

# From Complexity to Clarity

---

Transforming Supply Chain Planning with Generative AI

## Agenda

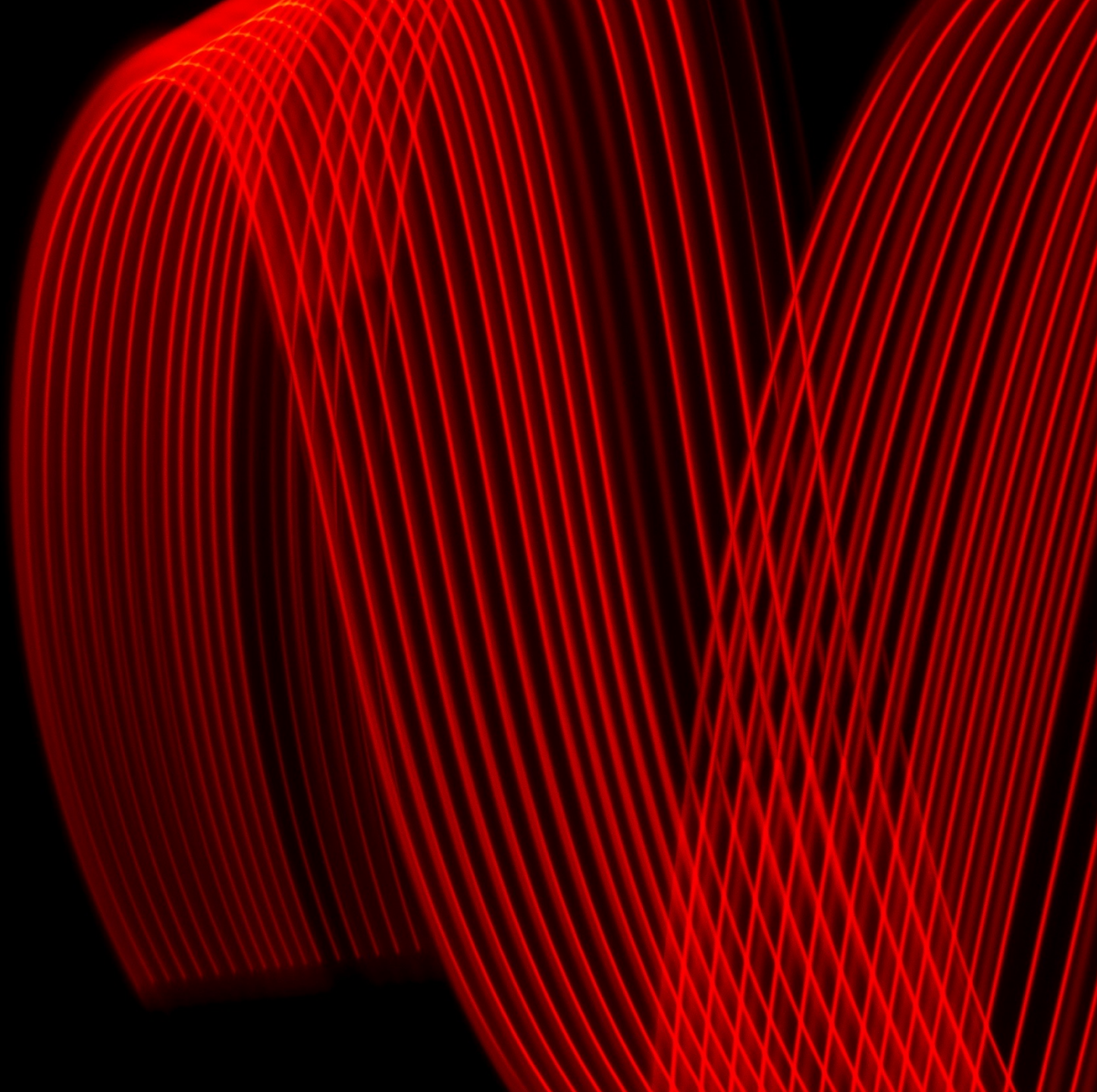
---

- **The wave of Generative AI in Supply Chain planning**
- **A demonstration of using Gen AI for network optimization**
- **How Supply Chain planners can think about using Gen AI**

