PRODUCT REQUIREMENTS DOCUMENT

BudgetBot

AI-Powered Personal Finance Assistant

Field	Value
Product Name	BudgetBot
Version	1.0
Created Date	December 2, 2025
Status	Draft

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1. Executive Summary

1.1 Product Overview

BudgetBot is a next-generation personal finance assistant that combines traditional money management with cutting-edge AI capabilities. Unlike existing finance apps that simply track spending, BudgetBot predicts financial futures, understands emotional spending patterns, and actively works to improve users' financial health through autonomous actions and personalized micro-interventions.

1.2 Problem Statement

Current personal finance apps suffer from:

- **Reactive, not proactive:** Only show what happened, not what will happen
- **One-size-fits-all:** Generic advice that doesn't account for individual behavior
- **Isolation:** Focus on individual finances, ignoring family dynamics
- **No emotional intelligence:** Ignore the psychological aspects of spending
- **Passive:** Require users to take all actions manually
- **Environmental blindness:** No connection between spending and sustainability

1.3 Solution

BudgetBot addresses these gaps by offering:

- Predictive AI that forecasts financial crises before they happen
- Emotional intelligence that understands the "why" behind spending
- Autonomous agents that negotiate bills and optimize finances
- Family-aware financial planning
- Gamified micro-actions for sustainable habit building
- Environmental impact tracking for conscious consumption

1.4 Unique Value Proposition

"BudgetBot doesn't just track your money—it understands you, predicts your future, and actively fights for your financial wellbeing."

2. Product Vision & Goals

2.1 Vision Statement

To become the world's most intelligent and proactive personal finance companion that transforms how people relate to money through AI-driven insights, predictions, and autonomous financial optimization.

2.2 Mission Statement

Empower every individual and family to achieve financial freedom through personalized AI assistance that understands their unique behaviors, predicts their needs, and takes action on their behalf.

2.3 Strategic Goals

Goal	Description	Success Metric
G1	Become the #1 AI-first finance app	1M+ downloads in Year 1
G2	Save users real money	Average $500/year savings per user
G3	Prevent financial crises	80% of predicted crises avoided
G4	Build lasting habits	60% daily active user rate
G5	Create environmental impact	10,000 tons CO2 awareness generated

2.4 Core Principles

1. **Privacy First:** User data is sacred; we protect it fiercely
2. **Proactive Value:** Don't wait for users to ask—anticipate needs
3. **Simplicity:** Complex AI, simple experience
4. **Actionable:** Every insight must lead to a clear action
5. **Inclusive:** Financial wellness for all income levels

3. Target Audience

3.1 Primary Personas

Persona 1: "Struggling Sarah" (Primary)

Attribute	Details
Age	25-35
Income	$35,000 - $60,000
Pain Points	Lives paycheck to paycheck, unexpected expenses cause stress, emotional spending
Goals	Build emergency fund, stop overdrafts, understand spending
Tech Comfort	High (smartphone native)
Key Features	Predictive Cashflow, Emotional Spending AI, Micro-Task Builder

Persona 2: "Optimizing Omar" (Secondary)

Attribute	Details
Age	30-45
Income	$80,000 - $150,000
Pain Points	Too many subscriptions, wants to optimize, interested in investing
Goals	Maximize savings, smart investments, reduce waste
Tech Comfort	Very High
Key Features	Subscription Decay, Bill Negotiator, Investment Guidance, Financial DNA

Persona 3: "Family-Focused Fiona" (Tertiary)

Attribute	Details
Age	35-50
Income	$100,000+ (household)
Pain Points	Managing family finances, teaching kids about money, planning for future
Goals	Family financial alignment, college savings, inheritance planning

Tech Comfort	Medium-High
Key Features	Family Financial Mesh, Digital Twin, Carbon Wallet

3.2 Market Size

Metric	Value
TAM (Total Addressable Market)	$1.5 Trillion (Global Personal Finance)
SAM (Serviceable Addressable Market)	$50 Billion (Digital Finance Apps)
SOM (Serviceable Obtainable Market)	$500 Million (AI Finance Apps)

4. Feature Specifications

4.1 Core Features (Foundation)

Feature F1: Expense Tracking

F1.1 Automatic Bank Categorization

Attribute	Specification
Priority	P0 (Critical)
Description	Automatically import and categorize transactions from linked bank accounts
User Story	As a user, I want my bank transactions automatically imported and categorized so I don't have to manu

Functional Requirements:

