



Supply Chain Management

Long Beach City College
The Port of Long Beach
Professor Mucci



Five Greatest Guitar Players ?



Class Content & Process

Process

- Relaxed
- Got to be Believed to be Heard
 - CV
 - Sea Stories
- Take Score at the End
 - Complete anytime during course
- Canvas How To Use
- No Recording

Content

- Ports of LGB & LA: The Big Dance
- Broad Understanding of SCM
- No Math
- Syllabus
- Biography





LBCC Business Department

Syllabus

- Course Conduct
- Course Organization and Grading
- Attendance, Course Completion & Drops
- COVID
- Recording
- Respect Based Management "It is my belief that an environment that fosters effective levels of creativity, autonomy, cohesion among colleagues and discipline that promotes responsibility is the most productive for creating and sustaining superior performance."
- Outcomes & Objectives



Learning Objectives & Objectives

- **IBUS 52 – INTRODUCTION TO SUPPLY CHAIN MANAGEMENT**
- This course was designed to provide a comprehensive view of Supply Chain Management; it will orient students to the alternative modes, systems, rates, services and regulations in global transportation including ocean, air and surface carriers & systems. It emphasizes the practical skills and techniques utilized to successfully market on an international basis. Supply Chain Management is a direct link to company Sales and Revenue (\$). Additionally, this course will help develop your understanding of some of the major Supply Challenges facing businesses today including Customer Service, Customer Interface, Planning, Forecasting, Mfg. Interface & Demand.

- **LEARNING OUTCOMES**
- By the end of this course, the successful student will be able to
- Examine the primary elements of the language and theories of Supply Chain Management
- Select creative and critical-thinking strategies in the solution of complex Supply Chain/Marketing situations through the application of learned concepts.
- Develop professional communication and teamwork skills, for the purpose of ensuring future success in a professional environment.
- Develop the capability to access, evaluate and use information in fulfillment of coursework and independent study
- Access the importance of ethics, social responsibility and diversity in promoting products and services.





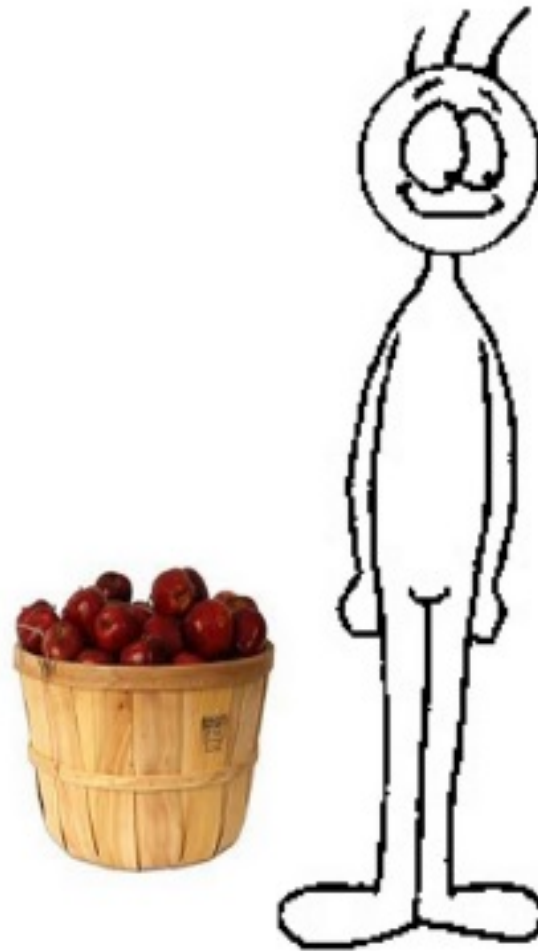
Marketing 4 P's

- Product
- Place
- Price
- Promotion



Comparative Advantage

- the ability of an individual or group to carry out a particular economic activity (such as making a specific product) more efficiently than another activity.



Tall dude should specialise in apple picking

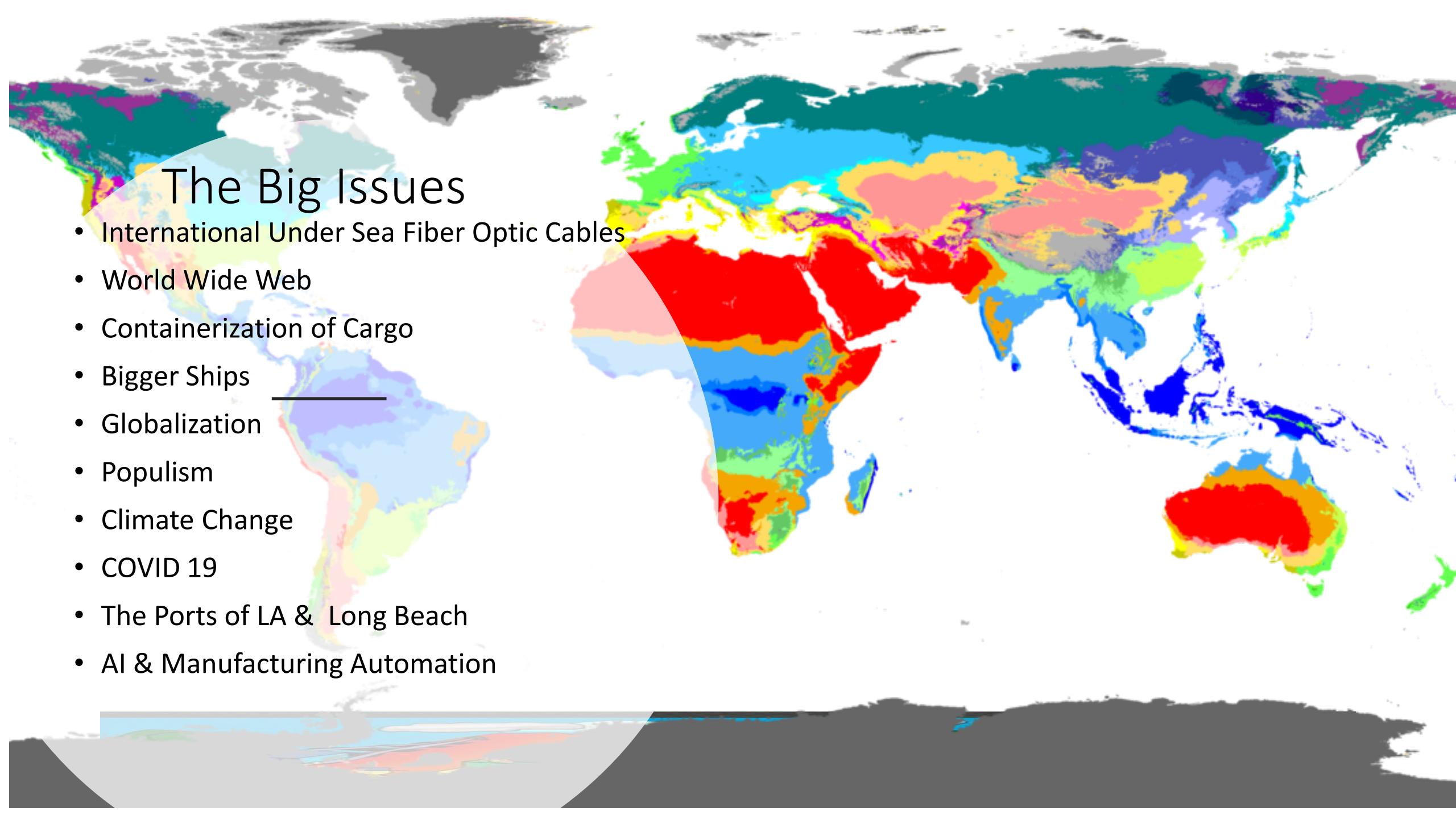


Short dude should specialise in strawberry picking

Supply Chain

- A supply chain is a network between a company and its suppliers to produce and distribute a specific product to the final buyer.
- This network includes different activities, people, entities, information, and resources.





The Big Issues

- International Under Sea Fiber Optic Cables
- World Wide Web
- Containerization of Cargo
- Bigger Ships
- Globalization
- Populism
- Climate Change
- COVID 19
- The Ports of LA & Long Beach
- AI & Manufacturing Automation

Containerization

Pier G Long Beach

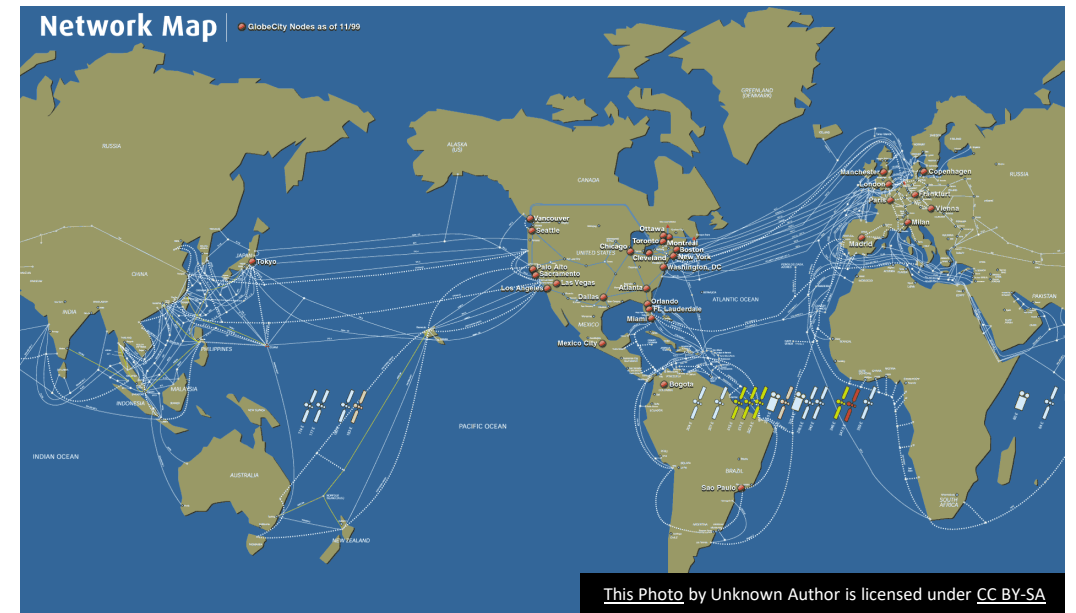
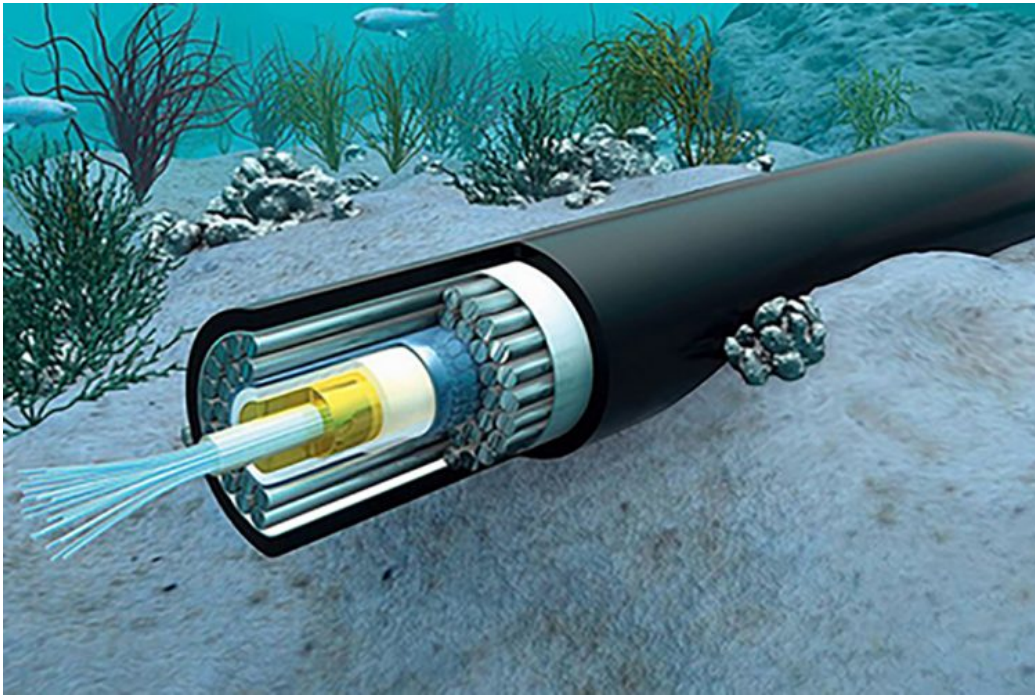


Seal Land 1962

- Sea-Land Services, a U.S.-flagged shipping company, begins operations at their Pier G container terminal in Long Beach. The carrier is the first to offer an innovative cargo handling system called containerization. Started on the U.S. East Coast in 1956, containerization places cargo in shipping containers, or steel boxes, for transport on trucks to seaport docks. Containers are loaded onto vessels, transported and off-loaded at their destination. Containerization revolutionizes the shipping industry.



Under Sea Fiber Optics Cable Faster Lower Cost



International Communications



1968 Overseas Supply Chain Communications 2021



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197,708 Tons (2021) vs 14,000 Tons (1968)



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The New Largest: Ever Ace

Push vs Pull

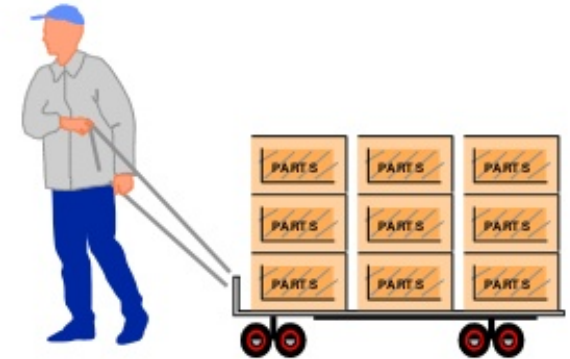
Push vs. Pull

**Make all we can
just in case.**



- Production Approximation
- Anticipated Usage's
- Large Lots
- High Inventories
- Waste
- Management by Firefighting
- Poor Communication

**Make what's needed
when we need it**



- Production Precision
- Actual Consumption
- Small Lots
- Low Inventories
- Waste Reduction
- Management by Sight
- Better Communication

Who does “Push”

BRIDGESTONE



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Where “Pull” Started



Just In Time

- JIT manages the balance between having inventory available for purchase, while also avoiding an excess in stock.
- Increases cash flow and optimizes the use of working capital



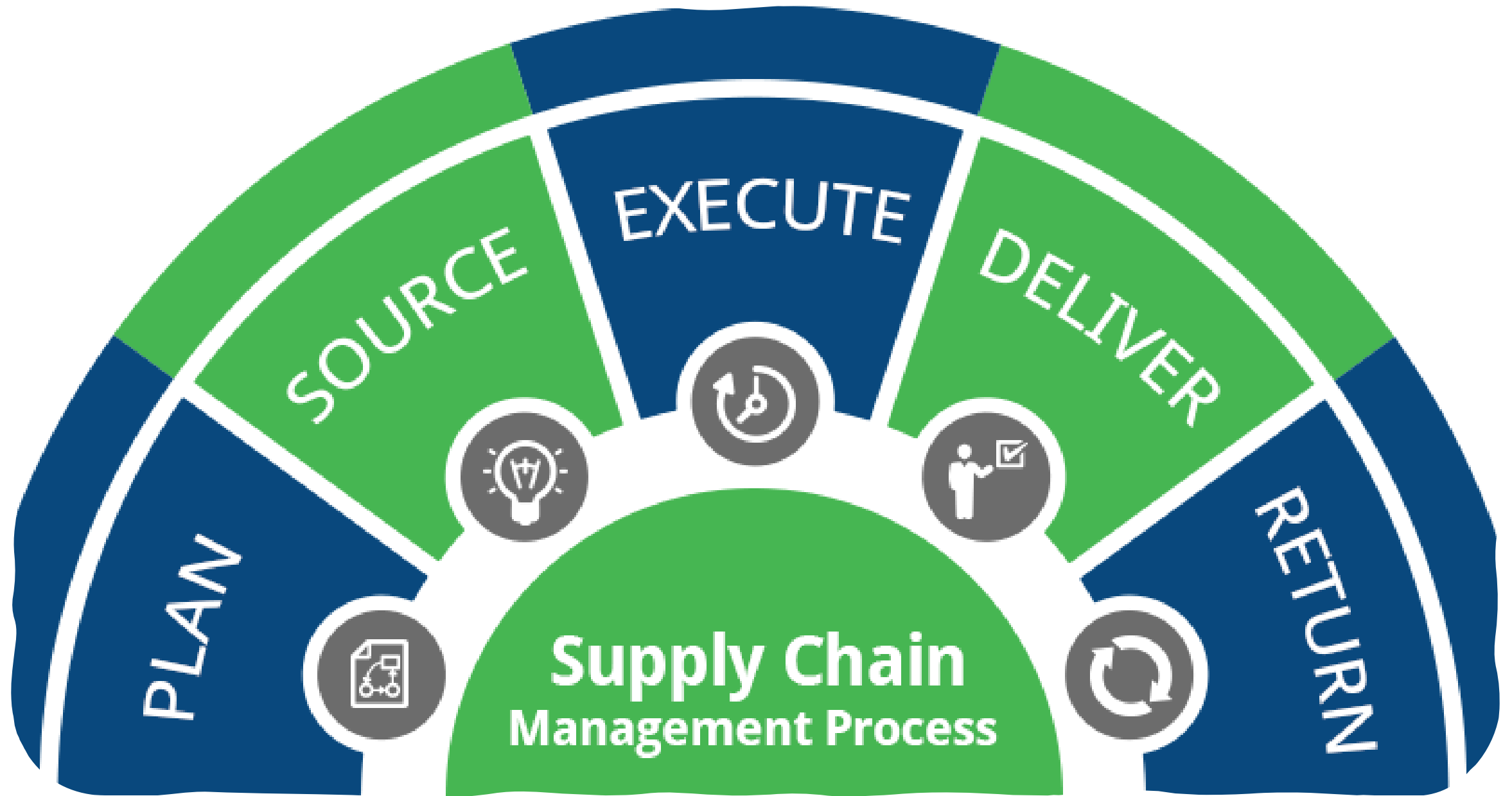
US Trade Flows by Partner Country

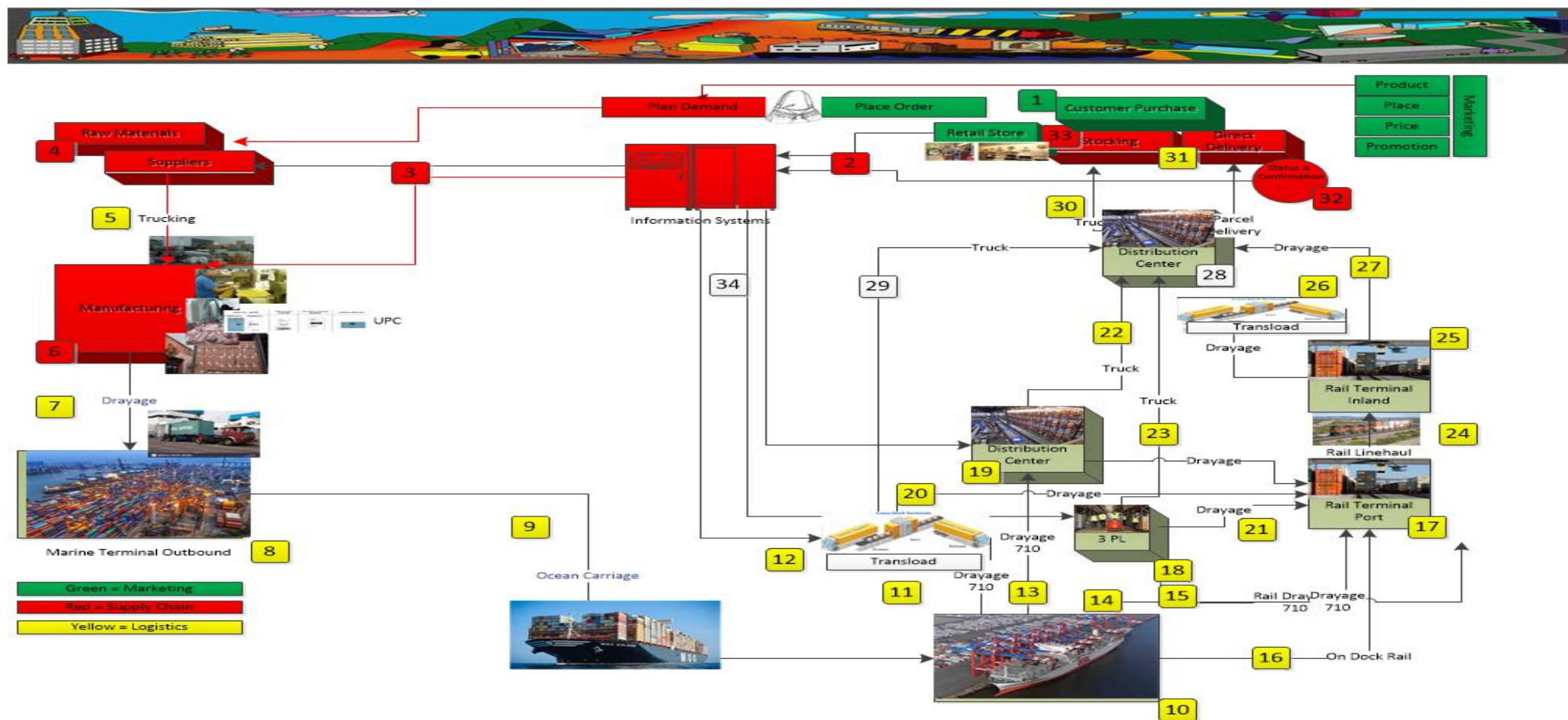
Figures inside bubbles represent total bilateral trade of goods in billions of USD.