01

---

# The wave of Generative AI



# Large Language Models (LLMs) are the most mature Generative AI and handle structured data and text, which address most relevant Supply Chain use cases

Supported by Large Language Models  
(most relevant for Supply Chain)

More mature				Less mature	
Structured data	Text	Image	Video / Audio	3D Objects	Multi-modal
<b>Current / demonstrated capabilities</b> <ul style="list-style-type: none"><li>• Understanding tabular data to extract insights</li><li>• Customer segmentation</li><li>• Synthesizing data</li></ul>	<ul style="list-style-type: none"><li>• Code generation and documentation</li><li>• Hyper-personalized insights and commentary</li></ul>	<ul style="list-style-type: none"><li>• Realtime ad image personalization</li><li>• Creation / iteration</li><li>• Auto-labeling</li></ul>	<ul style="list-style-type: none"><li>• Voice to text</li><li>• Text to video (Sora)</li></ul>	<ul style="list-style-type: none"><li>• Voice / emotion to face animation</li><li>• Protein folding</li><li>• Layout optimization</li></ul>	<ul style="list-style-type: none"><li>• Image description</li><li>• Visual question answering</li></ul>

# Large Language Models (LLMs): Five key functionalities / tasks

High value but increasing complexity 

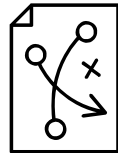
## Collect and summarize information

Research, synthesize, and/or classify content



## Translate and adapt existing content

Adapt communications for different audiences and contexts



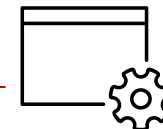
## Draft new content

Write documents, emails, reports, etc.



