MET CS 632 - IT Project Management Paperless Statements

**Nicholas Scala**

**Final Project**



Objective

This project lays the infrastructure and software needed to allow customers to receive their monthly statements electronically. As a result of this project, customers will be able to use the current online portal to opt-in and opt-out of this new feature. Should they choose to opt-in, customers will receive their monthly bank statement via email immediately after it is ready for their consumption.

The purpose of implementing paperless statements is to provide our customers with a quicker and easier-to-access monthly bank statement, while simultaneously improving the company’s environmental impact and decreasing costs.

Table of Contents

[1. Project Charter 4](#_Toc445196102)

[2. Scope Statement 5](#_Toc445196103)

[3. Stakeholder Documentation 8](#_Toc445196104)

[3.1 Stakeholder Identification 8](#_Toc445196105)

[3.2 Stakeholder Register 9](#_Toc445196106)

[3.3 Stakeholder Ranking 10](#_Toc445196107)

[4. Communication Management Plan 11](#_Toc445196108)

[5. Requirements Documentation 14](#_Toc445196109)

[5.1 Project Requirements 14](#_Toc445196110)

[5.2 Functional Requirements 14](#_Toc445196111)

[5.3 Non-Functional Requirements 15](#_Toc445196112)

[5.4 Hardware Requirements 15](#_Toc445196113)

[6. Human Resource Management 16](#_Toc445196114)

[6.1 Human Resources Plan 16](#_Toc445196115)

[6.2 Core Team 18](#_Toc445196116)

[6.3 Stakeholders and Partners 18](#_Toc445196117)

[7. Work Breakdown Structure Reports 19](#_Toc445196118)

[7.1 Work Breakdown Structure Summary 19](#_Toc445196119)

[7.2 Activity List 20](#_Toc445196120)

[7.3 Milestone List 22](#_Toc445196121)

[7.4 Activity Resource Requirements 23](#_Toc445196122)

[7.5 Activity Duration Estimates 24](#_Toc445196123)

[7.6 Detailed Work Breakdown Structure 26](#_Toc445196124)

[8. Project Cost Estimation 28](#_Toc445196125)

[8.1 Planning Poker Estimate 29](#_Toc445196126)

[8.2 Parametric Method Estimate 31](#_Toc445196127)

[8.3 Three Point Method Estimate 32](#_Toc445196128)

[8.4 Work Breakdown Structure Method Estimate 34](#_Toc445196129)

[9. Risk Management Plan 36](#_Toc445196130)

[9.1 Roles and Responsibilities 36](#_Toc445196131)

[9.2 Methods and Approaches 36](#_Toc445196132)

[9.3 Tools and Techniques 37](#_Toc445196133)

[9.4 Risk Categories 38](#_Toc445196134)

[9.5 Stakeholder Risk Tolerance 39](#_Toc445196135)

[9.6 Definitions of Probability and Frequency 39](#_Toc445196136)

[9.7 Definitions of Severity and Impact 39](#_Toc445196137)

[9.8 Risk Levels 40](#_Toc445196138)

[9.9 Risk Register 41](#_Toc445196139)

[9.10 Risk Response and Contingency Plan 43](#_Toc445196140)

[9.11 Positive Risk Register and Response Plan 47](#_Toc445196141)

[9.12 Risk Management Funding and Contingency 47](#_Toc445196142)

[10. Quality Management Plan 48](#_Toc445196143)

[10.1 Roles and Responsibilities 48](#_Toc445196144)

[10.2 Quality Assurance Approach 48](#_Toc445196145)

[10.3 Quality Control Approach 49](#_Toc445196146)

[10.4 Quality Improvement Approach 49](#_Toc445196147)

[10.5 Tools, Environment, and Interface 49](#_Toc445196148)

[10.6 Quality Reporting Plan 49](#_Toc445196149)

[10.7 Quality Metrics 49](#_Toc445196150)

[11. References 51](#_Toc445196151)

# 1. Project Charter

This document formally authorizes the project. This charter defines the reason for the project and assigns a project manager's authority level for the project.

|  |  |
| --- | --- |
| Project Title: | Paperless Statements |
| Organization | Ridgewood Savings Bank |
| Start Date | September 1, 2015 |
| End Date | January 1, 2016 |
| Project Champion | Rachel Alt-Simmons, CIO |
| Purpose | The purpose of implementing paperless statements is to provide our customers with a quicker and easier-to-access monthly bank statement, while simultaneously improving the company’s environmental impact  and decreasing costs. |
| Description | This project lays the infrastructure and software needed to allow customers to receive their monthly statements electronically. As a result  of this project, customers will be able to use the current online portal to opt-in and opt-out of this new feature. Should they choose to opt-in, customers will receive their monthly bank statement via email  immediately after it is ready for their consumption. |
| Goals | * Decrease costs associated with mailing statements by 50%  within 1 year * Achieve 25% customer participation in paperless statements  by Q3 2016 |
| Success Criteria | Success will be measured two-fold. We will bring in a third-party consulting firm to provide us with quantitative figures on the improvements of our environmental impact. We will also conduct surveys with our customers to measure brand perception and customer response to this new initiative. |
| Project Budget | $50,000 |
| Milestones | * Establish necessary hardware infrastructure (10/15/2015) * Enhance current online portal to support enrollment of  paperless statements (11/15/2015) * Communicate to customers the new initiative (01/01/2016) |
| Signatures | **Dr. Vijay Kanabar**, 09/03/2015 (CEO)  **Rachel Alt-Simmons**, 09/03/2015 (CIO and Project Champion)  **Nicholas Scala**, 09/03/2015 (Project Manager)  **Karuna Samat-Hinoch**, 09/03/2015 (IT Director) |

# 2. Scope Statement

The Scope Statement is the document that describes all aspects of the project, both the managerial process and the desired content to be delivered.

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Title:** | **Paperless Statements** | **Date:** | September 1, 2015 |
| **Prepared by:**  Nicholas Scala, Project Manager, (818) 555-8236, n.scala@ridgewoodsavings.com | | | |
| **Project Description:**  This project lays the infrastructure and software needed to allow customers to receive their monthly statements electronically. As a result of this project, customers will be able to use the current online portal to opt-in and opt-out of this new feature. Should they choose to opt-in, customers will receive a link to their monthly bank statement via email immediately after it is ready for their consumption and be able to view historical bank statements. | | | |
| **Project Justification:**  Rachel Alt-Simmons, CIO of Ridgewood Savings Bank has prioritized this project for 2015-2016 as part of the bank’s new environmental friendly initiatives. By allowing our customers to view current and historical statements electronically, the bank is pathing the way to a greener tomorrow, both environmentally and financially. This initiative significantly reduces the resources needed to mail statements to our customers including, but not limited to, paper, ink, and transportation necessities proving its positive environmental impact. This initiative will also reduce the bank’s expenses incurred through printing and mailing costs proving its positive financial impact. The estimated cost for this project is $50,000, but will save the company a projected $2,500 per month in printing expenses, thus achieving a payback period of less than two years. | | | |
| **Product Characteristics and Requirements:**   * Opt-In/Opt-Out Options: Customers should be able to opt-in and opt-out of this  service at will via the account settings in the current online portal. * Email Notifications: Emails containing standard text with a one-click link to access  the most recent statement shall be sent to customers enrolled in the paperless  statements service immediately after the statement period’s end date. * Links: Hyperlinks sent to the customer for accessing their monthly statements  must be masked/encrypted to not display any sensitive information. * Statement Format: Statements shall be available in a PDF and HTML format  for viewing within a browser and downloading a local copy. * Website Updates: The current online portal must be enhanced with a new  section for accessing historical statements. * Historical Retrieval: Customers must be able to retrieve monthly statements  dating back at a maximum of seven years. * Database Modifications: Our database must be modified to track which customers have opted-in and opted-out of paperless statements. Queries tied to the database must also be added to support access to historical statements. * Hardware: The technical infrastructure must be enhancements to support  the anticipated increase in online traffic and email notifications. * Security: Sensitive customer information must be protected from all possible  malicious threats, both internal and external. * Month End Process Update: Going forward, the system must only send PDF  statements for customers opted out of paperless statements to our printing vendor. * Reporting Capability: We will create the necessary reporting software to capture  customer participation rates in the paperless service. * The functionality must be accessible using a standard Internet browser on  Windows, Mac, and mobile operating systems. * The functionality must be available 24 hours a day, 7 days a week, with one hour  per year downtime for system maintenance, as appropriate. | | | |
| **Summary of Project Deliverables:**  **Project management-related deliverables:**  business case, charter, team contract, scope statement, WBS, schedule, cost baseline, status reports, final project presentation, final project report, lessons-learned report, and any other documents required to manage the project.  **Product-related deliverables:**   * Hardware Upgrades: To support an increase in traffic and email notifications our hardware will need to be upgraded * Database Updates: To capture whether or not our customers have enrolled in this new service, and to provide access to historical statements, our database will be updated. * Site content: The site will be updated to allow the customer to opt-in and opt-out of the paperless service and access historical statements. * Content: The emails will contain general text that needs to be finalized before email notifications are sent. * Middleware Solution: A solution will be created between the online portal and the statements storage location so that customers can pull their statements in a secure and effective method. * Test plan: The test plan will document how the new service will be tested, who will do the testing, and how bugs will be reported. * Promotion: A plan for promoting the new paperless service will document the timing and methods of communicating to our customers. * Project benefit measurement plan: A project benefit plan will measure the financial value of the site. | | | |
| **Project Exclusions:**   * The system will not attach statements in the email notifications to customers, but rather provide a link to the statement for security reasons * The project will not include the ability for the customers to pay for statements online * The project will not make any changes to the content or design of current statements * The project will not make any design changes to the current online portal other than the necessary additions to support the new functionality | | | |
| **Project Constraints:**   * The system must continue compliance with Federal Law to keep the past seven years of statements for all customers * The system must continue compliance with all security considerations in accordance with Security and Exchange Commission laws * The bank will utilize only internal resources for the project | | | |
| **Project Assumptions:**   * The bank’s current system already supports the monthly generation of PDF statements. * The bank’s current online portal already interfaces with our database to store, retrieve, and display customer transaction and account information. * The bank currently has sufficient internal IT resources and these resources possess the necessary skills to successfully complete this project. | | | |
| **Project Success Criteria:**  This project will be deemed successful if the project does not exceed the approved budget of $50,000 and its six month projected duration. Success of this project will also be measured by customer participation in paperless statements with a 30% goal within one year from the release with a positive trend. This goal of 30% customer participation will lead to our projected savings  of $2,500 per month in printing costs. The project will also provide the necessary reporting capabilities to measure customer participation and a third party vendor will be brought in to measure the change in environmental impact before and after this service is released. Finally, we will leverage our current customer survey platform to measure customer satisfaction changes as a result of this new service. | | | |

# 3. Stakeholder Documentation

The stakeholder register is used to identify those people and organizations impacted by the project and document the relevant information about each stakeholder.

