

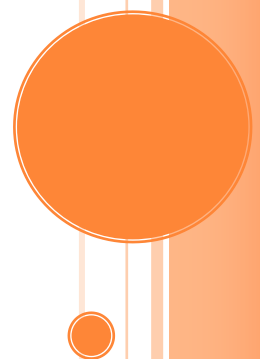
# FOODEALIZE

*Milestone 6 activity, part of User Experience (UX)  
Research and Design Micromaster by University of  
Michigan and edX, section UX509x*

User Test and Final Report

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# INTRODUCTION

## PROJECT BRIEF

In a world afflicted by famine, poverty and inefficiencies, half of the total available food [1] is (especially in the western world) wasted due to a thought totally conformed to aesthetic standards before of quality (for what concerns the buyers), and to economic pressures on the market (for what concerns the goods exchange and globalisation). This can lead to catastrophic consequences on the social (scuffles), environmental (land consumption, water shortage) and, in the end, on geopolitical equilibrium.

The main question is: can a software improve the quality and quantity of food consumption in a modern social way?

The system is called “Foodealize”, resembling the union of the words “Food” and “Realize” or “Idealize” (letting the users imaging which fits more to them).

Foodealize is a platform born by taking into account all the issues arisen by the users that are concerned about the lack of long-term vision about food redistribution over the population; in particular, wants to provide its users a useful set of tools that can help them to accomplish their needs of eating (if they act as “consumers”) and their willing to share (whether they act as “producers”), keeping always an eye to the possibility to make business.

As this system will run under the form of mobile application, it will give to the users the possibility to get the advantage of the built-in device sensors (like GPS), as well as the connectivity capabilities that pervade our lives in the last decade.

Last but not least, a robust centralized infrastructure will be “behind the scenes” to guarantee a proper service to the users: in fact, a client-server architecture is the only one that can provide the data durability and the coordination of the activities between the application installed on multiple devices.

## TARGET USERS

This application can be part of everyday life of who simply is against any form of food wasting, including

- People who have fresh food leftovers from the night-before party
- People who have food that is going to expire soon but that they don't have the willing/possibility to consume it in time
- Farmers whose vegetables/fruits soon will be destroyed because unsold or because of international importing regulations that make the selling on the traditional channels not convenient.
- People who have difficulties to spend money on food or simply want to make some economics.

## APPLICATION DESIGN AT A HIGH LEVEL

The application gives the user the possibility to meet their needs in terms of supply and demand for food.

Although there are no levels of separation between the types of account, on an abstract level, the users can be categorised in two groups: the *givers* and the *receivers*.

### The givers

- Can add a new meal to be shared on the other users' feed.
- Can accept a request of booking by a receiver
- Can share part or all of their earnings to an NGO.

### The receivers

- Can book a meal seen on their feed

### Common functions

- Can use the instant messaging function to organise the delivery
- Since Foodealize wants to connect people more on more using group activities as a pivot for sharing food, experience and knowledge, the possibility to add a link to an event (on Facebook) is added.

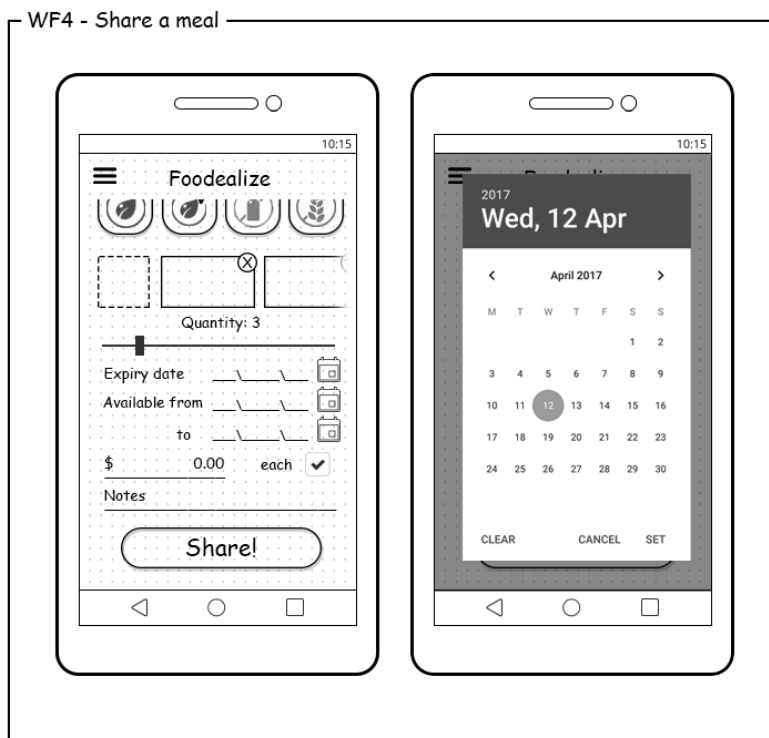
## DESIGN PROCESS

### ACTIVITIES PERFORMED AND RESEARCH METHODS

The very first activity performed had been starting with the core idea of what the application would be and getting some people related to the field of interest involved. With simple interviews, become more and more evident how a straight way to share and require leftover with ease, even for people of a certain age, would be the main factor of the application.

By analysing the results of the preliminary interviews, the key flow of the application functions had been structured, so the design started having in mind the target population which have a higher probability to have a smartphone instead of a tablet. So, the first ideas regarding the layout of the system were based on this type of device.

At first, a rough prototype born using the basic directives from the preliminary interview summaries:



**Figure 1 - The "Share a meal" initial paper prototype**

The second step involved giving to the testing group the paper prototype to begin the process of evaluation simply by emulating the function and the transactions throughout the screens of the application.

How to extract every relevant detail from the interview?

This was done using recording instruments:

- a smartphone which could get both the movements of the hand of the interviewees and their voice expressions
- logging sheet that helps the designer to take notes about the behaviour of the users

Although it could seem redundant having two kinds of mean, it should be clear that the impact of notes taken in real time is different than the audio/video recording: the former is useful for the debriefing interview (asking more question about certain action at the end of interview) while the latter for a more thoughtful analysis.

The analysis of the data got by the interviews lead to a general satisfaction of the User Experience, although some elements in the layout were not considered to be well-placed.

Using the results of the interviews a new set of screens were built, with the aid of a computer graphics software.

**Figure 2 - "Share a meal" mid-fi prototype**

Since the UX process is meant to be cyclic, a second round has been done asking another group of five people, with different age and from different social backgrounds, to test the application using this time a pseudo-interactive prototyping platform (inVision) in conjunction with the new screens (mid-fi prototype).

Thanks to inVision, the participants were able to play throughout the flow of the application without been distracted by everything a paper prototype involves (wrong positioning, manual browsing etc), therefore a screen capture software has been chosen as a valid alternative to a smartphone to record the pointer movements on the PC screen.

The results of the tests helped the designer to improve even more the usability of the app, having also the possibility to manipulate colours and some icons, besides the conventional small issues concerning the layout.

## USER NEEDS ANALYSIS

Preliminary interviews have shown that the food waste issue is felt like a great problem for modern society but often at a governance level, no (or almost any) concrete initiatives are taken to help the citizens to help and be helped in this aspect.

Mostly, when people (privates) decide to share a meal or a product they want to get rid of, share it on their Facebook feed or on a Facebook group, which can be a good mean but not perfect for reaching a great part of the potential requester. This is because the Facebook feed is by default visible to friends only while groups can be many and some of them not visible to a standard FB member.

For what concerns little food shops (butcherries, dairies, delicatessens etc.), their technique is purely based on "word of mouth", which can seem not very effective; but it is considered by the owners "enough" because it is felt like the easiest way to them to leave leftovers to

others without losing time in management activities, keeping always in mind that some owners don't pretend any charge for their "end-day" food.

Then, the very first question becomes how to use modern technologies to improve the possibilities to share products, following three main needs:

- Having the possibility to share untouched quality food that could be wasted
- Having the possibility to gain some money by selling unsold food in a shop.
- Having the possibility to give food for the ones that can't buy any.

but without using the digital mean as a "default" way to proceed just because of a trend, but, having in mind the goal to optimize the procedures instead of making them harsher.

A centralized approach can be followed using an ad-hoc application available to everyone's smart device that displays all the meals available in a particular area, keeping an eye on the type of food the user is searching for.

A particular requirement spotted for the general accessibility of the application, is maintaining the interface elements big enough to be used by, for example, elders, balancing it with the quantity of information needed to be displayed on the screen; in fact is not as well considered a good practice a view that needs to be scrolled a lot to show all the elements it is composed of.

