Form: Layr - High-Level Design Document (Application Creation/Modernization)

I. Project Overview

1. Document Metadata

- (Text Field) Document Title: \[Data Entry Field]

- (Text Field) Document Version: \[Data Entry Field]

- (Date Field) Document Creation Date: \[Data Entry Field]

- (Date Field) Document Last Modified Date: \[Data Entry Field]

- (Text Field) Author(s): \[Data Entry Field]

- (Text Field) Reviewer(s): \[Data Entry Field]

- (Text Area) Project Keywords: \[Data Entry Field] \\*For tagging/search\\*

2. Executive Summary

- (Text Area) Overall Project Summary: \[Data Entry Field] \\*Concise overview\\*

- (Text Area) Key Objectives: \[Data Entry Field] \\*High-level goals\\*

- (Text Area) Target Audience: \[Data Entry Field]

- (Text Area) Key Architectural Decisions: \[Data Entry Field] \\*Summary of choices\\*

- (Text Area) Summary of Expected Benefits: \[Data Entry Field]

3. Scope and Objectives

- (Text Area) Project Description: \[Data Entry Field] \\*Detailed description\\*

- (Text Area) Goals of Project: \[Data Entry Field] \\*Specific, measurable goals\\*

- (Text Area) Scope of Project: \[Data Entry Field] \\*Inclusions and exclusions\\*

- (List) In-Scope Items: \[Repeating Field]

- (List) Out-of-Scope Items: \[Repeating Field]

4. Current State (For Modernization - Skip if New App)

- (Text Area) Description of Existing System: \[Data Entry Field]

- (Text Area) Current Architecture Overview: \[Data Entry Field]

- (List) Technologies Used: \[Repeating Field] \\*With versions if possible\\*

- (List) Pain Points / Limitations: \[Repeating Field] \\*Specific issues\\*

- (Text Area) Current Data Model Overview: \[Data Entry Field]

- (Text Area) Current Integration Landscape: \[Data Entry Field]

5. Target State

- (Text Area) Vision for New/Modernized Application: \[Data Entry Field] \\*Desired future\\*

- (Text Area) Key Success Metrics: \[Data Entry Field] \\*How success is measured\\*

- (Text Area) Target User Personas: \[Data Entry Field]

II. Architecture Design

6. Architectural Style

- (Dropdown) Chosen Style: \[Microservices, Monolithic, Serverless, Event-Driven, etc.]

- (Text Area) Rationale for Choice: \[Data Entry Field] \\*Why this style?\\*

- (Checkbox Group) Architectural Drivers: \[Scalability, Performance, Maintainability, Cost, Time-to-Market, Security, Reliability] \\*Prioritized list\\*

- (Text Area) Diagram (Reference): \[File Upload or Link to Diagram] \\*UML, etc.\\*

7. Domain-Driven Design (DDD)

- (Text Area) Core Domains and Subdomains: \[Data Entry Field]

- (Text Area) Bounded Contexts: \[Data Entry Field] \\*With responsibilities\\*

- (Text Area) Domain Model Highlights: \[Data Entry Field] \\*Key entities, relationships\\*

- (Diagram (Reference): \[File Upload or Link to Diagram] \\*Context Map, etc.\\*

8. Microservices Architecture (If Applicable)

- (List - Section Group - Repeatable)

- Microservice Name: \[Text Field]

- Microservice Responsibility: \[Text Area]

- APIs Exposed: \[Text Area] \\*With specifications if available\\*

- Data Owned: \[Text Area] \\*Data sovereignty\\*

- Communication Pattern: \[Dropdown - REST, gRPC, Message Queue (Kafka, etc.), Sync/Async]

- Technology Choice Rationale: \[Text Area] \\*Language, framework, etc.\\*

- Dependencies (Other Services): \[List]

- Diagram (Reference): \[File Upload or Link] \\*Service Map, etc.\\*

9. API Design

- (Dropdown) API Style: \[RESTful, GraphQL, gRPC]

- (Text Area) API Versioning Strategy: \[Data Entry Field]

- (Text Area) Authentication / Authorization: \[Data Entry Field] \\*Protocols, etc.\\*

- (Text Area) Rate Limiting / Throttling: \[Data Entry Field]

- (Text Area) API Documentation Strategy: \[Data Entry Field] \\*Swagger, etc.\\*

- (Text Area) Error Handling Strategy: \[Data Entry Field]

10. Data Architecture

- (Dropdown - Multi-Select) Data Storage Technologies: \[Relational (PostgreSQL, etc.), NoSQL (MongoDB, Cassandra), Cache (Redis), Object Storage (S3), Graph (Neo4j), etc.]