## 3.1 Stakeholder Identification

The following table is a summary of the main stakeholders, their position, and their interest in the project.

|  |  |  |
| --- | --- | --- |
| **Stakeholder Name** | **Position / Title** | **Interest** |
| **Dr. Vijay Kanabar** | CEO | To comply with the IT Green Initiatives set by the board of directors and keep customers of the bank satisfied |
| **Rachel S Alt-Simmons** | CIO / Project Sponsor | To report progress to the board of directors and CEO and fund this initiative |
| **Karuna Samat-Hinoch** | IT Director | To report to the CIO the advances and risks of the project |
| **Nicholas Scala** | Project Manager | To manage risks and see through the successful completion of the project |
| **Joe McCarthy** | Operation Manager | To ensure hardware is fully functional and internal team is productive |
| **Joe Davis** | Software Development Manager | To oversee code is stable and produced cleanly without breaking other functionality |
| **Nichole Phillips** | Marketing Manager | To make sure any changes made to the website remain consistent with the bank’s brand and marketing |
| **Richard Duffet** | Legal and Compliance Manager | To make sure the bank continues to comply with regulations |
| **Customers** | External | To consume and utilize changes brought about by this enhancement |
| **International Regulatory Bodies** | External | To conduct audits to make sure banks are complying with international regulations |

## 3.2 Stakeholder Register

The following table demonstrates how to meet each stakeholder’s expectations for the project.

|  |  |  |  |
| --- | --- | --- | --- |
| **Stakeholder Name** | **Position / Title** | **Goal** | **Expectations** |
| **Dr. Vijay Kanabar** | CEO | Have at least 30% of the costumers in paperless by the end of the year | Save at least $2,500 a month in the printing and mailing of paper statements |
| **Rachel S Alt-Simmons** | CIO / Sponsor | Execute the project on time and within budget | Completion of the project to further the IT Green Initiatives |
| **Karuna Samat-Hinoch** | IT Director | Finish the project on time and without issues | To help project the manager resolve potential issues through the execution of the project plan |
| **Nicholas Scala** | Project Manager | Deliver the product on time and within budget | Completion of the project via the standards and goals set forth in the Scope Document |
| **Joe McCarthy** | Operation Manager | Finish the project and release resources for internal projects | Provide estimates for the effort and hardware needed for the project |
| **Joe Davis** | Software Development Manager | Create the software on time and defect free | Provide estimates for the effort and hardware needed for the project |
| **Nichole Phillips** | Marketing Manager | Check costumers are receiving quick and quality statements in the online portal | To review and approve the online portal content |
| **Richard Duffet** | Legal and Compliance Manager | Review that the bank is in compliance by providing the monthly statements with the paperless option | To keep track of the users receiving paperless statements for legal compliance |
| **Customers** | External | Utilize the features brought out by this project | The service will be user friendly and keep information secure |
| **International Regulatory Bodies** | External | Ensure the bank continues to comply with international regulations | The bank will continue to comply with international regulations |

## 3.3 Stakeholder Ranking

The Stakeholder Analysis table below was used to determine the ranking of each stakeholder’s interest and influence.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stakeholder Name** | **Position / Title** | **Interest\*** | **Influence\*** | **Total\*** |
| **Dr. Vijay Kanabar** | CEO | 9 | 10 | **19** |
| **Rachel S Alt-Simmons** | CIO / Sponsor | 8 | 10 | **18** |
| **Karuna Samat-Hinoch** | IT Director | 8 | 10 | **18** |
| **Nicholas Scala** | Project Manager | 7 | 7 | **14** |
| **Joe McCarthy** | Operation Manager | 6 | 5 | **11** |
| **Joe Davis** | Software Development Manager | 6 | 5 | **11** |
| **Nichole Phillips** | Marketing Manager | 6 | 5 | **11** |
| **Richard Duffet** | Legal and Compliance Manager | 6 | 5 | **11** |
| **Customers** | External | 10 | 1 | **11** |
| **International Regulatory Bodies** | External | 2 | 5 | **7** |

\* Guide

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Zero | **Extremely Low** | **Low** | **Medium Low** | **Medium** | **Medium High** | **High** | **Very High** | **Extremely High** | **Vital** |

# 4. Communication Management Plan

This section describes various one time and ongoing meetings that will be scheduled as part of this project.

|  |  |
| --- | --- |
| Message | **Introductory Meeting** |
| Description | This meeting will introduce the project to all stakeholders. Every stakeholder will be getting to know the goals and expectation of paperless statements. |
| Attendees (Required) | Sponsors, Project Manager, Banking Compliance team, Marketing, Quality Management team, Product Managers, Product Engineers, Software Quality team, IT Team |
| Attendees (Optional) | n/a |
| Method | In person meeting/WebEx |
| Frequency | One time |
| Host | Project Manager |

|  |  |
| --- | --- |
| Message | **Kickoff Meeting** |
| Description | This meeting will officially kickoff paperless statements. Teams working on this project will be formed from product management, engineering and software quality teams. Scrum master will be selected for the project. |
| Attendees (Required) | Project Manager, Product Managers, Product Engineering, Software Quality teams, IT Team |
| Attendees (Optional) | Sponsors |
| Method | In person meeting/WebEx |
| Frequency | One time |
| Host | Project Manager |

|  |  |
| --- | --- |
| Message | **User Stories Grooming Meeting** |
| Description | As part of Scrum methodology, Product Managers will explain requirements to the team working of development and testing of this project to reprioritize and estimate the backlog of user stories. |
| Attendees (Required) | Product Manager, Product Engineering team, Software Quality Team |
| Attendees (Optional) | Banking Compliance Team |
| Method | In person/WebEx |
| Frequency | Weekly |
| Host | Scrum Master |

|  |  |
| --- | --- |
| Message | **Daily Standup meeting** |
| Description | This meeting will allow each team member working on the project to update their daily tasks with other team members. |
| Attendees (Required) | Product Manager, Product Engineering team, Software Quality Team |
| Attendees (Optional) | n/a |
| Method | In person/WebEx |
| Frequency | Daily |
| Host | Scrum Master |

|  |  |
| --- | --- |
| Message | **Sprint Demo Meeting** |
| Description | At the end of each sprint, team will demo the product changes to all stakeholders with the progress made. |
| Attendees (Required) | Product Manager, Product Engineering team, Software Quality Team, Project Manager, Banking Compliance team, Marketing Team |
| Attendees (Optional) | Sponsors |
| Method | In person/WebEx |
| Frequency | Bi-weekly |
| Host | Scrum Master |

|  |  |
| --- | --- |
| Message | **Status Update Meeting** |
| Description | Project Manager will update sponsors with the latest progress of the product, specifically about project risks such as cost overruns and project delivery date. |
| Attendees (Required) | Sponsors, Project Management |
| Attendees (Optional) | n/a |
| Method | In person |
| Frequency | Monthly |
| Host | Project Manager |

|  |  |
| --- | --- |
| Message | **Hardware Readiness Status Meeting** |
| Description | IT Team will give updates about new hardware needed to test and support this project. |
| Attendees (Required) | Sponsors, Project Management, IT Team, Product Engineering, Software Quality |
| Attendees (Optional) | n/a |
| Method | In person |
| Frequency | Monthly |
| Host | Project Manager |

|  |  |
| --- | --- |
| Message | **Lessons Learned** |
| Description | This meeting will be held upon complete of the project to discuss and capture positive and negative aspects of the project to improve future initiatives at the bank. |
| Attendees (Required) | Sponsors, Project Management, Product Managers, IT Team, Product Engineering, Software Quality |
| Attendees (Optional) | CIO, IT Director |
| Method | In person/WebEx |
| Frequency | One time |
| Host | Project Manager |

# 5. Requirements Documentation

This document provides documentation of requirements.

Requirements are grouped by the following:

* Project Requirements
* Functional Requirements
* Non-Functional Requirements
* Hardware Requirements

## 5.1 Project Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement** | **Stakeholder** | **Acceptance Criteria** |
| Close the projects within 3 months. | CIO | Achieve at least 90% of Milestones within the allotted time |
| Complete project within allotted budget of $50,000 and save $2,500 per month in printing and mailing of paper statements by Q3 2016 | CIO, CEO | Stay within ±10% of the project Budget |
| Increase Customer participation rate in paperless statements | CEO | Achieve 25% customer participation by Q3 2016 |

## 5.2 Functional Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement** | **Stakeholder** | **Acceptance Criteria** |
| Allow bank customers to opt in/opt out feature to receive bank statement electronically | CIO, Bank Customers | As part of green initiative, customers will get option to receive monthly bank statement online only. Customer can also stop receiving online statement and switch to paper statement |
| Email Notification | Bank Customers, Compliance , Product Engineering | Customers to receive email notifications when monthly statements are ready to view online |
| Increased online storage for monthly statements | Compliance, Bank  Customers | Customer can view online statements dating back seven years from current date |
| Print and mail only opt out customer’s statements. | CIO, Bank  Customers | Printing module to print only those monthly statements for customers who are opted out of paperless statements |

## 5.3 Non-Functional Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement** | **Stakeholder** | **Acceptance Criteria** |
| Statements need to remain secure | CEO, CIO, Bank Customers | Sensitive customer information must be protected from all possible malicious threats, both internal and external |
| Database upgraded to support new functionality | CIO, IT | Database must be modified to track which customers have opted-in and opted-out of paperless statements. Queries tied to the database must also be added to support access to historical statements |
| Cross-browser/Cross-operating system  compatibility | CIO, IT, Bank  Customers | The new functionality needs to work on all major browsers (Internet Explorer, Chrome, Edge, Safari, Opera, Firefox) and on all major operating systems (Windows, Linux, Mac OS X, Apple iOS, Android) |
| 24/7/365 uptime | CIO, IT, Bank  Customers | The functionality must be available 24 hours a day, 7 days a week, with one hour per year downtime for system maintenance, as appropriate. |

## 5.4 Hardware Requirements

|  |  |  |
| --- | --- | --- |
| **Requirement** | **Stakeholder** | **Acceptance Criteria** |
| Upgrade email server and webserver performance to support increased usage. | IT, Product Engineering, Software Quality | Upgraded hardware to support 40% more traffic to email and online portal |
| Upgrade Content Manager server to support more historical data of monthly statements. | IT, Product Engineering, Software Quality | Customer is able to retrieve past seven years of data from online portal |

# 6. Human Resource Management

The human resource plan describes how all aspects of resources should be addressed. It is composed of roles and responsibilities, project organizational chart, and staffing management plan.

