CSE 563 Project Individual Report Number 2

Krishnaprasad Palamattam Aji

Table of Contents

1. Executive Summary

1.1 Background & Purpose

1.1.1. Objective

- Design an effort and defect tracking system that is a modified version of existing EffortLogger
    - Ensure employee privacy and confidential information security
    - Provide better support for enterprise-scaled agile

1.2. Customer Problem

1.2.1. Core Issue

- Existing application not suited for enterprise-scale agile projects needing cross-team collaboration
- Existing application does not ensure enough employee privacy and security

1.2.2. Stakeholders

- Software Engineers, Leadership team, head of the firm, government regulators, developers of our firm

1.3. Envisioned System & Features

- Description: A web-based application that tracks and stores effort and defect reports of employees
- Key Features: Employee privacy, security, scalability, report generation .

1.4. Operational Environment

- Accessibility: Web-based tool, available on any device with internet connectivity.
- Support: Detailed documentation and a dedicated support team for post-deployment assistance.

1.6. Risks & Challenges

- Security: Protecting personal and confidential data stored
- Accuracy: Tool's accuracy is dependent on the accuracy of employee entered data
- Performance: Web-based application will have performance issues in off-nominal conditions

2. Customer Problem

2.1. The Employees

The employees working in the customer firm will be the primary users of EffortLogger V2

2.1.1. Inappropriate usage of personal performance data

- They do not want personal identifiers with performance data

2.1.2. Personal Information privacy

- They want their personal information to be secure

2.2. The Supervisors

2.2.1. Employee Privacy Protection

- Individual effort and defect reports should not be used to single out individuals
- If not enough reports to hide the identity of user, restrict access to data

2.2.2. Confidential Information Security

- They do not want hackers to expose private data and confidential information
- They do not want competitors to have an unfair advantage by illegally accessing sensitive data

2.2.3. Transparency

- They want the process-flow of information to be transparent
- How privacy is ensured must be explained in a way that is understood to all

2.2.4. Enterprise-Scale agile support

- They want the application to be scalable to fulfill the needs of the firm
- They want EffortLogger to provide cross-team collaboration support

2.3. The head of the firm

2.3.1. Make estimates that are data-driven

- In search of fixed pay contracts better estimates need to be made that are not opinion based

2.4. The Developers of our firm

The developers working in our firm to build the EffortLogger V2

2.4.1. They need to understand the needs of the users to develop the application

2.5. Government Regulators

The government organizations that oversee the software industry

2.5.1. They need to ensure that the new app follows all the rules and regulations of the software industry

3. Concept of Operations

3.1. Introduction

The new EffortLogger is an upgrade to an existing EffortLogger application that will be used to log the effort and defects of employees in a firm while ensuring privacy and providing security.

3.1.1. Project Description

- Background
    - The existing EffortLogger needs a revamp with growing business needs
    - The new EffortLogger must ensure personal and confidential information security
    - The new EffortLogger must provide better support for enterprise-scale agile projects
- Assumptions and Constraints
    - The employees are willing to submit their effort and defect reports
    - The data entered into the EffortLogger is accurate
    - The employees follow best practices to ensure protection against security threats

3.1.2. Overview of the Envisioned System

- Overview
    - The EffortLogger V2 will be a web-based application
    - It will track the effort and defect reports of employees
    - EffortLogger will be designed to protect employee privacy and secure confidential information
    - EffortLogger will be able to provide better support for enterprise-scale agile projects
- System scope
    - Let employees provide effort and defect reports
    - Protect employee privacy by removing identifiers from reports that are accessed

3.2. Documents

3.2.1. Applicable Documents

- EffortLogger Business Opportunity Document 2023-01-07 V1.1 by Prof Lynn Robert Carter
- EffortLogger V2 Customer Need Document V1.1 by Prof Lynn Robert Carter
- EffortLogger Supervisor Input 2023-08-11
- EffortLogger User Input 2023-08-11

3.2.2. Reference Documents

- NASA - Appendix S - Concept of Operation Annotated Outline
- Derived Requirements, Grist Project Management

3.3. Description of Envisioned System

3.3.1. Needs, Goals and Objectives of Envisioned System

Needs and Goals

- The firm needs to track the effort and defect reports of its employees
- The firm needs to protect the privacy of its employees
- The firm needs the EffortLogger to provide confidential information security
- The firm needs the EffortLogger to be able to support enterprise-scale agile projects