Tracking Coronavirus Around the World





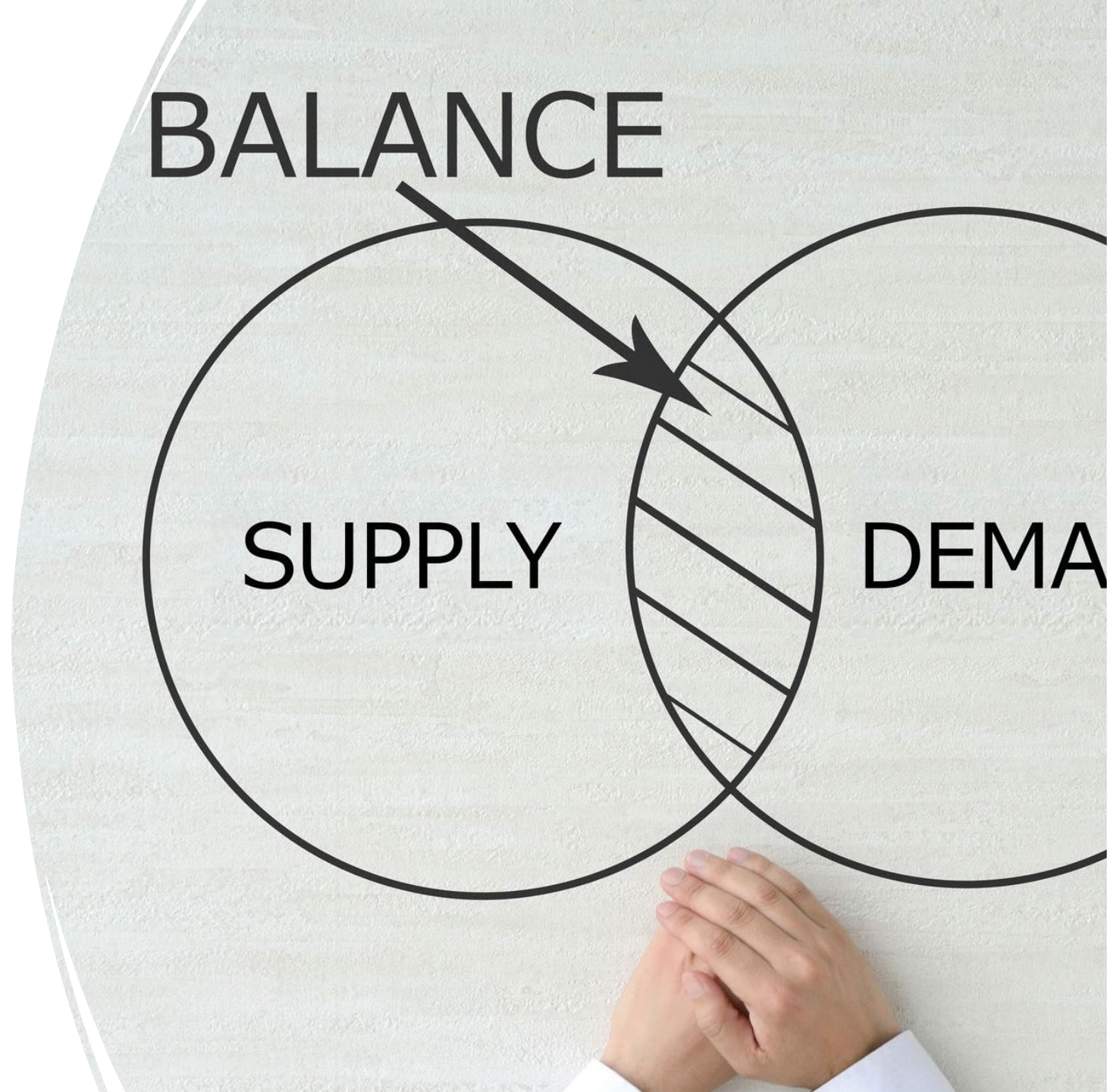


Plan



Demand Planning

- Product portfolio management (oversee product lifecycle, interdependent lines)
- Statistical forecasting (data prediction algorithms, accuracy and outliers, seasonality)
- Trade production management (marketing events influencing customers)



Source



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IMPACTS OF CLIMATE CHANGE

By **2030**, nine out of 10 of the major crops will experience reduced or stagnant growth rates, while average prices will increase dramatically as a result, at least in part, due to climate change.



MAIZE

12%

GROWTH RATE
DECREASE

90%

PRICE
INCREASE



RICE

23%

GROWTH RATE
DECREASE

89%

PRICE
INCREASE



WHEAT

13%

GROWTH RATE
DECREASE

75%

PRICE
INCREASE



OTHER CROPS

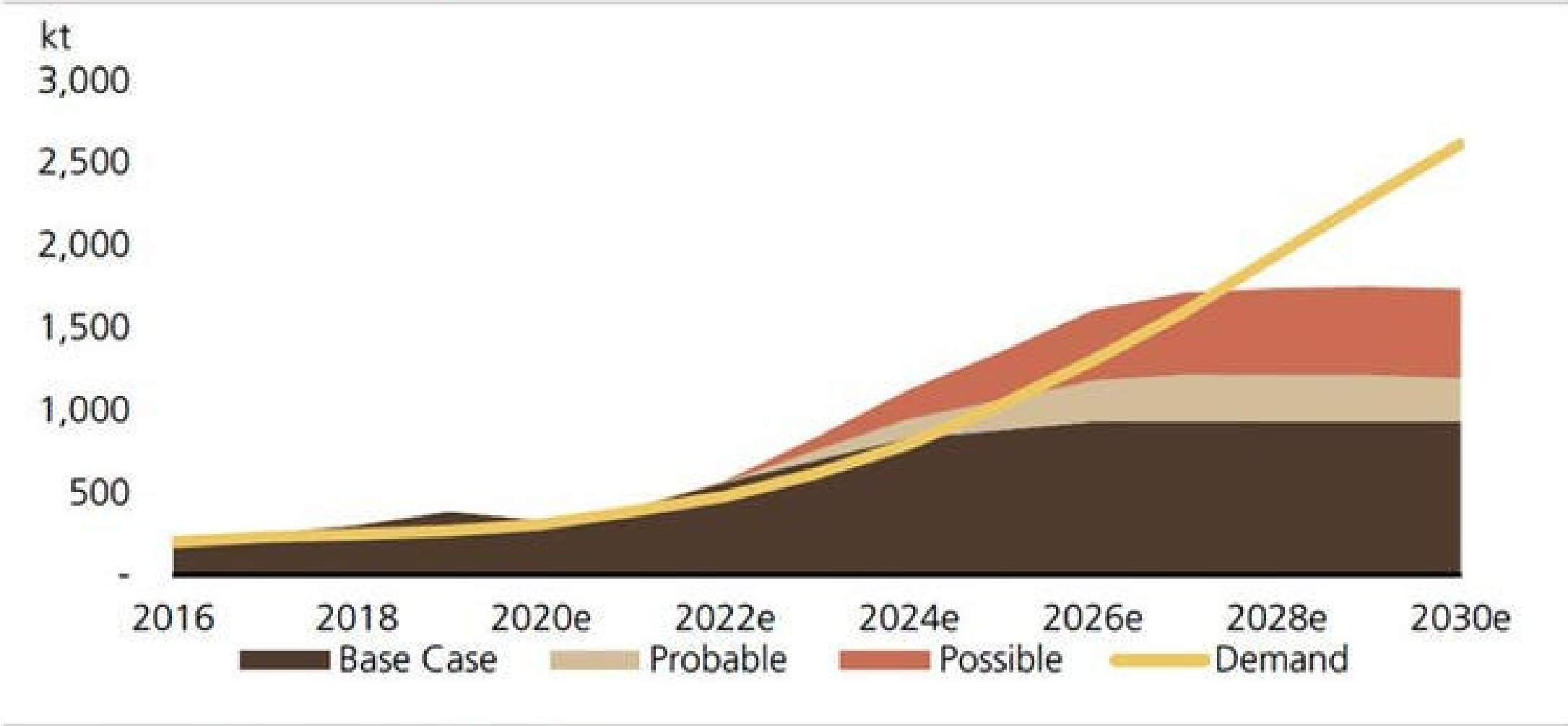
8%

GROWTH RATE
DECREASE

83%

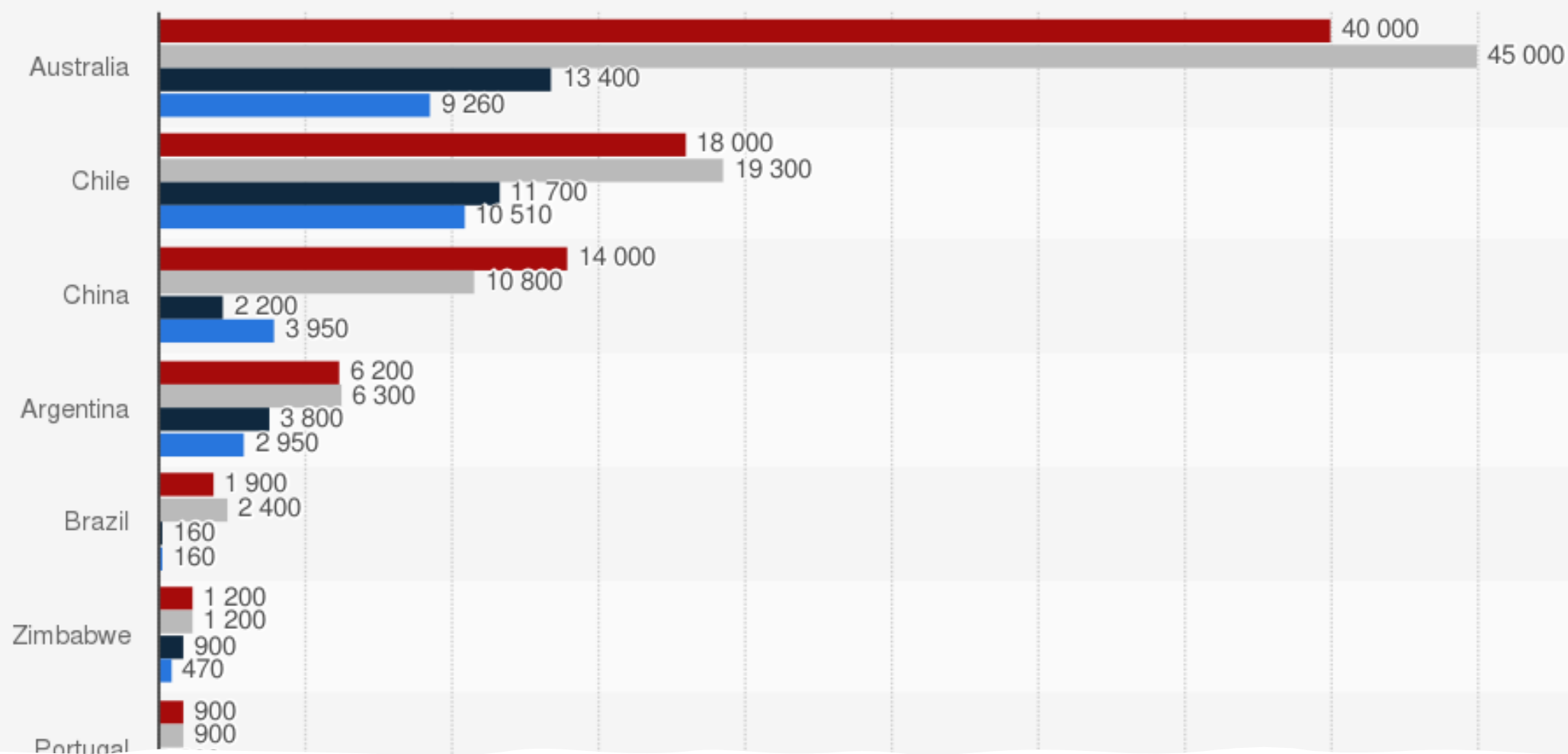
PRICE
INCREASE

Figure 11: Lithium Supply – Demand Balance

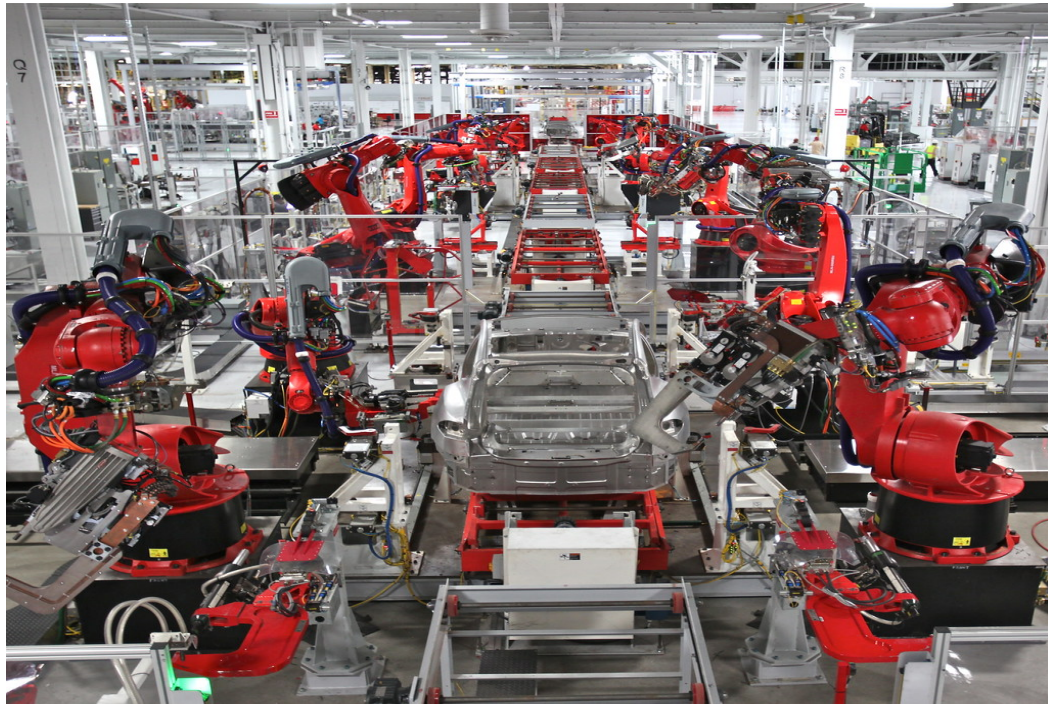


Source: WoodMac. Company Filings. IIRSe.

