crop, save and edit the profile picture and the thumbnail. The editing feature should take into account the circular or square profile pictures. Wanted confirmation messages when the profile picture is deleted and when it has been changed.
4	Change password	<p>3 participants (60%)</p> <ul style="list-style-type: none"> Pointed out that the confirmation message should be a popup instead of a notification bar at the top. The confirmation should be more visible, such as the colour change to green or confirmation through email. <p>1 participant (20%)</p> <ul style="list-style-type: none"> Suggested that 'Password (again)' should be renamed.
5	Set up 2FA	<p>4 participants (80%)</p> <ul style="list-style-type: none"> Were not able to complete this task. These participants suggested that there should be an explanation of what the two-factor authentication is and the rationale of why someone should use it. <p>3 participants (60%)</p> <ul style="list-style-type: none"> Did not understand the use of a token generator. <p>2 participants (40%)</p> <ul style="list-style-type: none"> Did not know how to use the QR code. Did not want to download an additional app on their phone. Believed that there were too many steps in setting up this system.
6	Log out	<p>1 participant (20%)</p> <ul style="list-style-type: none"> Pointed out that their first instinct was to go to the top right corner of the page, near the navigation bar to log out.
7	Change password from login page	<p>1 participant (20%)</p> <ul style="list-style-type: none"> Wanted a clearer message after clicking on 'Reset password', such as the details on which email address the recovery link was sent to and if the address was registered in the system. The account should specify whether the email or the password is valid.
8	Log in with new password	<p>2 participants (40%)</p> <ul style="list-style-type: none"> Pointed out that the 'Secure your account: Enable two-factor authentication' option in the log in page seemed unnecessary and unusable.
9	Exit account	N/A

Other Comments

1. **Language** – Language change should be clearly visible, maybe consider a dropdown menu option.
2. **Sidebar** – First letter of each menu item should be all uppercase or lowercase to keep consistency.
3. **GCTools Account logo** – Clicking on the logo should navigate the user to the main log in page.

Recommendations

Based on user feedback and the usability test findings, this section will propose recommendations for improvement for different tasks. For each task, the suggestions will cover the following research questions on:

- **Content and terminology** – Do our users understand the content and does it help them accomplish their tasks? Does it adequately communicate what users can/are required to do with the system?
- **Navigation and information architecture** – How does the system structure support users' ability to accomplish their tasks? Can they navigate to where they want to go and accomplish their tasks quickly and efficiently? What pathways do they take?
- **Layout and visual design** – What are our users' impressions of the visual design?

Sign in and Registration

Content and terminology

1. When entering incorrect credentials or an email that is not registered, current message reads: *"Please enter a correct email and password. Note that both fields may be case-sensitive"*. This should change to: *"Username or Password invalid. Note: Both fields are case sensitive"* (Refer to **Figure 4**).
2. 'General Terms' should change to 'Terms & Conditions' (Refer to **Figure 5**).
3. 'Password (again)' should change to 'Confirm New Password' (Refer to **Figure 5**).
4. Clicking on 'Register' should deliver a system feedback that clarifies where a user should go to continue with registration. The system feedback should read: *"Please verify your email address. An activation email was sent to: (email). Please click the **Activate** button/link in the email to proceed with registration. If you did not receive this activation email, please click **Resend** or [contact us](#)"* (Refer to **Figure 4**).

Navigation and information architecture

1. When an email is entered, the system should correctly verify if the email is already registered or incorrect (Refer to **Figure 4**).
2. Make the 'Register' link clearer, more prominent and visible so that users are able to easily find and proceed with the registration process (Refer to **Figure 4**).

The screenshot shows a 'Sign in' form with the following elements:

- Sign in** header with the subtext 'with your Pleio-account'.
- A red-bordered error box containing the text: 'Please enter a correct email and password. Note that both fields may be case-sensitive.'
- An 'Email address' input field.
- A 'Password' input field with a toggle icon (eye) on the right.
- A blue link for 'Forgot password?'.
- A purple 'Login' button.
- A link for 'Don't have an account? Register'.
- A light blue box at the bottom with a lock icon and the text: 'Secure your account Enable two factor authentication'.

Figure 4. GCTools Account Sign in message for incorrect email and password.

3. The ‘Secure your account: Enable two-factor authentication’ link in the log in page should be working/usable or removed from the page as 2FA can be set up from the ‘Account Settings’. It does not follow the conventional user workflow (Refer to **Figure 4**).
4. First and last name should be in two separate fields as to eliminate multiple variations (Refer to **Figure 5**).
5. Password requirements should be visible, not too strict, and suggest password recommendations if the entered password does not meet the requirements. Password strength indicator and a system feedback on whether or not the user correctly confirmed the password should also be present (Refer to **Figure 5**).

