Port Infrastructure and Investment

Factors changing the dynamics of profit, margin and risk in port and container terminal investments

Silk Road Port International Cooperation Forum, Ningbo, China

July 11 - 12

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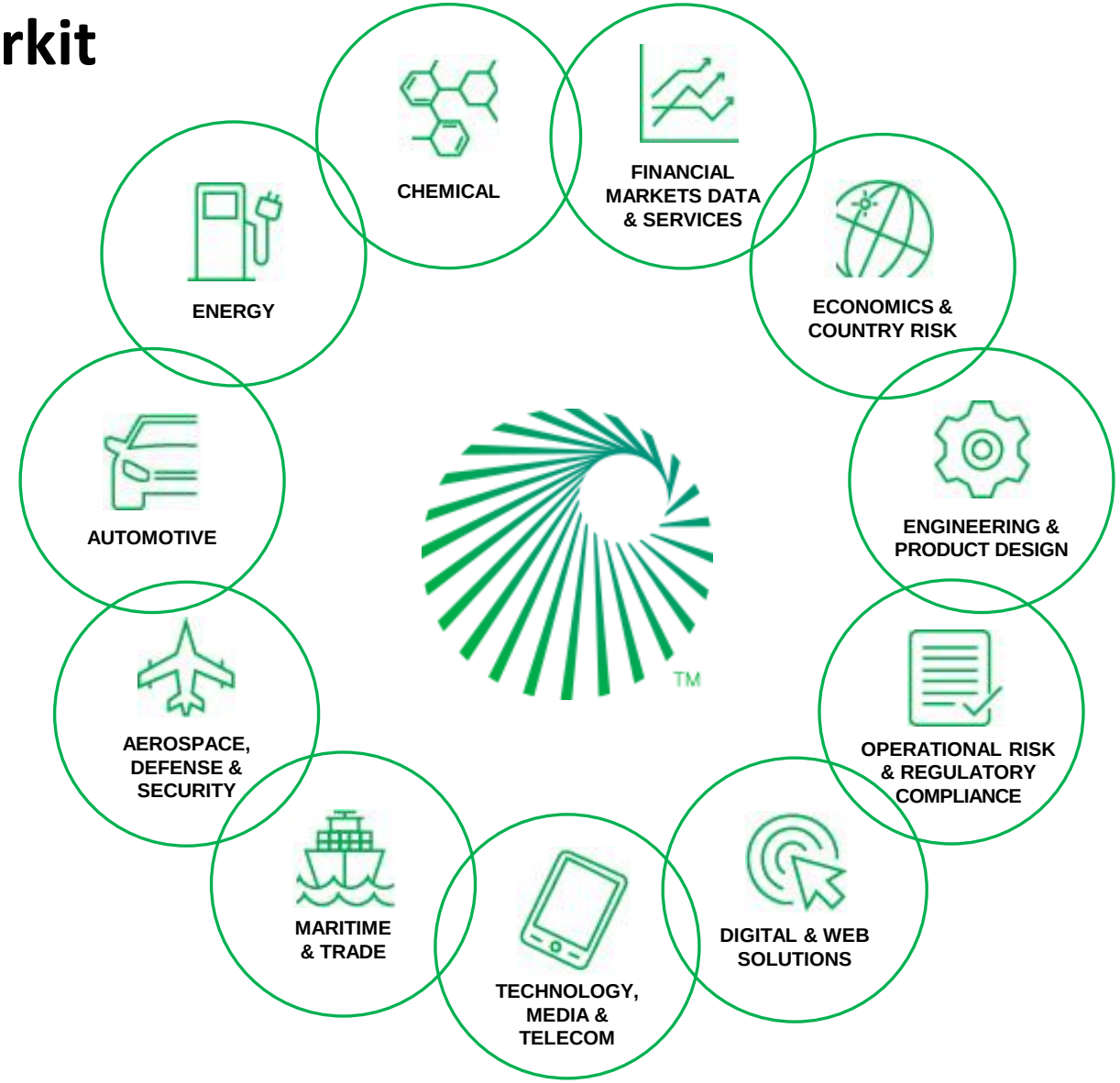
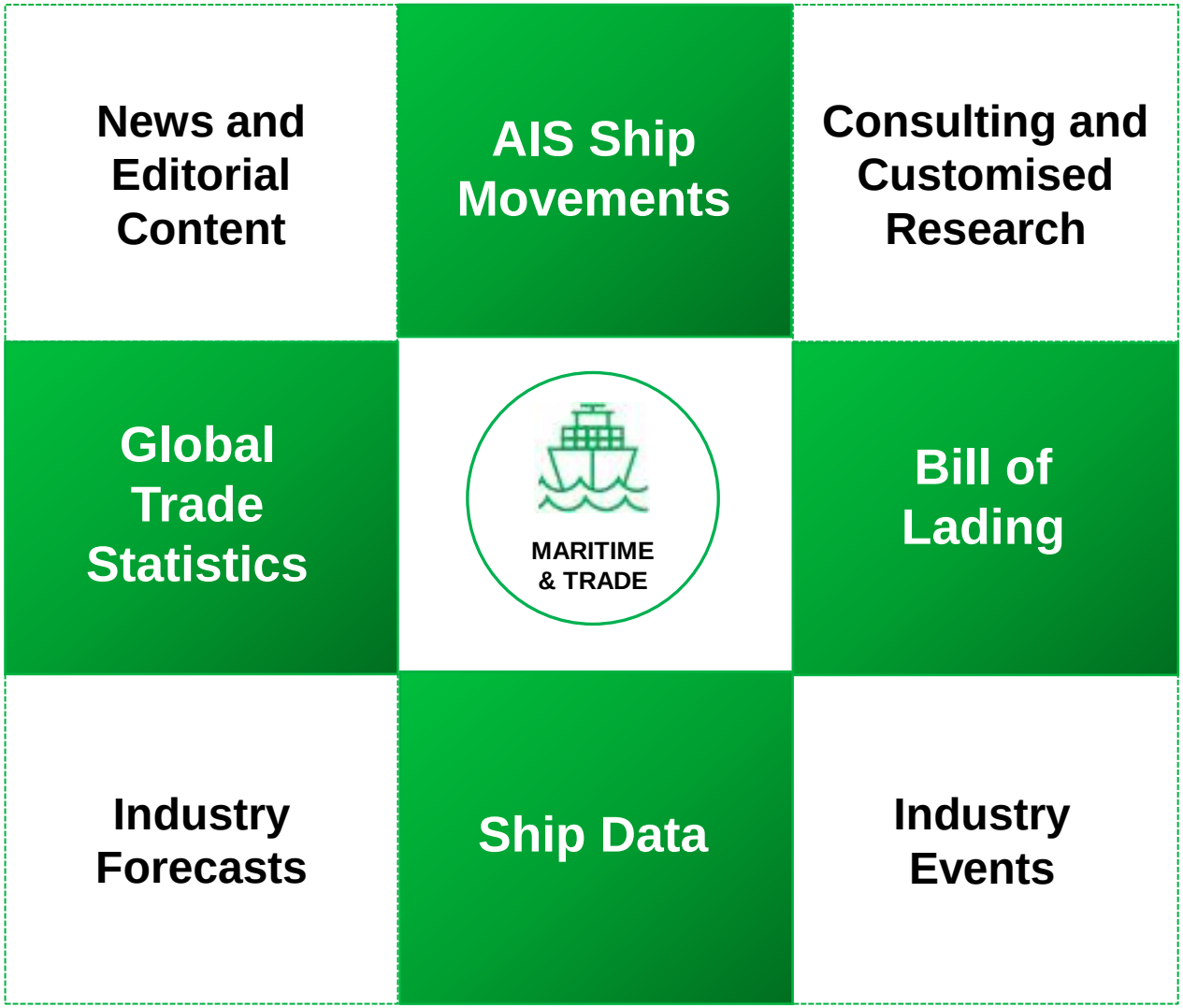
Introducing IHS Markit

