The Agile Port Efficient Marine Terminal

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AAPA Port Operations, Safety and IT Seminar

April 25, 2007

Port of Tacoma

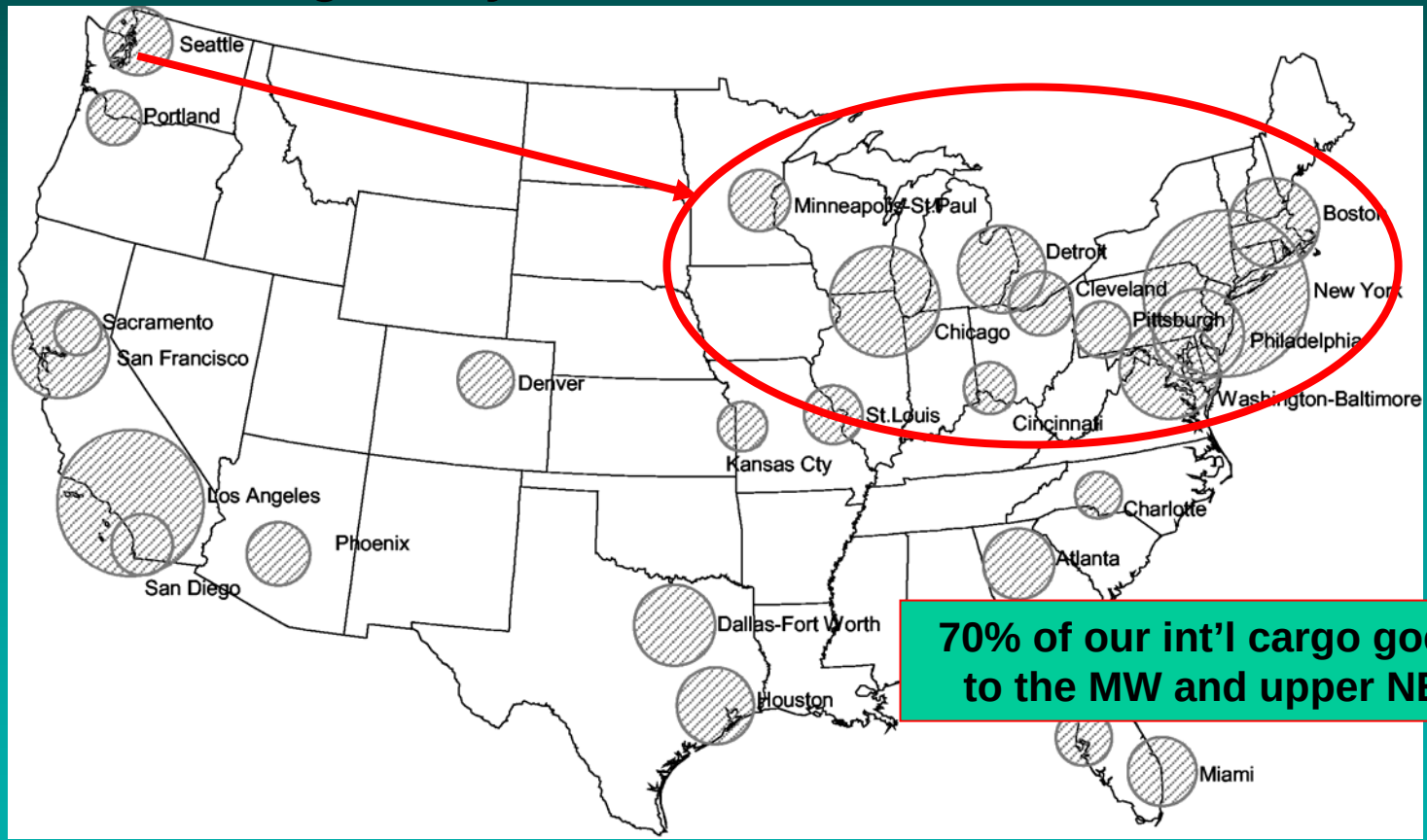
Help our Current Customers Grow

Prepare for the Future

Be a Good Neighbor

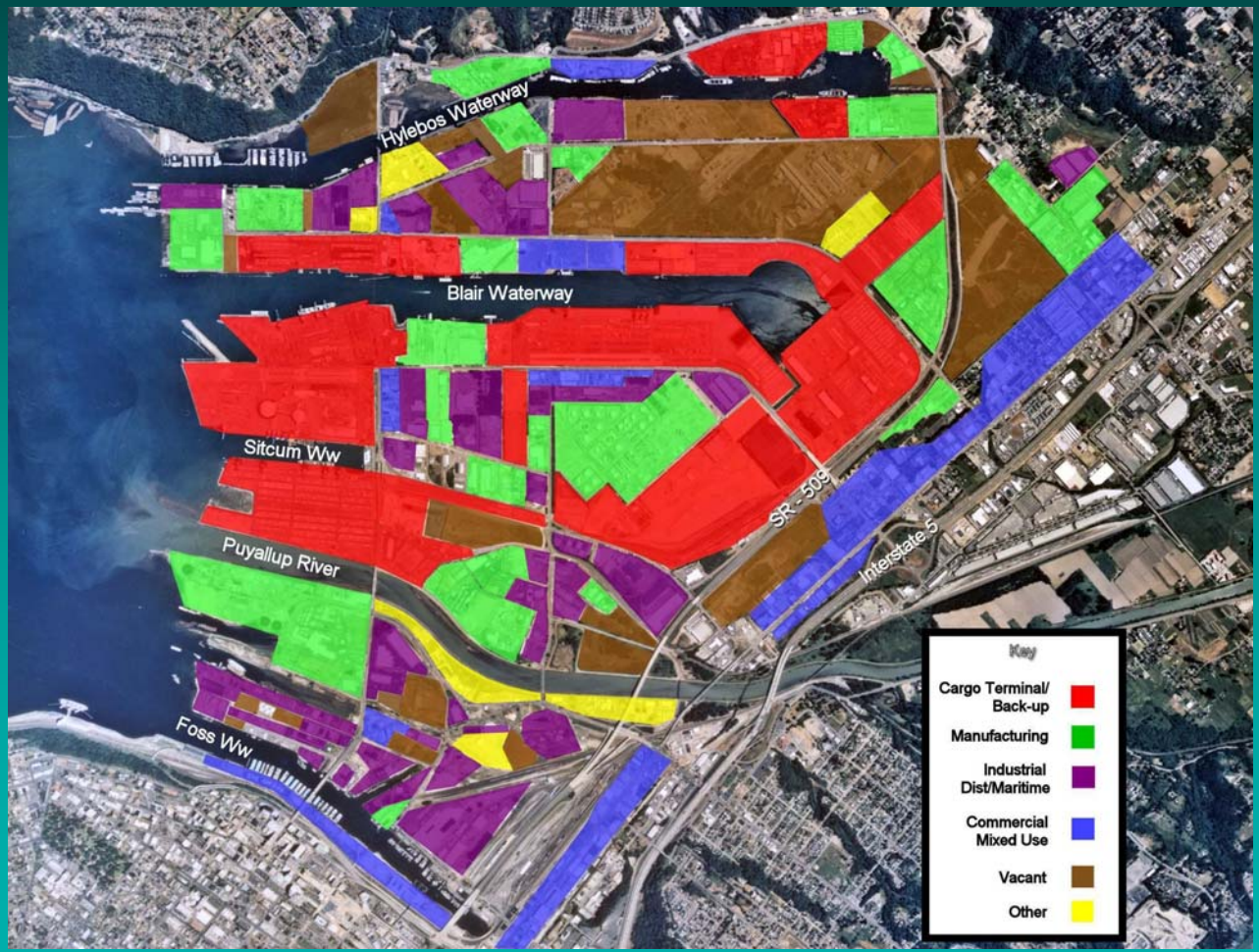
#1 Goal for the Port of Tacoma

- **The Port of Tacoma to be the most efficient and reliable intermodal gateway in North America**