Under a legal aspect, the system architecture should guarantee effective compliance with GDPR normative (the most advanced and restrictive series of norms for personal data storage and processing till 2018), including transparency of the data treated.

Personas and scenarios (see Appendix B), are fundamental tools to visualize in a qualitative way possible "real" application just thinking about several actions a user can make.

## COMPETITIVE ANALYSIS

Since there are already a series of similar apps on the traditional Android and iOS delivery channels, a Competitive Analysis has been made to search for many more details Foodealize can provide to improve the overall experience in this field (see Appendix C).

### SELECTION CRITERIA FOR "COMPETITORS"

- **Same targets** - Competitors that participate in one or more of the current or envisioned target, for example, food for everyone or food for organizations
- **Service strategy similarity** – Apps that offer a similar portfolio of functions and services
- **Comparable business processes** – Apps that appear to have comparable underlying business processes for what concerns programs of "rewarding"
- **Relevant intellectual property** - Competitors who have intellectual property that could be used to limit the market opportunities
- **Interface similarity** - Apps who appear on the surface to have a similar kind of style and interface interaction

- **Participates in relevant partnerships** - Apps who are actively participating in relevant Non-profit Organization Programs

## BEST PRACTICES AND OPPORTUNITIES FOR DIFFERENTIATION.

- The graphical design of the other product is not captivating enough, nor is well thought to run on a bigger screen (such as Galaxy Tab A). So, first of all, a study regarding the geometric disposition of the element and colour palette has been done. As well as the Foodealize app layout should try to get the maximum benefit from larger screens as well.
- Olio was the only application that contained a lot of resources shared, that's because it embedded an ad hoc community with a storyboard (just like Facebook) that helps people from the same area to connect.
- Food4All is the less transparent application: at the beginning requires the access to the most sensitive phone feature (contacts, messages, phone calls, camera etc) at the beginning without mention how they will be used, moreover there isn't a tutorial for the functions; moreover, it requires a phone number to subscribe (just like WhatsApp) – very uncomfortable. At the opposite, Olio turned out to be very clear about the possibilities with a good starting-point tutorial.
- Olio and YourLocal don't have an icon for vegetarian/vegan or anything like that type of meal, while Food4All has.
- No one has any possibility to share the earnings with an external organization. Food4All has a "food bank" that is not very clear what is about.
- Only Food4All gives the possibility to gain money from the leftovers.

## SPECIFICATIONS AND DESIGN GOALS

This study wants to find out how much good is the idea to implement in a unique system all the functionalities that lack in the single similar yet available applications and if the new contrived function to be implemented, can give a further boost for what concerns the linking between social technologies and solving of the food scarcity.

Foodealize is a chance to make the sharing of food capillary and easy, but it requires the developing of a system based on the union of multiple layers.

### GRAPHICS LAYERS

- The interface should be captivating enough to be used with pleasure.
- The interface should contain special characteristic of font and element size, in order to be accessible by everyone.
- The interface must respect as much as possible the Heuristic Design Rules by Nielsen, focusing mainly on the ease of use.
- The interface must be set with a non-blocking paradigm, loading it in a separate thread.

### FRONTEND FUNCTIONALITY LAYER

- Authorization of the following functionalities as minimum working requisites: *position, internet.*



- Implementation of RESTful communication for the client-server data exchange.

#### BACKEND LAYER

- Guarantee QoS for what concern data *availability*.
- Security authentication through HMAC-SHA256 encryption method.

#### MARKETING LAYER

- Find an effective way to advertise the app on the internet (blog, app store) to help the spreading of the application. This is an avoidable step because, like in a social network, the more the application is used, the more it will be used by new members since a lot of traffic is expected to be generated by the requesting.

#### BUSINESS LAYER

- Activating partnerships with NGOs which desire to participate in the program of rewarding.
- Inform the users about the possibility to earn money using the leftover selling system in conjunction with the local laws related to the location the app is distributed.

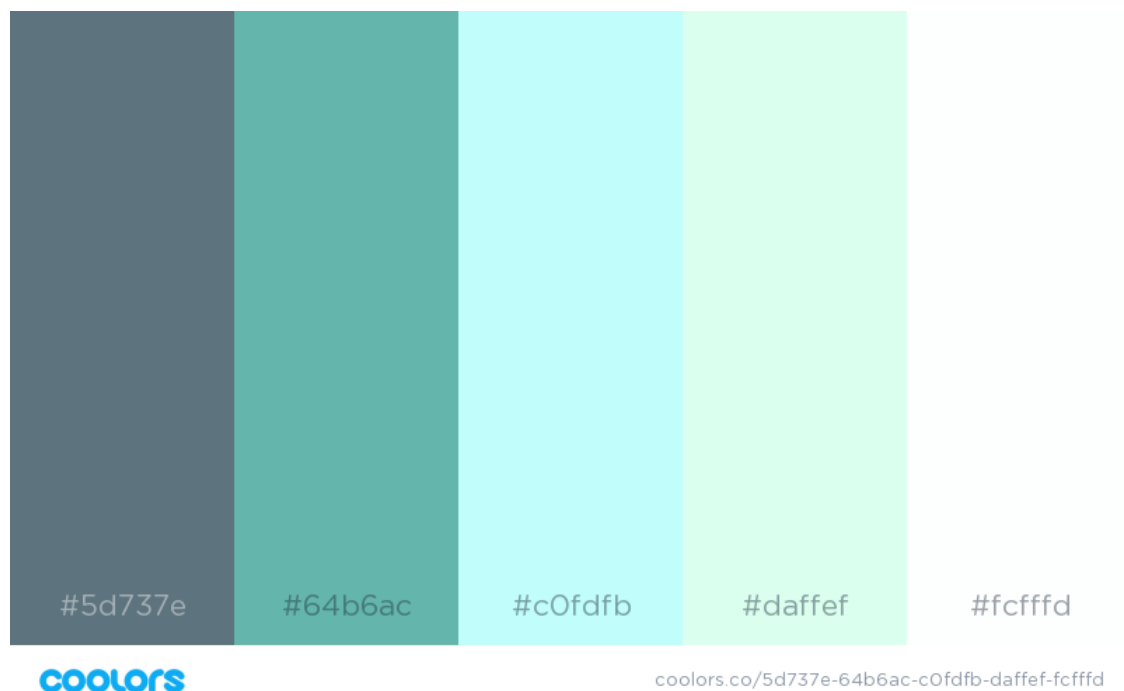
# PROTOTYPE

## KEY TASK OF THIS DESIGN

1. **Sign-up and login** – being able to Sign-up and Login to Foodealize
2. **Share a meal** – being able to share a new meal for the community
3. **Book** – being able to book a meal chosen from the app feed
4. **Accept a meal request donate** – being able to donate part of the earnings to an NGO after approving a request
5. **My request** – being able to manage the request of meals done by the current user