We are a global information and analytics company addressing strategic challenges with our interconnected capabilities



Our unique data assets provide governments and commercial customers with access to the most comprehensive insights



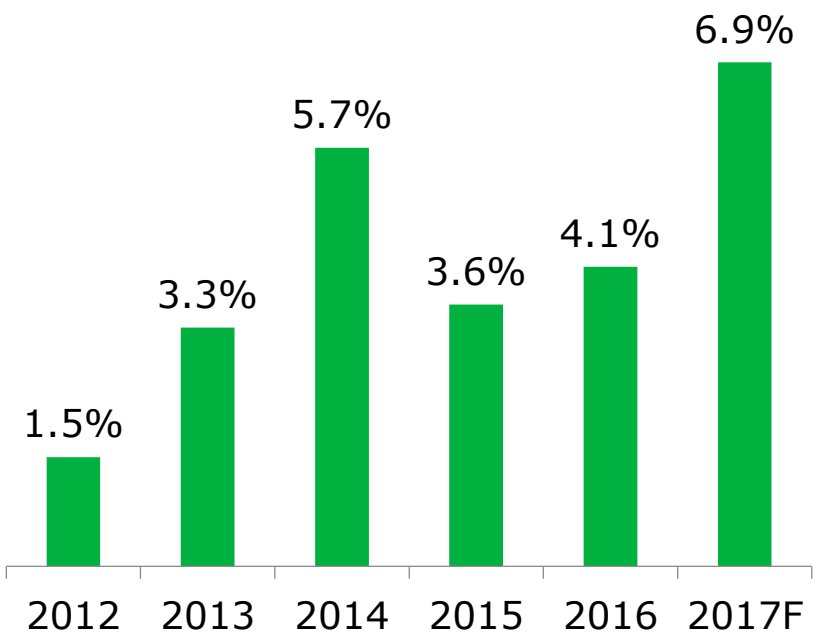
Container Shipping Outlook

Overcapacity and the continuing profitability challenge for container terminal customers

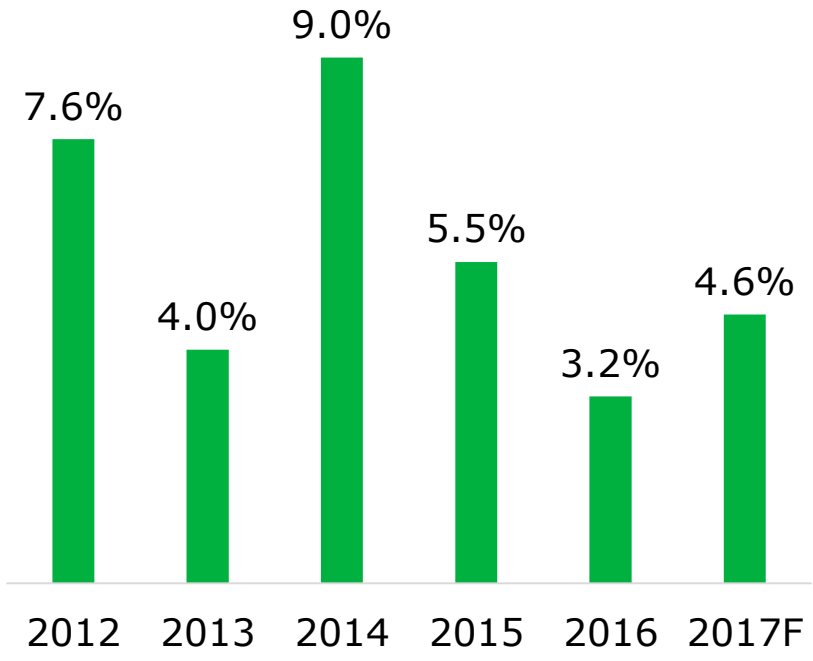
Asia–US to keep the uptrend in 2017, China leading gains

