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Problem Statement: Investors struggle to connect real-time market data with financial news, leading to missed opportunities and unexplainable trading decisions.

StratifyAI

 Signal Extraction & Backtesting Platform

◆ Problem

- **News drives markets:** Stock prices often react instantly to financial news, earnings updates, and global events.
- But **unstructured news data** is messy — it's hard to process, quantify, and connect to market signals.
- Traders and analysts struggle to **quickly test how news sentiment impacts stock performance**, slowing decision-making.

◆ Solution Overview

- We implemented a real-time signal extraction platform that ingests stock prices and financial news, analyses sentiment and topics, and generates actionable trading signals with explainable links to their originating events. Users can also receive instant alerts via **email** for important signals.





Meaning Behind “StratifyAI”

- ◆ **Stratify**
 - Means to organize into layers, categories, or levels.
 - Solution does exactly that:
 - Raw → structured data
 - Price data + news → features
 - Features → signals
 - Signals → backtesting → insights
 - Basically, the system stratifies complex, messy financial data into actionable trading layers.
- ◆ **AI**
 - Highlights the NLP sentiment analysis, feature engineering, and intelligent automation parts.
 - Signals are not just rule-based — they are enriched with AI-driven insights

Date/Time	News Headline	Sentiment Score	Stock Return (5min)	Volatility (5d)	Signal	Reasoning (Explainability)	Expected Outcome
2025-09-25 10:15	Apple unveils new AI-powered MacBooks	0.82 (Positive)	+0.27%	1.3%	BUY	Strong positive sentiment + upward short-term return → BUY	Target gain +0.6% intraday



What Customers Can Expect

Date/Time: 2025-09-25 10:15

News Headline: “Apple unveils new AI-powered MacBooks”

Sentiment Score: 0.82 (Positive)

Stock Return (5min): +0.27%

Volatility (5d): 1.3%

Generated Signal: BUY

Reasoning (Explainability):

→ Strong positive news sentiment (+0.82) + upward short-term return (+0.27%) triggered a BUY signal.

Expected Outcome: Position opened, target gain +0.6% intraday.

Email: Alerts for important signals



Features of the StratifyAI

- ◆ **Automated Data Ingestion**
 - Real-time integration with Alpha Vantage API for stock prices and News API for Articles.
 - Unified schema design to link events, sentiments, and stock movements.
- ◆ **NLP & Sentiment Analysis (via Snowflake Cortex)**
 - Sentiment scoring for each news article.
 - Topic extraction and relevance scoring.
 - Ticker/Stock-level sentiment association.
- ◆ **Feature Engineering**
 - Provides Stock features, Sentiment features and combined features for signal generation.
- ◆ **Backtesting Framework**
 - Records signals, positions, PnL, cumulative returns.
 - Enables validation of trading rules before production use.
- ◆ **Explainability and Traceability**
 - Each trading signal linked to originating events (stock price movement or specific news article).



Features of the StratifyAI

- ◆ **Orchestration via n8n**
 - Automated workflows for API calls, data transformations, and Snowflake inserts..
 - Error handling, retries, and scheduling included.
 - Modular design (separate workflows for ingestion, analysis, feature creation, backtesting).
- ◆ **Scalability & Extensibility**
 - New data sources (e.g., alternative datasets, Twitter feeds) can be plugged in easily.
 - Topic extraction and relevance scoring.
 - Additional models (ML-based signal generation) can extend beyond rule-based signals.
- ◆ **Visualization, Alerts & Reporting**
 - Final outputs (PnL, signals, sentiment trends) can be exposed to BI dashboards.
 - Monitoring of model performance over time.
 - Alerts on the email for important signals.



Benefits of StratifyAI

Speed & Automation

- **Automated ingestion** of stock + news data (no manual tracking).
- Real-time analysis → faster decision-making.

Accuracy & Intelligence

- AI-driven **sentiment & topic extraction** improves signal precision.
- Combined features (price + sentiment) → **smarter strategy validation**.

