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FOR IA, AI, AUTOMATION, TECHNOLOGY, AND
BUSINESS & DIGITAL TRANSFORMATION LEADERS



USE CASE: AI-ENABLED WAREHOUSING & LOGISTICS - STRATEGIES FOR NEXT-GEN SUPPLY CHAINS

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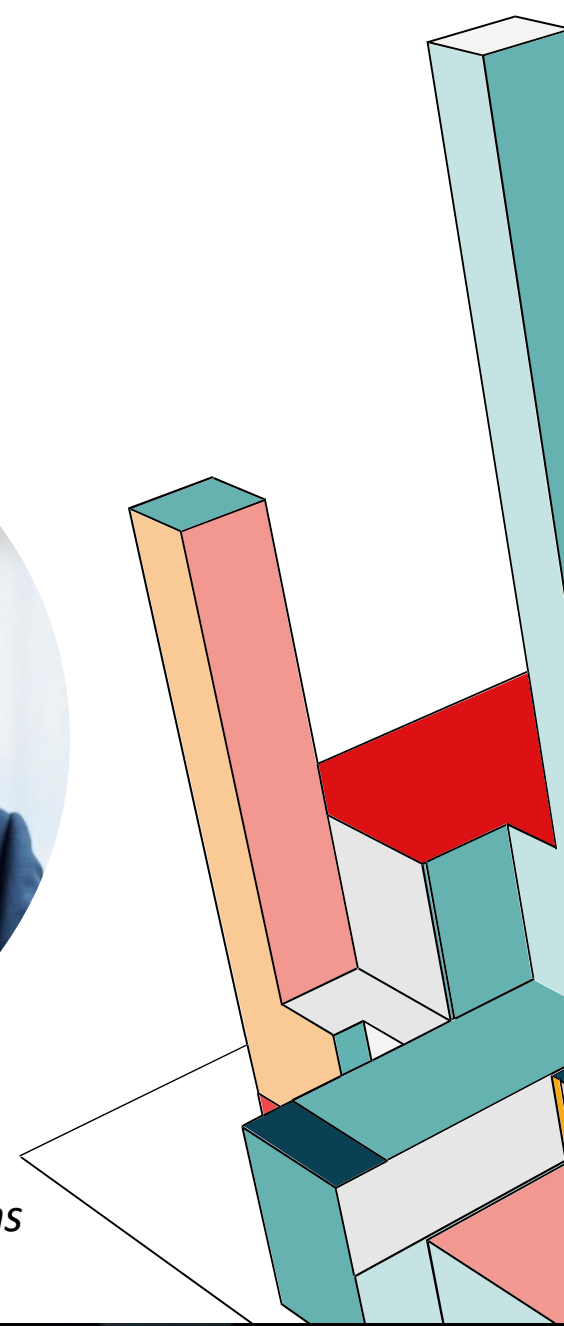
IA FORUM
Collectively Driving Digital Transformation Excellence

Agenda

- Evolution of Ecommerce Fulfilment
- Key challenges in 2025
- Innovation Shaping the future
- Strategies for business success
- Case Study – A large manufacturer in US
- Q&A



