1. **Introduction**

***1.1 Purpose of Document***

This is a Requirements Specification document for a new web-based bug tracking system for Simsoft Technologies (India) Pvt. Ltd. Simsoft is a software firm offering complete software solutions for enterprises. The new system will upgrade the current bug tracking and management system to provide customers and employees a customised experience while adding and handling bugs. This document describes the scope, objectives and goal of the new system. In addition to describing non-functional requirements, this document models the functional requirements with use cases, interaction diagrams, and class models. This document is intended to direct the design and implementation of the target system in an object-oriented language.

***1.2 Project Summary***

Project Name: Bug Tracking System

Project Manager: Aashay Kulkarni

Project Analyst: Aashay Kulkarni

***1.3 Background***

Simsoft works to provide affordable and indigenous software solutions for the enterprise using the latest technologies available. They are a well-equipped software solutions provider having experience in enterprise solutions, document management systems, workflow systems, CAD solutions, networks & network applications, databases and complete software solutions on the web platform.

Currently the bug tracking system in use is Bugzilla, a web-based general-purpose bug tracking system and testing tool originally developed and used by the Mozilla project, and licensed under the Mozilla Public License. Since it is a general-purpose tool, it can only help meet basic requirements of both users and the development team. To handle specific requirements of certain clients and to aid the development team in dealing with the entire process of dealing with bugs and managing the progress of patches.

Problems with the current system include

·         The criteria available are general purpose and hence restrict the user when they wish to add a new bug with specific features

·         Users who need more technical information have difficulty accessing the relevant tags for bugs since the interface is clunky

·         Developers that work on a particular bug have to face issues if the users have not followed the firm’s best practices while adding the bugs

The higher management of Simsoft has requested that an analysis be done with a view to reengineering the current bug tracking system. The new system should allow users to add more advanced and specific tags to bugs while also enabling the developers to deal with bugs with ease with all the necessary information being made available to them.

***1.4 Project Scope***

The scope of this project encompasses the development of an enhanced web-based bug tracking and management system tailored for Simsoft Technologies (India) Pvt. Ltd. This system aims to significantly improve the bug tracking process, providing a more intuitive and customizable experience for both customers and employees while managing bugs.

This initiative focuses on enhancing bug reporting and management capabilities, offering advanced tagging features, and streamlining the process for developers by ensuring comprehensive bug-related information is readily accessible. The project excludes inventory control and billing functionalities and does not involve implementing a new database system but involves modifications to the existing databases for improved bug tracking functionalities. The primary goal is to revolutionize bug tracking within the organization, fostering an efficient and intuitive bug management system while aligning with the firm's best practices.

***1.5 System Purpose***

*1.5.1 Users*

Those who will primarily benefit from the new system and those who will be affected by the new system include

End Users:

Individuals utilizing the Bug Tracking System to report bugs, track their progress, and engage with the platform for issue resolution. They will experience a more intuitive bug reporting and tracking interface, allowing for detailed bug submissions and efficient monitoring of issue resolution progress.

Engineers:

Distinguished by roles such as Database (DB), Technical (Tech), and User Experience (UX) engineers, actively involved in refining and managing the technical facets of the system. They will benefit from enhanced technical capabilities, facilitating streamlined bug management, and offering a customizable framework for improved issue handling.

Testers:

Responsible for conducting rigorous testing procedures to ensure the system's functionalities meet predefined standards and quality benchmarks. They will witness improved testing environments and procedures, ensuring thorough examination of system functionalities, leading to heightened software quality.

Team Leaders:

Assigned to oversee specific application teams, guiding operations and aligning them with the overall objectives of the Bug Tracking System. They will obtain better oversight and control over their application teams, enabling more informed decision-making and smoother coordination in bug resolution tasks.

Persons of Authority:

Key stakeholders holding decision-making authority, contributing strategic insights and directing the implementation of the system. They will gain access to comprehensive analytics and insights derived from bug tracking data, empowering strategic decision-making for system enhancement and refinement.

*1.5.2 Location*

The Bug Tracking System will be accessible to prospective customers via the Internet. Additionally, employees of Simsoft Technologies (India) Pvt. Ltd. can utilize the system from any location. Access to restricted sections of the site will be secured through a password protection scheme

*1.5.3 Responsibilities*

The primary responsibilities of the new system:

* Providing an intuitive platform for users to report bugs, track their progress, and manage the resolution process efficiently.
* Customizing bug categorization and tagging functionalities to accommodate specific project requirements.
* Implementing user-based access controls, allowing varying levels of system access for different user roles.
* Enabling users to submit bug reports, update bug statuses, and facilitate communication among team members seamlessly.
* Integrating notification systems to alert concerned parties about bug updates and resolutions.
* Offering comprehensive dashboards and reports for administrators to monitor bug resolution metrics.

