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**BCS3263**

**SOFTWARE QUALITY ASSURANCE**

**PLAN**

**SECTION 01B**

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# **1.0 PURPOSE AND SCOPE**

**1.1 PURPOSE :**

This Software Quality Assurance Plan shall define a structured method that would ensure StealthX Performance Workshop Management System meets the standards for quality. Besides, it should prove to be a reliable and unfailing digital platform for smooth workshop operations. Herein included are QA processes, lifecycle products, risk management practices to mitigate potential risks for the project with an intent to ensure continuous improvement and support StealthX Performance in furthering customer satisfaction and operational efficiency.

**1.2 SCOPE :**

This Software Quality Assurance Plan encompasses all modules of the StealthX Performance Workshop Management System, embedding quality assurance in each phase of the software lifecycle: requirements analysis, design, development, testing, deployment, and maintenance. The SQAP covers each module: Customer Information, Inventory Management, Appointment Scheduling, and Sales Reporting. This SQAP covers:

**Life Cycle Products:** QA would be imposed on deliverables ranging from specification through design, test plans, and maintenance records.

**Operational Alignment:** This system enhances the operational efficiency at StealthX Performance by providing valuable data about precise customers and inventory, proper scheduling, and reliable tracking of sales for better customer service and operational consistency.

# **2.0 DEFINITIONS AND ACRONYMS**

The abbreviations and acronyms used in this document are as follows:

| ACRONYM | DEFINITION |
| --- | --- |
| SDLC | Software Development Lifecycle |
| SRS | Software Requirement Specification |
| SDD | Software Design Document |
| SQA | Software Quality Assurance |
| SQAP | Software Quality Assurance Plan |

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# **3.0 REFERENCE DOCUMENTS**

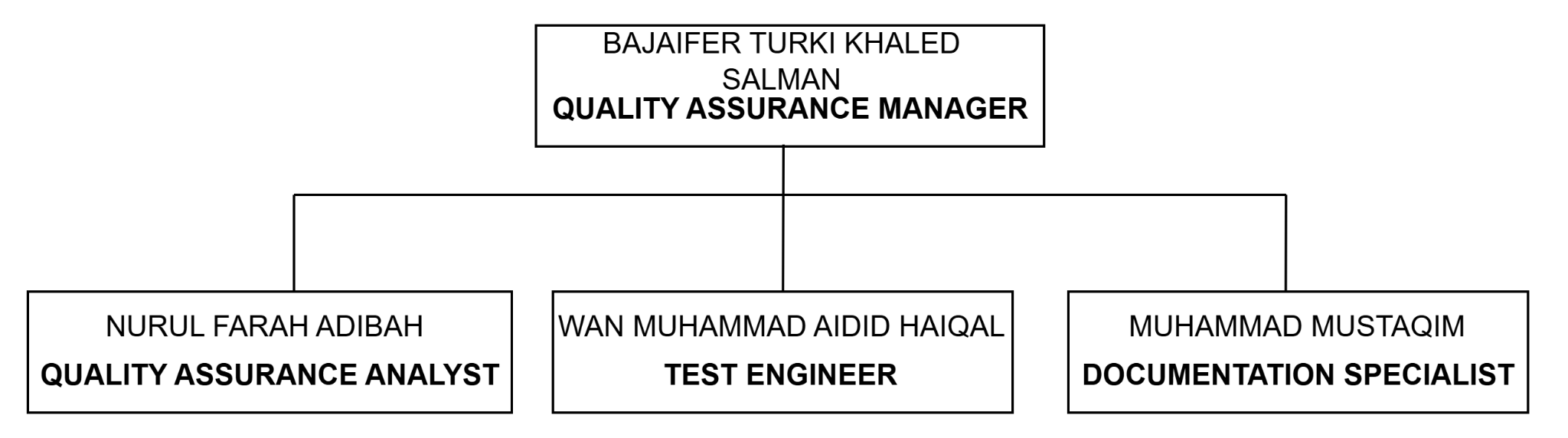
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# **4.0 SQA PLAN OVERVIEW**

