June 22, 2016

Freight Fluidity: Can We Connect the Inland Supply Chain?

Rapid advances in how technology is used promise greater ‘fluidity’, but processes must change

William B. Cassidy, senior editor of JOC.com, the online arm of The Journal of Commerce.

Presented by
IHS MARITIME & TRADE

Freight Fluidity: The Interconnected Supply Chain

Defining “Freight Fluidity”

- “Freight fluidity identifies where bottlenecks are occurring and the interrelationship with other modes and the total supply chain.”

  -- TRB Research Circular, attributed to FHWA’s Nicole Katsikides

- Freight fluidity may be viewed from an **infrastructure perspective** -- flow of goods in a travel corridor or lane by transportation mode.

- Freight fluidity may be viewed from a **supply-chain perspective** -- flow of goods through an individual or multiple supply chains.

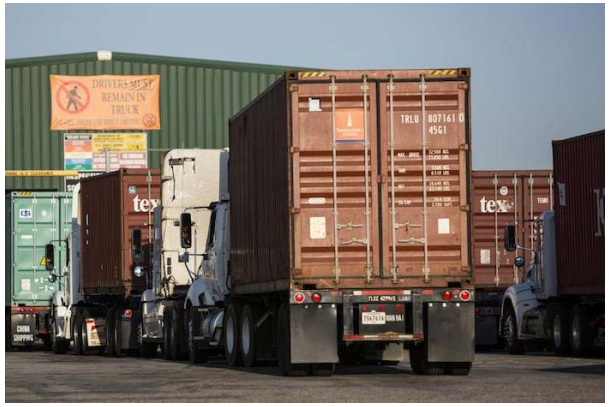
- For goods shippers, **fluidity = velocity = inventory turns**. And the uninterrupted flow of **data** is as important as the flow of goods.

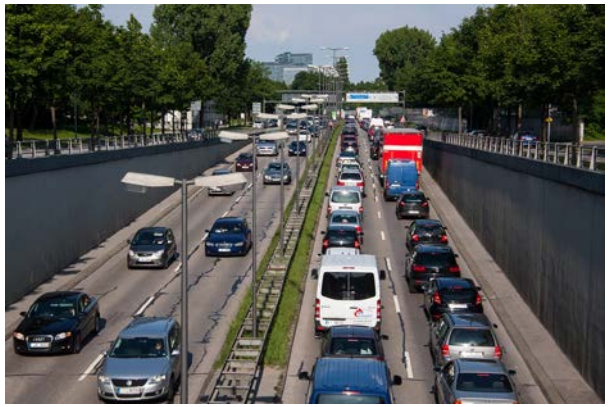
Freight Fluidity: The Interconnected Supply Chain

Defining the Problem: Three Core Issues

- Increasing trade, lack of long-term infrastructure investment and planning simply lay the foundation for bigger and bigger bottlenecks.
- More complex, multimodal, international supply chains mean more opportunity for things to go wrong, more trouble managing inventories.
- Despite need for an integrated systems outlook, we still think in “silos,” whether in terms of modes, infrastructure or links in supply chains.

Lack of visibility slows velocity, frustrates fluidity





Freight Fluidity:

