CSE 563 Project Report Number 2

Team 19

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1. Executive Summary

In the dynamic field of software development, the accurate estimation of project backlogs is pivotal for ensuring timely and within-budget project delivery. Our initiative aimed to address the inefficiencies observed in traditional planning poker sessions used for backlog estimations.

The main issue was the ineffectiveness and lengthy nature of these sessions, which frequently caused project delays. Engineers identified a requirement for a solution that would enable seamless sharing of session insights among team members, offer precise estimates based on past data, and permit quick revisions to user story weights.

Our solution is a tool designed to integrate seamlessly with the existing database, fetching relevant user stories based on specified criteria and appropriately weighting the fetched user stories based on their relevancy to the specified user-defined criteria. A notable feature is the stylized card representation, encapsulating the weighted average of user stories, which facilitates quicker consensus among team members. Additionally, the tool promotes collaboration by enabling the sharing of vital statistics, enhancing the overall decision-making process.

Operational efficiency and user-friendly design were paramount considerations in the tool's development. An excellent user experience is guaranteed by thorough documentation and committed post-deployment support. Although operational efficiency is our goal, we have also considered potential concerns, particularly those related to data security and performance with large datasets.

Currently, the state of the project includes resolving two main risks. These issues include the security and privacy risks when working with the user’s historical data and the performance risks when the planning tool provides estimates with historical data provided by the user. Specifically, we must make sure that the private and confidential personal data provided by the user is secure and safe from malicious actors. In addition, we must make sure our planning tool ensures accurate user story estimation based on both the historical data provided by the user and user-defined criteria for the session. With continued research and discussions with the customer, our team will address these potential risks with the most appropriate solution.

In conclusion, this technology represents a substantial advancement in addressing the problems that software engineering teams actually encounter during planning poker sessions. It not only lessens the current difficulties, but it also creates a solid foundation for better and more accurate project estimation procedures, enabling data-driven decision-making. This technology, in our opinion, will be extremely important for cutting down on project lead times, increasing the accuracy of product backlog estimations, and eventually resulting in effective project outcomes.

2. Customer Problem

2.1. Customer representative: Dr. Lynn Robert Carter wants a planning poker aide

- Wants a way to incorporate data-driven processes into planning poker sessions[1]
  - Old opinion-based methods can lead to inaccurate estimates
    - Wide-Band Delphi method
  - Needs a way to pull historical data from the user
    - Includes user story data
    - Needs a rapid way of estimating weights of relevant user stories
  - Need a way to use historical user story data to make estimates during planning session
    - Accurately estimate story points using historical data
- Adjusting weights of user stories during planning poker sessions takes too much time[2]
  - Need a way to specify known criteria about the project before planning poker session
    - Narrow the user story data down to a few relevant ones
    - Use user story data to provide accurate estimates
  - Need a tool to quickly update the weights of user stories based on discussion
    - Helps come up with a new weighted average
    - Some estimates are significantly larger or smaller
      - Members explain the experiences behind their estimates and changes are made
  - Want a tool to show the contribution of each item or user story given a previous assessment
  - Want a way to quickly view the details of items and user stories
    - Allows them to adjust weights based on the discussion
- Wants proper security and privacy for their personal information[2]

1 Customer Representative Dr. Lynn Robert Carter in 9/20 class interview

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- Wants an easy way to share information to all team members during planning poker session[1]
    - Wants a share option that makes information available to all the members
    - Want a planning poker card based on estimates from historical data
    - Want a way to view outlier card numbers to facilitate discussion

2.2. Stakeholders:

- Customer
    - Customer representative: Dr. Lynn Robert Carter
- Scrum master and product owner
- Members of cross-functional teams
    - Software engineers, hardware engineers, operations professionals

3. Concept of Operations

3.1. Introduction

The planning poker assistant is a tool that selects historical user story data based on a set of criteria and provides data-driven estimates to user stories.

3.1.1. Project Description

3.1.1.1. Background

- Software engineers need a customized tool to aid in shortening planning poker sessions
- Product owner and scrum master want a tool that helps engineers come to a consensus faster during planning sessions
- The customer representative needs a secure tool that helps with better estimation on user stories and large projects

3.1.1.2. Assumptions and Constraints

- The team members are familiar with the stories discussed and the historical data
- The number of individuals involved in planning poker sessions is not too large
- The planning poker assistant must be provided before December 1, 2023
- The planning poker assistant must be developed using Java, JavaFX, and Java supported tools

3.1.2. Overview of the Envisioned System

3.1.2.1. Overview

- An application that uses planning poker techniques to provide estimates to user historical data
- The planning poker tool can narrow the user story data down to a few relevant ones based on user-selected criteria
- The planning poker tool assigns weights to relevant user stories based on user selected criteria
- The planning poker tool allows users to quickly view the details of relevant user stories

- The planning poker tool allows users to quickly edit the weights of relevant user stories
- The planning poker tool allows users to view and share planning poker cards and statistics to other team members

