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## ***46th Annual Research & Policy Forum***

### ***Panel Session: Shifting Patterns of Global Trade***

# ***The Outlook for the Suez Canal Route & the Asian Trade "Tsunami"***

**John Vickerman  
Principal  
TranSystems Corporation  
Norfolk, Virginia**

**TRANSYSTEMS  
CORPORATION** 

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# ***US Maritime Trade: Current Course & Direction?***

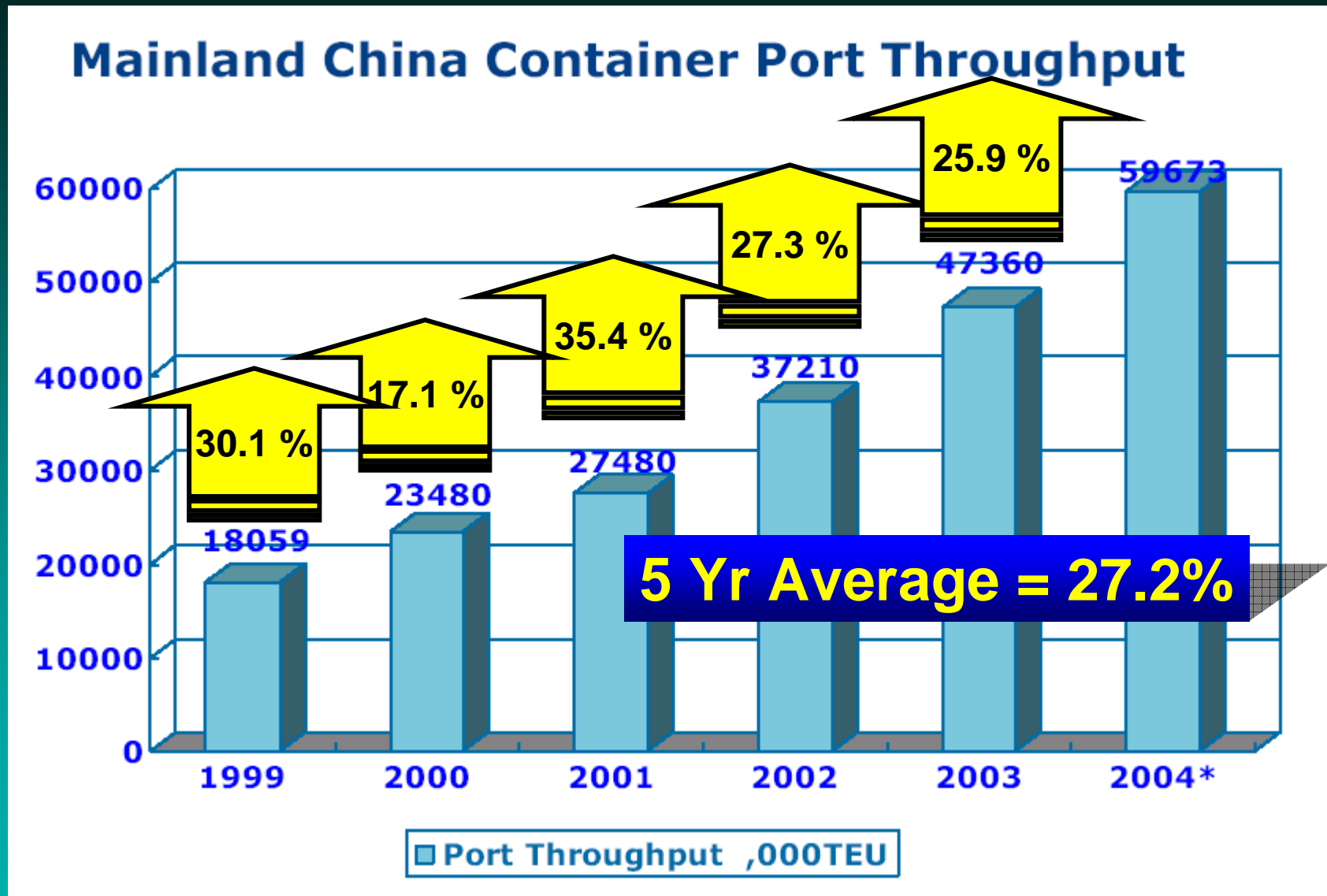
***Cargo Demands,  
Capacity, Funding, &  
Productivity Concerns***

***North American Ports***



**North American Maritime Trade:  
*Constant Bearing-Decreasing Range*  
*“The Perfect Storm”*: China Imports**

# Mainland China Container Growth (CAGR)



# China is Leading a Global Economic Rebound becoming the World's Manufacturing Powerhouse

- Global manufacturing is now centered in China.
- China will double its **GDP** by 2010 and **quadruple** it **by 2020**.
- By 2008 China will be the second largest global trading country.
- China's cargo, including Hong Kong loadings accounts for **70% of the total Pacific cargo flows**.
- China's container volumes will increase from 60 million TEUs to over **100 million TEUs by 2010**.

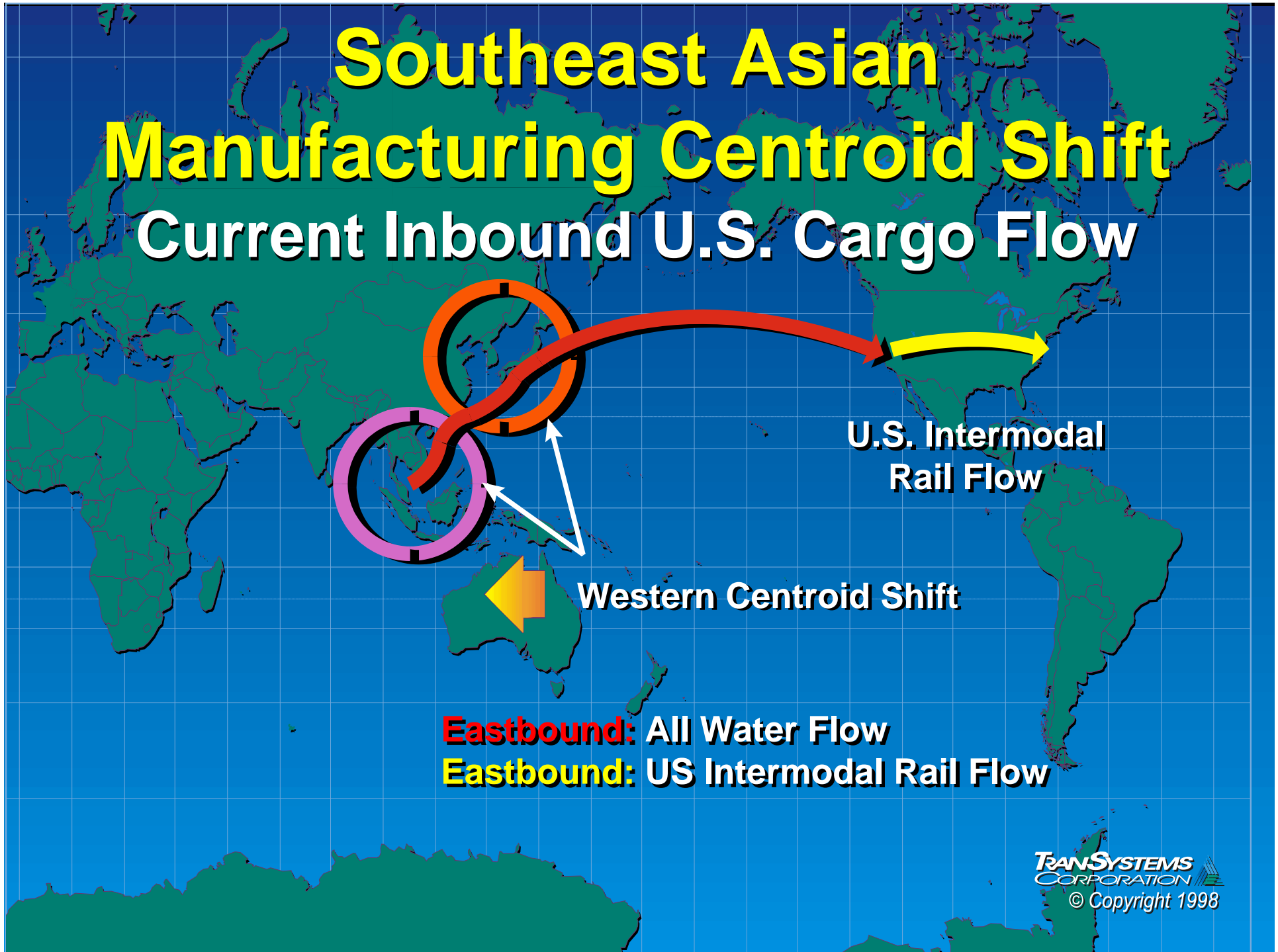
# China's Ministry of Railways Signed a 5 year Cooperation Agreement with the US BNSF Railroad for Intermodal Rail Development

- Develop China's high volume efficient intermodal network
- \$242 billion program to 2020
- High volume intermodal freight corridors to major ports
- On-dock & near-dock intermodal transfer yards at ports
- Ministry to build 18 mega-terminals with 7 at seaports



# Southeast Asian Manufacturing Centroid Shift

## Current Inbound U.S. Cargo Flow



U.S. Intermodal  
Rail Flow

Western Centroid Shift

**Eastbound:** All Water Flow

**Eastbound:** US Intermodal Rail Flow



# Southeast Asian Manufacturing Centroid Shift

## Current Inbound U.S. Cargo Flow



**Westbound All Water/Suez Flow**

**Westbound Intermodal U.S. Flow**

# The Suez Canal “Back Flow”



# U.S. Intermodal Freight Transportation System is an essential component of our national commercial economy

*This system is at risk...*

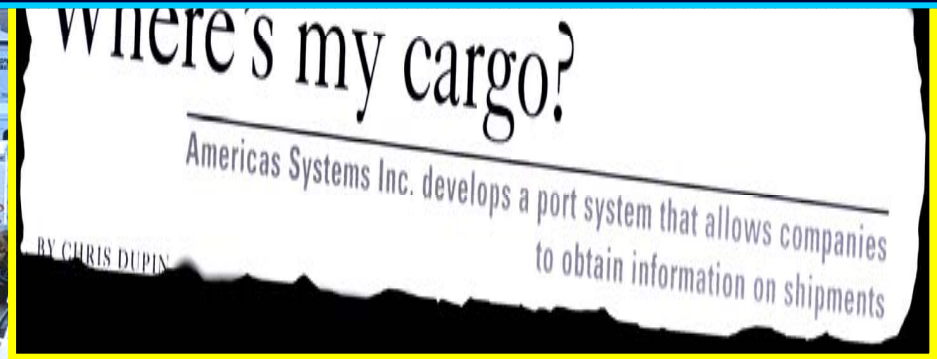




***The North American Freight Paradox:  
The Nation's Ports and Their Intermodal  
Linkages are Experiencing the  
"Best of Times and the Worst of Times"  
in Terms of Growth and Demands on Capacity***




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



A photograph of an iceberg floating in the ocean. The tip of the iceberg is visible above the water, while a much larger, jagged mass of ice is submerged below the surface. The sky is blue with light clouds. The text is overlaid on the submerged part of the iceberg.