Transparency & Explainability

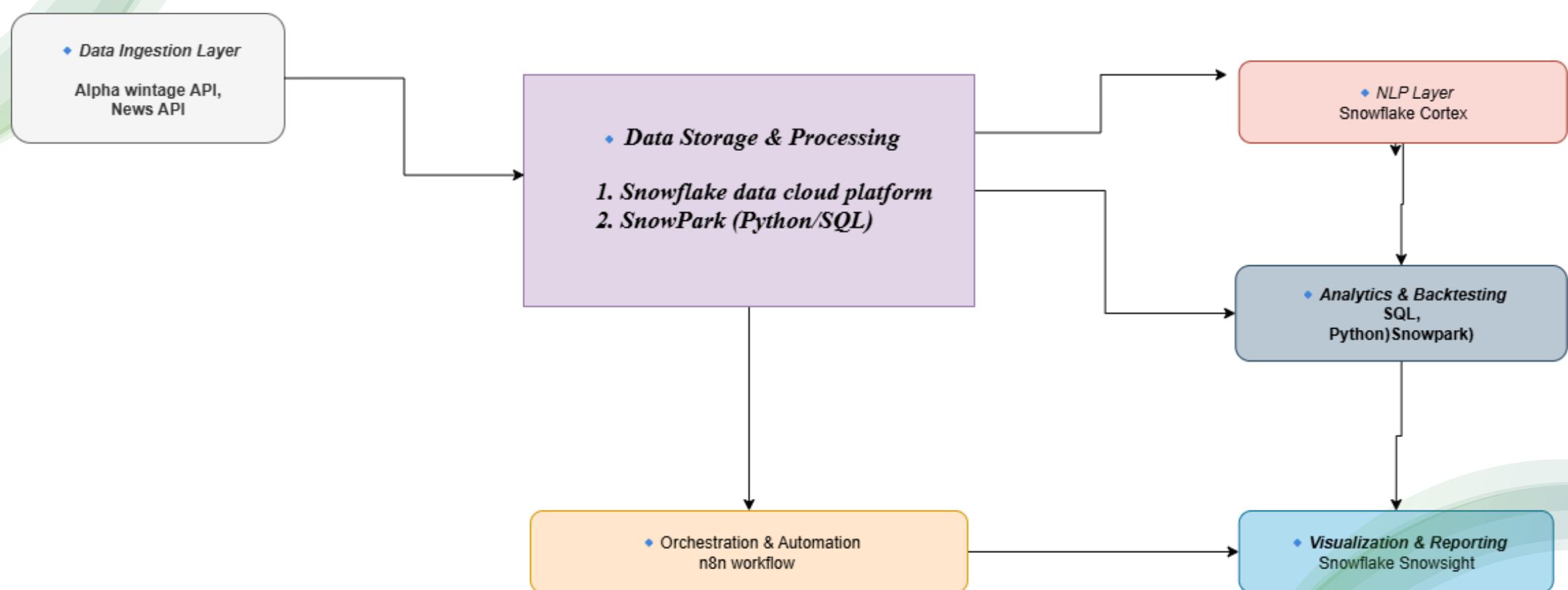
- Each signal linked back to **articles, prices, and features**.
- Full **audit trail** for compliance & debugging.

Scalability & Extensibility

- Cloud-native (Snowflake) → handles **large datasets** without infra headaches.
- New data sources (Twitter, alt-data) can be **plugged in seamlessly**.

Business Value

- Reduce **time-to-market** for new strategies.
- **Boost returns** by integrating news-driven signals into trading models.



Technical Stack – StratifyAI



StratifyAI

System Architecture

1 Data Integration

How:

- Collect **real-time stock prices** from Alpha Vantage API.
- Gather **financial news** via free APIs or web crawlers.
- Orchestrate ingestion, scheduling, and retries using **n8n**.
- Store raw data in Snowflake.

Why Unique:

- **Unified ingestion of structured + unstructured data** in one platform.
- Automated, scalable, and cloud-native → minimal manual intervention.



StratifyAI

System Architecture

2 Signal & Feature Engineering

How:

- Apply Snowflake Cortex for NLP: sentiment scoring, topic extraction, ticker relevance.
- Compute stock features: returns, volatility, volume patterns.
- Generate combined features: interactions like sentiment × return (FEATURES_PER_INTERVAL).
- Store enriched features in Snowflake tables for analysis.

