

# NINTH ORDINARY MEETING OF THE INTERAMERICAN COMMITTEE ON PORTS



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**Georgia Tech**  **Supply Chain & Logistics Institute**  
Stewart School of Industrial & Systems Engineering

# Georgia Tech Supply Chain & Logistics Institute



Education

Research

Industry Collaboration

Global Outreach

**#1 Industrial Engineering program  
for 24 consecutive years  
- *U.S. News & World Report***

# Supply Chain & Logistics Research





## Panama Center Research Focus

- Integrating Panama's existing logistics infrastructure to improve network performance – “one port” concept
- Establishing Panama as the “Gateway Hub” to Latin America for multi-national companies
- Predicting future requirements for Panama's logistics capabilities

# Panama network – container ports connected by rail and truck

- **To compete the network should function like a single port**
  - Rail connection should function like a conveyor belt
  - Truck connection should function like a parallel conveyor belt
  - Actual transit time approximately one hour





## Case #1: Transshipment trucking service

- **Trucking is currently not competitive with rail as a mode to move containers from port to port across country (estimated truck cost \$400 per trip, and rail cost \$150).**
- **What can be done to make trucking service competitive?**



# Transshipment trucking service

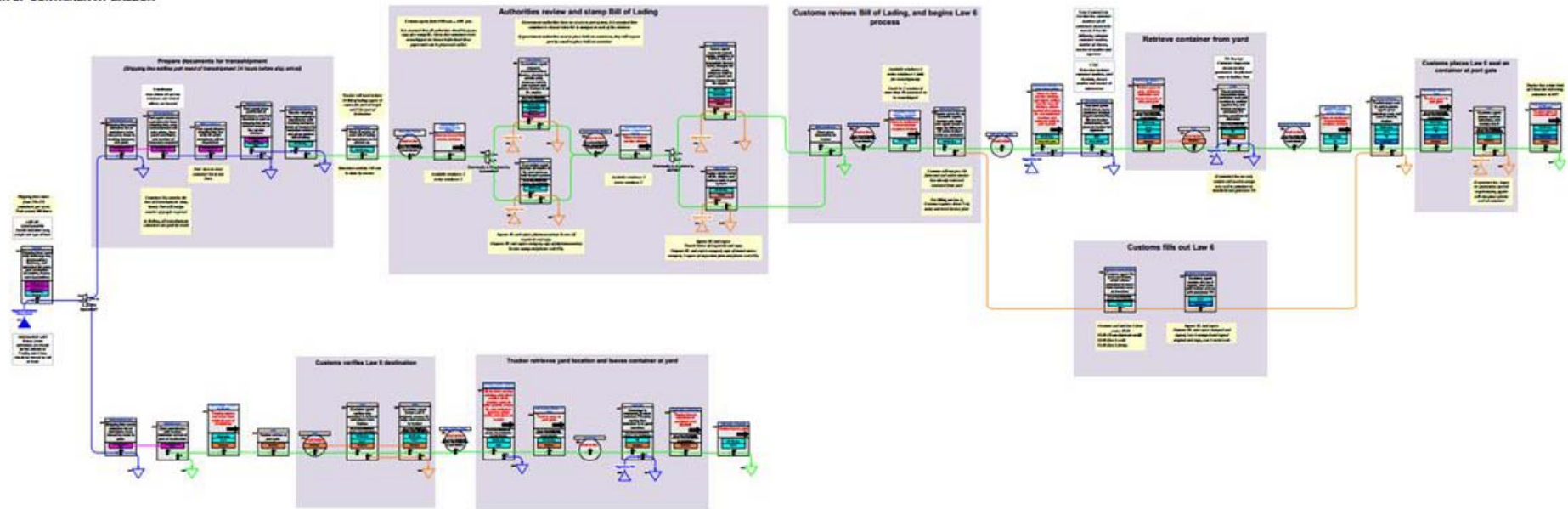
- **Study Methodology:**
  - Workshop with critical stakeholders
  - Map and document process at Balboa and MIT port
  - Identify key issues
  - Compare trucking, rail and transshipment within the same port
  - Validate analysis
  - Present findings to key stakeholders

