Risk Resolution Report

Project – PRJ601

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BSc Software Engineering

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Table of Contents

[Introduction 2](#_Toc409207876)

[Risk Mitigation 2](#_Toc409207877)

[Risk 1 – Unable to solve functionality of the application 2](#_Toc409207878)

[Risk 2 – Game developers restrict the use of their server API 3](#_Toc409207879)

[Risk 3 – Project Data loss 3](#_Toc409207880)

[Risk 4 – Unable to join characters in database for listing 3](#_Toc409207881)

[Risk 5 – Inefficacy with XP based methodology 4](#_Toc409207882)

[Risk 6 – Database scalability with characters 4](#_Toc409207883)

[Risk 7 – Compatibility with multiple web browsers 4](#_Toc409207884)

[Risk 8 – Copyright issues with game company (i.e. art use) 5](#_Toc409207885)

[Risk 9 – Failure to comply with Data Protection Act 5](#_Toc409207886)

[Risk 10 – Game servers offline or unavailable 5](#_Toc409207887)

[Risk 11 & 12 – Failure to comply with Riot Games API & 3rd party terms & conditions 6](#_Toc409207888)

[Methodology 6](#_Toc409207889)

[Final Stage Plan 6](#_Toc409207890)

[References 7](#_Toc409207891)

[Appendices 8](#_Toc409207892)

[Appendix A – Software Specification 8](#_Toc409207893)

[Appendix B – Final Phase Plan 10](#_Toc409207894)

PRJ601: Risk Resolution Report

Website Application using a game server API

# Introduction

This report will focus on the work done in progress for the project. This phase of the project tackles the risks identified in the Project Definition. How these risks have been reduced and better analysed will be detailed in this report.

# Risk Mitigation

Here is the list of the risks found in the Project Definition:

1. Unable to solve functionality of the application
2. Game developers restrict the use of their server API
3. Project data loss
4. Unable to join characters in database for listing
5. Inefficiency with XP based methodology
6. Database scalability with characters
7. Compatibility with multiple web browsers
8. Copyright issues with game’s company (i.e. Art use)
9. Failure to comply with Data Protection Act
10. Game servers offline or unavailable
11. Failure to comply with Riot Games API terms & conditions
12. Failure to comply with Riot Games third party application policies

Work done on each/several risks will be discussed below, including the impact on the specification, methodology and project planning.

## Risk 1 – Unable to solve functionality of the application

To attempt to solve the functionality of the application, it was necessary to create a partially functional prototype website. A prototype enables practice of the functional programming of the application. Because the application has various differing functions (e.g. send & receive API requests, statistical data processing, user voting etc.) on a single webpage, it would be more appropriate to make a prototype rather than make separate practise webpages.

The prototype consist of two webpages, the first one being homepage which has a form with three input fields; summoner name (account name), Champion (game character) and server. The second webpage is the results page where majority of functionality is located. The summoner name and server are sent as part of an API request and a list of chosen characters counters are displayed. For processing the list a rating algorithm was created to give accurate ordering in the list, as well as account for rating changes via a user voting system on the list. All this includes interaction with a prototype database (see risk 4).

**Impact on the project:**

Specification – With majority of the functionality practised/solved, it was decided to extend functionality by adding a user profile page which gives various user account specific game statistics.

Methodology – None

Planning – Because several functionality issues have already been approached or solved, the time needed to implement the application will be reduced. However an extension to functionality by having a user profile page will slightly affect this.

## Risk 2 – Game developers restrict the use of their server API

Research was done about Riot Games API to determine this risk. This research merely involved searching for any developer posts on the API website forum on API restriction or any upcoming changes. It was found that no announced changes would occur that restricted API use, assuming the API terms and conditions are withheld (see risk 11).

**Impact on the project:**

This risk was identified in the risk table in the Project Definition as having a very low probability of occurring so the result of the research was expected beforehand so doesn’t have a much impact on the project.

Specification – None

Methodology – None

Planning – None

## Risk 3 – Project Data loss

Data loss has huge impact however its likeliness is very low, as stated in the Risk table of the last report. To reduce this risk, setting up a weekly backup of project data on home computer and USB and Google Drive will be necessary.

**Impact on the project:**

Specification – None

Methodology – None

Planning – Will have to schedule weekly backup points to reduce this risk.

