

Driving Logistics Forward with Digital Intelligence

The Indian logistics and supply chain industry is undergoing a profound technological transformation, driven by the imperative to enhance efficiency, transparency and resilience. Valued at US\$ 317 Bn by 2024, the sector is projected to cross US\$ 480 Bn by 2029, growing at a CAGR of 8%–10%. Digital innovation has emerged as a core enabler of competitiveness, with increased investments in AI, IoT, blockchain and automation. Technologies like real-time tracking, predictive maintenance and digital twins are also enhancing safety and compliance, redefining

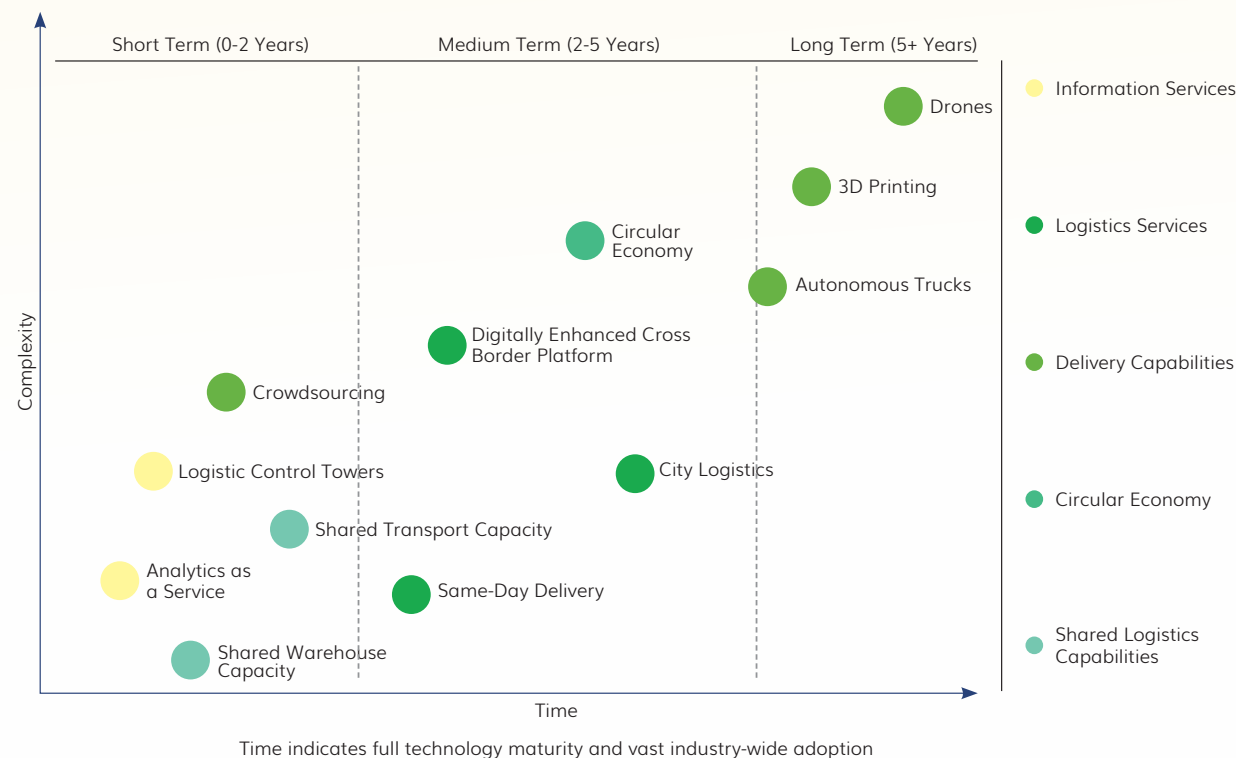
logistics as a more agile, data-driven and customer-centric ecosystem.

In tandem with this digital shift, physical infrastructure is also evolving to meet the sector's growing demands. Key logistics hubs like Chennai, Mumbai, Pune and NCR are set to expand in 2025 with new multimodal parks and fulfilment centres. To harness this momentum, there is a growing push for greater adoption of cutting-edge technologies and robust safety protocols across physical, digital and human touchpoints.

