**[[Loyalty Crawler]]**

**PROJECT MANAGEMENT PLAN**

**Version [[1.0]]**

***Place project logo here***

UTD Student Group::

Anthony Spencer (Group Leader)  
Alexander Baselice  
Alexander Lundlin  
Jairo Galarza  
Joseph Samonte  
Tony Nhan

RECORD OF CHANGES

\*A - ADDED M - MODIFIED D – DELETED

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| VERSION NUMBER | DATE | NUMBER OF FIGURE, TABLE OR PARAGRAPH | **A\* M D** | TITLE OR BRIEF DESCRIPTION | CHANGE REQUEST NUMBER |
| 1.0 | 02/01/2019 |  |  | First Deliverable |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**TABLE OF CONTENTS**

**Section Page**

[**SECTION 1. INTRODUCTION**](#_2et92p0)5

[1.1 PROJECT SUMMARY](#_tyjcwt) 6

[1.1.1 Purpose, Scope, and Objectives](#_3dy6vkm) 6

[1.1.2 Assumptions and Constraints](#_4d34og8) 6

[1.1.3 Project Deliverables](#_17dp8vu) 6

[1.1.4 Schedule](#_1ksv4uv) 6

[1.2 EVOLUTION OF THE PLAN](#_ihv636) 7

[1.3 DOCUMENT STRUCTURE](#_1hmsyys) 7

[**SECTION 2. REFERENCES**](#_41mghml)9

[**SECTION 3. DEFINITIONS**](#_vx1227)9

[**SECTION 4. PROJECT ORGANIZATION**](#_3fwokq0)9

[4.1 INTERNAL STRUCTURE](#_4f1mdlm) 10

[4.1.1 The Project Manager](#_28h4qwu) 10

[4.2 PROJECT ROLES AND RESPONSIBILITIES](#_sqyw64) 10

[**SECTION 5. MANAGEMENT PROCESS**](#_1rvwp1q)12

[5.1 START-UP](#_4bvk7pj) 12

[5.1.1 Estimation](#_1664s55) 12

[5.1.2 Staffing](#_25b2l0r) 12

[5.1.3 Resource Acquisition](#_34g0dwd) 12

[5.1.4 Staff Training](#_1jlao46) 12

[5.2 WORK PLANNING](#_2iq8gzs) 13

[5.2.1 Work Activities](#_3hv69ve) 13

[5.2.2 Schedule Allocation](#_4h042r0) 13

[5.2.3 Resource Allocation](#_1baon6m) 13

[5.3 PROJECT CONTROLS](#_3vac5uf) 13

[5.3.1 Requirements Control](#_pkwqa1) 13

[5.3.2 Schedule Control](#_2nusc19) 14

[If no follow up was posted in the GroupMe a week after the deliverable due date was missed we will post again in the GroupMe.](#_4du1wux) 14

[5.3.3 Budget Control](#_2szc72q) 14

[5.3.4 Quality Control](#_1yyy98l) 15

[5.3.5 Project Reporting and Communication](#_1d96cc0) 15

[Status reports happen once a week through a weekly in-person or virtual meeting each Monday.](#_338fx5o) 16

