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## 1 System Overview - Template

### 1.1 Introduction

This document provides a high-level overview of the system, establishing the context for all subsequent requirements. It serves as a foundation for understanding the system's purpose, boundaries, and key components.

### 1.2 System Purpose and Scope

#### 1.2.a System Purpose

| Aspect                | Description                                                   |
|-----------------------|---------------------------------------------------------------|
| Primary Goal          | The main problem the system aims to solve                     |
| Target Users          | The primary user groups the system is designed for            |
| Key Value Proposition | The unique value the system provides compared to alternatives |
| Business Objectives   | The business goals the system helps achieve                   |

### 1.2.b Scope Definition

| In Scope             | Out of Scope             |
|----------------------|--------------------------|
| Core functionality A | Extended functionality X |
| Core functionality B | Extended functionality Y |
| Core functionality C | Extended functionality Z |

### 1.2.c Example System Purpose

| Aspect                | Description                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Goal          | To provide a secure and user-friendly mobile application for tracking personal expenses and managing budgets                                |
| Target Users          | Individual consumers, households, small business owners                                                                                     |
| Key Value Proposition | Combines expense tracking, budget planning, and financial insights in a privacy-focused offline-first approach                              |
| Business Objectives   | Establish market presence in personal finance apps, generate revenue through premium features, build user base of 100,000 within first year |

## 1.3 System Context

### 1.3.a Context Diagram (UML)

*[Insert a UML context diagram showing the system and its interactions with external entities here. This should follow UML notation standards with clear system boundaries and relationship indicators.]*

### 1.3.b External Systems and Interfaces

| External System | Description                   | Interface Type       | Data Exchanged                |
|-----------------|-------------------------------|----------------------|-------------------------------|
| System A        | Brief description of System A | API/File/Manual/etc. | Key data elements transferred |
| System B        | Brief description of System B | API/File/Manual/etc. | Key data elements transferred |
| System C        | Brief description of System C | API/File/Manual/etc. | Key data elements transferred |

### 1.3.c User Types and Roles

| User Type | Description           | Primary Goals                | Key Permissions |
|-----------|-----------------------|------------------------------|-----------------|
| Role A    | Description of Role A | Main goals of this user type | Key permissions |
| Role B    | Description of Role B | Main goals of this user type | Key permissions |
| Role C    | Description of Role C | Main goals of this user type | Key permissions |

### 1.3.d Example External Systems Table

| External System           | Description                                   | Interface Type | Data Exchanged                        |
|---------------------------|-----------------------------------------------|----------------|---------------------------------------|
| Banking API               | Connects to user's bank accounts              | RESTful API    | Transaction history, account balances |
| Cloud Storage             | Stores encrypted backups of user data         | Cloud API      | Encrypted database backups            |
| Currency Exchange Service | Provides up-to-date currency conversion rates | RESTful API    | Currency rates, conversion formulas   |

## 1.4 System Architecture

### 1.4.a High-Level Architecture (UML)

*[Insert a UML component or package diagram showing the main components of the system here. Follow UML notation for components, interfaces, and dependencies.]*

### 1.4.b Key Components

| Component   | Purpose                | Key Functions | Related Components           |
|-------------|------------------------|---------------|------------------------------|
| Component A | Purpose of Component A | Key functions | Components it interacts with |
| Component B | Purpose of Component B | Key functions | Components it interacts with |
| Component C | Purpose of Component C | Key functions | Components it interacts with |

### 1.4.c Data Flow Diagram

*[Insert a data flow diagram showing how information moves through the system here. Note: Data Flow Diagrams typically use their own notation rather than UML.]*

### 1.4.d Example Component Table

| Component             | Purpose                         | Key Functions                                           | Related Components            |
|-----------------------|---------------------------------|---------------------------------------------------------|-------------------------------|
| Authentication Module | Manage user identity and access | Login, registration, password reset, session management | User Profile, Security Module |

| Component           | Purpose                                  | Key Functions                                                     | Related Components                       |
|---------------------|------------------------------------------|-------------------------------------------------------------------|------------------------------------------|
| Transaction Manager | Process and store financial transactions | Create, read, update, delete transactions; categorization; search | Database, Reporting Module               |
| Budget Planner      | Create and manage user budgets           | Set budget goals, track progress, alert on thresholds             | Transaction Manager, Notification System |