## 6.1 Human Resources Plan

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Project Title:** | Paperless Statements | **Version:** | 1.0 | **Date:** | 09/19/2015 |
| **Roles and Responsibilities CEO:** The CEO is responsible for managing the bank. The CEO has granted the funding for the project to the CIO.  **CIO:** The CIO’s responsibility is to ensure that the project is meeting the needs. The CIO maintains a close relationship with the IT Director and CEO throughout the duration of the project.  **IT Director:** The IT Director is in charge of ensuring paperless statements are fully functional and meets all customer needs.  **Project Manager:** The project manager will oversee the project, complete all documentation, and ensure that all deliverables are on track to meet the quality metrics.  **Product Manager:** The product manager represents the customer by providing and approving requirements and their priority.  **Operation Manager:** The Operations Manager will provide and manage the resources needed from his team to set up all the hardware to support the new paperless initiative.  **Software Development Manager:** The Software Development Manager will provide and manage the resources needed from his team to develop the software to support the new paperless initiative.  **Quality Assurance Manager:** The Quality Assurance Manager will ensure the code is defect free and stable through managing a series of software testing methodologies.  **Marketing Manager:** Will review and provide feedback for the content of the statements and text in the online portal.  **Legal and Compliance Manager:** Will keep track of the reports for the daily paperless statements to keep legal compliance. | | | | | |
| **Executive Structure** (abbreviated): | | | | | |
| **Staff Acquisition:**  All the resources needed for this project and thus acquisition of staff is not necessary for this project. | | | | | |
| **Staff Release:**  All the resources needed for this project are internal and thus release of staff is not necessary for this project. | | | | | |
| **Training:**  The process to show the statements in the online portal will be automated. Documentation on how the system works will be provided by the software development team for future reference and troubleshooting. | | | | | |
| **Performance Reviews:**  Performance reviews will be conducted annually on the individual level as per current HR policies. | | | | | |
| **Regulation and Policy Compliance:**  All regulations and policies will be strictly adhered to. If there are any questions or concerns regarding policy or regulation, contact the Project Manager. | | | | | |

## 6.2 Core Team

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Role** | **Location: City/State** | **Email** | **Phone** |
| **Nicholas Scala** | Project Manager | Boston, MA | n.scala@ridgewoodsavings.com | 555-555-5555 |
| **Ann Morrison** | Product Manager | Boston, MA | a.morrison@ridgewoodsavings.com | 555-555-5555 |
| **John Davis** | Senior Software Developer | Boston, MA | j.davis@ridgewoodsavings.com | 555-555-5555 |
| **Joe Bucks** | Senior Software Developer | Boston, MA | j.bucks@ridgewoodsavings.com | 555-555-5555 |
| **Jeff Stills** | Senior Network Administrator | Boston, MA | j.stills@ridgewoodsavings.com | 555-555-5555 |
| **Stephen Doe** | Senior Network Administrator | Boston, MA | s.doe@ridgewoodsavings.com | 555-555-5555 |
| **Vishal Jain** | Senior Quality Assurance Analyst | Boston, MA | v.metha@ridgewoodsavings.com | 555-555-5555 |
| **Rachel Cohen** | Senior Linux Administrator | Boston, MA | r.cohen@ridgewoodsavings.com | 555-555-5555 |

## 6.3 Stakeholders and Partners

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Area Represented** | **Location: City/State** | **Email** | **Phone** |
| **Vijay Kanabar** | CEO | Boston, MA | v.kanabar@ridgewoodsavings.com | 555-555-5555 |
| **Rachel Alt-Simmons** | CIO | Boston, MA | r.alt-simmons@ridgewoodsavings.com | 555-555-5555 |

# 7. Work Breakdown Structure Reports

## 7.1 Work Breakdown Structure Summary

Below is a high-level Work Breakdown Structure (WBS):

## 7.2 Activity List

Below is a list of activities as part of the Work Breakdown Structure. This list does not include milestones or recurring project team meetings.

|  |  |
| --- | --- |
| **WBS ID** | **Task Name** |
| **1.1** | **Inception** |
| 1.1.1 | Develop Business Case |
| 1.1.2 | Create Project Charter |
| 1.1.4 | Identify Stakeholders |
| 1.1.5 | Produce Stakeholder Identification Documents |
| 1.1.6 | Develop Scope Statement |
| 1.1.7 | Review Scope Statement with Team |
| 1.1.9 | Hold Kick-Off meeting |
| **1.3** | **Solution Design / Elaboration** |
| **1.3.1** | **Requirements Gathering, Analysis and Specifications** |
| 1.3.1.1 | Identify and Document Inputs |
| 1.3.1.2 | Identify and Document Functional Requirements |
| 1.3.1.3 | Identify and document Non-Functional Requirements |
| 1.3.1.4 | Compile Requirements in Requirements Document |
| **1.3.2** | **Communication and Human Resource Planning** |
| 1.3.2.1 | Draft Communication Management Plan |
| 1.3.2.3 | Identify Roles and Responsibilities |
| 1.3.2.4 | Draft Human Resource Plan |
| **1.3.3** | **Project and Risk Planning** |
| 1.3.3.1 | Develop Project Plan |
| 1.3.3.2 | Identify Risks |
| 1.3.3.3 | Draft Risk Identification and Response Document |
| 1.3.3.4 | Draft Risk Contingency Plan |
| 1.3.3.5 | Review Project Plan and Key Risks with Team |
| **1.3.4** | **Quality Assurance Planning** |
| 1.3.4.1 | Define Project Quality |
| 1.3.4.2 | Develop Metrics for Measuring Project Quality |
| 1.3.4.3 | Identify Quality Control Actions |
| 1.3.4.4 | Draft Quality Management Plan |
| **1.5** | **Execution** |
| **1.5.1** | **Hardware Upgrades** |
| 1.5.1.1 | Acquire Necessary Hardware |
| 1.5.1.2 | Install Hardware |
| 1.5.1.3 | Test Hardware |
| **1.5.2** | **Database Modifications** |
| 1.5.2.1 | Update Database Models and Documentation |
| 1.5.2.2 | Complete SQL Updates to Database |
| 1.5.2.3 | Ensure Database Integrity Post Modifications via Testing |
| **1.5.3** | **Software Development** |
| 1.5.3.1 | Develop Middleware Solution |
| 1.5.3.2 | Unit Test Middleware Solution |
| 1.5.3.3 | Develop Modifications to Website |
| 1.5.3.4 | Unit Test Modifications to Website |
| 1.5.3.5 | Develop New Email Notifications |
| 1.5.3.6 | Unit Test Email Notifications |
| 1.5.3.7 | Develop Security Measures |
| 1.5.3.8 | Test Security Strength of System |
| **1.5.4** | **Testing** |
| 1.5.4.1 | Test Prep |
| 1.5.4.1.1 | Create Test Plan |
| 1.5.4.1.2 | Create Test Traceability |
| 1.5.4.1.3 | Create Test Cases |
| 1.5.4.2 | Test Execution |
| 1.5.4.2.1 | Conduct System Testing |
| 1.5.4.2.2 | Complete Integration Development |
| 1.5.4.2.3 | Complete Integration Testing |
| 1.5.4.3 | User Acceptance Testing |
| 1.5.4.3.1 | Prepare UAT Plan |
| 1.5.4.3.2 | Identify Users & Kick-off session |
| 1.5.4.3.3 | Create User Guide / Test Scenarios |
| 1.5.4.3.4 | Complete UAT Testing |
| 1.5.4.3.5 | Perform Testing and Report issues |
| 1.5.4.3.6 | Fix issues reported by UAT |
| 1.5.4.3.7 | Review System Readiness |
| 1.5.4.3.8 | Deploy changes to production |
| **1.5.5** | **Training** |
| 1.5.5.1 | Develop Quick Reference Guide |
| 1.5.5.2 | Prepare Release Notes |
| **1.7** | **Transition / Deployment** |
| 1.7.1 | Release Code / Changes to Production |
| **1.8** | **Post Deployment Activities** |
| 1.8.1 | Establish Post Deployment Support for Critical Issues |
| 1.8.2 | Conduct Lessons Learned |

## 7.3 Milestone List

Below is a list of milestones as part of the Work Breakdown Structure. An “internal” milestone type denotes a milestone that bares importance to the internal IT Project Team, whereas an “external” milestone type denotes a milestone that bares importance to anyone outside of the IT Project Team, including but not limited to, bank executives and bank customers.

|  |  |  |  |
| --- | --- | --- | --- |
| **WBS ID** | **Milestone Name** | **Date** | **Type** |
| 1.1.3 | Get Business Case and Project Charter Approved and Signed | T 9/3/15 | Internal/External |
| 1.1.8 | Get Scope Statement Approved and Signed | F 9/11/15 | Internal/External |
| 1.2 | Complete Inception | M 9/14/15 | Internal |
| 1.3.1.5 | Review Requirements Document with Team | T 9/17/15 | Internal/External |
| 1.3.2.2 | Review Communication Management Plan with Team | T 9/15/15 | Internal/External |
| 1.3.2.5 | Review Human Resource Plan with Team | T 9/17/15 | Internal |
| 1.3.3.6 | Baseline Project Plan | W 9/23/15 | Internal |
| 1.3.4.5 | Review Quality Management Plan with Team | W 9/30/15 | Internal |
| 1.4 | Complete Solution Design / Elaboration | W 9/30/15 | Internal |
| 1.5.1.4 | Hardware Upgrades Complete | T 10/13/15 | Internal |
| 1.5.2.4 | Database Modifications Complete | T 10/8/15 | Internal |
| 1.5.3.9 | Software Development Complete | W 11/11/15 | Internal |
| 1.5.4.1.4 | Review Test Plan and Test Cases with Team | W 11/18/15 | Internal |
| 1.5.4.2.4 | Achieve QA Team Signoff | M 11/23/15 | Internal |
| 1.5.4.3.9 | Achieve UAT Sign off | T 12/15/15 | Internal |
| 1.5.5.3 | Training Complete | T 11/26/15 | Internal/External |
| 1.6 | Complete Execution | T 12/15/15 | Internal |
| 1.7.2 | Production Sign-Off (live) | W 12/16/15 | Internal/External |

## 7.4 Activity Resource Requirements

Below is a list of activity groups as part of the Work Breakdown Structure along with the amount of resources needed to successfully complete the underlying activates on time.