## Risk 4 – Unable to join characters in database for listing

This risk was resolved by firstly creating an initial database ERD (entity relationship diagram) to plan the tables needed initially. The two initial tables required were Champions and Users. To generate two lists that show the relation of the champion chosen, and the champions it’s weak and strong against two joining table were necessary. These two tables hold the data to produce each list, one being a ‘weaker than’ list and the other being a ‘stronger than’ list.

This initial database was then deployed onto the university’s edward2 server to resolve this risk which would be used by the prototype in risk 1 (see for further information) to solve the character joining and produce a list. In the prototype, two champions were able to join in the two database joining tables to in effect product a list based on a rating algorithm produced in risk 1.

However it became apparent that users will need an extra function to add characters to these lists themselves. The current spec only allows users to vote on individual character listings that already are listed to effect rating. Originally all champions were going to be listed with the majority of others, however having these tables initially sparse removes unneeded and redundant data being stored at the start. More relevant data can be stored instead but giving users control to add a character to a list.

**Impact on the project:**

Specification – The addition of a function will be needed, enabling users to add characters to a match-up listing. This will reduce redundant data and give more accurate listings.

Methodology – None

Planning – The work done will reduce time needed to setup and develop the database, as an initial working one is already in place.

## Risk 5 – Inefficacy with XP based methodology

The risk resolution plan created in the Project Definition didn’t originally detail creating a prototype however I felt this approach was in line with XP methodology. I felt this approach was in fact efficient for software development. For more detail see Methodology heading in this report.

**Impact on the project:**

None, would only impact the project if XP wasn’t suitable.

## Risk 6 – Database scalability with characters

From research of getting the number of new characters release per year of game (League of Legends Wiki, 2009-2015), it was concluded that then number was trending fewer per year, with only eight released in 2013 and six in 2014. Compared to the amount during the first 3 years of the game release in 2009 this is not a concern.

**Impact on the project:**

This risk was identified in the risk table in the Project Definition as having a very low probability of occurring so the result of the research was expected beforehand so doesn’t have a much impact on the project.

## Risk 7 – Compatibility with multiple web browsers

Research into the programming tools being used for this project (PHP, HTML, CSS, JavaScript) and how they affect multiple web browsers was carried out. The three most popular web browsers; Chrome, Firefox and Internet Explorer were researched and compared. The research found that the only issues that would arise would be from CSS related formatting and specific html form and table elements, which are present in Chrome but are limited within the Firefox and IE bowsers.

I have found a list of programs available (some free) for checking cross-browser compatibility from an online article (Smith, 2014) during my research. This resource will be useful as I will likely use the free web application Browsershots (Browsershots, 2005-2011) for the final phase.

**Impact on the project:**

Specification – None

Methodology – The use of Browsershots has been added

Planning – None

## Risk 8 – Copyright issues with game company (i.e. art use)

Upon reading the Riot Games guidelines for community use of their intellectual property it was clear that using game resources such as art work was fine for free applications and websites, however using the league of legends or riot games logo was not. “Game art’s a yes… But logos are a no” (Riot Games Inc., 2015).

**Impact on the project:**

Specification – None

Methodology – None

Planning – Acquiring champion art resources will not be needed

## Risk 9 – Failure to comply with Data Protection Act

Upon further review of the project and user stored data, the only possible sensitive data stored will be the user’s summoner name (game account name), email and website password (for the project website account). From my research an encryption method should be included for storing this data. “you should encrypt personal data and protect it with a password” (Smarta, 2008-2013).

**Impact on the project:**

Specification – Added data encryption

Methodology – None

Planning – Will need to give time for learning and implementing data encrypt

## Risk 10 – Game servers offline or unavailable

From personal experience of the author who has experienced many game server problems occurring over 2 year use of the game. It was concluded that individual game servers tend to offline/unavailable for at most 1 day which would normally only occur once or twice per month. This problem doesn’t span every server, so project functionality will be limited depending on user’s choice of server for the given time.

**Impact on the project:**

This risk was identified in the risk table in the Project Definition as having a very low probability of occurring so the resolution was expected beforehand so doesn’t have a much impact on the project.