Defining the Problem: Potential Solutions

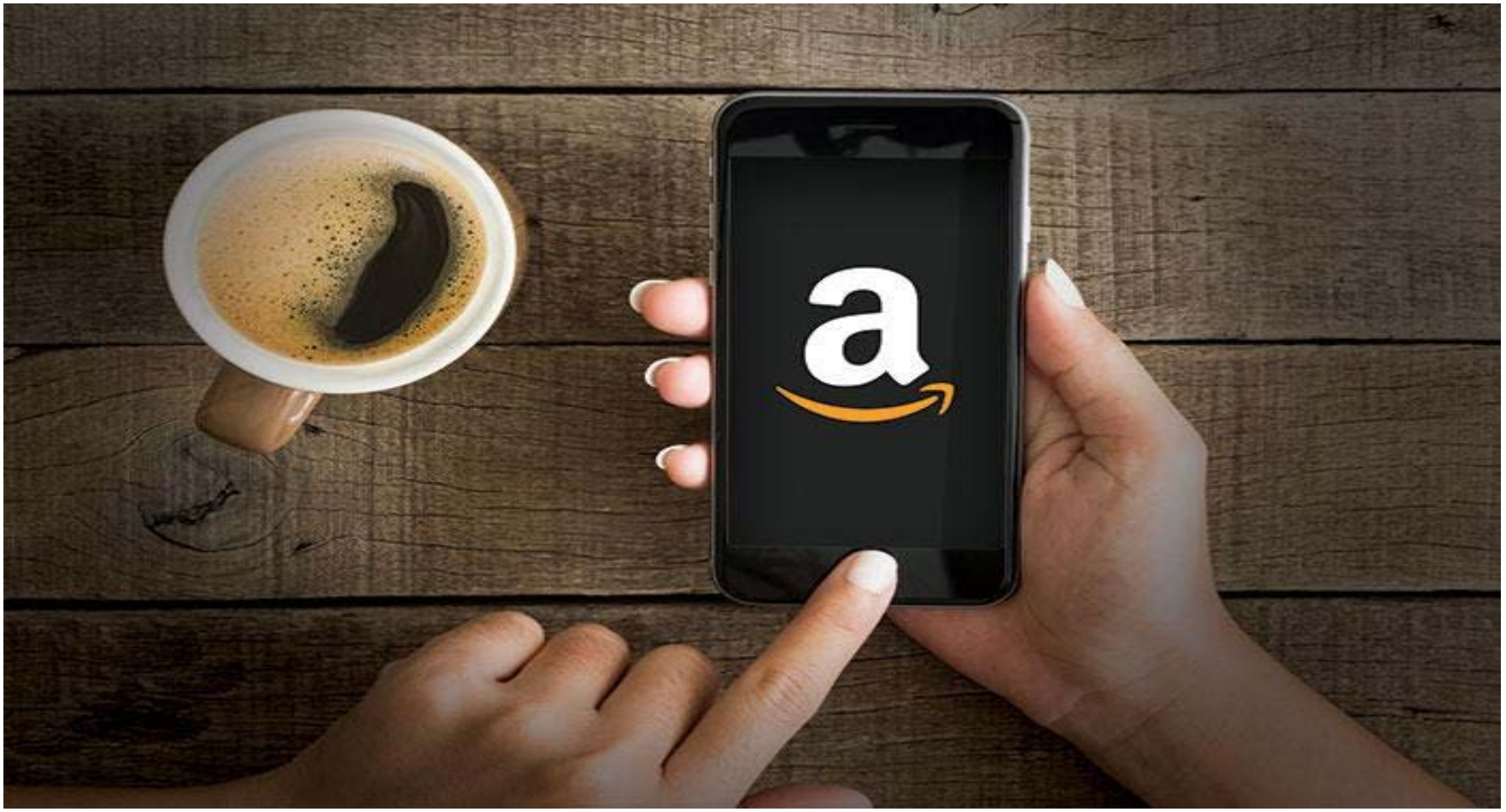
1) Advances in how technology is used, especially:

- M2M communications (Internet of Transportation Things)
- The cloud (replatforming, translation of data)
- Business analysis tools (prioritizing, profiting from Big Data)

2) Significant improvements in supply chain processes, starting with:

- Automation of manual processes (many still remain)
- Replacement of inefficient processes with new processes and models, thanks to better understanding of underlying data through technology

Freight Fluidity: The Interconnected Supply Chain



Congestion Threat Climbing

Freight Fluidity: The Interconnected Supply Chain

Increasingly Congested Ports & Roads

- Top three U.S. container ports account for almost **50%** of U.S. containerized international trade (source: U.S. DOT)
- International trade through U.S. ports to reach **60%** of GDP by 2030 (AAPA)
- Number of Class 8 trucks will grow **11.8%** to **3.98 million** by 2026 (ATA).
- **8 billion** HOURS wasted by U.S. commuters in traffic in 2015 (INRIX)
- U.S. highway congestion costs **$160 billion** a year (TTI/Texas A&M, 2015).
- Congestion cost truckers **$49.6 billion** in 2014 (ATRI, April 2016).

Freight Fluidity: The Interconnected Supply Chain

ATRI's Worst U.S. Freight Bottlenecks

1. "Spaghetti Junction" - Tom Moreland Interchange, I-285 at I-85, Atlanta. A five-level interchange.