- FR1.1.1: Connect to 10,000+ financial institutions via Plaid API
- FR1.1.2: Auto-sync transactions every 4 hours (configurable)
- FR1.1.3: AI-powered categorization with 95%+ accuracy
- FR1.1.4: Support for multiple accounts (checking, savings, credit cards)
- FR1.1.5: Historical transaction import (up to 24 months)
- FR1.1.6: User can override/correct categories (improves AI)
- FR1.1.7: Custom category creation

F1.2 Manual Transaction Entry

Attribute	Specification
Priority	P0 (Critical)
Description	Allow users to manually log cash transactions and expenses
User Story	As a user, I want to manually log cash purchases so my budget includes all spending

Feature F2: Budgeting

F2.1 Custom Budget Creation

Attribute	Specification
Priority	P0 (Critical)
Description	Users can create spending limits for any category

User Story	As a user, I want to set spending limits for categories so I can control my spending

Functional Requirements:

- FR2.1.1: Set monthly, weekly, or custom period budgets
- FR2.1.2: Budget by category or merchant
- FR2.1.3: Rollover unused budget (optional)
- FR2.1.4: AI-suggested budgets based on income and history
- FR2.1.5: Shared budgets for families
- FR2.1.6: Budget templates (50/30/20 rule, etc.)

Feature F3: Personalized AI Insights

F3.1 Spending Pattern Analysis

Attribute	Specification
Priority	P0 (Critical)
Description	AI analyzes spending patterns and provides actionable insights
User Story	As a user, I want to understand my spending patterns so I can make better decisions

4.2 Innovative Features (Differentiators)

Feature	Priority	Description
F5: Emotional Spending AI	P1	Detect emotional states and correlate with spending patterns
F6: Financial Digital Twin	P1	AI simulation of user's financial future based on current behaviors
F7: AI Bill Negotiator Bot	P2	Autonomous AI agent that negotiates bills and subscriptions
F8: Spending DNA	P2	Create unique behavioral pattern for personalization and fraud detection
F9: Predictive Cashflow Crisis Alert	P0	Predict future cash shortfalls before they happen
F10: Carbon Wallet	P2	Track environmental impact of spending
F11: Family Financial Mesh	P2	Cross-generational family financial planning
F12: Micro-Task Wealth Builder	P1	Gamified daily financial tasks for habit building
F13: Local Economic Intelligence	P3	Hyperlocal price tracking and deal alerts
F14: Subscription Decay Detector	P1	Detect subscriptions user pays for but doesn't use

5. Technical Architecture

5.1 System Overview

The BudgetBot architecture consists of five main layers: Client Layer, Service Layer, AI Layer, Data Layer, and External Integrations. The system is designed for scalability, security, and real-time performance.

- **Client Layer:** iOS App (Swift), Android App (Kotlin), Web App (React)
- **API Gateway:** Firebase for unified API management
- **Service Layer:** Microservices including Auth, Transaction, Budget, Insights, Investment, and more
- **AI Layer:** OpenAI GPT-4, Hugging Face, Google Cloud AI, Firebase ML, Custom Models
- **Data Layer:** Firestore (Real-time), Firebase Storage, BigQuery (Analytics)
- **External Integrations:** Plaid (Banks), Alpaca (Stocks), Apple Health, Google Fit

5.2 Technology Stack

Layer	Technology	Justification
iOS App	Swift / SwiftUI	Native performance, Apple ecosystem integration
Android App	Kotlin / Jetpack Compose	Native performance, modern Android development
Web App	React / Next.js	Fast development, SEO-friendly
Backend	Firebase Cloud Functions	Serverless, scales automatically
Database	Firestore	Real-time sync, offline support
Auth	Firebase Auth	Secure, multiple providers
AI/ML	OpenAI, Hugging Face, Google Cloud AI	Best-in-class capabilities
Analytics	BigQuery + Firebase Analytics	Powerful querying, real-time
Storage	Firebase Storage	Receipts, documents

6. AI & Machine Learning Strategy

6.1 AI Components Overview

Component	Purpose	Technology	Processing
Transaction Categorization	Auto-categorize transactions	OpenAI GPT-4	Cloud
Insight Generation	Create natural language insights	OpenAI GPT-4	Cloud
Sentiment Analysis	Analyze emotional context	Hugging Face	Cloud
Spending Prediction	Forecast future spending	Custom TensorFlow	Cloud
Anomaly Detection	Fraud and unusual activity	Firebase ML	On-device
Pattern Recognition	Identify spending patterns	Custom PyTorch	Cloud
NLU for Queries	Understand user questions	Google Cloud AI	Cloud

