2009 UIC Supply Chain and Freight Transportation Symposium

Supply Chain Management, Logistics, and Freight Transportation in a Changing Global Economy
In Memoriam

Joseph DiJohn

Transportation Executive, Researcher, Teacher and Friend

May 12, 1943 – March 19, 2011
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Introduction

On November 17, 2009 the UIC Center for Supply Chain Management and Logistics and the UIC Urban Transportation Center held a symposium event on the University of Illinois at Chicago campus. Entitled Supply Chain Management, Logistics, and Freight Transportation in a Changing Global Economy, the one-day event featured presentations and panel discussions by experts in reauthorization, public-private partnerships, and supply chain sustainability. Those in attendance at the event were professionals, educators, and students in supply chain management and the transportation industry. This document serves as an overview of the event and the topics discussed.

The day started off with a welcome by Dean Michael Pagano of the College of Urban Planning and Public Affairs. A keynote session on freight funding reauthorization followed the introduction. The session was led by Shailen Bhatt, Associate Administrator for Policy and Government Affairs at the Federal Highway Administration and Professor Joseph DiJohn, Director of the Metropolitan Transportation Support Initiative at the UIC Urban Transportation Center. Bhatt noted that the current system is straining and what his department is doing in response.

The keynote session on freight reauthorization was followed by a panel discussion on reauthorization. At this time, Shailen Bhatt and Professor DiJohn were joined by Piyushmita (Vonu) Thakuriah, Associate Professor, Department of Urban Planning and Policy at UIC, and Dennis Neumann, Executive Vice President of BNY Mellon.

Attendees were then able to decide between two tracks: Freight Planning or Private Public Partnerships. Both proved to be informative with insight from both the professional and education sectors. In the Freight Planning Session, Thomas Murtha, Senior Planner at CMAP said that planning agencies’ key priorities are to keep the region resilient. Jeffrey Srive, CREATE Program Director at the Chicago Department of Transportation in the Private Public Partnership Session talked about the impact of the CREATE organization on rail transportation.

The luncheon session focused on one of the most pertinent topics in the industry: Environmental Initiatives. Bob Stoffel, Senior Vice President Engineering, Strategy, Supply Chain and Sustainability at United Parcel Service (UPS) provided insights into current trends. Stoffel started by explaining the quantity of goods UPS ships and the system they have to support this movement. He then spoke to how lean systems equal green systems. With transportation, he recommended that companies rebalance the mix and use multiple modes.

Rounding out the day of speakers was a luncheon panel entitled: Supply Chain and Freight Management in Tough Times. Speakers included Brian Carroll, Principal at Lean Performance Improvement Consulting, Inc., George Billows, Executive Director at the Illinois Trucking Association, and David Burns, Consultant at Railroad Industrial Engineering.

The event concluded with a wine and cheese reception. We want to thank all those who participated in our event and made it possible.
The Center for Supply Chain Management and Logistics would like to extend a special thanks to the University of Illinois at Chicago for hosting the event and to the Canadian National Railway for their generous support.
Freight Funding Reauthorization

Shailen Bhatt
Associate Administrator for Policy and Government Affairs
Federal Highway Administration

- Deputy Director of Kentucky MPO
- 50 million tons daily moved in 2008
- Oversees international programs
- Current system is straining
  - Created for port to port, farm to market
  - Now freight is increasingly international
  - Increasing activity in dense areas that can’t expand capacity
- Transportation Reauthorization extended
  - 18 months so that states can confidently negotiate contracts
  - States hesitant to sign contracts on month-to-month basis because they
don’t know if they’ll get reimbursed by US Department of Transportation
- Need to balance economic arguments with physics
- More goods packed in = more severe accidents
Shailen Bhatt  
Associate Administrator for Policy and Government Affairs  
Federal Highway Administration  

(Federal point of view)
- Statistics:  
  - 166,000 pipelines  
  - Hundreds of thousands of ports  
- Challenges: any capacity is expensive  
- Freight is a major theme for authorization  
- Going green is a challenge  
- Next federal transportation bill: potential 18 month delay  
- The more you can transport with a truck, the more you can save  
- Safety is first and foremost concern  
- You need to look at every angle  

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Professor Piyushmita (Vonu) Thakuriah  
Associate Professor, Department of Urban Planning and Policy  
University of Illinois at Chicago  

