

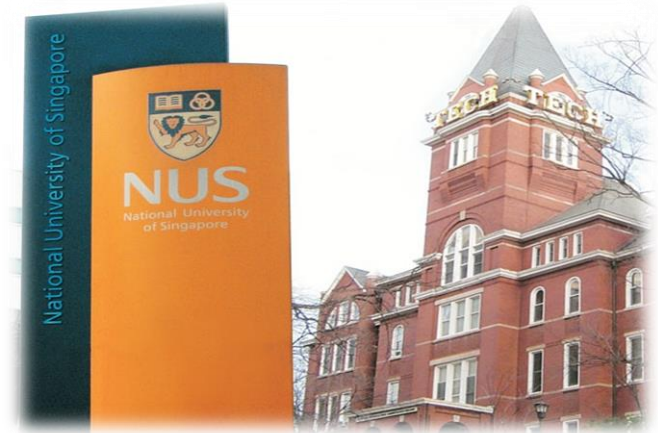
Studies in Balancing Time, Cost and Risk (crafted on readings of EATL Framework)

The Logistics Institute – Asia Pacific
National University of Singapore

Executive Director Dr. Robert de Souza

TLI-ASIA PACIFIC : OVERVIEW

- ▶ Established in November 1998 under The Global School House Program as a collaboration between



- ▶ Mission: *“To be the premier institute in Asia Pacific nurturing logistics excellence through world-class research, education and industry outreach”*



Main Challenges

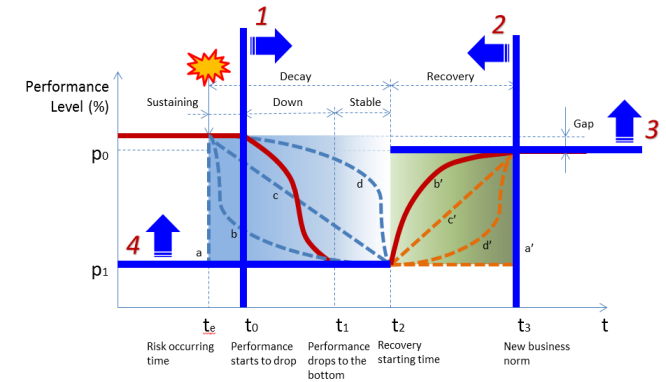
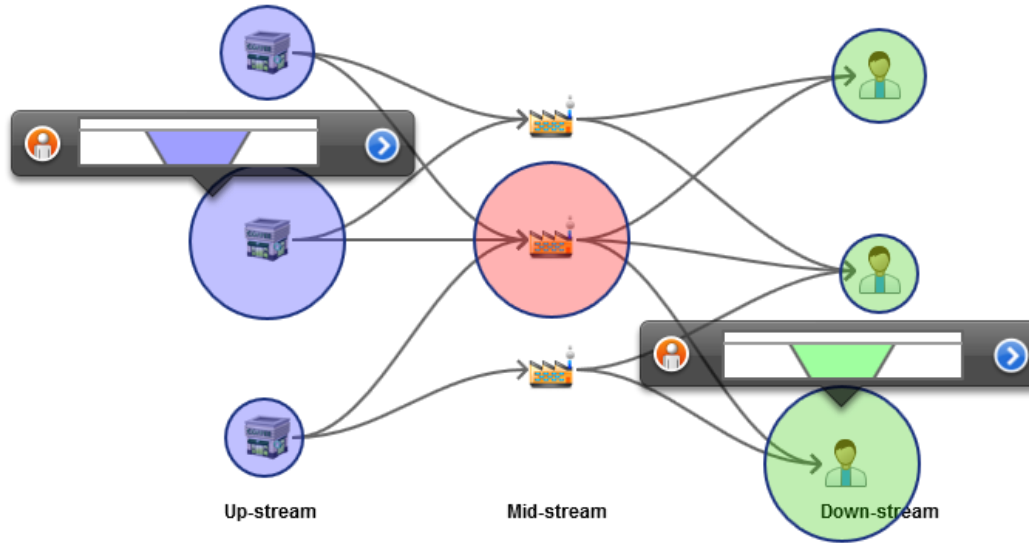
- Supply chain time, cost and disruptions affect firms' top and bottom lines

