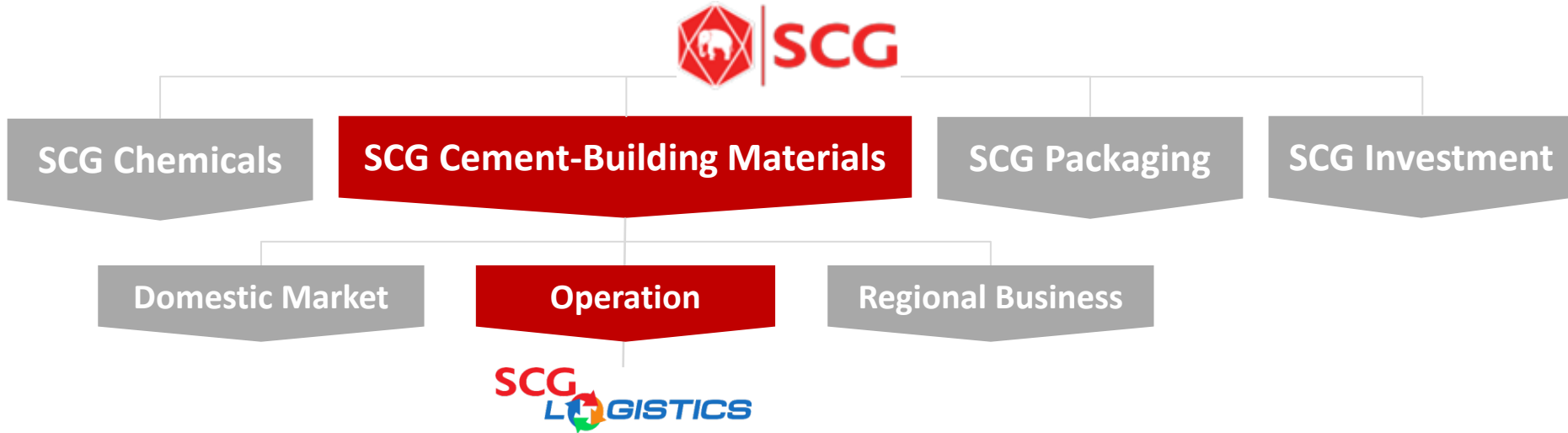# Export Service Center, Hybrid Logistics Model to Strengthen Export Competitiveness

SCG Logistics
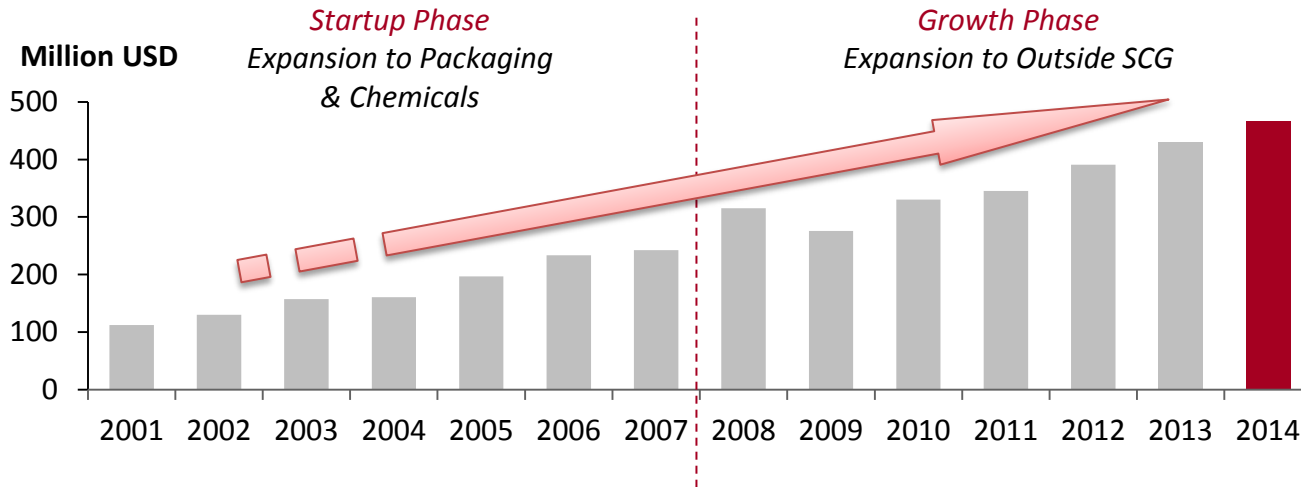
Budapest , Hungary.

October 27, 2015

Overview about SCG Logistics

SCG

| SCG Chemicals | **SCG Cement-Building Materials** | SCG Packaging | SCG Investment |

| Domestic Market | **Operation** | Regional Business |

SCG LOGISTICS

SCG Logistics Revenue 2001 - 2014

Startup Phase
Expansion to Packaging & Chemicals

Growth Phase
Expansion to Outside SCG

Million USD

Year	Revenue (Million USD)
2001	~110
2002	~130
2003	~160
2004	~160
2005	~195
2006	~235
2007	~245
2008	~315
2009	~275
2010	~330
2011	~345
2012	~390
2013	~430
2014	~465

SCG LOGISTICS

Overview about SCG Logistics

Third Party Logistics – Focus on Network Management to Grow Business

Carriers

Total 300 Carriers

(80 Core carriers)

- **Fleet and Facilities**
  - *6,900 Trucks*
  - *250 Barges*
  - *40 Hubs/Warehouses*
  - *14 Ports*

- **Drivers and Labors**
  - *7,500 Drivers*
  - *1,000 Labors*

SCG LOGISTICS

Owns Strategic Assets

- **DC in strategic locations**
  ESC - Laem Chabang
  RDC - Khonkaen, Chiangmai
  CDC – Phapradaeng, Wangnoi

- **Technology**
  SAP, TMS, WMS, GPS, Import-Export, Logistics Command Center etc.

- **Closed barge for bulk cement**

- **Skills Development School**

Customers

93 Customers

(10 Business Segments)

- **Network Coverage**
  - *1,600 Origins*
  - *26,000 Destinations*

- **Transactions**
  - *1.5 Million shipments/year*
  - *39 Million Tons/year*
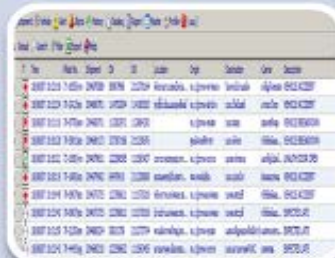
Overview about SCG Logistics

1,600 Origins	Transportation Management	Warehouse Management	ICT & Logistics Solutions	26,000 Destinations

1.5 million shipments/year, 37 million tons/year

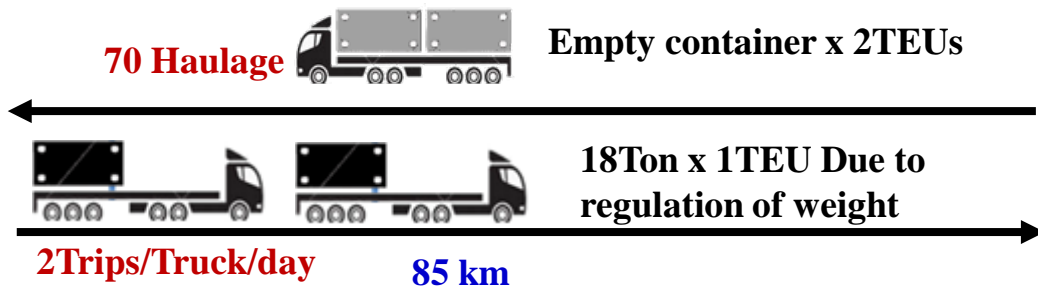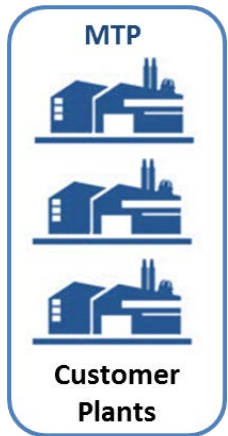| *Commodity*	*Food & Beverage and GMP required*	*Safety Concerned*	*Temperature Control*