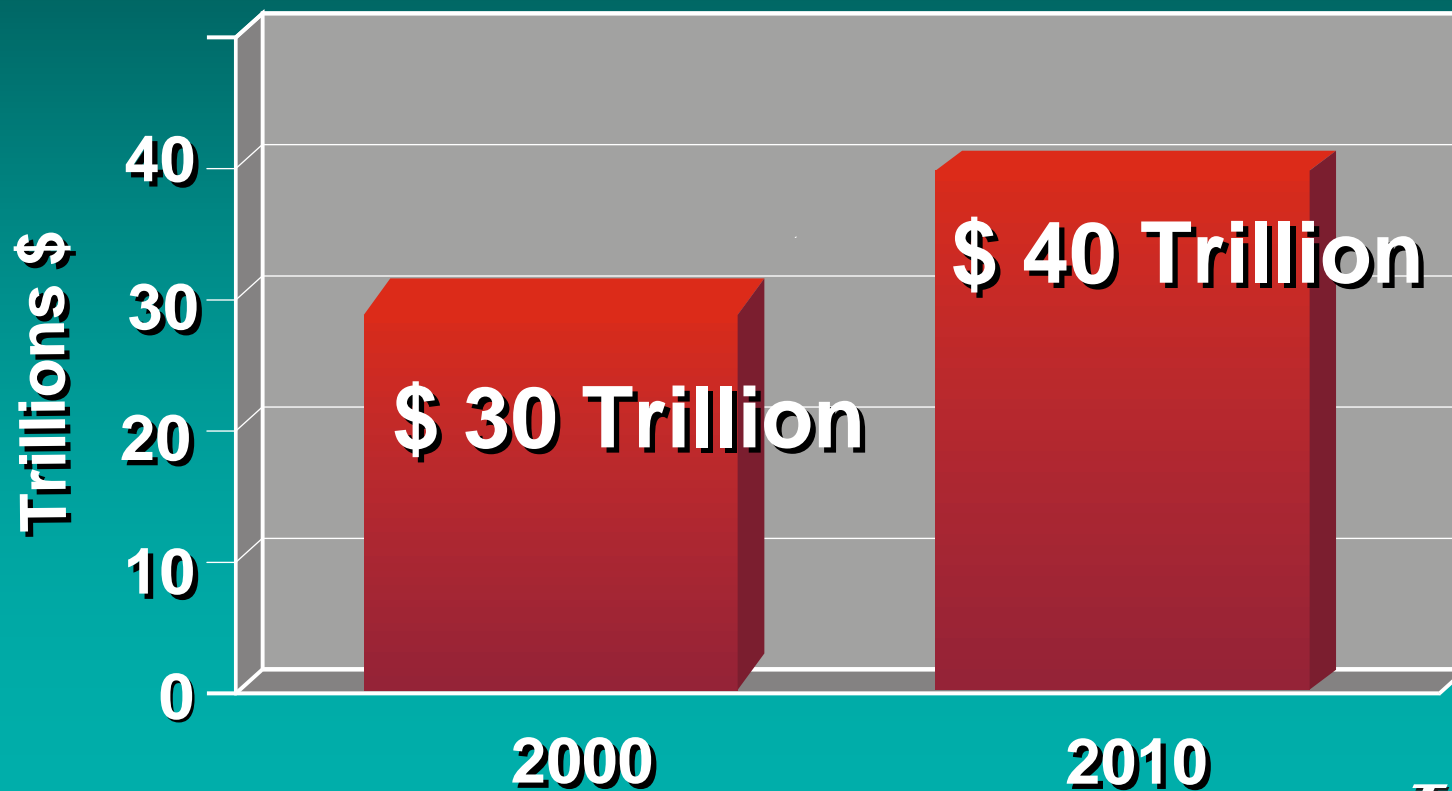
***US Port Capacity  
Concerns are the  
Tip of Our Freight  
Logistics  
Challenge***

An aerial photograph of a deep blue ocean with a white wake from a ship curving across the frame. The text is overlaid in the center.

