

Software Requirements Specifications

Tournament Master

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Revision History

Name	Date	Reason for Changes	Version
Initial	2015/01/22		1.0
Clarification	2015/01/27	Issues were clarified over email with Tournament Co.	1.1
Final Version 1 Revision	2015/01/28	Touch-ups and final clarification	1.2

1 Introduction

1.1 Purpose

This document specifies the requirements for the creation of a tournament management and organization system titled Tournament Master. Tournament Master will allow users to create, view, and maintain tournament information in a simple and manageable way.

1.2 Project Scope

Managing tournaments is difficult because of the problems associated with organizing and communicating relevant information to a large number of interested parties. Tournament Master will be a simple, self-contained application for managing and viewing tournament information. The application will handle tournament creation, initial seeding, and bracketing. Users with different roles in a tournament will be able to have different levels of authorization.

1.3 Glossary of Terms

Tournament Director	User who initially created the tournament and has full moderator privileges. The director is the only user with the privilege of assigning moderators and deleting the tournament.
Tournament Moderator	User who has been granted moderator privilege for a specific tournament by the Tournament Director. Moderators have the ability to update tournament information.
User	Person who is using the software.
Guest User	An un-registered user. They can only see publicly viewable information.
Team Leader	User who creates and represents a team for a tournament.
Seeding	Process of matching opponents based on tournament style for the initial bracket.
Bracketing	The placement and progression style of competitors in a tournament.

1.4 References

- [1] Tournament Systems, Wikipedia," [online] 2013,
http://en.wikipedia.org/wiki/Category:Tournament_systems (Accessed: January 2015).
- [2] jQuery Bracket Library, [online], <http://www.aropupu.fi/bracket/> (Accessed: January 2015).
- [3] PhoneGap Development Made Easier, Telerik, [online]
<http://www.telerik.com/campaigns/platform/phonegap?gclid=CK-EvvPHtcMCFciEfgodBbEAFQ> (Accessed: January 2015).
- [4] imLeagues, [online] <http://www.imleagues.com/Default.aspx> (Accessed: January 2015).
- [5] Challonge, [online] 2015 http://challonge.com/tournament/bracket_generator (Accessed: January 2015).

1.5 Overview

This document begins with a general overview of the product which includes but is not limited to the product perspective, features, types of users, and operational environments. Afterwards, there is a detailed discussion of the system features and the external interface as well as their requirements. A review of the non-functional requirements including performance, safety, security, and software quality attributes of the system concludes the report.

2 Overall Description

2.1 Product Perspective

Tournament Master is a response to a request from Tournament Co. for an innovative and cross-platform application. The application will resemble an existing product known as IMLeagues as they both handle tournaments targeted to non-professional users. Contrasting IMLeagues, that supports only public tournaments, Tournament Master will be a self-contained product that handles both public and private tournaments.

2.2 Product Features

The features that Tournament Master will offer are as follows:

- User Account Registration
 - The system will allow users to register for an account with Tournament Master. Registering will allow users to manage, view, and update both tournament and personal information.
- Team Creation
 - A registered user can create a team and add team members.
- Tournament Creation
 - Users will be faced with multiple options when creating a tournament such as choosing the visibility permissions, seeding, and bracketing.
- Signing Up for Tournaments
 - Users can freely register for public tournaments, but require an invite to access private tournaments.
- Seeding
 - There are a variety of seeding options available (Reference: 3.5.1).
- Bracketing and Results
 - Users will be able to see bracketing and updated results.

2.3 User Classes and Characteristics

Registered and guest users have different levels of access. Guest users only have read-only access so they may only view public tournament rosters. Users who have signed up can have the status of a Tournament Director, Tournament Moderator, Team Leader, and/or participant. These permissions are tournament specific; for example, a user can be a player in one tournament and the Director of another.

The tournament creator is assigned director status. Directors can change tournament settings, schedule tournament matches, modify tournament ranking, delete the tournament,

and assign moderator status to other users. Moderators have all the same permissions as the Director except that they are not able to assign other users as moderators, change tournament privacy, or delete the tournament.

Registered users can join public tournaments and be assigned viewing permission for private tournaments.

2.4 Operating Environment

The application will be supported on Android 4.1+, iOS 7+ Google Chrome, Firefox and Internet Explorer 8+. By extension, the application can be used on any operating system that runs the supported web browsers. The main development effort will be focused towards the responsive website. The website will then be converted to native device applications with a web application framework.

2.5 Design and Implementation Constraints

The libraries available for development will be constrained to packages that can operate well on each of the specified operating environments. There will be options for how the user wants to be notified of certain events; these communication types are limited to email and application notifications.

2.6 Assumptions and dependencies

The main tournament view will depend on jQuery and the jQuery Bracket plugin. To keep the user updated on their standings the application will rely on email and notifications. The available space will be reduced for each page because an area will be reserved for advertisements.