Nitin Agarwal
Director, IT Supply Chain Solutions
MCKESSON



Evolution of E-Commerce Fulfillment



Timelines



2000s

Traditional
Warehousing

2010s

Omni Channel
warehousing

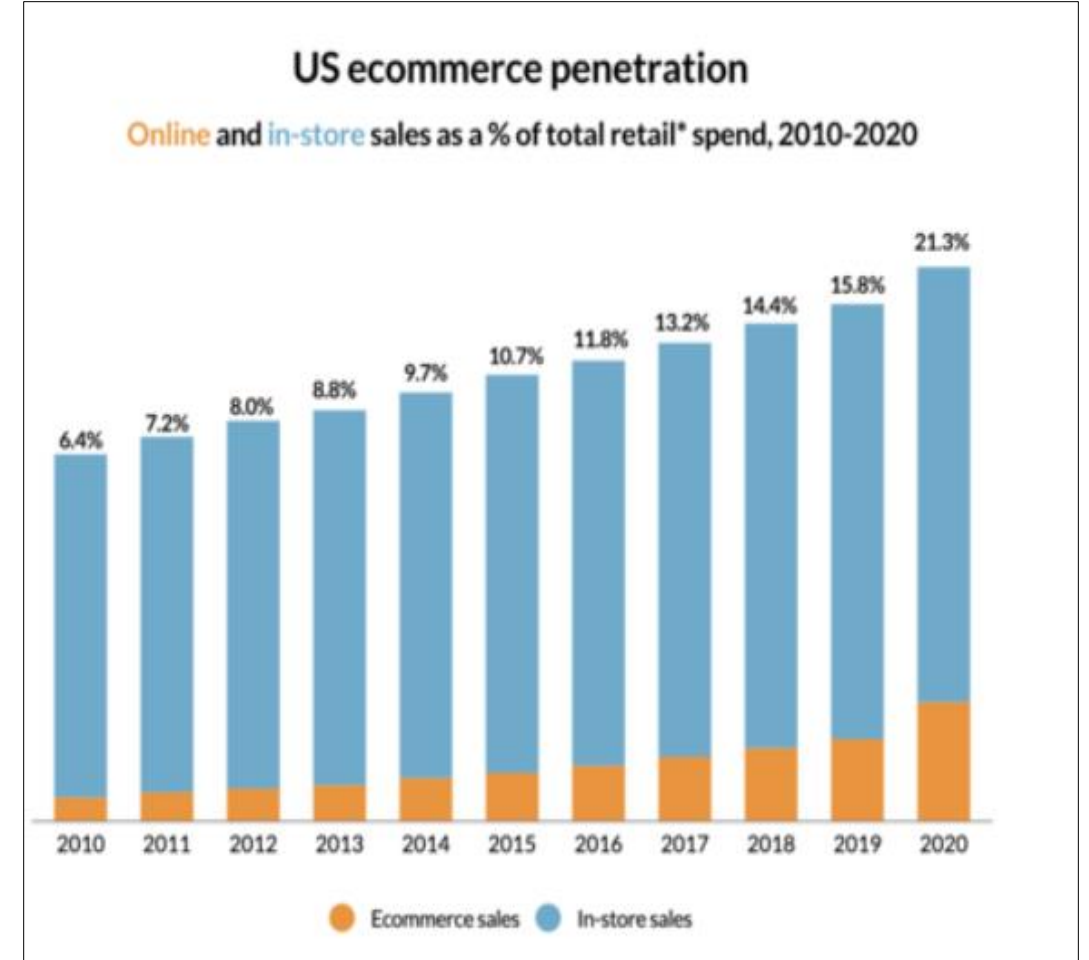
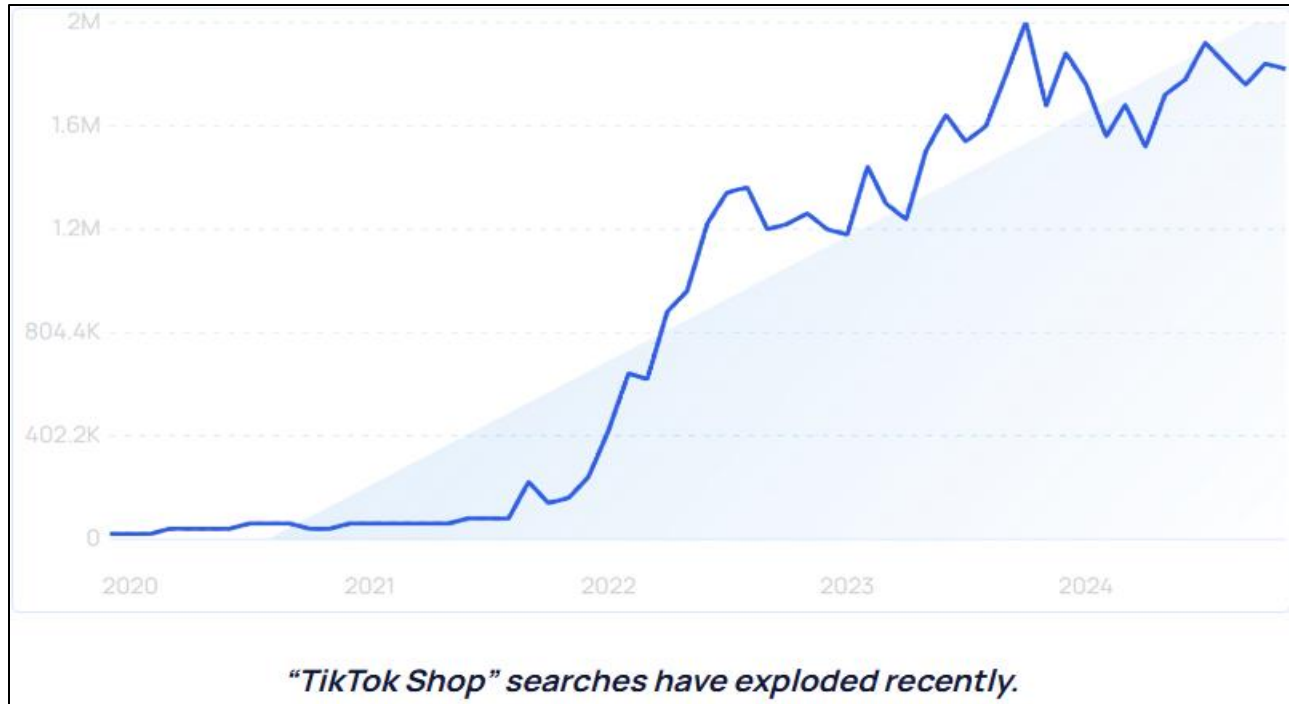
2020s