Digitalization in Logistics

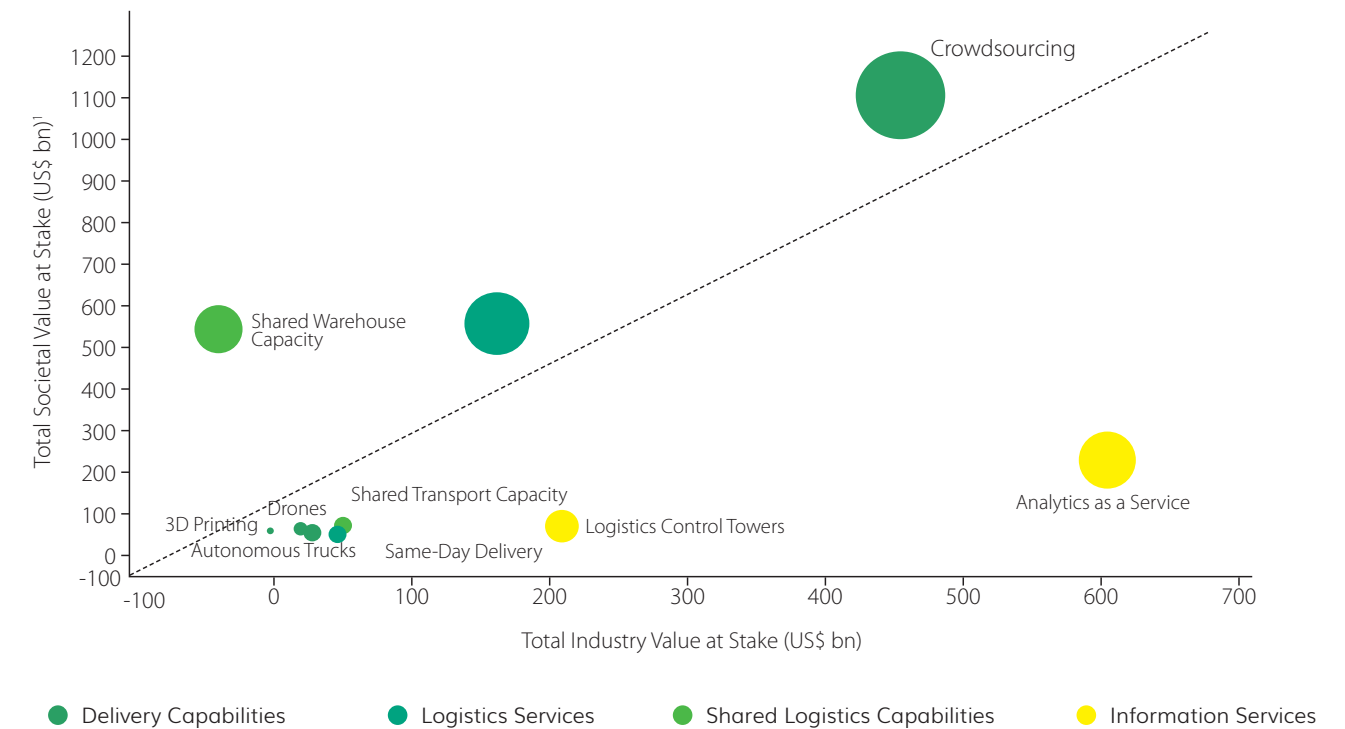
Digitalization in Logistics 4.0 is the application of pillar technologies such as big data and AI analytics, digital twins, robots, cybersecurity and IIoT in logistics business processes for increased efficiency, cost reduction and heightened customer satisfaction.

Future horizon of digital initiatives



These digital technologies have a protracted adoption timeline, with each technology taking its own time to mature and get implemented. The impact of adopting these digital technologies can be assessed from the Whitepaper by the World Economic Forum. The emerging digital technologies can be categorized in 4 Key categories and "Logistics Value at Stake" for each innovation can be calculated – both from the perspective of the Logistics Industry and well as the society as a whole.

Logistics Value at Stake



Note: (1) Total Societal Value at Stake includes impact on the consumers, society and environment. The impact on external industries has not been quantified. Only the incremental value of Logistics Control Tower (over and above what is already captured in Analytics as a Service initiative) has been shown. Economic value of congestion reduction and emissions considered in societal impact. Circular Economy and City Logistics have not been valued.