**4.1. Organization and Independence**



| Role | Responsibilities |
| --- | --- |
| Quality Assurance Manager | Develop and implement quality assurance policies and procedures and oversee the entire SQA process and ensure the quality requirements and standards are fulfilled during the software development lifecycle. |
| Quality Assurance Analyst | Executing quality assurance activities. This includes testing and verification of software products that have to fulfill specific requirements and quality standards. |
| Test Engineer | Conducts testing activities, follows testing protocols, and reports any defects to the SQA Lead. They also focus specifically on the execution of tests activities related to the SQA procedure |
| Documentation Specialist | Create, organize, and maintain documentation for quality assurance of the processes, procedures, and test items. |

**4.**[**2. Software Product Risk**](https://docs.google.com/document/d/1ZU4DtVmjlRME3kirb2tPHn1sEixKZnzrlqDgA9byAqY/edit?tab=t.0#heading=h.8rl5itwtx9ge)

| Risk | Risk Description | Mitigation |
| --- | --- | --- |
| Customer Data Loss Risk | Accidental data deletion or system failures could result in the loss of customer information, impacting operational continuity and leading to potential loss of customer trust. | Schedule regular backups of the customer database, ensuring that data can be restored in case of accidental deletion or system failure. Additionally, provide a “soft delete” feature, where deleted records are first moved to an archive for a specific period before permanent deletion, allowing recovery if necessary. |
| Risk of Unauthorized Data Modification | Data corruption, error, or even breach in privacy can be caused by unauthorized changes to customer records by unauthorized access by staff or some malicious users. This would be a threat to the integrity of the data and may result in being non-compliant with laws for protection regarding data. | Apply role-based access controls to ensure that only a need-to-know population can view or edit customer-specific information. Activity logs track changes to records so that customer records also maintain an audit trail of unauthorized changes. Institute a review for critical changes wherein changes are approved by the manager before going live. |
| Inconsistent Data Formatting Risk | Date, phone number formats, address, and other information are inconsistent, which greatly hampers the aspect of fetching data efficiently to analyze. This will delay customer service and perhaps affect the accuracy of data analytics. | Use standardized input fields with pre-set formats for data entry. For any given record, the same format must be followed, such as forcing one format for dates—in say, DD/MM/YYYY—and phone numbers. There should be automated validation rules set up that the system performs at the point of entry to detect and correct formatting issues. |

**4.3 Tools**

| **Tools** | **Description** |
| --- | --- |
| Google docs | We use Google Docs to create and update our SQAP and test documentation collaboratively. It allows our team to edit, comment, and refine plans together, keeping everyone aligned on quality standards. |
| Microsoft Powerpoint | Microsoft PowerPoint is used to create presentations that summarize our SQAP processes, test results, and project updates for stakeholders. This helps us share information clearly and visually. |
| Figma | Figma allows us to review and test user interface designs, ensuring they meet quality and usability standards before development. This helps us catch issues early and improve the overall user experience. |

**4.4 Standard, Practices and conventions**

## **4.4 Standard, Practices and Conventions**

| **Category** | **Objective** | **Standard, Practices and Conventions** |
| --- | --- | --- |
| **Coding Standards** | Code should also be allowed to fear change but their consistency should also be the goal. | **PSR-12 (PHP) or PEP 8 (Python)**   * Naming conventions, indentation, and documentation practices. |
| **Testing Standards** | Guarantee thorough testing and quality verification. | **IEEE 829**   * Structured test documentation, including test cases, plans, and results. |
| **Data Accuracy Standards** | Ensure financial data accuracy in transactions and reporting. | **ISO/IEC 25024**   * Data quality and validation to maintain reliable financial data. |
| **Security Standards** | Protect financial data integrity and confidentiality from an unauthorized user. | **ISO/IEC 27001**   * Data encryption, access control, and security protocols. |
| **User Interface Standards** | Implement a user-friendly, accessible interface for user easy to use. | **ISO 9241**   * Standards for ergonomic design, improving usability and reducing errors. |
| **Documentation Practices** | Maintain clear, accessible documentation for development, testing, and usage. | **IEEE 1063**   * Software documentation, including functional specs and user manuals. |
| **Version Control Practices** | Manage code changes efficiently and maintain a clear development history. | **Git with a structured branching strategy like Git Flow**   * Ensuring clear commit messages and controlled merges. |