Why Unique:

- Integrates market data + news sentiment in a structured, time-aligned feature set.
- Produces rich, predictive signals that go beyond simple price-based rules.



StratifyAI System Architecture

3 Backtesting & Traceability

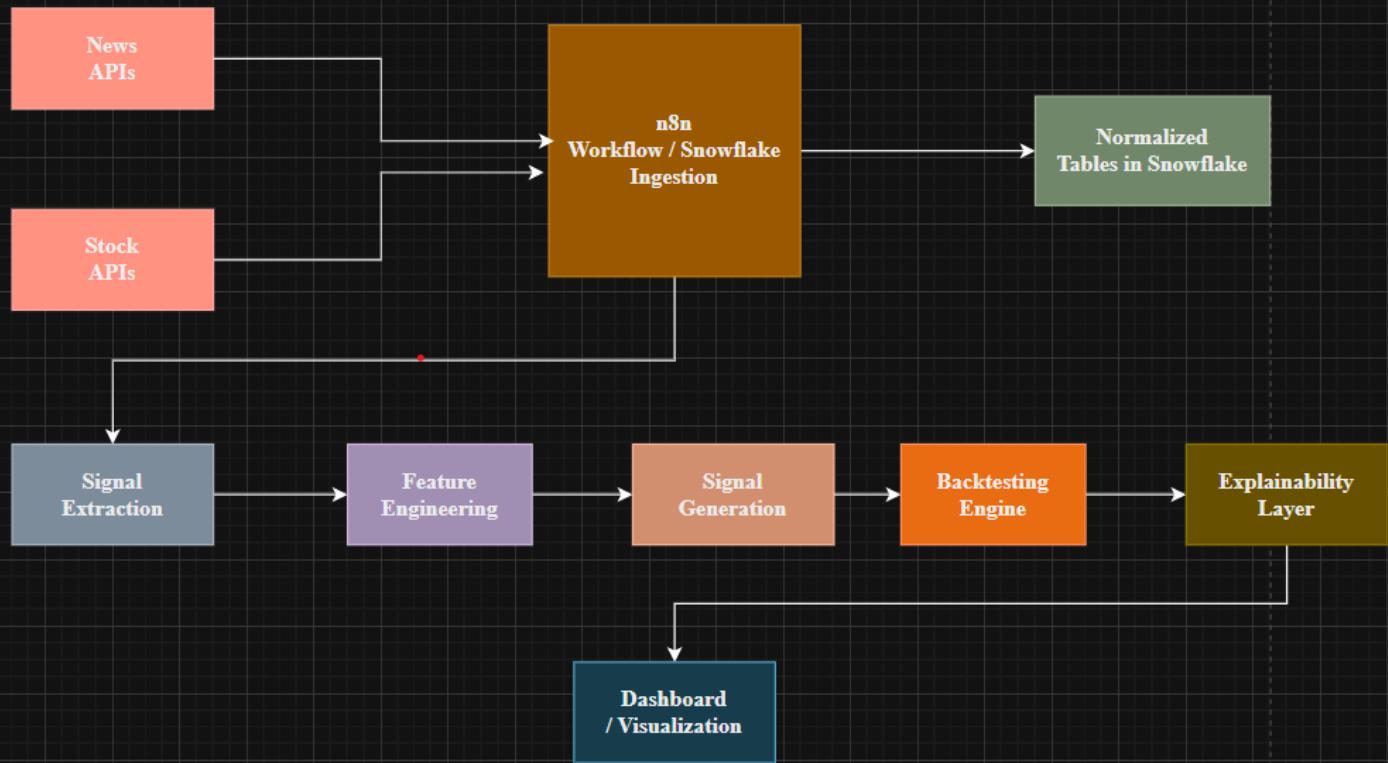
How:

- Run strategies on historical enriched features to generate signals (Buy/Sell/Hold).
- Track positions, PnL, cumulative returns in BACKTEST_RESULTS.
- Each signal links back to source articles and feature vectors for full auditability.

Why Unique:

- End-to-end explainability: every signal is traceable to raw data.
- Validates strategies before deployment → reduces risk and ensures reliability.