Objectives

- Track employee effort and defect reports
- Provide employee privacy and confidential information security
- Provide better support for enterprise-scale agile projects
- Provide support for cross-functional collaboration between teams

3.3.2. Overview of System and Key Elements

- The system will be easy to use with a simple interface and proper documentation
- The user interface will be similar to the existing EffortLogger to provide familiarity to the users
- The system will be scalable to support the needs of the firm as it grows
- The system will ensure the anonymity of individuals in the reports accessed
- The system will show insights into the data collected to identify trends and patterns

3.3.3. Interfaces

- Effort and defect entry interface
    - The user will enter effort and defect reports
- Effort edit interface
    - User will be able to edit already entered effort details
- Report generation interface
    - Allows supervisors to view trends and graphs of effort and defect data

3.3.4. Modes of Operations

- Effort Entry Mode
- Defect Entry Mode
- Data Edit Mode
- Data Analysis Mode

3.3.5. Proposed Capabilities

- The system will be easy to use with a simple interface and proper documentation
- The system will be scalable to support the needs of the firm as it grows
- The system will ensure the anonymity of individuals in the reports accessed
- The system will show insights into the data collected to identify trends and patterns

3.4. Physical Environment

- Since the EffortLogger will be a web-based system, physical environments will not be a significant factor
- It will be accessible from any device with a reliable internet connection
- The physical environment of data storage with sensitive data should be secure

3.5. Support Environment

- Our firm will provide a support team readily available for any issues related to the EffortLogger
- The interface of the new EffortLogger will be easy to use and similar to the existing application
- Sufficient documentation will be provided to help with user experience

3.6. Operational Scenarios and Use Cases

3.6.1. Nominal Conditions

- Logging into EffortLogger V2
    - The user has to login to EffortLogger before entering effort or defect data
    - The user will have a username and password to keep the data secure
- Starting effort with project and story selected
    - Once logged into the system, the user will be able to start effort tracking
    - The user will have to enter details like project name, software lifecycle step and user story
    - Once the clock is started the EffortLogger will keep track of the start time and the project details

- Entry will not be created once the clock is started

- Stopping effort for a particular story
  - Once the user stops the clock, current effort will be logged in
  - A new entry with fields related to project and effort time will be created
- Creating a defect report
  - If a user finds a defect that has to be addressed, it can be saved into the system
  - User can create a new defect with the associated project
- Editing or deleting effort data
  - In case user enters a wrong data or forgot to start the clock effort log can be edited
  - In case user forgot to stop clock and start clock again after finishing a task, the whole time can be split into two efforts
- Editing or deleting defect data
  - In case a defect has been solved or wrongly been created, user can delete the defect
- View all logs
  - The users can see the logs of all efforts created by them

3.6.2. Off-Nominal Conditions

- No internet connection or server unreachable
  - The EffortLogger would not be able to fetch logs in such conditions
  - The EffortLogger will keep working in offline mode until it gets a connection to the servers
  - The EffortLogger would start working as usual once services are restored
- Huge data or slow equipment
  - In case of dealing with huge data EffortLogger might show slowness
  - In case the hardware does not meet minimum requirements of the EffortLogger, it may slow down
- Inaccurate data
  - In case user deletes or modifies data accidentally the EffortLogger will have incomplete or bad data for historical data

3.7. Impact Considerations

3.7.1. Environmental Impact

- Since EffortLogger is a web-based application there will be minimum environmental impact

3.7.2. Organizational Impact

- EffortLogger will help organizations improve their efficiency by tracking the effort and defect reports of employees
- Better data-driven estimates can be made for fixed pay contracts with EffortLogger

3.8. Risk and Potential Issues

3.8.1. EffortLogger collects a lot of employee and company data that needs to be secured

3.8.2. The accuracy of EffortLogger depends on the accuracy of the data entered by users

3.8.3. There needs to be sufficient planning to use EffortLogger data as historical data to ease the planning poker process

3.8.4. The users must be encouraged to use the new EffortLogger else we will get inaccurate results

3.8.5. EffortLogger V2 will not currently have data from previous EffortLogger and this might affect estimation processes until we get a good sample set

3.8.6. The EffortLogger is a software application which may have technical issues and might stop working in absence of internet or compatible systems

Appendix B : Glossary of Terms

- EffortLogger: The app used to track effort and defect reports of employees
- Planning poker: A technique used to estimate effort required for a task
- Secure: Protect from unauthorized access
- Scalable: Able to accommodate more users
- Nominal Conditions: Conditions under which a system is designed to operate