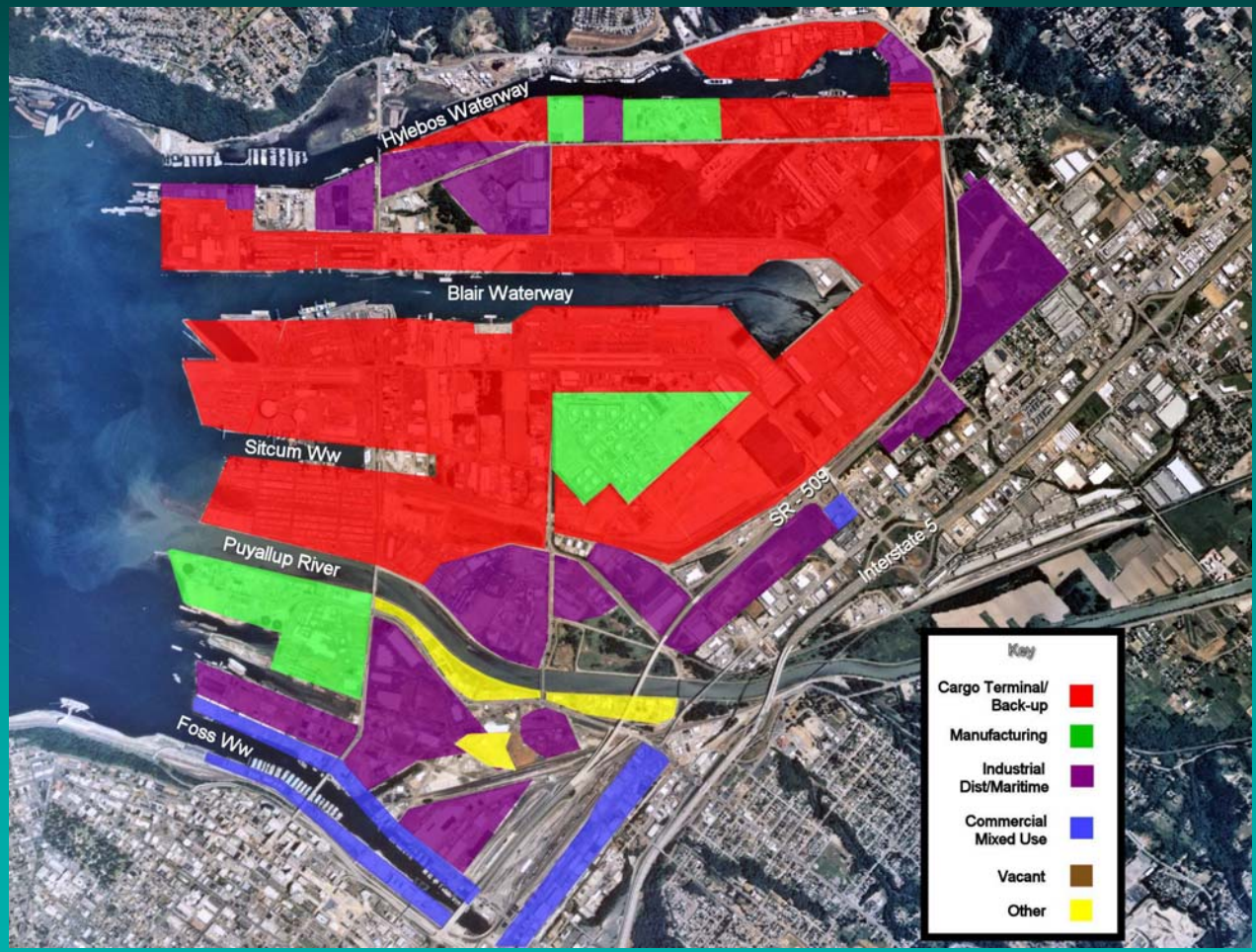
Why is this Important to Port of Tacoma?

Port of Tacoma 2007



2 Million TEU's .6 Million Intermodal Lifts

Port of Tacoma 2020



10 Million TEU's 3 Million Intermodal Lifts

Port Capacity Issues – How To Accommodate the Growth

- It can't just be more land
- Longer hours of operations
- Must increase the velocity
- Move it faster not just stack it higher
  - Agile port concepts
  - Information transfer technology
  - Inland ports – Will they help?

Military Link

- Military Cargo adds to our Cargo Diversity and is important to our local economy
- Port of Tacoma is a Strategic Port
- 43,000 military personnel and civilians work at Military bases in Pierce County
- Annual Payroll of $1.19 B
- Local spending of $741 M

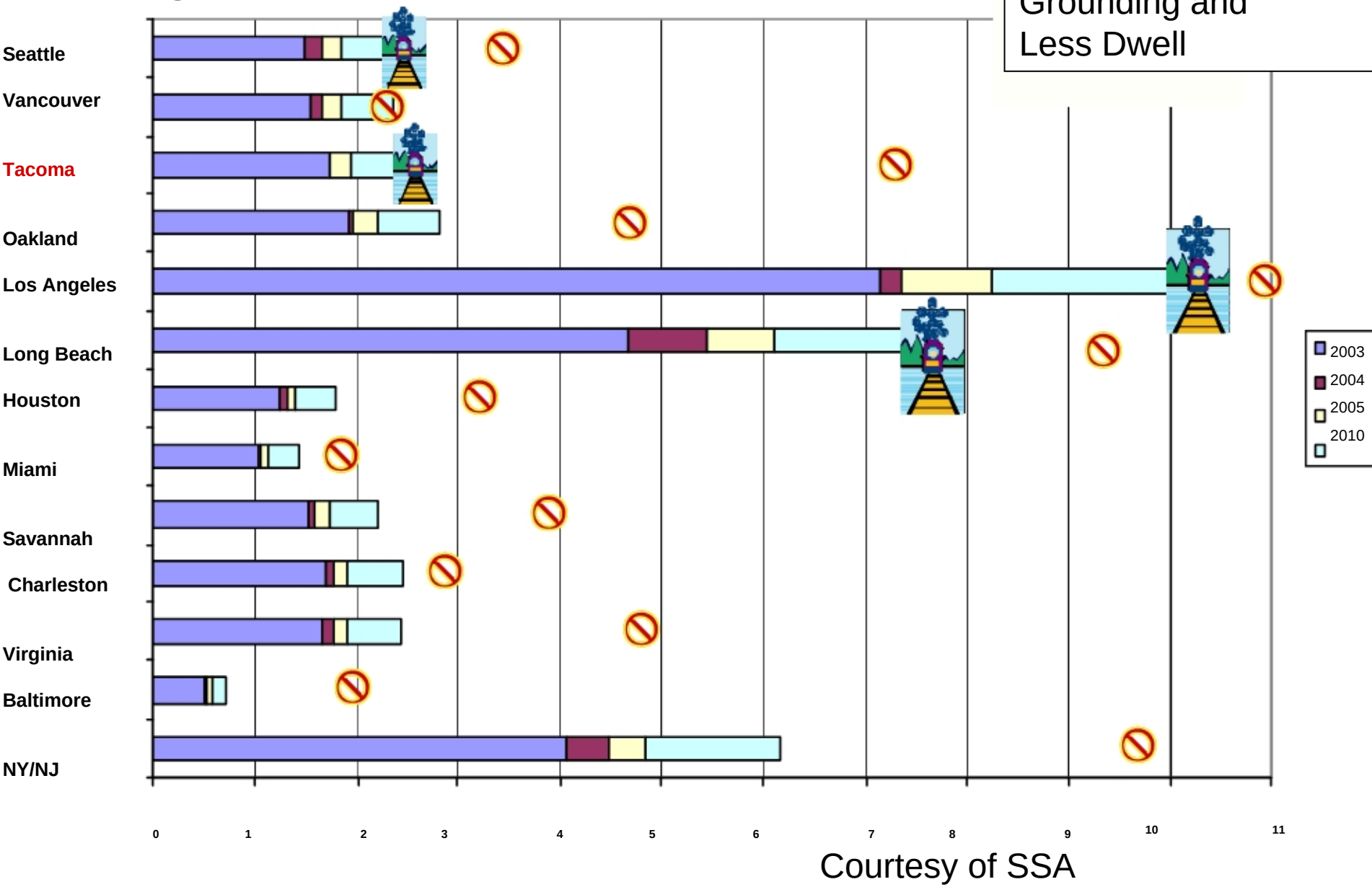
Constraints

Volume YTD

Build out @ 7650/ ac

(September Annualized)

Assumes Build out Grounding and Less Dwell



Courtesy of SSA

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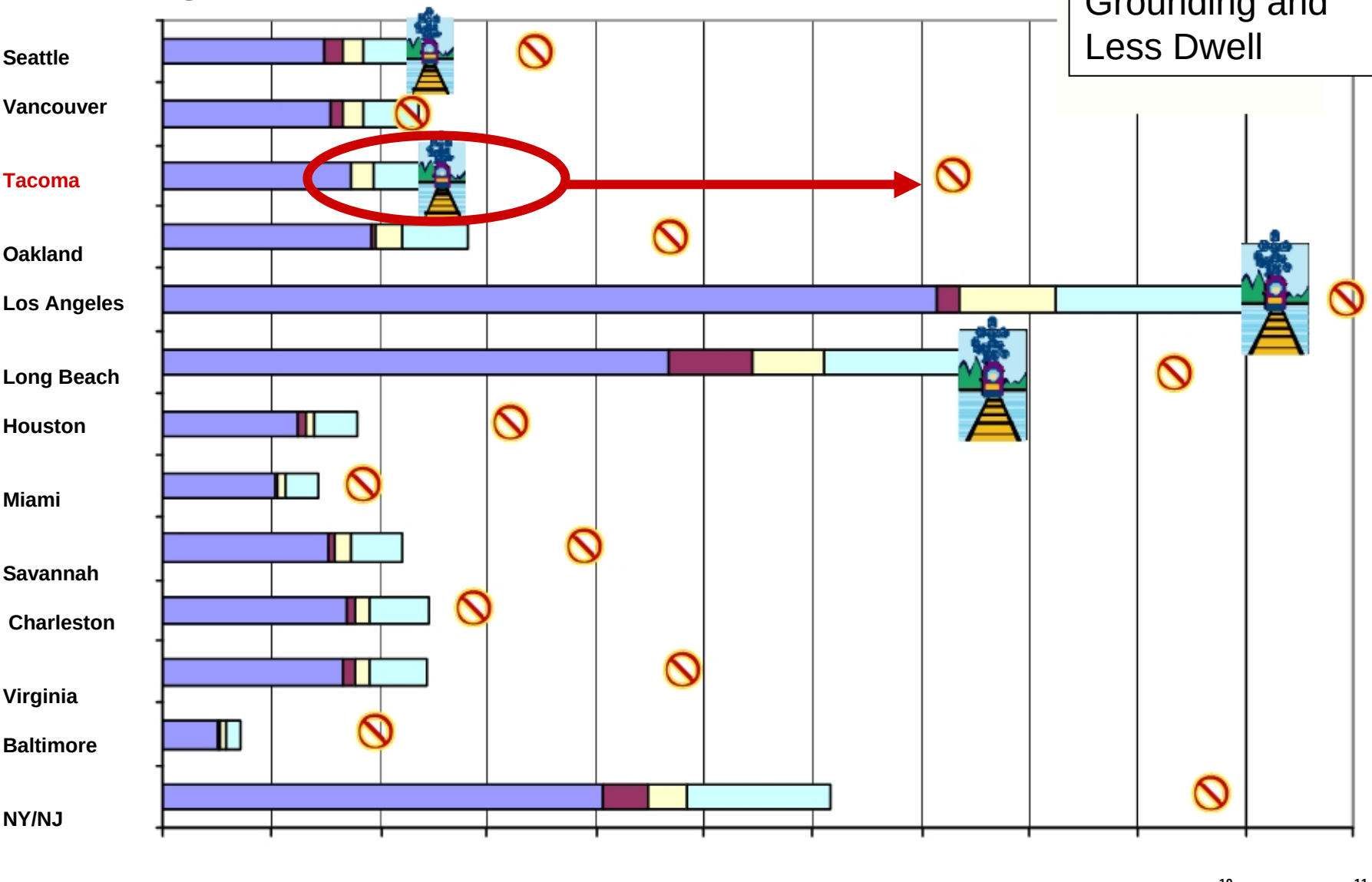

