Design Research Report

SALT - Sales And food Log Tracker

Team

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Problem & Solution Overview

Sam the server is frustrated. Twice this month he has been asked to come to work on his day off. Much like last time, Sam was given little notice by management. Every so often, the restaurant is hit with unexpected traffic. Management lets them know that there was a local event that's left lots of hungry customers at there door. Sam the server is proactive and frustrated, he combs through sales in the past two years and finds that the same event occurred last year around the same time.

Restaurants have to deal with varying amounts of customers and varying orders from customers on a daily basis. A restaurant's ability to adapt to the dynamic environment directly affects not only the revenue of the restaurant but also the amount of food wasted.

Computers, better than humans, are able to comb through large amounts of data. Using visualizations, they are able to simplify and inform users. Our proposed solution allows restaurants to track the food ordered by customers and the food ordered by the restaurant. Provided the data, our proposed solutions further helps our customers reflect on food waste and gain actionable insights. This data will be displayed on a monitor in a central location that facilitates collaboration and communication among the restaurant staff.

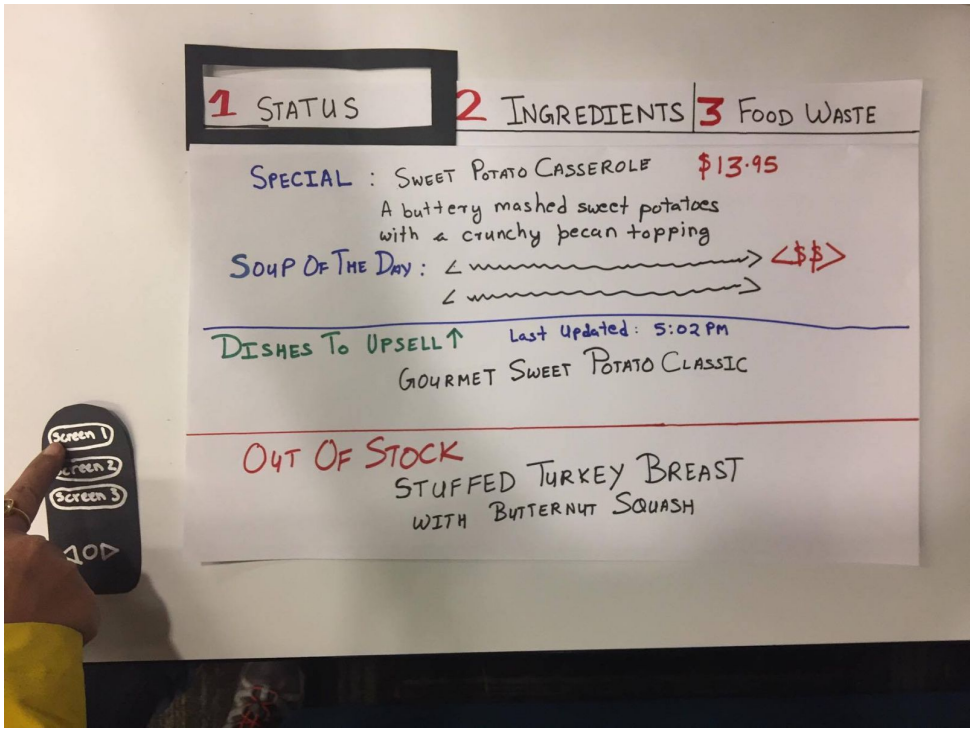
Initial Paper Prototype

Our design is a system for displaying critical information to restaurant staff. It tracks the amount of food ordered by the staff and the amount of food ordered by customers, and uses this data to estimate status of ingredients and food waste. It also provides information that servers need to know during their shifts, like the specials of the day. It will be displayed in a central location to encourage communication among the staff. We have included support for 3 primary tasks, because we found all 3 of these tasks to be very important to restaurant staff during our research.

Task 1: View the overall status

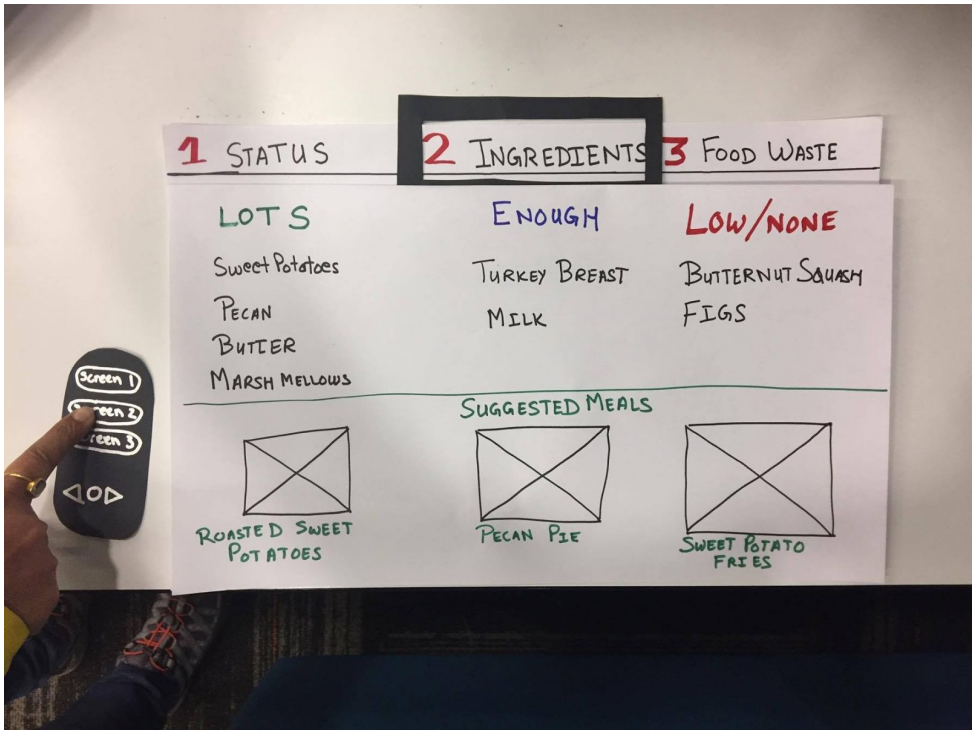
For chefs and managers, one thing they want to communicate properly to the servers is what need to be upsold and what dishes are out. Here on the monitor, people can view today's

special, what to upsell and what's out. Managers and chefs can constantly check the data shown here, and can change the data using the web app. Servers will be able to know they duties from this screen too.