Background of the Problem

Product & its packaging
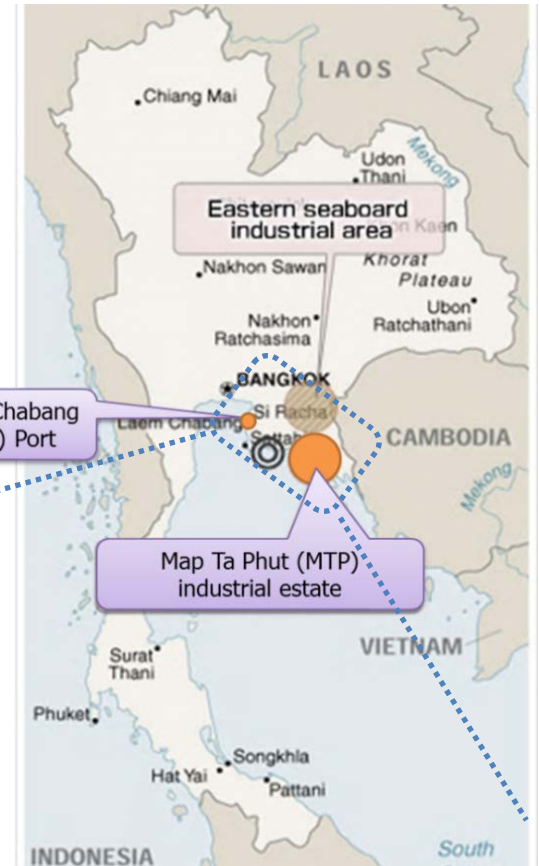
Logistics Model for Export in 2007

MTP

Customer Plants

70 Haulage — Empty container x 2TEUs

18Ton x 1TEU Due to regulation of weight

2Trips/Truck/day   **85 km**

Container Yard

LCB Port

Remark: ■ Loaded container *18Ton*   ▢ Empty container
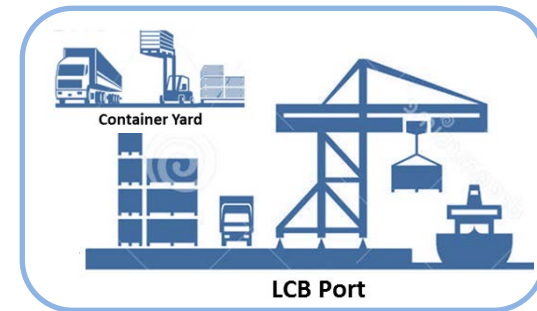
SCG LOGISTICS

Background of the Problem

Expansion Plan

'000 tons per year

Customer's Export Expansion Plan

CAGR 28.41%

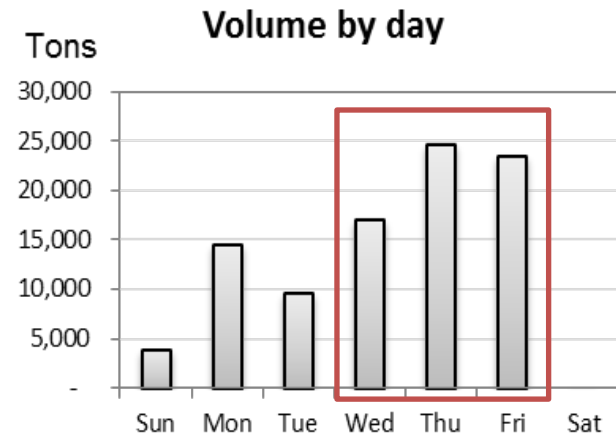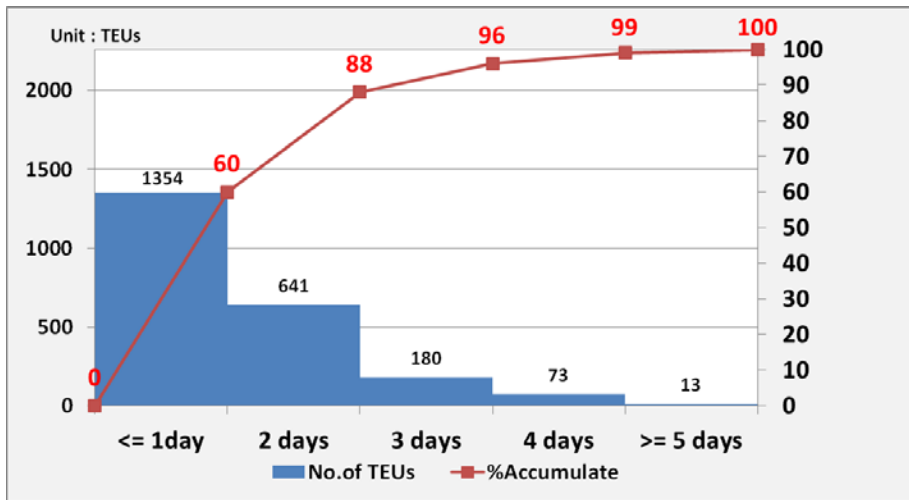| Year	Value
2008	320
2009	451
2010	757
2011	870
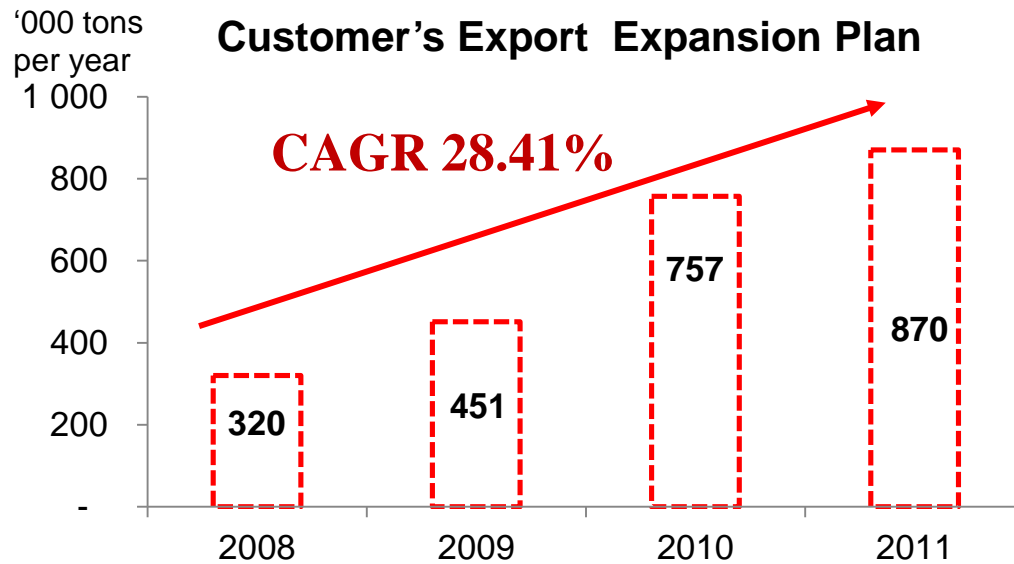
Task

To provide an export logistics model for the plastic resin pellets
from the MTP plants to the LCB port
that could serve the growth of the customer at a competitive price
and be abided by the law

Observation

> ## *Export Volume Pattern , Jan – Mar 2007*

Unit : TEUs

Pareto chart showing No.of TEUs by days: <= 1day: 1354, 2 days: 641, 3 days: 180, 4 days: 73, >= 5 days: 13. %Accumulate: 0, 60, 88, 96, 99, 100.

