

1      **Milestone II: Low-fidelity prototype and evaluation without users**  
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12     Norah Ridley, Ana-Pietje Du Plessis, Maize Mugot, Declan Hills, and Derek Kunkel. 2023. Milestone II: Low-fidelity prototype and  
13     evaluation without users. 1, 1 (March 2023), 12 pages. <https://doi.org/10.1145/nnnnnnn.nnnnnnn>  
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## 53      1 FUNCTIONALITY

54      **Problem:** Songwriting is a collaborative process with multiple files to track during the song development process.  
 55      During the songwriting process, songwriters struggle to track the progress of their project, share their work with  
 56      their collaborators, and centralize their files. Our solution to this problem is a system that provides version control for  
 57      songwriters.  
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## 60      2 PROTOTYPE

62      **Description:** Our prototype is a mobile application (app) that provides various features to assist songwriters during  
 63      their songwriting. Our prototype supports the following features:  
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- 65      • Logging in and account creation
- 66      • Creating text/audio/image/sheet music files (artifacts)
  - 67        – Organizing these artifacts into projects
- 68      • Sharing projects with other collaborators
- 69      • Tracking changes in projects and artifacts over time

71      **Reflection:** The paper-prototyping process took us three work sessions, with each session lasting approximately  
 72      three hours. We divided the idea for our app into different components: account creation and logging in, project overview  
 73      / landing page, artifact creation, project organization, and sharing content (publish and notification system) with other  
 74      users. For each of these components we generated five to ten raw ideas. During our brainstorming process we discussed  
 75      how a typical user might use the app from start to finish, from creating an account and project to creating an artifact  
 76      during the songwriting process. As a result we realized the importance of the collaborative aspect of songwriting  
 77      development, especially for users who are involved in multiple music groups. From this insight our original ideas  
 78      shifted to more intentionally support collaboration. We also became mindful of how the user will search for individual  
 79      elements within the system, which supported the idea of allowing the user to label sections of their project as "epochs"  
 80      to allow compression of older, less relevant artifacts. Additionally, orientations such as helping the user understand  
 81      where a node has changed within a project.  
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## 84      3 USABILITY INSPECTION

86      **Method:** We chose the inspection method heuristic evaluation because every member in our group has has a level  
 87      of experience with this method from the CMPT 481 individual assignment. Additionally, in our opinion, heuristic  
 88      evaluation grounds our design in usability from the beginning while our ideas are cheap to change. Since each member  
 89      was responsible for prototyping different aspects of the system, there were many moving parts to track during this  
 90      prototyping stage. For this reason, we thought that the structure of heuristic evaluations would help us systematically  
 91      examine the usability of our app.  
 92

93      **Tasks:** We picked three tasks that are core to the functionality of our app. Our three tasks were creating an account,  
 94      sharing a file from the app's "Riff Bank" to a node, and creating a text artifact.  
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96      *Task 1:* Creating an account requires the user to access the splash page (i.e., the page that the user first sees when  
 97      they open the app the first time after downloading it). The user clicks the "Sign up" button, and they are taken to a page  
 98      where they can either sign up with their email or with a pre-existing Google or Spotify account. If the user signs up  
 99      with a pre-existing account, they are taken to a page where they are asked to choose the account they want to use  
 100     before continuing.  
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105     Task 2: This task is to move a file from the Riff Bank to a node in the most recent project. A "Riff Bank" is a space to  
106     put a collection of files that is not necessarily tied to any project. Ideally, the task flow should go as follows: The user  
107     will currently be in the most recent project. They select a node, then will have the option to create a new file, or import  
108     one to the node. They will select to import a file from the Riff Bank. Then, after selecting a file from the list of files in  
109     the Riff Bank, the application will move it to the selected node.

110     Task 3: A user wants to create a text artifact containing lyrics in a new node starting from the Project Progression  
111     (tree display) page. Since this text is expanding on lyrics written in an existing node, they click on the plus sign attached  
112     to that existing node. This brings down the drop-down menu from the top of the screen, showing options of which type  
113     of media to add to the new node. Pressing on the 'A' icon for text artifacts, the user is taken to the text artifact creation  
114     page. Pressing on the text window brings up the smartphone's keyboard, which allows the user to type out their lyrics.  
115     Once they have finished typing out their lyrics, pressing "Publish" saves the text artifact in the node and closes the  
116     window.

