Senior Project Write Up

Sports-Tool

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1. Introduction

Playing sports is an important pass time for a lot of people and the application I am creating is call Sports-Tool that will help people play sports.

1.1. Description of Problem

Most people from the time they were born to when they are older have either picked up a sport or a hobby that they liked to play. Some people started in elementary school as others started in junior high or high school. Some of the hobbies and sports that people are involved are also influence by other people other than academic institutions. The problem usually isn't that people are exposed to sports or hobby they are interested in, but finding a way to stick with it. I've seen and experience personally how people give up sports or hobbies that they've committed a ton of time perfecting their skills and just doing what they love. I played tennis, water polo, and swam in high school. I love all of these sports, but once I came to college there wasn't a organized club where you could play for just the enjoyment. All the clubs sports in college seem to be extremely intense and mainly focus on winning.

I feel like the older you get the harder it is to still be involved with the hobbies or sports you use to play. When I was in high school I use to play tennis 6 hours a day. Although, I can also admit that the older you have more
responsibility you have and therefore don't have as much time, but now I would only play at most once every 2 weeks if I'm lucky. After college I'm afraid that I won't be able to play at all. The only reason I'm able to play tennis is because there's a slightly high interest than other sports, but sports like water polo is impossible to play with people since there isn't anything organize for it.

It is evident that one of the reason that people stop playing sports is because they can't find people to play with. Some people would stop playing all together and all those time spent building up the skills to perform that sport well would all go to waste. A web based tool is the solution I am purposing and it would allow people to find people who have similar sports interest and they are able to create and join sport events. Based on the initial reaction from testing, there is reason to believe that Sports-Tool could be a good solution to this problem.
1.2. Overview of Solution

This senior project involves the development of web application that allows people who are interested in sports to interact with each other. The web application is similar to a social network. Players are able to interact with each other, but will have a focus on sports. Anyone with a interest in a sport can register for the website.

The services the website has are:

- Create user accounts
- Create/Join Teams
- Create/Join Leagues
- Create/Join Tournaments

People have the ability to join teams that other friends create or teams with people they do not yet know. They can then go on to either create or join tournaments or leagues. These features and other are described in the Feature Overview section.

The way this solution will solve the problem described in section 1.1 is by helping to close the barrier between wanting to play a sport and actually doing it. This solution is similar to college intramural sports that most colleges have, but are less limiting in a lot of way and take a lot of other things in to account. Intramural sports allow users to join events that are setup by the
school for the students. The way it is limited is because the school chooses which sports are offered and only students from that school can play.

This website will allow the user to go on and quickly look for people and events in a sport they are interested in. For example, if a user is interested in soccer and does not know anyone who is, they can login, search for a soccer team and request to join one. They can also then join a league or tournaments that are available. This can all be done in a convenient online format, with which users of existing social networking sites are already familiar. The alternative is go to a soccer field and wait around until someone shows up!

This website is not to lower the live interaction between people but to make it easier to continue playing or to start a new sport. People would also be able to see what type of players are in the teams and what type of team they are. If someone is starting a team it wouldn't make sense to join a team that the average player has been playing the sport for 10 years. This website in detail should make starting and continue playing sports easier no matter how old you are.
1.3. Features Overview

This section provides a brief overview of the Sports-Tool features. Details of actual usage are covered in Chapter 3 of the report.

**User Account:** Players can register for accounts where they will provide information about themselves to better filter the website to meet the users need.

**Teams:** Players can register for teams. They can search for existing teams by filters, by location, and sport, or they can create their own. Each team has a team captain and various other roles that can be assign to other team members. Teams are sport specific and each is created specifically for a given sport.

**Leagues:** Depending on the sport, players can either register for leagues themselves or join a team and the team then can register for the league. A league is where a set of teams or players will compete against each other on a weekly basis until each team in the league has played against each other. Leagues usually last a season, with a post-season playoff where the winning team from each league plays against each other to determine who is the best.
The location will determine which leagues will play against each other in playoffs. A league is also sport specific.

