



How Supply Chain & Logistics Innovations Impact Digitalization of Construction

PPI Annual Symposium 12/09/2020



Ryder Corporate Highlights

RYDER IS A FORTUNE 500 COMPANY



8.9 Billion

Annual revenue



39,900

Employees



55 Million+

Square feet managed
across 300+ facilities



9,500+

Ryder Drivers



7 Billion

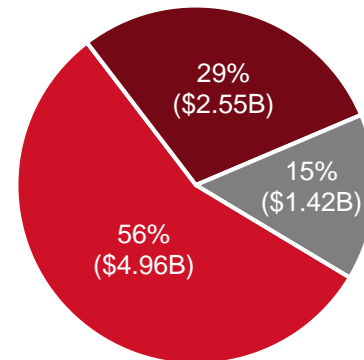
In leveraged freight spend



6,300 +

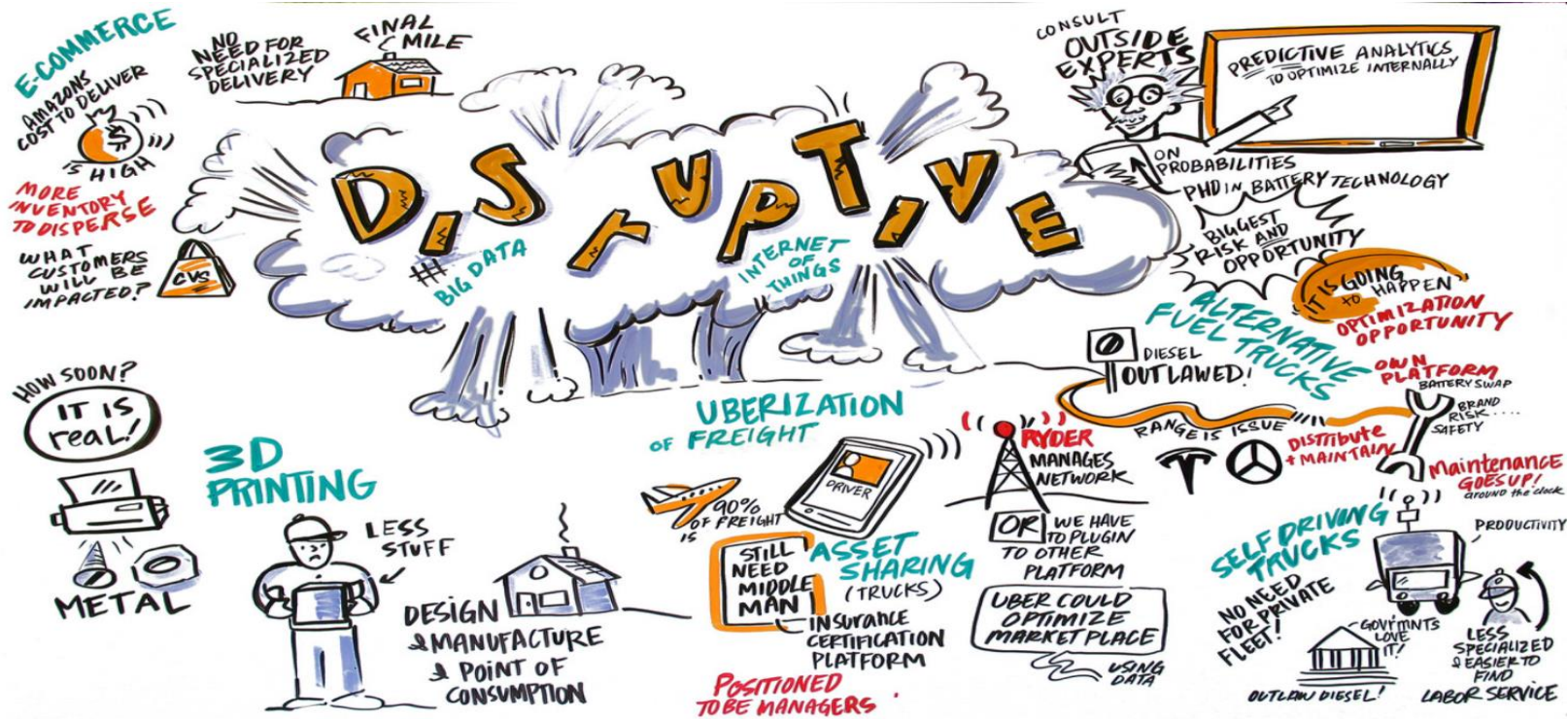
Maintenance technicians

OPS REVENUE BY SEGMENT

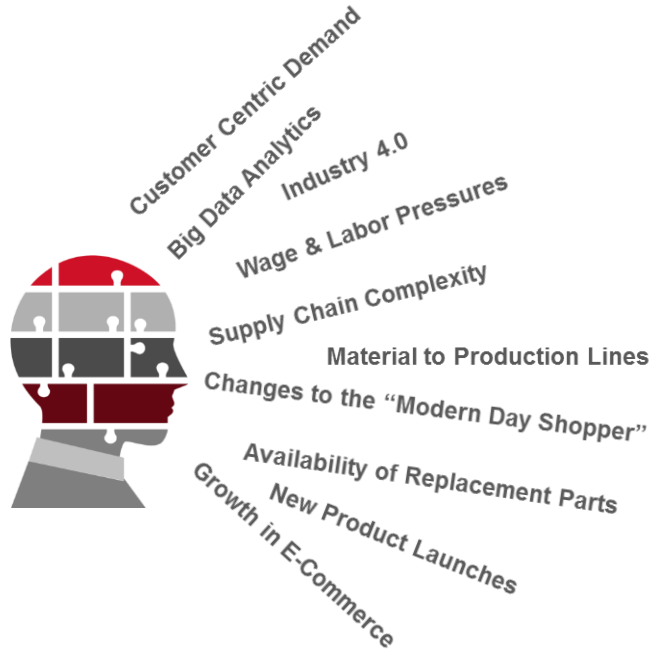


- Fleet Management Solutions (FMS)
- Supply Chain Solutions (SCS)
- Dedicated Transportation Solutions (DTS)

Unprecedented level of disruption in Transportation and Logistics

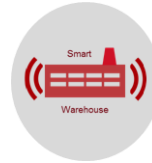


Look To The Future



The Digital Supply Chain

Data driven insights, integrated business capabilities across the supply chain & a customer first digital experience



The Smart Warehouse

Enormous improvements in technology combined with operational enhancements have allowed facilities of all sizes to become intelligent nodes in the supply chain



The Internet of Transportation

The use of sensors, telematics, and advanced vehicle technology drives operational efficiency and real-time transparency to detect exceptions before they occur

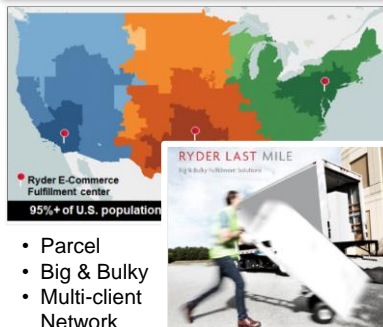
Ryder Investments & Innovation

Digitalization of the Supply Chain

- Agile Transformation
- Product Innovation
- Data Analytics



eCommerce Fulfillment

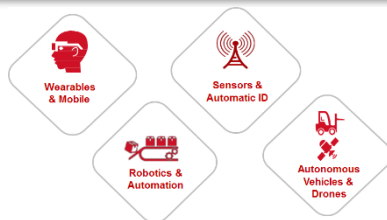


- Parcel
- Big & Bulky
- Multi-client Network

Asset Sharing



Smart Warehousing / Automation



Advanced Vehicle Technology



Strategic Partnerships

- Customer Advisory Boards
- Incubator Collaboration



“Ready Now” Technology



Autonomous Mobile Robots