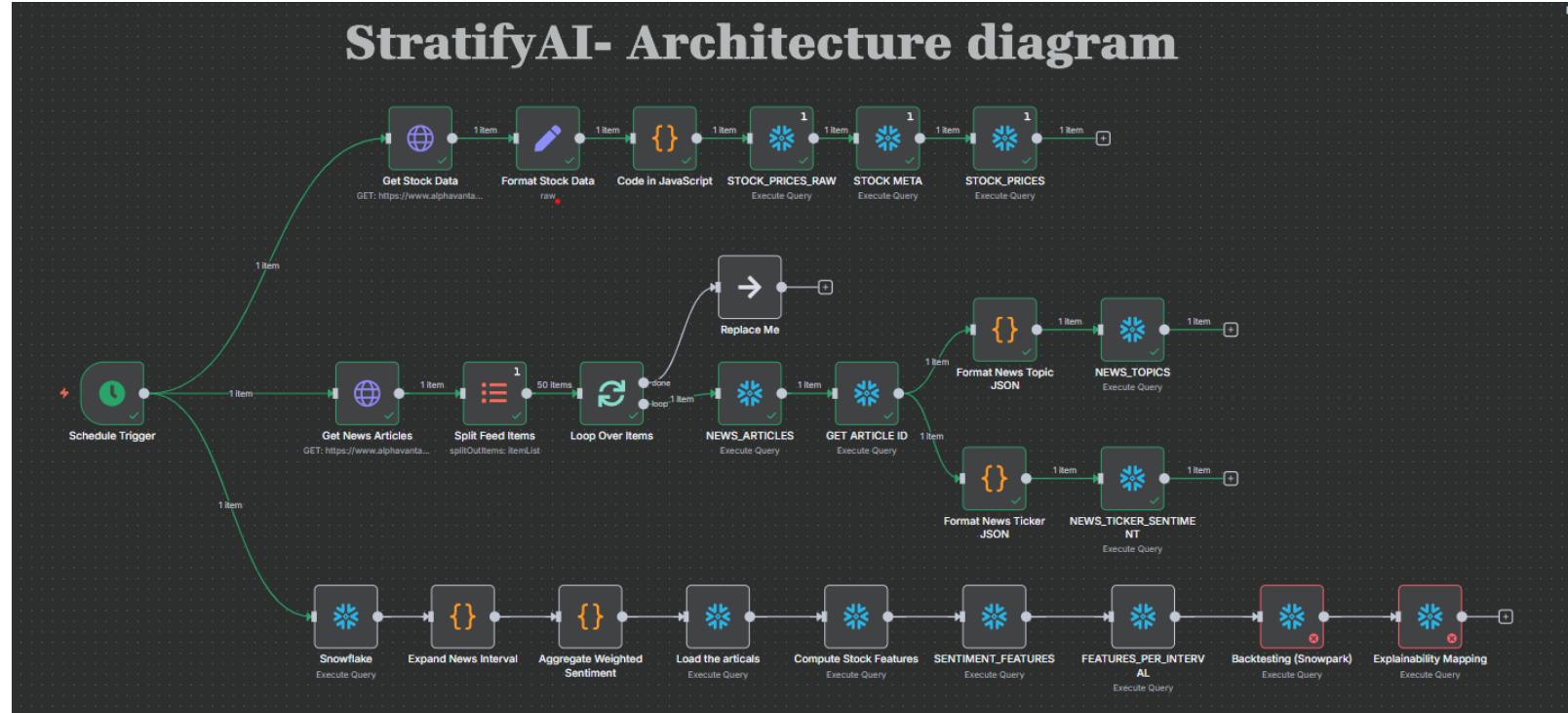
StratifyAI-Flow Diagram



Pipeline Overview

- Our pipeline is automated, scalable, explainable, and extensible — combining AI + financial data into a **production-ready decision engine.**"