Rush Order around 60% due to the product price is highly sensitive to crude oil price

Volume by day (Tons) — Sun, Mon, Tue, Wed, Thu, Fri, Sat

> 50% Ordered in Wed, Thu, Fri due to liner's window time

Daily Export Volume, Jan-Mar 2007 (Tons)
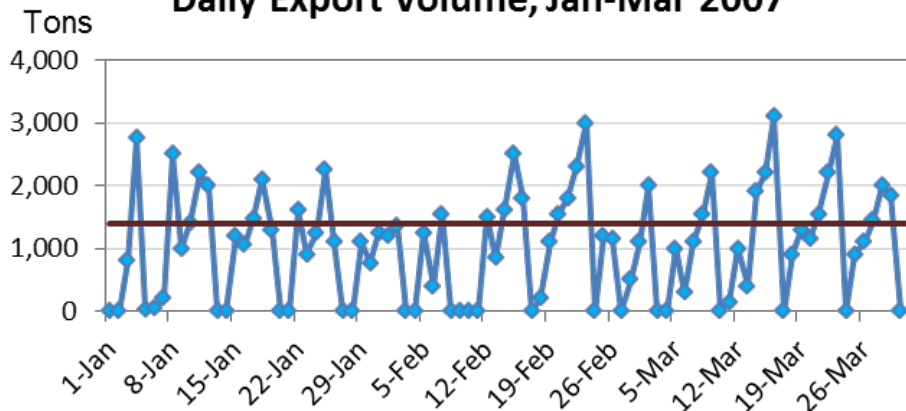
Daily volume
(Ton per day)

- Average   1,391
- Max   3,155
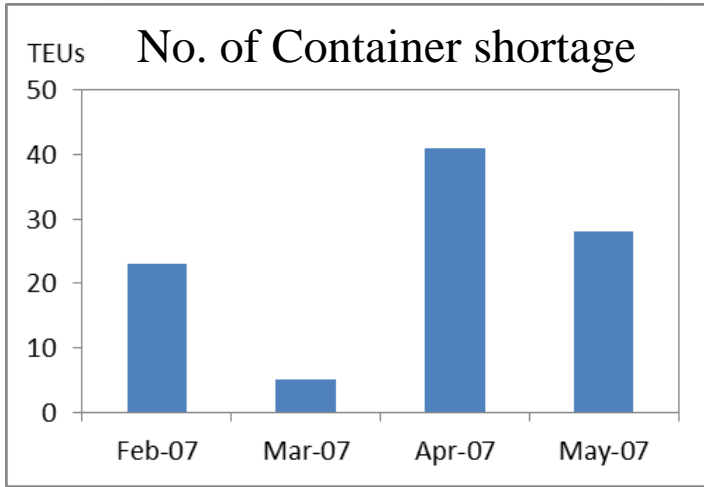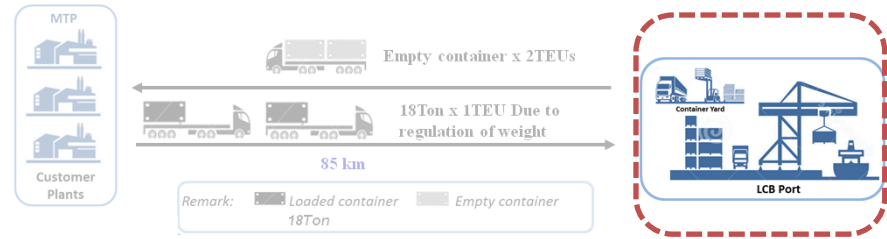- Min   87
- SD   722

- Hard to manage capacity
- Incur additional expenses (Overtime ,Spot Hire Cost)

Order could be changed with few days notice. The volume ranged from 87 to 3,155 Ton per day.

Observation

> *Nature of Container Yards & LCB Port*

No. of Container shortage

Chart: TEUs by month
- Feb-07: 23
- Mar-07: 5
- Apr-07: 41
- May-07: 28

MTP / Customer Plants — Empty container x 2TEUs — 18Ton x 1TEU Due to regulation of weight — 85 km — Container Yard — LCB Port

Remark: Loaded container 18Ton, Empty container

Operating Time	Container Yard Name
08:00 - 17:00	CDS, SIGHAMAS, EANGONG, HAST, KERRY, MODERN
08:00 - 20:00 to 22:00	99 DEPOT, KRC
08:00 - 24:00	TIPSCD, ECD

Time limited at CY lead to Incur additional expenses from

- Trucks waiting at container yards
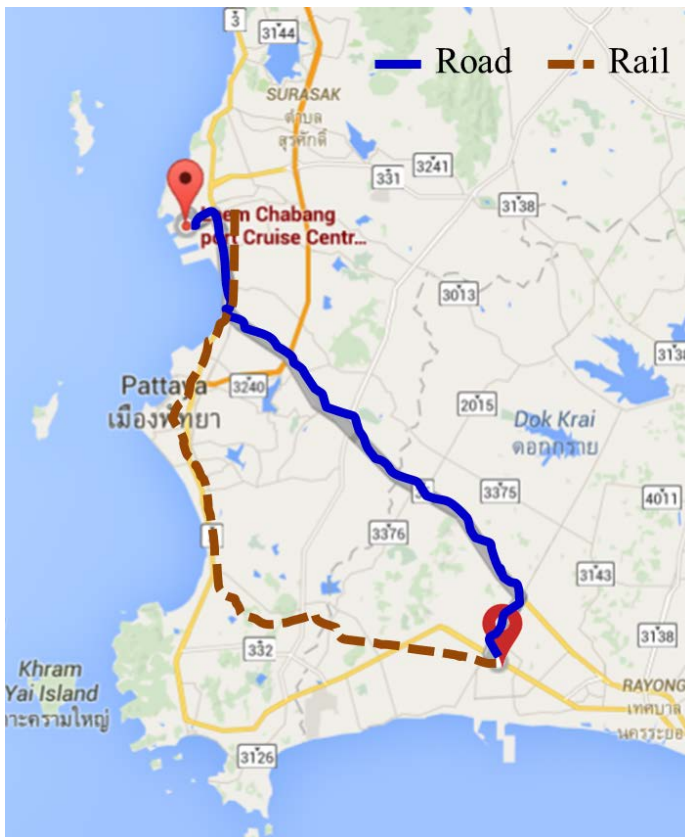- Demurrage charge due to container shortage

Traffic jam at LCB port

5 Km

- Truck jam at LCB Port after loaded the product from MTP plant lead to lower truck utilization and lower ability to serve fluctuation

SCG LOGISTICS

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Analysis

> *List up alternatives Model and Evaluation*

Alternative	Effectiveness	Efficiency	Timeliness	Possibility
1) Direct model with more truck supply	H	L	M	M
2) Direct model, using B-double truck	H	H	M	L
3) Train model	H	L	M	M
4) Cross-docking / Warehouse buffer model	H	H	M	M

Road — Rail

Alternative	Distance (Km)
Road mode ▬	85
Rail mode ▬ ▪	90

Analysis

> ## *List up alternatives Model and Evaluation*

Alternative	Effectiveness	Efficiency	Timeliness	Possibility
1) Direct model with more truck supply	H	L	M	M
2) Direct model, using B-double truck	H	H	M	L
3) Train model	H	L	M	M
4) Cross-docking / Warehouse buffer model	H	H	M	M

Road Mode: 1) Direct model, with more truck supply
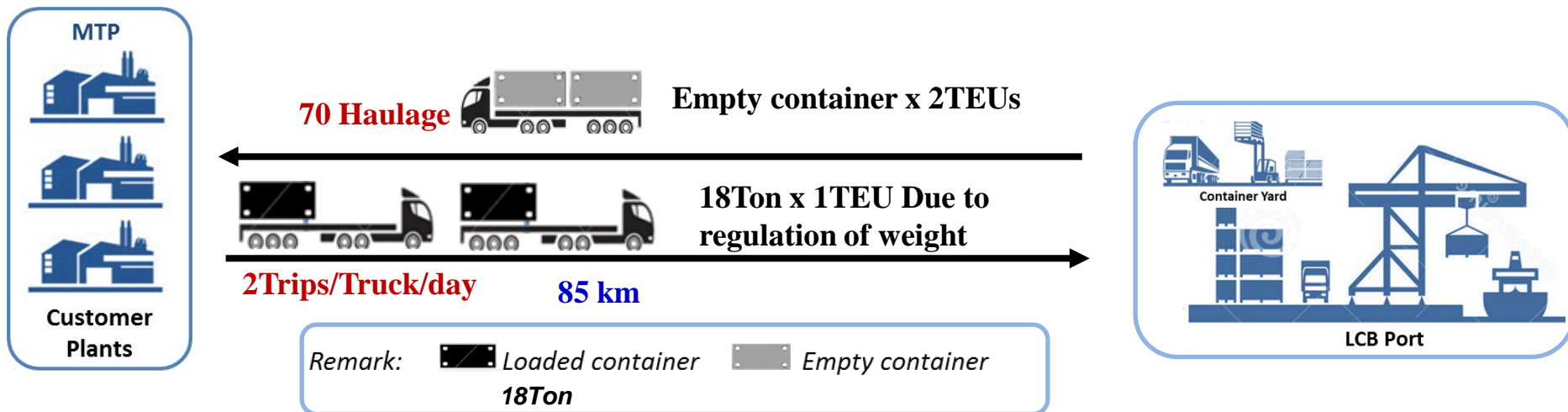
Analysis