Further growth in consumer spending and home sales will support the trade

Growth Forecast for Asia – US TEU Trade



Growth Forecast for Europe – US TEU Trade

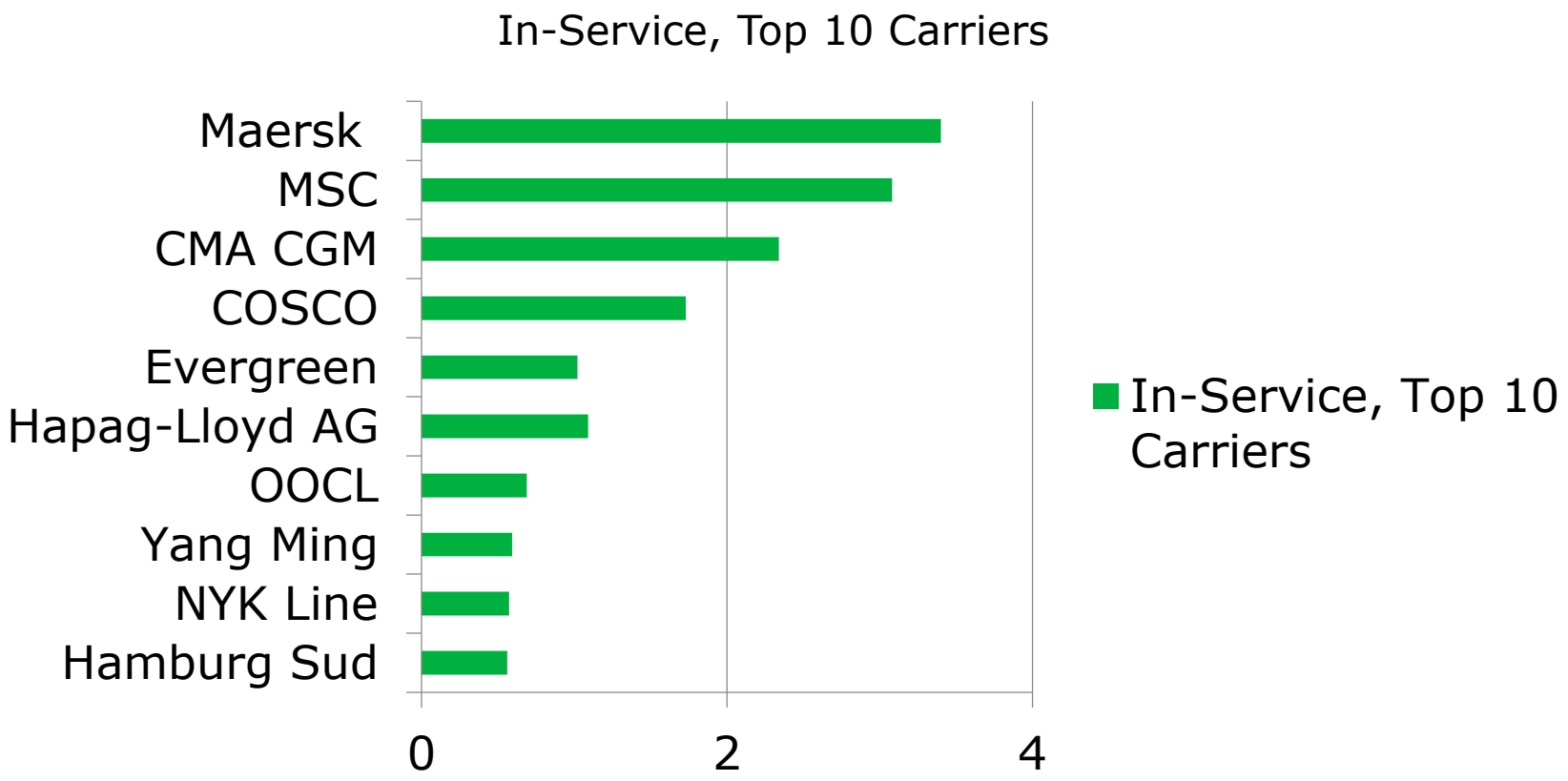


Source: IHS Markit, Journal of Commerce

Global fully cellular fleet capacity between 20.25m and 20.50m teu

Net fleet growth of 1.6% in 2016 was the lowest on record

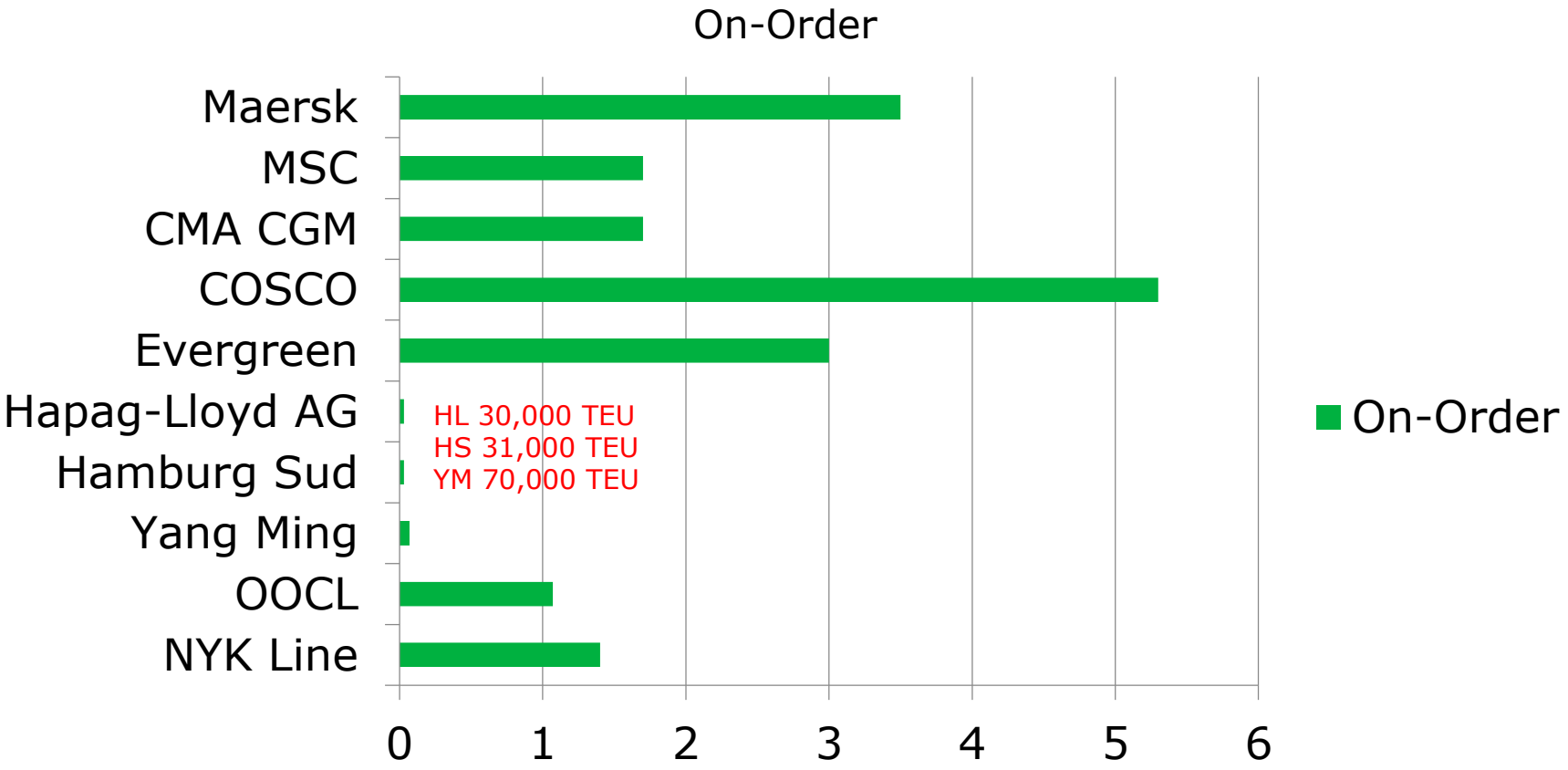
TEU millions, IHS Markit, Alphaliner



Order-book is over 14% of current fleet

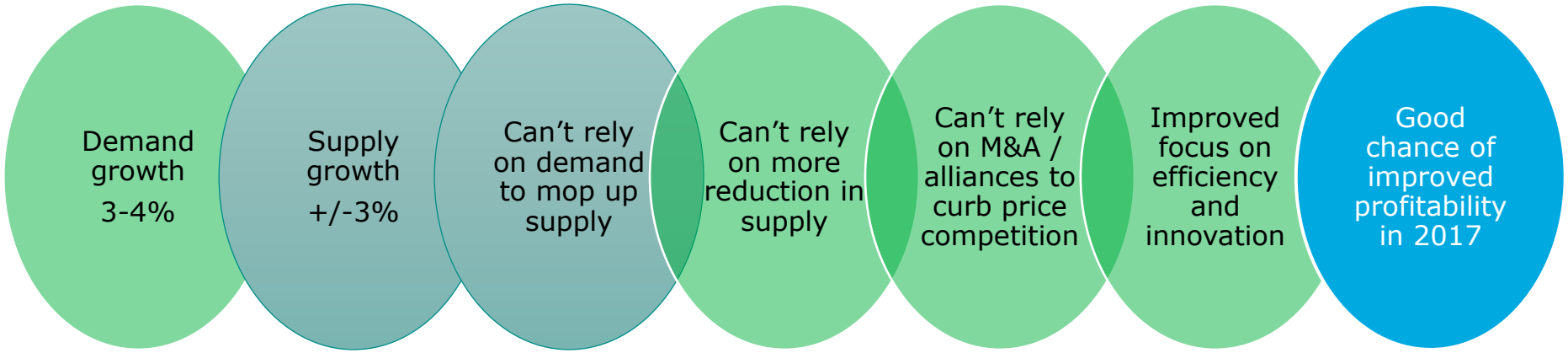
Even with high levels of scrapping and deferrals, we can expect fleet growth of +/- 3% this year

100,000 TEU, IHS Markit, Alphaliner



The plague of capacity oversupply continues … at least for now

Good signs for a healthier 2017, but a high degree of optimism is difficult to justify



