

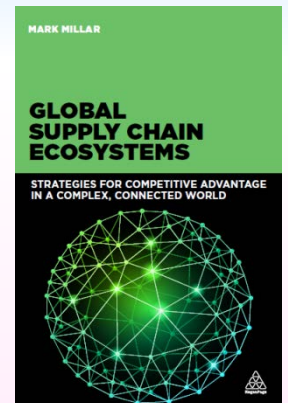


Warehousing & Distribution, E-Commerce and Last Mile

Mark Millar

Singapore, March 2016

www.markmillar.com



Mark Millar MBA, FCILT, FCIM, FHKLA, GAICD, SCOR-P

Speaker, Moderator, Advisor, Author
Managing Partner, M Power Associates

Mark Millar leverages over 30 years global business experience to provide value for clients with informed and independent perspectives on their supply chain strategies in Asia.

Acknowledged as an engaging presenter who delivers a memorable impact, Mark has completed over 350 speaking engagements at corporate events, client functions and industry conferences across 23 countries.

A Visiting Lecturer at Hong Kong Polytechnic University, Mark is recognised in the '*China Supply Chain Top 20*', as one of '*Asia's Top 50 Influencers in Supply Chain and Logistics*' and in the USA listing of '*Top Pros-to-Know in Supply Chain 2016*'.

Mark's book "[Global Supply Chain Ecosystems](#) – *strategies for competitive advantage in a complex, connected world*" is available from publisher [Kogan Page](#) of London.



[**www.markmillar.com**](http://www.markmillar.com)



Integrated Logistics and Transport

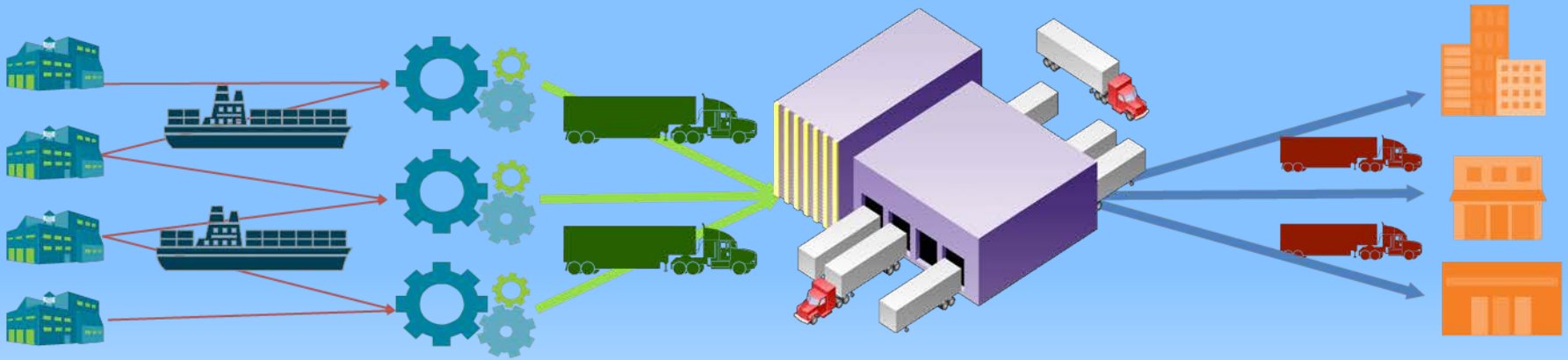
- enable and empower supply chain ecosystems
- every business, everywhere; the lifeblood of trade



the GLUE that connects and empowers the supply chain ecosystem

Logistics Definition

The Business of Logistics is the Logistics of Business!



Logistics: is that part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information - from the point of origin to the point of consumption, in order to meet customers' requirements

Logistics Sector

3 distinct Business Segments

Express

1

Global Integrators
DHL, UPS, FedEx, TNT



Closed Loop System
Asset Intensive
High Entry Barriers
Asset Utilisation

Forwarding

2

INTERNATIONAL
FREIGHT FORWARDING



Buy Sell Trading
Low Entry Barriers
Asset Light
Consolidation

Logistics

3



Trucks and Sheds
High Complexity
Tribal Knowledge
Cost+, Gain Share

Logistics Functions within the Supply Chain

ANALYTICS		PLANNING		MANAGEMENT	
Supply Logistics	Distribution	Reverse Logistics	Service Parts Logistics		
Vendor Management Inventory (VMI)	Value-Added Logistics	Diagnostics / Triage	Fulfilment		
Sequencing	Finished Goods	Repair / Reman Refurb	Pick up / Drop off point (PUDOs)		
Retail Consolidation	Kitting	Warranty Management	Forward Stocking Location (FSLs)		
Milkround	Pick-Pack-Ship	Failure Analysis Optimisation	Reverse Logistics		
	Merge in Transit	Asset Recovery			
	Cross-docking	Destruction Validation			
		Parts Reclamation			

Parties involved in Global Transport of goods

1. **Shipper** – sending (shipping) the goods
Beneficial Cargo Owner BCO
2. **Carrier** – carries the goods on vessel/aircraft
asset 'owner' / operator
Shipping Line – Maersk, CMA-CGM . . .
Airline – Emirates, Lufthansa, United, Cathay
3. **Logistics / Freight Forwarder**
Global - DB Schenker, Panalpina, CEVA, DHL
Local – thousands of medium and small forwarders

Definition of Contract Logistics

Contract logistics includes revenues derived from integrated warehouse and transportation services, supply chain services and value added logistics including sub-assembly, intervention, postponed manufacturing, kitting, labelling etc.. Within the context of a long term relationship between supplier and client, formalised on a contractual basis.

Dedicated contract carriage(DCC) / contract distribution is considered to be a contract logistics service.



Global Contract Logistics 2015

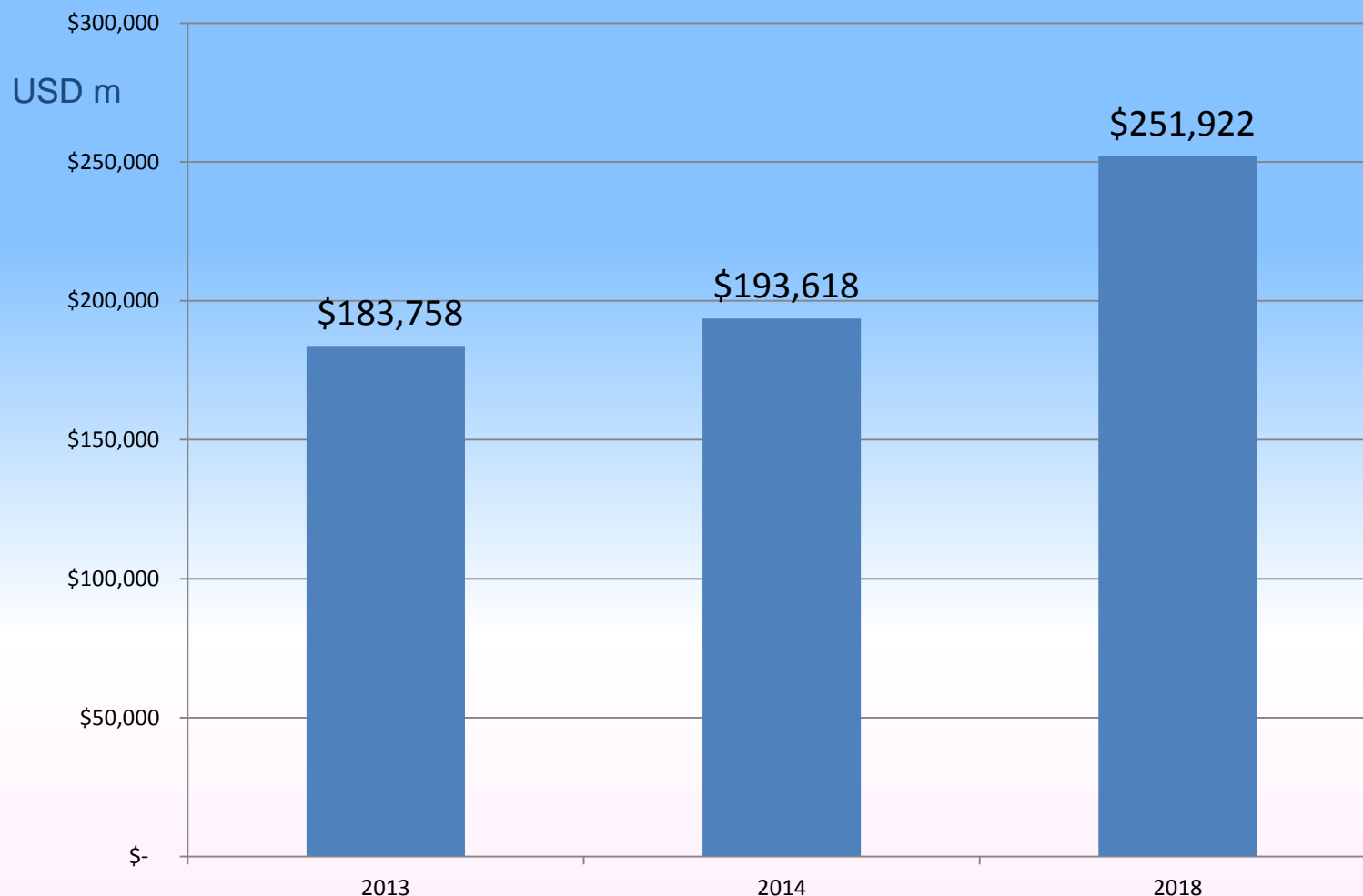
Industry-leading research into development and innovation within the global contract logistics market. Providing unique analysis of global, regional and country level contract logistics market sizes as well as detailed profiles of some of the leading logistics providers.