## Trigger action

Assist with automating tasks with other systems



## Predict and forecast

Model expected future outcomes and identify opportunities and risks



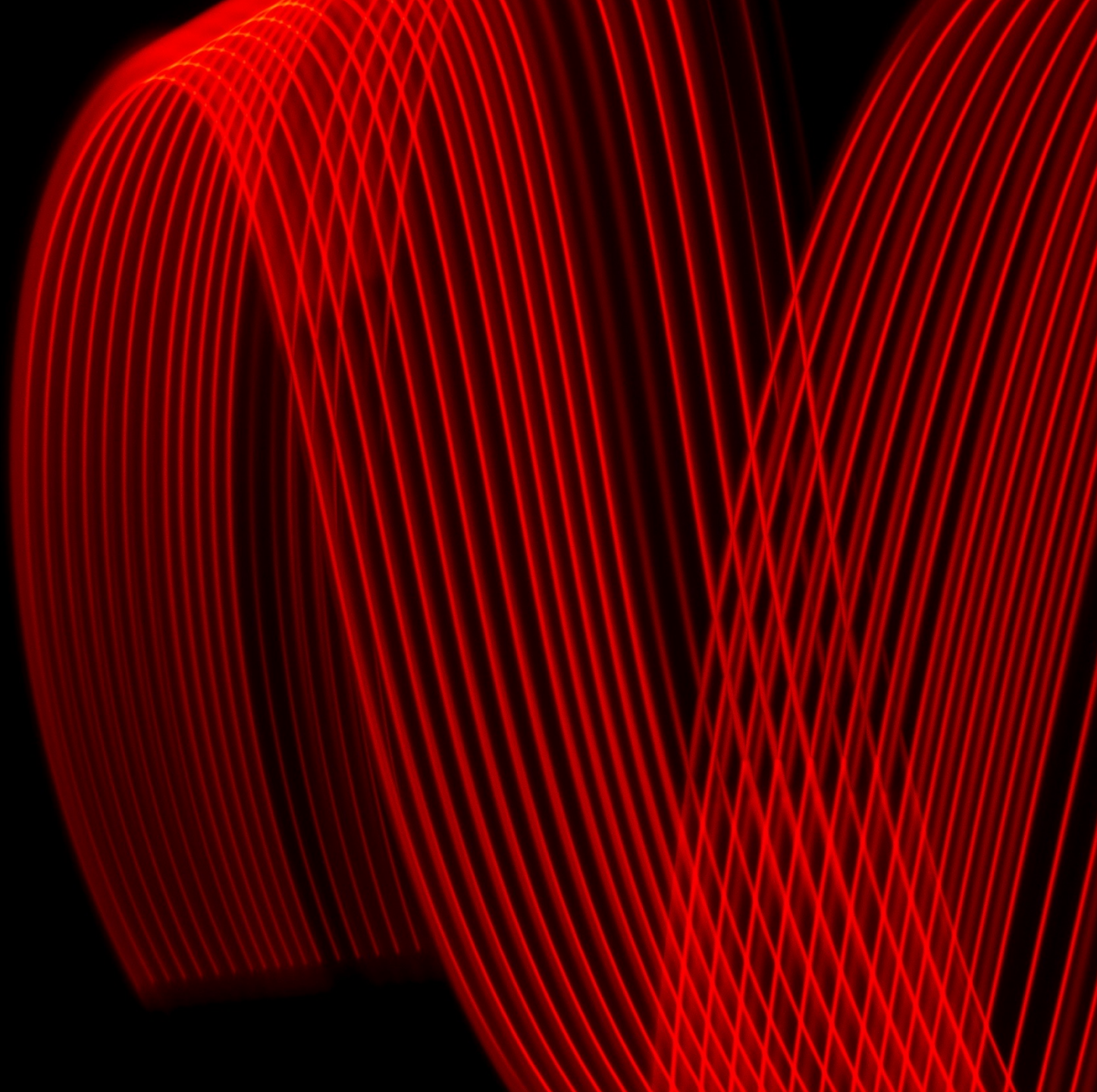
## Use cases

- Monitoring and collating information on market and vendor ecosystem (e.g., disruptions)
- Automates meeting prep and wrap-up (e.g., for demand and supply reconciliation discussions)
- Drafting inventory plan based on synthesized inventory data
- Generating reports on shortages, excess inventory or out of code inventory
- Creating market trend reports and develop historical sales data reports
- Chatbot that allows customers to track orders in real time and provides resolutions to queries (in concert with other techs)
- Identifying and correcting inconsistent / incorrect supply chain data (e.g., lot sizes, lead times)
- Automating and handling repetitive high-volume tasks such as data entry and sorting
- Detecting potential shortages and providing root-cause analysis and options for remediation (in concert with other techs)
- Providing sales team with predictive product availability information (in concert with other techs)

02

---

# Demonstration



# Optimizing a supply chain network involves a series of critical questions and choices

Cost Growth Enablement Resilience Responsibility

/ ILLUSTRATIVE

How will changes in **raw material costs** impact network dynamics?

Are we producing our products in the **lowest cost location** and optimizing distribution based on **customer demand**?

Are our inventory levels **aligned with our service and cost goals**?

Can our network **accommodate organic growth**?

Do our network nodes **align to key customer demand centers**?

Where can we **improve customer service levels**?

