CSE 563 Project Report Number 3

Team 19

Team Member Names:

1. Krishnaprasad Palamattam Aji
2. Zhicheng Lin
3. Malin Tan
4. Varun Menon

Table of Contents

1. Executive Summary

In the dynamic field of software development, the accurate estimation of project backlogs is essential for ensuring timely and budget-friendly 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 needed a solution that would enable seamless sharing of sessions among team members, offer precise estimates based on past data, and permit quick revisions to user story weights.

Our solution is a tool specifically designed to integrate seamlessly with the existing database, fetching relevant user stories based on specified criteria and appropriately weighing the fetched user stories based on their relevance to the specified user-defined criteria. A new notable feature is the 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 primary 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 thought about other potential concerns, particularly those related to data security and the performance of larger datasets.

Currently, the motive of this 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 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 any hack and malicious activities. Also, 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 and the creation of risk-reduction prototypes, our team will address these potential risks with the most appropriate solution. These prototypes include a database, planning poker, historical data, and Conops prototypes

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 reduces 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 long[2]
    - Need a way narrow the historical user story data down to a few relevant ones
    - Need a tool to quickly update the weights of user stories based on discussion
        - Helps come up with a new predicted story point for user story
    - Want a way to quickly view the details of user stories
- Wants proper security and privacy for personal information[2]
    - Employees have concerns about having personal data being leaked
        - Concerns about having personal data being mishandled
    - Also mentioned by Dr. Lynn Robert Carter[1]
- Wants an easy way to share information to all team members during planning poker session[1]
    - Wants a way to view which projects had higher or lower estimates
        - Helps facilitate discussion
    - Wants a share option that makes information available to all the members

[1] Customer Representative Dr Lynn Robert Carter 9/20 class interview
[2] Page 1 EffortLogger User Input 2023-08-11 Document

2.2. Stakeholders:

- Software engineers
    - Need a faster way to adjust weights of user stories[3]
    - Poker sessions take too long to complete[4]
    - Needs a way to easily share information to team members and view statistics of session[3]
- Scrum master and product owner
    - Need to interview potential stakeholders to discuss problems

[3] Page 2 EffortLogger User Input 2023-08-11 Document
[4] Page 1 EffortLogger User Input 2023-08-11 Document

3. Concept of Operations

3.1. Introductory outline

3.1.1. Overview of the Operational Scenarios

3.1.1.1. Setup scenario

- The Goal
    - Facilitate the setup of planning poker session
    - Provide users with historical data to use
    - Problem solves
        - A way to incorporate data-driven processes into planning poker sessions
            - Source: Customer Representative Dr Lynn Robert Carter 9/20 class interview
        - Solves the problem of proper security and privacy for employee information
            - Source: Page 2 EffortLogger User Input 2023-08-11 Document
- The Outcome
    - Provide a secure login method to access
    - Allow users start a new planning poker session
    - Allow users to use and view historical data
        - Includes all the user story from user
    - Allows user to specify details about new user story and project

3.1.1.2. First Planning Poker Round Scenario

- The Goal
    - Facilitate the first planning poker scenario
    - Provide user with an estimation based on historical data
    - Solution to provide

        - A way to incorporate data-driven processes into planning poker sessions
        - An easy way to share information with all team members during the planning poker session
        - Source: Customer Representative Dr Lynn Robert Carter 9/20 class interview

- The outcome
    - Allow users to view all historical data
        - Includes all the user story from user
    - Allow users select relevant user stories
    - Allow users to select user stories not to include for estimation
    - Allow the users to select weights of user stories
    - Provide users with story point estimate based on relevant user stories
    - Give the user the ability to share predicted story point

3.1.1.3. Subsequent Planning Poker Rounds Scenario

- The Goal
    - Facilitate subsequent planning poker scenarios
    - Provide users with options to reestimate predicted story points
    - Solution to provide
        - A way to incorporate data-driven processes into planning poker sessions
            - Source: Customer Representative Dr Lynn Robert Carter 9/20 class interview
- The outcome
    - Allow users to review all historical data
        - Includes all the user story from user
    - Allow users reselect relevant user stories after discussion

- Allow users to reselect user stories not to include for estimation after discussion
- Allow the users to reweight of user stories after discussion
- Calculate story point estimates based on relevant user stories
- Give the user the ability to share new predicted story

3.1.1.4. Final Scenario

- The Goal
  - Facilitate updating the user's historical data with new data
  - Solution to provide
    - A way to incorporate data-driven processes into planning poker sessions
      - Source: Customer Representative Dr Lynn Robert Carter 9/20 class interview
- The outcome
  - Provide users the option to update the EffortLogger V2.0 database with their user story data