117     **Details:** We conducted a heuristic evaluation with five different inspectors. To avoid bias in our evaluation, inspectors  
118     did not evaluate the design of their contribution to the overall prototype. Each inspector went through the tasks separately  
119     (the process took each person approximately 20 minutes per task). Then, as a group, we discussed our individual ratings  
120     before combining our ratings and comments to produce a unified heuristic evaluation. We assigned severity ratings  
121     to each usability issue that we found. We used the severity rating that was introduced in class where 1 is a cosmetic  
122     problem, 2 is a minor usability problem, 3 is a major usability problem (important to fix), and 4 is a usability catastrophe  
123     (imperative to fix).

124     **Results:**

125     See Appendix B for the full heuristic evaluation.

126     **4 REDESIGN BASED ON RESULTS**

127     In our table of heuristic violations, we proposed several aspects of our prototype that will change in later versions.  
128     However, a major theme that we need to focus on moving forward is user control and user freedom. We need to  
129     streamline navigation so that users can create artifacts more quickly, access the features more conveniently, and make  
130     it easier to recover from user errors.

131     **APPENDICES**

132     **A Task descriptions**

- 133         (1) Creating an account: You are a songwriter who wants to be more organized while writing songs. You decide to  
134             sign up for a music version control app by creating an account with the service. You use your email to create an  
135             account.
- 136         (2) Sharing a file from the "Riff Bank" to the node: You have been told to pretend that are a musician whose ideas  
137             come to you spontaneously. Because you have such an unstructured workflow, you've accumulated many things  
138             in your Riff Bank. You are instructed to move a file from the Riff Bank to the latest version of the most recent  
139             project in the band group "Code Daddy".
- 140         (3) Create a text artifact containing lyrics: You are a songwriter who has difficulty keeping track of the lyrics you've  
141             written, and frequently change their wording and structure. You have already used the app to create a project,

157 and have created a few other nodes and branches within that project. You are struck with a new lyrical idea,  
158 and want to add a new node to a branch, type these lyrics down, and publish them in that node to the project.  
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209      **B Heuristic evaluation**

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214	215	Element	HE-Violated	Severity	Description
216	217	Sign-up / Log-in	H2-10: help and documentation	2	User may want to know more about the app / company before creating an account
218	219	Sign-up / Log-in	H2-7: flexibility and efficiency of use	2	Will the app be available in multiple languages?
220	221	Sign-up / Log-in	H2-7: flexibility and efficiency of use	3	Do I have to log in every time? See *Note below.
222	223	Login in OR Sign up	H2-3: user control & freedom	4	If the user hits the wrong button, how do they go back?
224	225	Login in OR Sign up	H2-4: consistency and standards	2	Order of logging in options does not match order of signing up options (email vs existing external account)
226	227	Sign up	H2-5: error prevention	2	If a user has already created an account, but forgot where do we tell them this? Try to highlight before password entry.
228	229	Log in	H2-9: help users recognize, diagnose & recover from errors	2	If the user tried to sign-up with log in, help them identify that they either want to create a new account, or that they perhaps made a typo.
230	231	Log in	H2-3: user control & freedom	2	Keep me logged in choice
232	233	Log in	H2-10	4	No "help" options available
234	235	Sign Up	H2-1	2	No message displayed that confirms when a user has created an account.
236	237	Log in	H2-4	1	Sign up button is a "click here" clickable text when rest of system uses "buttons" for navigation