April 2015
Report code: TIGCL1505



Global Contract Logistics Market Value

- growing 5.4% CAGR to **USD 252 BN** in 2018

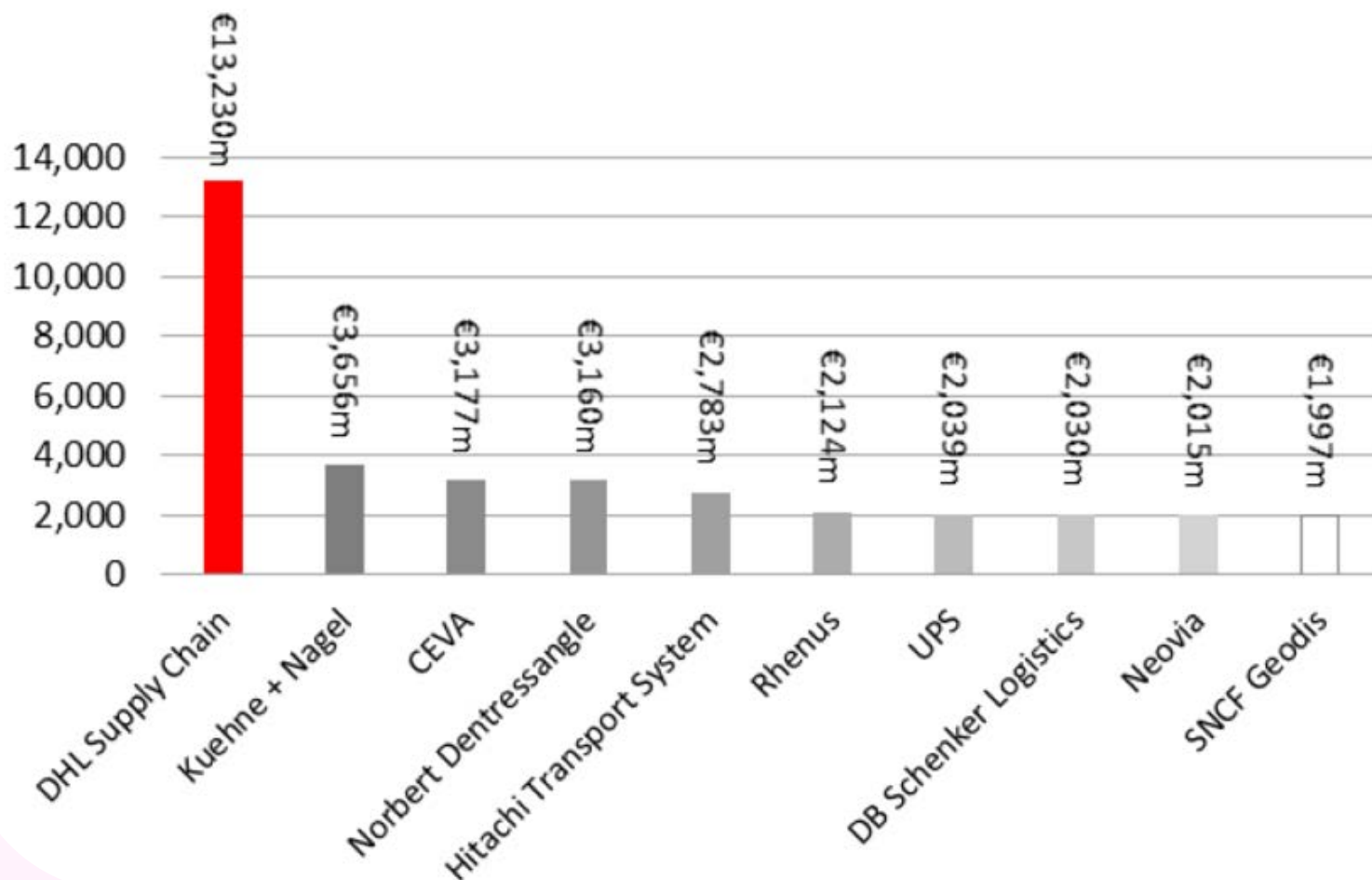


Global Contract Logistics Market

Top Ten Providers – Revenue (Euro = 1.09 USD)