# **International Maritime Cargo Forecast Trends**

# World Bank's 2010 "Global Economic Prospects"

World Output will Increase 33% in 10 years

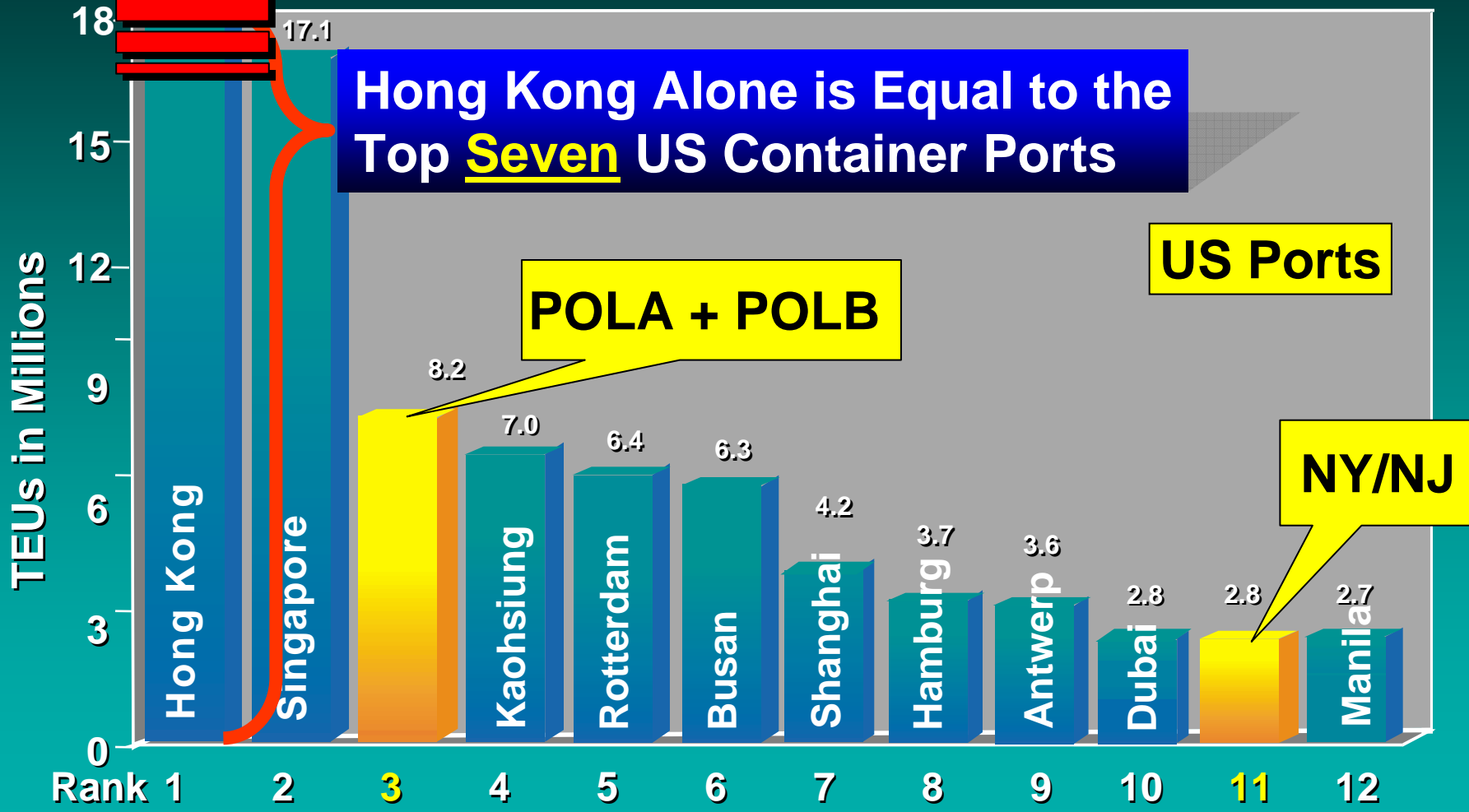




# World Container Gateways

## "The World's Top 12 Gateways"

31 M TEUs by 2011

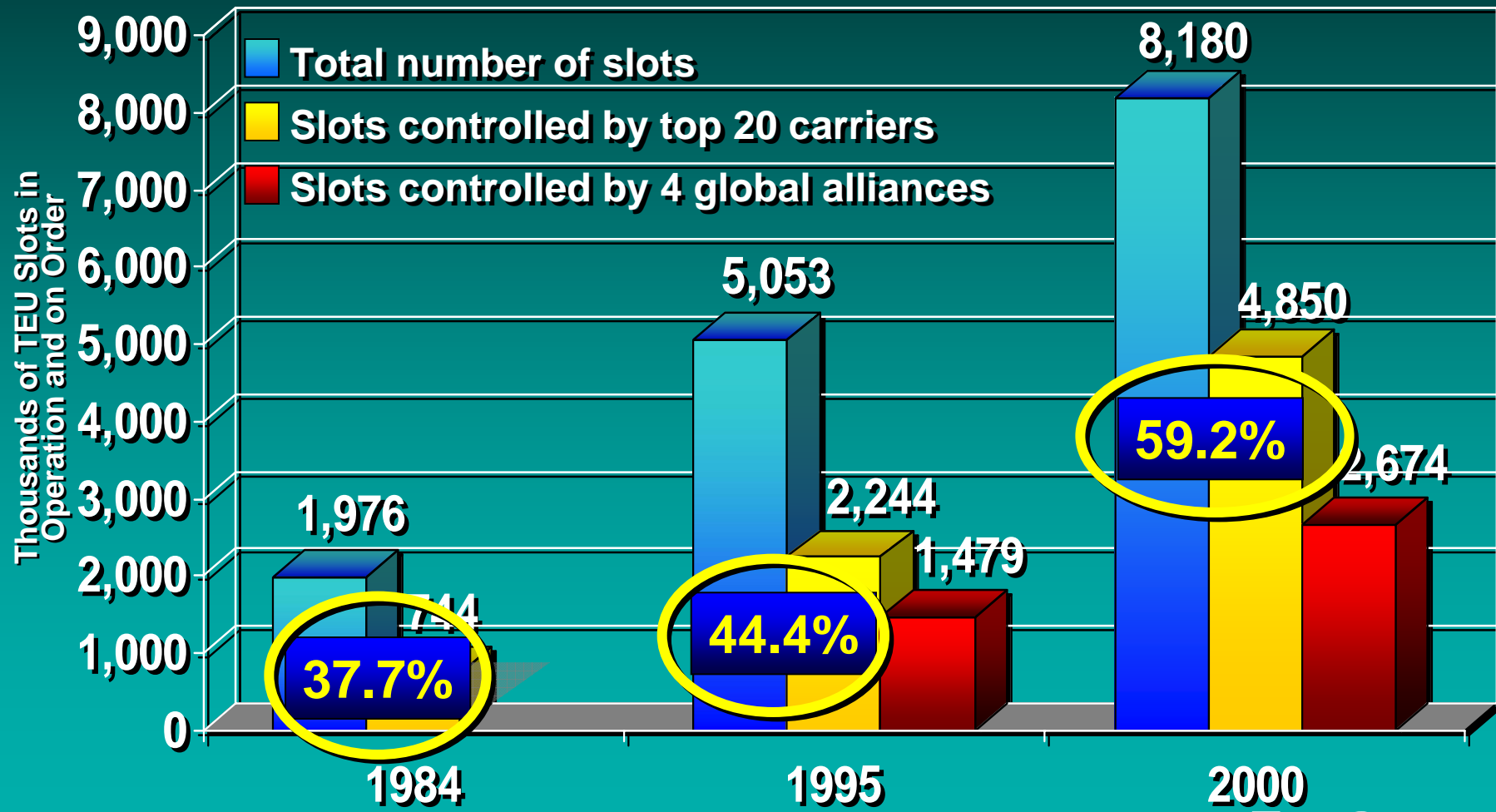


Source: AAPA, Containerisation International Yearbook

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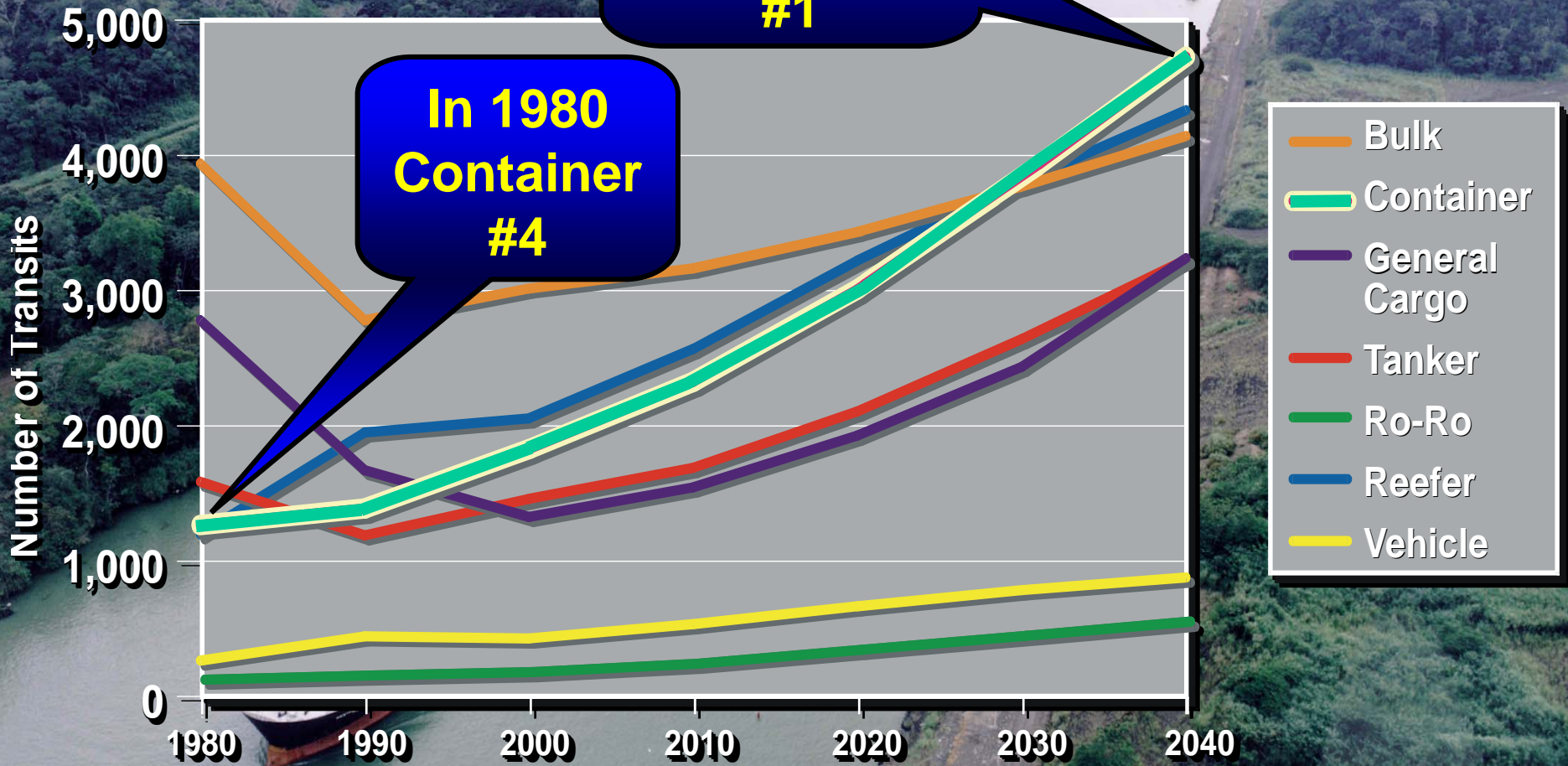
# The Container Industry Continues to Consolidate...