238      \*Note: Users will go straight to the landing page if already signed up and logged in, and they will  
239      not have to log in every time.  
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Element	HE-Violated	Severity	Description
Going to project in band to import file	H2-3: user control & freedom	3	Also want to allow the user to go to the Riff Bank to find a particular artifact and select where it goes from there.
Moving file	H2-7: flexibility and efficiency of use	3	Can I only use a file in one project? What if it's a very reusable piece? Option to use in project, or use in project and delete from riff bank
Moving file	H2-5: error prevention	2	Am I sure I have the right file? Can I listen to the audio? Or read the contents?
Moving file	H2-9: help users recognize, diagnose & recover from errors	3	Is there an easy way to move the file back to the Riff Bank if I pulled in the wrong one?
Moving file	H2-3: user control & freedom	3	What if I decide that multiple files should be moved to the project from the Riff Bank? Do I have to move each individually?
Project page	H2-1: visibility of system status	3	When the user clicks the band group "Code Daddy", it is not clear if the screen that the user is taken to is the project page for the band. Make sure the band name is visible.
Project page	H2-7 flexibility and efficiency of use	2	If a user has scrolled far down the screen in the project page, they will have to scroll all the way up to access their most updated projects. Add some functionality to quickly get back to top or page
Project page	H2-7 flexibility and efficiency of use	2	Allow user to search for specific projects
Riff Bank / Projects	H2-10: help and documentation / H2-6: recognition rather than recall	4	It's not clear how to move a file to / from the Riff Bank to a selected project.
Bands / Projects	H2-3: user control & freedom	3	Once the user is on a band project page, there is no clear way to return to the band selection page if the user wants to look at another band's projects.

Element	HE-Violated	Severity	Description
Share	H2-2: match between system & the real world	1	How do I share an empty node? Does this mean import instead?
Picking text	H2-7: flexibility and efficiency of use	2	What if typing lyrics is inconvenient right now? What if I want to use a speech to text service? What if I just want to record a voice note about my idea and type it out later? What if I have lyrics on a cocktail napkin? Can I just take a photo of that right now?
Picking one type of media when creating a node	H2-2: match between system & the real world	3	Is this going to restrict what kind of media I can put in later?
Picking one type of media when creating a node	H2-7: flexibility and efficiency of use	3	What if I want to start the node with two different kinds of files because I'm thinking of audio x while thinking of these lyrics?
Lyrics	H2-3: user control & freedom	2	What if I want to put the lyrics in the same document as the sheet music to help me remember which part of the song I was thinking about?
Publish	H2-1: visibility of system status	3	Is this sharing with everyone? Is this just saving my draft?
Creation	H2-3: user control & freedom	4	Am I stuck in here until I finish this task?
Creation	H2-3: user control and freedom	3	When a user exits out of the text window, they are taken back to the project progression, but they may want to just create a different type of artifact. More generally, make it easier to move back and forth.
Creation	H2-7 (flexibility and ease of use)	2	A User has to find the end of the tree to reach the "+" button to create a new artifact.
Creation	H2-9: help users recognize, diagnose and recover from errors	4	There doesn't appear to be a "undo" option if the user accidentally imports the wrong node or deletes all of their text
Creation	H2-2: match between system and the real world	1	Users who don't have familiarity with graph theory might be confused about what a node is
Creation	H2-10: help and documentation	3	No "help" button on main node creation page or text editor page
Creation	H2-1: visibility of system status	3	When the user creates a new artifact, it is not clear if they receive feedback that their artifact was successfully or unsuccessfully created
Creation	H2-2: match between system and the real world	1	No way to save text draft without publishing
Creation	H2-5: error prevention	4	"Delete" button on edit nodes is in same location as "save" or "publish" button, may cause user errors
Creation	H2-7: flexibility & efficiency of use	1	No option to "create new branch" from main menu

Fig. 3. Heuristic evaluation for creating the text artifact

## 365 C Prototypes

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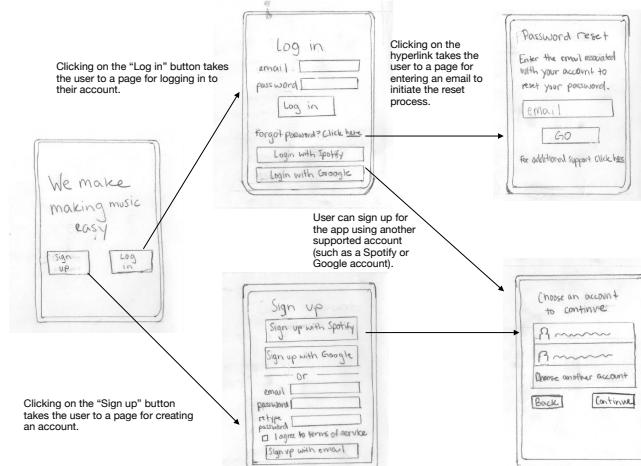