## Risk 11 & 12 – Failure to comply with Riot Games API & 3rd party terms & conditions

Both these risks were resolved upon reading the Riot Games Application (Riot Games, 2014) and Developer guidelines (Riot Games Inc, 2014). Because the project application is free and doesn’t give an unfair in-game advantage to players, the project follows these given guidelines

**Impact on the project:**

This risk was identified in the risk table in the Project Definition as having a very low probability of occurring so the resolution was expected beforehand so doesn’t have a much impact on the project.

# Methodology

The methodology chosen for the project was a solo adapted version of Extreme Programming (XP). This approach so far has mainly taken root during the risk resolution phase with the creation of prototype database and website application. The reasoning for creating a Prototype aligns itself with XP’s principles of Iterative releases and test driven development. Working on a prototype allowed for test driven development of the functionality and provided a base for a visual design. “prototypes are used to create a simple overall design also known as the system metaphor” (Wells, 2009).

In addition to the previous tools stated in the Project Definition, the author will be using a free web application called ‘Browsershots’ that can check for differences in cross browser compatibility. This will be useful for the deployment of the final website. “Testing multiple browsers on multiple platforms isn't just difficult — it can be virtually impossible… However there are tools that let you comprehensively test your website” (Smith, 2014).

# Final Stage Plan

The created and developed final stage plan was based off the iterative release guideline of XP methodology. The plan is split into four parts, the first three are each an iteration of the project. The last iteration being the final release.

For designating each tasks the author used experience from the creating the prototype (see risk 1) to break down each iterations task. For time estimates, these were base off of hours recorded during the development of the prototype that I record in my logbook.

The dates given on each iteration will need to consider contingency to keep a final release deadline before May, but realistic.

# References

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Smith, G. (2014, FEB 26). *13 Essential Tools to Check Cross-Browser Compatibility* [online][viewed 15 January 2015]. Availiable from: http://mashable.com/2014/02/26/browser-testing-tools/

Wells, D. (2009, JAN 1). *Introducing Extreme Programming* [online][viewed 15 January 2015]. Availiable from: http://www.extremeprogramming.org/introduction.html

# Appendices

## Appendix A – Software Specification

1. Form for a personal champion counter listing result
   1. Data required for form:
      1. Summoner name
      2. Champion
      3. Server
2. Send & Retrieve data to and from Riot Games API

2.1. Data required for request:

2.1.1. Summoner name

2.1.2. Server

2.2. Data retrieved:

2.2.1. Champion win rates

2.2.2. Play frequency of champions

1. A champion results page

3.1. Champion information displayed:

3.1.1. Name

3.1.2. Splash art

3.1.3. Common game role/roles

3.1.4. Counter Items

3.1.5. Counter summoner spells

3.2. List of champions strongest against chosen champion

3.2.1. List in order by rating system

3.2.1.1. Each listing can be voted on

3.2.1.1.2. votes effect rating of champion listing in database

3.2.2. User able to add non-existing champion to listing

3.3. List of champions weakest against chosen champion

3.2.1. List in order by rating system

3.2.1.1. Each listing can be voted on

3.2.1.1.2. votes effects rating of champion listing in database

3.2.2. User able to add non-existing champion to listing

1. Rating system for champion matching in a listing

4.1. Effected by average of user rating of listing

4.2. Effected by user win rate with champion, retrieved from API

4.2.1. Weight of effect adjustable by user via account settings

1. Account creation and log in system
   1. Details required:
      1. Summoner name (game account name)
      2. Email address
      3. Password (not game account password)
   2. Option to adjust weight of user win rates on the rating system
   3. User statistics page
      1. Uses summoner name to generate stats from the API
         1. Most played champions
         2. Highest win rate champions
         3. Recent match history stats

Non-functional requirements

N1. The website needs to render successfully on every web browser

N2. The website needs to render successfully regardless of screen resolution

N3. The results webpage will need to display the correct champion art chosen

N4. Data encryption is required for storing user details

Constraints

C1. User requires a Summoner name (game account name) to use application.

C2. User requires ranked game data linked to their game account for a personalised listing.

Evaluating project process

1. How did this iteration of the project improve from the previous.
2. To what extent is the project progress aligning with the plan.
3. How much use is being of the API.

Evaluating the products

1. How suitable are the software tools used, for the software requirements.
2. How developed is the aesthetics and navigation of the website.
3. To what amount have the software requirements been met.
4. To what extent does the website fill the users needs.