4. Requirements Elicitation

4.1. EffortLogger V2.0 Customer Need Document V1.1

4.1.1. Prior Need for an effort tracker

4.1.1.1. Tool needed for project tracking and accounting

- The firm needs to have better estimates regarding fixed-fee contracts
- The firm needs an easy to use application as an alternative to directly working on excel sheets

4.1.2. Current Need for a new EffortLogger

4.1.2.1. Employee Privacy

- Employees do not want their personal performance data to be inappropriately used
- They want their personal information to be secure

4.1.2.2. Confidential Information Security

- They do not want hackers to expose private data and confidential information
- They do not want their competitors to have an unfair advantage by illegally accessing sensitive data

4.1.2.3. Enterprise-Scale Support for Agile and Quality

- They want the application to be scalable to fulfill the needs of the firm
- They want EffortLogger to provide cross-team collaboration support

4.2. EffortLogger V2.0 User Input 2023-08-11

4.2.1. EffortLogger to store effort data based on user stories to help planning poker tool

4.2.1.1. Helping planning poker tool winnow down historical data

- Current planning poker process tends to be longer because users spend more time to manually find data related to current user story
- If known criteria about the user story is mentioned, planning poker tool must be able to narrow down a few stories similar to the current story
- EffortLogger V2 should store data in such a way that this narrowing down process will be easy to perform

4.3. EffortLogger V2.0 Supervisor Input 2023-08-11

4.3.1. Employee Privacy

4.3.1.1. The effort and defect reports accessed by teams should be anonymized

- All individual effort and defect reports should not have personal identifiers when being accessed by any team

- If there are not enough reports to ensure anonymity of individual, access to such data must be restricted

4.3.2. Improvement Efforts

4.3.2.1. Personal Identifiers to be present for improvement of the team and individual

- Individual effort and defect reports should have identifiers so that improvement efforts can be directed at groups in need of improvement
- Best practice information can be gathered from groups exceeding expectations

4.3.3. Transparency

4.3.3.1. Process flow of information must be transparent

- How privacy is ensured must be specified in a way that is understandable to all

4.4. EffortLogger V2.0 Business Opportunity Document 2023-01-07 V1.1

4.4.1. Scaling up and revamping the existing application to better suit enterprise needs

4.4.1.1. Making EffortLogger V2 better suited to enterprise-scaled agile projects

- Better data-driven estimates in case of fixed-fee or multi-year support contracts
- Need to scale up EffortLogger to include a variety of cross-functioning teams

4.5. Requirements elicitation questions

4.5.1. What proactive measures and best security practices will be practices by the employees to avoid security breaches[1]

4.5.2. How similar to the existing EffortLogger should the new EffortLogger be in terms of usability and user interface[2]

4.5.3. What measures will be taken by the firm to make sure that employees enter their data accurately?[3]

4.5.4. Should EffortLogger V2 also use the data from existing EffortLogger?[4]

4.5.5. What are the additional identifiers that must be stored with effort data that can be used to narrow down historical data at the time of planning poker[5]

4.5.6. What basic functionality should EffortLogger have in case of absence of internet[6]

[1] 3.8.1. EffortLogger collects a lot of employee and company data that needs to be secured
[2] 3.8.4. The users must be encouraged to use the new EffortLogger else we will get inaccurate results
[3] 3.8.2. The accuracy of EffortLogger depends on the accuracy of the data entered by users
[4] 3.8.5. EffortLogger V2 will not currently have data from previous EffortLogger and this might affect estimation processes until we get a good sample set
[5] 3.8.3. There needs to be sufficient planning to use EffortLogger data as historical data to ease the planning poker process
[6] 3.8.6 The EffortLogger is a software application which may have technical issues and might stop working in absence of internet or compatible systems

5. Requirements (Received and Derived)

5.1. Employee Privacy

5.1.1. The effort and defect reports accessed by teams should be anonymized

- Employees do not want their personal performance data to be inappropriately used[7]
- They want their personal information to be secure[7]
- All effort and defect reports should not have any personal identifiable information when being accessed by any team[8]
- If there are not enough reports to ensure anonymity of the individual, access should be restricted to that data[8]

5.2. Confidential Information Security

5.2.1. The firm wants to ensure security from data breaches[7]

- The firm does not want hackers to expose private data and confidential information
- They do not want their competitors to to have an unfair advantage by illegally accessing sensitive data

