Understanding National Freight System Dynamics:
State of Our Port and Intermodal Freight Systems

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Reliable Cargo Movement: State of Our Port and Intermodal Systems

U.S. Intermodal Freight Transportation System is an essential component of our national commercial economy... this system is at risk.
We do not have an “intermodal system” as such. Rather we have an aggregation of multiple, private and public modes, each of which are “stove-piped” within their own individual areas of interest with little or no true cross communication and collaboration.
The North American Intermodal Paradox:

The nation’s ports and their inland intermodal linkages are experiencing the “best of times and the worst of times” in terms of growth and demands on capacity.
Ports and their associated intermodal systems can no longer build their way out of capacity problems.

The US Intermodal freight transportation system is now being operated in many areas at near the limits of economically sustainable capacity.

We lack a systematic program for freight Transportation planning and development that Focuses our critical scarce resources on key system problem points.
To Be Competitive Today...

Marine/Intermodal Terminals Must Reduce Throughput Cost & Increase Cargo Velocity...

Securely
Evolutionary Phases of U.S. Marine/Intermodal Freight Transportation

1. Invention
   - Modally Oriented Services

2. Growth and Diversification
   - Modal Refinement
     - Dominated by Equipment Types and Infrastructure Development

3. Carrier Regulation
   - Governmental Limits on Destructive Competition and Sheltering of Emerging Modes

4. Service Integration and Optimization
   - Optimization of End to End Distribution and Cost in the Overall Logistics Chain
Poll of the Top 1000 “Blue Chip” Multinational Shipper Priorities

- Freight Rate: 38%
- Schedule Reliability: 43%
- Transit Time: 12%
Objective:
A multimodal
"Seamless" integrated
world wide cargo
conveyance system.
At Current Productivity and Growth Levels by 2020 North American Ports & Their Associated Intermodal Systems Will Be Severely Congested
Today’s Logistics Truths:

“The customer wants more and is willing to pay less for it.”
World Bank’s 2010 “Global Economic Prospects”

World Output will Increase 33% in 10 years

- 2000: $30 Trillion
- 2010: $40 Trillion
North American Prosperity is Driven by Cargo Imports and Exports

By 2020 Most US Container Port Gateways Will Double or Triple in Volume… Just to Maintain Current Market Share

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U.S. Containerized Tonnage Forecast

Source: DRI/McGraw Hill
Global Port Terminal Productivity

North American Ports Are Not As Productive As The Most Productive International Ports By a Factor Of More Than 4 To 1

Discounting Major “Transhipment Ports” The Factor is Almost 2 To 1
North American Intermodal Rail Freight Movement Trends
The Railroad Industry...
Since the Staggers Act:

- 35% less track
- 32% fewer locomotives
- 27% fewer railcars
- 60% fewer employees

But:
well over 50% more freight!
2020 Forecast of US Rail Traffic
(By Origins in Millions of Tons)

A 10,000 TEU Mega-Container Vessel Can Produce High Intermodal Rail Volumes (One Weekly Vessel Call)

Vessel Capacity
10,000 TEU
(5,892 Units)

75% Intermodal Split
Can North American Marine & Intermodal Terminals Handle the Forecasted Freight Volumes?
Predicts that Port and Intermodal Systems for the 13 Southern US States Will Reach Capacity in 2008 - 2012
Ports of Los Angeles and Long Beach Container and Intermodal 2020 Forecast

1996 - 2000 = 4.8% CAGR
2000 - 2020 = 6.2% CAGR

“Cargo will quadruple, a 320% change”

57% Imports

Current Capacity

Intermodal Rail

5% Intermodal Split

2X

(Worse Case: Asian Crisis Steady-State)
San Pedro Bay Ports of Los Angeles and Long Beach

Container Growth Implications:

“At current growth and per acre productivity, in 18 years the two Ports will require 3,624 new acres of container terminal”*