1. Jayne Byrne Interchange, I-290 at I-90/I-94, Chicago. $420 rehabilitation project

1. George Washington Bridge, I-95 at SR 4, Fort Lee, New Jersey.

1. I-65 AT I-64/I-71, Louisville, Kentucky.

1. I-610 AT US 290, Houston, Texas.

"If you build it, they will come … and congest it."

Freight Fluidity: The Interconnected Supply Chain

FAST Act Brings Slow Relief

- First five-year bill since 2005.
- $205 billion in highway spending.
- $48 billion for transit projects.
- $10.8 billion in freight project grants.
- Still no consensus on long-term sources for additional needed infrastructure funding.
- Funding far below levels often recommended by past research ($225 billion to $340 billion a year, according to 2008 congressional study).

Freight Fluidity: The Interconnected Supply Chain

"I went down to the crossroads, fell down on my knees."

"We have concluded that our surface transportation system is at a crossroads. We have a looming crisis coming. A failure to act would be catastrophic for this nation."

-- Jack Schenendorf, vice chairman, National Surface Transportation Policy and Revenue Study Commission, 2008

Supply Chains: Thicker or Leaner?

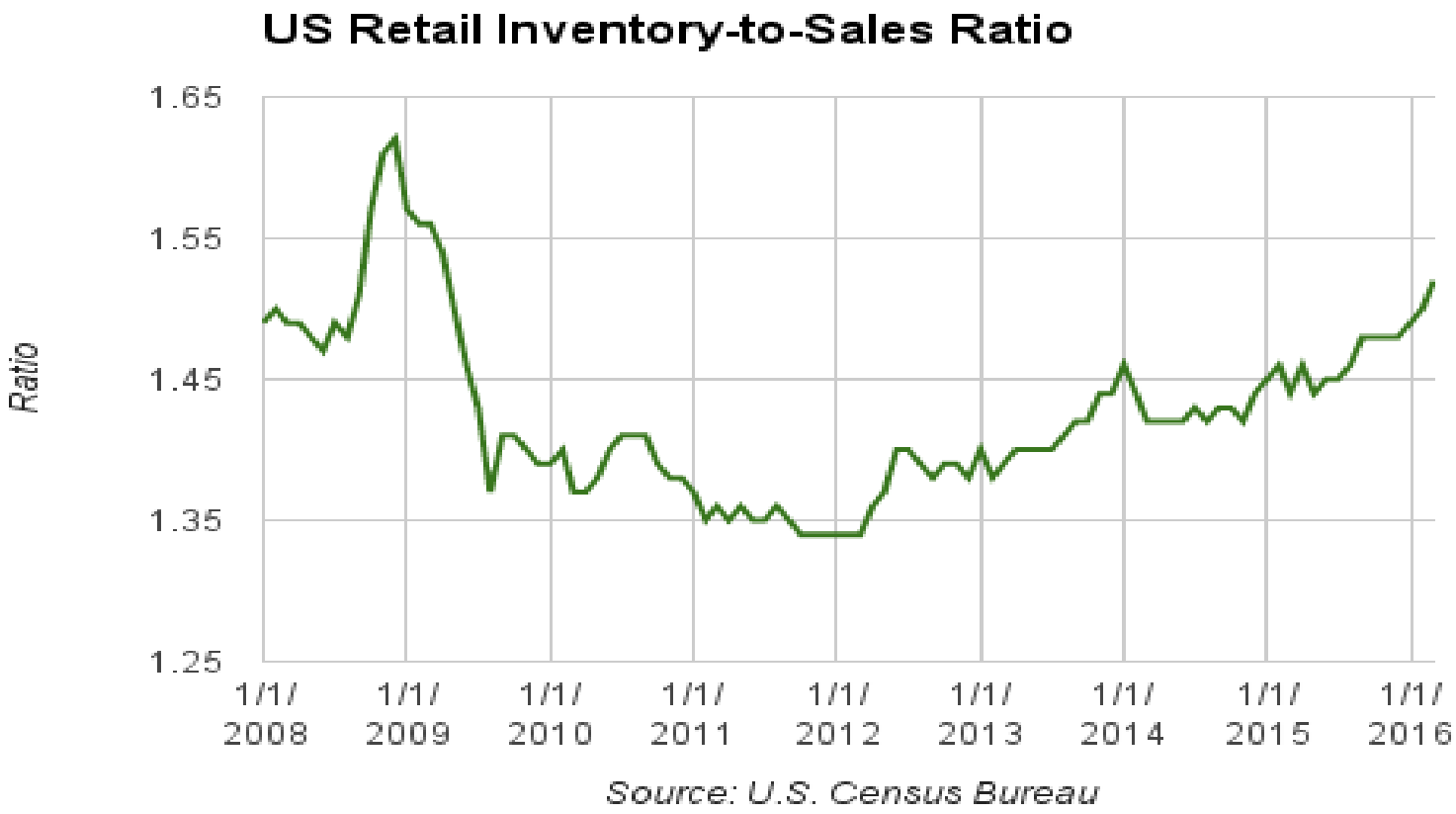
Freight Fluidity: The Interconnected Supply Chain

