

Gateway & Corridor Performance: *What is Important?*



*Dr. Michael W. Tretheway**
Robert Andriulaitis
Ian Kincaid
InterVISTAS Consulting Inc.

*strategic
transportation
& tourism
solutions*



**UBC International Conference
on Gateways and Corridors
3 May 2007**

* Dr. Tretheway is also Adjunct Professor, UBC Sauder School of Business

InterVISTAS Consulting

- **Vancouver based**
- **Transportation & tourism consulting practice**
- **Offices**
 - Vancouver (HQ), Winnipeg, Ottawa, Montreal
 - Washington DC, Chicago
 - Puerto Rico
 - London UK
- **65 team members**
- **Leading practice in**
 - Gateway Strategies
 - Border & Security Facilitation
 - Economic Analysis



Transportation & Trade

InterVISTAS

*strategic
transportation
& tourism
solutions*

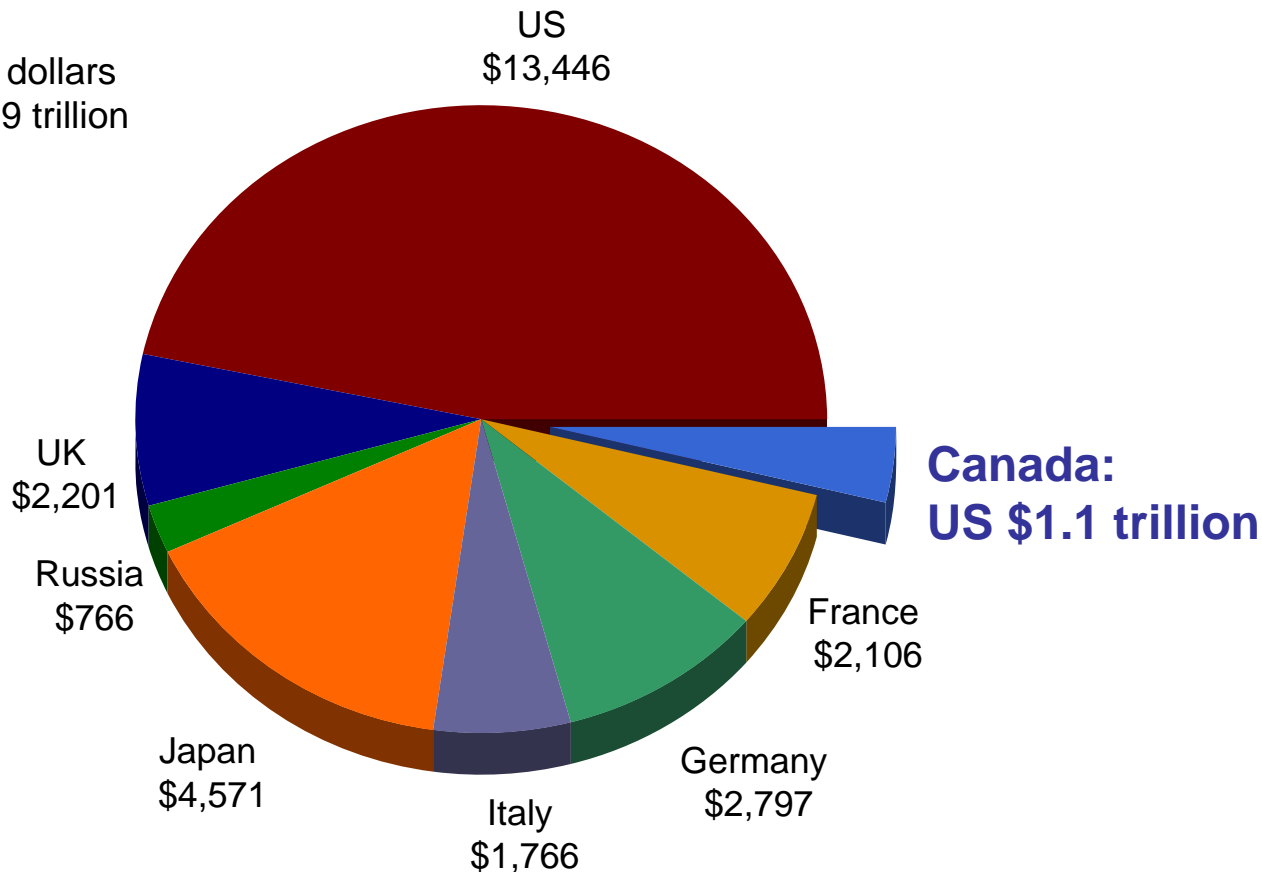


Transportation and Trade

Canada is a small, open economy...

