**Generative AI Stock Assistant Proposal**

# Issue

* **Information Overload for the Customer**: Investors have to deal with too much market data, news, and financial reports. It is an enormous task to sift through relevant information in real time to drive proper decision-making. The process involved in consolidating data from various platforms is really time-consuming and inefficient, leading to missed opportunities.
* **Lack of Knowledge in Financial Concepts or Analytical Tools**: Many investors lack the expertise or tools to perform technical or fundamental analysis effectively, making it difficult to evaluate stock performance or trends. Many investors lack a solid understanding of financial terminologies, indicators, or reports, creating a steep learning curve for effective investment decision-making.
* **Inefficient Stock Filtering**: Without effective stock filtering mechanisms, investors struggle to identify stocks that meet specific criteria, particularly in dynamic or volatile market conditions.
* **Lack of Personalization**: Investors do not understand their trading personality, leading to difficulty finding suitable investment opportunities.
* **Lack of Customer Support/Broker**: We currently do not have a broker who can help customers with direct transactions or explain company policies; this is available with other securities firms in the market. This modern tool of interactive and personalized engagement of customers reduces users' satisfaction and loyalty.
* **Low Adoption of Advanced Analytics**: Not many securities companies effectively leverage AI and machine learning to provide innovative solutions or gain a competitive advantage in the market.

# Solution

* We are writing to propose a comprehensive project to address these issues. This project was carried out with the goal of creating a tool to assist customers in dealing with information and executing transactions, like a low-cost financial transaction assistant, contributing to increasing customer satisfaction and service time.
* We will prepare and build the infrastructure to operate the data storage and processing system and Chatbot System in GCP as a back-end service. Ensure data is classified according to intended use and the system can be scalable when necessary. The Chatbot main features include:
  + Smart Data Query Assistant
  + Technical Stock Analysis Support
  + Fundamental Stock Analysis Support
  + Market News Summary & Analysis
  + Stock Filtering
  + Pinetree's Data Ecosystem Assistant
  + Personal Portfolio Analysis
* We will build the AI Assistant feature in the AlphaTrading app in the initial stages and track related events.
* We will launch a campaign to encourage users to experience this new feature.
* We will monitor user engagement metrics (e.g., time-usage rates, click rates...), track system performance and service billing cost.

# Business Objectives

* **Enhance Customer Experience:**
  + Personalized Support: Provide relevant insights and recommendations to meet individual customer needs or answer questions about company policies, improving satisfaction and engagement.
  + Real-Time Support: Give instant support 24x7 for investing and securities-related queries to answer questions fast and ensure a smooth experience.
  + Interactive Features: Give users the tools to intuitively explore and analyze stock data in order to increase platform usage.
* **Data-Driven Personalization:**
  + Simplified and Personalized Information: Complex market information shall be presented in simplified, easy-to-understand formats to be accessible for all types of users.
  + Investment Insights and Analytical Tools: Equip users with interactive tools to analyze stock performance, market trends, price movements, understand financial indicators, and explore investment opportunities.
  + Enhanced Query Assistance: Improve the resolution of customer queries by providing explanations for investment-related topics such as portfolio diversification, technical indicators, and financial health metrics using natural language understanding.
* **Business Growth:**
  + Improving Customer Retention and Loyalty.
  + Driving revenue growth and reducing customer support costs.
  + Attracting new customers with trendy features.

# Proposed Feature

## **4.1. Smart Data Query Assistant**

**Objective:**

* Searches for the necessary information right in the trading session about company and corresponding stock symbol, help to saving time and effort.
* Directly interact with the returned results, analyze data according to the needs of investors.
* Answering investors' questions related to financial, securities, and economic topics.
* Built-in real-time charting tools.

**Example:**

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| **Client:** | Tell me about HPG (Hòa Phát Group) and show me the real-time price chart. |
| **AI Assistant:** | 1. **Basic Information:**  * **Company Name**: Hòa Phát Group * **Stock Symbol**: HPG * **Industry**: Steel Manufacturing and Real Estate * **Market**: HOSE (Ho Chi Minh Stock Exchange) * **Overview**: Hòa Phát Group is one of the largest industrial manufacturers in Vietnam, focusing on steel production, agricultural operations, and real estate. The company dominates the domestic construction steel market and has expanded globally in recent years.  1. **Real-Time Stock Data:**  * **Open Price**: 28,500 VND * **Current Price**: 29,100 VND * **Day's High**: 29,500 VND * **Day's Low**: 28,200 VND * **Volume**: 10,800,000 shares  1. **Real-Time Price Chart:** (Visual representation of the price chart for HPG, showing intra-day price fluctuations and technical indicators like moving averages, if available.) |

## **4.2. Technical Stock Analysis Support**

**Objective:**

* Provides information about the technical indicators available on the platform and how to use them.
* Detects buy/sell signals by TA.
* Displays technical indicators on the chart.