3.1.2.2. System Scope

- Project will encompass creating a planning poker aide that provides accurate estimates of user stories to users
- Project won't include allowing users to create new user stories for old development projects
- Project will enable users to share poker cards with others, but will not support text or video communication

3.2. Documents and source of received requirements

3.2.1. Applicable Sources

- Interviews with Dr. Lynn Robert Carter
  - Discussions in class with Dr. Lynn Robert Carter about the project
    - Includes questions asked through email
- Customer-like documents
  - Pages 1 & 2 of EffortLogger User Input 2023-08-23

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

3.3.1.1. Needs and Goals

- Planning poker tool needs access to historical data from the user
  - Planning poker tool needs to provide users with relevant user stories based on criteria chosen by the user
- Planning poker tool needs to allow users to view and edit the relevant user stories provided by the tool
  - This includes editing the weights of each user story

- The planning poker tool needs to present a card based on the weighted average of a user's user stories
- The planning poker tool needs to share statistics to user and other team members
    - The range of card values
    - Simple average of all cards
    - The average card value excluding the highest and lowest outlier cards

3.3.1.2. Objectives

- To save time and shorten the whole planning poker process
- To help the team reach a consensus on user story point estimates
- To improve the accuracy of estimates by taking into account relevant user stories from the past

3.3.2. Overview of System and Key Elements

- The users of the systems are software developers who will use the tool to assist in planning poker sessions
- The database is to be populated with user story data from EffortLogger V2.0
- The planning poker tool will provide users with an interface to view and edit weights of such suggested user stories
- The planning poker tool will provide the users an interface to view tool selected user stories
- The planning poker tool will also provide an interface to view and share key statistics from the members in the team

3.3.3. Interfaces

- Database interface to fetch user stories from the database similar to the current user story
- User interface to view similar user stories selected from the database
- User interface that allows users to view details of user stories given previous assessment and edit the weights of the user stories
- User interface to view key statistics like high, low and average of the estimates

3.3.4. Modes of Operations

- Mode to select relevant user stories
- Mode to calculate a weighted average from the selected cards
- Mode to calculate a simple average from estimates of all users

3.3.5. Proposed Capabilities

- The system will be easy to use with simple interfaces and proper documentation on how to use the system
- The system will be scalable to support the needs of the firm as it grows
- The system will be secure to protect private and confidential information
- The system will provide key statistics that are useful during planning poker discussions
- The system will provide poker cards based on user story data to ease the planning poker process

3.4. Support Environment

- Sufficient documentation to operate planning poker tool will be provided to make it easy to use
- Will be a support team to assist with fixing future bugs and issues after deployment of the application

3.5. Operational Scenarios and Aspects

3.5.1. Nominal Conditions and Scenarios

- The planning poker tool will access the user's historical data
    - When the user uses the planning poker tool, the planning tool will ask for authorization to use the user's EffortLogger data
    - Data will be user story data from database updated by EffortLogger V2.0
- The user will be given options to specify criteria about the project after authorization
    - The tool will provide tags through some kind of dropdown list
    - Examples options include
        - the programming language and the application domain

- If the user specifies criteria on a project, the planning poker tool will give related user stories from EffortLogger V2.0 database
    - The user story data will be sorted from the one most relevant to least relevant
- The planning poker tool will weight each user story based on relevancy to the criteria
    - The weights will range from 0 to 4
    - Value of zero would mean that the item is not relevant and 0% contribution for this user story planning
    - A value of four means 100% relevant
    - Middle values indicate moderate relevancy
    - Relevancy will depend on how user story data is structured
        - Tags for each user story will help tool determine relevance
- Planning poker tool will compute the weighted average of all the obtained user stories
- If the user selects the quick view button, the planning poker tool will provide the user the option to edit the weights and view details of each user story
- If the user edits the weights of user stories, the planning poker tool will recompute the weighted average of the user stories
- If the user selects the share button, the planning poker tool will allow them to view key statistics from the team
    - Allows the user to share current card information to member in session
        - Card will have the weighted average from user story data
    - Allows the user to view statistics from the entire team
        - Will view an interface that has
            - The highest and lowest cards for the round
            - Simple average
            - The average card value excluding the highest and lowest outliers

3.5.2. Off-Nominal Conditions

- Performance of the planning tool may get slowed down by a large database
    - Planning poker tool will provide loading screens to inform the user

3.6. Impact Considerations

3.6.1. Environmental Impact

- The data servers however minor will use resources that might negatively impact the environment

3.6.2. Organizational Impacts

- The planning poker tool will help shorten the planning time allowing some additional time for development
    - This will help the software engineers maintain a healthy work-life balance
- The planning poker tool will provide data-driven estimates based on historical user story data
    - This will help increase the efficiency of the software engineers on the team

3.7. Risks & Potential Issues

3.7.1. The planning poker tool fetches data from the database of EffortLogger V2.0 which has private and confidential data that needs to be well secured