3 System Features

3.1 User Registration

3.1.1 Description and Priority

User-specific features require an account. Registration allows users to be granted increased privileges such as the ability to create, join, and modify tournaments. This feature has very high priority and is mandatory to complete.

3.1.2 Stimulus/Response Sequences

Upon opening the application, users will have the option to create an account, sign in, or proceed as a guest user. The create account option opens the user registration page. The registration page contains fields for the user to enter a username, full name, password, and email address. An email address is required to register, but no email verification is needed. Once registration is complete, the application continues to the home page.

3.1.3 Functional Requirements

REQ-1:

The system must allow a user to register for the application using validated inputs.

REQ-2:

The system must notify a user if registration fails.

REQ-3:

The system must notify a user if registration succeeds.

3.2 Tournament Creation

3.2.1 Description and Priority

Tournament directors may delegate moderator responsibilities to other registered users. Users who are on a team roster for a tournament but are not registered for an account within the system are unable to receive moderator responsibility for a tournament. In order for a user to create a tournament, a tournament name, a sport category, a maximum number of registered teams, a seeding type, start/end date and time, location, privacy

settings(public/private), and a required number of players per team must be specified. Creating tournaments has very high priority and must be completed.

3.2.2 Stimulus/Response Sequences

The tournament creation option will be available when a user signs in to the application. The user can then fill out the available fields and click a button to create the tournament. An error message will be displayed if any required fields are empty which notifies the user to fix their input.

3.2.3 Functional Requirements

REQ-1:

The system must allow users to create tournaments.

REQ-2:

The system must notify the user if any required tournament creation input fields are incomplete.

REQ-3:

The system must allow tournament directors to invite teams/individuals appropriately.

3.3 Joining Tournaments

3.3.1 Description and Priority

Users may register a roster into public team tournaments or themselves into public single tournaments. Users must be invited to join private tournaments. Joining tournaments is a high priority feature as teams and players are required for tournaments to occur.

3.3.2 Stimulus/Response Sequences

When a team is registered for a tournament, all team members will receive appropriate notifications according to their settings. The team roster should meet the minimum and maximum number of players requirement.

3.3.3 Functional Requirements

REQ-1:

The system must allow users to register a team into an existing public tournament.

REQ-2:

The system must allow users to register a team into an existing private tournament to which they have been invited.

REQ-3:

The system must notify the user if required team information is incomplete for the registration of a team-based tournament.

3.4 Tournament Roster and Moderator Delegation

3.4.1 Description and Priority

Tournament directors delegate moderators for their tournaments. Tournament delegation has high priority and must be completed.

3.4.2 Stimulus/Response Sequences

Tournament directors will have the option to add a moderator. When added, the user will receive a notification of the permissions update.

3.4.3 Functional Requirements

REQ-1:

Tournament directors must have the ability to add any registered user as a tournament moderator.

REQ-2:

The system must notify a tournament director if the user they invite to be a moderator is not registered.

REQ-3:

Users which are invited to be a moderator for a tournament must have the ability to deny the position.

3.5 Tournament Updating

3.5.1 Description and Priority

Tournament bracket and setting updates are only handled by the director and moderators of the tournament. This system feature has very high priority and must be completed.

3.5.2 Stimulus/Response Sequences

The tournament Director and Moderators can:

- Update the scores
- Update tournament and decide wins or losses
- Manage draws, forfeits, and disqualifications
- Add and remove players to teams
- Invite players or teams to appropriate tournaments

The directors and moderators will have a similar view of the tournament bracket to standard users but they will be able to edit various fields and options throughout the page.

3.5.3 Functional Requirements

REQ-1:

Updating scores of matches in progress and inputting the outcome of a match within a tournament must be available to tournament directors and moderators.

REQ-2:

A tournament director must have the ability to add players to teams when requested.

REQ-3:

A director must be able to change a private tournament into a public tournament. Modifying a public tournament to a private tournament is not possible.

3.6 Tournament Viewing

3.6.1 Description and Priority

On the viewing page, users can view the tournament bracket and match information. Public tournaments are viewable from a section of the homepage. Users can only view private tournaments they are invited to. This is an important priority feature.

3.6.2 Stimulus/Response Sequences

Users may search for tournaments by desired tournament details. Tournaments can be selected and information can be viewed on another page.

3.6.3 Functional Requirements

REQ-1:

Tournament directors must be able to edit tournament information from the tournament viewing page

REQ-2:

Users must be able to search for and view private tournaments they are apart of and all public tournaments

REQ-3:

The system must notify the user if required input fields are incomplete when searching

3.7 Tournament Seeding

3.7.1 Description and Priority

Tournaments set up opponents based on a seeding system. Usually opponents are matched up based on the greatest possible divergence between skill. Seeding intends to quickly distill tournament rounds into their most competitive versions involving evenly matched players/teams.

