Multi Echelon Supply Chain Business Networks

The way for future

Shaik Abdul Khadar

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EXPERIENCE

- Strategy Execution
- Business Process Management
- Business Planning & Budgeting
- Enterprise Resource Planning
- Supply Chain Execution Systems
- Enterprise Performance Management
- Project Management

- Middle East, Africa, India
- 31 Years

INDUSTRIES

- Agri Food
- Mining
- Automotive
- FMCG
- Manufacturing
- Logistics
- Government

CERTIFICATIONS

- BSC Certified Graduate
- PMP
- CPIM
- LSSBB
- EPM (IBM PA)
- ERP

AGENDA

Overview of Multi Enterprise Supply Chain Business Network (MESCBN)

Multi-level Order Fulfilment

How Business Network work

fruiSCE Introduction

Questions

Strategy Map

fruiStrategy

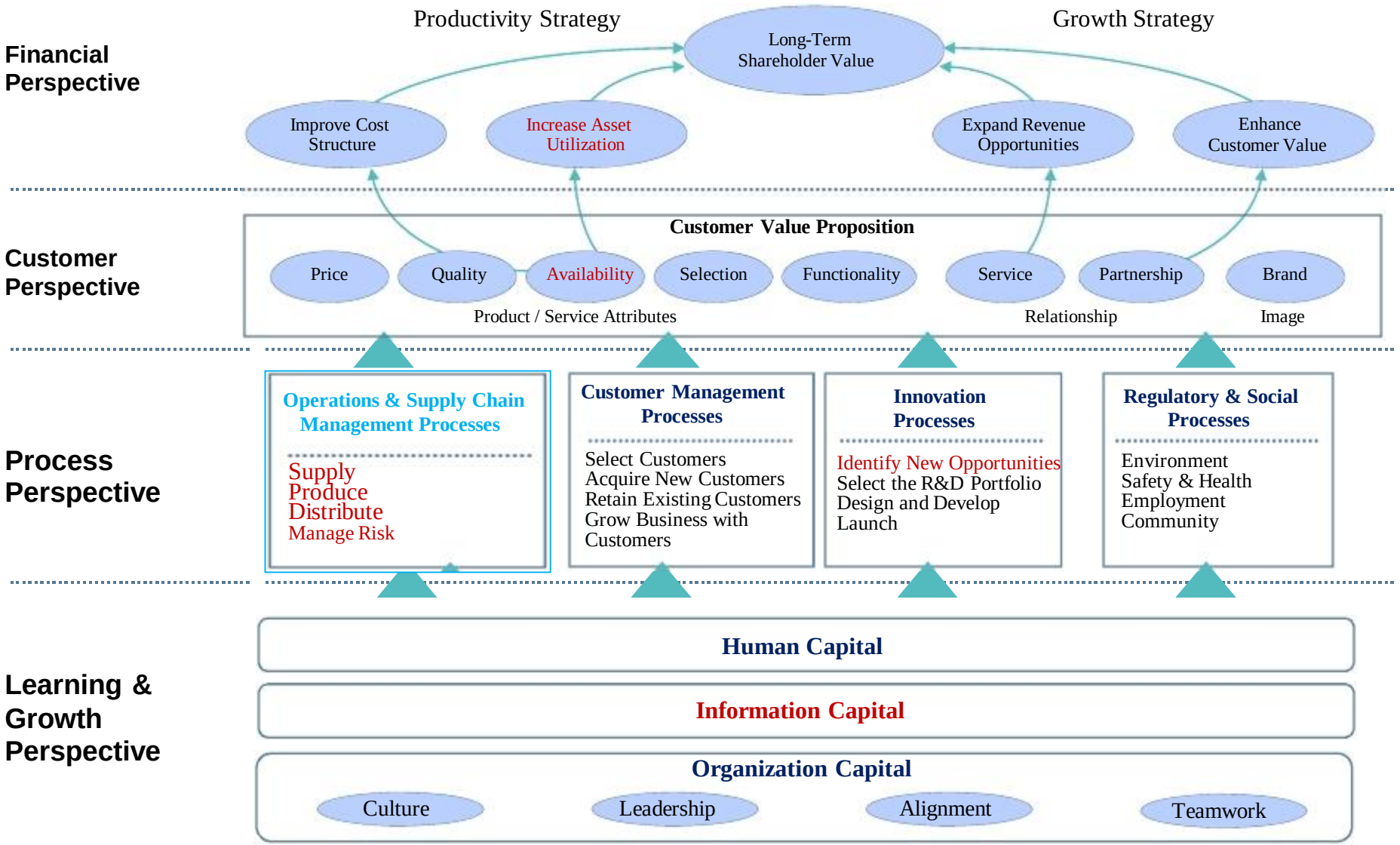
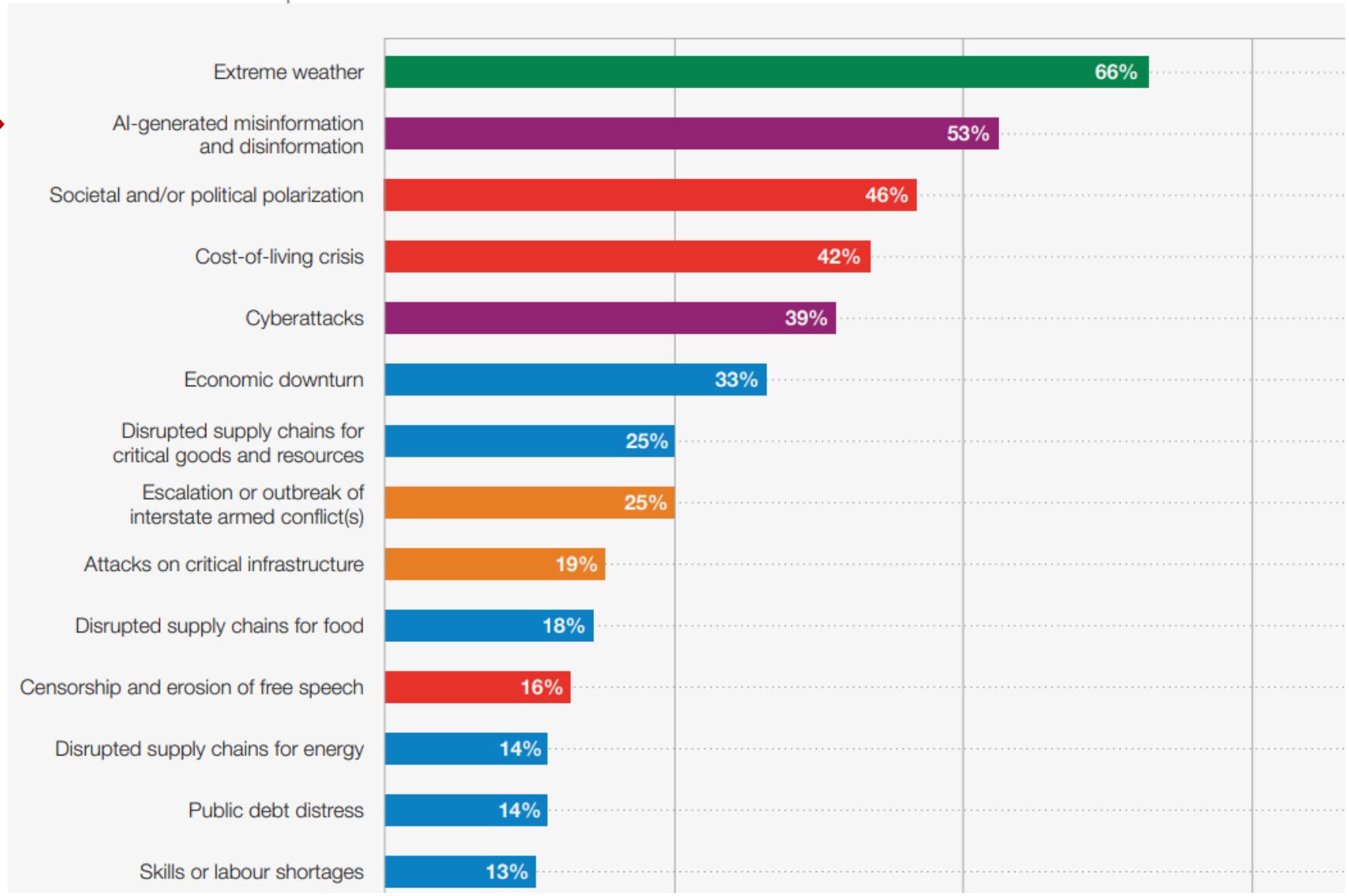