Fig. 4. Creating an account and logging in

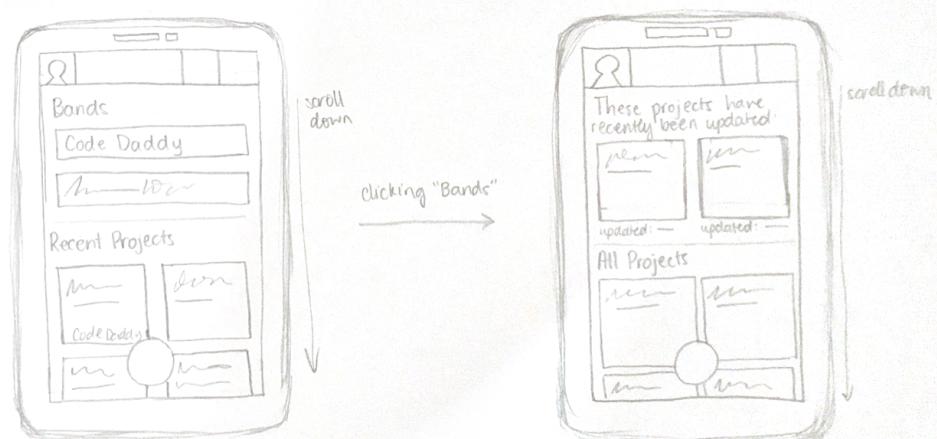


Fig. 5. Landing page