**4.5 Effort, Resources and Schedule**

**4.5.1 Effort - individual (explain by module)**

1. **SQAP Development**

Create the Software Quality Assurance Plan (SQAP), which outlines quality processes, standards, and procedures aimed at upholding the project's overall quality

1. **Documentation**

The effort, resource allocation, and schedule details will be documented and maintained throughout the project, with any changes or updates promptly documented and communicated to the project team.

1. **Manage Customer Information and Record**

This module allows staff and admin to add new customers, search customer records, update customer information, perform deletion of any record, or view past services that a customer had from the workshop. As a result, the listed features will therefore enable the workshop to keep proper, accurate, and updated records, hence good delivery of service or efficiency in operation.

1. **Quality Assurance:**

Throughout this project, rigorous testing, validation techniques, and monitoring were performed continuously in order to ensure that all the quality standards and requirements reached the intended Manage Customer Information and Records module. These practices ensure the accuracy, reliability, and security of customer data, supporting the general performance and usability of the system.

4.5.2 Resources

• People: Development teams, quality experts, quality control team.

• Tools: Laragon, Laravel, MySQL, Microsoft Word, and GitHub.

• Equipment: Computer and database

4.5.3 Schedule

| Phase | Duration |
| --- | --- |
| SQAP Development | 2-4 Weeks |
| Documentation | Throughout the project |
| All Module Development | 6-8 Weeks |
| Quality Assurance | Throughout the project |

# **5.0 ACTIVITIES AND OUTCOME TASK**

**5.1 PRODUCT ASSURANCE -(explain individual)**

The activities listed below shall be done to guarantee that the module, which is entitled Manage Customer Information and Records in the StealthX Performance Workshop Management System, is of quality and reliable:

**Verification of requirements**: This is the stage that involves extensive verification with respect to whether all the requirements regarding customer data management are correctly understood and appropriately implemented. Workshop person's meetings are delivered with the aim of ensuring features like secure data handling, efficient search, etc., cater to the requirements of both staff and customers.

**Data Management Testing:** Such testing looks to validate the system for correct execution of all its functions concerning customer records. Tests can range from creation to updating of customer information, deletion of obsolete entries, and retrieval of customer history. Modifications should and can be done by only authorized users, which will be ensured by extensive testing.

**Access Control and Security Testing**: Access control for sensitive customer information is tested by running tests. The different methods of encryption are checked so that unauthorized users cannot access and tamper with the data. Penetration testing is carried out for finding out the potential security vulnerabilities and their mitigation.

**Data Integrity Checks:** Extra precaution is taken to make sure the data being stored is accurate. Periodic tests are conducted to ensure that the updates and deletions are handled accordingly with no corruption of data. Systems are also in place to detect any discrepancies that may arise and correct them.

**User Experience Testing:** This level of testing involves the usability of the module by staff and admin. Feedback is solicited on how intuitive the interface is and how efficient the workflows are, such as searching for service history for a customer. It is done to make necessary adjustments that assure maximum user satisfaction.

**5.2 PROCESS ASSURANCE-explain individual**

Assure the embedding of the quality standard within the software development process for the module Manage Customer Information and Records through process assurance activities.

**Compliance Tests:** The developing and implementation processes are reviewed to establish if they indeed conform to set standards. for example, IEEE and ISO guidelines. This will ensure that data privacy and security protocols are put in place and followed consistently.