- (Text Area) Data Model Overview: \[Data Entry Field] \\*Logical model summary\\*

- (Text Area) Data Migration Strategy (Modernization): \[Text Area] \\*Detailed plan\\*

- (Text Area) Data Consistency Requirements: \[Data Entry Field] \\*ACID, eventual consistency\\*

- (Text Area) Data Security and Privacy: \[Data Entry Field] \\*Encryption, masking, etc.\\*

- (Diagram (Reference): \[File Upload or Link] \\*ERD, etc.\\*

11. Data Flow and Integration

- (Text Area) System Boundary Diagram (Reference): \[File Upload or Link]

- (List - Section Group - Repeatable) Integration Point:

- System Name: \[Text Field]

- Purpose of Integration: \[Text Area]

- Data Exchanged: \[Text Area]

- Integration Pattern: \[Dropdown - API (REST, etc.), Messaging (Kafka), File Transfer, Shared Database]

- Technology Used: \[Text Field]

- Security Considerations: \[Text Area]

- Diagram (Reference): \[File Upload or Link] \\*Sequence Diagram, etc.\\*

III. Functional and Non-Functional Requirements

12. Use Cases and Requirements

- (Section Group - Repeatable)

- Requirement ID: \[Text Field] \\*Unique ID\\*

- Requirement Name: \[Text Field] \\*Short, descriptive name\\*

- Description: \[Text Area] \\*Detailed description\\*

- Priority: \[Dropdown - High, Medium, Low]

- User Stories (Links): \[Repeating Field] \\*Link to user story tickets\\*

- Use Case Diagram (Reference): \[File Upload or Link]

- (Checkbox) Implemented:

13. Non-Functional Requirements

- (Section Group - Repeatable)

- Requirement ID: \[Text Field] \\*Unique ID\\*

- Requirement Name: \[Text Field] \\*Short, descriptive name\\*

- Description: \[Text Area] \\*Detailed description\\*

- Category: \[Dropdown - Performance, Scalability, Reliability, Security, Usability, Accessibility, Maintainability]

- Target Value: \[Text Field] \\*Specific, measurable target\\*

- Measurement Method: \[Text Area] \\*How to verify\\*

- (Checkbox) Met:

IV. Technology and Implementation

14. Technology Stack

- (Table - Repeatable Rows)

- Technology Area: \[Dropdown - Language, Framework, Database, Cloud Service, etc.]

- Technology: \[Text Field] \\*e.g., Java, Spring Boot, AWS S3\\*

- Version: \[Text Field] \\*Specific version\\*

- Rationale: \[Text Area] \\*Why this choice?\\*

15. Component Design

- (Section Group - Repeatable)

- Component Name: \[Text Field]

- Component Type: \[Dropdown - Service, Library, UI Component, etc.]

- Responsibility: \[Text Area] \\*What does it do?\\*

- Inputs/Outputs: \[Text Area]

- Dependencies: \[List]

- Diagram (Reference): \[File Upload or Link] \\*Class Diagram, etc.\\*

16. Integration Strategy

- (Text Area) Internal System Integrations: \[Data Entry Field]

- (Text Area) External System Integrations: \[Data Entry Field]

- (Dropdown - Multi-Select) Integration Patterns: \[API (REST, etc.), Messaging (Kafka), File Transfer, Shared Database, Events]

17. Deployment Strategy

- (Dropdown) Deployment Model: \[Cloud (AWS, Azure, GCP), On-Premise, Hybrid]

- (Text Area) Infrastructure as Code (IaC) Tools: \[Data Entry Field] \\*Terraform, etc.\\*