3.1.2. Project Description

3.1.2.1. Background

- Customer representative Needs:
  - Tool that provides a better estimation of user stories
    - Supports data-driven decision-making
    - Shall provide relevant user stories
  - A secure tool that protects employee privacy
  - A way for users to share calculated story points with the team
- Software engineers need a customized tool
  - Needs to shorten planning poker sessions
    - Need an easier way to view user stories
    - Need an easier way to adjust story points

        - Need an easier way to share predicted story points
- Product owner and scrum master want a tool that helps engineers come to a consensus faster during planning sessions

3.1.2.2. Assumptions and Constraints

- The team members are familiar with
    - The historical data that they own
        - Needs user stories to reference
    - The user stories discussed
- Planning poker aide must be completed before the deadline
    - Deadline is December 1, 2023
- Planning poker aide must be developed using
    - Java, JavaFX, and other Java supported tools

3.1.3. Overview of the Envisioned System

3.1.3.1. Overview

- Provides estimates to user-provided historical data
- Allows the user to narrow down all historical data
    - Provides few relevant ones based on criteria
- Allows assignment of weights to relevant user stories based on user-selected criteria
- Provides users a quick way to view the details of user stories
    - User stories are sorted from highest to lowest story points
- Provides users to quickly edit the weights of story points
- Allows users share planning poker card with predicted story point number

3.1.3.2. System Scope

- Encompass creating a planning poker aide that provides accurate estimates of user stories
    - Facilitates data-driven estimation

- Doesn't encompass allowing users to create new user stories for old development projects
- Enables users to share poker cards

3.1.3. Documents and source of received requirements

3.1.3.1. 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

3.1.3.2. Reference Documents

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

3.1.4. Description of Envisioned System

3.1.4.1. Needs, Goals, and Objectives of Envisioned System

3.1.4.1.1. Needs and Goals

- Needs access to historical data from the user
  - Provide users with user stories that have been worked on
- Needs to allow users to view and edit the relevant user stories
  - This includes editing the weights of each user story
- Needs to present a card based on the weighted average of a user's user stories

3.1.4.1.2. Objectives

- Save time and shorten the whole planning poker process
- Improve the accuracy of estimates using historical data
- Help reach a consensus on user story point estimates

3.1.4.2. Overview of System and Key Elements

- Users are software developers
    - will use the tool to assist in planning poker sessions
- Populated with user story data from a user using EffortLogger V2.0
- Provide users with a login screen to provide security and privacy
- Provide users with an interface to view and edit weights of such suggested user stories
- Provide the users an interface to view selected user stories
- Provide an interface to view and share key statistics from the members in the team

3.1.4.3. Interfaces

- Database interface to fetch user stories from a database that has user's historical data
- Login user interface to login the user to application
- Start user interface allows user to start a new session
- Setup user interface to
    - Allows users to view details of all historical user stories
    - Allows users to specify details about current user story and project
    - Allows users to select which user stories are relevant to project
    - Allows users to estimate the predicted story point
    - Allows users to specify weights of historical user story
- Card user interface to share predicted story point

3.1.4.4. Modes of Operations

- Mode to log in the user
- Mode to grab the user stories provided by user
- Mode to calculate a weighted average from the selected cards

3.1.4.5. 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 user story data to ease the planning poker process

3.1.5. Risks & Potential Issues

3.1.5.1. 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

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

3.1.5.3. The accuracy of the planning poker tool also depends on the story point data submitted by the employees which is from the historical data

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

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

3.1.5.6. There is a privacy risk if the planning-poker tool uses user historical data at the time of planning poker sessions

3.2. Operational Scenarios and Aspects

3.2.1. Setup scenario

This scenario solves the problem of the customer who wants a way to incorporate data-driven processes into planning poker sessions[5]. The source is from the customer representative Dr. Lynn Robert Carter. This scenario allows the user to gain access to their historical data and make more informed decisions compared to opinion-based methods. This scenario also solves the problem of proper security and privacy for employee information[6]. This is solved by the login screen to the application which only allows the user to access their planning poker.

On application startup, the user is presented with a login screen. Once the user inputs the correct credentials, the user is presented with a user interface known as the new project user interface that has a button to start a new session. Once the user clicks the button to start a session, the user's historical data is imported for the planning

[5] Customer Representative Dr. Lynn Robert Carter in 9/20 class interview
[6] Page 2 EffortLogger User Input 2023-08-11 Document

session. The historical data comes from the user's database logged by the EffortLogger application on their desktop. Another user interface known as the setup user interface is presented to the user. The user is provided fields that will allow them to name this project and describe the user story they are working on during the session, providing keywords related to the story. The user will be able to edit the data entered during all phases of planning poker through this setup interface. The setup interface will also present users with their historical user stories in a table that is sorted from the highest to the lowest story point.