# Panama Canal Vessel

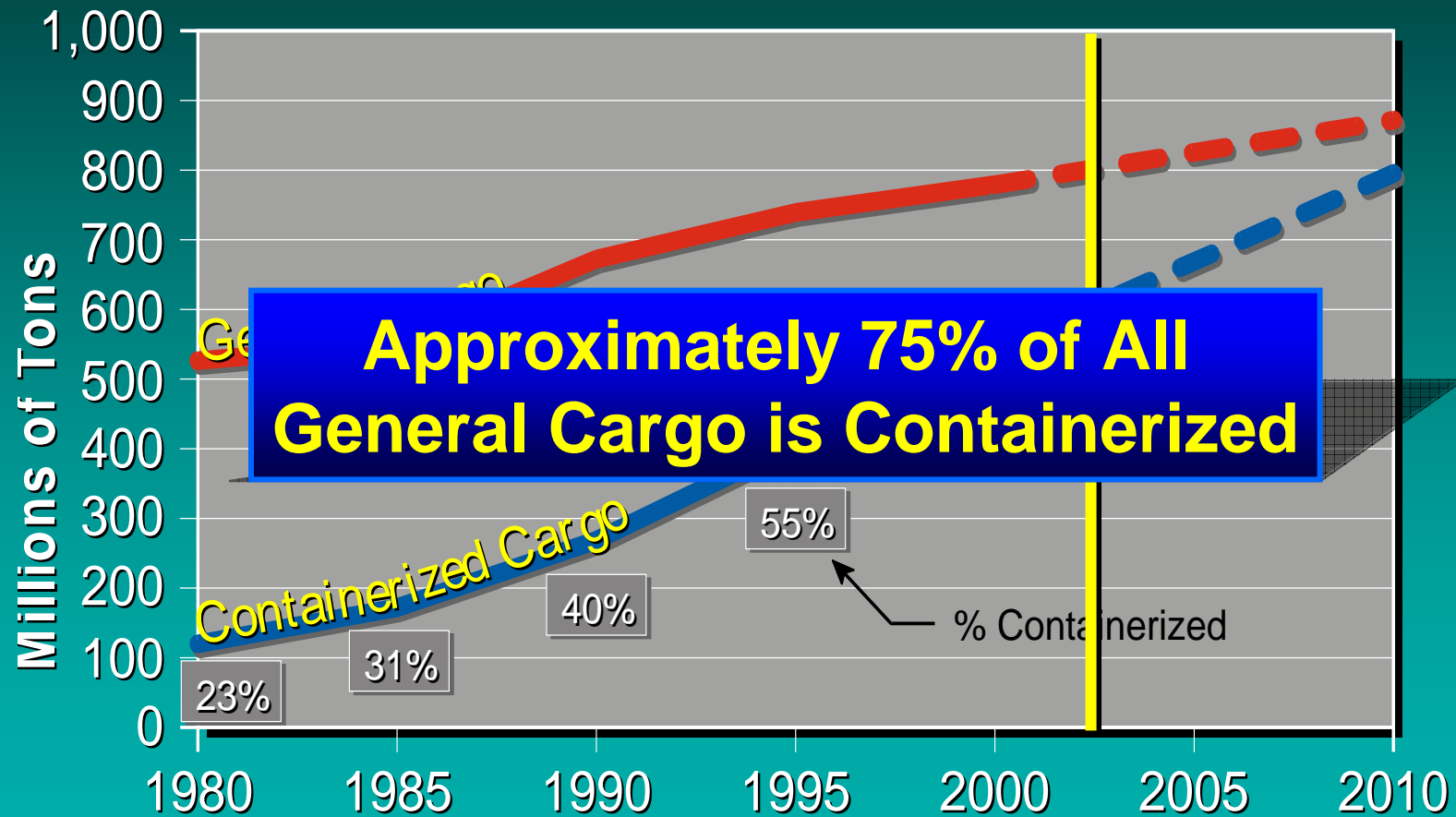
## Forecast Transits

Container Ships **In 2040 Container #1** Canal Transits

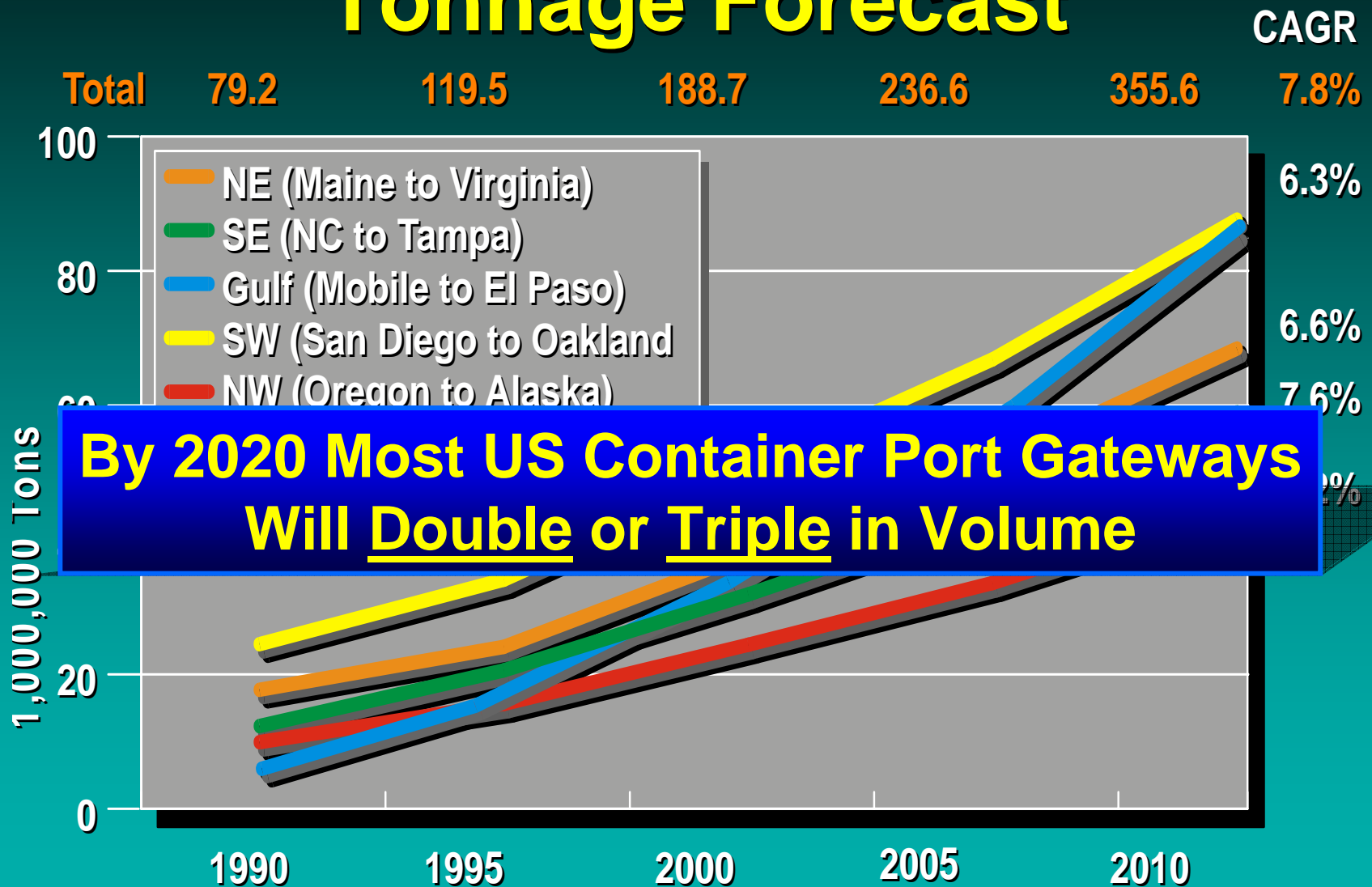


Source: Panama Canal Commission/ICF Kaiser, June 1997

# World Containerization of the General Cargo Trades



# U.S. Containerized Tonnage Forecast



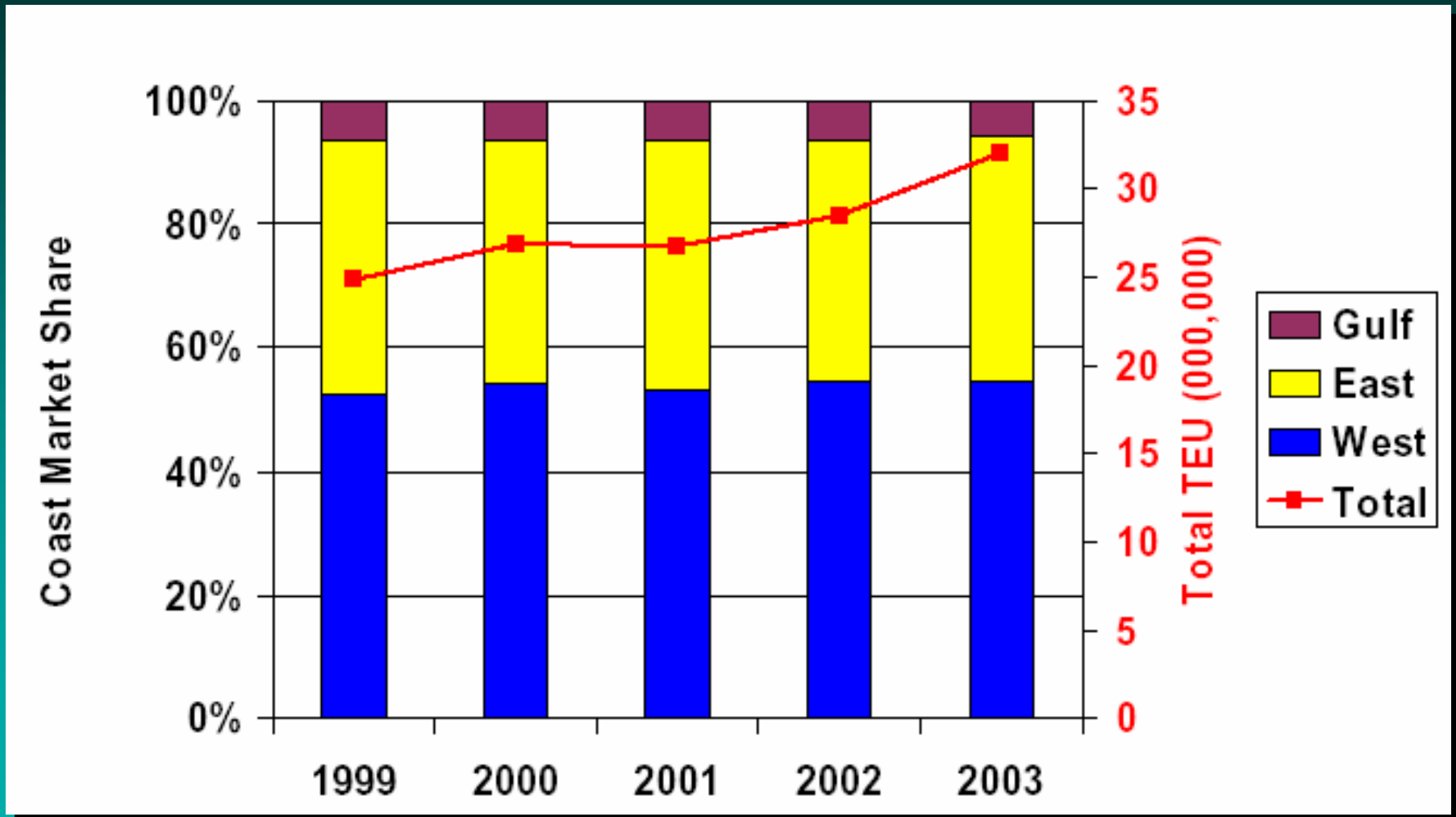
**By 2020 Most US Container Port Gateways Will Double or Triple in Volume**

Source: DRI/McGraw Hill

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# 2003 US Port Container Throughput by Coast

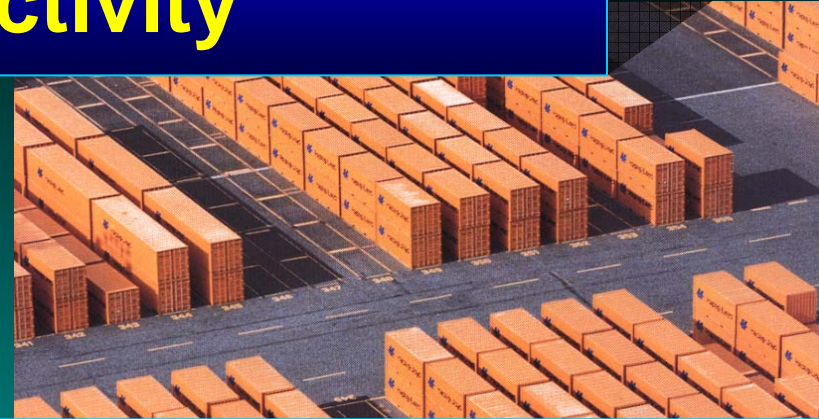


Source: Computed from Seaports of the Americas – 2003, Containerization International Yearbook - 2003 and port-provided data bases/interviews



# **International Port Productivity**

# 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**





# Global Marine Terminal Productivity Growth

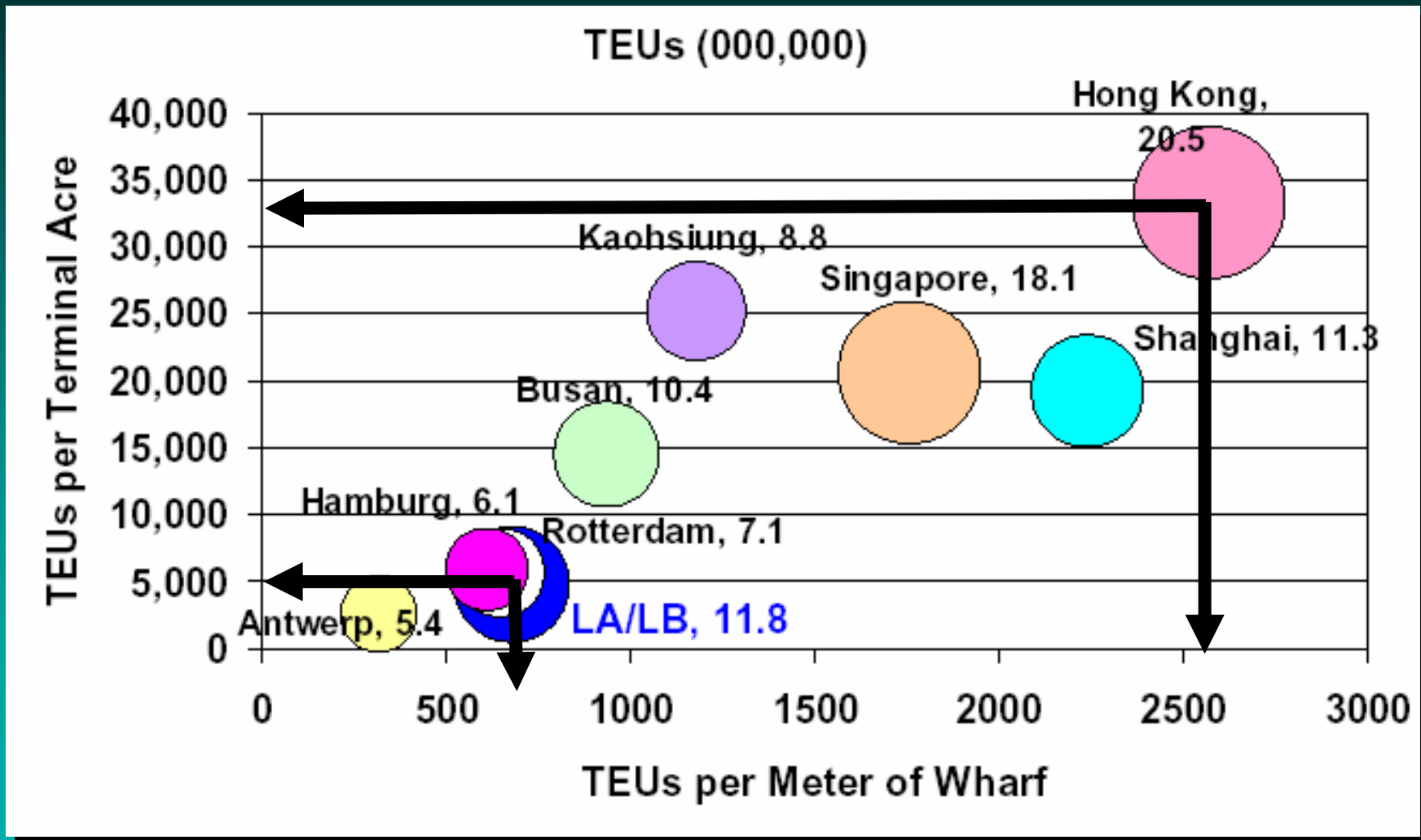
(Circa 1995 to 2003)

(Throughput measured in TEUs/Acre/Year)

	1995	2003	5YR CAGR
<b>Asian Ports</b>	<b>8,834</b>	<b>18,500</b>	<b>19.9%</b>
<b>European Ports</b>	<b>2,974</b>	<b>6,800</b>	<b>9.2%</b>
<b>United States Ports</b>	<b>2,144</b>	<b>3,900</b>	<b>9.0%</b>
<b>US West Coast Ports</b>	<b>3,567</b>	<b>4,300</b>	<b>10.9%</b>
<b>US Gulf Coast Ports</b>	<b>2,816</b>	<b>4,000</b>	<b>3.7%</b>
<b>US East Coast Ports</b>	<b>1,281</b>	<b>3,300</b>	<b>10.3%</b>