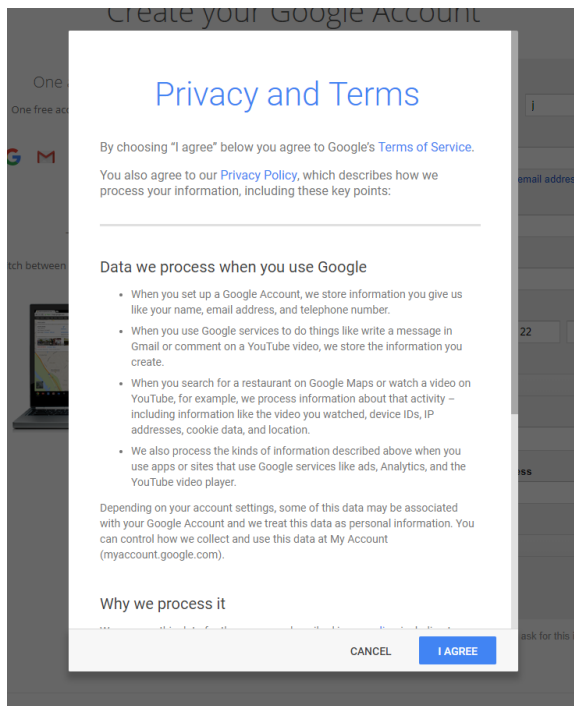


Figure 6. Google privacy and terms.

Figure 5. GCTools Account registration.

Layout and visual design

1. The toggle icon for the password should be an open eye when the password is masked and a closed eye when the password is unmasked. The system should show an icon that indicates what pressing it will do, not the state it's currently in (Refer to **Figure 5**).
2. ‘General Terms’ should be simple and placed in a pop-up (if accessible) much like the Google account. The system should encourage the user to read and scroll down to the end to click on ‘I agree’ (Refer to **Figure 6**).

Profile

Content and terminology

- ‘Avatar’ should change to ‘Profile picture’, therefore ‘Choose an avatar’ should be ‘Add profile picture’.

Navigation and information architecture

- 'Remove avatar' should be made more discreet because when changing the profile picture, users are more likely to click on 'Add profile picture' rather than removing it first. The 'Remove profile picture' function is still valuable and thus, it could be represented as an X icon when editing options become available.

Layout and visual design

- An 'Edit profile picture' feature should be present that can allow users to resize, crop, save and edit the profile picture thumbnail. The editing feature should take into account the shape of the picture (circular or square).

Password

Content and terminology

1. 'Password (again)' should change to 'Confirm New Password' (Refer to **Figure 7**).
2. When changing password from the sign in page, the system feedback message after clicking on 'Reset password' should be clearer, including the details on which email address the recovery link was sent to and if the address was registered in the system. The account should specify whether the email or the password is valid. It should read: *"Email sent to (email): The address you entered is registered in our system and you will receive an email with a link to configure a new password"* (Refer to **Figure 7**).
3. The email sent to reset the password should be GCTools specific (Refer to **Figure 7**).

Navigation and information architecture

1. When changing password from the 'Security' menu under 'Account Settings', the confirmation message should be a popup instead of a notification bar at the top.

The figure illustrates the GCTools Account message workflow for 'Forgot password?' from the sign in page. It consists of three main components:

- Forgot password form:** A form titled 'Forgot password of your Pleio-account' with an 'Email address' input field. Below the field are buttons for 'Reset password', 'Return to sign in', and 'Need help? Email support@pleio.org'.
- Email sent confirmation:** A message titled 'Email sent' stating: 'When the address is registered in our system you will receive an e-mail with a link to configure a new password.' It includes a 'Return to sign in' link.
- Reset password form:** A form titled 'Reset password of your Pleio-account' with two input fields: 'New Password' and 'New Password (again)'. Both fields have a toggle icon for password visibility. A 'Confirm' button is at the bottom.

Below the forms, a sample email from Pleio is shown, addressed to 'Dear Rebecca Jeong,'. The email states: 'You requested a new password for Pleio. Please follow this link to configure a new password.' followed by the URL <http://account.gccollab.ca/reset/OA/4tu-03d1a1bb13bbf59de6d6/>. It also includes a note: 'You can ignore this e-mail if you did not request a new password.'

Figure 7. GCTools Account message workflow for 'Forgot password?' from the sign in page

2. There should also be other security measures such as the security questions.

Layout and visual design

1. The confirmation message under 'Account Settings' should be made more visible, such as the colour change to green or an additional confirmation email regarding the password change.
2. The look and the layout of the email sent to reset the password should be consistent with other email notifications (Refer to **Figure 7**).

Two-factor Authentication

Content and terminology

- There should be an explanation of what the two-factor authentication (2FA) is and the rationale of why someone should use it. It should include the steps on how to set up the 2FA and definitions of a token generator and the QR code.

Navigation and information architecture

- Users should have the option to send a verification code by email instead of only having the single option of scanning the QR code.
- This feature should also be optional since some users do not have access or want to download an app on their mobile devices. However, it should be readily available for users that want to take additional security measures. It should be easy to find in the 'Security' menu under the 'Account Settings', and easy to use. Too many steps in setting up the system can deter users from using this feature.

Layout and visual design

- The two-factor authentication on the log in page should be easy to use, such as a transition that slides down to enter the token/code.