Major countries in worldwide lithium mine production from 2010 to 2020 (in metric tons)



Execute



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Deliver



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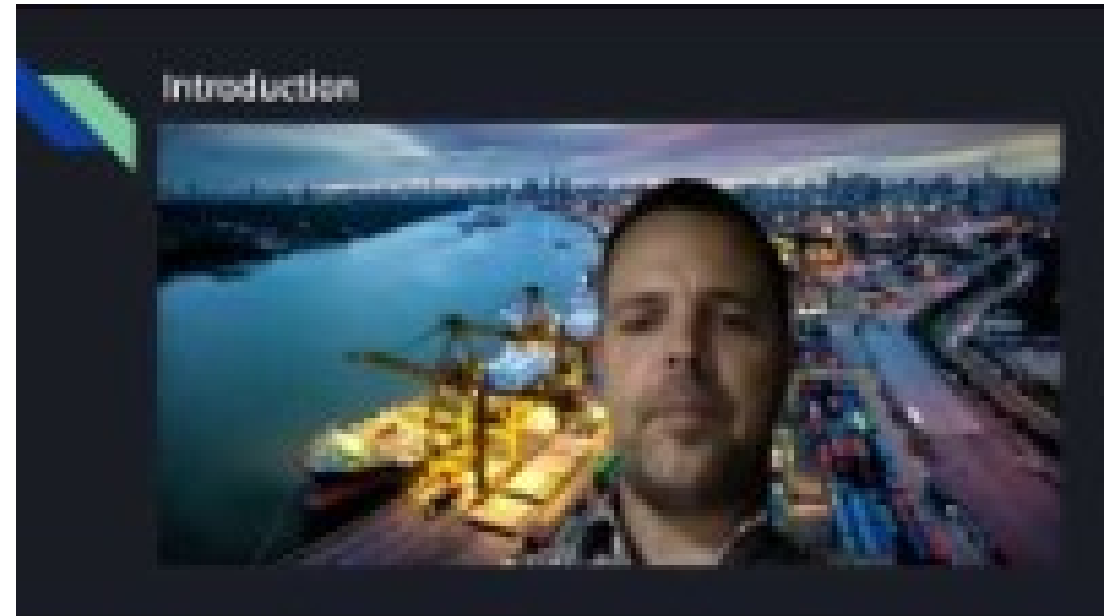
Return





TOYOTA

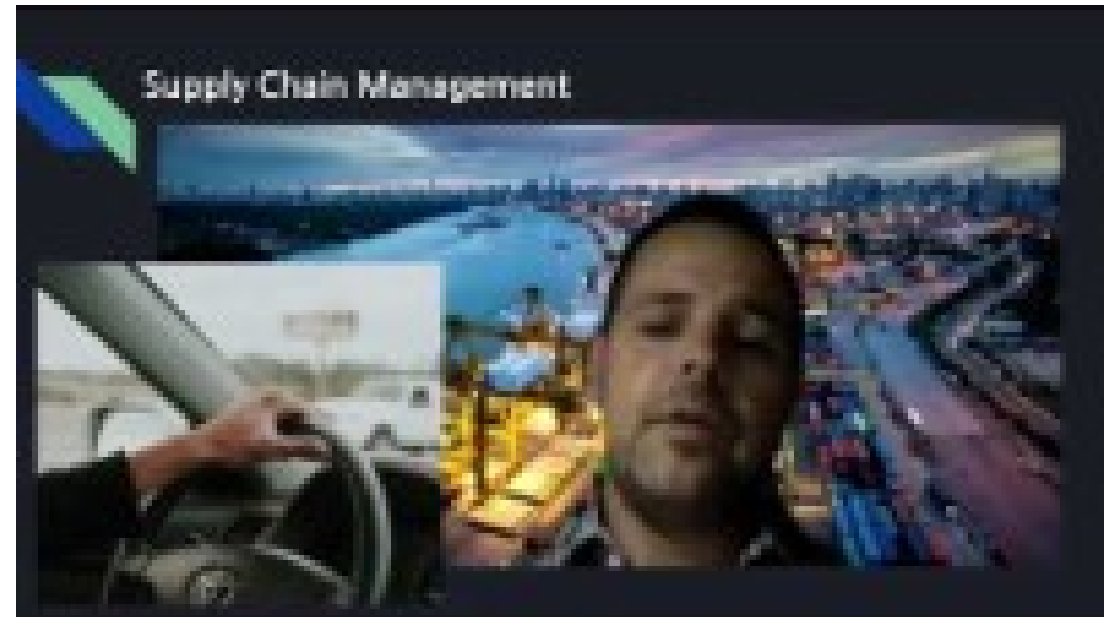
- Auto industry supply chain





TOYOTA

- Toyota's supply chain





TOYOTA

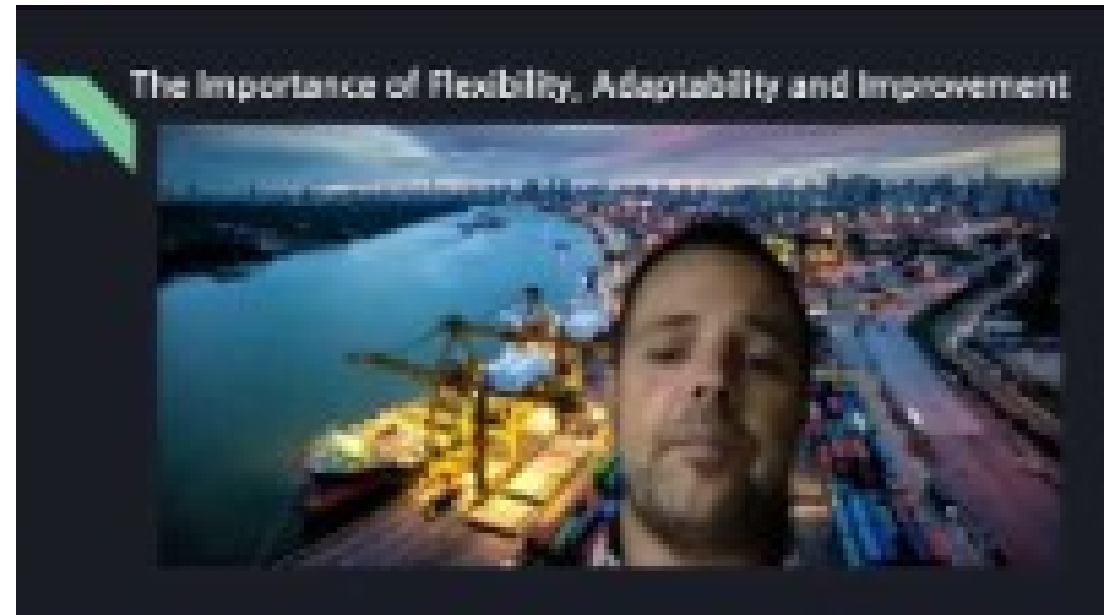
- Why is supply chain so vital





TOYOTA

- Maximizing efficiency and allocation of the right resources





TOYOTA

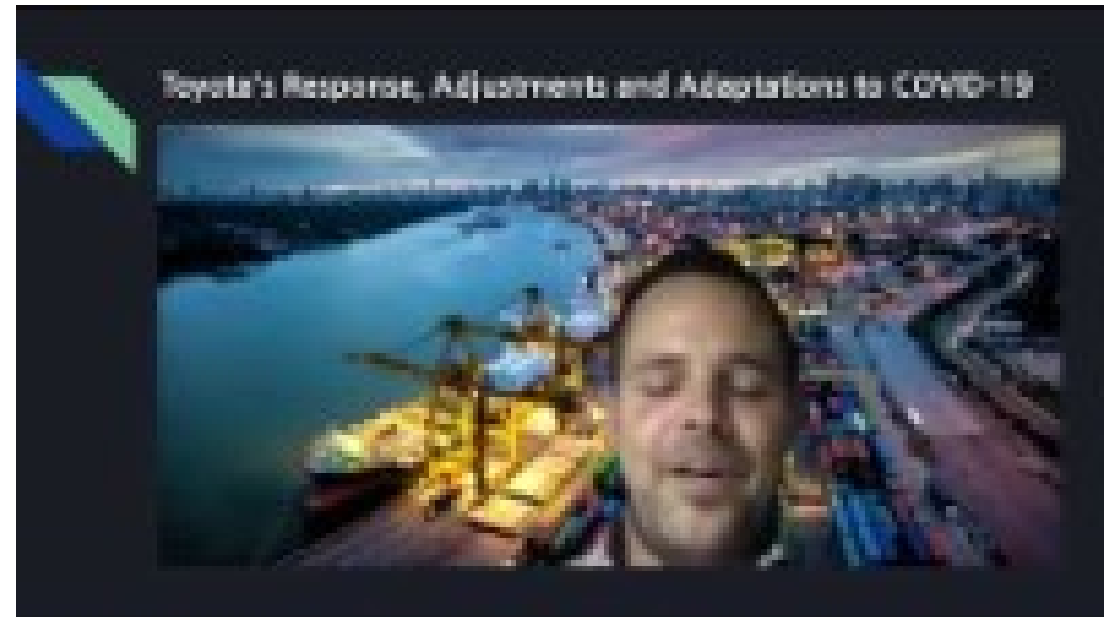
- What can happen if the supply chain is disrupted





TOYOTA

- How has COVID disrupted Toyota's operations?
- How has the company adapted to this current economic situation?



Distribution Channels

- **direct distribution channels:** company provides its own logistical team and transport vehicles to sell products directly to customers
- **indirect distribution channels:** company sells products wholesale to distributors/retailers, and pays third-party systems to transport their products for them



Ports of LA Long Beach

Ships at Dock: LA 21 Long Beach 18 = 39

Ships at Anchor: LA 25 Long Beach 20 = 45



White House appoints 'port envoy' to tackle congestion, bottlenecks

- John [Porcari's] expertise and experience with America's major trade gateways will be invaluable as the nation addresses supply chain challenges," Gene Seroka, executive director at Port of Los Angeles, said in an email. "His leadership will be immediate and significant as ports partner with the Biden-Harris Administration to find solutions."

The Omni-Channel Revolution

- Physical Option
- Online Option

Omni Channel Distribution

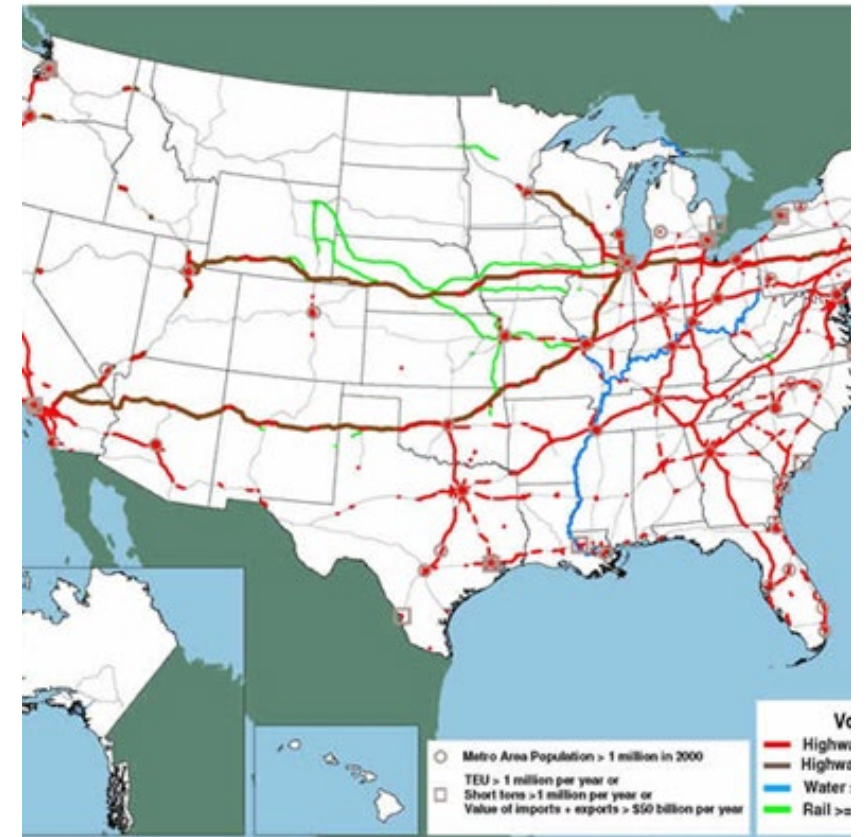




Ports of LA & Long Beach: The Big Dance

Why LA Long Beach?

- Close to Asia
- Deep Water = Big Ships
- Portside Land
- Highway Access East
- Rail Access East
- Large Consumption Area



Great Circle Route



Panamax _ Maximum Size for the Panama Canal

Costamare Triton

- **The neopanamax Triton** established a new record of total TEU capacity in the Canal, at 15,313 TEUs



HMM Algerciras

- HMM Algerciras is the world's largest containership with 24000 TEU capacity. South Korea to Europe via Suez.



GLOBAL SHIPPING ALLIANCES 2020



Ocean Alliance



CMA CGM



APL



COSCO SHIPPING



EVERGREEN



OOCL

2M



MAERSK LINE



MSC

THE Alliance



HAPAG-LLOYD



ONE



YANG MING



HMM

April 1, 2020





Seasick?

Port of Long Beach

- 2nd-busiest port in the United States (LA #1)
- 21st-busiest container cargo port in the world
- 9th-busiest port complex (with the Port of Los Angeles) in the world by container volume, after Shanghai, Singapore, Shenzhen (China), Ningbo (China), Busan (S. Korea), Hong Kong, Guangzhou (China), and Qingdao (China)



Difficult Peak Season LA/Long Beach

- With a second wave of container dwell times and ships at anchor approaching record levels, congestion in Southern California will get worse over the next three months when import volumes are likely to set new records, according to the executive director of the Port of Los Angeles.
- “Volumes will be strong in the traditional peak season due to unrelenting consumer demand,” Gene Seroka told a virtual press conference Tuesday.
- Seroka said the entire international supply chain is choked, with shipments piling up on factory floors in Asia, COVID-19 outbreaks affecting both port and warehouse labor availability in China and Southeast Asia, and vessels delayed leaving Asian load ports. In the US, ports and inland rail ramps are experiencing congestion issues and chassis shortages, and rail networks are stretched to the point where railroads are forced to pause or meter intermodal services.



Difficult Peak Season LA/Long Beach

- While it is too late to produce results for the current peak season, which runs from August through October, the executive director of the largest US container port gave this advice to supply chain participants: “We as an industry need to improve our resiliency,” Seroka said.
- In the Los Angeles-Long Beach gateway, more vessels are going straight to the “parking lot” at anchorage as they wait for berthing space to open, and they are spending more days at anchor while terminals are working near-record numbers of ships each day, Seroka said.
- This analysis was confirmed by Tuesday’s anchorage report provided by the Marine Exchange of Southern California. There were 36 vessels at anchor outside the ports of Los Angeles and Long Beach, four short of the record set in February, and each vessel is spending an average of 6.9 days at anchor, up from about five days last month. There were 29 container ships being worked at the berths, two less than the all-time record of 31, according to the Marine Exchange.

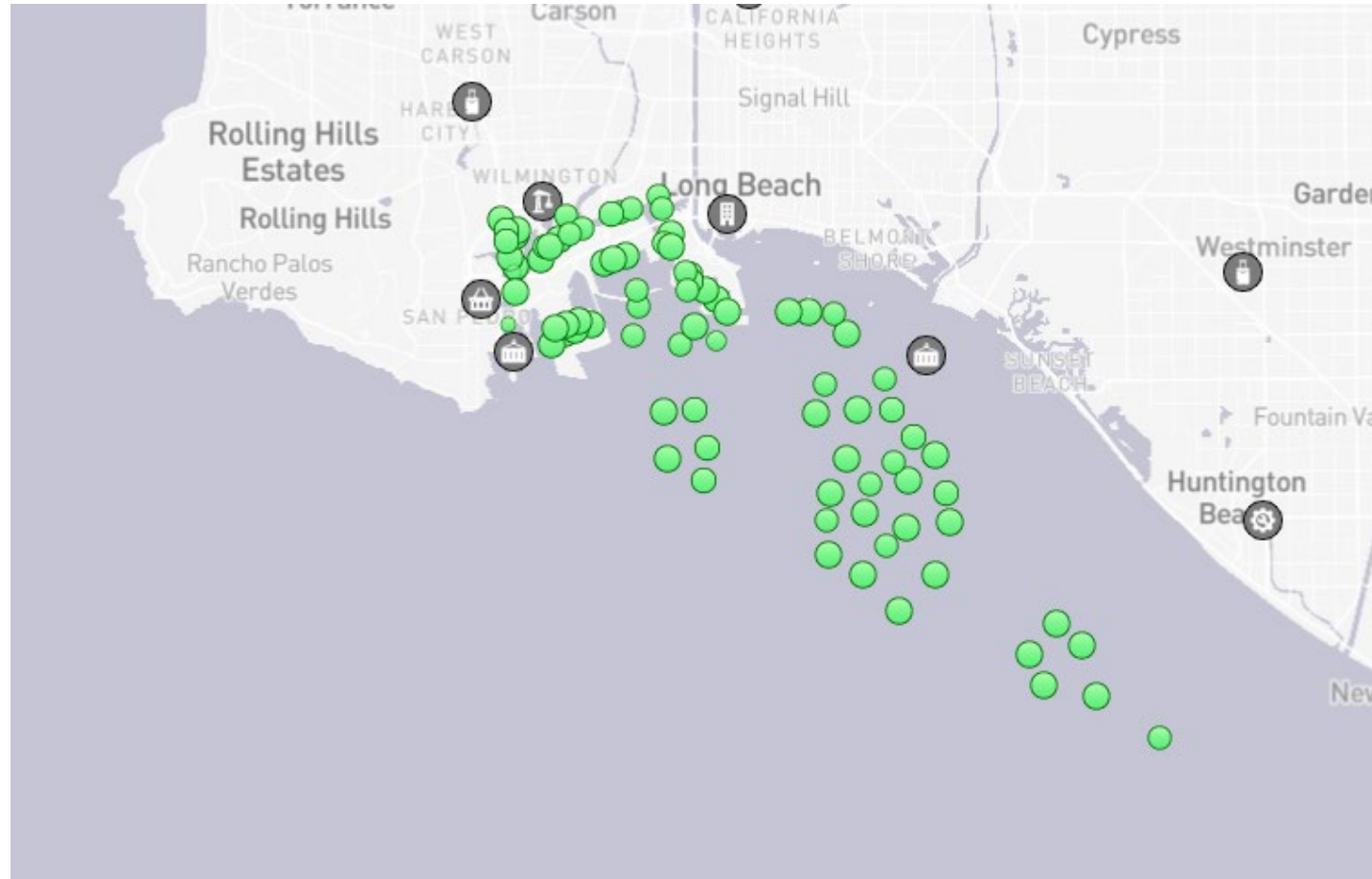


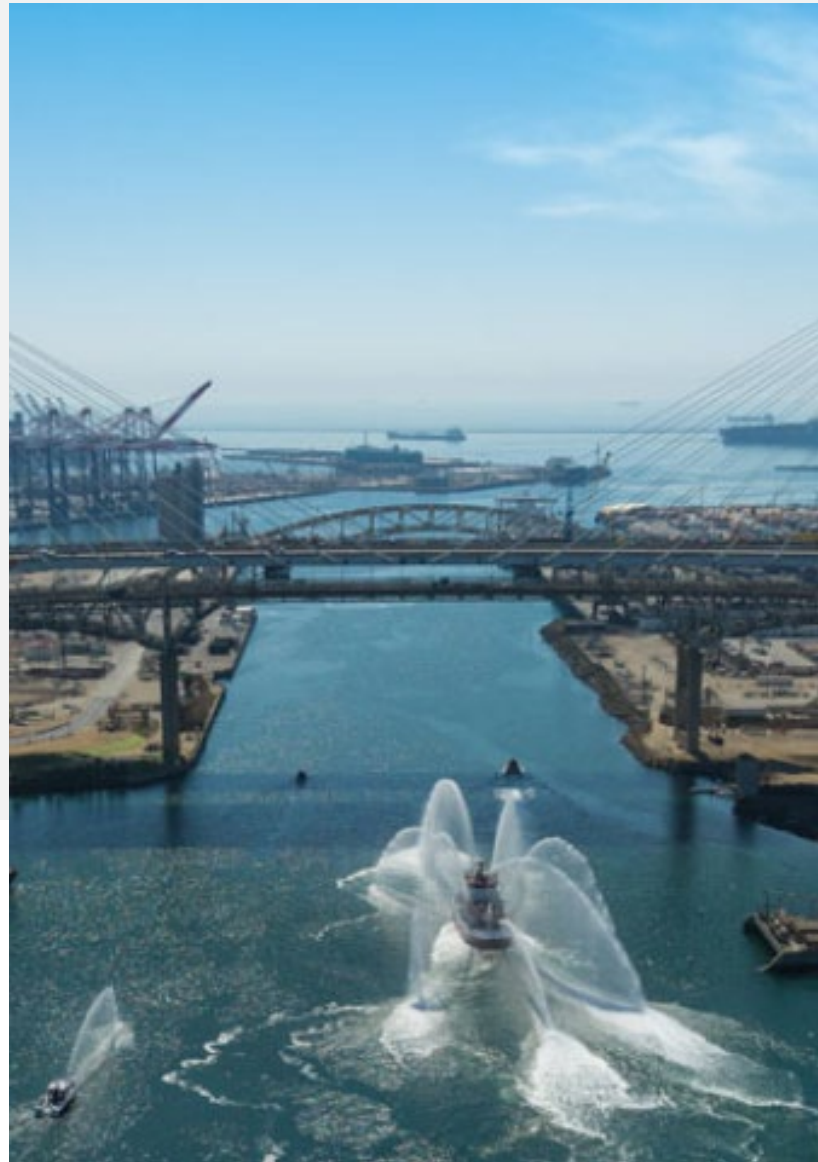
Difficult Peak Season LA/Long Beach

- Container dwell times too high
- Warehouse congestion fueling chassis shortages
- Slowing empty equipment repositioning compounds Indian inventory woes
- Call for government to assist
- US intermodal congestion derailing peak season imports
- Additional oversight?
- No relief on the horizon