## DESIGN OUTLINE

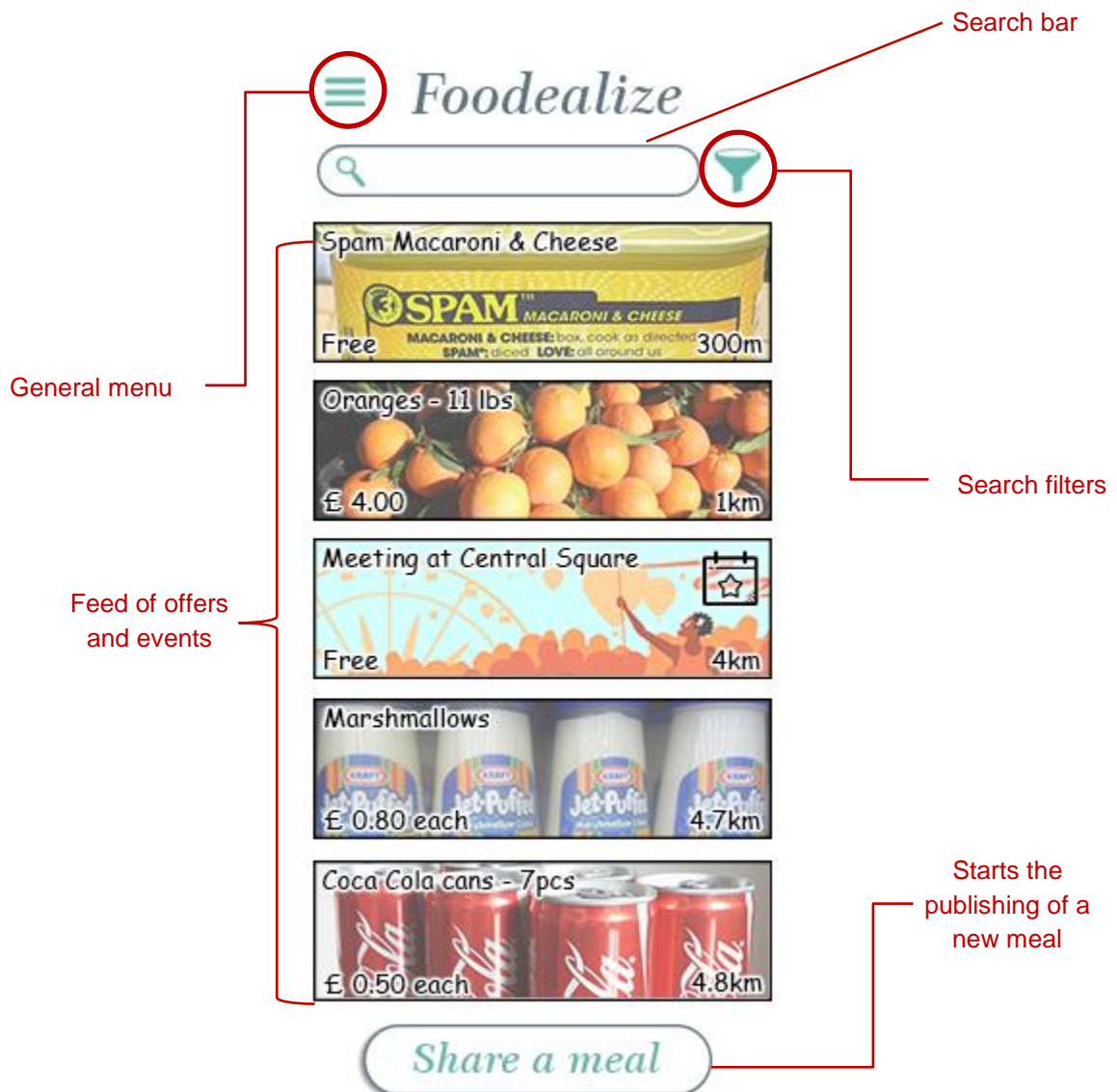
### COLOUR PALETTE



### FONTS

- Arial mainly for dialogs and section in which legibility must be guaranteed.
- Century751 which gives to the interface a “classy” look and feel.

## HOME PAGE ARCHITECTURE (for smartphones)



## GENERAL LAYOUT ARCHITECTURE (for smartphones)

Back button

Current position in the application

Form/information section



Function button


# Foodealize


## Share a meal


Title  
*Tuna gluten-free hamburgers*

Address  
*Baker Street 41, London, UK*

Expiry date:  \  \  

Available from *12 Sept 2018*   
*11:40 am*





to *12 Sept 2018*   
*08:20 pm*

Notes  
*High quality ingredients*

Quantity:

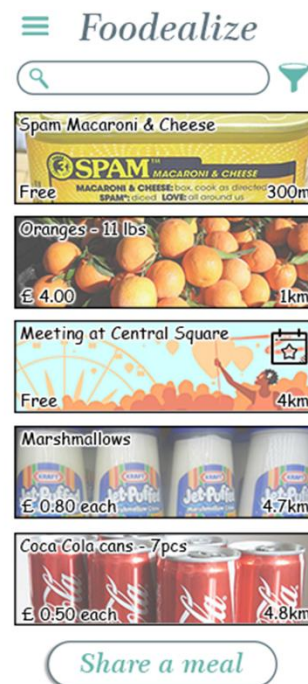
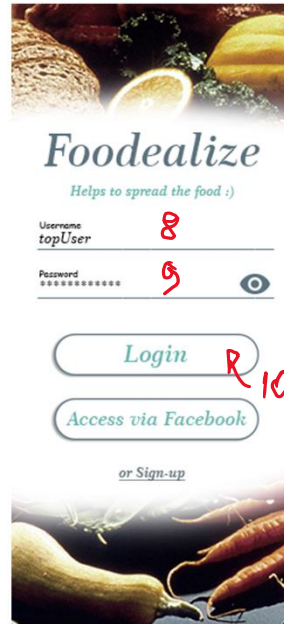
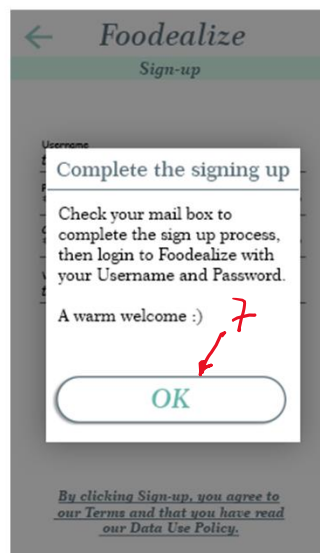
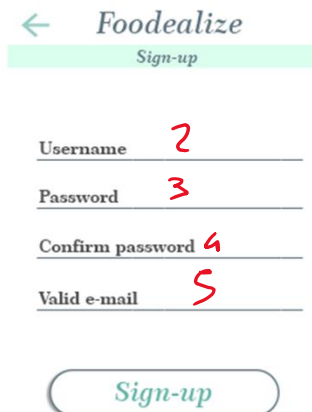
£  each ☒

Total earnable: £ 4.80

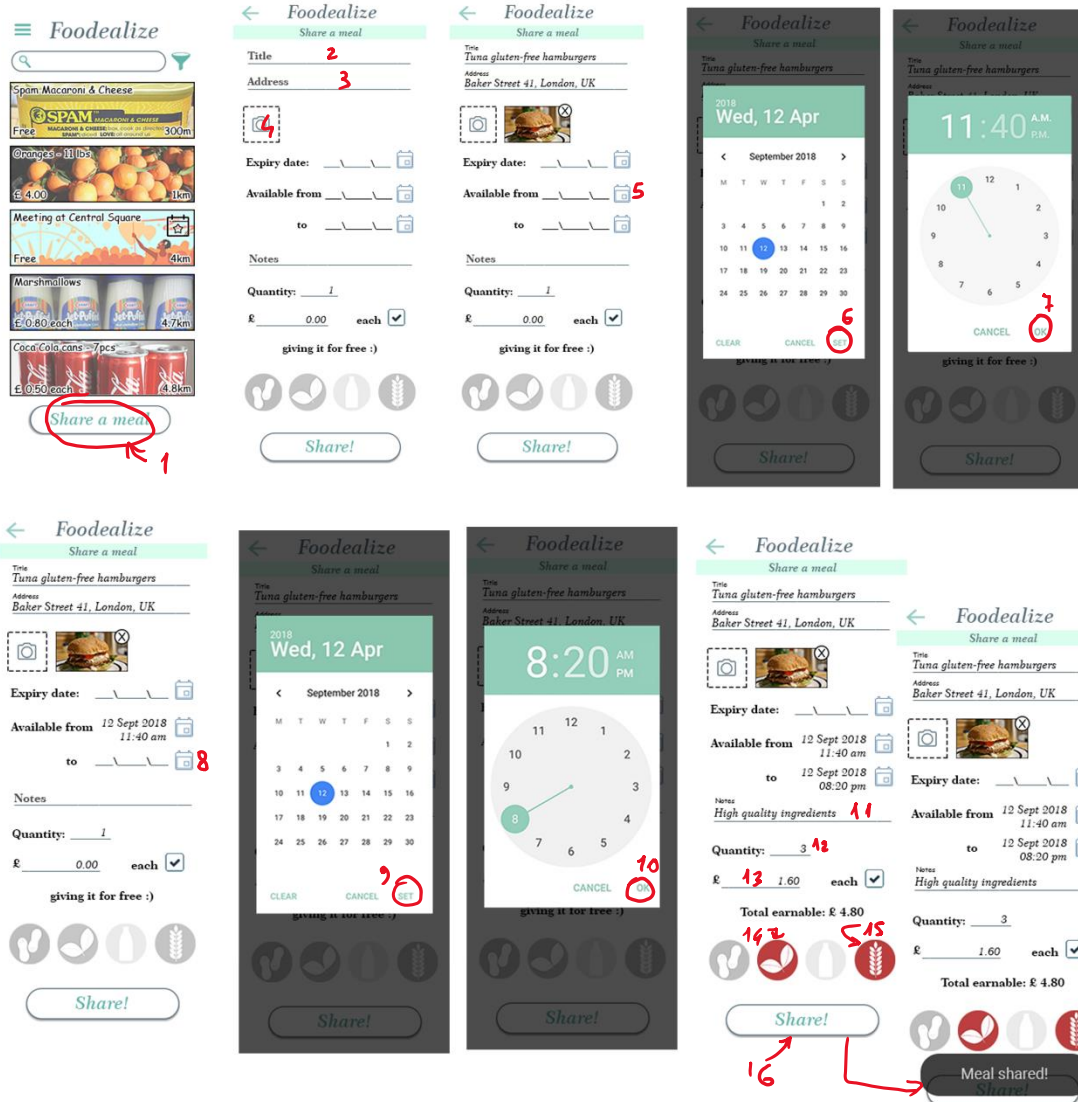
   

*Share!*

## SIGN-UP AND LOGIN – TASK FLOW



## SHARE A MEAL – TASK FLOW



## ACCEPT A MEAL REQUEST AND DONATE – TASK FLOW





## OTHER EXAMPLES OF SCREENS



# Foodealize

Helps to spread the food :)

Username  
topUser

Password  
\*\*\*\*\* 

Username or password wrong.  
[forgot the password?](#)

Login

Access via Facebook

or Sign-up



# Foodealize

## Sign-up

Username  
topUser

Password  
\*\*\*\*\* 

Confirm password  
\*\*\*\*\* 

Valid e-mail  
topUser@email.com

Sign-up

By clicking Sign-up, you agree to our Terms and that you have read our Data Use Policy.