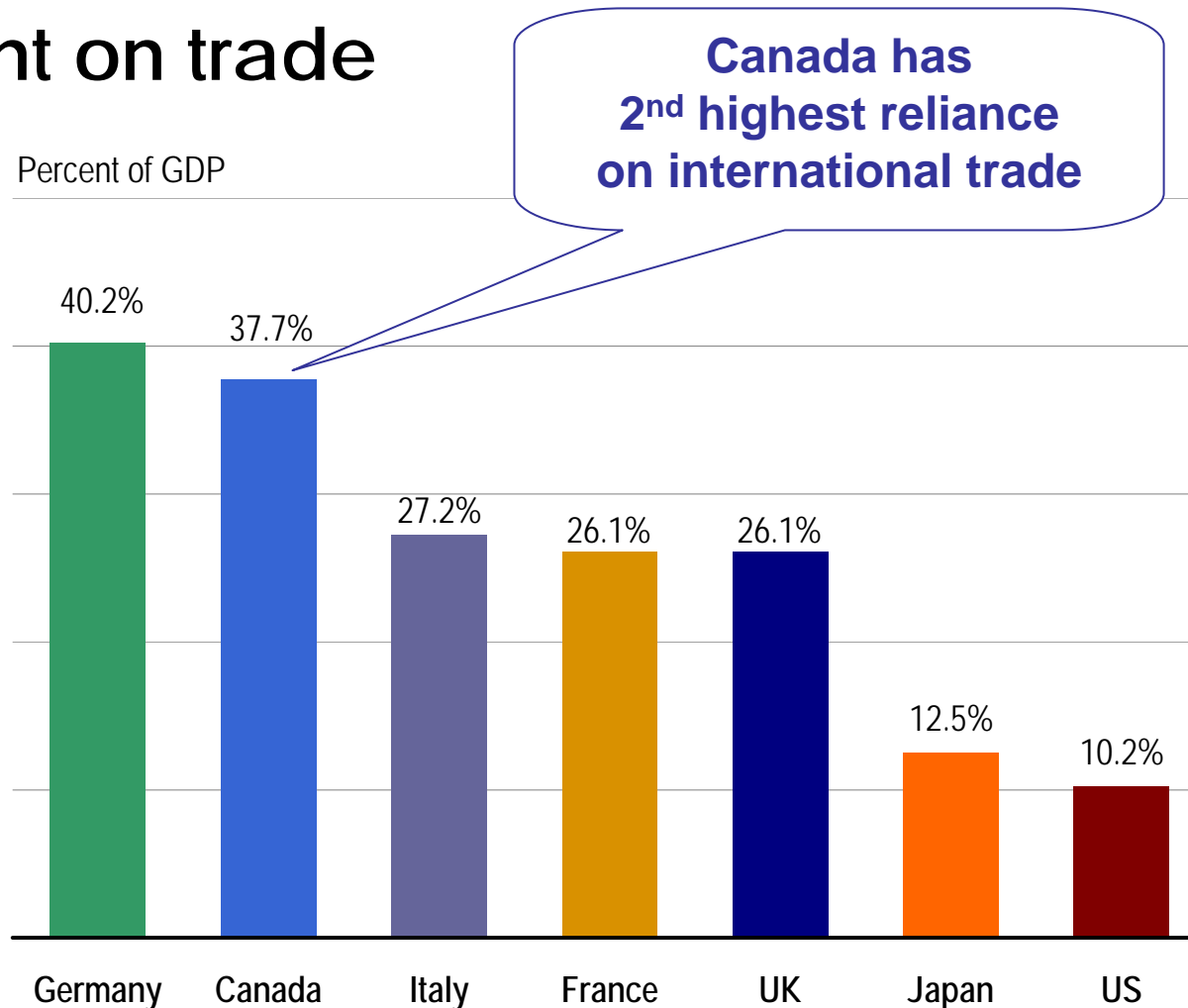
Gross National Product: G8 Nations

Billions of US dollars
Total G8 = \$29 trillion

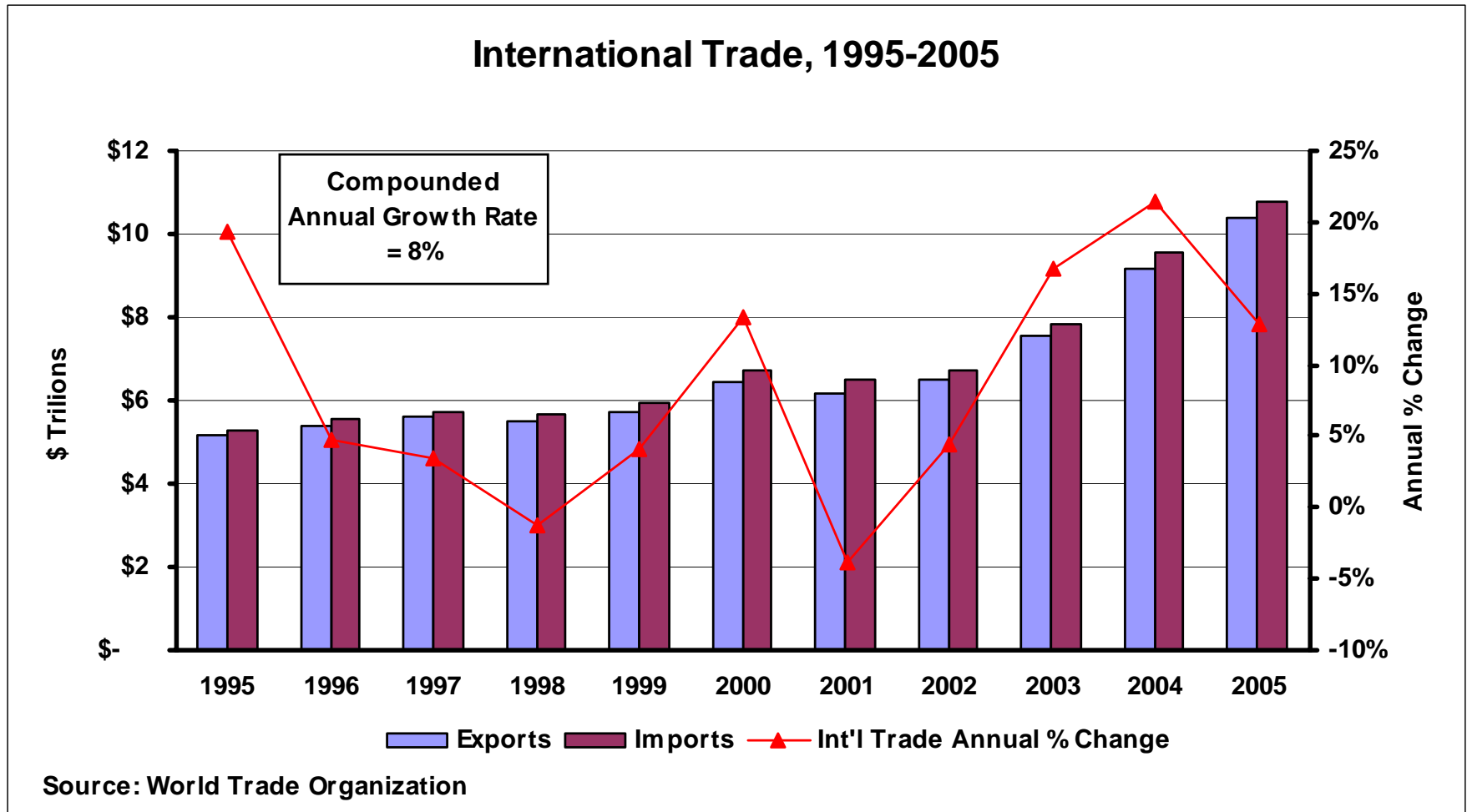


Transportation and Trade

...reliant on trade

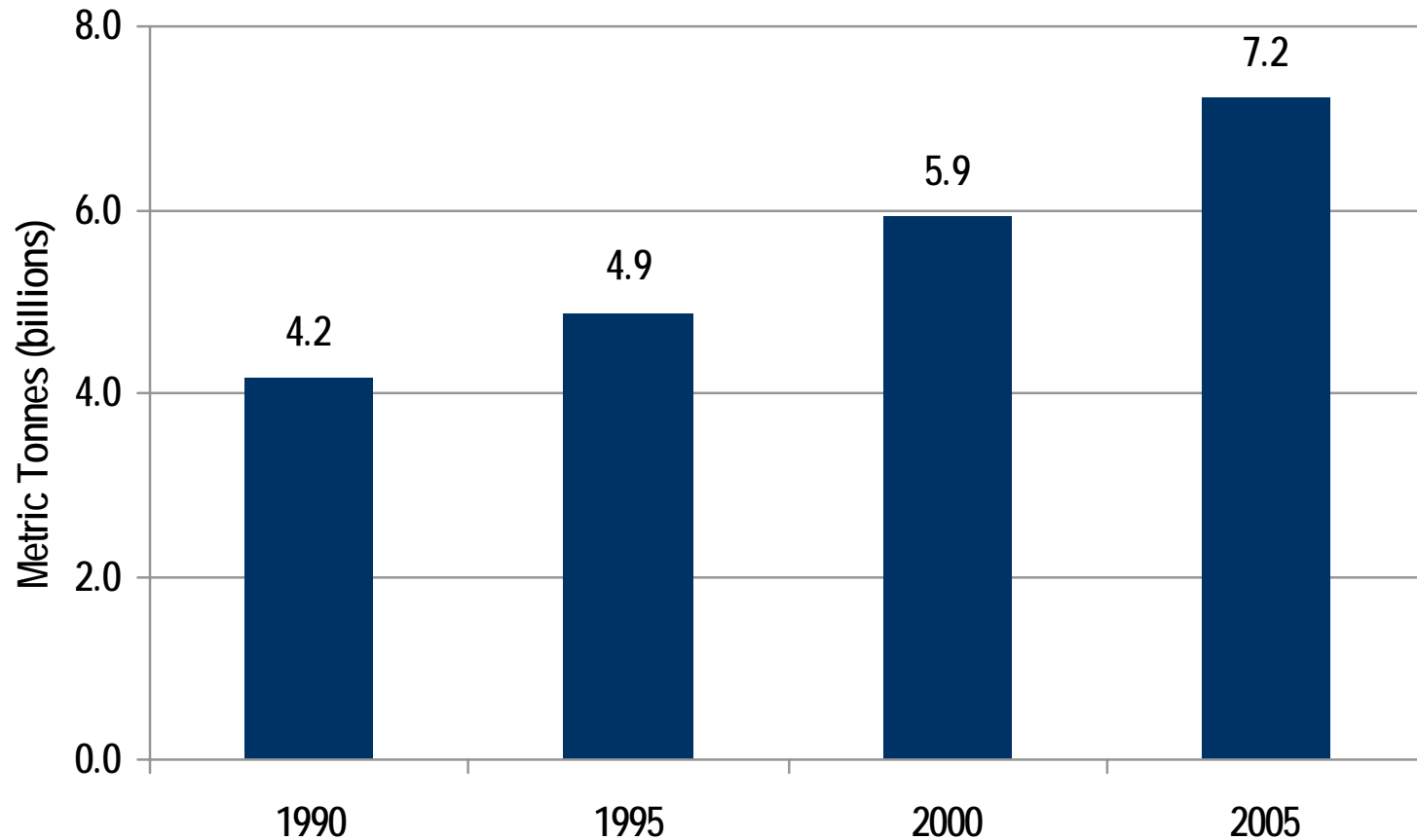


International Trade: 8% growth per annum



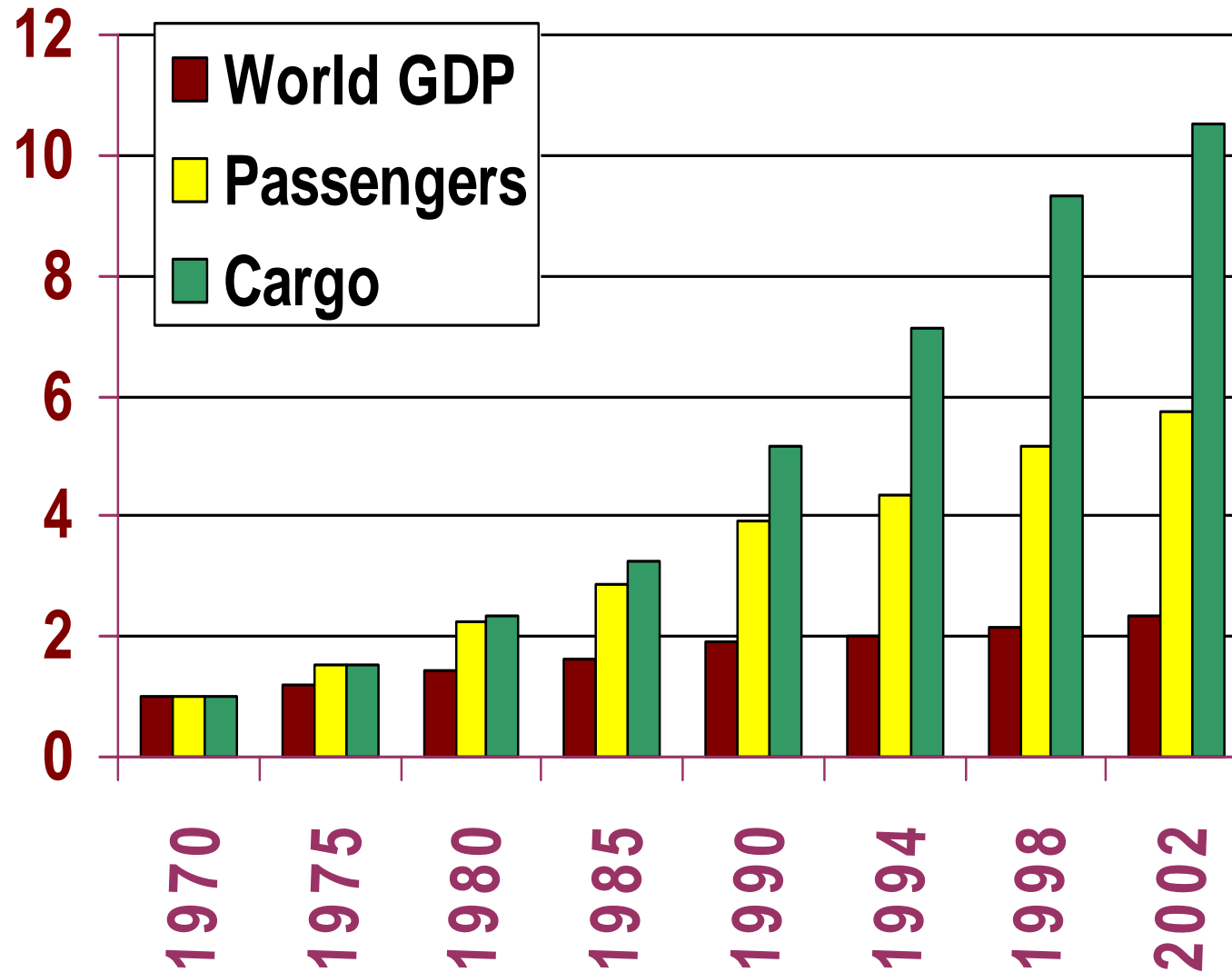
Transportation and Trade

World Maritime Trade



