

Capgemini / Neo4j European Partnership

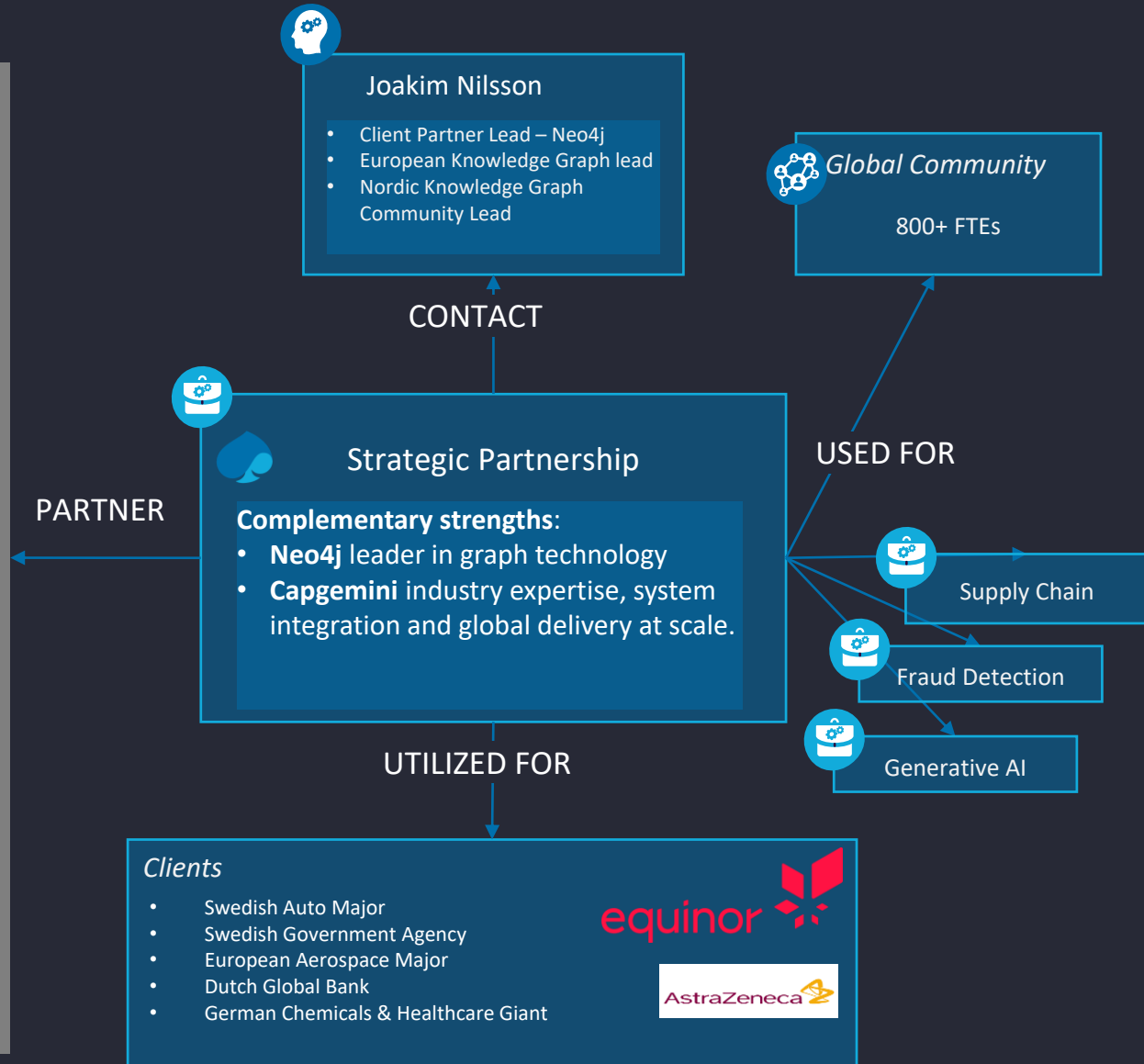


FR	30 FTEs
GE	15 FTEs
SP / UK / NL	40 FTEs
Nordic countries	25 FTEs

100+
Consultants

System Integration Expertise

Countries with successfully integrated Neo4j Projects in Europe





Building a Scalable Knowledge Graph to Power AstraZeneca's Supply Chain 2030 Vision

Context/Market Positioning & Competition:

AstraZeneca, a global biopharmaceutical leader, is transforming its supply chain through digital innovation. As part of its Supply Chain 2030 vision, the company is building a Digital Supply Chain Map (DCSM) using Knowledge Graph technology to enable real-time, conversational access to supply chain insights.

