
# Project Specifications Report

## CS 491: Senior Design Project

## O-Asis

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# 1. Introduction

## 1.1. Description

For some couple of years, the status of Turkish economy has deteriorated. Inflation has been increasing among these years and Turkish Lira has been losing its value against foreign currencies especially American Dollar, and Euro. Thus, the prices of all kinds of products of all kinds of industries (such as technology, fabric, etc.) have been explicitly increasing. Specifically the increasing price of food and beverage industry has a huge effect on peoples' daily lives. When it comes to socializing, especially with friends whether it is a special day or not the economy side of having fun is sometimes becomes a burden on one's shoulders. Therefore, restaurants have special campaigns in order to attract their potential clients to visit their restaurants. They put their low priced or under-sold products to the campaigns for a specific time interval. However, there is no way to announce their campaigns to a social platform except social media to the possible customers. Therefore O-Asis came as an idea to help people to save their time and preserve their economy with less effort compared to searching restaurants blindly on the streets. In a sense O-Asis will bring the streets' view in a similar way as Google Maps does to the users, in addition to that it will act as an assistance for finding promotions related to restaurants.

In O-Asis there are two types of users: restaurant clients and owners. Restaurant owners can create two different types of campaign such as permanent campaign and momentarily campaign. Permanent campaign will have no time limit on the other hand the momentarily campaign will have a time limit that is granted by the restaurant owners. Momentarily campaign will be potentially created by restaurant owners in the case of when their restaurant has a few number of customers than usual. Restaurant owners can create this kind of campaign for a limited hours such as one hour, two hours etc. Restaurant clients will be able to observe the available campaigns that are created by the restaurant owners. There are two different ways of getting information about the campaigns in O-Asis: first one is by streets' view in a similar way as Google Maps does but there is an important

difference. O-Asis shows the restaurants if and only if the restaurant has active campaign. Secondly, restaurant clients will have the option to follow their favorite restaurants if they wish so that they can get notifications about those places. The notification system works in such a way that, when there is a change occurs in any campaign including adding a campaign, changing ingredients, restaurant clients will be informed via notification system.

The most important feature of O-Asis is the machine learning algorithm that works in back-end. Restaurant owners are going to enter all the products that they sold to a list which will serve as a data set to be analyzed by that machine learning algorithm. With the help of this algorithm, restaurant owners can see which of their products are being sold less than other products and which of their products are being sold commonly. Based on the analysis of the algorithm, O-Asis is going to give the campaign recommendations that can increase that particular restaurant's sales.

O-Asis is going to release for IOS, Android and web. So far, Savor Döner, Federal Coffee Company, Lokal'71, Sözeri Pide&Kebap, Back House, Route, Nil Rock Bar, Noxus and Gaga Manjero agreed to work with us.

## 1.2. Constraints

- O-Asis will be implemented for both Android and Mac OS.
- React-native framework will be used for front-end development and JavaScript, HTML and CSS software languages will be used with this framework.
- Genymotion will be used as an emulator for both Android and Mac devices.
- Amazon DBS will be used as a server and its response time should be at most 1 second.
- PostgreSQL relational database language will be used for the database and every query should respond within 2 seconds.
- ASP .net Core framework will be used for back-end development and C# software language will be used with this framework.

- The project has to be completed before May 8, 2020.
- The number of developers for implementation is limited as 5 people.
- Application should has minimum number of 10 restaurants owners and 100 restaurant clients in the same district for the appropriate usage.

## 1.3. Professional and Ethical Issues

### 1.3.1. Sensitive User Data

- O-Asis deals with personal data like passwords, location, restaurant, and pub information. All the data should be stored and transferred securely depending on KVKK laws.
- The server should have an SSL certificate and always use HTTPS for the data transfer with clients and restaurants.
- User passwords should be stored in salted hash forms.
- Sensitive information common for multiple users such as personal information should be encrypted with a common symmetric key that can be obtained from the user password.
- Before sharing personal information of a user, O-Asis should ask for the appropriate permissions first,
- To minimize the risk of a data loss that can be valuable for users, there should be frequent database backups stored in a different location.
- Depending on user’s request their personal data deleted. So that it’s not going to be used after all.

# 2. Requirements

## 2.1. Functional Requirements

### 2.1.1. Restaurant’s Clients

- Having a valid email address that has not been used before should be enough to sign up for the O-Asis.
- The sign-up process should be protected with a verification link mailed to the user's email addresses to avoid spam and also each user account will be

connected to their unique phone number again protected through SMS verification.

- O-Asis should send notifications (through user permission) about the events in the city the user is in. In order to get the location, the information created by the O-Asis itself should be used.
- O-Asis should be able to show the restaurants serving around the close-by areas for the users.
- Clients should be able to see the campaigns that are promoted by the restaurants by tabbing on the restaurants' names that are appearing on the map. Campaign information will be seen on the screen.
- Users are able to follow the restaurants in order to be able to get a notification if there is a change occurs in campaigns such as adding a new campaign or changing the matter.
- O-Asis should support the navigation on the map by sliding the screen. Also, users can zoom-in and zoom-out on the map.
- Users should be able to tab with a link that is directing the user to the Google Maps in order to get a direction as a path to follow towards the restaurant.
- The location of the user should be shown on the map in a distinct way, so the user can identify the location of him/herself on the map.
- For some special occasions, users will have to verify code in order to be able to attend those campaigns.
- Clients can select a category depending on their interest among the types of restaurants.

### 2.1.2. Restaurant's Owners

- Restaurant owners will have all the features that a restaurant client has.
- Restaurant owners should be able to instantly put their desired goods to the campaign within the desired time interval. Customers should verify the code verification to apply those campaigns.
- Restaurant owners should be able to create permanent campaigns for our system and that will not require code verification.

- Restaurant owners will be able to put the campaign of combined goods together with the same campaign within the desired time interval.
- Using the machine learning algorithm, O-Asis should be able to recommend optimum campaigns to restaurant owners to maximize their profit, if restaurant owners enter all sold products into our system.
- Restaurant owners should be able to edit and delete their created campaigns.

## 2.2. Non-Functional Requirements

### 2.2.1. Maintainability

- The architecture of O-Asis's system is going to be easily maintainable, which means errors and bugs can be easily found and fixed.
- The system of O-Asis can be easily updated. It can be added new features and can be removed unwanted features easily with the help of O-Asis's system architecture.

### 2.2.2. Adaptability

- O-Asis is going to be implemented in a way that it can be adapted to the changes in Android and IOS systems.

### 2.2.3. Performance

- In a project, system response time is one of the most important properties. With the help of O-Asis’s architecture, its response time is going to be at most 500 ms.

### 2.2.4. Usability

- O-Asis is going to be a user-friendly application. Since O-Asis is going to be used for ages from 7 to 70, its design needs to be easily understandable. Design of O-Asis is planning to implement in a way that every user can easily understand and use it without any help.
- Colors that are going to be used in the application’s screens will be selected in a way that will not disturb users.
- In addition, after the user registered to O-Asis, basic information about the usage of O-Asis will be shown briefly.

### 2.2.5. Reliability

- To prevent possible errors and bugs that can be occurred after O-Asis released, it is going to be tested many times before the release date.

### 2.2.6. Installability

- When the new version of O-Asis is released, every user that has any old version of O-Asis can install the new version.

### 2.2.7. Security

- The system of O-Asis protects sensitive data depending on KVKK laws.