Source: Clarkson Research

Strong Growth in Air Cargo



Source: ICAO, IATA, OECD

Transportation Trends

InterVISTAS

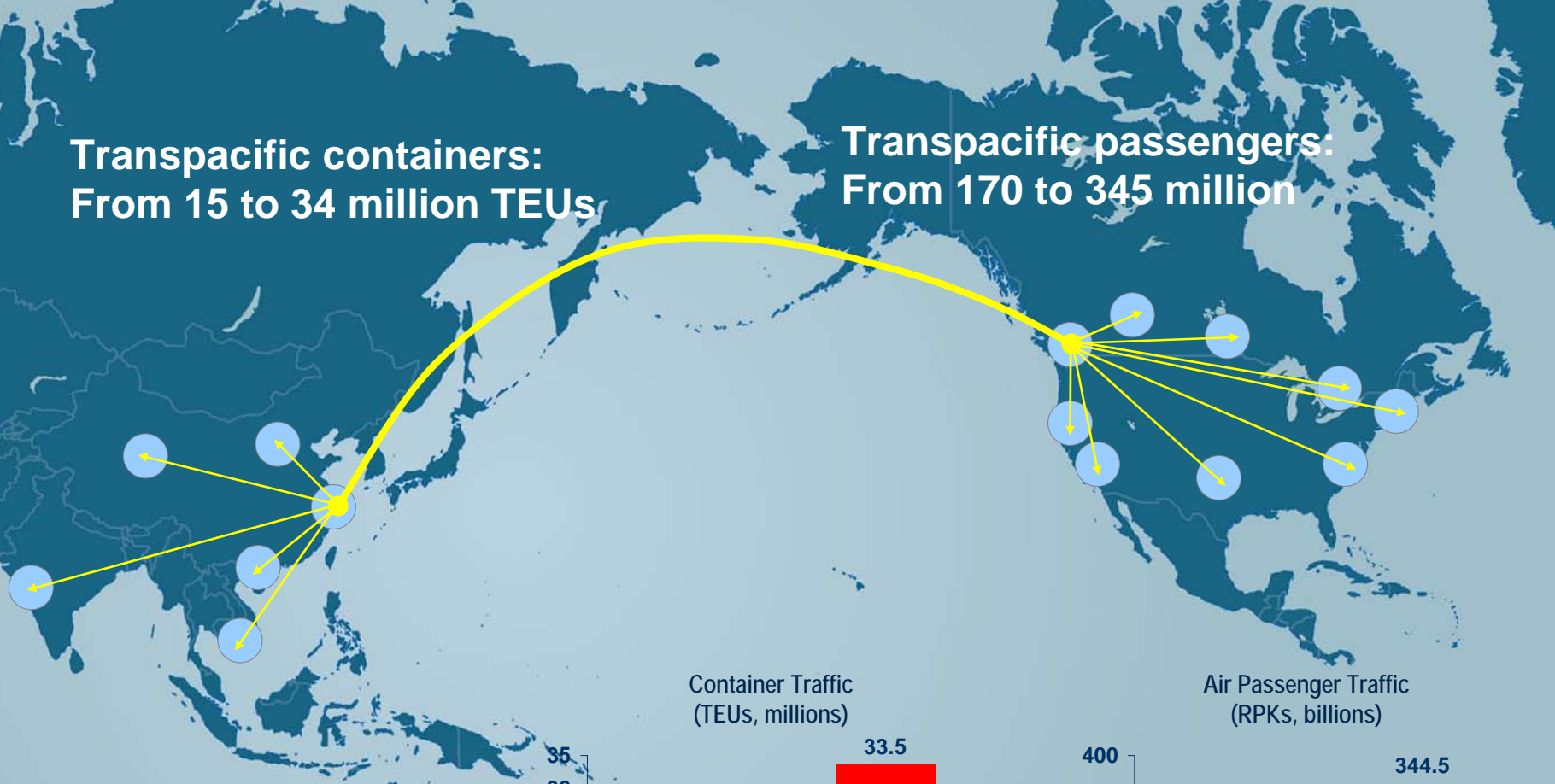
*strategic
transportation
& tourism
solutions*



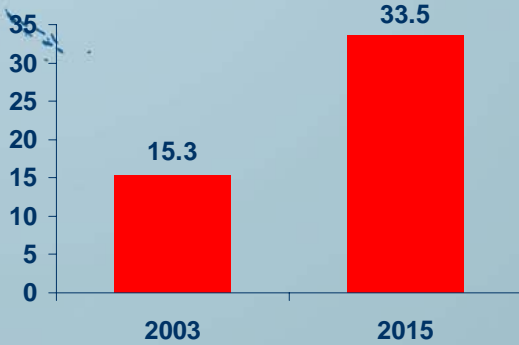
Trends: *Traffic between Asia - North America*

**Transpacific containers:
From 15 to 34 million TEUs**

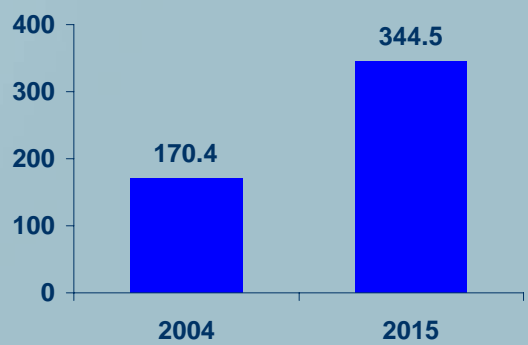
**Transpacific passengers:
From 170 to 345 million**



Container Traffic
(TEUs, millions)



Air Passenger Traffic
(RPKs, billions)



Transportation Trends

■ Explosive Growth in China, India:

- Increasing Demand for Raw Materials (shipped in Bulk, Break Bulk)
- Chinese Consumer Goods (shipped in Containers)
- Empty Containers Back-Hauled to Asia
- Empty bulk to North America