FIGURE 1.2

Current risk landscape

"Please select up to five risks that you believe are most likely to present a material crisis on a global scale in 2024."



Supply Chain Business Network

MESCBN defined as “a community of trading partners — of any tier and type within a network — that needs to coordinate and execute supply chain processes across multiple enterprises.”
(Source Gartner)

The key capabilities of MCN solutions include three layers:

- Network representation and management
- Application functions
- Embedded analytics and intelligence.

Figure 1: Magic Quadrant for Multienterprise Supply Chain Business Networks

Source: Gartner (May 2022)

Evolution of MESCBN (Multi Enterprise Supply Chain Business Network)

- ✓ Manual Processes and Point Solutions
- ✓ MRP Systems
- ✓ Enterprise Resource Planning (ERP) Systems
- ✓ Electronic Data Interchange (EDI)
- ✓ Introduction of Supply Chain Management (SCM) Software
- ✓ Rise of Cloud Computing
- ✓ Emergence of Multi-Enterprise Business Networks
- ✓ IoT and Advanced Analytics
- ✓ Blockchain Technology
- ✓ Artificial Intelligence (AI) and Machine Learning (ML)
- ✓ Focus on Resilience and Sustainability

Supply Chain Business Network

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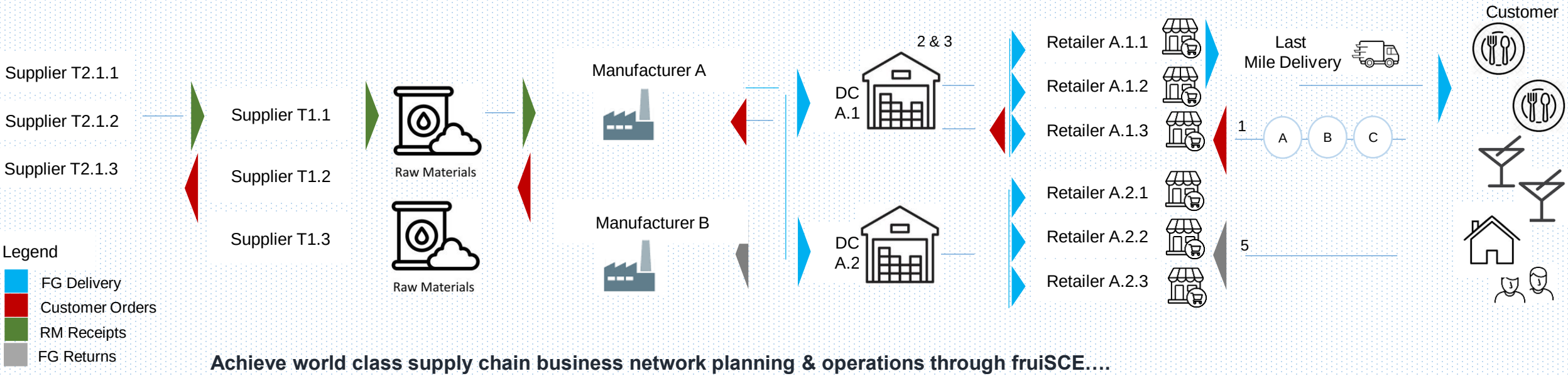


Achieve world class supply chain business network planning & operations through fruiSCE….

Multi-Level Order Fulfilment	Demand Sensing & Response	Supply Chain Visibility	Multi-Tier Inventory	Inter Enterprise Automation
Closed Loop Supply Chains	Risk & ESG Compliance	Collaboration	Supply Chain Finance	Center of Excellence

fruiSCE® Supply Chain Business Network

Multi-Level Order Fulfilment	Demand Sensing & Response	Dynamic Supply Chain Visibility	Multi-Tier Inventory	Inter Enterprise Automation
• Order Capturing • Order planning • Capacity planning • Order processing • Replenishment • Inventory allocation • Logistics & delivery coordination • Order fulfilment • Direct order management • Returns management • ATP, Capable to promise	• Forecasting based on AI models • Aggregation/Disaggregation • Demand Planning • NPI, Sensitivity Analysis	• Inventory at nodes • Inventory in transit • Order status (Purchase, Sales, production, transportation) • Capacity • Containers • CX • Track & Trace • Customs	• Inventory visibility • Safety stock optimization • Planning parameters • VMI • Multi-tier inventory planning • Centralized coordination • Service levels • Performance management	• Information sharing & visibility • Business process integration (purchase, sales, delivery) • ASN & EDI • Collaborative planning • Delivery schedules • SLA performance
ERP	DP	CT	WMS + IP	Integrator

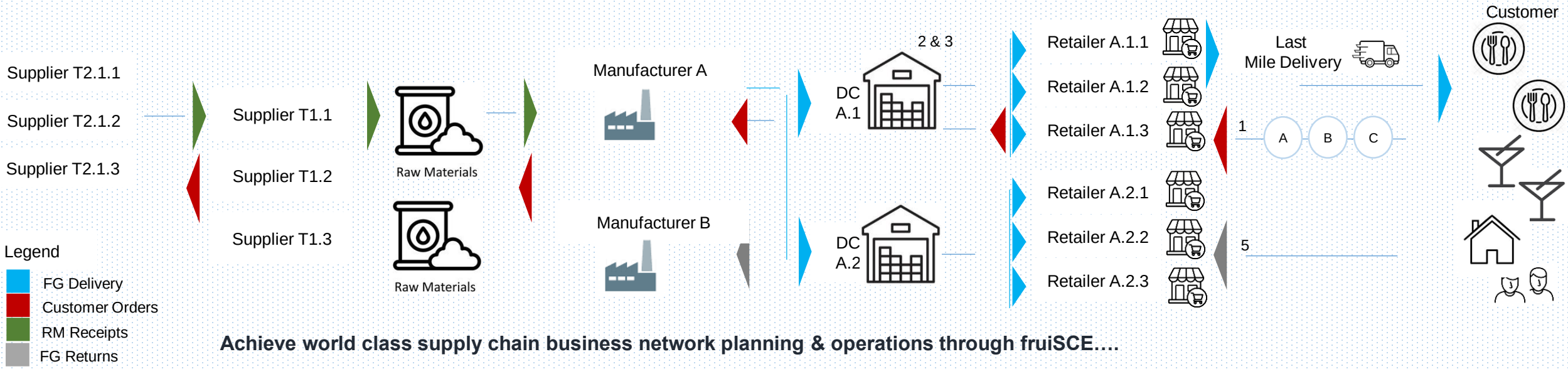
Closed Loop Supply Chains	Risk & ESG Compliance	Collaboration	Finance	Center of Excellence
• Product design for recovery • Demand forecasting for new and returns • Inventory planning for all • Reverse logistics network • Optimization for reverse logistics • Collaboration & partnerships • Performance measurements • Variance analysis	• Supply chain risks • ESG Assessment • Environmental compliance • Social enablers • Governance structure • Risk response planning	• Communication platform • Alerts & notifications • Supply chain decisions • Action messages • Blockchain Approvals	• Billing for warehousing, transportation, VAS • Vendor payments • Working capital management • Invoicing • Customs • Profit & Loss	• Control Tower • Contact Center • Manufacturing • Transportation • Warehousing • Planning • Performance Management
ERP + WMS + TMS	SCR + ESG	Collaboration	WMS, FMS,GTM	CT + Dashboards

