

Dynamic Logistics – Moving us into the Future

Logistics changing role in Global Supply Chain Optimization

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WERNER

Dynamic Logistics

1. Globalization transformation towards Regionalization

2. Geopolitical Risk

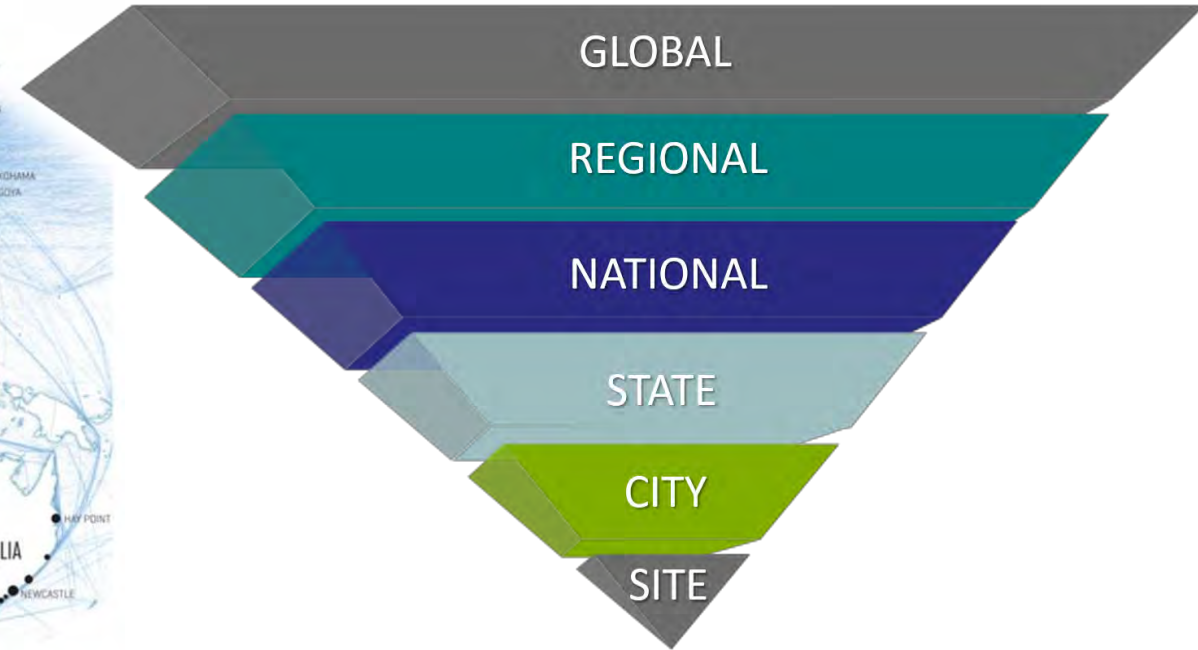
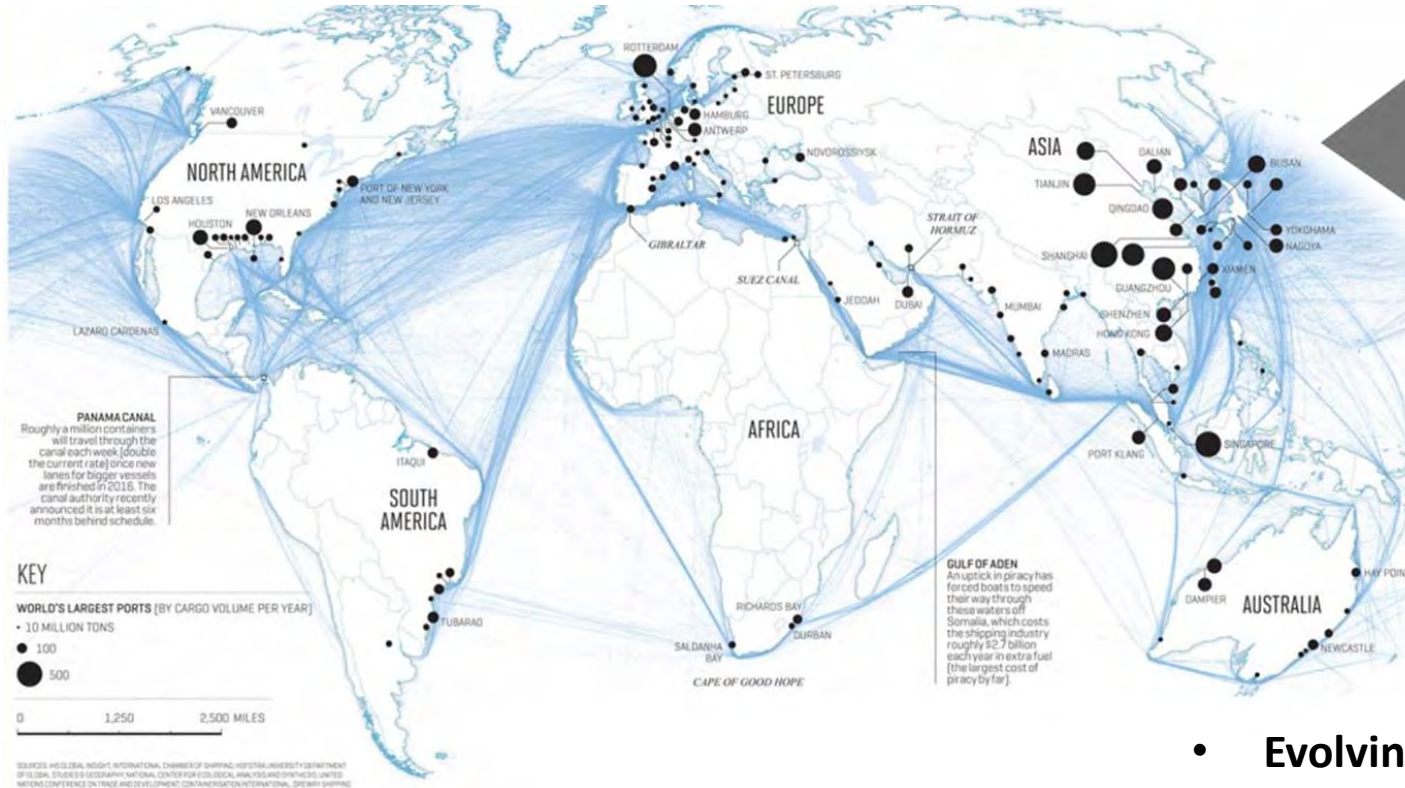
- a) Tariffs
- b) Trade Agreements