Steps to Overcome Challenges

Companies take various steps to entrench their supply chains, including:

- Gaining a deep understanding of their supply chain
- Not relying too much on a single supplier or region within the supply chain
- Understanding where time and cost is expended and where risks emanate

Supply Chain Risk Management: Framework



Risk Identification

- Supply chain risk category
- Risk exposure index

Risk Assessment

- Risk propagation
- Risk measurement via Value-at-Risk
- Risk matrix approach
- Time-based risk propagation analysis

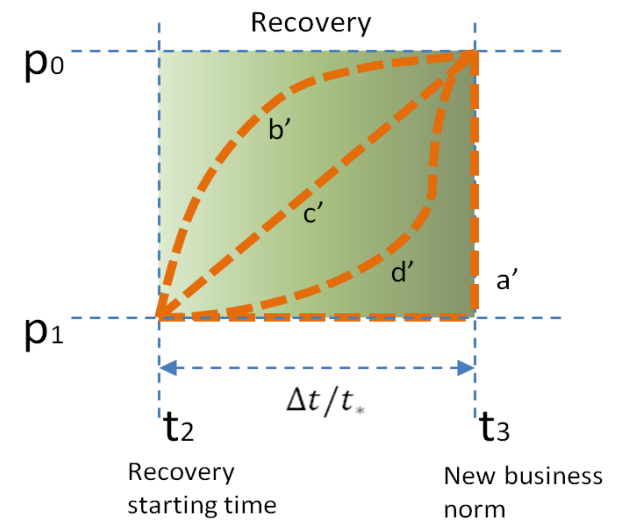
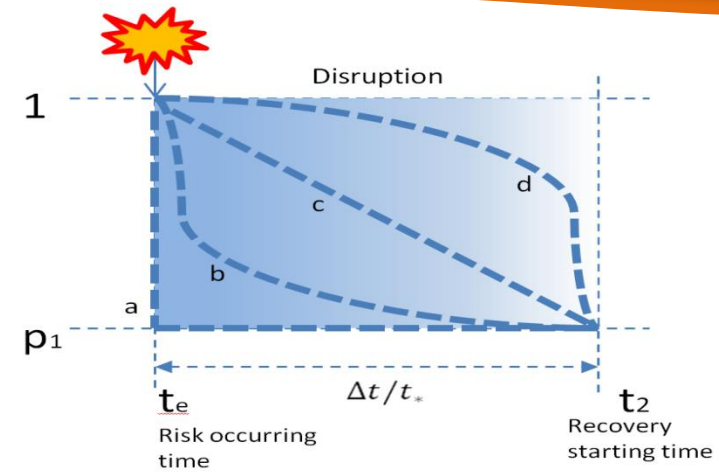
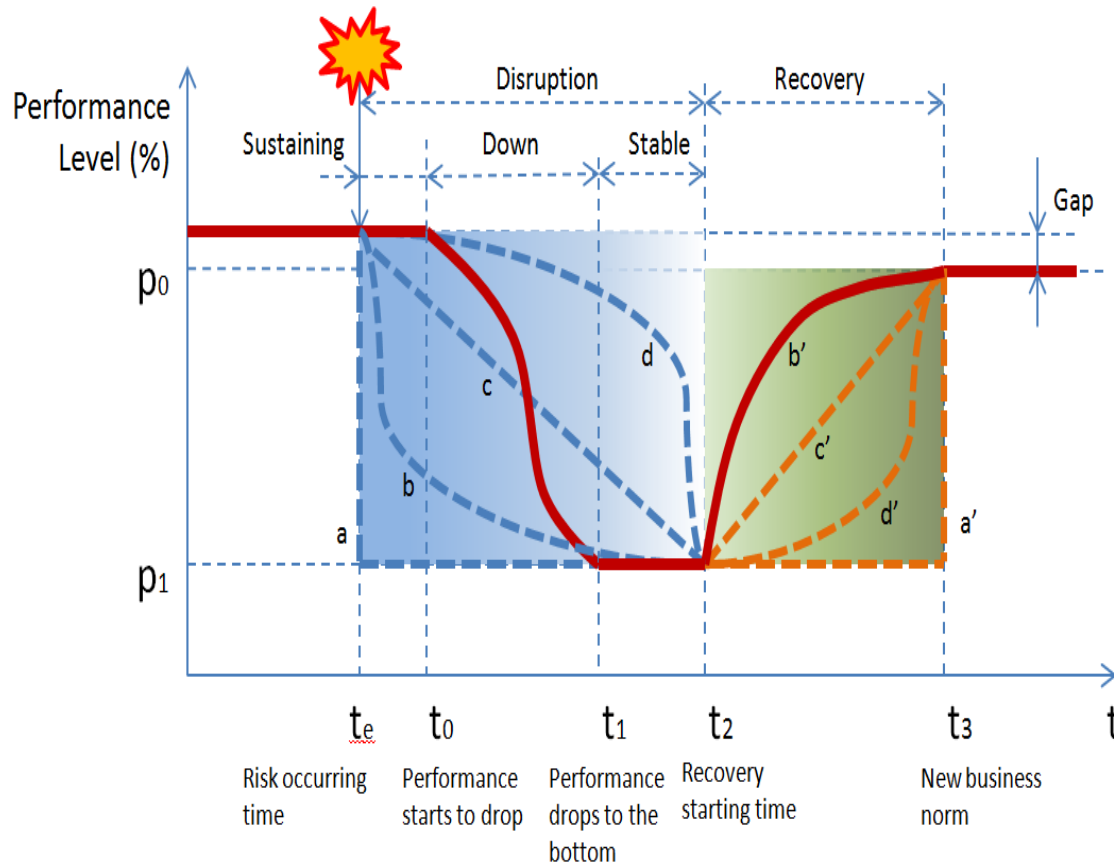
Risk Mitigation

