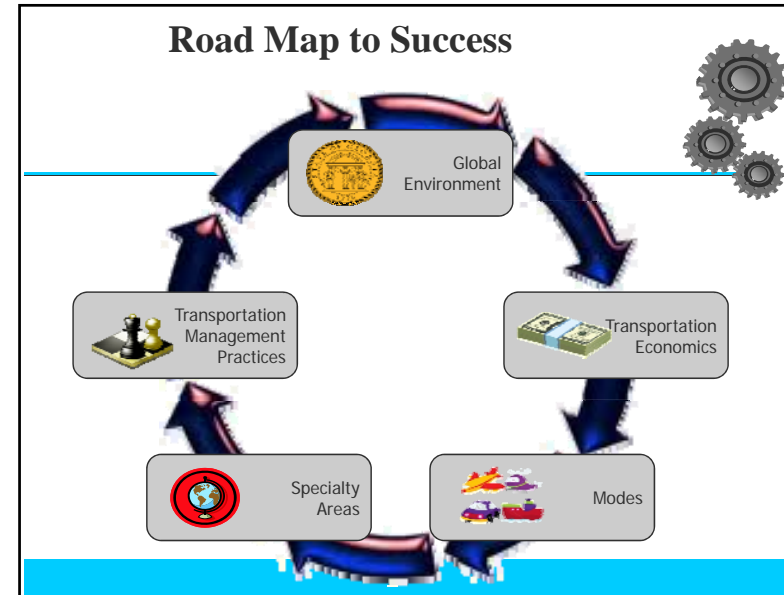


Chapter 8c

Intermodal Transportation








Road Map to Success


Chapter Objectives: Intermodal

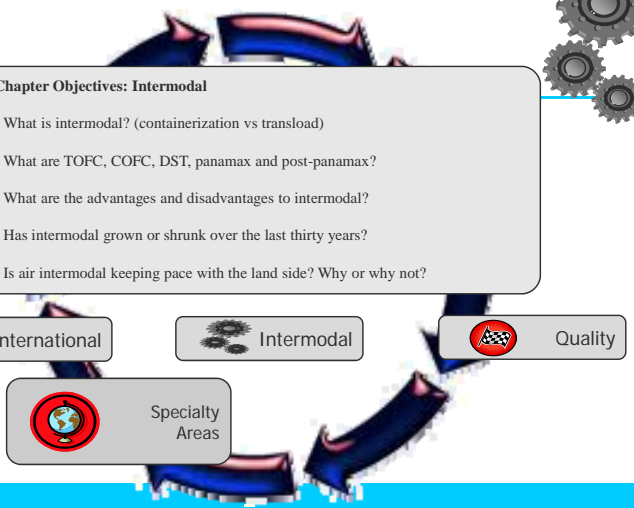
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 International

 Intermodal

 Quality

 Specialty Areas



What is Intermodalism?

- the combined use of _____ or _____ modes of transportation to complete the movement of a single shipment
- the _____ and _____ door-to-door transportation of freight in two or more transportation modes

A Brief History of Intermodalism

- Pre 19th century
 - sailing ships and horse-drawn wagons
- 19th century
 - barge canal operations combined with horse-drawn wagons and/or railroads
 - experimentation with intermodal containers
- Early 20th century
 - rail cars on seagoing vessels
 - truck trailers on rail cars (TOFC, piggyback)