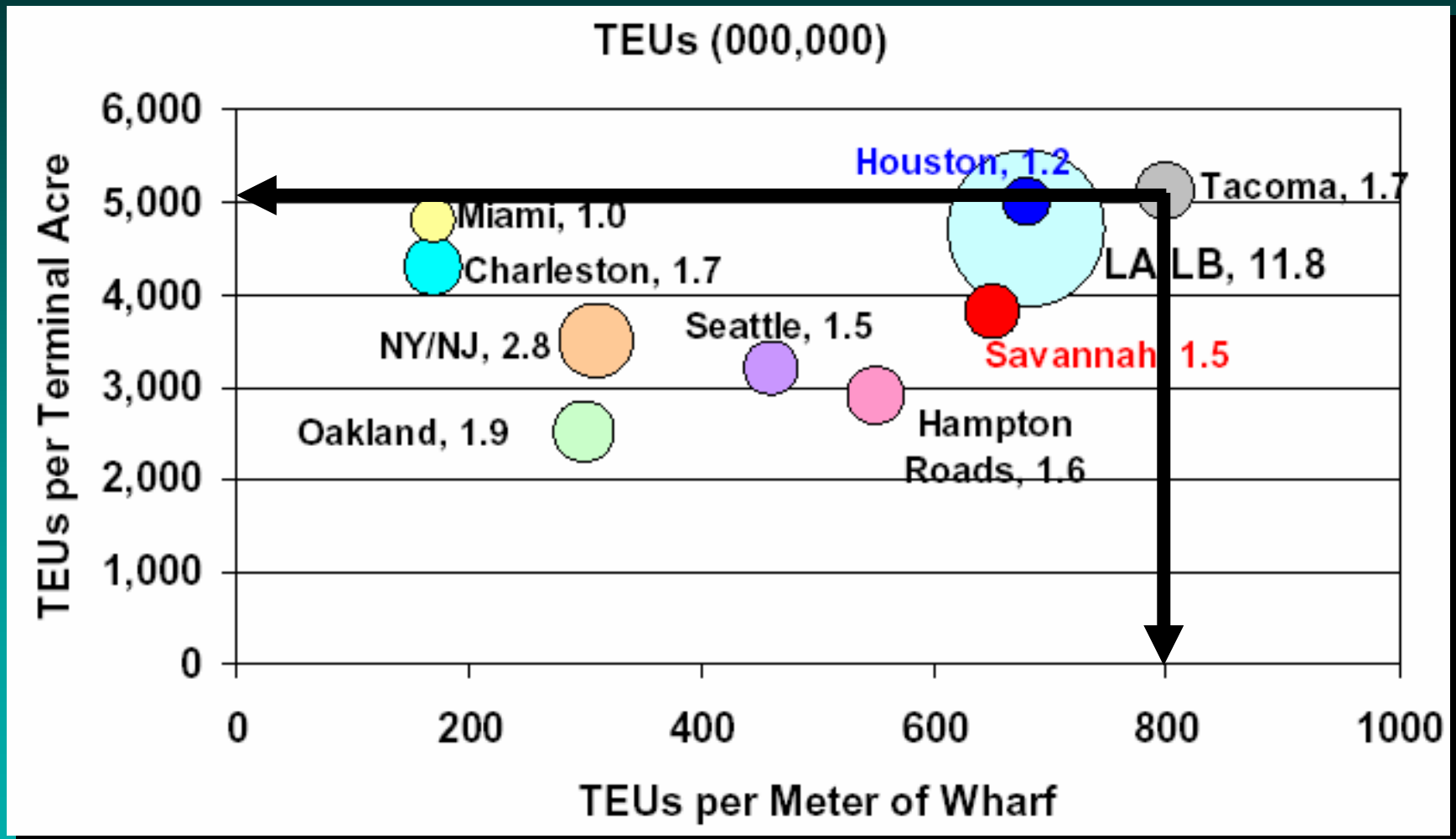
Source: 1995 & 2003 CI Yearbooks, Seaports of the Americas, Port Data

# 2003 International Port Productivity Top 10 Ports in Millions of TEU Throughput



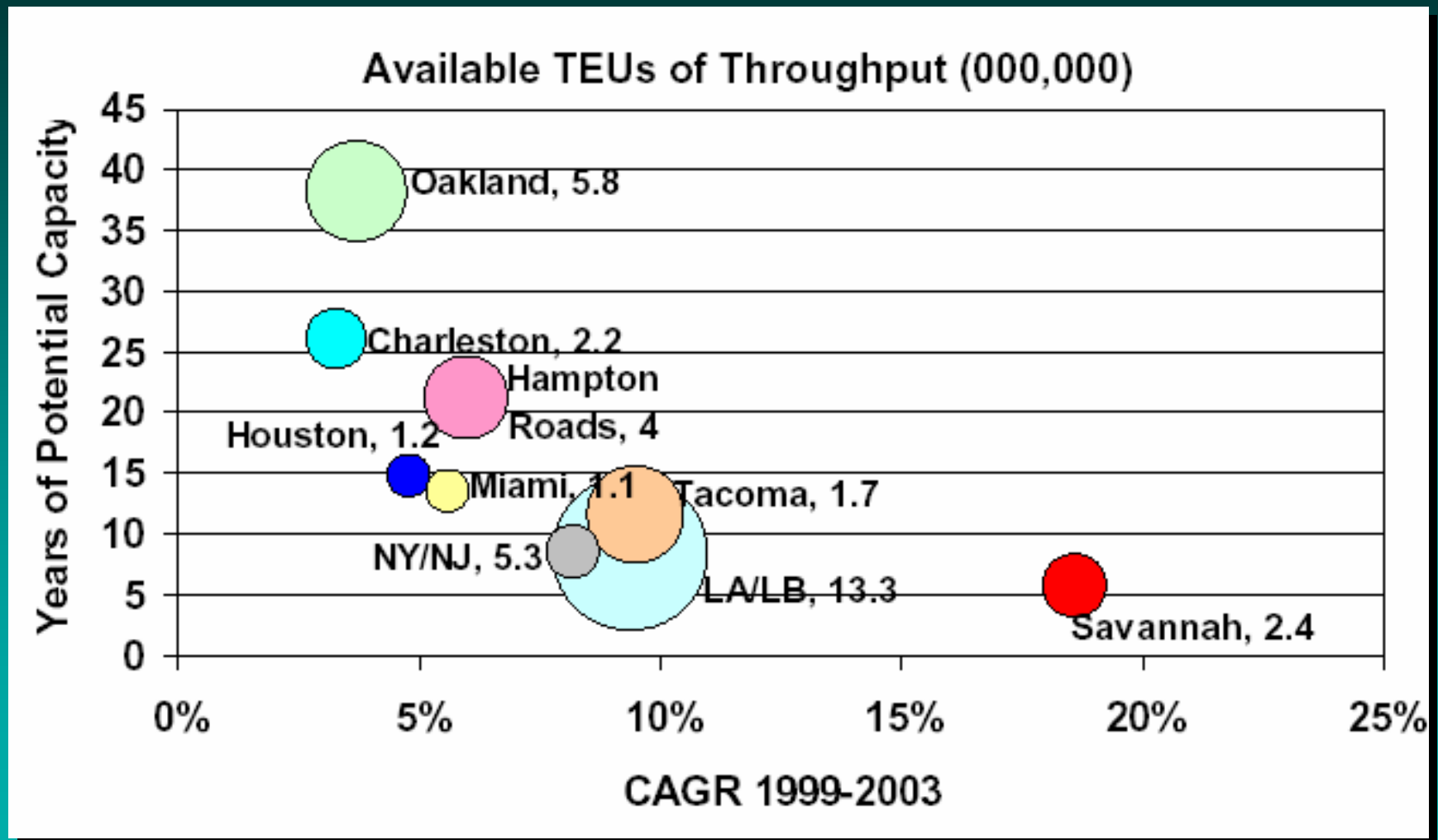
Source: Computed from Seaports of the Americas – 2003,  
Containerization International Yearbook - 2003 and port-provided data bases/interviews

# 2003 US Port Productivity Top 10 Ports in TEUs of Throughput



Source: Computed from Seaports of the Americas – 2003,  
Containerization International Yearbook - 2003 and port-provided data bases/interviews

# 2003 Potential US Port Productivity Top 10 Ports in TEU Throughput

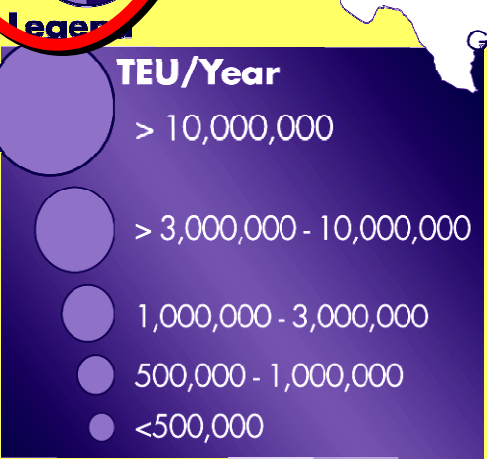
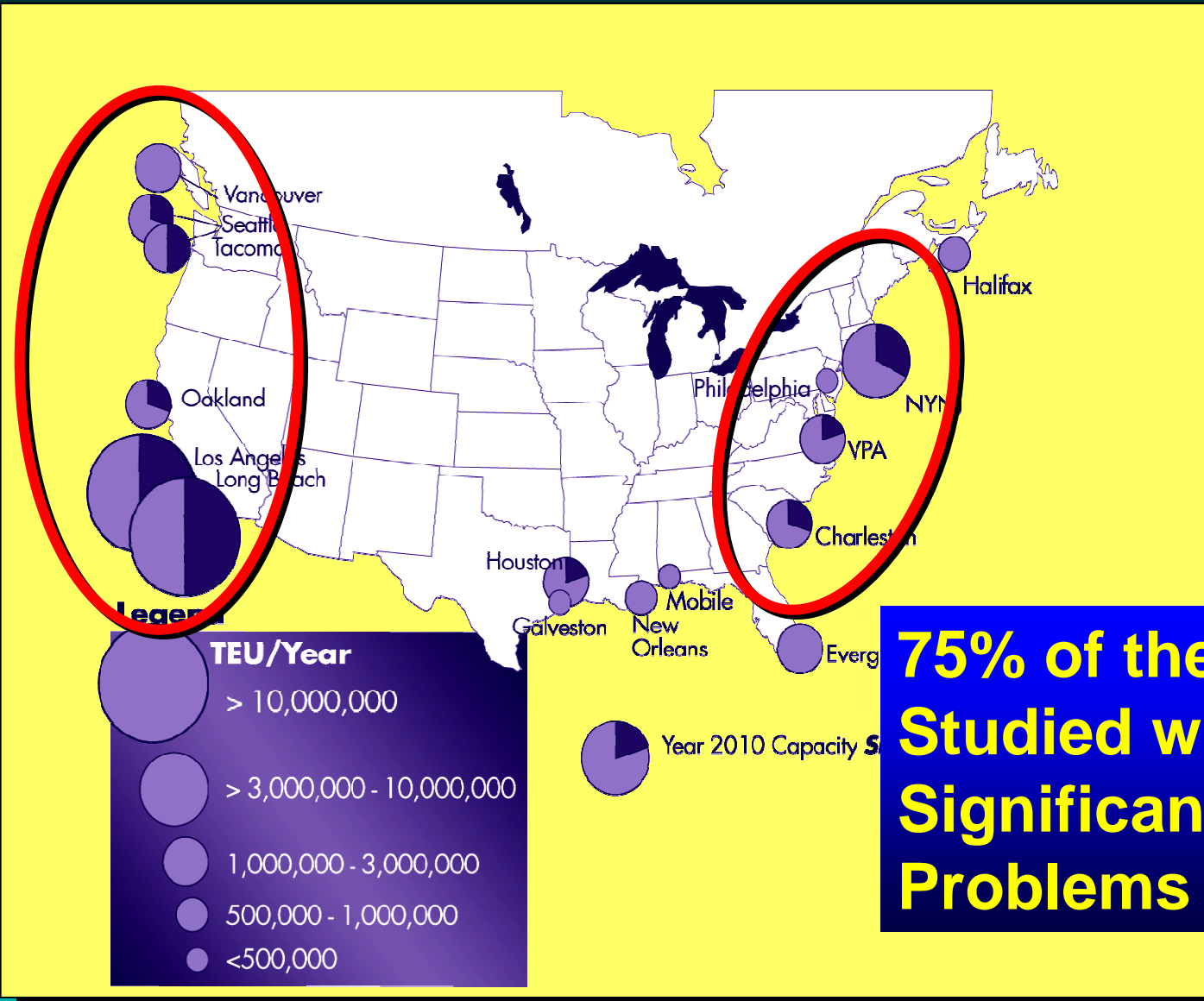