3.2.2. First Planning Poker Round Scenario

This scenario also helps solve the problem of the customer who needs a way to incorporate data-driven processes into planning poker sessions[7]. The source is from the customer representative Dr. Lynn Robert Carter. This scenario presents users with their historical data and also allows the user to decide which historical data is relevant, allowing for more informed decisions compared to opinion-based methods. This scenario also solves the problem of the customer who needs an easy way to share information with all team members during the planning poker session[5]. The source is relayed from the customer representative Dr. Lynn Robert Carter. This scenario helps solve this problem because

After the user has the description of the user story they are planning from the planning poker session, the user goes through the historical data on the setup user interface to view the user stories produced by themselves. The user can filter irrelevant user stories from the historical data after knowing the details of the current user story. The user will filter out the irrelevant user stories on the setup user interface by using a checkmark next to each user story, indicating which user stories to include during the estimation process. Once the user has removed all irrelevant historical data, they can click a button on the setup user interface to calculate the estimate of the story points required for the current user story. The planning poker application will calculate a weighted average, and the user interface will move to the card user interface that displays the predicted story point. The user can use this interface to share the number with the others participating in the session.

3.2.3. Subsequent Planning Poker Rounds Scenario

This scenario also helps solve the problem of the customer who needs a way to incorporate data-driven processes into planning poker sessions[6]. The source is from the customer representative Dr. Lynn Robert Carter. This scenario allows the user to decide which historical data is relevant based on discussions, allowing for more informed decisions compared to opinion-based methods. This scenario also allows the user to create data-driven estimations based on a weighted average.

[7] Customer Representative Dr. Lynn Robert Carter in 9/20 class interview

If the user needs to determine the relevant user stories or the weights based on the discussion, the user can go back to the setup interface from the card interface with a button, allowing the user to remove other irrelevant historical data or add relevant data to the estimation process. The user will also be able to readjust the weights of the relevant historical data based on their relevance to the current user story in discussion using the checkboxes provided by the setup user interface. The setup user interface will sort the user stories based on the highest and lowest story points, allowing users to easily make changes if necessary. Recalculation of predicted story points can happen when the user clicks the button to start estimation. This process of discussion and recalculation of weights of relevant historical data continues until a consensus is reached.

3.2.4. Final Scenario

This scenario solves the problem of the customer who wants a way to incorporate data-driven processes into planning poker sessions[8]. This allows the current user story to be added to a user's historical data, allowing the user to make accurate predictions in the future. Once agreement has been reached for the user story by all participants, the user can update the story add keywords and notes and save it for further use in EffortLogger V2.0. This is done by selecting a button on the setup interface to update the user story to the EffortLogger V2.0.

Appendix: 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

[8] Customer Representative Dr. Lynn Robert Carter in 9/20 class interview

4. Received Requirements

4.1. Customer representative Dr. Lynn Robert Carter interviews and class discussion

4.1.1. Specifically from the 9/20, 9/25, and 9/28 interviews and discussion videos

4.1.2. Planning poker aide shall assist engineers in planning poker sessions

4.1.2.1. Planning poker aide shall assist with product backlog estimation

- Includes the estimation of user stories for new projects

4.1.3. Planning poker tool shall provide historical data from the user

4.1.3.1. Historical data includes user stories that members have worked on

- Include story points of user stories

4.1.3.2. Shall provide users with better data

4.1.3.3. Shall allow users to make data-driven

- Shall allow users to move away from opinion-based decision-making

4.1.4. Planning poker tool shall provide employees with security and privacy

4.1.5. Planning poker tool shall allow users to utilize known criteria about the project

4.1.5.1. Known criteria shall be:

- User stories details
    - The who, what, and why details
- Name of project developers are working on

4.1.5.2. Shall help employees specify:

- Relevant user stories for this particular planning session
- Insignificant user stories for this particular planning session

4.1.6. Planning poker tool shall provide options to quickly adjust weights

4.1.6.1. Shall reduce time spent during the manual process after discussion

4.1.7. Planning poker tool shall produce a planning poker card

4.1.7.1. Planning poker cards shall have a predicted story point number

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

4.1.8.1. Employee devices that shall be supported are

- Employee mobile devices
- Employee tablet devices

5. Derived Requirements

References Specifically from the 9/20, 9/25, and 9/28 interviews and discussion videos

5.1. Planning poker application shall have accurately predicted story points number

- Shall calculate the weighted average from the relevant user story points
- A prioritized list of user stories and features that provides a clear understanding of the work to be done.
- Rationale:
    - Employees want an accurate story points estimate of the user story.
    - Facilitate data driven estimation
- Referenced received requirement:
    - 4.1.2. Planning poker aide shall assist engineers in planning poker sessions

5.2. Planning poker application shall have quick access to historical data

- Design data retrieval API
- Use efficient querying techniques to ensure rapid data retrieval, such as cached responses, and pagination.
- Ensure data normalization, to reduce data redundancy.
- Index frequent queried columns to speed up data retrieval.
- Regularly backup database and test restoration processes to safeguard against data loss.
- Rationale:
    - Employees want to grab relevant information quickly to help them with user stories
- Referenced Received Requirement
    - 4.1.3. Planning poker tool shall provide historical data from the user

5.3. Planning poker shall provide responsiveness for all compatible devices

- Responsive design for varying screen sizes.
- Testing the tool to check functions on different devices.