Some bracketing formats are restricted to specific seeding options. The following table show compatible seeding and bracketing formats:

Seeding Type Option	Bracketing Type Option
Round Robin	Round Robin
Round Robin	Single Elimination Elimination
Manual Selection	Single Elimination Elimination
Random Selection	Single Elimination Elimination
Swiss System	Swiss System

Seeding is a critical priority feature and must be completed.

3.7.2 Stimulus/Response Sequences

Within the tournament creation process the Director selects a seeding and bracketing format based on the set of compatible pairs.

3.7.3 Functional Requirements

REQ-1:

Multiple seeding options must be available to the tournament director.

REQ-2:

Seeding is only initialized once the Director has confirmed the final team rosters and either the maximum quantity of registered teams has been reached or the registration end-by date has passed.

3.8 Tournament Bracketing

3.8.1 Description and Priority

Tournament brackets support Swiss and single-elimination (otherwise known as a knockout) formats. The bracketing format can be selected as an option on the tournament creation page and cannot be changed after the tournament has been created. All tournament matches and eliminations will be based on the tournament format. Supporting all common bracketing formats is essential for a tournament application to be useful and therefore is a high priority and must be completed.

3.8.2 Stimulus/Response Sequences

The tournament format can be selected from a dropdown menu on the tournament creation page. Once the tournament has been created, the tournament page's matches will be organized based on the format selected. When wins and losses are entered, the elimination of players or teams will be decided by the tournament format and the diagram for the tournament rounds in the tournament page will be updated accordingly.

3.8.3 Functional Requirements

REQ-1:

The bracketing status will only be updated once the tournament director has updated match outcomes.

3.9 Tutorials

3.9.1 Description and Priority

When a user first uses the software, the tutorials will be displayed to introduce each feature. The tutorials can be configured in the application settings where there will be an option to reinitialize the tutorial interface. The tutorials will help with the overall usability of the application and assist new users. Tutorials are a low priority feature whose completion is not mandatory.

3.9.2 Stimulus/Response Sequences

Helpful bubbles containing text will appear over a darkened screen to describe functionality. Users will be able to close tutorial sections.

3.9.3 Functional Requirements

REQ-1:

The system provides tutorials that users may experience if they desire.

REQ-2:

The system must allow the user to exit a tutorial prematurely.

3.10 Settings

3.10.1 Description and Priority

All users should be able to edit standard profile information and system settings. This is a mandatory feature for all registered users.

3.10.2 Stimulus/Response Sequences

The personal settings will be accessible via a button. When the button is pressed a new page will appear with a listing of all the configurable changes.

3.10.3 Functional Requirements

REQ-1:

Users are able to update their account information and system settings.

REQ-2:

The system must notify the user if updated settings fields are incomplete.

4 External Interface Requirements

4.1 User Interfaces

The application should be accessible for users with little to no experience with similar applications. The sections and transitions in the application should be clear, and information should be well organized so that new users have no problems finding their way through the application.

Users are able to access all features of the application from the home page once logged in.