StratifyAI- Architecture diagram

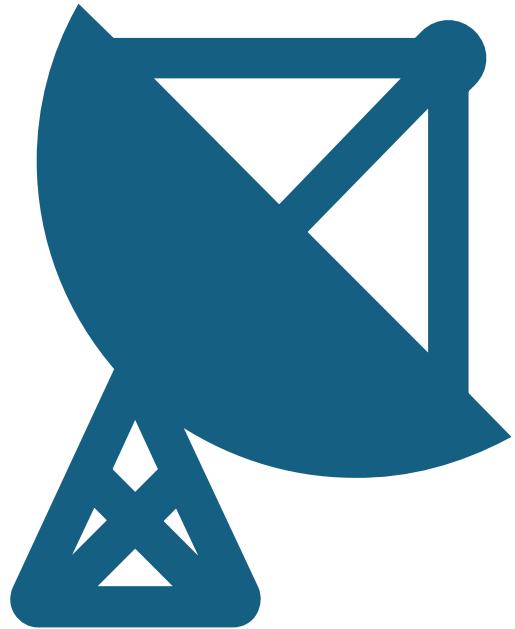
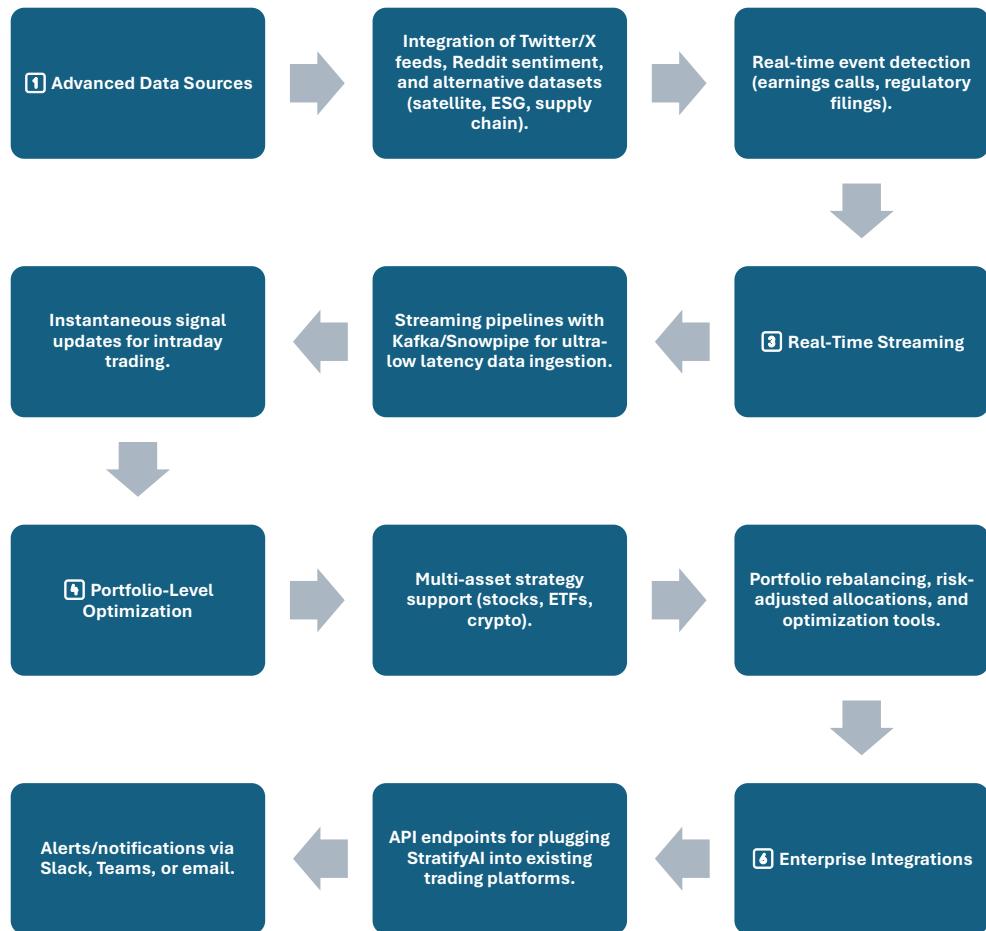


***Snapshot of the
StratifyAI
n8n Automation workflow***



Future Development

“Future versions will expand **StratifyAI** into a multi-source, ML-driven, real-time platform with advanced explainability and enterprise integrations.”





To explore
StratifyAI in depth:

GitHub Public Repository : <https://github.com/Saurabhkure/StratifyAI-.git>