[5.3.6 Metrics Collection](#_1idq7dh) 16

[5.4 RISK MANAGEMENT](#_2hio093) 16

[5.5 PROJECT CLOSEOUT](#_wnyagw) 16

[**SECTION 6. TECHNICAL PROCESS**](#_3gnlt4p)17

[6.1 PROCESS MODEL](#_1vsw3ci) 17

[6.2 METHODS, TOOLS AND TECHNIQUES](#_1a346fx) 17

[6.3 PROJECT INFRASTRUCTURE](#_odc9jc) 17

[6.4 PRODUCT ACCEPTANCE](#_47hxl2r) 17

[**SECTION 7. SUPPORTING PROCESSES**](#_3ls5o66)18

[7.1 CONFIGURATION MANAGEMENT](#_20xfydz) 18

[7.2 INDEPENDENT VERIFICATION AND VALIDATION](#_302dr9l) 18

[7.3 DOCUMENTATION](#_3dhjn8m) 18

[7.4 QUALITY ASSURANCE](#_2rrrqc1) 18

[7.5 REVIEWS AND AUDITS](#_1kc7wiv) 19

[7.6 PROBLEM RESOLUTION](#_ymfzma) 20

[7.7 PROCESS IMPROVEMENT](#_2wwbldi) 20

[7.7.1 Systems/Software Process Improvement Lead](#_qbtyoq) 20

[7.7.2 Systems Engineering Process Group](#_3sv78d1) 21

[**APPENDIX A. [[PROJECT NAME]] MASTER SCHEDULE (MICROSOFT PROJECT)**](#_n5rssn)22

[**APPENDIX B. [[PROJECT NAME]] FACILITIES PLAN**](#_1maplo9)23

[**APPENDIX C. [[PROJECT NAME]] PROJECT TRAINING PLAN**](#_2lfnejv)24

[**APPENDIX D. [[PROJECT NAME]] MEASUREMENT PLAN**](#_3kkl7fh)25

[**APPENDIX E. [[PROJECT NAME]] PRODUCT ENGINEERING AND QUALIFICATION PROCESS**](#_4jpj0b3)26

[**APPENDIX F. [[PROJECT NAME]] QUALITY ASSURANCE PLAN**](#_1e03kqp)27

[**APPENDIX G. [[PROJECT NAME]] CONFIGURATION MANAGEMENT PLAN**](#_2d51dmb)28

**LIST OF FIGURES**

**Figure Page**

**LIST OF TABLES**

**Table Page**

[Table 7-1. [[Project Name]] Documentation 16](#_sabnu4)

# SECTION 1. INTRODUCTION

## 1.1 PROJECT SUMMARY

The following paragraphs define the overall objective of the product to be developed and the scope of the project to produce this product. Additionally, assumptions and constraints for the project development are listed, and a preliminary schedules for workflow and deliverables are presented.

### 1.1.1 Purpose, Scope, and Objectives

In this project, the UTD student group is to design and implement a web crawler application for the sponsor with Alliance Data. The objective of this application is to sift, or “crawl” through the web obtaining any artifacts determined to be relevant to loyalty rewards programs for customers. These artifacts can then be categorized, organized, and examined according to predetermined requirements or user preference by means of an easy-to-use user interface. The web crawler and accompanying user interface are to be implemented as a web based application that is user-friendly, efficient, and modular.

### 1.1.2 Assumptions and Constraints

As a student project facilitated through the University of Texas at Dallas as a semester course, the UTD student group makes the following assumptions. There is no effective budget for the project as the students assume no further expenditures beyond that of tuition, and the group will no be funded in any capacity by the university or the sponsor. As a semester course, the delivery date will inherently be toward the end of the semester in early May. Additionally, any constraints on the group’s schedule for meetings and project delivery will likely arrive from conflicts of the students’ personal schedules, and prior coordination will be made to address this possibility. As for the resources to be utilized, the group assumes the approval of open source and currently owned software artifacts for the implementation of the application.

### 1.1.3 Project Deliverables

The project will have deliverables dates matching the documentation due dates for this class:

1. Project Management Plan Due: 2/01/2019
2. Requirements Documentation Due: 2/15/2019
3. Architecture Documentation Due: 3/01/2019
4. Skeleton Design Deliverable Due: 3/08/2019
5. Prototype Deliverable Due: 3/15/2019
6. Detailed Design Documentation Due: 3/22/2019
7. Product Build Version 1 Due: 4/12/2019
8. Testing Plan Due: 4/12/2019
9. Product Revision
   1. Final Product Version Due: 5/03/2019
10. Final Project Report Due: 5/03/2019
11. Final Project Demonstration Due: 5/03/2019

### 1.1.4 Schedule

Schedule us set to deliver product on time:

1. Meeting with sponsor and learn business problem 1/21 - 1/25
2. Project management plan 1/28 - 2/01
3. Requirements meeting with sponsor 2/04 - 2/15
4. Requirements documentation 2/11 - 2/15
5. Design brainstorming 2/18 - 3/25
6. Architecture Documentation 2/25 - 3/01
7. Skeleton Design Deliverable 3/01 - 3/08
8. Prototype Deliverable 3/01 - 3/15
9. Detailed Design Documentation 3/15 - 3/22
10. Meeting with sponsor about design feedback 3/25 - 3/29
11. Product Build Version 1 3/22 - 4/12
12. Testing Plan 3/22 - 4/12
13. Meeting with sponsor for product feedback 4/15 - 4/19
14. Product revising 4/12 - 5/03
15. Meeting with sponsor to help revise 4/12 - 5/03
16. Final Project Report 4/29 - 5/03

## 1.2 EVOLUTION OF THE PLAN

This document will be appropriately and punctually adjusted and appended upon further development into the project lifecycle.