3.7.2. The accuracy of the estimates provided by the tool depends on the accuracy of the weights provided by the users

3.7.3. The accuracy of the planning poker tool also depends on the effort data submitted by the employees which form the historical data

3.7.4. Planning poker tool will only be available with EffortLogger V2.0 and not compatible with existing EffortLogger

3.7.5. If the EffortLogger is a desktop application users might not be able to use it on their phones or other personal devices

3.7.6. There is a privacy risk if the Planning-poker tool shares user historical data at the time of planning poker sessions

Appendix B : Glossary of Terms

- EffortLogger: The application used to track effort and defect reports of employees
- Planning poker: A technique used to estimate the 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
- Off-Nominal Conditions: Conditions where the system needs to perform in a way that is different from normal

4. Requirements Elicitation

4.1. Customer representative Dr. Lynn Robert Carter 9/20 interview and class discussion

4.1.1. Planning poker tool must help assist engineers in planning poker sessions

4.1.2. Engineers shall bring a planning poker assistant to the planning poker session

- Either on mobile or tablet devices

4.1.3. Planning poker tool shall allow users to specify known criteria about the project

4.1.4. Planning poker tool shall provide historical data based on relevancy to specified criteria

- Historical data would include user stories that members have worked on

4.1.5. Planning poker tool shall provide options

- Must allow users to view details of items so they can adjust weights
- Must reduce time spent during manual process

4.1.6. Planning poker tool shall produce a planning poker card

- Must be based on a weighted average

4.1.7. Planning poker tool shall provide an option to share card information

- Must make card information available to the members during session

4.2. Requirements elicitation questions

4.2.1. What proactive measures and best security practices will be practiced by the employees to avoid security breaches[3]

4.2.2. What measures will be taken by the firm to make sure that employees enter their data accurately?[4]

4.2.3. Should the Planning Poker Tool also use the data from the existing EffortLogger?[5]

4.2.4. What additional identifiers or criteria are needed to narrow down historical data at the time of planning poker?[6]

[3] 3.7.1.The planning poker tool fetches data from the database of EffortLogger V2.0 which has private and confidential data that needs to be well secured
[4] 3.7.3. The accuracy of the planning poker tool also depends on the effort data submitted by the employees which form the historical data
[5] 3.7.4. Planning poker tool will only be available with EffortLogger V2.0 and not compatible with existing EffortLogger

4.2.5. Should the planning poker tool on one device interact with the tool on another device?[6]

[6] 3.7.6. There is a privacy risk if the planning-poker tool shares user historical data at the time of planning poker sessions

5. Conclusion

5.1. Development of Planning Poker Assistant Tool

5.1.1. Core Objective

5.1.1.1. Streamlining the estimation process

5.1.1.2. Utilizing historical data

5.1.2. Addressed Challenges

5.1.2.1. Lengthy planning poker sessions

5.1.2.2. Time-consuming weight adjustments

5.2. Stakeholder Engagement

5.2.1. Customers

5.2.1.1. Receiving accurate project estimations

5.2.1.2. Improved project delivery timelines

5.2.2. Software Engineers

5.2.2.1. Efficient planning and quick weight indication

5.2.2.2. Rapid access to relevant user stories

5.2.3. Scrum Master & Product Owner

5.2.3.1. Facilitating faster consensus

5.2.3.2. Displaying relevant data for varied estimates

5.3. Requirements Elicitation

5.3.1. Key Requirements

5.3.1.1. Criteria-based selection of user stories

5.3.1.2. Rapid weight indication and adjustments

5.3.2. System Objectives

5.3.2.1. Saving time in planning poker sessions

5.3.2.2. Improving the accuracy of estimates

5.4. Key Features of the Tool

5.4.1. Criteria-based Selection

5.4.1.1. Efficient user story retrieval

5.4.1.2. Weight adjustments based on criteria

5.4.2. Sharing Capabilities

5.4.2.1. Sharing of key statistics

5.4.2.2. Enhanced collaborative decision-making

5.5. Operational Environment & Considerations

5.5.1. Support and Documentation

5.5.1.1. Comprehensive documentation

5.5.1.2. Post-deployment support

5.5.2. Risk Management

5.5.2.1. Data security

5.5.2.2. Performance considerations with large databases

5.6. Future Scope

5.6.1. System Enhancements

5.6.1.1. Incorporating feedback for continuous improvement

5.6.1.2. Expanding the database to include more historical data

5.6.2. Stakeholder Feedback

5.6.2.1. Gathering further feedback from all stakeholders

5.6.2.2. Addressing any concerns and making necessary adjustments

6. Appendix A: Credit Sheet

Team Member Name	Contributions
Krishnaprasad Palamattam Aji	Helped write Customer Problem Helped write improved ConOps Helped write Requirement Elicitation
Malin Tan	Helped write Customer Problem Helped write improved ConOps Helped write Requirement Elicitation
Varun Menon	Helped with the Executive Summary section. Wrote the conclusion of the report. Assisted in reviewing and revising the Requirements Elicitation section.