(Economic and research perspective)
- In the news:  
  - Recession and jobs  
  - Infrastructure investment  
  - Congestion reduction  
  - Financing  
  - High speed rail  
- 63% of highway structure is inefficient  
- Less prominent or not happening  
  - Gearing towards reauthorization  
  - Climate change and green  
  - Technology/jobs  
  - Freight  
- Not happening  
  - People - human capital  
  - Technology + R&D  
  - Impacts on long term productivity  
- Need long term strategic needs  
- Recovery will happen!  
- By 2035 the volume of freight shipped by the intermodal transportation system will increase to 33.7 billion metric tons worth more than 38 trillion an increase of more than 48% (U.S. D)  
- The challenge is finding the balance
• Reauthorization
  - Balancing long term vs. critical immediate issues
  - Right now focus is on how to create jobs
  - VMT reduction is focus of Department of Transportation (DOT)
  - Importance of “accessibility vs. “mobility”
  - $250 to $300 billion annually to have competitive infrastructure in 50 years
  - Climate change/Green jobs
  - Clean Energy Bill by Jon Kerry & Barbara Boxer
    • Could lay path for reauthorization
  - Should be talked more about in reauthorization:
    • People (human capital)
    • Technology, R&D in reauthorization
    • Impact on long term productivity
• DOT forecast: by 2025 volume of intermodal freight will increase 48%
• “Senator, people don’t eat in the long run, they eat today.”
  - Harry Hopkins, 1933, Federal Emergency Relief Administration

Dennis Neumann
Executive Vice President
BNY Mellon

• Short answer question: “Who’s got the capital?”
• Government has been hit by many crises this decade, each straining its credibility and funds
  - Enron - outflow of capital
  - Airlines - credit tightening
  - Housing - legislative intervention
  - Banks - TARP, IASM, FASB
  - Businesses struggling - TARP II, nationalization of banks
  - Unemployment
• Troubled Asset Relief Program - initially intended to purchase toxic assets from banks
  - Evolved into US Government directly injecting money
  - Private firms don’t have the leverage to finance infrastructure projects
  - Capital is hard to find, very expensive

Questions
1) Privatization of parking, etc, what’s the future for this type of project?
   - More and more communities will follow this pattern
   - Only 10-12 states at first had legislative power to do this, now they all do
   - Political resistance
2) What is recovery?
   - Recovery will be a sustained growth in job creation
   - “Shovel ready” projects start the wheel, other projects that follow will sustain
   - Warren Buffet: “highways are so congested, when recovery comes it will (hopefully)
improve value of railroad”

3) How to fund transportation shortfall if VMT goes down?
   - Looking at VMT tax
   - Link VMT, gas tax to alternative energy
   - What works in Portland might not work in Montana
   - “Finance innovation” might be unrealistic in this economy
Freight Planning

Professor Kazuya Kawamura
Associate Professor, College of Urban Planning and Policy
University of Illinois at Chicago

- Same amount of money going into freight, but costs have gone way down
  - Implies efficiency gains within freight industry
- Decrease in costs > supply chain evolution > increase in efficiency, increase in freight volume > congestion > decrease in efficiency
  - Geopolitics and information technology significantly affecting supply chain evolution
  - Challenge for planners lies in figuring out what to do about congestion
  - Congestion measured in V/C (vehicles over capacity)
- Corridor coalitions compete against each other
  - Need for institutional framework to cover trips across states

<table>
<thead>
<tr>
<th>Goals</th>
<th>Port</th>
<th>Line-haul</th>
<th>Urban</th>
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<tbody>
<tr>
<td>Jobs</td>
<td>X</td>
<td></td>
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<tr>
<td>Congestion</td>
<td>X</td>
<td>X</td>
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<tr>
<td>GHG</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Primary Pollutants</td>
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- No “local” project in freight
- Look at Freight Analysis Framework (FAF)
- Provision of government run terminal?
- Right time scale (think in 5-10 year time frame - businesses won’t be on board if you think in a longer term than this)
- Resist instinct to control/regulate
- Problem with projections
  - Based on last few decades
  - Growth will be different because of rising labor costs
  - Most freight activity is domestic
Thomas Murtha  
Senior Planner  
CMAP

- Planning agencies realize that they don’t know the answers  
  - Focus is for region to be resilient, flexible. No need to figure out all the answers right now
- Infrastructure needs to plan 50-100 years  
  - Conflict with short term business planning
- Stakeholder input  
  - System strengths and deficiencies  
  - Workforce issues  
  - Needed improvements between jurisdictions  
  - Trends along truck routes  
  - Funding options
- Possible solution: Develop strategic parking for trucks during rush hour periods
- Addressing congestion: Transportation Management  
  - Demand management  
  - Just-In-Time delivery means vulnerability to traffic delay  
  - Congestion pricing
- Improve turning radii for trucks  
  - Means that more time for pedestrians to cross streets  
  - Longer signal cycle  
  - This increases delay along road
- The Transportation Authorization/Reauthorization Bill. As you may know, Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU) expired in September. A 18-month extension has been asked for by the US Department of Transportation.
- The CREATE program  
  (although, with CN’s purchase of the Elgin, Joliet and Eastern Railway (EJ&E), not sure what CN’s role in the program will be)
Public Private Partnerships

