

## Assignment 3b: Usability Check-In

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### Usability Tests Descriptions

Our first participant was a female student recruited at the HCDE lounge. She is a full time student pursuing a Bachelor's degree in HCDE at the University of Washington. She has only been recently admitted to the program, therefore she is not familiar with paper prototyping nor usability testing yet. We chose this environment for our first test because many master's and undergraduate students tend to hang out in this spot, especially during lunch hour. To make sure we were getting our intended user we approached potential participants and asked some pre-screening questions:

- Are you the person responsible in your household for managing the house chores?
- Do you have a hard time allocating time for cleaning?
- Do you find that is hard to keep your household clean and organized most times?

The second and third participants were recruited through our initial CI participants. We reached out to them again and asked if they could recommend us to a couple of their friends with lifestyles similar to them for a usability session with the prototype we had developed. They introduced us to a couple of friends (two males working professionals) that graciously agreed to participate in the usability study. We asked them to meet us at the Architecture Hall, where Doaa has an office, this a very private comfortable place with a big table. We scheduled each participant an hour apart so we could have the time to run the test and make changes to the prototype in between testing sessions. All three of our users live busy lives and have a hard time making time to do some cleaning around the house which made them suitable for testing the product we are developing.

Before starting the test we gave her a little bit of background about the Neat system to provide the user with some context. We gave three scenarios to the participant and asked them to perform tasks inside the scenarios using a think-aloud protocol that turned into conversation sometimes to encourage expression. Based on the feedback from session we modified the scenarios to make them more general and less leading. These were the scenarios we provided to participant two and three:

- You want to check the last time you changed your sheets in the bedroom. How would you do that?
- You have decided you want to spend 15 minutes cleaning. How would you go about doing that?
- Neat just reminded you that your mom is coming over in 2 days and that you may want to start doing some cleaning if you want to have the house ready before she arrives. You want to learn what has to get clean and how long those chores will take before your mom arrives. How would you do that?

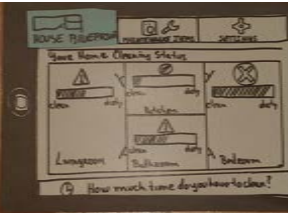
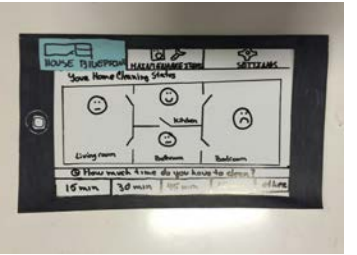
For the second and third test we also introduced the ease of use metric. We asked them after each task to rank from 1 to 5 how easy was to accomplish that task, 5 being the easiest.

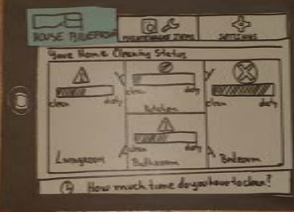
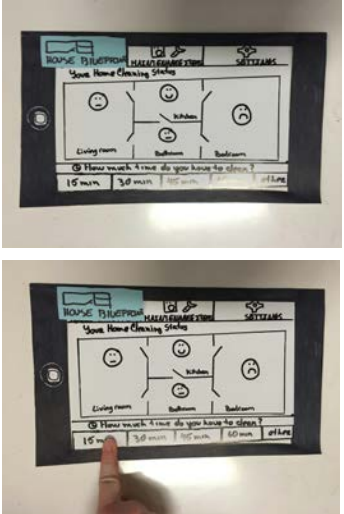

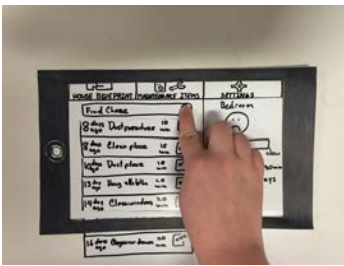
During the first user test Yoanna performed as the facilitator, Sid as the note taker and Andrew as the machine. Our first participant had a hard time understanding the overview screen. It wasn't clear to her what the symbols or the bars meant and felt like the axis for clean and dirty should be reversed. She also had a hard time finding the quick link buttons for task suggestions if you have 15, 30, 45 minutes to clean. The main problem with this is that the button was not recognized as a button because it was too long and wordy. Overall she struggled to complete the tasks.

With a revised prototype we conducted the second usability test. Yoanna remained in her role as facilitator, this time Doaa served as note taker and Sid as the machine. Those roles also held for the third usability test. Our second participant was a male working professional. He was able to successfully complete each task without much trouble. He was a thoughtful participant, very vocal about what he expected from the application. For example, during the drag and drop of chores he wanted to see more of a visual feedback. When talking about the draggable set of cleaning tasks he said, "If I hold this I will expect it to shake or wiggle".




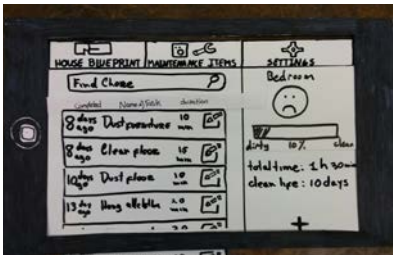


After feedback from our second participant we did some fine tuning changes for the prototype before testing with participant number three. Our third participant, also a male working professional completed the tasks quickly and correctly. Our roles during the third test remained the same as the roles for the second test.

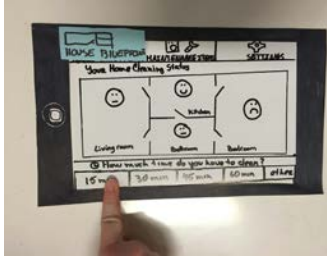
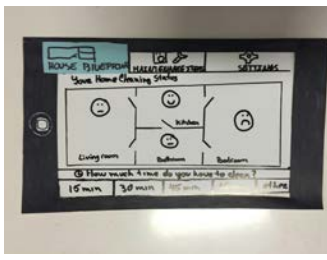
## Usability Test 1

Image	Issue	Severity	Change	Fixed Image
	<p>The bar and the symbols added too much clutter to the screen. The user had trouble determining if an area was clean because she did not understand the symbols and she thought the bar should be backwards.</p> <p>Heuristic violated: Match between system and the real</p>	<p>3</p>	<p>The bars and symbols on the main screen have simply been replaced with three faces (smiling, ambivalent and frowning) that reflect the room's status</p>	

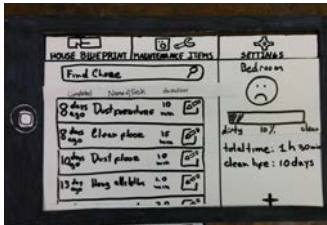
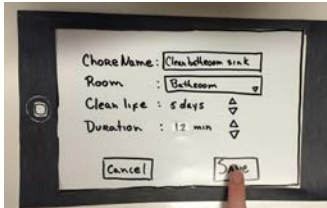
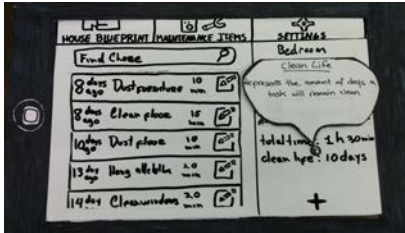
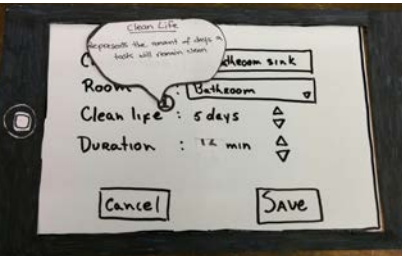
	world.			
	<p>The user had trouble accomplishing our first task which asks the user to navigate to the suggested cleaning list given an input time. Instead of touching on the bar at the bottom, the user got stuck in navigating through the room. She did not identify this as a button for a long time.</p> <p>Heuristic violated: Consistency and standards</p>	4	<p>The time options have been added underneath the “How much time do you have to clean?” button and the button now serves just as a heading.</p> <p>Touching one of the time options brings up the suggested cleaning</p>	
	<p>It was unclear how to navigate to a certain task and the user had trouble searching a particular task</p> <p>Heuristic violated: User control and freedom Flexibility and efficiency of use</p>	3	<p>A new search function has been added. The list dynamically adjusts to user input</p>	


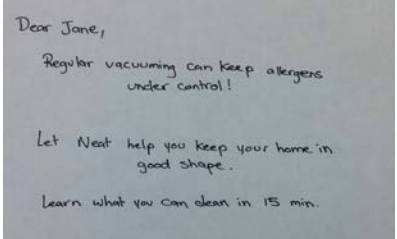

## Usability Test 2

Image	Issue	Severity	Change	Image
	<p>The user expressed a desire to postpone the notification. Although, the user can simply swipe the notification back, there exists some confusion as what to do if the user does not want to immediately address the task</p> <p>Heuristic violated: Flexibility and efficiency of use</p>	1	Added not now button	
	<p>The user did not immediately get the meaning of "8 days ago", after completing some of the tasks, he learned that it was meant to show when a cleaning task was last completed.</p> <p>Heuristic violated: Consistency and standards</p>	3	Added header to clearly label the information so it apparent	
	<p>Having a wearable device that only records voice adds complexity and is not necessary.</p> <p>Heuristic violated: Match between</p>	1	Decided to go with modified fitbit concept. This modification of the fitbit will allow it to also serve to record cleaning metrics and is a	

	system and the real world.		device that most users already have and wear at all times.	
	User was able to recognize that the faces (. , . , □) were referring to the status of the room.	NA	NA	NA
	Action buttons were easily recognizable. User was able to select that they had 15 minutes to clean very quickly.	NA	NA	NA

### Usability Test 3

Image	Issue	Severity	Change	Image
 	<p>The user had trouble understanding what the term clean life meant.</p> <p>Heuristic violated: Flexibility and efficiency of use</p>	3	Added tooltip for clarification of clean life term	 

 <p>Dear Sid, Did you know that regular vacuuming can keep allergens under control and improve air quality? Let Neat show you what you can do in just 15 mins so that you can have a clean home.</p>	<p>The message happened to be too long and the user was not interested in reading it. Also happened to be too much of a nag</p> <p>Heuristic violated: Flexibility and efficiency of use</p>	<p>2</p>	<p>Streamline message to appear in devices like the smart tv. More to the point and more motivational. Also added whitespace.</p>	 <p>Dear Jane, Regular vacuuming can keep allergens under control! Let Neat help you keep your home in good shape. Learn what you can clean in 15 min.</p>
 <p>To record your cleaning activity remember to @ talk to the Fitbit: Ex: "Start cleaning toilet" "Stop cleaning toilet"</p> <p>Don't show again    Got it</p>	<p>User effectively understood and carried on the voice commands to record cleaning metrics using the modified fitbit.</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>