Top 10 global contract logistics providers by revenue

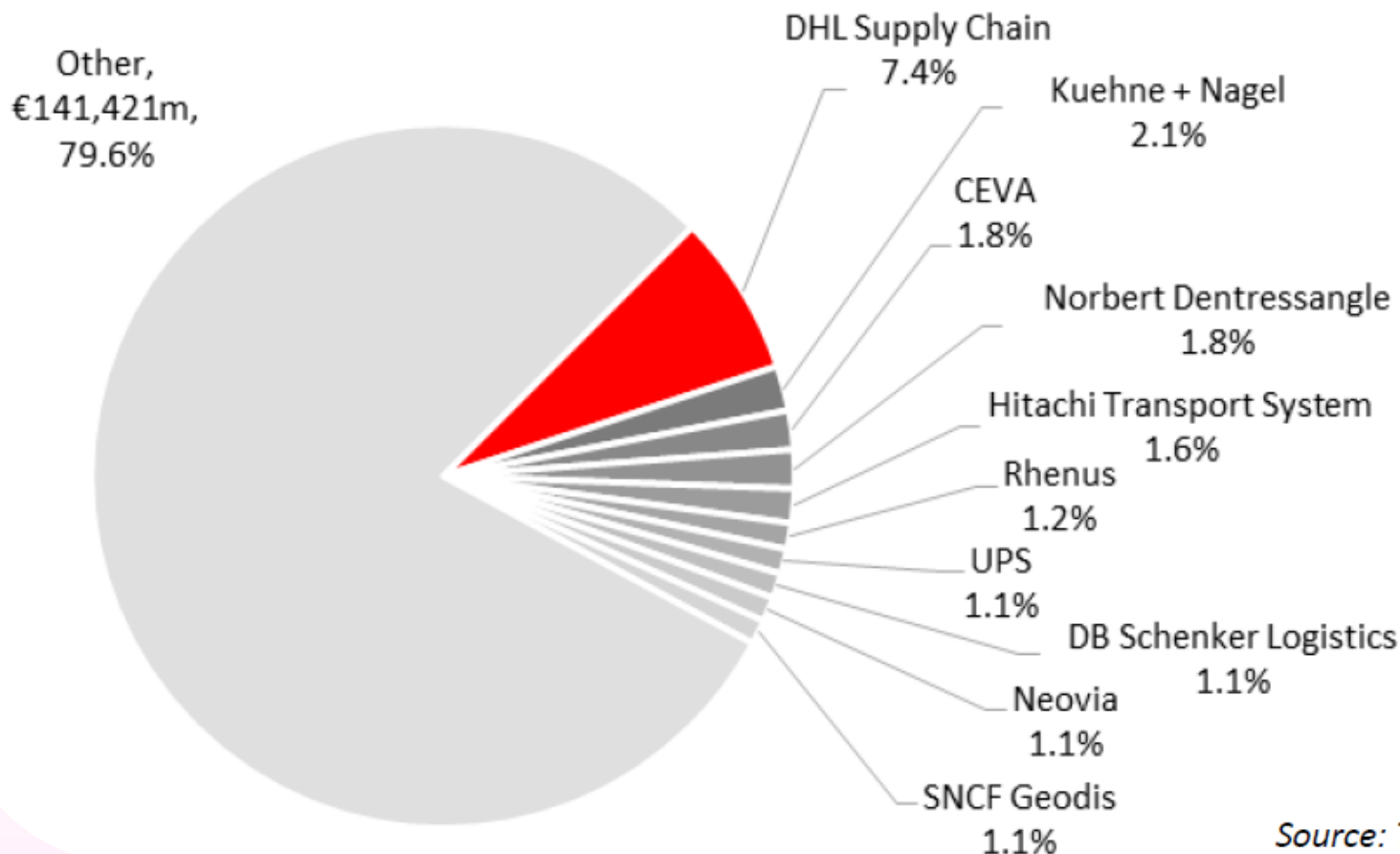


Global Contract Logistics Market

Top Ten Providers - Share



Global market share of top 10 contract logistics providers by revenue



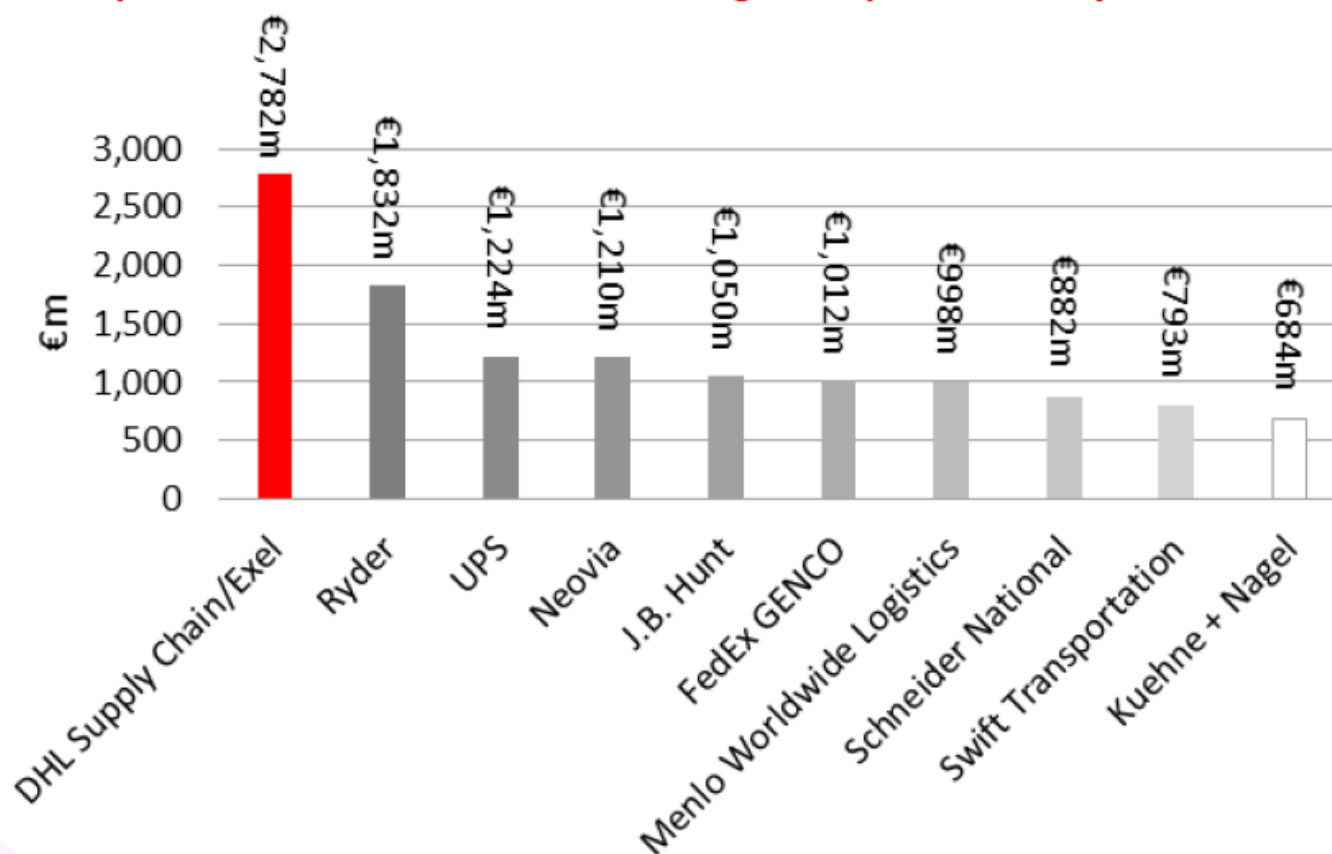
Source: Ti

North America Contract Logistics Market

Top Ten Providers - Revenue (Euro)



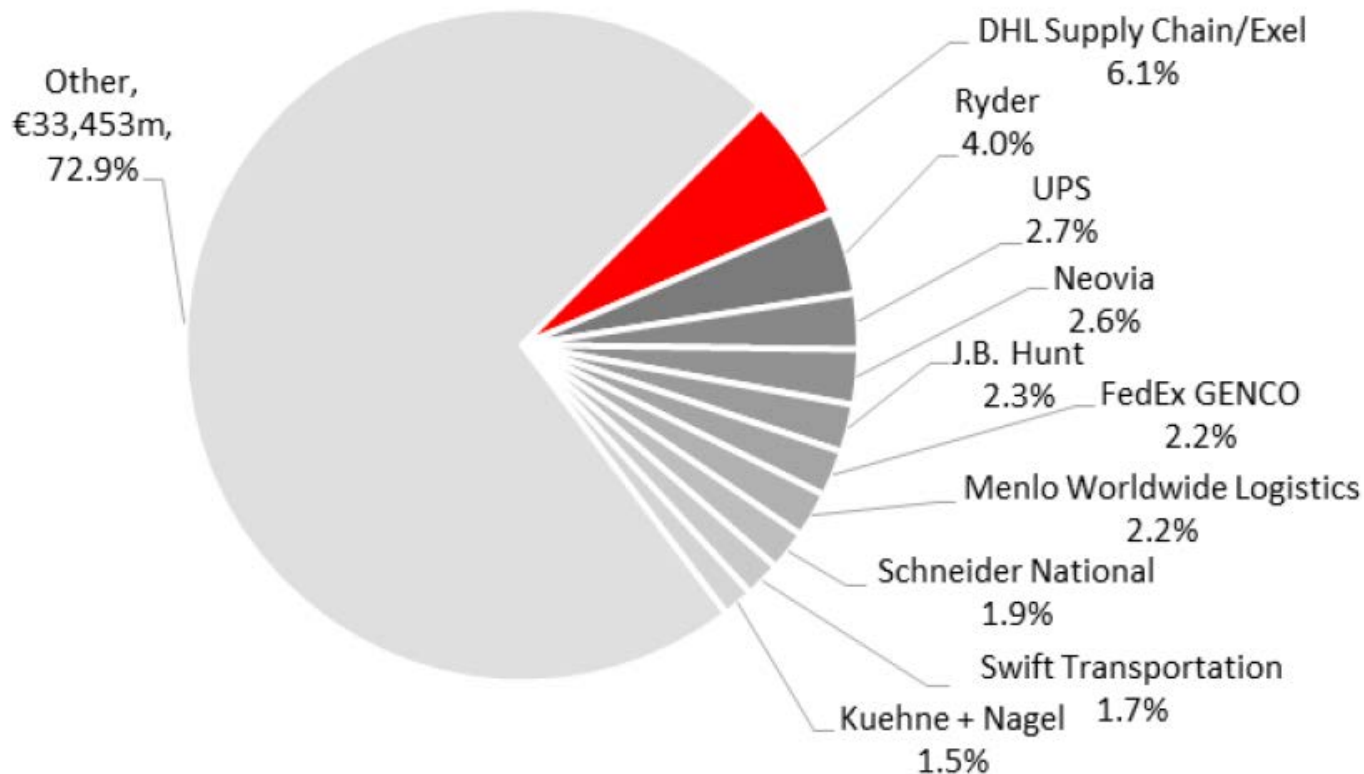
Top 10 North America contract logistics providers by revenue