Difficult Peak Season LA/Long Beach





Port of Long Beach



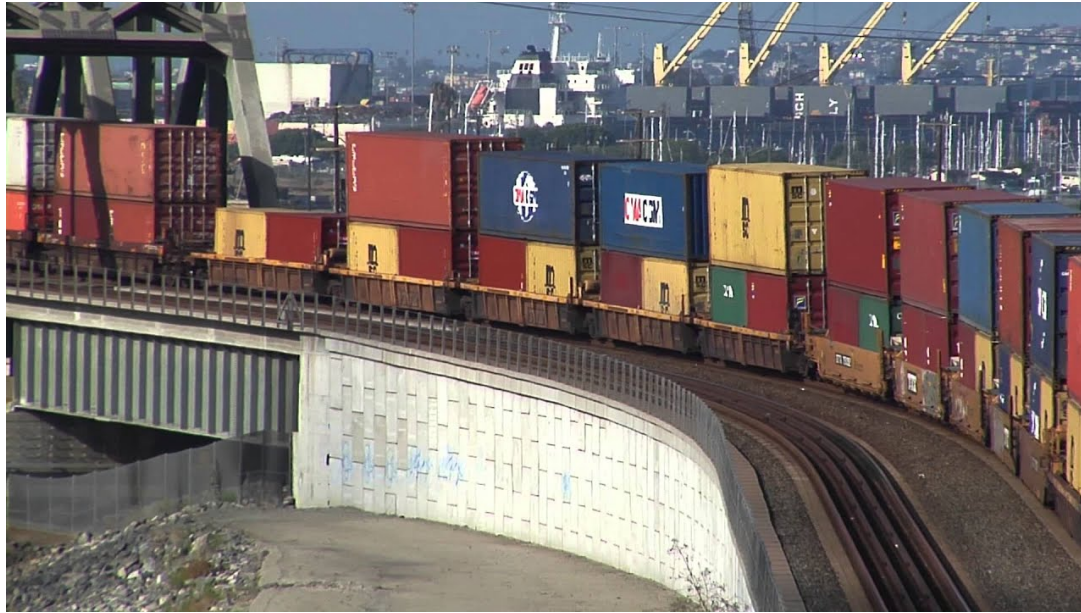
MSC Mia Arriving Long Beach

PORT OF LONG BEACH CONTAINER TRADE IN TEUS: FISCAL YEAR TO DATE – JULY 2021

Category	2021	2020	% Change
Loaded Inbound	3,889,267	2,990,353	31.1
Loaded Outbound	1,226,026	1,223,256	-2.2
Empty Inbound	133,917	99,312	34.9
Empty Outbound	2,695,234	1,795,565	50.0
Total (TEUs)	7,944,683	6,139,786	29.4

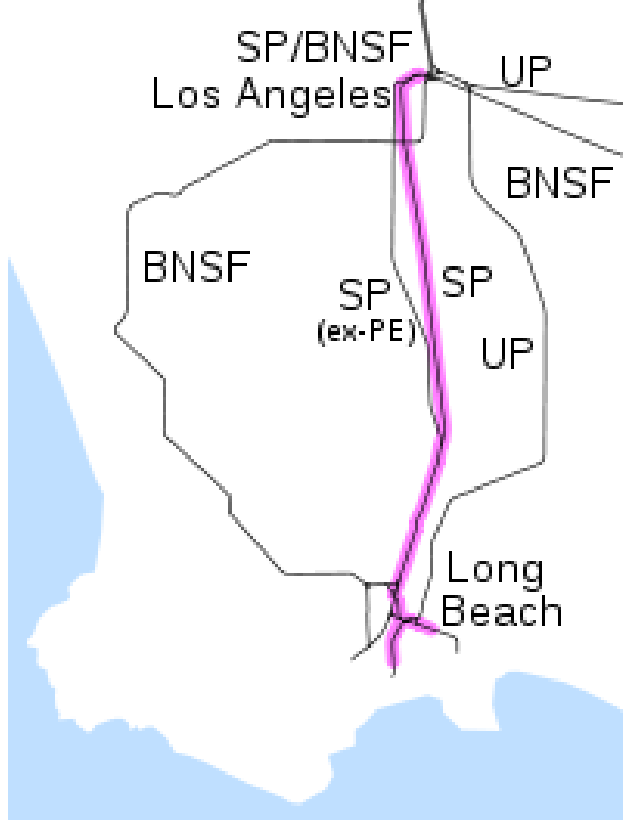
Intermodal Rail Double Stack

Long Beach/LA Port On Dock Rail



Los Angeles Rail Yard





Alameda Corridor

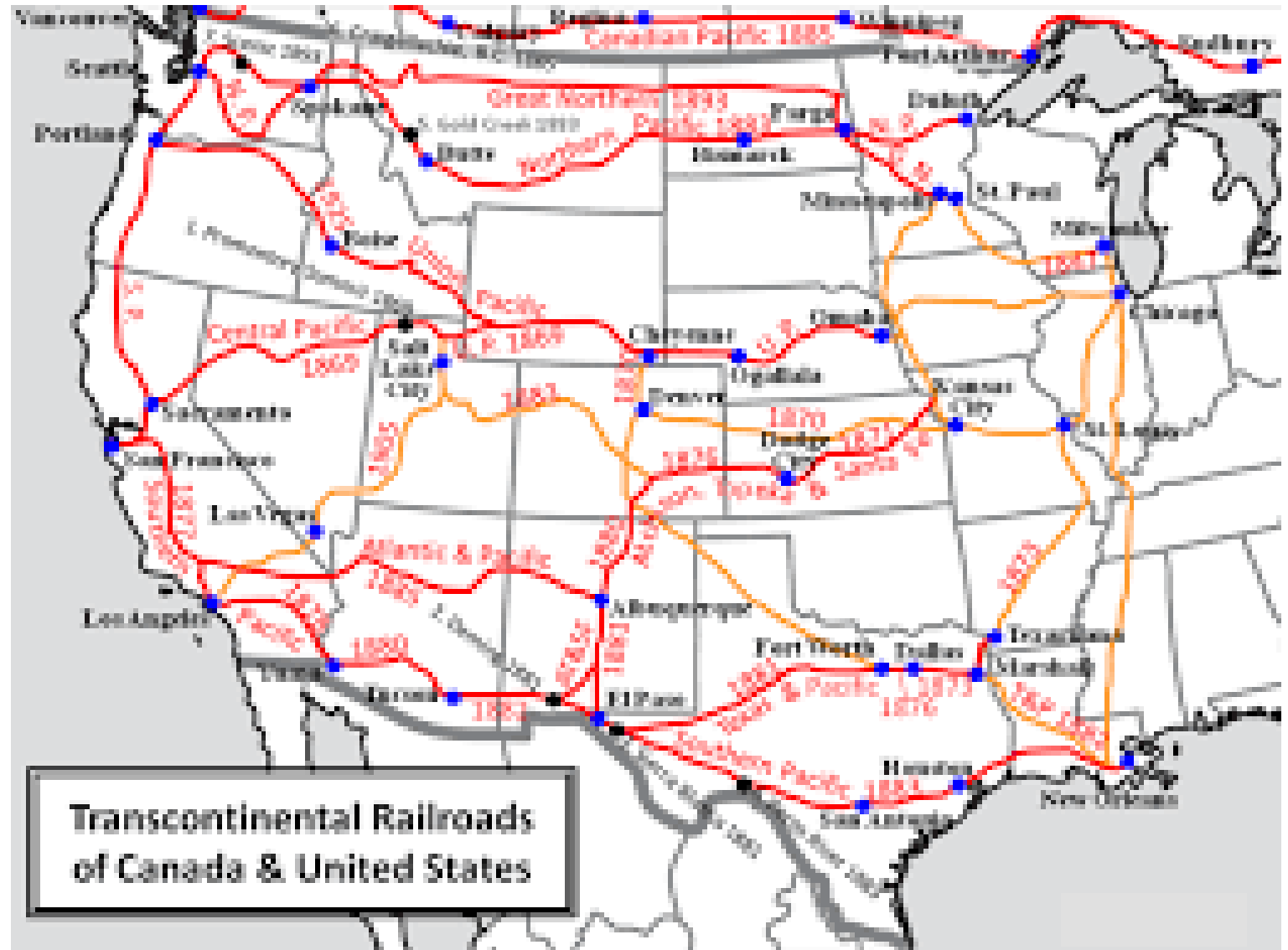
- The Corridor serves as **the primary connection for cargo-carrying train traffic moving between the ports of Los Angeles and Long Beach and the transcontinental rail network based near downtown Los Angeles**





Double Stack Rail Service

Transcontinental Rail



Foreign Trade Zones

- A foreign trade zone is a designated area in the United States where companies can set up operations with exempted or deferred tariffs on foreign merchandise. FTZs make U.S. manufacturing more competitive by reducing or eliminating unfair tax burdens on companies that make or assemble finished products using foreign components.

• **FTZ BENEFITS**

- Merchandise may be stored within a Foreign Trade Zone for an unlimited period of time and avoid all duties and excise taxes.
- Merchandise may be opened, examined, assembled, mixed, cleaned, labeled or repackaged within a zone.
- Merchandise may be displayed, sampled or examined within the zone.
- Waste materials and damaged merchandise may be destroyed within the zone to avoid duties.



Dry Bulk Tenants

Terminal	B	D	F	G	T
Tenant	National Gypsum	CEMEX USA GP Gibson	Koch Carbon Mitsubishi Cement Morton Salt	Metro Ports	SA Recycling



Liquid Bulk Tenants

Terminal	B	F	S	T
Tenant	Marathon Petroleum Petro Diamond	Chemoil Marine	Vopak	Marathon Petroleum



Break Bulk & Ro Ro

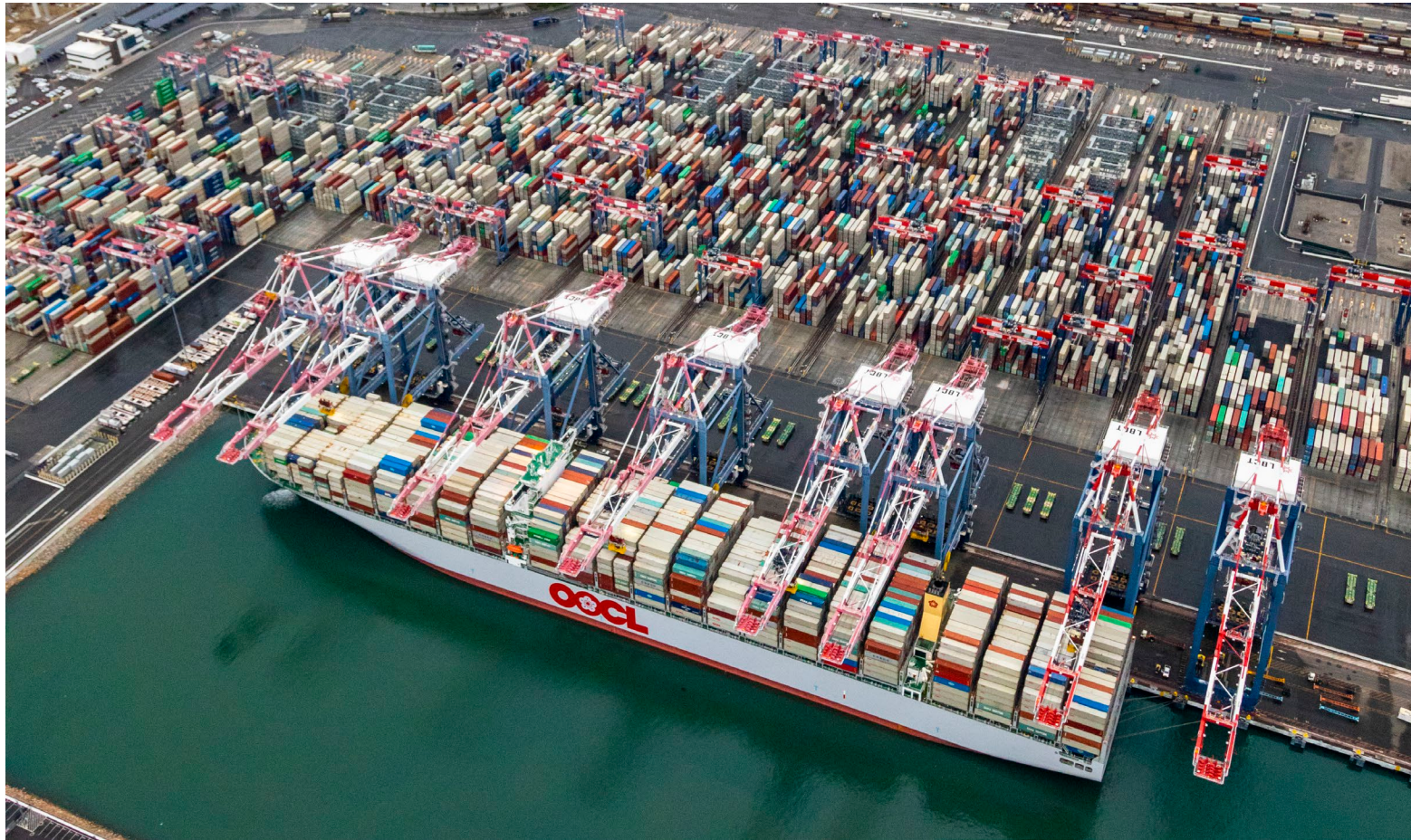
Terminal	B	D	F	T
Carrier	Toyota Logistics	Crescent Warehouse	Cooper (SSA) Crescent (SSA)	Fremont Forest



Long Beach Container Terminals

Terminal	ITS-Pier G	LBCT-Pier E	PCT-Pier J	SSA-Pier A	SSA-Pier C	TTI-Pier T
Alliance	The Alliance Independent	OCEAN Alliance	Ocean Alliance	Oceana Vessel Sharing Agreement + Independent	Independent	2M+Z+S
Carrier	ONE Hapag- Lloyd Yang Ming HMM MSC Maersk CMA CGM	OOCL COSCO CMA CGM Evergreen	COSCO OOCL CMA CGM Evergreen	Hamburg Sud Hapag-Lloyd ANL MSC Polynesia Line Pasha Hawaii Matson Wan Hai Lines Zim	Matson	Maersk MSC HSD SM Line ONE Hapag- Lloyd Yang Ming HMM

WORLD'S GREENEST CONTAINER TERMINAL POLB



The Middle Harbor Terminal Redevelopment Project is a 10-year construction program combining two aging shipping terminals into one of the world's most advanced and greenest container terminals.

Marine Terminal Operator

- Lease terminal from port
- Contract with carriers
 - Load & Unload Ships
 - Store Containers
 - Receive & Deliver Containers
 - Load & Unload Drayage Trucks
 - Load On Dock Rail
- Provide cargo handling equipment
- Order longshore gangs
- Supervise work
- Pay Longshore gangs via PMA
- Incentive to maximize the use of the least amount of ILWU labor
- Incentive to increase container in/out velocity with the least amount of labor



Long Beach
Marine
Terminal
Truck Gate





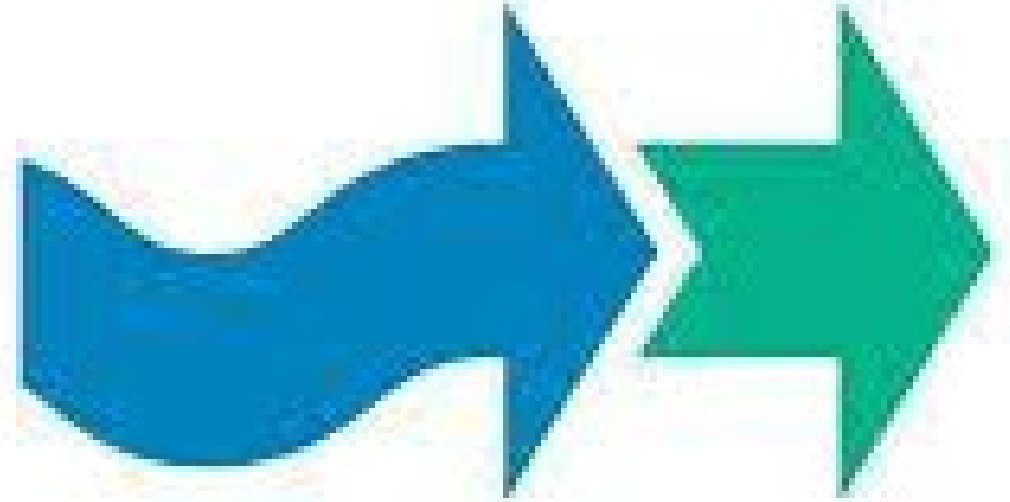
Pool of Pools: 58,000 Marine Container Chassis

- The "Pool of Pools" (POP) is a multi-pool agreement between the three major proprietary marine container chassis pools operating in the San Pedro Basin port complex. DCLP, TPSP and FLBP developed this agreement in response to port stakeholder desires to create greater chassis fluidity across the port complex, which is by far the largest in the United States.



Pier Pass

- PierPASS is a partnership among the marine terminal operators at the Port of Long Beach and the Port of Los Angeles aimed at easing truck congestion, improving security and helping air quality. All international container terminals in the two ports have five shifts per week and trucking companies are encouraged to spread their services among the shifts to prevent bottlenecks.



PIERPASS



Container Ship Discharge



LA Long Beach Dock Workers

- ILWU International San Francisco
- Harry Bridges 1960 M&M
- Charlie Velson (Charlie the V) Honolulu
- 1971 @ 134 Day Strike (Steadymen)
- Local 13 Longshoreman
- Local 63 Marine Clerks
- Local 63 OCU Office Clerical
- Local 94 Foreman/Walking Bosses



Pacific Maritime Association

- The PMA's mission is to provide industry leadership to our member companies through innovative integrated labor relations, human resources and administrative services. Our membership consists of 70 ocean carriers and terminal operators who operate at the 29 West Coast Ports. These ports are a vital engine for economic activity in the United States.



PMA Member Companies

American President Lines, Ltd. APM Terminals Pacific LLC APS Stevedoring, LLC Benicia Port Terminal Company Ceres Terminals Incorporated CMA CGM (America) LLC Coast Maritime Services Consolidated Stevedoring Company LLC Cosco Shipping Lines (North America) Inc. Crescent City Marine Ways & Drydock Company, Inc. Evergreen Marine Corp. (Taiwan) Ltd. Everport Terminal Services, Inc. Fenix Marine Services, Ltd. Hamburg Sud North America, Inc. Hapag Lloyd AG Harbor Industrial Services Corporation Husky Terminal & Stevedoring, Inc. Hyundai Merchant Marine (America) Inc. Innovative Terminal Services Inc. International Transportation Service, Inc. Jones Stevedoring Company "K" Line America, Inc. Kinder Morgan Bulk Terminals LLC LBCT, LLC Maersk, Inc. Main Lines Inc. Marine Terminals Corporation Marine Terminals Corporation – Columbia River Marine Terminals Corporation of Los Angeles Marine Terminals Corporation – Puget Sound Marko Industries Inc. Matson Navigation Company, Inc. Mediterranean Shipping Company Metro Cruise Services LLC Metropolitan Stevedore Company Mitsui O.S.K. Lines, Ltd. NYK Line Ocean Network Express (North America) Inc. Ocean Terminal Services, Inc. OOCL (USA) Inc. Oregon Chip Terminal Inc. Pacific Crane Maintenance Company, LLC Pacific Northwest Auto Terminals, LLC Pacific Ro-Ro Stevedoring, LLC Pacific Terminal Service Company, LLC Pasha Hawaii Pasha Stevedoring & Terminals L.P. Portland Lines Bureau Port Maintenance Group (PMG), Inc. Port Service Group, LLC Reliable Line Service Sea Star Stevedore Company Siem Car Carriers AS SSA Marine, Inc. SSA Terminals, LLC Tacoma Line Handling Company Terminal Equipment Services, Inc. Total Terminals International, LLC TransPacific Maintenance Company, LLC Transpac Terminal Services, LLC TraPac, LLC Wallenius Wilhelmsen Logistics Washington United Terminals Watermark Terminal Solutions, LLC West Coast Crane Services, LLC West Coast Terminal and Stevedore, Inc. Williams, Dimond & Company Yangming Marine Transport Corporation Yusen Terminals, LLC Zim American Integrated Shipping Services Company, Inc.