> ## *List up alternatives Model and Evaluation*

Alternative	Effectiveness	Efficiency	Timeliness	Possibility
1) Direct model with more truck supply	H	L	M	M
2) Direct model, using B-double truck	H	H	M	L
3) Train model	H	L	M	M
4) Cross-docking / Warehouse buffer model	H	H	M	M

Road Mode: 2) Direct model, using B-double truck
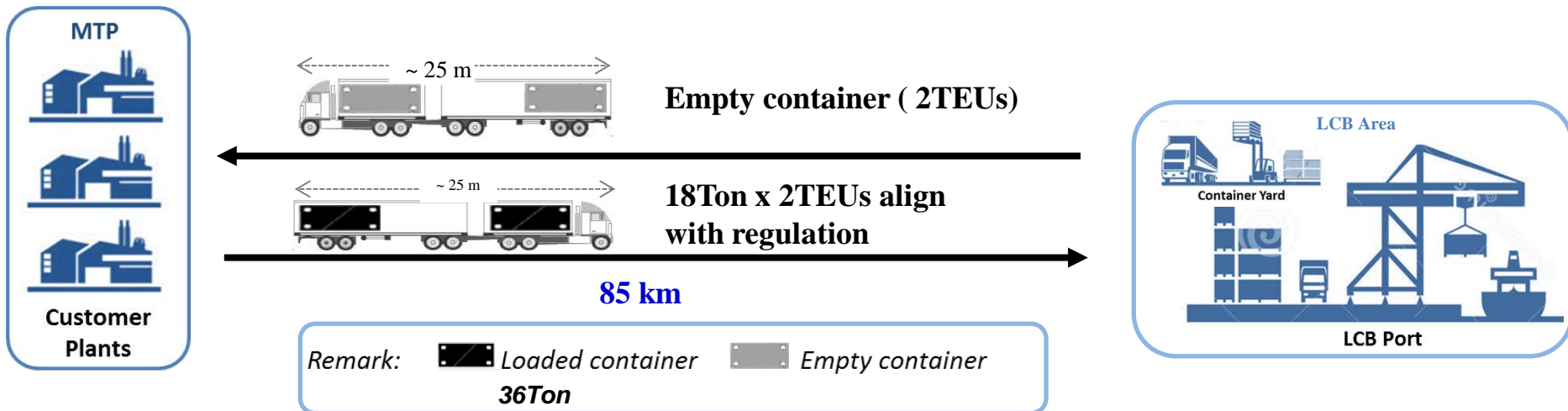

B-double truck requires

- Wider road & turning radius ,Wider U-Turn , larger parking space and gas station

- Special driving skill

- More horsepower, means more expensive trucks

Analysis

➤ *List up alternatives Model and Evaluation*

Alternative	Effectiveness	Efficiency	Timeliness	Possibility
1) Direct model with more truck supply	H	L	M	M
2) Direct model, using B-double truck	H	H	M	L
3) Train model	H	L	M	M
4) Cross-docking / Warehouse buffer model	H	H	M	M

Road Mode: 3) Train model

Remark: ▇ Loaded container   ▭ Empty container
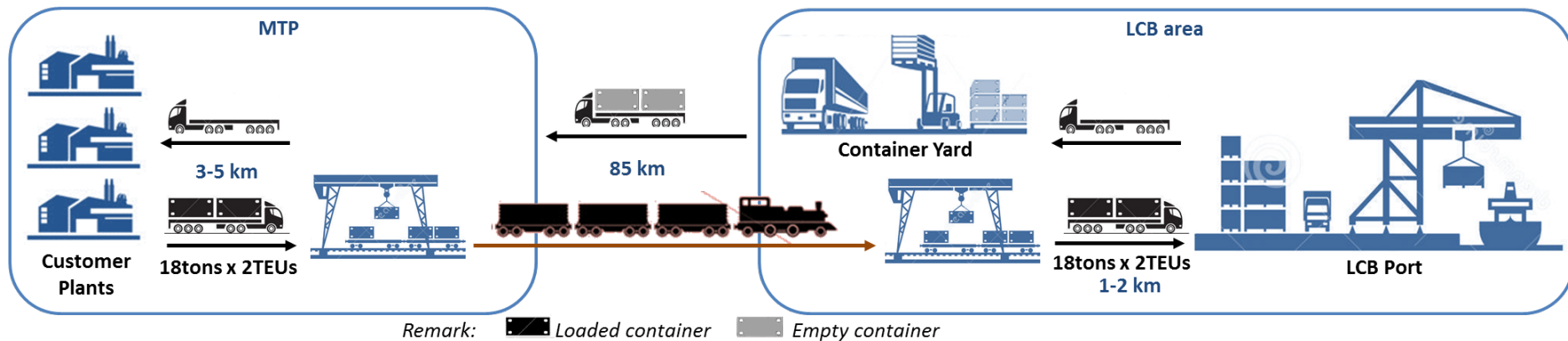
State Railway of Thailand (SRT) Operate :

- Low reliability
- Poor track condition

SCGL Operate :

- High investment in tracks and/or locomotives

- Less flexibility:
  - Fixed schedule (Limited trips)
  - No door to door service /Longer time spent
  - Fluctuated order (87 – 3,155 ton/day) can not match with train carriages due to certain number of container required
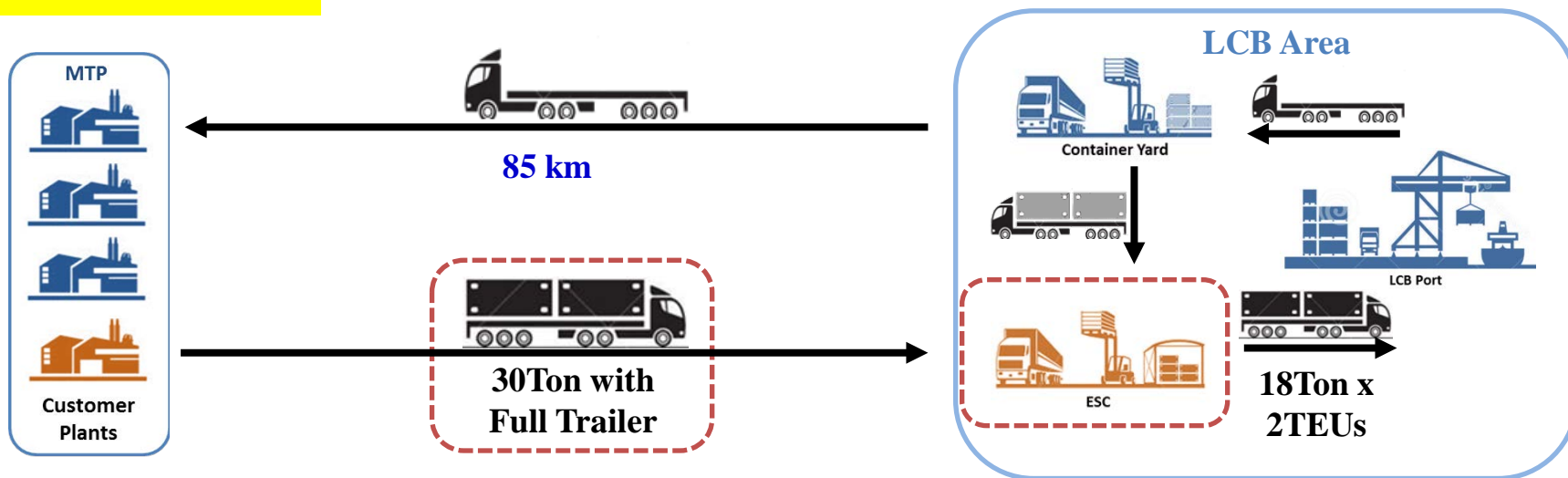
12