- Time-adjusted inventory policy
- Demand uncertainty analysis
- Mitigation policy examination platform

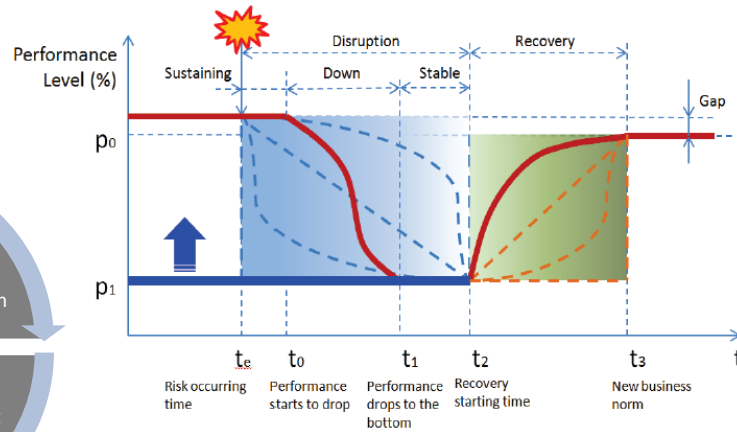
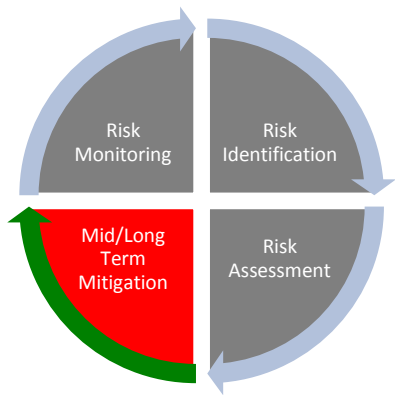
Risk Monitoring

