# Agentathon

# 2026

## Social Impact & Community Services

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# PROBLEM STATEMENT

- Global geopolitical events—such as trade sanctions, tariffs, and international conflicts—introduce sudden disruptions to India's trade flows, directly impacting economic stability and disproportionately affecting the agricultural sector. While historical trade data contains clear patterns linking geopolitical shocks to export volatility, existing systems analyze these impacts only after economic losses have occurred.

- For example, a sudden export restriction or conflict-induced demand shock can collapse commodity prices after farmers have already committed to crop cycles, leaving them with unsold produce and income loss.

- These disruptions extend beyond farmers to affect national export revenues, food price stability, rural employment, and citizen welfare. There is currently no intelligent system that proactively anticipates such risks and translates them into actionable precautionary guidance for farmers and policymakers.

# EXISTING SOLUTION

- Trade dashboards and statistical reports that analyze historical export and import data
- Economic analysis tools that assess trade performance after geopolitical events
- Policy review mechanisms triggered post-impact to address trade disruptions
- Market advisories that react to price fluctuations after losses occur

# OUR APPROACH

- Our Project adopts a multi-agent AI architecture to proactively predict trade disruptions caused by global geopolitical events.
- Autonomous agents analyze historical trade data, reason over risk signals, and generate early-warning insights.
- The system converts trade-level intelligence into actionable guidance for farmers and policymakers.
- An MCP (Model Context Protocol) Server coordinates inter-agent communication and shared reasoning context.

MCP Server Used:
Local Python-based MCP Server for agent orchestration and memory sharing

# OUR APPROACH

## Data Ingestion Agent
- Loads and filters historical trade data
- Selects country, commodity, and time window

## Trend Detection Agent
- Detects abnormal export volatility
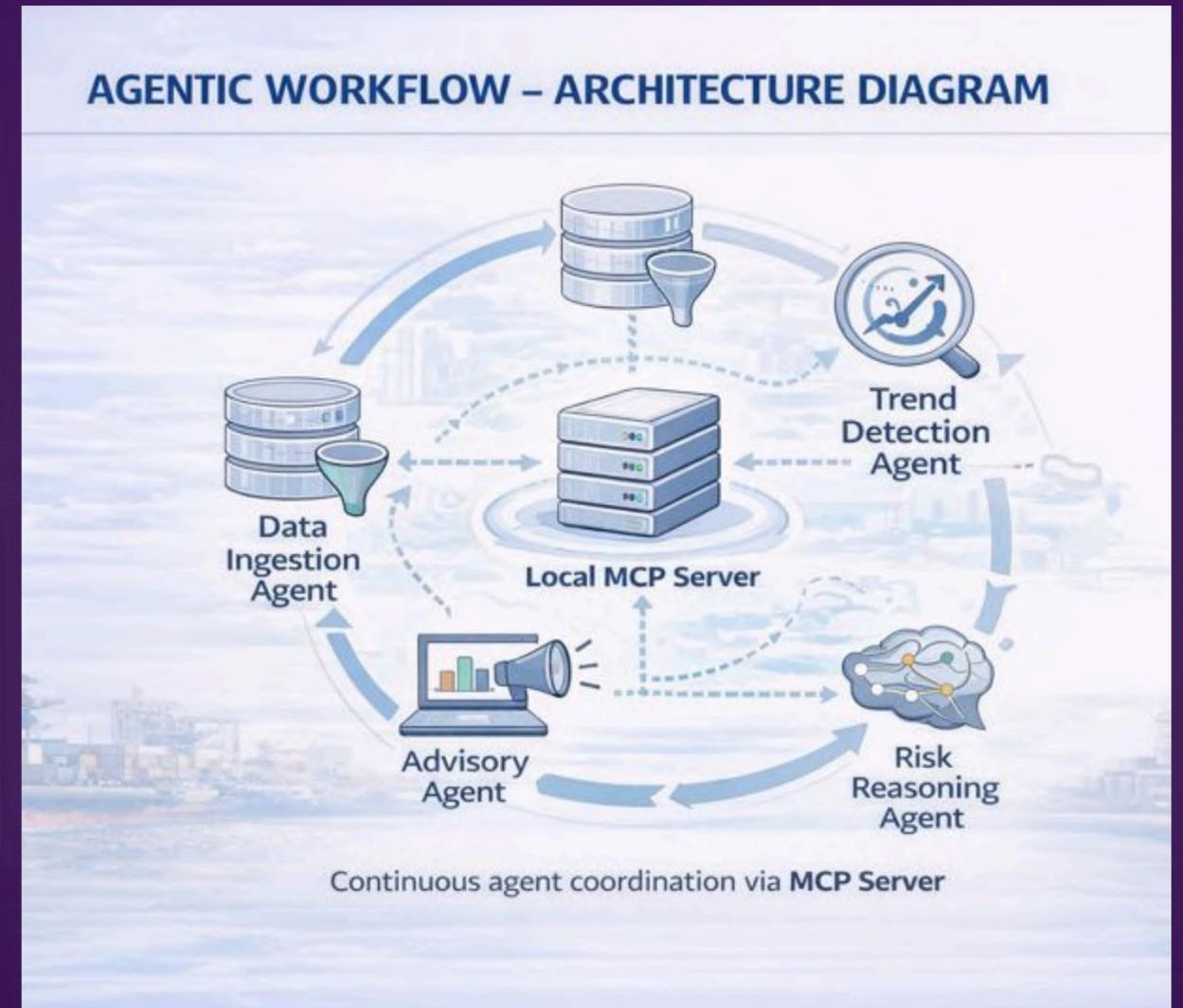- Identifies sudden drops or spikes

