

## Assignment 3d: Usability Testing Review

### Usability Test 1

The participant is a UW sophomore who lives in the student housing community and faces problems with doing laundry. The study was conducted in the laundry room where we asked the participant to walk through the process of doing his laundry while incorporating Laundr. This participant was chosen because he matches our participant criteria of students living in shared apartments with a shared laundry rooms. It was ensured that the test touches on the primary task of knowing when to get or transfer your laundry from the machines. Emily and Atharva conducted the test where Atharva gave an initial introduction to the participant. Emily addressed the concerns our participant had and noted the observations.

Based on the feedback from our usability tests, we plan to make changes to improve navigation in the app. We revised the functionality of the laundry ball 'Laundr' to a device which is put in the machines to communicate with the sensors which lets the app know which machine is being used.

### Usability Test 2

The participant is a UW student living off-campus with other people he knows. The usability testing took place in the Nano Science building on campus. This student was chosen because he lives off-campus where the shared laundry room situation is common and fits our ideal target participants. We provided the prototypes for the participant to explore and we observed whether the participants are recognizing the functions in the prototype. In this usability test, Emily gave the initial introduction of the prototype to the participant and Atharva provided guidance for the participant to complete exploring the paper prototype.

According to our participant, there are two functionalities that are not addressing the problems we were trying to solve and the design for those features were not obvious at all. For example, the camera function in the first prototype was very confusing, our participant does not have a clear idea of what that button does, therefore they do not want to tap into it. We are aiming to remove the camera function entirely because we realized that is not one of our primary problems we are trying to solve.

### Usability Test 3

The participant is a UW student living in an apartment. He fits with our target audience and is familiar with the pains of doing laundry in a shared space. In particular, his apartment has 3 washers and 2 dryers which are mostly busy so we thought it fits with one of our primary task (coordinating laundry based on machine availability) perfectly. We conducted the test in a reserved room of the CSE2 building where the participant could comfortably voice his thought




process without interruptions. The participant performed two tasks. First, he had to schedule reminders for doing his laundry. Then, he pretended to take his laundry down to the washers and dryers and use the app to track its status. Sam facilitated the test and played the “computer” role while Hang took notes and introduced the design.

Based on the feedback, we will revise the mobile to app to require less input and set up from the user to track their laundry. Instead, we will automate detection process between the ball and the machines and use the app more for notification purposes during this tracking phase.

# Critical Incidents

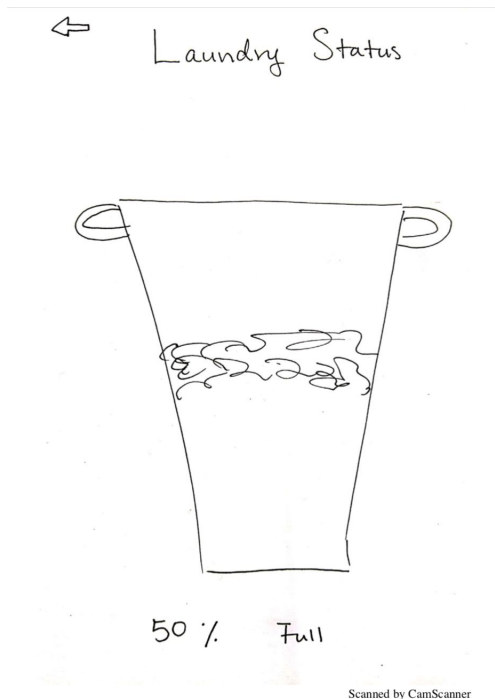
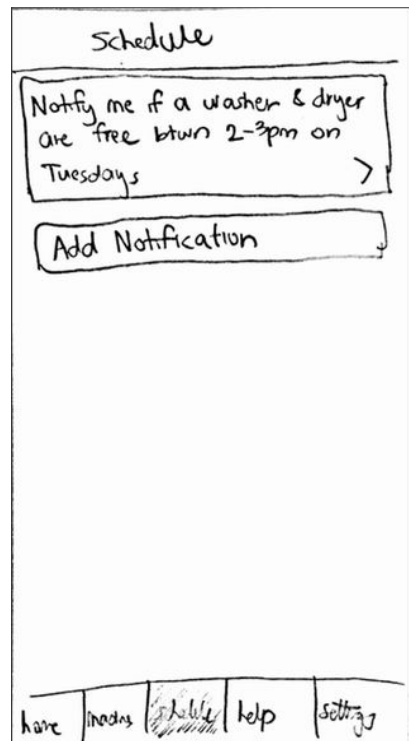
## Incident 1: Interaction and Navigation

- Severity: 4
- Purpose of the camera not clear: our users are not tapping on the camera button because they are unsure of what the camera button will do. We decided to remove this feature because it is not our primary task that we decide to address and it is becoming more confusing than it should have been.
- Current basket and machine status not visible: the participant tried to click on it when it is only a status notification of what is available. It is not clearly conveyed that it is not a button, but a status report.