Courtesy of SSA


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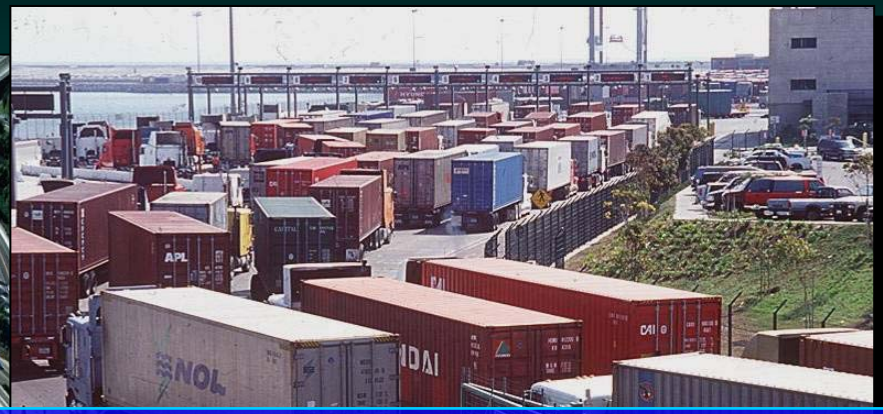
DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA
Agile Port System (APS) Demonstration
The Efficient Marine Terminal
TranSystems

The North American Freight Paradox:

The Nation's Ports and Their Intermodal Linkages are Experiencing the *"Best of Times and the Worst of Times"* in Terms of Growth and Demands on Capacity

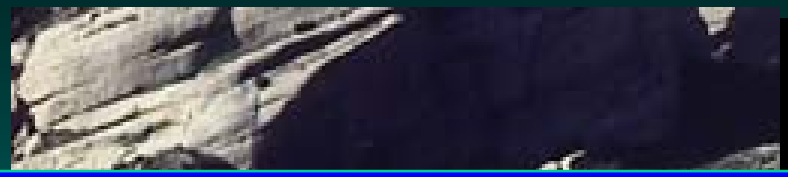


At Current Productivity and Growth Levels by 2020 North American Ports & Their Associated Intermodal Systems Will Be Severely Congested

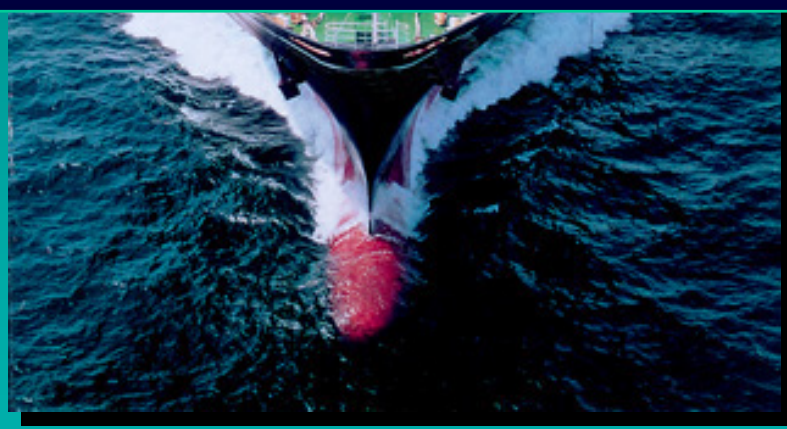
Where's my cargo?

Americas Systems Inc. develops a port system that allows companies to obtain information on shipments

BY CHRIS DUPIN

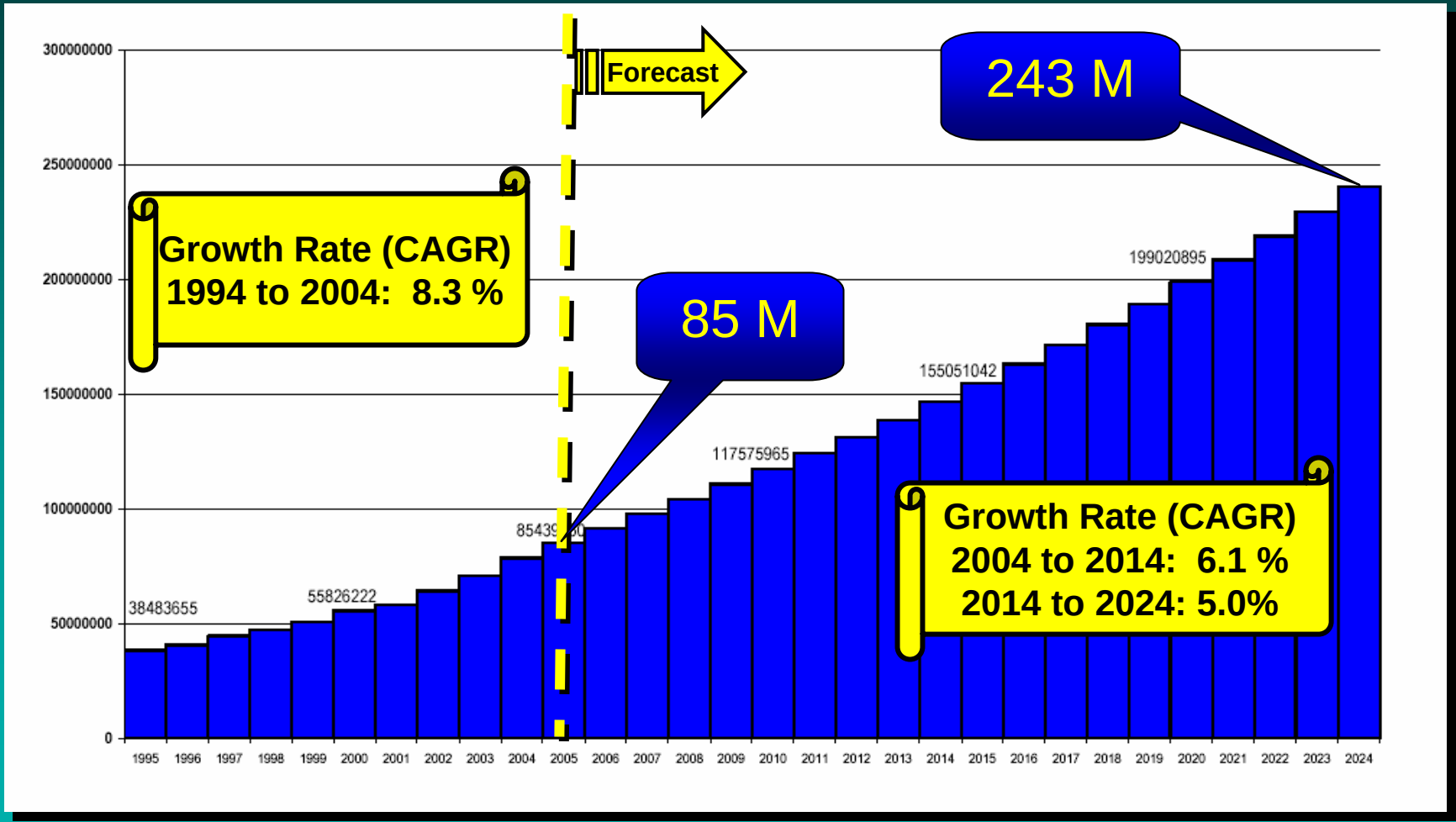


We do not have an "intermodal system" as such. Rather we have an aggregation of multiple, private and public modes, each of which are "stove-piped" within their own individual areas of interest with little or no true cross communication and collaboration.