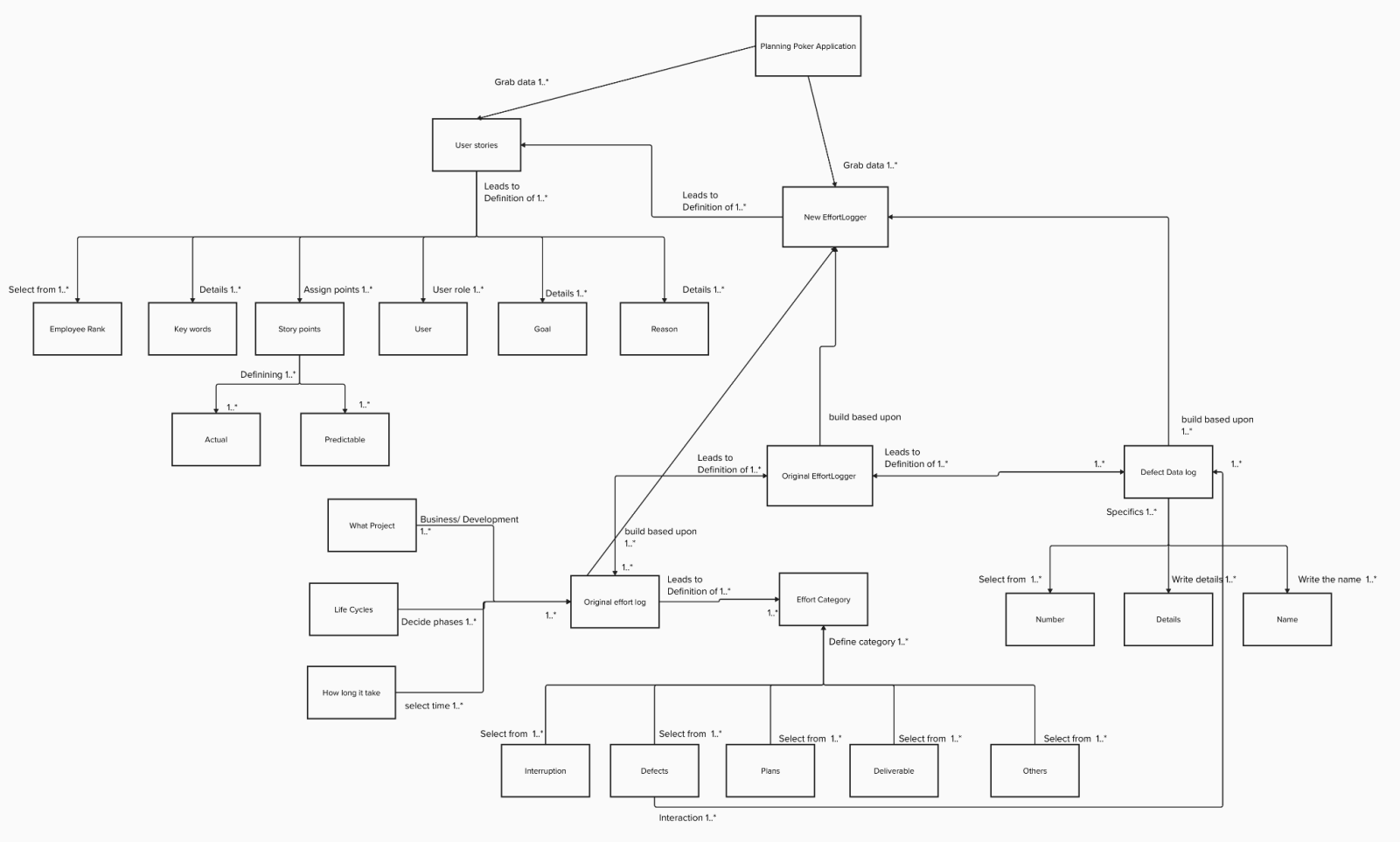
- Performance optimization, due to limited power and memory
- Rationale:
    - Planning poker aide will run on a users mobile device
    - Responsiveness is necessary when running on different devices
        - Helps facilitate a faster planning poker session
- Referenced received requirement:
    - 4.1.8.1. Employee devices that shall be supported

5.4. Planning poker application shall provide authentication to ensure security and privacy

- Passwords
- Choose the right database structure like SQL database
- Smart card
- Fingerprint Scanners
- Using Encryption techniques
    - Symmetric encryption
    - Asymmetric encryption
    - Hash functions
- Rationale:
    - Employees worried about data leakage and unauthorized access
    - Employees want their data to be secured
- Referenced received requirement:
    - 4.1.4. Planning poker tool shall provide employees with security and privacy

6. Requirements Analysis

6.1 Data Semantic Map



- User stories represent the features or tasks that users want to achieve in a software application. Short, simple description of functionality by the end users.
- The Goal outlines the main objectives of a user story, it provides what end result should it achieve, guiding developers and stakeholders throughout the process.
- Reason explains the motivation for a user story, it explains why a particular feature is necessary.
- Story Points (Actual, Predictable), it is used to estimate the effort required to complete the story. The actual story points represent the true efforts taken to complete the process. The Predictable is just an estimation of the story points.