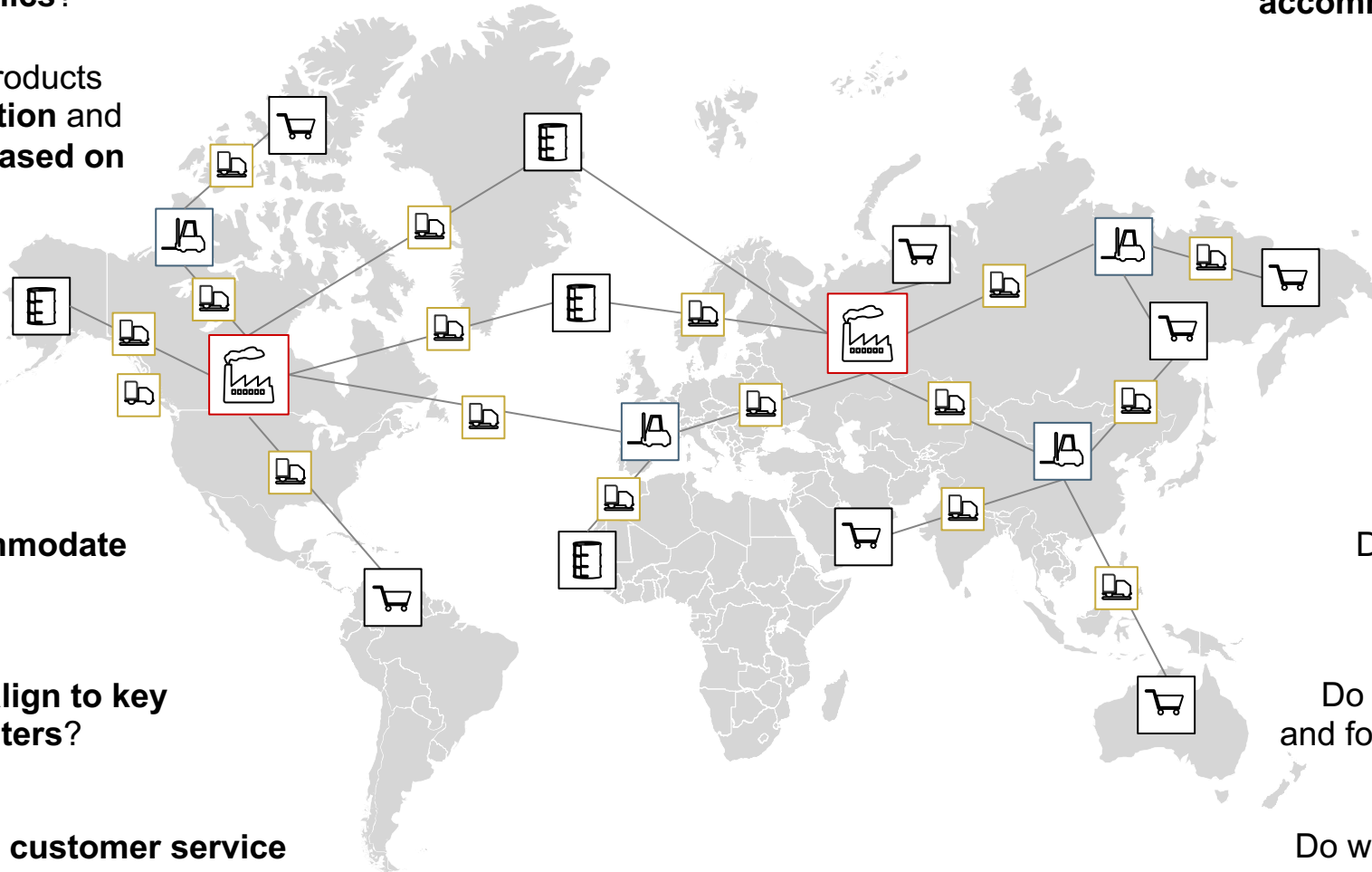
Do we have the **flexibility to accommodate demand spikes** in response to crises?

Can our network withstand **unplanned facility outages**?