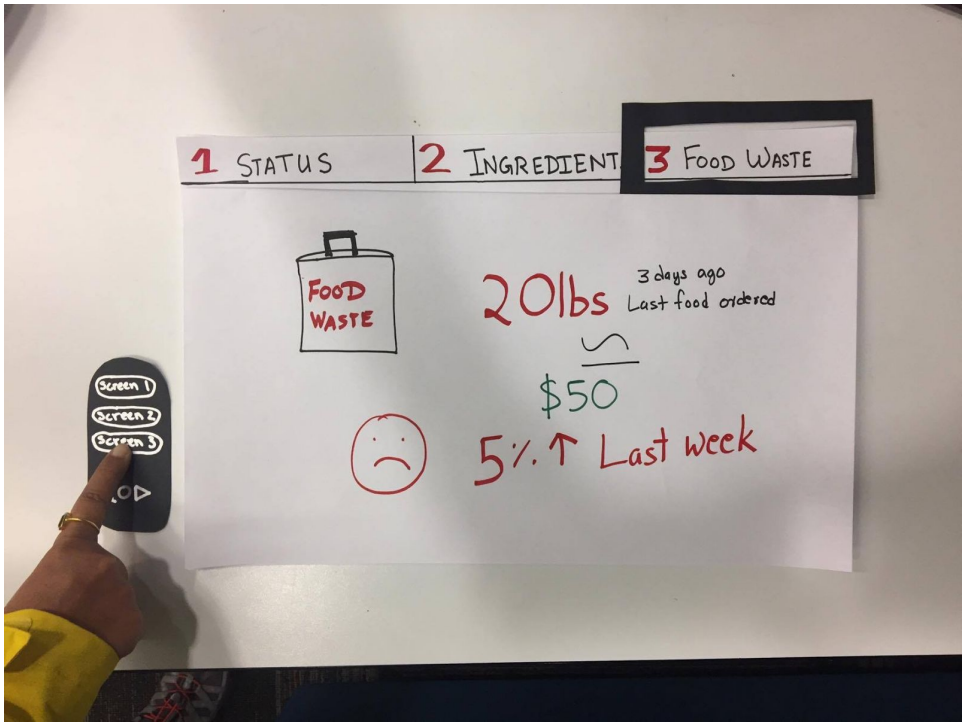
Task 2: View the ingredients status

The second task here is to see how much the ingredients are left in stock. On this screen, people can view 3 different categories: lots, enough and low/none. With the available ingredients, the system generates what dish is suggested to make.



Task 3: View the food waste statistics

On the third screen, people can view the food waste stat result. It shows how much is wasted, comparing to before and how much it was worth here.



Testing Process

Process Refinement

Our first two usability tests were heuristic evaluations. Following the heuristic evaluations, we adapted our testing by editing our prototype to fix common mistakes in usability as determined by heuristics. We caught 13 errors in our first paper prototype.

Following the first test, we adapted our prototype before the next usability test. We also determined that it'd be more effective to interview current employees rather than past employees due to our participant being forced to recall and generalize her past experience.

Following second test, we adapted our prototype before the next usability test. We added a task to be "suggest new daily special based on what excessive amount of food we have". We focused on presenting a real world scenario and not helping them complete it.

User Usability Test 1

We conducted our first usability test with a former server, Helena, from a local restaurant. We choose this participant because she has experience in ordering, bringing food and assisting chefs. We conducted the test in the kitchen area of her home. For this, our roles were: Abby – computer, Priyanka – facilitator, Michael – notetaker, and Meredith – notetaker. We began by providing a scenario to our participant: you just came in for your shift, and you are helping the chef out as usual.

User Usability Test 2

We conducted our second usability test with a server for Housing and Food Services at UW. We choose this participant because he worked on a live counter making pastas and also as a server, and therefore had experience both from a server and chef-type perspective. We held the test in the Research Commons, as we did not have access to the kitchen in which he worked. Our roles were: Abby – Computer and Facilitator, Priyanka – notetaker. Our scenario was that our participant had just come into his shift and was preparing to start work.

User Usability Test 3

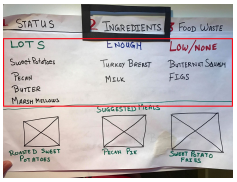
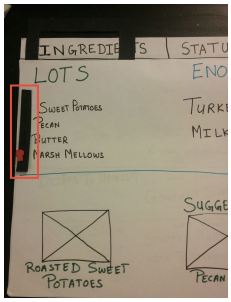
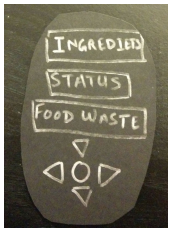
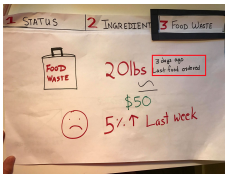
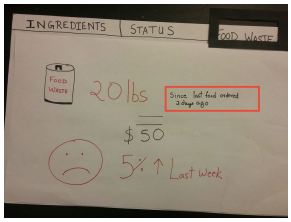
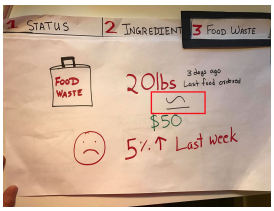
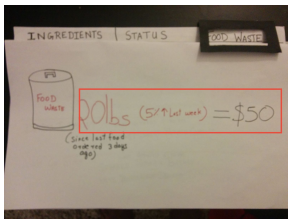
We conducted our third usability test with a server from a local restaurant. We choose this participant because he has experience in ordering, bringing food, and managing the kitchen. We had the test in Research Commons in a library. For this, our roles were: Abby – Facilitator, Priyanka – Computer, and Meredith – notetaker. We began by providing a scenario to our participant: you just came in for your shift, and you are helping the chef out.

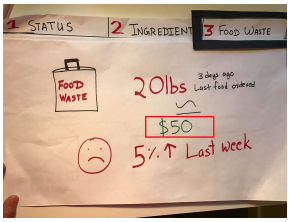
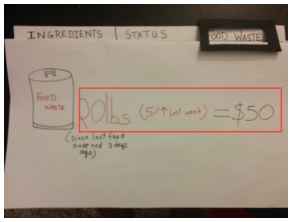
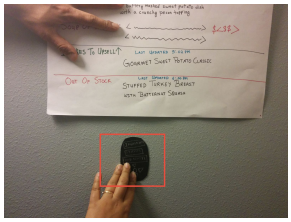
Testing Results

Overall the paper prototype helped us locate severe errors in usability. We were quickly able to go to our users and discover they were not able to complete tasks because we lacked a scroll bar or up / down arrows. We discovered that our interface for food waste was very confusing. We explored different forms for the remote control and tested.

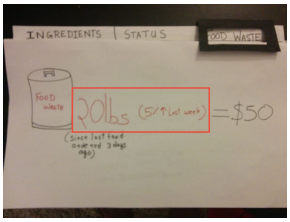
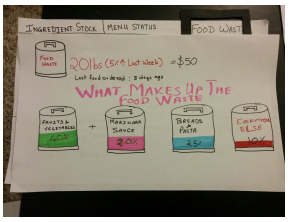
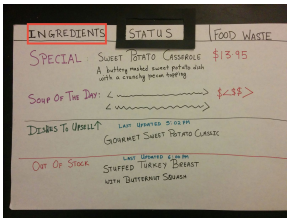
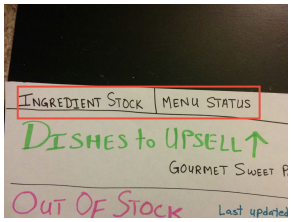
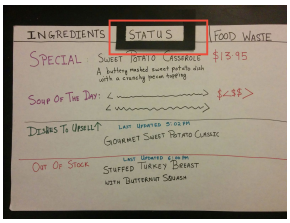
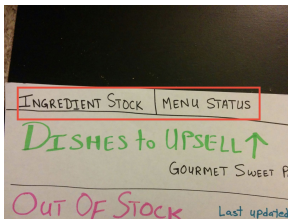
Due to the page constraint, we include the most severe changes from each usability test. Our appendix includes the rest of the issues we discovered.