Sources: World Economic Forum Whitepaper Digital Transformation Of Logistics Industry:2016-2025



Enterprise Information Systems (EIS)

Integrated Information systems - a larger variant of the erstwhile ERP systems are the digital backbone of logistics, integrating procurement, inventory, finance and customer service. With the global market expected to exceed US\$ 70 Bn by 2030, adoption is rising—especially in India, where businesses report up to 20% higher efficiency and 15% cost savings. The significance of magnifies in the context of fast moving digital adoption of B2B market places supported by improving digital infrastructure like the digital payments ecosystem, Open Network for Digital Commerce (ONDC) and Open Credit Enablement Network (OCEN).

Especially given the expansive MSME sector in India, offer real-time data flow and easy integration with client, supplier and government systems, streamline operations, boost transparency and ensure compliance—making them vital for agile, customer-centric supply chains.

US\$ 117.68 Bn

Projected Market Size by 2030

Up to 20%

Operational Efficiency Improvement

Up to 15%

Supply Chain Cost Reduction

Understanding The Role of ERP in Supply Chain Management



AR, VR & XR in Logistics

Augmented Reality (AR), Virtual Reality (VR) and Extended Reality (XR) are transforming logistics by enhancing efficiency, safety and training. AR enables real-time navigation and hands-free picking through smart glasses, while VR reduces training time by up to 40% and errors by 30% via immersive simulations. XR takes this further by enabling gesture-controlled operations in smart ports, allowing remote crane handling and real-time cargo synchronization—making logistics safer, more agile and human-centric.

Sources: *The Next Frontier: AR & VR in Supply Chain Operations*

Projected to reach **US\$ 62.0 Bn**
by 2029, growing at a CAGR of 8.97%
Global AR/VR Market

75%

VR training can reduce training time

Robotics in Logistics

The logistics industry is undergoing a significant transformation, driven by the integration of robotics. As of 2025, the global logistics robotics market is valued at approximately US\$ 11.87 Bn and is projected to reach US\$ 44.56 Bn by 2034, growing at a CAGR of 15.88%. This surge is fueled by the increasing demand for automation in warehousing and distribution, aiming to enhance efficiency, accuracy and scalability in operations. Key robotic technologies revolutionizing logistics include Automated Storage and Retrieval Systems (AS/RS), Autonomous Mobile Robots (AMRs) and Automated Guided Vehicles (AGVs).

US\$ 11.87 Bn

Global logistics robotics market size in 2025

US\$ 44.56 Bn

Projected market size by 2034

15.88% CAGR

Compound Annual Growth Rate (2025–2034)

Sources: *Logistics Robotics Market Size to Hit US\$ 44.56 Billion by 2034*

Autonomous Mobile Robots

AMRs are self-navigating robots equipped with sensors and AI algorithms, enabling them to move materials within warehouses without fixed paths. The global AMR market was valued at US\$ 3.96 Bn in 2024 and is projected to surpass US\$ 29.66 Bn by 2034, growing at a CAGR of 22.30%. Their flexibility and adaptability make them ideal for dynamic environments, enhancing order fulfillment speed and accuracy.

US\$ 3.96 Bn

Market Size in 2024

US\$ 29.66 Bn

Projected Market Size in 2034

22.30%

CAGR (2024–2034)

Sources: *Autonomous Mobile Robots Market Size to Hit US\$ 29.66 Bn by 2034*



Automated Storage and Retrieval Systems (ASRS)

AS/RS are computer-controlled systems designed to automatically place and retrieve loads from defined storage locations. In 2025, the global AS/RS market is estimated at US\$ 10.65 Bn, with expectations to reach approximately US\$ 21.28 Bn by 2034, reflecting a CAGR of 7.99% . These systems optimize warehouse space utilization, reduce labor costs and improve inventory management by minimizing human intervention in storage and retrieval processes.