Supply Chains Getting "Thicker" by the Day

- More diversified sourcing, procurement strategies.
  Not just China but Vietnam, Mexico, other countries.
- Increasingly multimodal transportation strategies.
  Not just switching modes, but service levels to get results.
- Leaner supply chains more exposed to risk.
  Think of diversion costs associated with West Coast port labor dispute.
- Great opportunity for breakdown in shipper-carrier communications.
  Weak points in super-extended supply chains break more easily.

Freight Fluidity: The Interconnected Supply Chain

Not So Fluid Freight: Inventory-to-Sales Ratio Heads Up



Freight Fluidity: The Interconnected Supply Chain

"Communication Breakdown, It's always the same …"

- As supply chains become more multimodal and complex, more problem or pressure points come to light. These are the points where data fails to be passed on to the next link the chain, obscuring "supply chain visibility."

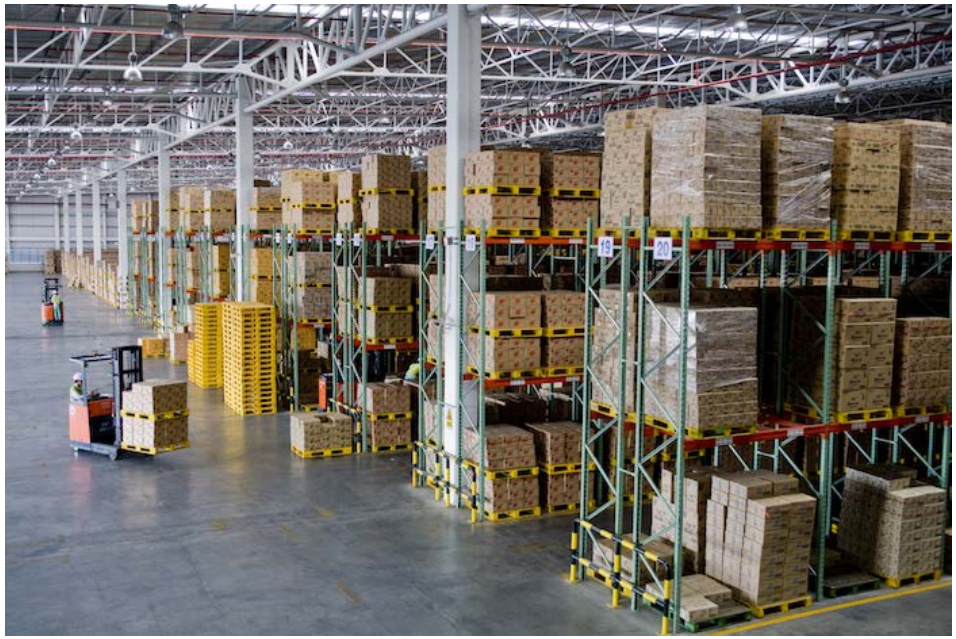
- Too many supply chains are divided into "silos" of information that are poorly linked. Issues abound involving ownership of data, lack of common data standards and platforms and the use of legacy systems and technologies.

- A great amount of freight data goes to waste. "You do need a data strategy to get the value out of your data. You need to put data on a common footing. And it will need replatforming." -- *Greg Smith, Tech Mahindra*.

