**Project Specification Document**

<<Title>>

<< Team Member >>

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**Table of Contents**

Section Page

[1. Project Vision and Objectives 1](#_Toc2669142)

[1.1 Project Scope and Vision 1](#_Toc2669143)

[1.2 Project Goals and Objectives 2](#_Toc2669144)

[2 Project Planning 3](#_Toc2669145)

[2.1 Project Lifecycle 3](#_Toc2669146)

[2.2 Project Setup 3](#_Toc2669147)

[2.3 Stakeholders 3](#_Toc2669148)

[2.4 Project Resources 4](#_Toc2669149)

[3 Requirements (User Stories) 5](#_Toc2669150)

[3.1 Overall Description 5](#_Toc2669151)

[3.2 Users and Roles 5](#_Toc2669152)

[3.3 Constraints and Limitations……......................................................................................7](#_Toc2669155)

[Definitions and Acronyms 8](#_Toc2669156)

# Project Vision and Objectives

## Project Scope and Vision

<< Provide a concise statement on the purpose of the project; the problem or opportunity addressed. The explanation should include what you intend to do and by when. Vision – how will the customer’s world improve as a result of this project? When appropriate, tie this into what is currently being considered or has just been completed at the company.

**Example:** Currently, Microsoft uses Microsoft Dynamics AX as their enterprise resource planning (ERP) solutions for businesses. The latest version of Microsoft Dynamics AX will collect a significant amount of telemetry about the user’s actions while navigating in the application and its thousands of forms. This project aims to extract information about how users use the forms by analyzing the raw telemetry data. By using big data analysis and machine learning techniques we hope to develop predictions into what actions the user will do next. Using these insights, the Microsoft Dynamics AX engineering may be able to optimize the user experience and reduce the number of steps needed to perform desired actions or reach desired forms. The final delivery will be at the final presentation in early May. >>

## Project Goals and Objectives

<< State, in quantifiable terms, if possible, the goals and objectives of the project. Goals may be related to product, process, quality, or teamwork. >>

**Example:**

|  |  |
| --- | --- |
| **#** | **Goal or Objective** |
| 1 | Make the system extensible – future updates like xxx can be done easily |
| 2 | Make the system easy to support – provide good documentation, configuration/build files, administrator’s manual |
| 3 | Make the system very easy to use – users would agree that minimal to no training is needed |
| 4 | Build a prototype that demonstrates the user interface by xx/xx/xx - in order to get early feedback from the customer/users |
| 5 | Have fun working on the project |

# Project Planning

## Project Lifecycle

<< Describe the lifecycle of the project. You can choose from an existing lifecycle definition or create your own.

**Example:** The team will use an agile approach. Our team will gather requirements and create a high level development plan at the onset of the project and then implement the gathered requirements over three iterations. The team will follow a SCRUM-like approach with an emphasis on frequent meetings and collaboration. >>

## Project Setup

<< Define some of the basic project decisions that will be used on this project. >>

**Example:**

|  |  |
| --- | --- |
| **#** | **Decision Description** |
| 1 | Windows 8, C#, OpenSphere vs. Azure, Trac/SVN vs. Git, etc. |
| 2 | Standards that must be followed (default Capstone coding standard, etc.) |
| 3 | Special access privileges needed, nondisclosure forms, release to open source, etc. |
| 4 | A virtual server image will be set up at NDSU that matches the customer environment (image provided by customer) |

## Stakeholders

<< Identify all stakeholders for this project (groups or individuals that are affected by or are in some way accountable for the outcome of the project – business managers, end users, developers, testers, support people, instructors, etc.) >>

|  |  |
| --- | --- |
| **Stakeholder** | **Role** |
| Person A | Sponsor |
| Person B | Mentor |
| Person C | Instructor |
| Person D | Team member |
| Person E | Team member |
| Person F | Team member |

## 

## Project Resources

<< Identify the anticipated resources required for this project. This can include staff members who will work on the project, equipment needed for the project, special software that will need to be acquired, or any other resource necessary for the project. >>

