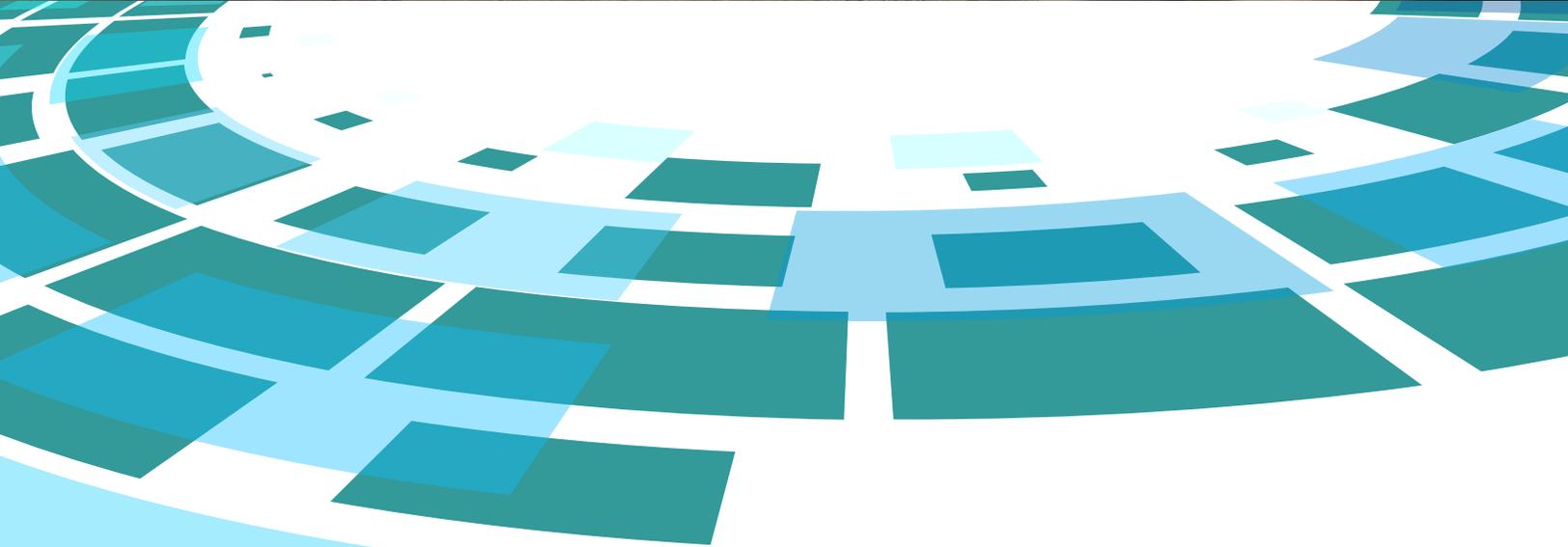


20TH ANNUAL FREIGHT AND LOGISTICS SYMPOSIUM

The Integral Role of Freight in the On-Demand Revolution

A Summary Report | December 1, 2017 | Minneapolis, Minnesota



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**CENTER FOR
TRANSPORTATION STUDIES**
UNIVERSITY OF MINNESOTA

20th Annual Freight and Logistics Symposium

The Integral Role of Freight in the On-Demand Revolution

E-commerce is booming as consumers increasingly shop online for convenience, price, and availability to meet their needs. New trends and emerging technologies are driving consumer expectations for shortened, lower-cost, more flexible delivery options. But what do those expectations mean for the freight industry? What challenges does the industry face in meeting the demands of the new on-demand economy? How is the industry responding?

Participants in the 2017 symposium focused on finding answers to those pressing questions as they explored the integral role of freight in the on-demand revolution. The event brings together representatives from public and private sectors to gain a better understanding of issues that affect freight, such as e-commerce and other emerging technologies.

Keynote: Using Information and Technology to Thrive in an On-Demand Economy

- David W. Wangler, President, Trimble Transportation Enterprise

Panel: Introducing Duluth's Full-Service Intermodal Facility

Moderator: Richard Stewart, Professor & Director, Transportation and Logistics Research Center, University of Wisconsin–Superior

Panelists:

- Lonny Kubas, Director, International Overseas Marketing, CN Intermodal
- Jonathan Lamb, President, Lake Superior Warehousing
- Brad Milbeck, Materials Manager, Lexington Manufacturing

Panel: Facilitating the Coexistence of Commuters and Commerce

Moderator: Frank Douma, Director, State and Local Public Policy Program, Humphrey School of Public Affairs, University of Minnesota

Panelists:

- Nick Thompson, Transportation Director, Metropolitan Council
- Brian Isaacson, Director of Metro Planning, Program Management & Transit, MnDOT

More information

Download this document and related materials from the 20th Annual Freight and Logistics Symposium: cts.umn.edu/events/freight/2017



Technology Applications Offer Possible Solutions as On-Demand Economy Becomes More Demanding

With e-commerce growing at 15 percent annually and a high number of brick-and-mortar store closings—more than 5,300 from January to June of 2017 alone—the on-demand economy is placing new demands on the transportation industry.