Freight Fluidity: The Interconnected Supply Chain

Physical Goods or Data: The new Chicken or the Egg?

As much as physical infrastructure, freight fluidity depends on the free flow of **data** about that freight, whether for regional transportation managers trying to break or avoid congestion bottlenecks, for carriers transporting products or for shippers and receivers depending on the timely arrival of goods.



In too many cases, the flow of that data is interrupted, leading to **missed deliveries**, **bloated inventories** and **higher costs** for everyone.

Freight Fluidity: The Interconnected Supply Chain

The Supply Chain's "Black Holes"

Places where visibility can get very murky:

- Marine terminal container yards
- Drayage runs from ports to warehouses, deconsolidation centers
- Transloading, transfer of freight between truck, rail
- Inbound movement from coastal warehouses to DCs, RDCs
- Shipment from DC or RDC to store, plant or consumer

The technology to avoid "black holes" is out there, but ...

"Shippers are looking for an optimal price, and may not choose a partner that has EDI. The majority of shippers do not have a TMS."

-- Michael Kukiela, Schneider Logistics

Freight Fluidity: The Interconnected Supply Chain

Applying Technology: EDI vs. API

- **Electronic Data Interchange**

  Pro: Widely used by large shippers, carriers.

  Con: Not real-time, not flexible, can be costly to implement.

"It's still the most friendly, dominant form of data transmission" -- S*atish Jindel, SJ Consulting Group*

- **Application Program Interface**

  Pro: More real-time, flexible, easily connects IoT, multiple systems

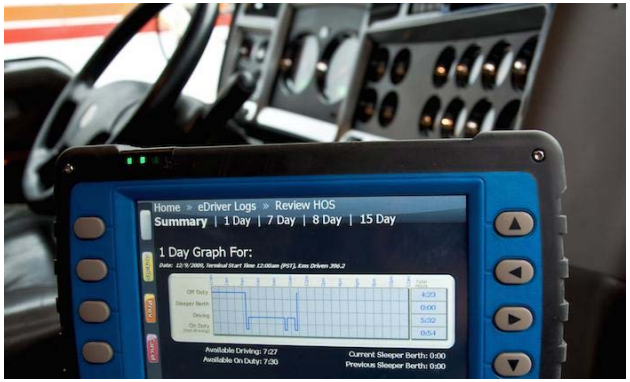
  Con: Still in early stages of deployment in transportation

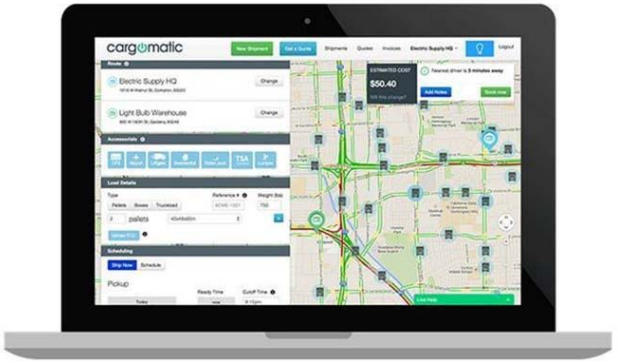
"The world outside transportation uses APIs to transmit and share information. The iPhone has been around 10 years now." -- *Jett McCandless, project44*

Freight Fluidity: The Interconnected Supply Chain

Welcome to the Machines

As M2M communications expands, trucks increasingly are nodes in the “Internet of Transportation Things” - rolling WiFi hotspots





- ELD mandate will set off a “data explosion”
- Freightliner Inspiration - an autonomous truck
- ‘Uberization’ of Transportation?

Freight Fluidity: The Interconnected Supply Chain

Identifying, Changing Inefficient Processes that impede Fluidity

- Process comes first: Applying good tech to bad processes won't help
- Automation needs to replace manual, human activity when possible
- Carriers, 3PLs, Shippers need to identify common objectives
- Shippers need a data strategy to get value from their data
- Better data, better decisions, fewer bottlenecks
- Changing processes is hard, but can be highly rewarding

THANK YOU!

William Cassidy
Senior Editor, Trucking and Domestic Transportation, JOC, IHS

bill.cassidy@ihs.com, 202-872-1228

@wbcassidy_joc