**Verification and Validation Notes**

Prepared By: Group 2

Elicited with: Group 4

Date: March 15th, 2024

**1. Introduction**

**1.1 Purpose of the Document:**

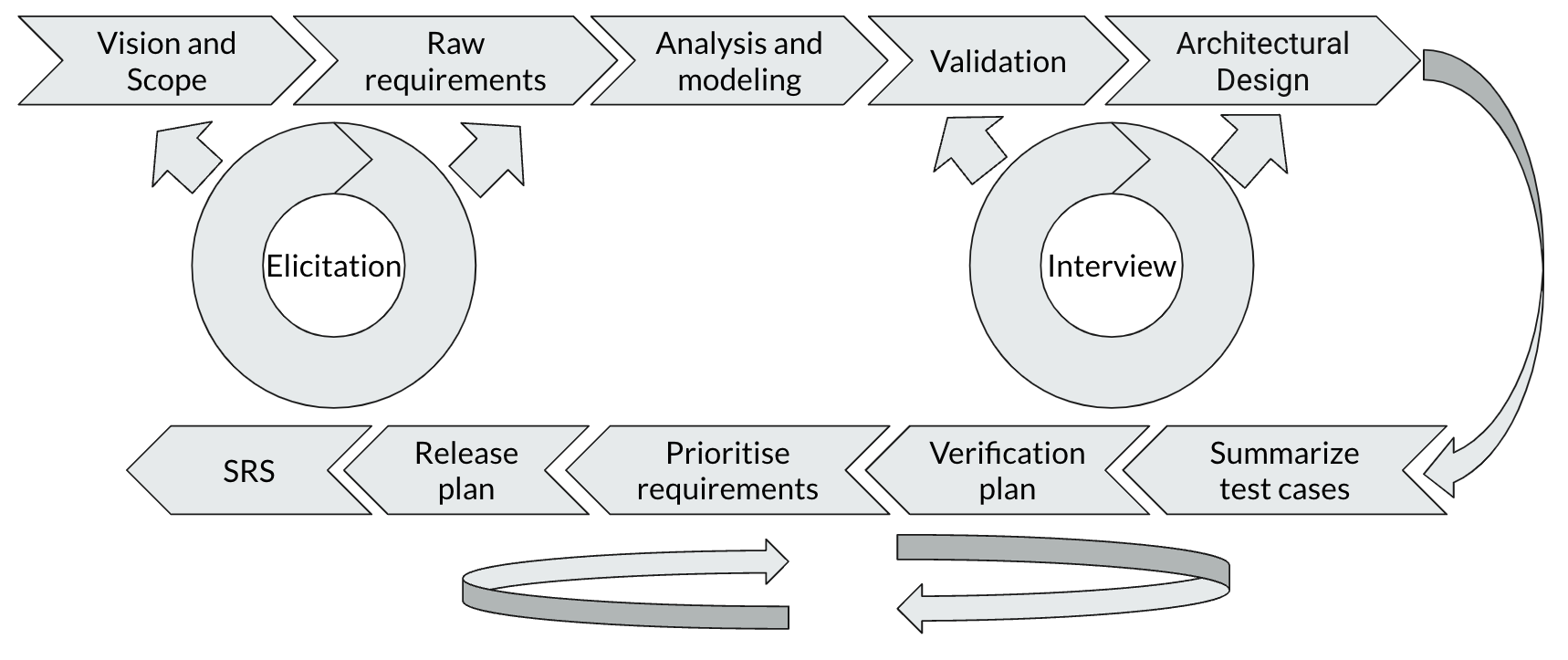
This verification and validation note aims to establish a structured approach for ensuring the Check Inn #1 Hotel Management System meets the defined business requirements, operational goals, and user expectations as outlined in the Vision and Scope Document. It serves to guide the verification and validation processes to confirm that the system's development aligns with the strategic objectives of enhancing guest experiences, streamlining hotel operations, and supporting expansion plans.

**1.2 Scope of the System Under Validation and Verification:**

The system under consideration is the Check Inn #1 Hotel Management System, a comprehensive digital solution designed for a rapidly expanding Canadian chain hotel brand. The system encompasses various modules to automate and integrate hotel operations, including online booking, guest profile management, dynamic pricing, housekeeping scheduling, and data analytics, among others. The system is intended to enhance guest satisfaction, improve operational efficiency, and provide actionable business insights.

**1.3 Elicitation Strategy with Stakeholders**

Validation and verification strategies were elicited with stakeholders (group 4) using the interviewing technique. Architects and QAs from group 4 involved during the elicitation sessions. This document summarizes the outcomes from the elicitation specifically for validation and verification strategies.



**1.3 Definitions and Acronyms:**

- HMS: Hotel Management System

- CRM: Customer Relationship Management

- IT: Information Technology

- UI/UX: User Interface/User Experience

**2. Reference Documents**

This section lists all the documents referenced in this Verification and Validation Note to ensure a thorough understanding and alignment with the Check Inn #1 Hotel Management System's intended design, functionality, and business goals.