“No matter the commodity or product category, the on-demand economy is changing the movement of freight from raw materials to manufacturer to consumer,” says David Wangler, president of Trimble Transportation Enterprise. “Your business is now driven by the capture, analysis, and exchange of information.”

Consumers expect almost unlimited selection with immediate availability and increasingly competitive pricing, he says. What’s more, meeting those expectations requires transportation providers to make faster decisions and deal with more distributed inventories and smaller shipments—all with greater transparency.

“The good news is that the transportation industry thrives on capacity and has an almost unlimited ability to adapt to the changing demands of the shipper community,” Wangler adds.

The shift puts more pressure on carriers and logistics service providers to increase their own pace of change, adapt to new distribution and delivery models, and provide higher service levels that typically underutilize capacity.

But technology, Wangler says, offers an important tool in responding to rising consumer expectations while facing the pressures of reducing cost and improving service.

Tools for fast-paced change

Wangler’s firm, Trimble Transportation Enterprise, offers integrated technology and software solutions globally to the transportation industry.

“The final mile is the ultimate battleground,” Wangler says. “It’s not

FREIGHT STATS



\$700B

worth of freight/year is moved by trucking



30%

volume of freight moving through U.S. transportation system is set to increase over the next 5 years



95-97%

operating at 95–97 percent capacity over last 3 years, crunch coming

Source: Trimble

uncommon for final-mile delivery to account for 40 to 50 percent of total transportation costs.”

More carriers are establishing local delivery operations and using advanced routing and scheduling to compete. They are also looking carefully at asset uptime and the cost of maintenance to help improve operational efficiency and bottom-line performance. And since all parties involved want to know the location of their product during shipping, real-time updates are important.

Though technology helps with these tasks, continued success depends on the automation of front-line decisions and back-office practices, combined with a dramatically enhanced ability to collect, analyze, and quickly apply information.

“We need to shift our view from the rearview mirror, based on traditional reporting, to a windshield view made possible by predictive analytics,” Wangler says, pointing out that global companies already make use of predictive analytics to forecast consumer behaviors and risk. “It will now be a fundamental tool in helping transportation enterprises improve service levels, reduce costs, and increase profitability.”

Power to the blockchain

Part of the digital transformation involves changing management strategies, interactions with trading partners, and work with suppliers to increase efficiencies through new tools, such as blockchain. In fact, the organization Blockchain in Transport Alliance (BiTA) formed to leverage the benefits of blockchain concepts and technology.

Most frequently mentioned in the financial sector with development of new currencies such as Bitcoin, blockchains also can aid transportation, Wangler says.

A blockchain functions as a peer-to-peer electronic system, a database ledger that keeps track of related transactions. Blockchains allow willing parties to directly complete transactions without the need for a trusted third party. With a blockchain, no single authority owns the network. Instead, the distributed nature of the network, along with security and consensus rules among members, make the network trustable.

BiTA is working to develop common standards to form the basis of blockchain applications in the trucking industry. Blockchain brings the potential to streamline processes, such as RFPs, to more easily track carrier history, safety, and maintenance records, and to improve the speed of payments to drivers and others in the chain.

Connected-truck technology

In addition to blockchain, the emerging vision for transportation technology also includes other components, Wangler says. Connected trucks are one of those elements.

“Essentially, trucks are becoming the next smart device,” he says. By 2020, estimates suggest 35 million connected trucks worldwide will ride the roads, eventually communicating directly with the infrastructure and vehicle-to-vehicle, as well as adapting to obstacles automatically. It may take some years before fully autonomous trucks become commonplace, he notes, but trucks today already incorporate basic levels of vehicle autonomy, such as driver assist.

Technology will help advance asset maintenance, as businesses take advantage of predictive analytics to understand potential maintenance issues well before vehicle breakdown. The application of new technologies also helps improve driver safety, retention, and recruitment, Wangler says.