Heuristic Evaluations / Design Critique / Usability Test 1 Revisions – Paper prototype version 1

Image	Issue with severity	Fix	Revised image
	There are a large number of ingredients in a kitchen. What if the list for them goes longer here. **S: 4**	Add a scroll bar	
	What if we have content that requires navigation within a page? **S:4**	Add a up and down arrow	
	The food waste screen is confusing- what does “3 days ago” mean? **S:4**	Reword text to “since last food order, 3 days ago.”	
	Decrease in food waste (5%) and dollar amount ($50) not clear as to what it means. **S: 3**	Put the 5% decrease immediately after the 20lbs in parenthesis so it is clear that it means a decrease in total poundage.	

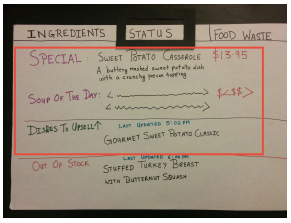
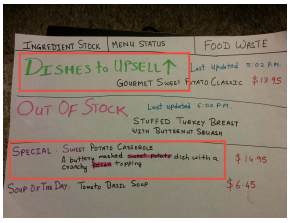
	Food waste color **S: 4**	Make the dollar amount red or black, not green.	
	The remote control could get lost or messy in the kitchen. **S:3**	Mount the remote control on the wall.	

Usability Test 2 Revisions – Paper prototype version 2

Before Image	Issue with severity	Fix	Revised image
	Food waste only tells an overall number- users can't get actionable info from it. **S:4**	Add some more information about which food group the waste is coming from.	
	"Ingredients" is not a good tab name- is confusing to server. **S:3**	Rename to "ingredient stock"	
	"Status" is a confusing tab name. **S:3**	Rename to "menu status"	

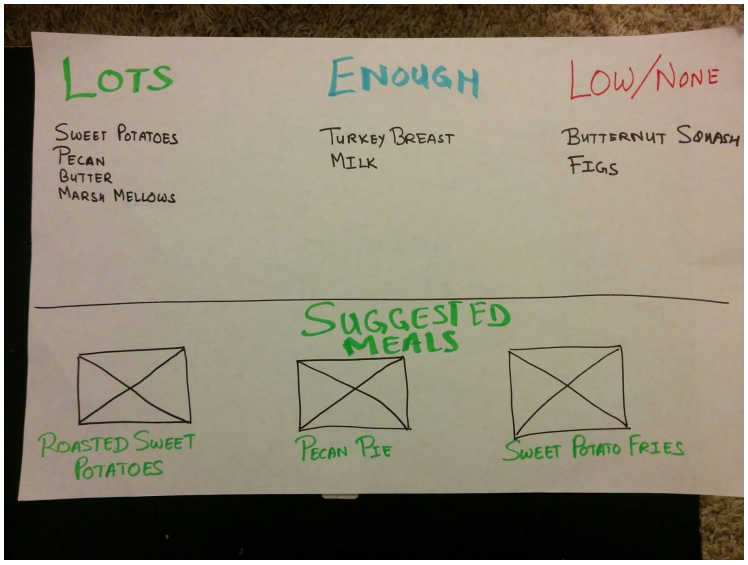
Usability Test 3 Revisions – Paper prototype version 3

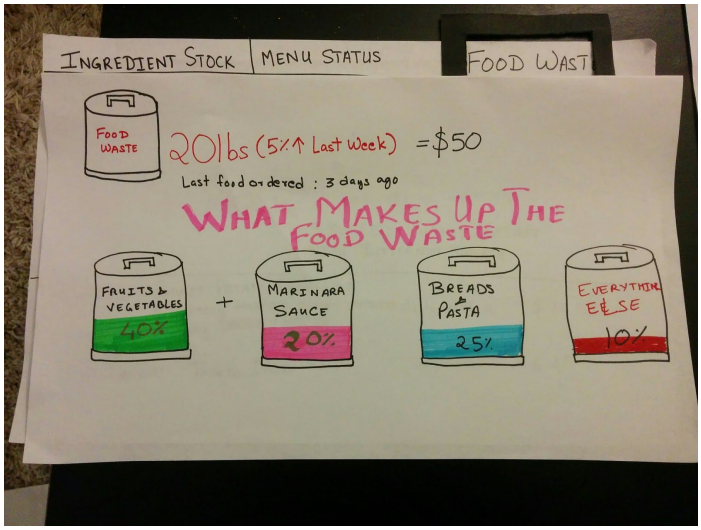
Before image	Issue with severity	Fix	Revised image

	Confused by “daily special” and “what to upsell”. **S:3**	We changed the sequence of the content and placed them apart.	

Final Paper Prototype

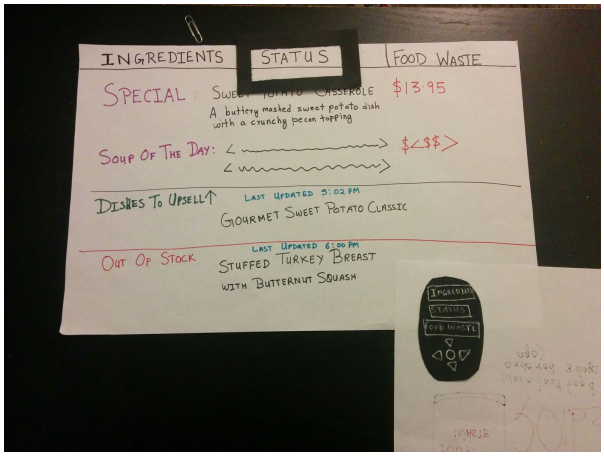
Our overall design- a centralized monitor that displays important data for restaurant staff- stayed the same throughout our iterations of the design. However we found that what we most needed to update was the organization and wording of information displayed. We also narrowed in on two tasks- discovering what to upsell and using the ingredient status to introduce a new menu item. The critical aspects of our design are clear and concise presentation of accurate data and displaying this data in a centralized way that facilitates communication and allows the restaurant staff to easily access the information they need.





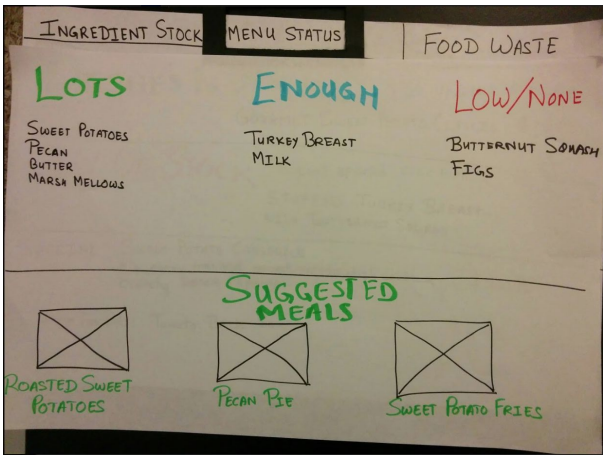
Task 1: Discovering what to upsell

The major task here is to find out what to upsell. We often add sub tasks, such as find out how much ingredients we have left in pantry. Participant can complete the task by simply navigating through the system.