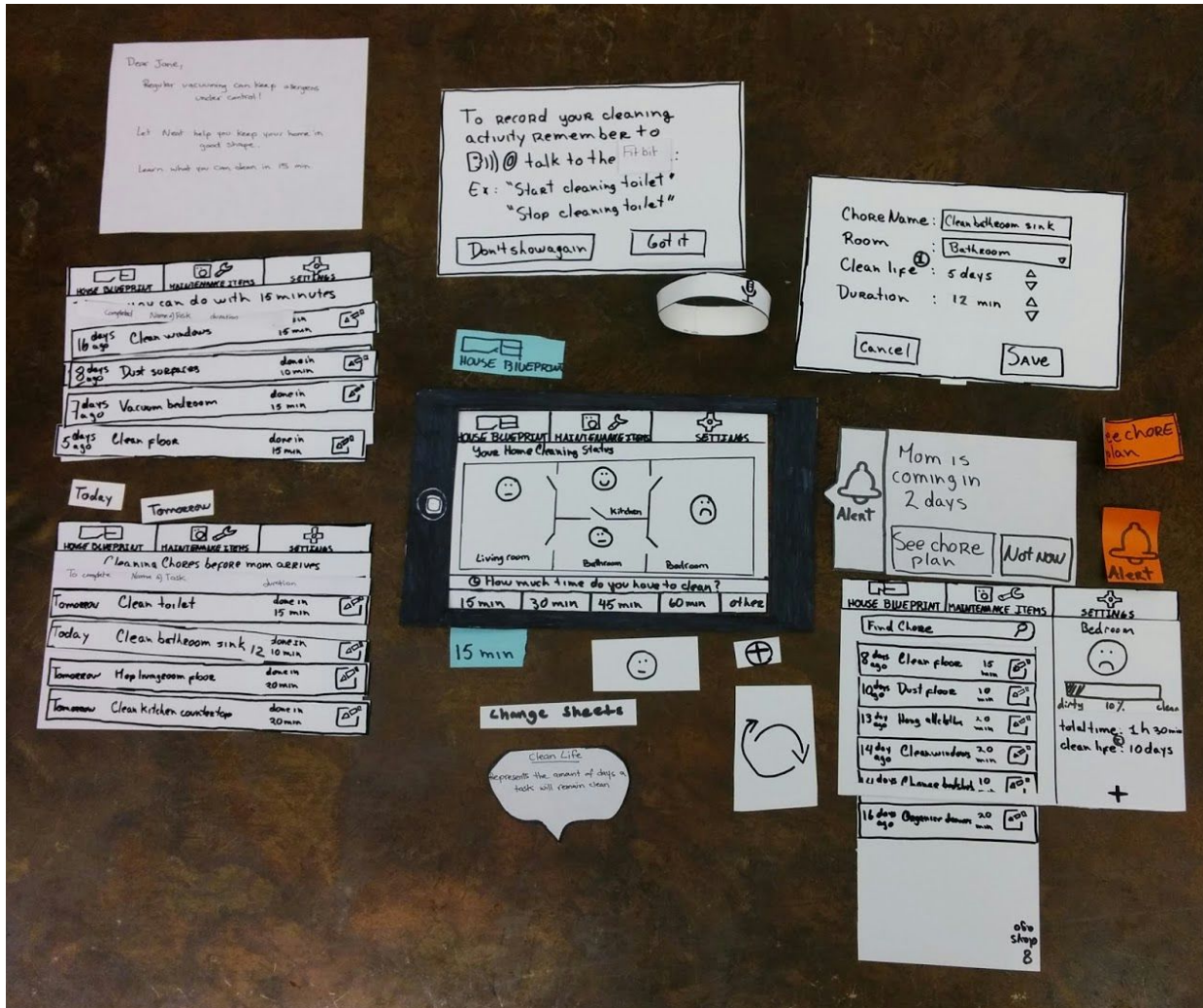
## REVISIONS

The major revisions that had the most impact on the ability of users to complete tasks were performed after the heuristic evaluation and the first usability test. We iterated three times on how to present the overall cleaning state of the house to the users. We refined our blueprint of the house to show a better division of the house and included doors after the heuristic evaluations because our evaluators did not get that they were in the presence of a house blueprint. Regarding the encoding for the cleaning state of each room, initially we had a some sort of bar similar to a car gauge (full when room was dirty and empty otherwise). This did not work during the heuristic evaluations. Then we presented a bar with upper bound dirty, and lower bound clean accompanied with a checkmark symbol to indicate when it was clean, an alert symbol (!) for when it was getting dirty and urgency symbol (X) to indicate when it needed immediate attention. That second version of the encoding did not work well with our first participants either, therefore we tested a simpler metaphor with participant two and three. We choose to go with different faces (☹, ☺, ☹) to indicate the overall cleaning state of each room in the blueprint. The second participant quickly associated that a sad face meant a dirty room

while a happy face meant a clean room. For our final mockup we plan on adding color to serve as a second encoding for the overall cleaning state of the house.

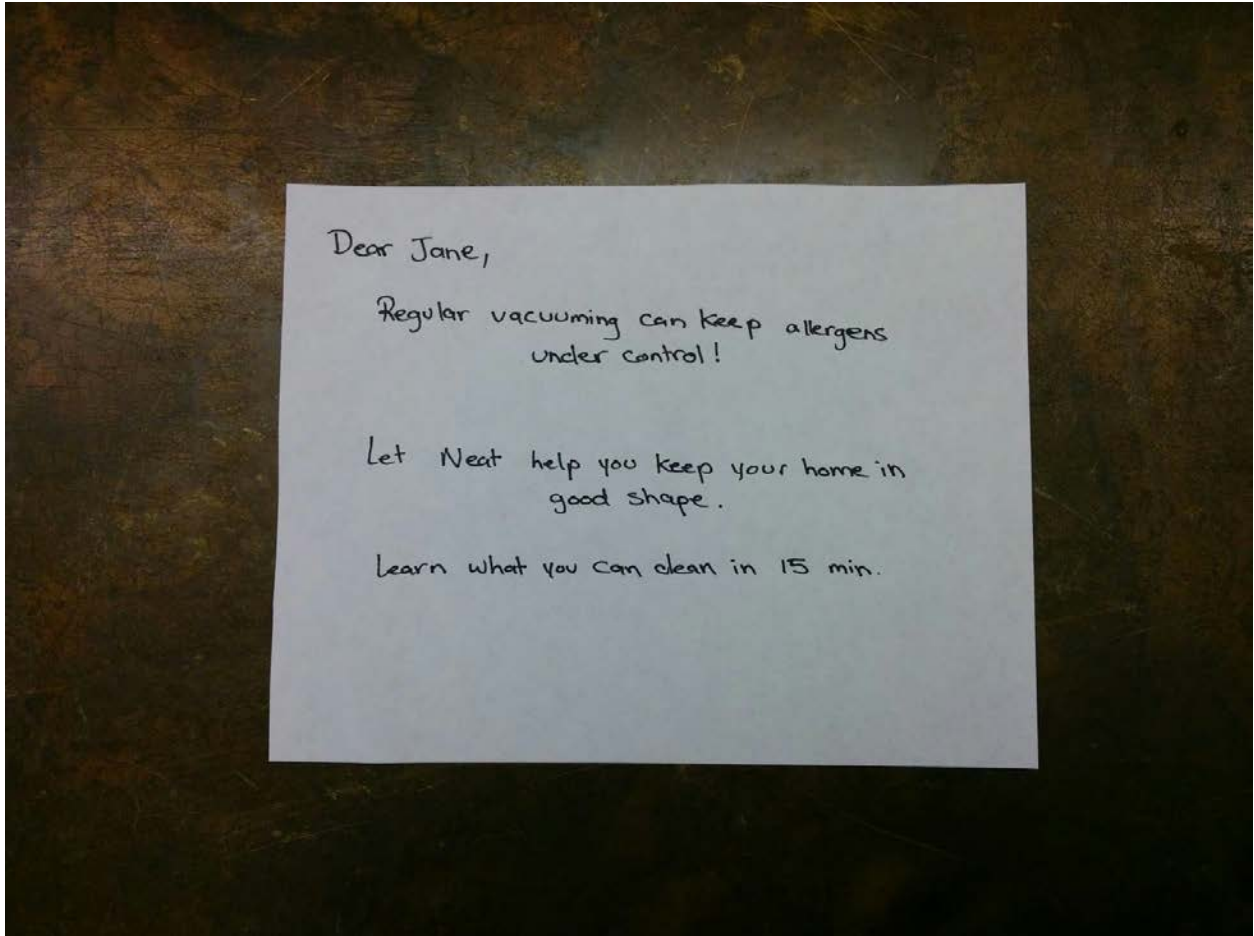
Another significant revision was making the time buttons of things you could do with 15, 30, 45, etc minutes visible to the user. Initially we had this long button “How much time do you have for cleaning?” that button after pressed will be replaced with smaller minutes buttons. However, that was not reading as a button so it was practically impossible for our first user to access that feature and accomplish the task associated with it. We proceed to eliminate the long button and turn it into a header for the smaller time buttons that will now show on the main screen. After this fix users two and three were quickly able to select how much time they had available for cleaning and successfully completed the remainder of the task.

# Overview of Final Prototype

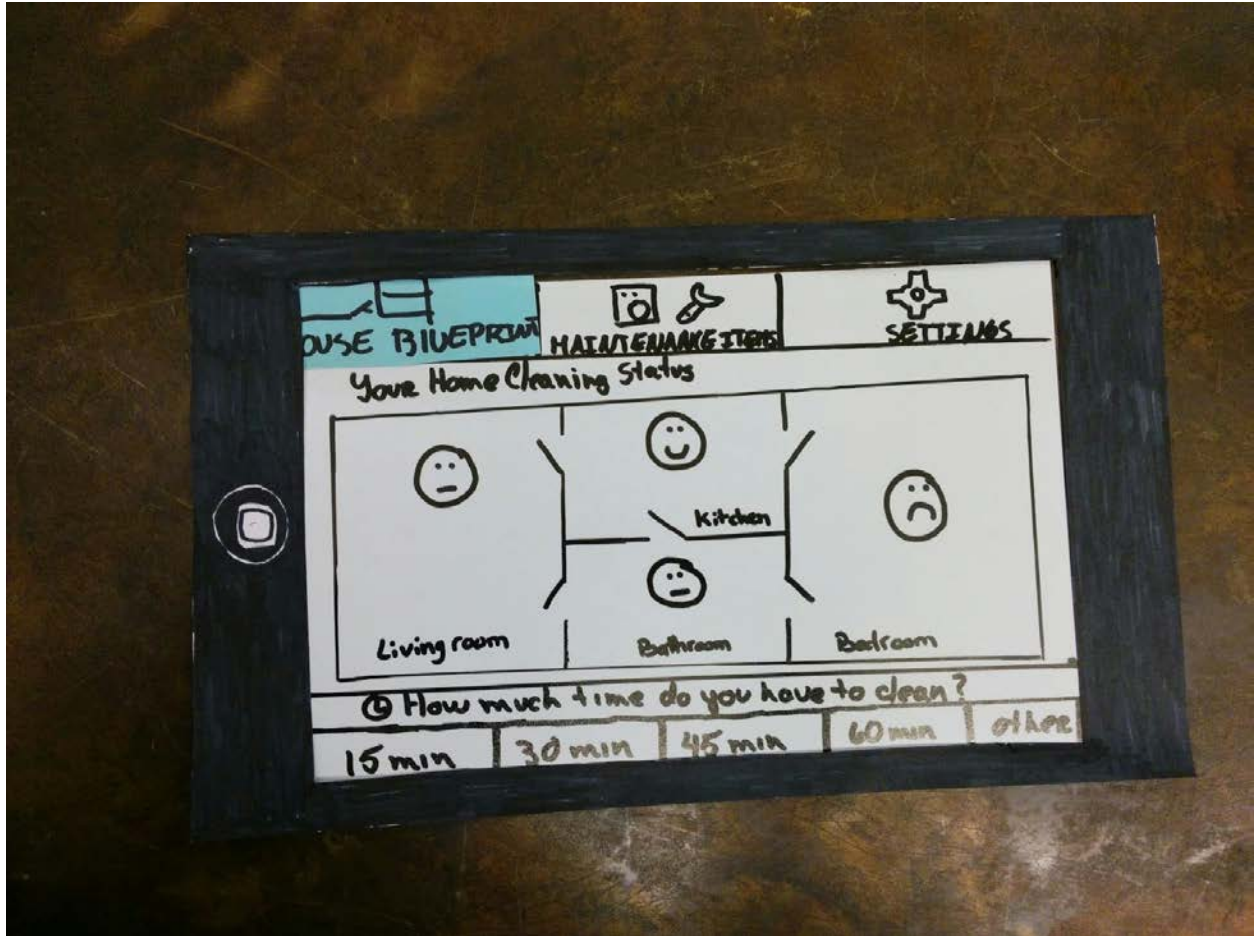




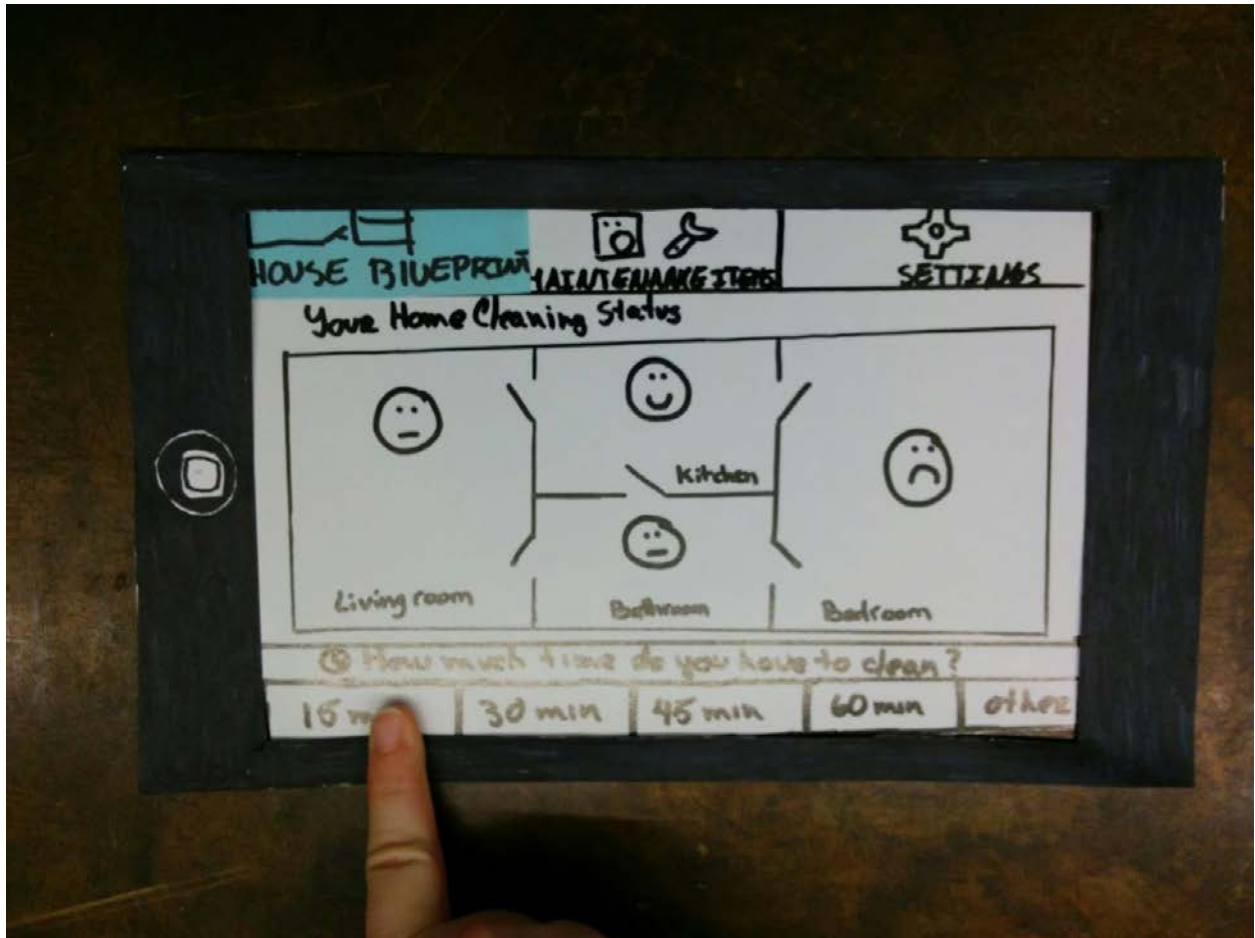
Task #1: Promote Cleaning Activities during Idle Times