|  |  |  |  |
| --- | --- | --- | --- |
| **WBS ID** | **Task Name** | **Resource Type** | **Qty.** |
| 1.1.1 | Develop Business Case | Project Management | 3 |
| 1.1.2 | Create Project Charter | Project Management | 3 |
| 1.1.4 | Identify Stakeholders | Project Management | 3 |
| 1.1.5 | Produce Stakeholder Identification Doc | Project Management/Business Analysis | 3 |
| 1.1.6 | Develop Scope Statement | Project Management/Business Analysis | 3 |
| 1.1.7 | Review Scope Statement with Team | Project Management | 3 |
| 1.1.9 | Hold Kick-Off meeting | Project Management | 3 |
| 1.3.1 | Requirements Gathering, Analysis and Specs | Project Management/Business Analysis | 3 |
| 1.3.2 | Communication and Human Resource Planning | Project Management | 3 |
| 1.3.3 | Project and Risk Planning | Project Management | 3 |
| 1.3.3.1 | Develop Project Plan | Project Management | 3 |
| 1.3.3.3 | Draft Risk Identification and Response Doc | Project Management | 3 |
| 1.3.3.4 | Draft Risk Contingency Plan | Project Management | 3 |
| 1.3.4 | Quality Assurance Planning | Quality Assurance | 1 |
| 1.5.1 | Hardware Upgrades | Hardware Administration | 1 |
| 1.5.2 | Database Modifications | Software Development | 2 |
| 1.5.3 | Software Development | Software Development | 2 |
| 1.5.4 | Testing | Quality Assurance | 1 |
| 1.5.4.1 | Test Prep | Quality Assurance | 1 |
| 1.5.4.2 | Test Execution | Quality Assurance | 1 |
| 1.5.4.3 | User Acceptance Testing | Quality Assurance/Product Management | 2 |
| 1.5.5 | Training | Project Management/Product Management | 3 |
| 1.7.1 | Release Code / Changes to Production | Software Development | 2 |
| 1.8.1 | Establish Post Deployment Support | Project Management/Software Development | 3 |
| 1.8.2 | Conduct Lessons Learned | Entire Project Team | 10 |

## 7.5 Activity Duration Estimates

Below is a list of activities as part of the Work Breakdown Structure along with their planned durations, start dates, and end dates. For tasks ending October 5th or earlier, the duration period is actual and not estimated. For tasks ending October 6th or later, the duration period is estimated and not actual.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WBS ID** | **Task Name** | **Duration** | **Start Date** | **End Date** |
| **1.1** | **Inception** | **10 days** | **T 9/1/15** | **M 9/14/15** |
| 1.1.1 | Develop Business Case | 3 days | T 9/1/15 | T 9/3/15 |
| 1.1.2 | Create Project Charter | 1 day | T 9/1/15 | T 9/1/15 |
| 1.1.4 | Identify Stakeholders | 1 day | F 9/4/15 | F 9/4/15 |
| 1.1.5 | Produce Stakeholder Identification Documents | 2 days | M 9/7/15 | T 9/8/15 |
| 1.1.6 | Develop Scope Statement | 2 days | W 9/9/15 | T 9/10/15 |
| 1.1.7 | Review Scope Statement with Team | 1 day | F 9/11/15 | F 9/11/15 |
| 1.1.9 | Hold Kick-Off meeting | 1 day | M 9/14/15 | M 9/14/15 |
| **1.3** | **Solution Design / Elaboration** | **12 days** | **T 9/15/15** | **W 9/30/15** |
| **1.3.1** | **Requirements Gathering, Analysis and Specifications** | **3 days** | **T 9/15/15** | **T 9/17/15** |
| 1.3.1.1 | Identify and Document Inputs | 1 day | T 9/15/15 | T 9/15/15 |
| 1.3.1.2 | Identify and Document Functional Requirements | 1 day | T 9/15/15 | T 9/15/15 |
| 1.3.1.3 | Identify and document Non-Functional Requirements | 1 day | T 9/15/15 | T 9/15/15 |
| 1.3.1.4 | Compile Requirements in Requirements Document | 2 days | W 9/16/15 | T 9/17/15 |
| **1.3.2** | **Communication and Human Resource Planning** | **3 days** | **T 9/15/15** | **T 9/17/15** |
| 1.3.2.1 | Draft Communication Management Plan | 1 day | T 9/15/15 | T 9/15/15 |
| 1.3.2.3 | Identify Roles and Responsibilities | 1 day | W 9/16/15 | W 9/16/15 |
| 1.3.2.4 | Draft Human Resource Plan | 1 day | T 9/17/15 | T 9/17/15 |
| **1.3.3** | **Project and Risk Planning** | **7 days** | **T 9/15/15** | **W 9/23/15** |
| 1.3.3.1 | Develop Project Plan | 2 days | T 9/15/15 | W 9/16/15 |
| 1.3.3.2 | Identify Risks | 2 days | T 9/17/15 | F 9/18/15 |
| 1.3.3.3 | Draft Risk Identification and Response Document | 1 day | M 9/21/15 | M 9/21/15 |
| 1.3.3.4 | Draft Risk Contingency Plan | 1 day | T 9/22/15 | T 9/22/15 |
| 1.3.3.5 | Review Project Plan and Key Risks with Team | 1 day | W 9/23/15 | W 9/23/15 |
| **1.3.4** | **Quality Assurance Planning** | **5 days** | **T 9/24/15** | **W 9/30/15** |
| 1.3.4.1 | Define Project Quality | 1 day | T 9/24/15 | T 9/24/15 |
| 1.3.4.2 | Develop Metrics for Measuring Project Quality | 1 day | F 9/25/15 | F 9/25/15 |
| 1.3.4.3 | Identify Quality Control Actions | 1 day | M 9/28/15 | M 9/28/15 |
| 1.3.4.4 | Draft Quality Management Plan | 2 days | T 9/29/15 | W 9/30/15 |
| **1.5** | **Execution** | **54 days** | **T 10/1/15** | **T 12/15/15** |
| **1.5.1** | **Hardware Upgrades** | **9 days** | **T 10/1/15** | **T 10/13/15** |
| 1.5.1.1 | Acquire Necessary Hardware | 4 days | T 10/1/15 | T 10/6/15 |
| 1.5.1.2 | Install Hardware | 3 days | W 10/7/15 | F 10/9/15 |
| 1.5.1.3 | Test Hardware | 2 days | M 10/12/15 | T 10/13/15 |
| **1.5.2** | **Database Modifications** | **6 days** | **T 10/1/15** | **T 10/8/15** |
| 1.5.2.1 | Update Database Models and Documentation | 2 days | T 10/1/15 | F 10/2/15 |
| 1.5.2.2 | Complete SQL Updates to Database | 2 days | M 10/5/15 | T 10/6/15 |
| 1.5.2.3 | Ensure Database Integrity Post Modifications via Testing | *2 days* | W 10/7/15 | T 10/8/15 |
| **1.5.3** | **Software Development** | ***24 days*** | **F 10/9/15** | **W 11/11/15** |
| 1.5.3.1 | Develop Middleware Solution | *4 days* | F 10/9/15 | W 10/14/15 |
| 1.5.3.2 | Unit Test Middleware Solution | *4 days* | T 10/15/15 | T 10/20/15 |
| 1.5.3.3 | Develop Modifications to Website | *3 days* | W 10/21/15 | F 10/23/15 |
| 1.5.3.4 | Unit Test Modifications to Website | *2 days* | M 10/26/15 | T 10/27/15 |
| 1.5.3.5 | Develop New Email Notifications | *2 days* | W 10/28/15 | T 10/29/15 |
| 1.5.3.6 | Unit Test Email Notifications | *2 days* | F 10/30/15 | M 11/2/15 |
| 1.5.3.7 | Develop Security Measures | *3 days* | T 11/3/15 | T 11/5/15 |
| 1.5.3.8 | Test Security Strength of System | *4 days* | F 11/6/15 | W 11/11/15 |
| **1.5.4** | **Testing** | ***24 days*** | **T 11/12/15** | **T 12/15/15** |
| 1.5.4.1 | Test Prep | *5 days* | T 11/12/15 | W 11/18/15 |
| 1.5.4.1.1 | Create Test Plan | *1 day* | T 11/12/15 | T 11/12/15 |
| 1.5.4.1.2 | Create Test Traceability | *1 day* | F 11/13/15 | F 11/13/15 |
| 1.5.4.1.3 | Create Test Cases | *3 days* | M 11/16/15 | W 11/18/15 |
| 1.5.4.2 | Test Execution | *8 days* | T 11/12/15 | M 11/23/15 |
| 1.5.4.2.1 | Conduct System Testing | *3 days* | T 11/12/15 | M 11/16/15 |
| 1.5.4.2.2 | Complete Integration Development | *2 days* | T 11/17/15 | W 11/18/15 |
| 1.5.4.2.3 | Complete Integration Testing | *3 days* | T 11/19/15 | M 11/23/15 |
| 1.5.4.3 | User Acceptance Testing | *16 days* | T 11/24/15 | T 12/15/15 |
| 1.5.4.3.1 | Prepare UAT Plan | *2 days* | T 11/24/15 | W 11/25/15 |
| 1.5.4.3.2 | Identify Users & Kick-off session | *1 day* | T 11/26/15 | T 11/26/15 |
| 1.5.4.3.3 | Create User Guide / Test Scenarios | *1 day* | F 11/27/15 | F 11/27/15 |
| 1.5.4.3.4 | Complete UAT Testing | *5 days* | M 11/30/15 | F 12/4/15 |
| 1.5.4.3.5 | Perform Testing and Report issues | *2 days* | M 12/7/15 | T 12/8/15 |
| 1.5.4.3.6 | Fix issues reported by UAT | *3 days* | W 12/9/15 | F 12/11/15 |
| 1.5.4.3.7 | Review System Readiness | *1 day* | M 12/14/15 | M 12/14/15 |
| 1.5.4.3.8 | Deploy changes to production | *1 day* | T 12/15/15 | T 12/15/15 |
| **1.5.5** | **Training** | ***3 days*** | **T 11/24/15** | **T 11/26/15** |
| 1.5.5.1 | Develop Quick Reference Guide | *2 days* | T 11/24/15 | W 11/25/15 |
| 1.5.5.2 | Prepare Release Notes | *1 day* | T 11/26/15 | T 11/26/15 |
| **1.7** | **Transition / Deployment** | ***1 day*** | **W 12/16/15** | **W 12/16/15** |
| 1.7.1 | Release Code / Changes to Production | *1 day* | W 12/16/15 | W 12/16/15 |
| **1.8** | **Post Deployment Activities** | ***6 days*** | **T 12/17/15** | **T 12/24/15** |
| 1.8.1 | Establish Post Deployment Support for Critical Issues | *5 days* | T 12/17/15 | W 12/23/15 |
| 1.8.2 | Conduct Lessons Learned | *1 day* | T 12/24/15 | T 12/24/15 |

## 

## 7.6 Detailed Work Breakdown Structure



# 8. Project Cost Estimation

After conducting a series of cost estimation analyses including (1) Planning Poker, (2) Parametric Estimating, (3) Three Point Estimating, and (4) utilizing the Work Breakdown Structure, the team has decided to combine the estimations received from Planning Poker and the Work Breakdown Structure to arrive at a total cost estimate for the Ridgewood Savings Bank’s Paperless Statements project of **$48,960**.