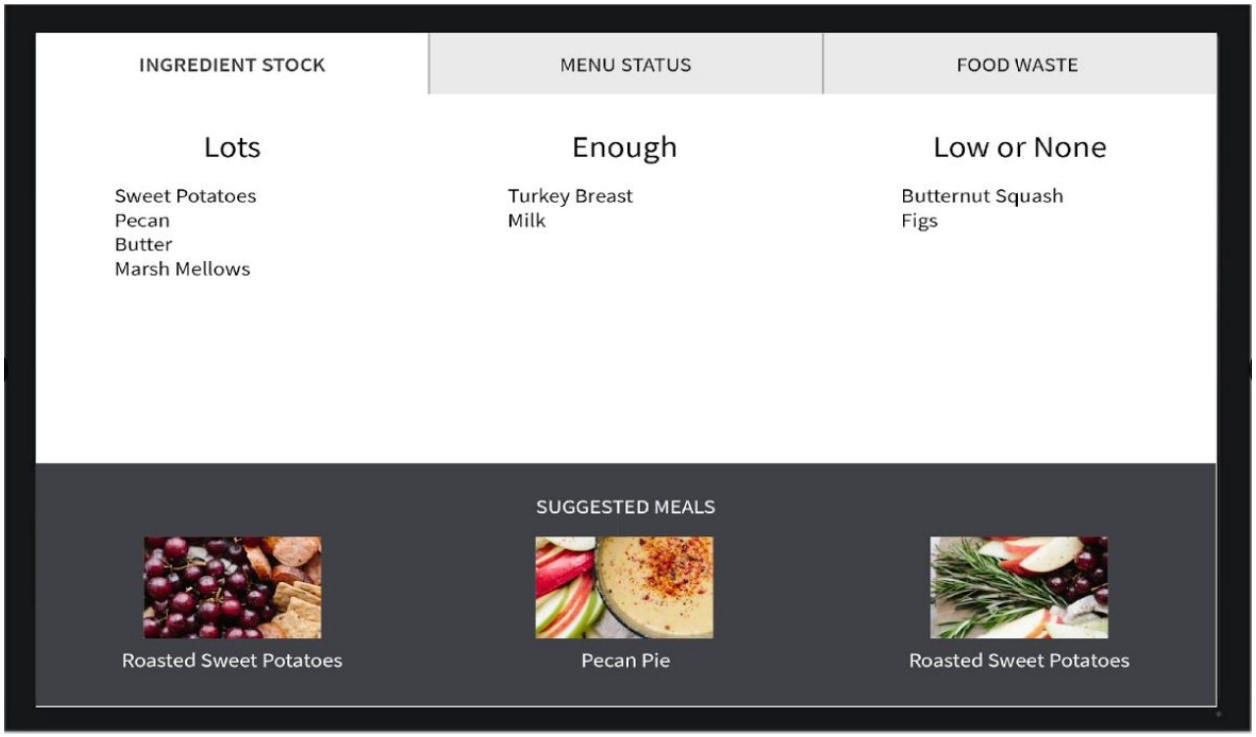


Task 2: View the ingredient status and introduce a new menu item
The second task here is to see how much the ingredients are left in stock. On this screen, people can view 3 different categories: lots, enough and low/none. With the available ingredients, the system generates what dish is suggested to make. Participant can complete the task by simply navigating through the system as well.

The participants then inspect the suggested meals along with ingredients to brainstorm new specials.

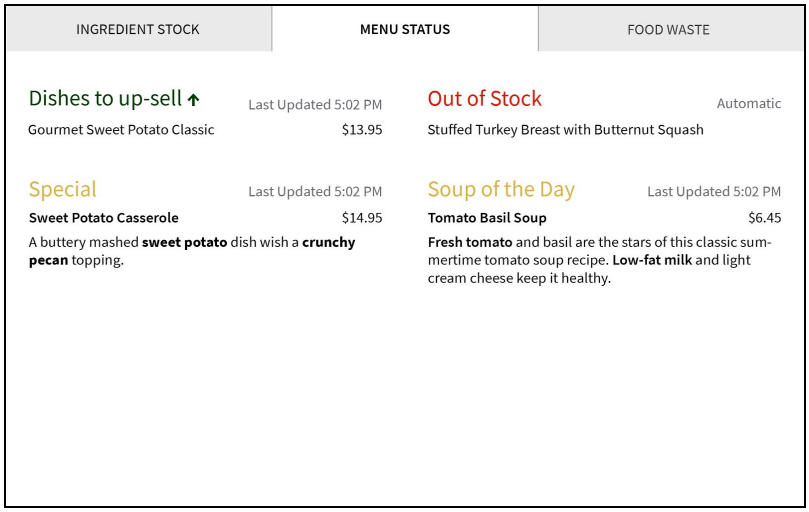


Digital Mockup



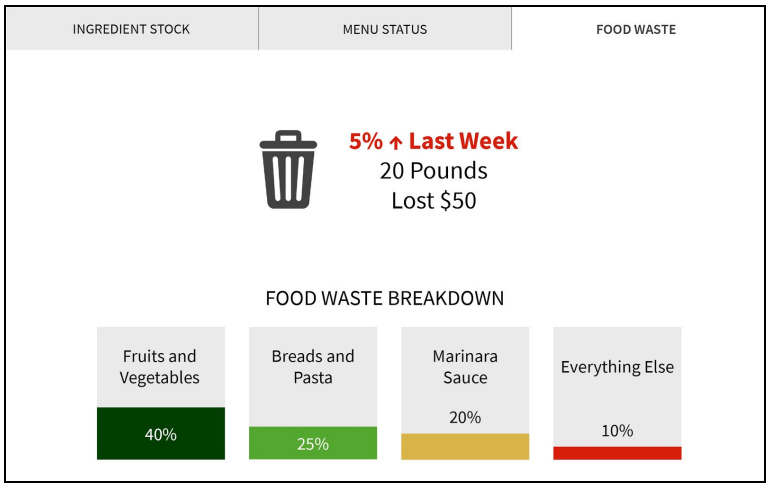
With this screen, the chef can complete his or her primary task of inspecting the pantry and introducing new menu items. The chef can accomplish his task of introducing new menu items based on the ingredient stock by viewing one static screen. The ingredients are automatically updated as receipts are printed. The ingredients that are most in danger of getting wasted or running out are sorted to the top.

Most new menu items introduced by the chef as specials or updates to the menu, have been on the menu in the past; therefore, the screen also suggests meals that the chef has introduced in the past that best remedy the ingredient situation.



With this screen, we tackle the primary task of helping servers upsell. Servers are in a rush throughout their shift. This screen can quickly help the server learn about menu items to upsell.