3. Dynamic Supply Chain and Mobility Technology

- a) Logistics Technology
- b) Trucking
- c) Rail



Globalization transformation towards Regionalization



- Continued Trade Growth expected (Tariffs?)
- Domestic and FDI (M&A vs. Greenfield)
- Digital Transformation (half of Capex on Technology)
- Security a major concern

- Evolving Sourcing / Procurement – now available Regionally
- Reduction / Shifting of Key Trade Lanes – reflecting:
 - Resiliency and Optionality (requires vision)
 - Lowering Logistics costs
 - Consumer focused Supply Chains and JIT delivery
 - Risk reduction
 - Nearshoring
 - Reshoring and Onshoring

Geopolitical Risk - Major Readjustment of U.S. / Global Trade Policy

- **Focus is on China** MARKET VS NON-MARKET
 - IPR / Forced Technology Transfer
 - State Owned Banks / Preferred Loans
 - Non-Market Pricing & Costs / Anti-Dumping
 - Targeted M&A, FDI and Infrastructure Loans
 - Cyber / Commercial Espionage
 - Made In China 2025 Industrial Policy
- **WTO Reform** MARKET VS NON-MARKET
 - Appellate Body / Dispute Settlement
- **The IMF and Trump** GLOBALISM VS NATIONALISM



• US Trade Agreements

- South Korea
- Argentina
- Australia
- Brazil
- **NAFTA / USMCA**
- **Japan**
- **UK**
- **Germany**
- **France**

Other US Trade Agreements in place:

- Chile, Colombia, Panama, Peru,
- Bahrain, Jordan, Morocco, Oman,
- Singapore

Strategic Restraint >>> Establishing Enduring Institutional Order >>> Sustainable Free & Fair Global Trade

Dynamic Supply Chain and Mobility Technology

Mobility Technology:

- Mobile CRM
- IoT
- Robotics
- Blockchain in Transportation Alliance (BiTA)
 - Emerging technologies in Transportation
 - 2017, 500+ members, 25+ countries
 - Blockchain and Distributed Ledger Technologies (DLT)
 - Encrypted blocks
 - 5G Technology The 4th Industrial Revolution

- Blockchain and International Commerce and Trade Facilitation and Efficiency
 - Finance
 - Expedited Letters of Credit and Insurance
 - Customs
 - Realtime documentation compliance verification and approvals
 - Tracking the provenance of goods (Visibility)
 - Realtime movement of goods monitoring
 - Realtime alternative backup planning
 - Expose fraud and theft
 - Payment
 - Secure, realtime transactions



Truck / Rail / Ocean / Air / 3PL / Mfg / WHD / Tech

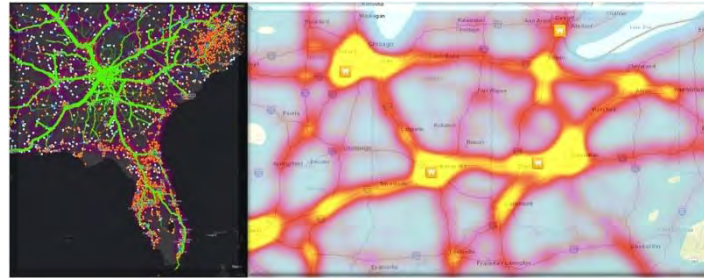
Software / Consulting / Financial / Insurance / OEM