Analysis

➢ *List up alternatives Model and Evaluation*

Road Mode: 4) Cross-docking / Warehouse buffer model

Alternative	Effectiveness	Efficiency	Timeliness	Possibility
1) Direct model with more truck supply	H	L	M	M
2) Direct model, using B-double truck	H	H	M	L
3) Train model	H	L	M	M
4) Cross-docking / Warehouse buffer model	H	H	M	M

ESC Model

MTP

Customer Plants

85 km

30Ton with Full Trailer

LCB Area

Container Yard

LCB Port

ESC

18Ton x 2TEUs

Remark: ▬ Loaded container ▬ Empty container

Analysis

> ## *List up alternatives Model and Evaluation*

Road Mode: 4) Cross-docking / Warehouse buffer model

Alternative	Effectiveness	Efficiency	Timeliness	Possibility
1) Direct model with more truck supply	H	L	M	M
2) Direct model, using B-double truck	H	H	M	L
3) Train model	H	L	M	M
4) Cross-docking / Warehouse buffer model	H	H	M	M

FMEA

				Failure Mode and Effect Analysis (FMEA)						After Action			
Part/Process function & its requirement	Potential Failure Mode	Potential Effect(s) of Failure	(A)Severity (out of 10 = most severe)	Potential Cause(s)/Mechanism(s) of Failure	(B)Occurence (out of 10 = highest)	Current process Controls-Detection/Prevention	(C)Detectability (out of 10 = cannot detect)	Risk Priority Number (RPN) A*B*C	Recommended action	(A)Severity (out of 10)	(B)Occurence (out of 10)	(C)Detectability (out of 10)	Risk Priority Number (RPN) A*B*C
Pick empty container	not enough empty container	demurrage	10	export-import seasonality	2	no prevention	9	180	store empty containers at warehouse	10	1	5	50
Load product into container	cannot stuff product into container within time	demurrage	10	fluctuate demand with fixed loading facility and staff	4	check with the plants to extend working hours	5	200	preload	10	2	2	40
Deliver to port	truck with loaded container could not arrive LCB port before closing time	demurrage	10	1) traffic jam 2) fluctuate demand with fixed capability	7	call truck driver to check status and, if required, negotiate with liners	4	280	shorten distance for loaded truck	10	2	2	40
Pick empty container	container not in good condition	product damage	6	container condition required differs among users; container yard staff judge on their own criteria	5	truck drivers check container condition before receiving from container yard	4	120	inspect by own staff with defined criteria	6	3	3	54

SCG LOGISTICS

Analysis

➢ *Warehouse Location Selection*

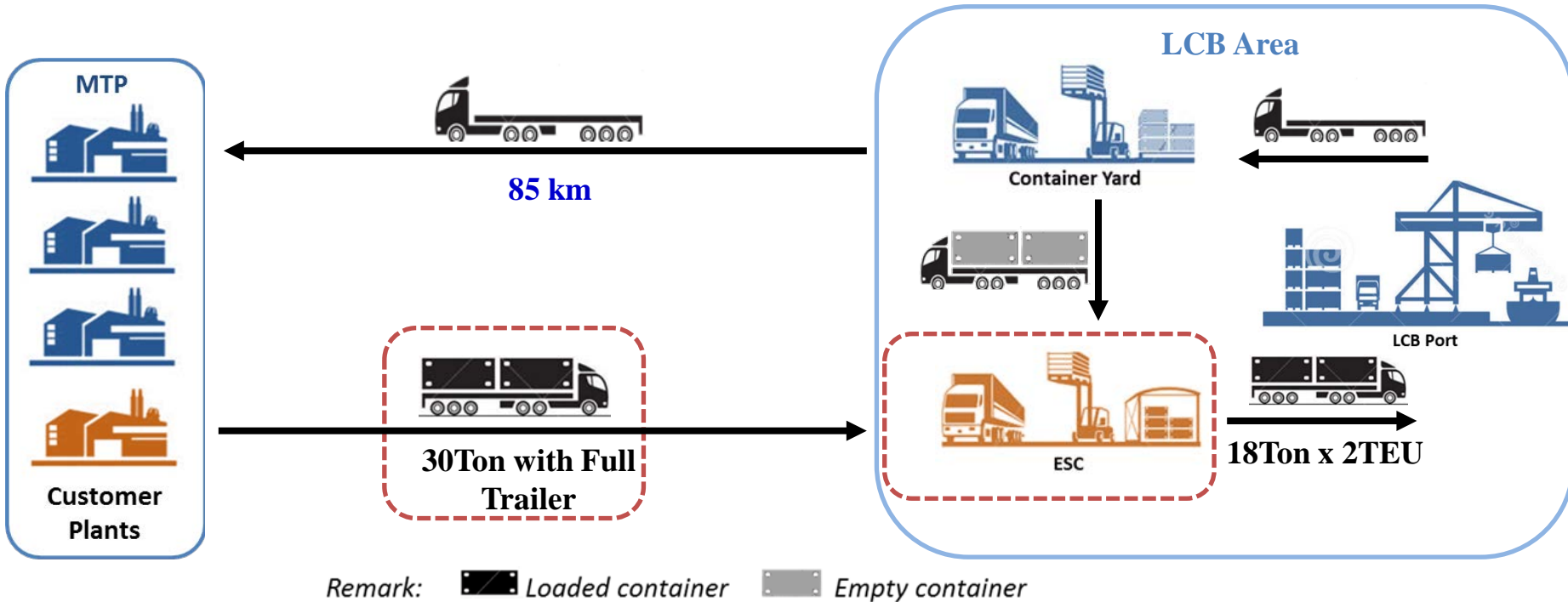| Location	Distance from LCB Port (km.)	Remark	Service					Facility				
			WH	Transport	Distribution	Dock	CY	WH size (sq.m.)	No. of WH	No. of Dock	Dock size	Floor load
ESC	3-5		✓	✓	✓	✓	✓	30,000	1	10	2 TEU	5
Location A	2-3		✓	✓	✓	✓		27,000	4	5	2 TEU	3.5
Location B	6		✓		✓	✓		28,836	6	2	1 TEU	3
Location C	6	truck weight limitation area	✓	✓	✓			80,000	22	-	1 TEU	3
Location D	10-11		✓	✓	✓			35,000	2	-	1 TEU	3.5
Location E	inside LCB port	for export only	✓	✓	✓	✓		15,000				

Laem Chabang Port
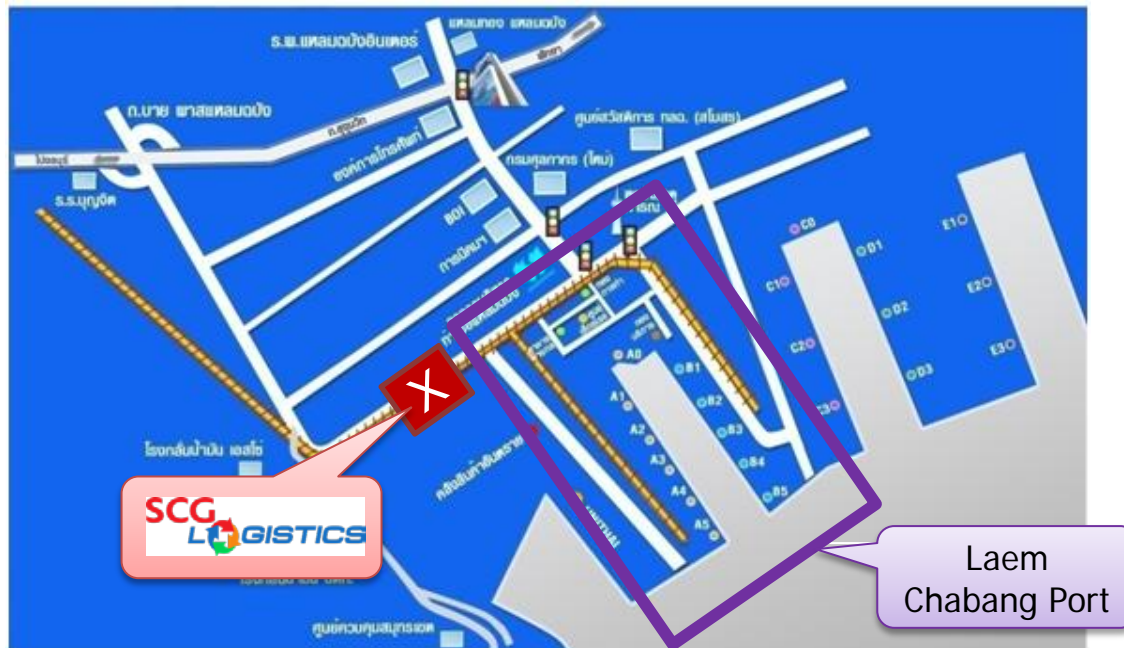
Advantage ESC - LCB Port