Robotics + AI driven
warehousing



DTC Growth Projections

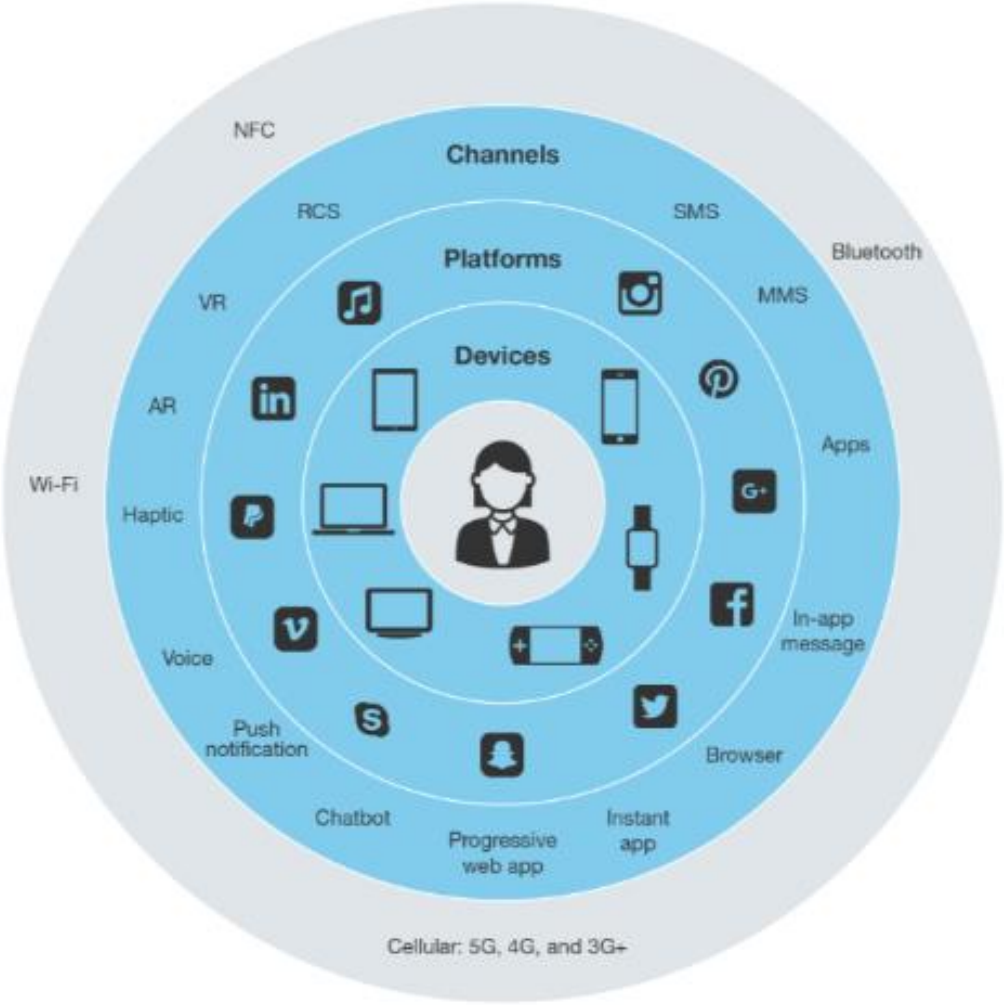
- “US DTC Ecommerce Sales could reach \$284B by 2025, up from \$76B in 2019”
- “E-commerce sales in APAC to hit \$2T by 2030”
- “DTC to become hyper-personalized in age of AI”