(working with pickers to improve productivity)



Drones

(still developmental for true inventory tracking value, but useful in remote locations, yard checks)



Bot-Based ASRS

(scalable cost effective options to optimize space and increase productivities)



Vision, A/R and Voice Picking

(complex, field service & remote diagnostic value)

Autonomous Vehicles

(sensor and guidance technology continues to improve)



Analytics & Insights

(data and automation to drive operational efficiencies & predictive capabilities)



IoT Sensors

(various types of sensors, badges and equipment are being deployed to measure various conditions within building and yard)

“What's Coming Next” Technology



Fully Autonomous Case Picking

(flexible scalable solution to shelf picking product)



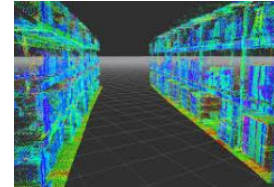
Next-Level AI

(allow autonomous operations to adjust to less constrained environments)



Fully Autonomous Trailer Case Loading and Unloading

(no humans required for floor loaded carton product)



Full 3-D Mapping With AI

(know where everything is real-time and if anything is out of standard)



Fully Integrated IoT

(sensors throughout supply chain along with automation coupled with analytics and control platform optimizing every part of operation with full visibility)

Project Logistics - Key Challenges

Process & Procurement

- Program complexity and multiple phases
- Collaboration with multiple partners
- Labor recruitment and retention
- Security and controls
- Fragmented supply chain
- International supply chain

Health & Safety

- Construction environment
- Interaction with public
- Segregation of equipment, vehicles and people
- Material handling above and below ground
- Repeatable, standard safe systems of work
- Field safety procedures and oversight