• **Shorter distance from ESC to LCB port (3-5 km)**

• **Nearby Container Yard (5-10 km)**

• **Regulation : Can carry 18Ton x 2TEUs/Trip**

Analysis

> *New Model Design*

MTP

85 km

30Ton with Full Trailer

LCB Area

Container Yard

LCB Port

ESC

18Ton x 2TEU

Customer Plants

Remark: ▰ Loaded container ▱ Empty container
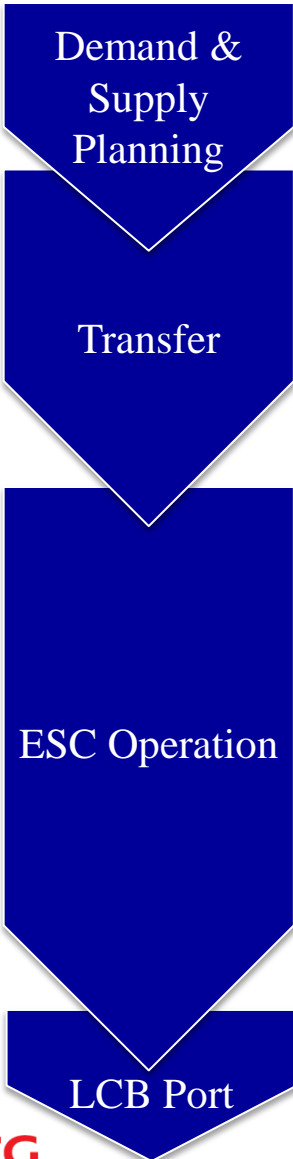
- Fully utilize transfer trucks
- More flexible operating hours for containers pickup / return
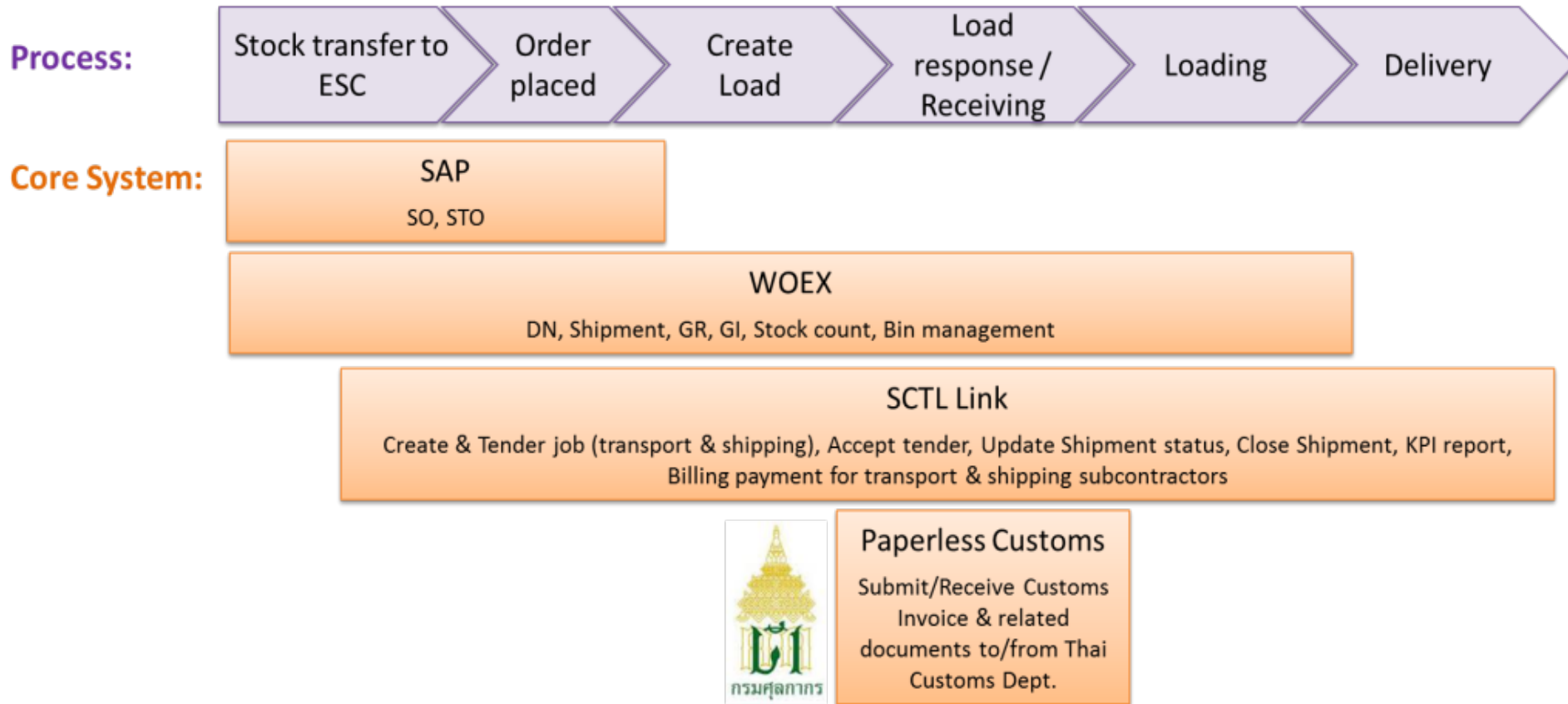- Less container shortage problem

SCG L◇GISTICS

> ## *Work Process*

Demand & Supply Planning
- Monthly S&OP
- Daily plan
  - Stock level
  - Transfer volume
  - Export volume

Transfer
- Transfer from Customer plants to ESC

ESC Operation
- Receiving
- Stock
- Dispatching
- Container preparation

LCB Port
- Receiving
- Load to vessel

Stage	Customer		SCG-L			SCG-L's Subcontractor			KPI
	at Plants	at Head office	Sales	CS & LPC	Transport	Warehouse	Shipping	Transport	Warehouse
Demand - Supply Planning	S&OP meeting: demand - supply planning → Production planning → Demand Planning by model (direct or transfer to ESC); Production & Stock; Stock Transfer planning				Truck supply planning	Space, labor, equipment planning				Forecast accuracy
Stock transfer to ESC	Prepare product, loading facility; Load product; Update stock level in system	Create Stock Transfer order	Create Job Order; Tender Job order to carrier(s)			Accept Job order; Truck(s) go to plant to pick up products; Truck(s) go to ESC; Update stock level in system			Prepare space, labor, equipment; Unload & store product in WH	
Order Placed	Confirm & place order									Order fulfillment
Create Load		Create loading plan & Issue order	Create Job Order; Tender Job order to carrier(s)							On-time tender *(1 day after receive order)*
Load Response / Receiving			Prepare customs documents			Prepare customs documents	Accept Job order; Truck(s) go pick container from contacted CY			On-time accept tender; % Accept tender; *1 day*
Loading	Check product stock in system; Check customer's credit; Plan load product; Plan product, loading shade,		Confirm product & container readiness		Receive empty container & documents; Confirm SO with product & container readiness			Prepare labors & facilities; Check product & container physical conditions; Load; Seal container and confirm		On-time inbound; *finish load within 1 day after having empty container*
Delivery	Close order / shipment		Close customs documents		Update stock level in system			Deliver laden container to port		On-time inbound; On-time delivery

SCG LOGISTICS

Implementation

➢ *ICT System*

Process: Stock transfer to ESC → Order placed → Create Load → Load response / Receiving → Loading → Delivery

Core System:

SAP
SO, STO

WOEX
DN, Shipment, GR, GI, Stock count, Bin management

SCTL Link
Create & Tender job (transport & shipping), Accept tender, Update Shipment status, Close Shipment, KPI report, Billing payment for transport & shipping subcontractors

Paperless Customs
Submit/Receive Customs Invoice & related documents to/from Thai Customs Dept.