North America Contract Logistics Market Top Ten Providers - Share



North America market share of top 10 contract logistics providers by revenue



Changing Role of the Warehouse

Time



Traditional Stocking Warehouses

- Receiving
- Put-Away
- Storage Operations
- Picking
- Packing
- Shipping

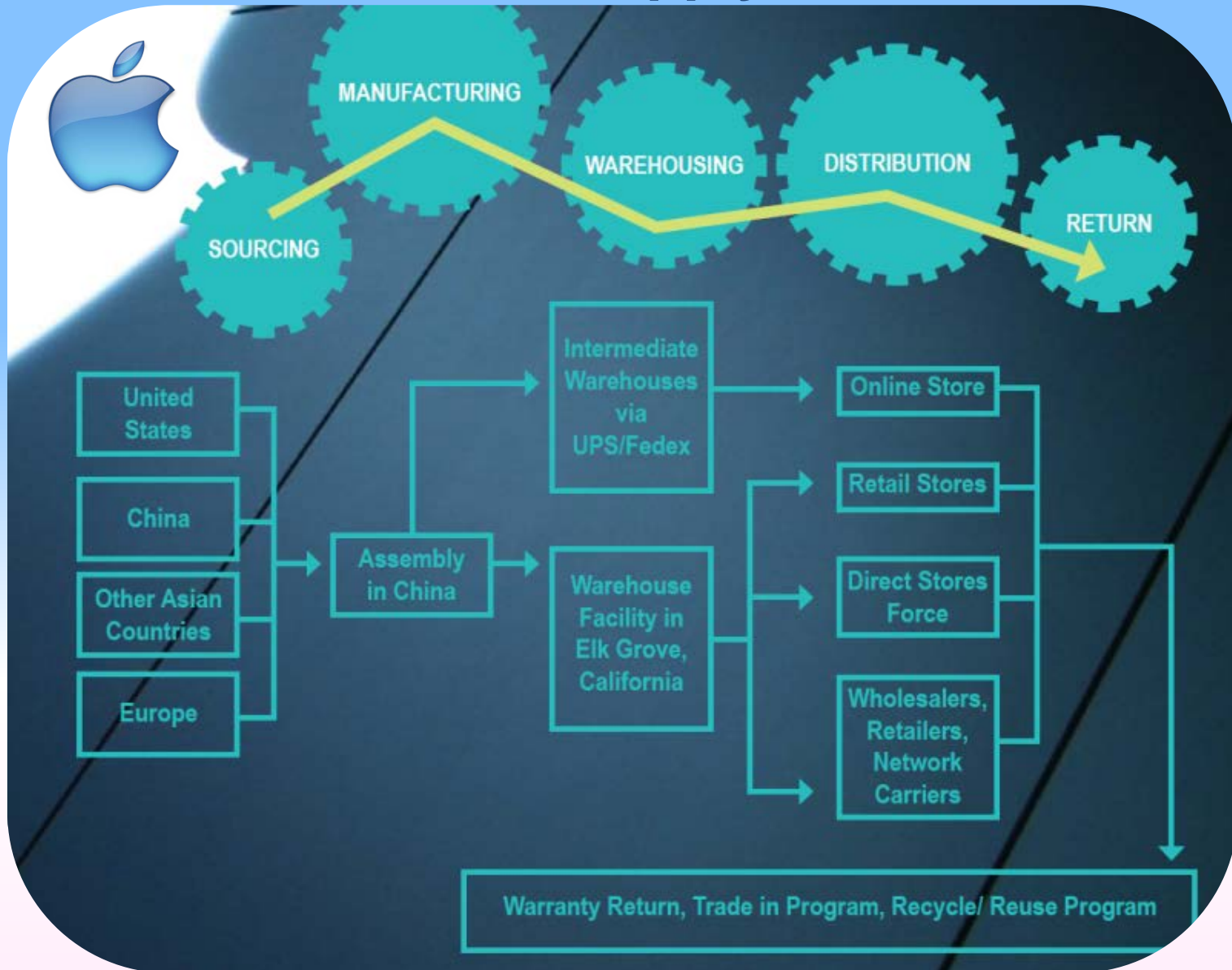
Distribution Centers (DCs)

- Scheduled Cross-Docking
- Special Handling
- Kitting Operations
- Returns Handling
- Simple "Postponed" Manufacturing Steps
- Other Value-Added Services

Fulfillment Centers (FCs)

- Dynamic Cross-Docking
- Mixed-Mode Fulfillment
- Multi-Channel Including On-Line Fulfillment
- Distributed Order Management (DOM)
- "Green" Operations (e.g. End-of-Product-Life Disposition, Recycling, and Reclamation)

Warehouse within the Supply Chain



Warehousing Considerations

1. Warehouse Layout
2. Picking Strategies
3. Material Handling Equipment
4. Warehouse Management System
5. Operational Efficiency & Metrics

Warehouse Layout

Five fundamental process objectives

Warehouse designs should be based on throughput not storage

- Evaluate the number type and physical features of the products
- Understand the potential changes in product profiles over time
- Evaluate type and variability of demand and order profiles
- Look at forecasted growth over the next five years

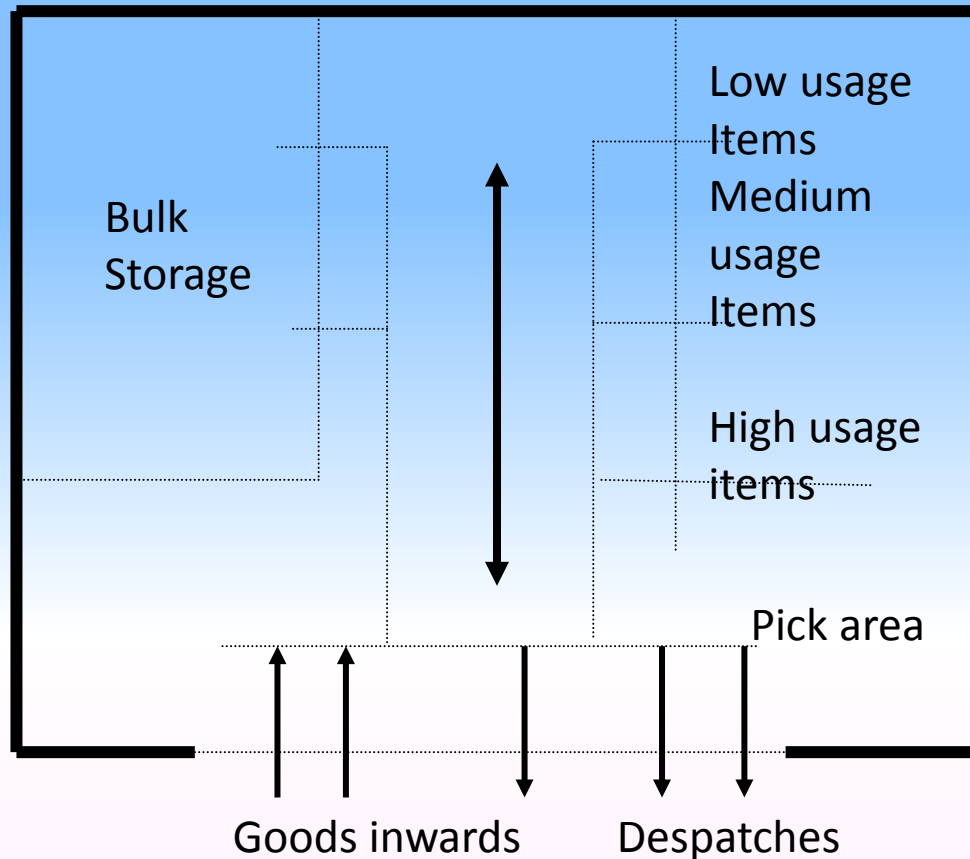
Emphasis is placed on eliminating time, space and movement