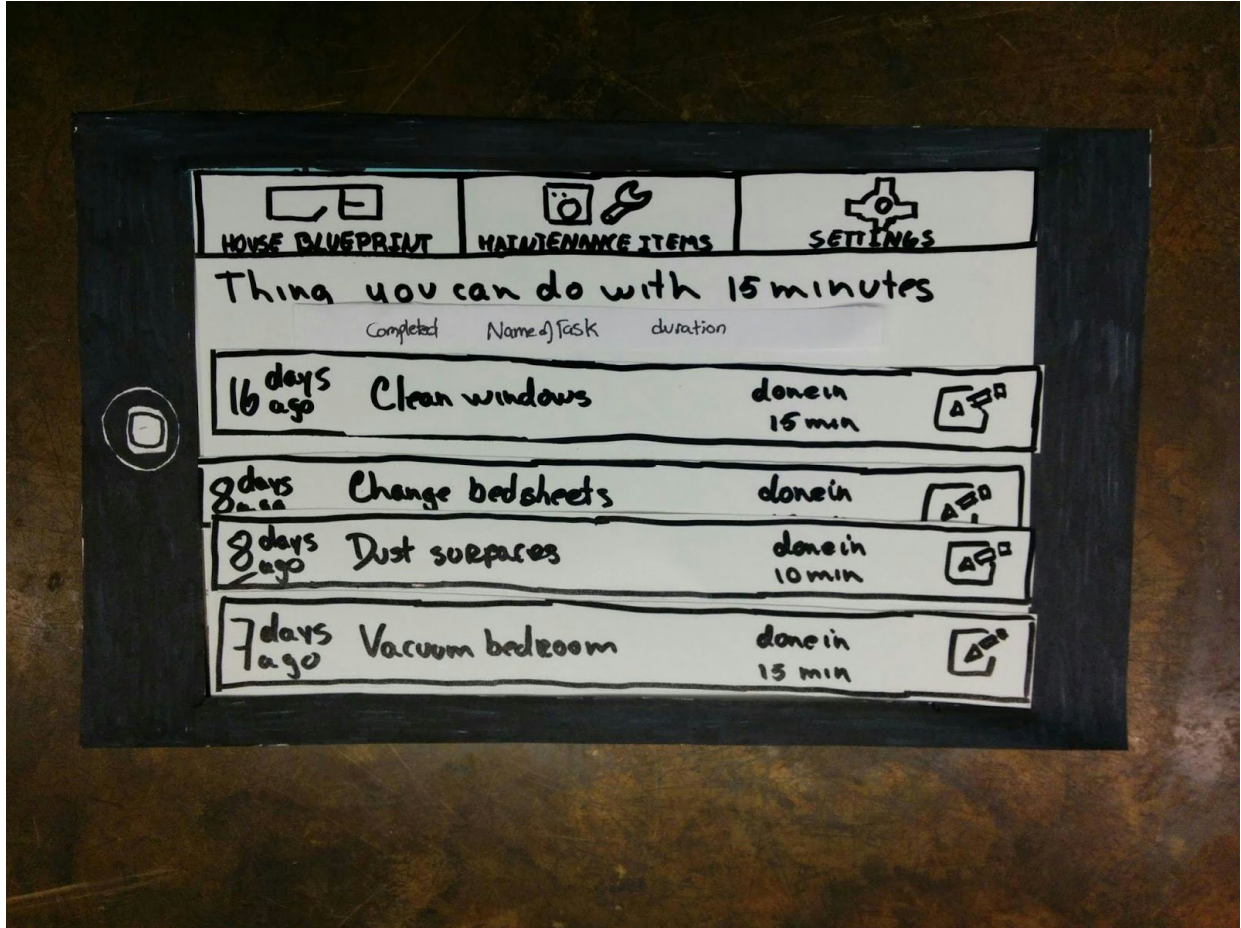
*User sees message on TV screen during commercial or laptop and is encouraged to clean.*



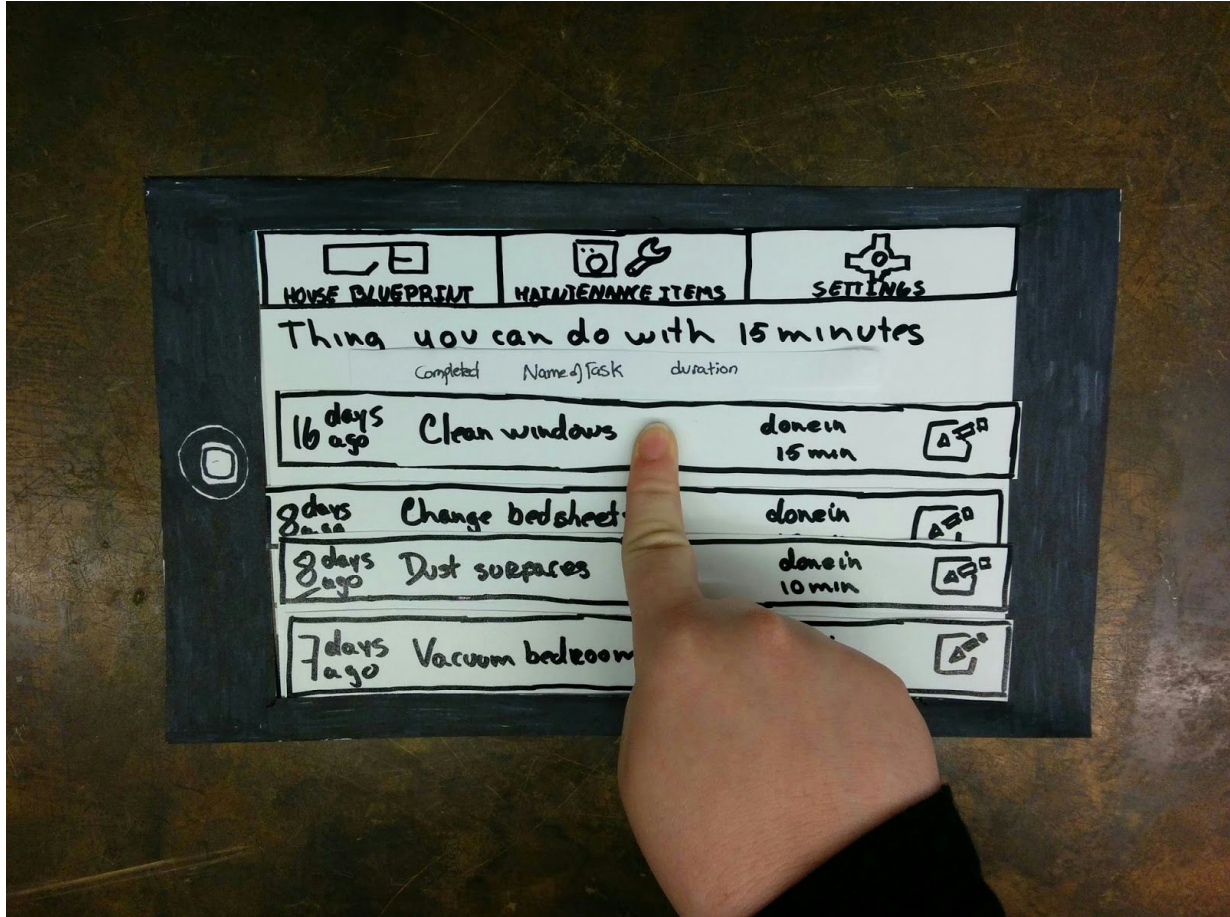
Overview of the house where user can see overall cleaning state of the residence.



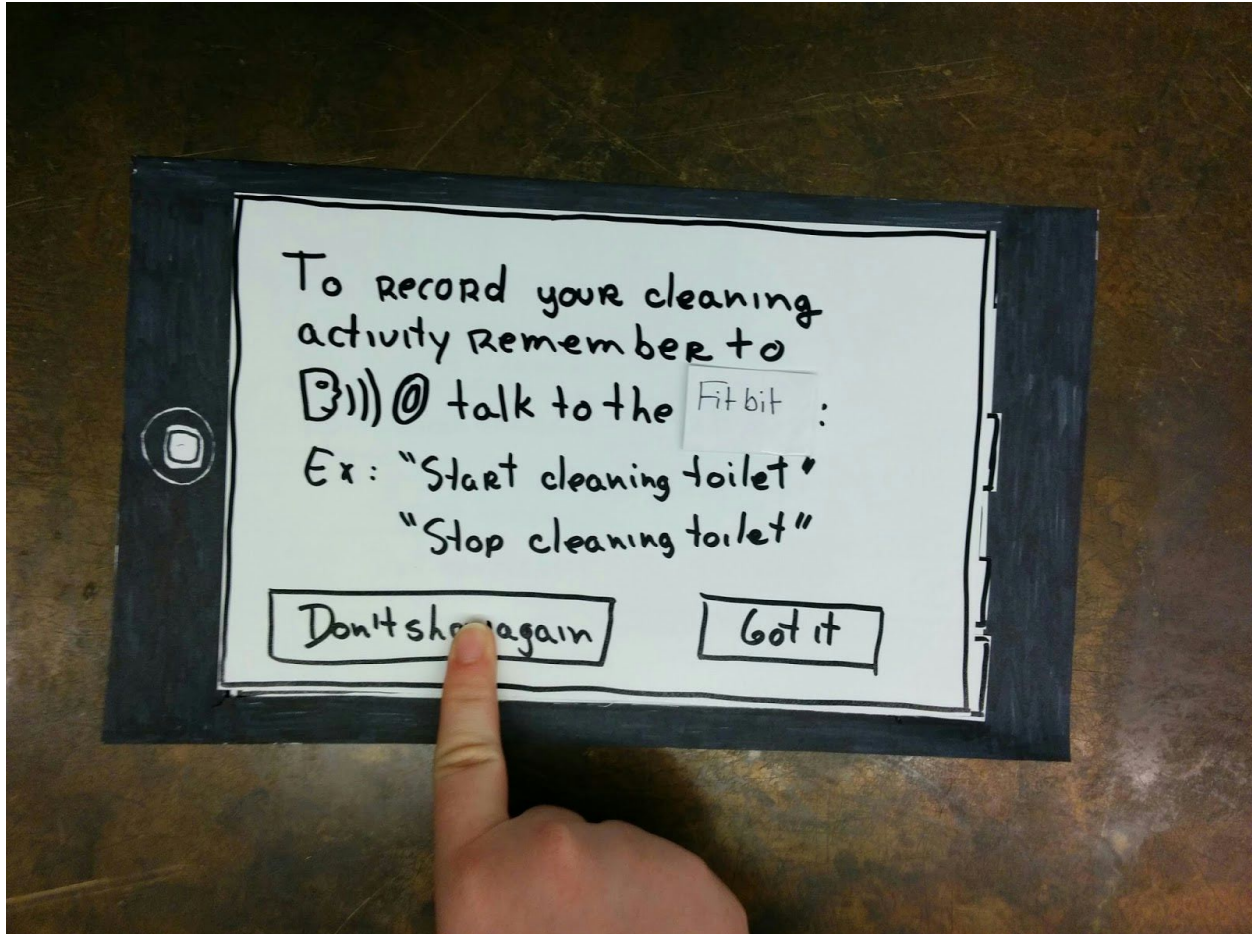
User determines they have 15 minutes to clean and want to do the most impactful possible task under 15 minutes. Selects 15 minutes button under the how much time do you have to clean section.