Port infrastructure and investment

Factors changing the dynamics of profit, margin and risk in port and container terminal investments

- Customer profitability challenge: continuing focus by lines on cost control and the ongoing search for better economies of scale to beat low rates and improve profitability

  > Deployment of larger vessels is the most obvious element of this trend

- Liner sector consolidation in the form of both M&A and larger alliance networks
- Increasing state involvement in port development where development drivers may go beyond simply building a port facility

  > Impacts port infrastructure development, regional port competition, available capacity

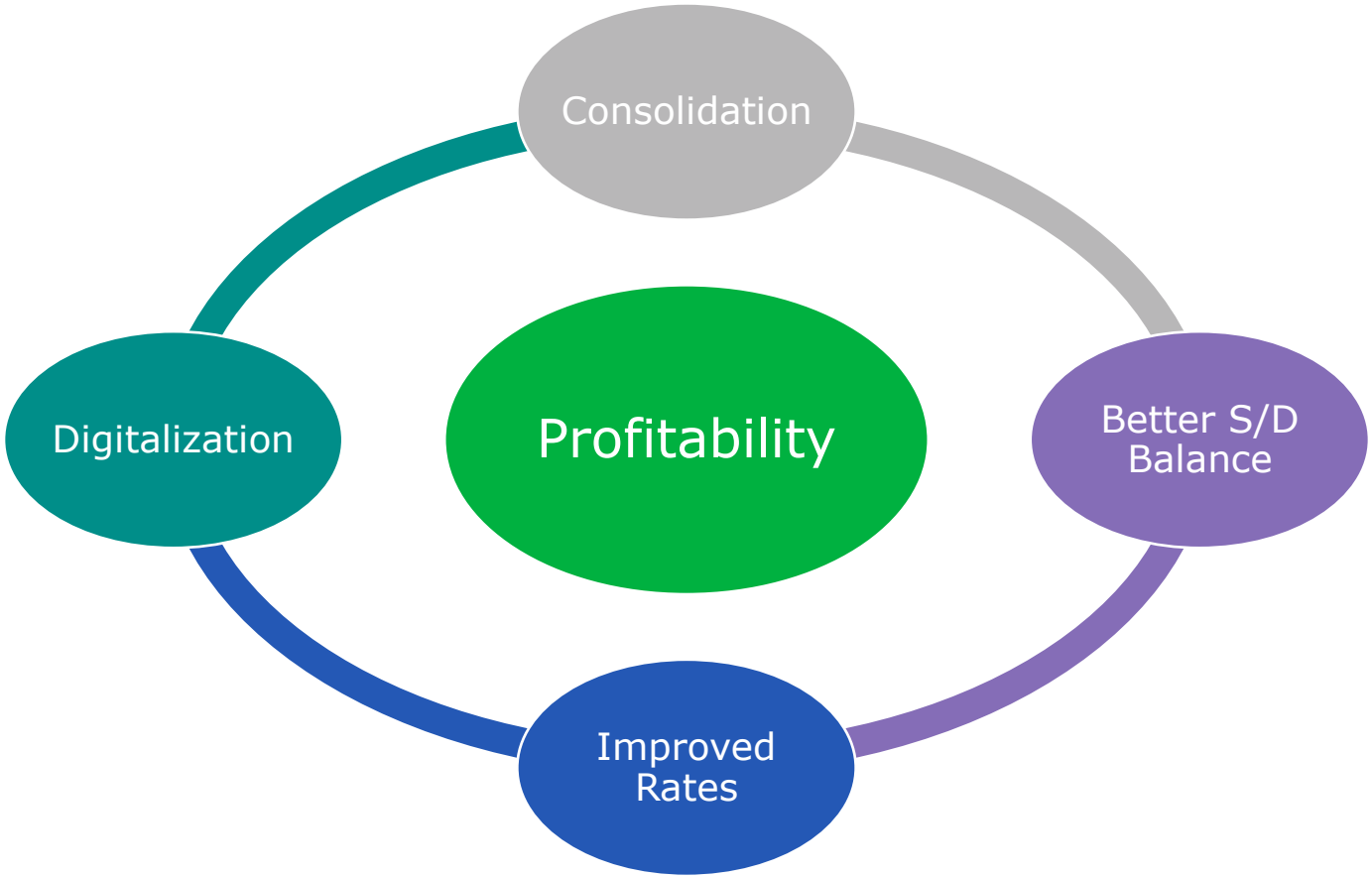
  Demand Side: Q1 global container throughput growth around 3.6% after 2.1% in Q4 2016. Forecast is for 4% growth this year and in 2018 (Drewry)

- Africa, LATAM, North America, Oceania, China showing strong Q1 growth compared with last year
- Over the medium term, promising growth regions include Southeast Asia, South Asia, Africa, LATAM. China still seen by many as having legs but declines eventually inevitable
- Terminals hit by falling GDP multiplier. Container volume growth in the 90s was 3.5 times GDP growth; 2000 – 2009 it was 2.7 times;, since 2010 just 1.2 times

Container Industry Dynamics

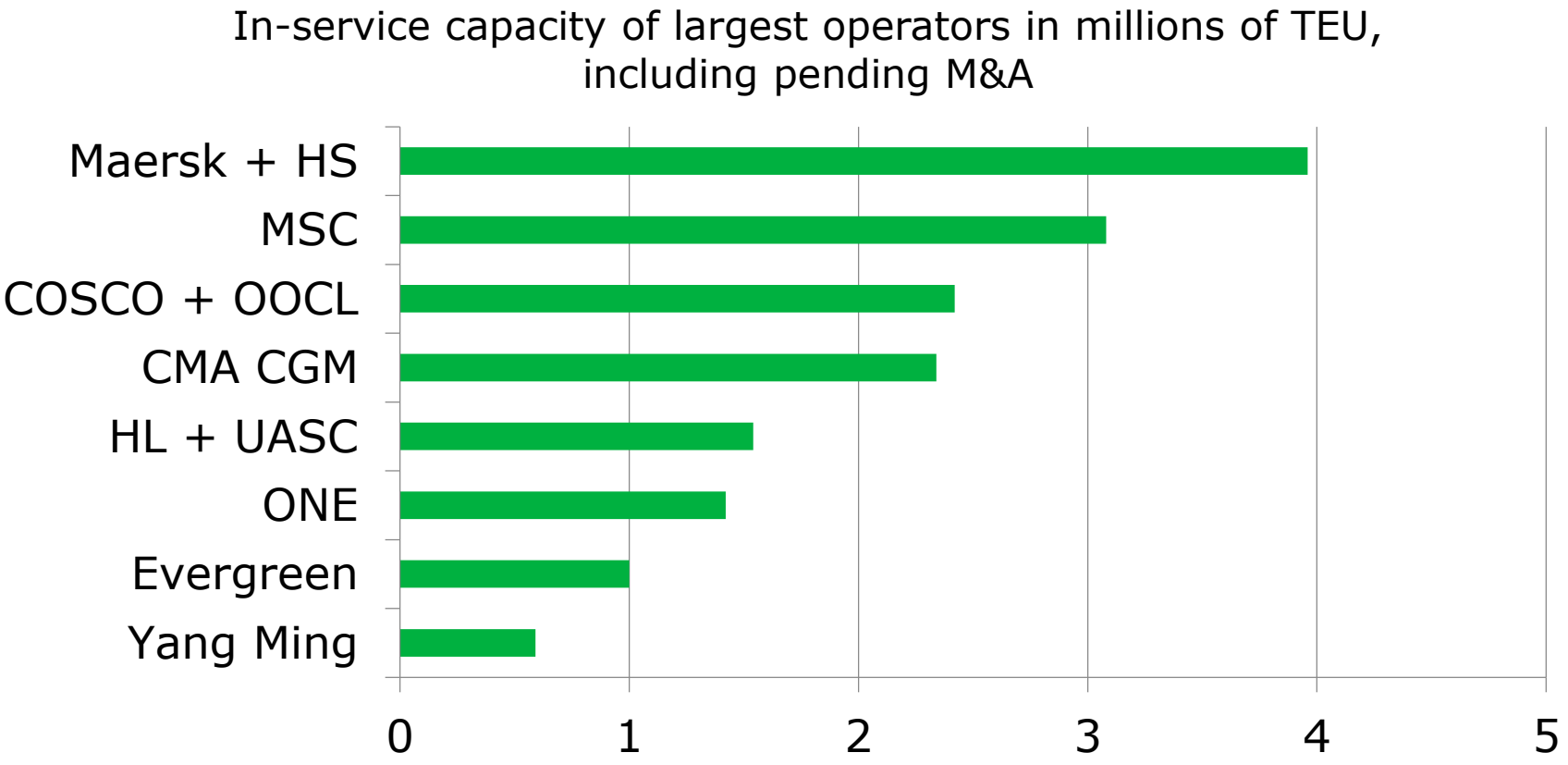
Industry consolidation and increasing vessels size