Other desired features of the new system:

* Consistent and user-friendly interface design for ease of navigation and usage.
* Advanced search functionalities to facilitate quick and precise bug retrieval.
* Context-sensitive help resources for users to navigate the system effectively.
* Secure authentication mechanisms, ensuring controlled access to sensitive bug data.
* Multilingual support for users operating in diverse language settings.

*1.5.4 Need*

The system is essential to address the growing demand for efficient bug management within Simsoft Technologies (India) Pvt. Ltd. The replacement of the existing bug tracking systems aims to mitigate the limitations inherent in those platforms. By introducing this new system, the organization anticipates a rapid augmentation in bug resolution capabilities, enabling swift and effective handling of reported issues. Consequently, this system empowers the organization to manage escalating bug volumes efficiently, minimizing the need for a substantial expansion in workforce, particularly in the sales and customer support domains.

*1.6 Overview of Document*

The rest of this document gives the detailed specifications for the bug tracking system. It is organized as follows:

·         Section 2: Functional Objectives  
 Each objective gives a desired behavior for the system, a business justification, and a measure to determine if the final system has successfully met the objective. These objectives are organized by priority. In order for the new system to be considered successful, all high priority objectives must be met.

·         Section 3: Non-Functional Objectives  
 This section is organized by category. Each objective specifies a technical requirement or constraint on the overall characteristics of the system. Each objective is measurable.

·         Section 4: Context Model  
 This section gives a text description of the goal of the system, and a pictorial description of the scope of the system in a context diagram. Those entities outside the system that interact with the system are described.

·         Section 5: Use Case Model  
 The specific behavioural requirements of the system are detailed in a series of use cases. Each use case accomplishes a business task and shows the interaction between the system and some outside actor. Each use case is described with both text and an interaction diagram. An interface prototype is also shown. The system use case diagram depicts the interactions between all use cases and system actors.

·         Section 6: An appendix containing a glossary that defines terms specific to this project

**2. Functional Objectives**

 2.1 High Priority

1. Efficient Bug Reporting and Resolution

* Desired Behaviour: The system shall enable users to report bugs efficiently, reducing the time from bug identification to resolution by X%.
* Business Justification: This will streamline the bug resolution process, decreasing the overall turnaround time and optimizing team productivity.
* Measure of Success: Decrease in average resolution time by X% compared to the previous bug tracking system.

1. Real-time Bug Updates

* Desired Behaviour: The system shall reflect real-time updates to bug status and details within X minutes of any modifications by team members.
* Business Justification: This ensures all stakeholders have access to the most current bug information, reducing misunderstandings and enhancing collaboration.
* Measure of Success: Reduction in incidents of outdated bug information displayed by X% compared to the previous system.

1. Customized User Experience

* Desired Behaviour: The system shall provide a personalized dashboard and bug categorization based on the user's role, reducing the mean navigation time to X pages per session.
* Business Justification: This feature enhances user satisfaction and productivity by delivering tailored bug tracking experiences.
* Measure of Success: Decrease in the average number of navigated web pages per user session to X compared to the previous system.

1. Efficient Bug Ownership Identification

* Desired Behaviour: Employees should quickly identify the owner of a reported bug, facilitating faster bug resolution.
* Business Justification: Streamlining bug ownership identification enhances communication and problem-solving efficiency.
* Measure of Success: Successful bug ownership identification within one contact attempt improved by X% compared to the previous system.

2.2 Medium Priority

1. Advanced Search Functionality

* Desired Behaviour: The system shall support advanced full-text searches allowing users to find bugs based on specific criteria (all specified words, any specified word, exact phrases, Boolean search).
* Business Justification: Enhanced search capabilities improve bug identification and resolution efficiency for users.
* Measure of Success: Successful execution of specified search types with improved accuracy compared to the previous system.

1. Access to Additional Bug Resources

* Desired Behaviour: Provide access to supplementary resources like whitepapers directly from the bug details page.
* Business Justification: Empowering users with additional bug-related resources reduces dependency on support channels and promotes self-help.
* Measure of Success: Increase in self-resolved bug-related queries by X% compared to the previous system.