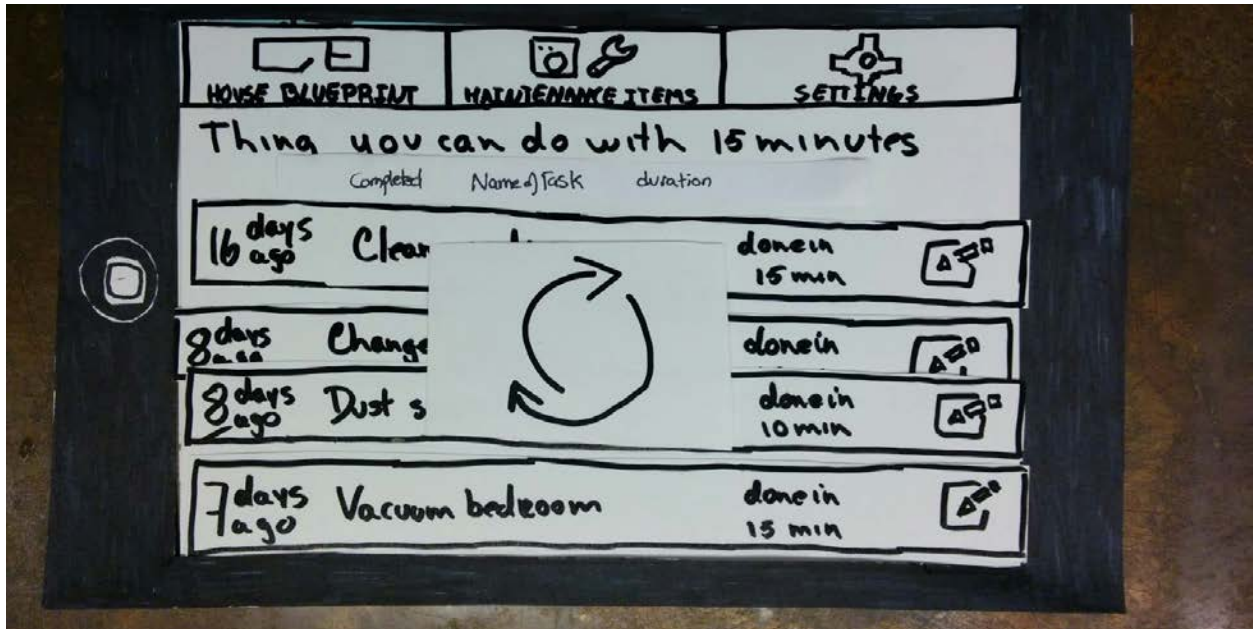
User gets provided with a list of tasks that can be accomplished under 15 minutes and are prioritized in order of most beneficial to the overall cleaning state of the house.



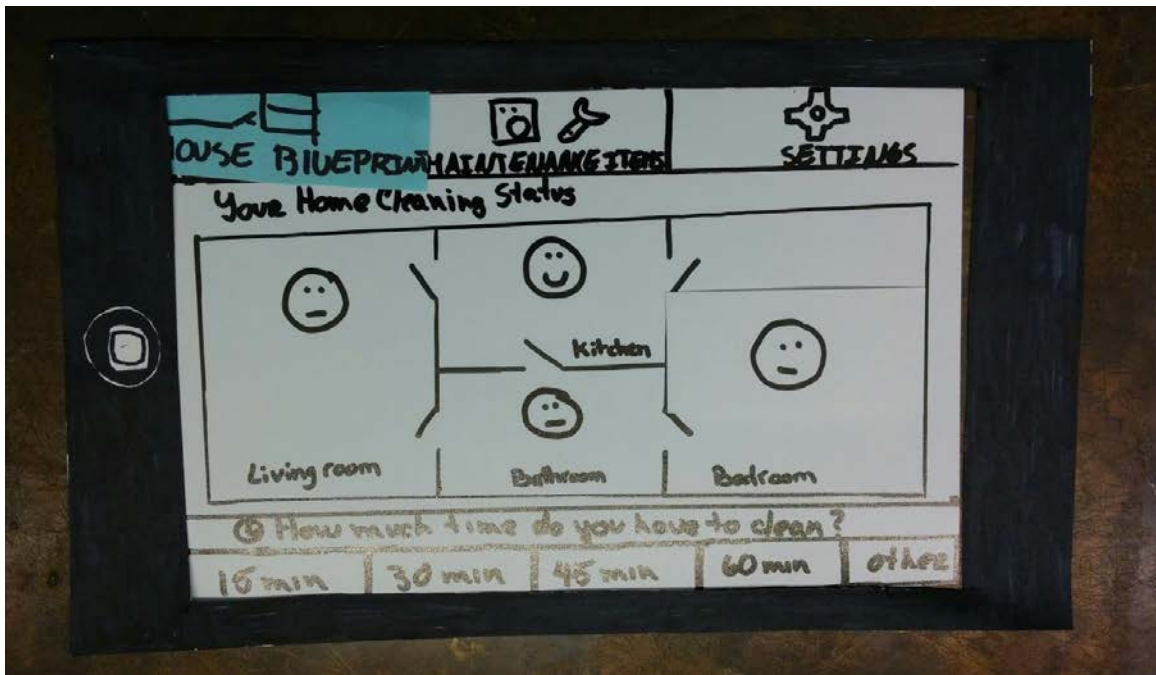
User shows interest on a task and selects it.



*After tapping on a potential task user is presented with instructions on how to record the cleaning metrics. After user gets how to operate the wearable (modified Fitbit to also include recording of cleaning metrics) and selects the "Don't show this again" button a message encouraging cleaning like "We are ready when you are" shows up instead for future occurrences.*

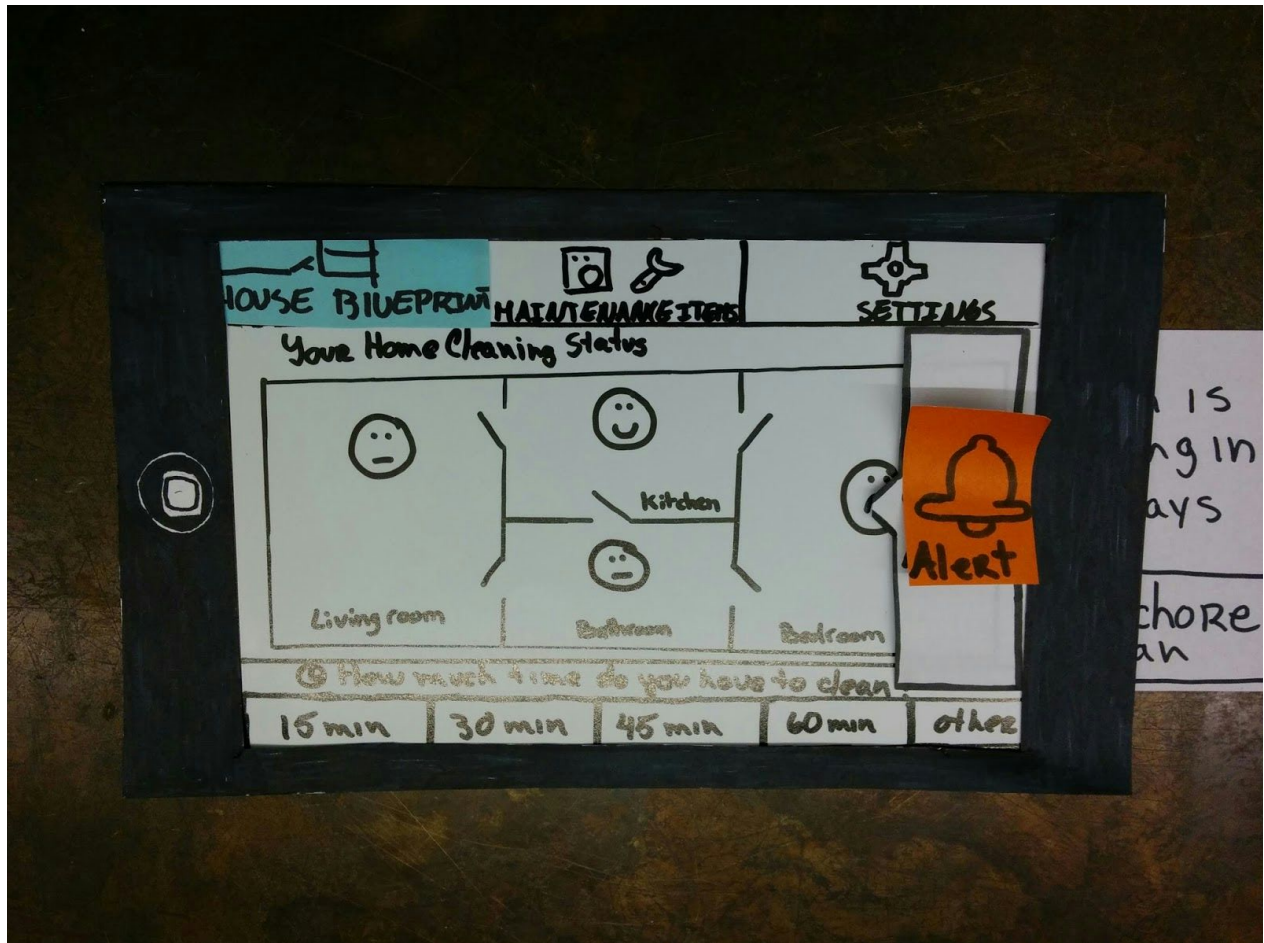


Data from the band syncs with the central board.



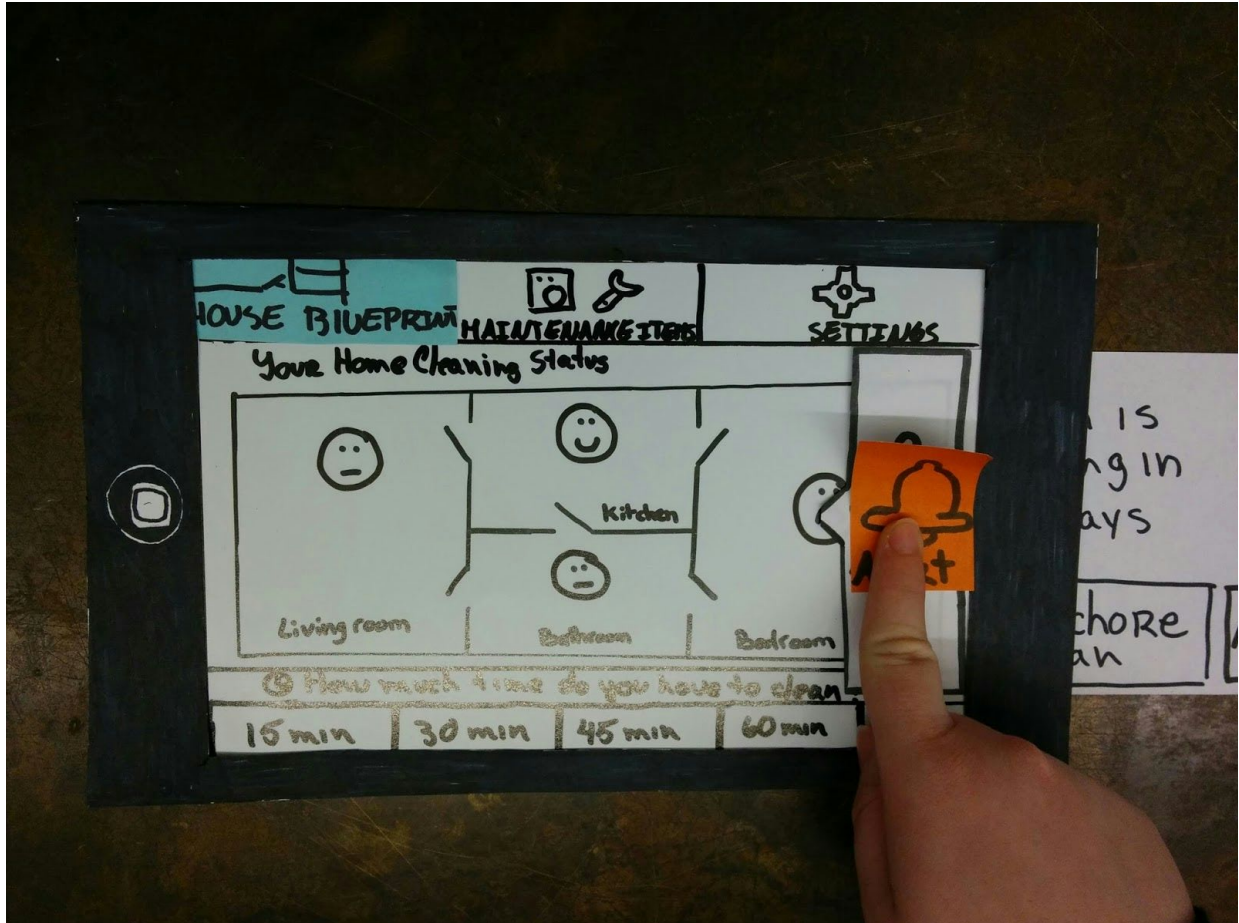
After user performs the task, the board updates and the main overview updates to show new cleaning status of the house.