Consolidation: did we reach a tipping point in 2016?



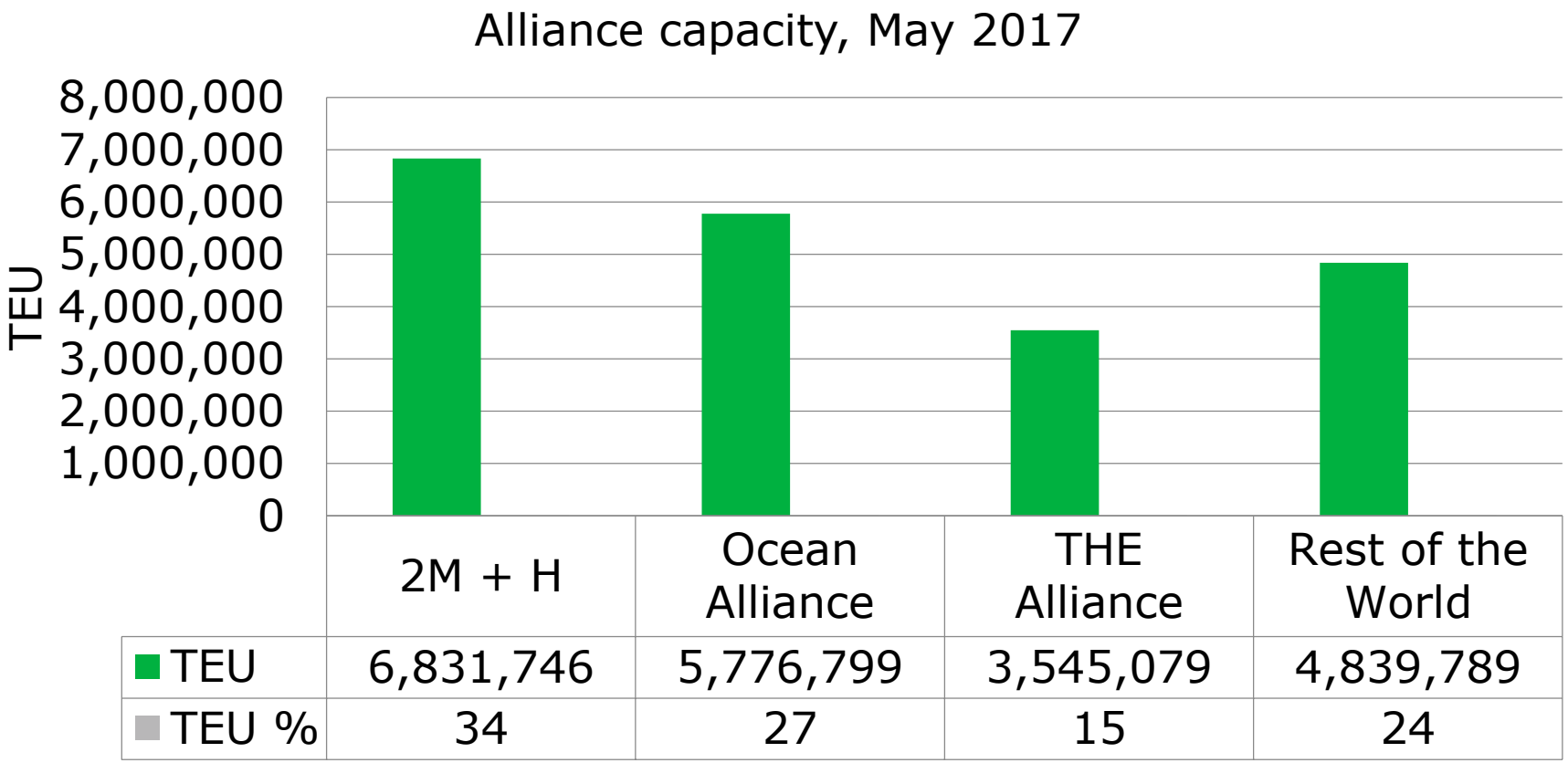
The top six carriers on course to control 70% of global fleet capacity

IHS Markit, Alphaliner



The new network alliances already account for 75% of global fleet capacity

IHS Markit, Alphaliner (total fully cellular and non-fully cellular capaciity)



	2M + H	Ocean Alliance	THE Alliance	Rest of the World
TEU	6,831,746	5,776,799	3,545,079	4,839,789
TEU %	34	27	15	24