5.3. Enterprise-Scale Support for Agile and Quality

5.3.1. Scalable to support growth of the firm and agile principles[7]

- EffortLogger should provide cross-team collaboration support

5.3.2. EffortLogger to store effort data based on user stories to help planning poker tool[9]

- If known criteria about the user story is mentioned, planning poker tool must be able to narrow down a few stories similar to the current story
- EffortLogger V2 should store data in such a way that this narrowing down process will be easy to perform

5.3.3. Scaling up and revamping the existing application to better suit enterprise needs[10]

- Better data-driven estimates in case of fixed-fee or multi-year support contracts

5.4. Increase efficiency of teams and provide transparency[8]

5.4.1. Improvement Efforts

- Individual effort and defect reports should have identifiers so that improvement efforts can be directed at groups in need of improvement

[7] EffortLogger V2.0 Customer Need Document V1.1
[8] EffortLogger V2.0 Supervisor Input 2023-08-11
[9] EffortLogger V2.0 User Input 2023-08-11
[10] EffortLogger V2.0 Business Opportunity Document 2023-01-07 V1.1

- Best practice information can be gathered from groups exceeding expectations

5.4.2. Process flow of information must be transparent

- How privacy is ensured must be specified in a way that is understandable to all

5.5. Derived Requirement 1 : Security and Data Encryption[11]

5.5.1. EffortLogger must be designed with security in mind to protect data breaches

- Effort Logger must implement strong authorization and authentication mechanism to prevent unauthorized data access
- EffortLogger must encrypt all sensitive and personal data while in storage and while being accessed

5.6. Derived Requirement 2 : Data storage[12]

5.6.1. Database will be needed to scale up the application and to provide secure storage

- EffortLogger should have a database to scale up to the needs of the firm and to assist in other agile practices
- Integrating encryption and other security measures will be easier to a database

5.7. Derived Requirement 3 : Assist planning poker tool[13]

5.7.1. EffortLogger to store effort data based on user stories to help planning poker tool

- EffortLogger V2 should store data in such a way that the narrowing down process for planning poker tool will be easy to perform
- EffortLogger should be able to include user stories along with effort and defect data to help add to the historical data

5.8. Derived Requirement 4 : Data reports for improvement efforts[14]

5.8.1. EffortLogger should be able to generate reports to help improvement efforts

- EffortLogger must be able to generate reports that identify groups that need improvement
- EffortLogger must be able to generate reports that identify best practices from groups that are exceeding expectations

[11] 5.2. Confidential Information Security
[12] 5.3.1. Scalable to support growth of the firm and agile principles
[13] 5.3.2. EffortLogger to store effort data based on user stories to help planning poker tool
[14] 5.4.1. Improvement Efforts

6. Conclusion

6.1. Brief Recap

- Design an effort and defect tracking app that is a modified version of existing EffortLogger
- Ensure employee privacy and confidential information security
- Provide better support for enterprise-scaled agile

6.2. Customer Problem

- Core Issue:
    - Existing application not suited for enterprise-scale agile projects needing cross-team collaboration
    - Existing application does not ensure enough employee privacy and security
- Stakeholders:
    - Employees:
        - Needs: Employee Privacy, Appropriate use of personal performance data
    - Supervisors:
        - Needs: Employee Privacy Protection, Confidential Information Security, Transparency, Enterprise-Scale Agile Support
    - Head of the Firm:
        - Need: Data-driven estimates for fixed pay contracts

6.3. Operational Environment & Considerations

- Accessibility: Web-based tool, ensuring universal access
- Support:
    - Comprehensive documentation
    - Post-deployment support
    - Dedicated support team for addressing future issues
- Operational Scenarios:
    - Logging in
    - Start effort tracking
    - Stop and log effort tracking
    - Edit effort
    - Create and delete defect
    - View all logs
- Impact Considerations:
    - Environmental: Minimal, with server resource consumption being a concern
    - Organizational: Aiming for efficiency, work-life balance, and improved estimation accuracy

6.4. Risks & Challenges

- Security: Protecting personal and confidential data stored
- Accuracy: Tool's accuracy is dependent on the accuracy of employee entered data
- Performance: Web-based application will have performance issues in off-nominal conditions

6.5. Next Steps

- Exploring current best practices to address the new customer needs
- Research on data collection and analysis with privacy, secure software development and agile project management.
- Requirements elicitation questions to get a concrete idea of customer requirements
- Requirement Validation,
- Developing a prototype of the new solution and validating it with the stakeholders
- Performance: Web-based application will have performance issues in off-nominal conditions