# BALBOA Process MODEL

Activity	Color
Planning	Blue
Execution	Green
Control	Yellow
Improvement	Red

## TRANSSHIPMENT TRUCKING SERVICE (BALBOA)

PICK UP CONTAINER AT BALBOA

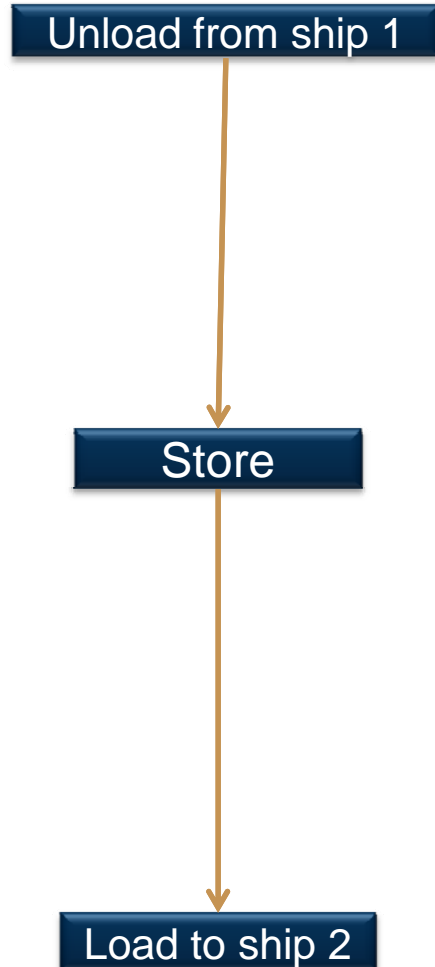


DROP CONTAINER AT BALBOA

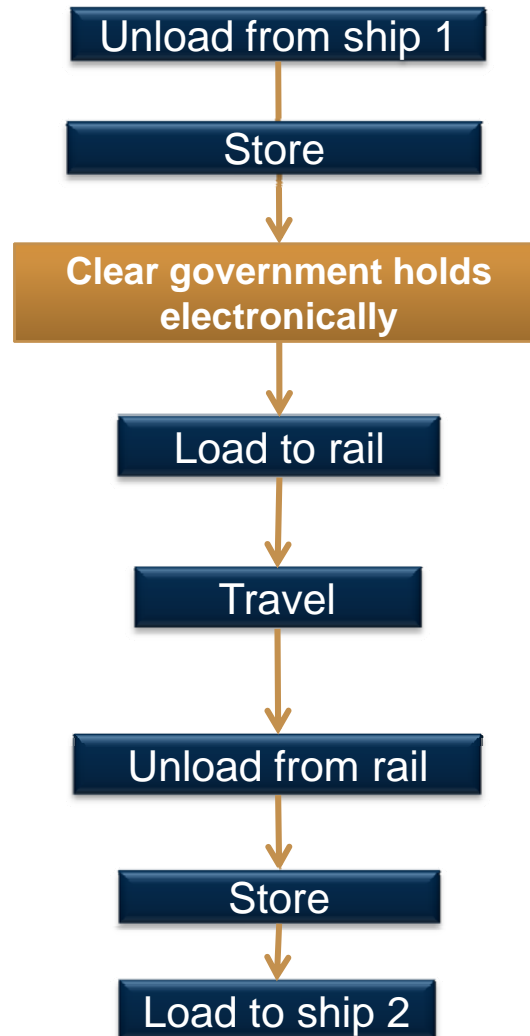


# TRANSHIPMENT MODELS

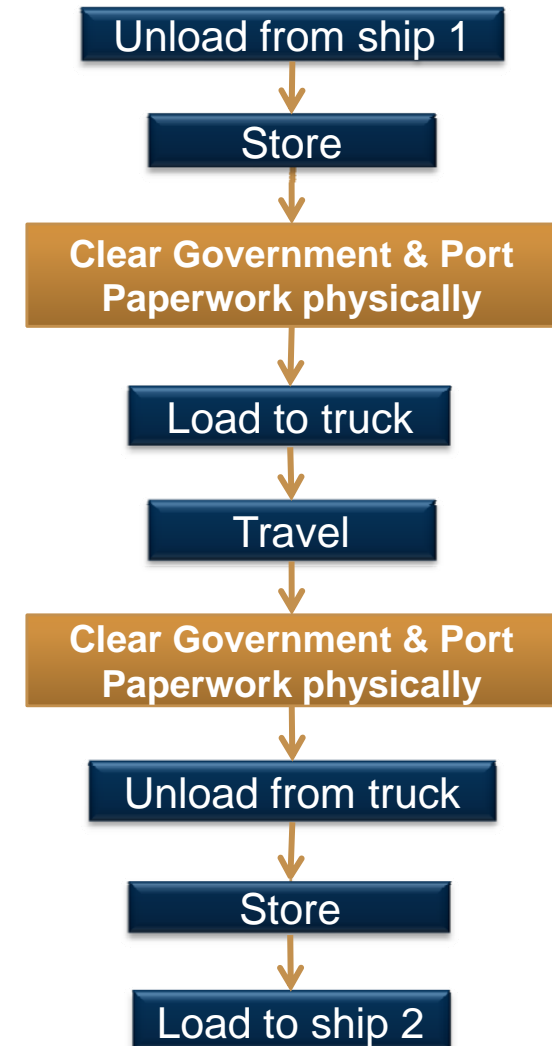
## WITHIN SAME PORT



## RAIL

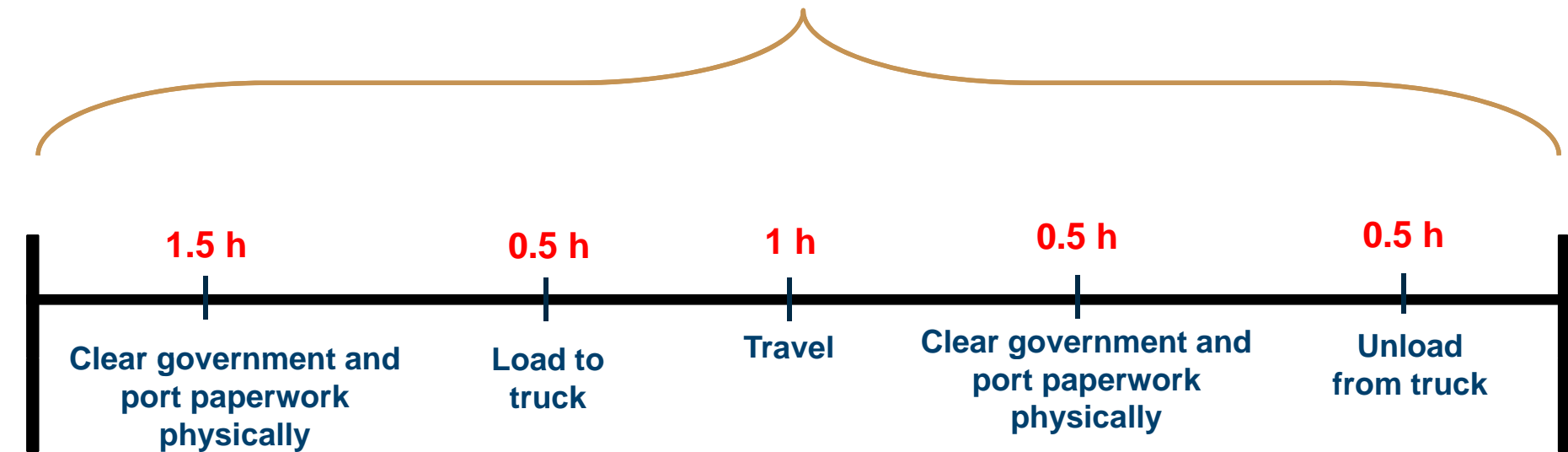


## TRUCKING



# TRUCKING SERVICE TIMELINE

**Processing + Travel Time = 4 hours**



Unload from ship 1  
at port of origin

Load to ship 2  
at port of destination

**Trucking is expensive because trucks can make only one trip per day!**

# Recommendations to improve transshipment competitiveness

- Establish clear performance goals and metrics based on maximum total transfer times
- Have performance of all network components monitored by a neutral party to eliminate finger pointing
- Establish contingency plans for disruptions
- Improve road infrastructure between ports
- Change laws and government processes to make trucking between ports competitive
- Reduce government charges for clearing transshipment containers



## Case #2: Impact of big ships

- **Current Panama Canal – 4,000 TEU ships**
- **Expanded Panama Canal – 14,000 TEU ships**
- **Current max size – 18,000 TEU ships**
- **Why bigger ships?**
  - 12,000 TEU ship about twice the cost of 4,000 TEU ship
  - 12,000 TEU ship uses about twice the fuel of 4,000 TEU ship
  - 12,000 TEU ship requires about the same crew as 4,000 TEU ship
- **How will big ships impact Panama?**