**2.1 Vision and Scope Document for Check Inn #1 Hotel Management System**

* **Description:** This document provides a comprehensive overview of the business requirements, opportunities, objectives, success metrics, vision statement, risks, assumptions and dependencies, scope and limitations, stakeholder profiles, project priorities, and deployment considerations for the Check Inn #1 Hotel Management System.
* **Version**: 0.1.0
* **Date**: February 24th, 2024
* **Approval**: Approved by Chun Yang (CEO), with reviews by Yulun Feng (CTO), Sihui He (COO), Yuhan Zhang (CFO), and Yifer Zhang (CMO).

**2.2 Business Requirements Section**

* **Details**: Specific business requirements including background, business opportunities, objectives, and success metrics that the Check Inn #1 Hotel Management System aims to address.

**2.3 Technical Specifications Document**

* **Description**: Details the technical architecture, system components, data models, and integration points of the Check Inn #1 Hotel Management System. This document would provide a deep dive into how the system's features and functionalities are designed and implemented.
* **Note**: The actual document should be referenced here if it exists.

**2.4 User Requirements Document**

* **Description**: Outlines the specific requirements from the perspective of the end-users, including hotel staff and guests. This would typically detail the user stories, use cases, and any specific user interface/experience requirements.
* **Note**: This should be included if it has been prepared.

**2.5 System Design Document**

* **Description**: Provides a comprehensive overview of the system design, including system architecture, database design, interface design, and other critical design elements.
* **Note**: This document should be referenced if available.

**2.6 Compliance and Regulatory Requirements Document**

* **Description**: Outlines the compliance and regulatory standards that the Check Inn #1 Hotel Management System needs to adhere to, including data protection and privacy laws, such as PIPEDA.
* **Note**: Include this document if it has been prepared.

**2.7 Project Plan Document**

* **Description**: Details the project's timeline, milestones, resource allocation, and risk management plan for the development and implementation of the Check Inn #1 Hotel Management System.
* **Note**: Reference this document if it exists.

**3. Verification Process**

The verification process is designed to ensure that the Check Inn #1 Hotel Management System is developed according to the specified requirements and design documents. This section outlines the structured approach for verifying the system throughout the development lifecycle.

**3.1 Planning:**

**Objective**: Establish a comprehensive plan to guide the verification activities, ensuring that each feature and component of the Check Inn #1 Hotel Management System aligns with the documented requirements.

**Activities**: Define the scope of verification, identify the features and components to be verified, allocate resources, and schedule verification activities.

Stakeholders Involved: Include representatives from development, testing, project management, and user groups to ensure a holistic verification approach.

**3.2 Review Process:**

**Objective**: Conduct thorough reviews of the project artifacts, including requirements, design documents, and implementation, to identify discrepancies and ensure alignment with the project's objectives and user expectations.

**3.2.1 Informal Reviews:**

**Description:** Engage in casual review sessions involving project team members and stakeholders to gather feedback and identify potential issues in a less structured format.

**Participants:** Developers, testers, business analysts, and end-users.

**3.2.2 Formal Reviews:**

**Description:** Conduct structured reviews of project deliverables, following a defined process to ensure comprehensive examination and documentation of findings.

**3.3 Defect Management:**

**Objective**: Implement a systematic approach to record, track, and manage defects identified during the verification process.

Defect Tracking System: Utilize a defect tracking system to log, categorize, prioritize, assign, and monitor the resolution of defects.

Resolution and Closure: Ensure that defects are analyzed, resolved, and verified before closure.

**3.3.1 Defect Checklist Sample**

* **Completeness**
  + Are all guest service and operational needs captured?
  + Is missing information clearly marked as "To Be Determined (TBD)"?
  + Are functional requirements such as booking, check-in/out, and billing fully defined?
  + Are interfaces with external systems (e.g., payment gateways, third-party booking sites) defined?
  + Are error handling and data validation requirements documented?
  + Is the implementation priority for critical features like data security and user authentication defined?
  + Is every requirement within the scope of the current release or iteration?
* **Correctness**
  + Are there any conflicting or duplicate requirements regarding guest data handling or room inventory management?
  + Are all requirements written in clear, concise, and unambiguous language?
  + Are error messages for user input in the client interface clear and meaningful?
  + Are solutions and constraints correctly distinguished from actual requirements?
  + Is the system architecture technically feasible within the constraints of the AWS environment?
* **Quality Attributes**
  + Are usability goals for the guest-facing app and staff interface clearly defined?
  + Is system performance, including load times and response rates, specified?
  + Are security measures, such as data encryption and access controls, adequately specified?
  + Are trade-offs between features like booking flexibility and system complexity documented?
  + Are localization issues, such as multi-language support and currency conversion, addressed?
  + Are all quality requirements, like system uptime and backup frequency, measurable?
* **Organization and Traceability**
  + Are requirements organized logically for easy access and understanding?
  + Are references to external documents or systems correctly listed and linked?
  + Is the level of detail consistent across requirements for different system modules?
  + Are requirements correctly labeled and uniquely identifiable?
  + Is each requirement traceable to its origin, such as a specific business need or regulatory requirement?
* **Other Issues**
  + Are there any missing use cases, such as guest amenity booking or special event handling?
  + Are all business rules, including pricing strategies and room availability, defined and linked to the relevant requirements?
  + Are any necessary reporting capabilities for management and operational oversight identified?