We know from servers that typically the task includes emphasizing certain aspects of the dish; therefore, we allow the manager to bold words in the description.



Moving from a paper prototype to digital, we needed to align and finalize the look; therefore, we focused on following a grid pattern an appropriately centering elements. The ingredient stock page before was unclear and hard to follow. In digital format, we were able to use a two column layout and alignments to organize the all the elements. Smaller changes include addressing feedback on titles like “what makes up the food waste” to “food waste breakdown”.

In response to critique, we added borders to our digital prototype to indicate the edge. We also inspected the size of the text to ensure that it’d be appropriate for our environment on a tv screen.

Discussion

Now looking bad and reflecting on the project and results, I think our prototype has changed a lot from the very first paper sketch to the final digital mockups. Every iteration we did made the prototype better, and each design critique we received in section and each user feedback we got from usability testing has contributed to the final product.

In class section, we really appreciate the TAs and classmates in other teams listening us walking through our design process. We normally walk through the scenario, and design goal and problem we are trying to solve, and then walk through the prototype, incorporating the product into the scenario, or story, we just presented. Other teams have been giving us a lot of really valuable feedbacks and critiques, which shaped the design into a better form.

We received a lot of great feedbacks from TAs as well, both in class section and also in assignment comments. For example, we received feedback that the font and size might look great on our laptop, but might not be as proper in the platform we are designing -- monitor in kitchen. So we iterate on that and made the digital screen having bigger font than paper prototype ones.

There many steps in the process that shaped our final design. Basically, we started on user research to understand the scenario, situation and what problems our target users were trying to

solve. In the research process, we formed basic understanding of how the design environment is like, and why our target users need our problem to solve the problems that they are currently having. After research, we also did a bunch of ideation. We know great design comes from brute force. If we have literally tried every single option, we have came across the best solution. We evaluated the tradeoffs of each design solutions from ideation and brainstorm, and we moved forward with the most promising one. We then started paper prototypes, usability testing, got feedbacks from design peers, from TAs and from actual users. We iterated based on the feedbacks we received, and then finally reached to where we are right now.

In usability testing process, we changed our tasks based on the design iterations. Initially, we wanted users to be able to find where the food waste information is in our system. Throughout the process, we realized that not only did our users want to know how much food waste they produce, they also want to know what the food waste is. So throughout the process, we added task for users to be able to identify what food waste is constituted with, instead of just simply how much they have.

We can probably have better result if we have done even more iterations. However, due to resources and time constraint, I think we are now at a good point to stop. If we do have the resources, we would probably code the product out and try to test it in real kitchen with real staff, and we can conduct contextual inquiry then.

Appendix

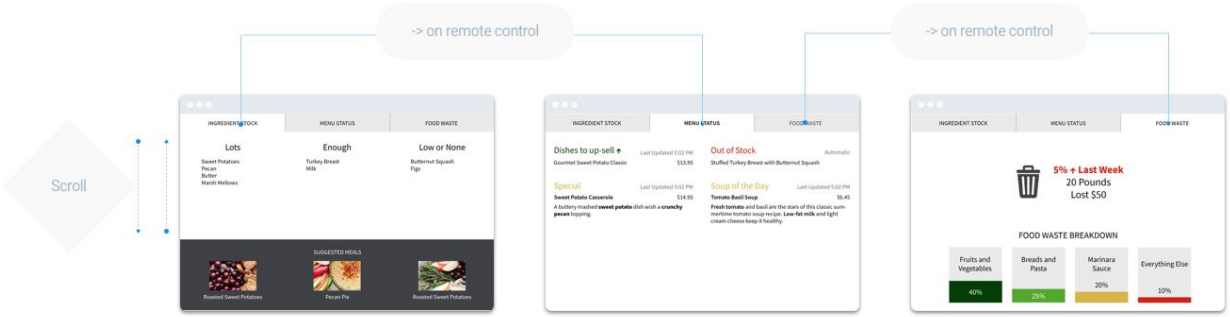
Usability test instruction and script

We normally present a scenario to the participant first, such as walking her through the story of a server coming in for her shift and do her job and help the chef, etc.

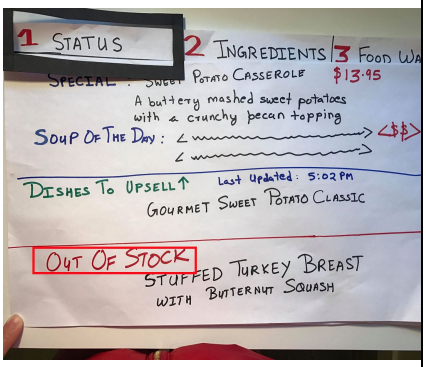
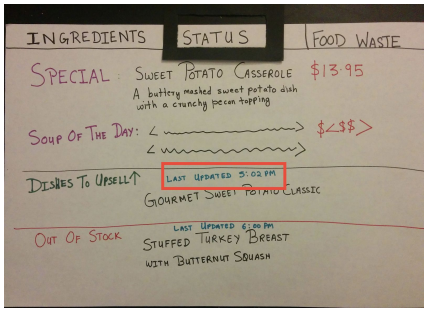
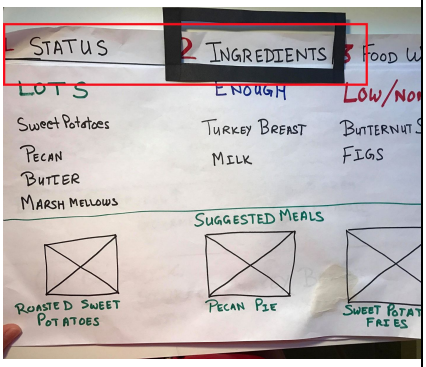
We also ask the participant with the following tasks:

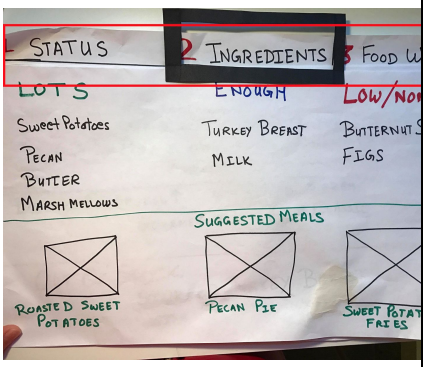
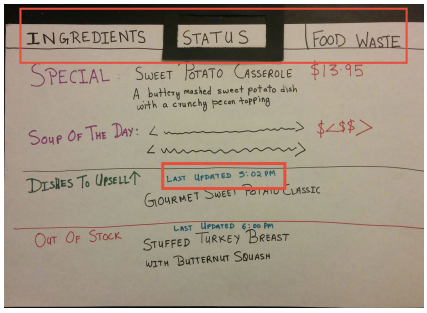
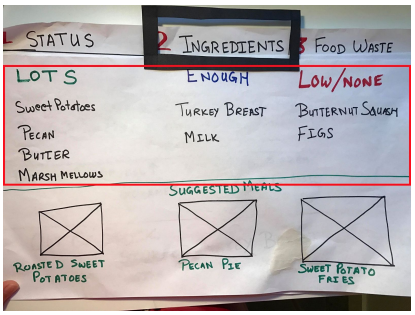
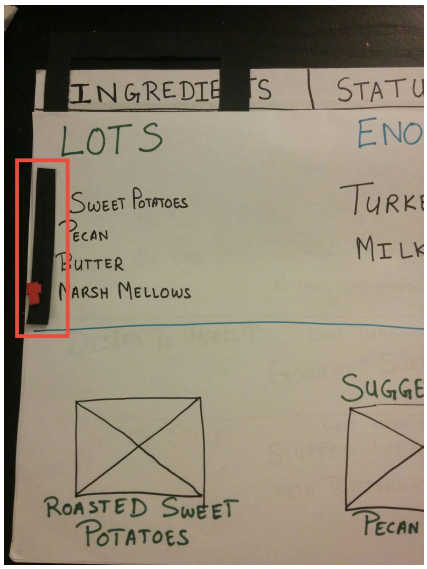
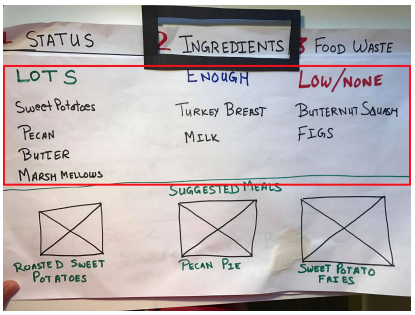
- Help the head chef prepare a meal.
- Find out what to upsell as a server.
- Find out food waste, as if you were the manager.

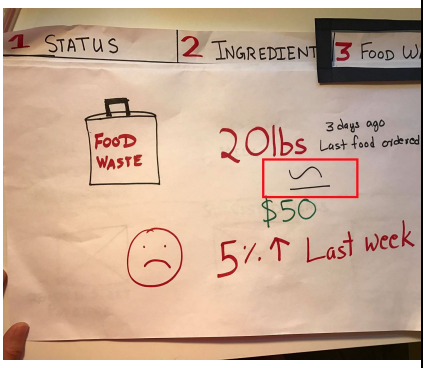
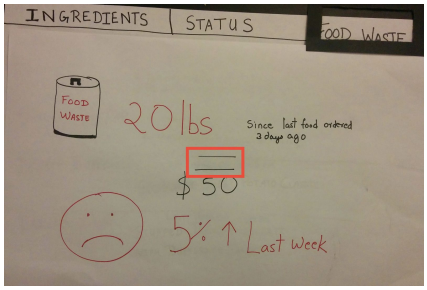
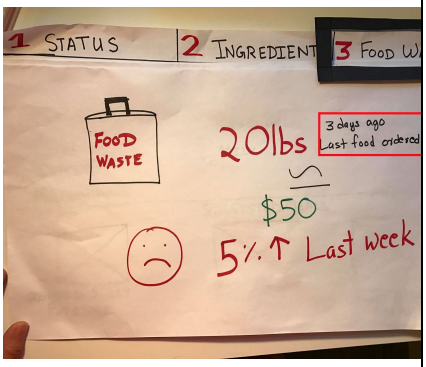
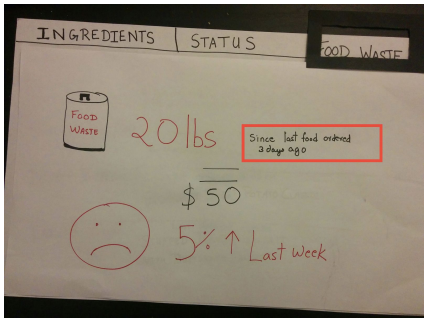
We don’t have strictly designed script, but we jump in when participants need our help.

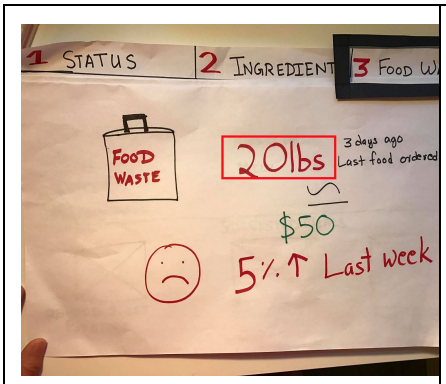
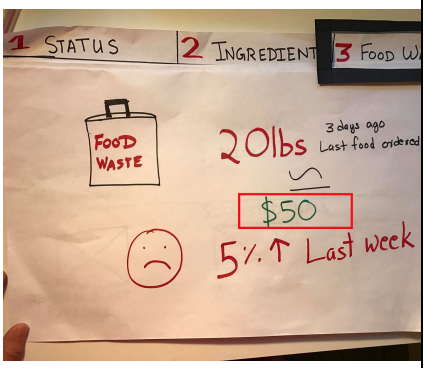
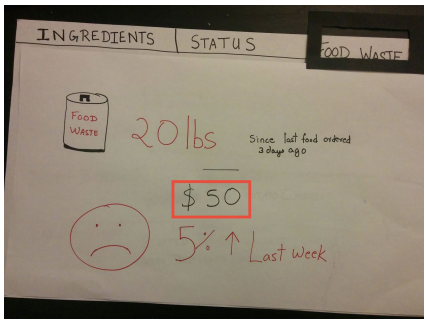
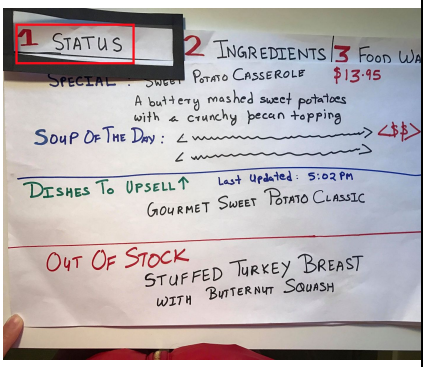


Critical incidents

Image	Issue with severity	Fix	Category	Revised image
	Servers can't tell when the out of stock informati on was last updated. **S: 2**	Add last updated box in Out of Stock Section	Match between system and the real world, Consistenc y and standard.	
	Ingredie nts might be before status because of following cause and effect.	Swap ingredien ts and status because that should be the first thing chef wanted to see.	Match between system and the real world	

	S: 0			
	Numbering implies an order, that isn't necessarily there. **S: 2**	Remove numbering of tabs.	Consistency and standards.	
	There are a large number of ingredients in a kitchen. What if the list for them goes longer here. **S: 4**	Add a scroll bar	Visibility of system status, Match between system and the real world	
	The labels 'LOTS', 'ENOUGH', and 'Low/None'. Do you need all three or should	This is to be determined by the customer from usability tests.	Match between system and the real world, Consistency and standards	

	you focus more on one or two of them. **S:0**			
	The symbol between 20 lbs and 50$ is a bit confusing. **S:2**		Consistency and Standards	
	3 days ago is confusing. Maybe flipping the two lines: last food ordered 3 days ago, or adding a “since”. **S:2**		Consistency and Standards	

	The users need more informati on on what food is wasted **S:0**		Not a heuristic, this is asking for a feature. Consider removing.	
	Because $50 is green, it looks like it's how much you saved. You should change it to red or somethin g else. **S:2**		Consistenc y and Standards	
	Changin g "status" wording to somethin g like "menu" or "highligh ts"? **S:0**	This is to be determin ed by the customer from usability tests. Both seem appropria te.	Consistenc y and standards.	