## Task #2: Prevent a Messy Home when Receiving Visitors



*Neat identifies an external trigger by parsing through the user's emails and texts and generates an alert that is displayed on the main screen and among other smart devices around the house to encourage cleaning behavior.*

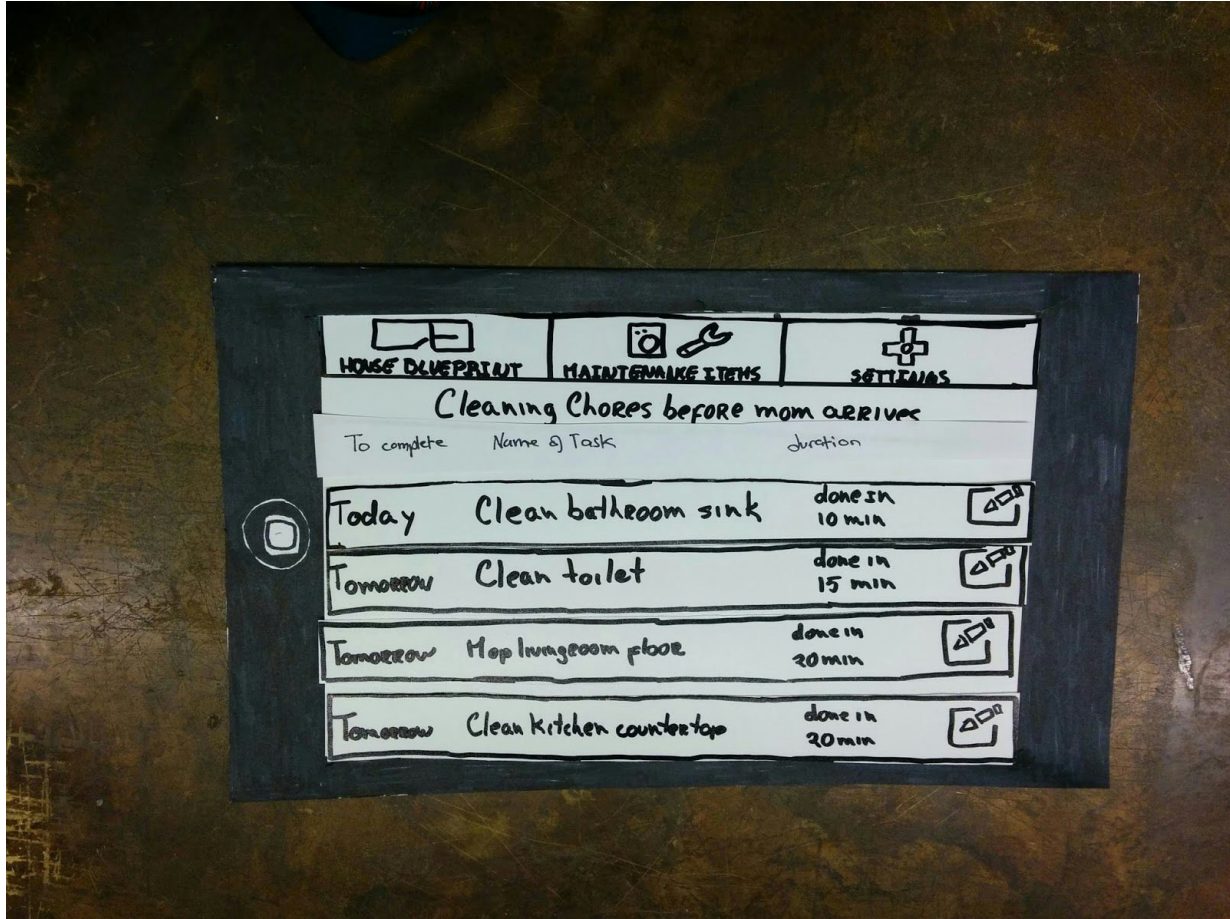




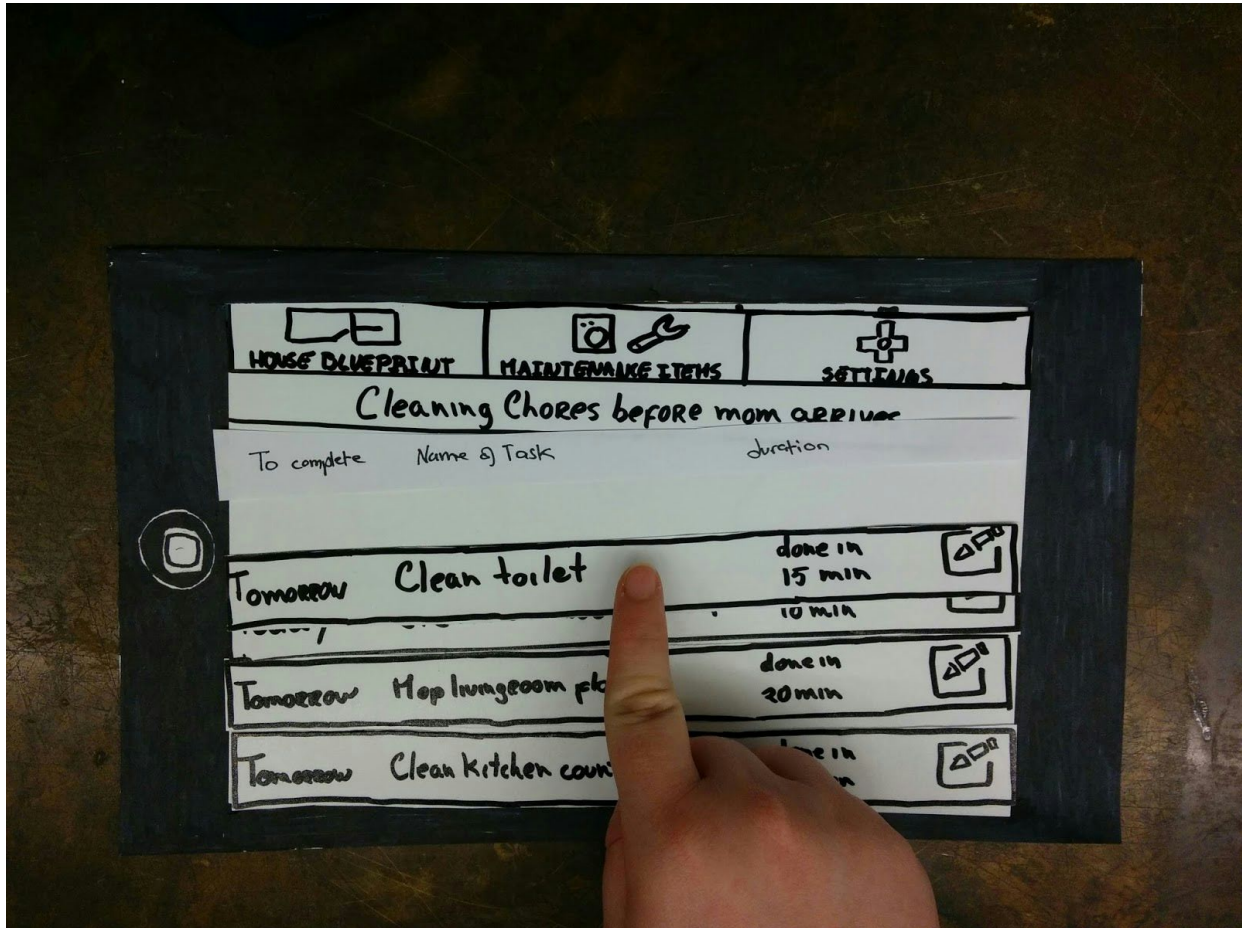
The user chooses to address the alert by swiping left.



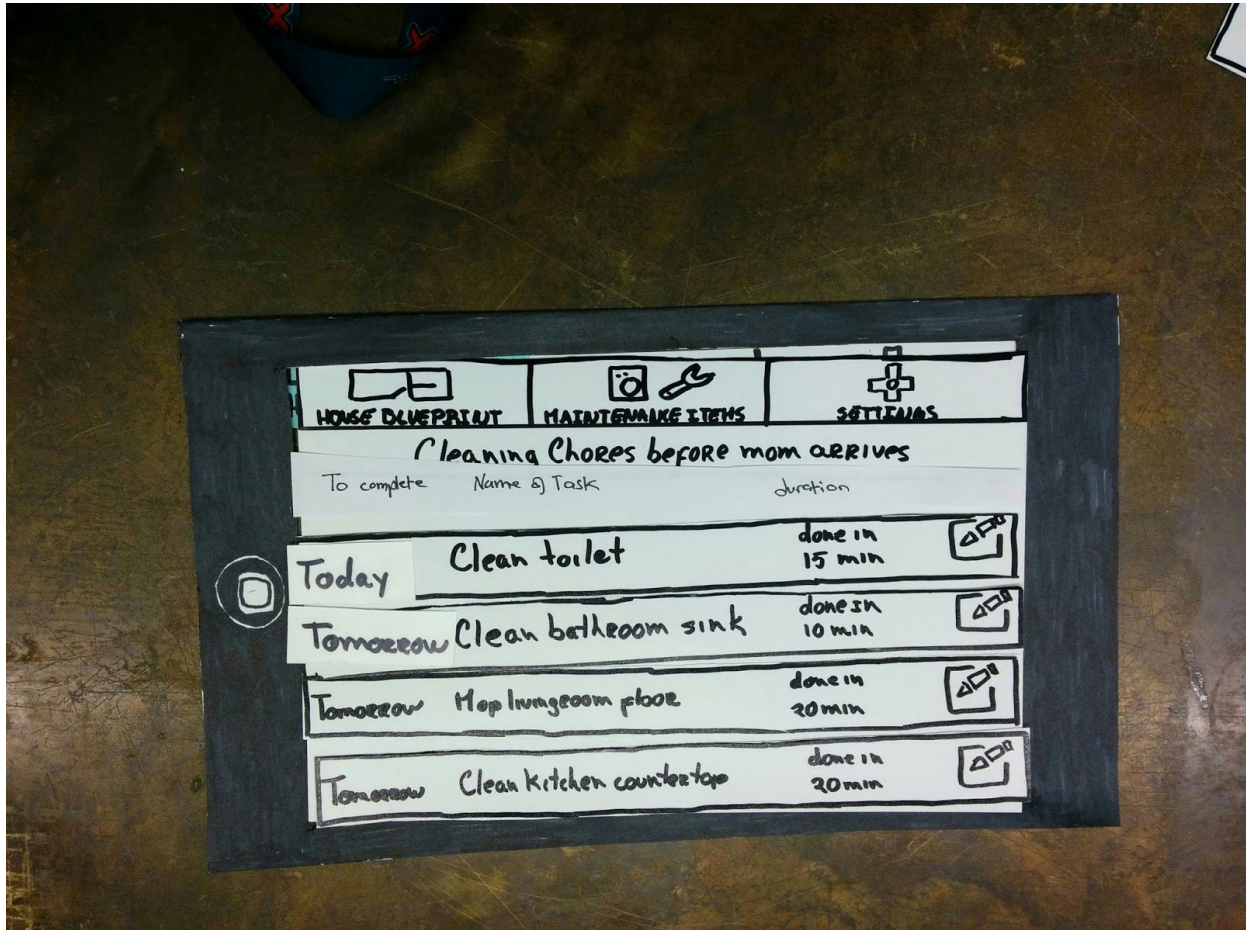
The alert now covers some of the screen and displays alert details. User selects chore plan.



Based on the areas that are most unclean and the areas that are most likely to be seen, Neat automatically generates a roadmap of tasks to complete.