The team has decided not to use the formal *Analogous cost estimation method* because the company does not have any similar projects that we can derive analogous activities from, as this is a unique project for the company. The team extensively researched similar projects executed by similar companies to derive like activities to employ the Analogous method, but that research was inconclusive.

Because this project blends hardware acquisition and software development, with software development dominating the majority of the work effort, the team has decided not to use the estimate received from the *Parametric method*. Similar to the Analogous method, in order for the team to derive accurate constants, the company would need sufficient history of similar projects. For our company, this worked well in determining the hardware costs, but falls short in determining more flexible costs such as the software costs.

Our estimates derived from the *Three Point Method* were wide in range due to the confidence interval premise. The Three Point Method also only included effort and not fixed costs, like hardware acquisition. For these reasons, the team decided not to report the estimate derived from the Three Point Method.

The team found the software development estimates from *Planning Poker* to be very accurate. This is because this software development team has worked together previously and have built up experience to make accurate estimates. Due to the group consensus nature of Planning Poker, both the estimates and the requirements became more accurate through the detailed estimation discussions. Planning Poker is strong at estimating software development costs. When it comes to hardware and more of the planning and designing activities however, this method is not sufficient.

For the planning, designing, hardware, and deployment activities, the team turned to the estimates derived from the *Work Breakdown Structure*. Instead of providing guess-based estimations on high-level tasks, the detailed broken-down nature of this bottom up micro approach derived stronger estimates that the team felt comfortable reporting.

## 8.1 Planning Poker Estimate

Planning Poker is an Agile Software Development estimation technique that uses consensus based “rounds of poker” to arrive at a final estimate for software development work [5]. Planning Poker cannot accurately be used to estimate other activities such as planning and design and thus were left out of scope for this planning method.

**Procedure**:

1. The team delineated those who should vote and those who should observe. Based upon the project team composition the following members were required to vote:
   * John Davis, Senior Software Developer
   * Joe Bucks, Senior Software Developer
   * Vishal Jain, Senior Quality Assurance Analyst
2. The team scheduled a series of meetings to conduct Planning Poker.
3. In each session, the Product Manager, Ann Morrison, read each software requirement with acceptance criteria aloud to the voting team.
4. The voting members asked for further clarifications to arrive at a better estimate and Ann provided more details when asked.
5. For each requirement, Ann had asked the team to use their Planning Poker cards (numbered 0, 1, 2, 3, 5, 8, 13, 20, 40 and 100) to simultaneous estimate the effort required.
6. If there were differing estimates, the voters with the highest and lowest estimate would voice their opinions as to why they provided that estimate.
7. After discussion, the team re-voted continuously until a consensus was reached.
8. When the team reached a point estimate consensus, Ann noted down the estimate and moved onto the next requirement.

**Estimates:**

Below are the final point estimates reached by the voting team for each software requirement along with the estimated cost. Because this team has worked together previously, there was sufficient historical information to determine that each story point is approximately equivalent to $200.

**Functional Requirements:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirement** | **Point Estimate** | **Cost** | |
| Allow bank customers to opt in/opt out feature to receive bank statement electronically | 8 | 8 x $200 = $1,600 | |
| Email Notifications | 5 | 5 x $200 = $1,000 | |
| Increased online storage for monthly statements | 5 | 5 x $200 = $1,000 | |
| Print and mail only opt out customer’s statements. | 3 | 3 x $200 = $600 | |
| **Total Functional Cost:** | | **$4,200** |

**Non-Functional Requirements:**

|  |  |  |
| --- | --- | --- |
| **Requirement** | **Point Estimate** | **Cost** |
| Statements need to remain secure | 13 | 13 x $200 = $2,600 |
| Database upgraded to support new functionality | 8 | 8 x $200 = $1,600 |
| Cross-browser/Cross-operating system  compatibility | 8 | 8 x $200 = $1,600 |
| 24/7/365 uptime | 3 | 3 x $200 = $600 |
| **Total Non-Functional Cost:** | | **$6,400** |

Functional Cost + Non-Functional Cost = Total Cost

$4,200 + $6,400 = **$10,600 for software development**

## 8.2 Parametric Method Estimate

A parametric estimate is a mathematical relationship between the cost, or schedule of an element of the project and the project’s parameters. Constants, equations, and parameters derived from historical data combine to deliver a top-down cost estimate [2].

Below figures are based upon historical estimations. Due to the limited historical data and the top-down nature of this approach, the estimate produced below is a *rough order of magnitude* estimate.

**Parametric Cost Estimate:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Deliverable/Task** | **No. in Project** | **Cost/unit** | **Cost Estimate** |
| Support Artifacts (Charter, WBS, etc.) | 8 | $1,000 | $8,000 |
| New Servers | 2 | $2,500 | $5,000 |
| Modified SQL Queries | 3 | $2,000 | $6,000 |
| Modified SQL Data Tables | 1 | $1,000 | $1,000 |
| Impacted Web Pages | 7 | $2,000 | $14,000 |
| Impacted Users | 500,000 | $0.01 | $5,000 |
| **Total Parametric Estimate:** |  |  | **$39,000** |

## 8.3 Three Point Method Estimate

The Three Point Method is based the assumption that normal distribution curves do not work for project management estimation because “once projects start to be late, they stay late.” Instead, we blend calculations from three different types of estimates [2]:

1. *Pessimistic Estimate*: a worst-case scenario
2. *Most Likely Estimate*: normal activity duration
3. *Optimistic Estimate*: a best-case scenario

**Resources and Rates:**

|  |  |  |
| --- | --- | --- |
| **Resource Name** | **Role** | **Standard Rate** |
| Rachel Cohen | Linux Admin | $25.00/hr |
| Jeff Stills | Network Admin | $20.00/hr |
| Stephen Doe | Network Admin | $20.00/hr |
| Ann Morrison | Product Manager | $40.00/hr |
| Nicholas Scala | Project Manager | $30.00/hr |
| Vishal Jain | Quality Assurance Analyst | $20.00/hr |
| Joe Bucks | Software Developer | $25.00/hr |
| John Davis | Software Developer | $25.00/hr |
| **Average/blended rate:** | | **$25.50/hr** |

**Top-Down Project Estimates:**

1. Pessimistic (*p*) = 2,000 hours
2. Most Likely (*m*) = 1,600 hours
3. Optimistic (*o*) = 1,500 hours

**PERT Mean:**

**Standard Deviation:**

**Estimated Cost:**

|  |  |  |
| --- | --- | --- |
| **Confidence Interval** | **Effort Calculation** | **Cost (hrs. x $25.50)** |
| 66% confidence | 1,650 ± (1 x 83.33) = 1,566.67 - 1,733.33 hours | **$39,950 - $44,200** |
| 95% confidence | 1,650 ± (2 x 83.33) = 1,483.33 - 1,816.67 hours | **$37,825 - $46,325** |
| 99.5% confidence | 1,650 ± (3 x 83.33) = 1,400 - 1,900 hours | **$35,700 - $48,450** |

The project schedule cost estimate is **between** **$37,825 and $46,325 with a 95% confidence level**.

## 8.4 Work Breakdown Structure Method Estimate

The Work Breakdown Structure Method is a bottom up approach that utilizes task level estimation along with resource allocation and rates to arrive at a total cost estimate for the project.

**Resources and Rates:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Resource Name** | **Role** | **Standard Rate** | **Overtime Rate** |
| Rachel Cohen | Linux Admin | $25.00/hr | $37.50/hr |
| Jeff Stills | Network Admin | $20.00/hr | $30.00/hr |
| Stephen Doe | Network Admin | $20.00/hr | $30.00/hr |
| Ann Morrison | Product Manager | $40.00/hr | $60.00/hr |
| Nicholas Scala | Project Manager | $30.00/hr | $45.00/hr |
| Vishal Jain | Quality Assurance Analyst | $20.00/hr | $30.00/hr |
| Joe Bucks | Software Developer | $25.00/hr | $37.50/hr |
| John Davis | Software Developer | $25.00/hr | $37.50/hr |