Impact of liner consolidation

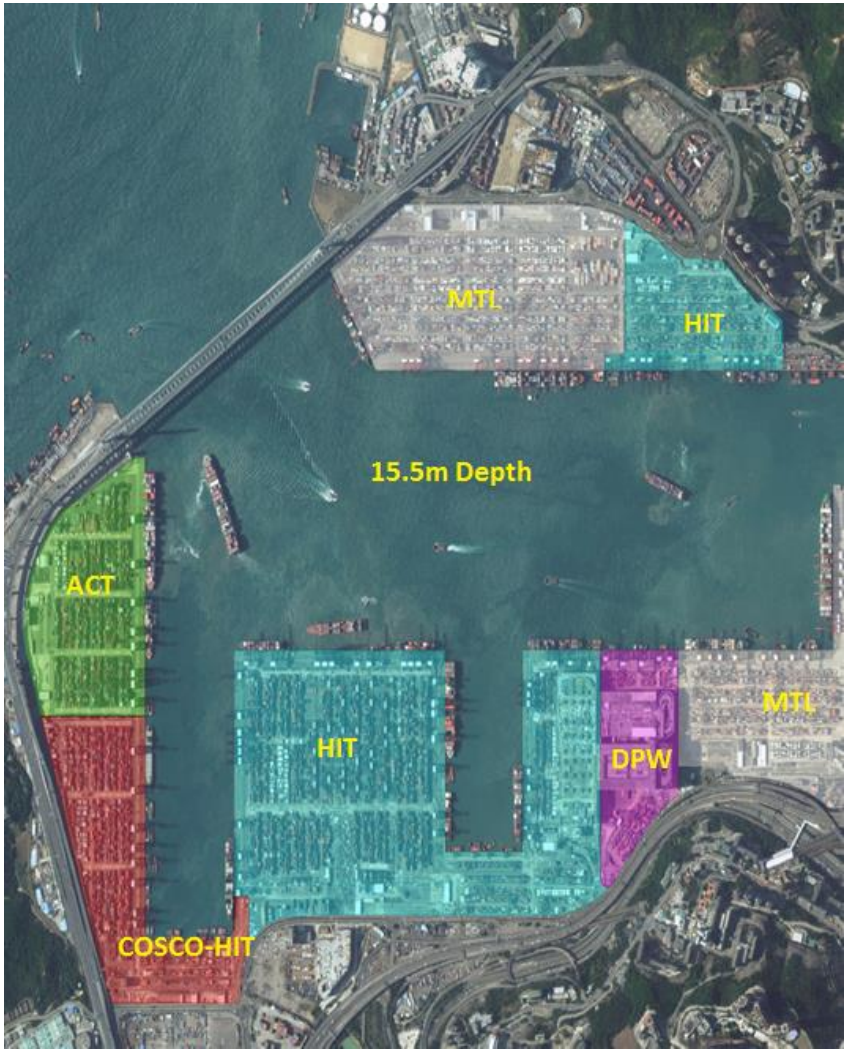
Customer-side consolidation affects the shape of port call networks, throughput volumes and tariffs

- No guarantee that consolidation will curb price competition among lines
- More concentrated market means loss of negotiating power for terminals operators
  - > M&A leads to the 'tariff effect'
    - – Difficult for terminals to refuse adopting lowest price contract
    - – Ocean Network Enterprise expects a billion dollars in annual savings from TE
- Ownership interest becomes more important in the choice of terminal
- Ports and terminals may offer equity stakes to lines and create concession agreements that are conditional on guaranteed liner business
  - > Liner equity stakes determine network choices
  - > Concession agreement RFPs conditional on guaranteed volumes
- Alliance reshuffle impacts shape of networks
  - > Winners (Singapore, Laem Chabang, Cai Mep, Tanjung Priok) and losers (Port Klang)
  - > Mega-hubs 'lock-in' big customers that find it tougher to move
  - > Expected reduction in number of regional transshipment hubs called at on service loops; smaller hubs increasingly service more feeder business

Impact of consolidation

Innovations on the terminal side

- Increased interest in collaboration among terminals in non-competing jurisdictions, or where there is a pre-existing link
- 'Co-management agreement' brings majority of the berth space at Hong Kong's Kwai Tsing terminals under unified management and operation for the first time
- Creates additional capacity by increasing flexibility in yard planning. Better accommodation of alliance customers and ability to handle challenges such as ITT
- Better capability to improve and develop barge operations
- Cost savings from shared services. Revenue / expenses allocated based on designed capacity owned by each company
- In general, the industry still lags others in terms of partnering and best practice IT adoption



The container Terminals at Kwai Tsing, Hong Kong

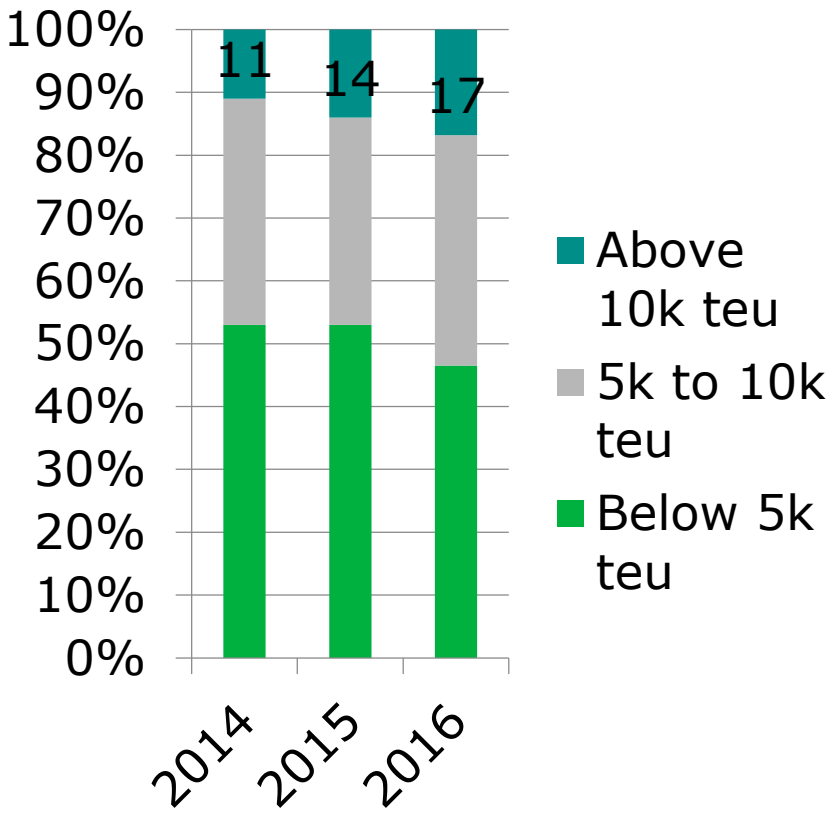
The Mega-Ship

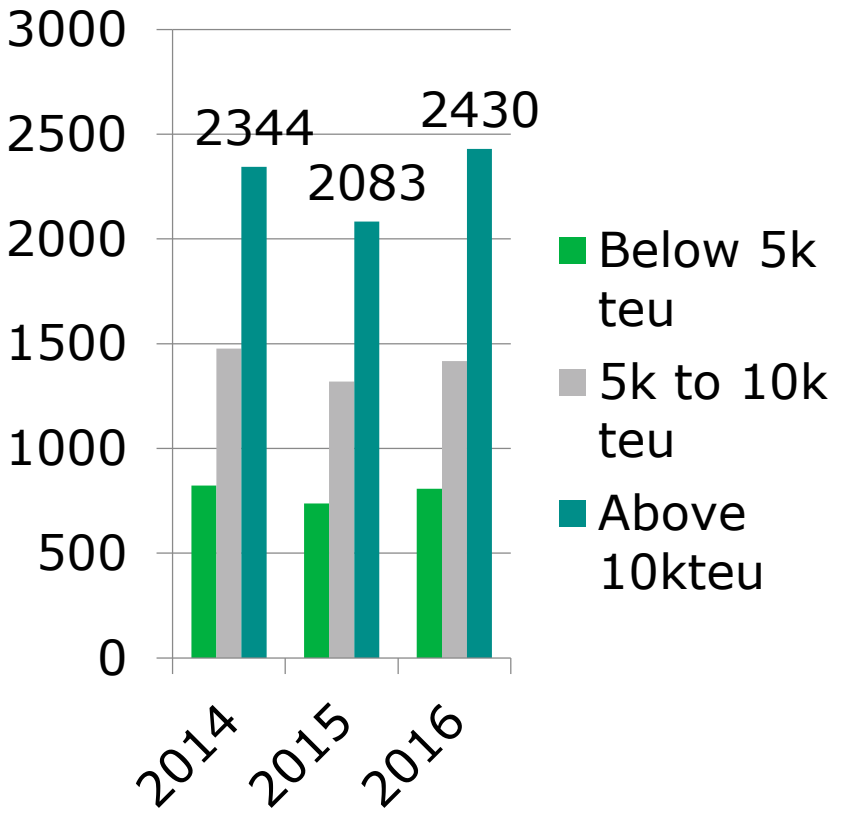
The response to larger vessels and larger call sizes