6.2 AI Ethics & Privacy

1. **Data Minimization:** Only collect data necessary for features
2. **On-Device Processing:** Process sensitive data locally when possible
3. **Anonymization:** Strip PII before cloud processing
4. **Consent:** Explicit opt-in for AI features
5. **Explainability:** Users can see why AI made recommendations
6. **Bias Monitoring:** Regular audits for algorithmic bias
7. **User Control:** Ability to delete AI-derived data

7. API Integrations

7.1 Financial APIs

Plaid Integration

- Purpose: Bank account linking and transaction retrieval
- Key Endpoints: /link/token/create, /accounts/get, /transactions/sync
- Security: OAuth 2.0, Encrypted at rest, PCI DSS compliant
- Cost: $0.30 per connected account/month

Alpaca Markets Integration

- Purpose: Investment data and trading capabilities
- Key Endpoints: /v2/account, /v2/positions, /v2/orders
- Security: API key authentication, IP whitelisting
- Cost: Free tier available, then usage-based

7.2 AI APIs

API	Purpose	Est. Cost
OpenAI API	NLP, insights generation, categorization	$0.02-0.10 per user/month
Hugging Face API	Sentiment analysis, text classification	$9/month (after free tier)
Google Cloud AI	Natural language understanding, ML ops	$1-5 per 1000 API calls

7.3 Health APIs

API	Data Types	Privacy
Apple HealthKit	HRV, sleep analysis, activity levels, mindfulness	Data stays on device
Google Fit API	Heart rate, sleep segments, activity, stress indicators	Same as HealthKit approach

8. Data Models

8.1 Core Data Entities

The data model is built on Firestore with the following main collections: Users, Accounts, Transactions, Budgets, Insights, Spending DNA, Digital Twin, Cashflow, Subscriptions, Families, Tasks, and Carbon footprint data.

Collection	Description
users/{userId}	User profile, preferences, subscription, gamification data
users/{userId}/accounts/{accountId}	Linked bank accounts via Plaid
users/{userId}/transactions/{transactionId}	All financial transactions
users/{userId}/budgets/{budgetId}	User-defined budgets
users/{userId}/insights/{insightId}	AI-generated insights and recommendations
users/{userId}/spendingDNA	Unique spending behavior patterns
users/{userId}/digitalTwin	Financial projections and scenarios
users/{userId}/subscriptions/{subscriptionId}	Recurring subscriptions
families/{familyId}	Family groups with shared goals

9. User Interface & Experience

9.1 Design Principles

1. **Simplicity First:** Complex AI, simple interface
2. **Progressive Disclosure:** Show basics first, details on demand
3. **Actionable:** Every screen leads to an action
4. **Delightful:** Celebrate wins, gamify progress
5. **Accessible:** WCAG 2.1 AA compliance
6. **Dark Mode:** Full dark mode support

9.2 Key Screens

• Home Dashboard: Net worth overview, daily insights, budget status, quick tasks
• Budget View: Visual progress bars, category breakdown, alerts
• Insights Feed: AI-generated recommendations and patterns
• Digital Twin: Future projections with what-if scenarios
• Family Hub: Shared goals, member status, privacy controls

9.3 Onboarding Flow

1. Welcome Screen with value proposition
2. Account Creation (Email/Password or Social Login)
3. Bank Connection via Plaid Link
4. Initial Setup (currency, income, goals)
5. Feature Introduction and permissions
6. First Insight based on initial data

10. Security & Privacy

10.1 Security Measures

Layer	Measure	Implementation
Transport	TLS 1.3	All API communications
Authentication	Multi-factor	Firebase Auth + TOTP
Authorization	Role-based	Firebase Security Rules
Data at Rest	AES-256	Firestore encryption
API Security	Rate limiting	100 req/min per user
Secrets	Vault storage	Google Secret Manager
Monitoring	Real-time alerts	Firebase Crashlytics

10.2 Privacy Compliance

Regulation	Status	Implementation
GDPR	Compliant	Data portability, deletion, consent
CCPA	Compliant	Do not sell, access requests
SOC 2	In Progress	Security controls audit
PCI DSS	Via Plaid	No direct card data storage

10.3 Data Classification

- **HIGH:** Bank credentials (never stored), SSNs (never collected), full account numbers
- **MEDIUM:** Transaction data, account balances, biometric data (encrypted/on-device)
- **LOW:** Budget settings, preferences, gamification data