Anthony M. Pagano
Director, Center for Supply Chain Management and Logistics
University of Illinois at Chicago

Chicago
• First city in America with a PPP (the Skyway) in 2004 (1.83 billion lease, for 99 years)
• Leased the Indiana Toll road in 2005 (3.8B lease, for 75 years)
• City tried to Lease Midway, negotiations fell through (2.5B for 99 years)

Why government gets involved with transportation issues:
• Transportation markets tend to become private monopolies
• Externalities and Public vs. Private sector incentives
• Private sector
  - competitive forces
  - maximize profit
  - stay in business
• If we rely solely on private there is a chance of market failure

Rationale for public involvement in transportation decisions
• Nature of transportation markets
• Private monopoly
• Institutional reasons
• decreasing costs with greater density
• Externalities
• Public goods

<table>
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<tr>
<th>TYPE OF PPP</th>
<th>PRIVATE</th>
<th>PUBLIC</th>
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<tbody>
<tr>
<td>Greenfield Concession</td>
<td>Build, operate, finance, maintains, eventual transfer to public</td>
<td>Negotiate, regulations</td>
</tr>
<tr>
<td>Design Build</td>
<td>Construction</td>
<td>Planning, operations</td>
</tr>
<tr>
<td>Brownfield concession</td>
<td>Finance, operates, maintains, eventual transfer to public</td>
<td>Negotiate, regulations</td>
</tr>
<tr>
<td>Asset sales</td>
<td>Finance, operate, maintain, transfer</td>
<td>Negotiation with private sector or no role</td>
</tr>
<tr>
<td>Deregulation</td>
<td>Build, maintain</td>
<td>None</td>
</tr>
<tr>
<td>Publication</td>
<td>Build, operate, finance, maintains</td>
<td></td>
</tr>
</tbody>
</table>

Other reasons for government involvement in transportation
• High risk and payback periods—large transportation projects
• Equity considerations

In a good PPP, public sector should be apart of planning, coordination, and possibly get subsidies. Private sector will operate system.

Difficult issues
• Length of the contract period
  (Private companies prefer longer payback period)

Use of funds from initial lease payment
• Greenfield concession and Brownfield concession

Conclusions:
• Brownfield concession most problematic
• PPPs can achieve social benefit for transportation in the most efficient manner

Dennis Neumann
Executive Vice President
BNY Mellon

• PPP is the only way to go forward
• Traffic congestion
  - 97 of roads need repair
• Congestion pricing.
  “Are people going to pay for something they are not using?”
  If you pay for an IPASS every month, you won’t care as much since you don’t have to ay each tie you use the toll.
• Average metro driver spends 46 hours stuck in traffic a year
• Detrimental impact on global economic competitiveness
• Ports cannot unload because trains and trucks cant get in and once in cant get out

Jeffrey Sriver,
CREATE Program Director,
Chicago Department of Transportation

• CREATE: Chicago region environmental and transportation efficiency program
• CREATE is a successful PPP. It improves freight rail travels through Chicago.
  - Much more efficiency with Metra and Amtrak to go through freight rails
  - 6 out of 7 class 1 railroads converge in Chicago
  - 25% of all us rail traffic touches Chicago
  - 53% of all intermodal traffic in the US touches Chicago
  - Create is a partnership
- Create program currently has 71 projects
  - CREATE is a partnership with IDOT, CDOT, Association of American RXR and others
  - Improvements CREATE has done
    - Currently 71 projects are being done
    - Including:
      - 25 Road/rail grade separation
      - 6 Passenger/ freight rail grade separation
      - Viaduct improvement
      - Grade crossing improvements
      - Rail operations and visibility improvements
  - CREATE looks at the rail roads as a system
  - Benefits include freight and passenger rail delay reduction, less idling of trains
  - The American Reinvest and Recovery act.
    CREATE received money for all of the agencies to use (Also called Tiger Fund)
    - Secured: 509.2 million
    - Unfunded need: 2.56 billion
  - CREATE is looking into High speed rail corridor to connect Chicago to St. Louis
Environmental Initiatives

