

Software Requirement Specification (SRS)

Project Name: AI-Powered Real-Time Stock Market Application

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1. Introduction

1.1 Purpose

The purpose of this SRS is to define the software requirements for a Real-Time Stock Market Web Application. The system allows users to view live stock data, analyze interactive charts, manage personalized watchlists, receive alerts, and access AI-generated summaries. It is designed for traders, investors, and financial enthusiasts who require accurate, real-time insights and intelligent automation for better decision-making.

1.2 Scope

The application enables users to:

- Create secure accounts via Better OAuth (email/password authentication).
- View real-time stock prices and financial data using FinHub API.
- Access live interactive charts and analysis tools via TradingView widgets.
- Manage personalized stock watchlists.
- Receive AI-powered personalized news summaries and market updates.

1.3 Definitions, Acronyms, and Abbreviations

Term	Definition
AI	Artificial Intelligence
API	Application Program Interface
OAuth	Open Authorization (Authentication framework)
UI	User Interface
FinHub	Financial Data API provider
Ingest	Automation and background workflow engine
Trading View	Financial charting and analysis platform

1.4 References

- IEEE Std 830-1998 for Software Requirements Specification
- Next.js 15 documentation
- MongoDB Atlas documentation
- Better OAuth official documentation
- FinHub and TradingView API guides
- Ingest official developer guide

2. Overall Description (New Project)

2.1 Product Perspective

Frontend: Next.js 15, React, Tailwind CSS, Shadcn UI

Backend: Next.js Server Actions, MongoDB, Better OAuth, Ingest workflows

: FinHub, TradingView, Google Gemini (APIs for AI summaries)

The application follows a modular architecture supporting scalability and seamless cloud integration

2.2 Product Functions

- Secure user authentication (sign-up/sign-in/sign-out)
- Real-time stock search and live data display
- Interactive stock charts and technical indicators
- Personalized watchlist management
- AI-powered daily news summaries and welcome emails
- Email notifications for alerts and updates
- Admin management and monitoring dashboard

2.3 User Characteristics

- Regular Users: Basic stock market knowledge and internet literacy.
- Admin Users: Technically proficient with understanding of APIs, dashboards, and configurations.

2.4 Constraints

- Requires stable internet connection for real-time updates.
- Limited to browsers supporting modern JavaScript and WebSocket APIs.

- Depends on FinHub and TradingView APIs for live data.
- Serverless limitations in free-tier Vercel or Ingest accounts.

2.5 Assumptions and Dependencies

- APIs (FinHub, TradingView) remain available and functional.
- MongoDB Atlas database remains online.
- Users have verified email accounts for authentication and alerts.

3. External Interface Requirements

3.1 User Interfaces

- Login/Signup Page: Secure authentication with Better OAuth.
- Dashboard: Display of real-time stock data, charts, and watchlist.
- Stock Details Page: Detailed stock info, interactive charts, and news.
- Admin Panel: Manage users, API configurations, and logs.
- Settings Page: Manage personal preferences, alert options, and themes.

3.2 Hardware Interfaces

- Works on any internet-enabled device: desktop, laptop, tablet, or smartphone.

3.3 Software Interfaces

- Operating Systems: Windows, macOS, Linux
- Browsers: Chrome, Firefox, Safari, Edge
- Database: MongoDB Atlas
- Server: Vercel Serverless Environment
- APIs: FinHub, TradingView, Google Gemini, Better OAuth, Ingest

3.4 Communication Interface

- Operating Systems: Windows, macOS, Linux
- Browsers: Chrome, Firefox, Safari, Edge
- Database: MongoDB Atlas

- Server: Vercel Serverless Environment
- APIs: FinHub, TradingView, Google Gemini, Better OAuth, Ingest

4. System Features

Feature	Description
User Authentication	Secure registration and login via Better OAuth integrated with MongoDB.
Real-Time Stock Data	Fetch and display live stock prices, volume, and change using FinHub API.
Interactive Charts	TradingView widgets embedded for real-time visual analysis.
Watchlist Management	Add, remove, and track favorite stocks
AI-Powered Insights	Generate personalized summaries and welcome emails using Google Gemini via Ingest.
News Aggregation	Display latest market news related to user’s watchlist
Alert Notifications	Send emails or in-app alerts for stock movements or updates
Admin Dashboard	Manage users, API settings, and logs securely

5. Non-Functional Dependencies

Category	Requirement
Performance	System should handle at least 10,000 concurrent users with real-time updates.
Security	Encrypted data (TLS/HTTPS); secure password hashing with Better OAuth.
Usability	Clean, responsive UI with intuitive navigation.
Reliability	Automatic retries for background jobs using Ingest.
Scalability	System can expand for multiple elections simultaneously.
Maintainability	Modular codebase using Next.js route groups and reusable components.
Availability	99.9% uptime using Vercel’s serverless architecture.

6. Acceptance Criteria

- Users must be able to register, log in, and securely access their dashboard.
- Stock data must update in real-time without page refresh.
- Personalized watchlists and alerts must persist between sessions.
- AI summaries and daily reports must be generated automatically.
- Admin must be able to view and manage user data and logs.
- Application should deploy successfully on Vercel with environment variables configured.

7. Deliverables

- Fully functional real-time stock market web application.
- Source code with documentation and comments.
- Database schema (ER Diagram + connection config).
- SRS and System Design Document.
- Test cases and QA report.
- User Manual and Deployment Guide.

Project Members

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Project Guide Signature