Challenges/Pain points:

- Limitations in current architecture hinder scalability and integration
- Manual data refresh processes reduce agility
- Lack of strategic alignment across initiatives leveraging the knowledge layer
- Urgent demand for new features following re-platforming to Neo4J

Gain points:

- Accelerate delivery of new features and data sources
- Align with Operations Knowledge Fabric and Supply Chain 2030
- Enable semantic modeling and conversational AI for deeper insights
- Reduce regret spend by reusing existing architecture

Approach & Solution:

- Capgemini proposed a three-stream approach: enhancing DCSM functionality, enabling semantic modeling with a chat interface, and identifying use cases aligned with Ops2030.
- A scalable Neo4J-based architecture was developed, integrating inventory, production, and financial data.
- A self-service map designer and chatbot interface were created to enable intuitive data exploration.
- The architecture was aligned with the Operations Knowledge Fabric (OKF) to ensure long-term scalability and interoperability.

BENEFITS DELIVERED

FASTER

delivery of insights through automated data refresh

IMPROVED

strategic alignment with Ops2030

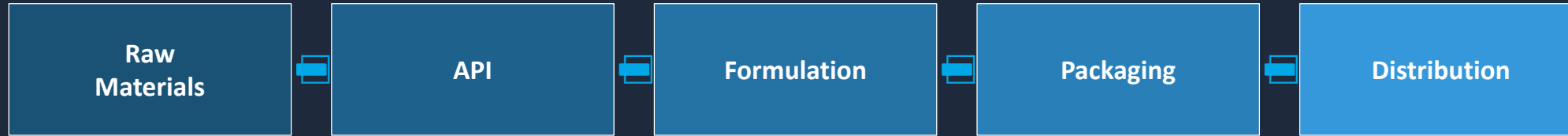
SCALABLE

architecture enabling platform expansion

Data Challenges

The challenge is ~~seldom~~ never lack of data — but understanding it

SUPPLY CHAIN COMPLEXITY



Spanning multiple continents · Thousands of SKUs · Multi-step production flows



Complex Dependencies

Materials, sites, suppliers & processes deeply interlinked



50–100 Columns / Row

Tabular source data with massive dimensionality per record



Legacy & Inconsistency

Naming drift, evolving standards, and layered historical data



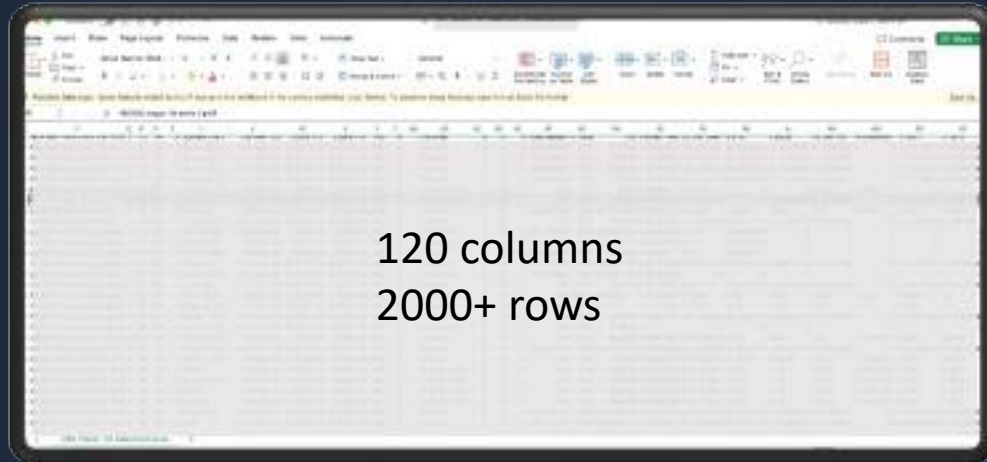
AZ Data Trust

Reliable data products from Salesforce — consistent format over time

The Power of a Multidimensional Dataverse

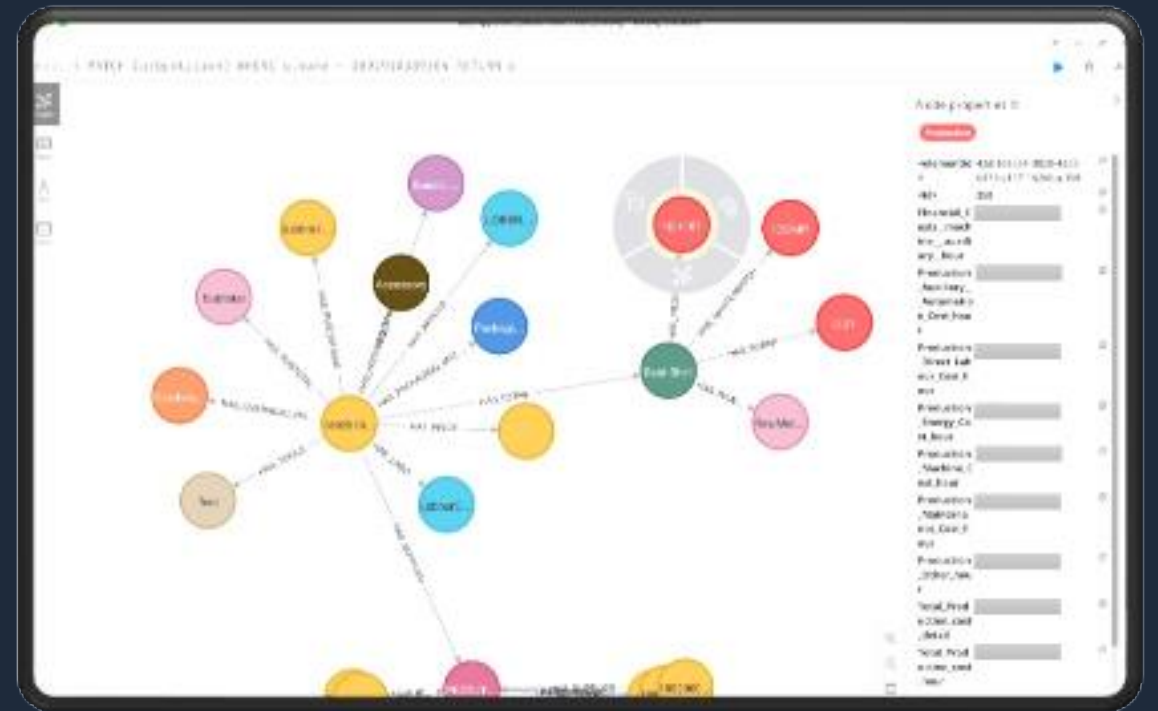
AKA: The Deterministic Dead-End

“Tabular data is two-dimensional – which is really good for two-dimensional uses-cases”



120 columns
2000+ rows

A screenshot of a spreadsheet application showing a very wide table with many columns and rows. The text "120 columns" and "2000+ rows" is overlaid on the right side of the spreadsheet.