A Brief History of Intermodalism

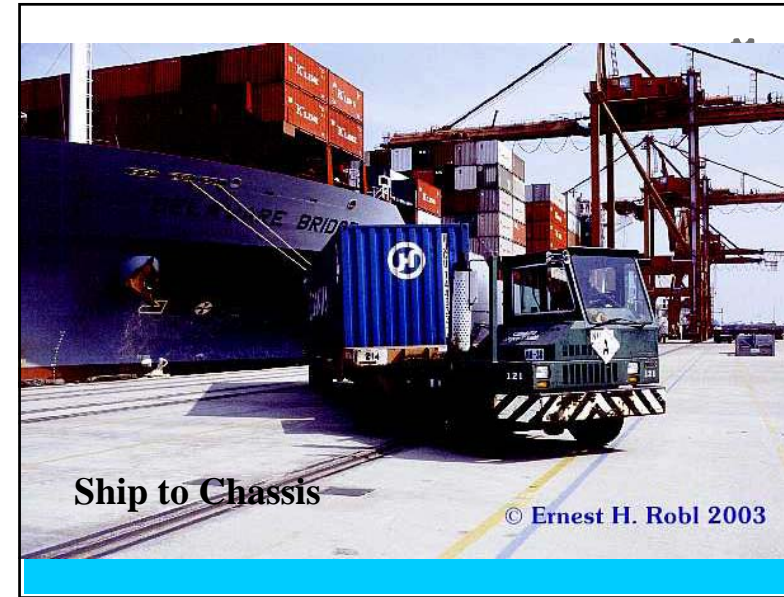
- Mid 20th century
 - piggyback plans 1-5
 - container revolution
 - switch from TOFC to COFC
 - transatlantic containership operations
- Late 20th century
 - doublestack container service
 - increased modal cooperation
 - unprecedented growth

Types of Intermodal Freight

- - cargo remains in same container throughout the entire trip
- Transload freight
 - breaking bulk shipments from the container of one mode to that of another mode

Container Ship





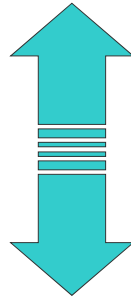
Containerization

– Advantages

- unitizes freight
- protects freight from weather & pilferage
- easy and quick to load/unload

– Disadvantages

- high cost of purchase, rental, & repair
- idle storage and empty backhauls
- economies only with large numbers
- not always compatible with products

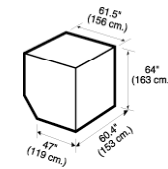


Intermodalism

• IM equipment

– Containers

- TEU (Twenty-Foot Equivalent)
- Air cargo container
- Floating containers



Types of Intermodal Freight

– Interline

- more than one company involved in the transportation of the freight
 - JB Hunt pickup/CSX linehaul/JB Hunt deliver

– Single-carrier

- one company with multimodal capabilities handles transportation of freight
 - UPS truck pickup & deliver/plane linehaul



Types of Intermodal Freight

– Land based

- Rail - motor carrier moves

– Water based

- Ocean steamship - motor carrier moves
- Ocean steamship - rail moves
- River barge - rail moves

– Air based

- Airline - motor carrier moves



Rail - Motor Carrier Moves

- Substitute for long distance trucking
 - reduces highway congestion
 - less labor intensive
 - conserves resources
- Heavy growth during 1980s-1994, then leveling off in 1995 and 1996
 - improved service levels, cooperation
- Variety of methods
 - TOFC / COFC / DST / Carless

Rail - Motor Carrier Moves

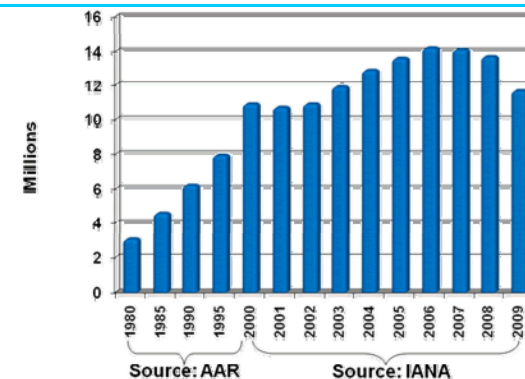
Cost Per Loaded Mile



Rail - Motor Carrier Moves

- Threats to success & continued growth
 - excessive drayage costs (15-25% of total)
 - equipment shortages in peak seasons
 - terminal capacity / congestion
 - service levels are not consistent
 - not cost effective for short hauls
 - economic conditions impact volume
 - price gap is shrinking