Productivity: Eliminate, Automate, Accelerate

Material and information flow should be properly integrated to avoid delays and uncertainty

Warehouse Layout options

Inverted 'T' Warehouse Flow



Advantages

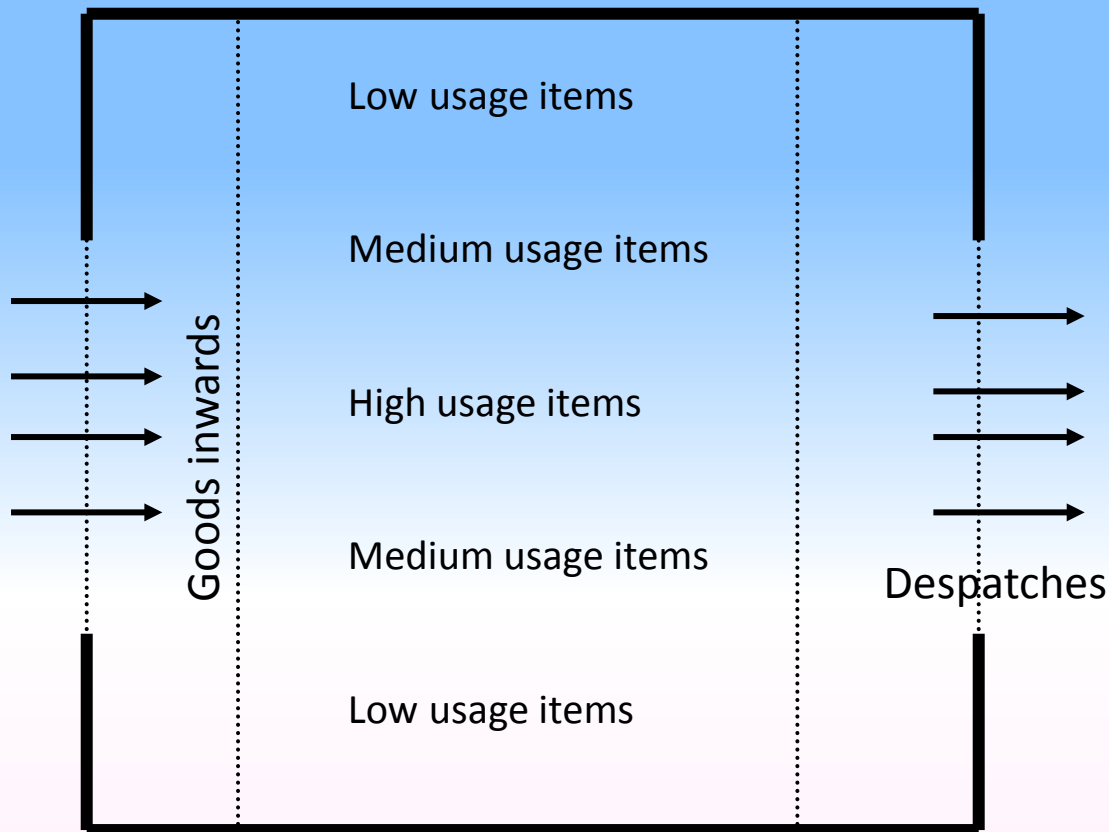
- Better utilisation of loading docks
- Reduction in total area required
- Increased flexibility
- Unified management of merchandise flow
- Better security control
- Ability to extend warehouse
- Improve employee comfort and reduce heat loss

Disadvantages

- Congested central area
- Potential friction between inbound and outbound teams

Warehouse Layout options

Through Flow Warehouse



Advantages

- Less disruption at the loading bays
- Natural flow of goods

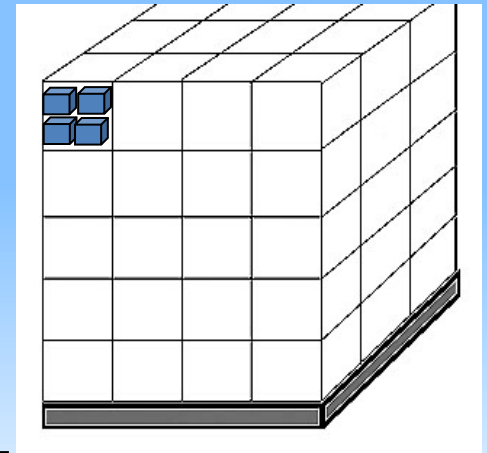
Disadvantages

- More difficult to expand without major changes internally
- Increase security required
- Possibility of requiring 2 exits from the yard

Picking Strategies

Four types of pick requirement within a warehouse:

1. Full-pallet pick
2. Layer pick
3. Full-case or carton pick
4. Piece, unit, item or broken-case pick



Materials Handling Equipment (MHE)

The key principles of **Materials Handling** are:

1. Continuous movement is most economic
2. Economy is directly proportional to size of load
3. Standardization reduces costs
4. Mechanization improves efficiency
5. Gravity is cheap
6. Simplicity is the goal



Gravity is Cheap

- carton-flow rack



Warehouse Management System (WMS)

WMS – the essential system that -

- Controls all the processes in the warehouse.
- Directs data within the warehouse.

Accurate data input throughout the warehouse essential – best achieved through automated data capture.

- Replace manual processes with WMS-controlled automated ones.

Pick the most appropriate picking / process methodology for -

- The warehouse.
- The range and type of products.

Real time data in most circumstances.

Improved productivity and reporting.

Assessing Warehouse Efficiency

1. Yard Process
2. Inbound Process
3. Outbound Process
4. Task Management
5. Inventory Management
6. Warehouse Labour

Assessing Warehouse Efficiency

Yard Process – You need a plan for handling the trailer before it arrives at your gate. Does it go straight to a door, sit and wait based on priority, or is it arriving as replenishment stock and only needs to be dropped off?

Inbound Process – The moment the product arrives at your facility you need to know where it's headed, how it needs to be handled and how long it may need to stay there. We call it a "Plan For Every Part" (PFEP).

Outbound Process – A big step that you can't overlook is the final piece of the puzzle – the outbound process. Two keys to shipping the perfect order are ensuring you have done all the required previous steps for handling at your location, and doing it on time.

Task Management – Once all available product is on hand and the work required is known, how do you prioritize what needs to be handled to achieve maximum efficiency? The most efficient way to execute this is by using your WMS as the backbone, and letting it optimize task assignments.

Inventory Management – Last-In-First-Out (LIFO), First-In-First-Out (FIFO), first available, cross-docked product – how you choose to stock and use your inventory will greatly affect the required handling, racking and the processes within the building.

Warehouse Labour – This component drives roughly 70 percent of your overall cost of doing business in a warehouse. It's easy to throw extra staff at a problem to meet demand, but the trick is planning and optimizing to minimize the single largest line item in your warehouse budget.