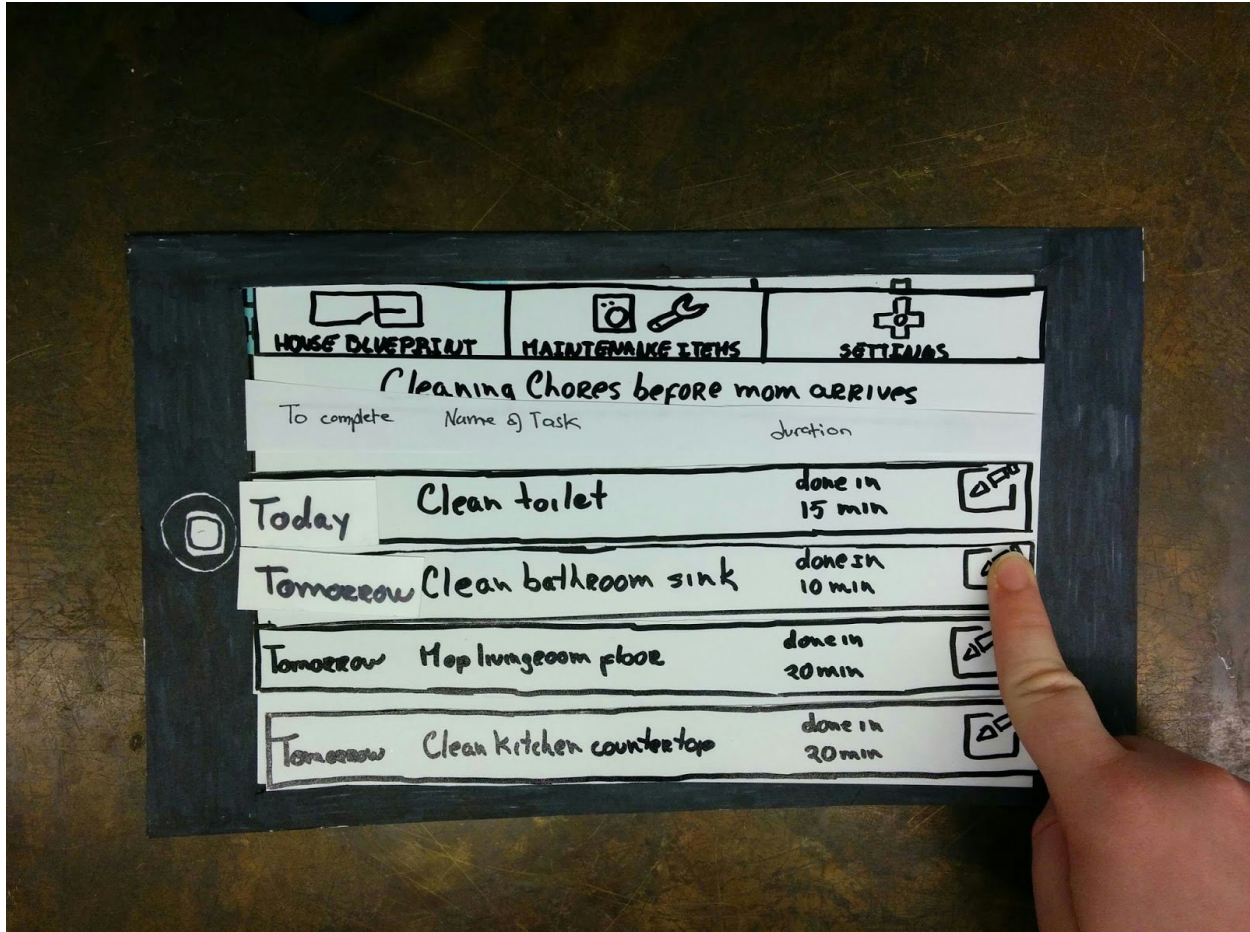
*If the user does not like the order of the suggestions he or she can rearrange the suggested plan by dragging and dropping.*



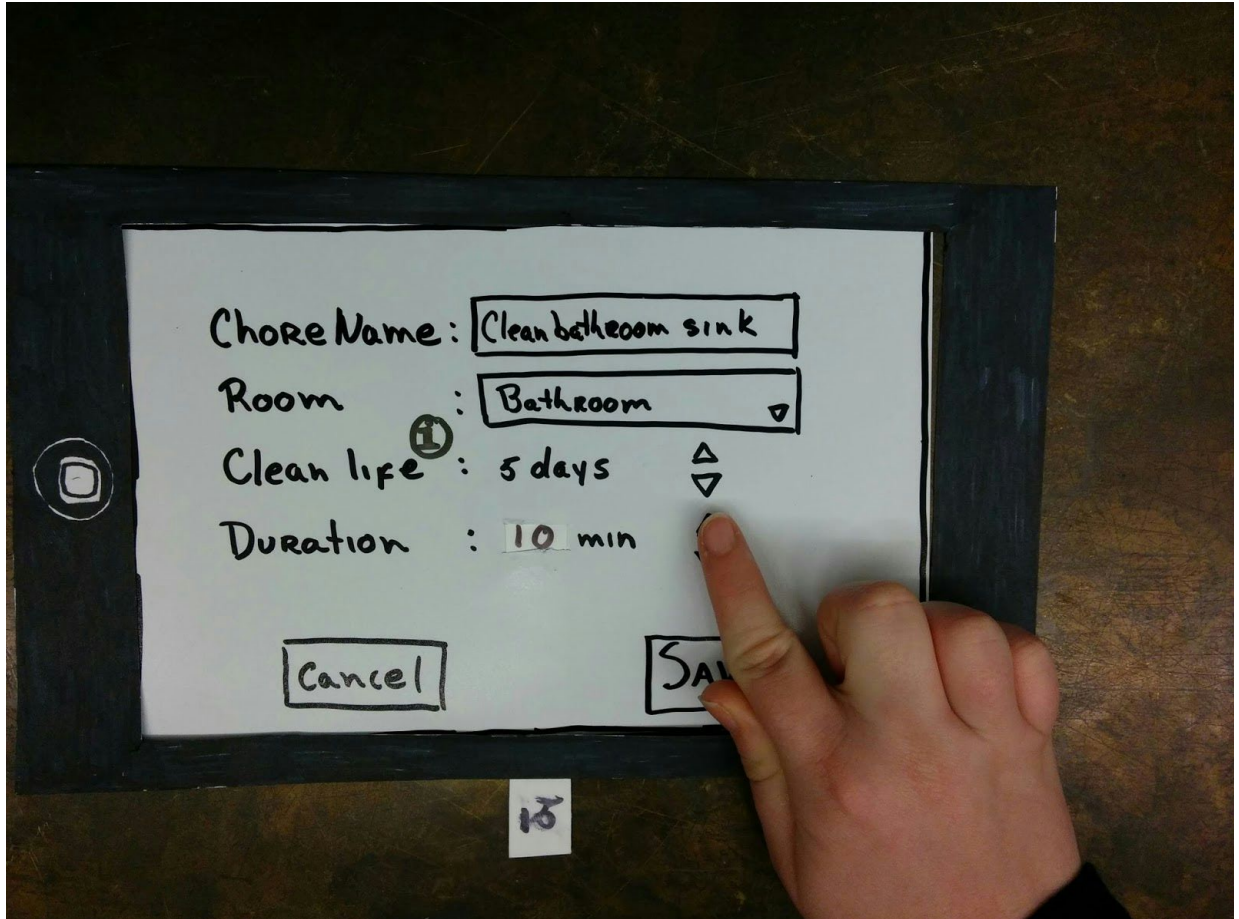
*Cleaning chores before mom arrives after rearrange. From here the user can decide what to do and use the band to record cleaning metrics once they start cleaning.*

### Prototype Addition 1

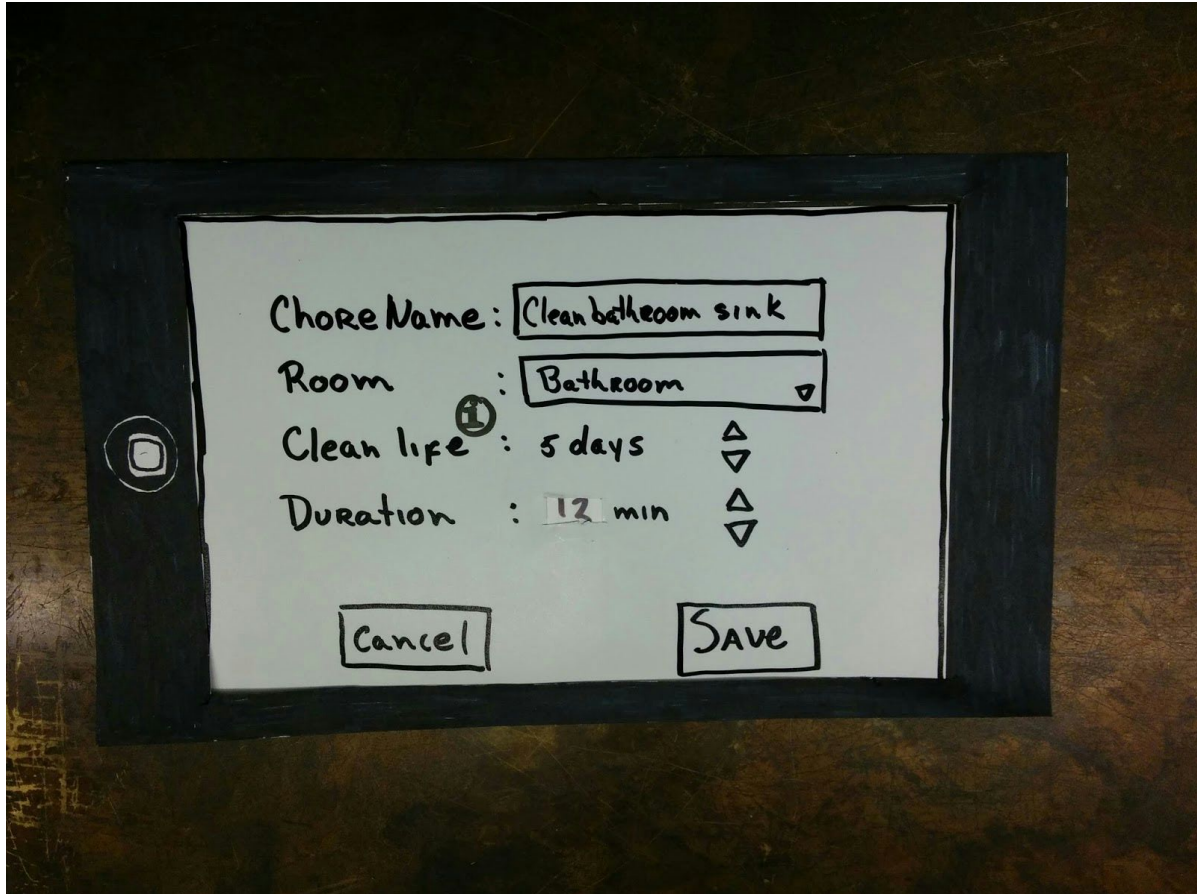
During the heuristic evaluations it was brought to our attention that if there was incorrect information in any of the tasks the user had no way to edit tasks. Therefore, we decided to add an edit button as part of the chores. Edit task depicted below:



From any screen with a chore the user can click on edit button to modify chore.

