**Product Requirements Document (PRD)**

**Phase 1: Multi-Agent Financial Advisory System (MCP + LangGraph)**

**1. Overview**

We aim to build a **multi-agent financial advisory system** powered by **Model Context Protocol (MCP)** and **LangGraph**. The system will autonomously gather, analyze, and recommend financial insights using multiple specialized agents.

Phase 1 will deliver a **CLI-based MVP**, while Phase 2 will extend functionality into a **Streamlit UI**.

**2. Objectives**

* Automate the retrieval of **company news** and **financial market data**.
* Enable intelligent **data analysis and financial recommendations** using AI agents.
* Ensure scalability with **MCP orchestration** and modular design.
* Deliver a **production-ready CLI MVP** in Phase 1.

**3. Agent Roles**

1. **News Agent** – gathers company news and related articles using DuckDuckGo search.
2. **Financial Data Agent** – retrieves stock/market data from Yahoo Finance.
3. **Analysis Agent** – performs correlation, sentiment, and risk analysis using LLM reasoning.
4. **Recommendation Agent** – generates financial recommendations (buy/hold/sell insights, risk notes, investment strategies).

**4. Orchestration Framework**

* **LangGraph** for workflow definition, inter-agent communication, and state management.
* **MCP (Model Context Protocol)** for structured agent collaboration and tool integration.

**5. Tools & Integrations**

* **DuckDuckGo Search API** – for company news and external content.
* **Yahoo Finance API** – for financial datasets.
* **LangGraph** – agent orchestration.
* **MCP** – structured context sharing.

**6. LLM Configuration**

* **Primary Model**: GPT-5.0
  + Use for analysis, reasoning, and recommendation generation.
  + Provides higher factual accuracy, structured reasoning, and efficiency.
* **Secondary/Fallback Model**: GPT-4o-mini
  + Use for lightweight summarization (e.g., condensing long news articles, quick lookups).
  + Reduces cost and latency for non-critical tasks.

**Hybrid Setup Example:**

* News Agent → GPT-4o-mini (summarization).
* Analysis & Recommendation Agents → GPT-5.0.

**7. User Interface**

* **Phase 1 (MVP)**: CLI interface for agent orchestration and outputs.
* **Phase 2**: Streamlit-based dashboard with:
  + News feed section.
  + Stock/market data charts.
  + Recommendation panel with rationale.

**8. Phase 1 Deliverables**

* CLI application with functional multi-agent orchestration.
* Ability to query **company ticker** → retrieve news + financial data.
* Agents collaborate to produce **recommendations** with supporting analysis.
* Logging for agent reasoning and data flow.

**9. Success Metrics**

* **Accuracy**: Recommendations align with retrieved data and market signals.
* **Efficiency**: End-to-end analysis and recommendation under **10 seconds**.
* **Scalability**: Easily extendable to new data sources/tools.
* **User Experience**: Clear and concise CLI outputs.

**10. Next Steps (Post-MVP)**

* Phase 2: Streamlit UI with visualization and interaction.
* Add **portfolio tracking** and **alerts**.
* Introduce **GenAI financial scenario simulations** (what-if analysis).
* Multi-agent debate/validation layer for recommendation robustness.