# Foodealize

## Sign-up

Username  
topUser

Complete the signing up

Check your mail box to complete the sign up process, then login to Foodealize with your Username and Password.

A warm welcome :)

OK

By clicking Sign-up, you agree to our Terms and that you have read our Data Use Policy.

# Foodealize

## Password recovery

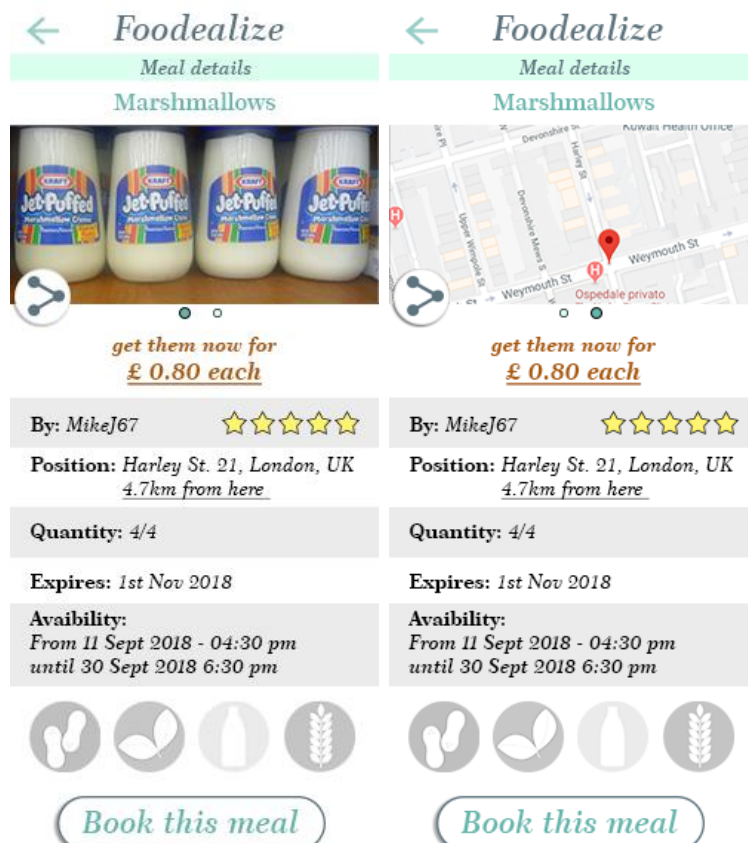
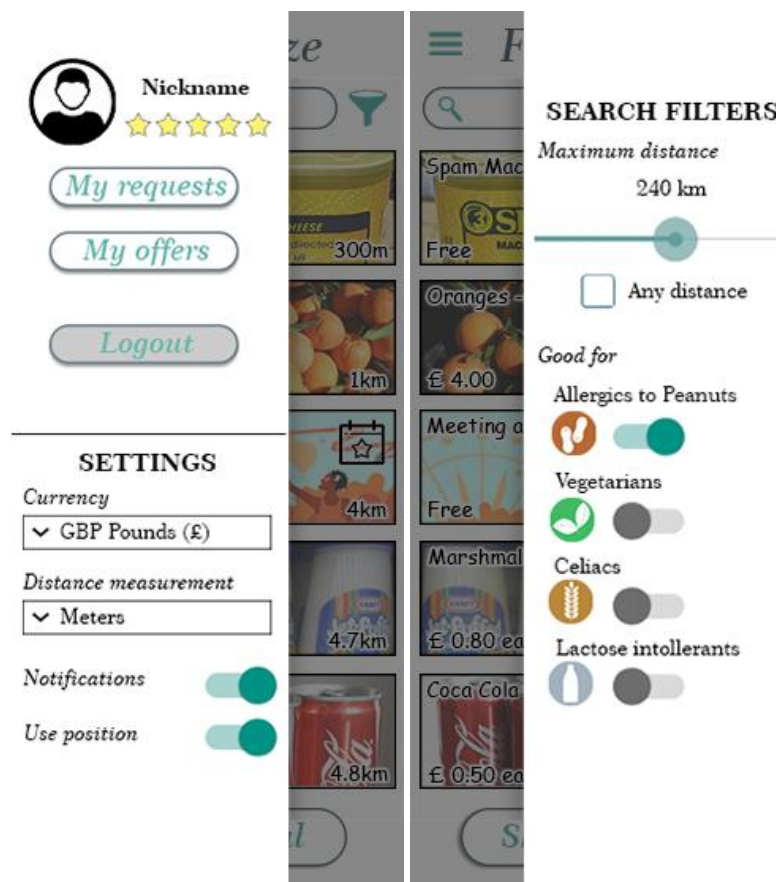
By clicking Send request, you will receive a new password in the mailbox you used during the signing-up phase

Valid e-mail  
topUser@email.com

☐ I'm not a robot   
reCAPTCHA  
Privacy - Terms

Send request








← Foodealize  
Share a meal


Title \_\_\_\_\_

Address \_\_\_\_\_



Expiry date: \_\_\_\_/\_\_\_\_/\_\_\_\_ 

Available from \_\_\_\_/\_\_\_\_/\_\_\_\_ 





to \_\_\_\_/\_\_\_\_/\_\_\_\_ 

Notes \_\_\_\_\_

Quantity: \_\_\_\_ 1

£ \_\_\_\_ 0.00 each ☒

giving it for free :)

Share!

← Foodealize  
Share a meal

Title  
Tuna gluten-free hamburgers

Address  
Baker Street 41, London, UK





2018  
Wed, 12 Apr

< September 2018 >

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

CLEAR CANCEL SET

giving it for free :)

Share!

← Foodealize  
Share a meal

Title  
Tuna gluten-free hamburgers





Address  
Baker Street 41, London, UK

8:20 AM PM

11 12 1  
10 2  
9 3  
8 4  
7 5  
6

CANCEL OK

giving it for free :)

Share!

← Foodealize  
Share a meal

Title  
Tuna gluten-free hamburgers

Address  
Baker Street 41, London, UK

Expiry date: \_\_\_\_/\_\_\_\_/\_\_\_\_ 

Available from 12 Sept 2018 11:40 am 

to 12 Sept 2018 08:20 pm 

Notes  
High quality ingredients

Quantity: \_\_\_\_ 3

£ \_\_\_\_ 1.60 each ☒

Total earnable: £ 4.80

Meal shared!  
Share!