**Tournaments:** Players or teams can also join tournaments. Tournaments are similar to leagues, but they usually consist of more teams/players and usually take place over a short period of time (from 1 day to couple of weeks). Tournaments are in the format of single or double elimination. Smaller tournaments will be round robin format.

**Ranking:** Teams and players in a league have a ranking system. There is also broader ranking system related to locations or just within certain sports. Teams and Players gain points by participating in sports award points towards a ranking. Based on ranking, some teams and players can qualify for special events.

**Statistics:** Teams and players can see an in-depth analysis of their performance. This is provided to encourage players to improve not to discourage them from playing. Accordingly, the feature can be disabled by users. Players can see how well they did on a certain team and overall performance within a sport. They can also see how well they improved, as
well as others trends in their performance. This can help players better assess their performance and improve their game.

**Challenge System:** Teams/Players can challenge other teams/players to matches or games, depending on the sport. This is an important and novel part of the application. The challenge system helps Teams/Players schedule practice events with other Teams/Players. Users can filter these based on location and sport and schedule practice games or just practice session with each other.

**Social Network Aspect:** Users have a simple form of online communication with other players. The features are only very basic, since the focus of the Sports-Tool is playing sports, not general social networking.
1.4. Focus & limitation

The main focus of this senior project is to create a tool that has some of the features listed in the feature overview. The complete system would take more time to complete than the three months spent on a senior project. Accordingly, the focus of the senior project must be narrowed.

Sports-Tool features are limited to the most important ones given in the Survey. Presented in section 2. The features are limited down to:

- Sign up for account
- Create/Join Teams
- Create/Join Tournaments
- Sports Available: Basketball, Football, Soccer, Tennis, Baseball, and Volleyball
- Location Available: Fresno, San Luis Obispo, Walnut Creek, and Sanger

The reason these features were chosen is based on the survey and what most people wanted. Since this is a first release of this project and on completion it would only be in pre-alpha, I felt like it was most important to get the features that seemed most people would be interested in.

The implementation of the teams and tournaments are also narrowed down to the point where players can join and create teams and then only teams can join tournaments. Any user can create tournaments.
The focus of the initial Sports-Tool prototype is mainly on usability and making a determination if it is something that people would. The system can be characterized as a pre-alpha release without any security measures or a dedicated server.
1.5. Outline of the Report

This report is outlined in the order of steps I took to complete the project. A description of each section is given below.

**Survey:** A survey was given out on during the first quarter of this senior project to gage how many people would be interested in this and what type of things they will be interested in. The survey results are presented and analyzed.

**Scenario of System Use:** This section covers how end users interact with the Sports-Tool website. the scenario presents specific examples and provides screens shots and details on each feature.

**Design and Implementation:** This section covers the different aspects of the project and what had to occur in the backend of the Sports-Tool. It also covers installation details that of which tools were used and how to setup the project if someone else were to continue working on the project. This section includes coverage of Database design, System Design, and UI design.
**Usability Testing:** This section covers the steps and tools used to test the usability of Sports-Tool. It also includes results of selected test cases and analysis of test results.

**Related Work:** This sections discusses other work on tools with features like those provided by Sports-Tool

**Conclusion and Future work:** This sections covers the results, what I learned from this project, and the future of Sports-Tool.

**NOTE:** Some images may be hard to see in this document due to reduced size. Full-size images can be viewed in the electronic project repository, in the folder `.images`.
2. Survey Analysis

For this senior project I compiled a survey to help me assess which type of features people would want to see in a senior project like this.

The survey was hosted by Survey Monkey and was distributed using Facebook. The total number of people who responded to the survey was 78.

2.1 Survey Overview

The following are a snapshot of the survey as well as detail to survey.

Introduction to survey
The introduction to the survey is short as well as informational, explaining what the survey pertains to.