**Work Breakdown Structure:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WBS ID** | **Task Name** | **Work** | **Fixed Cost** | **Total Cost** |
| 1.1.1 | Develop Business Case | 72 hrs | $0.00 | $2,160.00 |
| 1.1.2 | Create Project Charter | 24 hrs | $0.00 | $720.00 |
| 1.1.4 | Identify Stakeholders | 24 hrs | $0.00 | $720.00 |
| 1.1.5 | Produce Stakeholder Identification Documents | 48 hrs | $0.00 | $1,440.00 |
| 1.1.6 | Develop Scope Statement | 48 hrs | $0.00 | $1,440.00 |
| 1.1.7 | Review Scope Statement with Team | 24 hrs | $0.00 | $720.00 |
| 1.1.9 | Hold Kick-Off meeting | 24 hrs | $0.00 | $720.00 |
| 1.3.1.1 | Identify and Document Inputs | 24 hrs | $0.00 | $720.00 |
| 1.3.1.2 | Identify and Document Functional Requirements | 24 hrs | $0.00 | $720.00 |
| 1.3.1.3 | Identify and document Non-Functional Requirements | 24 hrs | $0.00 | $720.00 |
| 1.3.1.4 | Compile Requirements in Requirements Document | 48 hrs | $0.00 | $1,440.00 |
| 1.3.2.1 | Draft Communication Management Plan | 24 hrs | $0.00 | $720.00 |
| 1.3.2.3 | Identify Roles and Responsibilities | 24 hrs | $0.00 | $720.00 |
| 1.3.2.4 | Draft Human Resource Plan | 24 hrs | $0.00 | $720.00 |
| 1.3.3.1 | Develop Project Plan | 48 hrs | $0.00 | $1,440.00 |
| 1.3.3.2 | Identify Risks | 48 hrs | $0.00 | $1,440.00 |
| 1.3.3.3 | Draft Risk Identification and Response Document | 24 hrs | $0.00 | $720.00 |
| 1.3.3.4 | Draft Risk Contingency Plan | 24 hrs | $0.00 | $720.00 |
| 1.3.3.5 | Review Project Plan and Key Risks with Team | 24 hrs | $0.00 | $720.00 |
| 1.3.4.1 | Define Project Quality | 8 hrs | $0.00 | $160.00 |
| 1.3.4.2 | Develop Metrics for Measuring Project Quality | 8 hrs | $0.00 | $160.00 |
| 1.3.4.3 | Identify Quality Control Actions | 8 hrs | $0.00 | $160.00 |
| 1.3.4.4 | Draft Quality Management Plan | 16 hrs | $0.00 | $320.00 |
| 1.5.1.1 | Acquire Necessary Hardware | 32 hrs | $5,000.00 | $5,800.00 |
| 1.5.1.2 | Install Hardware | 24 hrs | $0.00 | $600.00 |
| 1.5.1.3 | Test Hardware | 16 hrs | $0.00 | $400.00 |
| 1.5.2.1 | Update Database Models and Documentation | 32 hrs | $0.00 | $640.00 |
| 1.5.2.2 | Complete SQL Updates to Database | 32 hrs | $0.00 | $640.00 |
| 1.5.2.3 | Ensure Database Integrity Post Modifications via Testing | 32 hrs | $0.00 | $640.00 |
| 1.5.3.1 | Develop Middleware Solution | 64 hrs | $0.00 | $1,280.00 |
| 1.5.3.2 | Unit Test Middleware Solution | 32 hrs | $0.00 | $640.00 |
| 1.5.3.3 | Develop Modifications to Website | 48 hrs | $0.00 | $960.00 |
| 1.5.3.4 | Unit Test Modifications to Website | 16 hrs | $0.00 | $320.00 |
| 1.5.3.5 | Develop New Email Notifications | 32 hrs | $0.00 | $640.00 |
| 1.5.3.6 | Unit Test Email Notifications | 16 hrs | $0.00 | $320.00 |
| 1.5.3.7 | Develop Security Measures | 48 hrs | $0.00 | $960.00 |
| 1.5.3.8 | Test Security Strength of System | 32 hrs | $0.00 | $640.00 |
| 1.5.4.1.1 | Create Test Plan | 8 hrs | $0.00 | $160.00 |
| 1.5.4.1.2 | Create Test Traceability | 8 hrs | $0.00 | $160.00 |
| 1.5.4.1.3 | Create Test Cases | 24 hrs | $0.00 | $480.00 |
| 1.5.4.2.1 | Conduct System Testing | 24 hrs | $0.00 | $480.00 |
| 1.5.4.2.2 | Complete Integration Development | 16 hrs | $0.00 | $320.00 |
| 1.5.4.2.3 | Complete Integration Testing | 24 hrs | $0.00 | $480.00 |
| 1.5.4.3.1 | Prepare UAT Plan | 16 hrs | $0.00 | $320.00 |
| 1.5.4.3.2 | Identify Users & Kick-off session | 8 hrs | $0.00 | $320.00 |
| 1.5.4.3.3 | Create User Guide / Test Scenarios | 8 hrs | $0.00 | $320.00 |
| 1.5.4.3.4 | Complete UAT Testing | 40 hrs | $0.00 | $800.00 |
| 1.5.4.3.5 | Perform Testing and Report issues | 16 hrs | $0.00 | $320.00 |
| 1.5.4.3.6 | Fix issues reported by UAT | 48 hrs | $0.00 | $960.00 |
| 1.5.4.3.7 | Review System Readiness | 8 hrs | $0.00 | $160.00 |
| 1.5.4.3.8 | Deploy changes to production | 16 hrs | $0.00 | $320.00 |
| 1.5.5.1 | Develop Quick Reference Guide | 16 hrs | $0.00 | $640.00 |
| 1.5.5.2 | Prepare Release Notes | 8 hrs | $0.00 | $320.00 |
| 1.7.1 | Release Code / Changes to Production | 16 hrs | $0.00 | $320.00 |
| 1.8.1 | Establish Post Deployment Support for Critical Issues | 120 hrs | $0.00 | $3,600.00 |
| 1.8.2 | Conduct Lessons Learned | 80 hrs | $0.00 | $2,040.00 |
| **Total Cost:** | |  |  | **$46,520.00** |

Total Cost of all non-software related activities: **$38,360**

# 9. Risk Management Plan

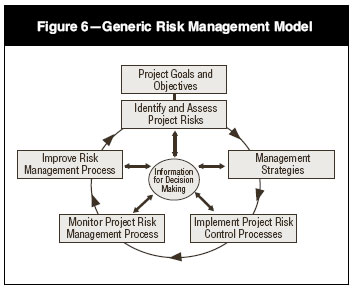
## 9.1 Roles and Responsibilities

The following roles and responsibilities are documented as it relates to the Risk Management Plan for the Paperless Statements initiative.

|  |  |
| --- | --- |
| **Role** | **Responsibilities** |
| **Project Manager** | * Develop and maintain the Risk Management Plan * Oversee project process to ensure sufficient and utilized risk escalation paths * Facilitate risk discussions * Identify, document, and escalate project risks as necessary * Determine and document risk mitigation and contingency plans * Keep necessary stakeholders informed of project risks * Prepare reports and communication to the project’s Sponsor and the organization’s Executive Committee |
| **Sponsor** | * Inquire about project risks * Read and respond to risk documentation presented by the project team * Provide support and additional funding as needed to mitigate risks |
| **Executive Committee** | * Oversee project risks * Intervene to support risk mitigation as necessary |
| **Project Team** | * Identify and escalate risks to Project Manager |

## 9.2 Methods and Approaches

The generic risk management model set forth by the bank’s Project Management Office is as follows [1]:



* Identify and Assess Project Risks: Project Management will be held accountable for the accurate identification and assessment of project risks. These decisions should include input from the project team and affected stakeholders. Critical and catastrophic risks will be confronted as soon as possible.
* Management Strategies: Ridgewood Savings Bank’s Information Office Management at the executive level have established strategies for mitigating risk in support of all department projects
* Implement Project Risk Control Processes: Project Management will establish the necessary repositories for documenting and assessing project risks. Project Management will also determine actionable mitigation and contingency plans for all identified risks. The Project team should feel empowered and free to voice any potential risks without hesitation.
* Monitor Project Risk Management Process: Project Management will oversee project risks, update the Risk Management Plan, and escalate risks as necessary
* Improve Risk Management Process: The project team will conduct lessons learned at the end of the project and are encouraged to identify ways in which the organization and the team can improve risk management on an ongoing basis

## 9.3 Tools and Techniques

The project team will employ the following risk management tools and techniques:

* Risk Identification
  + The project team will hold risk brainstorming sessions at the project’s onset as prescribed in the Work Breakdown Structure.
  + Project Management will reach out to project team members on a regular basis as a reminder on the methods of identifying project risk.
  + Project Management will utilize the “Risk Management Checklist” as prescribed by the Project Management Office.
  + Project Management will consider the Project Management Office’s historical database of common project risks to identify potentially missed risks.
  + Project Management will conduct a SWOT analysis at the end of the project’s phases to determine project strengths, weaknesses, opportunities, and threats
  + Raised risks will be stored on a SharePoint site that the project team and necessary stakeholders have access to.
  + Project Risks will be reported in weekly status updates to the Sponsor and Executive Committee
* Risk Mitigation
  + Negative Risks
    - *Avoid*: First choice of risk mitigation if available; This technique eliminates the risk through modifying other aspects of the project that will remove the possibility of said risk. An example of risk avoidance is changing requirements/scope.
    - *Mitigate*: This technique attempts to reduce the likelihood or impact of the risk occurring. An example of risk mitigation is training software developers if they are unfamiliar with a specific technology.
    - *Transfer*: This technique moves the risk to a third party. An example of risk transference would be utilizing third party insurance in which the project forfeits a portion of the budget to push the risk to the insurance company.
    - *Accept*: This technique accepts the reality that the other risk techniques are not able to be used and the team will embrace whatever happens as a result of the risk.
  + Positive Risks
    - *Exploit*: This technique identifies project risks and takes advantage of them. An example of risk exploitation is assigning the most talented resources to the most critical tasks.
    - *Enhance*: This technique attempts to increase the likelihood or impact of the risk occurring. An example of risk enhancement is assigning idle staff to tasks along the critical path to shorten the project schedule
    - *Share*: This technique leverages third party help and assigns them tasks that they will probably perform better. An example of this is assigning database work to a third party contractor with specialty in database engineering.
    - *Accept*: This technique accepts the reality that the other risk techniques are not able to be used and the team will embrace whatever happens as a result of the risk.

## 9.4 Risk Categories

The following risk categories are inherited from previous projects completed at Ridgewood Savings Bank as established by the standards set forth by the bank’s Project Management Office. The potential risks listed in each category are specific to the Paperless Statements software project and have been derived from several project team brainstorming sessions as part of the Risk Management plan.

|  |  |
| --- | --- |
| **Risk Category** | **Potential Risks** |
| **Budget (cost)** | Aggressive budget, scope creep, increased unplanned costs |
| **Schedule (time)** | Aggressive schedule, unplanned project team PTO, deadline changes, inter-department coordination |
| **Resources** | Availability, resources stretched between multiple projects |
| **Skills** | Lack of technical knowledge skills, training needs |
| **Organizational** | Company culture, customer relations |
| **Software** | Defects, environment issues, legacy code |
| **Hardware** | Defective hardware, increasing costs, increased hardware demand |
| **Requirements** | Scope creep/gold plating, ambiguity, dependency of approvals |
| **Regulatory** | Regulatory compliance/breeches, external audits |

## 9.5 Stakeholder Risk Tolerance

The following stakeholder risk tolerance assessment is specific to the Paperless Statements software project and have been derived from a project team discussion as part of the Risk Management plan.

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk Category** | **Sponsor** | **Project Manager** | **Project Team** |
| **Budget (cost)** | 1 | 1 | 3 |
| **Schedule (time)** | 1 | 1 | 3 |
| **Resources** | 3 | 1 | 1 |
| **Skills** | 3 | 1 | 1 |
| **Organizational** | 2 | 2 | 2 |
| **Software** | 3 | 2 | 1 |
| **Hardware** | 3 | 2 | 1 |
| **Requirements** | 2 | 2 | 1 |
| **Regulatory** | 1 | 1 | 1 |

*\*Legend: High Tolerance = 3; Medium Tolerance = 2; Low Tolerance = 1*

## 9.6 Definitions of Probability and Frequency

The following definitions for probability are inherited from previous projects completed at Ridgewood Savings Bank as established by the standards set forth by the bank’s Project Management Office.

|  |  |  |  |
| --- | --- | --- | --- |
| **Rating** | **Likelihood** | **Definition** | **Probability** |
| **1** | Rare | Occurs only in exceptional circumstances | 2% |
| **2** | Unlikely | Could occur at some time | 20% |
| **3** | Possible | Might occur in an average environment | 50% |
| **4** | Probable | Most likely to occur | 75% |
| **5** | Imminent | Expected to occur and should be strongly monitored | 95% |

## 9.7 Definitions of Severity and Impact

The following definitions for severity are inherited from previous projects completed at Ridgewood Savings Bank as established by the standards set forth by the bank’s Project Management Office.

|  |  |  |  |
| --- | --- | --- | --- |
| **Rating** | **Impact** | **Definition** | **Impact Value** |
| **1** | Negligible | No cost or schedule impact | Cost: less than 2% of budget  Schedule: less than 1 day |
| **3** | Minor | Minor cost or schedule impact | Cost: less than 5% of budget  Schedule: less than 2 days |
| **5** | Moderate | Significant cost or schedule impact | Cost: less than 10% of budget  Schedule: less than 5 days |
| **8** | Critical | Extensive cost and/or schedule impact | Cost: less than 30% of budget  Schedule: less than 10 days |
| **13** | Catastrophic | Hugh cost or schedule impact | Cost: greater than 30% of budget  Schedule: greater than 10 days |