* Source: Port of Long Beach
NY/NJ Regional Container Forecast (TEUs)
By Channel Depth (40ft, 45ft, 50ft)

- Low (40' Channels)
- Base (45' Channels)
- High (50' Channels)

Source: PANY/NJ, Planning Year

Current Capacity: 4X
The USDOD Logistics Mandate: Army’s Strategic Mobility Requirements

(The Military’s Goal is to Reduce Deployment Time by 80 Percent... Without Disrupting Commercial Ports)

Current DOD Target: 75 Days

Chief of Staff’s Goal: 30 Days

Combat power ~ 6 Divisions (~ 2 Corps)

Gulf War: 180 Days

Combat power ~ 5 Divisions

Source: Adapted from briefing by William Lucas, MTMC, to TRB Annual Meeting, Jan. ’00
Container Ship Evolution

1st Generation (Pre-1960 - 1970) 1,700 TEU
2nd Generation (1970 - 1980) 2,305 TEU
3rd Generation (1985) 3,220 TEU
4th Generation (1986 - 2000) 4,848 TEU
5th Generation (2000 - 2005) 7,598 TEU
### Mega Container Vessel Trends

#### 1970 Industry Prediction:

<table>
<thead>
<tr>
<th>Vessel Name</th>
<th>TEU Capacity</th>
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<tbody>
<tr>
<td>Regina Maersk</td>
<td>6,000 TEU</td>
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<tr>
<td>Sovereign Maersk</td>
<td>6,600 TEU</td>
</tr>
<tr>
<td>20-Wide Planned</td>
<td>8,000 TEU</td>
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#### The Reality:

- Regina Maersk: 6,000 TEU
- Sovereign Maersk: 6,600 TEU
- 20-Wide Planned: 8,000 TEU

#### Near Term Possible:

- 10,000 – 15,000 TEU (Suez-Class)
The 15,000 TEU Containership

LOA. = 400 m (1,312 ft.)
Draft = 14 m (46 ft.)
BEAM = 69 m (226 ft.)
Emerging Viable Container On Barge
Inland Intermodal Port Potential
High-Speed, Low Wake, Intermodal Float Technology
USDOD Agile Port
Information Technology (IT) Developments
The Agile Port Concept is not a new technology...

...It is a way of managing and organizing information to reduce container port terminal dwell time & increase terminal capacity.
IT Freight Data/Information Integration

Consist Data

Container Vessel

Data/Info Management

Double Stacked Train

Major Terminal & Systems Benefits
USDOD Agile Port Technology
Full Scale IT Demonstration Project

Hyundai Terminal
Washington United Terminals
Port of Tacoma
22-29 June 2003

Potential: Doubling the Terminal Capacity without Building Anything
Reliable Cargo Movement: State of Our Port and Intermodal Systems

Study Approach & Recommendations

By the National Chamber Foundation of the U.S. Chamber of Commerce
March 2003
## Reliable Cargo Movement: State of Our Port and Intermodal Systems

### USCOC Target Ports

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<tr>
<th></th>
<th>USCOC Ports</th>
<th>Canadian Ports</th>
<th>West Coast Ports</th>
<th>Gulf Coast Ports</th>
<th>East Coast Ports</th>
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<tbody>
<tr>
<td>1.</td>
<td>Vancouver, Canada</td>
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<td>2.</td>
<td>Tacoma, Washington</td>
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<td>3.</td>
<td>Seattle, Washington</td>
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<td>4.</td>
<td>Oakland, California</td>
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<td>5.</td>
<td>Los Angeles, California</td>
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<td>6.</td>
<td>Long Beach, California</td>
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<td>7.</td>
<td>Houston, Texas</td>
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<td>8.</td>
<td>Mobile, Alabama</td>
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<td>9.</td>
<td>Galveston, Texas</td>
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<td>10.</td>
<td>New Orleans, Louisiana</td>
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<td>11.</td>
<td>Halifax, Canada</td>
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<td>12.</td>
<td>New York/New Jersey</td>
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<td>13.</td>
<td>Norfolk, Virginia</td>
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<td>15.</td>
<td>Port Everglades, Florida</td>
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<td>16.</td>
<td>Charleston, South Carolina</td>
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North American Port & Intermodal Public Policy Themes
Reliable Cargo Movement: State of Our Port and Intermodal Systems