- Risk visualization
- Real-time natural disasters for warning
- Master facilitative control tower

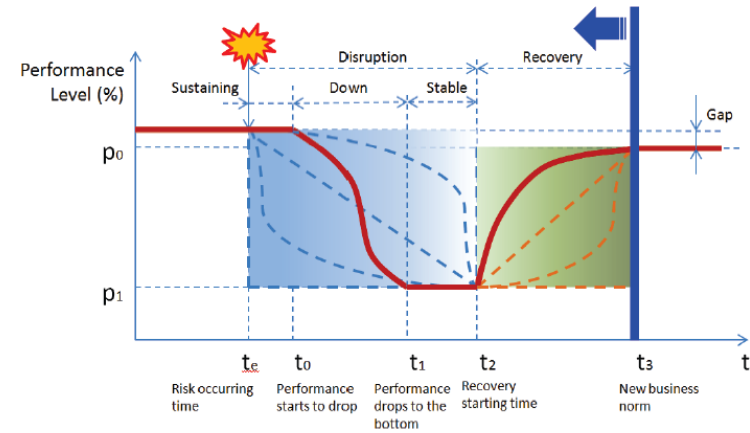
Combinations: Robustness & Resilience



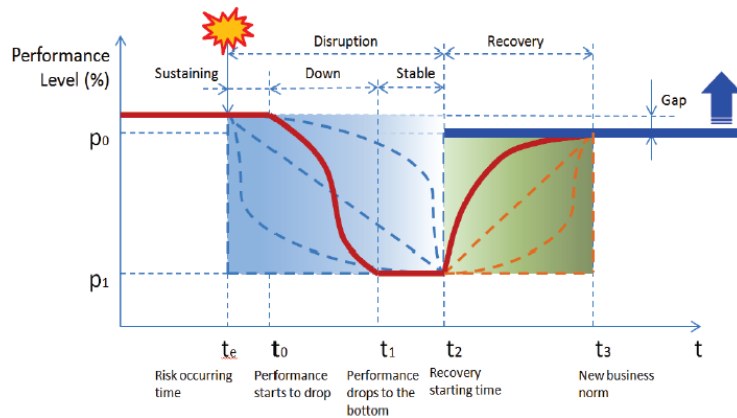
Risk Mitigation



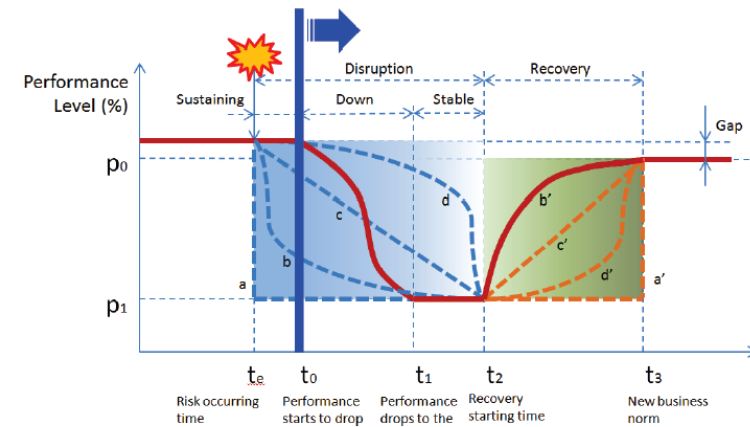
Reduce disruption severity



Reduce disruption duration

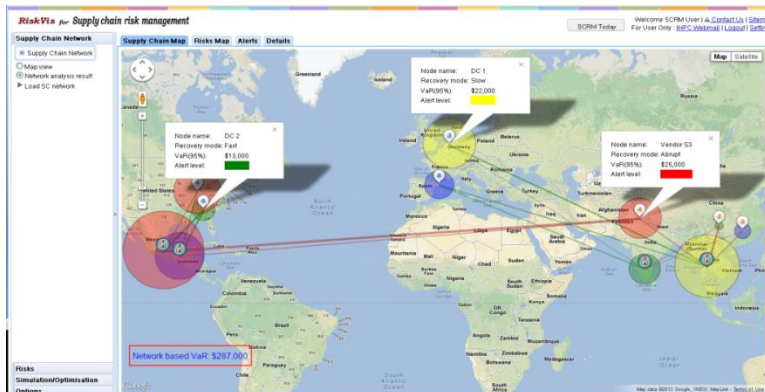
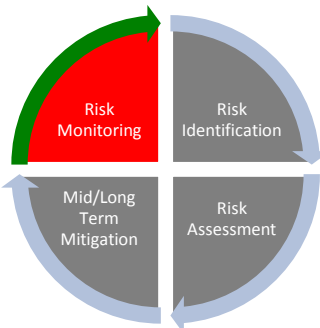