**Update and Change Management:** Changes are provided within a managed and documented approach, be it modifications to data handling rules or improvements in the user interface. Each update undergoes extensive testing and approval to ensure system stability and data integrity.

**Code Quality Assessment**: Regular code assessments are done by involving peers to achieve possible issues as early as possible in the development cycle. This keeps the code maintainable, clean while adhering to the standards of the project. Such reviews' feedback is used in continuously refining the codebase.

**Bug Tracking and Issue Resolution:** It follows a systematic approach toward bug tracking or problems and their resolution. Whenever there are problem reports, they get logged, analyzed, and prioritized in terms of their impact. Quick resolution ensures minimal disruption to the system and high reliability of data.

**Integration and Regression Testing:** These tests are conducted after every change or addition that the module will go on working flawlessly. Such tests ensure that the addition of new features has not affected previous or existing functionality; hence, it ensures stability and reliability of the system.

**Maintenance of Documentation:** Processes and changes are fully documented; ongoing revisions of user manuals and system guides regarding the addition of new features are available, so that staff and any admin clearly understand how to effectively use this module.

# **6.0 ADDITIONAL CONSIDERATIONS**

# **Contract Review** Define the needs related to customer data management, including data protection, service acceptance criteria, and compliance with data privacy regulations. Ensure the roles and liabilities of the system provider and the personnel in the workshop are well described in the contract. Ensure that all issues regarding data management, security, and expectations about the services have been fully settled and agreed upon by all parties.

# **Quality Measurement** Identify appropriate quality metrics regarding customer data management:

# **Data Integrity**: Checks on data integrity should be performed regularly to ensure that update, delete, and retrieval operations do not lead to inconsistencies in data.

# **Usability**: Execute usability testing by user feedback sessions, heuristic analysis, and task-based tests to verify that staff can manage customer records effectively.

# **Security**: Identification and rectification of any vulnerability regarding customer data, which would come in handy in assessing risks pertaining to data breaches or putting in place robust security.

# **Waivers and Deviations** Identify deviations from the SQAP, contract, or project plans under review:

# **Data Handling**: However, exceptions to update data immediately without validation are sometimes requested by staff. These should, nonetheless, be screened carefully and approved only when the accuracy of the data will not be affected.

# **Usability**: Take requests for adapting the user interface to meet the needs of a particular staff member only when this does not conflict with overall usability or accessibility.

# **Security**: Any proposals that involve derogation from security protocols, such as relaxing password requirements to make life easier, shall undergo a risk analysis prior to approval.

# **Task Repetition** Emphasize SQA tasks which may need to be iterated:

# **Data Accuracy Checks**: This will have to be checked time and again after every software change to ensure that no new errors have cropped up.

# **Usability Testing**: Test for usability regularly by collecting users' feedback for improvements.

# **Security Audits**: Let periodic security audits be done to detect emerging threats and vulnerabilities.

# **Risk to Performing SQA** Identify all the risks that might affect the successful implementation of SQA:

# **Data Integrity**: The risk may be because of inadequate validation processes or incomprehensive data entry procedures for the customer data.

# **Usability**: Unclear or changing requirements will result in a user interface not serving the needs of the staff or becoming awkward to use.

# **Security**: Risks include weak identification of vulnerabilities or weak implementation of controls and countermeasures, leading to data breaches or unauthorized access.

# **Communications Strategy** Establish contact with all stakeholders, including workshop management and third-party vendors, through effective communication channels. Prepare reports on the activities of quality assurance, progress updates, and identified risks; present these regularly to the stakeholders.

# **Non-Conformance Process** Specify the contractual responsibilities for the control of non-conformity, data protection legislation, and quality management. Provide clear procedures for reporting and resolving non-conformances, including documentation and corrective action. Outline arrangements that are established to manage corrective and preventive action in terms of the system's ability to quickly identify and resolve problems.

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