ESC Management System : Truck Transfer Process

Transfer See Thru, control process by GPS visibility 4 Stations

GPS Real Time Monitoring

Transfer Truck Status

ESC Station · Rayong Site · On the way to site & ESC

Internal use only, do not distribute
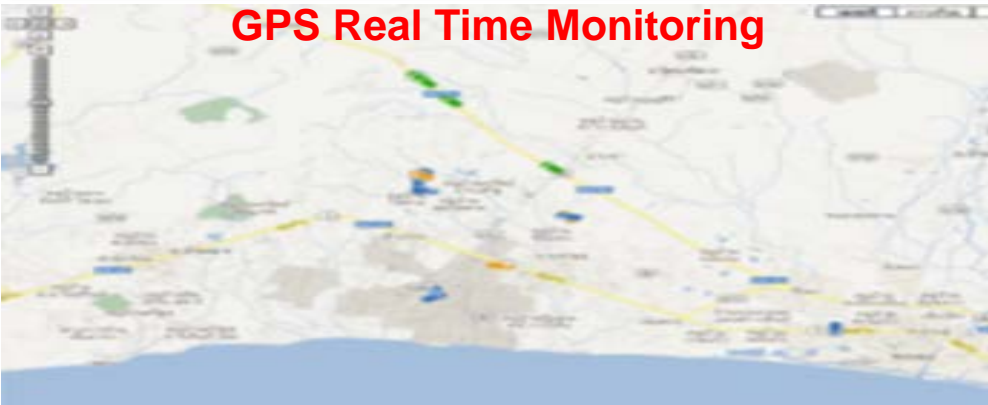
Implementation

> ## ICT System

ESC Management System : Dispatching Process
The Excellence system for Visibility, Track & Trace of Export operational.

Receive → Storage → **Receive Cont.** → **Assign Shade** → **Loading** → **Deliver**

Container Yard Management

Real Time loading monitoring PIC : CY   Planning   TSA   HandHeld by shipping

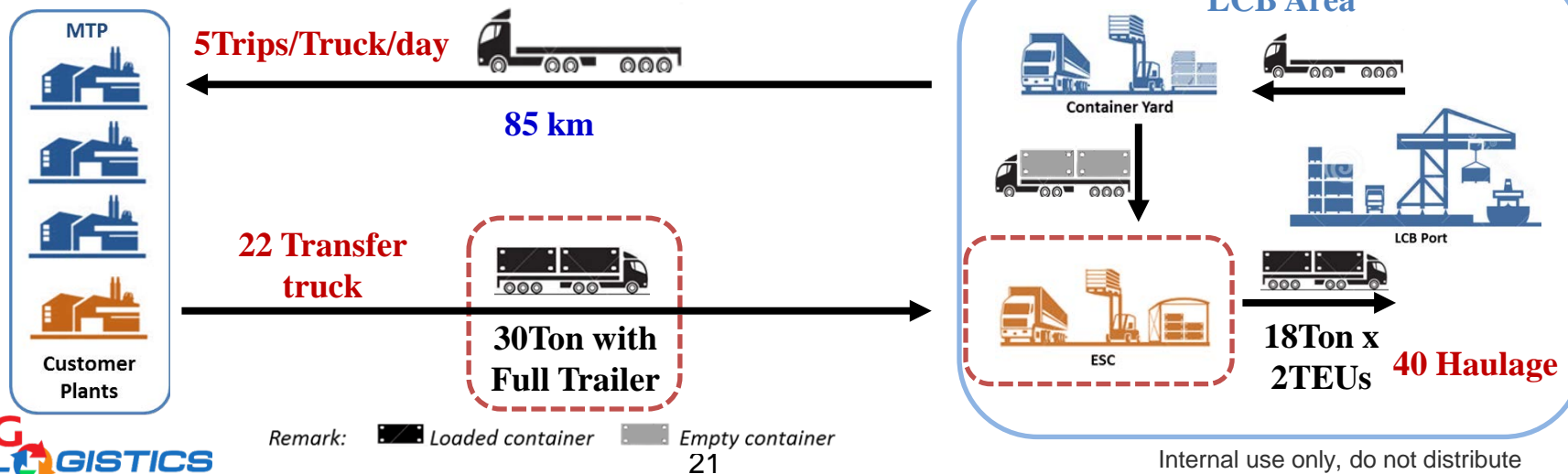| TPE		28067397		50300155375		29/03/2013		27/03/2013	31/03/2013		12:00	B2		4/6	
Number	Container No.	Seal No.	Type	AV Status	Receive Container	Assign Shade	Weight In	Photo Before Loading	Photo After Loading	Take Seal Photo	Weight Out	Release Container	Goods Ctrl List	Shore	DN
01	EGHU3032771	EMCHGR0002	20'	Full	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴
02	EISU3790629	EMCHGR0032	20'	Full	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴
03	WFHU1311752	EMCHHC3382	20'	Sound	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴
04	EMCU3763430	EMCHHC3272	20'	Full	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴

distribute

Benefit from ESC Model

1) **Transportation cost saving from short distance for customers 12%**
2) **Increase truck utilization from 2 trips/day to 5 trips/day**
3) **Reduce Haulage truck supply from 70 to 40 trucks**

Existing Direct Model

70 Haulage — Empty container x 2TEUs

18Ton x 1TEU Due to regulation of weight

2Trips/Truck/day — 85 km

Remark: Loaded container 18Ton — Empty container

Container Yard — LCB Port

ESC Model

5Trips/Truck/day — 85 km

22 Transfer truck — 30Ton with Full Trailer

LCB Area — Container Yard — ESC — LCB Port

18Ton x 2TEUs — 40 Haulage

Remark: Loaded container — Empty container
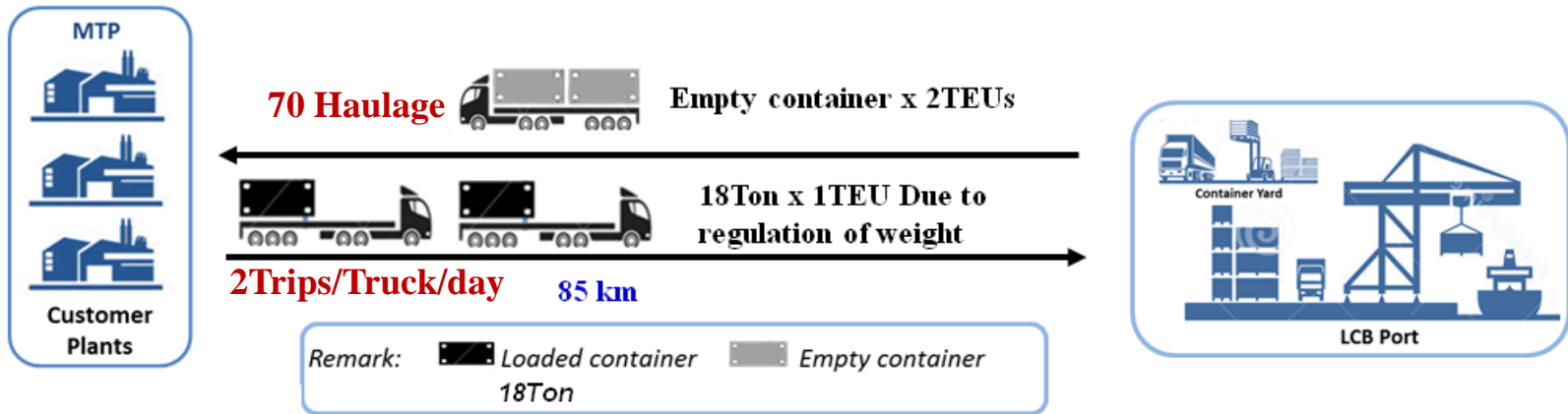
SCG LOGISTICS

