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AWS powered supply chain for manufacturing operations in India

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Trends shaping Indian supply chains

- Indian manufacturers are in growth mode and hence seeks an adaptive supply chain rather than a reactive one

- Supply chains/product lines have become very complex and globally dependent, macroeconomic/geopolitical instability, have made them fragile due to key materials availability

- Warehouse modernization, tactical network balancing, Freight Under management optimization and supplier collaboration are the top 4 SCO's (Supply Chain Officer's) priorities

- Environmental sustainability is a key concern for customers and companies. Supply chain & working capital performance are competitive differentiator along with sustainability goals beyond board room

AWS innovation in adaptive supply chain

There are four key capabilities when building an adaptive and resilient supply chains with the ability to maintain the required level of operational efficiency and respond successfully to the issues being faced, whatever they are.

1.

Digitized business model using advanced supply chain technologies to build supply chain connectivity, agility, and visibility.

2.

Respond quickly to sudden changes in customer demand, volume and locations

3.

Adaptable sourcing to shifts in key markets, shutdowns, labor rates, and other factors
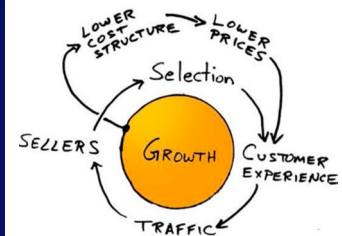
4.

Build resilience for unforeseen disruptions, with respect to inventory, working capital and freight under management

Lessons from Amazon's supply chain

Starting with Amazon's "virtuous flywheel", AWS supply chain insight embodies three major themes

1. Customer Centricity

1.1 Perfect Customer Experience
Offer customers options for product selection w/ bundled services, dynamic delivery options, price/payment options in channel/format convenient to them

1.2 Predict/Shape Customer Preferences
Sense latest trends and hyper-local demand patterns with the use of AI/ML models on consumption data and demand drivers (internal & external); offer promotions and options to shape customer preferences

1.3 Full-Life Cycle Customer Support
Enable customers to derive maximum value from their purchases by reducing downtime, extending useful life through predictive maintenance and repairs

1.4 Product Compliance, Trace & Recall
Trace product batch origins for regulatory compliance, to conform to product specs and conduct product safety recalls, with ability for independent verification

2. Speed and Reliability

2.1 Demand Driven Operations Planning
Use optimization algorithms, ML techniques to generate optimal distribution, inventory, labor (fleet) and procurement plans driven by highly accurate demand forecasts

2.2 Auto-Replenish & Network Balancing
Enable fast and continuous operations with ML-driven intelligent agents on the edge autonomously executing replenishment, VMI, direct ship, inventory rebalancing and procurement processes

2.3 Highly Automated Facility Operations
Operate warehouses, plants (fleet), fulfillment centers with speed and efficiency, by using advanced algorithms and robotics to plan and execute material handling operations

2.4 Optimized Transport & Logistics
Optimize end-to-end inbound/outbound routes, labor, delivery sequencing, yard planning and driver scheduling; enable fleet monitoring and delivery status updates from start to final mile

3. Resiliency and Sustainability

3.1 Resilient Product & Ops Design
Use simulation models to design networks to avoid unnecessary cost of SC complexity. Configure n-tier network, product alternates, multi-sources and transport options to ensure resiliency reduce supply chain risk

3.2 Cognitive Sourcing & Procurement
Utilize self-learning methods in procurement to lower material and process costs while minimizing risk to operations and maintaining a healthy supplier base

3.3 Responsive Production & Supply
Use AI/ML for lean operations w/ minimal bottlenecks, flexible demand driven manufacturing, BOM substitutions, product mix and changeovers to reduce capacity loss

3.4 Sustainable Operations (Net-Zero Carbon impact)
Redesign end-to-end supply chain for net-zero carbon emissions, with use of renewable energy, clean fuels, electric delivery trucks, drones, reduced packaging, optimal routing

AWS and our partners' solutions - 2023 priorities

Our customers are asking for 5 different categories of solutions

Intelligent Supply Chain Solutions (Horizontal)

SC Foundation
SC Data Lake (OAGIS compliant), SC Digital Twin (maker), SC Control Tower etc.