How to Model a Global Supply Chain from Snowflake Data

5 steps from chaos to clarity

01

Dive In



Explore before you model

- Explore raw tables
- Profile structure & anomalies
- Identify hidden entities

02

Find Foothold



Anchor on a concrete use case

- Identify stable keys & anchors
- Map core entities
- Establish first relationships
- Find what does not move

03

Preserve Lineage



Keep the data story intact

- Trace transformations & flows
- Enable tracking movement across systems
- Traceability =>Trust

04

Iterate



Refine with the domain

- Develop model with domain experts
- Validate against real scenarios
- Start exploring adjacent usecases

05

Abstract



Build reusable patterns

- Align with enterprise ontology
- Generate process flow based on BOM chain

Strategy: Stay Close to the Source

How to trust a 4 million node graph



Don't infer relationships prematurely

Resist the urge to derive edges from implicit patterns — keep only what the source states explicitly



Don't collapse complexity too early

Premature simplification destroys the context needed to debug and explain results later



Preserve source property naming

Keep field names as-is from Snowflake — no renaming until you understand intent



Maintain traceability to origin systems

Every node carries its source table, system ID & load timestamp



Allow unused attributes to remain

Carry extra columns forward — missing data later is more expensive than extra now



Transparency over elegance

A readable graph you can explain beats a clean graph you can't debug





DEMO: AN AI DRIVEN ASSEMBLY STATION

Make your assembly station manage a messy context



New Tariffs Declared

Announced via social media — cost structures shift overnight



Ship Stuck in Suez