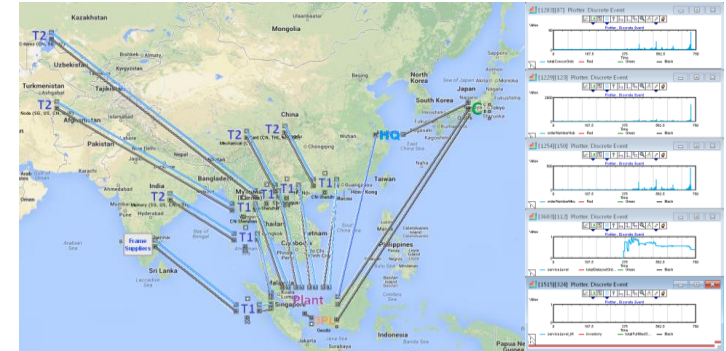


Improve recovered performance level



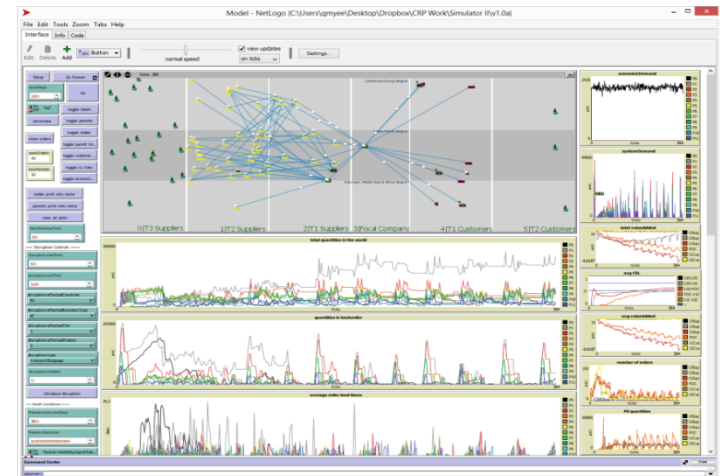
Postpone the disruption effecting time

Building Advanced Capabilities (in Singapore)




Recovery mode

			
normal	slow	abrupt	fast



What do local SC Experts think is most important to consider when choosing Locations for Preposition Strategic Stockpiles?