SC Planning
Demand planning Sensing, Inventory, Risk Impact analysis, Response planning, Network Optimization

SC Operations
Warehouse, Transport Distribution, Network Optimizer, After-sales service parts, Product Substitution

SC Visibility
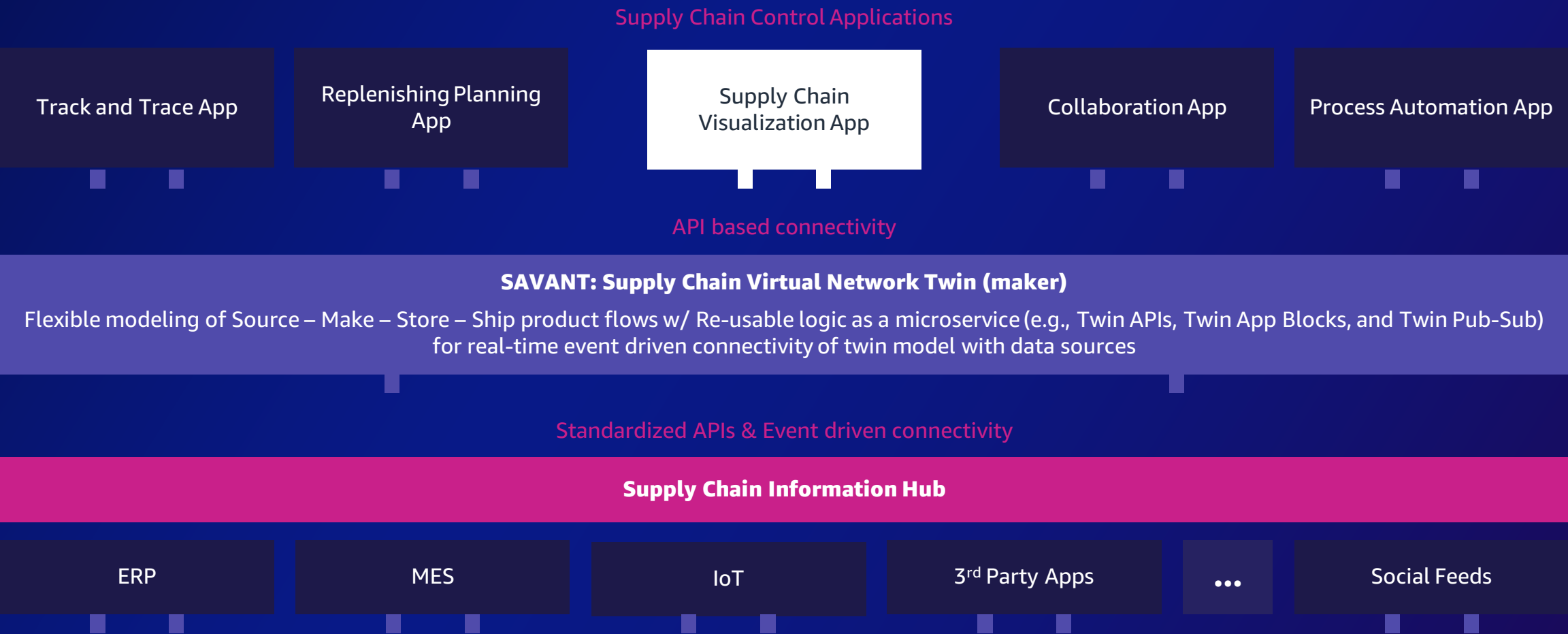Real-time transport visibility, shipment ETA, Product trace-n-track, Substitution, complexity analysis

T&L (Vertical)

SC Logistics
Container visibility, fleet asset utilization, optimal vehicle route rail/ocean port management

By working with AWS, our customers can use advanced analytics on their supply chain data from many different sources.

AWS Architecture | Supply chain control towers

We offer a scalable supply chain architecture to enable our customers to build control and visualization Apps on top of their data lake with efficient virtual modeling, compute, storage, and retrieval methods; reducing their development time by 30% or more.

Supply Chain Control Applications

| Track and Trace App | Replenishing Planning App | Supply Chain Visualization App | Collaboration App | Process Automation App |

API based connectivity

SAVANT: Supply Chain Virtual Network Twin (maker)

Flexible modeling of Source – Make – Store – Ship product flows w/ Re-usable logic as a microservice (e.g., Twin APIs, Twin App Blocks, and Twin Pub-Sub) for real-time event driven connectivity of twin model with data sources

Standardized APIs & Event driven connectivity

Supply Chain Information Hub

| ERP | MES | IoT | 3rd Party Apps | ... | Social Feeds |

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Self adaptive supply chains – Control Apps

We believe customers need to build a multi-tier stack of supply chain applications

Predict Supply Chain Disruptions

Use forecasting and ML to predict disruptions

- Supplier disruptions - shortage of key component)
- Production disruption - facility or machine down, quality
- Delivery disruption - transportation delay
- Shipping disruptions - warehouse or location down
- Customer disruption - demand changes, or facility down