Shift in Consumer Expectations



Before 2000s	Now (2025)
5–7-day delivery	Same day/30min delivery
Manual order tracking	Real time AI tracking
Standard packaging	Personalized and eco-friendly packing
No Personalization	Hyper Personalization
Limited digital engagement	Deep Digital engagement
Customer experience was limited	Obsessive customer experience



Key Challenges of 2025 & Beyond



Key Challenges of 2025 & Beyond



Workforce and Automation Balance

- Automation Adoption, labor shortages
- High implementation cost of technology
- Challenges with Human-AI Collaboration
- Failed deliveries and last mile challenges



Hyper-Personalization & Demand Volatility

- Consumers expect tailored experiences
- Fluctuating Consumer Demands
- Inventory and fulfillment challenges



Sustainability Pressures

- Consumer expectations
- Green Logistics challenges
- Regulatory pressures



Supply Chain Disruptions and Geopolitics Risks

- Global Supply chain volatility – Trade wars, tariffs, RM Shortages
- Logistics Network Fragility – One disruption can delay the fulfillment
- Inventory Optimization challenges – Overstock/Out of Stock

Innovations Shaping the Future of E- Commerce Fulfilment

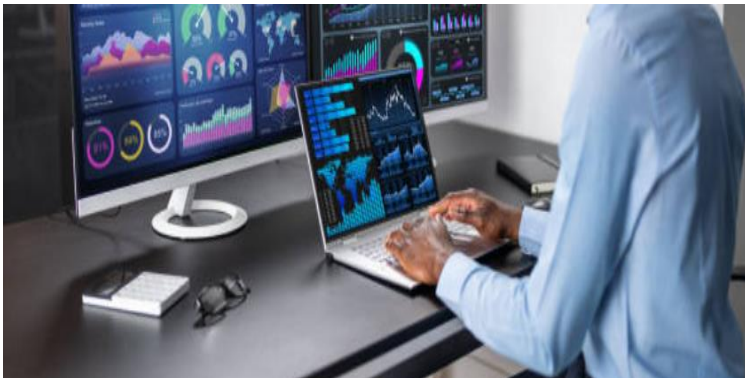


Innovations Shaping Future



Predictive Analytics & AI

- Demand Forecasting using AI
- AI- optimized order routing
- Fraud detection and returns optimization