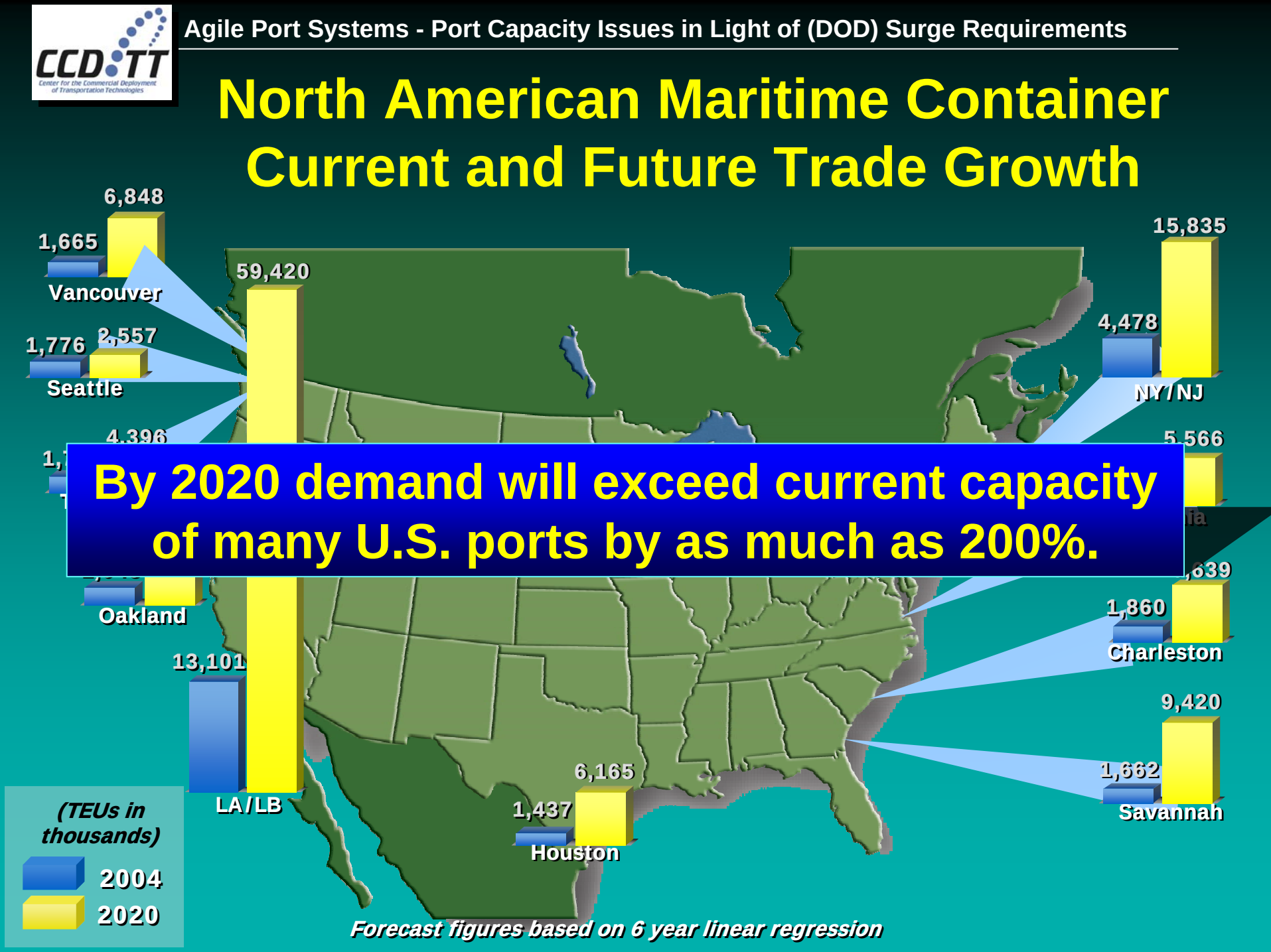
World Container Forecast to 2024 in TEUs

(186% Increase in Next 20 Years)



Source: Global Insight, 2004

North American Maritime Container Current and Future Trade Growth

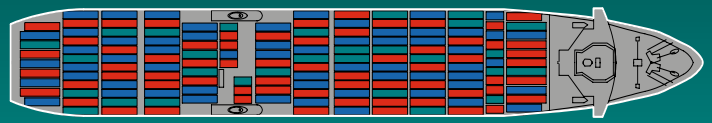


By 2020 demand will exceed current capacity of many U.S. ports by as much as 200%.

Forecast figures based on 6 year linear regression

World Container Ship Evolution

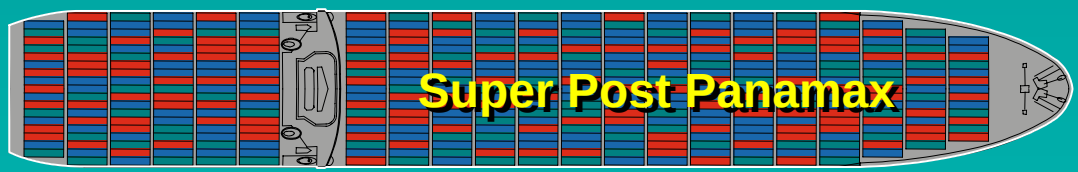
1st Generation (Pre-1960 - 1970)



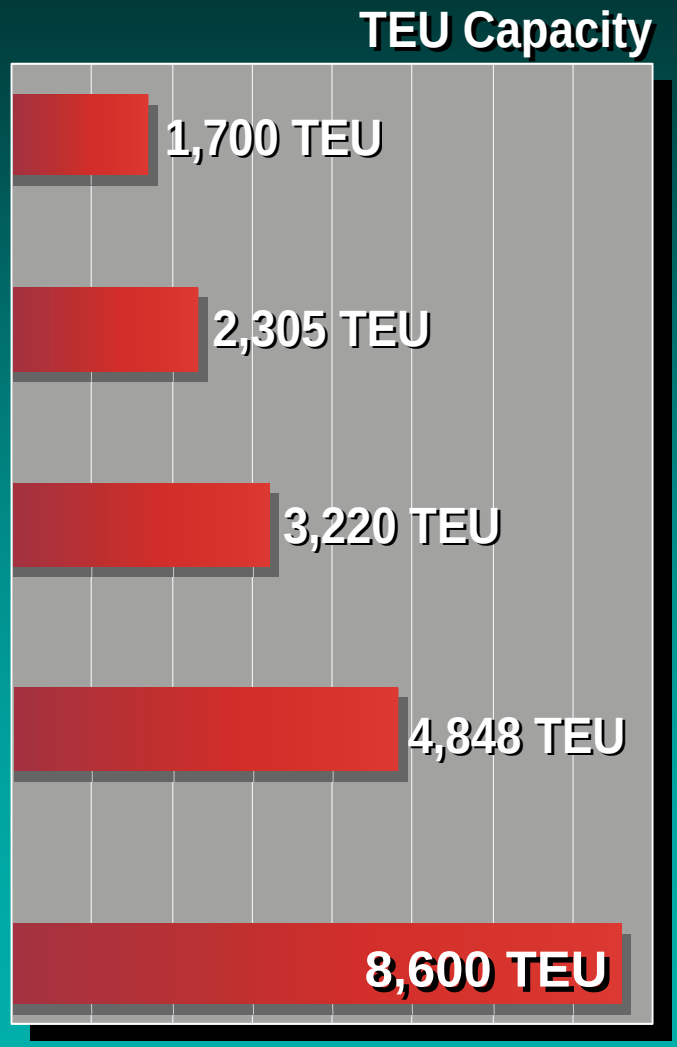
2nd Generation (1970 - 1980)

3rd Generation (1985)

4th Generation (1986 - 2000)



5th Generation (2000 - 2005)



10,000 TEU Container Ships Currently on Order

Zim orders four 10,000 TEU container ships from Hyundai Shipyards in Korea; will double its carriage capacity
Zim will take delivery of the ships, second half of 2009

Cosco orders four 10,000 TEU containerships from Hyundai Heavy Industries to be delivered in 2008
$505 M Deal