Original	Revised
<p>Dashboard</p> <div>Current Basket Status  </div> <div>Next wash in 🕒 🕒 🕒 Days</div> <div>Last wash on JAN / 01 / 1999</div> <div>Available Now 10 Washers 5 Dryers</div> <div></div>	<p>Dashboard</p> <div>Laundry Status &gt; Red Ball: Washer 2 23 min remaining</div> <div>Available Now &gt; 2 washers 1 dryer</div> <div>Start Laundry &gt;</div> <div>home   machine   status control   help   settings</div> <p>5</p>

## Incident 2: Labelling

- Severity: 2
- Laundry Status means Laundry Basket or the Laundry in the Washer/Dryer: our participant did not find a clear indication of whether this is a laundry status of dryer or washer, it is difficult to distinguish the difference because there is no obvious indication.
- Title of the page could be Current Status instead of Laundry: the inconsistency of the title becomes confusing to the participants and they were lost in the process of trying to navigate through this software

Original	Revised
 <p>← Laundry Status</p> <p>50% Full</p> <p>Scanned by CamScanner</p>	 <p>Schedule</p> <p>Notify me if a washer &amp; dryer are free btwn 2-3pm on Tuesdays &gt;</p> <p>Add Notification</p> <p>home   inbox   <del>schedule</del>   help   settings</p> <p>We have decided to remove this feature and added a notification scheduling service instead. Users will receive notifications according to their own preference.</p>

← Laundry Status



OVERLOADING

Scanned by CamScanner

Add Notification

Notify me if a...

Washer

dryer

are available...

	M	T	W	Th	F	Sa	S
6a							
7a							
8a							
9a							
10a							
11a							
12p							
1p							
2p							

Typically free  Typically in use

Tap to select times

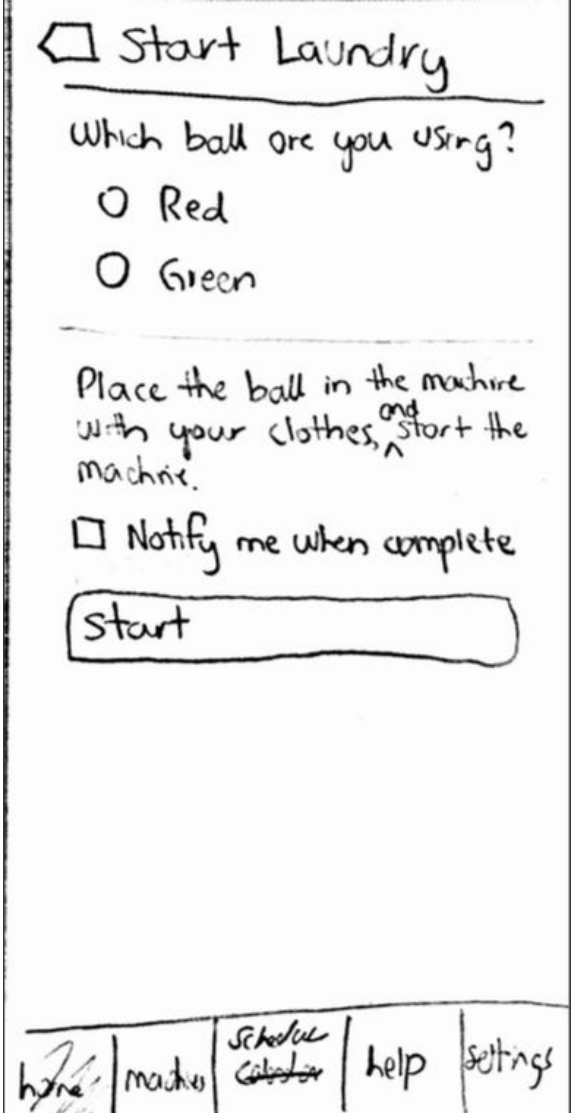
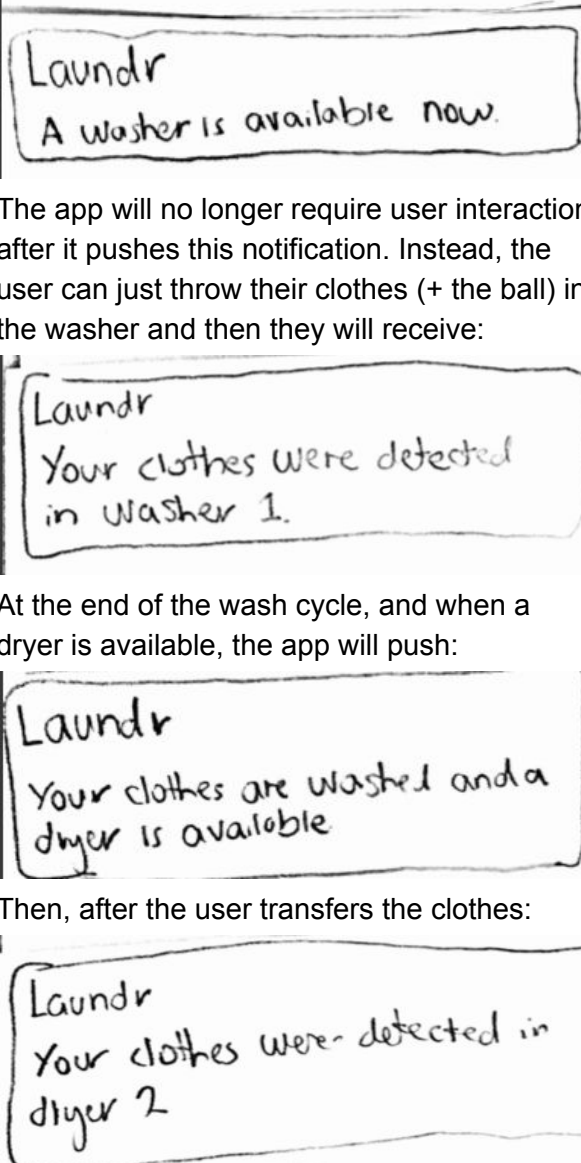
Create Notification

home	inbox	scheduler	hp	settings
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The software also provides flexibility to create their own notifications for laundry schedule, instead of being notified according to the status of the laundry basket.