■ Complex, Global Supply Chains

■ Capacity Constraints and Bottle-Necks

■ Competition Amongst Ports, Airports & Gateways



Competition: *North American Ports*

Vancouver largest port by tonnes
closing on Oakland for #4 container port

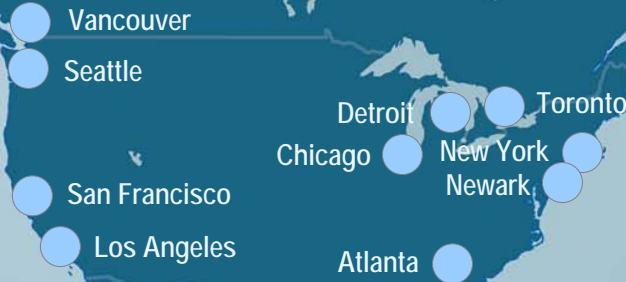


Port Container Traffic
2004

City	TEUs (millions)	% Share
Los Angeles	13.1	33.8%
New York	4.5	11.5%
Seattle	3.6	9.2%
Oakland	2.1	5.3%
Vancouver	2.0	5.1%
Charleston	1.9	4.8%
Norfolk	1.8	4.7%
Miami	1.7	4.3%
Savannah	1.7	4.3%
Houston	1.4	3.7%
Other	5.1	13.3%
Total	38.8	100.0%

Competition: *North American Airports*

Vancouver: #3 gateway to Asia
Closest point in North America



Seat Capacity to/from Asia
Summer 2005

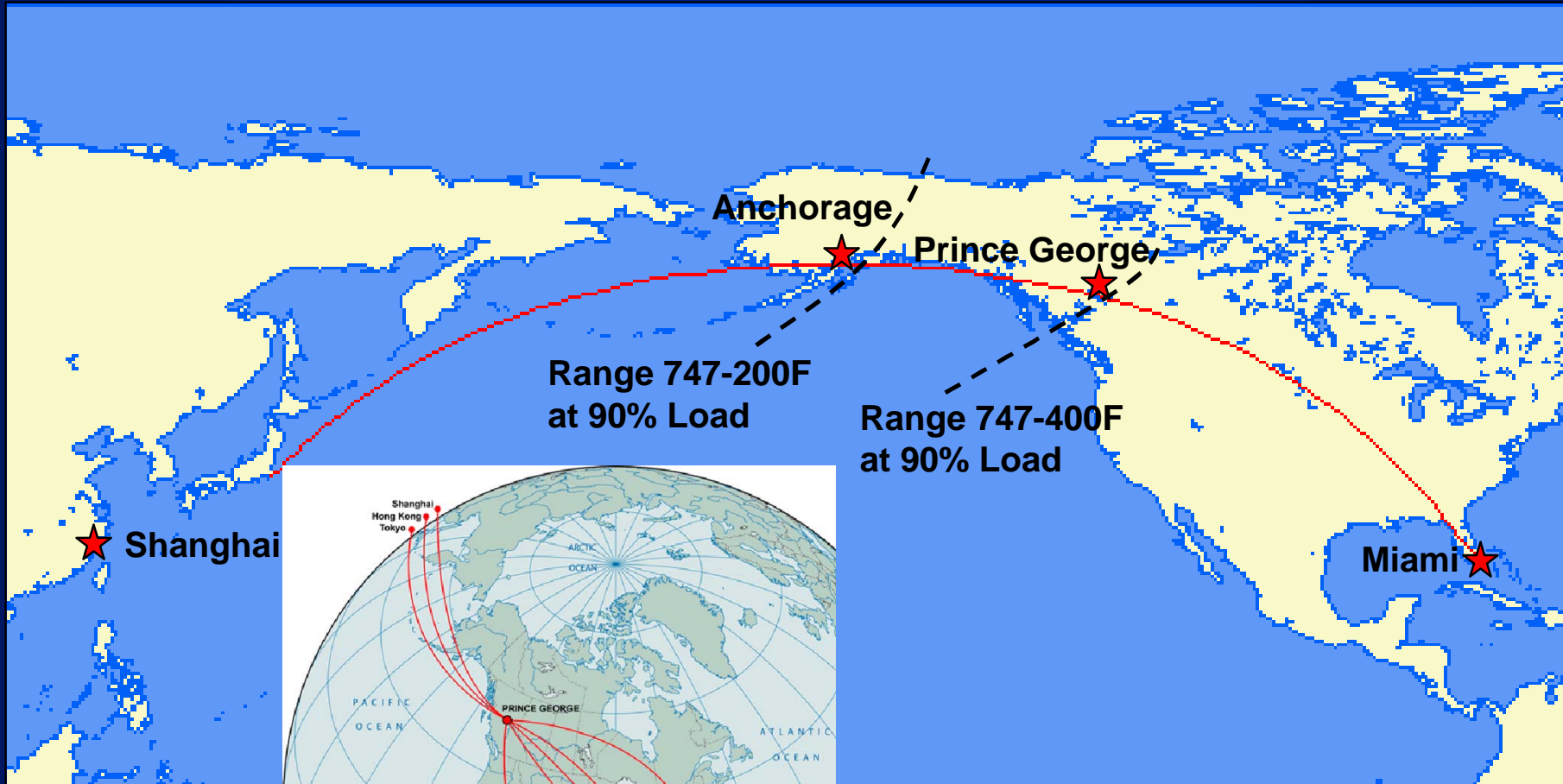
City	Monthly Seats (thousands)	% Share
Los Angeles	638.0	27.6%
San Francisco	417.1	18.1%
Vancouver	302.6	13.1%
Chicago	221.0	9.6%
New York	220.8	9.6%
Detroit	99.9	4.3%
Seattle	79.7	3.5%
Toronto	73.0	3.2%
Newark	61.0	2.6%
Atlanta	44.1	1.9%
Other	152.4	6.6%
Total	2,309.7	100.0%