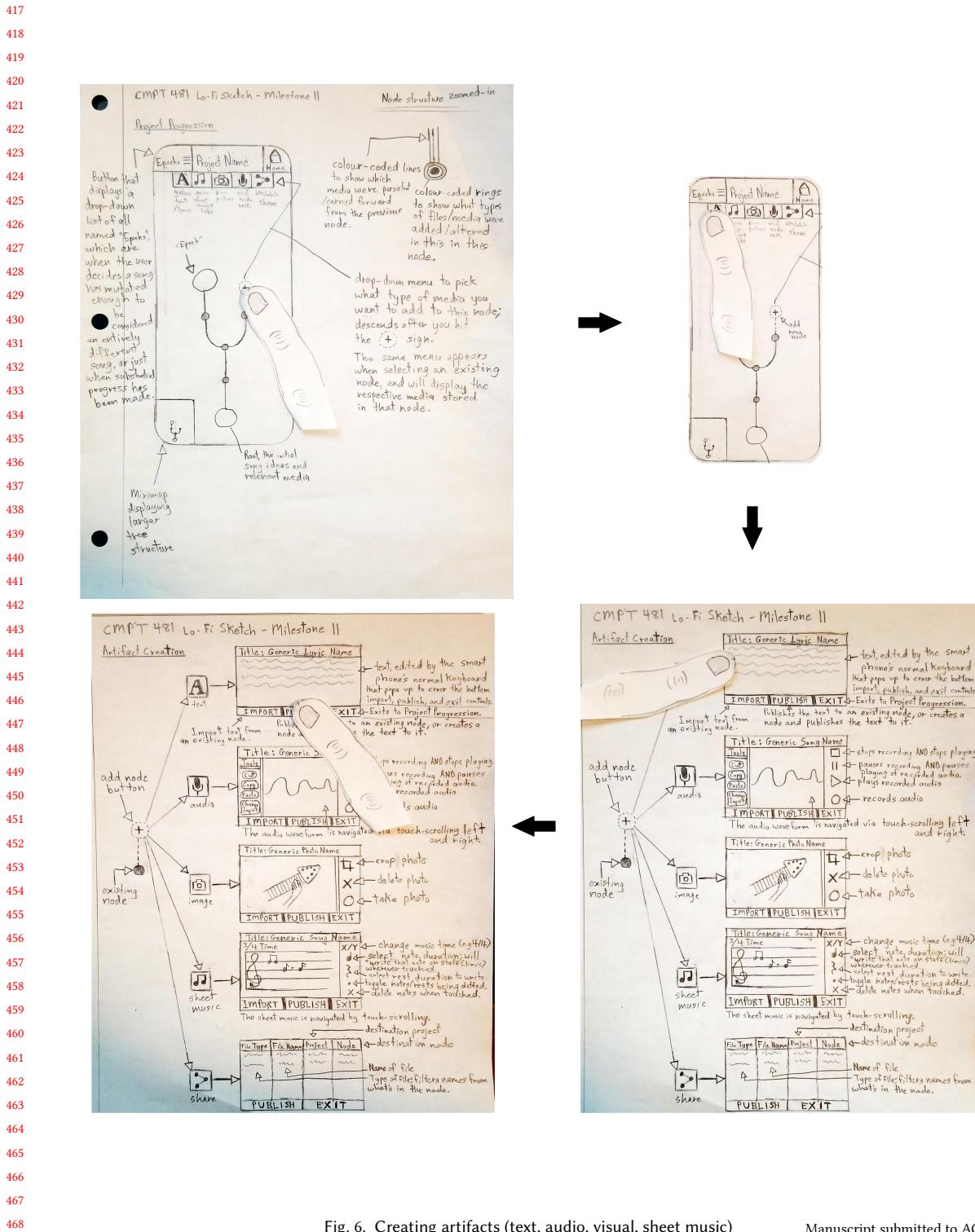
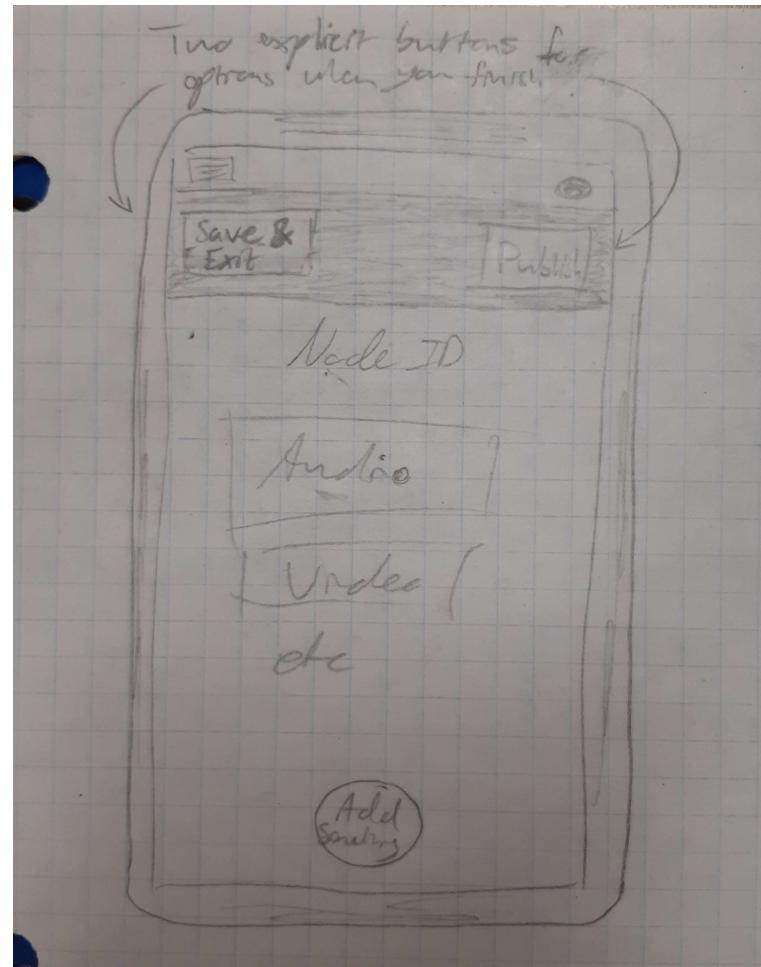


Fig. 6. Creating artifacts (text, audio, visual, sheet music)