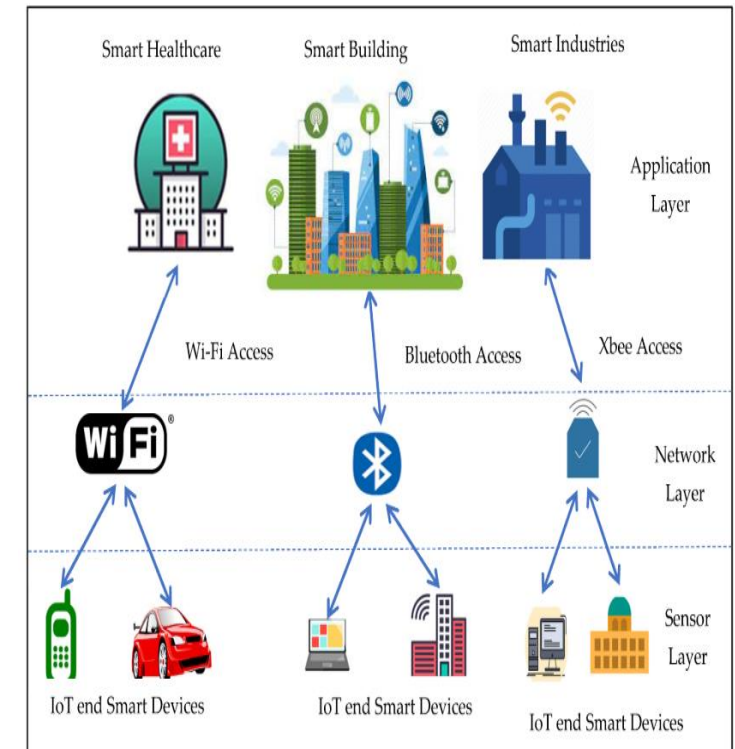
Warehouse Automation & Robotics

- Automated Mobile Robots (AMR) – to pick pack, load
- Automated Storage and retrieval Systems (AS/RS) – high precision storage and retrieval
- Cobots – Humans and Robots working together



Blockchain & IOT

- Blockchain for End-to-End visibility – real time tracking inventory, fraud, theft
- IoT sensors - to monitor temperature, GPS enabled devices for real time tracking



Innovations Shaping the Future



Next-Gen Delivery Solutions

- Drones, self driving delivery vehicles – Amazon prime Air, starship, Nuro
- Smart Lockers and Pick up points – helps to cut failed deliveries
- Micro-fulfillment centers – small AI powered urban warehouses for same day delivery



Sustainability Innovations

- Green warehousing – solar powered, energy efficient and LED lightening
- Sustainable packaging and Circular logistics – AI recommends right size packaging to reduce waste
- Carbon neural logistics – EVs replacing gas powered fleets



Hyper-Personalized with AI & 3D Printing

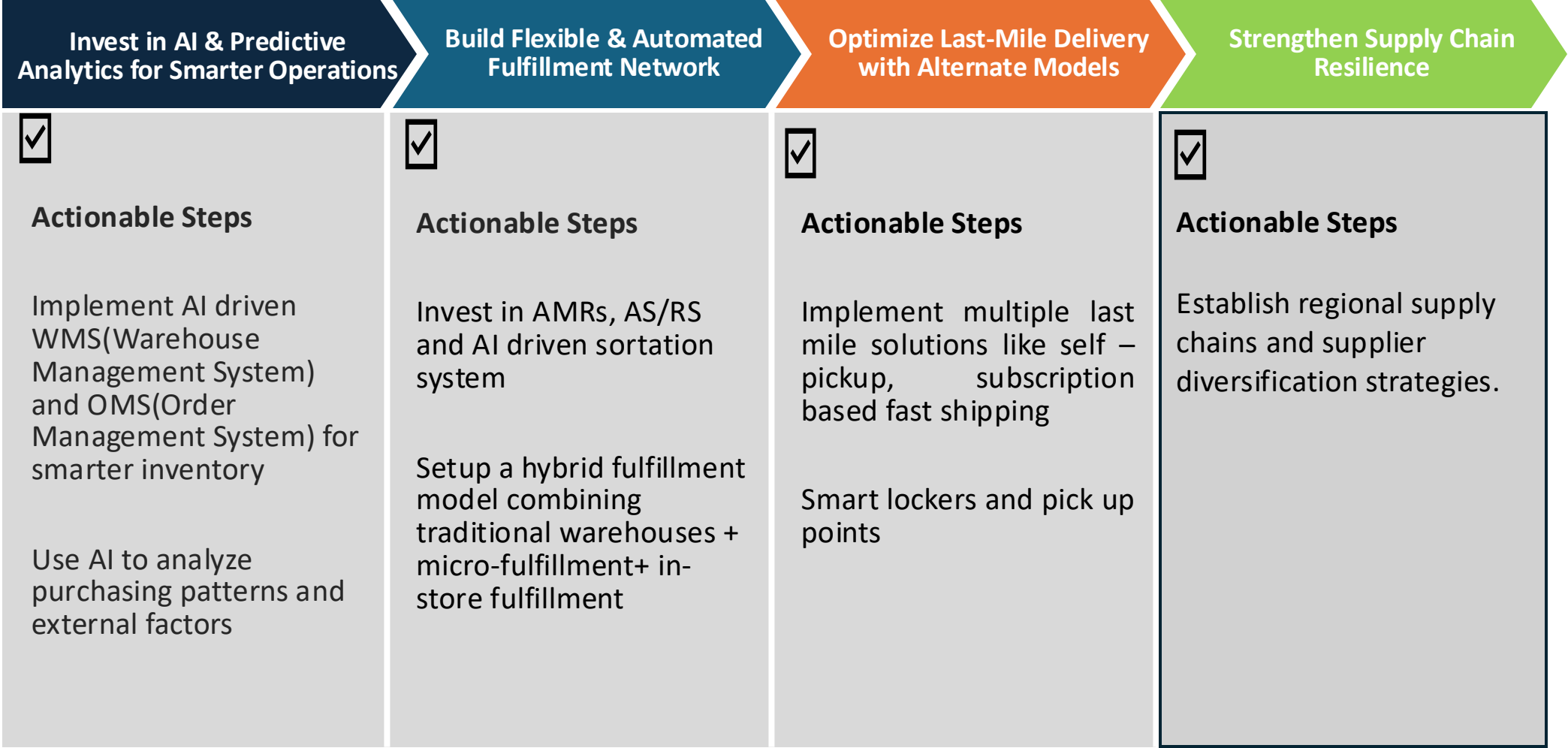
- AI powered order customization
- Dynamic packaging and branding – custom packaging designs
- Localize 3D printing hubs to reduce inventory cost – personalize medical devices, auto and spare parts, shoes and accessories