## 1.3 DOCUMENT STRUCTURE

This plan is organized as follows:

1. Section 1, Project Overview. This section provides an overview of the scope and objectives of the project, the project’s assumptions and constraints, reference to the project deliverables, schedule and budget, and a description of the evolution of the plan.
2. Section 2, References. This section provides a list of all documents, policies, templates, processes, and other sources of information referenced in the plan.
3. Section 3, Definitions. This section contains the abbreviations and acronyms required to properly understand this planning document.
4. Section 4, Project Organization. This section identifies interfaces to organizational entities external to the project, the project’s internal organizational structure, and defines roles and responsibilities for the project.
5. Section 5, Management Process. This section describes the planning, measurement, tracking, reporting, risk control mechanisms needed to provide management control over the technical processes and product quality, and appropriate project initiation and closeout procedures.
6. Section 6, Technical Process. This section describes the technical solution in terms of a process model and implementation methods, tools, and techniques to be used to develop the various work products, plans for establishing and maintaining the project infrastructure, and the product acceptance.
7. Section 7, Supporting Processes. This section describes processes that are employed to facilitate and control the technical processes and the state of the product. These include, but are not limited to, configuration management, verification and validation, documentation, quality assurance, reviews and audits, problem resolution, and contractor management, and methods to ensure continuous process improvement.
8. Section 8, Additional Plans. This section addresses the logistic support strategy to be applied to increase the system’s operational effectiveness.
9. Appendix A. [[Project Name]]Master Schedule (Microsoft Project)
10. Appendix B. [[Project Name]]Facilities Plan
11. Appendix C. [[Project Name]]Project Training Plan
12. Appendix D. [[Project Name]]Measurement Plan
13. Appendix E. [[Project Name]]Product Engineering and Qualification Process
14. Appendix F. [[Project Name]]Quality Assurance Plan
15. Appendix G. [[Project Name]]Configuration Management Plan

# SECTION 2. REFERENCES

***IEEE Std 1058-1998 Guidance***

***(Clause 2) References***

*This clause shall provide a complete list of all documents and other sources of information referenced in the document. Each document should be identified by title, report number, date, author, path/name for electronic access, and publishing organization. Other sources of information, such as electronic files, shall be identified using unique identifiers such as date and version number. Any deviations from referenced standards or policies shall be identified and justifications shall be provided.*

# SECTION 3. DEFINITIONS

***IEEE Std 1058-1998 Guidance***

***(Clause 3) Definitions***

*This clause shall define, or provide references to, documents containing the definition of all terms and acronyms required to properly understand this planning documen*

# SECTION 4. PROJECT ORGANIZATION

## 4.1 INTERNAL STRUCTURE

The following paragraphs will define the internal structure of UTD student group, and the role of leadership assigned to the group leader (project manager).

### 4.1.1 The Project Manager

While the UTD student group has no official project manager, the group leader will effectively assume the role of the project manager, with some assistance from the curriculum provided by course instructor.

**4.1.1.1 Scope of Authority**.

The effective project manager will be granted authority over supervision of the team meetings, delegation of project tasks (with group input), supervision over progress and coordination amongst the group, and communications with the sponsor.

**4.1.1.2 Scope of Responsibility**.

The effective project manager assumes responsibility in contexts of the group’s structure and efforts, and during the entire course of the project lifecycle.

**4.1.1.3 Internal Responsibilities**.

As for internal responsibilities, the effective project manager is tasked with coordinating tasks between group members and monitoring the group’s progress as well as the project’s overall direction during the project lifecycle.

**4.1.1.4 External Responsibilities**.

As for external responsibilities, the effective project manager is tasked with conducting and maintaining proper communication with the sponsor, and delivering any and all deliverables to the course instructor and/or sponsor on behalf of the group.

