A Constantly Changing World: What Does It Portend For Your Port?

John Vickerman
A Thank you to: Kurt Nagle
For allowing me To trade places on the Agenda
400 Years Ago
A Voyage of Three Vessels
Created the First Permanent English Port in Jamestown, VA

13 Years Before the Pilgrims Landed at Plymouth, Three Brigantine Vessels of the Virginia Company of London Landed in Jamestown, Virginia
Godspeed Brigantine, Circa 1607
Deadweight Tonnage: 40 tons
LOA: 88 feet; Crew: 13
Vessel Cargo Handling Circa 1950
Cargo Handling Circa 2005
What We Know Today... Will Be Surely Be Different Tomorrow!
To Be Competitive Today...

Marine/Intermodal Terminals Must Reduce Throughput Cost & Increase Cargo Velocity Securely and as Stewards of the Environment
Global Trade: Current Course & Direction?

Financial Global Meltdown, Cargo Demands, System Capacity, Funding, Port Productivity & Environmental Concerns
The Sea State of Trade Is Dramatically Changing...

The More It Changes...

The More It stays The Same
Near Term Growing Global Financial Meltdown

• Retail Demand Down – Carrier Pullbacks
• Collapsing Box Ship Orders
• World Growth Rates At WW II Level
• US Growth Rate In Recession
Long Term Global Trends & Conditions:

- Increasing Asian & Brazilian Trade Growth
- Ships Getting Bigger
- US Port, Rail and Road Congestion Continues
- Panama Canal Transhipment Boom
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.
Poll of the Top 1000 “Blue Chip” Multinational Shipper Priorities

- 43% Schedule Reliability & Consistency
- 38% Competitive Freight Rate
- 12% Transit Time & Speed
Today’s Logistics Truth:

“The customer wants more and is willing to pay less for it.”
Relationship Between US Trade and US Prosperity
(US Trade & Gross Domestic Product - $ Billions)

Source: USDOT Based on USDOC Data
Total US Logistics Costs as a % of GDP
(Percentage of US Gross Domestic Product)

International Maritime Cargo Demand Trends
A Turning Point in Global Economic History
The Advanced Economies Will Decline From 2/3 share of the Global Economy to a 1/3 Global Share. The Global Economy Will See Higher Average Pace of Growth in the Future…

Source: IMF - Forecast by TD Economics, December 2009
Advancing vs. Developing Countries
Global Growth Rates

The “Great Recession” Appears to Have Ended at the End of 2009. Initial Indicators Point to a World Economy Expected to Expand by 3.8% in 2010/2011

Source: IMF - Forecast by TD Economics, December 2009
World Bank’s 2010 “Global Economic Prospects”

World Output will Increase 33% in 10 years

- $30 Trillion in 2000
- $40 Trillion in 2010
World Container Forecast to 2024 in TEUs
(186% Increase in Next 20 Years)

2007: 96 Million
2024: 243 Million

Growth Rate (CAGR)
1994 to 2004: 8.3%

Source: HIS Global Insight
In the past five years, container trade in North America has increased by 6.85% CAGR reaching 48 million TEU in 2005.

North American container trade is predicted to soar by 50 percent to 72 million TEUs by 2015.

Source: Containerization International Statistics
Primary Global Containerized Ocean Freight Flows
(Billions of Laden FEU-Kilometers, 497 Flows)

Source: American Shipper July 2009 – MergeGlobal SeaFlow Model

One FEU-Kilometer = a 40 foot container transported one Kilometer
Shorter – Faster Arctic Ocean Route

2+ Months A Year Using Convoys

½ the Time & Distance
Global Financial & Trade Growth Recovery: A 2011-2012 Reversal?
The World Economy Has Suffered the Worst Recession of the Postwar Era

(Percent Change)

Source: IHS Global Insight
Economic Performance Varies by Region
(Real GDP, Percent Change)

Source: IHS Global Insight
World Container Growth Forecast
(Including full & Empty Containers, Port to Port, and Transshipment Volume in Millions of TEUs)

Drewry estimates worldwide container volume will surpass the 2008 level in 2012.