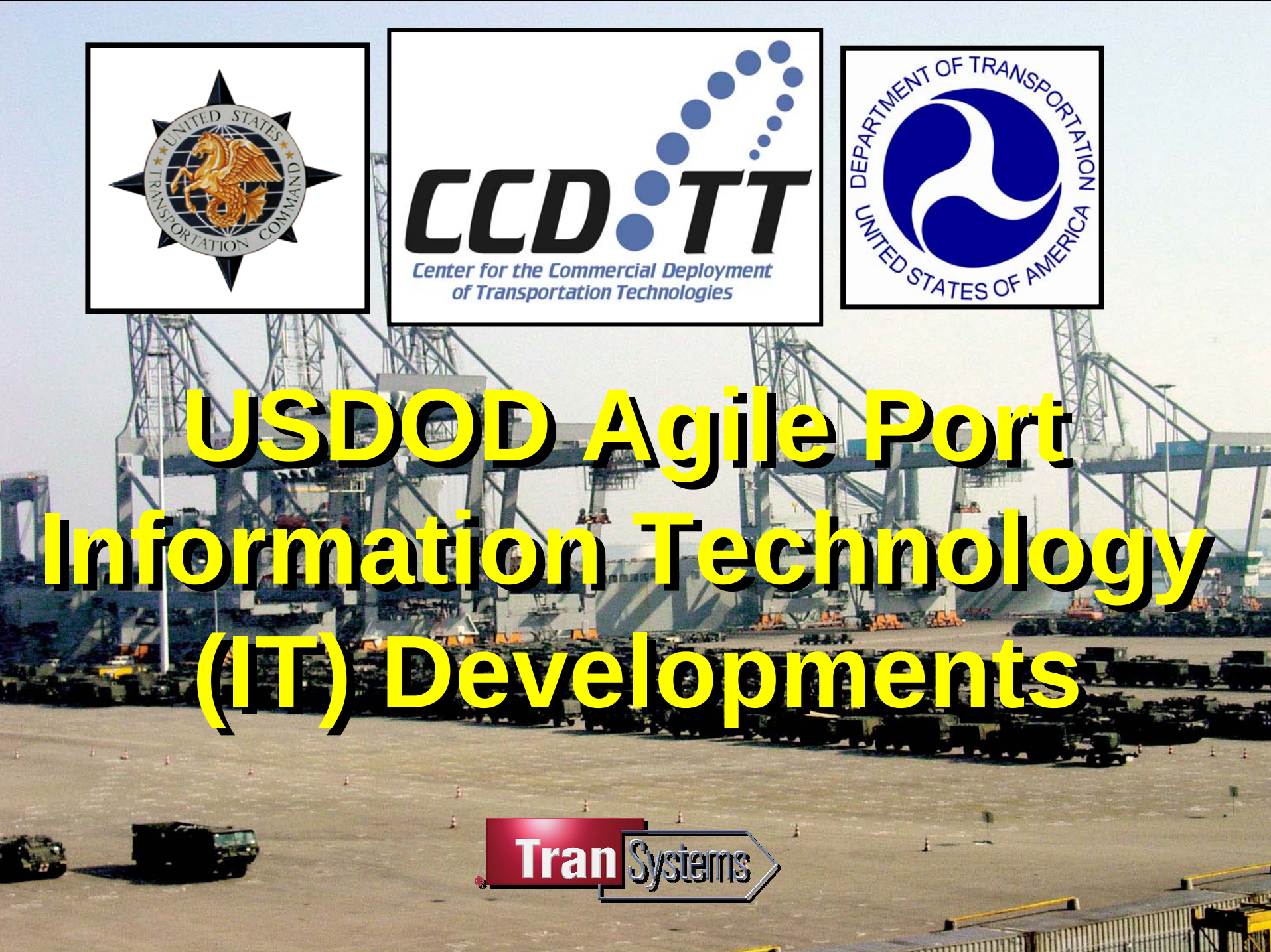
Source: North Sea Terminal Bremerhaven GmbH & Co

A.P. Moller-Maersk September 2006 Service Announcement for 14,000 TEU Vessel

The new-build known as "M/S Emma Maersk", was christened at the Odense-Lindo Shipyard in Denmark in August 2006.

The nominal capacity of the new vessel could be as high as 14,000 TEUs based on its reported LOA of 397 m, Beam of 56 m, Draft of 15.5 m, Gross Tonnage 170,974 gt, Speed 25.5 knots

Source: Journal of Commerce August 2006, Marine Log December 2006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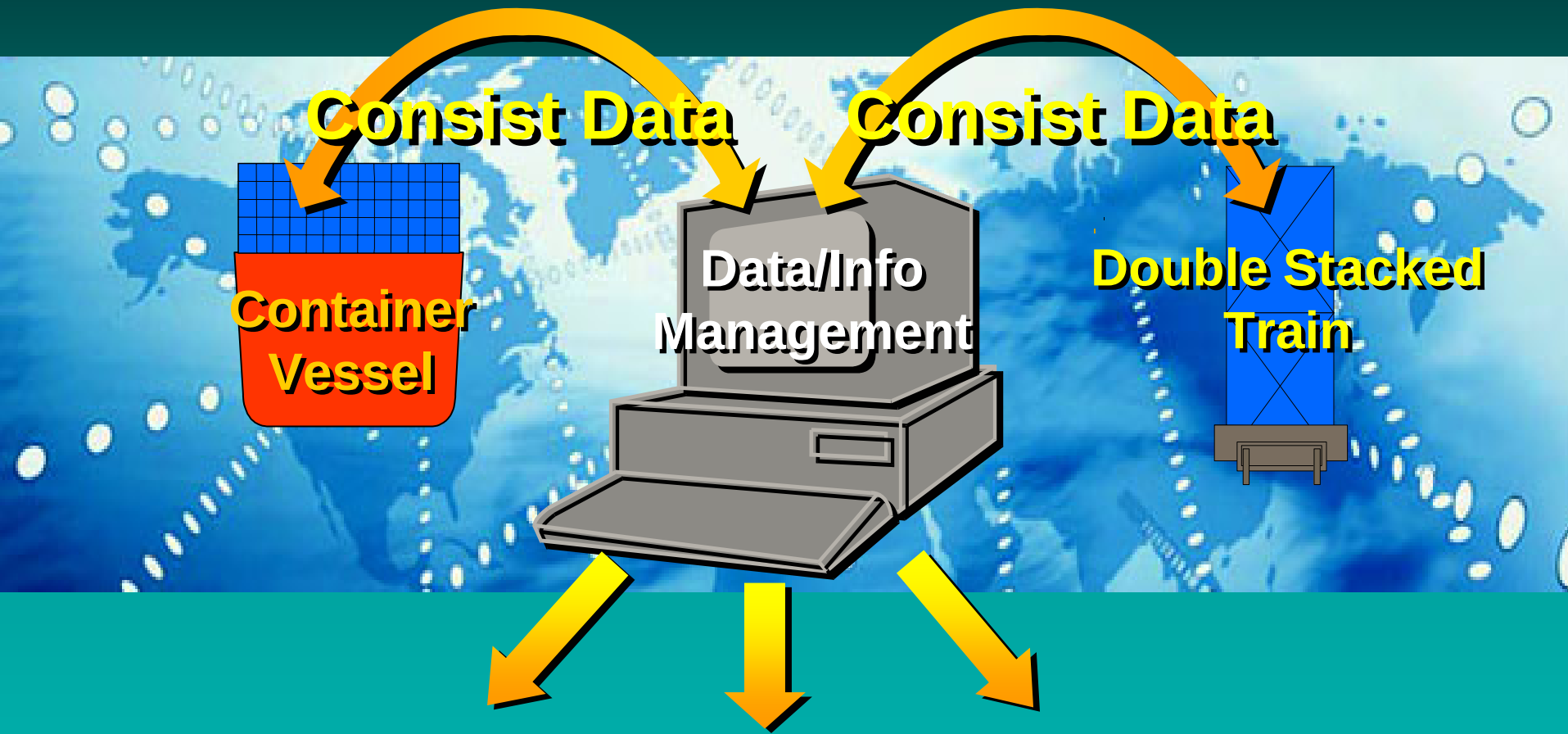
USDOD Agile Port Information Technology (IT) Developments
TranSystems