## 4.2 PROJECT ROLES AND RESPONSIBILITIES

Group Leader - Anthony Spencer

* Communicating and scheduling with sponsor
* Submitting project deliverable with instructor
* Coordinate with team members and make sure they held accountable make meetings and deadline

Group Members - Alex Lundin, Alex Baselice, Jairo Galarza, Tony Nhan, Joseph Samonte

* Complete each member specific tasks on each deliverables
* Do research for the project
* Do your roles in software development

Front-End Developer - Alex Baselice, Jairo Galarza

* Design web UI that easy to use for software product
* Initial tester of front-end, final tester for back-end

Back End Developer - Anthony Spencer, Tony Nhan, Joseph Samonte

* Design web crawling program and database server communication
* Initial tester of back-end, final tester for front-end

Documentation Expert - Alex Lundin

* Take lead in noting and formatting all documentation
* Keep all documents organize and easy to access

# SECTION 5. MANAGEMENT PROCESS

## 5.1 START-UP

The following paragraphs will define the approaches to project estimation, staffing structure, resource acquisition, and training efforts for the UTD student group.

### 5.1.1 Estimation

As mentioned prior in this document, the project itself has no official budget and is not projected to generate any expenditures in terms of development costs. However, the following estimations are made in recognition of scheduling commitments and resource requirements. We have organized preliminary schedules for both deliverables (1.1.3) and workflow (1.1.4), and will address these itineraries periodically throughout the course of the project to reassure the group’s punctuality toward these deadlines. Observation in “ad hoc” fashion will be a key form of measurement for maintaining these schedules. Additionally, the group estimates the utilization of entirely free-to-use and open source technologies, and the group unanimously assumes the adequate competence and aptitude to use these technologies.

### 5.1.2 Staffing

The group consists of six individuals, with one individual appointed as the group leader. As a project facilitated by the University of Texas at Dallas for senior computer science and software engineering undergraduates, the group’s technical ability assumes that of a (university) senior level. While no definitive roles in relation to development tasks have been assigned yet, such will be determined in consideration of each group member’s individual skill and specialization near and before the implementation phase.

### 5.1.3 Resource Acquisition

The group will seek appropriate outlets for the utilization of free-to-use and open source software technologies. Some of these sources currently known shall be the Linux Foundation (for Node.js), Amazon (for AWS services), and GitHub (for applicable and/or similar software artifacts). Naturally, this list will increase further into development as more concrete functionality and behavior is determined.

### 5.1.4 Staff Training

The goal of training is for the group to be sufficient in Python, JavaScript, and Node.js programming. Node.js and JavaScript will be learned through online tutorial websites such as w3schools.com; Python is to be learned from the website learnpython.org. Other websites and resources can be used, but the ones just mentioned are to be required. Every group member that is considered in the role of developer or tester will be trained in these languages. Once packages, exception handling, and data structures are learned at each language, training will be sufficient. Training is expected to take less than 7 days for each group member given their experience with other high-level languages.

## 5.2 WORK PLANNING

The following paragraphs provide a working management plan for the acquisition of the Customer Loyalty Program Web Crawler.

### 5.2.1 Work Activities

The activities will be divided by the group in a weekly basis. The project’s entirety from gathering requirements, planning, implementing, testing, and so forth will be delegated out equally.

### 5.2.2 Schedule Allocation

The schedule has been allocated biweekly in assigned deliverables by the course professor.

Project Management plan 2/01/19

Requirements Documentation 2/15/19

Architecture Documentation 3/01/19

Detailed Design Documentation 3/22/19

Testing Plan 4/12/19

Final Project Report 5/03/19

Final Project Demonstration 5/03/19

### 5.2.3 Resource Allocation

The resources allocated to the group are not only the ones available on campus. The library, the computer labs, and the classrooms are just some of the resources. The university’s online library is available. Online collaboration is provided through Blackboard or WebEX.

## 5.3 PROJECT CONTROLS

The UTD student group will use an excel spreadsheet to show outstanding requirements that have not been met. If a group of requirements is estimated to change more than 3% of the project, the group will reevaluate the project schedule. In order to implement the requirements on a two week basis, the group will use a burndown chart.

### 5.3.1 Requirements Control

For requirements control, the group will be logging changes in requirements in a excel spreadsheet and analyze the impact on the project. A change request form will be issued to client for approval. Once approved, changes to requirements will be made. This is important because major changes usually have an effort and schedule impact on the project; the client must approve of these changes formally. Given the time constraint of this project, if any one or a group of change requests takes more than 3% of the total estimated effort for the project, a review on the re-estimation of the project schedule and effort will be done.

### 5.3.2 Schedule Control

The following paragraphs define the management approach for schedule control of the [[Loyalty Crawler]].

**5.3.2.1 Schedule Tracking**.

The group will implement appropriate scheduling mechanisms as it transitions into development. One option is a burndown chart, a tool which gives all group members a visual representation of actual progress made in contrast to the expected amount of progress left.