Ship Size and Average Call Size Development: World's Top 30 Container Ports

Size of vessel calling and average call size by vessel type

IHS Markit / JoC Port Productivity Data





Order-book is over 80% mega-ship tonnage

Call sizes continue to increase, putting pressure on infrastructure and facilities

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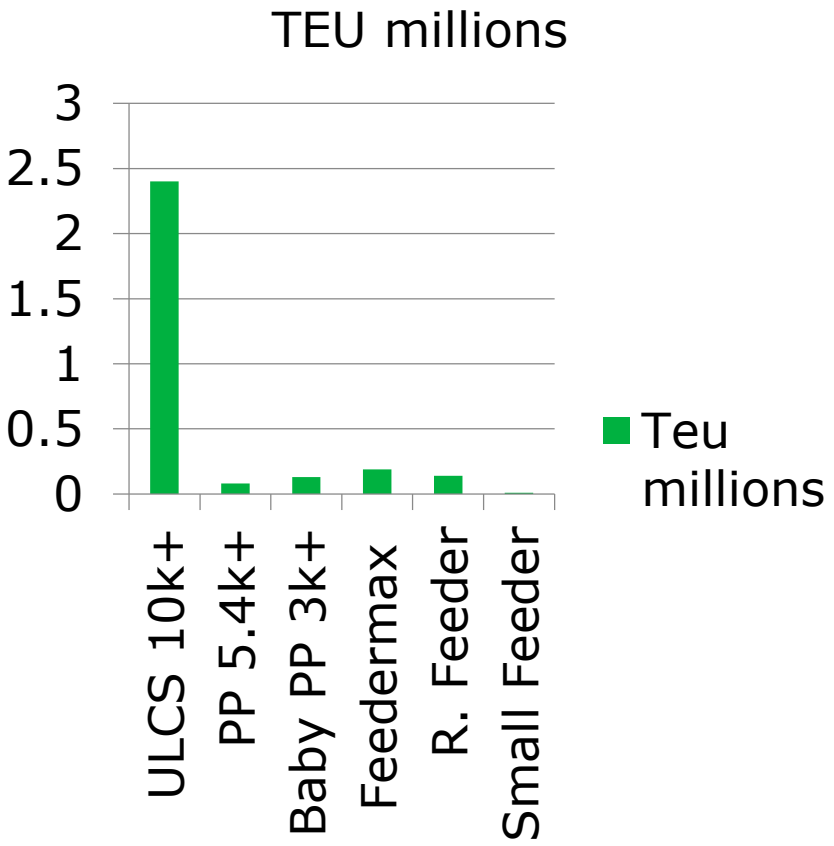
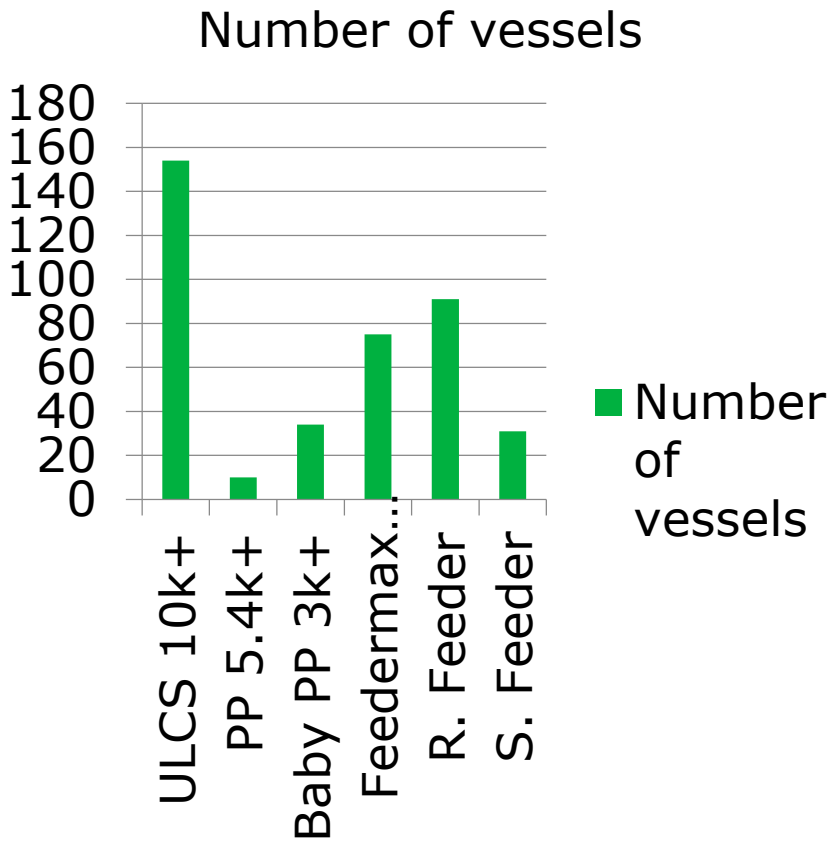
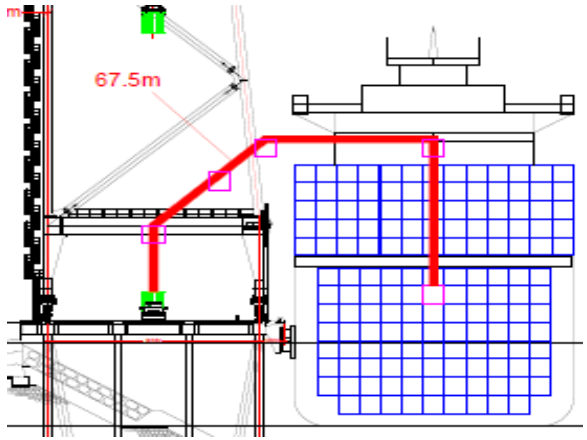
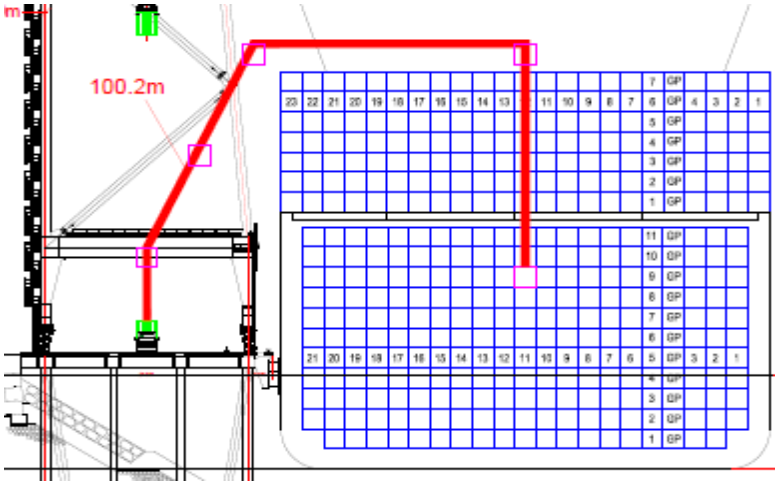