Demographic information: information about gender and age

Demographic information

This demographic information allows survey results to be analyzed based on the background of the respondents.
Interest Questions: questions about types of sports people are interested in

In order to know how interested people are to the this website the best way to do so is to ask. This page is to see what type of interest people taking the survey have. The first question ask if they are interested in a website like this and the second ask about the type of sports they are interest or involved with.
Features: questions about what features people would be interested in.

1.4 Features Questions

The Features questions was the reason why this survey was created. To see which features people would be interested in. The question is listed as different features and people taking the survey can respond appropriately.
2.2 Survey Analysis

The following are the results from the survey responses:

Survey Questions: Percentage answered: Choice: percent(people)

1. Gender?
   a. Male: 59%(46)
   b. Female: 41%(32)

2. Age Group?
   a. 25 or Older: 7.7%(6)
   b. 21-24: 78%(61)
   c. 18-21: 12.8%(10)
   d. 14-18: 1.3%(1)
   e. Younger than 14: 0% (0)

3. How interested would you be in this website?
   a. Not at all interested: 5.3%(4)
   b. Not really interested: 13.2%(10)
   c. Neutral: 23.7%(18)
   d. Interested: 46.1%(35)
   e. Very Interested: 11.8%(9)
4. What type of sports do you play?
   a. Basketball: 38.4%(28)
   b. Soccer: 37%(27)
   c. Tennis: 41.1%(30)
   d. Flag Football/Football: 34.2%(25)
   e. Racquetball: 17.8%(13)
   f. Volleyball: 26%(22)

5. Next, we like to gather information on possible website features. Below you'll find a list of possible features. Please indicate how likely it is that you would use each proposed feature.

   a. Leagues - The ability for users to create leagues that teams/individuals can join and compete.
      i. Very Unlikely: 2.8%(2)
      ii. Unlikely: 14.1%(10)
      iii. Neutral: 23.9%(17)
      iv. Likely: 43.7%(31)
      v. Very Likely: 15.5%(11)

   b. Teams - Be able to form teams and connect with each other
      i. Very Unlikely: 2.8%(2)
      ii. Unlikely: 11.3%(8)
      iii. Neutral: 18.3%(13)
      iv. Likely: 50.7%(36)
      v. Very Likely: 16.9%(12)
c. Teams - Be able to manage practices and team meetings.
   i. Very Unlikely: 7.1%(5)
   ii. Unlikely: 11.4%(8)
   iii. Neutral: 14.3%(10)
   iv. Likely: 48.6%(34)
   v. Very Likely: 18.6%(13)

d. Challenge System - Be able to challenge other players/Teams to practice matches/game
   i. Very Unlikely: 2.8%(2)
   ii. Unlikely: 8.5%(6)
   iii. Neutral: 18.3%(13)
   iv. Likely: 46.5%(33)
   v. Very Likely: 23.9%(17)

e. Rankings - Have Team/Player Ranking within a league.
   i. Very Unlikely: 4.2%(3)
   ii. Unlikely: 11.3%(8)
   iii. Neutral: 19.7%(14)
   iv. Likely: 43.7%(31)
   v. Very Likely: 21.1%(15)

f. Tournaments - Weekend/day events where a bunch of Teams/Players come and compete.
   i. Very Unlikely: 4.2%(3)
ii. Unlikely: 4.2%(3)

iii. Neutral: 15.5%(11)

iv. Likely: 52.1%(37)

v. Very Likely: 23.9%(17)

g. Statistics - See overall performance as a Team/Individual against other Teams/Individuals.

i. Very Unlikely: 4.2%(3)

ii. Unlikely: 5.6%(4)

iii. Neutral: 26.8%(19)

iv. Likely: 39.4%(28)

v. Very Likely: 23.9%(17)

Survey Analysis:

This survey was posted on Facebook where the sampling were then from people that were my friend on Facebook. Overall I got 78 people to respond to this survey. There were slightly more male than female respondents.

Most of the peoples age that took this survey we're around my age and probably college students. The people who responded to the section on whether they were interested or not shows that majority of the people that took this survey were interested in a site like this.