Supply Chain Business Network

Processes

fruiSCE

SUPPLIER TIER 1 | SUPPLIER | LOGISTICS/STORAGE | MANUFACTURER | DISTRIBUTION CENTER | RETAILER | TRANSPORTER | CUSTOMER



Achieve world class supply chain business network planning & operations through fruiSCE….

Purchase Orders (Supplier to Manufacturer)

Purchase Orders (Supplier to Manufacturer)

Transfer/Replenishment (Supplier to Manufacturer)

Replenishment Order
Inventory Replenishment
Payments & Delivery Schedules

Customer Order Placement
Inventory Replenishment
Payments & Delivery Schedules

Purchase Deliveries (Supplier to Manufacturer)

Purchase Deliveries (Supplier to Manufacturer)

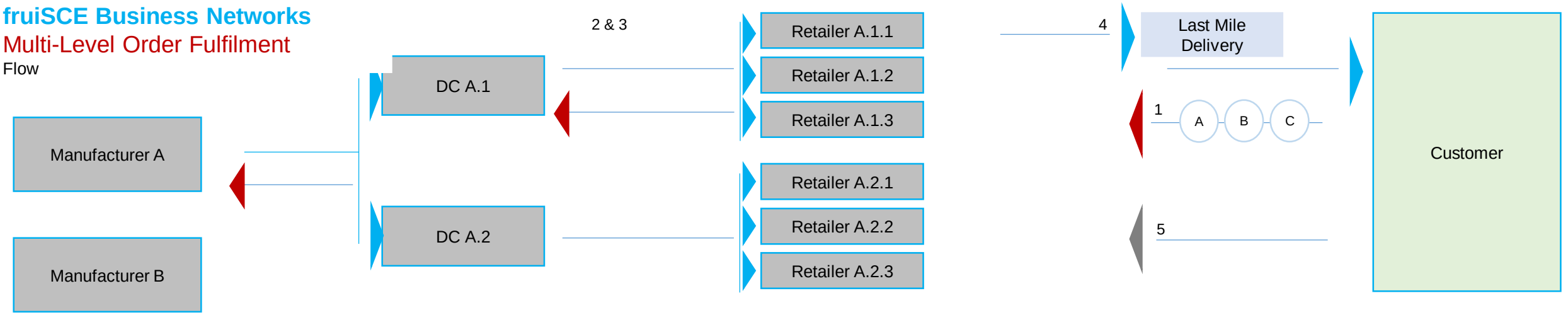
Delivery (DC to Retailer or Retailer to Retailer)
Delivery, Invoicing

Delivery (Retailer to Customer)
Delivery, Invoicing, PoD

Multi Echelon Supply Chain Flow (Every Node & Link)

Order Processing | Delivery Processing | Inventory Visibility | Order Status Visibility | Notifications | Traceability | Proof of Delivery | Transportation Visibility | Customer Service Level

fruiSCE Business Networks
Multi-Level Order Fulfilment
Flow



Multi-Level Order Fulfilment
Process

Key Points

- Master data: Manufacturer, DC/Wholesaler, Retailer
- Order input screens from different sources A,B,C
- Order split to multiple Retailers based on availability
- Order consolidation from multiple retailers against the customer order
- Transfers from Manufacturer to DC to Retailers
- Transfers from Retailer to Retailers
- Integration with Last Mile delivery
- Intercompany orders if any to be delivered (demand)
- Last mile delivery, PoD, completion, payment (if)
- Returns chain

2. Consolidation

Order delivery from multiple retailers; DC; MFG → Hub ➔

1. Order Placement

Order input from multiple ways → A) on-line, B) mobile app, C) web app, others
Stock availability check in selected retailer
Stock availability in other retailers; DCs; Manufacturers

Intercompany orders

3. Fulfilment

Retailer → Customer
Retailer → Retailer → Customer
DC → Retailer → Customer
MFG1 → DC → Retailer → Customer
MFG2 → DC → Retailer → Customer

4. Last Mile Delivery

Last Mile Delivery integration
Order completion
Proof of delivery
Payment on delivery (if)

5. Returns

Customer → Retailer → DC → Manufacturer
Customer → DC → Manufacturer
Customer → Manufacturer
Customer → ?

fruiSCE Business Networks

Demand Sensing & Response

Real Time Integration

Sales Data (by Node) → PoS + Sales

Parameters
- Social Media Trends
- Weather Forecast
- Market Research
- Customer Sentiment Analysis