### Incident 3: Flexibility and Efficiency of use

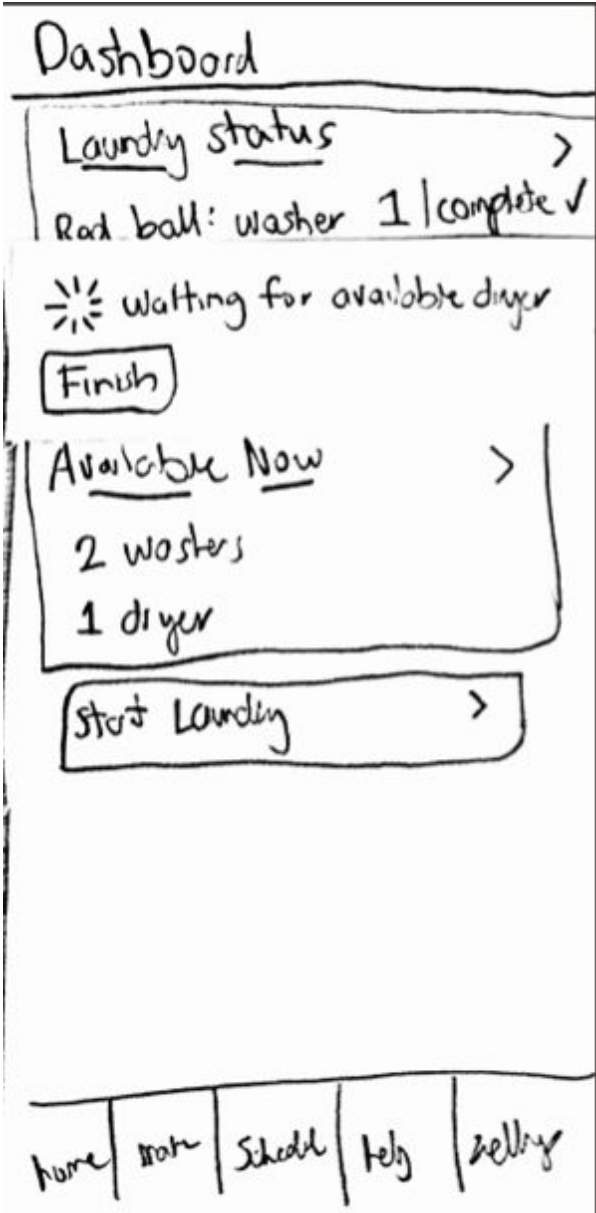
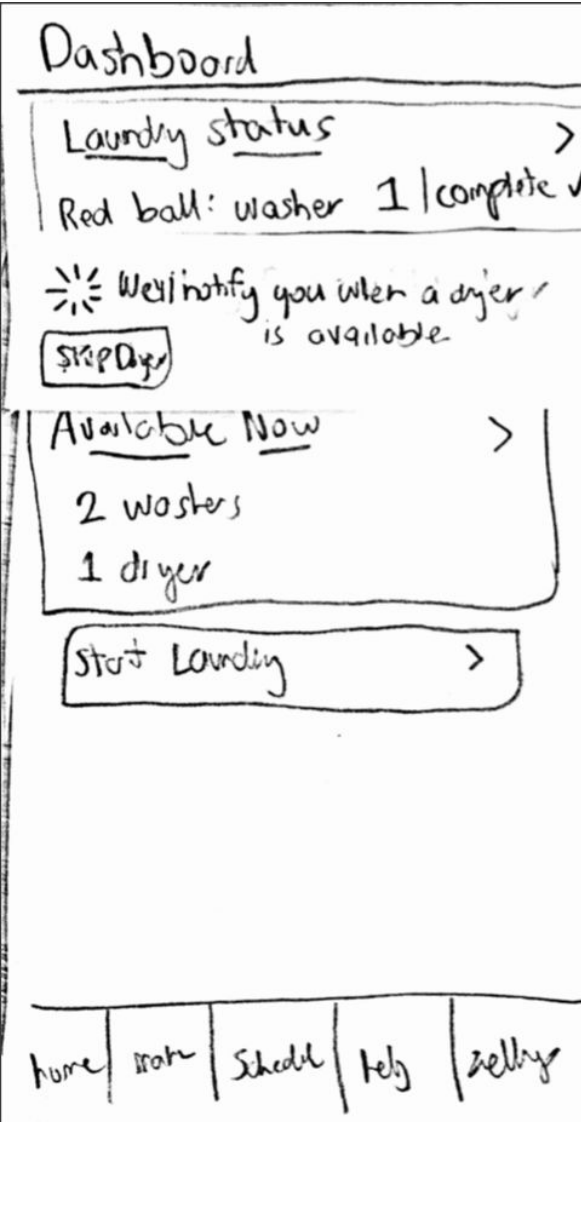
- Severity: 2
- The user assumes that when there is a notification, he does not have to open the app to do additional setup for transferring his laundry to the dryer
- We will automate the setup process and have the ball detect when it is in the washer or dryer so all the user have to do is throw it into the machines. The active balls will automatically show up on the app while inactive balls do not.
  - The app will notify the user when the laundry has been detected in the machines, to keep them informed without requiring direct interaction
- We removed the original setup screen and take the user directly to the laundry status screen