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503 Fig. 7. Publishing a node from within a node  
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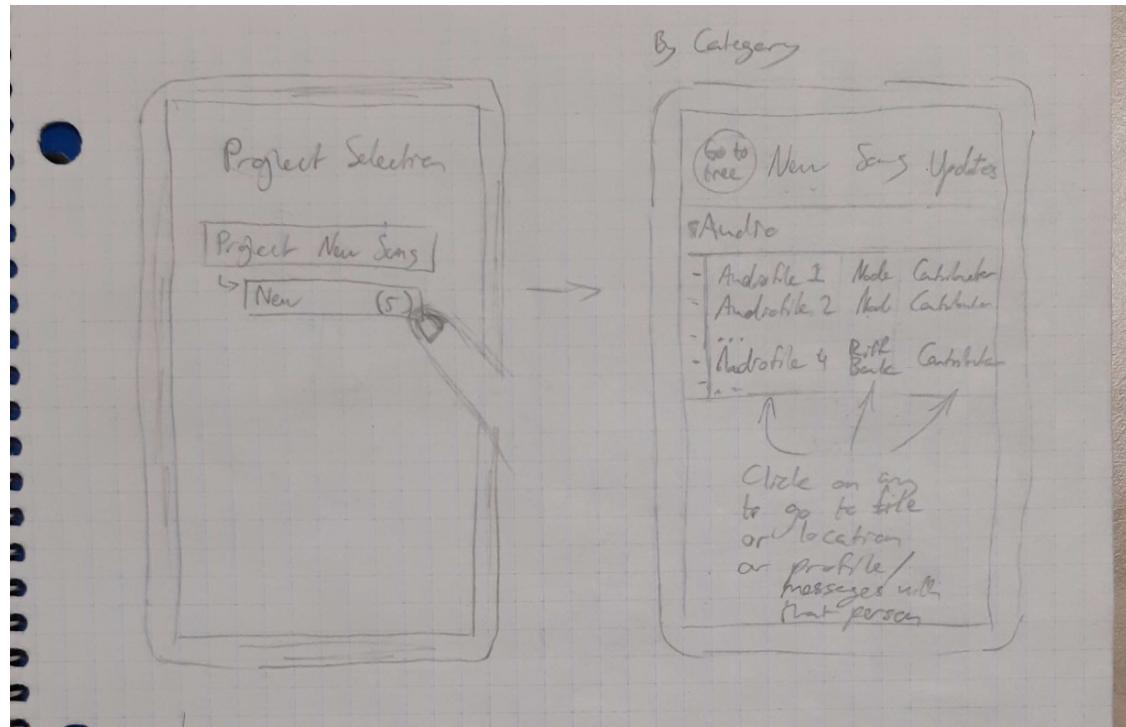


Fig. 8. Notifications about project changes from other users

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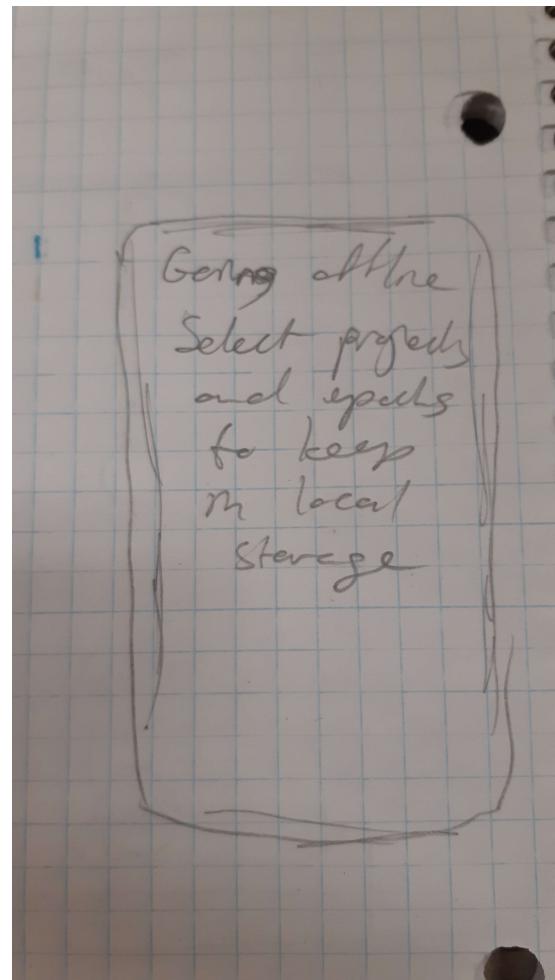


Fig. 9. Offline instructions

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