Integration with ERP & TMS

Demand Signal Repository

Store demand data
Store demand signal data

Forecasting & Analytics Engine

- Autoregressive Integrated Moving Average
- Single Exponential Smoothing
- Double Exponential Smoothing
- Triple Exponential Smoothing
- Holt Winter's Addictive & Multiplicative Methods
- Holt Linear Trend
- Croston's Method
- Best Fit option

Aggregation & Disaggregation

Manual Inputs

Demand Plans

Collaborative Planning

- Collaborative data
- Forecasts
- Inventory

- Collaborative Planning & Replenishment

Demand Driven Replenishment

Retailer → Retailer
DC → Retailer
Manufacturer → DC

Supply Chain Execution

Collect forecast/plans from party → Consolidated planning → Replenishment plans

Continuous Monitoring & Evaluation

Forecast accuracy | Customer Service Levels | SLAs

Process Integrations

ERP | WMS | TMS | MES | Others

Demand Sensing & Response

Demand sensing and response in fruiSCE business network refers to the capability to sense and understand changes in customer demand patterns in real time and respond swiftly to meet those demands. It involves the use of forecasting techniques, data analytics, and advanced supply chain algorithms to capture and interpret demand signals from various sources, enabling proactive decision-making and agile response within the supply chain.

Demand sensing and response capabilities empower supply chain organizations to proactively address demand fluctuations, minimize inventory risks, optimize operations, and enhance customer satisfaction.

Real-Time Data Integration: fruiSCE help you to build integration of real time data from diverse sources, including point-of-sales (POS)data, social media trends, weather data, market research, and customer sentiment analysis. This data is aggregated and analysed to generate accurate and up-to-date demand insights.

Demand Signal Repository: A demand signal repository serves as a central repository for storing and analysing demand-related data. It allows supply chain stakeholders to access and interpret demand signals, historical data, and forecast models to gain actionable insights into demand patterns.

Forecasting Techniques & Advanced Analytics: Demand sensing and response is built on advanced analytics and forecasting techniques to analyse demand signals and generate accurate short-term demand forecasts. The techniques include statistical modelling, machine learning, and predictive analytics to capture demand patterns and anticipate changes.

- Autoregressive Integrated Moving Average
- Single Exponential Smoothing
- Double Exponential Smoothing
- Triple Exponential Smoothing
- Holt Winter's Addictive & Multiplicative Methods
- Holt Linear Trend
- Croston's Method
- Best Fit option

Collaborative Planning: Collaboration among supply chain partners is crucial for demand sensing and response. fruiSCE Business Networks facilitate collaboration by providing a platform for sharing demand insights, forecasts, and inventory data across the network. This enables collaborative demand planning and coordination among stakeholders.

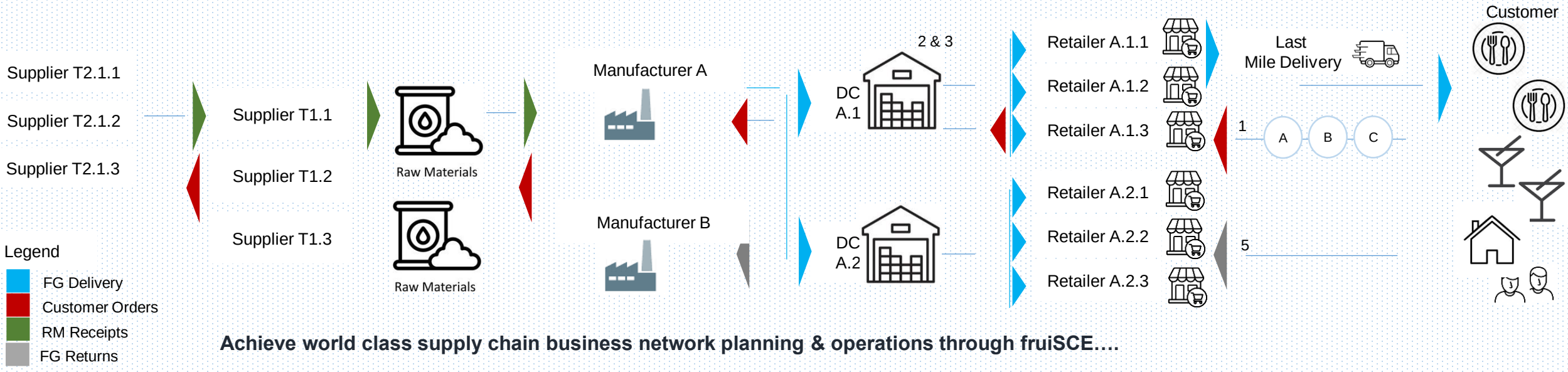
Rapid Response and Flexibility: Demand sensing and response enable agile response to changing demand patterns. By continuously monitoring and analysing demand signals, supply chain stakeholders can make rapid adjustments to production, inventory levels, and distribution strategies. This agility helps reduce stockouts, optimize inventory, and improve customer satisfaction.