- Employee Rank, it is used to represent the level of employees within the organization, it might reflect their experience, expertise, or position in the team.
- User, is an individual who has requested or would benefit from the particular user story. Making sure the developed task aligns with their needs and expectations.
- Keywords, specific terms or phrases associated with the user story that can help quickly categorize the main focus, making it easier for searching and analysis.

6.1.1 Highest Priority Data Item 1: User Stories

6.1.2. Highest Priority Data Item 2: Goal

6.1.3. Highest Priority Data Item 3: Reason

6.1.4. Highest Priority Data Item 4: Story Points (Actual, Predictable)

6.1.5. Highest Priority Data Item 5: Employee Rank

6.1.6. Highest Priority Data Item 6: User

6.1.7. Highest Priority Data Item 7: Key words

6.2. Storyboards supporting Architectural and Detailed Designs

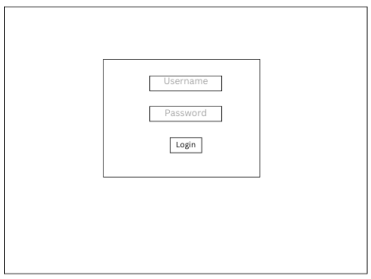
6.2.1. EffortLogger V2 Storyboard 1

6.2.1.1. Overview

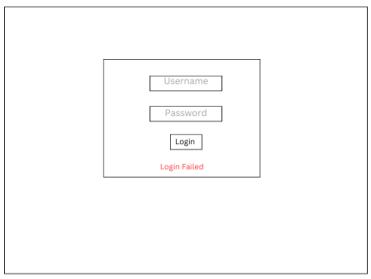
The storyboard shows the login page and primary effort logging feature of the EffortLogger V2. The user can login to the EffortLogger with their login credentials. Once login is successful, the user can start entering details about the project and user story and finally start effort tracking. Once the user is done working on the story, the user can stop effort tracking and return to the home page.

6.2.1.2. Storyboard

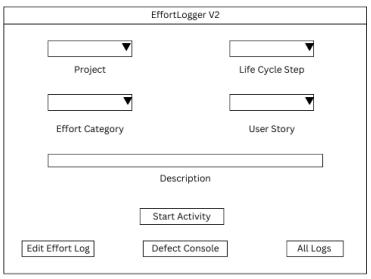
Login Phase



1. Login to EffortLogger V2 Tool

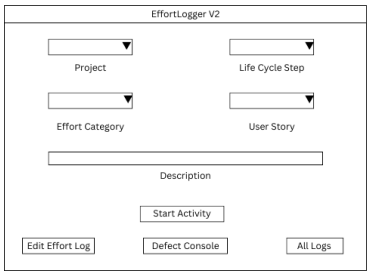


2.Login failure

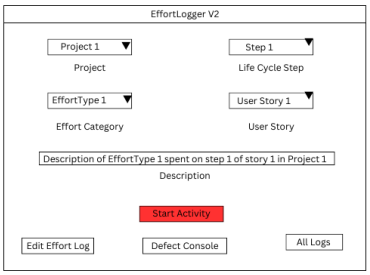


3.Home Page after login success

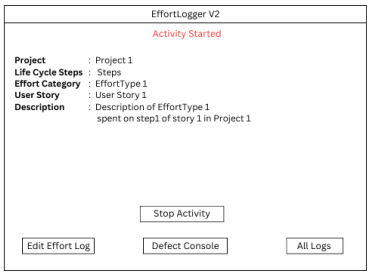
Effort Logging Phase



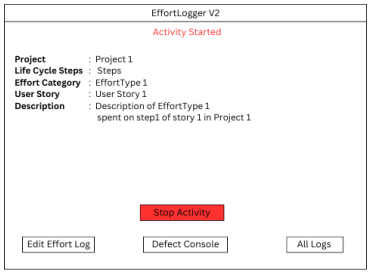
4. Select project and user story details from drop down
Add descriptions if necessary



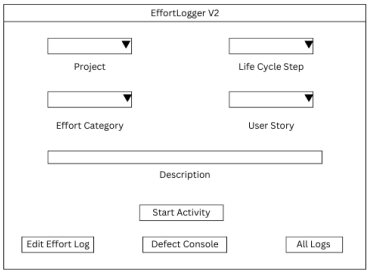
5.Start Activity button is pressed after all details are entered



6.Home Page after login success



7.After effort, user stops effort logging
by clicking on Stop Activity button



8.Goes back to Effort Logging Home Page

6.2.1.3. Explanation

The user logs in to the EffortLogger with a username and password. If authentication fails, an error message is displayed to retry. Once logged in successfully, the user can enter details about the project, user story, and description of the effort and start activity. The timer starts and keeps running until the user stops the activity with another button. The effort gets stored and the user is taken back to the home page to start another activity.