2.3 Low Priority

1. User Data Retention

* Desired Behaviour: The system shall store user-specific data for subsequent visits, reducing data re-entry time by X minutes per visit.
* Business Justification: Enhancing user experience by saving time and effort during repeated visits to the system.
* Measure of Success: Reduction in data re-entry time by X minutes per user visit compared to the previous system.

1. Multilingual Support

* Desired Behaviour: Translate bug details and system interface into languages prevalent in client regions.
* Business Justification: Facilitating bug reporting and resolution in native languages enhances customer support and reduces language barrier issues.
* Measure of Success: Decrease in language-related bug resolution issues and customer support queries by X% compared to the previous system.

**3. Non-Functional Objectives**

*3.1 Reliability*

* System Uptime: The system shall maintain operational functionality for a minimum of x% of the time during standard operational hours.
* Recovery Time: In case of system failure, the downtime for resolving issues and restoring functionality shall not surpass x hours to ensure minimal disruption in service.

*3.2 Usability*

* User Familiarization: Users should achieve a comfortable proficiency level with the bug tracking system within x days of initial system exposure or training.
* Efficient Bug Retrieval: Once a user identifies a specific bug, the system should allow them to locate and view the relevant bug details within x seconds from the search or navigation initiation.
* Simplified Navigation: The system's design must ensure that the number of clicks or steps required to access comprehensive bug information from the main dashboard or landing page should not exceed x, facilitating quick access to essential bug data.

*3.3 Performance*

* User Capacity: The system should efficiently support a minimum of x simultaneous users without compromising responsiveness or functionality.
* Page Load Time: The average time taken to load a web page over a 56Kbps modem connection should not surpass x seconds, ensuring prompt accessibility to essential bug tracking information.

*3.4 Security*

* Access Control: The system will implement robust authentication mechanisms to restrict access to sensitive bug-related information, ensuring that only authorized personnel can view and modify crucial data.
* Data Protection: All interactions and transactions involving bug reports and related information will be encrypted, safeguarding the confidentiality and integrity of sensitive data during transmission and storage within the system.

*3.5 Supportability*

* Scalability for System Expansion: The system architecture will be structured to seamlessly integrate additional bug tracking categories, new issue types, or extended functionalities with minimal system overhaul, ensuring adaptability to evolving project requirements without disrupting ongoing operations.
* Cross-Platform Compatibility: The system will be optimized to function uniformly across multiple platforms and browsers, including but not limited to Internet Explorer, Mozilla Firefox, Google Chrome, and Safari. This guarantees a consistent bug tracking experience, allowing users to access and manage issues seamlessly irrespective of their preferred browser or operating system.

*3.6 Online user Documentation and Help*

* The system shall provide a web page that explains how to navigate the site. This page should be customized based on what pages that user is allowed to access.
* This help page should be accessible from all other pages.

**4. The Context Model**

*4.1 Goal Statement*

* The goal of the system is to Enhance operational efficiency and service quality by x% within the next y years and improve the bug tracking system to ensure comprehensive and accurate capture of issue data directly from users and technical teams.
* Facilitating swift access to precise product details and supporting documentation for customers and internal teams.

*4.2 Context Diagram*

*4.3 System Externals*

* User: Any individual using the bug tracking system to report, view, or resolve bugs. They can log issues, check updates, and interact with the system.
* Developer: Authorized personnel responsible for resolving reported bugs. They access the system to view, update, and mark bugs as resolved or pending.
* Administrator: Users with elevated privileges to manage user access, system settings, and overall maintenance of the bug tracking system. They control system configurations and user permissions.
* Quality Analyst: Responsible for evaluating and validating the fixes applied to the reported bugs. They utilize the system to verify bug resolutions and ensure their correctness before closing issues.
* Project Manager: Oversees bug tracking processes, including assignment, priority setting, and team coordination. They monitor the progress of bug resolutions and manage the overall workflow.

**5. The Use Case Model**

*5.1 System Use Case Diagram*

*5.2 Use Case Descriptions (for selected cases)*

Notes:

* For all use cases, the user can cancel the use case at any step that requires user input. This action ends the use case. Any data collected during that use case is lost.
* For all use cases that require a logged in user, the current login session is updated during the use case to reflect the navigation paths through the use case.

**6. Appendix**

Glossary

Whitepaper

Technical paper containing detailed product specifications.