**3.4 Verification Entry Criteria**

* **Requirements Documentation**: All functional and non-functional requirements are documented and approved by stakeholders.
* **Development Completion**: The development of features outlined in the requirements document, such as the online booking interface, guest profile management, and dynamic pricing, is complete.
* **Unit Testing**: Individual units or components of the system have been thoroughly tested.
* **Integration Readiness:** All components that need to interact are ready for integration testing.
* **Test Environment**: The test environment is set up and mirrors the production environment as closely as possible.
* **Test Data**: Test data, including simulated guest data and hotel operational data, is prepared and available.
* **Test Cases**: Test cases are written and reviewed, covering all aspects of the requirements, including data acquisition, integrity, retention, and disposal.
* **Compliance Check**: Any compliance requirements are ready to be verified.
* **Training**: Relevant staff and testers are trained on the system's functionality and the verification process.

**3.5 Verification Exit Criteria**

* **Test Completion:** All planned tests have been executed according to the test cases.
* Defect Resolution: All identified defects have been addressed, and necessary corrections have been verified.
* **Requirement Satisfaction**: Every requirement has been checked and verified to work as intended, including those related to security and data management on AWS.
* **Performance Requirements**: The system meets the performance requirements, such as supporting 10,000 simultaneous users and response times under 2 seconds.
* **Security Validation**: All data encryption and access control mechanisms have been validated to function correctly.
* **Documentation**: All verification activities are documented, and reports are generated, detailing the test results and the system's compliance with the requirements.
* **Stakeholder Approval**: Key stakeholders review and approve the verification results.
* **No High-Priority Defects**: There are no outstanding high-priority or critical defects.
* **Risk Assessment**: A final risk assessment has been conducted post-verification to ensure no new risks have been introduced.
* **Backup and Recovery**: Backup and recovery procedures have been tested and confirmed to work as expected.

**4. Validation Process**

The validation process ensures that the Check Inn #1 Hotel Management System fulfills its intended purpose, meeting the user needs and business objectives as defined in the Vision and Scope Document. This section outlines the steps to validate the system against its operational environment and user expectations.

**4.1 Prototyping:**

* **Objective**: Use prototyping to validate requirements and design choices with stakeholders, ensuring the system aligns with user expectations and business needs.
* **Prototyping Activities**: Develop interactive prototypes to simulate system functionality and gather feedback from end-users and stakeholders.
* **Feedback Incorporation:** Refine requirements and system design based on the insights gathered from prototyping sessions.

**4.2 Test Case Development:**

* **Objective**: Develop comprehensive test cases based on the system's requirements to validate its functionality, performance, and usability.
* **Test Case Design**: Create test cases that cover all functional requirements, user scenarios, and boundary conditions.
* **Validation Through Testing**: Execute test cases to validate that the system behaves as expected, meets performance standards, and provides a user-friendly experience.

**4.3 Acceptance Criteria:**

* **Objective**: Define and agree on acceptance criteria with stakeholders to ensure the system meets business objectives and user needs.
* **Criteria Development**: Develop acceptance criteria that are specific, measurable, achievable, relevant, and time-bound.
* **Stakeholder Agreement**: Ensure all key stakeholders review, understand, and agree on the defined acceptance criteria before validation testing.

**4.4 Acceptance Testing:**

* **Objective**: Conduct acceptance testing to validate the system against the agreed acceptance criteria, confirming it is ready for deployment.
* **User Acceptance Testing (UAT)**: Engage end-users in testing the system to validate that it meets their requirements and expectations.
* **Business Acceptance Testing (BAT):** Ensure the system meets the defined business objectives and can support operational processes effectively.
* **Feedback and Refinement:** Address any issues identified during acceptance testing and refine the system as necessary to meet the acceptance criteria.

**4.5 User Training and Documentation:**

* **Objective:** Provide comprehensive training and documentation to ensure that end-users can effectively utilize the system.
* **Training Programs**: Develop and deliver training programs tailored to different user roles within the hotel management context.
* **Documentation**: Provide clear and concise user manuals, online help, and FAQs to support users in leveraging the full capabilities of the system.

**4.6 Post-Deployment Validation:**

* **Objective**: Validate the system's performance and user satisfaction in the live operational environment post-deployment.
* **Monitoring and Feedback**: Continuously monitor system performance and gather user feedback to identify any areas for improvement.
* **Iterative Enhancement**: Implement a process for ongoing evaluation and enhancement based on user feedback and evolving business needs.