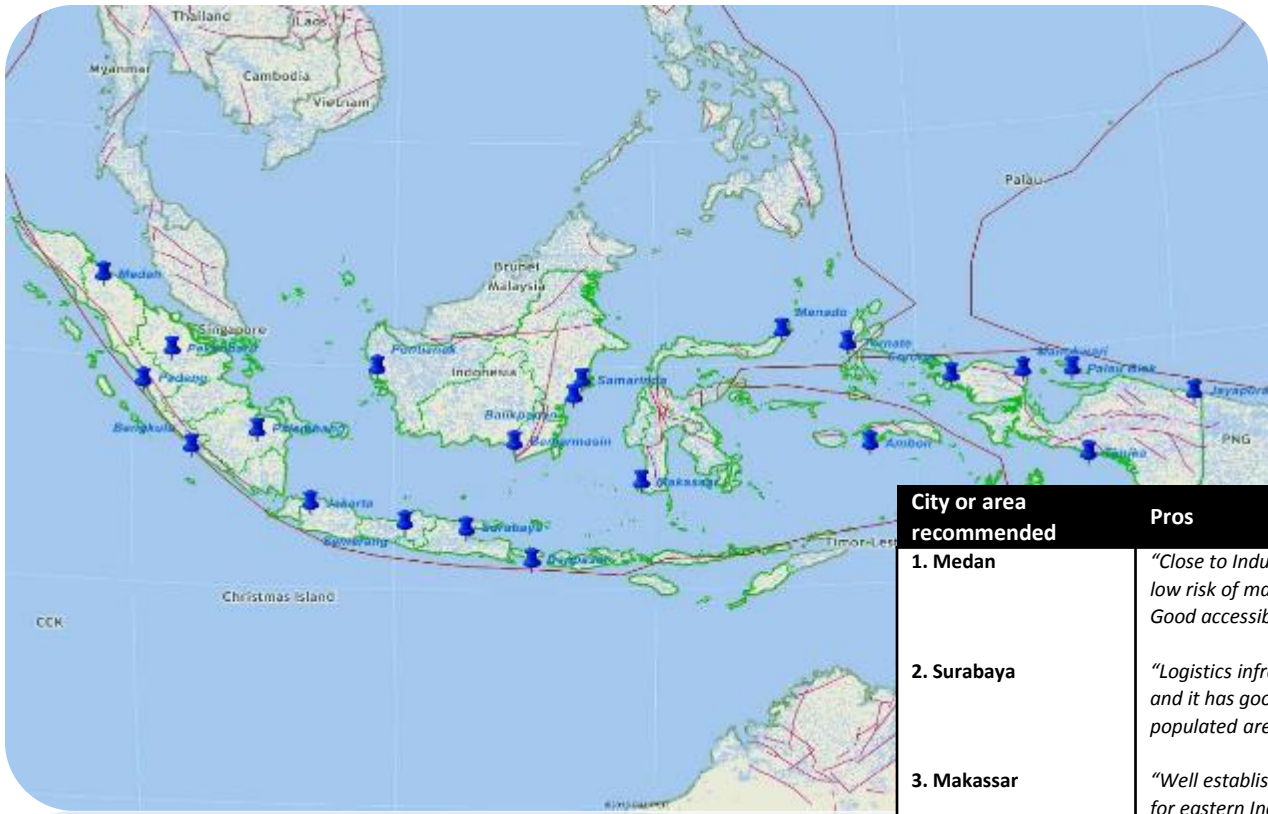


Warehouse Location Criteria	Weight
Coverage	0.1813
Access to Affected Zones	0.2155
Risk	0.2081
Access to Infrastructure	0.1666
Access to Corridor	0.0972
Congestion	0.0476
Costs	0.0461
National Development Plan (NDP)	0.0376

“Experts’ opinions analysis highlight that High Accessibility to Disaster Affected Zones and Disaster Risk Free Location are the two Priorities to consider decision making process concerning DC network design ”