Under the section about which sports they play there is also a good variety in interest in each sport listed. They were also able to leave comments for sports that aren't listed, and the sport that seemed to spark interest in most people was baseball and softball. Due to this assessment Softball and Baseball has been added to the list of sports.
The last section covers the features that this social web site could have regarding the sports aspects. Nearly all these features have a high rate of interest. Accordingly, each one of these features will be added to the requirement page for things to be develop.

Overall, this survey was a success as I was able to get peoples opinion on what they thought and what they would like to see in a website like this. I was told from Professor Burns, a Psychology professor, that when you give a survey out you will ended up with a lot of responses towards the center and therefore people who are interested should be treated as those who are very interested, and the same for those who aren't interested. This survey has helped me assess which things to add to the requirements page as well as which things will be develop and things that won't.
3. Scenario of System Use

This section covers what the user sees and how to use the Sports-Tool web application. Detailed explanation and screenshots are provided.

Home Page:

This is homepage of what the user will see when going to the website. The user can either login, if they have an account or create one. The template and message is only a temporary feature that is part of the senior project.
Register:

When the user clicks 'Sign Up' at the home page they are taken to the register page.

Here is where the user can create an account. The user needs to fill in all the information with an asterisk next to it, then hit submit on completion. The Fields are by default only based on the ordering of the fields.

Logged in page:
Once the user logs in they can then see a different home page where it would have a picture of them. Information about this website and a list of current registered tournaments. They can hit refresh to get the most up to date tournaments. There are also tabs to other sections of this application. The user also has the ability to logout anytime they choose to. The message is a temporary feature that is part of the senior project.

Teams:
Users can click on the team tab to see a list of their teams. They have the option of creating a team or finding a team listed above. When a user picks a team they can either leave the team or view the players current in that team.
Users can click on the tournament tab to either find a tournament or create their own. When a player is looking for a tournament the filters are shown on the site where a player can choose a location and a sport. They can then click on 'View Tournament Detail' and then choose to register for the tournament or not.
4. Design and Implementation

4.1. Installation and Setup

Required software:

1. [1]WAMP server 2.0: W - Windows; A - apache; M - mysql; P - PHP server
5. [5]PHP 5.3.0: PHP compiler
6. [6]ZendFramework 1.10: framework that connects Flex to PHP.

**Installation: (for my configuration in Windows 7)**

First you need to get all these software, then you need to first install the WAMP server. Then install Flex Builder (you can download it through adobe website and install as trial, a version that is good for a limited time.) After this you need to install mysql and PHP. PHP needs to be hooked up to the WAMP server but is usually done so automatically.

**Setting up Project for Flex Builder:**

Copy over the project source called 'ST' in FlexWorkspace located in the zip file to the workspace of Flex Builder. Open up Flash Builder and create a new project called 'ST'. Create this project as web application and uses PHP services. Configure the PHP service location of your WAMP server. Then hit submit

**Setting up PHP service:**

Copy over the PHP service called 'Service.php' to the WAMP server. Configure in Flash Builder the location of where this service is located in the WAMP server directory. After setting up your mysql database you need to open the php file and edit the database location.

**Setting up mysql Database:**
Mysql database file is also contain in the zip file under database. Open up mysql workbench and click on called 'Open Connection to Start Querying' and import 'sportstooldb.sql' and execute this script. This will create the database needed for this project.

**Configuring ZendFramework:**

Copy the ZendFramework folder that was downloaded to the WAMP server root directory. Flash Builder should already be configured to know where it is, but if not might need to configure it.

**Starting application:**

Once everything is setup and working start up WAMP server service and then click run on Flash builder and the project should load up on a web browser.

The current build of the project is located in wamp src. Copy the files over to your wamp server location and open a web browser and point to localhost/ST-debug. You might have to configure the amf_config file that is located in the .../wamp/www/ST-debug folder.
4.2. Database Design

This is the database relational ER diagram. It shows which tables contain which elements and how they are related to each other. This was how the database is model.
4.3. System Design

This is a high-level design of how Sports-Tool is implemented.

