Product Requirements Document (PRD)

AI-Powered Personal Productivity System

1.1 Executive Summary

Product Vision

A free, self-hosted, AI-powered productivity system that rivals commercial solutions like Notion while maintaining zero operational costs. The system emphasizes local-first architecture, intelligent automation through local LLMs, and seamless integration with Claude via browser-based connectors.

Key Differentiators

- **Zero Cost**: No subscription fees, API costs, or hosting charges
- **Privacy-First**: All data encrypted client-side, local LLM processing
- **Claude Integration**: Direct manipulation through chat interface without API costs
- **Cross-Platform**: Native-like experience on iOS, Android, Mac, and Windows
- **Offline-First**: Full functionality without internet connection

1.2 Stakeholders

Role	Responsibilities	Success Criteria
Product Owner	Feature prioritization, requirements validation	User adoption, feature completion
Lead Developer	Technical architecture, code quality standards	System performance, maintainability
Frontend Developer	UI/UX implementation, PWA optimization	Responsive design, 60fps animations
Backend Developer	API design, database optimization, sync logic	<100ms response time, data integrity
AI/ML Engineer	Local LLM integration, prompt engineering	Task parsing accuracy >95%
DevOps Engineer	CI/CD pipeline, deployment automation	Zero-downtime deployments
QA Engineer	Test automation, cross-platform testing	99.9% uptime, <0.1% error rate

1.3 User Personas

Primary Persona: Knowledge Worker "Alex"

- **Demographics**: 25-45 years old, tech-savvy professional
- **Goals**: Manage complex projects, automate repetitive tasks

- **Pain Points**: Expensive subscriptions, data privacy concerns

- **Technical Skill**: Comfortable with moderate technical setup

- **Devices**: iPhone 14, iPad Pro, MacBook Pro, Windows desktop

- **Usage Pattern**: 50+ tasks daily, 10+ projects simultaneously

Secondary Persona: Student "Jordan"

- **Demographics**: 18-25 years old, budget-conscious learner

- **Goals**: Track assignments, manage study schedule

- **Pain Points**: Cannot afford premium tools, needs offline access

- **Technical Skill**: Basic technical knowledge

- **Devices**: Android phone, Windows laptop

- **Usage Pattern**: 20-30 tasks daily, semester-based projects

1.4 Functional Requirements

Core Features

F1: Task Management

ID	Requirement	Priority	Acceptance Criteria
F1.1	Create tasks via natural language input	P0	Parse title, date, priority with 95% accuracy
F1.2	Rich text task descriptions with Notion-like blocks	P0	Support headings, lists, code, tables, toggles
F1.3	Task dependencies and subtasks	P0	Prevent circular dependencies, auto-cascade updates
F1.4	Bulk operations (select, move, delete, update)	P1	Process 100+ tasks in <1 second
F1.5	Task templates for common workflows	P1	Save/load templates with variable substitution
F1.6	File attachments via URL references	P2	Store URLs only, preview on demand

F2: Scheduling & Automation

ID	Requirement	Priority	Acceptance Criteria
F2.1	Weekly recurring tasks with patterns	P0	Support complex patterns (e.g., "every 2nd Tuesday")
F2.2	Intelligent scheduling based on priorities	P0	Auto-schedule considering deadlines and capacity
F2.3	Time blocking with calendar integration	P1	Sync with Google Calendar, iCal
F2.4	Automated task creation from triggers	P1	Event-based task generation
F2.5	Smart notifications and reminders	P1	Context-aware timing, bundled notifications
F2.6	Workload balancing and capacity planning	P2	Visual capacity indicators, overload warnings

F3: AI Integration

ID	Requirement	Priority	Acceptance Criteria
F3.1	Local LLM for task parsing	P0	<500ms response time, offline capable
F3.2	Priority scoring algorithm	P0	Consider urgency, importance, dependencies
F3.3	Claude connector for advanced operations	P0	Export/import state, execute commands
F3.4	Intelligent task suggestions	P1	Based on patterns and history
F3.5	Natural language queries	P1	"What should I work on today?"
F3.6	Automated task breakdown	P2	Split large tasks into actionable steps

F4: Data & Sync

ID	Requirement	Priority	Acceptance Criteria
F4.1	Client-side encryption (AES-256-GCM)	P0	Zero-knowledge architecture
F4.2	Real-time sync across devices	P0	<1 second sync latency
F4.3	Offline-first with conflict resolution	P0	CRDT-based merge strategy
F4.4	Automatic backups	P1	Daily encrypted backups
F4.5	Import/export (JSON, CSV, Markdown)	P1	Preserve all metadata
F4.6	Version history for tasks	P2	30-day history retention

F5: User Interface

ID	Requirement	Priority	Acceptance Criteria
F5.1	Responsive design for all screen sizes	P0	320px to 4K displays
F5.2	Touch-optimized for mobile/tablet	P0	Swipe gestures, touch targets ≥44px
F5.3	Keyboard shortcuts for power users	P0	Customizable key bindings
F5.4	Dark/light theme with system sync	P1	Automatic theme switching
F5.5	Customizable views (Kanban, List, Calendar)	P1	Drag-drop between views
F5.6	Focus mode for distraction-free work	P2	Hide UI elements, zen mode

1.5 Non-Functional Requirements

Performance Requirements

Metric	Target	Measurement Method
Page Load Time	<2s on 3G	Lighthouse audit
Time to Interactive	<3s	Web Vitals
API Response Time	<100ms p95	Server monitoring
Local LLM Inference	<500ms	Performance API
Sync Latency	<1s	End-to-end timing
Memory Usage	<200MB	Chrome DevTools
CPU Usage	<30% idle	Performance monitor

Reliability Requirements

Metric	Target	Measurement Method
Uptime	99.9%	Status monitoring
Data Durability	99.999999%	Backup verification
Sync Success Rate	99.95%	Error tracking
Offline Functionality	100% core features	E2E testing

Security Requirements

Requirement	Implementation	Validation
Encryption at Rest	AES-256-GCM	Cryptographic audit
Encryption in Transit	TLS 1.3	SSL Labs A+ rating
Authentication	JWT with refresh tokens	Token validation
Authorization	Role-based access control	Permission matrix

Requirement	Implementation	Validation
Password Policy	Min 12 chars, complexity rules	Entropy calculation
Session Management	24h timeout, secure cookies	Security headers

Compatibility Requirements

Platform	Version	Features
Chrome	90+	Full support
Safari	14+	Full support
Firefox	88+	Full support
Edge	90+	Full support
iOS Safari	14+	PWA support
Android Chrome	90+	PWA support

Document Version: 1.0.0

Last Updated: January 2024

Next Review: February 2024