**4.7 Validation Entry Criteria**

* **Verification Activities Completed**: All verification activities have been successfully completed, and the exit criteria for verification have been met.
* **System Documentation**: Complete system documentation is available and updated, including user guides, system configuration, and design documents.
* **User Acceptance Testing Preparedness**: The environment for User Acceptance Testing is ready, with all necessary data and tools in place.
* **Training**: End-users and hotel staff have been trained on using the system.
* **Regulatory Compliance**: The system has been checked for compliance with relevant regulations.
* **Stakeholder Review**: Stakeholders have reviewed the system's features against the requirements and have agreed to proceed with UAT.
* **Risk Mitigation**: Any risks identified during the verification process have been mitigated, and a contingency plan is in place.

**4.8 Validation Exit Criteria**

* **User Acceptance**: All critical user groups have accepted the system after UAT, indicating that it meets their needs.
* **Functional Completeness**: Users confirm that all functional requirements, like booking, billing, and customer service features, work as intended.
* **Non-Functional Acceptance**: Non-functional aspects such as performance, usability, and security are validated against user expectations and industry standards.
* **Change Requests**: Any change requests or feedback from User Acceptance Tests have been incorporated, or a plan has been put in place for future releases.
* **Final Documentation**: All documentation has been finalized, including any revisions after User Acceptance Tests.
* **Regulatory Sign-Off:** If applicable, the system has been signed off as compliant by regulatory bodies.
* **Operational Readiness**: The system is confirmed to be ready for deployment, including integration with existing hotel systems, third-party services, and AWS infrastructure.
* **Business Approval**: Business stakeholders have signed off on the system, confirming that it meets the defined business objectives and is ready for go-live.
* **Contingency Planning**: Post-deployment support and contingency plans are established and communicated to all relevant parties.
* **Final Risk Assessment**: A final risk assessment has been conducted, ensuring that all potential risks have been addressed or accepted by the business.

**4.9 Inspection Roles**

* **Author:**Chun Yang (CEO)

**Responsibilities:** Originates the requirements document; in this context, Sihui He as the COO who prepared the document.

**Support:** Yulun Feng (CTO), Yuhan Zhang (CFO), and Yifer Zhang (CMO) as they reviewed the Vision and Scope document.

* **Moderator:** Chun Yang (CEO)

**Responsibilities:** Ensures the inspection process is on track and coordinates activities. This could be, who has approved the document.

* **Reader:** Yulun Feng (CTO), Yuhan Zhang (CFO)

**Responsibilities:** Read the requirements during the meeting to ensure understanding and clarity. The Business Analysts team, assuming they are involved, would take on this role, as they are likely to have a deep understanding of the requirements.

* **Recorder:**Yifer Zhang (CMO)

**Responsibilities:** Documents issues and defects found during the inspection. A member of the QA team or the IT Support Team would be suitable for this role as they will handle the technical aspects of the system's implementation and ensure adherence to compliance and security standards.

**5. Roles and Responsibilities**

This section outlines the key roles and responsibilities associated with the verification and validation processes for the Check Inn #1 Hotel Management System, ensuring clarity and accountability throughout the project.

**5.1 Project Manager**

* Responsibilities:
  + Oversee the overall verification and validation processes.
  + Ensure alignment with the project timeline and objectives.
  + Coordinate communication between all stakeholders involved in the verification and validation processes.

**5.2 Business Analyst**

* Responsibilities:
  + Ensure that the verification and validation activities align with the business requirements and objectives outlined in the Vision and Scope Document.
  + Facilitate the development of acceptance criteria with stakeholders.

**5.3 Quality Assurance (QA) Lead**

* Responsibilities:
  + Develop and implement the verification plan, detailing the approach, tools, and resources required.
  + Lead the QA team in designing and executing test cases, managing defects, and ensuring that the system meets quality standards.

**5.4 Testers**

* Responsibilities:
  + Execute test cases as per the validation plan.
  + Document test results and identify any discrepancies from the expected outcomes.
  + Collaborate with developers to ensure timely resolution of identified issues.

**5.5 Developers**

* Responsibilities:
  + Address issues identified during the verification process.
  + Collaborate with testers to understand defects and implement fixes.
  + Ensure that the system's implementation aligns with the defined requirements and design specifications.

**5.6 End-Users (Hotel Staff and Guests)**

* Responsibilities:
  + Participate in user acceptance testing to validate the system against their requirements and expectations.
  + Provide feedback on the system's usability and functionality.

**5.7 IT Support Team**

* Responsibilities:
  + Support the deployment and integration of the system within the hotel's IT infrastructure.
  + Assist in troubleshooting and resolving any technical issues during the validation process.

**5.8 Data Security Officer**

* Responsibilities:
  + Ensure that the verification and validation processes adhere to data protection and privacy regulations.
  + Verify that security measures are correctly implemented and effective.

**5.9 Stakeholders (Hotel Owners, Investors)**

* Responsibilities:
  + Review and approve the verification and validation plans.
  + Ensure that the system aligns with the strategic objectives and provides the expected business value.