Confirm the Effects

➢ *Cost Competitiveness*

Cost Benchmarking of alternative models

THB per ton

- Operating & Management Cost
- Logistics Cost : Transfer
- Logistics Cost : Container

Direct Model | ESC Model (Good ⬇) | Other Service Provider

➢ *Ability to serve fluctuation*

Dispatching July 2010

- Daily
- Accumulate
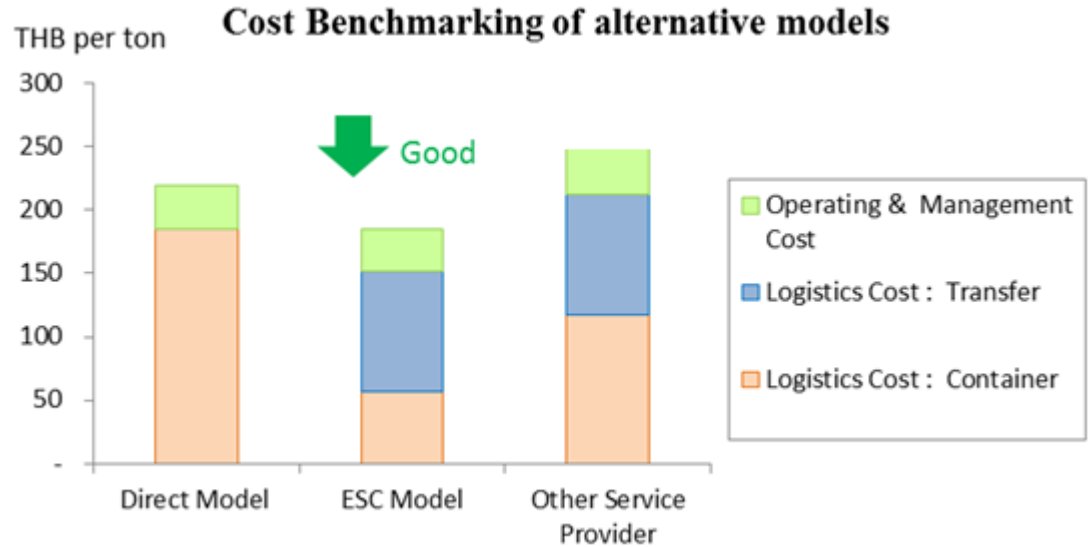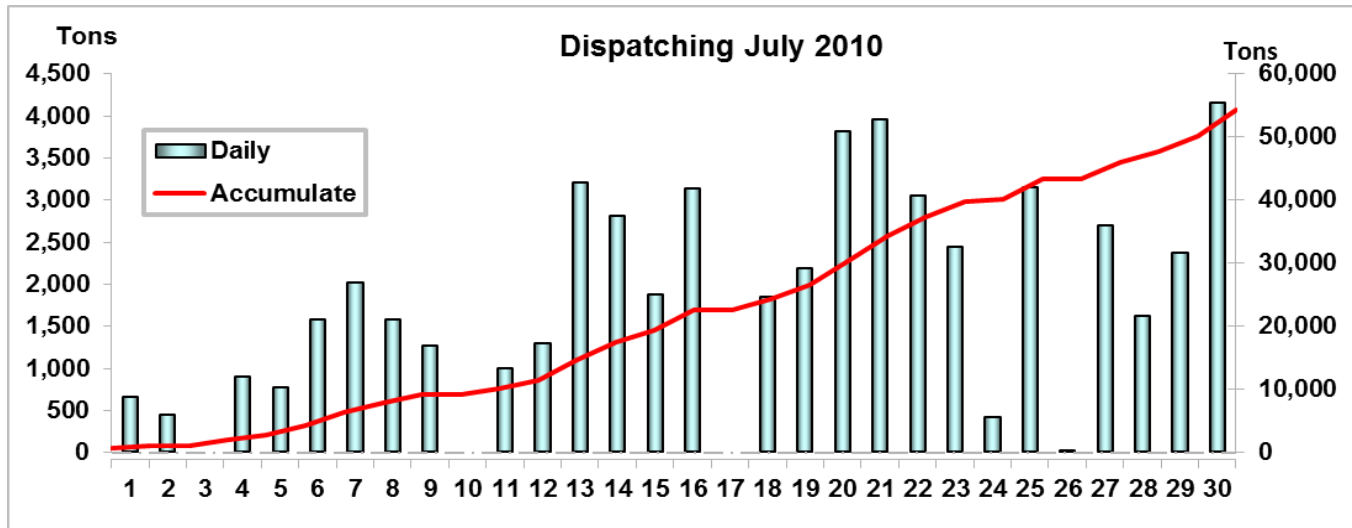
SCG LOGISTICS

Confirm the Effects

➤ To Customers

On time Delivery, 2010 - 2014

Values: 2010: 100%, 2011: 100%, 2012: 100%, 2013: 100%, 2014: 100%

Legend: ☐ % On Time Target, ■ % On Time Actual

↑ Good
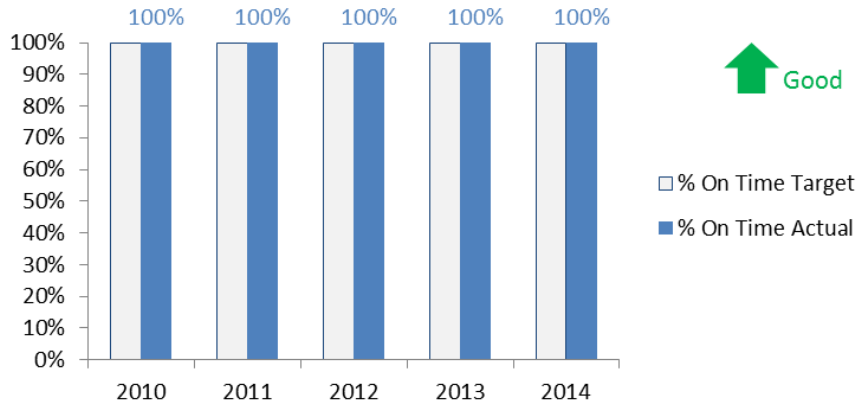
Product Damage, 2010 - 2014

Actual values: 2010: 0.037, 2011: 0.028, 2012: 0.036, 2013: 0.027, 2014: 0.014

Target values: 2010: 0.040, 2011: 0.035, 2012: 0.033, 2013: 0.033, 2014: 0.033

Legend: ☐ % Damage Target, ■ % Damage Actual

↓ Good
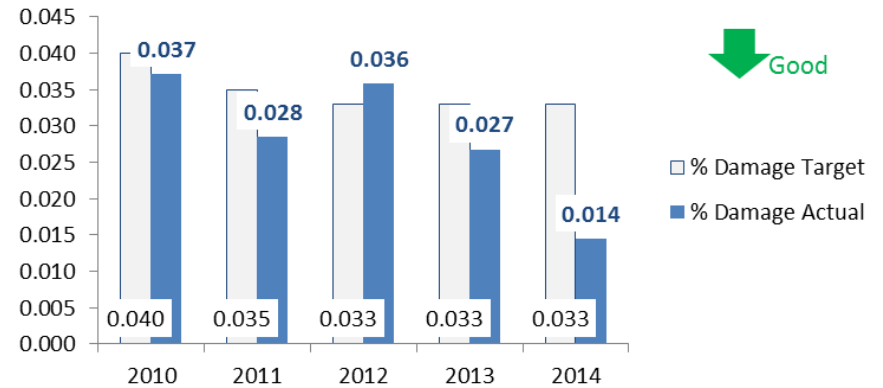
➤ To SCG Logistics

Number of Container and Customer using ESC, 2008-2014

TEUs / No.Of Customer

No.of Customer values: 2008: 1, 2009: 2, 2010: 7, 2011: 8, 2012: 9, 2013: 15, 2014: 18

↑ Good

Legend: ■ ESC, ■ No.of Customer

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Confirm the Effects

Customer
- Lower cost
- Better service level

Community
- Better road condition

SCG Logistics
- Increase revenue
- Increase new customers

Truck's Carrier
- Better truck utilization
  → Increase carrier's revenue

Monthly Export Volume of the Customer through ESC Model, 2008 - 2014

tons

ESC phase 1

ESC phase 2 onwards

Good

End of Presentation

Thank you for your kind attention