## Problem Definition

### Name of this Capstone Project

* Official name: Football Field Reservation System
* Vietnamese name: Hệ thống đặt chỗ đá bóng
* Abbreviation: FFRS

### Problem Abstract

* There are certain limits in reservation fields in traditional methods, for both field owners and users. Users usually only reservate field at a few fields they know. If the time frame of field is busy, user easy to cancel match although a lot of field have suitable time frame near them. Finding and matching opponent depend entirely on field owners, so the range of interaction is quite narrow. This lead to can not find opponent or matching not suitable opponent. For field owners, managing reservation request on paper is easy to miss or conflict. They have no way to promote about sale price for field to user. If they fill players into any time frame, the business problem will be really optimized.
* The system provides a mobile application for user that support suggest suitable opponent based rating point, reservate field easy with expected time frame. User will have options about time, location, level of opponent to have a good match. For field owners, the system provides a web application to manage fields easier, promote about sale off. Reservating fields, finding and matching opponent will happen completely automatically. The system creates an enviroment to interactive between users and field owners that will be easier than ever.

### Project Overview

#### Current diagnostic diseases

Below are the problems encountered in this project:

* New technique: some team members are new to the techniques used in the project. The team need an amount of time to get familiar with those techniques.
* Fix scope: the scope of the project is not simple to determine. There are some factors that may affect and the team have to decide scope correctly.
* Behavior of users: the system depends on behavior of users. So, the calculation to cover most of the behavior of users is relatively difficult.
* Absence of team members: team members can get sick or unexpected problems.

#### The Proposed System

The system will have three sub-systems:

* An API application to serve API for mobile application and web application. API application is a center to process all business logic.
* A mobile application for users to perform find opponent, reservate field, feedback opponent and field, view promotion from field owner, manage and exchange discount voucher from bonus points.
* A web application for field owners and administrators. Field owner perform manage fields, promote sale off price. Admin manage profits and statistics of profits.

##### Mobile Application:

* For user:

+ Manage profile

+ Find field

+ Find opponent

+ Reserve field

+ View/cancel field reservation request

+ Payment online

+ View rewards, exchange voucher from bonus points

* For guest

+ Become football team

##### Web Application

* For admin:

+ Manage profit

+ Solve report

* For field owner:

+ Manage profile

+ Create/Update/Delete fields

+ View status of field

+ View timeline of field

+ Confirm reservation request

+ Rating users

+ Disable field/timeline of field

##### API Application

The server system takes responsibility to respond all the requests and also manages and processes data.

* Provide APIs for Mobile Application, Web Application
* Perform data processing
* Perform scheduled tasks

#### Boundaries of the System

The system does:

* Allow user to find fields.
* Allow user to find opponents.
* Allow user to reserve fields.
* Allow user to create a matching opponents request.
* Allow user to cancel field reservation request.
* Suggest opponents with same level.
* System supports match opponent and reservate field automatically.
* Allow field owner manage their field.
* Notify to field owner when field is reserved.
* Notify user when request is accepted.
* Allow admin to manage profit.
* Allow admin to solve report.

#### Future plans

Current system is concentrated on core business flow. Therefore, some supporting features are restricted for the development team. These features may be expanded in the future:

* Assess skill of specific player in team.
* Organize tournament to attract more users and based on the results to assess skill of users more exactly.

#### Development Environment

##### Hardware requirement

* **For server:**

|  |  |  |
| --- | --- | --- |
| **Linux** | **Minimum Requirements** | **Recommended** |
| Internet Connection | Cable (4 Mbps) | Cable (8 Mbps) |
| Operating System | Ubuntu 12.04 LTS | Ubuntu 16.04 LTS |
| Computer Processor | Intel® Core i3 1.4GHz | Intel® Core i5 2.50GHz |
| *Table 1: Hardware requirement for Server* | | |

* **For mobile:**

|  |  |  |
| --- | --- | --- |
| **Linux** | **Minimum Requirements** | **Recommended** |
| Internet Connection | Wi-Fi or 3G (4 Mbps) | Cable (8 Mbps) |
| Operating System | Android 5 | Android 7 or above |
| Device | Sony Z5 | Sony Z5 or later |
| *Table 3: Hardware requirement for Mobile* | | |