Top 10 WERC Metrics by importance

Metric	Major opportunity	Typical	Median	Best in class
On-time shipments	<96%	≥96 and <98.3%	99%	≥99.8%
Internal order cycle time	>27.4 hours	≥8 and <21.2	12 hours	<3.4 hours
Total order cycle time	>72 hours	≥24 and <28.9 hours	24 hours	<8 hours
Dock to stock cycle time	>24 hours	≥5 and <9.1 hours	7.2 hours	<2.4 hours
Order pick accuracy	<98%	≥99 and <99.6%	99.4%	≥99.9
Lines picked and shipped per hour	<12.3	≥23.2 and 45 per hour	34 per hour	≥70 per hour
Supplier orders received damage free	<95%	≥98 and <99%	98.9%	≥99.5%
Average warehouse capacity used	<70%	≥80 and 87.6%	85%	≥91.1
Lines received and put-away per hour	<8.3 per hour	≥16 and <25 per hour	22 per hour	≥58.8
Back orders as a % of total orders	>8%	≥1.2 and <4%	2%	<0.14%
<i>Perfect order index</i>	<85%	≥91.1 and <98%	96%	≥99.3

Order Picking Errors – Costs?

- consequences and costs of a mis-pick

1. Cost of recovering the item
2. Labour cost of in-handling and checking the item on its return;
3. Cost of picking the replacement item;
4. Cost of repacking;
5. Cost of redelivery;
6. Administrative costs of handling credit claims, etc;
7. Cash flow with reference to non-payment of invoice;
8. Possible stock write-off if the returned product is outside an acceptable shelf life or has been damaged in transit.



Cost of Warehouse Errors

	Volume	Occurrence	Approx. cost per occurrence	Total Cost
Despatch errors (96% accuracy)	50,000 orders	4.0% error rate	\$45	\$90,000
Shrinkage/loss	\$7,000,000 in stock	1.0%	0.1% x \$7m in inventory	\$70,000
Data entry error	100,000 transactions	4%	\$10 per entry	\$40,000
Miss-placed product in warehouse	50,000 orders x 5 lines per order	2%	\$2.50 Based on 10 minutes searching at \$15 per hour	\$12,500
Total				\$212,500

Some writers suggest one pick error can cost up to \$100

Six ways to Maximise Warehousing Operations

IMPROVE SLOTTING PATTERNS

Place high-velocity pick items close together and near the door. Voice-pick technology with scanners helps with efficiency.



UPGRADE TECHNOLOGY

Improving warehouse management software can provide multiple traceability benefits.



EXAMINE LABOR EFFICIENCY



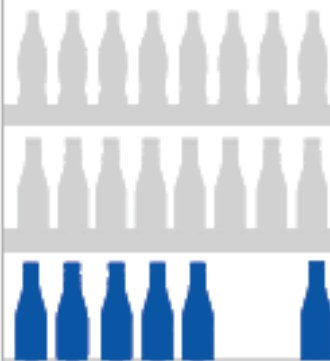
Use software to help manage movement of employees and to track productivity.

INCREASE COMMUNICATIONS



Communicate among company divisions for efficiencies. Or get help from a 3PL provider.

REPLENISH AT THE SHELF LEVEL



Logistics providers can deliver goods and stock them at the shelf level, creating a more customer-focused environment.

CREATE A CONTINGENCY PLAN

From pre-planning for everything from a natural disaster to a sudden spike in business, advance planning is the way to go.



Rental
Leasing
Logistics

Logistics Providers – alphabet soup

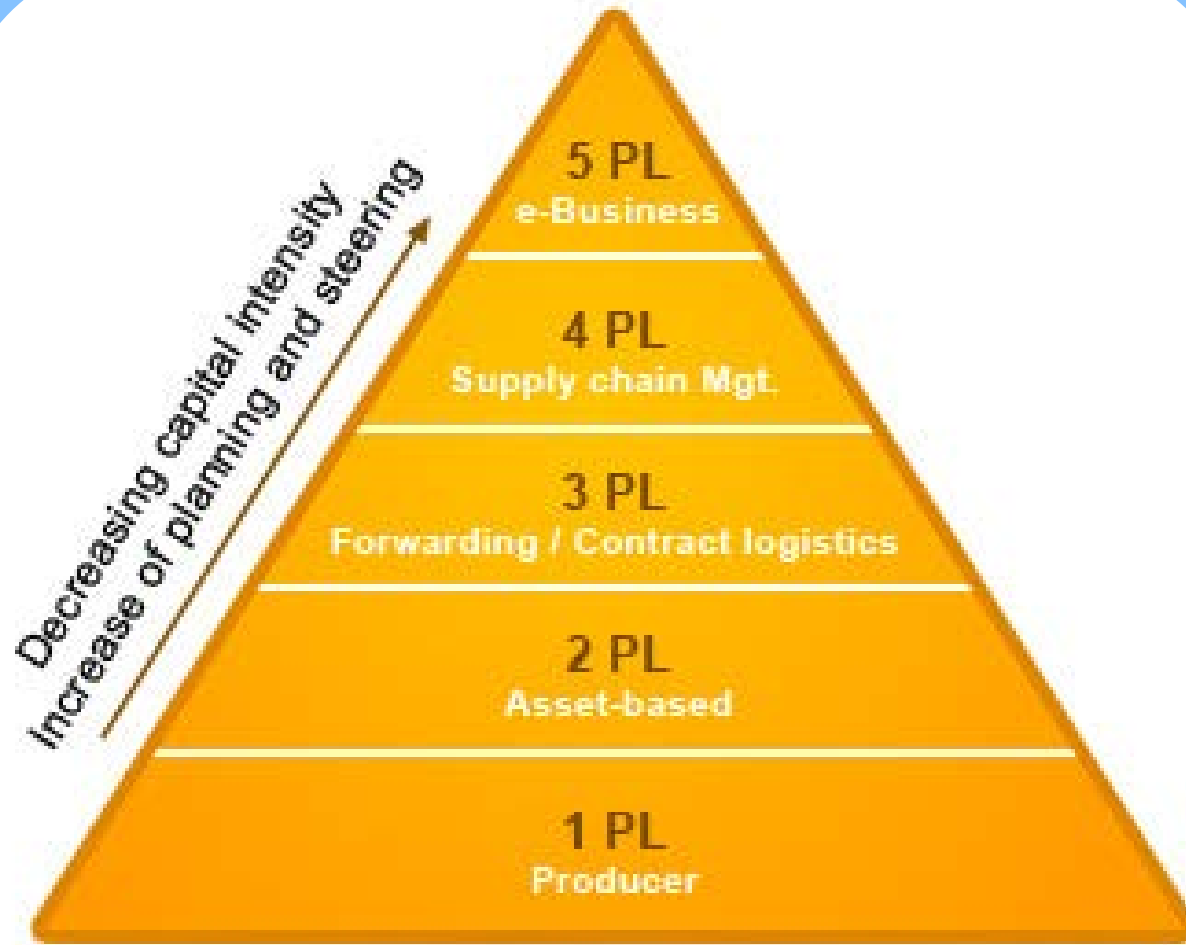
3PL

4PL

LLP

LSP

Asset Intensive vs Information Intensive



4PL vs LLP

- Same Activities, Different Models

Fourth Party Logistics



4PL

External, Above

Lead Logistics Provider



LLP

Within, Inside

Managing Multiple Logistics Service Providers

- example three LSP's – how to manage them?

Three Service Providers Management?



3PL Sector Consolidation

- Greater Scale, Less Choice?