US\$ 10.65 Bn

Market Size in 2025

US\$ 21.28 Bn

Projected Market Size in 2034

7.99%

CAGR (2025–2034)



 **Sources:** Automated Storage And Retrieval System Market Size to Hit US\$ 21.28 Bn by 2034

BlockChain, IoT and Sensor Technology

Blockchain enhances transparency and traceability across supply chains by providing a secure, decentralized ledger for recording transactions. This technology reduces fraud, streamlines operations and ensures data integrity among stakeholders.

These tools are embedded in the transport vehicles and storage facilities. They enable monitoring and maintaining temperature in real time, real-time tracking of shipments, especially perishable or sensitive goods such as dairy products, meat or chemicals and pharmaceuticals. Real-time monitoring of operating and environmental conditions, such as different road conditions, is possible and reduces the chances of damage to the load.

US\$ 1.17 Bn

Market Size in 2024

US\$ 33.25 Bn

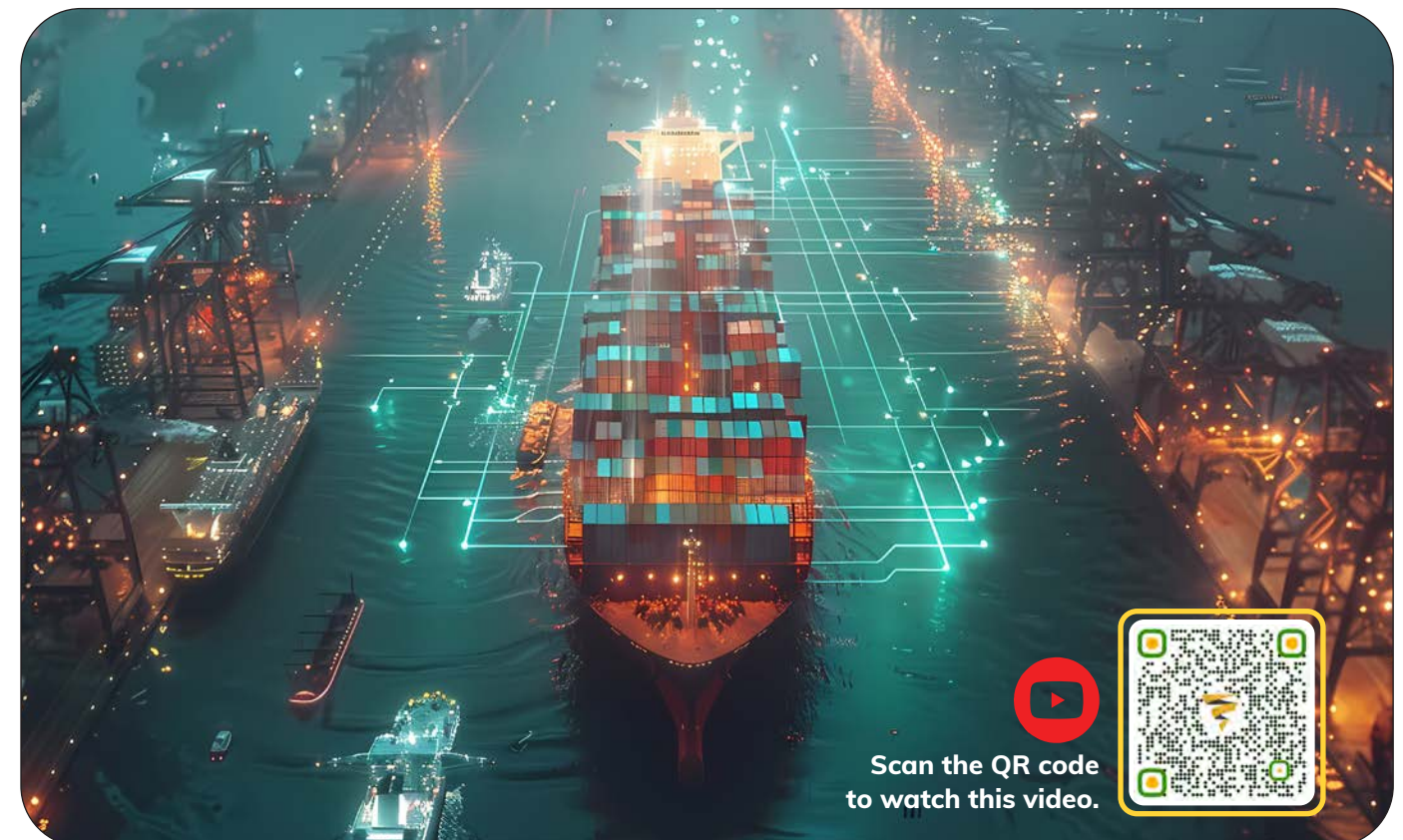
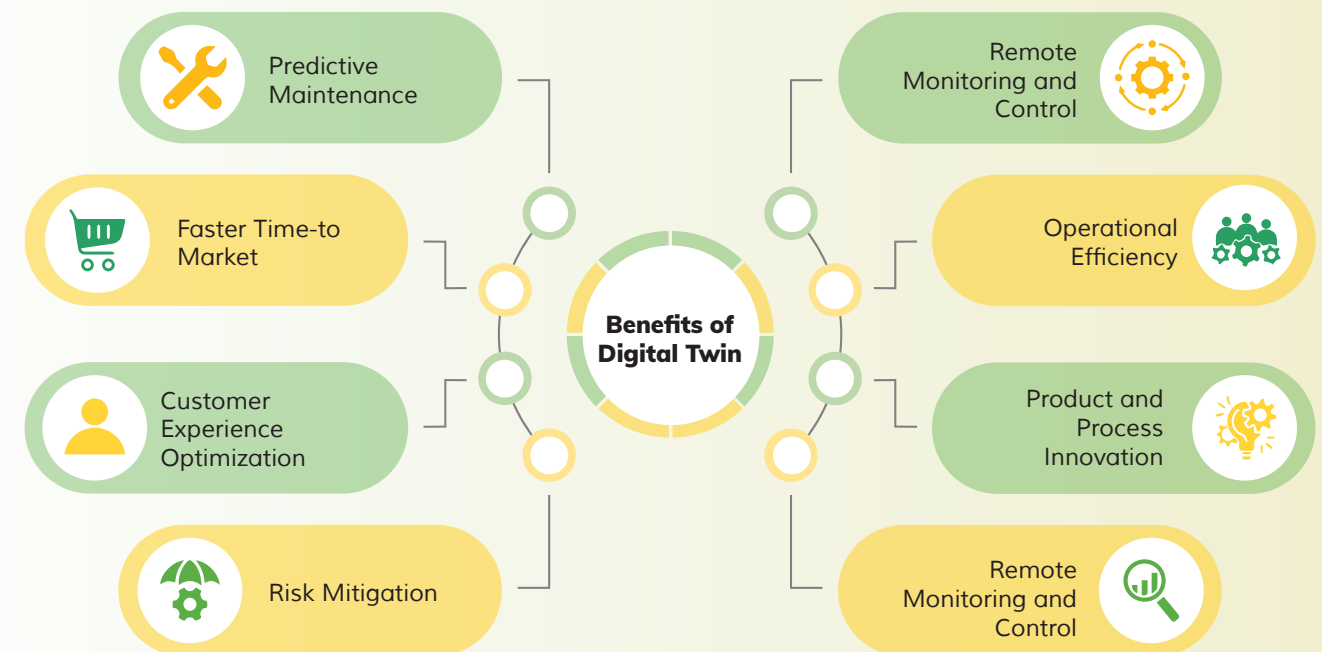
Projected Market Size in 2034