Critical components blocked — delivery windows collapse



Supplier Plant Fire

Single-source component gone — entire lines at risk



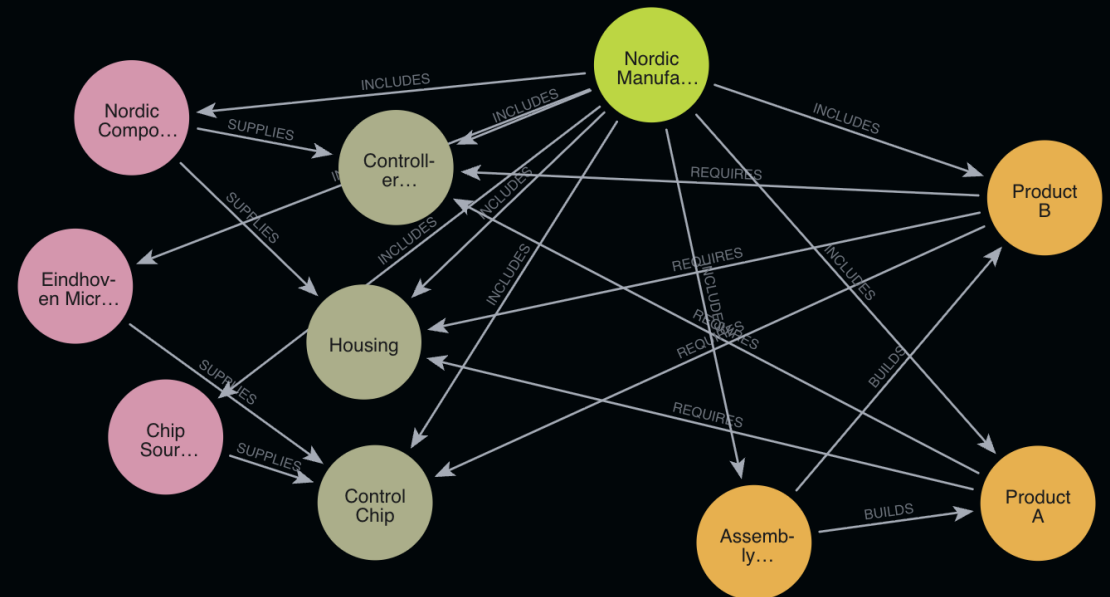
Rush Order Out of Schedule

Priority override cascades across the whole supply network



DEMO

Conversational Supply Chain assistant, with context graph



FACTORY FLOOR

COMPONENT STOCKS

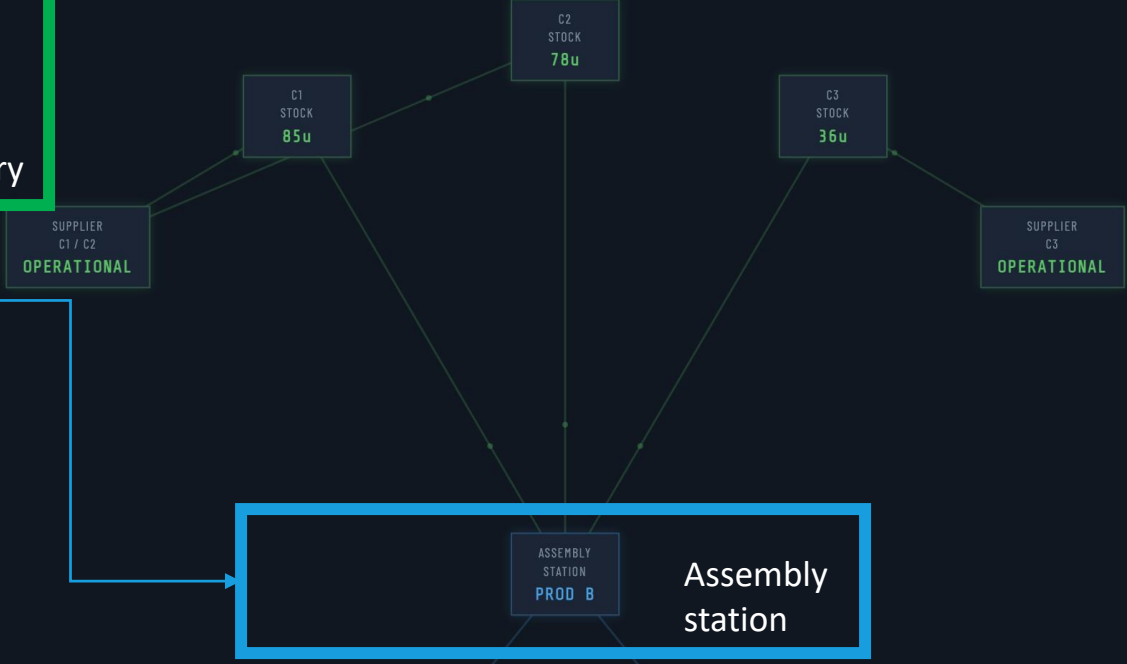
Component C1	85u/120
Component C2	78u/120
Component C3	36u/60

Next delivery - C1: T10 | C2: T10 | C3: T12

Inventory

CONTEXT GRAPH

LIVE STATE - updates from simulation + applied emails



ASSEMBLY STATION

PROD B

step 0/3

C1: 1u C2: 1u C3: 1u ← shared

Current prod

STATION CONTROL

PROD A

PROD B

SCHEDULE PROGRESS

Product A	0/40
Product B	0/30

Stocks

SCHEDULE

PROD A

0/40

Prod A

SCHEDULE

PROD B

0/30

Prod B

ASSEMBLY STATION
PROD B

Assembly station

COMMS INBOX

MAILBOX 6 unread · 6 total

NEW MESSAGES

PROCUREMENT 09:14
ALERT: Fire at C3 Supplier - All Shipments Suspended
 Fire at primary C3 warehouse. All outbound shipments suspended indefinitely.
 URGENT NEW

FINANCE 10:32
FWD: New C3 Import Tariffs - 10% Surcharge in 14 Days
 Trade compliance: 10% C3 tariff effective in 14 days. Product B margins affected.
 NEW

PROCUREMENT 11:05
Update: Alternative C3 Supplier Located - Limited Volume
 Alt C3 supplier found in Eindhoven. Delivery in 6-8 ticks, 40% volume, +12% c...
 NEW

Inbox

SUPERVISOR AGENT

SUPERVISOR

Production Supervisor online. I can answer questions about operations, model the impact of decisions, or help you process incoming emails. What do you need?

AI Supervisor Chat

Ask the supervisor...

SEND

- Nominal
- Warning
- Critical

DECISION ENGINE LOG

T000 System initialized. Assembly station producing Product B per schedule.