Location Definition – Candidates to Consider



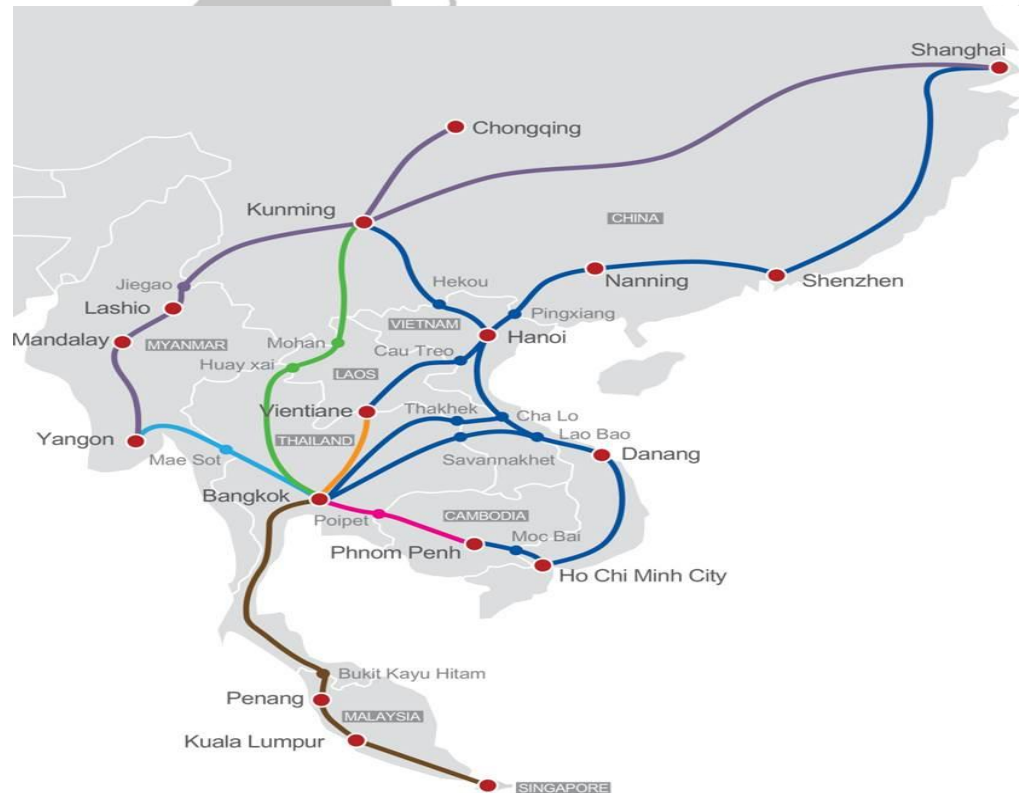
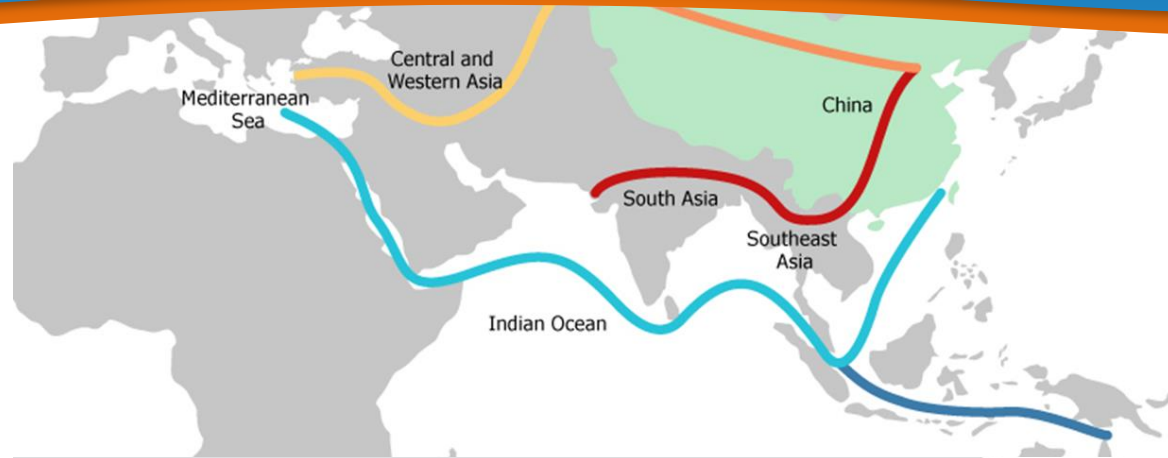
City or area recommended	Pros
1. Medan	"Close to Industrial cluster, Economic Center part of RPJMN 2015-19, low risk of major events, good accessibility to Sumatra hazard area. Good accessibility to well established airport and seaport"
2. Surabaya	"Logistics infrastructure (Airport, and seaport) are quite substantial and it has good accessibility to java hazard area (with high risk populated area) and Nusa Tenggara"
3. Makassar	"Well established logistics infrastructures, and key transportation hub for eastern Indonesia. Good connectivity with other localities of Sulawesi, Maluku, and Papua"
...	...

