What is the Future of Containerization in Maritime and Inland Freight Distribution?

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Net Traffic Change, World's Largest Container Ports, 2003-05 / 2008-10

Net Traffic Change, 2003-05 / 2008-10 (in TEU)
- Red: Less than -500,000
- Orange: -500,000 to 0
- Yellow: 0 to 500,000
- Green: 500,000 to 1 M
- Blue: 1 M to 4 M
- Dark blue: More than 4 M
The Big Port Squeeze: Largest Available Containership, 1970-2011 (in TEUs)

- **L “Lica” Class** (3,400 TEU)
- **E “Emma” Class** (12,500 TEU)
- **S “Sovereign” Class** (8,000 TEU)
- **R “Regina” Class** (6,000 TEU)
- **“Triple E” Class** (18,000 TEU)
Containerization as a Diffusion Cycle: World Container Traffic (1980-2010) and Possible Scenarios to 2015

<table>
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<th>Adoption</th>
<th>Acceleration</th>
<th>Peak Growth</th>
<th>Maturity</th>
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New (niche) services
Productivity gains

Network development
Productivity multipliers

Massive diffusion
Network complexities

Reference
Divergence
Depression
Niche markets
A Wasted Life: Container Usage during its Life-Span

- 56% Ocean Transit
- 16% Terminal
- 16% Inland Use
- 6% Repair
- 6% Idle or Empty Repositioning

A lot of waste to improve upon.

*Challenges for asset management.*
Filling the Service Gaps?

Freight rate to shipper (gate-to-gate)

Performance (Speed, Reliability, Flexibility)

Liner shipping

Slow steaming
Transshipment

Polar routes
Direct services
Fast ships
Trans-Siberian rail

Intermodal

Intermodal corridors
Inland ports

Truckload

LTL

Air
Supply Chain Differentiation: Pick Your Performance Preference

Costs (38%)
Stability of the cost structure.
Relation with the cargo being carried.

Time (12%)
Influence inventory carrying costs and inventory cycle time.
Routing options in relation to value / perishability.

Reliability (43%)
Stability of the distribution schedule.
Reliability can mitigate time.
Pushing Atomization in the Hinterland and Massification in the Foreland

PORT FORELAND

PORT HINTERLAND

**Massification**

**Atomization**

**Foreland-Based Regionalization**

Insertion of transshipment hubs

**Hinterland-Based Regionalization**

Setting of inland load center network

Economies of scale

Frequency

Capacity

Frequency

Capacity

Gap
The Massification of Transportation and Land Use in Inland Systems

Inland Load Center Network Formation

Supporting Land Use

Direct truck  ---  End haul  ➔  Rail / barge service

Port

Inland Terminal

IT

Port

IT

IT

Port

Port-Centric Corridor

Intermodal Industrial Park

Inland Port