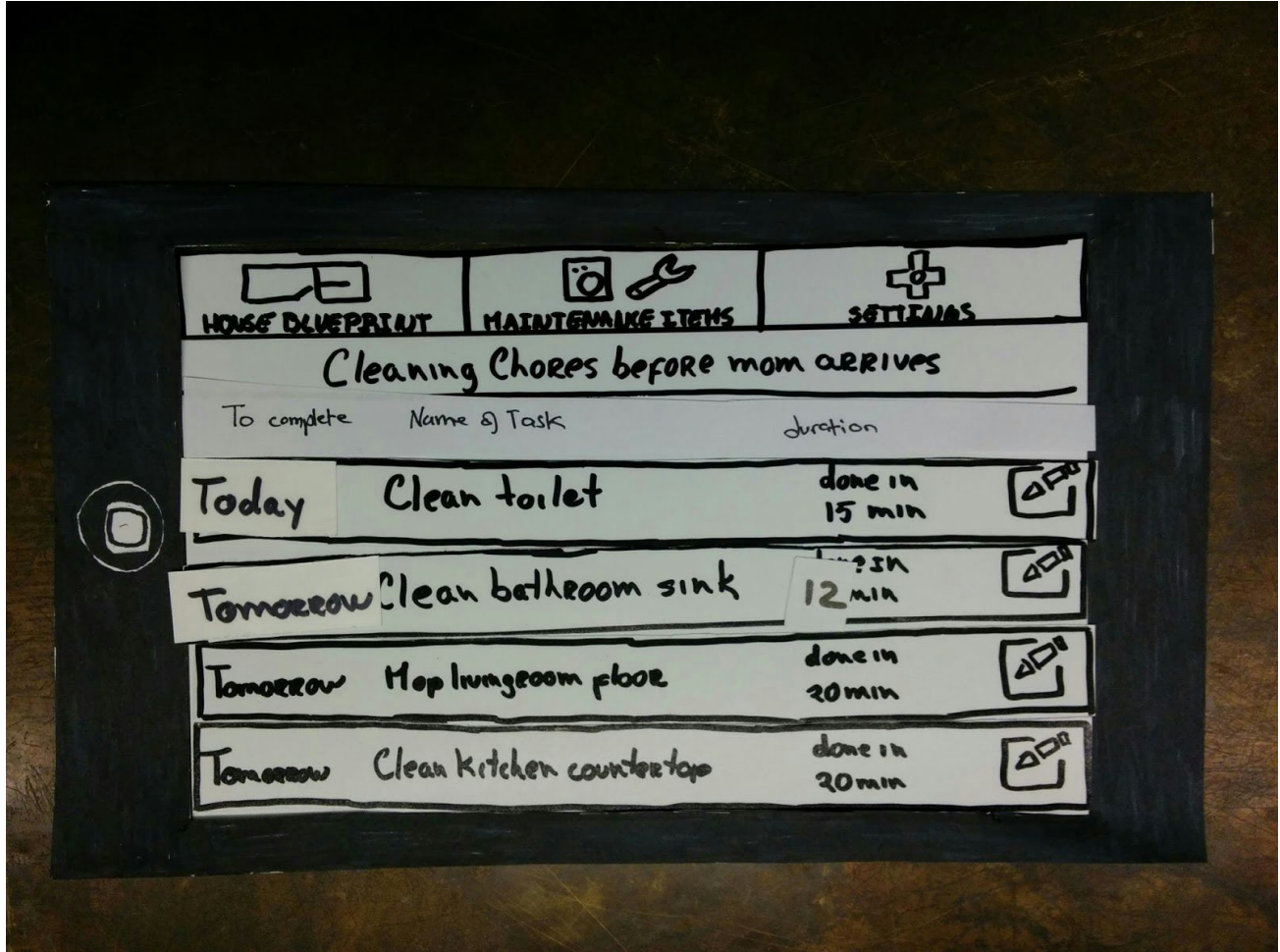


*Details about the chore will be brought up. In this example we are changing how long does a chore takes.*



*Then user can save changes by pressing the save button.*

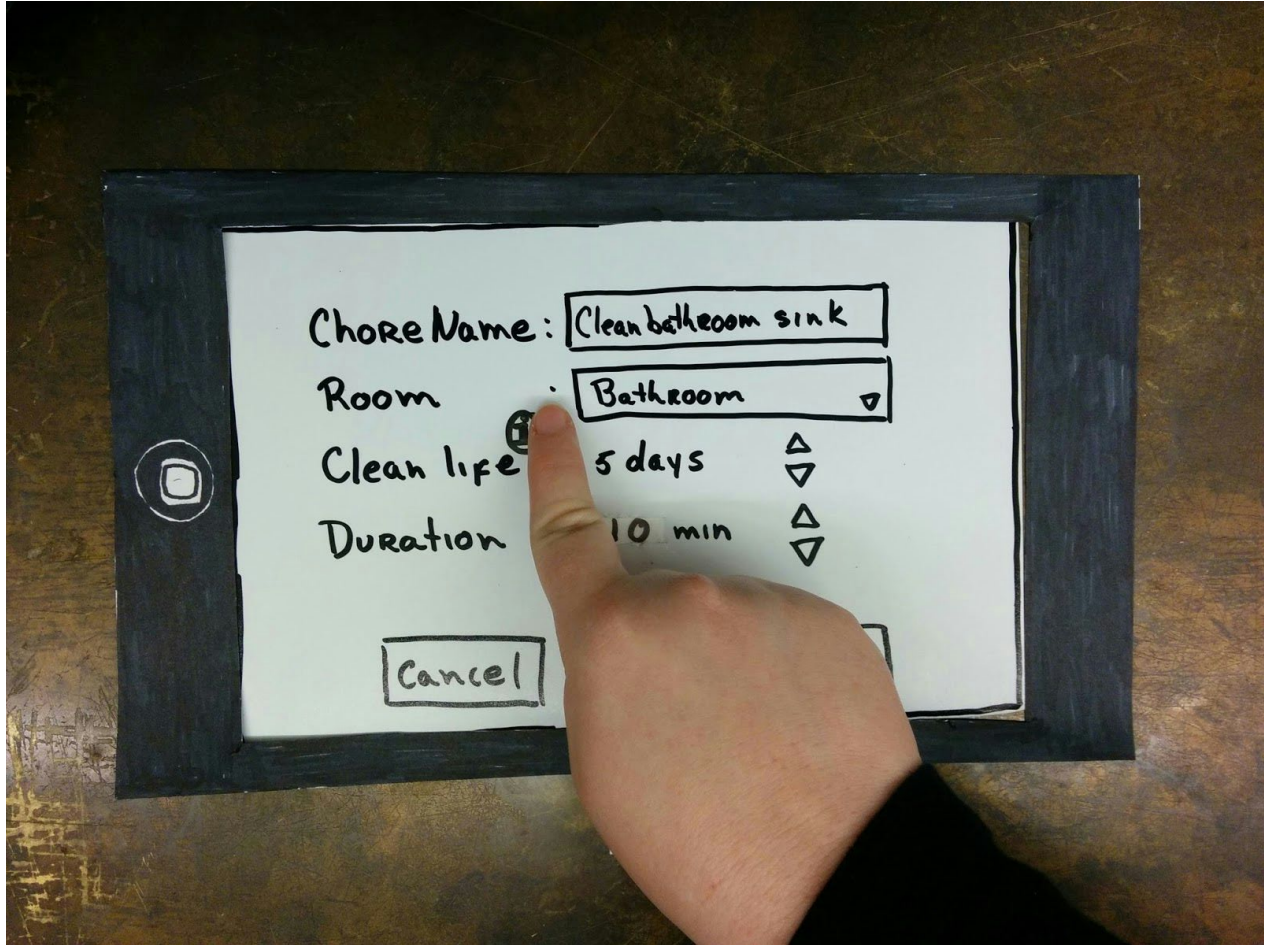




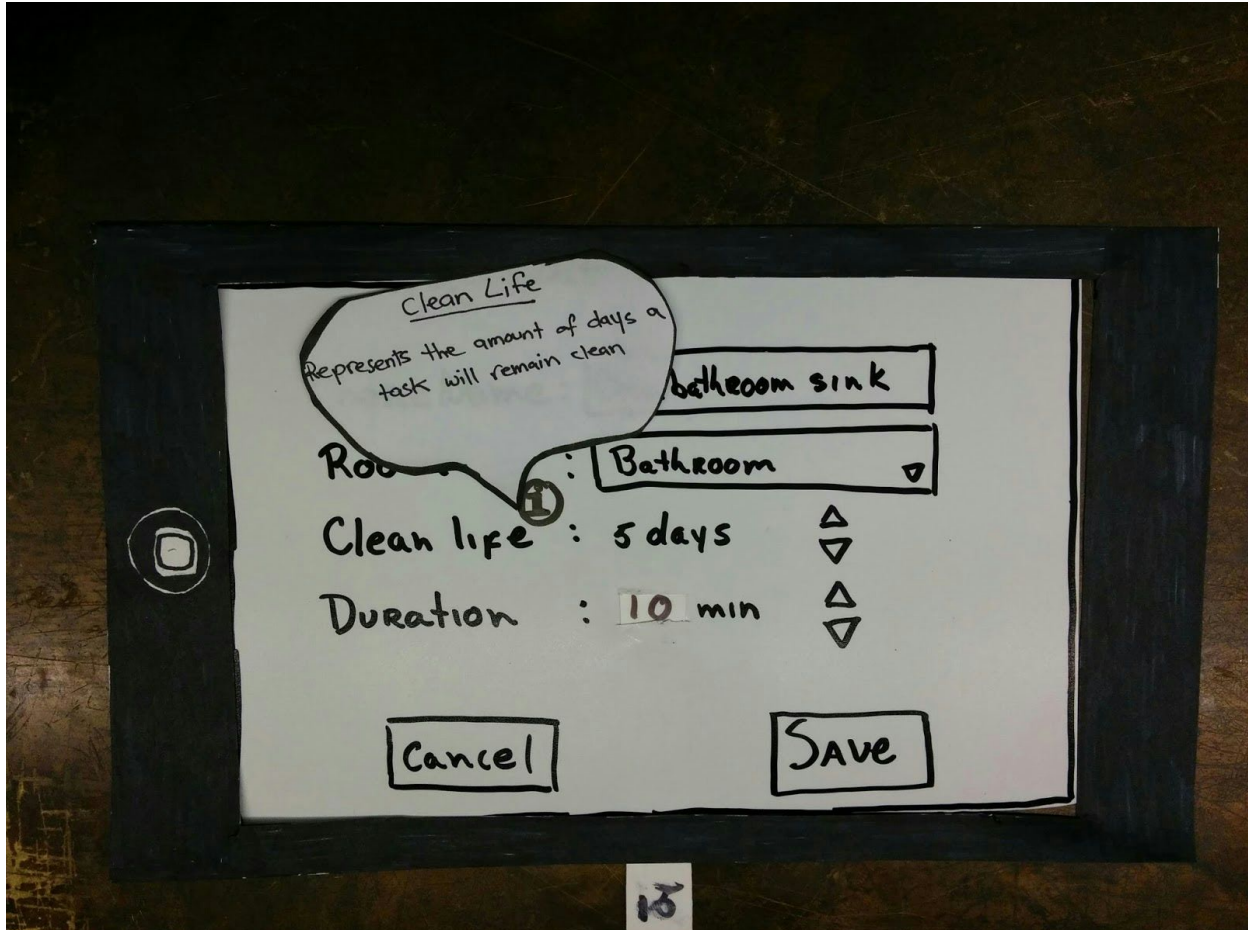
Screen from where the user reached the edit process will show updated chore.

### Prototype Addition 2

From one of our usability tests, we noticed that users had difficulty understanding what "Cleaning Life" meant in the editing screen. Therefore, we added a tooltip that defined the term "Cleaning Life" in the Neat system for the user. The follow images show how to use the tooltip.



User clicks on the information icon next to "Clean Life" to bring up the definition.



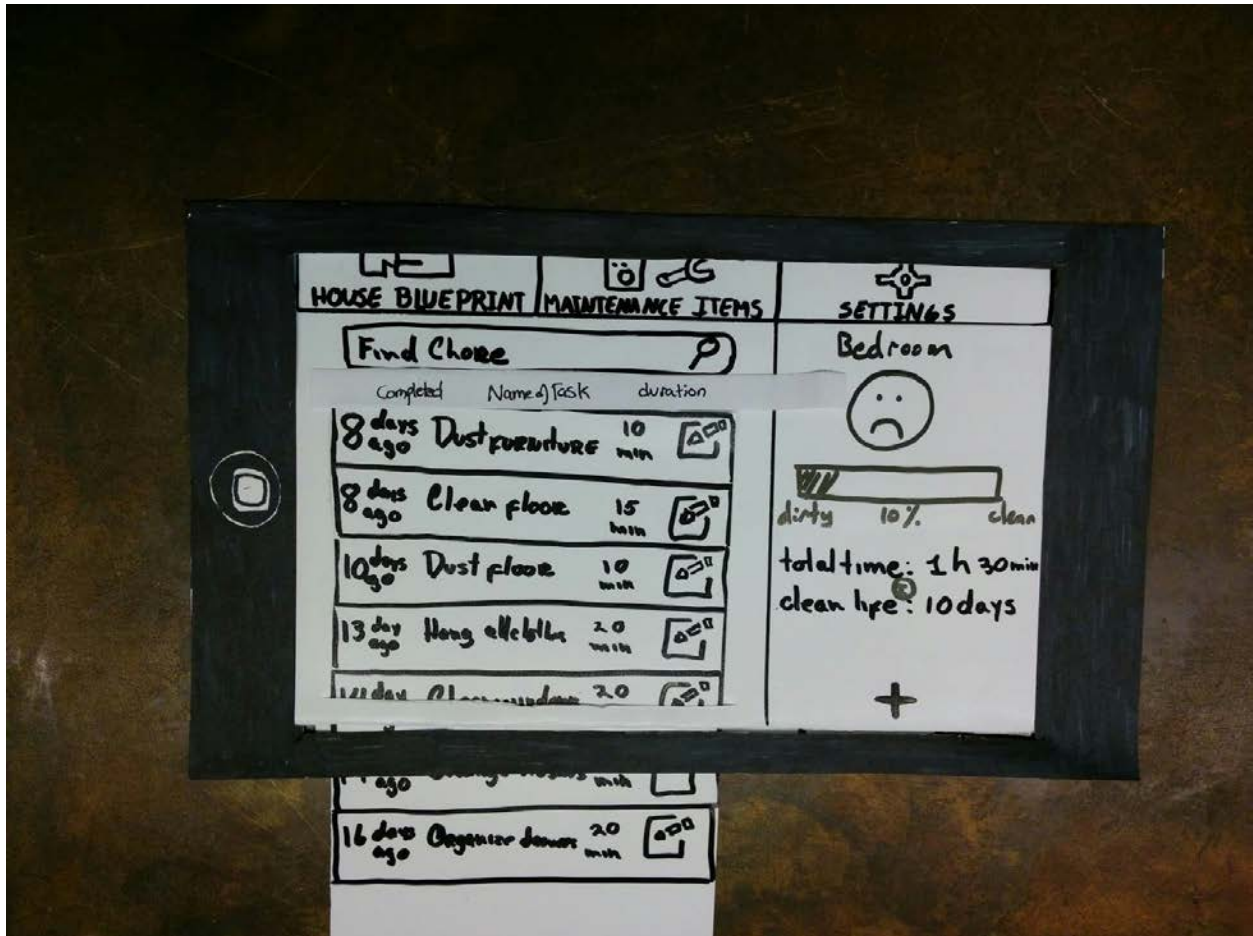
A popup definition of "Clean Life" appears to aid the user in understanding the terminology.