## Risk Reasoning Agent
- Correlates trade trends with geopolitical risk
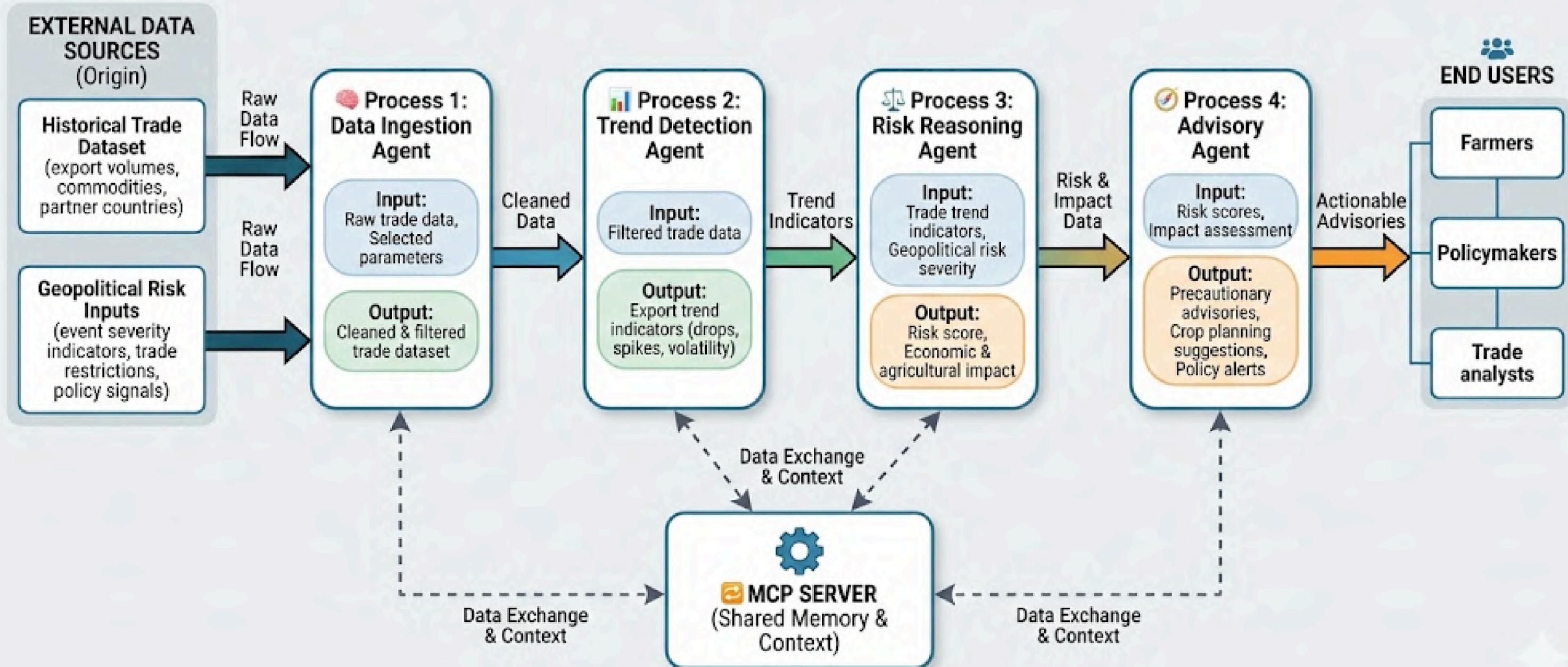- Computes economic and agricultural risk severity