Source: Computed from Seaports of the Americas – 2003,  
Containerization International Yearbook - 2003 and port-provided data bases/interviews

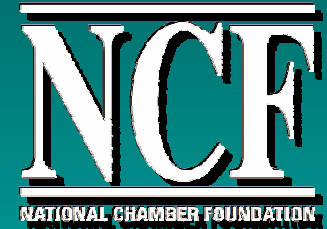


**Can US Marine  
Terminals Handle  
the Forecasted  
Freight Volumes ?...**

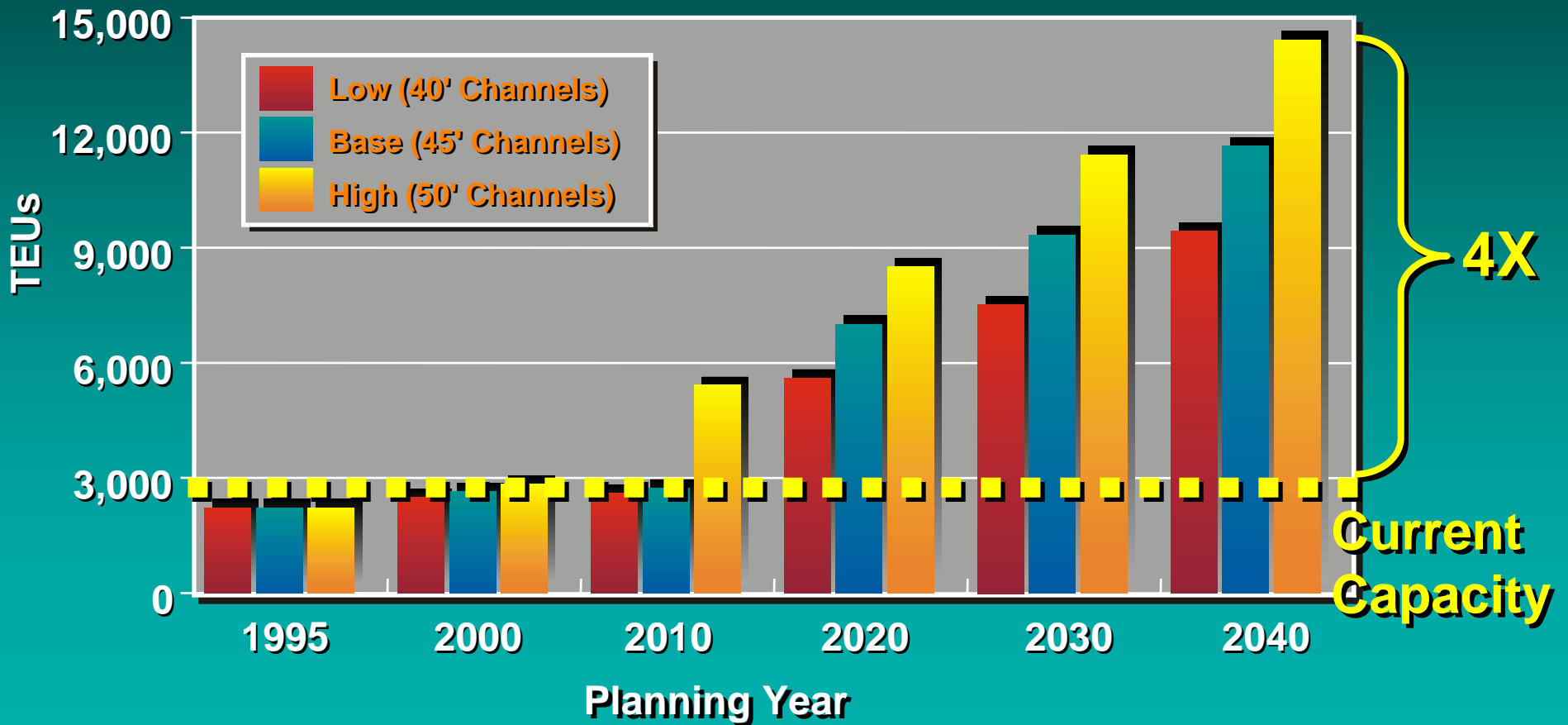
# 2010 Projected Public Port Capacity Shortfall



**75% of the 16 Ports Studied will have Significant Capacity Problems by 2010**



# Port Authority NY/NJ Long Range Regional Container Forecast (TEUs)

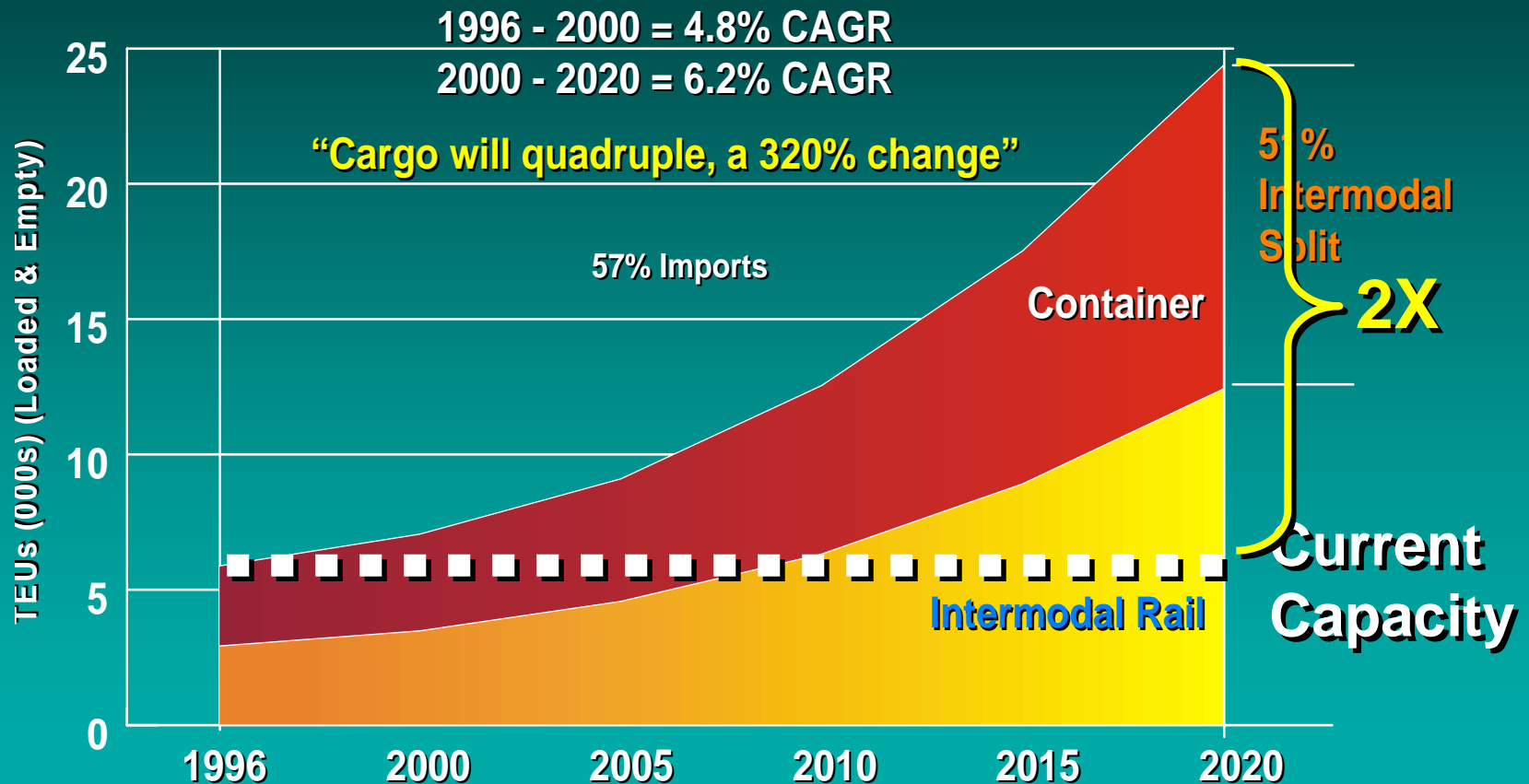


Source: PANY/NJ

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# Ports of Los Angeles and Long Beach Container and Intermodal 2020 Forecast



(Worse Case: Asian Crisis Steady-State)



# San Pedro Bay Ports of 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



# **Container Vessel Evolution & Trends**

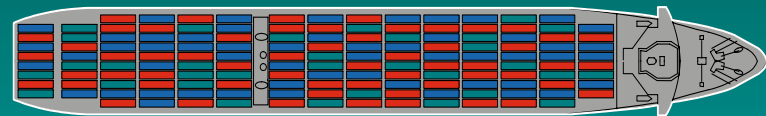
# World Container Ship Evolution



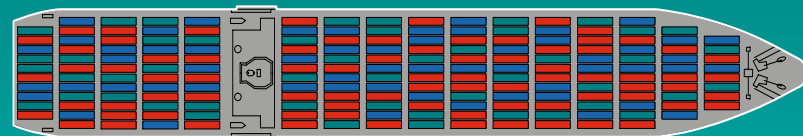
1st Generation (Pre-1960 - 1970)