← Foodealize

My offers

**Mushrooms - 3lbs**  
1 left, free  
added the 10th Sept 2018

---

**Beef Lasagne**  
Free, £ 1.00  
added the 7th Sept 2018

3

Booking

---

**Coca Cola 2l**  
1/3 left, free  
added the 8th Sept 2018

Hidden

← Foodealize

My offers

**Who's asking?**  
*Beef Lasagne*

---

**Mark Smith**  
★★★★☆  
booked the 9th Sept 2018 10:22 am

---

**Pablo87**  
★★★★★  
booked the 10th Sept 2018 11:05 am

---

**Shamalaya**  
★★★★☆  
booked the 10th Sept 2018 04:41 pm

Share a meal

← Foodealize

My offers

**Who's asking?**  
*Beef Lasagne*

Pablo87

Accept


Reject

Profile

Archive


← Foodealize

Profile



**Pablo87**  
★★★★☆


Latest transactions



by P\*\*\*d (3rd Aug 2018)

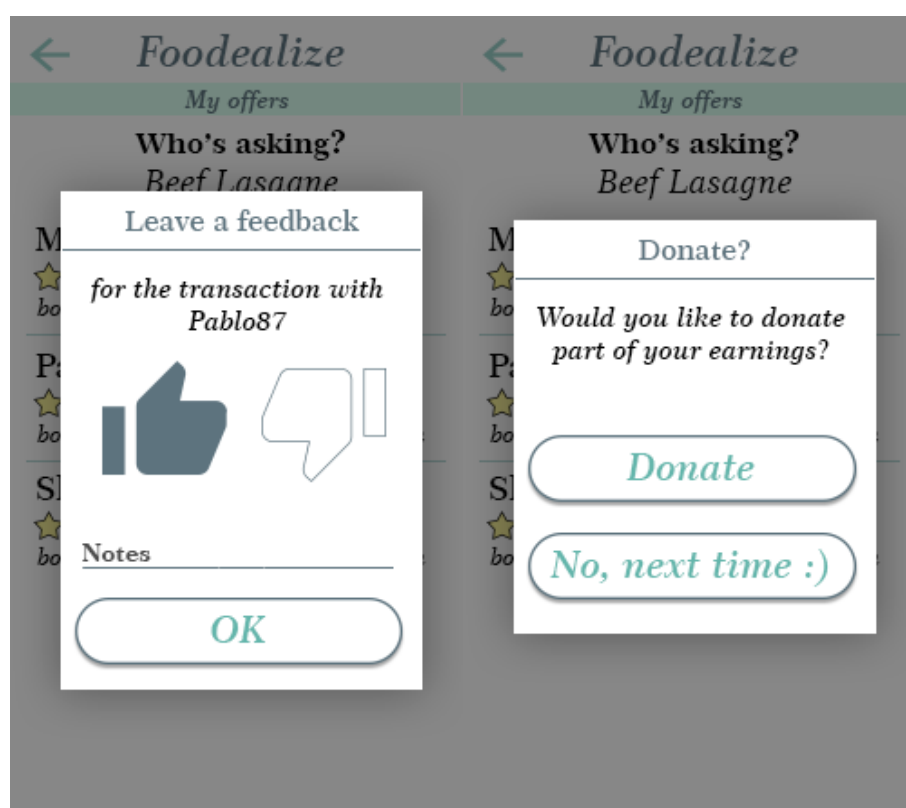
kind and flexible. He offered me a coffe.

---



by R\*\*\*1 (1st Aug 2018)

He said he would meet me at 4 at his home but he was n...



**You earned £ 1.00!**

☐ Give a fixed amount:

£ 0.00



or



☒ Give a percentage:



▼ 50% = £ 0.50

to

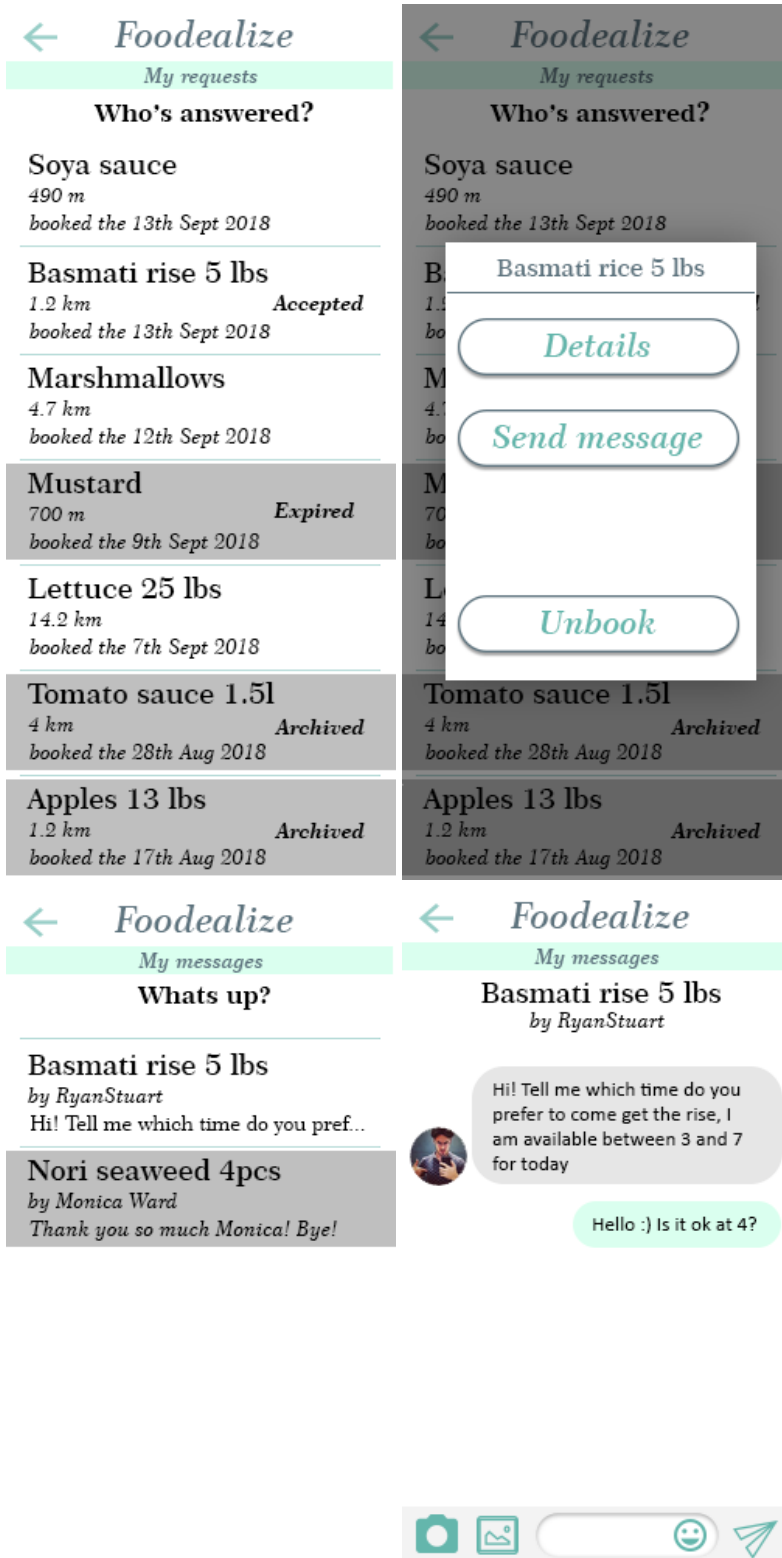
☐ NGO7  

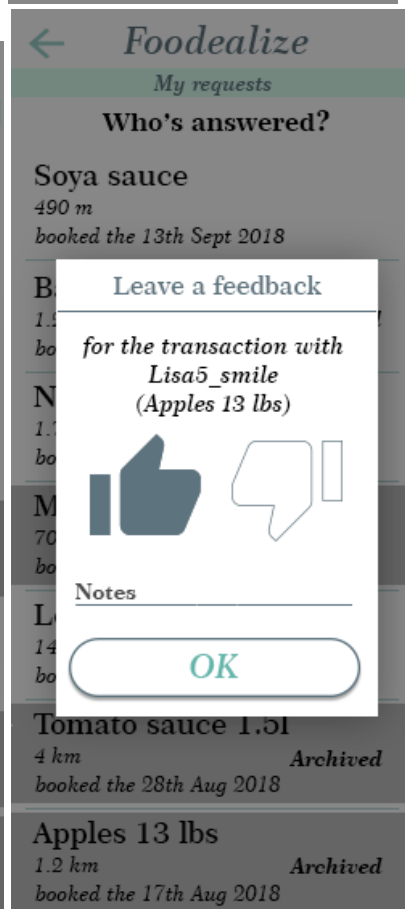
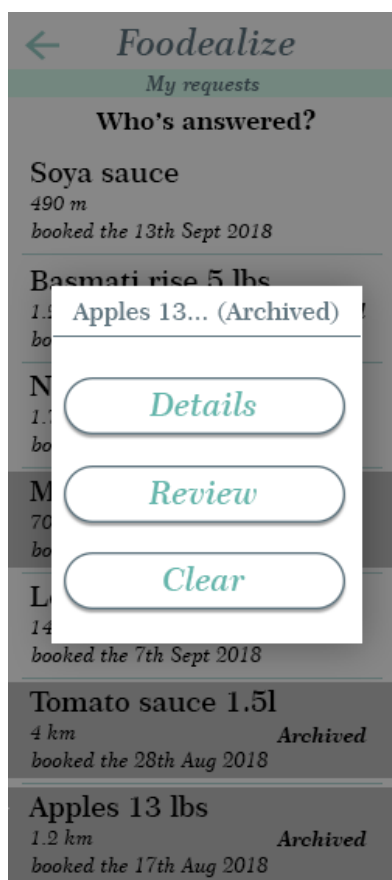
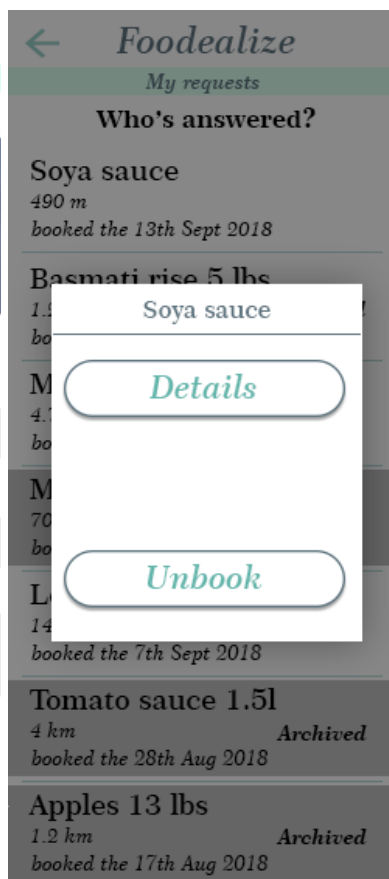
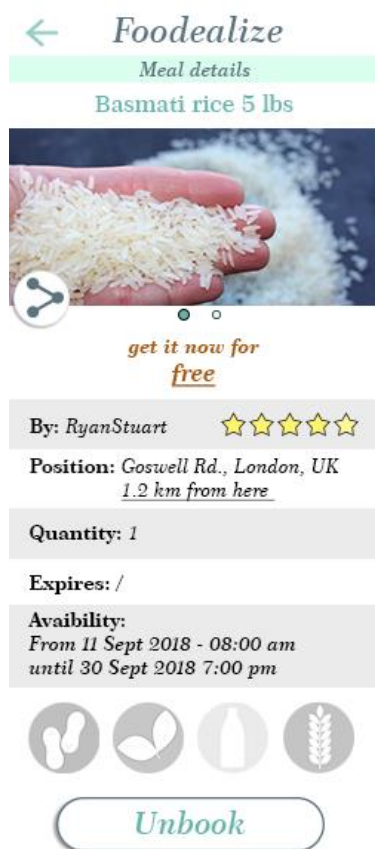
☒ NGO2  