**5.10 External Consultants/Experts (if applicable)**

* Responsibilities:
  + Provide expertise in specific areas such as data analytics, user experience, or regulatory compliance.
  + Assist in the validation of respective system components or features.

By defining these roles and responsibilities, the project team ensures a structured and collaborative approach to verifying and validating the Check Inn #1 Hotel Management System, aligning with the project's goals and stakeholder expectations.

**6. Schedule**

This section outlines the schedule for the verification and validation activities of the Check Inn #1 Hotel Management System, ensuring that each phase aligns with the overall project timeline and key milestones.

**6.1 Verification Schedule:**

* **Planning Phase:**

Duration: January 14 to January 27

Activities: Define verification scope, identify components to be verified, allocate resources, and schedule verification activities.

* **Informal Reviews:**

Duration: January 28 to February 10

Activities: Conduct informal review sessions to gather early feedback on the system's components and documentation.

* **Formal Reviews:**

Duration: February 11 to February 25

Activities: Perform formal reviews of the project deliverables, including requirements, design documents, and code.

* **Defect Management:**

Duration: Ongoing from February 26 to March 15

Activities: Track, manage, and resolve defects identified during the verification process.

* **Exit Criteria Evaluation:**

Duration: March 16 to March 20

Activities: Ensure all exit criteria for verification are met before transitioning to the validation phase.

**6.2 Validation Schedule:**

* **Test Case Development:**

Duration: March 21 to March 30

Activities: Develop detailed test cases based on the system's requirements and acceptance criteria.

* **User Acceptance Testing (UAT):**

Duration: March 31 to April 3

Activities: Engage end-users in testing the system to validate it against user requirements and expectations.

* **Business Acceptance Testing (BAT):**

Duration: March 31 to April 3

Activities: Validate the system against business objectives and ensure it supports operational processes.

* **Training and Documentation:**

Duration: Parallel with acceptance testing, March 31 to April 3

Activities: Develop and deliver training programs for end-users and provide comprehensive system documentation.

* **Post-Deployment Validation:**

Duration: April 3 (Post-Deployment)

Activities: Monitor system performance, gather user feedback, and make necessary adjustments to ensure the system meets business and user needs.

**6.3 Key Milestones:**

Based on the detailed schedule provided earlier, we can identify the following key milestones:

* **Verification Completion:**

Date: March 20

This marks the end of the Exit Criteria Evaluation phase, indicating that all verification activities are complete.

* **Validation Commencement:**

Date: March 21

This date signifies the start of the Test Case Development phase, beginning the validation activities.

* **UAT (User Acceptance Testing) Completion:**

Date: April 3

This is the end date for User Acceptance Testing, indicating that UAT has been completed and the system is validated against user requirements.

* **BAT (Business Acceptance Testing) Completion:**

Date: April 3

Similar to UAT, this date marks the completion of Business Acceptance Testing, confirming the system's alignment with business objectives.

* **System Go-Live:**

Date: April 3

The system goes live on this date, marking its availability for operational use.

* **Post-Deployment Review:**

Date: April 3 (Post-Deployment)

While the specific activities might extend beyond this date, April 3 marks the commencement of post-deployment monitoring and review to ensure the system performs as expected and meets the stakeholders' needs.

This schedule provides a structured timeline for the verification and validation processes, aligning each activity with the project's overall timeline and ensuring that key milestones are identified and adhered to for the successful implementation of the Check Inn #1 Hotel Management System.

**7. Resources**

This section outlines the resources required to carry out the verification and validation activities for the Check Inn #1 Hotel Management System effectively, ensuring that all necessary tools, environments, and personnel are identified and allocated appropriately.

**7.1 Human Resources:**

* **Project Management Team**: Responsible for overseeing the verification and validation processes, ensuring adherence to the schedule, and managing resources.
* **Business Analysts**: Play a key role in aligning the validation activities with the business requirements and objectives.
* **Quality Assurance Team**: Comprises QA leads and testers who will design, execute, and document the test cases and manage the defect tracking process.
* **Development Team**: Developers will address and rectify issues identified during the verification process.
* **End-Users and Stakeholders**: Include hotel staff and management who will participate in user acceptance testing (UAT) and provide feedback on the system's functionality and usability.
* **IT Support Team**: Provides technical support during the validation phase, particularly during UAT and post-deployment.
* **Data Security Officer**: Ensures that the system meets all required data protection and privacy standards PIPEDA throughout the verification and validation processes.

**7.2 Tools and Software:**

* **Test Management Tools**: Software to manage and track test cases, test execution, and defect logging, such as JIRA, TestRail, or similar.
* **Defect Tracking System**: A tool to log, track, and manage defects found during the verification and validation processes.
* **Automated Testing Tools**: (If applicable) Tools like Selenium, QTP, or others for automating functional and regression tests.
* **Performance Testing Tools**: (If applicable) Software to test system performance under various loads, such as LoadRunner or JMeter.
* **Security Testing Tools**: Tools to identify vulnerabilities within the system to ensure data protection and compliance with security standards.