## Appendix B – Final Phase Plan

**First Iteration**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | **Description** | **Start date** | **Date due** | **Priority** | **Estimated Hrs.** | **Comments** |
| 1. | Draw design wireframes | 19/01 | 21/01 | Medium | 4 | Using Microsoft Visio |
| 2. | Create external CSS file for website | 20/01 | 24/01 | Medium | 3 |  |
| 3. | Design Database Structure | 20/01 | 24/01 | High | 3 | Make an ERD |
| 4. | Deploy Database onto server | 21/01 | 24/01 | High | 4 | Onto Edward server |
| 5. | Populate Database with test data | 21/01 | 24/01 | Medium | 2 |  |
| 6. | Create homepage with Form | 24/01 | 26/01 | High | 4 | Won’t require PHP |
| 7. | Create layout for results page | 24/01 | 26/01 | Medium | 6 | Without functionality |
| 8. | Re-design & implement rating system | 26/01 | 27/01 | Medium | 2 | Javascript |
| 9. | Generate champion listings | 27/01 | 30/01 | High | 9 | Most intensive programming |
| 10. | Add voting for listings | 30/01 | 01/02 | Low | 4 |  |
| 11. | Create log in and register account feature | 01/02 | 02/02 | Medium | 3 |  |
| 12. | Create account page | 02/02 | 04/02 | Medium | 7 | Layout and functionality |

**Second Iteration**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | **Description** | **Start date** | **Date due** | **Priority** | **Estimated Hrs.** | **Comments** |
| 1. | Re-draw design wireframes | 04/02 | 06/02 | High | 5 | Using Microsoft Visio |
| 2. | Re-create external CSS file for website | 05/02 | 09/02 | High | 3 |  |
| 3. | Re-Design Database Structure | 05/02 | 07/02 | Medium | 3 | edit ERD |
| 5. | Deploy and populate new database | 07/02 | 09/02 | Medium | 2 |  |
| 6. | Re-create homepage with Form | 09/02 | 11/02 | High | 4 | Won’t require PHP |
| 7. | Re-create layout for results page | 09/02 | 11/02 | Medium | 6 | Without functionality |
| 8. | Re-design & implement rating system | 11/02 | 12/02 | Medium | 3 | Javascript |
| 9. | Generate champion listings | 12/02 | 15/01 | High | 11 | Most intensive programming |
| 10. | Add voting for listings | 15/02 | 17/02 | Low | 4 |  |
| 11. | Create log in and register account feature | 17/02 | 18/02 | Medium | 3 |  |
| 12. | Re-create account page | 18/02 | 20/02 | Medium | 7 | Re do Layout and functionality |

**Final Iteration**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | **Description** | **Start date** | **Date due** | **Priority** | **Estimated Hrs.** | **Comments** |
| 1. | Re-draw design wireframes | 22/02 | 24/02 | High | 7 | Using Microsoft Visio |
| 2. | Re-create external CSS file for website | 24/02 | 02/03 | High | 5 |  |
| 3. | Re-Design Database Structure | 24/02 | 26/02 | Medium | 4 | edit ERD |
| 5. | Deploy and populate new database | 26/02 | 02/03 | Medium | 3 |  |
| 6. | Re-create homepage with Form | 02/03 | 06/03 | High | 6 | Won’t require PHP |
| 7. | Re-create layout for results page | 02/03 | 06/03 | High | 8 | Without functionality |
| 8. | Re-design & implement rating system | 06/03 | 08/03 | Medium | 5 | Javascript |
| 9. | Generate champion listings | 08/03 | 14/03 | High | 14 | Most intensive programming |
| 10. | Add voting for listings | 15/03 | 17/03 | High | 5 |  |
| 11. | Create log in and register account feature | 17/03 | 20/03 | High | 4 |  |
| 12. | Re-create account page | 20/03 | 24/03 | High | 9 | Re do Layout and functionality |

**Additional**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Task** | **Description** | **Start date** | **Date due** | **Priority** | **Estimated Hrs.** | **Comments** |
| 1. | Project report | 01/05 | 15/05 | High | 16 |  |
| 2. | Design poster | 17/05 | 25/05 | High | 8 |  |
| 3. | Prepare presentation | 17/05 | 25/05 | High | 6 |  |