## Advisory Agent
- Generates precautionary actions
- Suggests alternative crop strategies and policy signals

Continuous reasoning loop enabled through MCP Server



AGENTIC WORKFLOW – ARCHITECTURE DIAGRAM

Data Ingestion Agent

Local MCP Server

Trend Detection Agent

Advisory Agent

Risk Reasoning Agent

Continuous agent coordination via MCP Server

# TECHSTACK

## DATA LAYER

- **Historical Trade Dataset (CSV format)**
- **Geopolitical Risk Indicators (static inputs)**

## AGENT LAYER

- **Python**
- **Pandas & NumPy (data processing)**
- **Rule-based reasoning & statistical analysis**

## MCP

- **MCP (Model Context Protocol) Server**
- **Local Python-based MCP implementation for:**
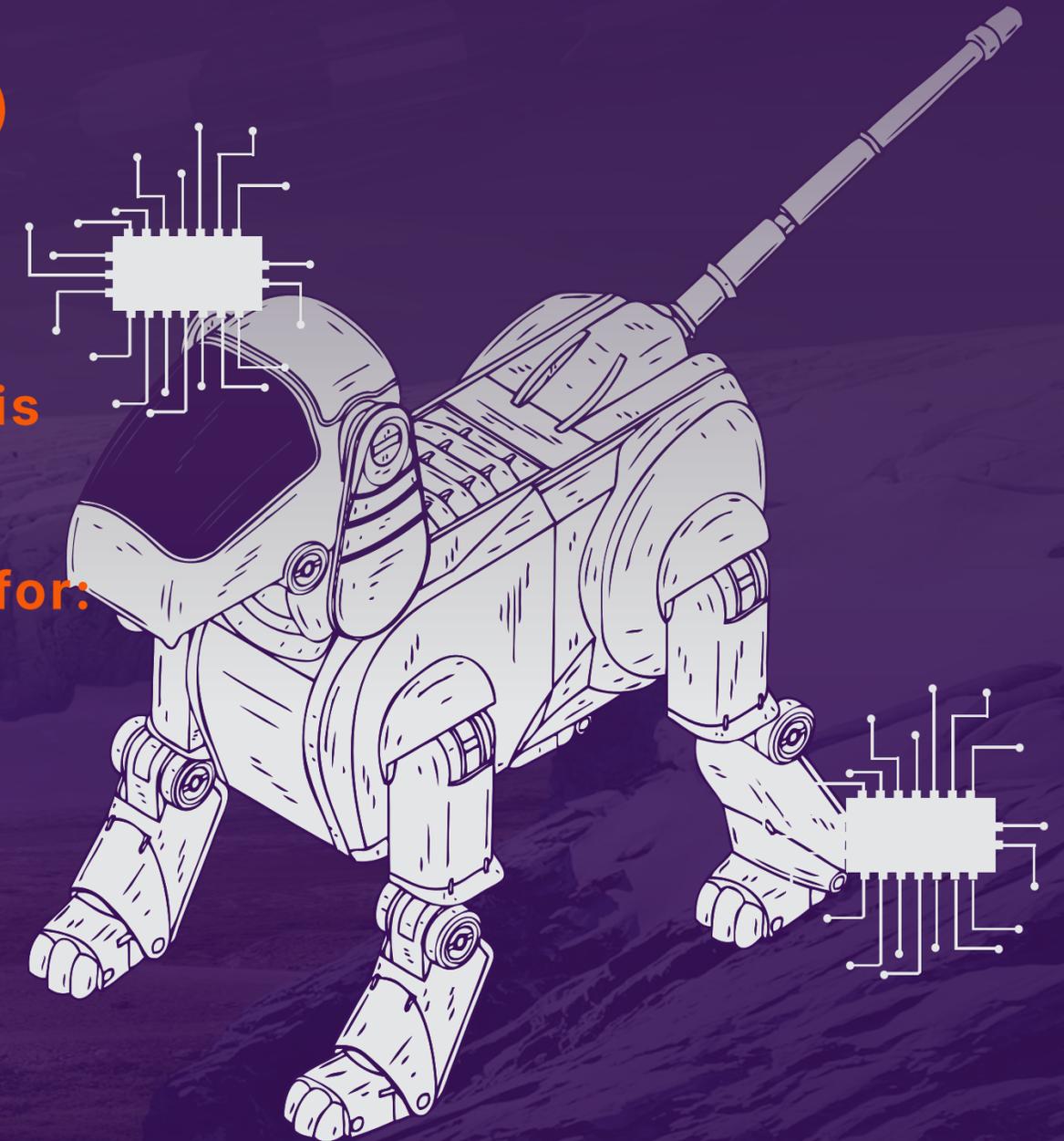- **Inter-agent communication**
- **Shared memory & reasoning context**

