SDLC Phases & Documentation Matrix

A good reference matrix mapping documentation, diagrams, and deliverables to each phase of the Software(Product) Development Life Cycle. (with help of AI)

This shows the phases involved in producing a software product, and within each phase, what documents and diagrams need to be created.
So that the output of one phase becomes the input for the next phase.

💡 So instead of diving straight into code, making chaos, skipping the early project stages, or hiring a product designer at first... developers can rely on this!

> This framework supports both traditional waterfall projects and agile MVP/MLP development paths.

Contents

Phase 0 - Ideation & Brainstorming

Goal: Identify real problems, market opportunities, capture raw ideas, and generate initial product concepts.

Artifacts

- Documents:
  - Ideas list
  - Research report

    - Market Validation Report
    - Risk register
    - JTBD
    - High-level user interview
- Diagrams:
    - Mind map

Output

- Documents
- Diagram
- Final validated idea

Phase 1 – Conception & Feasibility

Goal: Determine if the product is viable and decide whether to build.

Artifacts

- Documents:
    - Project charter
    - High-level timeline roadmap
    - Feasibility study report
    - ROI Projection
    - Initial stakeholder register
    - Initial product requirements document (PRD)
    - Business case
- Diagrams:
    - System context digram (L1)
    - High-level feature map
    - Business process flow diagram

Output

- Documents
- Diagrams

Phase 2 – Planning & Requirements Analysis

Goal: Define WHAT to build, priorities and WHAT the product must do.

Artifacts

- Documents:
  - Software requirements specification (SRS) – functional & non-functional
  - Full PRD
  - Performance Requirements Specification (PRS)
  - High-level security requirements
  - User stories with acceptance criteria
  - Requirements traceability matrix (RTM)
- Diagrams:
  - Use case diagrams
  - Container diagram (L2)
  - UI sketches / Lo-Fi Wireframe

Output

- Documents
- Diagrams
- Initial designs

Phase 3 - Design

Goal: Define HOW the product will be built and define architectures.

Artifacts

- Documents:
  - Technical specification document (TSD)
  - System design document
  - Data architecture document
  - Database design document (DDD)
  - UI/UX design specifications
  - Security architecture
  - Deployment architecture
  - Scalability Documentation
  - Architecture decision records (ADRs)
  - API design and specifications
- Diagrams:
  - User flow diagrams
  - Design system / UI Kit
  - Data flow diagrams (L0, L1)
  - Component diagrams
  - Sequence diagrams
  - Entity-relationship diagrams (ERD)

    - Wireframes / mockups
    - Network and infrastructure topology

Output

- Documents
- Diagrams
- Final designs

Phase 4 - Implementation

Goal: Build/Develop the product.

Artifacts

- Documents:
    - Developer guides
    - Code review checklist
    - Dependency update policy
    - DevOps Pipeline Documentation
    - Coding standards
- Diagrams:
    - Updated user flows
    - Updated data flows
    - Code architecture diagrams
    - Deployment topology

Output

- Documents
- Diagrams
- Product source code

Phase 5 - Testing

Goal: Verify the product works correctly. Functionality, performance, & security.

Artifacts

- Documents:
    - Test strategy
    - Test plans
    - Test cases

    - Test results and reports
    - Security test report
- Diagrams:
    - Issue lifecycle flow

Output

- Documents
- Diagrams
- Reports
- Verified product source

Phase 6 – Release & Deployment

Goal: Release/Deploy the product to users.

Artifacts

- Documents:
    - Release process documentation
    - Deployment runbook
    - Versioning scheme
    - Rollback procedure
    - End-user guides
    - Installation guide
    - Administrator guides
    - Changelog
- Diagrams:
    - CI/CD deployment pipeline
    - Environment topology

Output

- Documents
- Diagrams
- Stable product

Phase 7 – Maintenance & Improvement

Goal: Keep system healthy; manage incidents and maintenance.

Artifacts

- Documents:
  - Incident response plan and post-incident report templates
  - Monitoring and observability guides
  - Backup and disaster recovery procedures
  - Vulnerability disclosure policy
  - Operations runbooks
  - Technical debt register
  - Compliance checklist
- Diagrams:
  - Incident response workflow

Output

- Documents
- Diagrams
- Reports

MVP/MLP Path

For fast-paced or resource-constrained projects, focus on these essentials:

Phase	Essential Items
Conception/Feasibility	Project Charter • Short PRD • Stakeholder Register
Planning/Analysis	High-Level SRS • Prioritized Backlog • Acceptance Criteria • Risk Register
Design	TSD + ADR Index • Data Model (ERD) • Deployment Architecture
Implementation	Coding Standards • CI Spec • API Spec • Unit Test Target
Testing	Test Plan • Automated Test Suites • Test Environment Setup
Release/Deployment	Release Checklist • Rollback Plan • Release Notes Template
Maintenance/Improvement	Monitoring Specification • SLOs • Incident Runbook • On-call Rota

Abbreviations & Terms

Abbreviation	Meaning
SRS	Software Requirements Specification
PRD	Product Requirements Document

Abbreviation	Meaning
TSD	Technical Specification Document
ADR	Architecture Decision Record
ERD	Entity-Relationship Diagram
RTM	Requirements Traceability Matrix
CI/CD	Continuous Integration/Continuous Deployment
SLO	Service Level Objective
JTBD	Jobs To Be Done
MVP	Minimum Viable Product
MLP	Minimum Lovable Product
PoC	Proof of Concept
QA	Quality Assurance
UI/UX	User Interface/User Experience

Notes

- **Full matrix:** for regulated/enterprise projects requiring thorough documentation.
- **MVP/MLP path:** for agile/startup environments or initial product versions.

https://github.com/Yousha/PDLC-Phases-Documentation-Matrix/