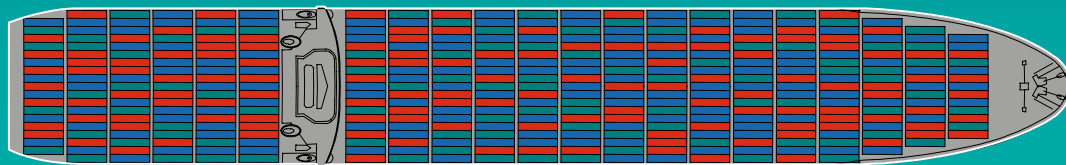
2nd Generation (1970 - 1980)



3rd Generation (1985)

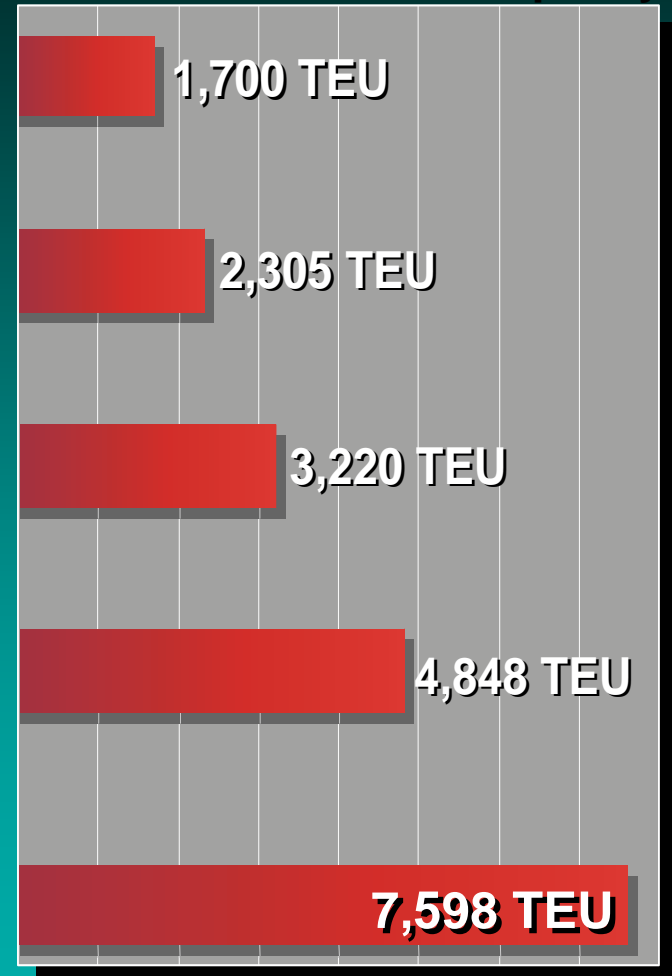


4th Generation (1986 - 2000)

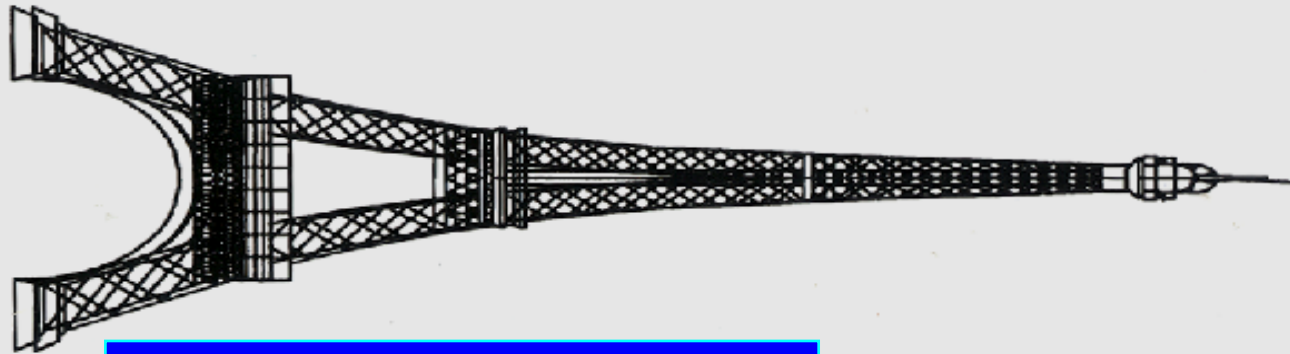


5th Generation (2000 - 2005)

TEU Capacity



# Today's Mega Ships - Measuring Up



**Eiffel Tower – 990 feet**



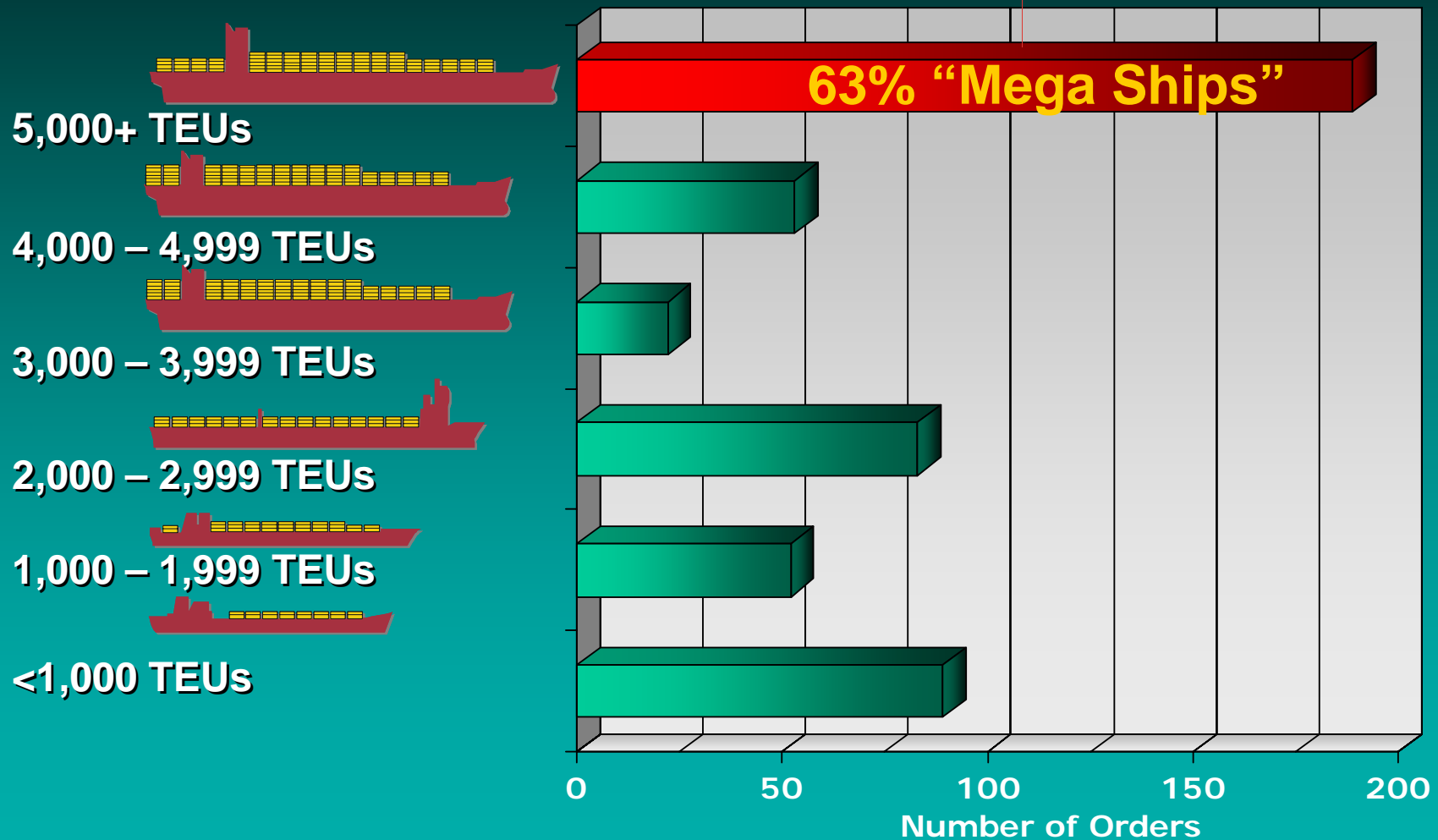
**Reginia Maersk – 1043 Ft, 140 Ft wide, 6000+ TEUs**

# Madison Maersk (3,928 TEUs) in the Panama Canal



# 2003 New Build Orders

## Expansion of World Post-Panamax Container Fleet



Source: 2004 Containerisation International Yearbook

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**AP Moller Odense Shipyard  
Ultra Post Panamax Vessels  
KNUD MAERSK In the Suez  
(Regina Class: 6,000 TEU)  
(Sovereign (S) Class: 6,600 TEUs)**



***Total S Class Fleet = 31 vessels (Delivery 2004)  
Could the last vessels be  
super-sized to 10,500 TEUs ??***

# Mega Container Vessel Trends

1970 Industry Prediction: “3,250 TEU”

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)**





**January 7, 2004...**

**Hapag-Lloyd's new class of 8,600-TEU containerships by Hyundai Heavy Industries. Three 8,600-TEU "mega container ships," with the first to be delivered in 2007 and the remaining two in 2008. The 100,000 dwt ships will be 335 meters (1,099 feet) long, 43 meters (141 feet) wide, and a maximum speed of 25.2 knots**