**Example:**

|  |  |  |
| --- | --- | --- |
| **Resource** | **Resource Description** | **Quantity** |
| Database Server | A database server provided by the sponsoring company. | 1 |
| Capstone Team | Our team of students who will be the primary developers of the project. | 4 |
| Jim Somebody | The mentor who will be able to provide us with technical assistance. | 1 |
| Mac Workstation | An OS X workstation with X Code for developing the OS X version of the software. | 1 |
| Android Phone | An Android phone to be used as test hardware for the mobile version of the software. | 2 |

# Requirements (User Stories)

## Overall Description

<< Provide a more detailed, two to three paragraph description of the project. This description may include more technical details to describe the purpose of the project.

**Example:** This project is an attempt to apply data science and machine learning techniques to telemetry data from Microsoft ERP products in an attempt to anticipate user actions based on previous navigation and controls to create more efficient application navigation. Using Event Tracer for Windows, test teams are able to record millions of data points with information regarding actions that users have taken, forms they have navigated through, and the time data for each of those events. By combing the data and arranging it by session ID and time we can create a sort of roadmap of each user’s actions in time order from the moment they start the application.

First this data must be cleaned and sorted using R statistical software. Then graph visualizations of the data (initially pertaining to the navigation path through the application) will be generated to allow us to view the dominant paths to specific modules and forms in the product, and give us an idea of where to start with machine learning. The statistics and visualization using R will be compiled into an R package to allow for easy documentation, and extensible use with various datasets. The visualization and statistics functions will provide basic insight into the data for any Program Manager, or someone not experienced in data science. >>

## Users and Roles

<< Provide a list and description of the different types of users or roles within the system. This may include different classes of users, such as administrator, instructor, student, etc. This list may also include autonomous agents that interact with the system as well. These may include users (or personas) that are used as part of any user stories produced for the project. >>

**Example:**

|  |  |
| --- | --- |
| **User** | **Description** |
| Developer | A capstone team member or mentor who is tasked with managing the test data, creating initial machine learning models, and ultimately generating a firm process for applying these techniques to future user data. This is used for sub-stories and task needed to fulfill the true end user use cases. |
| Microsoft Program Manager | A manager at Microsoft who is working on developing the ERP application who will be making design decisions based on the data analysis. |
| Dynamics AX User | An end user of the Microsoft ERP product who will be generating the data used and reaping the potential efficiency benefits from the data analysis when designing the application. |

## Constraints and Limitations

<< This section provides a list of constraints and limitations for the project. This provides additional information about any limitations that may exist in the project (e.g. will not work in versions of Internet Explorer prior to 8.0) that are not covered by requirements, but provide important information related to the project. This may include constraints related to security, performance, and other aspects of the system.

The **Constraint** field lists the constraint or limitation for the project. The **ID** field lists the related requirement ID (if any) that provides additional context for the constraint. >>

**Example:**

|  |  |
| --- | --- |
| **Constraint** | **ID** |
| Team will not provide alternative language pack files. | 720 |
| Provided 3D models will not be of professional-grade quality. | 1100 |
| Team will use Visual Studio 2007 for development as 2010 is not available. |  |

# Definitions and Acronyms

<< This section provides a definition for terms or acronyms used in this document which may not be familiar for all users. >>

**Example:**

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Enterprise Resource Planning (ERP) Software | Software that tracks payroll, inventory, labor, capital, etc. for businesses to increase efficiency and manageability. |
| Dynamics AX | Microsoft’s popular ERP software solution with the capabilities to manage small and large businesses. |
| Microsoft Azure | Microsoft’s cloud computing platform that houses modules such as Azure ML (Machine Learning) and Azure HDInsights (Hadoop). |
| R | Open source statistical analysis software used by many developers in data science and analysis. |
| Form | A window or application page in Dynamics AX that contains a set of controls or functions. |