 **Sources:** Blockchain Supply Chain Market Size and Forecast to 2033

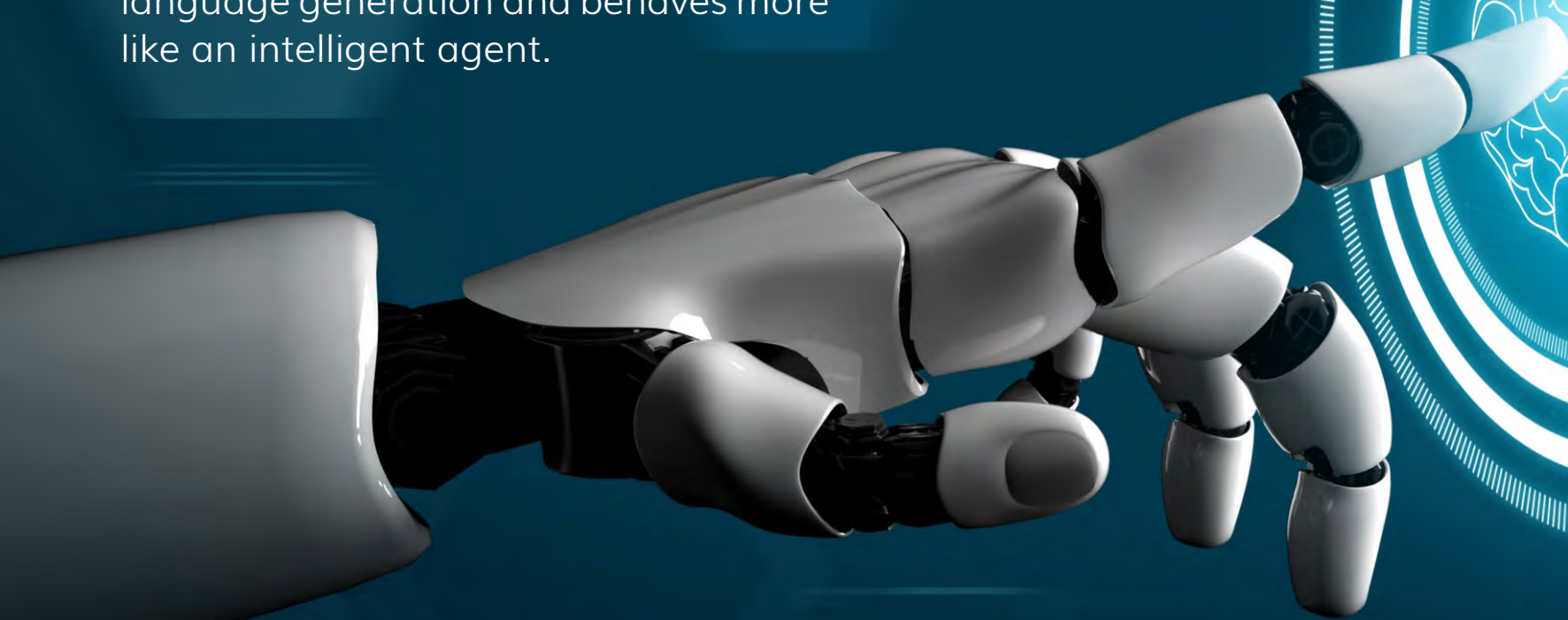
Digital Simulation/Digital Twin

Digital Twin is a digital model that virtually recreates the physical processes and systems of a physical warehouse through real-time simulation. This enables identifying and rooting out inefficiencies in the operations and ensures better optimization and inventory and supply chain management.



Agentic AI

Agentic AI refers to a class of AI systems that can autonomously plan, make decisions and take actions to achieve a specific goal—often by chaining together tools, APIs, or reasoning steps. It is a framework that integrates large language models (LLMs) with external data sources, enabling the development of intelligent applications for supply chain management. It facilitates real-time decision-making and process automation. It goes beyond passive language generation and behaves more like an intelligent agent.



Autonomous Supply Chain Agents

- Monitor shipment statuses across geographies
- Re-plan routes in real time based on weather or congestion
- Automatically update customers and suppliers
- Impact: Minimises delays and improves supply chain visibility

Smart Inventory Managers

- Forecast demand using real-time and historical data
- Trigger procurement or redistribution actions without human input
- Optimise stock levels across multiple warehouses
- Impact: Reduces stockouts and inventory carrying costs

Automated Documentation & Compliance

- Read, interpret and generate shipping documents (e.g., invoices, BoLs, customs declarations)
- Check compliance with local trade regulations
- Impact: Saves legal and admin time and reduces risk of penalties
- Improved operational efficiencies

AI Logistics Planners

- Design end-to-end supply routes
- Choose optimal carriers
- Simulate what-if scenarios for contingency planning
- Impact: Drives faster, smarter logistics planning with minimal manual oversight

Multimodal Coordination Agents

- Coordinating between sea, air and road transport
- Adjusting ETAs and rebooking shipments autonomously
- Impact: Enables seamless intermodal logistics