☐ NGO20  

☐ NGO1  

Donate  PayPal





# FINAL USER TEST

## GOALS

The purposes of this test are the following

- Being sure that the disposition of the elements in the layouts of each screen is adequate to the pursuing of the main functions of the system.
- Checking the quality of the flow of the usability of the interface for what concerns the cause-effect transitions, making sure that the tester is well aware of the steps he did until that moment and what he/she needs to do to accomplish a particular task.
- Getting knowledge about how an average user would recover from errors searching for a more adequate solution.
- Getting an overall feedback about the intuitiveness and pleasantness of the structure of the interface.
- Getting an overall feedback about the functionality of the app, collecting at the same time proposal of improvements by adding/removing certain behaviours from the system.

## PARTICIPANTS

### *Participant 1*

*Man 31 of years old, working as a local manager in a grocery store in Vauxhall, London. He is very concerned about all the food he needs. He knows that the law in the UK allows the redistribution of leftover from a food store because a food chain has started using another application for it, but he feels it should be more “social oriented”.*

### Participant 2

Woman 24 of years old, she works as a volunteer in a soup kitchen in London, she cooks the meals 3 times a week, in the evening. She has been working there for 2 years and thinks that the amount of people going to the kitchen is slightly increasing.

### Participant 3

Man 24 of years old, he is an agronomist and son of an Italian farmer of olive trees who went bankrupt because he felt the pressure of the Tunisian market while his tree had been hit by the *Xylella fastidiosa* disease.

### Participant 4

Man 19 of years old, he is a student of Rural Economy at the Newcastle University, he is very interested in the dynamics of food management in the rural areas and in modern technologies to improve the quality of life of the average person.

### Participant 5



Woman 69 of years old, she is a retired woman who was a chef in a little restaurant in Fulham, London, during the 80s. She likes now to organise charity events like fundraisers. She is a member of an university of the third age.

## PROCESS

### Milestones

- Being able to retrieve and understand information about the available offers
- Being able to complete the posting of an offer by filling the proper fields
- Understanding the diverse ways to donate earnings to a charity opera
- Being able to follow the flow of the overall process of meals exchange (finding->requesting->getting->posting/sharing->giving)

### Method of submitting

The test is made in form of screen recording on a PC. The users used the virtual prototype version of the application through the platform inVision.

### Interview topics

- An outline of the user's profile: occupation, moral values, life experiences about sharing/food/economy
- The graphic appeal of Foodealize: colour palettes, fonts, element sizes
- Assessment of the general usability of Foodealize: task completion, error recovery, usefulness.
- Approaching an iterative design: what to change to improve the app usability? And what other functions are needed?
- Reflections on the business model: is Foodealize a win solution? What can be done to make it sustainable and attractive for a long-term period?

### Hardware

- 1x SONY ICD-UX533 audio recorder
- 1 PC for dynamic app usability test on inVision
- pens
- paper

### Environment details

The environments in which the interviews took part is a familiar place to the respondent. These places must be tranquil enough to permit both concentration for the interviewed and audio clearness for the recording, moreover an appropriate source of light is essential to make possible a comfortable reading of the features on the computer screen.

Since a proper place familiar to the respondent, there hadn't been the need of renting an audio recording room.

### Team composition

All the phases of testing (warming-up, introduction, core task execution, post-test questionnaire) is carried out by one person.

## Entry and Exit Criteria

The interviewer will be asked to start the interview when he feels ready, soon after the warm-up.

According to the “Consent form” and to the introduction phase, the respondent is be able to quit the interview any time he/she prefers. In the case of early quit, the work done till that moment is not be considered in the report.

The core interview is considered terminated when the last task will be completed, then “post-test” questions will follow.

## Tracking tools

- Audio recording using the audio recorder for offline deep analysis
- Screen recorder software (e.g. TinyTake)
- Logging sheet

## Post-questionnaires

For the post-test questionnaire, the standard SUS was administered on paper.

# RESULTS

## Summary result

- Task Completion Rate (TCR): assigning a score from 1 to 5 to weight the successfulness of the Nth task for the Mth participant. All the votes have been put in an MxN matrix and extract the average vote for each task. Every average vote has been normalised to get a percentage final value.

		n Task				
		1	2	3	4	5
m Participant	1	5	4	5	5	5
	2	5	4	5	4	5
	3	5	4	5	5	5
	4	5	5	5	5	5
	5	4	4	5	4	4
Total		24	21	25	23	24

$$TCR_n = \frac{\sum_{i=1}^m a_{in}}{m * max} * 100$$

Where *max* is the maximum vote possible (5 in this case) and *a* is the current vote in the matrix.

### Task Completion Rate (TCR)

<i>n Task</i>	<i>rate</i>
1	96%
2	84%
3	100%
4	92%
5	96%

- Average completion time: 25:20 minutes, with an average time/task of 5:04 minute.
- The second task involves a lot of control forms, so it can be understandable why it got the lowest score (more complexity)
- The third task had a TCR of 100% since it is straightforward. Although it's easy it was included in the User Testing because of its importance as a core component of the User Experience.

All the users expressed satisfaction about the overall graphics design, especially for the consistency going from one screen to another, but at the same time, some of them concerned about the default font (serifed) used in dialogs/popups which is not very comfortable for the reading of a warning (or a useful information).

As described in the key find, participant 4, argued that a easier access to the message panel (from the home page – like Instagram) could improve the general usability of the application.

In general, the TCR is above 93% which can be considered quite good for a pre-production prototype.

### Limitations

It is also important to underline the fact that some tasks had been passed through more cycle of review, making them easier to accomplish, so this is can be read as a biasing component.

The choice of putting the task in the so considered “order of difficulty” could add a bit of stress to the respondent.

On the other hand, the tasks results could be altered also by the normal ascending confidence in using the paper prototype that the participant acquires during the assessment experience.

All the results are reasonably biased by the small number of interviews and in terms of demographic variability of the participant. Moreover, not everyone was comfortable with the electronic prototype testing on a PC (for all of them it was the first time), so it will be considered the fact that for them is not very neat the difference between a layout trial and a in-app final user interface with the properly coding part.