Drayman

- Protecting the Right to Organize (PRO) Act (H.R. 842)
- AB5
 1. The worker is free to perform services without the control or direction of the company.
 2. The worker is performing work tasks that are outside the usual course of the company's business activities.
 3. The worker is customarily engaged in an independently established trade, occupation, or business of the same nature as that involved in the work performed.²
- Pier Pass 2nd Appt
- Waiting Time
- Chassis PU & Returns
- Traffic to Inland Empire
- Destination not Open
- Inland Container Yard
- Terminal Shuttles
- Fee Exploitation
- Reliability



Drayman

- **Xin Da Yang calls at PCT and LBCT**
- When claiming containers discharging from the Xin Da Yang Zhou 77, please confirm whether your containers are at PCT or LBCT, and that your claim is updating at the correct terminal.
- The MTO is visible in the claim process, if you see the wrong one coming up, please send an email to pierpass.offpeak-TMF@pierpass.net and we will make the updates necessary to make your containers available for claiming at the correct location.





Port to
Warehouse
Trucking
(Drayage)

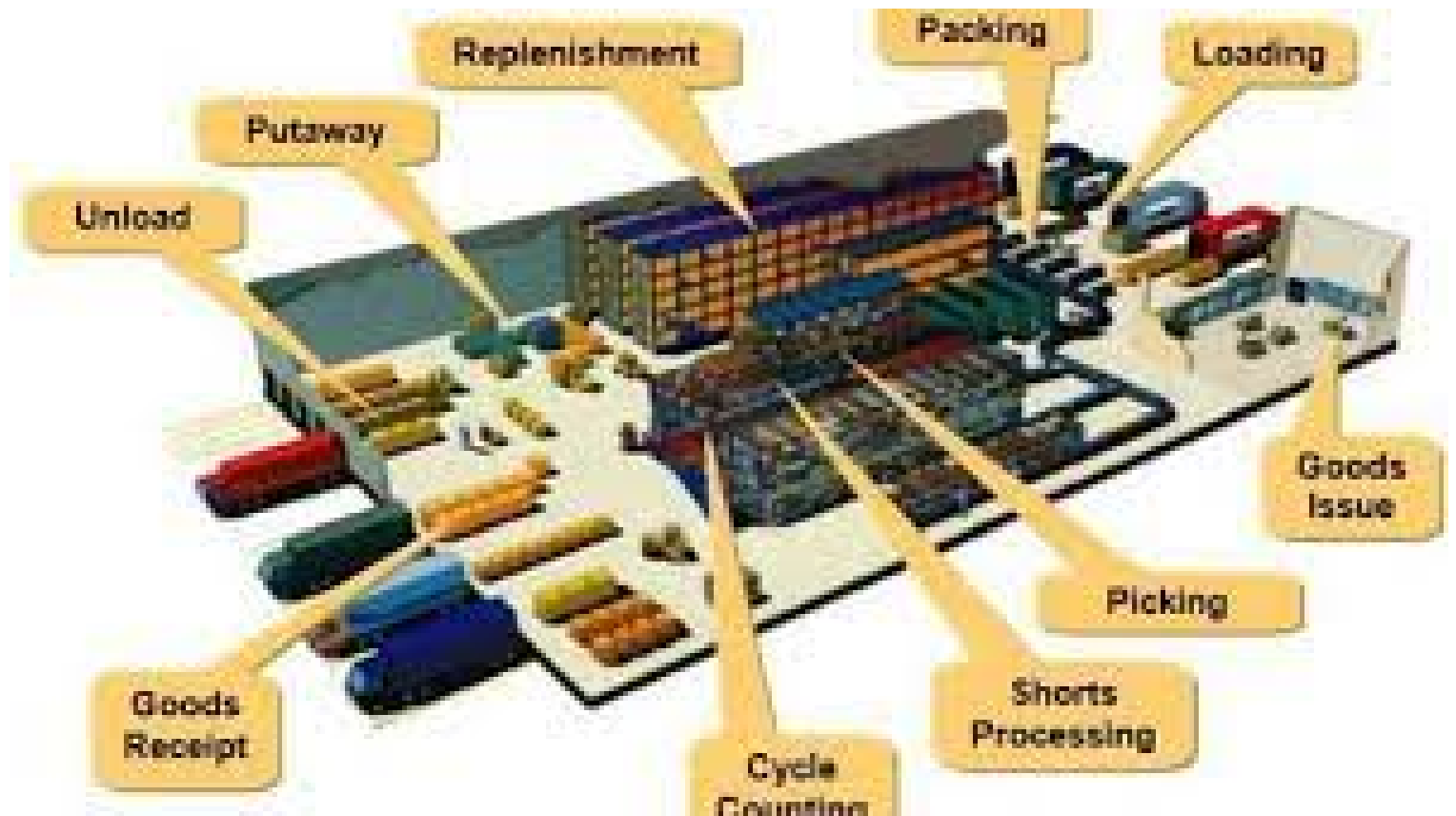


Demurrage & Detention

- Demurrage is what you pay for use of a container within a port or terminal beyond an allotted free time, which averages 4-5 days. Demurrage is **charged per day per TEU** (twenty-foot equivalent unit, which is the capacity of a 20-foot container). The fee increases in intervals of a few days.
- These charges are similar to demurrage costs, but they arise **outside the port terminal**. Detention is billed per container and per day, and the charged amount will vary per location, carrier and container type.



Put Away So
Cal
Warehouse





Rapidly building congestion at import distribution centers could herald a repeat of last fall's meltdown at Los Angeles-Long Beach and other major ports



Transload

- Five standard 40 foot ocean containers
- Transload into
- Three 53 foot domestic trailers
- 53's move via Rail Double Stack Service or Truck



Major East West Highway Access



96 Hour Cargo Recovery





Linbis
Logistics Cloud Applications

BILL OF LADING

FREIGHT RATES, CHARGES, WEIGHT AND / OR MEASUREMENTS		
SUBJECT TO CORRECTION	PREPAID	COLLECT
DGR OCEAN FREIGHT		5,000.00 USD
GRAND TOTAL		5,000.00 USD

RECEIVED, by the Carrier as described on the reverse hereof (hereinafter called the Carrier) from the above named shipper, the goods, or packages said to contain goods, hereinabove described, in apparent good order and condition unless otherwise noted hereon, to be held and transported subject to all written, typed, printed or stamped provisions of this bill of lading, on this and on the reverse side hereof, to the port or place of discharge named above or so near thereunto as the ship can always safely get and leave always afloat at all stages and conditions of water and weather and there to be delivered or transhipped on payment of the charges hereon.

DATED AT: **NON-NEGOTIABLE**

SIGNED ON BEHALF OF CARRIER:

By: **Sample47 User47**

Page 1 of 1

B/L No.

Carrier BL Number

NON-NEGOTIABLE

Page 1 of 1

B/L No.

Carrier BL Number

[ELOriginals](#)

Choice Criteria (Intermodal Rail Pricing)

All Water 38 days \$\$\$



Intermodal 20 days \$\$\$\$



Truck vs Rail

Rail Less Expensive

Rail Heavier Weights

Trucks Faster 200 miles
from Major Rail Ramps

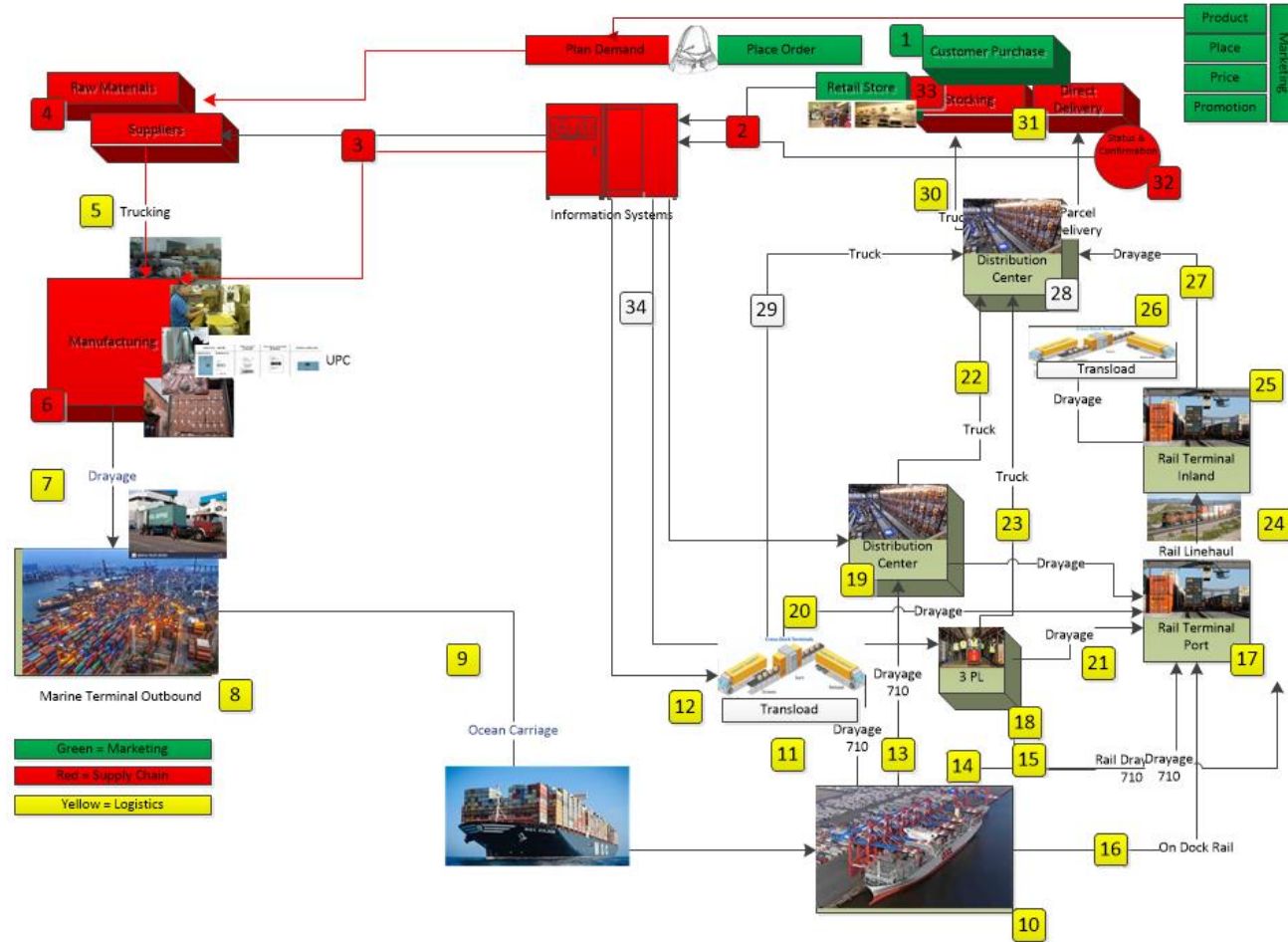
Trucks more Flexible



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JACOBSEN PILOT SERVICE



LONG BEACH PILOTS
SINCE 1924



Port Congestion: Long Term Solutions

Continued meeting with stakeholders through Federal Advisory Committee Act meetings can help to ensure that the government treats the stakeholders as a multi-modal freight environment and not a siloed ecosystem.

The creation of a national port information sharing system, which is an effort that Seroka has championed for years at this point.

Seroka told the administration that tariffs are hurting businesses, specifically the fees on chassis that ports need to increase pool capacity.

A workforce training center that would cost about \$140 million for workers to get training and accreditation in jobs the community needs.

Shift the share of infrastructure investment to provide increased funds to the West Coast. "We have been out invested 11 to one by the federal government in the United States over the last 10 years, compared to the eastern and Gulf ports," he said, adding that when an infrastructure bill passes the "appropriators need to invest where it will have the greatest impact on the American economy."



Port Congestion Short Term Solutions



The short-term recommendations that The Port of Los Angeles is focused on include:



Creating incentives for driving down turn times for trucks, improving dual transitions



Improving visibility with data tools like the port's Signal or Horizon forecasts



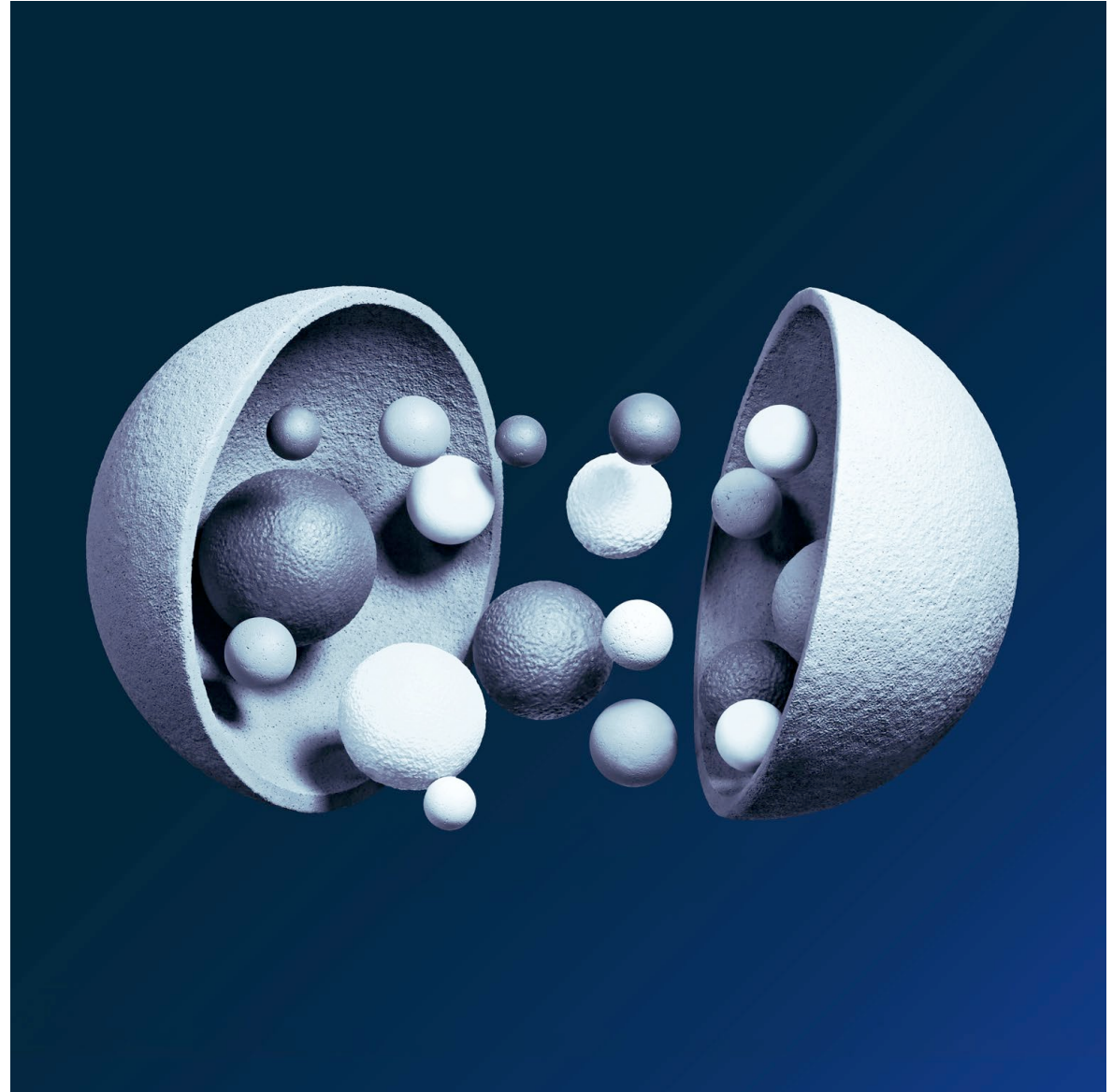
Working with the FMC to pilot improved detention and demurrage using the facility's Port Optimizer tool, and to create a data standard for tracking the issue



Figuring out how to better use capacity, as just 30% of truck appointments use nightside gates

The Changing Environment

- Climate Change
- COVID-19
- Populism
- Global Trade Agreements, Generational Entitlement
- Automation and Artificial Intelligence (AI)



Ever Given Oops! 1 Billion \$





The Cost of shipping
in the trans pacific
market is equaling
20% or more of the
retail value of many
goods

Logistics

- Logistics refers to the overall process of managing how resources are acquired, stored, and transported to their final destination.
- Logistics management involves the physical movement of product from inception to consumption in addition to identifying prospective distributors and suppliers and determining their effectiveness and accessibility



Seven Rights of Logistics

- the **right** quantity in
- the **right** condition to
- the **right** place at
- the **right** time for
- the **right** customer
- at the **right** price.





Ocean Freight

- Huge ships are the first way to move things across the planet. There are also oil tankers, bulk carriers, and general cargo ships. It is good for worldwide water ports in the global supply chain. Container ships and other cargo vessels move a lot of parts and finished products and raw materials. It is good to get to the final destination of manufacturers.

The new oligopoly of container shipping



The combined market share of the 10 largest global container carriers has jumped from 51 percent in 2000 to 82 percent today.



US Flagged Cargo Ships (Container Ships)

• 1965 = 2376 (0)



• 2019 = 182 (65)

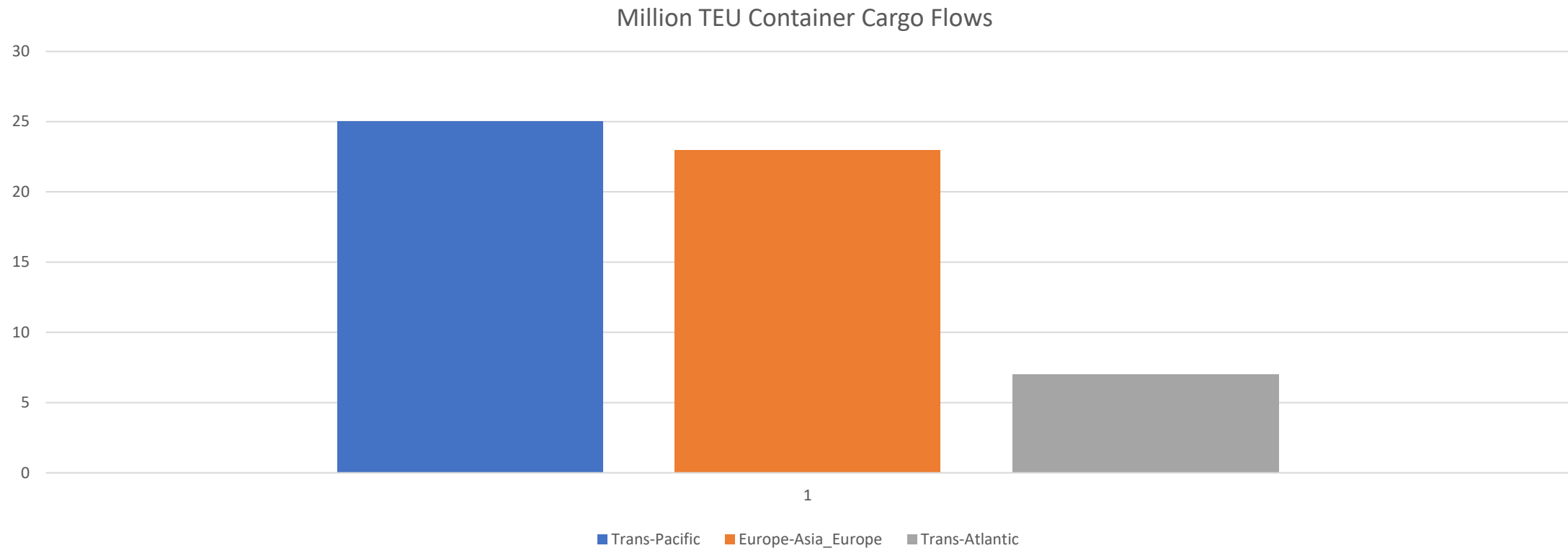


Big Ships & Ports

- Gains from the economies of scale resulting from the deployment of larger vessels do not necessarily benefit ports and inland transport service providers, as they often increase total transport costs across the logistics chain.
- A rise in the average call or ship size often leads to peak demand for trucks, yard space and intermodal connections, as well as additional investment requirements for dredging and bigger cranes.