**7.3 Environments:**

* **Development Environment:** Where the system is developed and initial testing is performed.
* **Testing Environment:** A replica of the production environment where the verification and testing occur without affecting the live system.
* **Staging Environment:** Used for performance and security testing, as well as for staging the system for UAT.
* **Production Environment:** The live environment where the system will be deployed after successful validation.

**7.4 Training Materials and Documentation:**

* **Training Programs:** Development and provision of comprehensive training materials for different user groups to facilitate effective use of the system.
* **User Manuals and Help Guides:** Detailed documentation to assist users in navigating and utilizing the system effectively.

**7.5 Financial Resources:**

**Budget Allocation:** Adequate funding must be secured to cover the costs associated with human resources, tools, training, and other expenses related to the verification and validation activities.

By identifying and allocating the necessary resources as outlined above, the project team can ensure a well-organized and effective approach to verifying and validating the Check Inn #1 Hotel Management System, aligning with the project's goals and ensuring readiness for deployment.

**8. Risk Management**

This section outlines the risk management strategies to identify, assess, mitigate, and monitor risks associated with the verification and validation activities of the Check Inn #1 Hotel Management System.

**8.1 Risk Identification:**

* **Integration Risks:** Challenges in integrating the new system with existing hotel infrastructure or third-party services.
* **Data Migration Risks:** Issues related to the accuracy and integrity of data when migrating from existing systems to the new HMS.
* **Technology Adaptation Risks:** The risk that hotel staff or guests may face difficulties adapting to the new system, affecting user satisfaction and system effectiveness.
* **Compliance Risks:** Potential failures to meet regulatory requirements related to data protection, privacy, or industry standards.
* **Scope Creep Risks:** The risk of project scope expansion without corresponding adjustments in time, resources, or budget, potentially impacting the project timeline and success.

**8.2 Risk Assessment:**

* **Likelihood and Impact:** Each identified risk should be evaluated in terms of its likelihood of occurrence and potential impact on the project, categorized as low, medium, or high.
* **Risk Matrix:** Develop a risk matrix to prioritize the risks based on their likelihood and impact, aiding in effective risk management and resource allocation.

**8.3 Risk Mitigation Strategies:**

* **Integration Risks:** Engage in thorough planning and testing of integration points. Establish clear communication channels with third-party service providers to ensure compatibility and smooth integration.
* **Data Migration Risks**: Implement a detailed data migration plan, conduct trial migrations, and validate data integrity at each step to ensure accurate and complete data transfer.
* **Technology Adaptation Risks:** Develop comprehensive training programs and user-friendly documentation to facilitate the adaptation process for all users. Include feedback mechanisms to quickly identify and address usability issues.
* **Compliance Risks**: Stay updated with relevant regulations, conduct regular compliance audits, and implement necessary security measures to ensure ongoing compliance.
* **Scope Creep Risks**: Establish clear project objectives, involve key stakeholders in scope definition, and implement a change control process to manage scope adjustments effectively.

**8.4 Risk Monitoring and Reporting:**

* **Monitoring**: Establish a routine monitoring process to track the status of identified risks and the effectiveness of mitigation strategies.
* **Reporting**: Regularly report the risk status to stakeholders, including any new risks identified, changes in risk assessments, and updates on mitigation efforts.

**8.5 Contingency Planning:**

* **Plan Development:** For high-priority risks, develop contingency plans outlining the steps to be taken if the risk materializes.
* **Resource Allocation:** Ensure that resources are allocated for the implementation of contingency plans if necessary.

By systematically managing risks through identification, assessment, mitigation, monitoring, and planning, the project team can proactively address potential issues, ensuring the successful verification and validation of the Check Inn #1 Hotel Management System.

### **9. Change Management Procedure Overview**

#### **9.1. Originator Submits a Change Request**

* Action: Any project stakeholder identifies a need for change and submits a detailed change request form.

#### **9.2. Submitted Stage**

* Action: An evaluator performs an initial impact analysis to assess the feasibility, implications on scope, timeline, budget, and potential risks.

#### **9.3. Evaluation Stage**

* Decision by Change Control Board (CCB):
  + If Approved: The CCB decides to implement the change, assigns it to a specific release, and appoints a Modifier for executing the change.
  + If Rejected: The change request is officially declined, and the originator is informed of the decision with reasons for rejection.

#### **9.4. Approved Stage**

* Potential Actions:
  + If Change is Canceled: Any work or modifications related to the change are rolled back.
  + Modifier Implements the Change: The assigned Modifier makes the requested changes and then submits them for verification.
  + Direct to Verification (if applicable): In cases where no physical verification is required (e.g., policy changes), the Modifier finalizes and saves the modifications.

#### **9.5. Change Made Stage**

* Potential Outcomes:
  + Change Canceled: If the change is canceled post-implementation, modifications are rolled back.
  + Verification Failed: If the change does not pass verification, it returns to the Approved Stage for reassessment and potential rework.
  + No Verification Required: Modifier finalizes the change.