Vancouver: 2 advantages

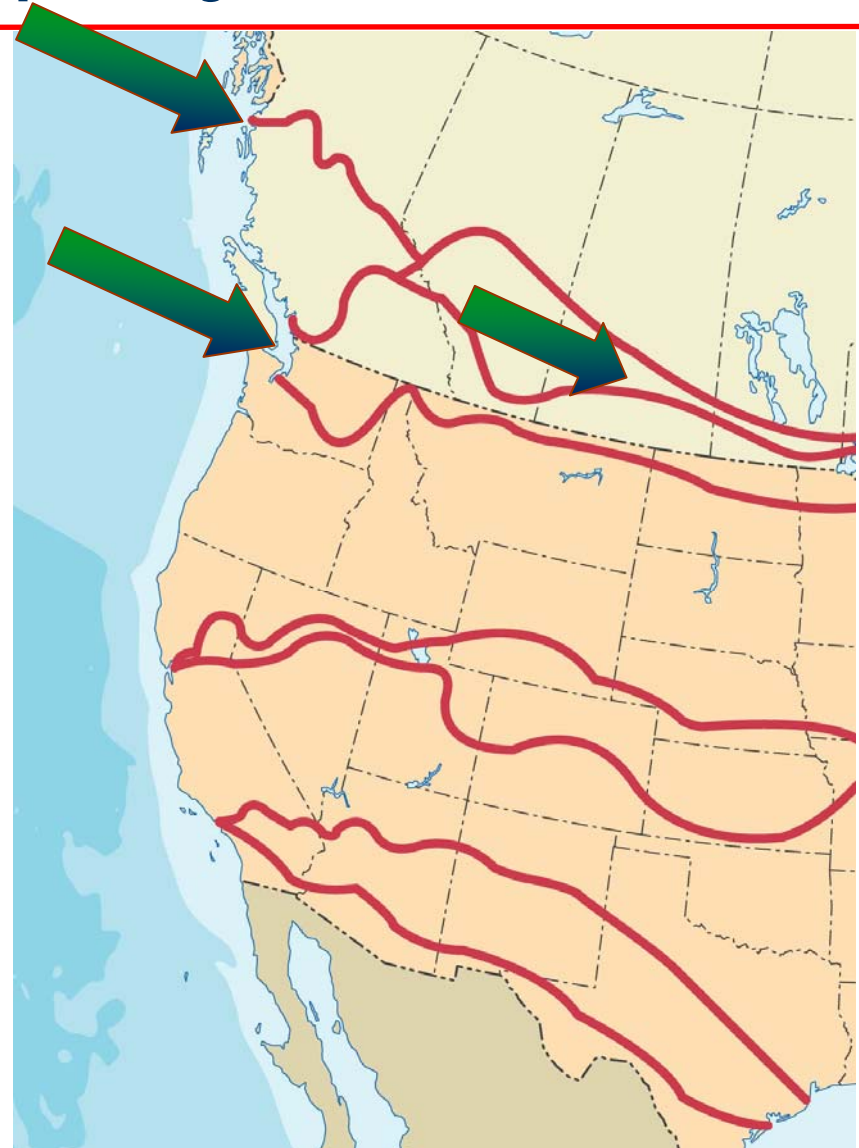
- closest point to Asia
- Also closer to many NAFTA cities

Emerging Prince George Opportunity



Container growth is straining port and rail capacity

- There are only 7 rail crossings of the Rockies
 - 5 in the U.S. – all at capacity
 - 2 in Canada
- Canada's northern corridor has significant, immediate capacity



CN: Prince Rupert connects to the U.S. Heartland via Chicago



Gateways & Corridors

InterVISTAS

*strategic
transportation
& tourism
solutions*



Definitions: Gateway

Nationally or regionally significant point of entry/exit (the gateway)

and related transportation network (the corridor)

for international trade and travel



Definitions: Gateway

Functions of a Gateway:

■ Distribution of goods

- Transportation facilities/networks, warehouses, freight forwarding/customs brokers services, inspection services, etc.

■ Movement of people

- Air, ground and sea transportation facilities and services, international transit connectivity, inspection services, etc.

■ Delivery of services

- Telecommunications, business services, banking services, foreign language capabilities, immigration services, security services, etc.

Supply Chain Evolution: driving gateway

Intercontinental Gateway Volumes Growing

- **Displacement of local & national production with international production**
 - higher movement of final goods
- **Specialisation at production stages**
 - more goods moving between production sites, rather than all stages at one site
- **Concentration of volumes for economies of scale**
 - ship to gateway, then breakbulk to smaller shipments

The Supply Chain

The material and informational

interchanges in the logistical process

- stretching from acquisition of raw materials
- to delivery of finished products to the end user.

Supply Chains

- Supply chains hold inventory to deal with *uncertainty*
 - uncertainty in sales
 - uncertainty in re-supply
- Holding inventory is expensive
 - 25% or more of the value of the commodity, on an annual basis
- *Reliable* supply chains reduce inventory need
- Shorter supply chains
 - tend to be more reliable
 - also reduce in-transit inventory

Supply Chain Evolution

Today's Supply Chains are more complicated

- **Global sourcing of parts and subassemblies**
- **Parts and assemblies may cross oceans several times before final production and reaching the consumer**
- **Goods typically use more than one transport mode from origin to final destination**
 - Marine
 - Rail
 - Truck
 - Air

Gateway & Corridor Functions

- Provide critical intermodal linkages for the movement of goods and people
- Accommodate the movement of goods
- Serve as a storage and logistics depot for goods awaiting shipment
- Serve as a distribution centre for the provision of supplies and services
- Provide facilities and services for goods and passengers in transit at airports

What is Important?

InterVISTAS

*strategic
transportation
& tourism
solutions*



What is Important?

- Port/Airport **Infrastructure** & Capacity
- *Corridor* Capacity
- **Reliability** of the combined gateway & corridor
- **System design** for reducing life cycle cost
- **Information Systems** linking
 - origin/destination gateways
 - corridor operators

#1: Key Elements of Port Capacity

- Number and capacity of berths
- Channel depth
- Number and type of container cranes and other handling equipment
- Capacity of bulk handling equipment
- Container/bulk staging/storage space
- On-site rail intermodal yard existence/capacity
- Capacity of internal road//rail systems
- Number and capacity of truck gates
- Information systems
- Size and productivity of workforce