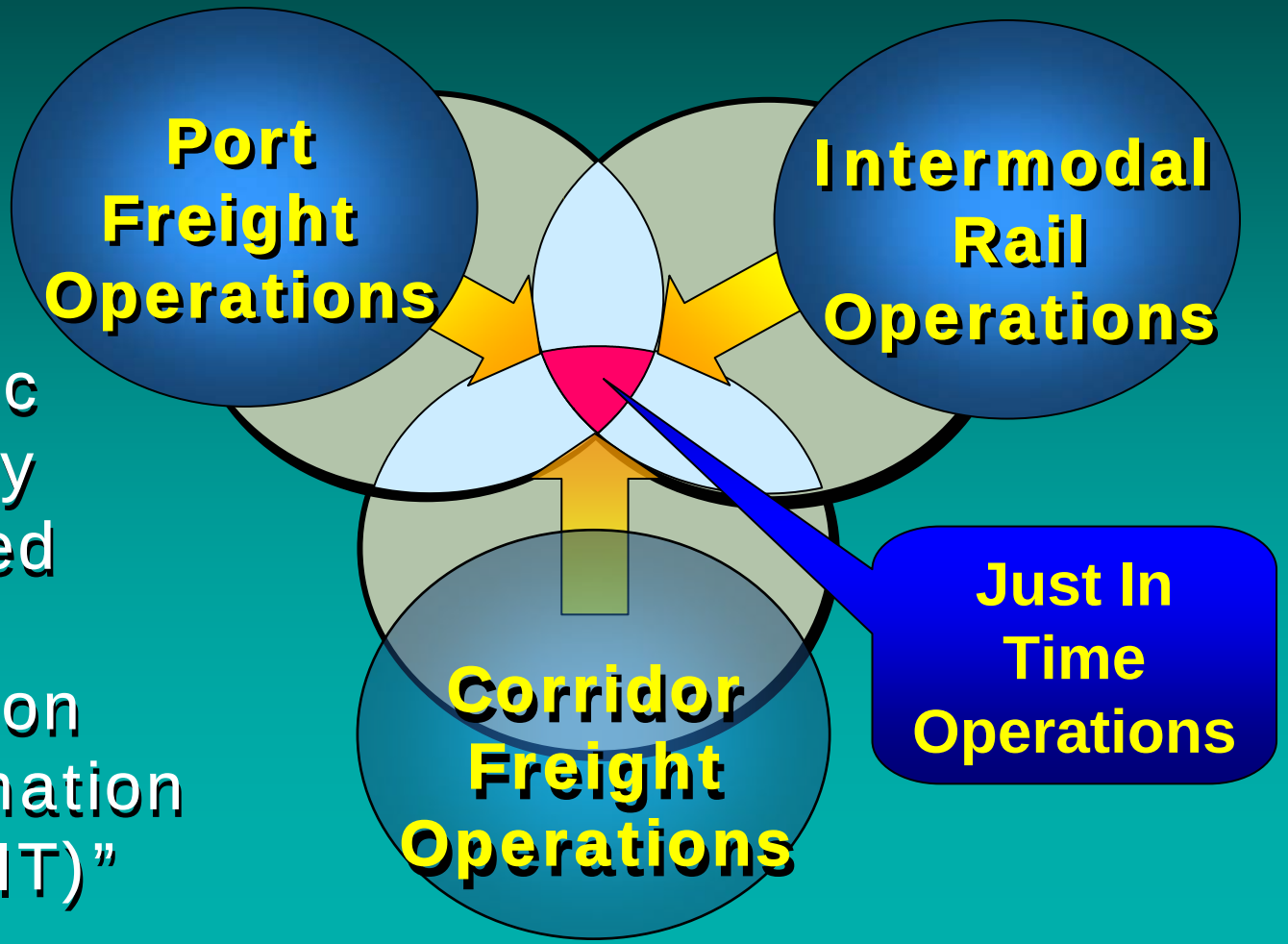
IT Data/Information Integration



Major Terminal & Systems Benefits

Agile Port Systems: A NEXUS for Efficient System Wide Freight Transport

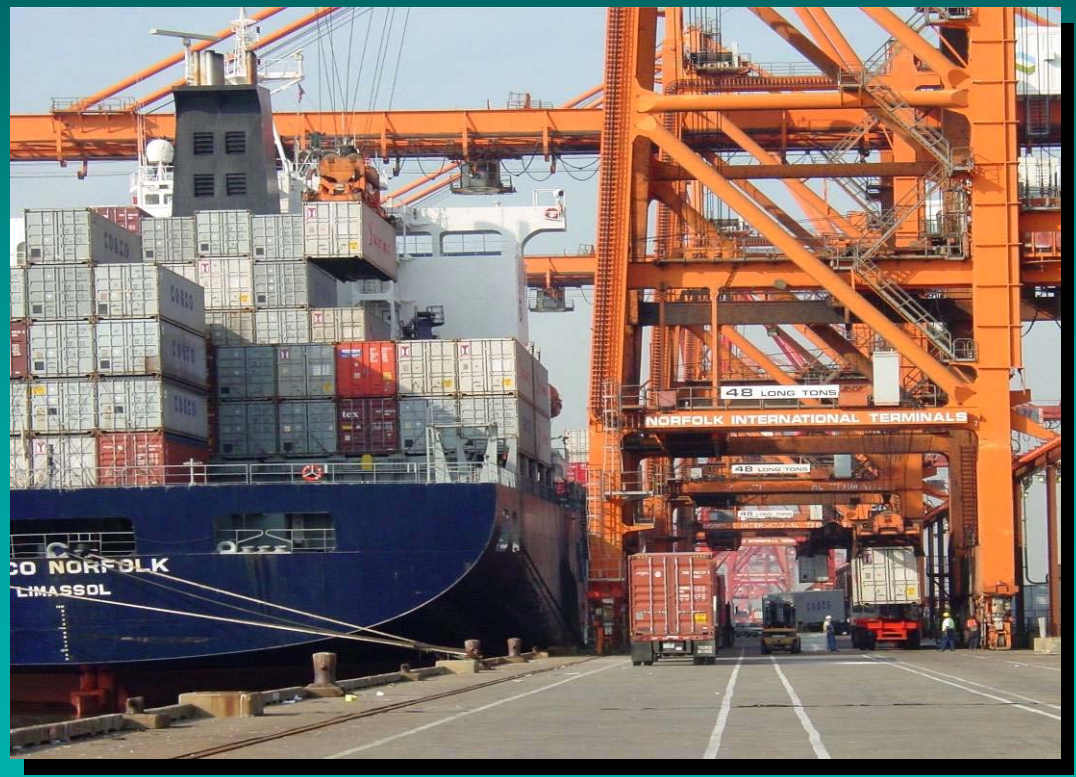
"A Strategic Opportunity for Improved Freight Transportation Through Information Technology (IT)"



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.

Better organized, accurate and timely information between ship and rail can increase the "velocity" of a container through a terminal without changing equipment, management or labor.



Container Dwell:

The Average Length of Time an Average Container Remains on the Terminal

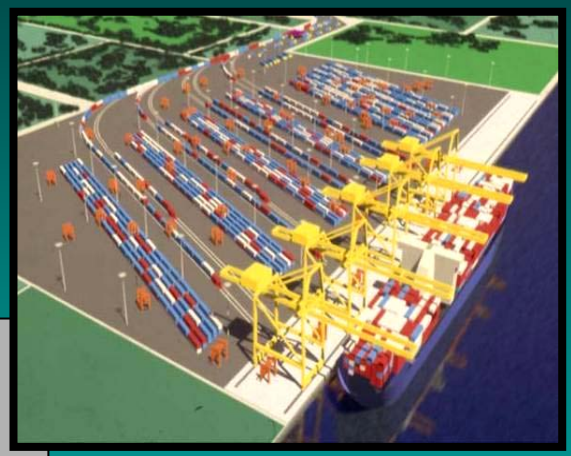
U.S. Marine Container Terminal Dwell:

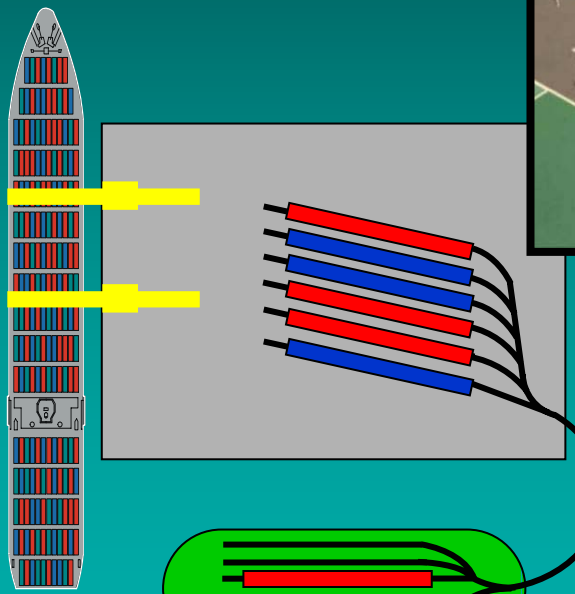
6 to 8 Days (Average)

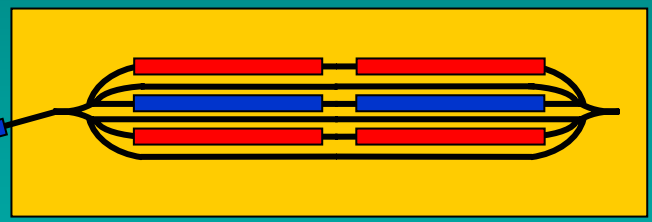

U.S. Intermodal Rail Terminal Dwell:
1 1/2 - 2 Day (Average)
When You Reduce Terminal Dwell by One Half
You Double the Terminal Throughput…without Building!

Agile Port Concepts

Integrating Vessel and Rail Information Systems







Efficient Marine Terminal (EMT)