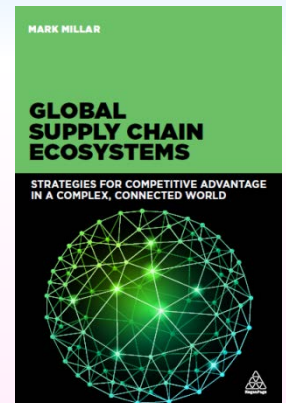


E-Commerce Fulfilment and Last Mile

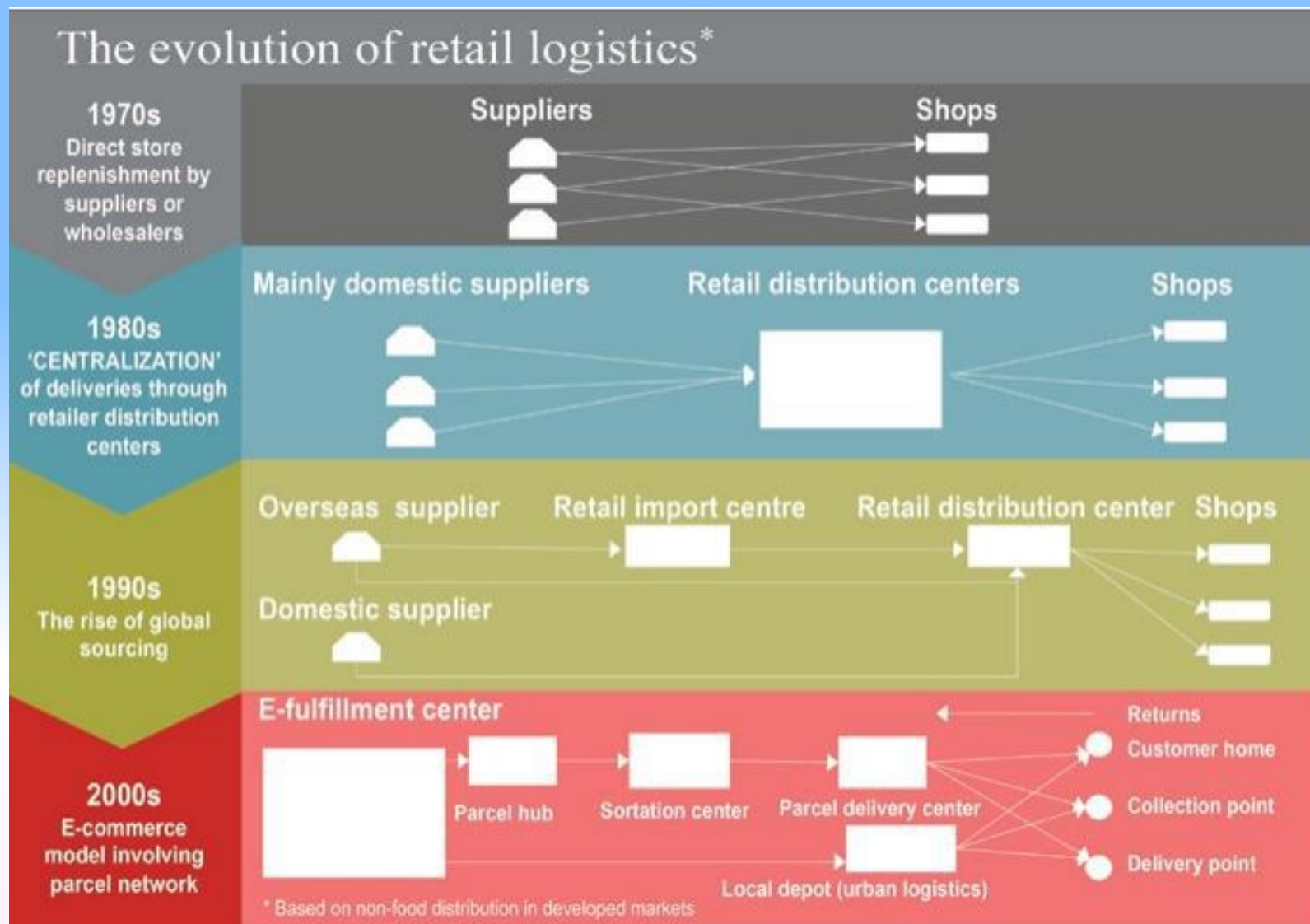
Mark Millar

Singapore, March 2016

www.markmillar.com



Evolution of Retail Logistics



Omni Channel Supply Chains



Last Mile Delivery - Complex and Costly

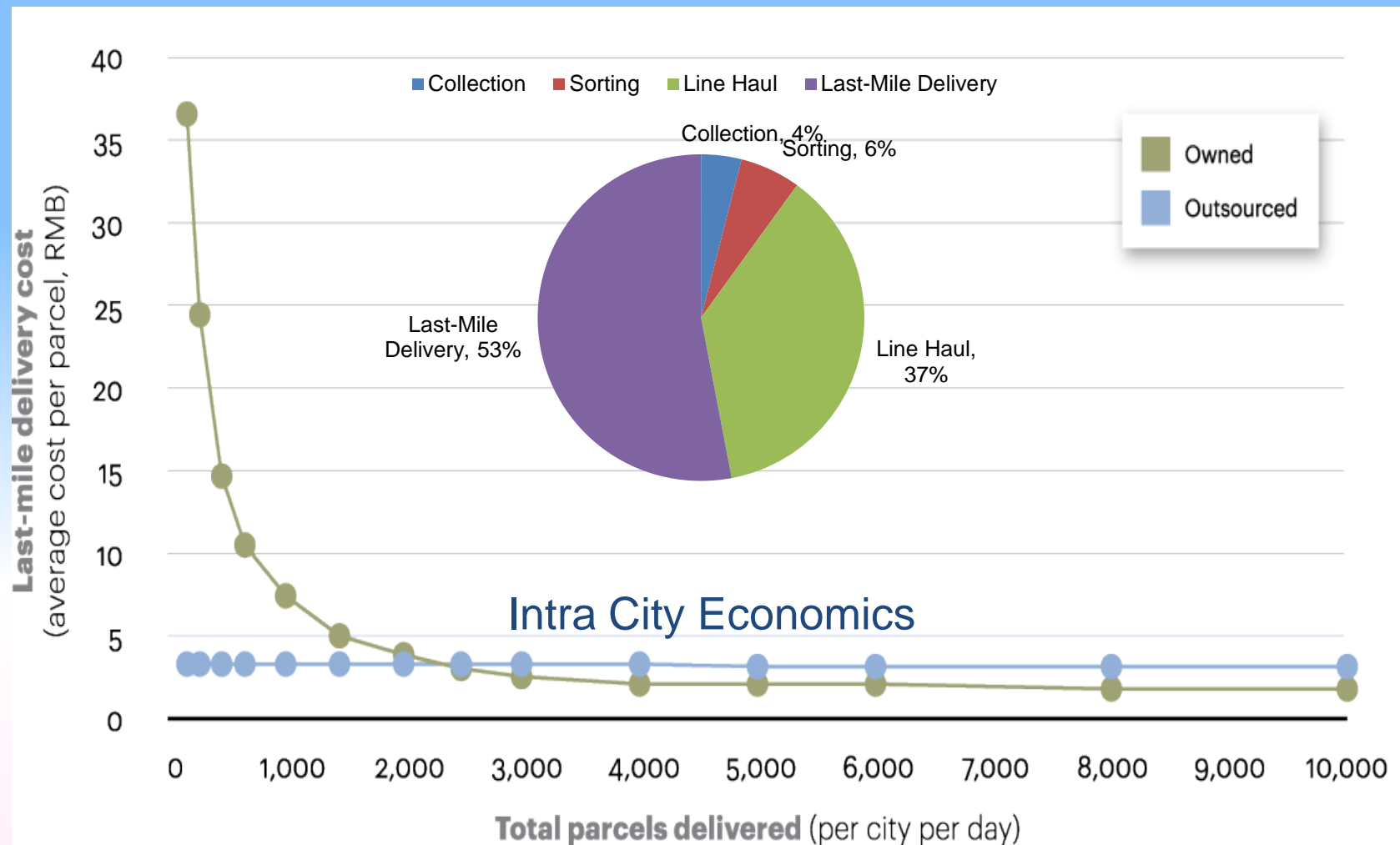
typically >50% of total delivery cost



- Generally the least efficient link
- Urban Congestion, Rural Distance
- Customer Impact – timely, condition, service