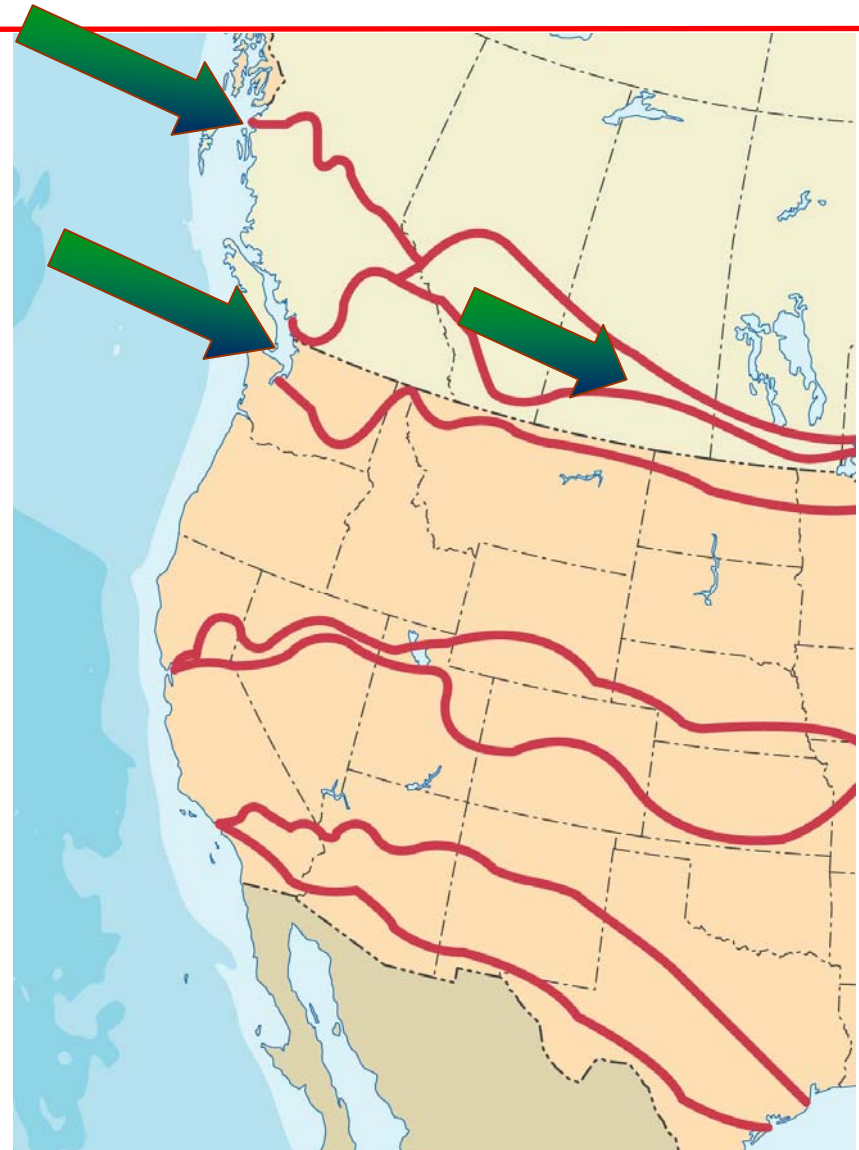
Key Elements of Airport Capacity

- Runway capacity
- Taxiway design and extent
- Apron space
- Terminal capacity
 - which includes elements such as check-in counters, security; customs and immigration, baggage handling systems; holding areas, and in-transit capabilities
- Air cargo terminals and productivity
- Air navigation systems

#2: Corridor Capacity

■ Gateways served by inadequate corridors will:

- suffer congestion
- incur higher costs
- not meet shipper expectations
- impose negative impacts on their urban settings
- result in higher GHG & other emissions



Corridor Capacity

- **Corridor capacity within the urban area**
 - Los Angeles Alameda Corridor Project:
Invest in grade separation and capacity increase to increase throughput, reduce gateway congestion, reduce urban congestion and emissions
- **Corridor capacity from gateway to market**
 - Ports, rail carriers, highway investment are by different entities with different priorities and access to capital
 - Investing in corridor may produce an externality benefit to gateway operator and shippers
 - hence need for public investment

Air Corridor Capacity

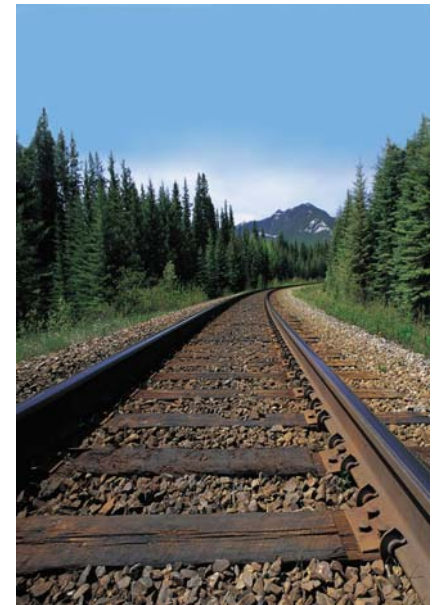
- **Scope, frequency and seat capacity of connecting services**
 - bi-directional: into the gateway, out of gateway
- **Key Factors**
 - Policy can constrain scope/frequency/capacity
 - Carrier economics
 - there is a constraining policy element to capacity
 - and an element of infrastructure fees/charges
 - and carrier costs
 - Carrier strategies
 - importance of carrier ownership liberalisation

#3: Reliability of Combined Gateway/Corridor

- **Supply Chain choices are strongly driven by system reliability**
- **Low reliability:**
 - greater risk of customer stock-out
 - greater need for safety stock inventory
 - undermine benefits of just-in-time production design
 - result in higher costs

Reliability of Combined Gateway/Corridor

- Reliability is assessed on performance of the whole supply chain
- Potential failure points:
 - port/airport service reliability
 - corridor reliability
 - interface between gateway/corridor operators
 - All three must be addressed !
- Important role of Gateway Councils
 - identify priority investments
 - improve co-ordination between the operators



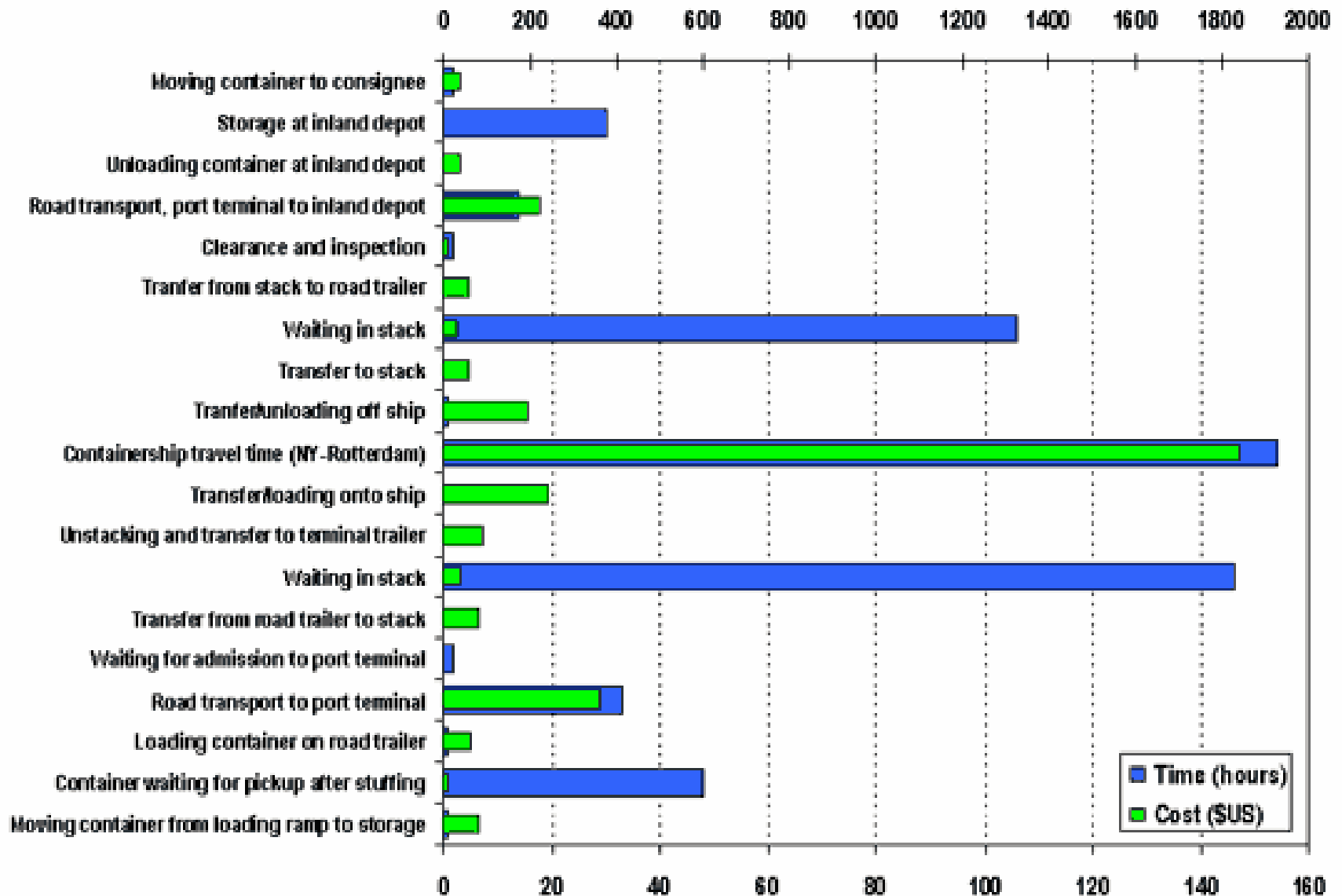
#4: System Design to Reduce Life Cycle Cost