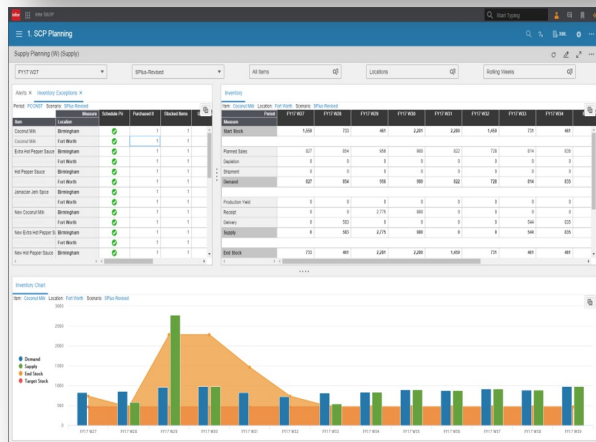
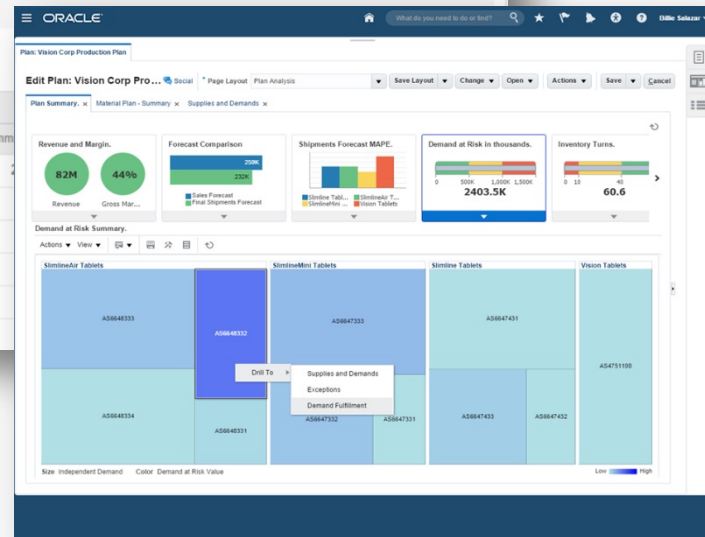
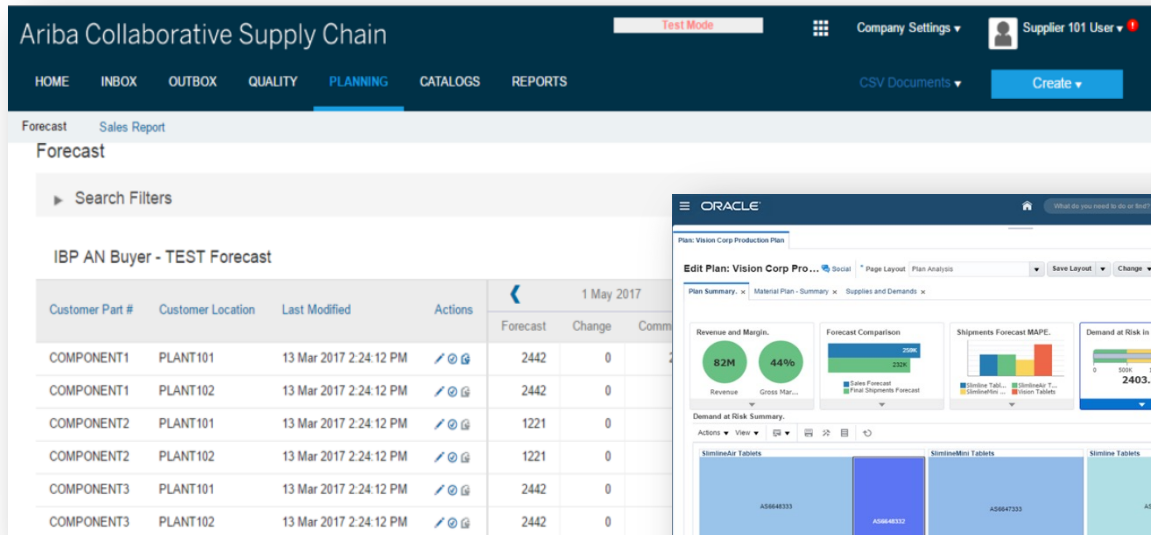
Does our network **minimize environmental impact**?

Do we **protect human rights** and follow **fair labor practices**?

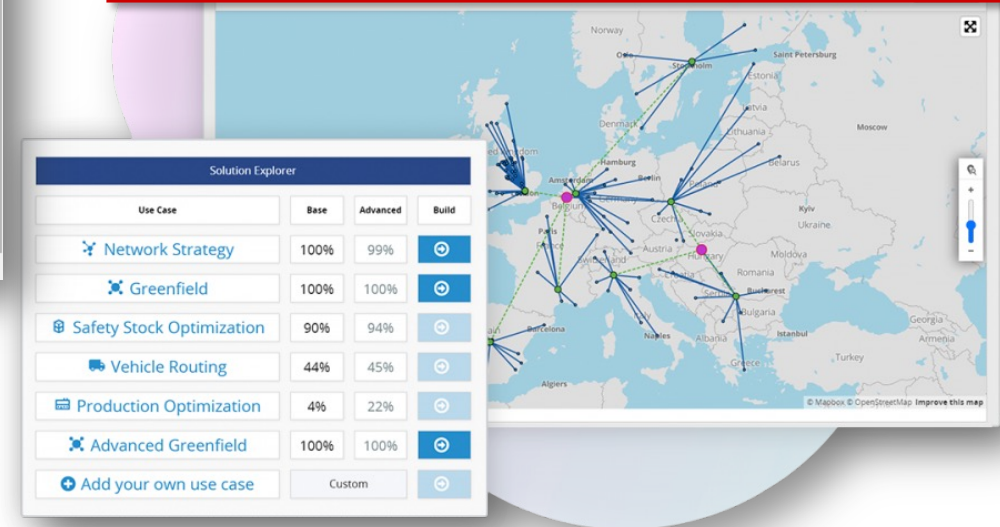
Do we support **diversity in our network / supplier base**?