Strategies for Business Success



Strategies for Business Success



Case Study for a Large Manufacturer in the U.S.



Challenges in Yard Management Leading to TONU Charges



 High TONU (Truck Order Not Used) Charges

 Manual and Time-Consuming Check-In

 Mismatched Load Assignments

 Limited Real-Time Visibility

 Lost Productivity and Revenue Impact

One of the leading Manufacturing Plant with 50+ plant in USA was spending almost 15 Million in TONU charges every year.



From Problem to Solution: Our Approach



Precheck App

- Role of mobile applications in streamlining check-ins, reducing wait times.

AI Cameras

- How they capture vehicle/license plate details, integration with security systems.

Automation Workflow

- Integration with WMS/TMS for real-time visibility.



TRAILER 81
SPOT 37

Checked in Monday,
March 18 2:05 PM



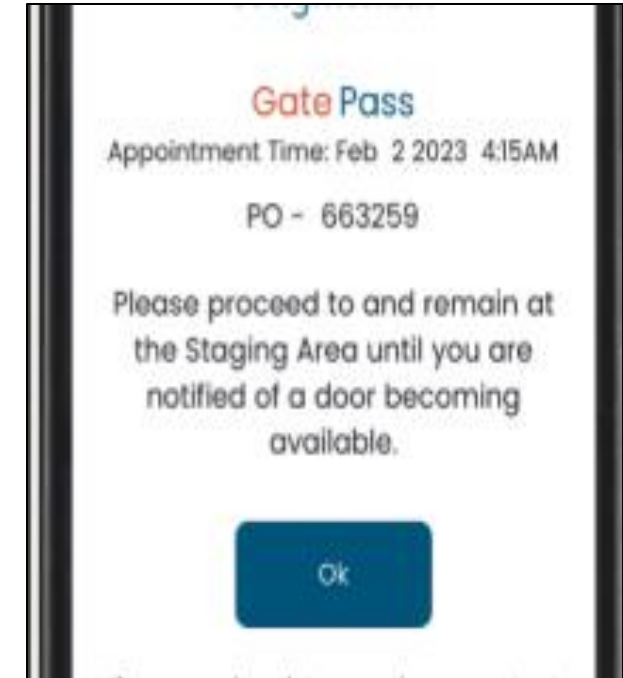
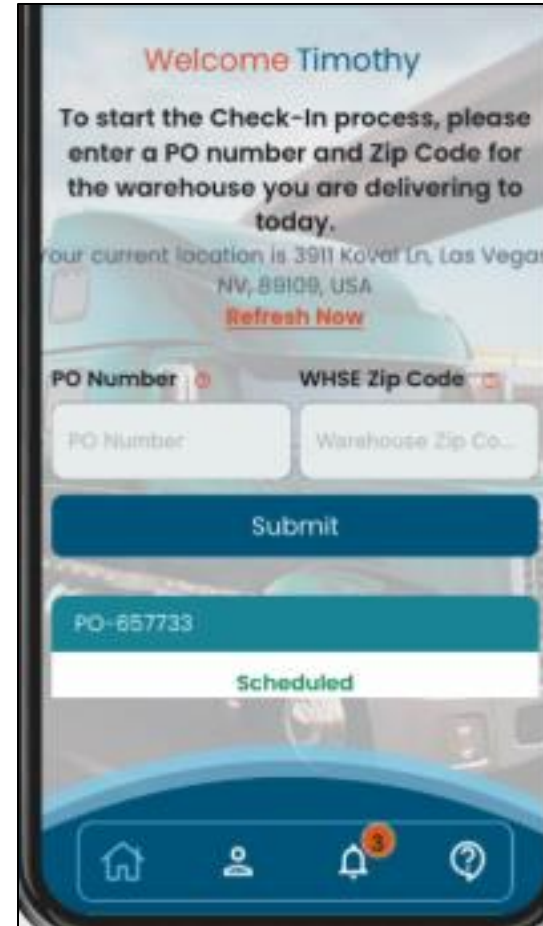
Implementation & Case Study