## 1.5 Technical Environment

### 1.5.a Technology Stack

| Layer          | Technologies        | Rationale                 |
|----------------|---------------------|---------------------------|
| Frontend       | [List technologies] | Justification for choices |
| Backend        | [List technologies] | Justification for choices |
| Database       | [List technologies] | Justification for choices |
| Infrastructure | [List technologies] | Justification for choices |

### 1.5.b Development Tools and Environments

| Environment | Purpose                    | Configuration         | Access        |
|-------------|----------------------------|-----------------------|---------------|
| Development | Developer work environment | Configuration details | Access method |
| Testing     | Testing environment        | Configuration details | Access method |
| Staging     | Pre-production validation  | Configuration details | Access method |
| Production  | Live environment           | Configuration details | Access method |

### 1.5.c Example Technology Stack

| Layer    | Technologies                                | Rationale                                                         |
|----------|---------------------------------------------|-------------------------------------------------------------------|
| Frontend | Kotlin, Jetpack Compose, Material Design    | Native performance, modern UI toolkit, consistent design language |
| Backend  | Kotlin Coroutines, Room Persistence Library | Asynchronous programming,                                         |

| Layer           | Technologies                                            | Rationale                                                         |
|-----------------|---------------------------------------------------------|-------------------------------------------------------------------|
|                 |                                                         | efficient local data storage                                      |
| Data-base       | SQLite, Encrypted Room Database                         | Reliable local storage with security for sensitive financial data |
| Infra-structure | Firebase (Analytics, Crashlytics), Google Play Services | Robust monitoring, crash reporting, and distribution platform     |

## 1.6 System Constraints and Assumptions

### 1.6.a Constraints

| Constraint Type | Description             | Impact                    |
|-----------------|-------------------------|---------------------------|
| Technical       | Technical limitations   | How it affects the system |
| Business        | Business limitations    | How it affects the system |
| Regulatory      | Regulatory requirements | How it affects the system |
| Resource        | Resource limitations    | How it affects the system |

### 1.6.b Assumptions

| ID | Assumption        | Validation Method        | Risk if Invalid                     |
|----|-------------------|--------------------------|-------------------------------------|
| A1 | Stated assumption | How it will be validated | Consequences if assumption is wrong |
| A2 | Stated assumption | How it will be validated | Consequences if assumption is wrong |
| A3 | Stated assumption | How it will be validated | Consequences if assumption is wrong |

### 1.6.c Example Constraints Table

| Constraint Type | Description                             | Impact                                                            |
|-----------------|-----------------------------------------|-------------------------------------------------------------------|
| Technical       | App must function offline               | Requires robust local data storage and sync resolution strategies |
| Business        | Initial release must be within 6 months | Limits scope of first version, requires priori-                   |

| Constraint Type | Description                    | Impact                                                                                | Stakeholder Group | Representatives       | Primary Concerns           | Engagement Method        |
|-----------------|--------------------------------|---------------------------------------------------------------------------------------|-------------------|-----------------------|----------------------------|--------------------------|
| Regulatory      | Must comply with GDPR and CCPA | Requiring core features                                                               | Group B           | Named representatives | Key interests and concerns | How they will be engaged |
|                 |                                | Requires implementing data portability, right to be forgotten, and consent management | Group C           | Named representatives | Key interests and concerns | How they will be engaged |

### 1.7.a Example Stakeholders Table

| Stakeholder Group  | Representatives                     | Primary Concerns                             | Engagement Method                       |
|--------------------|-------------------------------------|----------------------------------------------|-----------------------------------------|
| Executive Sponsors | Sarah Chen (CEO), David Park (CTO)  | ROI, market positioning, timeline            | Bi-weekly steering committee meetings   |
| Development Team   | Tech Lead, Senior Devs, Junior Devs | Technical feasibility, quality, architecture | Daily standups, sprint planning         |
| End Users          | Focus group, beta testers           | Usability, performance, value                | User testing sessions, feedback surveys |
| Compliance         | Legal Team, Data Protection Officer | Regulatory compliance, data security         | Monthly compliance reviews              |

## 1.7 Key Stakeholders

| Stakeholder Group | Representatives       | Primary Concerns           | Engagement Method        |
|-------------------|-----------------------|----------------------------|--------------------------|
| Group A           | Named representatives | Key interests and concerns | How they will be engaged |

1.8 Visualization Recommendations

Effective system overviews benefit significantly from visual representations. Consider including:

- 1. **UML System Context Diagram:** Shows the system and its relationship to external entities using standard UML notation
- 2. **UML Component Diagram:** Illustrates major system components and their relationships using UML component notation
- 3. **UML Class Diagram:** Shows key data structures and their relationships (when appropriate for the overview)
- 4. **UML Sequence Diagrams:** Illustrates key interactions between components for critical processes
- 5. **Data Flow Diagram:** Depicts how information moves through the system (non-UML notation)
- 6. **UML Deployment Diagram:** Shows how system components are deployed on hardware infrastructure
- 7. **User Journey Maps:** Visualizes how users interact with the system to achieve goals (non-UML notation)

1.8.a UML Diagram Types and Usage

| UML Type | Diagram           | Purpose                              | When to Use                    |
|----------|-------------------|--------------------------------------|--------------------------------|
|          | Context Diagram   | High-level view of system boundaries | Early planning to define scope |
|          | Component Diagram | Shows components and interfaces      | System architecture definition |

| UML Type | Diagram            | Purpose                                | When to Use                     |
|----------|--------------------|----------------------------------------|---------------------------------|
|          | Class Diagram      | Shows data structure and relationships | Data model definition           |
|          | Sequence Diagram   | Shows interactions between objects     | Process and workflow definition |
|          | State Diagram      | Shows states and transitions           | Complex state-based behavior    |
|          | Deployment Diagram | Shows physical deployment              | Infrastructure planning         |

1.8.b Tools for Creating Visualizations

| Tool       | Best For                 | UML Support      | Key Features                                          |
|------------|--------------------------|------------------|-------------------------------------------------------|
| Draw.io    | General purpose diagrams | Full UML support | Free, browser-based, multiple export formats          |
| Lucidchart | Collaborative diagrams   | Full UML support | Real-time collaboration, integration with other tools |

| Tool              | Best For                        | UML Support                | Key Features                                            |
|-------------------|---------------------------------|----------------------------|---------------------------------------------------------|
|                   | gram-ming                       |                            |                                                         |
| Plan-tUML         | Code-based UML diagrams         | Complete UML standard      | Text-based diagram generation, version control friendly |
| En-Ar-chi-itect   | Professional UML modeling       | Comprehensive UML standard | Complete modeling environment, code generation          |
| Vi-sual Pa-radigm | UML and business modeling       | Full UML support           | Integration with development environments               |
| Mi-ro             | Collaborative visual planning   | Basic UML support          | Team collaboration, templates for system design         |
| Fig-ma            | UI/UX wireframes and prototypes | Limited UML support        | Design collaboration, interactive prototypes            |

## 1.9 Integration with Requirements

This system overview document serves as a foundation for more detailed requirements. Cross-reference this overview when creating:

1. **Epics and Features:** Ensure they align with the system components and architecture
2. **User Stories:** Verify they serve the identified user types and roles
3. **Technical Requirements:** Confirm compatibility with the technology stack and constraints
4. **Non-functional Requirements:** Validate against system constraints and technical environment
5. **Acceptance Criteria:** Check against assumptions and system boundaries

## 1.10 System Evolution

### 1.10.a Current State

Brief description of the system’s current state (if applicable), including any legacy systems being replaced or enhanced.

### 1.10.b Future Vision

Short-term and long-term vision for how the system will evolve beyond the current implementation scope.

### 1.10.c Phasing Strategy

| Phase   | Time-frame | Key Deliverables         | Strategic Objectives   |
|---------|------------|--------------------------|------------------------|
| Phase 1 | Time-frame | Core deliverables        | Key strategic goals    |
| Phase 2 | Time-frame | Next set of deliverables | Next strategic goals   |
| Phase 3 | Time-frame | Future deliverables      | Future strategic goals |

### 1.11 Document Control

| Version | Date       | Author        | Description of Changes   |
|---------|------------|---------------|--------------------------|
| 0.1     | YYYY-MM-DD | [Author Name] | Initial draft            |
| 0.2     | YYYY-MM-DD | [Author Name] | [Description of changes] |
| 1.0     | YYYY-MM-DD | [Author Name] | Approved version         |

### 1.12 Appendix: Glossary

| Term   | Definition   | Context          |
|--------|--------------|------------------|
| [Term] | [Definition] | [Where/how used] |
| [Term] | [Definition] | [Where/how used] |
| [Term] | [Definition] | [Where/how used] |

### 1.13 Appendix: References

| Reference ID | Document Name   | Version   | Location   |
|--------------|-----------------|-----------|------------|
| REF-001      | [Document Name] | [Version] | [Location] |
| REF-002      | [Document Name] | [Version] | [Location] |
| REF-003      | [Document Name] | [Version] | [Location] |