Analyze Impact of Disruptions

Use Virtual Network Twin and simulation to analyze impact

Analyze impacts of:
- Supply disruptions on production
- Production disruption on inventory and delivery
- Delivery disruption on customers and inventory, shipping delays on inventory and customers, and customer disruption on their orders and service

Healing Response to Disruptions

Use local perturbations and substitutions to heal

Respond to disruptions accordingly:
- Supplier disruptions by alternate sourcing, expediate orders, substitutions
- Production disruption by alternate facility, contract suppliers, substitutions
- Delivery disruption by expediated transport mode, alternate locations
- Shipping disruption by changing to alternate locations, or carrier or mode of transport
- Customer disruption by shipping to another customer point, product substitutions

SC Resiliency w/Scenario Plan

Use Monte-Carlo simulation for sensitivity analysis

- Supply resiliency - product shortages, supplier capacity, cost variations
- Production resiliency – facility/machine down, quality, bottlenecks, labor shortage
- Delivery resiliency –transport delays from suppliers/inter-facilities, capacity shortages
- Shipping resiliency - warehouse or location down, transport strike, or delays
- Demand resiliency - order cancellations, demand changes, customer facility down

Introducing AWS Supply Chain (Preview)

Easily connect data across systems

Quickly harmonize into a unified view

View ML-powered insights and risk alerts
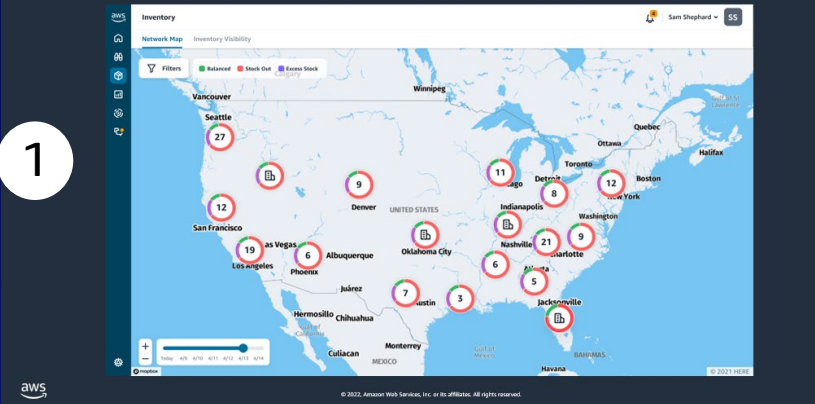
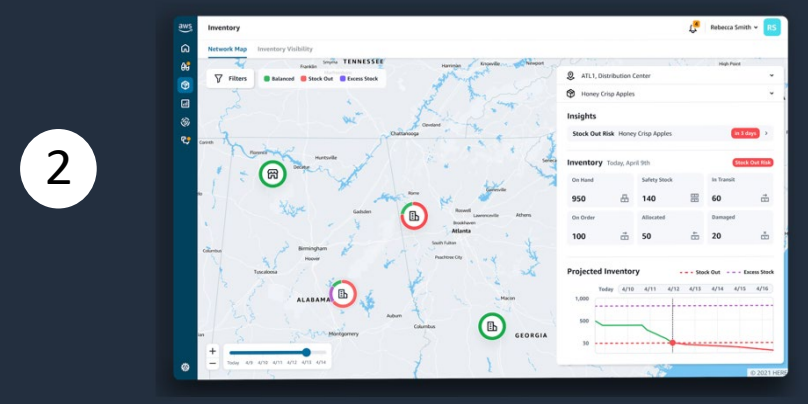Accelerate mitigation with recommendations