Total Intermodal Loadings










Source: Intermodal Association of North America

Ocean Moves

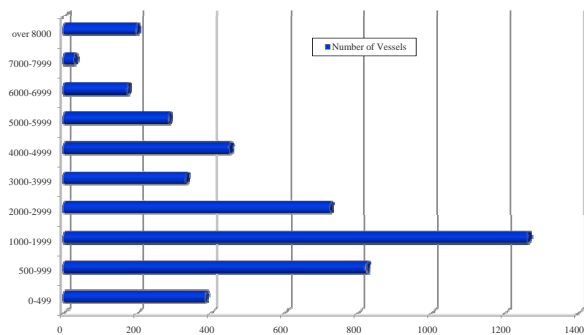
- 60% of general cargo is moved in containers aboard containerships
- Freight is transferable to truck, rail, air
- Variety of containership types
 - fully cellular - transport containers
 - RO/RO - transport wheeled equipment
 - combination - handle both types
- wide range in sizes
 - 100 TEUs to 8,000+ TEUs

Growth of Containerships

		Length	Draft	TEU
First (1956-1970)	 Converted Cargo Vessel	135 m	< 9 m < 30 ft	500
	 Converted Tanker	200 m		800
Second (1970-1980)	 Cellular Containership	215 m	10 m 33 ft	1,000 – 2,500
Third (1980-1988)	 Panamax Class	250 m	11-12 m 36-40 ft	3,000
		290 m		4,000
Fourth (1988-2000)	 Post Panamax	275 – 305 m	11-13 m 36-43 ft	4,000 – 5,000
Fifth (2000-2005)	 Post Panamax Plus	335 m	13-14 m 43-46 ft	5,000 – 8,000
Sixth (2006-)	 New Panamax	397 m	15.5 m 50 ft	11,000 – 14,500

Source: The geography of transport systems

Number of Container Ships (2010)



Source: Containerisation International; www.container-transportation.com/container-ships.html

Air Moves

- World air cargo is expected to triple by 2010
- Airline-forwarder alliances are being formed
- Pallets used more often than IM containers
 - lighter and cheaper
 - easier to handle
 - airlines have special containers to fit in aircraft
- Great opportunity for revenue growth
- UPS and FedEx are leading the way

Future Drivers

- Growth
 - improved communications capabilities
 - new facilities - ISTEA
 - cooperation between modes
 - new equipment being added
- Potential limitations
 - falling rates in other modes
 - imbalance of East-West traffic
 - equipment is not standardized

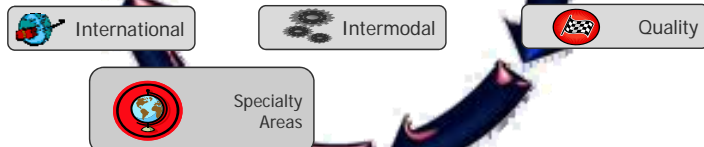
Benefits of Intermodal Transport

- utilizes the inherent advantages of modes
- minimizes impact of modes' disadvantages
- creates cost and operating efficiencies
- becoming niche oriented - increased options
- reduces duplicate functions
- improves global access

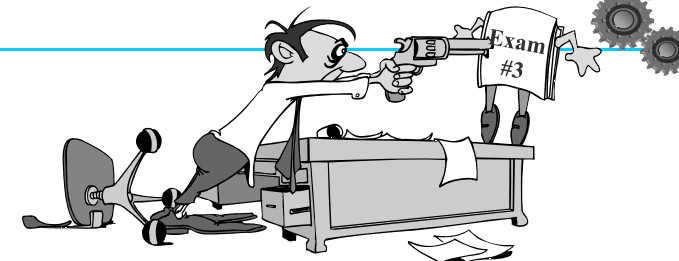
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End Here for Exam #3



- Same format as Previous Exams
 - multiple choice - Brown scan form