Estimated containerized cargo flows on major container trade routes in 2020, by trade route



Top Ten US Importers (2019)

- 1 Walmart | 893,390 | Retail | Bentonville, Ark.
- 2 Target | 600,040 | Retail | Minneapolis, Minn.
- 3 Home Depot | 400,100 | Retail | Atlanta, Ga
- 4 Lowe's | 292,244 | Retail | Mooresville, N.C.
- 5 Ashley Furniture | 270,000 | Furniture | Arcadia, Wisconsin
- 6 Dole Food | 230,117 | Fresh Fruit and Vegetables | Thousand Oaks,
- 7 Samsung America | 181,328 | Conglomerate | Ridgefield Park, N.J.
- 8. Family Dollar Stores/Dollar Tree | 171,936 | Retail | Matthews, NC,
- 9 LG Group | 156,348 | Conglomerate | Englewood Cliffs, N.J.
- 10 Chiquita Brands International | 151,589 | Fresh Fruit and Vegetables | Charlotte, N.C..





Disrupted ocean markets a windfall for forwarders (Ocean = NVOCC)

- NVOCC Non Vessel Operating Common Carrier
- NVOCC Issues a Bill of Lading
- NVOCC Contracts with VOCC (Vessel Operating Common Carrier) for space: COSCO, MSC, Matson, OOCL, Hanjin

A large Asiana Cargo Boeing 747-400 is parked on an airport tarmac under a blue sky with light clouds. The aircraft's tail features the Asiana logo, a stylized crane in red, yellow, and blue. In the foreground, numerous pallets of cargo, wrapped in clear plastic and secured with metal strapping, are stacked on the tarmac. A semi-transparent white circle is overlaid on the left side of the image, containing the title and a list item.

Air Freight

- Flying is also a good way to move across the ocean to go international. Commercial cargo aircraft are usually equipped with Unit Load Devices (ULDs) to move between airports. It is expensive so it is used for critical necessities. It is quick and reliable. It is usually the fastest way to transport freight when time is ticking.

Truck Freight

An illustration of a semi-truck with an orange cab and a grey trailer. The trailer is shown in a semi-transparent cutaway view, revealing several stacks of grey rectangular boxes inside. The truck is positioned diagonally across the frame, moving towards the right. The background is plain white.

- Trucks are the primary character in the worldwide supply chain. It is the best way to transport freight across land. It is the most common and has ways to transport freight that others ways cannot. For example, air freight is costly and railways cannot go everywhere

A freight train is crossing a large steel truss bridge over a river. The locomotive, numbered 9841, is at the front, pulling a long line of flatcars loaded with intermodal shipping containers. The containers are stacked high and come in various colors including red, blue, orange, and green. The background shows a dense green forest on a hillside.

Rail Freight

- Railcars are pulled by engines and used after trucks. It is cheaper and better for the environment. To put into perspective, in 2018 overall, railroads have moved almost 14.5 million intermodal shipping containers.

Last Mile Delivery



Last Mile Delivery

- **The main difference** between the supply chains of brick-and-mortar (B&M) stores and online retailers **is the endpoint of final delivery**

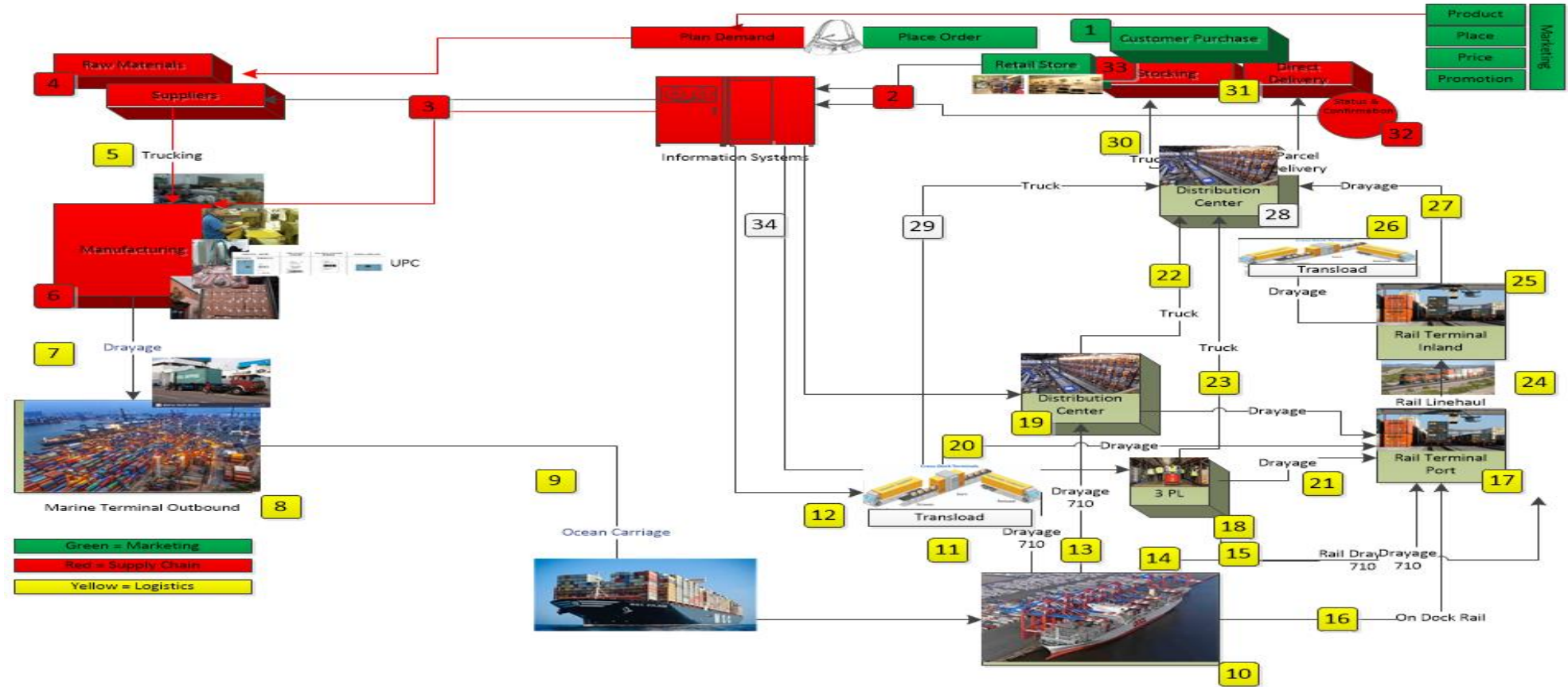


The most cost effective supply chain is...

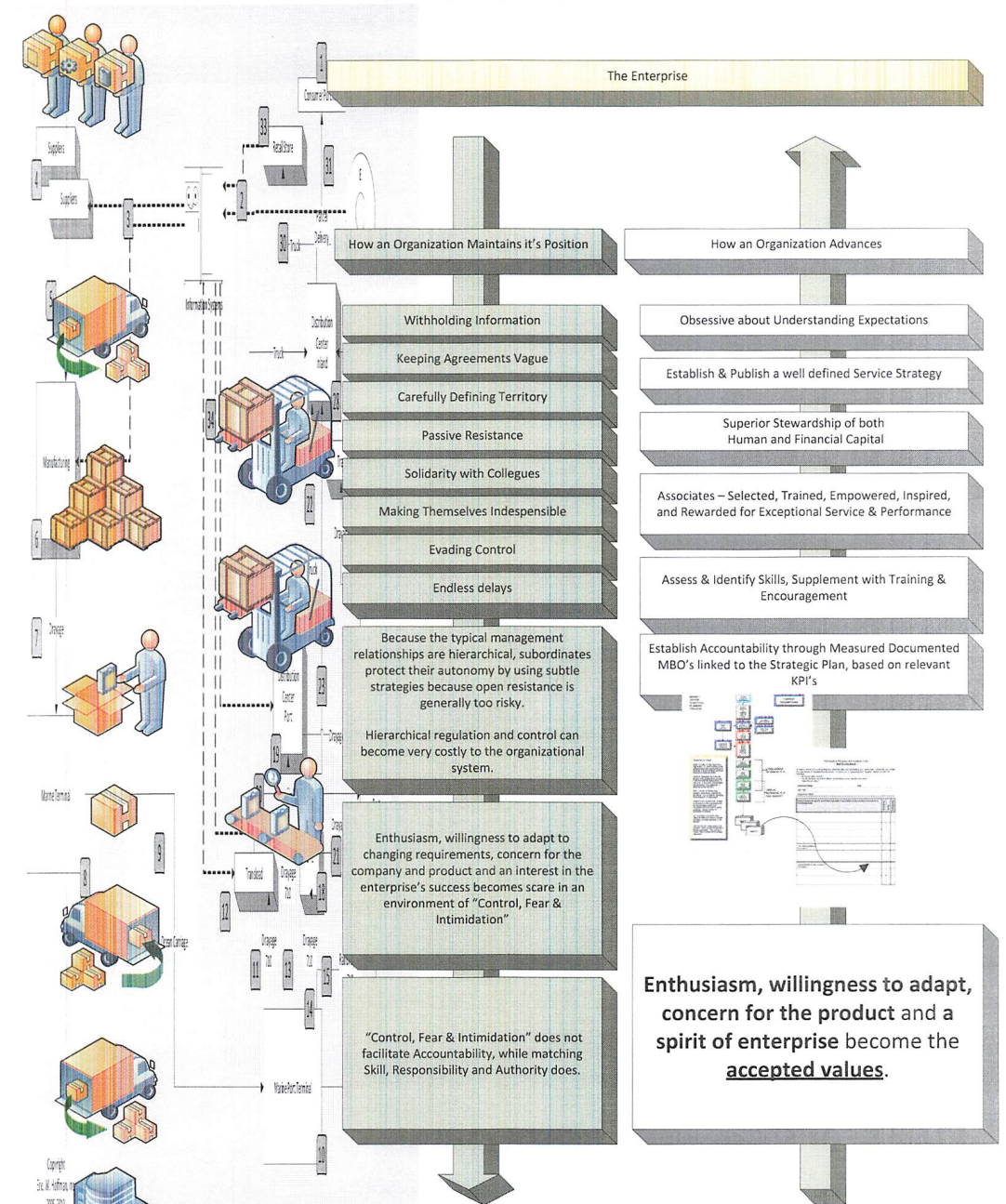
- Reliable
- Supply chains that produce consistent output and run smoothly are cost-effective
- make products quickly and with minimal cost, **at the expense of inventory balance and consistent delivery times**



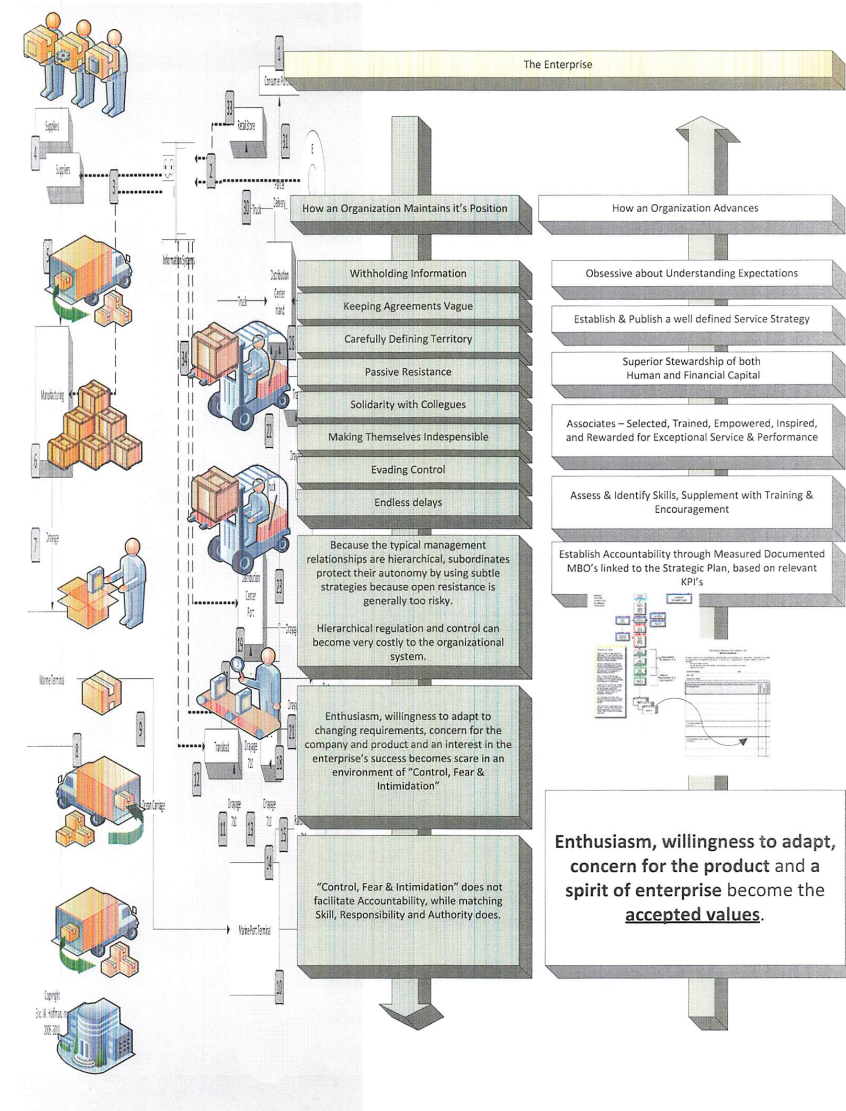
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How an Organization Advances



Orchestrate Supply Chain



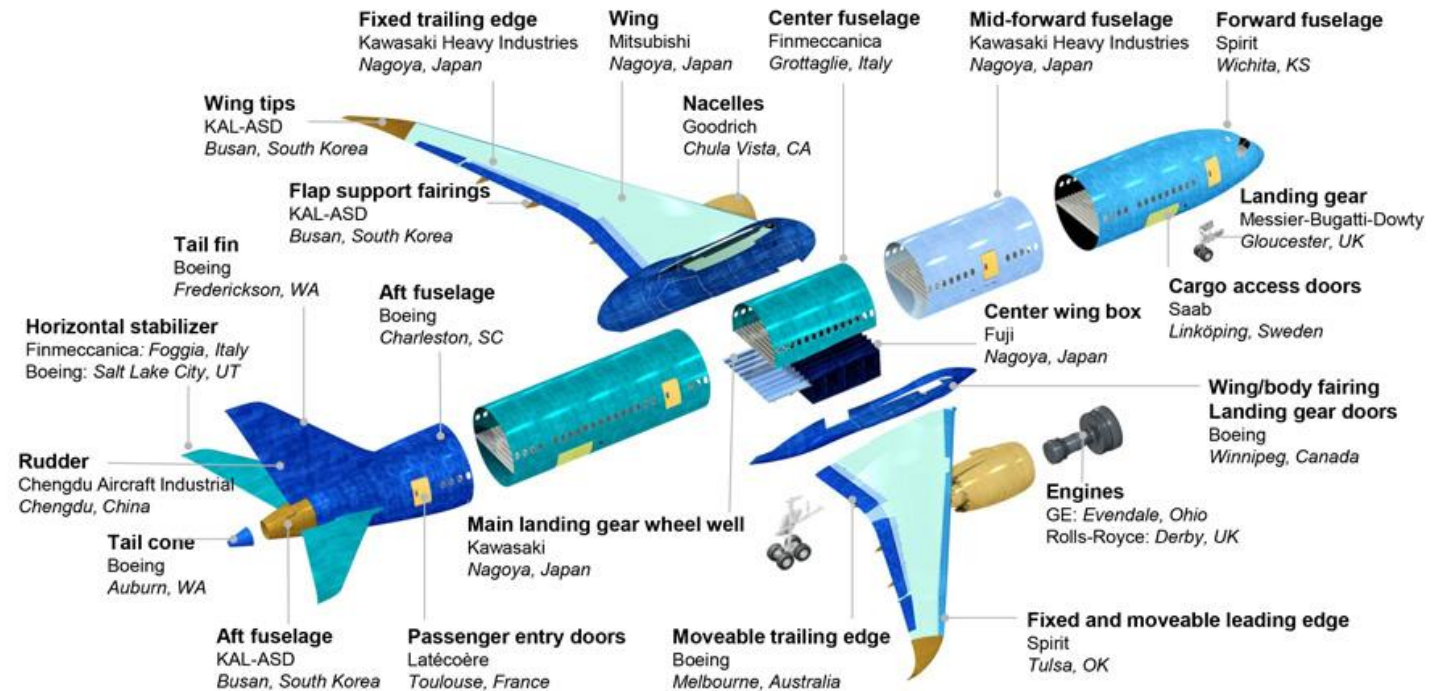
Logistics Organizations

- Non Hierarchical
 - Long Decision-Making Time
 - Message Distortion
 - Lack of Individual Authority
 - Inability to Adapt Globally
 - Over-specialization
- Orchestrate

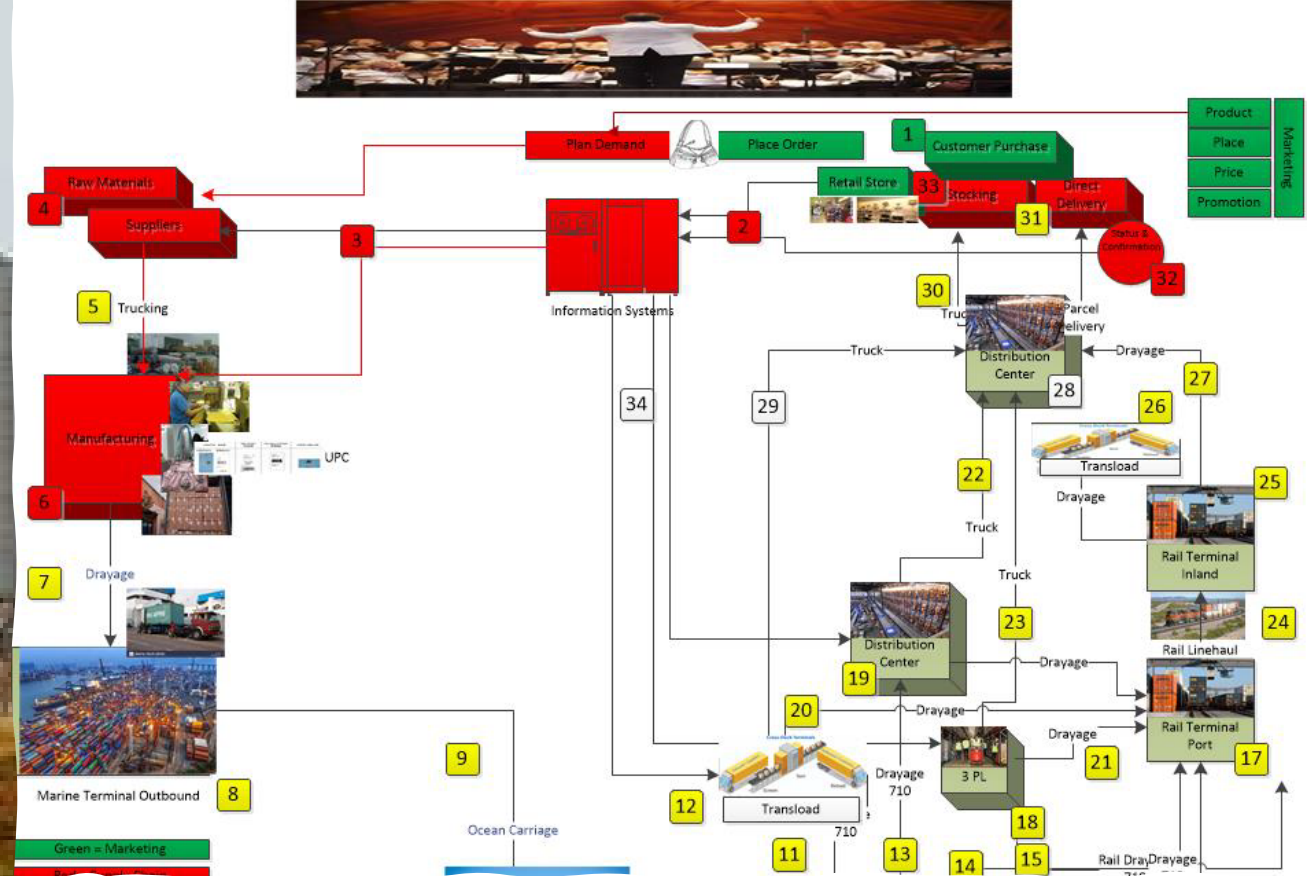


Global Supply Chains

- **More sourcing opportunities**
- Greater range of selection for workers, modes of transportation, materials, and products. This gives a company more options to choose higher-quality labor, lower-quality materials, etc. based on its particular needs.
- **More room to expand**
- With more customers, greater access to different technologies, and more land to build properties, a company can break into new markets, increase sales, and extend their reach across the globe.
- **More ways to save money**
- This ties in closely with Benefit 1. A company can choose to outsource cheaper labor to lower manufacturing costs (i.e. Apple and its China sweatshops), or subcontract out a local manufacturer/distributor to reduce logistics costs.