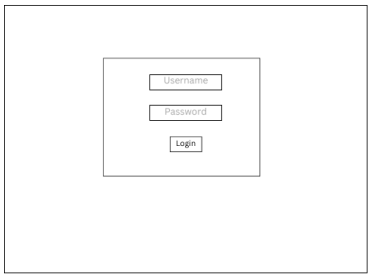
6.2.2. Planning Poker Storyboard 1

6.2.2.1. Overview

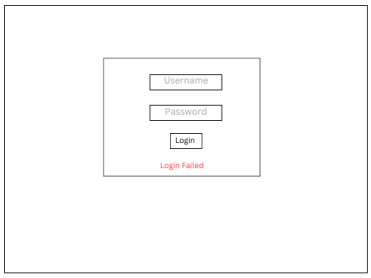
The storyboard shows the login and setup phase of the Planning Poker tool. The user has to log in to the tool with their credentials. Once logged in, the user can start a planning session. When the session starts, the user's historical data is loaded onto the screen with data sorted in increasing order of story points. The user can then start the estimation process.

6.2.2.2. Storyboard

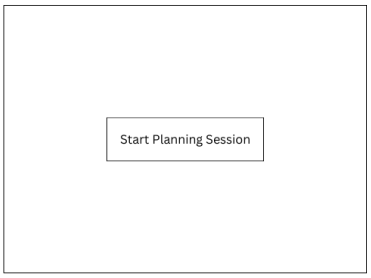
Login Phase



1. Login to Planning Poker Tool

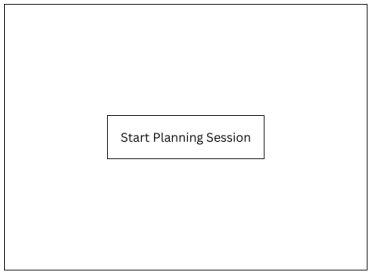


2. Login failure

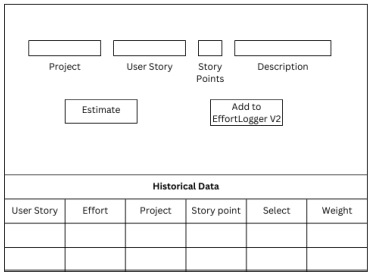


3. Home Page after login success

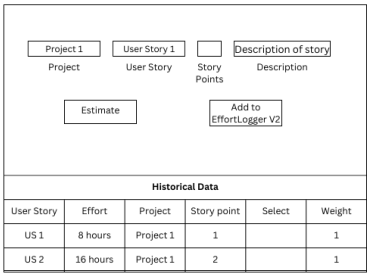
Setup Phase



4.Start Planning activity



5.Load all historical data



6.Enter project, user story and description details

6.2.2.3. Explanation

The user logs in to the Planning Poker tool with a username and password. If authentication fails, an error message is displayed to retry login. Once logged in successfully, the user can start the planning session. The user's historical data is loaded onto the screen. The user can now enter details like project name, user story and some description with keywords.

6.2.3. Planning Poker Storyboard 2

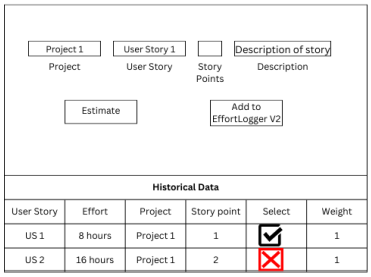
6.2.3.1. Overview

The storyboard illustrates the effort estimation process using historical data from EffortLogger V2. Users can select stories that are similar to the current user story under discussion. Once prepared, they can click the 'estimate' button to determine the current story's estimate based on the average of the historical data. In subsequent rounds, users have the option to add or remove stories as desired. They can also adjust the weights of selected stories. After making adjustments, the effort can be re-estimated. If a user observes exceptionally high or low estimations, they can quickly identify the story causing the discrepancy since the data is sorted based on story points. Once a consensus is reached regarding the story point, users can incorporate this data into EffortLogger V2 for future estimations.