FACTORY FLOOR

COMPONENT STOCKS

Component C1	85u/120
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ASSEMBLY STATION

PROD B step 0/3

C1: 1u C2: 1u C3: 1u ← shared

STATION CONTROL

PROD A

+ PROD B

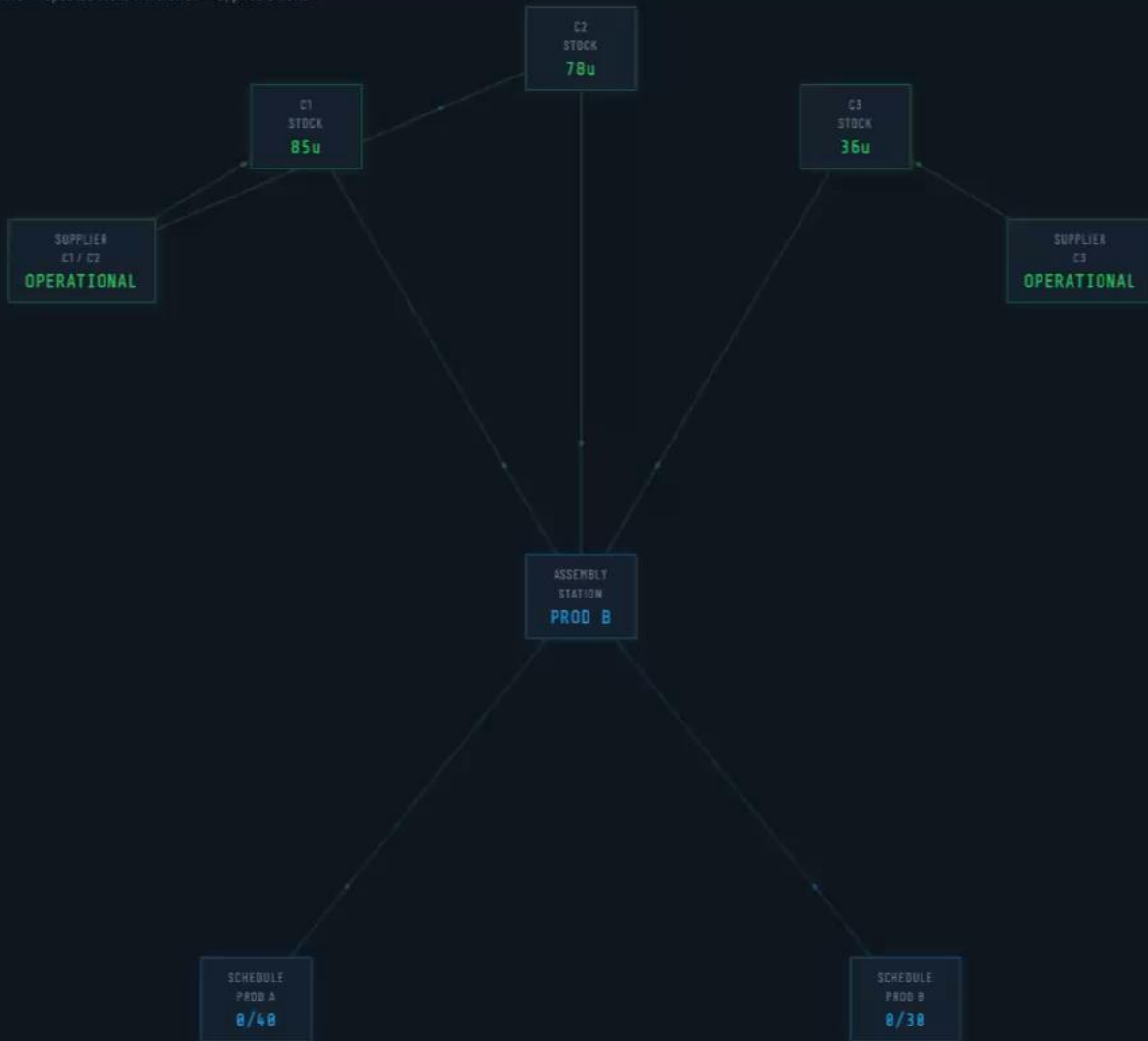
Switch incurs 2-tick retuning downtime

SCHEDULE PROGRESS

Product A	0/40
Product B	0/30

CONTEXT GRAPH

LIVE STATE — updates from simulation + applied emails



- Nominal
- Warning
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NEW
- PROCUREMENT 11:05

🔴 **Update: Alternative C3 Supplier Located — Limited Volume**

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NEW

SUPERVISOR AGENT

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Production Supervisor online. I can answer questions about operations, model the impact of decisions, or help you process incoming emails. What do you need?