**Example:**

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| **Client:** | Analyze the technical indicators of HPG and tell me if there is a buy signal? |
| **AI Assistant:** | **Here is the analysis of HPG's technical indicators based on the latest market data:**   1. **Relative Strength Index (RSI):**  * **Current RSI Value**: 62 * **Analysis**: RSI is below the overbought zone (70), suggesting no overbought conditions. * **Signal**: Neutral – RSI does not indicate an immediate buy or sell opportunity.  1. **Moving Average Convergence Divergence (MACD):**  * **MACD Line (12, 26, 9)**: 0.45 * **Signal Line**: 0.30 * **Analysis**: The MACD line is above the signal line, indicating bullish momentum. * **Signal**: Buy – Positive momentum suggests upward movement.  1. **Bollinger Bands:**  * **Current Price**: 29,100 VND * **Upper Band**: 29,500 VND * **Lower Band**: 27,500 VND * **Analysis**: The price is approaching the upper band but hasn’t broken it yet, indicating strength but potential resistance. * **Signal**: Caution – Wait for confirmation of a breakout or reversal.  1. **50-Day Simple Moving Average (SMA):**  * **Current Price**: 29,100 VND * **50-Day SMA**: 28,000 VND * **Analysis**: The current price is above the 50-day SMA, indicating a bullish trend. * **Signal**: Buy – Indicates strong upward momentum.   **Summary:** If you’re looking to buy, the MACD and SMA suggest favorable conditions. However, monitor Bollinger Bands and RSI to avoid entering at a resistance point. |

## **4.3. Fundamental Stock Analysis Support**

**Objective:**

* Provides fundamental information and financial ratios of specific company.
* Explains the meaning of financial indicators and how to use them.
* Compares between companies in the same industries.

**Example:**

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| **Client:** | Show financial ratios of HPG for the past three years. |
| **AI Assistant:** | **Financial Ratios of HPG (Past 3 Years)**   1. **Profitability Ratios**  * **Gross Profit Margin**: Slight decline in 2023 (2021: 18.5%, 2022: 19.2%, 2023: 17.8%) * **Net Profit Margin**: Decrease in 2023 (2021: 9.5%, 2022: 10.2%, 2023: 8.0%)  1. **Efficiency Ratios**  * **Return on Assets (ROA)**: Decline in 2023 (2021: 7.5%, 2022: 8.0%, 2023: 6.8%) * **Return on Equity (ROE)**: Decrease in 2023 (2021: 15.2%, 2022: 16.0%, 2023: 13.5%)  1. **Liquidity Ratios**  * **Current Ratio**: Healthy liquidity (2021: 1.85, 2022: 2.05, 2023: 1.92) * **Quick Ratio**: Stable liquidity (2021: 1.30, 2022: 1.45, 2023: 1.25)  1. **Solvency Ratios**  * **Debt-to-Equity Ratio**: Slight increase in 2023 (2021: 0.50, 2022: 0.45, 2023: 0.48) * **Interest Coverage Ratio**: Decrease in 2023 (2021: 5.2, 2022: 6.0, 2023: 4.8)  1. **Market Ratios**  * **P/E Ratio**: Stable valuation (2021: 9.4, 2022: 8.2, 2023: 9.1) * **EPS**: Decrease in 2023 (2021: 3,500 VND, 2022: 3,800 VND, 2023: 3,200 VND)   **Summary:** HPG shows stable liquidity but a decline in profitability and efficiency in 2023, with lower net profit margin and EPS. The stock remains reasonably valued based on the P/E ratio. |

## **4.4. Market News Summary & Analysis.**

**Objective**:

* Statistics on the number of recent news.
* Automatically aggregate and summarize important data from news and financial reports.
* Represent and compare sentiments across companies and industries.