Original	Revised
 <p>Hand-drawn sketch of the original 'Start Laundry' screen. It features a title 'Start Laundry' with a back arrow icon, a question 'Which ball are you using?' with radio button options for 'Red' and 'Green', instructions 'Place the ball in the machine with your clothes, and start the machine.', a checkbox for 'Notify me when complete', and a 'Start' button. At the bottom is a navigation bar with 'home', 'machines', 'Schedule', 'help', and 'settings'.</p>	 <p>Hand-drawn sketches of three notification messages. The first says "Laundr A washer is available now." The second says "Laundr Your clothes were detected in washer 1." The third says "Laundr Your clothes are washed and a dryer is available". Below the third notification, it says "Then, after the user transfers the clothes:" followed by a fourth notification: "Laundr Your clothes were detected in dryer 2".</p>

	<p>The user never has to enter the app to tell it that they're moving their clothes -- it will happen automatically.</p>
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#### Incident 4: Labelling

- Severity: 2
- The user assumed that “waiting for available dryer” meant there was nothing else the app could help with, and clicked the “finish” button.
- We changed the dialog to say “we’ll notify you when a dryer is available” to make the next system step more clear, and changed the button to “skip dryer.”

Original	Revised
	



### Incident 5: Flexibility and Efficiency of use

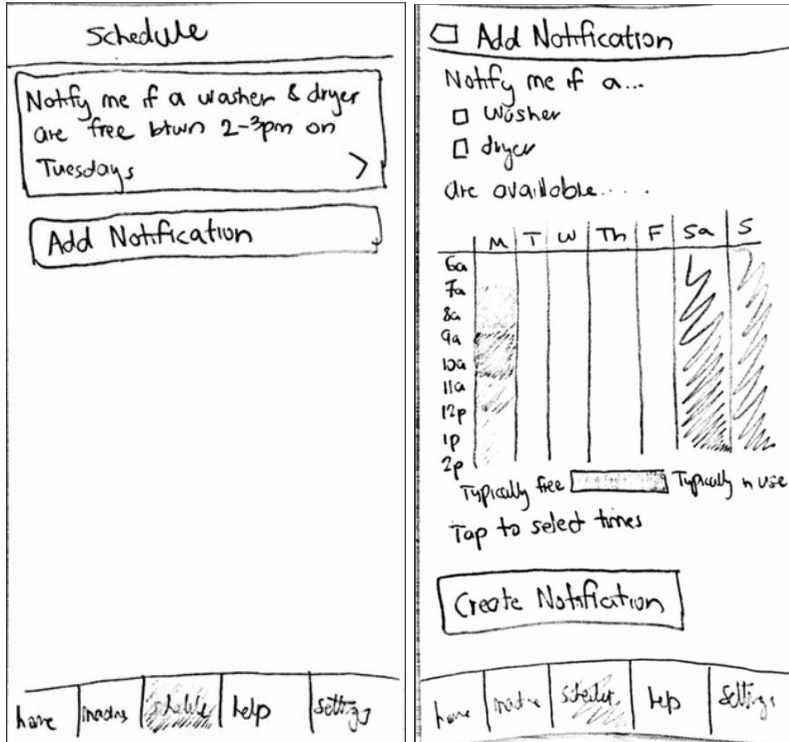
- Severity: 1
- When scheduling reminders, the user noted that he would have to switch between our app and his Calendar app to remember when he is and isn't at home.
- We will integrate with the phone's Calendar app to overlay events on the "Add Notification" page.

Original	Revised																																																																																																																																																																
<div> <input type="checkbox"/> Add Notification         </div> <div>           Notify me if a...         </div> <div> <input type="checkbox"/> Washer  <input type="checkbox"/> dryer         </div> <div>           etc available...         </div> <table border="1"> <thead> <tr> <th></th> <th>M</th> <th>T</th> <th>W</th> <th>Th</th> <th>F</th> <th>Sa</th> <th>S</th> </tr> </thead> <tbody> <tr> <td>6a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>8a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>9a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>11a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12p</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1p</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2p</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <div>           Typically free <span style="border: 1px solid black; padding: 2px;">[ ]</span> Typically in use         </div> <div>           Tap to select times         </div> <div style="border: 1px solid black; padding: 5px; display: inline-block;">           Create Notification         </div> <div> <span>home</span>   <span>inbox</span>   <span>scheduler</span>   <span>help</span>   <span>settings</span> </div>		M	T	W	Th	F	Sa	S	6a								7a								8a								9a								10a								11a								12p								1p								2p								<div> <input type="checkbox"/> Add Notification         </div> <div>           Notify me if a...         </div> <div> <input type="checkbox"/> Washer  <input type="checkbox"/> dryer         </div> <div>           etc available...         </div> <table border="1"> <thead> <tr> <th></th> <th>M</th> <th>T</th> <th>W</th> <th>Th</th> <th>F</th> <th>Sa</th> <th>S</th> </tr> </thead> <tbody> <tr> <td>6a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>8a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>9a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>11a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12p</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1p</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2p</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <div>           Typically free <span style="border: 1px solid black; padding: 2px;">[ ]</span> Typically in use         </div> <div>           Tap to select times         </div> <div style="border: 1px solid black; padding: 5px; display: inline-block;">           Create Notification         </div> <div> <span>home</span>   <span>inbox</span>   <span>scheduler</span>   <span>help</span>   <span>settings</span> </div>		M	T	W	Th	F	Sa	S	6a								7a								8a								9a								10a								11a								12p								1p								2p							
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## Positive Incidents