Demand-Driven Replenishment: Demand sensing and response facilitate demand-driven replenishment by dynamically adjusting production schedules and inventory levels based on real-time demand signals. This helps minimize excess inventory and reduce lead times, enabling a more responsive and efficient supply chain.

Continuous Monitoring and Evaluation: fruiSCE Business Networks enable continuous monitoring and evaluation of demand patterns, forecast accuracy, and response effectiveness. This allows supply chain stakeholders to refine their forecasting models and response strategies based on real-time feedback and performance metrics.

Scalability and Integration: Demand sensing and response capabilities should be scalable to accommodate growing data volumes and expanding supply chain networks. Integration with other supply chain systems, such as enterprise resource planning (ERP) and transportation management systems (TMS), is essential to ensure seamless data flow and synchronized decision-making.

Supply Chain Business Network
Integrations



Achieve world class supply chain business network planning & operations through fruiSCE….

ERP | GTM | WMS | MES | DMS | WMS | TMS | LMD | POS | eCommerce

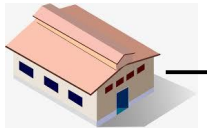
SUPPLY CHAIN BUSINESS NETWORK

IIoT | AI/ML Models | Cloud Computing | EDI | Blockchain

Collaboration | Analytics | Visibility | Notifications/Alerts | ULIP

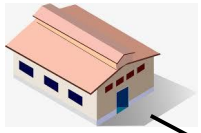
Automotive Industry Supply Chain

Tier 2 Suppliers



- Metal Parts
- Plastic and Rubber Parts
- Electronics
- Carpet & Trim

Tier1 Suppliers



- Finished goods
- Semi finished goods

Manufacturing Outsourcing / Sub-contractor

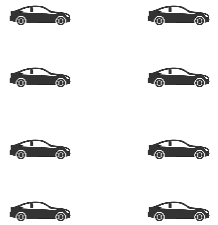
- Seating and Interior Trim
- Electrical systems
- Exhaust and emissions systems
- Exhaust and emissions system
- Tries
- Brakes
- Engine cooling

Manufacturing Outsourcing / Sub-contractor

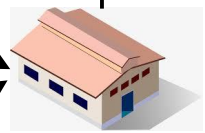
Manufacturing / Assembly Plant

OEM

Open yard in OEM



Goods will be sent before the shift (one shift before) starts



Warehouse inside OEM(Store)

Area within factory

Outside the factory zone(300+ km away)