This is an overview of how the system works. Sports-Tool is implemented in Flex and uses ZendFramework to connect to PHP. The Sports-Tool application will make service calls to the ZendFramework which will then connect to the Service.php on the WAMP server which will then execute queries to the mysql database. Once it gets a response it will then give back the result to the.
ZendFramework which will then give that result back to Sports-Tool Web Application.

**Sports-Tool Web Application:** A look inside how Sports-Tool is implemented.
4.4. UI Design

The UI component is done using flex which is a language similar to html that uses flash to create application. The design was first created in adobe fireworks, which is a UI modeling tool that lets users create prototypes. Once the main look and UI was created it was converted into an application in flash builder.

The 3 main colors I choose are #31B96E, #A4E666, and #616536. The UI design process took approximately 30-40 hours.
5. Usability Testing

Usability testing files are located in the testing directory. The test I did for this senior project was to test the usability of this application and to see what people thought about it. The way I structured this test case was by selecting a few people that took the survey in the beginning of the senior project. I then sent those people email that contained the test scripts and information on how to execute, what to expect, and how to provide feedback.

Email:

Hey Tester,

I’m emailing you regarding my senior project and was wondering if you can take 10-30 minute out of your time to run some test for me. This is a big part in my senior project and would be greatly appreciated if you can help me out by running a couple of these test scripts.

Please keep in mind that my senior project is still in Pre-Alpha phase(http://en.wikipedia.org/wiki/Software_release_life_cycle) of its life cycle. It could have a lot of bugs and some things might not work correctly. I’m just giving you this warning ahead of time so please be patient with it. If you find bugs please let me know it would be very helpful.

Also note, my senior project is kind of secure, but not completely secure. In other words, to be safe please use dummy data when you are testing the site.

Here are a list of test cases you can run. You don’t have to run all of them, but try to run as many as you can. As an incentive if you help me out with this I’ll treat you to some lunch if you want.

Note: just because you start a test case doesn’t mean you have to finish it.

URL: http://www.sports-tool.com/ST/#

<table>
<thead>
<tr>
<th>Test Case Number:</th>
<th>Test Case:</th>
<th>Expected Result:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Create an account</td>
<td>You should be logged in once your account is created</td>
</tr>
<tr>
<td>---</td>
<td>------------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>2</td>
<td>After test case 1, Log out</td>
<td>Logged out</td>
</tr>
<tr>
<td>3</td>
<td>Log in with the account you created.</td>
<td>Logged in</td>
</tr>
<tr>
<td>4</td>
<td>Click on teams and look for and register for the team, TEST TEAM located in Fresno, California, and sport is Tennis</td>
<td>You should be part of the team.</td>
</tr>
<tr>
<td>5</td>
<td>Create your own team(you choose the fields)</td>
<td>You should be part of this team too.</td>
</tr>
<tr>
<td>6</td>
<td>Create a tournament</td>
<td>Should tell you the tournament is created.</td>
</tr>
<tr>
<td>7</td>
<td>Register for your own tournament you created</td>
<td>Go back to home page and your tournament should be available in the front page.</td>
</tr>
<tr>
<td>8</td>
<td>Remove yourself from Team: TEST TEAM</td>
<td>You should no longer be part of the Test Team</td>
</tr>
<tr>
<td>9</td>
<td>Remove yourself from your team you created</td>
<td>You should no longer be part of your team</td>
</tr>
<tr>
<td>10</td>
<td>Join test team again</td>
<td>Should be part of test team.</td>
</tr>
</tbody>
</table>

Once your finished running the test cases you were able to run please fill out the feedback form located: Feedback Form

If you don't want to help out and run these test cases please reply back with "NO TEST".