**5.3.2.2 Schedule Performance Reports**.

A schedule is considered to be met if the deliverable is emailed to both the professor and the sponsor by the date listed in 5.2.2 (Schedule Allocation).

**5.3.2.3 Schedule Reviews**.

The group will hear from the professor or the sponsor if the schedule has not been adhered to successfully.

**5.3.2.4 Progress Variance Monitoring**.

The group will hear from the professor or the sponsor if the schedule has not been adhered to successfully. If this is the case we go to 5.3.2.5 (Progress Variance Resolution) .

**5.3.2.5 Progress Variance Resolution**.

If the group should receive an email from the professor or sponsor about a deliverable being missed, the group will then post in the GroupMe to inform all other group members. When the deliverable has been submitted, the group will inform all others via GroupMe.

**5.3.2.6 Follow Up on Corrective Action**.

### If no follow up was posted in the GroupMe a week after the deliverable due date was missed, the group will post again in the GroupMe.

### 5.3.3 Budget Control

The following paragraphs define the management approach for budget control of the [[Loyalty Crawler]].

**5.3.3.1 Cost Management**.

The group has a budget of $0 so far, and thus the intention is to use only free tools. If the needs of the group exceed AWS free tier, then the group will ask the sponsor for money.

**5.3.3.2 Methods to Ensure Cost Adherence**.

The group plans to only use free tools and will address a group member if they are noticeably using paid-for products.

**5.3.3.3 Cost Control**.

The group intends to only use free tools.

**5.3.3.4 Contractor Cost Control**.

The group will not have contractors and will only work within the group with no outside contracting help.

### 5.3.4 Quality Control

The group will have two types of testers. The group will have an internal tester. An internal tester is a member who built the program. They will test when the group meets weekly with the team. The feedback will be recorded for that meeting. The group will also have an external tester. An external tester is a member who did not build the program. An example of an external tester would be when the sponsor and a group member use the product. This would happen during the weekly friday meetings with the sponsor. The group will then feedback feedback on the google doc/folder for the meeting.

### 5.3.5 Project Reporting and Communication

The following paragraphs define the management plan for ensuring the appropriate communication of needed information for project coordination.

**5.3.5.1 Electronic Media**.

The group will use GroupMe to communicate in a group chat with all other group members. The group leader will use email to communicate with the team sponsor.

**5.3.5.2 Meetings**.

The group will meet once a week with the sponsor or their coworker to talk about how the project is going. The group will have internal meetings with our team on Mondays.

**5.3.5.3 Information Repository**.

The group is considering using an AWS PostgreSQL instance to store. The group is also considering storing the links/information it finds in a file folder on the server in an AWS S3 Bucket.

**5.3.5.4 Reviews**.

Reviews happen once a week through a weekly in-person or virtual meeting each Monday.

**5.3.5.5 Status Reporting**.

### Status reports happen once a week through a weekly in-person or virtual meeting each Monday.

### 5.3.6 Metrics Collection

The group will collect a list of what everyone did to prepare for the meeting. For each deliverable, the group keeps track of how many hours each person worked on the deliverable. This list will be a google doc where each group member keeps track on what section they worked on and for how long the worked. This list will be updated every time someone makes a change to the deliverable. At the end will add up how many hours each person did for each deliverable and show work done by deliverable.

## 5.4 RISK MANAGEMENT

Risk factors with rank from most likely to least likely:

1. The scope of loyalty point program is not concrete and well defined due to many programs such as rebate and discount also fall into it. This may cause the scope to endlessly grow and product fail to achieve the business goal.
2. Since the project is for building a web crawler, there is a risk that the web search scope becomes to big and potentially become impossible to capture information efficiently.
3. The product will store data into a database. The communication channel between the Web Crawler and Database is a point of failure.
4. No group members have experience working on similar project before and potential error due to lack of expertise.

Risk reduction strategy for each risk factors:

1. The group will set constraints for the scope by clearly defining the requirements to have a point program categorize as a loyalty program.
2. By setting a constraint on the scope the potential information to be capture have been limited, but we also will add a non-functional requirement related to speed and efficiency to deal with this risk.
3. The database that we will use is AWS RDS which is a well establish database service which have secure channel for communication.
4. As no group member has prior experience, every development step must be thoroughly research and study before implementing to protect from errors. Unit testing will also be done by developer every time new code is added to make sure all new code add must work to avoid error.