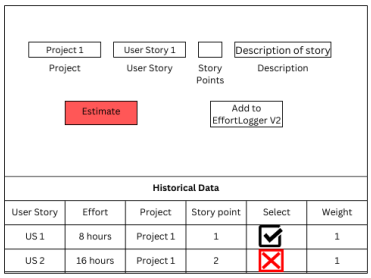
6.2.3.2. Storyboard

Requirements Analysis

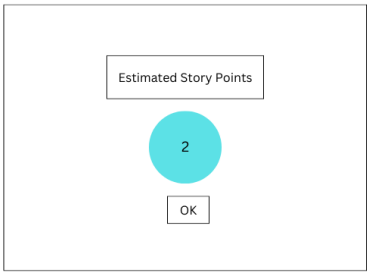
First Round



1.Remove irrelevant historical data

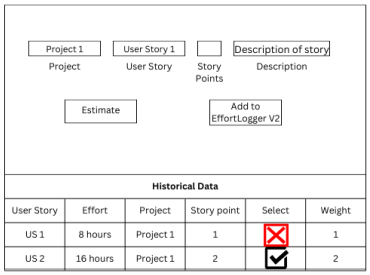


2.After selecting relevant items, user clicks estimate

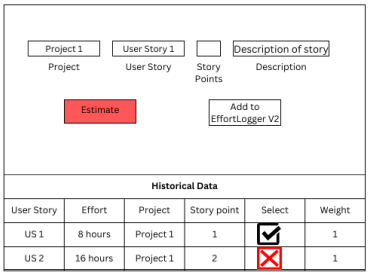


3.Display estimated story points

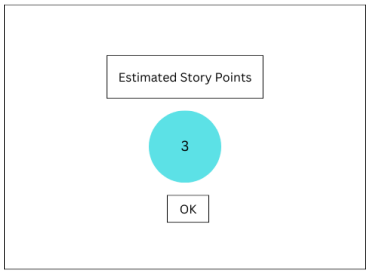
Subsequent Rounds



4.After discussions, historical data can be added or removed, weights can be adjusted

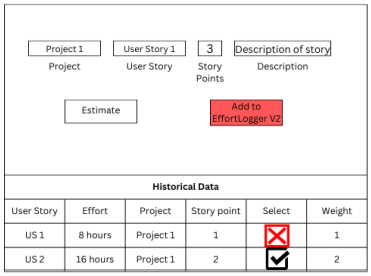


5.After selecting relevant items and adjusting weights, user clicks estimate

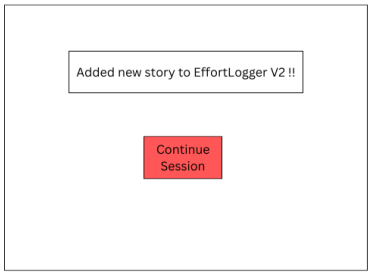


6.Display estimated story points

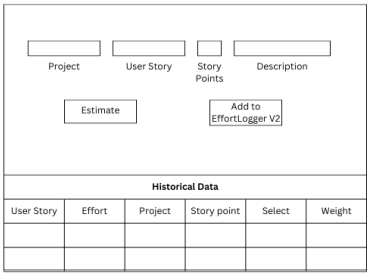
Finalization Phase



7.After consensus is reached, the data can be added to EffortLogger V2



8.After data is added to EffortLogger V2, user can continue current planning session



9.User can continue the effort estimation activity

6.2.3.3. Explanation

Once the details about the project, user story, and description are added, the user can select relevant stories to start the estimation process. If the user needs to readjust the weights or reselect relevant stories from historical data, it is possible to do the same. The stories are sorted on the basis of story points and if there are any extreme story points affecting the estimation it can be easily identified. Once consensus is reached on the story points, the user can add the story point to the text box and choose to add the data to EffortLogger V2 so that it can be used in future estimations as well as effort tracking purposes in EffortLogger V2. The user can choose to continue the session to estimate the story points of a new story.

6.3. Risk-Reduction Prototypes

6.3.1. Database prototype

6.3.1.1. Risks to be mitigated

- Risks with securing confidential data
  - Planning poker tool fetches data from the database of EffortLogger V2.0
  - Private and confidential data that needs to be well secured
- Risks associated with providing historical data to planning poker tool

6.3.1.2. Risk-Reduction Prototype

- Who will be responsible for this prototype?
  - Malin Tan
- Explain what the prototype will do.
  - This prototype will be a MySQL database that will provide the necessary data for the planning poker prototype and will use a public key to encrypt all the sensitive information. The fetched data will need a private key to decrypt the data.
- How will the prototype mitigate the risk?
  - By encrypting the data in the database, all the data will be unreadable, only the users who have the private key will be able to read it. Thus the employee's data will be private and safely secured. This prototype will also help test whether the planning poker tool can receive the required data from a database maintained by EffortLogger on a desktop.