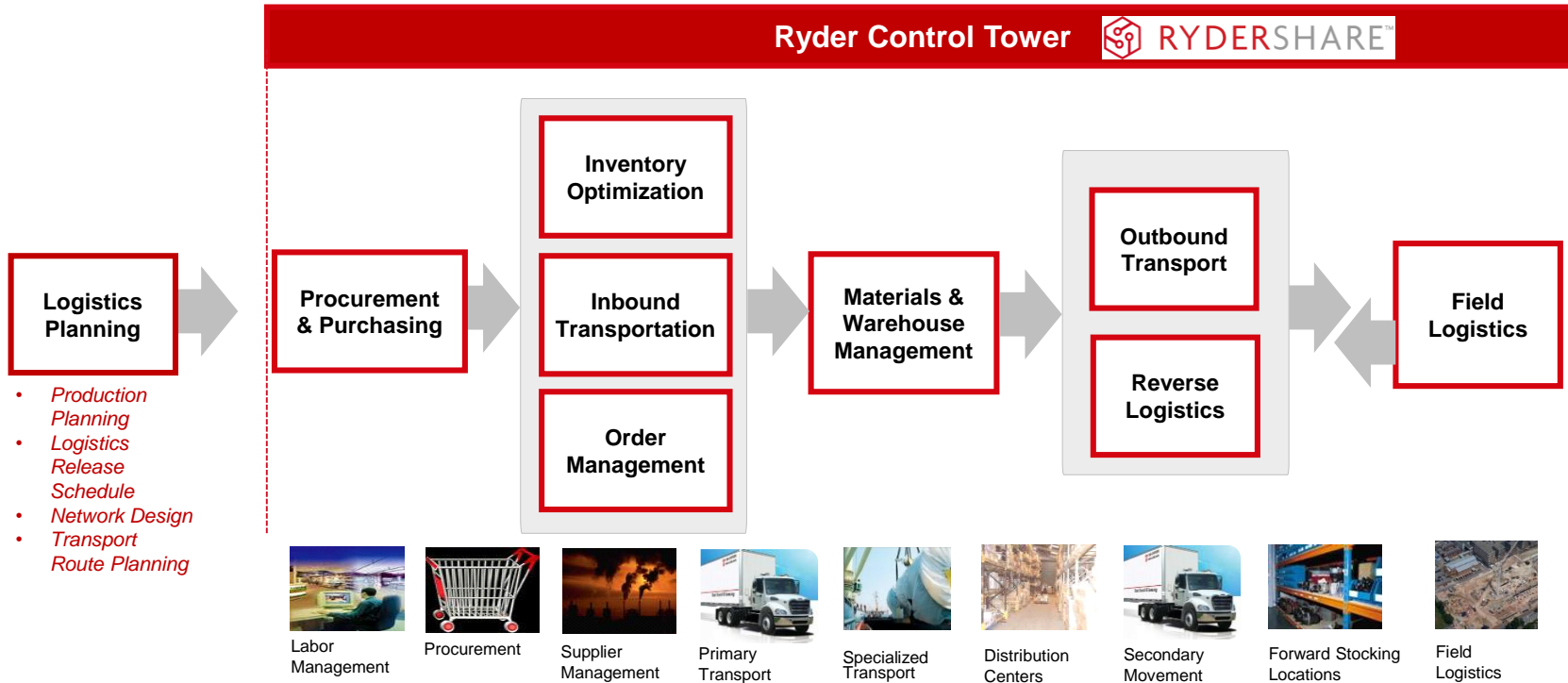
Sites Complexity

- Remote locations, access and egress
- Vehicle receipt and unloading
- Constrained site space
- Potential restrictions
- Permitted working times
- Risks caused by congestion

Social Responsibility

- Sustainability
- Minimization of waste
- Waste disposal
- Considerate contractor and partners
- Impact on congestion

Project Logistics - Integrated Supply Chain



Digitalization of Construction - Value Creation

Increase Project Certainty	Reduce Single Project Costs	Reduce Supply Chain Costs	Create Competitive Advantage
Reduce risks that compromise time & cost	Reduce areas of waste & contingency	Incorporate efficiencies into project cost plans	Develop Best In Class logistics
Eliminate time lost through inadequate <u>site logistics</u>	Provide <u>visibility</u> of requirements to supply chain	Reflect improved efficiencies in rates & packages	Leverage <u>new innovations</u> & technologies
Reduce time lost through <u>material supply planning</u>	Optimize material flow into and on-site	<u>Standardize</u> processes	<u>Optimize</u> & integrate whole value chain
Reduce material waste, loss & damage on-site	Configure materials <u>off site</u> to reduce complexity on site	<u>Integrate</u> supply chain across projects	Continuous improvement

Cost Benefits

2% of Build Cost

4% of Build Cost

8% of Build Cost

Closing Thoughts

- Clear data management strategy and use insights to drive value
- Holistic and intelligent approach to production and logistics planning
- Visibility and transparency across the end-to-end supply chain
- Fully integrated IoT, automation, analytics and control system approach
- Leverage new advancements in technology
- Collaborative partner approach