Source: Drewry Shipping Consultants
San Pedro Bay (POLA +POLB)
Container Volume Forecast

344% Increase by 2035

March 2010 Update:
POLA's imports grew 29.8% - exports went up 32.6% year on year.
POLB reported a 39.5% export increase and 32.8% rise in imports.

Annual Growth Rate in Recovery Averages Around Five Percent

Source: HIS Global Insight 2010 Forecast
Total US Trade - 2011 Forecast

Annual Rate of Change

Source: US Census, Scotiabank, TD Economics, RBC, E-economics
Congressional Budget Office (CBO) Forecast
Percent Change in Real GDP – June 2009

Source: Rand Corp. Fast Forward –
Key Issues in Modernizing the US Freight Transportation Systems

Panama Canal Opening
2009 - 2010 Container Rate Benchmark
(Average FEU Spot Rate in US Dollars)

$986 per FEU
May 2009

$2,189 per FEU
May 2010

Source: Drewry Shipping Consultants [Journal of Commerce May 24, 2010]
After Years of Dominating North American Maritime Trades, US West Ports are Threatened…

Converging Economic Forces Now Favor Growth of the Gulf and East Coast Ports for Asian Trade via the Midwest!
Last Year... Moody’s Revised Its Outlook for the US Port Industry From Stable to NEGATIVE!

Moody’s noted that for "ports serving significant levels of discretionary cargo to Midwest Markets, competition has few geographic barriers as intermodal flexibility, rail rates, and volatile bunker fuel prices play into the relative cost structure.”
Essence of World Economic Crisis

Empty Idle Ships in Singapore Harbor

January 9, 2009 AIS Ship Position Plot

Source: January 9, 2009 Spore AIS Ship Position
Essence of World Economic Crisis
Empty Idle Ships in Singapore Harbor
10% of the World Fleet

A 10.4 Million TEU Container Fleet
...At Anchor!

Source: February 20, 2009 Aerial Photo
The world's largest manufacturer of maritime containers, has already exceeded its total production for 2009 in only 3 months.

CMIC reports that 102,900TEU have been produced in the January thru March 2010 period compared with just 60,400TEU for the whole of 2009.

Source: April 2010 JOC
The Growing Asian Import Trade Challenge
Global Market Economic Shifts (Country GDP Rank)

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Dramatic Market Shifts are Underway that will Affect the Very Core of US Trade and Transportation

Source: HIS Global Insight
China-US: Twin Engines of the World

Population:
US: 298 million
China: 1,307 million
(1/5 World)

The number of Chinese children in elementary school is equivalent to the total US population.
Mainland China Container Port Growth
(Compound Annual Growth Rates)

5 Yr Average = 27.2%
Increased Volume
China Breaks Container Traffic Record

Chinese Ports hit an All-Time Monthly High of 12.44 Million TEUs in May 2010 - Foreign Trade Surged by nearly 50% from a year ago. Six of the Top 10 Chinese Ports Booked Record Volumes.

Source: European Liner Affairs Association - ELAA 2009 Price Index – JOC June 2010
Shanghai International Shipping Center
Yangshan Deep Port - 20 Mile Bridge Access
Southeast Asian Manufacturing Centroid Shift

Current Inbound U.S. Cargo Flow

Expanded Asian Panama Canal 2014 Flows

Eastbound: All Water Flow
Eastbound: US Intermodal Rail Flow
With Manufacturing Centroid Shifts Into Vietnam and/or India, The North American East Coast will See Dramatically More Westbound Suez Traffic
2010 Westbound Suez Canal Container Vessel Traffic
Maritime Vessel Technology Trends
The Future of Container Ship Carriers?