Dynamic Supply Chain and Mobility Technology - Trucking

- Trailer tails and skirting
- Automated tire inflation
- Low rolling resistant tires
- Lighter weight equipment
- Drive tandem fairings
- Minimized tractor-trailer gap
- GIS Positioning
- Ultra low sulfur diesel fuel
- Diesel Exhaust Fluid (DEF)
- Aerodynamic tractor models
- Speed reduction
- Automatic transmissions
- Advanced lubricant
- Automatic engine shut-offs
- Advanced engine efficiency
- Collision Mitigation System
- Adaptive Cruise

***“Werner trucks are currently pinged every 15 minutes,
..... with 5G implementation, locations will be realtime”***

ELECTRONIC LOGGING DEVICES (ELD’S)



AUTONOMOUS TRUCKING



Dynamic Supply Chain and Mobility Technology - Rail

- 263K → 286K shift vital and will require significant infrastructure Capex
- Big Data gathering and implementation will determine winners and losers
- Precision Scheduled Railroading (PSR) co-op essential to both Class I & Short Lines
- Positive Train Control (PTC) and Tier 4 Locomotives competitive advantages
- Lineside Technology, Smart Sensors, Automated Inspection very important
- Big Question ----- Autonomous Trains

ADVANCED FUEL MANAGEMENT SYSTEMS

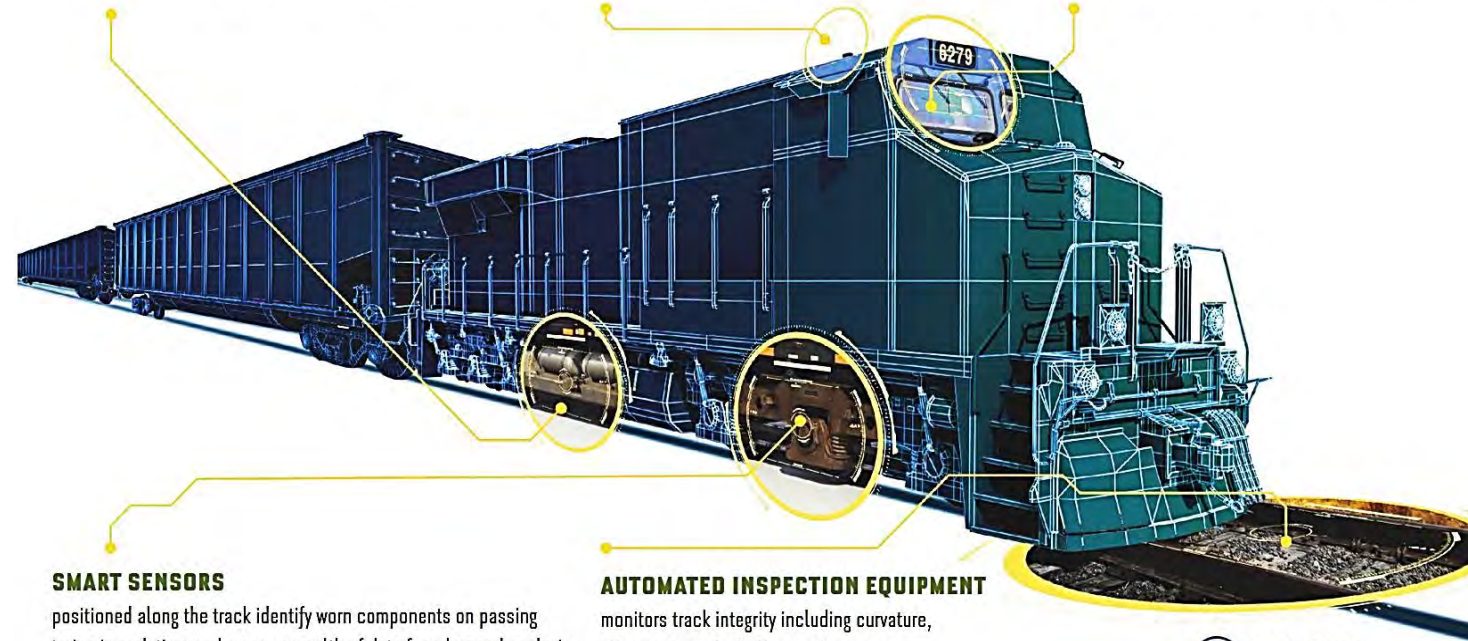
assess track grade, train weight, wind speed and more, allowing our locomotives to move one ton of freight 470+ miles on a single gallon of fuel – 4x more efficient than trucks.