- (Text Area) CI/CD Pipeline: \[Data Entry Field] \\*Tools, process\\*

- (Text Area) Containerization and Orchestration: \[Data Entry Field] \\*Docker, Kubernetes\\*

- (Text Area) Monitoring and Logging: \[Data Entry Field] \\*Tools, strategy\\*

- (Text Area) Release Management Strategy: \[Data Entry Field] \\*Frequency, process\\*

V. Cross-Cutting Concerns

18. AI/ML Considerations (If Applicable)

- (Text Area) AI/ML Use Cases: \[Data Entry Field] \\*Where is AI/ML used?\\*

- (Text Area) Model Training and Deployment: \[Data Entry Field] \\*Process, tools\\*

- (Text Area) Data Requirements for AI/ML: \[Data Entry Field] \\*Volume, type, quality\\*

- (Text Area) AI/ML Model Monitoring: \[Data Entry Field] \\*Drift detection, etc.\\*

- (Text Area) Ethical Considerations: \[Data Entry Field] \\*Bias, fairness, etc.\\*

19. Security and Access Controls

- (Text Area) Authentication and Authorization: \[Data Entry Field] \\*Protocols, identity providers\\*

- (Text Area) Data Encryption: \[Data Entry Field] \\*At rest, in transit\\*

- (Text Area) Vulnerability Management: \[Data Entry Field] \\*Scanning, patching\\*

- (Text Area) Compliance (GDPR, etc.): \[Data Entry Field] \\*Specific regulations\\*

- (Text Area) Security Testing: \[Data Entry Field] \\*SAST, DAST, etc.\\*

20. Scalability and Performance

- (Text Area) Scalability Strategy: \[Data Entry Field] \\*Horizontal, vertical scaling\\*

- (Text Area) Performance Optimization: \[Data Entry Field] \\*Techniques, tools\\*

- (Text Area) Caching Strategy: \[Data Entry Field] \\*Levels, technologies\\*

- (Text Area) Load Testing Strategy: \[Data Entry Field]

21. Reliability and Availability

- (Text Area) High Availability Design: \[Data Entry Field] \\*Redundancy, failover\\*

- (Text Area) Disaster Recovery Plan: \[Data Entry Field] \\*RPO, RTO\\*

- (Text Area) Monitoring and Alerting: \[Data Entry Field] \\*Tools, thresholds\\*

- (Text Area) Backup and Restore Strategy: \[Data Entry Field]

22. Resiliency and Disaster Recovery

- (Text Area) Resiliency Patterns: \[Circuit Breaker, Retry, etc.]

- (Text Area) Failover Strategy: \[Active-Active, Active-Passive]

- (Text Area) Disaster Recovery Sites: \[Primary, Secondary]

- (Text Area) Recovery Time Objectives (RTO): \[Data Entry Field]

- (Text Area) Recovery Point Objectives (RPO): \[Data Entry Field]

- (Text Area) Disaster Recovery Testing: \[Frequency, Types of Tests]

23. Compliance and Regulatory

- (Text Area) Data Privacy Regulations: \[GDPR, CCPA, etc.]

- (Text Area) Industry-Specific Regulations: \[HIPAA, PCI DSS, etc.]

- (Text Area) Accessibility Standards: \[WCAG]

- (Text Area) Audit and Logging Requirements:

24. Risks and Mitigations

- (Table - Repeatable Rows)

- Risk Description: \[Text Area]

- Likelihood: \[Dropdown - High, Medium, Low]

- Impact: \[Dropdown - High, Medium, Low]

- Mitigation Strategy: \[Text Area]

- Contingency Plan: \[Text Area]

- Owner: \[Text Field]

VI. Conclusion and Next Steps

25. Summary

- (Text Area) Project Summary: \[Data Entry Field] \\*Concise recap\\*

26. Next Steps

- (List) Action Items: \[Repeating Field] \\*Specific tasks\\*

- (List) Open Issues: \[Repeating Field] \\*Unresolved questions\\*

27. References and Appendices

- (List) References: \[Repeating Field] \\*Links to other docs\\*

- (List) Appendices: \[Repeating Field] \\*Supporting material - diagrams, etc.\\*