### Incident 6: Flexibility and Efficiency of use

- This was a positive incident where the user were able to quickly and easily schedule reminders for available machines.
- He effectively navigated to the scheduler screen and back to the dashboard via our improved navigation bar



### Incident 7: System status Visibility

- User could easily locate and understand information regarding machine availability and laundry status

### Machine status

Washer 1	Free
Washer 2	Free
Washer 3	47m In Use
Washer 4	Free

Dryer 1	38m In Use
Dryer 2	20m In Use
Dryer 3	Free
Dryer 4	1h3m In Use

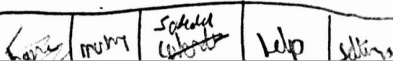


### Laundry status

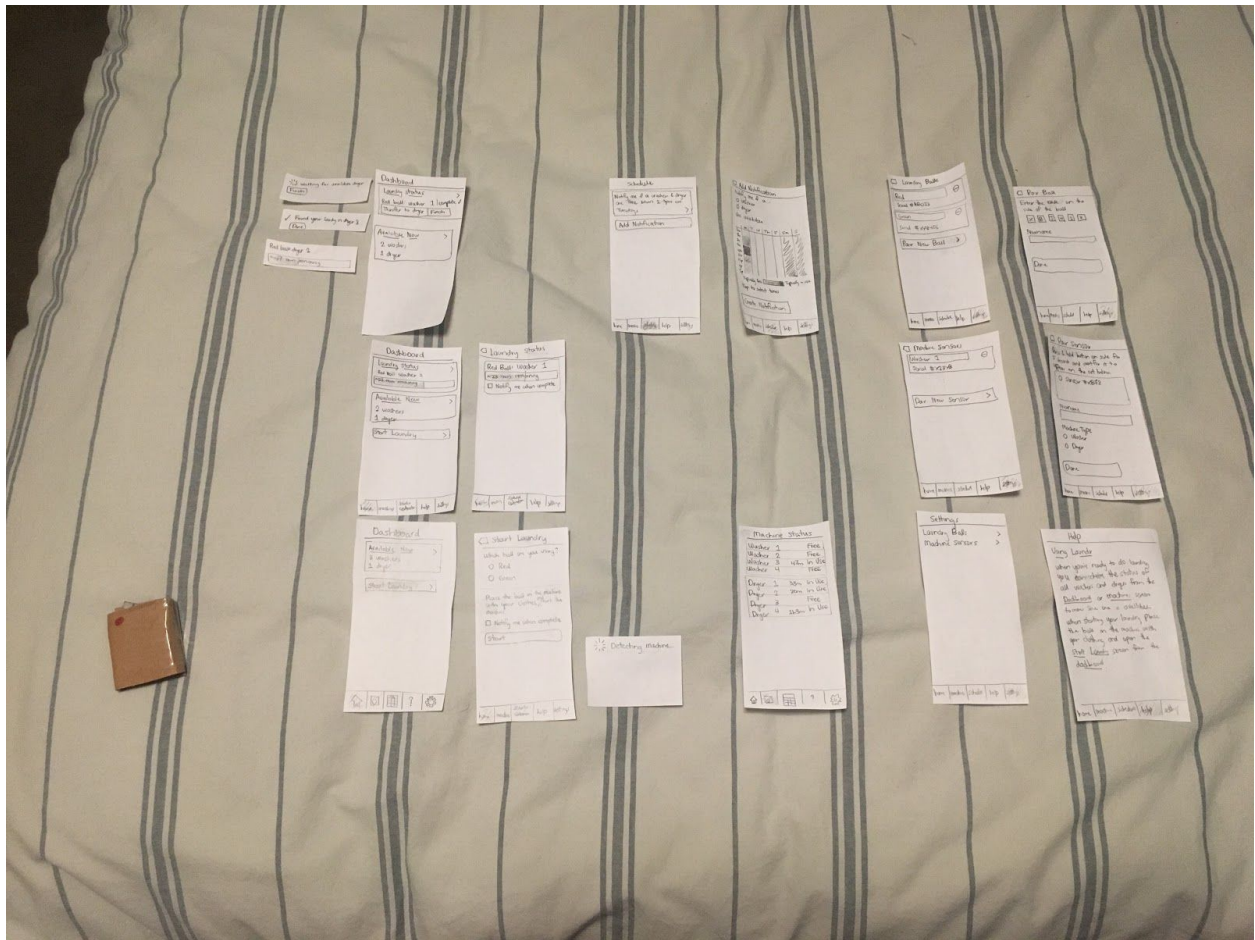
Red Ball: Washer 1

~23 min remaining