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Legacy Supply Chain vs Dynamic Supply Chain



Reimagine the Pharma Supply Chain

- The pandemic has only exacerbated a previously existing problem: U.S. dependence on foreign manufacturers of drug ingredients and finished products that has resulted in shortages of critical medicines. The remedy is to create a domestic manufacturing capability, adopt new production technologies, and change what's kept in the Strategic National Stockpile. This will require a partnership between the public and private sectors.

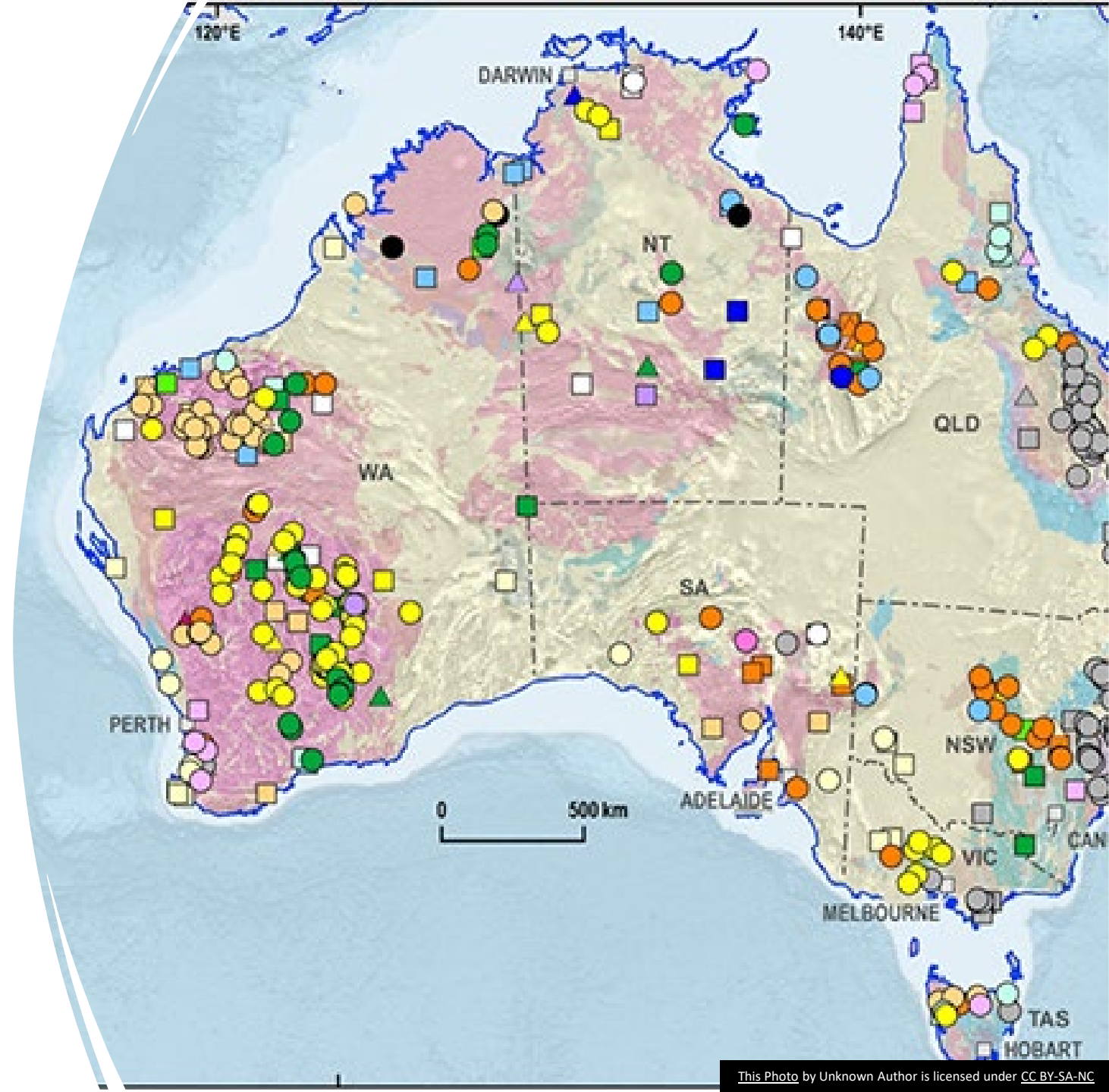
Customer Acquisition

- **Brick-and-mortar store:** traditional business establishment with a physical storefront
- **Online retailer:** company selling on the Internet, usually from a centralized website, to ship products based on online orders directly to locations optioned by the consumer



Raw Materials Source

- Lithium
- Graphite
- Cobalt
- Manganese.





Global Trade Agreements

The United States currently has 14 Free Trade Agreements (FTAs) with 20 countries in force

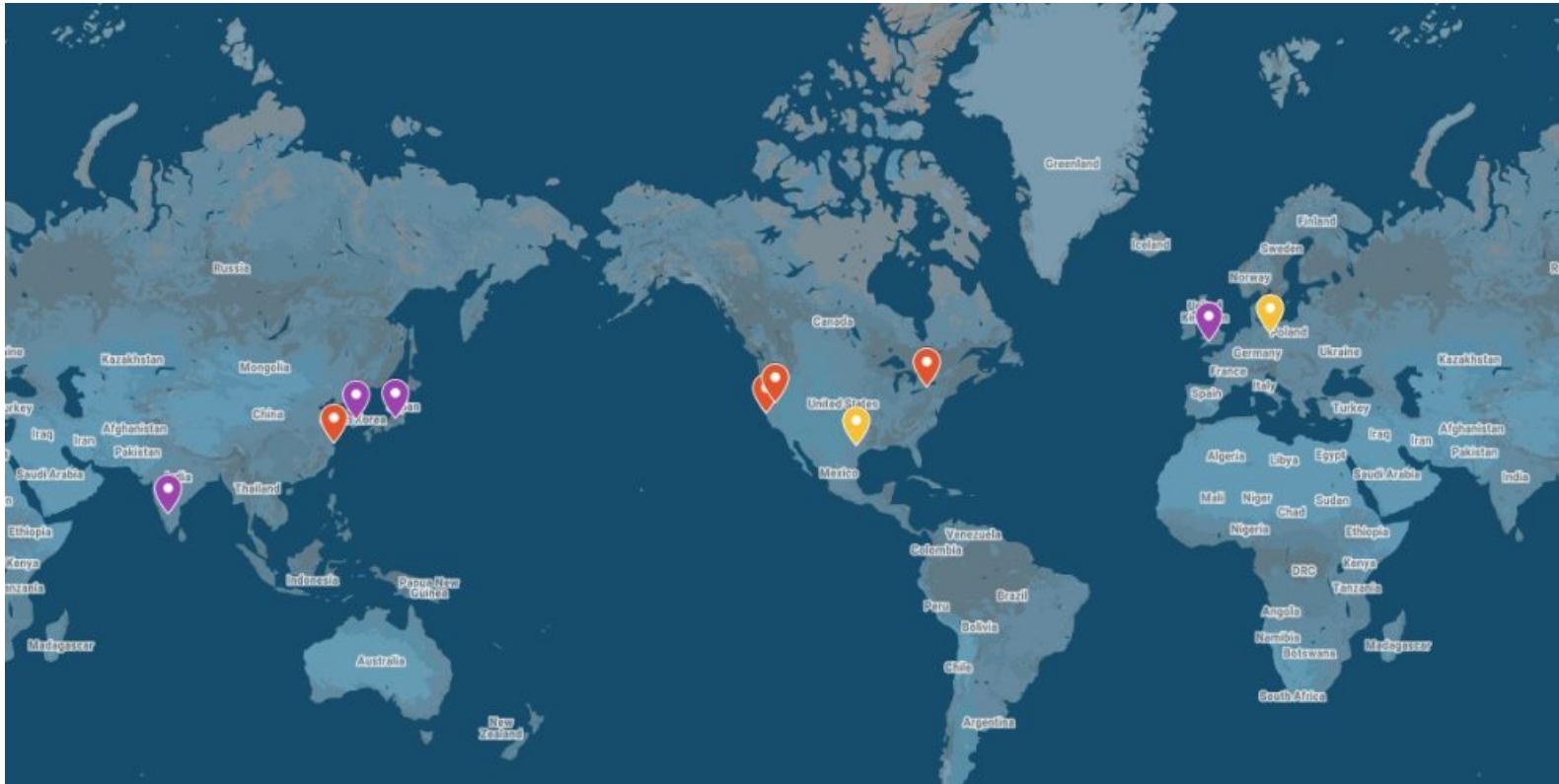


Trade Agreements

- NAFTA
- TPP



Manufacturing

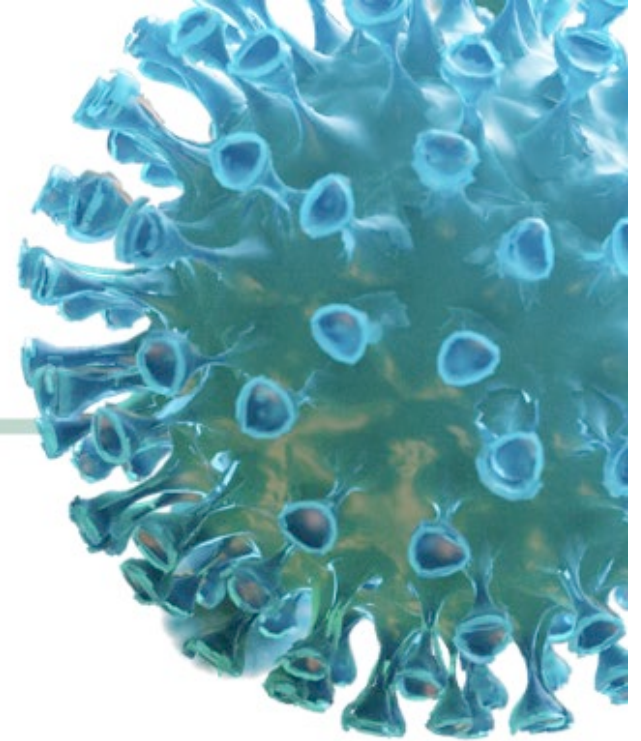


‘Co-opetition’ - co-operating with competitors

- Co-opetition is the act of cooperation between competing companies. Businesses that engage in both competition and cooperation are said to be in co-opetition.
- Coopetition includes a mixture of cooperation with suppliers, customers, and firms producing complementary or related products. It is a type of strategic alliance that is particularly common between software and hardware firms



BIONTECH



Future Warehouse



- Warehouses will build on current effective process-driven technologies, such as widespread supply chain automation, hyper-effective robotic technologies and, yes, plenty of drones to go around.

AI Applications in Logistics

- Demand Forecasting
- Warehouse Robots
- Self Driving Vehicles
- Delivery Drones



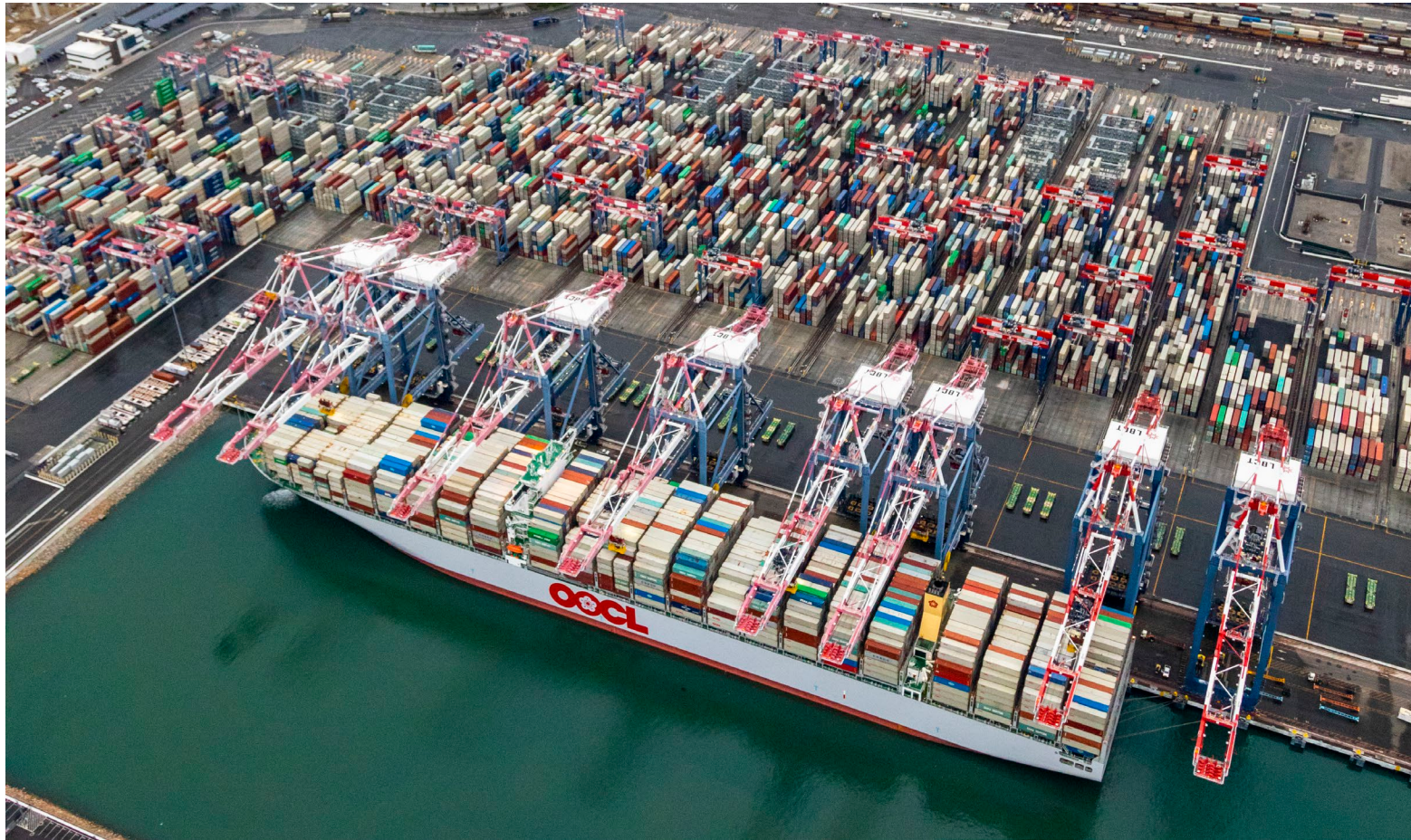
The Omni-Channel Revolution

- Physical Option
- Online Option

Omni Channel Distribution



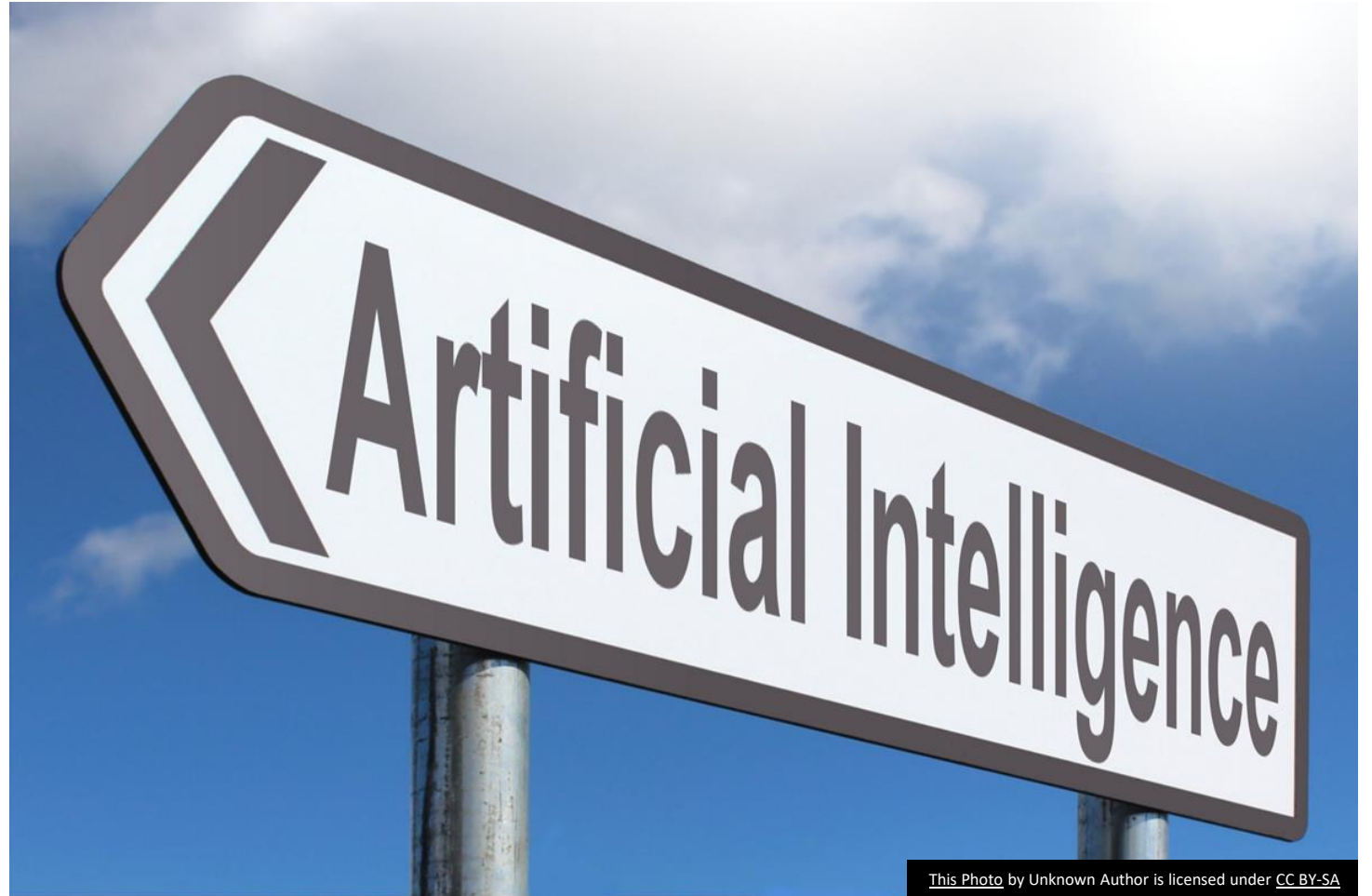
WORLD'S GREENEST CONTAINER TERMINAL POLB



The Middle Harbor Terminal Redevelopment Project is a 10-year construction program combining two aging shipping terminals into one of the world's most advanced and greenest container terminals.