Shoals of Red Ink: $19 Billion in Losses in 2009
In 2009 the Ocean Carriers Lost $10 Billion Every Six Months

Jan-Sept 2009 vs 2008

Note: MSC’s US Import Volume was Flat Through the First Nine Months of 2009

Source: JOC Top 40 Container Lines, PIERS Global Intelligence Solutions
In 1955 Malcolm McLean, sold McLean Trucking, and secured a bank loan of US$42 million to build the world's first container ship.
World Container Ship Evolution

1st Generation (Pre-1960 - 1970)
- Ideal X

- Full Cellular

3rd Generation (1985)
- Panamax

- Post Panamax

5th Generation (2000 - 2006)
- Super Post Panamax

6th Generation (2006-2012)
- Ultra Post Panamax

TEU Capacity
- 1,700 TEU
- 2,305 TEU
- 3,220 TEU
- 4,848 TEU
- 8,600 TEU
- 12,000+ TEU
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
A.P. Moller-Maersk L Class M/S Emma Maersk
(14,000 TEU Vessel - 22 Containers Wide)

Maersk Line's E-class Container Vessel: *Ebba Maersk*, set a world record for the number of slots when it carried 15,100 TEU

Length: 1,302 ft, Width: 207 ft, Net Cargo: 123,200 tons

**Quay Cranes:** 10, Engine: 14 in-line cylinders diesel engine (110,000 BHP)

Cruise Speed: 31 mi/h, Full Crew: 13, Construction cost - US $145 M+

MSC Daniela 15,000+ TEUs
World’s Largest Container Ship
Built by Samsung Shipbuilding & Heavy industries Co. Ltd in South Korea and delivered to Mediterranean Shipping Company in December 2009. She is the largest container ship ever built.
A Container Ship Capable of Fitting 22,000 TEUs - Designed by South Korea’s STX Shipbuilding Co

Both one and two-propeller types with the ability to reach 24 to 26 knots. 460m in length, 60m wide and 30m high. They are capable of saving more than 40% on the unit transportation cost.
2015 Panama Canal Expansion Impacts
What Does the Competitive Environment Look Like FIVE Years From Now?
Current Panama Canal Constraints

Madison Maersk (3,928 TEUs)
(Current Max Panamax Vessel = 4,800 TEUs)
Panama Canal Transit Reservation Demand

Third Lane Canal Expansion

$5.25 Billion

2007: 4,800 TEU

2014-2015: 12,600 TEU

Source: ACP Expansion Proposal
US Southeast & US Gulf Coast Ports can directly benefit from the Panama Canal’s new Lane Opening 2014/15
Benefits of the New Panama Canal
New Lane Opening December 2014/15

• **A Doubling of Capacity & Change in Shipping Patterns for Asian Cargo to North America**
• By 2020, 64 % of the PCA will be containerships
• An Immediate Savings to Exporters of 30 %
• Movement of discretionary cargoes from west coast ports including Los Angeles and Seattle, and the Class I railways
• It costs as much as $1,000 more per cargo container to use trains than ships – all water
The New Post Panamax Boom Favors All - Water Service Routes with the Following Vessel Characteristics:

- Vessel Capacity: **9,000 to 10,000 TEUs**
- Vessel Draft: 46 to 50 feet (tropical fresh water)
- Required Port Channel Depths: **50 to 54 feet**
- LOA: 1,000 to 1,200 feet
- Beam: 140 to 160 feet
The Container Ship Colombo Express (8750 TEU)
Southeast Louisiana Asian Routing Comparison – Shanghai to New Orleans

It costs as much as $1,000 more per cargo container to use trains than ships for Land Bridge Traffic.

Source: Parsons Brinkerhoff - Napoleon Avenue Container terminal Development
Canada’s Intermodal Land Bridge: Emerging Projects
Canada’s Strategic Global Location
*(Shortest Trade Routes to Asia and Europe)*

Trans-Pacific Route

Trans-Atlantic (EU-NAFTA)

North South (NAFTA)
Canada’s National Integrated Freight Gateways

Where is the US National Freight Policy?