Thanks,

Bryant Ung

Once the emails were sent out they were given a week and a half to execute the test scripts and report back. 9/13 people responded. A few people responded by email or by phone telling me they either don't want to do
it or don't know what they are doing. Although, majority of people did get back to me. The detailed results are also located .../testing.

The results from the usability testing was good overall. Most people liked the site and liked the way it looked and said it was easy to manage around it. The test cases were run by people from different background. The people who were known to be very technical had a lot more to say and took more time to run the test cases. They had a harder time to navigate around the site and run the test cases. It would seem that those who weren't as technical took less time and ran into less trouble. Also, the more technical people had better feedback overall and seemed to put more effort into it.

Overall, the usability testing was a success and it would seem that if this site were to be improved and go live it would do well. If there was more time I would of liked to improve the site based on usability results and run a second stage of testing, but unfortunately this time was not available within the scope of the senior project.
6. Related Work

Global Tennis Network:

http://www.globaltennisnetwork.com/

This website is also a social network that allows people from all over the world to communicate with each other, but is geared around people playing tennis. This website is similar to what I'm doing by allowing people to socialize, but also allows people to interact with each other and set up events for tennis. The difference between this site and the one I'm creating is that it is only for tennis and doesn't support any other sports. The good thing about this is that it attracts people who only play tennis and not other sports, but the bad thing about it that as a social network it doesn't attract a lot of people. Also the layout as well as the setup of their site could be more simple. As I was going through the site I noticed that it took about 30 minutes to set up everything and some things were confusing.

Sports Connections:

http://www.sportingconnections.com/

The sportingconnections.com site is very similar to what I'm trying to do for
my senior project. It not only has what I want to do with my website but it supports a lot of sports. My site will differ from this site a little because on the sportingconnections.com site you can only create teams and participate in events. The events are only places where you can advertise but the site has no way of keep track of the people participating in the events. My site will differ by not having events but instead have leagues as well as tournaments and events. A big aspect this website that is missing is the ability for teams to have league play. This website only allows people to create teams, but in no way to form leagues with other teams to have league play. This website is mostly a fancy way to connect with others, but does no better job in organizing events than facebook. This website seems to get a lot of users who are also not within the United States. Although the problem this site is trying to solve seems to be the same as what I'm trying to solve for my senior project, I believe that the missing features are significant. From my survey, over 60% wanted leagues to play in. The process on how people will interact on their site is different than Sports-Tool. Because of the lack of users it also causes the website to be useless to most people that are on it, because they can’t find people to play sports within that area. Currently the site seems dead as no new development has been done on it and doesn't seem it's been updated in 3 years.
7. Conclusion and Future Work

Working on Sports-Tool has taught me a lot about different technologies and how hard it is to get something done alone. I really enjoyed the time I spent tackling problems and figuring how to get everything work, but it was a lot of work and took more time than I had. The idea of Sports-Tool came from myself, because I love to play sports and always thought it would be cool if there was something to help me play sports. Since this was my idea I had a little more motivation to continue working on it and to take it as far as I could in 6 months. The other things I learned from working on this senior project was to believe in myself and to just keep trying really hard even when things seem impossible. This attitude was necessary because all the technology I used in this senior project was something I never used before. This Senior project wouldn’t of got done otherwise.

I plan to continue working on Sports-Tool after I graduate. Since I took survey from people and had people test it, it seems that some people are interested in helping me out. I hope to someday get it working in a way where everyone can use it. In the future I plan to redo the requirements as well, because as a first pass through this senior project I didn’t have a lot of people
to throw ideas at me on how things should be done, and so after seeing the
usability testing I can now see that things need to be changed. Overall, I
learned a lot of new things that I didn't learn in other classes, but I also had to
use the skills I picked up from school to work on this Senior Project.
8. Bibliography

Sites referenced:

1. Facebook: http://www.facebook.com/

Tools Used:

1. WAMP server 2.0: http://www.wampserver.com/en/
4. Flash Builder with Flex 4.1:
   http://www.adobe.com/products/flashbuilder/
5. PHP 5.3.0: http://www.php.net/