Bob Stoffel
Senior Vice President Engineering, Strategy, Supply Chain and Sustainability
United Parcel Service (UPS)

• “How to become green in the supply chain”
  - UPS is 102 yrs old
    • 3 years ago, ups did a “green audit”- looked at where they were
      $50 Billion organization
    • Start: They use a lot of transportation
    • They move 6% of US GDP and 2% of world GDP
      - 100,000 trucks, 1000 aircraft
      - 2008: 32 Billion metric tons of CO2 and forecasted to grow
  - How-to’s of environmental initiatives
    - UPS aims to reduce carbon emissions
    - 13% of emitted emissions are due to transportation.
  • Reduction targets are fueled by two main bodies:
    - Regulatory: EU aims to reduce carbon emissions by 20% by 2020
    - Customers: More pressured to reduce their carbon footprints.
      They are demanding that companies reduce carbon footprints as well.
  • 53% of emissions are generated from UPS airline.
    - There are aims to reduce emissions with efficient technologies and bio-fuels.
    - Obama wants emissions down by 17% by 2020
  • Two GPS systems are being implemented which will reduce idol times and backing.
  • Real time dynamic optimization - 10% reduction in fuel and miles.
  • One second saved amounts to savings up to 30 million dollars.
  • There are four elements of transportation that will increase efficiency, improve service, and increase customer satisfaction:
    1) Greening Transportation –
      Rebalance the mix and modes of transportation. High value commodities should move by air. Low value commodities should move by ground.
      Must find the right balance between speed, cost, and environmental impact.
    2) Greening packaging –
      Minimize damage on the product by focusing on packaging. Reducing footprint will reduce necessary load.
    3) After Market –
      Intelligent return service.
    4) Distribution –
      Determined by the price of oil. Location decisions are dependent upon oil.
Brian Carroll  
Principal  
Lean Performance Improvement Consulting, Inc.

- *Lean* - Process Oriented Lean Business Administration is supplanting Mass Business Administration throughout the global supply chain because lean is the market winner.
- Business Process owners and operators are the experts in the processes that they perform.
- Lean is an emerging science in the workplace. It is the philosophy of eliminating all waste in all system processes continuously and the complete set of processes required to produce the product. It is always process oriented.
- A company can be considered lean when it is designed, organized, and operates according to the five lean principles:
  - Value
  - Value added from customer perspective
  - Flow: elimination of waste
  - Pull: make it when it is needed
  - Pursuit of perfection: continuously and relentlessly

- GM is behind Toyota in terms of the transition from mass to lean production.
- Administrative processes are much leaner for Toyota.
- Adopting Lean will help firms:
  - To survive among lean competitors
  - To gain a strategic advantage
  - To meet customer expectations
  - To respond quickly to opportunities and threats

- Womak and Jones- “Lean Thinking”
- Some of Lean practices cultural principles are:
  - Process oriented thinking
  - Process quality= Product quality

George Billows  
Executive Director  
Illinois Trucking Association

- Truck load revenue per mile is down 13.7% from 2008.
- 3,000 trucking companies went bankrupt in 2008.
Logistics Chain Development on the:

- **Wholesale Railroads** - Example: BNSF
  - 6 railroad companies
  - Large overhead
  - Need volume.
  - 32,000 route miles
  - 40,000 employees
  - 6,700 locomotives
  - 220,000 average freight cars on system
  - 8 million cars originated a year
  - Employees reassigned every 2 years or so
  - Cooperating with trucking companies

- **Retail Railroads** - Example: Arkansas and Missouri
  - 500 regional and small railroads
  - Profit made on small volume
  - Low overhead
  - Personal service
  - Incentive to work hard.
  - 140 miles
  - 25 locomotives
  - 75 employees
  - 41,000 car loads/year

- **Freight Car** - Key to the logistics chain

  - Today there are approximately 200 specialized car types. Freight car is difficult to load, subject to impact loading, and tare weight can be higher than truck.

  - Large railways are very conservative and change only when pushed.

    - Plastic Pellet Car - one of the most profitable cars at only 4 loads per year.

    - Heavy Bulk Material Car - cement. Short distance cost is minimized.

    - Steel Coil Car

    - Paper Car - Difference between 100 tons and 110 tons is reduction in transport costs by 30%.

- Railroads can have a major role in the logistics chain, but it requires personal and quality service.

- Must make car and service fit the product and not the product fit the car.

- **Value System Analysis** - Lean tool.

  Looking at the entire process from point to point.