### Prototype Addition 3

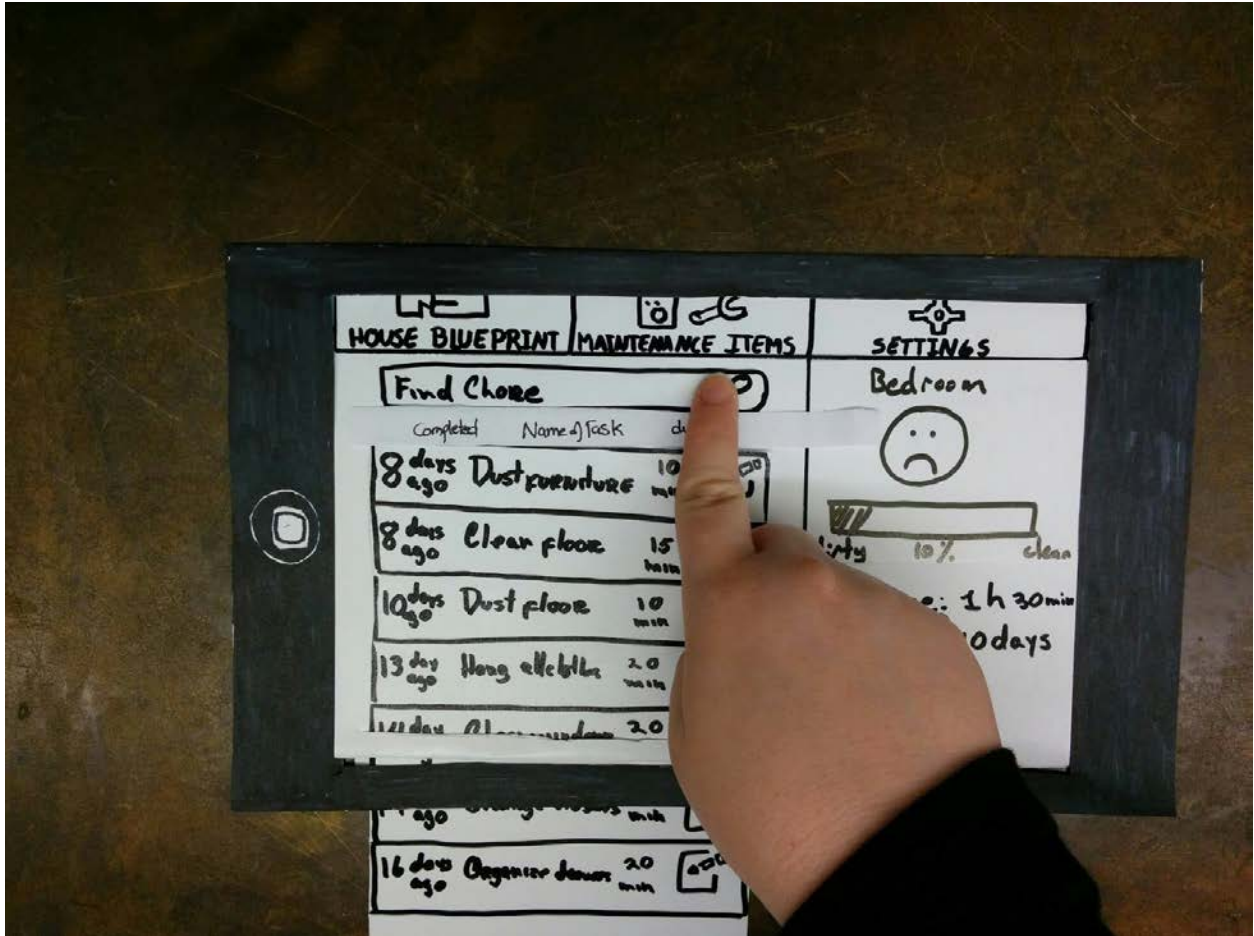
Also from the usability test, we saw that users had the tendency to select what to do by selecting a room and viewing what has to be accomplished on that room. The following images show how to get from the main overview to the details for a room.



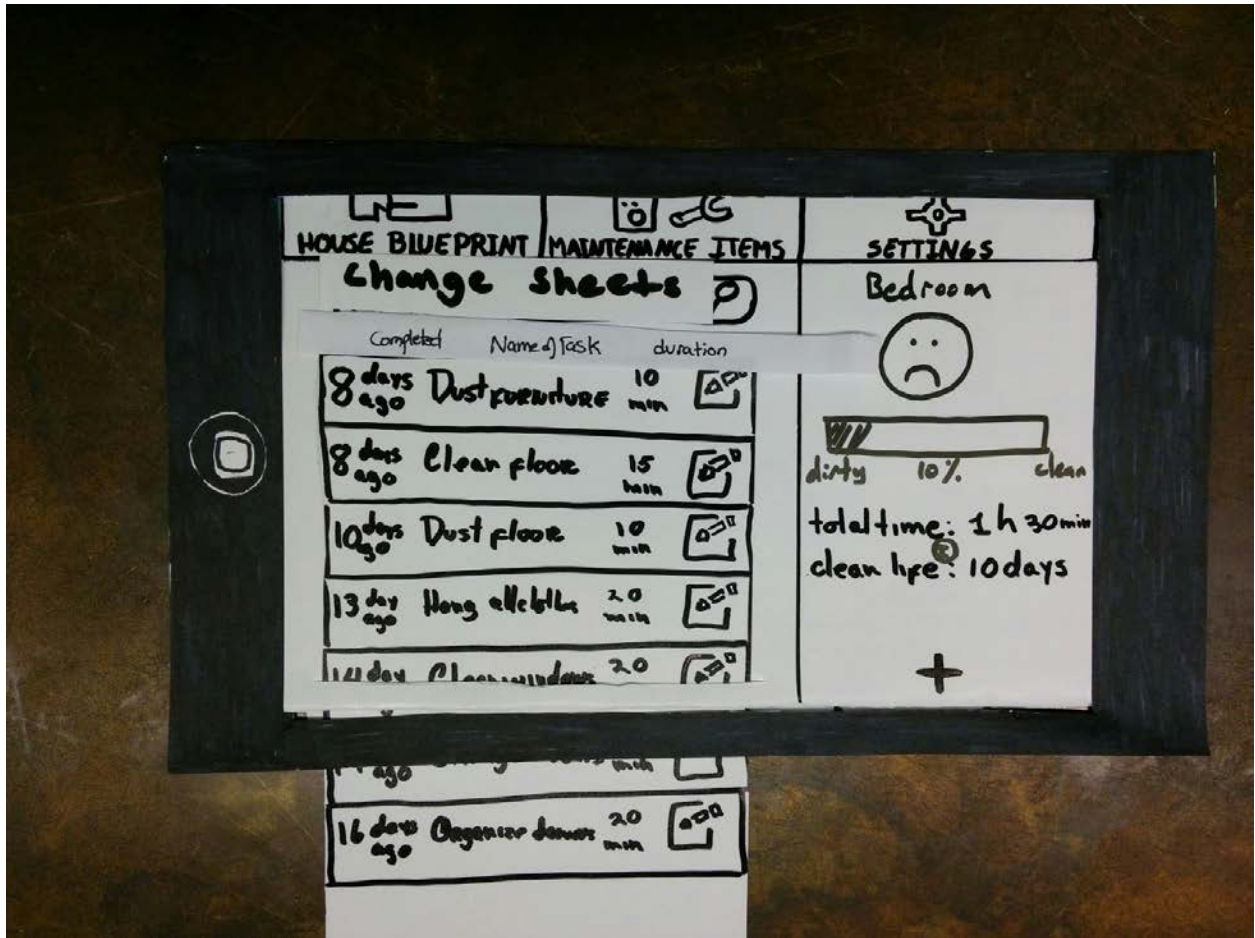
*From the house blueprint, tap on the room you want to see more details.*



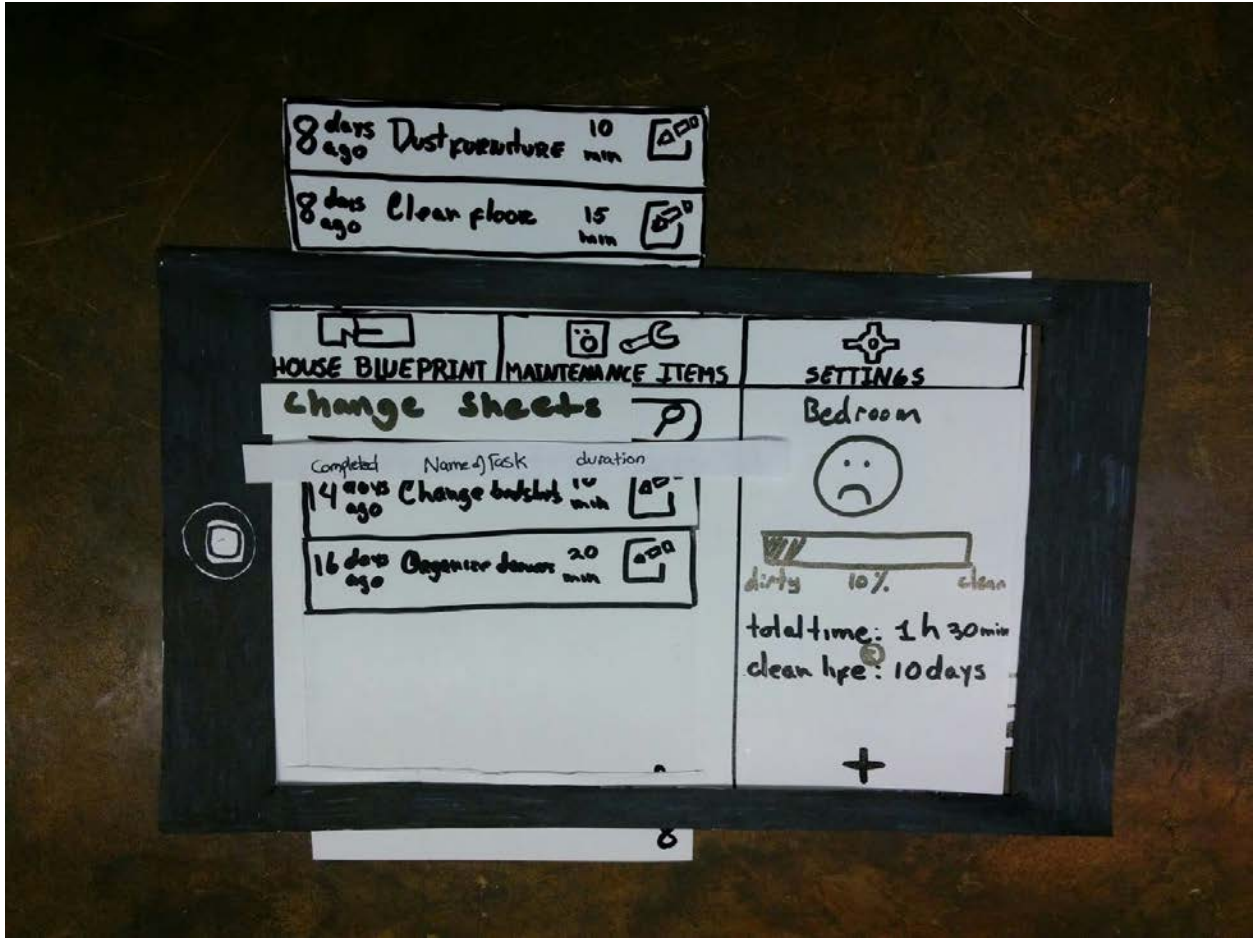
This screen will show more details about that room, like how clean is actually that room, how long will it take you to fully clean it, the clean life of the room, etc. This screen also lets you see the cleaning history of that room and search for a task see when was the last time it was performed.



User clicks on the search bar to begin entering a chore query.



User types in his or her search query.



User is then shown the results of the query.