Other Recommendations

Language

1. Language change should be clearly visible to show which language the user is using, possibly in a dropdown menu.
2. Similar to the toggle icon for password, the language icon should indicate what pressing it will do, not the state it's currently in. For instance if the current page is in English, the icon should show 'FR' and vice versa.
3. In the French log in, registration and 'Account Settings' pages, text is still partially in English (Refer to **Figure 8**).
4. 'Logout' should translate to 'Déconnexion' and 'Mots de passe perdu?' should translate to 'Oublier votre mots de passe?'

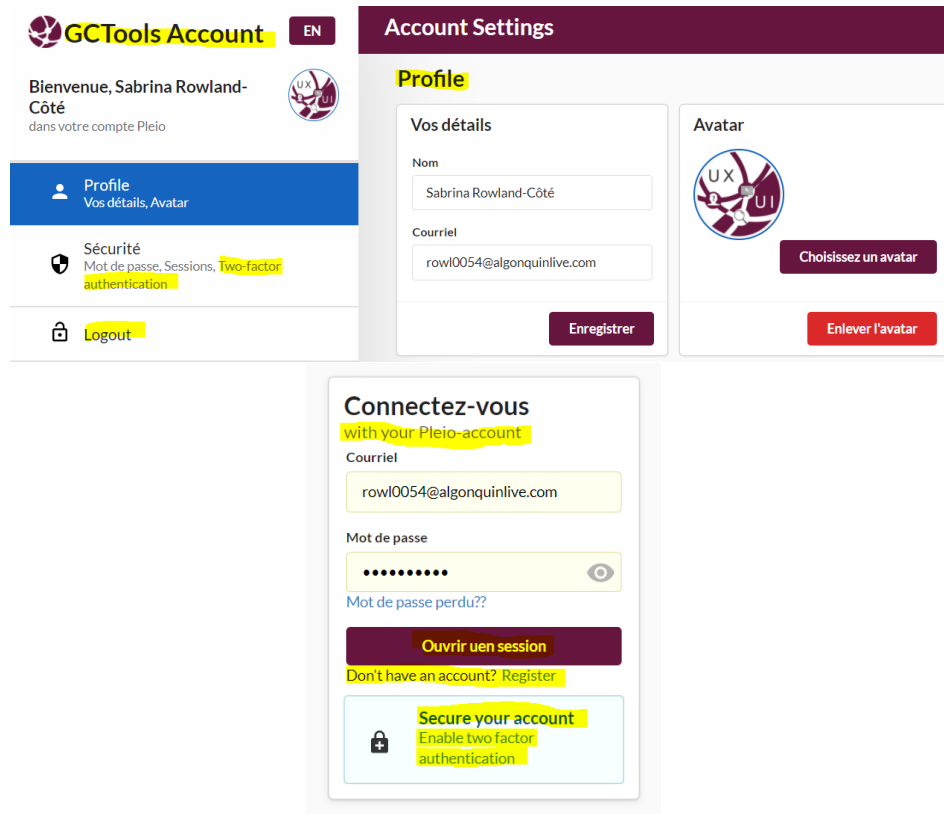


Figure 8. French pages.

Email notifications

1. The GCTools account system triggers email notification overload. This may discourage users from using this system (Refer to **Figure 9**).
2. Consider authorizing or confirming different 'Locations', web browsers or devices to only receive important email notifications (i.e., recover password, change personal information, etc.). Also provide users with the option to opt out of some notifications.

User expectations

1. Help / Contact Us should be prominent on the account page, possibly as a menu item in the 'Account Settings' for easier access.
2. Following the conventional navigational layout, the 'Logout' feature may be better placed at the top right corner of the page.
3. Clicking on the GCTools Account logo should navigate the user to the main log in page.

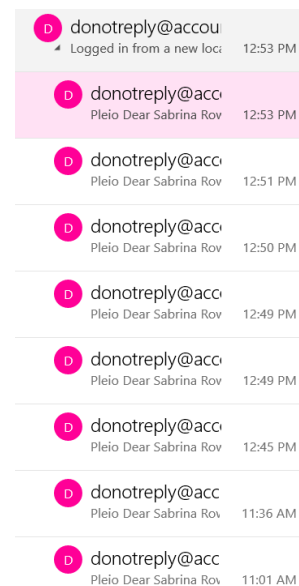


Figure 9. GCTools Account email notifications.

Access

- The GCTools account should be accessible with government emails as some departments do not have a phone to receive email notifications from external email addresses.

References

GCTools Account. (2018). <https://account.gccollab.ca/account/login/>

Google Account Help. (2018). Install Google Authenticator, from <https://support.google.com/accounts/answer/1066447?co=GENIE.Platform%3DAndroid&hl=en>

Neilsen Norman Group. (2014). Turn User Goals into Task Scenarios for Usability Testing. Retrieved February 5, 2018, from <https://www.nngroup.com/articles/task-scenarios-usability-testing/>

Usability.gov (2018). Turn User Goals into Task Scenarios for Usability Testing. Retrieved February 5, 2018, from <https://www.usability.gov/how-to-and-tools/methods/task-analysis.html>

Appendix

Please contact the GCTools team for the full report and additional information: [Help / Contact Us](#)