## 5.5 PROJECT CLOSEOUT

The group will send a link to all repositories that have been developed to the sponsor.The group will give a final presentation at UTD that will include lessons learned and analysis of project objectives achieved. The group will then talk with the sponsor about how the project turned out and what other addition pieces of information they might need. The group will then email the project sponsor any information they request.

# SECTION 6. TECHNICAL PROCESS

## 6.1 PROCESS MODEL

For the requirements gathering, the UTD student group shall use a linear approach to collect information about what the Web Crawler will do. Once the group moves into development, it will transition into a more suitable process model to deliver high quality work on time. The group believes that an Agile Process of two week sprints will give it the best result in building this product.

## 6.2 METHODS, TOOLS AND TECHNIQUES

For source control, the group will use a single GitHub repository. The group will choose the programming language(s) that provide the most direct route to our end goal of building a Web Crawler. The group will keep in mind these techniques when choosing a language: Test Driven Development and Continuous Integration and Deployment. These two principles will give the group ample time to test its software between builds and ensure new builds are seamless for the end users.

## 6.3 PROJECT INFRASTRUCTURE

The end user’s at Alliance data have limited rights on their work computers. Therefore the group will build this application entirely in a web browser, so that end users can access the product without administrative rights. The group will research browser based database management to support this concept. The group will strictly adhere to separation of Test databases and Live databases to ensure no conflicts arise with Live data.

## 6.4 PRODUCT ACCEPTANCE

Product acceptance shall be largely determined by Alliance. All internal work products shall pass all internal tests and external tests, before moving onto the acquirer. All database tests shall pass on test data, before attempting anything on Live data. Developers shall be required to write their own unit tests for each module they develop, this will be internal testing. This will ensure the group’s regression test bank grows as the code base grows, instilling its test driven development principle. The group shall leverage a programming language that supports automatic regression testing to smoothen the acceptance process. After internal testing passes, the group shall move onto external testing, where developers who did not write the code will test.

# 

# 

# SECTION 7. SUPPORTING PROCESSES

## 7.1 CONFIGURATION MANAGEMENT

The group shall use a single Github to track all configurations through the project lifecycle. The Github will contain a standard work document on how to checkout a branch, modify the code, and check the branch back in. This way all developers adhere to the same practices. The group shall include a tracking platform to add visibility to changes in progress during the life cycle. All releases will be as automated as possible, and done in a browser based format so that end customers do not have to do any workstation setup for new releases. The group shall adhere to continuous deployment and integration.

## 7.2 INDEPENDENT VERIFICATION AND VALIDATION

Verification planning will involve the use of traceability as mentioned in section 5.3 of this document and milestone and peer reviews as mentioned in section 7.4 of this document.

Validation planning will involve a combination of unit testing, integration testing, and acceptance testing. Prototyping will involve the use of a simple data retrieval by a simple web crawler. Analysis will be done after the success of the construction of this simple web crawler. Simulation will be constructed in accordance with how an improved web crawler will be able to meet requirement goals. Method for inspection of results is yet to be determined.

## 7.3 DOCUMENTATION

TABLE 7-1. [[PROJECT NAME]] DOCUMENTATION

|  |  |  |  |
| --- | --- | --- | --- |
| **Document Type** | **Format Standard** | **Estimated Page Count** | **Peer Review Type** |
| Requirement Specification | IEEE 830 | 30 |  |
| Architectural Description | IEEE 1471 | 30 |  |
| Design Description | IEEE P1016 | 40 |  |
| Testing Plan | IEEE 829 | 60 |  |

## 7.4 QUALITY ASSURANCE

The UTD student group shall use the following strategy for meeting Quality goals and metrics:

|  |  |
| --- | --- |
| Strategy | Expected benefits\* |
| Do defect prevention using the standard defect prevention guidelines and process; use common standards developed for coding. | About an estimated 8-23% reduction in defect injection rate and about 3% improvement in productivity |
| Group Review of Program specs for first few/logically complex use cases; Group review of design documents/first time-generated code by Team Lead, involved developers, and outside developers. | Improvement in quality as overall defect removal efficiency will improve; some benefits in productivity as defects will be detected early. |
| Introduction of Rational Unified Process (RUP) methodology and implementing the project in iterations. Milestone analysis and defect prevention exercise will be done after each Iteration. | Approximately 6% reduction in defect injection rate and 2% improvement in overall productivity. |

\*Numbers in percentages are example numbers and are subject to change based on team reviews and metric analysis.