Notify me when complete

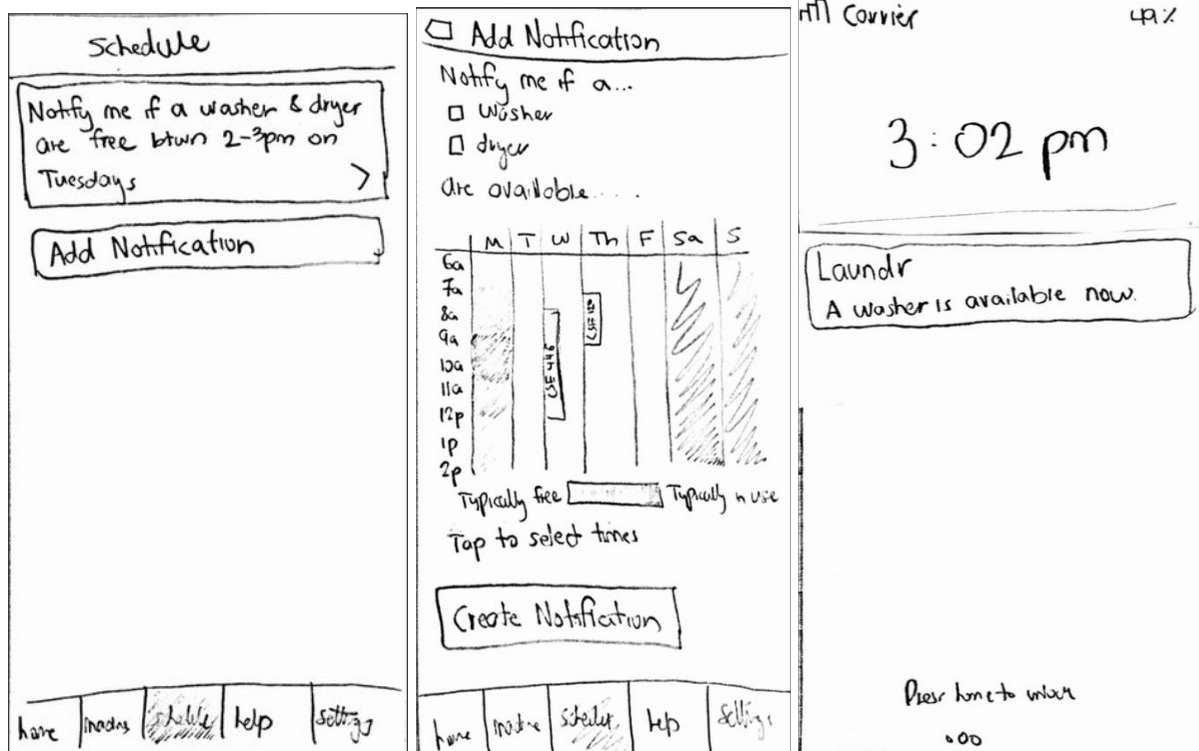


# Revised Prototype

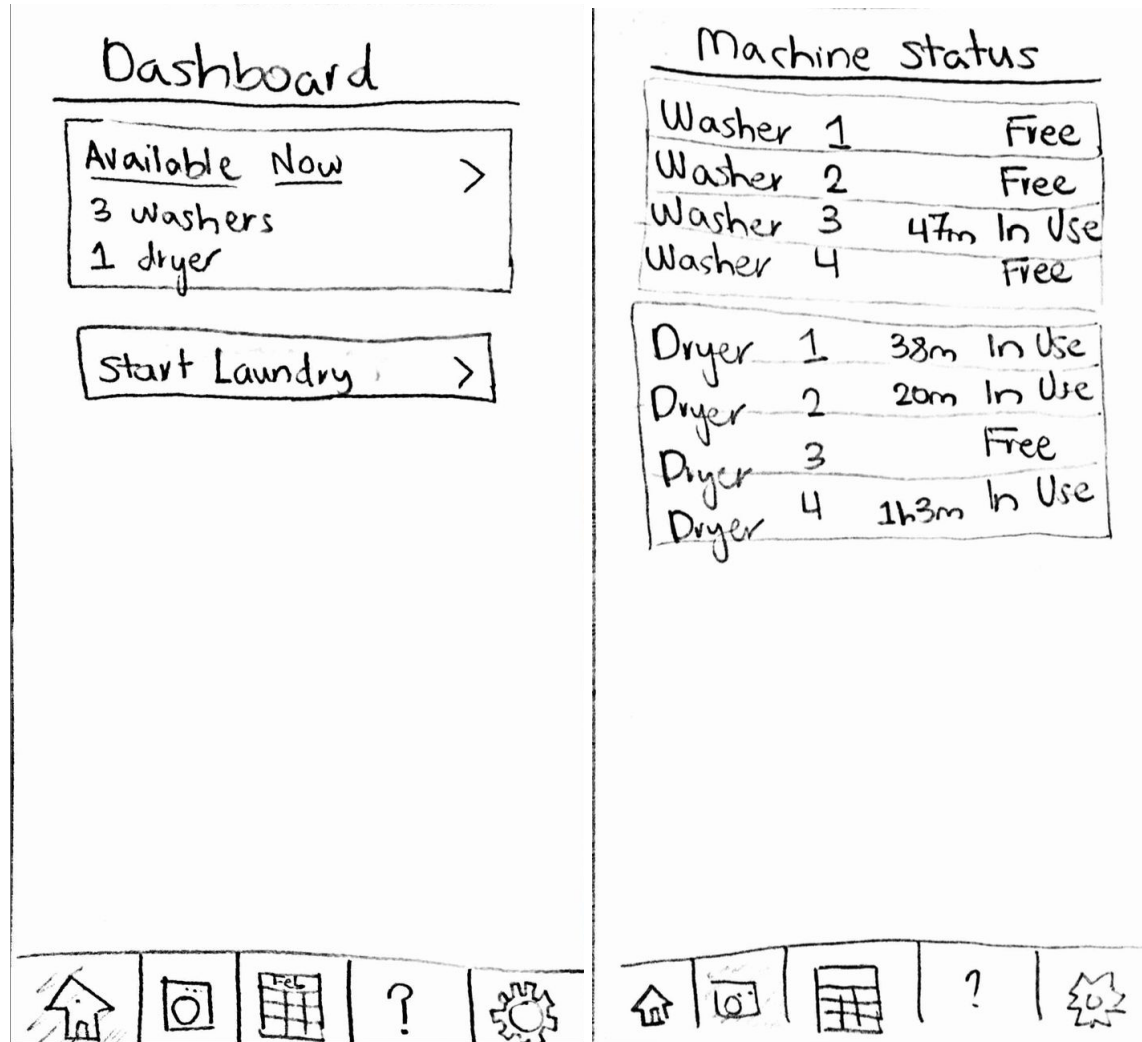


Overview Image: machine sensors (brown rectangle), app interface, ball (which communicates with the app and machine sensors, and also acts as an anti-static dryer ball)

## Task 1: Deciding when to do laundry



The user can set notifications on certain times based on their schedule, and the likely availability of machines. The app will suggest good times to do laundry based on typical usage of machines, and then it will send the user a notification if it detects free machines within the user's timing preferences.