In total, Indonesian experts indicated 22 cities as potential nodes of the National Network of Emergency Response Facilities



Aims for Commercial Companies

- Provide a platform to facilitate decision making on logistics time-cost
- Platform is designed to be relevant across different levels of decision making
 - **Strategic** (Between regions)
 - **Operational** (Between countries)
 - **Tactical** (Last Mile)
- Platform is designed to encompass multi-modal logistics options



Value Proposition

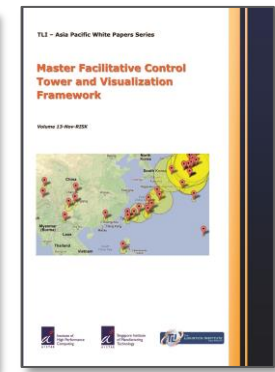
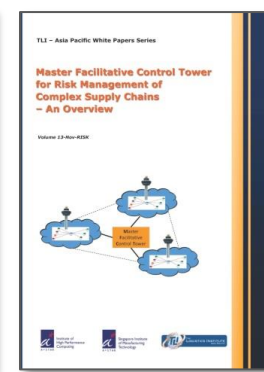
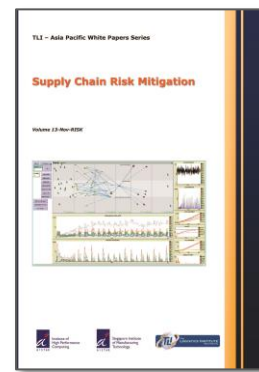
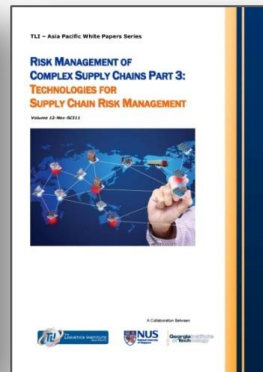
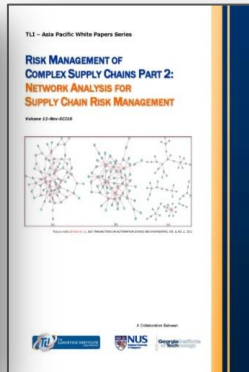
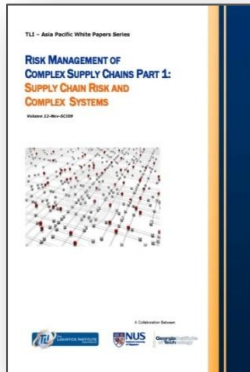
- Identify and present possible logistics time-cost combinations
- Ability to ingest big data on logistics demand and multi-modal transportation networks availability
- Ability to define selected parameters so as to derive relevant combinations
- Opportunity to achieve logistics cost savings
- Visualised on GIS systems for ease of orientation



Last Mile Scenario (Indonesia Java)



Supply Chain Risk Management at www.tliap.nus.edu.sg



Leads a

Research Consortium



Thank You

rdesouza@nus.edu.sg