## 7.5 REVIEWS AND AUDITS

Review plan

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Review Point | Review Item | Type of Review | Date of Review | Time spent on Review |
| End of Project planning | \*Project Plan  \*Project Schedule | \*Group Review  \*SQA Review | 02/01/2019 | TBA |
| End of 85% of Requirements Gathered | \*Business analysis and requirements specification document  \*Use Cases | \*Group Review | TBA | TBA |
| End of 85% Design completion | \*Design Architecture Document  \*Object Model | \*Group Review | TBA | TBA |
| Beginning of each Iteration | \*Iteration Plans | \*Group Review | TBA | TBA |
| End of Detailed Design | \*Software Specification Sheet  \* Diagrams | \*Group Review | TBA | TBA |
| Consensual Stopping Point for code | \*Code | \*Group Review  \*Peer Review | TBA | TBA |
| Testing of Code | \*Code | \*Peer Review  \*SQA Review | TBA | TBA |
| Unit Test Plan | \*Unit Test Plan | \*Group Review  \*SQA Review | TBA | TBA |
| Beginning of Integration Test | \*Integration Test Plan | \*Group Review  \*SQA Review | TBA | TBA |

## 7.6 PROBLEM RESOLUTION

As problems become apparent in the production of the project, group members will determine if the issue is significant enough to report it to the project manager. The project manager will come together to discuss how to resolve this issue. If this is not the case, the project will work with all group members in a collaborative effort to describe, track and resolve issues. However, small issues are preferably to be handled within each group as they discover them. Problems that may arise are testing results, unforeseen rapid changes, and other causes that may impact project completion.

## 7.7 PROCESS IMPROVEMENT

The following paragraphs provide data on the [[Loyalty Crawler]] efforts for continuing process improvement.

### 7.7.1 Systems/Software Process Improvement Lead

Process Improvement Lead - Alex Lundin

The group shall use a continuous improvement process to fix problems. The group shall communicate any issue as soon as it’s notice during weekly team meetings. This shall ensure clarity inside the group. Each issue shall have a priority. High priority items will be handled immediately to reduce further impact to the project delivery. The group’s main techniques will be traditional project management techniques:

* Plan
  + Create task based agenda to realize improvements. Improvements must be prioritized

* Do
  + Follow through on all items from the agenda, to our best ability

* Check
  + Analyze the results

* Act
  + Review the results as a team, decide to continue or move on

### 7.7.2 Systems Engineering Process Group

The group shall assign a process improvement group as the needs arise. The group’s charter shall be to handle all process improvement tasks and report on the progress during team meetings. The process improvement group will disband as the need evaporates.

**APPENDICES**

# APPENDIX A. [[PROJECT NAME]]MASTER SCHEDULE (MICROSOFT PROJECT)

***Guidance***

*The objective of the [[Project Name]] master schedule is to provide management with the task map and tracking tool needed to guide the project in the performance of its mission.*

The [[Project Name]] *master schedule’s Microsoft Project representation of the WBS would be tailored from the templates available from the SSC Pacific Process Asset Library (PAL) in the “SW-CMM Archive”. Draft Microsoft Project templates are found under the “Process Assets by SW-CMM KPA”, “Software Project Planning (SPP)” in the “Tools” section. These templates can be tailored up or down to meet specific project needs.*

# APPENDIX B. [[PROJECT NAME]]FACILITIES PLAN

***Guidance***

*The objective of the [[Project Name]] Facilities Plan is to document the environmental needs of the project. These needs include space, equipments, security, safety, support tools, and the staff necessary to maintain and operate an environment needed for project operations.*

*The facilities requirements for projects vary broadly, often with several projects sharing both facilities and computer resources. There currently are no templates available from the SSC Pacific PAL to assist in developing a facilities plan. However, recommended issues to address in a Facilities Plan would include, but not be limited to, the following list:*

