Project Research Document

House Sharing App

Matthew Roche – X00102929

# **Detailed Discussion**

The goal of this project is to create a cross platform Web/Android application to provide Housemates the ability to coordinate and quantify their contributions to the overall household. There number of people currently involved in House-Sharing is a large and growing group, according to a report a report commissioned by the Private Residential Tenancies Board, the average rent for Q2 2015 has risen 7.1% since the same period 2014. This has led many people to seek out House-Sharing alternatives options where they wouldn’t have normally done so. This is a trend that has been ongoing since 2011.

Given these statistics I believe there is a large demand for an app to make the process of House-Sharing easier and more accessible. Given the goal of this app this project will focus on coordinating two primary areas; Finances (Bills, Rent etc.) and Tasks (Cleaning, Shopping, Feeding Pets etc.)

## Finances

One of the largest headaches involved in house-sharing is managing finances, keeping track of how much each person owes and what the exact division of costs between housemates can be quite contentious. One of the primary features of this app will be a “Totaliser” showing how much each person has contributed to the overall total and how much each person has left to be contributed.

This can be utilized for both the rent and utilities, there will also be a facility to upload documents relating to payments, such as pictures of receipts, email receipts etc. As bills are added or removed the app will provide the facility to achieve this functionality.

Finally the app will provide a “look-back” facility to see previous months to review who paid what and any relevant documents from that month.

## Tasks

The Tasks feature of this app will allow House-Mates the ability divvy up common household chores that need to be repeated at certain intervals. When a task is completed the House-Mate assigned to that task will be given the ability to mark it as “completed” or post a status message about the chore ex. “Out for the day will clean up tomorrow”.

This feature will allow the creator of the House to create new custom tasks or select from a pre-defined list of common task and assign people to them. This app will also provide the House Owner with customization options to display statistics such as percentage of tasks completed or number of tasks completed, which will be displayed on their User Profile.

This app will also have features outside of these two main areas, such as a guest area for information such as wifi code, door code etc. As well as a notification facility to allow House-Mates to send TOAST notifications to one another.

# **Existing Applications in this Domain**

There are several House Sharing Applications in this domain, examples of some of these apps are:

## FairShare - <http://www.getfairshare.com/>

FairShare is an Android/iPhone app which has a very similar functionality to what I have described in this document, it has facilities for organizing Tasks and Finances. However, it does not have a Web Based Platform which is where I feel a large number of potential users would be.

## Splitwise - <https://www.splitwise.com/>

Splitwise is an IOU app for Android/iPhone which is aimed towards handling debts between housemates, friends, etc. While this app would have similar functionality to this project in the finance area, it is not specifically aimed at House Sharing. As such it doesn’t have functionality aimed towards Task Sharing, it also doesn’t have a Web based functionality.

## Our Groceries - <https://www.ourgroceries.com/>

Our Groceries is a shopping list app aimed towards households, it is an Android/iPhone app with a small Web presence that allows users to check their lists online. This app is specific to Shopping lists meaning that it doesn’t really compete in the same area as this project.

# **Platform, Technologies and Libraries**

For this project I will be focusing on developing for Web and Android, as such I will be developing a REST API hosted in the Azure Cloud. The advantage of a REST API is that is allows low overhead, stateless data storage and retrieval. Another advantage is that a REST API allows clients access to the same data which means the experience will be consistent across Platforms, and the project could easily be scaled to more Platforms such as iOS or Windows Phone 10.

I also plan to use the Entity Framework Object Relational Model on the REST API in order to develop the back end Database in a code first manner. This allows me to avoid any potential Object-Relational Impedance Mismatch issues without too much design overhead.

I plan on developing both the REST API and the Web App in C# using ASP.NET, this will allow me the use of the Entity Framework with better support from Azure. The Android Application will be developed in Java according to the Google Material Design guidelines.

I plan on using OAuth 2.0 to allow users to login to their accounts using their Facebook account details. This allows me to verify whether or not a user exists based on their Facebook credentials and gives a secure login capability. Security is a large concern with REST APIs as it sends login information over HTTP requests, since the guideline for REST is stateless the client needs to include authentication details with each GET request. This raises concerns over security, OAuth bypasses these concerns by delegating authentication to a third party in this case Facebook.

# **The Risks**

The primary risk involved in this project is the reliance upon a REST API for all application functionality, if for some reason this API is non-functional the app will be unusable. The Azure Cloud platform is useful in this situation as it allows for automatic scaling of instances in response to number of users.

Another risk factor involves utilizing OAuth to delegate authentication to Facebook, if Facebook becomes unavailable for any period (as it has been as recently as January 2015) then this app would become unusable due to authentication facilities being unavailable.

I am also unfamiliar with Android development, this project will be my first experience developing for this platform. As a result my inexperience with this development platform presents a risk to the overall outlook of the project.

# **References**

Daft.ie. (2014, May 12th). *Rents on the Rise Nationally*. Retrieved from www.Daft.ie: https://www.daft.ie/news/2014/daft-rental-report-q1-2014.daft

Mazza, E. (2015, January 27). *Facebook, Instagram Suffer Widespread Outage Overnight; Tinder, Hipchat Also Go Down.* Retrieved from The Huffington Post: http://www.huffingtonpost.com/2015/01/27/facebook-instagram-outage\_n\_6552248.html

Private Residential Tenancies Board. (2015, January 1). *The PRTB Rent Index.* Retrieved from www.prtb.ie: http://prtb.ie/docs/default-source/rent-index/prtb-rent-index-quarter-2-2015.pdf?Status=Temp&sfvrsn=8