# Many Supply Chain Optimization solutions are sophisticated and complex



- Simple heuristics are preferred over Optimization-based models which may be harder to explain
- There is a need for specialist users or IT to setup. Major vendors offer paid certifications. This leads to higher latency as they are the only experts capable of modifying the model.



**Can we use Generative AI to add transparency and ease the use of state-of-the-art solutions?**



03

---

# Integrating Gen AI with supply chain planning

# Supply Chain: Potential use cases for generative AI

## High value but increasing complexity

<b>Demand planning</b>	<ul style="list-style-type: none"> <li>• <b>Synthesize market research</b> to create organized databank (e.g., brand awareness, geography, sales trends)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Develop outlines and proposals for demand planning</b> based on synthesized market research</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Create market trend reports</b> and develop historical sales data reports</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Autogenerate quarterly demand analyses</b> based on set outline and key datasets</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Automate demand prediction and order optimization</b> by synthesizing historical sales data, price forecast, macro changes</li> </ul>
<b>Supply planning</b>	<ul style="list-style-type: none"> <li>• <b>Collect and synthesize internal</b> (e.g., storage constraints, machine downtime, etc.) <b>and external data</b> (e.g., port congestion, route closures, weather, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Identify and design plan effectiveness, product availability and plan adherence KPIs</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Generate reports</b> on shortages, excess inventory or out of code inventory</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Generate scenarios and recommendations for planning exceptions</b></li> <li>• Create alerts for gaps in plan</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Generate optimal sourcing logic for internal network</b> by simulating SC scenarios</li> </ul>
<b>Inventory planning</b>	<ul style="list-style-type: none"> <li>• <b>Synthesize supply and demand planning</b> to assist in inventory level planning</li> <li>• Navigation and verification of <b>internal supply data</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Draft inventory plan</b> based on synthesized inventory data</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Generate reports on forward looking inventory projections</b> (min/max tracking, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Make recommendations for optimum min/max levels for products</b> based on segmentation</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Predict optimal inventory level</b> and automatically adjust production levels to prevent bottlenecks</li> <li>• <b>Support in hedging volume recommendation</b></li> </ul>
<b>Sales and operations planning</b>	<ul style="list-style-type: none"> <li>• <b>Monitor and collate information on vendor ecosystem</b></li> <li>• <b>Manage knowledge base for sales use</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Draft advanced S&amp;OP</b> based on real-time inputs from multiple sources</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Autogenerate profitability reports</b> based on automated profitability calculations</li> <li>• Support in drafting and developing negotiation strategy</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Generate scenarios and recommendations for gaps to plan with financial impact</b></li> </ul>	<ul style="list-style-type: none"> <li>• Predictive tool to analyze potential shortages (first alert, then root cause analysis, then option set)</li> </ul>

Immediate Generative AI applications

Longer-term Generative AI applications

# While Generative AI has started to see adoption, there are still many challenges to delivering value

## Challenges associated with using Gen. AI



### Time / resources

Large language models can be time-consuming to train and run; minimized by leveraging third party models (e.g. from OpenAI)



### Integration complexity

Capturing full potential benefits involves addressing substantial data / systems integration challenges



### Accuracy / correctness

Baseline models (prior to fine-tuning) can present inaccurate or false output



### Quality / refinement

Quality of language / images / output does not always meet requirements for some applications



### Talent availability

Newer capabilities can make it challenging to identify / onboard talent required to manage it



### Rights / ownership

Ownership rights of created content remain somewhat ambiguous  
Unclear liability for harm



### Ethical concerns

AI's cost-saving ability may render many jobs obsolete  
Rise of deepfakes reduces trust in public figures, news and content

While real, these challenges are all addressable

Early adopters have an opportunity to establish a competitive advantage by capitalizing on the flywheel between user engagement and data / model performance

**Questions**