*1. Facility Objectives/General Description*

*2. Facility Locations (i.e., Building Locations)*

*3. Facility Diagrams*

*a. Floor Plans (i.e., lab, work cubicles)*

*b. Environmental Requirements i.e. Heating, Lighting*

*4. Facilities Equipment Requirements*

*a. Equipment Lists (i.e., work stations, development, test)*

*b. Equipment Interface Diagrams*

*c. Space Equipment Layouts*

*d. Inspections and Records Requirements*

*5. Facilities Software Requirements*

*a. Software by Development/Test Host Equipment*

*b. Software by Workstation*

*6. Facilities Operating Personnel Requirements*

*7. Facilities Operating Personnel Training Requirements*

*8. Security Measures*

*a. Internal*

*b. External*

*9. Safety Measures*

*10. Maintenance Requirements (i.e., spaces, per equipment)*

*11. Facilities Performance Measurements*

# APPENDIX C. [[PROJECT NAME]]PROJECT TRAINING PLAN

***Guidance***

*The objective of the [[Project Name]] Project Training Plan is to develop the skills and knowledge of the project staff so they can perform their roles effectively and efficiently.*

*The [[Project Name]] Project Training Plan would be tailored from the* [*Department/Project Training Plan Template*](http://sepo.spawar.navy.mil/Department_Project_Training_Plan_Template.doc) *available from the SSC Pacific Process Asset Library (PAL). The template is located in the “Process Assets” sub-page under the “Organizational Training” PA in the “Plans” section. The template can be tailored up or down to meet specific project needs.*

# APPENDIX D. [[PROJECT NAME]] MEASUREMENT PLAN

***Guidance***

*The objective of the [[Project Name]] Measurement Plan is to develop and present the data needed to support project management information needs necessary to ensure objective decision-making.*

*The [[Project Name]] Measurement Plan would be tailored from the Software Measurement Plan Template available from the SSC Pacific Process Asset Library (PAL) in the “SW-CMM Archive”. This template can be found under the ”Process Assets by SW-CMM KPA”, “Software Project Tracking and Oversight (SPTO)” KPA in the “Tools” section. The template can be tailored up or down to meet specific project needs.*

# APPENDIX E. [[PROJECT NAME]] PRODUCT ENGINEERING AND QUALIFICATION PROCESS

***Guidance***

*The objective of the [[Project Name]] Product Engineering and Qualification (PE&Q) Process is to document the processes comprising a technical solution for development, maintenance, test, and product qualification.*

*The [[Project Name]] PE&Q Process would be tailored from the Product Engineering and Qualification Process available from the SSC Pacific Process Asset Library (PAL). The process is located in the “Process Assets” sub-page under the “Technical Solution” PA in the “Process” section. The PE&Q Process can be tailored up or down to meet specific project needs.*

# APPENDIX F. [[PROJECT NAME]]QUALITY ASSURANCE PLAN

***Guidance***

*The objective of the [[Project Name]] Quality Assurance Plan is to provide staff and management with objective insights into processes and associated work products, ensuring their conformance to documented requirements.*

*The [[Project Name]] Quality Assurance Plan would be tailored from the Quality Assurance Plan Template available from the SSC Pacific Process Asset Library (PAL). The process is located in the “Process Assets” sub-page under the “Process and Product Quality Assurance (PPQA)” PA in the “Plans” section. The template can be tailored up or down to meet specific project needs.*

# APPENDIX G. [[PROJECT NAME]]CONFIGURATION MANAGEMENT PLAN

***Guidance***

*The objective of the [[Project Name]] Configuration Management Plan is to establish and maintain the integrity of [[Project Name]] work products using configuration identification, configuration control, configuration status accounting, and configuration audits.*

*The [[Project Name]] Configuration Management Plan would be tailored from the Configuration Management Plan Template available from the SSC Pacific Process Asset Library (PAL). The template is located in the “Process Assets” sub-page under the “Configuration Management (CM)” PA in the “Plans” section. The template can be tailored up or down to meet specific project needs.*

**DOCUMENT CHANGE REQUEST (DCR)**

|  |  |
| --- | --- |
| Document Title: **[[Project]]****Project Management Plan** | Tracking Number: |
| Name of Submitting Organization: | |
| Organization Contact: | Phone: |
| Mailing Address: | |
| DCR Description: | Date: |
| Change Location:  (use section #, figure #, table #, etc.) | |
| Proposed change: | |
| Rationale for Change: | |
| Note: For the ***appropriate authority*** to take appropriate action on a change request, please provide a clear description of the recommended change along with supporting rationale.  Send to: Commanding Officer, Space and Naval Warfare Systems Center, Code [[xxx]], 53560 Hull Street, San Diego, CA 92152-5001  Fax to: ***indicate appropriate fax number***  Email to: ***indicate appropriate email***  Submit online: ***indicate appropriate URL***  DCR Form 1/2009 | |