# The 15,000 TEU Containership

**“...the ship is a flight of fancy... but such a ship is within the current state of the shipbuilder’s art...”**

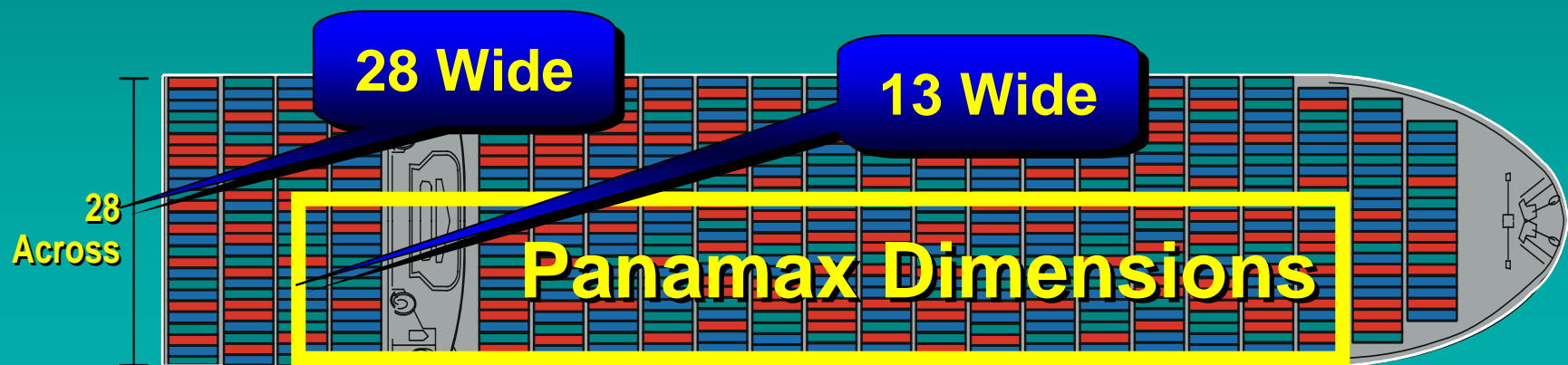
**R. G. McLellan, P&O Containers**

# The 15,000 TEU Containership

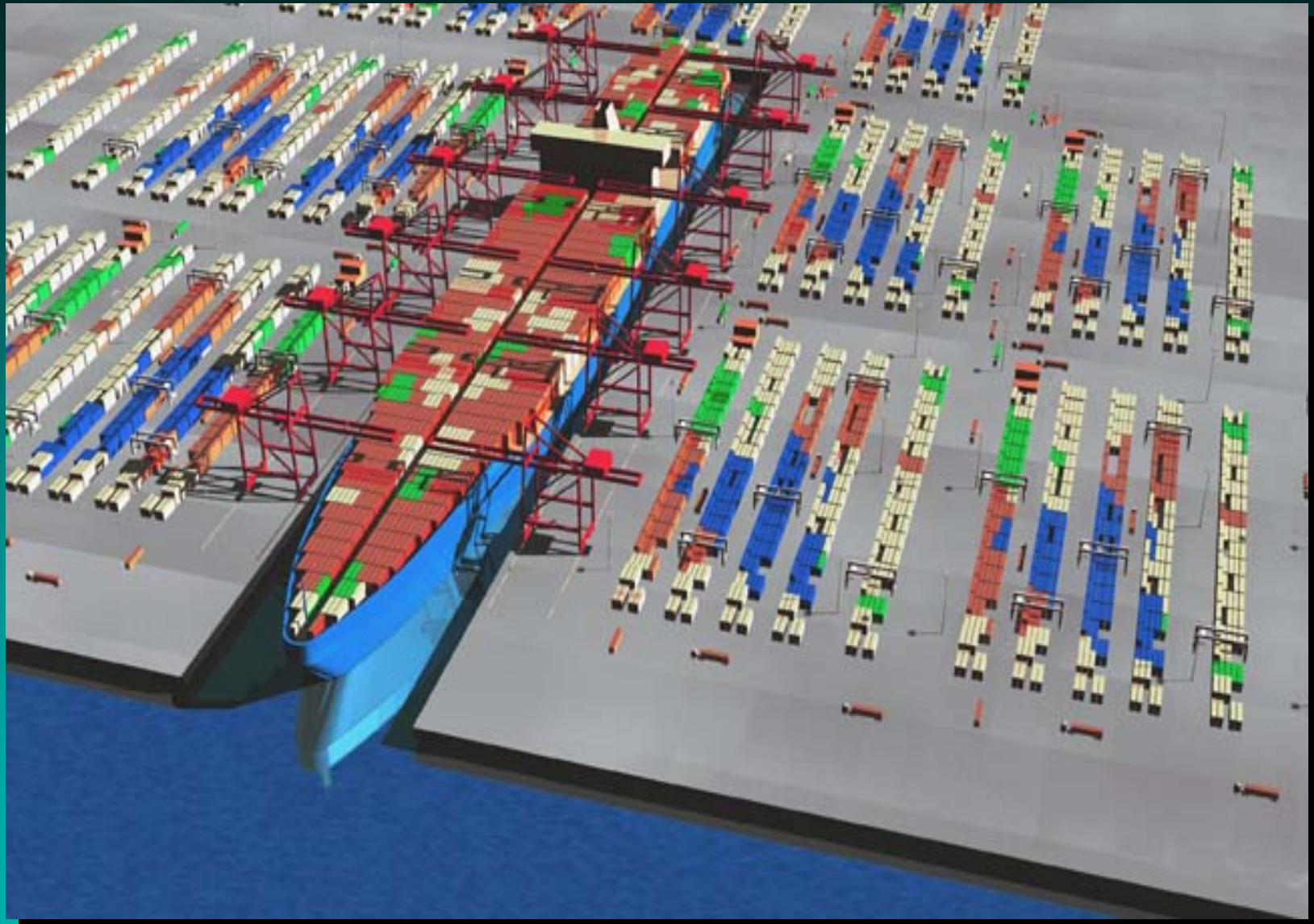
LOA. = 400 m (1,312 ft.)

Draft = 14 m (46 ft.)

BEAM = 69 m (226 ft.)



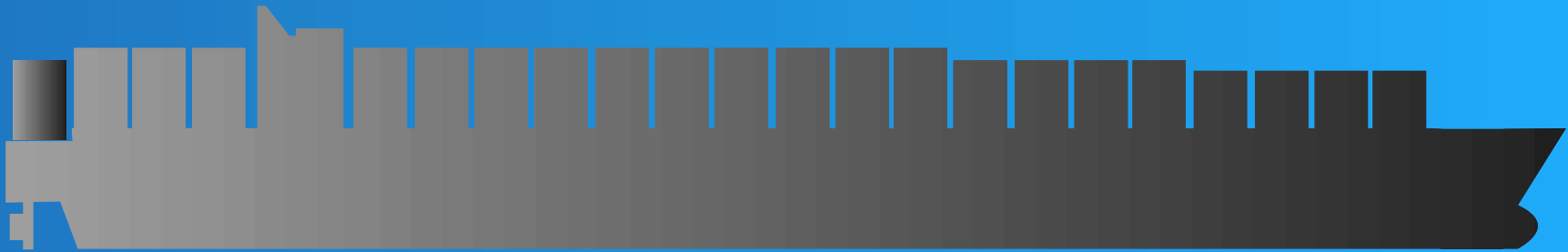
# Container Ship-in-a-Slip Concept



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# The 18,000 TEU Malaccamax Reported Predictions/Benefits



- By 2010 on Asia-Europe Trade Route
- **30% Cheaper** than 4800 TEU Panamax Vessel, primarily due to “Economies of Scale”
- **US\$40/TEU Savings**

Source: Dynamar Consultancy, Rotterdam

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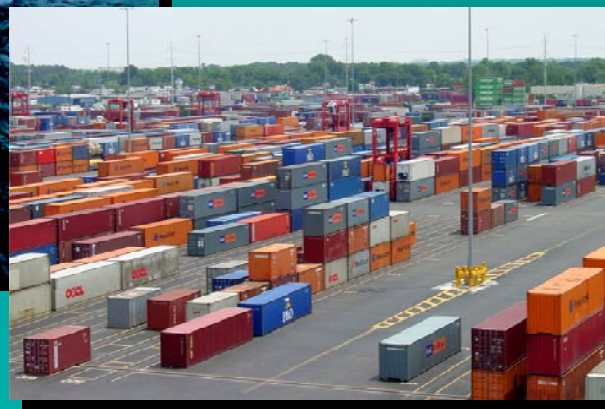
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# USDOD Agile Port Information Technology (IT) Developments

# ***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.***



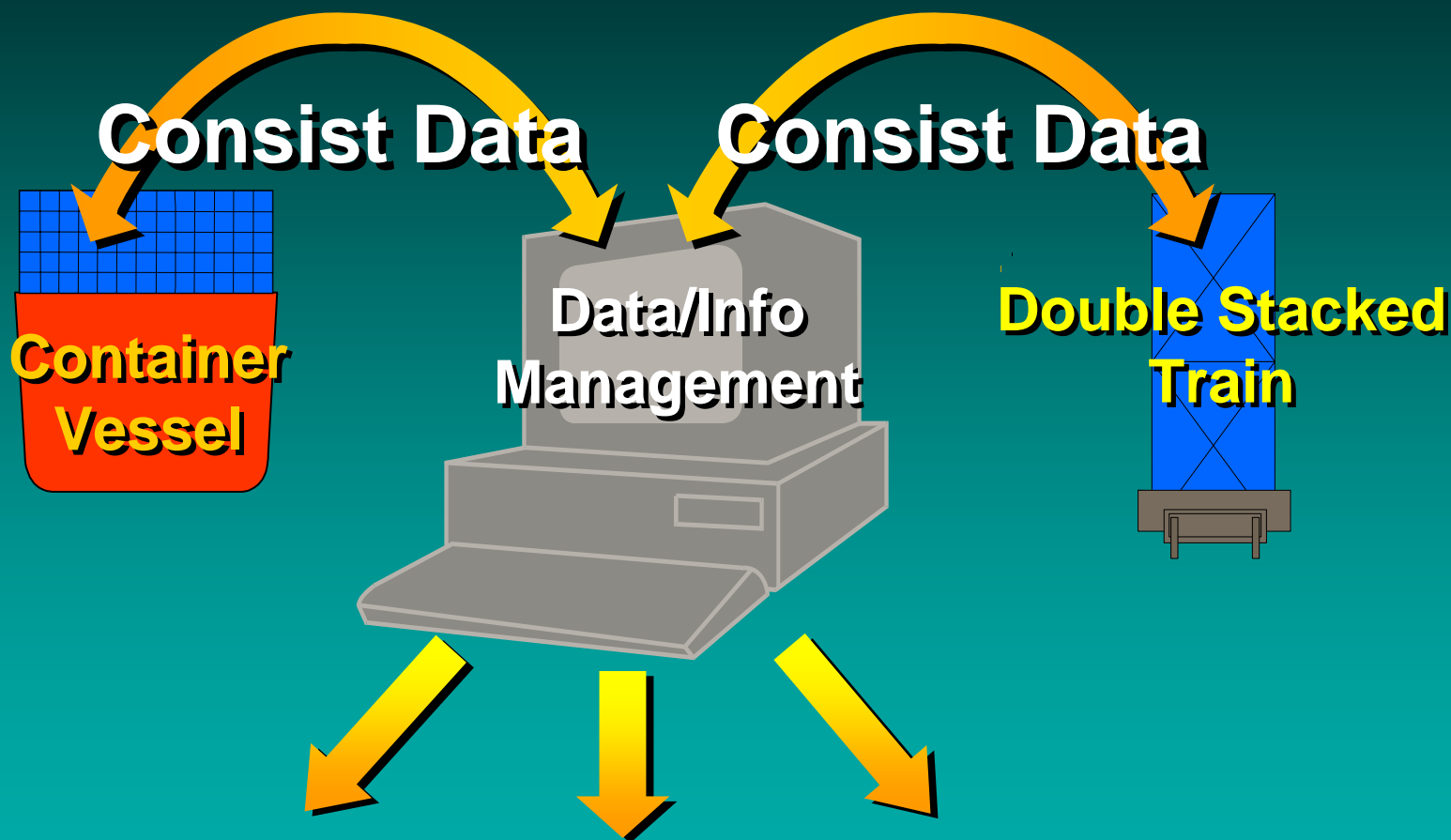


# Agile Port Concepts

*Integrating Vessel and Rail  
Information Systems*



# IT Data/Information Integration



## Major Terminal & Systems Benefits

# USDOD Agile Port Technology Full Scale IT Demonstration Project



**Hyundai Terminal  
Washington United Terminals  
Port of Tacoma  
July 2003**

**Potential: Doubling the  
Terminal Capacity without  
Building Anything**



## ***46th Annual Research & Policy Forum***

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# ***The Outlook for the Suez Canal Route – Asian Tsunami***

## **Thank You**