#### **9.6. Verified Stage**

* Action: A Verifier confirms the success of the change.
  + If Change is Canceled Post-Verification: Roll back the modifications.
  + Successfully Verified: Modifier saves all modified work products, ensuring the change is fully integrated into the project documentation and systems.

#### **9.7. Closed Stage**

* Finalization: The change process is officially closed. Documentation is updated to reflect the change, and relevant stakeholders are informed of the outcome. A review might be conducted to capture lessons learned and insights for future change requests.

By establishing a structured change management process, the project team can ensure that changes are handled systematically, maintaining control over the project's scope, schedule, and quality, and ensuring that the Check Inn #1 Hotel Management System remains aligned with its intended objectives and user requirements.

**10. Approval**

This section outlines the formal approval process for the Verification and Validation Note, ensuring that all key stakeholders agree with the methodologies, schedules, resources, and processes outlined in the document for the Check Inn #1 Hotel Management System.

**10.1 Document Finalization:**

* Review: Before seeking approval, ensure that the Verification and Validation Note is thoroughly reviewed by key team members, including project managers, business analysts, QA leads, and technical leads.
* Revisions: Incorporate any feedback or revisions arising from the review process to ensure the document is accurate, comprehensive, and reflective of the agreed-upon verification and validation strategies.

**10.2 Stakeholder Review:**

* Distribution: Distribute the final draft of the Verification and Validation Note to all relevant stakeholders, including project sponsors, hotel management representatives, IT department heads, and other key personnel involved in the system's development and deployment.
* Feedback: Allow time for stakeholders to review the document and provide feedback or request clarifications on any aspects of the verification and validation processes.

**10.3 Approval Process:**

* Meeting: Organize a formal meeting or series of meetings where stakeholders can discuss the Verification and Validation Note and address any concerns or suggestions.
* Consensus: Aim to reach a consensus on the document, ensuring that all parties agree with the outlined processes, responsibilities, schedules, and resource allocations.
* Sign-off: Obtain formal sign-off from all key stakeholders, which may include project sponsors, the project manager, the QA lead, and representatives from the user community.

**10.4 Documentation of Approval:**

* Approval Record: Document the approval of the Verification and Validation Note, including the names, positions, and signatures of all stakeholders who have signed off on the document.
* Date of Approval: Record the date when the document was approved, which will mark the official go-ahead for the verification and validation activities to commence as planned.

**10.5 Post-Approval Distribution:**

* Distribution: Once approved, distribute the final version of the Verification and Validation Note to all project team members and stakeholders, ensuring that everyone has access to the approved processes and plans.
* Accessibility: Ensure that the document is stored in a central, accessible location where team members can refer to it throughout the verification and validation phases of the project.

**10.6 Revision Control:**

* Updates: In case any significant changes are required after the initial approval, follow a formal change management process to update the Verification and Validation Note and seek re-approval from the necessary stakeholders.
* Version Control: Maintain a version history of the document to track changes and updates over time, ensuring that team members are always working from the latest approved version.

**Appendix. Functional Features Checklist**

### **1. Online Booking and Reservation Management:**

* **Completeness:** The system should allow for real-time visibility of room availability and pricing, and include all necessary functions for guests to complete their bookings online.
* **Correctness:** The feature must accurately reflect room inventory and pricing without discrepancies.
* **Quality Attributes:** The system should be user-friendly, responsive, and reliable.
* **Organization and Traceability:** Requirements should be logically documented and easily traceable to business objectives and user stories.
* **Other Issues:** Ensure that no critical booking processes or flows are missing.

### **2. Check-In/Out and Room Assignment Automation:**

* **Completeness:** Ensure the feature encompasses all scenarios, including early check-ins/late check-outs.
* **Correctness:** Automations should work without errors, assigning rooms according to defined rules.
* **Quality Attributes:** Check-in/out process should be quick and efficient.
* **Organization and Traceability:** The feature should be clearly documented with traceability to the initial requirements.
* **Other Issues:** Verify that all user interface elements for check-in/out are included and operational.

### **3. Guest Profile Management:**

* **Completeness:** The system must store all relevant guest information.
* **Correctness:** Profiles should be updated correctly in real-time.
* **Quality Attributes:** Security of guest data is critical, as is the accuracy of profile management.
* **Organization and Traceability:** Each aspect of profile management should be traceable back to its requirement.
* **Other Issues:** Confirm that the integration of profiles with other system functions is addressed.

### **4. Dynamic Pricing and Revenue Management:**

* **Completeness:** All factors affecting pricing should be included.
* **Correctness:** Pricing calculations must be correct and reflective of real-time data.
* **Quality Attributes:** The system should handle a high volume of data and provide accurate pricing information.
* **Organization and Traceability:** Requirements should be detailed and traceable to specific business rules.
* **Other Issues:** The pricing model should consider exceptions and alternative flows, such as discounts or promotions.