Global Tier N Suppliers

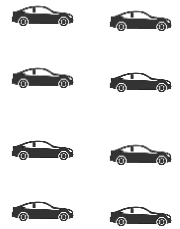
If not VMI **Finished goods**

Self certified suppliers

3 PL's

Primary movement

Open yard in State / district



Dealers

CUSTOMER

Raw Material Supplier

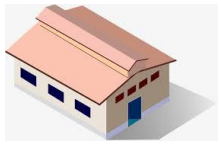
Nucleic acid raw materials

Inactive raw materials

Herbal raw materials

Anti-biotic raw materials

Tier 1 supplier



- Dye
- Packing and label making
- Chemicals

Manufacturing process

Development process

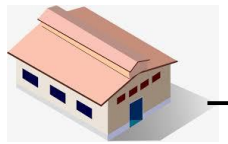
testing

Central Distribution warehouse/ super stockiest

2/3/4 PL

Hospitals

Patients



Local dealers

Medical Retail

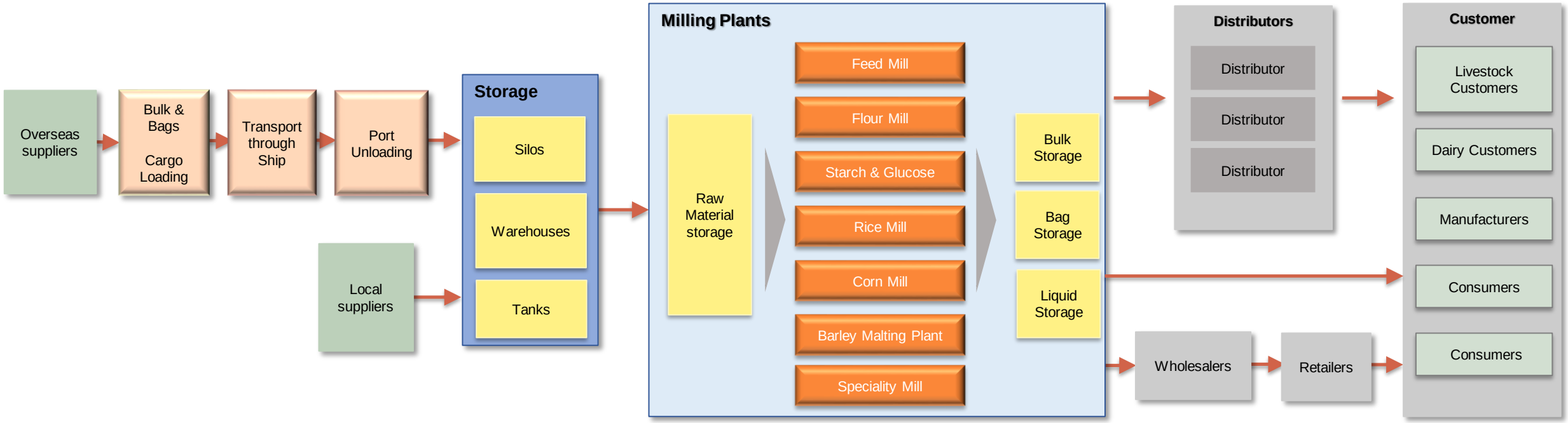
patients

Online pharma

patients

Pharma Industry supply chain

Milling Supply Chain



1.Flour Mills: Flour mills specialize in grinding grains, particularly wheat, into flour. These mills may be large-scale industrial facilities or smaller operations, depending on the volume of production and market demand.
2.Feed Mills: Feed mills are dedicated facilities that produce animal feed. They receive various grains, such as corn, soybeans, and barley, and process them into balanced feed formulations suitable for different types of livestock, poultry, or aquaculture.
3.Rice Mills: Rice mills focus on the processing of rice, removing the husk and bran layers to obtain polished white rice. These mills may also produce rice flour and other rice-based products.
4.Oat Mills: Oat mills process oats to produce oatmeal, oat flour, and other oat-based products. These mills may include processes such as cleaning, hulling, and grinding to achieve the desired oat products.
5.Corn Mills: Corn mills specialize in the processing of corn kernels to produce various products such as cornmeal, corn flour, grits, and masa (used in making tortillas and other corn-based dishes).
6.Barley Malting Plants: Barley malting plants focus on the malting process, where barley grains are germinated, dried, and processed to produce malt. Malt is primarily used in brewing and distilling industries.
7.Specialty Mills: Specialty mills cater to specific niche markets and may produce specialty flours or unique grain-based products. These mills can include facilities that process gluten-free grains, ancient grains, or organic grains, among others.

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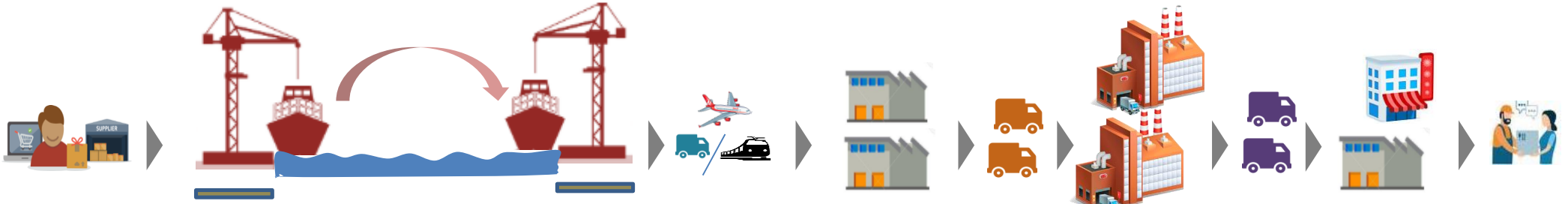
SUPPLY CHAIN EXCELENCE

Supply Chain Business Network



Material Flow

Produce → Deliver	Customs	Transport	Customs	Transport	Receive → Store → Deliver	Transport	Produce - Deliver	Transport	Receive → Store → Deliver	Order → Receive

Business Processes

Operations	Sourcing & import process	Purchase order	Transport order processing	Shipment execution	Warehouse receiving	Warehouse outbound	Production order processing	Materials & operational reporting	Assets management	Dispatch & delivery	Sales orders
	Duty management	Trade Finance	Compliances	Freight settlement	Storage & operations	ASN	Claims	Manufacturing enabling processes	EDI	Export management	Invoicing
Planning	Demand forecasting	Supplier scheduling	Transportation planning	Logistics capacity planning	Shipment planning	Master Scheduling	MRP	Inventory planning	Route optimization	Sourcing optimization	Production scheduling

AI/ML & IIoT

AI & ML	Supplier Selection	Risk Indicators	Capacity Prediction	Demand Prediction	ETA Prediction	Route Optimization	Lead Time Optimization	Sensitivity Analysis
IIoT& RPA	Shipment Monitoring	Automate Operations	Manufacturing Analytics	Automated Receiving	Inventory Reconciliation	Predictive Maintenance	What-if simulation	Integrations

fruiSCE Suite

NETWORK | GTMS | TMS | WMS | MES | SP | CT | EAM | ERP | SCO

Supply Chain Business Network Versus Supply Chain Control Tower

Aspect	Multi-Enterprise Supply Chain Business Network	Supply Chain Control Tower
Scope and Focus	• Emphasizes collaboration and connectivity among multiple supply chain partners. • Creates a digital platform for real-time information exchange and joint planning.	• Focuses on monitoring and managing day-to-day operations. • Serves as a centralized hub for real-time visibility into various aspects of the supply chain.
Functionality	• Facilitates collaboration and information exchange. • Includes features like shared data repositories, real-time communication, and collaborative planning tools.	• Provides visibility and control over ongoing supply chain operations. • Aggregates data, analyzes it, and presents a unified view for informed decision-making.
Collaboration vs. Control	• Emphasizes collaboration and building a network of interconnected partners. • Aims to enhance efficiency and responsiveness across the entire supply chain.	• Emphasizes control and management. • Monitors day-to-day operations, identifies issues, and enables timely corrective actions to ensure smooth flow of goods and information.
Key Technologies	• Utilizes technologies like cloud-based platforms, blockchain, and API integrations to enable seamless collaboration and data sharing.	• Utilizes technologies such as advanced analytics, real-time monitoring tools, IoT devices, and AI-driven decision support systems for comprehensive visibility and control.