## BACKEND

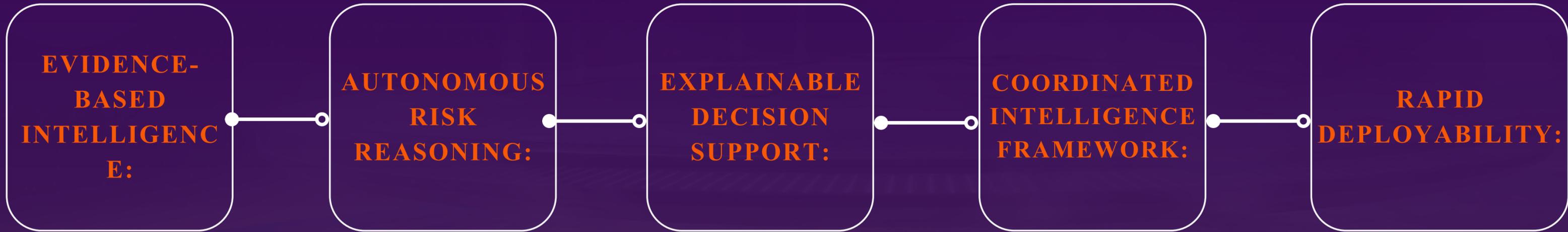- **Python (FastAPI / CLI-based execution)**
- **Modular agent architecture**

## OUTPUT

- **Command Line Interface (CLI) / Streamlit**
- **Generated risk scores & advisories**

# FEASABILITY

**EVIDENCE-BASED INTELLIGENCE:**

**AUTONOMOUS RISK REASONING:**

**EXPLAINABLE DECISION SUPPORT:**

**COORDINATED INTELLIGENCE FRAMEWORK:**

**RAPID DEPLOYABILITY:**

The solution operates on validated historical trade patterns that reflect repeated geopolitical and export-disruption scenarios.

The system independently detects abnormal trade behavior, correlates it with geopolitical context, and evaluates downstream economic and agricultural impact.

Risk assessments are accompanied by transparent reasoning and human-readable justifications, ensuring trust and interpretability.

Modular reasoning components exchange insights through a shared coordination layer, enabling consistent and state-aware predictions.
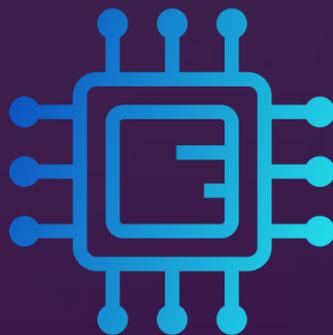
Lightweight computation and modular execution allow end-to-end deployment and demonstration within a constrained development window.

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# RESEARCH AND REFERENCES

## RESEARCH

- Prior analytical work established strong links between geopolitical events and trade volatility using historical export data.
- Recurring disruption patterns validated the feasibility of predictive trade-risk analysis and informed key design choices such as trade indicators and volatility thresholds.
- The current work extends this foundation with autonomous reasoning and proactive decision support, enabling early risk anticipation instead of post-impact analysis.

## REFERENCES

- United Nations Comtrade Database – International Trade Statistics
- World Bank Open Data – Trade & Economic Indicators
- WTO Trade Monitoring Reports
- Academic literature on :
1. Trade disruption analysis
2. Geopolitical risk and economic impact

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**THANK YOU!**