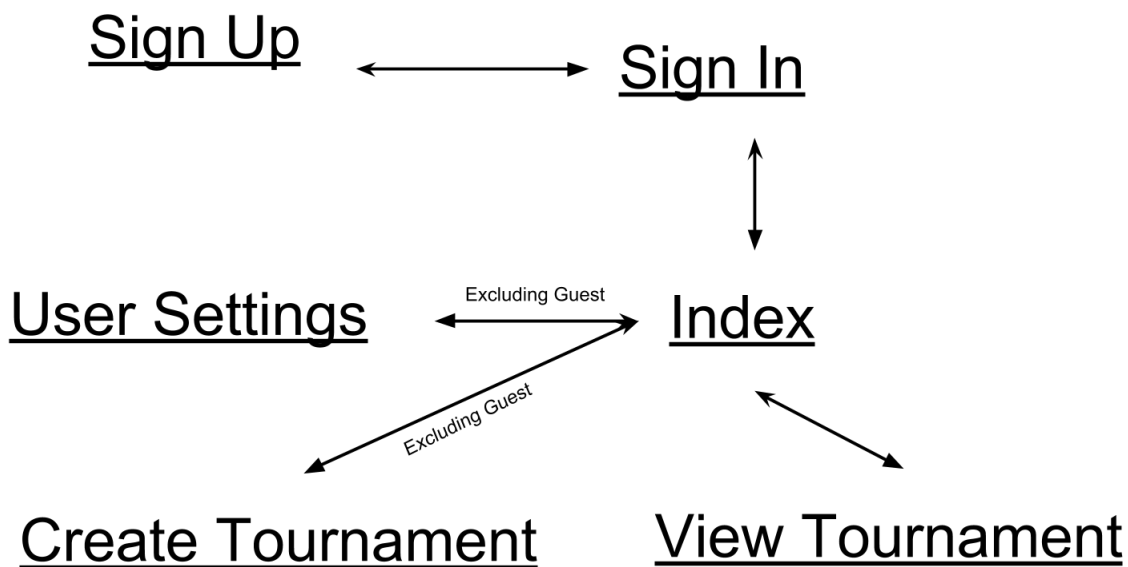


Figure 1.0: A General Layout of Tournament Master

4.2 Hardware Interfaces

The application will be web-based and as such any supported device must have an internet connection in order to fully take advantage of the application. However, the application will be usable offline in a mobile app form with only locally stored data being able to be seen and modified.

4.3 Software Interfaces

Data will be transmitted to and from a Tournament Co. hosted server and stored in a MySQL database. This data includes user accounts, user permissions, tournaments, and rankings. All non-public user account data will be transmitted over HTTPS to ensure against network snooping. PhoneGap will be used to port our initial web-based application to a semi-native application for phones. Notifications to users will be sent via e-mail for tournament invites and other tournament-related changes that the user is involved in.

4.4 Communications Interfaces

The communication methods used in the application include application notifications, and email. Any administrative position (Tournament Director, Tournament Moderators, Team Leaders) requires an account within the application. Players that are listed in a team can have accounts as well. All accounts are linked to an email, and every account has the option to choose whether they want to be notified through email/application methods, if at all. Unregistered users which are assigned to a team roster may have an associated email address where notifications will be sent.

5 Other Nonfunctional Requirements

5.1 Performance Requirements

The application must be reasonably responsive across all supported devices. There are no specific timing goals that the application must adhere to. However, users should not notice any delay when transitioning between screens and loading times should be minimized. Caching and prefetching data will be used to give the appearance of increased network speed. When the user does not have a data connection, only local, non web-based tournament data will be available.

5.2 Safety Requirements

Any tournament competitions related to the consumption of alcohol or any illicit substance should have a disclaimer informing the user of the dangers associated.

A warning is included to the possible injuries that can be sustained while participating in each game type.

5.3 Security Requirements

Sign in and registration must have an encrypted connection using a security certificate. Passwords will never be displayed to the user and will be cryptographically hashed in the database. User email addresses will never be shared with other users without explicit permission. User authentication and any operations to do with sensitive information, such as changing passwords, will always be performed over HTTPS. All email notifications will have the options to be disabled on the settings screen.

For tournaments the tournament Director's email will have the option to be hidden. When the Director's email is hidden from tournament users the users are given the option to send the Director a message through an obfuscated email system that hides the email address from users.

5.4 Software Quality Attributes

As Tournament Co. is a startup company that plans to use this application as a foundation to build on the application should be adaptable and robust. Planned expansions for version 2.0 of this application include:

- A tournament history for each player
- Pre-configured teams with information
- Integrated live streaming and chat services
- More tournament type choices
- Player statistics (Win/Loss, Profile Picture, etc...)
- Integration with social media platforms

These future plans will be kept in mind when designing and planning the application. As Tournament Co. is not sure in the direction they would like to move with this product it also has to be open to modifications and large upgrades. The system allows for expansion into a variety of tiers of user including coach's, captains, referees, and many more. The abstract architecture allows for the variety of sports that can be included in tournament listings to be very modifiable.

As described in section 4.2, the application should be always available given that the user has a connection to the internet. When not connected to the internet, the application should still be functional so that the user can modify locally stored data and browse the previously loaded tournaments.

Appendix A: Analysis Models

A.1 First Elicitation Meeting Minutes

Date: January 22, 2015

Time: 10:00 AM

Place: ECS 104

Present: Sarah, Jakob

Recorder: Sarah, Jakob

1. **Tournament Specifics**

- Tournament Formats
- Tournament scope (commercial vs intramural)
- Participant limits
- Disqualification parameters

2. **Clarifications**

- Hierarchy of privilege, Directors can raise Moderators
- Private Tournament Access
- Private vs Public declarations
- Compatible Platforms
- Tournament Searching/Browsing

3. **User Classes and Privileges**

- Director
- Leader
- User/Player
- Guest

Appendix B: Issues List

The following are a list of questions that have arisen while defining the application's requirements.

1. Should the application be localized and have translation options?
2. Is there a limit to how many tournaments one user can make?
3. How long can a user be logged into one session for?
4. What should happen if the user tries to create two sessions (ie. they are logged in by desktop then try to log in by mobile)?
5. Should the user be automatically logged into the app upon account creation?
6. How should tutorials be accessed by the user? Upon doing a new task it'll appear or should be only accessed in the settings or both?