## 9.8 Risk Levels

**Risk Score Matrix**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Probability/Frequency** | | | | |
|  |  | Rare (1) | Unlikely (2) | Possible (3) | Probable (4) | Imminent (5) |
| **Severity/Impact** | Negligible (1) | **1** | **2** | **3** | **4** | **5** |
| Minor (3) | **3** | **6** | **9** | **12** | **15** |
| Moderate (5) | **5** | **10** | **15** | **20** | **25** |
| Critical (8) | **8** | **16** | **24** | **32** | **40** |
| Catastrophic (13) | **13** | **26** | **39** | **52** | **65** |

|  |  |  |
| --- | --- | --- |
| **Risk Level** | **Risk Score Interval** | **Response** |
| **Low** | Risk Score < 10 | * Will be tracked/reported on project SharePoint site |
| **Medium** | 10 ≤ Risk Score < 25 | * Will be tracked/reported on project SharePoint site * Will be communicated in weekly status updates |
| **High** | 25 ≤ Risk Score < 40 | * Will be tracked/reported on project SharePoint site * Will be communicated in weekly status updates * Contingency plan will be formalized * Will be escalated to Project Sponsor immediately |
| **Extreme** | Risk Score ≥ 40 | * Will be tracked/reported on project SharePoint site * Will be communicated in weekly status updates * Contingency plan will be formalized * Will be escalated to Project Sponsor and Executive Committee immediately |

## 9.9 Risk Register

The following list contains the most up-to-date project risks along with their risk level, probability, and severity.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Risk ID** | **Risk Level** | **Probability** | **Severity** | **Category** | **Definition** |
| **NR-001** | Medium | Possible | Moderate | Budget | Project estimates prove to be inaccurate |
| **NR-002** | Medium | Unlikely | Critical | Budget | Change in organizational budget reduces funding for project |
| **NR-003** | Medium | Possible | Moderate | Schedule | Schedule omits necessary tasks |
| **NR-004** | Low | Possible | Minor | Schedule | Schedule pressure reduces productivity |
| **NR-005** | Medium | Possible | Critical | Schedule | Stakeholders change project deadline |
| **NR-006** | Low | Possible | Minor | Resources | Stakeholders lack necessary participation and become disengaged ignoring communications/ requests |
| **NR-007** | Medium | Unlikely | Critical | Resources | Stakeholder turnover causes change in requirements/ expectations |
| **NR-008** | Medium | Probable | Moderate | Resources | Stakeholders disagree regarding requirements/ expectations |
| **NR-009** | High | Possible | Catastrophic | Resources | Project team turnover causes project disruption and cost overrun |
| **NR-010** | Medium | Possible | Moderate | Resources | Project team takes extended paid time off (PTO) |
| **NR-011** | Low | Unlikely | Minor | Skills | Project team lacks necessary skills/ knowledge to complete the project |
| **NR-012** | Medium | Unlikely | Moderate | Organizational | Project lacks executive support and team lacks the authority to achieve objectives |
| **NR-013** | Medium | Unlikely | Critical | Organizational | Executive turnover changes outlook on/ support for project |
| **NR-014** | Low | Rare | Critical | Organizational | A merger or acquisition disrupts and restructures the company |
| **NR-015** | Medium | Possible | Critical | Software | Defects are found late in development |
| **NR-016** | Medium | Possible | Moderate | Software | Legacy code is unreadable/ unmanageable |
| **NR-017** | High | Possible | Catastrophic | Software | Product Management refuses to accept implemented functionality |
| **NR-018** | Low | Unlikely | Minor | Hardware | Hardware is delayed because it is out of stock |
| **NR-019** | Medium | Unlikely | Moderate | Hardware | Hardware arrives defective |
| **NR-020** | Medium | Unlikely | Moderate | Hardware | Estimated hardware purchases do not sufficiently support volume increases |
| **NR-021** | Medium | Unlikely | Critical | Hardware | Internal infrastructure suffers system outages (i.e. test environments crash) |
| **NR-022** | Medium | Possible | Critical | Requirements | Requirements are ambiguous leading to uncertainty by development |
| **NR-023** | Medium | Probable | Moderate | Requirements | Scope creep delays timeline and expands budget |
| **NR-024** | Medium | Possible | Critical | Requirements | Requirements estimates prove to be inaccurate |
| **NR-025** | High | Possible | Catastrophic | Requirements | Changing opinions from Sponsor and Product Management change requirements late in the project |
| **NR-026** | High | Unlikely | Catastrophic | Regulatory | Requirements are not regulatory compliant |
| **NR-027** | Low | Rare | Minor | Regulatory | Regulatory body conducts audit on project while still in progress |

## 9.10 Risk Response and Contingency Plan

The following list contains the risk assessment, response and contingency plan for the identified risks. Contingency planning has only been conducting for High and Extreme risks.

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk ID** | **Assessment** | **Response** | **Contingency** |
| **NR-001** | Project cost and effort estimates were diligently conducted combining a series of different methods with an experienced team. However, inaccurate estimates could change project cost and schedule. | **Mitigate**: Extensive estimation has taken place to reduce the likelihood of this risk occurring. | *n/a (medium risk)* |
| **NR-002** | The bank could alter budgets for financial or market driven reasons and thus funding can be minimized for this effort. | **Mitigate**: The Project Manager has received funding approvals/signatures from the necessary parties to reduce the likelihood of this happening. | *n/a (medium risk)* |
| **NR-003** | As the project is being developed, there exists the possibility that the WBS could be missing key tasks that the team initially overlooked. | **Accept**: If necessary tasks were omitted, the team must schedule them in and accept the changes to budget/ schedule. | *n/a (medium risk)* |
| **NR-004** | Depending on project progress, the schedule deadline could cause pressure for project team members thus decreasing productivity/ quality as the project team rushes. | **Mitigate**: The Project Manager will check in on project team members to reduce stress and boost morale. If necessary, the Project Manager would rather extend the deadline than produce lower quality work. | *n/a (low risk)* |
| **NR-005** | There could be a rush to get this new functionality to the market considering the benefits to the brand's perception, customer satisfaction, and environmental impact and thus stakeholders may ask for the project to be delivered sooner. | **Avoid**: The Project Manager has received approvals/ signatures on the current project deadline and will hold stakeholders accountable. If there is an approved executive decision to rush the deadline, Project Manager will explore crashing and fast tracking methods to mitigate the risk. | *n/a (medium risk)* |
| **NR-006** | Key project stakeholders are busy executives with day jobs outside of this project. Therefore, key stakeholders could not participate or ignore communications due to their hectic schedules. | **Transfer**: If key stakeholders become unresponsive when needed, the Project Manager will shift the accountability on the Project Sponsor and Executive Committee to find replacement, committed stakeholders. | *n/a (low risk)* |
| **NR-007** | Stakeholders may leave the company and new ones may be hired with differences in opinions on the requirements and budget allocation for this project. | **Accept**: The project team has no influence over stakeholder turnover and must accept the changes in employees. | *n/a (medium risk)* |
| **NR-008** | Different stakeholders representing different business functions can disagree on implementation of Paperless Statements. | **Mitigate**: The Project Manager will receive consensus from stakeholders and approvals on requirements will be stringently enforced. | *n/a (medium risk)* |
| **NR-009** | Project team members may leave the company and new ones may be hired with different skill sets. This can cause a knowledge loss and delay for the project team. | **Accept**: The project team has no influence over project team members’ turnover and must accept the changes in employees. | A portion of the contingency budget will be allocated to mitigate this risk should it come to fruition. This money will be used in training new resources or acquiring resources with the necessary skills. |
| **NR-010** | Project team members may take vacation days during the life of the project, which may cause delays in timelines. | **Mitigate**: The Project Manager will ask for the team’s scheduled vacation time early in the project to incorporate these days into the project schedule. | *n/a (medium risk)* |
| **NR-011** | Project team members may not have sufficient knowledge to implement certain features and thus may need training on new technologies, which can increase costs and schedule delays. | **Mitigate**: The project team will conduct analysis of knowledge gaps early in the project and Project Management will dedicate a portion of the budget for training if needed. | *n/a (low risk)* |
| **NR-012** | Due to shifting priorities, executive support can diminish for this project although it is unlikely given the estimated benefits this project brings to the bank. | **Mitigate**: Project Manager has ensured that the assigned stakeholders have the necessary bandwidth to commit to the project. | *n/a (medium risk)* |
| **NR-013** | Executives may leave the company and new ones may be hired with different opinions and priorities. This can change the funding or resource dedication on the project. | **Accept**: The project team has no influence over executive turnover and must accept the changes in company structure. | *n/a (medium risk)* |
| **NR-014** | Although highly unlikely given the bank's current standing, a merger or acquisition could occur disrupting funding and/or support for the project. | **Accept**: The project team has no influence over M&A activity and must accept the changes in company structure and employees. | *n/a (low risk)* |
| **NR-015** | Defective software can be found in user acceptance testing (later in the project lifecycle) that would need to be fixed with additional development effort. | **Mitigate**: The project team has established a strict and rigorous Quality Management Plan that will reduce the likelihood of defects through continuous testing as prescribed by Agile methodologies. | *n/a (medium risk)* |
| **NR-016** | As the software developers begin coding, they may have difficulty in modifying existing code if it has not been commented properly or is difficult to follow. This could delay software development time. | **Avoid**: The Project Manager has assigned software developers to this project that are familiar with legacy code and are experienced in the organization. | *n/a (medium risk)* |
| **NR-017** | If the requirements were not captured properly, or Product Management changes their minds, they may refuse to accept implemented functionality, which can cause additional development rework and schedule delays. | **Mitigate**: Thanks to the Agile Methodology selected by the Project Team, changes will be frequently showcased to Product Management early so last minute changes can be accommodated in time without significant schedule impact. | A portion of the contingency budget will be allocated to mitigate this risk should it come to fruition. This money will be used in additional software development efforts to accommodate the change in requirements. |
| **NR-018** | When the team goes to procure the hardware, it may be out of stock or shipment can be delayed. | **Transfer**: The project team will look to another supplier of the hardware and software changes have been factored in to be independent of the hardware installations should there be a delay. | *n/a (low risk)* |
| **NR-019** | Upon installing the hardware, it may be defective and need to be exchanged for functional hardware. This could delay the schedule for hardware installations. | **Accept**: The project team has no influence over the functionality of ordered software, but the software changes have been factored in to be independent of the hardware installations should there be a delay. | *n/a (medium risk)* |
| **NR-020** | Upon conducting end-to-end regression testing, the project team may discover that the originally estimated additional hardware may not be sufficient to support the estimated increase in customer traffic. | **Mitigate**: Architecture will include a clustered server with failover capability and backup (redundant hardware for the application between CMoD and the online portal). | *n/a (medium risk)* |
| **NR-021** | Throughout development and testing, the system may suffer unexpected outages due to a variety of unknown reasons. This may hinder team productivity as these issues are fixed. | **Accept**: The project team has no influence over the functionality of IT infrastructure and must accept and modify the schedule to accommodate for this. | *n/a (medium risk)* |
| **NR-022** | Requirements can be incorrectly understood by the development teams due to ambiguity and what is implemented might not match what was intended. This can cause rework for the development team. | **Mitigate**: Thanks to the Agile Methodology selected by the Project Team, changes will be frequently showcased to Product Management early so last minute changes can be accommodated in time without significant schedule impact. | *n/a (medium risk)* |
| **NR-023** | Product Management may ask for additional features not included on the agreed to and approved scope and requirements documentation. This can cause delays in project schedule and increases in project cost. | **Mitigate**: Thanks to the Agile Methodology selected by the Project Team, additional requests can be accommodated by additions to the backlog. However, these additions along with the current requirements must be reprioritized. | *n/a (medium risk)* |
| **NR-024** | Software development cost and effort estimates were diligently achieved via an experienced team's consensus. However, inaccurate estimates could negatively impact project cost and schedule. | **Mitigate**: Extensive estimation has taken place to reduce the likelihood of this risk occurring. | *n/a (medium risk)* |
| **NR-025** | Product Management or the Project Sponsor may ask for additional features not included on the agreed to and approved scope and requirements documentation. This can cause delays in project schedule and increases in project cost. | **Mitigate**: Thanks to the Agile Methodology selected by the Project Team, additional requests can be accommodated by additions to the backlog. However, these additions along with the current requirements must be reprioritized. | A portion of the contingency budget will be allocated to mitigate this risk should it come to fruition. This money will be used in additional software development efforts to accommodate the change in requirements. |
| **NR-026** | The implementation of certain features may not be compliant with state and federal regulations given the financial impact of this project. | **Transfer**: Legal and Compliance will be asked to overlook requirements before they are developed to ensure project regulatory compliance. | A portion of the contingency budget will be allocated to mitigate this risk should it come to fruition. This money will be used in additional software development efforts to accommodate the compliance changes. |
| **NR-027** | Regulatory agencies may ask to oversee project development and implementation while the project is ongoing. This may negatively impact morale or team efficiency. | **Transfer**: Project Management will defer regulatory activates to the Legal and Compliance teams. | *n/a (low risk)* |