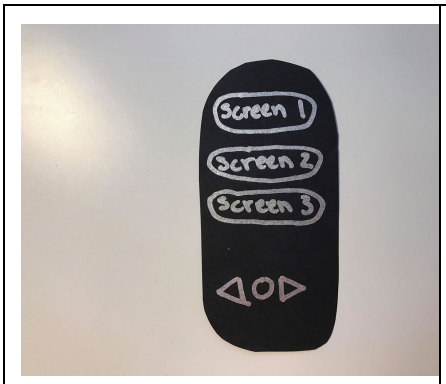
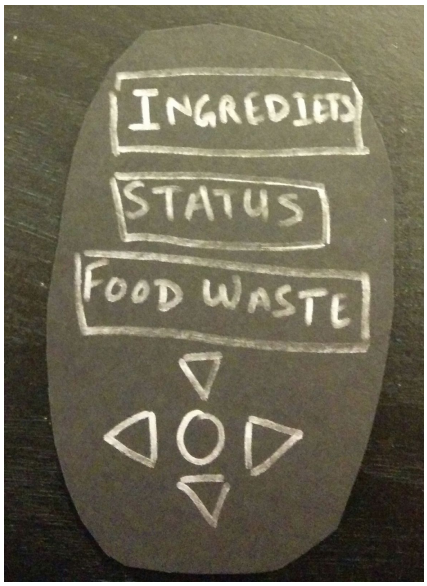
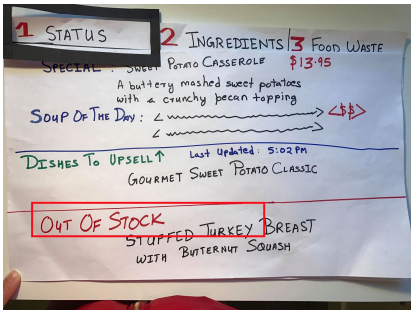
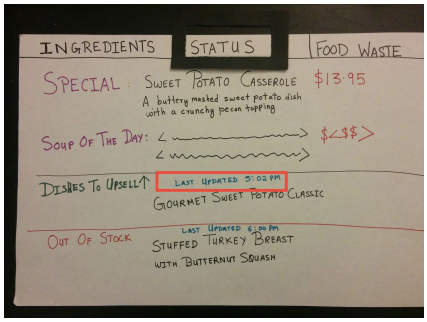
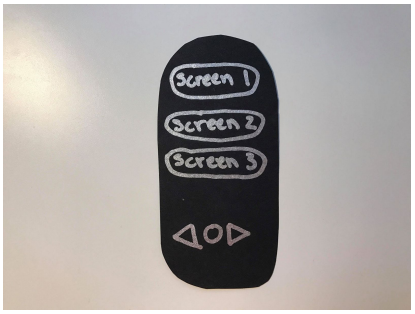
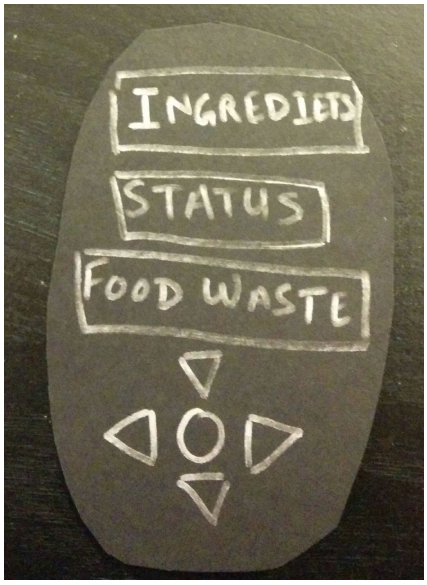
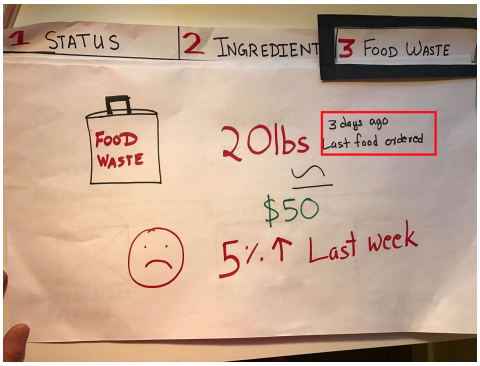
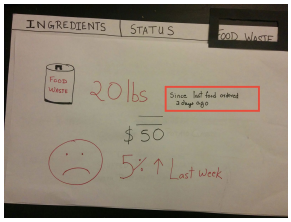
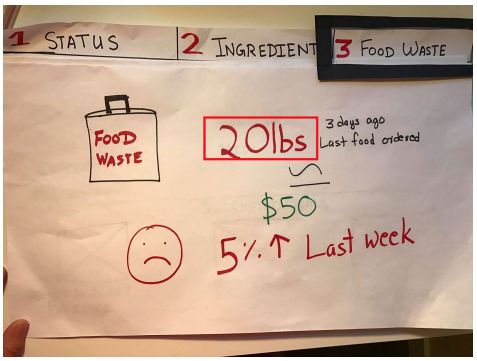
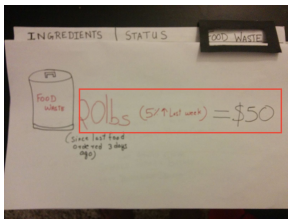
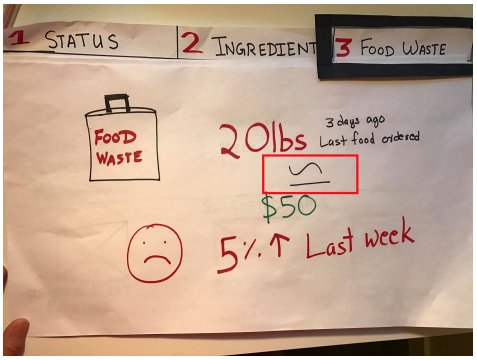
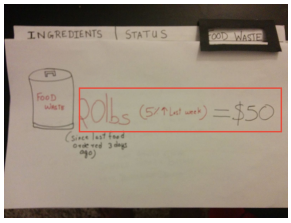
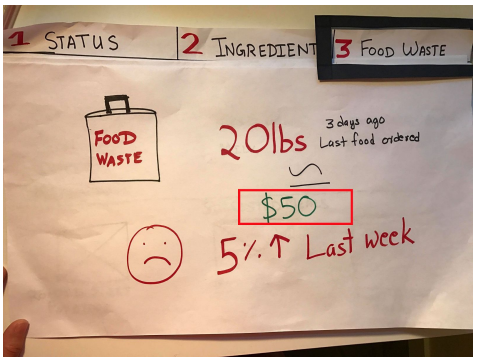
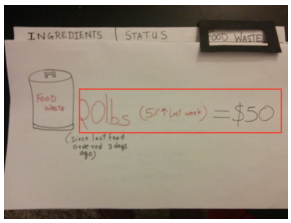
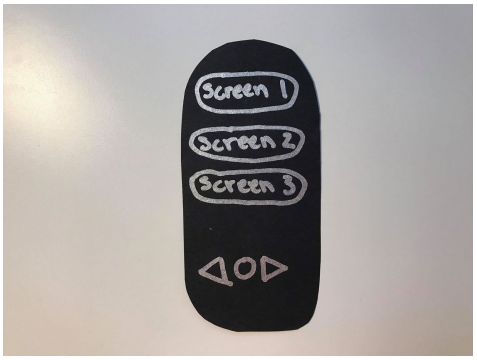
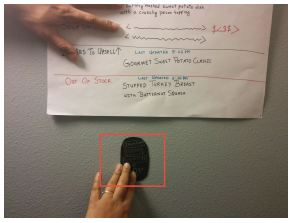
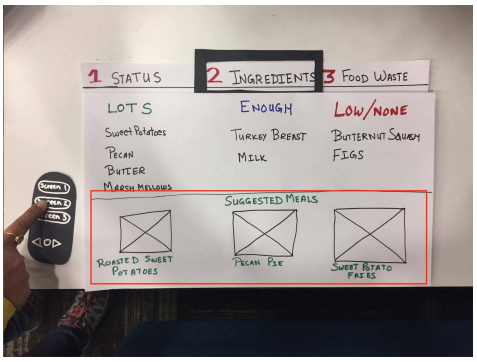
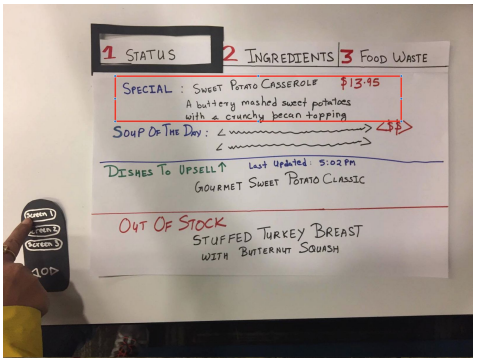
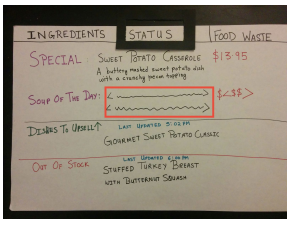
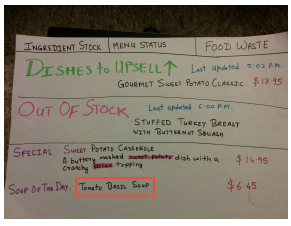
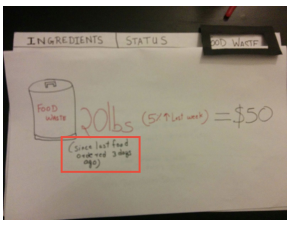
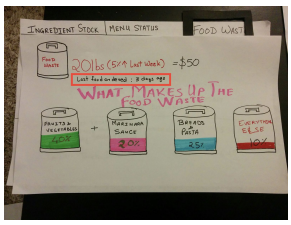
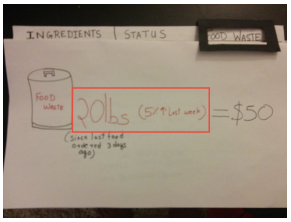
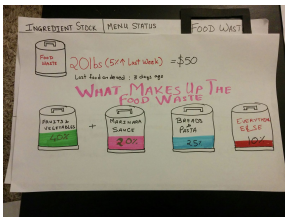
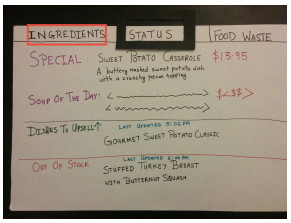
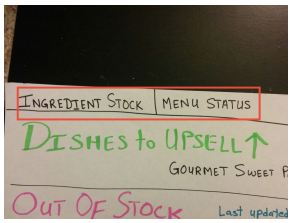
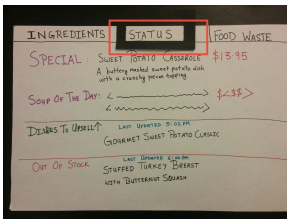
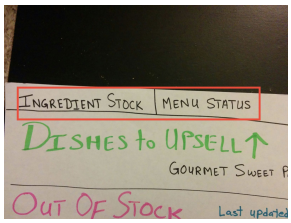
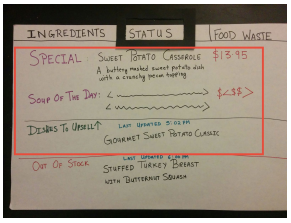
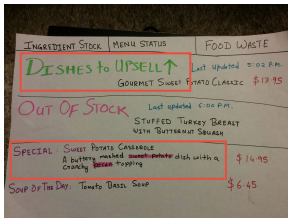
	We don't need screen 1, 2, 3 and also "arrow left" and "right". Also, delete the round button. We don't need it. **S:1**		Aesthetic and minimalist design.	
	Why isn't there a last updated time for the Out of Stock section. **S:2**		Consistency and standards	
	What if we have content that requires navigation within a page? **S:4**		Consistency and standards.	