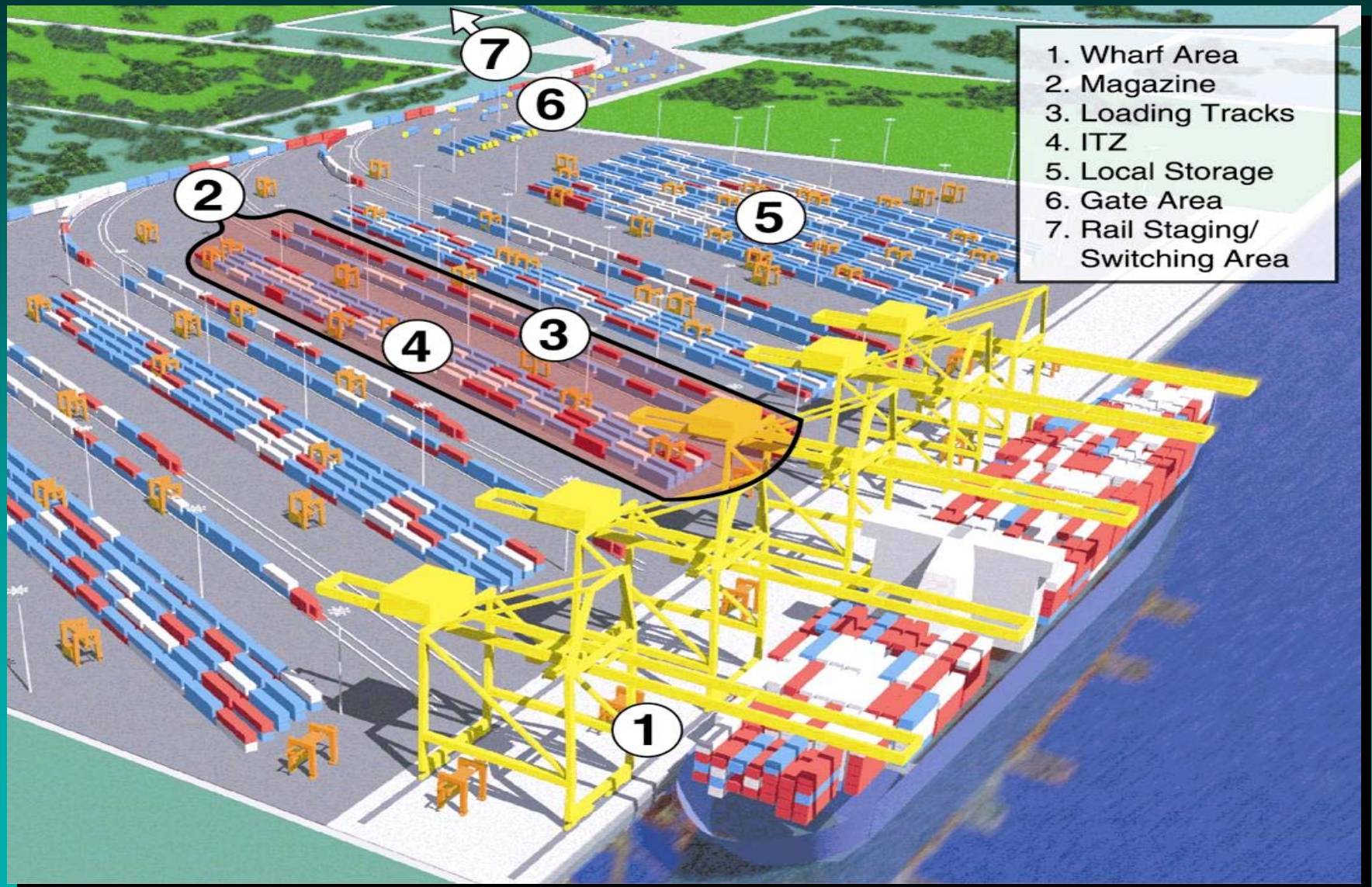
Dedicated Rail Corridor

Intermodal Interface Center (IIC)

Rail Storage Buffer

Inland Port

Agile Port System Components



Simultaneous Load & Discharge

Port of Tacoma – Efficient Marine Terminal Demonstration

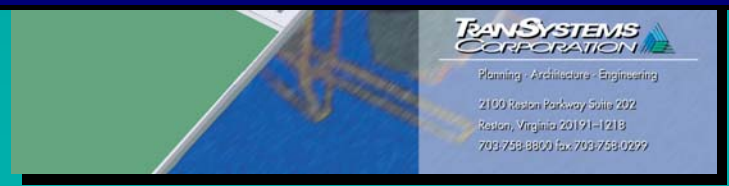
Participants

CCDoTT
USDOT MARAD
USDOD USTRANSCOM
ILWU
Port of Tacoma
Hyundai
Washington United Terminals
TranSystems
Automation Associates

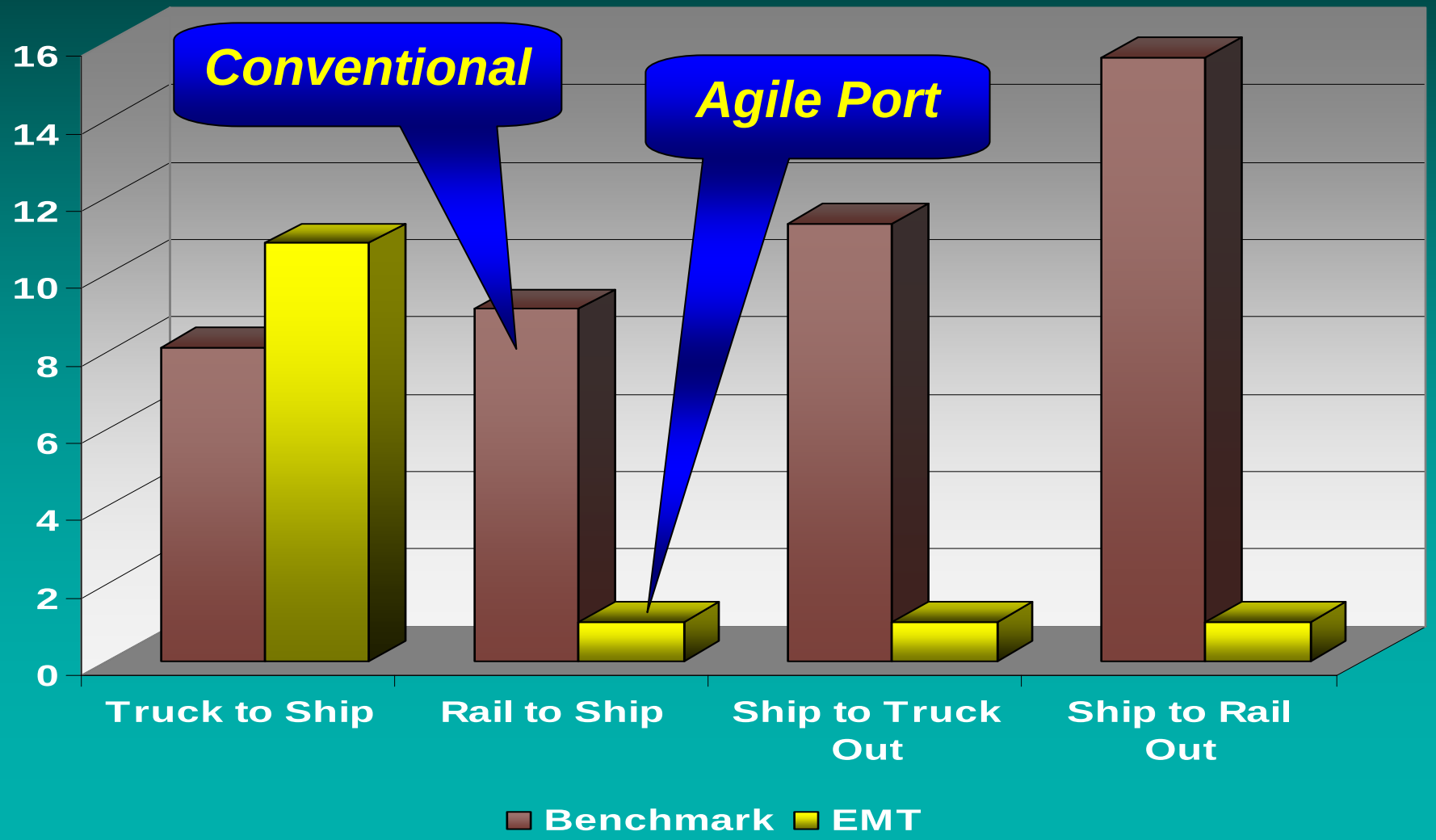
In March 2003
The ILWU President and
The ILWU Coast Committee
Agreed to become a Key Stakeholder in and active participant of:
The Agile Port Demonstration Project
Port of Tacoma

Agile Port Systems - Port Capacity Issues in Light of (DOD) Surge Requirements

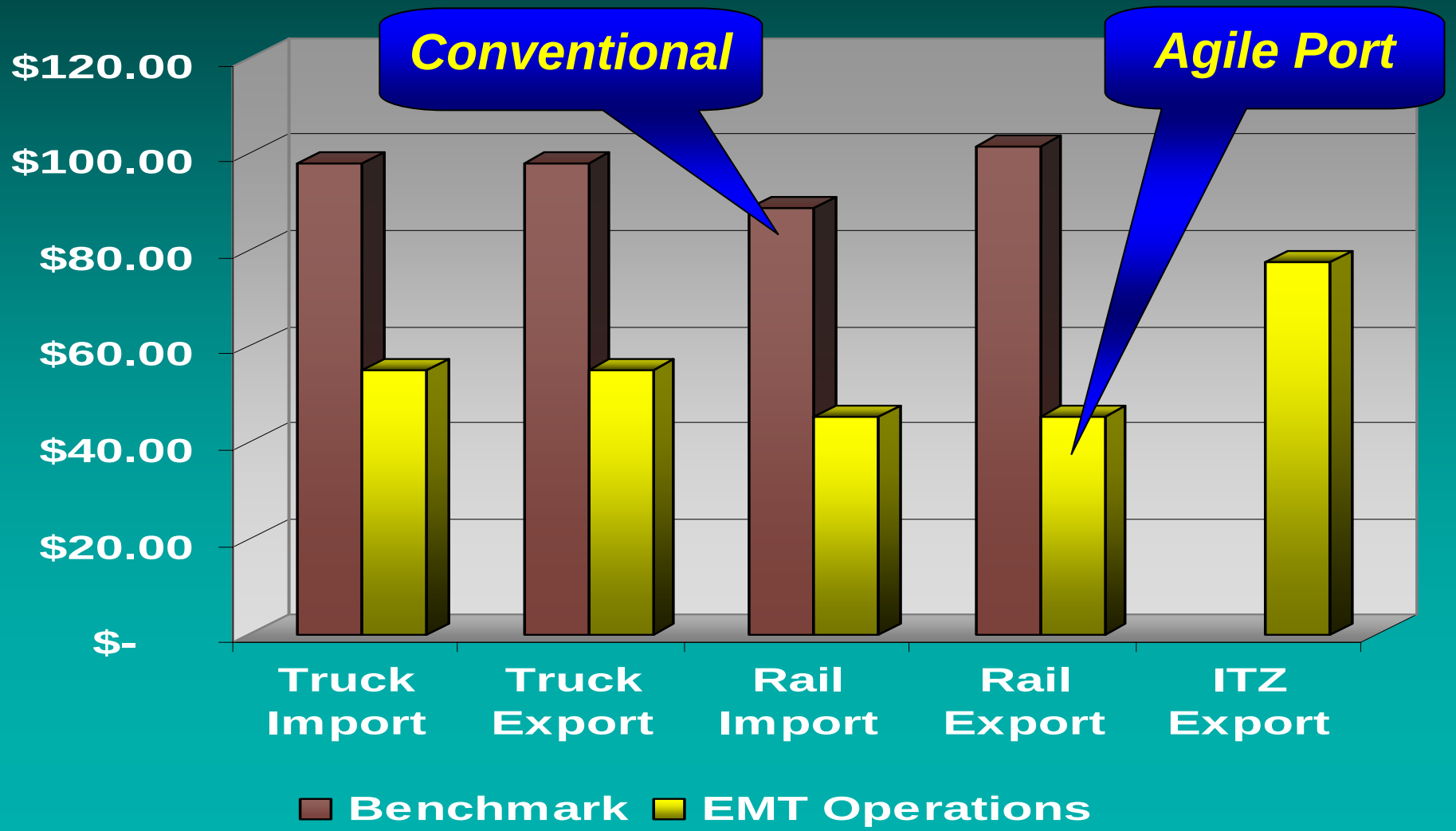
US Department of Defense,
US Department of Transportation,
CCDoTT (Cal State Long Beach Research Agency
Full Scale Testing of the Agile Port
Efficient Marine Terminal (EMT)
July 2003: <u>Doubled Terminal Throughput</u>
Future PNW Demonstration Test 2007