Alternately, the user can go into the app if they prefer to do laundry at an unscheduled time and can see both overall status of the machines from the Dashboard screen, and more detailed statistics from the Machine Status screen.

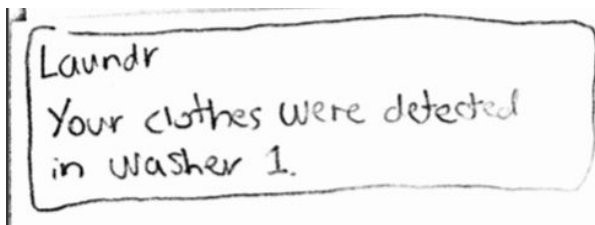
## Task 2: Knowing when clothes are finished washing and drying

Note: the notification images below are assumed to be surrounded by the phone's lock screen or notification bar.

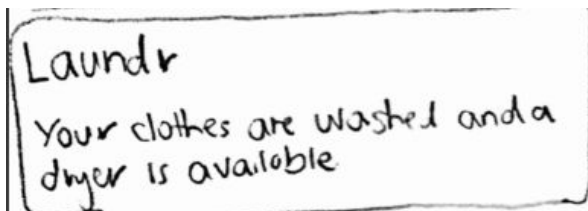
When the user receives this notification, they know that a washer is available.



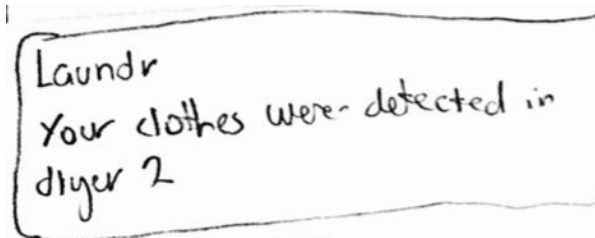
They can then go and place their clothes in the washer (along with the ball) and start it without ever interacting with the app. They will receive this notification to confirm that Laundr knows their clothing is there:

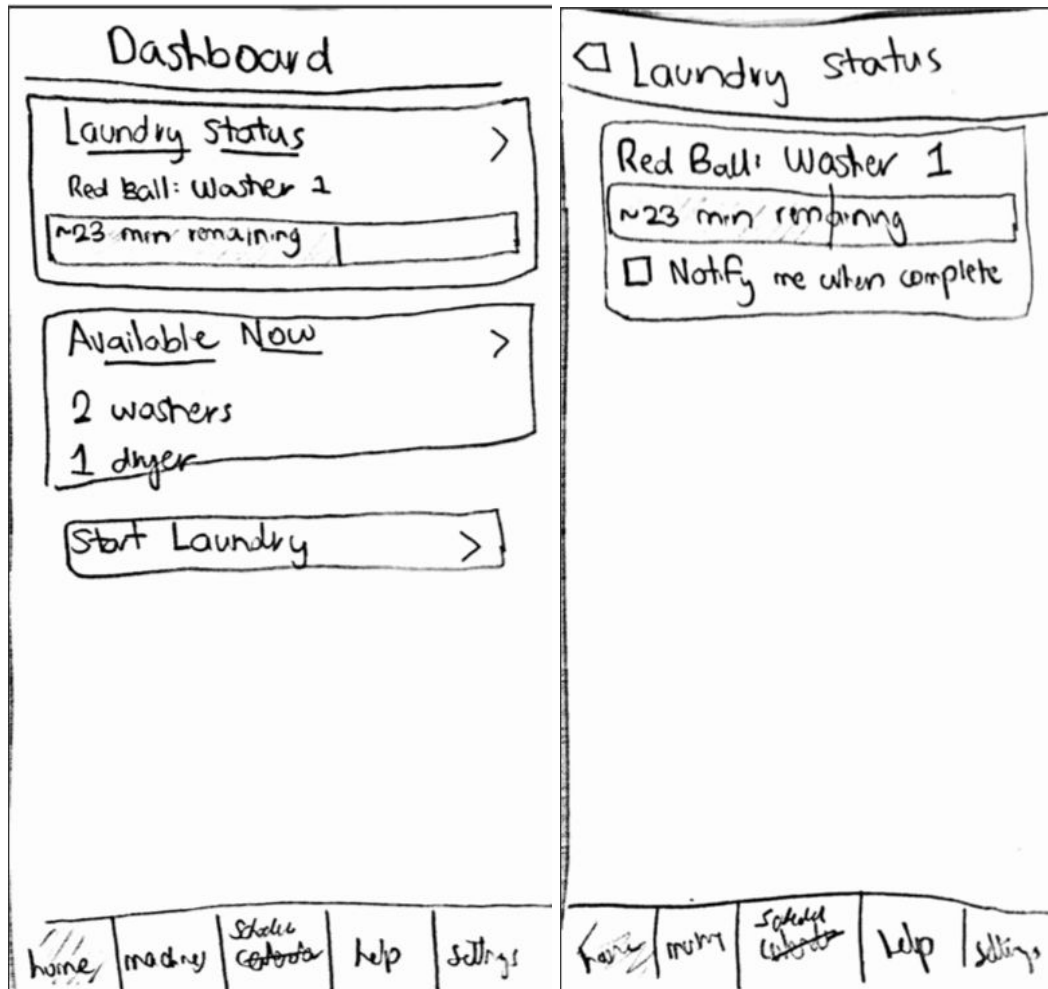


At the end of the wash cycle, and when a dryer is available, they will receive a new notification:



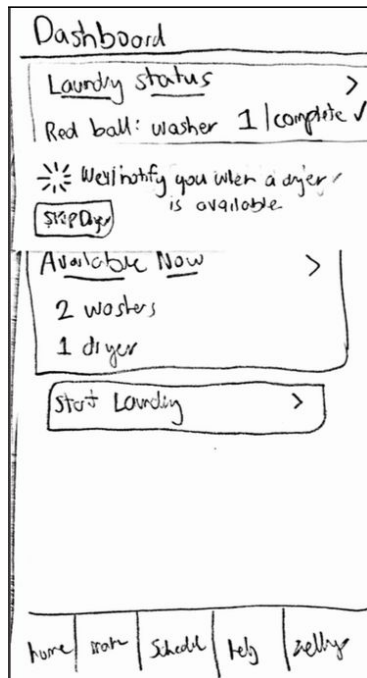
Again, the app will not require any interaction at this point -- once the user transfers their clothes they will automatically receive a notification confirmation:





Any time during the process, the user can check on the status of the washer or dryer from the Dashboard, or view a more detailed status from the Laundry Status screen. An estimated time is provided based on the app learning how long past washer cycles tend to have taken.





If the washer is finished but a dryer isn't yet available, the app will wait before notifying the user to transfer their clothing. An option to "skip dryer" is given in case the user prefers not to dry their clothing in a dryer. The app makes it clear that it can help with the next step (i.e. the drying) but it hasn't notified the user yet because it's waiting for availability.



Once the clothing is finished drying, the app notifies the user that their laundry is complete.

## Revisions to the Prototype

### 1. Removing the camera button

According to our users, the purpose of the camera button was not clear. The camera was meant to scan the washing instructions given on clothes labels and set the washer dryer to the required setting. It was an extra feature unrelated to our primary tasks, which added to the confusion for the users. It was critical to get rid of this feature as it diverted the user's attention from the main functions of the application.

### 2. Labelling

The first two participants pointed out label errors on the screens. The confusion was whether "Laundry Status" meant the Laundry Basket or status of the Laundry in the Washer/Dryer. It was difficult to differentiate between the two due to no clear indication. The title for the pages was inconsistent to the participants and they faced issues while navigating the app to perform specific tasks.

We decided to replace this feature with a notification scheduling service. Instead of confusing the users with multiple pages displaying different status, the new feature allows users to schedule and receive notifications according to their preferences. This feature gives users the flexibility to opt for the notifications they like to receive for the specific items they wish to track. It can also send notifications to the user by checking the availability of washers or dryers in the range of time specified. This acts as an alert for the user instead of the user checking the status frequently.

### 3. Flexibility of use

During the usability test with our third participant, on getting a notification the user assumed that it was not necessary to open the app and go through additional interactions for transferring his laundry to the dryer which was not in line with the interaction we had planned.

We revised the interaction to an automated setup process with the ball detecting when it is in the washer or the dryer. The active balls will automatically show up on the app and the inactive balls won't. This reduces the user's task to only transferring clothes and the ball to the dryer. The purpose behind making this change was to reduce the number of additional interactions a user has to go through and ease the process. We also got rid of the original setup screen for starting the laundry process and the user is now taken directly to the laundry status screen.