Another piece of the technology puzzle—mobile apps—will continue to grow at a rapid pace, he adds. Video and artificial intelligence are other technologies with the potential to help improve driver safety by predicting difficult situations and offering 360-degree views to see what happened on any given trip.

Big data, big change

Matching freight demand and capacity proves a complex problem. Questions about load requirements, restrictions, and certification, among others, influence options. “Improving utilization requires a much deeper set of data than what we might typically see on a commercially available load board,” he says.

The growing set of tools makes it easier to capture massive amounts of data, but equally important is the ability to digest and use the data effectively. Techniques to mine big data are helping generate benchmarks for strategic decision making around markets, pricing, services, asset performance and utilization, staff productivity, and retention.

“The pace of change in every aspect of transportation and logistics is accelerating, but there are exciting new technologies capable of helping us cope with that change,” Wangler says. “No matter where you position yourself in the world of transportation and logistics, there is no shortage of opportunities to win by matching the right problems with the right technologies.”



CN Duluth Intermodal Terminal Opens Major New Options for Shippers

When the first international intermodal container ramp—the CN Duluth Intermodal Terminal—opened in 2017 in the Twin Ports of Duluth, Minnesota, and Superior, Wisconsin, it provided new, more competitive freight options to the state and region.

Minnesota-based Lexington Manufacturing was ready for the opportunity. The company, which manufactures component parts for the window and patio door, architectural door, furniture, and structural millwork industries, wanted a better way to import fire-rated door cores.

The new intermodal service improves the efficiency of importing the product because it comes in heavy containers through the port, says Brad Milbeck, materials manager for Lexington Industries, which has facilities in Brainerd and Coon Rapids. “We basically get a 25 percent savings on our transportation costs.”

Milbeck shared his experience as part of a symposium panel with CN Intermodal director of international overseas marketing Lonny Kubas and Jonathan Lamb, president of Lake Superior Warehousing. Richard Stewart, professor and director of the Transportation and Logistics Research Center at the University of Wisconsin–Superior, moderated the discussion.

One facility, three gateways

Duluth Cargo Connect (DCC), a working partnership of the Duluth Seaway Port Authority and Lake

Superior Warehousing, operates the intermodal ramp at the port’s Clure Public Marine Terminal, which is served by Canadian National Railway Company (CN). With the new service, shippers gain the advantage of reaching the Pacific, Atlantic, and Gulf gateways from one facility.

According to Stewart, Duluth has been a front-runner in intermodal transportation, and Duluth’s new full-service intermodal facility continues that tradition of innovation.

The intermodal terminal offers businesses many advantages: access to international markets, greater efficiencies, reduced supply-chain costs and transit times, and expansion opportunities. Moreover, it supports the growth and stability of the five-state area’s manufacturing, agricultural, and forest products markets by offering cost-effective logistics solutions and an opportunity to expand into markets that they couldn’t otherwise reach.

But establishing the new service wasn’t easy, especially because intermodal freight transportation is complex and involves collaboration and the coordination of many modes to increase efficiency. “Transportation thrives on complexity,” Stewart says.

Key partnerships and growth

Attracting CN as a partner made the difference. “While we are fortunate to have four Class 1 railroads that serve our facility, CN was the only one that can do what our facility was needing to do,” Lamb says.

CN invested time and effort talking to shippers, analyzing markets, and evaluating other barriers, such as regulatory issues and ways to engage steamship lines bringing containers to and from the ports. “Just to have a railroad do that is a big step,” Lamb says. “It is very innovative.”

Kubas views collaboration with Duluth Cargo Connect as crucial to CN’s involvement. “That’s really the foundation of what it takes to establish an intermodal rail terminal in today’s world,” he says.

CN, which has seen annual growth of more than 20 percent, evaluated the impact of key trends as it considered expanding its service in Duluth, he says. The strong North American economy, two significant West Coast CN port terminal expansions, and a tight global supply of containers all pointed to growth opportunities.

Dramatic market shifts—such as the rapid rise of e-commerce, significant ocean freight industry consolidation, and the loss of containers due to a major bankruptcy—also put more demands on freight movement. As a result, larger ships are delivering larger discharges with containers that need to be replenished more quickly, leading to greater-than-predicted growth.

Duluth’s attractive assets

Planning and preparation have positioned CN to respond to growth opportunities, including in Duluth. Kubas says the almost-completed CN expansions at the Port of Vancouver and the Port of Prince Rupert have increased CN’s capacity significantly.