6.3.2. Planning poker prototype

6.3.2.1. Risk

- Risks concerning how the tool is used by stakeholders
- Risks concerning the accuracy of the weights provided by the tool
    - Accuracy of the estimates provided by the tool depends on
        - The weights provided by the users
        - The story points inputted their historical data

6.3.2.2. Risk-Reduction Prototype

- Who will be responsible for this prototype?
    - Krishnaprasad Palamattam Aji
- Explain what the prototype will do.
    - This prototype will accurately calculate the predicted story points based on the historical data using mathematical operations to find out how accurate the estimation is, making sure the data is all accurate. It will also compare the old story points to see if there are many deviations. If there are, something might go wrong, so users will pay closer attention to the data they are entering.
- How will the prototype mitigate the risk?
    - If the data submitted by the users is correct, the result should always be the same, running it multiple times, making sure the data is accurate. This prototype will also help test how the end users will use the tool, so they can identify any missing functionalities.

6.3.3. Historical data sharing prototype

6.3.3.1. Risk

- Privacy risks when working with historical data
    - Employees care about privacy of data

6.3.3.2. Risk-Reduction Prototype

- Who will be responsible for this prototype?
    - Zhicheng Lin
- Explain what the prototype will do.

- This prototype will define role-based access control, so each individual will get a role with permissions attached to it, ensuring that only authorized personnel can view the old historical data. As for the data collected and saved from history, it will only collect the minimum amount of data necessary for the intended purpose. Also deploying blockchain data structure for transparency and privacy.

- How will the prototype mitigate the risk?
  - By defining the role-based access control, only the users with specific roles can access the data, all other users will not be able to access it. As for the data collected, it will only be minimal, so there won't be identifiable information. Lastly, the blockchain structure will record all the access of the data and show a clear transparency view on who access what and at what time.

6.3.4. Concept of operations prototype

6.3.4.1. Risk

- Risks associated with requirements that planning poker needs to fulfill
  - Ensure that all customer requirements are captured

6.3.4.2. Risk-Reduction Prototype

- Who will be responsible for this prototype?
  - Varun Menon
- Explain what the prototype will do.
  - This prototype will make sure that the operations of the planning poker tool are properly captured. This prototype will ensure that the planning poker tool addresses all the customer concerns, ensuring the team hasn't missed any requirements from the customer.
- How will the prototype mitigate the risk?
  - The prototype will mitigate the risk by providing a document that the customer can review. This will allow the customer to ensure that the planning poker tool will address all the concerns they have discussed with the team.

7. Conclusion

10.1. Customer Problem

10.1.1. Customer Representative's Needs

- Incorporation of data-driven processes in planning poker.
- Efficient user story retrieval and weight adjustments.
- Security and privacy concerns addressed.
- Enhanced sharing capabilities for collaborative decision-making.

10.2. Stakeholder Engagement

10.2.1. Software Engineers

- Emphasis on faster weight adjustments.
- Efficient sharing of session statistics.

10.2.2. Scrum Master & Product Owner

- Enhanced tools for facilitating consensus.
- Display relevant data for varied estimates.

10.3. Concept of Operations

10.3.1. Storyboard Insights

- Emphasis on effort estimation using historical data.
- Efficient user story retrieval and weight adjustments.
- Enhanced sharing capabilities for collaborative decision-making.

10.4. Requirements

10.4.1. Security Measures

- Multi-factor authentication and encryption techniques.
- Addressing concerns about data leakage and unauthorized access.

10.4.2. Device Responsiveness

- Ensuring tool compatibility across various devices.
- Emphasis on performance optimization.

10.4.3. Risk Reduction Prototypes

- Database, Planning poker, Historical data, Conops prototypes
    - Malin Tan will work on the Database prototype
        - Reduces security risks
    - Krishnaprasad Palamattam Aji will work on Planning poker prototype
        - Reduces usability risks
    - Zhicheng Lin will work on Historical data prototype
        - Reduces privacy risks
    - Varun Menon will work on Conops prototype
        - Reduces risks to requirements understanding

10.5. Key Features & Future Scope

10.5.1. Criteria-based Selection

- Efficient user story retrieval.
- Dynamic weight adjustments based on criteria.

10.5.2. Operational Environment & Considerations

- Comprehensive documentation and post-deployment support.
- Risk management with a focus on data security.

10.5.3. System Enhancements

- Continuous feedback incorporation.
- Database expansion for more historical data.

10.6. Pending Issues & Feedback

- Further stakeholder feedback integration.
- Potential system enhancements based on user feedback.
- Addressing unforeseen challenges in the deployment phase.

8. Appendix A: Credit Sheet

Team Member Name	Contributions
Krishnaprasad Palamattam Aji	Helped write Customer Problem Helped write improved ConOps Helped with Storyboards for EffortLogger and Planning Poker
Malin Tan	Helped write Customer Problem Helped write ConOps Helped write Requirement Received Helped write Requirement Derived
Varun Menon	Helped with the Executive Summary section. Wrote the conclusion of the report. Assisted in reviewing and revising the Requirements.
Zhicheng lin	Helped write Customer Problems Helped write improved ConOps Helped draw data semantic map Assisted in reviewing and revising the Requirements.