Ask the supervisor... SEND

DECISION ENGINE LOG

T000 System initialized. Assembly station producing Product B per schedule.



RUSH ORDER HANDLED

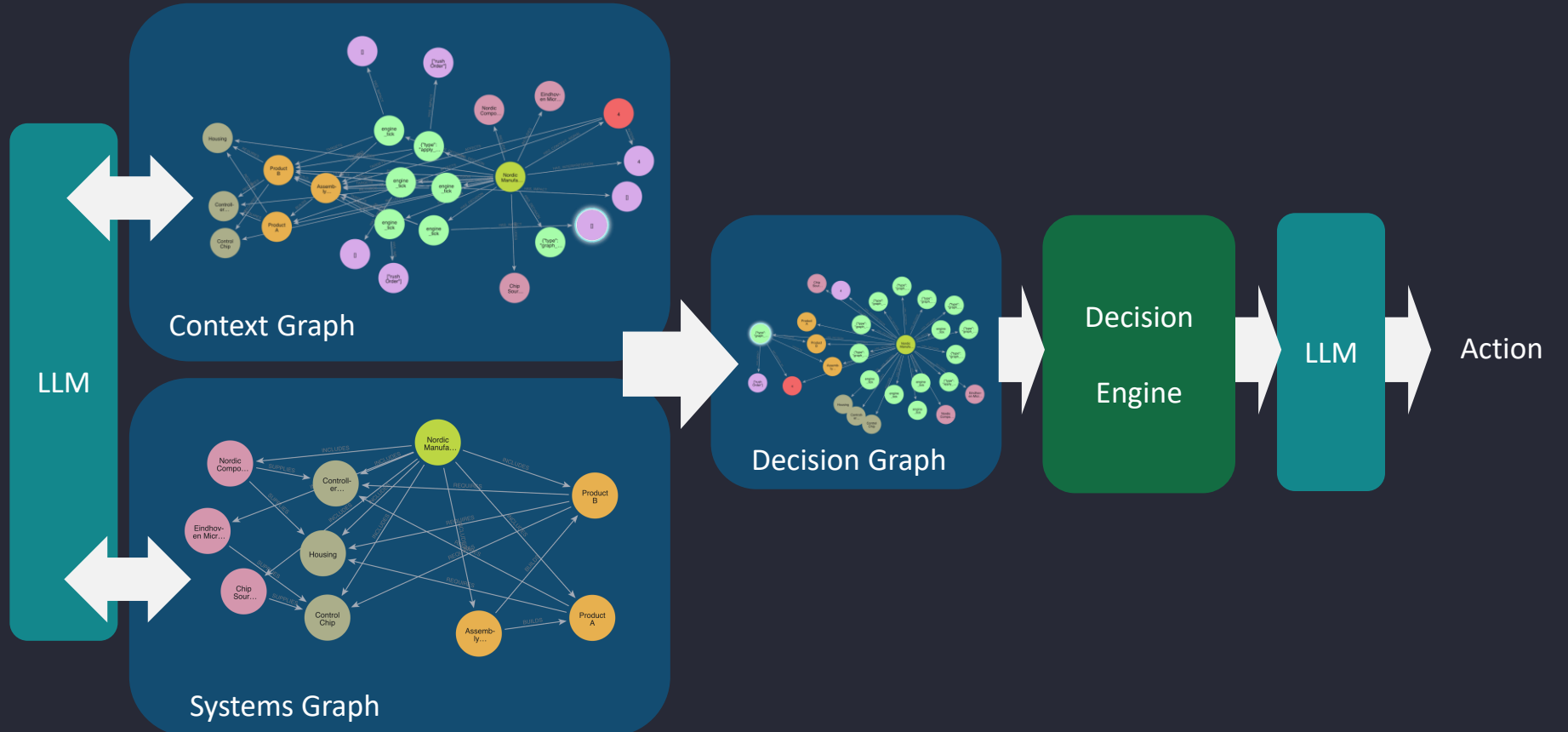
Create a fact-based conversational supply chain assistant