## KEY FINDINGS

FINDING 1: easier access to messages

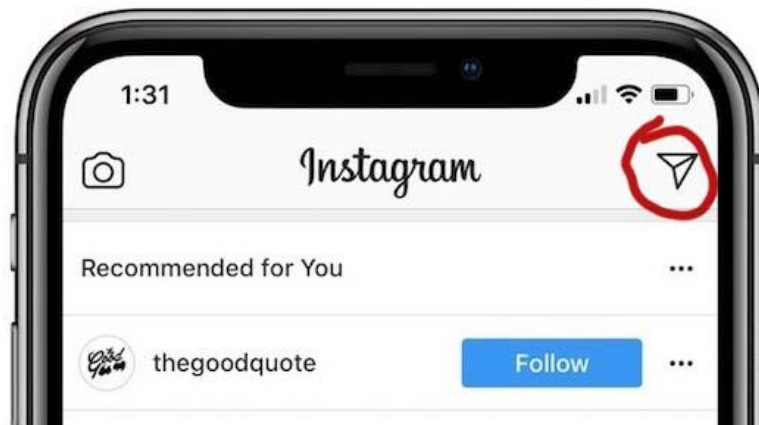
SEVERITY: 2/4

HEURISTIC VIOLATED: *User control and freedom*



**Description:** It's not comfortable to enter the messages menu without passing from "My Request". This is misleading because messages are not only related to a particular function, but it wants to be a hub also for general communication.

**Recommendations:** Although it possible to enter the messages screen through the "My Request" menu option, it would be useful placing an icon to give to user direct access to the related function (with the number of pending messages in a corner), following what Instagram does for his application.

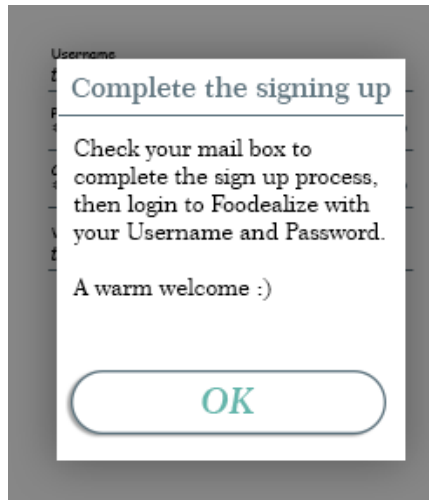


FINDING 2: font inside the dialogs/popups

SEVERITY: 1/4

HEURISTIC VIOLATED: *Aesthetic and minimalist design*

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**Description:** Although comprehensible, the standard template of a dialog/popup shows a message with the same serif font of the rest of the interface (Century751), which is nice but not so much comfortable to read.

**Recommendations:** Changing the font inside those part of the interface, opting for a more familiar and readable “Arial”.

FINDING 3: required field should be signalled

SEVERITY: 2/4

HEURISTIC VIOLATED: *Error prevention*

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DUNKIN' DONUTS 711, LONDON, ON



Expiry date: \_\_\_\_/\_\_\_\_/\_\_\_\_ 

Available from \_\_\_\_/\_\_\_\_/\_\_\_\_ 

to \_\_\_\_/\_\_\_\_/\_\_\_\_ 

Please, select a proper range  
for availability

NAME

**Description:** In “Share a meal” mode, there is a long form in which the user is called to type and select the information related to his/her product. Since is not compulsory to fill each field (e.g. honey never expires), in the test it has been found out that a “guide” to know in advance what fields should be completed could be a good idea.

**Recommendations:** A red asterisk near the fields used in a lot of websites to indicate compulsory field should be effective even on the application.

## NEXT STEPS

Foodealize has turned out to be a pleasant discovery for each user tested it, because it enforces the possibility to address the habits of the local (and possibly the world) community to manage better the necessities of food.

After solving the issues related to the key findings, the natural step after the final prototype committing can be the actual production of the application on the Android platform (less costly) and then, with the appropriate feedback extending it to the iOS; keeping an eye to the cost maintenance of the back-end infrastructure (server development, renting and connection).

Here some other feature likely to be implemented:

- **Local event management:** the users will be able to link the feed of Foodealize to an event they created on Facebook, in order to expand its visibility. For this purpose modules related to the creation (maybe using some Facebook APIs), editing and deletion of an event will be integrated into Foodealize, granting the Foodealize user to set their participation.
- **Charity scoring system:** the users have a second level of “reputation” beyond the traditional star system: when coming to the selling of a product, the one who gives more than 30% of his/her earning to an NGO have one *Charity Point*. In this way, a user who has to choose to which one he should pay the pack of pasta he/she was searching for (in case of multiple offers, of course), will be more confident in asking and pay it to the person who has more charity point.  
People with more charity point accumulated in one year will have a sort of certificate for their kindness by Foodealize organization.  
In any case, the Charity Point indicator in the profile of the user will be reset every month to avoid unbalanced selling possibility between who is a new user and who is a “veteran”.
- **Audio guide:** to make the application more accessible, it will be evaluated a voice recognition system based on Google Assistant/Siri API that can at least read the meals available in the user feed and possible help him to find the wanted product through proper filtering.
- **Guide:** setting a guide module and a tutorial that can help the users the get confidence with the application in a fast way.
- **More intolerances:** by doing more statistical research adding no more than three other food intolerance to cover the basic needs of the population. It will be avoided to put too many categories to not make the system too complex to manage.
- **Special account for dealers:** an account for professionals and shops should be activated in order to keep the app in the law regime inside some states. Moreover, there will be extra options, like the setting of the working time from the panel.

Along with a code testing, the chance to make an assessment of the graphic interface by an artist is taken into account.

Further studies will be conducted to see if, with the above recommendations, the system can be more intuitive for the average user, possibly with the expansion of the target population, getting the data, for example through Firebase-like programs.

# APPENDIX A

## ABBREVIATIONS AND ACRONYMS

**GDPR** – General Data Protection Regulation

**NGO** – Non-Governative Organization

**REST** – Representational State Transfer

# APPENDIX B

## PERSONAS

*George*



### Motivators

- **Avoiding losses:** he really wants all of his product to be sold every day.
- **Curiosity about new technologies:** he enjoys using the smartphone and the apps
- **Member of no-profit organizations:** he like the possibility to give a hand to the other using these agencies

### Demographics

**Age:** 32

**Occupation:** owner of a fry shop

**Location:** Los Angeles

**Life stage:** married with two children, he is paying the rent for his home

### Constraints

- **Shortage of time:** he doesn't have much time "to play" with an app to be sure that everything works
- **Not patient:** he doesn't like people that make commitments without fulfilling it
- **Choosy:** he would like to give the priority of his action to the people he knows in advance



*Tina*



### Motivators

- **Feeling better with herself:** she likes to make good action to the others, this makes her mood better
- **Likes to cook:** she enjoys preparing sweets but unfortunately, she can't eat everything because of her diabetes.
- **Hates waste:** when she sees food be thrown in the bins, she feels her heart bleeding

### Demographics

**Age:** 42

**Occupation:** yoga instructor during the evening

**Location:** New York

**Life stage:** single

### Constraints

- **Moderate technical literacy**
- **Privacy:** she is very suspicious about privacy issues with the online services
- **Limited range:** since she doesn't have a car she can't move too much to reach a place if it is not absolutely necessary

## SCENARIOS

*George*



George is a 32 years old owner of a fry shop. based in Los Angeles. He is getting a pause with his business consultant discussing how important nowadays is the efficiency aspect when applied to storage of products. One of his colleague, Robert, says that the last year, thousands of pounds of unsold food has turned out to be a great loss and advises George to employ a manager for his company.

Unfortunately, George does not have enough money to have a manager so he decided to rely on information technology. After a couple of weeks, his friend Jessica, owner of a pizzeria in Tucson, tells his about an app called "Foodealize" that can help him to reduce losses. Can it be true? It's Friday evening and George will close the shop in about one hour. Unfortunately, many hamburgers and chips are left unsold so he decides to rely on Foodealize: on the screen appears the possibility to create a "leftover selling" which automatically suggests an offer of 2\$ for each of the ten hamburgers unsold, so he takes a photo and put it on the platform. After 5 minutes, Mary Smith books two hamburgers, and after two minutes more, James Caves asks for 4 hamburgers. After ten minutes, James Caves comes to the shop and pays George 8\$ for his hamburgers. At the end of the working day, Mary Smith didn't come so George gives to her profile a "dislike" vote while giving to James a "like" vote. George is satisfied in any case because he earned 8\$ dollars instead of throwing 4 good hamburgers away.

*Tina*



Tina works as a yoga instructor in the evening. Often, when she walks down the streets of her neighbourhood to go to the gym she finds a lot of homeless begging. Since she is a very sensitive woman, she decides to ask around a way to help them with ease, considering that for her, giving food is always a better choice to give money.

One of her students, Sarah, explains to Tina that there is the possibility to share easily leftovers with an application for mobile devices called “Foodealize”.

In the beginning, she was thinking it would be necessary to learn in deep how the application works, but after just 1 minute, she figured out how to use it with ease.

