Background

Engineering
- Physical relationship between ONE single input to the output

Technological
- Physical relationship of ALL factors
- No waste

Economic
- Value of ALL inputs... and EXTERNALITIES

- Technological/Economic Efficiencies in the private sector already achieved through:
  - Capital/human investments
  - Planning and operational improvements
  - Experience
  - Research and development

But
\[ \sum \text{Efficiency}_{\text{company/subsystem}} \neq \text{Total System Efficiency} \]

The Freight System

The freight transportation system is the physical manifestation of the economy. The much needed freight traffic generates problems such as congestion and environmental pollution, especially in metropolitan areas.

The system in numbers:

- Economic impacts (CA): $650 billion, 32% of the California economy
- Employment (CA): 5 million, 33% of California jobs
- Consumed (US): 27.8% of total energy, 70% of the petroleum
- Produced (CA): 50% of diesel PM, 45% of the Nitrogen Oxide, 24.2% of GHGs

Inefficiencies: Examples

Port Terminals

Delays affecting Vessel Carriers

Example performance (hours)

Vessels on time
Optimized port stay and reduced emissions

Complete disregard for urban freight

Impacts of mega-ships

"...15% more manpower for the same container volume..."

"...Manpower requirements increasing twice as fast as volume..."

Rail Terminal Dwell Times (hrs)

Improving Freight System Performance

Key aspects needed to understand the freight system:
- Identify the key stakeholders, their roles and interactions
- Stakeholder Engagement

Some strategies to improve the system include:
- PierPass 2.0 (Dynamic Traffic Mitigation Fee)
- Advanced Information Systems (e.g., FRATIS 2)
- Improved Chassis Pool of Pools (PoP)
- Appointment Systems
- Maximize the benefits and Mitigate the impact of Business Alliances (e.g., Vessel Sharing Alliances)
- Reduce Empties
- Update vehicle size and weight restrictions
- Careful consideration of Hours of Service rules
- Consider Urban Freight

Urban Freight Initiatives

• ON-STREET PARKING AND FAIR RATES:
  - Freight Pricing and Loading Zones
  - Multi-modal Parking
  - Reducing clutter

• IN-PORT PARKING AND FACILITIES:
  - Efficient Allocation of Parking Space
  - Improved Parking Systems
  - Improved Storage Areas
  - Truck Chassis Parking Outside of Metropolitan Areas

• Rail Terminal Dwell Times (hrs)

• Rail I - CA
• Rail I - Total
• Rail II - CA1
• Rail II - CA2
• Rail II - Total

• Trucking Industry

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