Automation and Artificial Intelligence

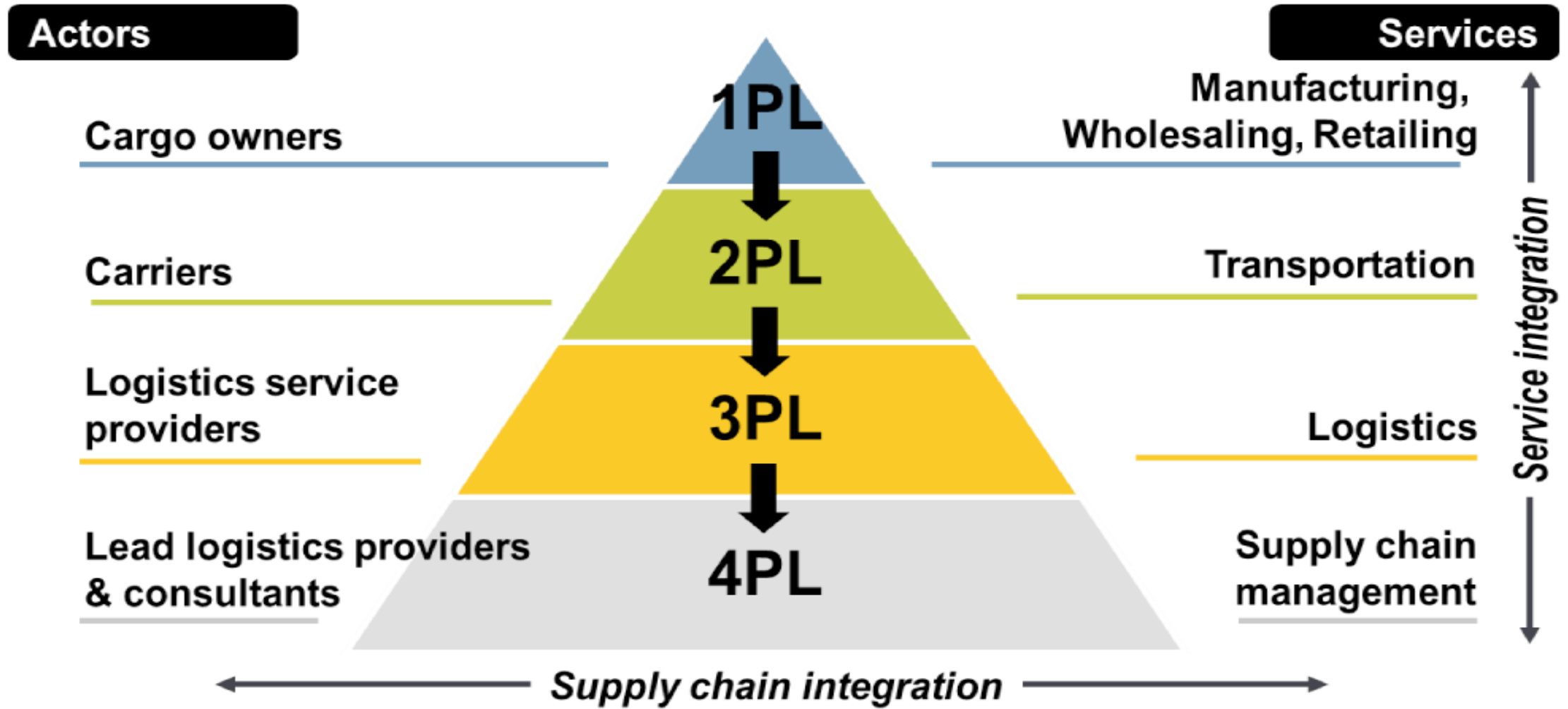
- Automating business processes
- Gaining insight through data analysis
- Interacting with customers and employees.



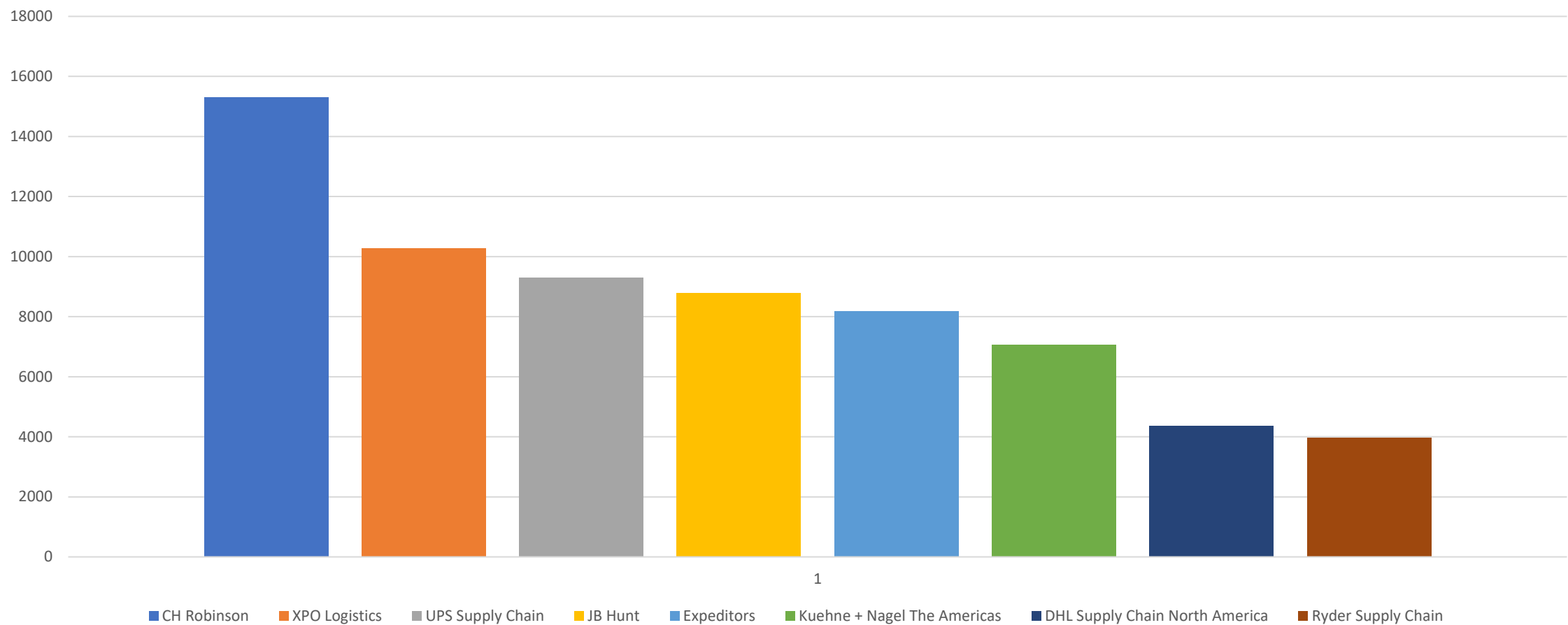
Visability

- **Product and Shipment Visibility**
- Supply chain partners must share data and adopt universal standards for barcoding, track and trace, and data exchange. That control generates more information, but also requires more collaborative technology as companies adopt GS1 standard barcoding at all levels (order, shipment, container pallet, and unit).
- **Transport and Logistic**
- Entities responsible for shipping are tightly connected to logistic service providers (LSPs). LSPs are usually outsourced third parties that handle transportation pathways like overland freights. To ensure maximum synergy, LSPs should send real-time updates of the contents and ETA status of packages to shipping providers.
- **“Control center” technologies and the Cloud**
- Adaptable supply chains possess end-to-end capabilities. Cloud computing offers greater agility in communication, low upfront investment, secure access, faster deployments, simplified integration of data, and continuous upgrades to the software. All these characteristics allow for the different moving parts of a supply chain to share data, contributing to high visibility across the board.





10 Largest US Third Party Logistics Providers



Supply Chain Software

- Winners and also-rans often use the same technology, the difference is, "the ones who are getting a return on their investment are trying to change their practices, not just the name brand of their software."





Adapting Supply Chains

Driving with the Windows Down

Supply Chain Economics 1%

- A few firms got supply-chain religion early on, and thanks to years of sustained efforts are now vastly more efficient than their competitors.
- For example, Dell Computer carries less than five days of inventory as compared with nearly 25 for Compaq -- and that doesn't even count the two to four weeks of inventory in Compaq's reseller system.
- Experts estimate that a one-week inventory advantage translates into a 1 percent cost advantage, which helps explain why Dell has been able to continue making money even in the cutthroat personal computer business.



43%

of small businesses
track inventory
manually or do not
track inventory at all



Source: Wasp Barcode Technologies

 **FinancesOnline**
REVIEWS FOR BUSINESS



Amazon

- With [110 fulfillment centers](#) and 300 delivery centers in the United States, Amazon is the king of free two and next-day shipping, as well as last-mile delivery.
- In addition, Amazon continues to remain competitive with third-party logistics warehouses as they [extend their service offerings](#).



Automation of Supply Chain Functions

- Technology is intended to augment human efforts by speeding up simple, repetitive tasks.
- By relegating these tasks to machines,
- human workers can focus on higher-value tasks that have a more direct effect on
- business growth and customer experience.



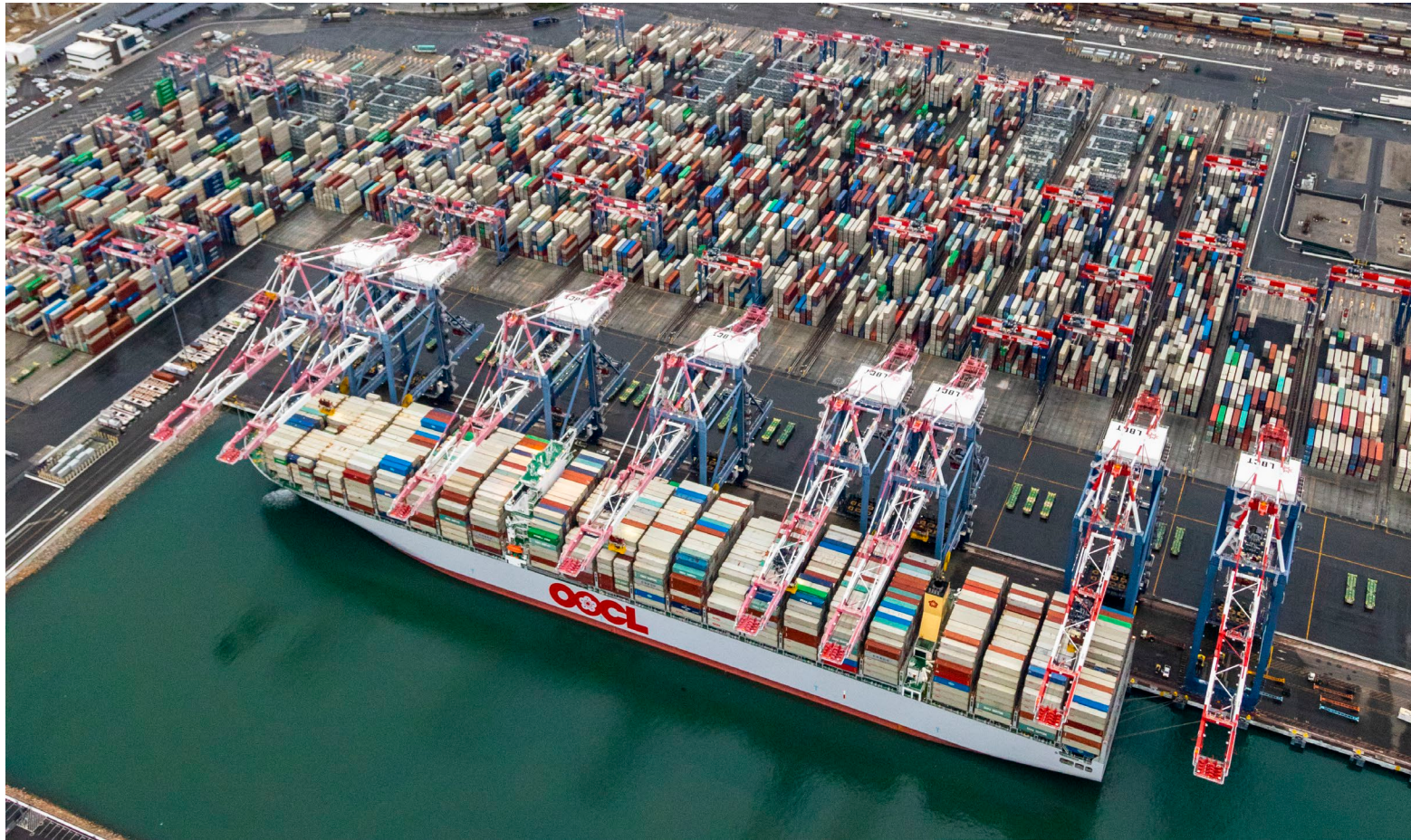


Sustainable Supply Chain

- **People:** It measures how responsible a corporation has been throughout the years socially.
- **Planet:** It measures how responsible a corporation has been throughout the years environmentally.
- **Profit:** It measures how much money a corporation is making after a loss account (P&L) regarding profit and loss.

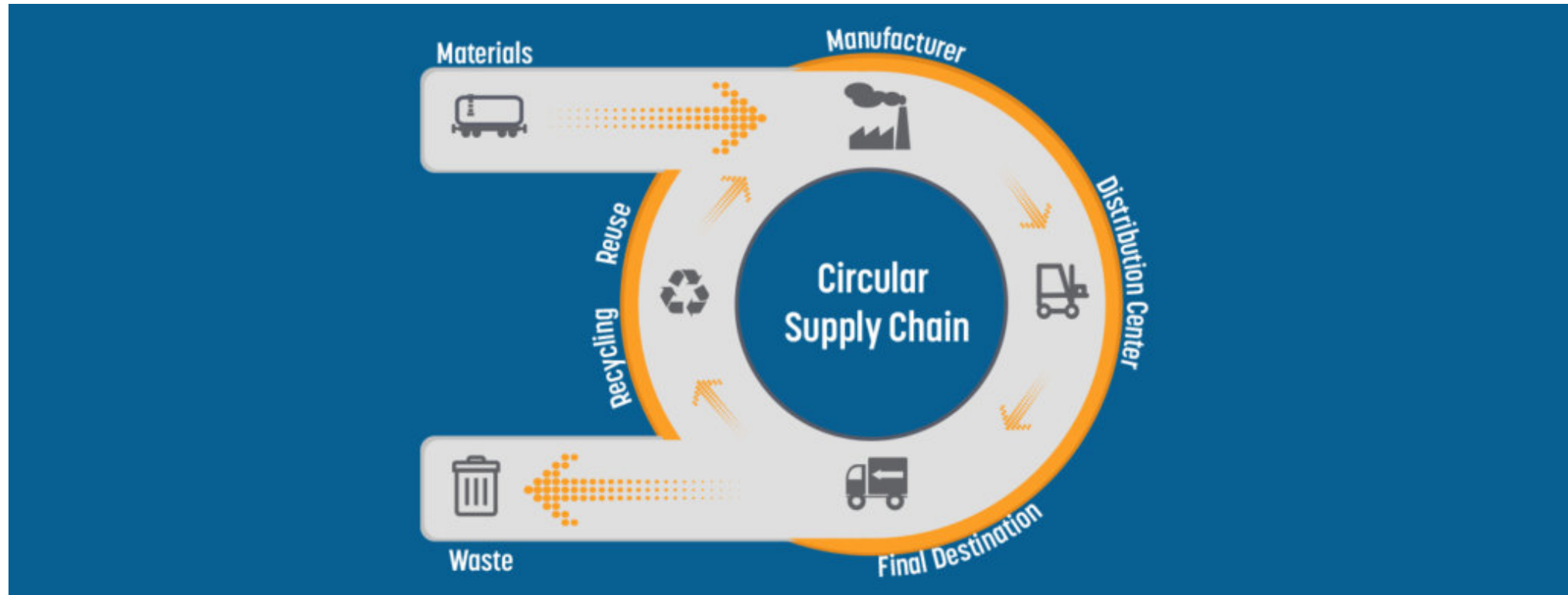


WORLD'S GREENEST CONTAINER TERMINAL POLB



The Middle Harbor Terminal Redevelopment Project is a 10-year construction program combining two aging shipping terminals into one of the world's most advanced and greenest container terminals.

Recycling for Raw Materials



Six policy actions to prepare for a post-pandemic world

- Support trade so it can effectively sustain growth and development
- Help reshape globalization for sustainability and resilience.
- Promote greater technology uptake and digitalization.
- Harness data for monitoring and policy responses.
- Enable agile and resilient maritime transport systems.
- Maintain the momentum on sustainability, climate-change adaptation and resilience building.



The Pandemic's Legacy

- A paradigm shift – risk management and resilience-building are becoming new policy and business mantras
- Accelerated shift in globalization patterns and supply chain designs.
- New consumer spending and behaviour.
- A strengthened case for digitalization and dematerialization.
- A significant increase in the use of electronic trade documentation
- Standards and interoperability becoming more important.
- Cybersecurity becoming a major concern. Increased cyberattacks
- Adjustments in maritime transport to adapt to the new operating landscape.
- A greater need for systemic and coordinated policy responses at the global level.



Supply Chain Trends 21/22

- Supply chains are going green
- Circular supply chains are the future
- More supply chain integrations
- Workforce globalization and challenges
- Spread of SCaaS & SCM
- Faster product life cycles
- Rise of elastic Logistics
- SCM Standard Certification
- Better SCM transparency
- Blockchain tools
- Adoption of IoT
- Robotics Automation
- AI, AR and VR Automation
- More agile supply chains





Be back
in
20 minutes





Be back
in
60 minutes



Good Work
We Are Done for Today
Any Questions?
See You Next Class
Jim