Projected Capacity Shortfall

Legend
TEU/Year
- > 10,000,000
- > 3,000,000 - 10,000,000
- 1,000,000 - 3,000,000
- 500,000 - 1,000,000
- <500,000

Year 2010 Capacity Shortfall

Projected Capacity Shortfall
Theme #1: Although we currently have a semblance of an intermodal system of freight transport in North America, there is substantial room for improvement in our Port & Intermodal Transportation System Efficiency and Productivity.

- On a national basis, we need to develop a better near real-time freight data tracking system and make rational “system” decision based on this data.

- We must develop a consistent measurement of “system” performance to prioritize our intermodal transportation system improvements.
Theme #2: Port & Intermodal Transportation System Security has become a public/private national priority issue.

- Improved productivity and transportation system security are not mutually exclusive.

- Promising emerging Information Technologies (IT) could play a key role in enhancing cargo security. The deployment of these technologies could have significant system performance benefits for the intermodal transportation system as a whole.
Port Productivity & Port Security Are Not Mutually Exclusive
Theme #3: Funding for needed Port & Intermodal Freight Transportation Infrastructure should be contingent on finding **Smart IT Solutions** with both community and environmental benefits and support.

- Congress must renew & extend our **national freight policy mandate & vision** – They must take a leadership role in defining a new national freight agenda.

  **Ports and Intermodal terminals are no longer able to build their way out of congestion & capacity problems**

- **Expansion of ALL federal aid program eligibility for freight.**
Theme #4: New Cross-Cutting Systemic Planning & Implementation Strategies are needed to guide the future of port and intermodal transportation freight development.

- Rising social costs, heightened environmental concerns and evolving mitigation strategies necessitate national leadership on freight transportation issues.

- The nation’s failure to accommodate the growing volume of freight transportation needs, will negatively impact all levels of our economy and national collective quality of life... Jobs, Wages, Taxes
Study Recommendations

A National Freight Policy is Needed:

No longer can freight transportation programs of “national significance” be relegated solely to local authority or focused at the MPO level. We must take a systemic view of the intermodal freight system.
Study Recommendations

Clearly Define the Freight Program Within the USDOT

The USDOT Office of Intermodalism must be given the mandate, the authority, and the funding to function as a unifying element between the modal administrations.
Study Recommendations

Create a National Intermodal Planning and Development Initiative

A Federal Freight Advisory Committee comprised of private freight industry executives, appointed by the President, to provide regular and informed interaction between USDOT and the freight community.
Study Recommendations

A Coherent Environmental Regulatory Process is Essential

- Streamlined Permitting
- Brownfields Conversion
- Freight Land Banking
Study Recommendations

Labor Must Be Integrated Into National Freight Policy

Representatives from the major transportation unions **must** be engaged in the Cooperative Freight Research Program to ensure that new technologies can be implemented by the existing work force.

In March 2003, The ILWU President and The ILWU Coast Committee agreed to become a key stakeholder and active participant of:

*The Agile Port Demonstration Project*

Port of Tacoma
North American Competitive Freight Transport Mandates

- Ports & intermodal linkages must change the current cost versus value relationship in the logistics chain. **Become Value Added Multipliers...** Through Innovative Public Private policy initiatives, expanded funding options and inspired labor & management partnering.

- Successful ports & intermodal terminals in the next decade must **invest in and leverage technology** to improve terminal productivity, cost, effectiveness and reliability for all modes of transportation...**securely.**