**1. Conceptual Architecture**

* **Data Layer:**
  + Pipe-and-Filter system for MSE data scraping
  + MySQL database for structured data storage
  + User authentication data store
* **Business Logic:**
  + Nest.js backend services for data processing
  + Stock analysis calculations
  + Authentication and authorization service
* **Presentation Layer:**
  + Vite React frontend with TypeScript
  + Interactive charts and visualizations
  + Protected routes and auth flows

**2. Execution Architecture**

* **Server Infrastructure:**
  + Python scraper service
  + Nest.js API server
  + MySQL database
  + JWT authentication service
* **Microservices:**
  + Data Collection Service (Python scraper)
  + API Service (Nest.js)
  + Auth Service (user management)
* **Containers:**
  + Docker containers for each service
  + Docker Compose for orchestration

**3. Implementation Architecture**

* **Technologies:**
  + Data Collection: Python (BeautifulSoup, Pandas)
  + Database: MySQL (Aiven)
  + Backend: Nest.js with TypeScript
  + Frontend: Vite React, TypeScript, Chart libraries
  + Auth: JWT, bcrypt
  + Containerization: Docker
* **Pipe-and-Filter Components:**
  + ScraperFilter: Symbol collection
  + DateCheckerFilter: Date range validation
  + DataProcessorFilter: Data processing and storage
* **Hybrid Architecture:**
  + Pipe-and-Filter for data collection
  + REST architecture with auth middleware
  + Containerized microservices