PRODUCTS & SERVICES PORTFOLIO

PRODUCTS

fruiSCE
Enterprise Resource Planning
- Purchasing & Inventory
- Sales & Distribution
- Marketing & CRM
- Manufacturing & Quality
- Accounting & Human Resources
- Projects, Facilities, & e-Commerce

fruiSCE® Manufacturing 4.0
- Manufacturing Management
- Quality Management
- Maintenance & Asset Management
- Energy Management
- Planning (MPS/MRP/Scheduling)
- Machine & PCS Integrations

fruiSCE® Logistics & Global Trade
- Transportation & Fleet Management
- 3PL Operations
- Asset Maintenance
- Finance & Statutory
- Global Trade Management
- Operations Management

fruiSCE® Supply Chain Planning
- AI/ML Driven Forecasting
- Demand & Capacity Planning
- Sales & Operations Planning
- Resource Planning
- MPS, MRP, & Scheduling
- Historic Data Management

fruiStrategy
Enterprise Strategy Management
- Strategy Analysis
- Balanced Scorecard (BSC)
- Objectives & Key Results (OKR)
- People Performance
- Enterprise PMO
- Budgeting & Planning
- Risk & Compliance
- Alignment
- Organizational Performance
- ESG Assessment
- OHI Assessment
- Performance Dashboards

fruiSCE® Business Networks
- Multi-Level Order Fulfilment
- Multi-Tier Inventory Management
- Demand Sensing & Response
- Supply Chain Visibility
- ESG & Supply Chain Risk
- Close Loop Supply Chain

fruiSCE® Warehouse Management
- Putaway & Picking Strategies
- Barcode & RFID Empowered
- Mobility
- Warehouse Performance
- End-to-End Operations Management

fruiSCE® Supplier Connect
- Supplier Registrations
- RFP, RFQ, & PO
- Purchase Management
- ASN & Inbound Logistics
- Performance Evaluation

fruiSCE® Control Tower
- Visibility of Inventory & Orders
- Capacity Planning
- Collaboration
- AI/ML driven Notifications & Alerts
- Supply Chain Performance

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IMPLEMENTATION ADVISORY SERVICES

SAP S/4 HANA
ERP | Group Reporting | BPC | SAC | Integrations

IBM ORACLE Microsoft
Planning Analytics EPM Cloud Dynamics 365 F&O, BC

Consulting
Strategy Transformation | Supply Chain Excellence
Enterprise Integrations | Project Management

TECHNOLOGY

Artificial Intelligence & ML	Process Mining	Robotic Process Automation	IIoT & Integrations	Java Spring Boot | Angular | Python | MongoDB | Flutter

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Data Labs India

Road Map for Business Excellence

Strategy
Achieve Strategy Excellence through comprehensive strategy management solution which include Balanced Scorecard, strategy analysis, PMO, risk & compliance, people performance, communication, and organizational performance

Planning & Control
Achieve supply chain excellence through demand planning, capacity planning, AI/ML driven forecasting
Control Supply chain through visibility of inventory, orders, containers, capacity; collaboration; AI/ML driven notifications; process mining alerts

Execution (Extended Operations)
Warehouse Management → Achieve world class warehouse operations powered by AI/ML models, by process mining, and integrations
Manufacturing Execution → Manage all manufacturing operations seamlessly through connected shop floor to balance inventory, operations, and performance powered by AI/ML algorithms
Transportation & Fleet Management → Manage transportation and fleet operations with fully integrated solution
Global Trade → complex global trade operations to be automated and managed for compliance, logistics, finance, order management

Execution (Core Operations)
Digital transformation of business processes through ERP implementation aligned to industry best practices

Enablers
Process Mining → Complete visibility of process efficiencies and time stamps to identify and remove bottlenecks in processes
AI/ML Models → Fully integrated models to generate notifications
Integration with IoT devices, Mobile solutions, and eCommerce platforms

fruiStrategy® Strategy Management

fruiSCE® Business Network

fruiSCE® Supply Chain Planning

fruiSCE® Control Tower

fruiSCE® Manufacturing Execution (MES)

fruiSCE® Warehouse Management (WMS)

fruiSCE® Transportation Management (TMS)

fruiSCE® Global Trade Management (GTMS)

fruiSCE® Fleet Management (FMS)

fruiSCE® Supply Chain Optimization (SCO)

fruiSCE® ERP

SAP S/4HANA

SAP B1

Microsoft Dynamics F&O, BC

Enabling Integrations → Process Mining | AI/ML Models | IoT | Mobility | RPA

DEMO

Questions….

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