It's the 23rd of December and she is preparing sweets and cakes at home for her friends from the gym when suddenly, her friend Sarah says that she will not come because of the flu, but asks Tina to give her food for someone who really needs it, suggesting to check on “Foodealize” if there is an event in the nearby. Tina checks the oncoming events on the main page, and she comes to know that at 1 mile from home there would be the gathering of the leftovers for the Christmas Eve, the next day.

At 8 o' clock of the Christmas Eve, she wakes up, gets all the sweets remaining from the day before and goes to the square marked on “Foodealize”, bringing there her food. Now Tina is happy with her gesture and feels better with herself.

## APPENDIX C

### COMPETITIVE MATRIX

Factor	Food4All	YourLocal	Olio
Over request of permissions	Asks 6 types of permission without good reasons		
Introduction to the app functions		x	x
Optimized for tablets	Somehow	Somehow	
Requires phone number to subscribe	x		
Icon “for vegetarians”	x		
Sharing earnings with volunteer programs	Not clear		
Available in more languages		x	
For food only	x	x	

## APPENDIX D

### FINAL USER STUDY PLAN AND SUPPORTING MATERIAL

#### post-questionnaires

For the post-test questionnaire, we will administer the standard SUS questionnaire on paper. The form should be printed out before each session.

#### pretest checklist

- Reload target inVision web page
- Double check success criteria
- Print task instructions, one per page
- Print post-test questionnaire
- Print logging sheet
- Print this Test Script

- Start screen recording

### posttest checklist

- Stop recording, save audio and video to backup drive
- File informed consent form
- File logging sheet

### recruiting criteria

The system will make it possible the meeting of two types of people: the “providers” and the “requesters”. The providers are the ones who can give and share leftovers on the common platform from where the requesters can get them. Considering also the possibility of these two entities to act like the other one, the target audience can be very broad:

- Age: 16-80
- Level of instruction: any
- Gender: any
- Salary/incomes: probably low for the requesters

Having this big range of selection will make it easier to find testers for the system.

The strategy will imply asking a possibility of interviewing to the owners / employees of grocery shops, soup kitchens and catering services as well as the average person of the neighbourhood.

## USER TEST SCRIPT

### pre-test interview

The goal of the pre-test interview is to characterize the participants’ experience with leftovers management, and to characterize the participants’ experience and preferences.

Sample questions:

1. What do you think is the best way to be aware of the new events about food in you area?
2. Have you ever had the necessity to search for the lowest prices at your favourite grocery shop?
3. Do you think that the food waste has increased or decreased in the last year, by your experience? Why?

### debriefing guidelines

The focus of the debrief is to walk through any problems that were encountered during the tasks. If any time remains afterwards, ask higher-level questions 2-5.

1. Review parts of the test where the user struggled: What difficulties did you have on \_\_\_\_? I noticed you struggled with\_\_\_\_, can you tell me what happened? You paused here, tell me more about that.

2. Preferences: What did you think of the site? What did you like/dislike? Which parts of this page are most/least important to you?
3. Changes: If you had 3 wishes to make this better for you, what would they be? Why?
4. Understanding: How would you describe this to a friend?
5. Use Cases: Under what circumstances would you use this? Why?

## TASK INSTRUCTIONS

### TASK 1

You have heard by a friend of yours that the app “Foodealize” is the perfect solution to give to someone in the need, the leftovers or the things in your fridge about to expire but that you are not in the mood to eat.

You installed and started it for the first time.

- Before starting the use of the functions, create an account
- Login to Foodealize

### TASK 2

It's the 12th September morning in Baker Street 41, London, where you work in your bar. Only now you notice that there are some fine gluten-free Tuna hamburgers that no one touched from the day before. Since you feel guilty for throwing them in the trash, you have the idea to try selling these on Foodealize

- You think posting it with a photo is a good idea
- You want to sell three of them for £ 1.60 each
- By experience you know that the highest possibility to start selling a hamburger is from 11:40 am
- At the same time, you don't think to keep the hamburgers over the 8:20 pm since this will not keep their quality high.
- Describe it as made of high-quality ingredients to have more chances to find a requester.

### TASK 3

You are scheduling your next evening party at home, you've heard from your friend Carl that marshmallows are a nice product to share with other people.

- Search for marshmallows and access the detail of the product
- book 2 bottles of marshmallows

### TASK 4

You post on Foodealize that Beef Lasagne your mother continues to buy you, although she never remembers that you don't like it at all.

The application, then, notifies you that more than one person has shown interest in your offer

- Accept the request for the product Beef Lasagne done by the user Pablo87
- Accept confirmation and give a positive feedback
- Choose to devolve 50% of money using PayPal to the NGO2, after putting it in your favourites

## TASK 5

You have received a notification regarding the user RyanStuart who accepted your request of booking of Basmati Rice.

- Go to the list of the meals you made a request for
- Search for the message of RyanStuart related to the basmati rice you've chosen
- Chat with him to pinpoint a meeting about the delivery of the rice

## CONSENT FORM (UNSIGNED)

### Consent Form

I agree to participate in the study "Foodealize milestone 3 - test" being conducted as part of the edX course "UX 509x: Milestone 3: Initial Prototype, User Test Plans".

I consent to the recording of this test. This recording will be used for research and product improvements only.

I understand that participation in this usability study is voluntary and I agree to immediately raise any concerns or areas of discomfort during the sessions with the study administrator.

*Please, sign below to indicate that you have read, and you understand the information on this form and that any questions you might have about the session have been answered.*

**Date:** \_\_\_\_\_

**Full name:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

*Thank you!*

*We appreciated your participation.*

## LOGGING SHEETS

### User Test Logging Sheet

Test Name: FOODREALIS FINAL REPORT

Participant ID: 2

Task Number: 4

Logger: GABRIELE FAVIA

Date: 16<sup>th</sup> October 2018

Task Success: 5/5

Clock Time	Event Code	Notes
16:19	TASK START	Be sure to log start time for syncing later
21:00	TASK STOPS	

## User Test Logging Sheet

Test Name: FOODSEALIZE FINAL REPORT Logger: GABRIELE PAVIA

Participant ID: 3

Date: 16<sup>th</sup> October 2018

Task Number: 2

Task Success: 415

[illegible]



## User Test Logging Sheet

Test Name: FODSALIZE FINAL REPORT Logger: GABRIELE FAUJA

Participant ID: 2

Date: 20<sup>th</sup> October 2018

Task Number: 1

Task Success: 5/5

[illegible]

# User Test Logging Sheet

Test Name: FOODBALIZED FINAL REPORT      Logger: GABRIELE FAVID  
Participant ID: 5      Date: 21 October 2018  
Task Number: 2      Task Success: 4/5

Clock Time	Event Code	Notes
7:09	TASK START	Be sure to log start time for syncing later
12:00	P5-t2-1	DOESN'T KNOW WHICH FIELD IS MANDATORY
17:02	TASK STOPS	

## User Test Logging Sheet

Test Name: FOODEALITH FINAL REPORT Logger: GABRIELE FAVIA

Participant ID: 1

Date: 16<sup>th</sup> October 2018

Task Number: 2

Task Success: 4/5

[illegible]

## POST-TEST QUESTIONNAIRES

**Post-test questionnaire**

Answer the following questions based on the scale of 1 -5 where 1 is strongly disagree and 5 is strongly agree

1. I think that I would like to use this system frequently  
1                      2                      3                      ~~4~~                      5
2. I found the system unnecessarily complex  
1                      ~~2~~                      3                      4                      5
3. I thought the system was easy to use  
1                      2                      3                      ~~4~~                      5
4. I think that I would need the support of a technical person to be able to use this system  
1                      ~~2~~                      3                      4                      5
5. I found the various functions in this system were well integrated  
1                      2                      3                      4                      ~~5~~
6. I thought there was too much inconsistency in this system  
1                      ~~2~~                      3                      4                      5
7. I would imagine that most people would learn to use this system very quickly  
1                      2                      3                      ~~4~~                      5
8. I found the system very cumbersome to use  
~~1~~                      2                      3                      4                      5
9. I felt confident using the system  
1                      2                      3                      ~~4~~                      5
10. I needed to learn a lot of things before I could get going with this system.  
~~1~~                      2                      3                      4                      5

## Post-test questionnaire

Answer the following questions based on the scale of 1 -5 where 1 is strongly disagree and 5 is strongly agree

1. I think that I would like to use this system frequently

1                      2                      3                      4                      ~~5~~

2. I found the system unnecessarily complex

1                      ~~2~~                      3                      4                      5

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~~1~~                      2                      3                      4                      5

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6. I thought there was too much inconsistency in this system

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