Last Mile Delivery

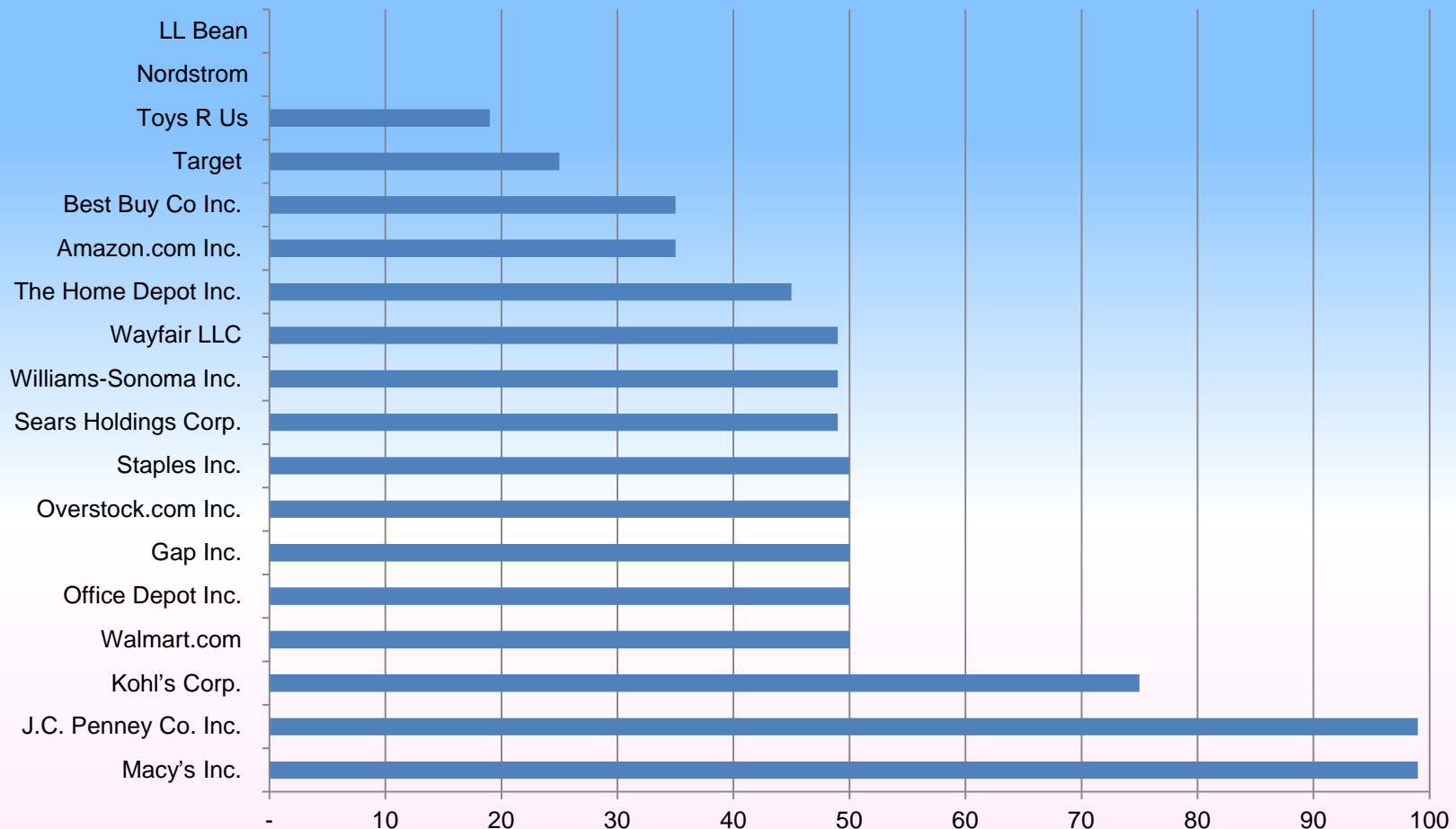
>50% of total delivery cost, drop density critical



Free Home Delivery on \$20 orders?

Toys R Us reduced minimum from \$49 to \$19

Top Retailers USD Order Value for Free Shipping



Last Mile Delivery - HOME Delivery

– Complex, Inefficient, Costly



**FREE
HOME
DELIVERY**

Challenges:

- Invalid Address
- Non Unique Address
- Buyer not at Home
- Buyer's Remorse
- Cash on Delivery
- Parking Facilities
- Building Access
- Elevator Out of Order
- **Schedule Re-delivery**

Last Mile Delivery – often the ONLY link in the e-commerce supply chain that directly touches the customer



Click and Collect – Convenient, Cost Effective

- deliver many packages to one location at same time

1



2



3



4



Last Mile Challenges

- often 2-3 attempts to make a home delivery



Sorry we missed you ... **PARCEL-FORCE** WORLDWIDE

We called to deliver to No 7 on 11/16 at 5/15

Your parcel :

- ☐ is from ALG
- ☐ will be delivered again
- ☐ has a charge to pay of £ 515 (cash/cheque only)
- ☐ was left ALG
- ☐ needs to be signed for.
- ☐ has been returned to our depot. Please contact us within 5 days.
- ☐ will be at the Post Office as you requested, from midday tomorrow (Mon-Fri).

Please contact us on 0870 588 5588 or www.parcelforce.com/contact to arrange another delivery, or to collect the parcel from our depot. You can also arrange to collect it from your local Post Office for a 50p fee. Please allow one day after this card was left before coming to collect, and bring this card and proof of identity with you.

Driver ALG Route WLS

Unsuccessful Home Delivery – everyone suffers

Parcels operator

- Each failed delivery costs an estimated USD 60 in direct and opportunity costs
- Parcels not delivered take up room in a van which could be used for other deliveries
- Administration required to agree and organise new delivery time

Recipient

- Poor perception of the retailer's customer service
- Potential requirement to take time off work to receive goods
- May choose alternative high street retailer to meet immediate needs

Retailer

- Loss of custom to alternative retail channels
- Loss of brand equity

Opportunity? Mall Services



Opportunity? White Glove Services



Walmart's eCommerce Fulfillment Center Network (1.43)



Delivering with impact for your audience

Clients have engaged Mark Millar as Speaker, Moderator, MC or Conference Chairman at more than 350 Events in 23 Countries.

Contact

speaking@markmillar.com

Hong Kong +852 9468 5295



Knowledgeable | Professional | Memorable

"Mark connects very effectively with the audience" "thought-provoking, inspiring and humorous"
"the best Moderator in the business" "a highly skilled communicator with an energetic presence"
"a truly inspiring Speaker" "his engagement with the audience is second to none"

Mark Millar is Managing Partner of M Power Associates Limited in Hong Kong

www.markmillar.com

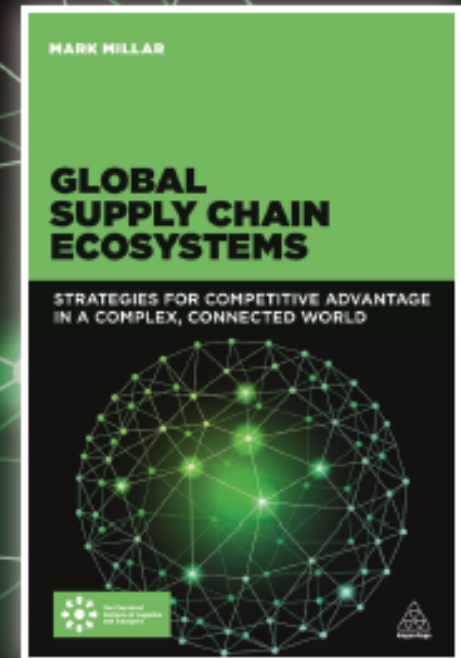
Global Supply Chain Ecosystems

Strategies for competitive advantage in a complex, connected world

By Mark Millar

Exploring the latest market trends across developed, developing and emerging markets, *Global Supply Chain Ecosystems* will help you capitalise on market opportunities, overcome supply chain challenges and make better informed business decisions.

The book highlights key supply chain shifts and features real-life case-studies.



www.koganpage.com/globalsupplychain
www.gsce-mm.com