## 9.11 Positive Risk Register and Response Plan

The following list contains the positive risk assessment along with risk responses.

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk ID** | **Category** | **Definition** | **Response** |
| **PR-001** | Budget | Project ends up costing less money (less effort) than originally planned. | **Exploit**: The Project Team will inquire with the Sponsor and Product Management for additional features that can be included in this release. |
| **PR-002** | Schedule | Project is ahead of schedule. | **Exploit:** Project Manager will look into fast tracking and assign idle resources to tasks along the critical path in hopes of finishing the project sooner. |
| **PR-003** | Hardware | User response to the marketed new feature is beyond original estimations and servers are overloaded due to unexpected traffic increases. | **Accept**: The Project Team will purchase additional hardware to support increased traffic. |

## 9.12 Risk Management Funding and Contingency

The Sponsor and Executive Committee have agreed to allocate an additional $10,000 from the bank’s budget to this project on a contingency basis. The bank values this Green IT initiative greatly and believes it can boost the brand’s perception as well as help the bank become a good corporate citizen. Contingency planning has been performed for “high” and “extreme” risks and if the bank must extend more than the $10,000 in contingency funds, the project will be considered a failure for the bank as the return-on-investment (ROI) will not be sufficient.

# 10. Quality Management Plan

The Quality Management Plan will help to achieve output of the project with the highest quality by minimizing defects and keeping the project within its planned financial and functional boundaries. The plan aims at avoiding gold plating of requirements, assigns specific responsibilities to owners, and defines processes to address conflicts.

## 10.1 Roles and Responsibilities

|  |  |
| --- | --- |
| **Role** | **Responsibilities** |
| **Project Manager** | The Project Manager is responsible for delivering the Paperless Statement project with all functional requirements completed within the allocated budget. They will coordinate with the project Sponsor, product management, software engineering, and quality-testing teams to make sure the project is executed as per the intended scope. The Project Manager will facilitate the allocation of best possible resources to complete the project as per the scheduled timeframe. |
| **Sponsor** | The project Sponsor is responsible for achieving the planned benefits of the Paperless Statements project, which is to reduce the mailing costs by 50% in one year. Having the ultimate authority and responsibility of the project, the Sponsor will work with the project manager to coordinate smooth execution of the project. |
| **Product Manager** | The Product Manager is responsible to work with all stakeholders to draft functional requirements. She is also responsible to validate the engineering analysis document and software quality test plans so that they satisfy the requirements. She will also conduct product demos. |
| **Product Engineering** | Product Engineering is responsible for delivering quality software as prescribed in product requirements. |
| **Software Quality** | The Software Quality team is responsible for validating software changes by creating test plans and executing test cases. They will log defects if application changes do not align to the requirements. |
| **IT Team** | The IT Team is responsible for ordering and configuring new hardware needed to support the project. |
| **Marketing** | The Marketing team will ensure that bank customers are informed about this new Paperless Statement feature and will attempt to maximize customer enrollment. |

## 10.2 Quality Assurance Approach

Quality assurance will be provided jointly by product engineering, product management, and the project manager by reviewing project progress periodically. After each sprint, engineering will present the work accomplished to confirm that development is completed in accordance with the requirements. Any shortfalls or gold plating will be promptly addressed to keep the project within scope and quality parameters. The Project Manager will be responsible to allocate resources to promptly find and address defects while continuing development.

## 10.3 Quality Control Approach

To ensure development is done with minimum defects, engineering team will conduct code reviews before any changes are submitted for testing. Independent code reviewers will be assigned. The software quality team will give higher priority to the requirements. Software quality defects will be first discussed in daily meetings with engineering before entering defects into the Rally project lifecycle management tool to minimize overhead. All defects will be triaged on a weekly basis and will be addressed according to the severity and priority assigned.

## 10.4 Quality Improvement Approach

The Paperless Statements project is limited to the initially agreed upon system specifications. If any new requirements are needed beyond the scope of the project, these will be reviewed by the change control board, represented by all stakeholders. The Project Manager will conduct a thorough impact analysis on schedule, cost, and quality to assess if such change requests can be accepted.

## 10.5 Tools, Environment, and Interface

The following set of tools will be used by the various teams:

* Project Management activities: Microsoft Project 2013
* Requirement and defect tracking: Rally
* Development tools: Microsoft Visual Studio 2013, IIS 7.0
* Load Testing: HP LoadRunner
* Website Testing: Internet Explorer, Chrome, Firefox, Safari, Opera
* Collaboration Tools: SharePoint, WebEx Conference calling
* Documentation: Adobe Acrobat, Microsoft Office 2013

## 10.6 Quality Reporting Plan

In each weekly build, product engineering will inform the software quality team about stories checked in for the build by updating story status in Rally. Any known issues will be reported in the build notes. In daily standup meetings, the software quality team will first discuss the defect with engineering team before creating new defect in Rally.

## 10.7 Quality Metrics

The following quality metrics chart identifies how to measure project quality:

|  |  |  |  |
| --- | --- | --- | --- |
| **Metric ID** | **Requirement** | **Quality Metric** | **Measurement Method** |
| **QM-001** | *Creation of monthly report in PDF files.* | Speed | In monthly bath processing, the PDF file for each customer must be completed within 5 seconds. |
| **QM-002** | *Accessing monthly report after log in process is done.* | Response Time | User must be presented with monthly report within 3 seconds once month and year is selected on website. |
| **QM-003** | *Browser compatibility* | # of Browsers | User must be able to view monthly reports in PDF and HTML format on Internet Explorer, Chrome, Edge, Safari, Opera, and Firefox. |
| **QM-004** | *Operating System compatibility* | # of Operating Systems | User must be able to view monthly reports in PDF and HTML format on Windows, Linux, Mac OS X, Apple iOS, and Android. |
| **QM-005** | *Email Notifications* | % User Base | Emails server must be able to handle email notifications sent to at least 80% of the customer base each day. |
| **QM-006** | *Load Testing due to increased online activities* | # of Users | Online website must support at least 10,000 users connected to online portal accessing monthly PDF files at once. |
| **QM-007** | *Service must remain available for customers throughout the year* | Downtime | The functionality must be available 24 hours a day, 7 days a week, with one hour per year downtime for system maintenance, as appropriate. |
| **QM-008** | *Database retrieval speed* | Response Time | Query speed to the database must remain unchanged after changes are made to the database |
| **QM-009** | *Defects should be kept to a minimum* | # of Defects | The system must be deployed to production with at most 0 critical defects, 0 major defects, 2 medium defects, and 5 minor defects |
| **QM-010** | *Sensitive customer information must be protected from all possible malicious threats, both internal and external* | # of Breeches | The system must have 0 breeches of malicious intent on sensitive customer information |
| **QM-011** | *All the highest priority requirements must be developed* | # of Requirements | The development team must successfully implement all of the “1-Must Have” prioritized requirements |
| **QM-012** | *Customer participation* | % of User Base | Customer enrollment into Paperless Statements should be 30% within one year of software release |
| **QM-013** | *Customer satisfaction must increase post deployment* | % of User Base | Using pre-existing customer surveys, customer satisfaction must increase by 10% within one year of software release |

# 11. References

[1] Benvenuto, Nicholas A., and David Brand. "Outsourcing—A Risk Management Perspective." *Information Systems Control Journal* 5 (2005): n. pag. ISACA.org. Web. 4 Oct. 2015. <http://www.isaca.org/Journal/archives/2005/Volume-5/Pages/Outsourcing-A-Risk-Management-Perspective1.aspx>.

[2] Kanabar, V. (2014). *MET CS 632: ArtScience\_of\_PM\_templates.* Retrieved 2015, from Boston University's MET CS 632 online classroom.

[3] Kanabar, V., & Warburton, R. (2013). *The Art and Science of Project Management 2nd Edition.* Newport, Rhode Island, United States: RW Press. Retrieved 2015.

[4] Mar, Anna. "130 Project Risks." *Simplicable*. N.p., 11 Mar. 2013. Web. 05 Oct. 2015. <http://management.simplicable.com/management/new/130-project-risks>.

[5] "Planning Poker." *Mike Cohn’s Blog Succeeding With Agile*. Web. 26 Sept. 2015. <https://www.mountaingoatsoftware.com/agile/planning-poker>.

[6] Cover art retrieved from: https://www.bankeasy.com