POSITIVE TRAIN CONTROL

continuously analyzes the hundreds of variables required to safely stop a train at any given time, counteracting human error.

MODERN TIER 4 LOCOMOTIVES

are outfitted with hundreds of sensors that generate thousands of performance readings per minute to maximize efficiency.



SMART SENSORS

positioned along the track identify worn components on passing trains in real-time and amass a wealth of data for advanced analysis.

AUTOMATED INSPECTION EQUIPMENT

monitors track integrity including curvature, alignment, grade, ballast and more.

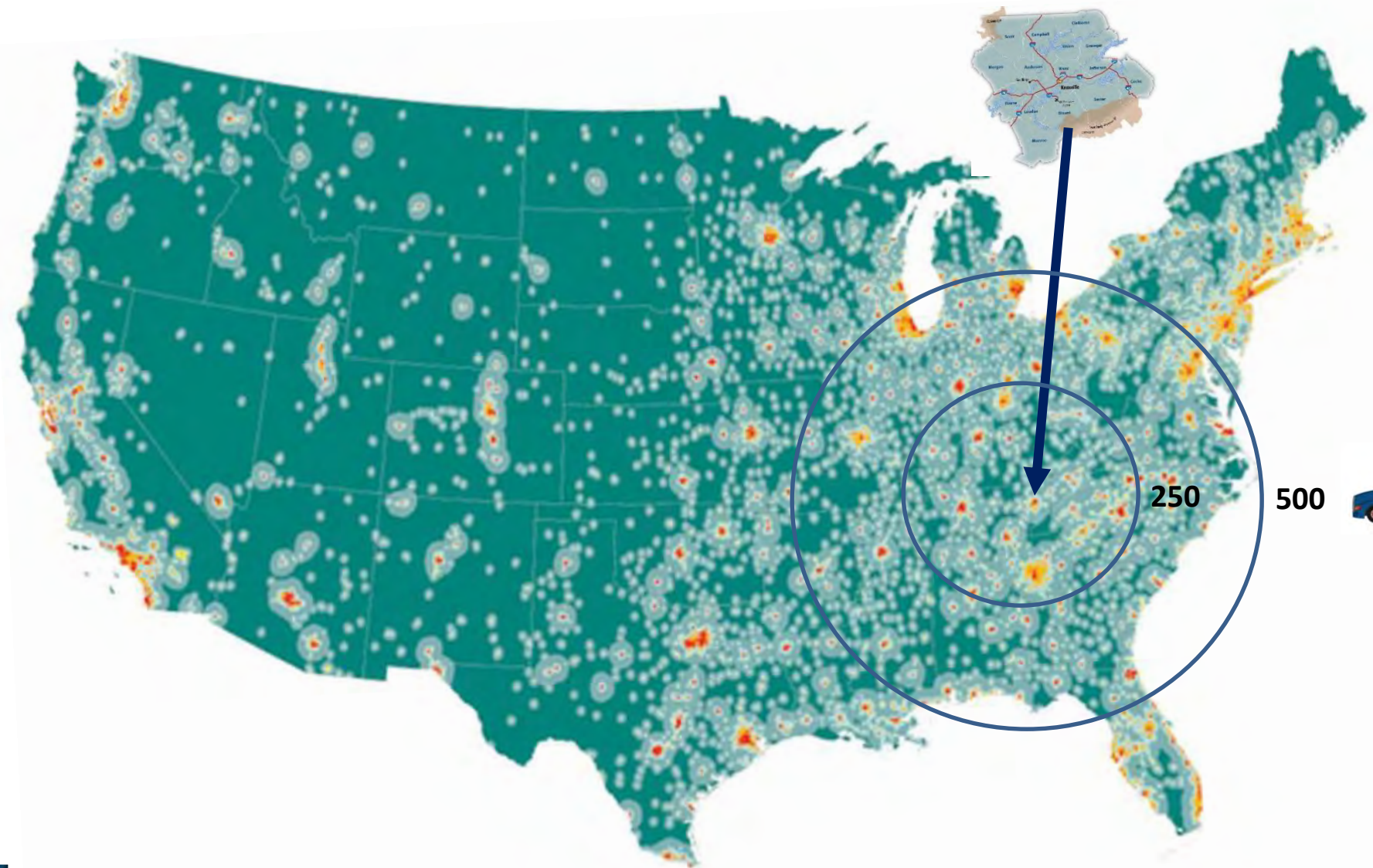
Logistics - Location

Regarding Manufacturing and Warehouse Distribution projects.....

“Logistics should determine Location..... Rather than Location dictating Logistics”



East Tennessee Economic Development



Q&A



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