Automation in Transportation and Logistics
NUTC Business Advisory Council Meeting 10.19.17
Large Scale Automated Fulfillment

Challenges
- High Labor Costs
- Plan for future growth

Solution / Technology
- Automated Handling & Sequencing w ASRS
- Residuals Process
- VAS
- Pack & Hold
- Unit Sorter Consolidates Orders before VAS
- PnA
- Receiving Process and Routing to Palletizing

Results
- Over 50% reduction in NVA, with like reduction in labor
- Capacity increased w/ 25% for future growth
Large Scale Automated Fulfillment

Temporary storage of active pick residuals in mini-load ASRS reduces touches.
Automated Fulfillment / Goods to Robot

**Challenges**
- Changing market conditions and an increase in e-commerce competition
- Reduce order cycle time to customers
- Consolidate 3 facilities into one building

**Solution / Technology**
- (3) Mini Load ASRS for storing and sequencing/synchronizing the release of frames and lenses to auto order consolidation
- (2) Robotic Each Pick Cells to auto pick and consolidate an individual frame with a lens to complete order
- WES to manage inventory, and perform matching and syncing of orders

**Results**
- System consolidated current operations into one building
- Increased speed and accuracy of delivery
- Reduction of labor content
Automated Fulfillment / Goods to Robot
Autonomous Vehicles – DC Material Transportation

- Assisted Putaway / Picking
- Auto Truck Loading
Autonomous Vehicles – Auto Truck Loading
Autonomous Robots / Container Unload - Inland Ports

De-Consolidation / Cross Dock
- Inbound – ISO Sea Containers Floor Loaded
- Outbound – Domestic Containers Floor Loaded

Palletization
- Convert ISO Sea Container Loads to Pallet Loads
Autonomous Robots / Container Unload - Inland Ports

Automatic Unloading of Ocean Freight Containers