### **5. Housekeeping and Maintenance Scheduling:**

* **Completeness:** Ensure all scheduling functionalities are covered.
* **Correctness:** Schedule updates should reflect accurately and in real-time.
* **Quality Attributes:** Scheduling should be optimized for ease of use and efficiency.
* **Organization and Traceability:** Scheduling rules and logic should be documented and traceable to operational requirements.
* **Other Issues:** Ensure there are no missing user cases, such as handling unscheduled maintenance requests.

### **6. Customer Relationship Management (CRM) Integration:**

* **Completeness:** All desired integration points with CRM should be covered.
* **Correctness:** The exchange of data between systems must be accurate.
* **Quality Attributes:** Integration should be seamless and not degrade system performance.
* **Organization and Traceability:** CRM integration points should be well-documented and maintainable.
* **Other Issues:** Address the handling of CRM system updates or changes to avoid future integration issues.

### **7. Feedback and Review Management:**

* **Completeness:** System should facilitate collection and management of all types of guest feedback.
* **Correctness:** Feedback data must be recorded correctly for accurate analysis.
* **Quality Attributes:** The feedback system should be accessible and easy to use.
* **Organization and Traceability:** Feedback mechanisms should be traceable to user experience requirements.
* **Other Issues:** Ensure all feedback channels are included, such as direct feedback, social media, and review platforms.

### **8. Data Analytics for Customer Insights:**

* **Completeness:** All sources of data necessary for analytics should be included.
* **Correctness:** Analytics should correctly interpret data without misrepresentations.
* **Quality Attributes:** The analytics feature should process data efficiently and present it in a user-friendly format.
* **Organization and Traceability:** Requirements for data analytics should be documented and traceable to data-driven decision-making objectives.
* **Other Issues:** Check for the inclusion of predictive analytics and other advanced data analysis capabilities.

### **9. Basic Guest Profile Management (Initial Release):**

* **Completeness:** Ensure the capture of all necessary guest details for the initial release.
* **Correctness:** Profile entries and updates must reflect accurately.
* **Quality Attributes:** The system should protect guest privacy and ensure data integrity.
* **Organization and Traceability:** Requirements should be clearly outlined and linked to the appropriate use cases.
* **Other Issues:** Ensure no basic functionality for guest profile management is missing.

### **10. Simplified Reservation System (Initial Release):**

* **Completeness:** System should cover essential reservation management tasks.
* **Correctness:** The system must correctly show real-time room availability.
* **Quality Attributes:** User interface should be intuitive and reservation process should be error-free.
* **Organization and Traceability:** Reservation management features should be organized and linked back to the scope of the initial release.
* **Other Issues:** Include safeguards against overbooking and handle edge cases.

### **11. Enhanced Room Services Management (Initial Release):**

* **Completeness:** All room statuses and service requests should be accounted for.
* **Correctness:** Room status updates must be timely and correct.
* **Quality Attributes:** The service request system should be efficient and reliable.
* **Organization and Traceability:** Document the process flow for room services management.
* **Other Issues:** Ensure no room service or maintenance scenarios are missing.

### **12. Basic Billing Module (Initial Release):**

* **Completeness:** Billing module must handle all typical guest charges and payments.
* **Correctness:** Calculations and bill generation must be accurate.
* **Quality Attributes:** Billing process should be straightforward for both staff and guests.
* **Organization and Traceability:** Billing rules should be well-documented and trackable.
* **Other Issues:** Address all necessary reporting capabilities for billing.

### **13. Staff Management System (Initial Release):**

* **Completeness:** Include all aspects of staff scheduling and task management.
* **Correctness:** Staff assignments and updates should be managed without errors.
* **Quality Attributes:** System should be optimized for staff use and coordination.
* **Organization and Traceability:** Each functionality should be clearly documented and traceable to business objectives for staff efficiency.
* **Other Issues:** Ensure integration with other system components, like room status updates, is included.

### **14. Enhanced Online Booking (First Subsequent Release):**

* **Completeness:** Feature should support a full cycle of booking tasks.
* **Correctness:** Online booking system must reflect up-to-date room availability.
* **Quality Attributes:** The online booking experience should be seamless across devices.
* **Organization and Traceability:** Traceability to user experience and marketing objectives.
* **Other Issues:** Verify the handling of high traffic volumes and booking during peak times.

### **15. Advanced Data Analytics (Second Subsequent Release):**

* **Completeness:** Cover all analytics needs, including forecasting and trend analysis.
* **Correctness:** Analytics should provide accurate and actionable insights.
* **Quality Attributes:** System should be able to handle large datasets without performance lag.
* **Organization and Traceability:** Requirements for advanced analytics should be clear and linked to strategic decision-making needs.
* **Other Issues:** Ensure adaptability for future data sources and analytics methodologies.

### **16. Personalized Guest Experiences (Second Subsequent Release):**

* **Completeness:** All elements of guest personalization should be captured.
* **Correctness:** Personalization algorithms must function as intended.
* **Quality Attributes:** Personalization features should enhance the guest experience.
* **Organization and Traceability:** Requirements should be directly linked to guest satisfaction metrics.
* **Other Issues:** The ability to update and modify personalization options should be considered.