Scale across SIPOC value chain

SIPOC value chain – Supplier Input Process Output Customer
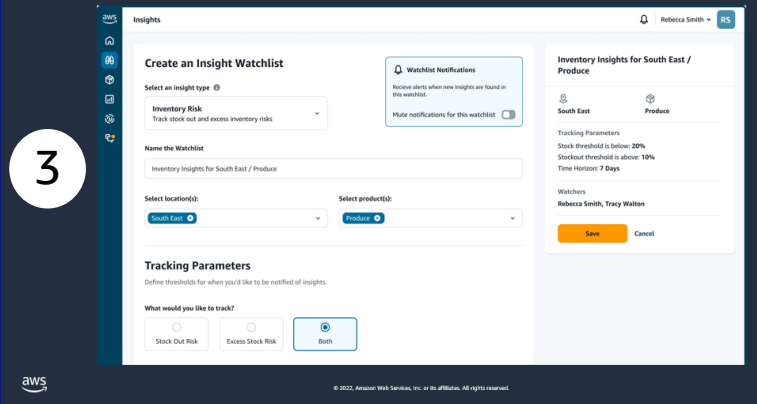
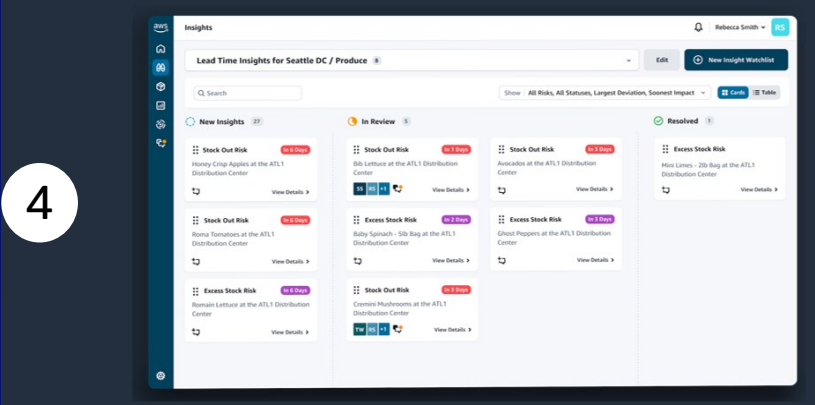# 6 key enablers of AWS supply chain solution

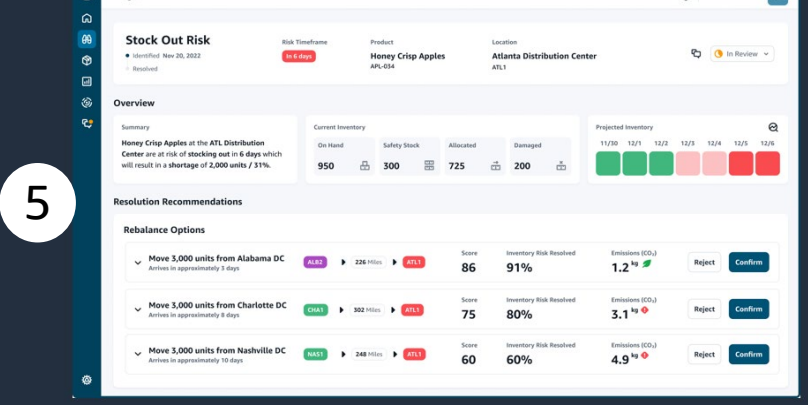**Real-time inventory map**

1

Inventory insights details

2

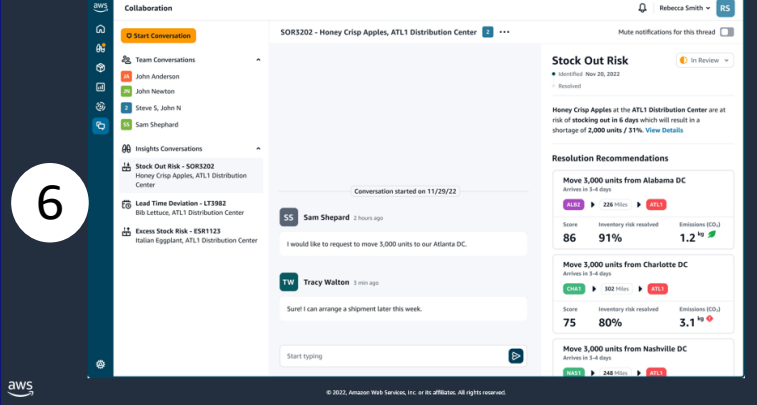**Create risk watchlists**

3

ML-powered insights

4

Review recommendations

5

Built-in contextual collaboration

6

Next Steps – Why AWS?

We are uniquely qualified to assist companies in all industries to become more **customer-centric, resilient to disruptions, and better stewards of the global environment**, by using our pre-configured solutions.

If you would like to explore some ideas to innovate your supply chain, please contact us for a discovery workshop...

- We leverage **supply chain learnings from our Pan-Amazon** experience, and package them as solutions that our customers can use to exploit the full **power of data and cloud**.

- We inspire our customers to **reimagine their supply chain** processes to continuously use data insights to **delight their end customers**.

- We anticipate long term **technology and business trends**, and help our customers take advantage of these trends to **stay competitive**.

- We offer our customers **solution choices**, from a wide array of **partners, in addition to AWS**, to help **transform their supply chains**.

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Your time is now
Build in-demand cloud skills your way

Thank you!

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Please complete the
session survey