11. Monetization Strategy

11.1 Pricing Tiers

Feature	Free	Premium ($9.99/mo)	Family ($14.99/mo)
Bank connections	2	Unlimited	Unlimited
Transaction history	6 months	Unlimited	Unlimited
Budgets	3	Unlimited	Unlimited + Shared
AI Insights	Limited	Full	Full
Emotional Spending AI	—	✓	✓
Financial Digital Twin	Basic	Full	Full
Bill Negotiator	—	✓	✓
Family features	—	—	✓ (up to 6 members)
Priority support	—	✓	✓

11.2 Revenue Projections

Metric	Year 1 (Conservative)	Year 3 (Optimistic)
Total Users	100,000	1,000,000
Premium Users	12,000 (12%)	150,000 (15%)
Family Users	3,000 (3%)	50,000 (5%)
Premium Revenue	$1,438,560	$17,982,000
Family Revenue	$539,640	$8,994,000
Total Revenue	$1,978,200	$26,976,000

11.3 Additional Revenue Streams

- Affiliate Partnerships: Commission on recommended financial products
- Bill Negotiator Fee: 25% of first year savings
- Carbon Offsets: Small margin on offset purchases
- Premium Insights Reports: One-time detailed financial analysis

12. Success Metrics

12.1 Key Performance Indicators (KPIs)

Category	Metric	Target (Year 1)
Acquisition	Downloads	100,000
Acquisition	Cost per Install	< $3
Activation	Bank Connected (Day 1)	60%
Activation	Onboarding Complete	80%
Engagement	DAU/MAU	40%
Engagement	Avg. Session Duration	3 min
Retention	Day 7 Retention	50%
Retention	Day 30 Retention	30%
Revenue	Free to Paid Conversion	15%
Revenue	Monthly Churn	< 5%
Value	Avg. User Savings/Month	$100
Satisfaction	NPS Score	> 50
Satisfaction	App Store Rating	> 4.5

13. Development Roadmap

13.1 Phase Overview

Phase	Focus	Key Features
Phase 1: Foundation	MVP	Core expense tracking, basic budgeting, simple insights, auth
Phase 2: Intelligence	AI Enhancement	Advanced AI insights, cashflow predictions, subscription decay, micro-tasks
Phase 3: Innovation	Differentiation	Emotional spending AI, Digital Twin, Spending DNA, Carbon wallet
Phase 4: Ecosystem	Expansion	Bill Negotiator, Family Mesh, Local intel, Investment guidance
Phase 5: Scale	Growth	International expansion, B2B features, advanced AI, partnerships

13.2 MVP Feature Set (Phase 1)

Must Have (P0):

- User registration and authentication
- Plaid bank account linking
- Automatic transaction import and categorization
- Manual transaction entry
- Budget creation and tracking with alerts
- Basic spending insights
- Mobile apps (iOS + Android)

Should Have (P1):

- Receipt scanning (OCR)
- Multiple account support
- Category customization
- Weekly email digest

14. Risks & Mitigations

14.1 Technical Risks

Risk	Probability	Impact	Mitigation
Plaid API changes/outages	Medium	High	Multi-provider strategy (Yodlee backup)
AI model accuracy issues	Medium	Medium	Continuous training, human fallback
Data breach	Low	Critical	SOC 2 compliance, encryption, audits
Scalability issues	Medium	High	Auto-scaling infrastructure, load testing

14.2 Business Risks

Risk	Probability	Impact	Mitigation
Low user adoption	Medium	High	Strong marketing, referral program
High churn rate	Medium	High	Focus on value delivery, engagement
Competitor copying features	High	Medium	Rapid innovation, brand building
Regulatory changes	Medium	Medium	Legal counsel, compliance monitoring

15. Appendix

15.1 Glossary

Term	Definition
DAU	Daily Active Users
MAU	Monthly Active Users
NPS	Net Promoter Score
HRV	Heart Rate Variability
OCR	Optical Character Recognition
ETL	Extract, Transform, Load
PCI DSS	Payment Card Industry Data Security Standard

15.2 References

- Plaid API Documentation: https://plaid.com/docs/
- Firebase Documentation: https://firebase.google.com/docs
- OpenAI API Reference: https://platform.openai.com/docs
- Apple HealthKit: https://developer.apple.com/healthkit/
- Google Fit API: https://developers.google.com/fit

15.3 Revision History

Version	Date	Author	Changes
1.0	Dec 2, 2025	BudgetBot Team	Initial PRD

Sign-Off

Role	Name	Date	Signature
Product Owner			
Tech Lead			

Design Lead			
Engineering			

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