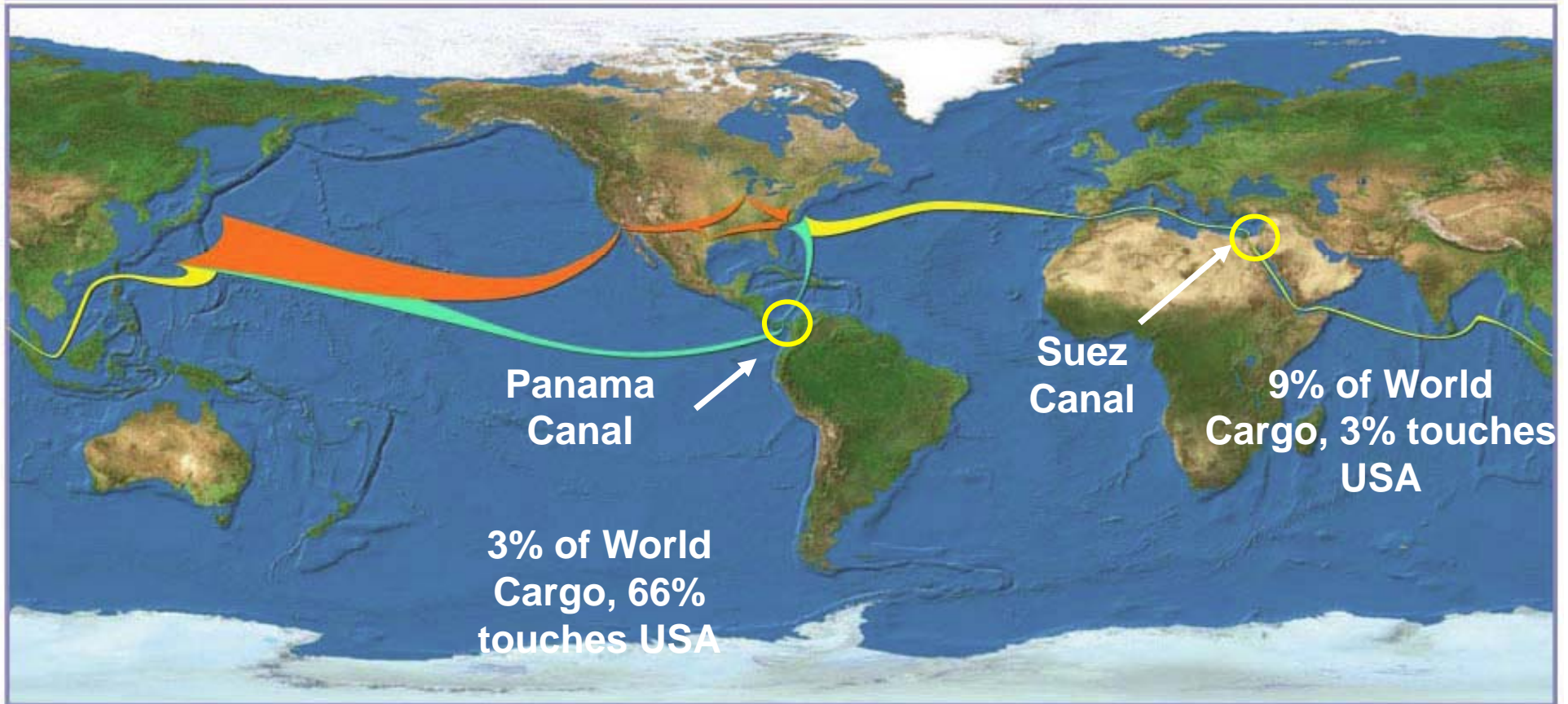
# Impact on Shipping Lines

- **Bigger ships require more volume**
- **Volume via Panama Canal is down**
- **How can shipping lines increase volume?**
  - Reduce rates
    - Shipping lines losing money
  - Reduce services
    - The P3 alliance (Maersk, Mediterranean Shipping and CMA CGM)
    - CKYHE alliance (Cosco, “K” Line, Yang Ming, Hanjin and Evergreen)
    - Mergers just announced by Hapag-Lloyd and CSAV

# Panama Canal

## Asia - U.S. trade.

### Main Competitors of the Panama Canal Route



- U.S. Intermodal System Route
- Panama Canal Route
- Suez Canal Route



# Impact of Big Ships on Ports

- **Bigger ships will call on fewer ports**
  - Volume will dictate winners and losers
- **Depth and cranes**
  - Big ships require more depth
  - Big ships require bigger cranes
  - Requires major investments
- **Volume surges**
  - Requires operational changes
  - Increases daily work imbalances
  - Increases operational costs
  - Requires more infrastructure to handle surges
- **A very few “winners” on east coast**



# Impact on Shippers

- **Inventory increases with transit time**
  - Transit time through Suez at least 3 days longer
  - Additional time to load and unload ships
  - Inland transit time may increase
- **Inventory increases with transit time variability**
  - Service frequency
  - Alliances
- **Transshipment**
  - Many ports cannot service big ships
  - Many ports cannot justify volume required by big ships
  - Transshipment will increase
  - Potential for delays



# What are the true supply chain costs of bigger ships?

- **Shippers**

- Increased inventory
- Not obvious decrease in transportation costs

- **Ports**

- Increased investment
- Increased operational costs
- Increased financial risks

- **Carriers**

- Decreased operational cost per cell (not clear how much)
- Utilization is a challenge
- Overcapacity is a huge risk
- Cost of maintaining alliances to fill ships
- Competition from smaller ships



# Impact on Panama

- **Big ships require**
  - Few port calls
  - Very large volumes
  - Long hauls
- **Solution seems to be more transshipment**
- **Panama has the potential to become a mega transshipment hub**
- **Becoming a mega transshipment hub increases connectivity which increases the value of Panama as a “gateway hub” for the Americas**
- **Recommendation – increase Panama focus on facilitating transshipment!**



Questions?

Comments?