Agile Port Demonstration Results: Comparison Of Dwell Times



Comparison of Costs Per Container (Using Number of Lifts By Type)

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Agile Port Program
Pacific Northwest 2007
Demonstration Program
TranSystems

Agile Port Program Pacific Northwest 2007 Demonstration Partners

Ports of Tacoma,

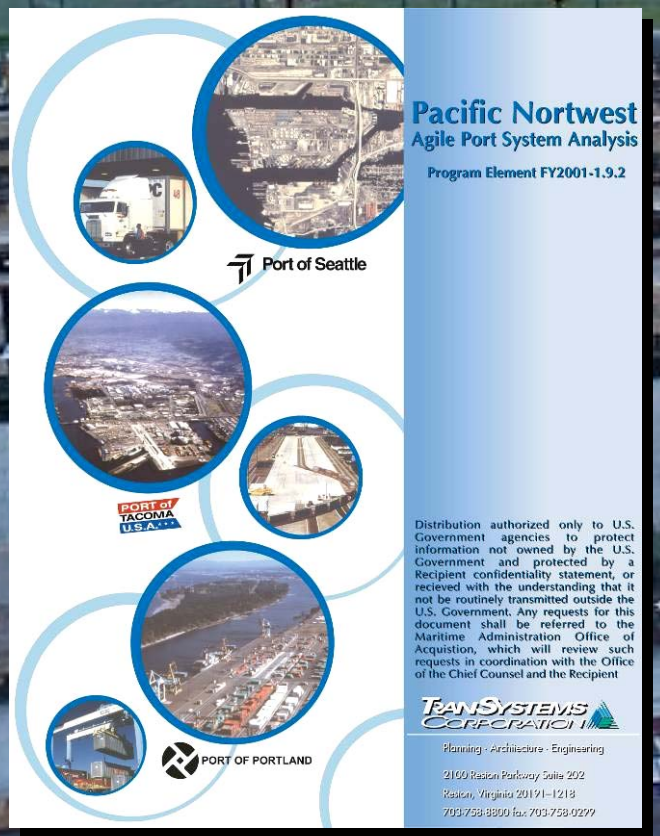
Port of Seattle,

Port of Portland,

CCDoTT, SDDC, TRANSCOM, MARAD, WUT, Hyundai, BNSF, UP, TMBL, TranSystems Corporation, Manalytics, Automation Associates Inc.

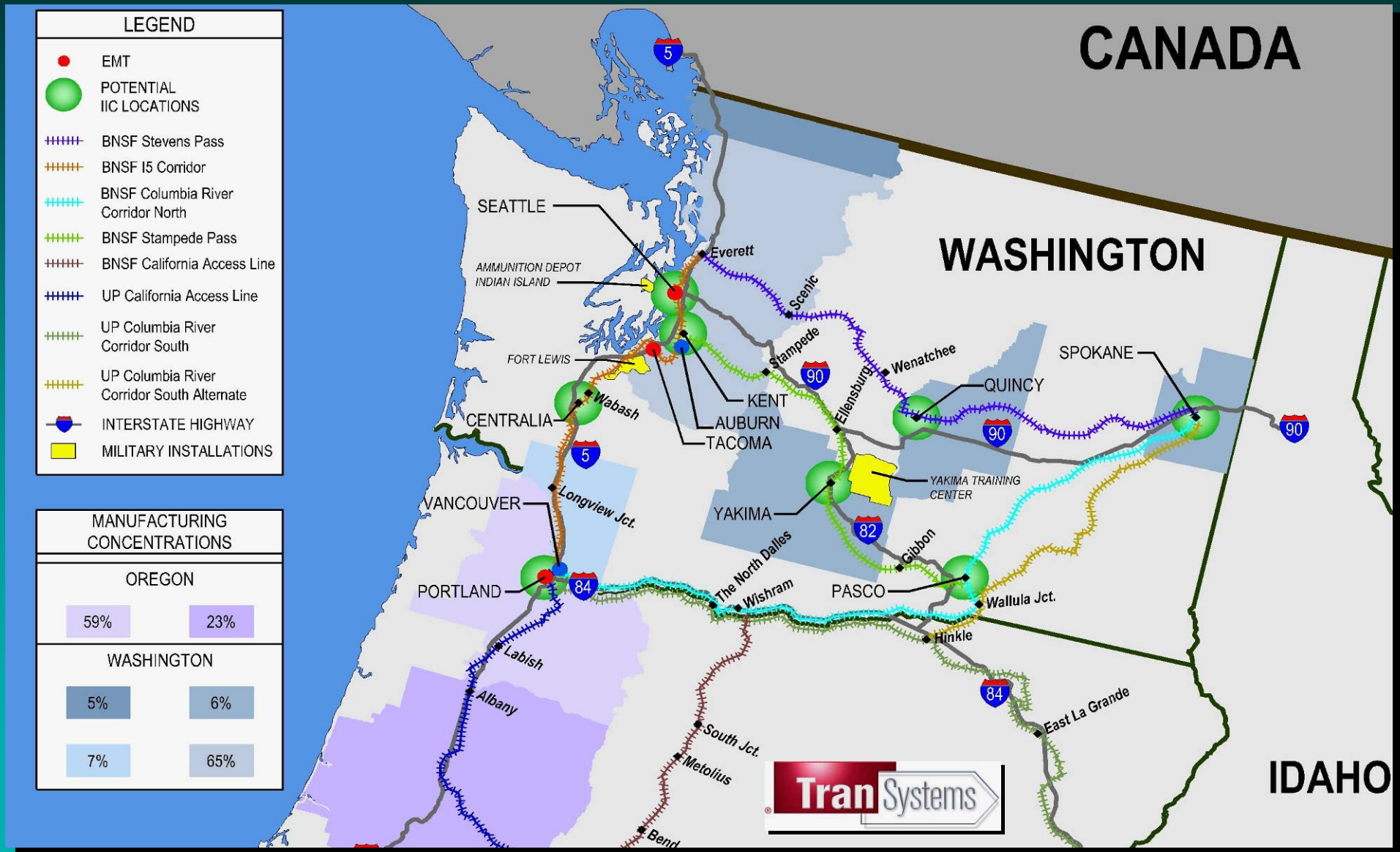
The Hubbard Group

Agile Port Program Pacific Northwest 2007 Demonstration Partners



Ports of Tacoma,
Port of Seattle,
Port of Portland,
CCDoTT, USDOD,
TRANSCOM, MARAD,
Washington United Terminals
Hyundai, BNSF, UP
TranSystems Corporation

PNW Transportation Network and Potential Inland Port Locations



Demonstration Objectives

- **Evaluate APS benefits for surge deployments**
  - **Ability of a marine terminal to accommodate Full Force Projection Military Operations while minimizing commercial disruption.**
  - **Minimize the amount of terminal property required during staging and ship loading operations.**

Demonstration Objectives

- Improve rail movement planning and operations
- Improve military force projection planning
- Fully utilize the capabilities of the PPP Deployment Facility
- Utilize TC-AIMS II – Block 2 Deployment Program
  - Evaluate possible system interfaces with the rail operating system

Train Loading/Unloading

- Stage the maximum amount of equipment at Fort Lewis (Inland Port)
- Maintain an adequate surge buffer
- Load approximately 1,003 prime movers on approximately 700 rail flat cars

Ship Loading

- Minimize the amount of equipment staged for loading
- Maintain an adequate surge buffer
- Load as many decks and holds concurrently as the ship design allows – Simultaneous Load and Discharge

USDOD Agile Port Information Technology (IT) Benefits

- Increased Marine Terminal Productivity **(Up to 200%)**
- Increased Marine Terminal Efficiency (less equipment needed)
- Reduced Marine Terminal Acreage

The Agile Port
Efficient Marine Terminal

Thank You