

Software Development Lifecycle (SDLC) Overview

Department: R&D and Operations

Model: Agile (Scrum/Kanban Hybrid)

Objective: Define the standard phases and required gates for all software development projects within NexaCore.

1. Phase 1: Planning & Definition

- **Goal:** Define the **Why** and **What**.
- **Activities:** Market research, competitive analysis, gathering stakeholder input.
- **Output:** **Product Requirements Document (PRD)**, signed off by the Product Manager and key stakeholders.

2. Phase 2: Design & Prototyping

- **Goal:** Define the **How** and create a technical blueprint.
- **Activities:** System architecture design, database schema, API design, UX/UI mockups.
- **Output:** **Feature Specification Document**, **Architecture Review Document**, and (for new technology) a **Prototype Evaluation Report (PE-001)**.

3. Phase 3: Implementation (Development)

- **Goal:** Write, test, and integrate the code.
- **Activities:** Agile Sprints (2-week cycles), daily stand-ups, code review (mandatory peer review for all merges), unit testing.
- **Gate:** All code must pass automated security scanning and static analysis before merging to the main branch.

4. Phase 4: Testing & Quality Assurance (QA)

- **Goal:** Validate functionality, performance, and stability.
- **Environments:** Development Integration Staging.
- **Activities:** Regression testing, load testing (for performance-critical features), security penetration testing (for external-facing features).
- **Gate:** QA Lead signs off on the **Release Candidate** after verifying all Acceptance Criteria in the PRD are met and no P1/P0 bugs remain.

5. Phase 5: Deployment & Release

- **Goal:** Deploy the software to the production environment.
- **Activities:** Follow the **Release Management Process**, perform phased/canary deployments, notify stakeholders.

- **Gate:** Change Advisory Board (CAB) approval is required for all non-standard production changes.

6. Phase 6: Maintenance & Iteration

- **Goal:** Monitor performance, fix bugs, and gather user feedback.
- **Activities:** Monitoring SLOs, managing technical debt (using the TD framework), analyzing user feedback (PF-001).
- **Cycle:** Insights gained feed directly back into Phase 1 (Planning) for the next iteration.