FROM sales@nordic-mfg.com 11:47

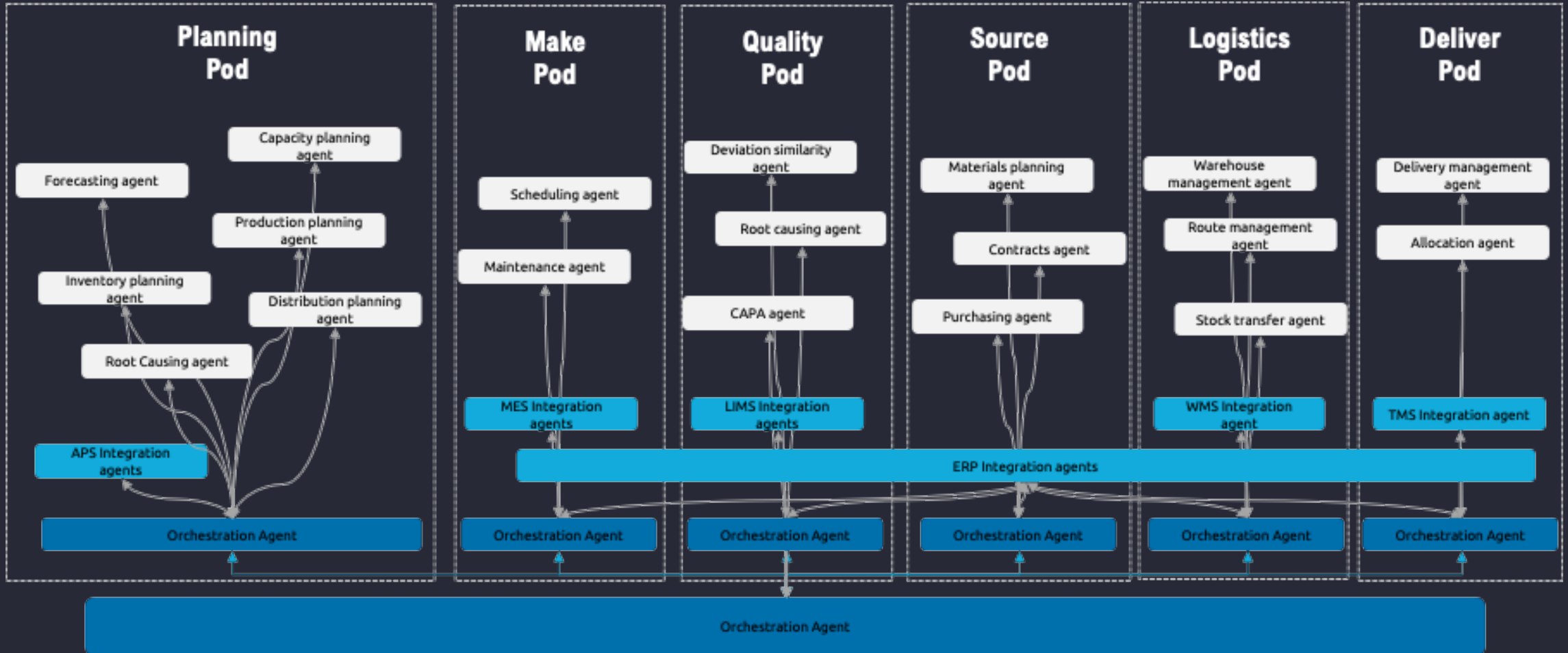
⚡ Rush Order: 10x Product A – Nordvest AS

Sales here. Key account Nordvest AS has placed an urgent order for 10 additional units of Product A, needed within 8 ticks. This is a strategic account – losing this order has significant relationship implications beyond this transaction. Please advise on feasibility and schedule impact as soon as possible.

Mail forwarded



AGENTIC POWERED SUPPLY CHAIN



AGENTIC POWERED SUPPLY CHAIN



Enterprise Ontology