- Port of Vancouver & Port of Prince Rupert
- Montreal, Halifax & Strait of Canso Melford Terminal
- Pacific Gateway
- System Integrated
- Atlantic Gateway
Canada’s Intermodal Rail Network
The Emerging CN Transcontinental Land Bridge Focus
The Emerging CN Transcontinental Land Bridge Focus
New Terminals Are Being Built on All Three Coasts to Support Asian & South American Trade Linkages

Port of Prince Rupert

CN

LIGTT
Melford Container Port & Intermodal Logistics Park
First Phase:

- 315 Acre Terminal
- Intermodal Rail Terminal
- 1500 Acre Logistic Park

2 Berths

1.5 M TEU Capacity

250 Acre Logistic Park

$420 million USD
Closest East Coast Port To Europe and the Suez:

- **29 Hour Sailing Advantage** on New York
- **36 Hour Sailing Advantage** on Norfolk
Louisiana International Deep Water Gulf Transfer Terminal: Deep Water Port Commission
Louisiana International Deep Water Gulf Transfer Terminal: “Gateway to the Americas”
The Vision for the LIGTT Concept:
Integrated Hub & Spoke Distribution System
The Vision for the LIGTT Concept:
An Integrated Hub & Spoke Distribution System

Using the Mississippi River as a Strategic Highway:
Change US Midwest Supply Chain Distribution Logistics Networks…

Achieving Better Reliability, Lower Cost, and Greater Market Share
Inland Ports: Defined – A Convergence of Logistic Trends
Inland Ports Defined
A Convergence of Logistics Trends

- Short Sea Shipping Technology
- Intermodal Rail
- Logistics
- Automation
- Distribution Center
Emerging US Green Inland Port Technologies

CSX High Density Intermodal Crane Configuration

NS High Density Nested Crane Configuration
Automated Intermodal Rail Terminal Concepts - Europe

Automatic Stacking Cranes (ASC)

Automatic Guided Vehicles (AGV)
The Inland Port: “The Concept of an Inland Port System as a Regional Competitive Advantage” Leveraging Supply Chains
The Inland Port:

“With Integrated JIT Delivery: The Inland Port Can Greatly Increase the Freight System Capacity”
Inland Ports: Europe’s Current Strategy Applications
Rotterdam World Gateway - EUROGATE Builds an Inland Container Port Network

ECT Main Terminal

Maasvlakte 2 Plan

European Shortsea Network

Short Sea Container Inland Port
The Dutch Transport Ministry and Port of Rotterdam Authority (PoRA) signed a Founding Agreement on June 29, 2009

The Town of Alblasserdam, East of Rotterdam will get a Container Transferium (CT), a Inland Port Container Transfer Facility to be operated by Binnenlandse Container Terminals Nederland (BCTN).

“This is the first time the Port Authority has promoted such a partnership. PoRA to promote transport by rail and water and to shift containers from road to the other modes of transport in order to reduce the number of trucks in the road.”
Dutch Transport Ministry Inland Port Container Transferium (CT) Strategy

(Noord River, Town of Alblasserdaam
€38 million, open by end-2012)
Dutch Transport Ministry Inland Port Container Transferium (CT) Strategy

(Noord River, Town of Alblasserdaam €38 million, open by end-2012)
North American Inland Ports: Connected to Emerging Trade Corridors
Emerging New Trade Corridors

Source: NASCO
Current Largest US Distribution Markets

Source: HIS Global Insight
Wal-Mart’s New 3.4 million SF (78 acres under roof) Import Distribution Center

The Cost of This Import Distribution Center was Paid for by the Savings in Truck Drayage Between the Warehouse & the Intermodal Rail Terminal
CenterPoint – KCS Intermodal Center
Inland Port Solution

- 1,348 Acre Logistics Park
- 970 Acre Industrial Park
- 7.4 M SF Building Area
CenterPoint – KCS Intermodal Center
Kansas City, MO
North American Emerging Trade & Transportation Trends in Port Strategic Planning

Thank You