“The sweet spot for Duluth for us was that we

had a team of people there who were extremely experienced, and it had a significant amount of existing assets that most terminals would just love to have,” Kubas explains. “It is on our main line between essentially the West and Chicago, our biggest corridor, our highest velocity corridor.”

Value-added services at the Duluth terminal only add to its attractiveness as a partner. Recent expansion at the Clure Terminal tripled outdoor storage capacity and doubled heavy-lift cargo handling capabilities.

But the CN Duluth Intermodal Terminal offers more than a place to load and unload—it’s basically a turnkey facility offering a range of services and amenities. These value-added services, combined with the presence of a skilled workforce with much experience, helped move the effort forward, Lamb says.

“When you place an intermodal terminal in the middle of all those services, and you don’t have to move that container onto a public street,” he says, “you have really hit a home run, because now you are in a position to make the supply chain as seamless as possible for that customer.”

Continued investment

CN Intermodal represents 23 percent of CN’s business and is CN’s largest growing segment with double-digit growth for the last seven years, Kubas says. CN serves many diverse industries as the only North American carrier that reaches the West Coast, East Coast, and the Gulf.

Bolstered by its growth, CN plans to continue

CN DULUTH INTERMODAL TERMINAL AT A GLANCE

- 400,000 square feet of indoor warehouse space, including heated storage
- More than 40 acres of secure outdoor space for cargo storage, staging, and assembly
- Container stuffing and de-stuffing
- Storage, warehousing, and distribution services
- Crating, skidding, bundling, bulk loading, and overhead crane use
- Heat-treated dunnage certification for export package compliance
- Overweight container handling for cost-effective rail moves
- IT support with EDI/RFID capabilities
- Certified truck scale
- On-site customs and board protection processing facility
- Tier II warehouse management software for inventory control

investing capital in network improvements, he adds. One project nearing completion will result in unique truck and rail inspection services at one location. The fully certified Centralized Examination Station (CES) at the port of International Falls, Kubas says, will further streamline the U.S. inspection process and reduce operational delays.

At the Twin Ports, plans are underway to address ongoing growth, including the addition of more rail tracks on the property. DCC led the way with services that have proven popular and exceeded expectations, Lamb says, with 90 percent of the container business using value-added services. Future expansion may involve increasing warehouse capacity and purchasing additional equipment.

In less than a year, the hard work is paying off for all parties: DCC, CN Intermodal, and shippers. “We’re really pleased with getting this off the ground,” Kubas says. “Every month, we continue to have more lifts, more imports, and more exports.”

For Lexington Manufacturing, the terminal and its services help their operations in a number of ways. In addition to saving on transportation costs, the company also takes advantage of the warehousing services. By storing 30 to 40 trucks onsite, the company has been able to use some of its own warehousing space to grow its manufacturing operations.

“I really recommend it,” Milbeck says. “It’s made my life easier as far as the handling of the imports.”

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— Jonathan Lamb





Twin Cities Metro Highway Investments Target Preservation as Needs Grow

Brian Isaacson studies data about the I-94 corridor through the heart of the Twin Cities metro. He tracks infrastructure, congestion, and investment plans. As the corridor ages with more than 80 lane-miles of pavement and 145 bridges, the effort and expense needed simply to preserve these existing assets continues to grow.

But there is not enough funding to meet these needs, says Isaacson, director of Metro Planning, Program Management, and Transit for the Minnesota Department of Transportation (MnDOT).

What's more, the steady dose of lane closures for road maintenance between Minneapolis and St. Paul tends to increase congestion rather than relieve it.

"From a local construction impact standpoint, you can count on lane closures between Minneapolis and St. Paul for the foreseeable future," Isaacson says.

The situation is far from atypical, he adds. "You'll see this kind of paradigm bear itself out around the state."

Isaacson and Nick Thompson, transportation director for the Metropolitan Council, concluded the symposium with short presentations and an interactive dialogue with attendees focused on preserving Twin Cities metro highways and prioritizing investments. Frank Douma, director of the State and Local Public Policy Program at the University

of Minnesota Humphrey School of Public Affairs, moderated the discussion.

Preservation first

Preservation efforts rank highly when it comes to investment dollars, Isaacson and Thompson say.

"It's our priority, of course, to keep the system in good working order," Isaacson explains. "Safety is a critical element of what we do. Whether it's preserving the system or making it operate in a safer environment, those are at the highest levels of priority."

The Metropolitan Council is updating the region's 2040 Transportation Plan Policy, which links forecasted investment to the region's needs for a reliable transportation network.