Image	Incident with Severity	Fix	Revised Image
	The food waste screen is confusing- what does “3 days ago” mean? S:4	Reword text to “since last food order, 3 days ago.”	
	Is 20 lbs $50? S: 2	Put $50 on the same line as the 20 lbs and change it to an equals sign.	
	Decrease in food waste (5%) and dollar amount ($50) not clear as to what it means. S: 3	Put the 5% decrease immediately after the 20lbs in parenthesis so it is clear that it means a decrease in total poundage.	
	Food waste color S: 4	Make the dollar amount red or black, not green.	

	The remote control could get lost or messy in the kitchen. S:3	Mount the remote control on the wall.	
	The suggested meals fit well with the task of preparing the menu using ingredients.		
	The special had enough details to upsell to a customer.		

Before Image	Issue with severity	Fix	Revised image
	Squiggly lines for soup of the day looks like there is no soup of the day. S:1	Replace with actual words.	

	Label for food waste “since last ordered 3 days ago” is confusing. S:2	Reword to just include time span	
	Food waste only tells an overall number- users can’t get actionable info from it. S:4	Add some more information about which food group the waste is coming from.	
	“Ingredients” is not a good tab name- is confusing to server. S:3	Rename to “ingredient stock”	
	“Status” is a confusing tab name. S:3	Rename to “menu status”	
	Ingredients should be included for specials, in case customers have allergies. S:0	N/A	N/A

Before image	Issue with severity	Fix	Revised image
	Confused by “daily special” and “what to upsell”. S:3	We changed the sequence of the content and placed them apart.	

	Uncomfortable with 3 buttons, which lead to three screens, on the remote control S:2	We removed the three buttons and decided to stick with the arrow buttons as they are enough for navigation. Having names for each screen button would also restrict the remote for customizations