We implemented this solution with one of the largest Manufacturing Plant in the USA with 50+ Plants.

Step 1 : Driver Pre- Check App

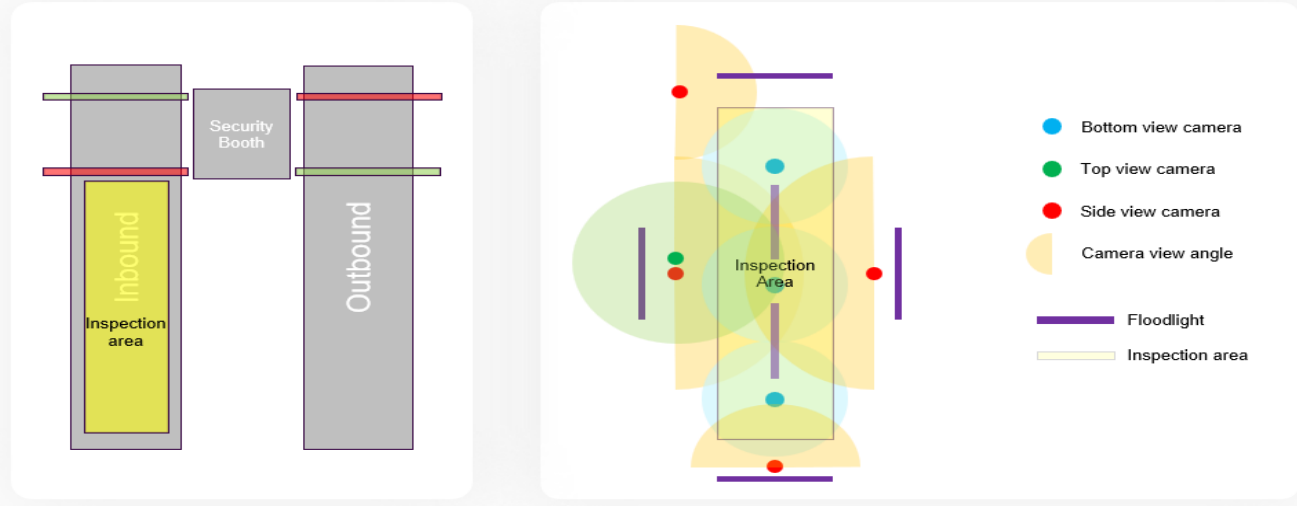
- Developed Pre-check App which integrates with WMS.
- Driver enters the PO number 30-45 mins before reaching the gate.
- Precheck App interacts with WMS and validates if the PO is valid.
- If valid it assigns the door number for that PO and informs the truck driver on the dock door number



Implementation & Case Study - Continued



Check-in gate with possibility of self check-in



Step 2 : AI Cameras

- Once the truck near to the warehouse security gate AI cameras scans the license plate and chase number and Trailer number.
- AI cameras validate the data against data in WMS and validate the data.
- If successful driver gets a message in his app to proceed over to the assigned dock door.



Q&A



Thank You