"Safety is a critical element of what we do. Whether it's preserving the system or making it operate in a safer environment, those are at the highest levels of priority."

— Brian Isaacson

“The network we have in place is basically the network we are going to have in place,” Thompson says. He is responsible for the Met Council’s long-range multimodal planning in the Twin Cities and its contracted transit operations.

“There isn’t going to be this rapid expansion of the highway network,” he says. “We want to make sure it operates as efficiently as possible for everybody, it is well-maintained, and we preserve that in every way possible so that we’re stretching out that dollar.”

Preservation + mobility

Sometimes, preservation and mobility projects can go hand-in-hand.

“In the metro area, we try to capitalize where we can on preservation projects,” Thompson says. “When we’re taking a 50-year-old interstate and rebuilding the pavement, if you add a little bit of extra capital into that, you can get some mobility improvements at the same time. That’s one of our key strategies: Partner preservation projects with mobility.”

Additional strategies help maximize the impact of limited dollars. One such strategy involves making improvements within publicly owned land to avoid the high cost of obtaining right-of-way, he says. Others include a focus on solutions that reap higher benefits for lower costs and coordination of projects with local governments for more cost-effective results with minimal disruption.

As it stands now, the lion’s share of dollars is directed at preserving current assets, Isaacson says. This means not much funding is available for mobility projects, even for incremental improvements.

Continuing congestion

In addition, several factors complicate the situation.

“Revenue is flat,” Thompson says, and that lack of growth likely will not change. “There hasn’t been any major structural change in funding for highways in a long time.”

At the same time, the cost to build is increasing 3 to 5 percent annually, which decreases the actual real dollar available in the metro area. Add to that a projected population increase of 800,000 people in the next two decades—with 94 percent of them living in the metro area—and the result brings more congestion.

“Consumers and freight are going to have a much harder time moving around in 2040 under the current scenario,” Thompson says.

The area’s projected growth, combined with funding gaps, almost ensures chronic congestion in

“There hasn’t been any major structural change in funding for highways in a long time.”

— Nick Thompson

the metro. “Congestion is something that is not really solvable in the current paradigm,” Isaacson says.

Smart strategies

Using a hierarchy of regional mobility investments supports the goal of maximizing funding to combat congestion, Thompson says. That hierarchy includes four layers:

- Traffic management technologies, which work to control flow
- Spot mobility improvements throughout the system
- MnPASS, which can improve system reliability for those who pay
- Strategic capacity



The first two layers tend to be the least costly, but the benefits only go so far, Thompson says. The last two require more significant investments. Improving main arterials to highways also can help improve traffic flow. Currently, 34 high-priority intersections are slated for interchange improvements.

A number of funding programs also are helping focus dollars on congestion projects that are key to improved freight movement, Isaacson says. The FAST Act of 2015 provided funding for freight projects on the National Highway Freight System. Based on stakeholder feedback, MnDOT has developed a Freight Investment Plan, which includes recommended projects.

Several state programs also look at transportation investments for freight mobility, including Corridors of Commerce, Transportation for Economic Development (on trunk highways), and Transportation Economic Development Infrastructure.

Multimodal investment strategy

While highways remain a vital means of transportation, planners also suggest it pays to consider the potential of other modes, especially as the state looks to grow its economy.

“We are always comparing ourselves to our peers because we are competing for that worker,” Thompson says. “We want them to move here. We want the businesses to move. So, our transportation investment strategy, which is one component of competing for that worker, is saying we need to be multimodal—we need to move people, we need to move goods. That’s why we’re investing in all modes.”

The freight industry also has an opportunity now to share its expertise as transportation planners gather the data needed to make what may be tough decisions given the limited resources available. To be sure, Issacson and Thompson welcome further input.

“We are trying to listen to industry as much as

2019-2022 MNDOT FREIGHT AWARDS

PROJECT	GRANT
CSAH 70 Expansion	\$7,000,000
Concord Street Improvements	\$7,560,000
CSAH 83 Reconstruction	\$594,000
US 212 Freight Bottleneck Improvements	\$15,000,000
Hwy 10/169 Safety and Mobility Improvements	\$20,000,000
TH 13 Port Access and Mobility Project	\$15,000,000
TH 252 Interchange at 66th Ave	\$10,000,000
Downtown Chaska Hwy 41 Improvements	\$4,000,000
Total	\$79,154,000

Source: MnDOT

we can,” Thompson says. “If industry is saying, ‘There are these fundamental changes that you are not reflecting in your planning process, we need to know that. We rely on industry to tell us that.’”



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