**Example:**

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| **Client:** | What are the latest news insights on HPG? |
| **AI Assistant:** | **Total news of HPG in the last 30 days: 5 news**   * Hòa Phát boosts production capacity to meet growing demand. (positive) * Steel industry sees mixed results as economic recovery slows. (neutral) * Hòa Phát announces new export markets for construction steel. (neutral) * Steel price drop impacts margins for Vietnamese manufacturers, including Hòa Phát. (negative) * HPG reports strong financials despite global steel price volatility. (positive) |

## **4.5. Stock Filtering**

**Objective**: Filter stocks by informational criteria or complex conditions by natural language.

**Example:**

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| **Client:** | Show me stocks with a price under 50,000 VND, trading volume over 500K, and a P/E ratio below 10 |
| **AI Assistant:** | **Filtered Stocks:**   1. **HPG (Hòa Phát Group)**  * Price: 45,000 VND * Volume: 750K * P/E Ratio: 9.8  1. **VNM (****Vinamilk)**  * Price: 48,500 VND * Volume: 600K * P/E Ratio: 9.5  1. **FPT (FPT Corporation)**  * Price: 49,800 VND * Volume: 550K * P/E Ratio: 9.7 |

## **4.6. Personal Portfolio Analysis**

**Objective**:

* Evaluate users' portfolios for diversification, risk, and sector exposure, providing actionable suggestions to optimize investments.
* Analyze user behavior and trading patterns to identify their risk tolerance, preferred investment style, and decision-making habits.

**Example:**

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| **Client:** | What is my trading personality based on my activity? |
| **AI Assistant:** | **Trading Personality Analysis:**   * **Style**: Active Trader – 15 trades/month. * **Risk Tolerance**: Moderate – Typically avoids high-risk penny stocks. * **Behavioral Insights**:   + Prefers stocks with stable growth and dividends (e.g., VNM).   + Occasionally positions exit prematurely during minor price dips.   **Recommendations:**   * **Emotional Discipline**: Use stop-loss strategies to minimize emotional selling during market fluctuations. * **Explore Growth Opportunities**: Allocate a portion of the portfolio to emerging sectors or growth stocks for higher returns. |

## **4.7. Pinetree's Data Ecosystem Assistant**

**Objective:**

* Provide detailed insights into Pinetree's financial products, services, and trading platforms.
* Answer inquiries about trading policies, account types, and fees.

**Example:**

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| **Client:** | What are the trading fees for stocks at Pinetree? |
| **AI Assistant:** | **Stock Trading Fees at Pinetree:**   * **Zero Trading Fees**: Pinetree provides a FREE lifetime trading policy to investors (only Exchange fee: 0,03% per transaction) * **Margin Lending Interest Rate**: 9.9% per annum. * **No Custody Fees**: Pinetree offers free custody services for all accounts. |

# Anticipated Resources & Action Steps

## **5.1. Phase 1: Build core features & launch AI Assistant on AlphaTrading app on April 30th (3 month)**

Focus on providing core functionalities for the initial user experience. Prioritize features that are easy to implement and deliver the highest value to users in the early stages.

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| **No.** | **Task** | **PIC** | **Estimated Completion** |
| 1 | Project analysis and test-case preparation | DA |  |
| 2 | Build a database system and prepare data | DA |  |
| 3 | Building the Chatbot Gen AI algorithm:   * Smart Data Query Assistant * Technical Stock Analysis Support * Stock Filtering | DA |  |
| 4 | Develop app AI Assistant feature | DP |  |
| 5 | Design UI/UX | DX |  |
| 6 | Integrate with AlphaTrading app | DP, Core |  |
| 7 | Test and track event | DP, DA |  |
| 8 | Launch marketing campaign | DP, MKT |  |

## **5.2. Phase 2: Enhance AI-Powered features on July 31st (3 month)**

Develop advanced features based on Phase 1's features, focusing on AI analysis and user experience personalization.

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| **No.** | **Task** | **PIC** | **Estimated Completion** |
| 1 | Project analysis and test-case preparation | DA |  |
| 2 | Build a database system and prepare data | DA |  |
| 3 | Building the Chatbot Gen AI algorithm:   * Advanced Technical Stock Analysis * Fundamental Stock Analysis * Market News Summary & Analysis * Advanced Stock Filtering * Pinetree's Data Ecosystem Assistant * Personal Portfolio Analysis | DA |  |
| 4 | Launch marketing campaign | DP, MKT |  |

# Expected Outcomes

Implementation of the Generative AI Stock Assistant will likely improve customer experience, investment processes, and contribute to overall business growth significantly. The main expected outcomes are:

* **5% Increase in Trading Volume and 10% Faster Investment Decisions:** Advanced tools and AI-driven insights will enable a 5% increase in trading volume while allowing users to make investment decisions 10% faster, driving both efficiency and financial results.
* **10% Boost in Customer Engagement and Retention:** Personalized, real-time support and tailored recommendations will enhance user engagement by 10% and foster stronger customer loyalty and satisfaction.
* **Increased Operational Efficiency:** Automation of customer support and data analysis will streamline processes, reducing manual workload and improving operational scalability.
* **Competitive Advantage for Pinetree:** The advanced AI assistant will give Pinetree a competitive advantage over other securities firms, increasing its ability to attract new customers.