- **Objective:** eliminate steps in the handling of goods through gateway and corridor
 - Will reduce cost per unit
 - Can save millions of dollars over life cycle of facility

- **Example:**
 - 20 containers per day,
\$20 cost reduction
 - Annual savings: \$300,000
Life Cycle: \$2.9 million



Cost & Time for Container Shipment



System Design to Reduce Life Cycle Cost

Airport Context:

- **Distribution Centres, FTZs, 3PL facilities, ...**
 - Typically do not have airside access
 - Air containers loaded
 - Trucked to cargo terminal
 - Transferred to airside tug train
- **Alternative:**

Design the cargo village to allow tug access for DCs, etc. to airside gates

 - eliminate the truck and reload step

Supply Chain Evolution: Inland Facilities

■ Ports are constrained

- limited land for expansion
- need for multiple rail/truck positioning
 - e.g., 140,000 tonne ship requires 10 trains of 14,000 tonnes
- delayed ship arrival can congest port facilities
- highway capacity limits require rail solutions

■ Emerging Role for Inland Facilities

- can stage, sequence and hold shipments for vessel arrival
- can perform breakbulk and consolidation operations
- can utilise empty container capacity
 - by containerising former break bulk shipments
 - containerised shipments may have higher values due to reduced loss and damage

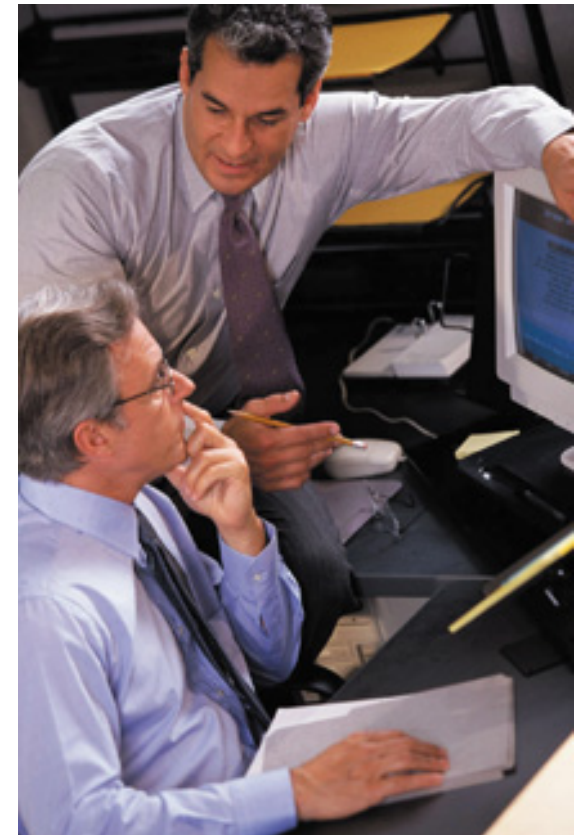
#5: Information Systems

- **Example of the objective**
 - Load vessel at foreign port
 - so that containers are positioned in the order required for unloading
 - so that they can go directly onto rail cars
 - in the sequence needed for efficient train operation through corridor interchanges

Information Systems

■ This will require

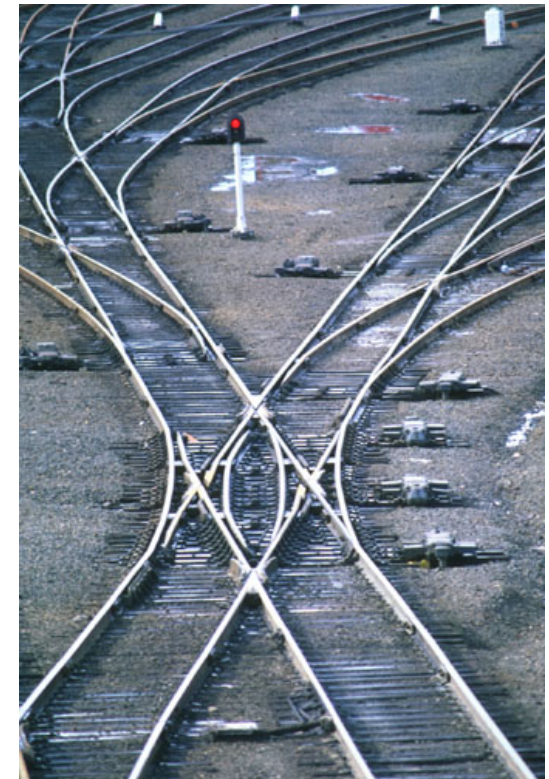
- The train operator communicating to the gateway's terminal operator the sequence of container unloads required
- the gateway terminal operator communicating to the origin port the sequence of unloads
- etc.



Concluding Comment

- Focussing on these five dimensions
 - four of which go beyond gateway infrastructure and capacity ---

Will allow the gateway to provide genuine value added to shippers/travellers



Thank You

Mike Tretheway

Executive Vice President

InterVISTAS Consulting Inc.



www.InterVISTAS.com