Mega-Ships require bigger infrastructure, adjusted processes, and improved levels of operational efficiency

Modern Terminals, IHS Markit



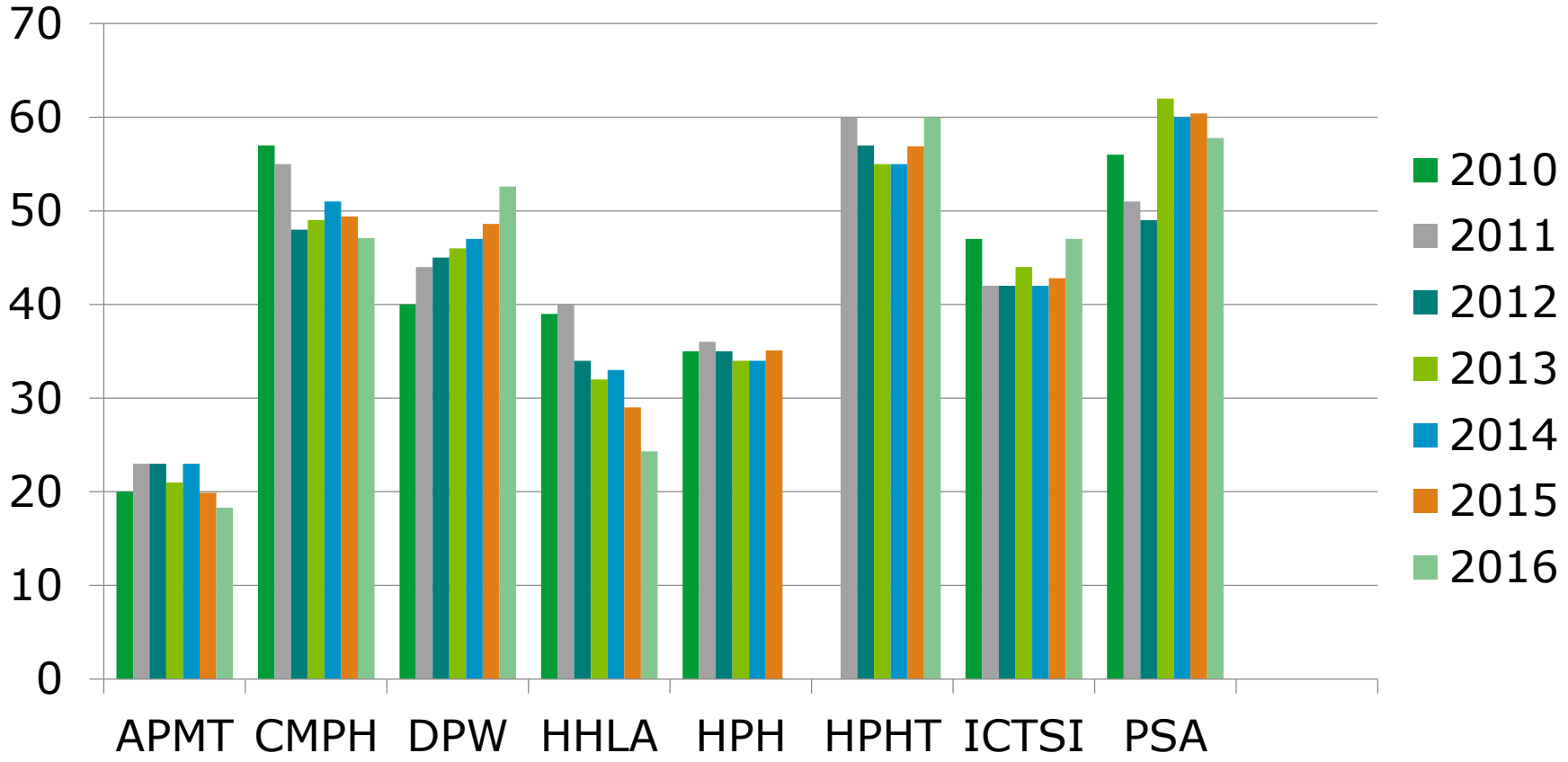


- Triple E deck is 7m higher than Panamax deck
- Panamax Vessel: 13 containers across, 5 above deck
- Triple E: 23 containers across, 7 above deck
- Equipment has to be upgraded
- Additional resources to enhance productivity, implications for labour, etc.
- Substantial Capex for new / adjusted cranes; stronger berths; adjustments to yard operations, etc.

Margin pressure leads to stronger focus on costs

Margins still strong but face squeeze due to downward pressure on charges, demand for higher service levels, and new / upgraded infrastructure

EBITDA Margin % (PSA data calculated differently), Arcadis, IHS Markit, Annual Reports



Global 'Bright Spots' for Port and Terminal Development

A brief look at opportunities in Southeast Asia, South Asia and Africa

Southeast Asia

The Strait of Malacca is one of the hottest regions for port development globally, and there are significant port and terminal infrastructure gaps in emerging ASEAN economies

- ASEAN is a major Belt and Road investment destination due to favorable demographics, strong natural resource base and strategic location of the member countries. ASEAN infrastructure needs as a whole est. USD100bn over coming 15 years
- Major Chinese-invested projects include the expansion of Kuantan Port and phase 1; development of Samalaju Port (Malaysia); Tanjung Sauh Port, Batam Island, Indonesia and Maday Island Port in Myanmar
- Potential for overcapacity in the Strait of Malacca region where there are five major ongoing projects (Singapore Tuas; expansion works at Klang and PTP; Melaka Gateway; Tanjung Sauh Port, Batam Island)
  - > Despite the millions of teu capacity on offer in the region, Tanjung Suah is planned as a container-focused facility, with its first phase to offer 4 million teu of capacity.
- Improving port infrastructure and hinterland links is critical to reducing logistics costs and increasing competitiveness of economies such as Indonesia, the Philippines, Cambodia and Myanmar. Congestion remains a risk in these countries
- Ports and hinterland links suffer from congestion, inefficiencies and low productivity.
- Expect more projects in Indonesia and the Philippines (greenfield, brownfield, capacity enhancement, IT systems and port hinterland projects), and a gradual improvement in the environment for foreign investment

Indonesia: Sea Tollway

High capacity and low unit cost container shipping network between west and east Indonesia, linking five hub ports and supported by 19 feeder ports

Location	Project	Developer	Operator	Capacity (teu m)	Type	Cost (US$m)	Scheduled
Belawan	Belawan ICT	Pelindo 1	Pelindo 1	0.7	Expansion	390	2017
Kuala Tanjung (Sumatra)	Kuala Tanjung Phase 1	Pelindo 1		0.25	Expansion	225	2017
Tanjung Priok	New Priok Port Phase 1A	Pelindo II		3	Expansion	1200	2018
Makassar	Makassar New Port Phase 1A	Pelindo IV	Pelindo IV	0.5	Greenfield	152	2018
Tanjung Perak	Teluk Lamong	Pelindo III	Pelindo III	4.5	Greenfield		2021+
Bitung	Bitung Port Dev. Proj. Phase II	Pelindo IV	Pelindo IV	0.25	Expansion		2021+
Tanjung Priok	New Priok Port Phase II	Pelindo II		8.0	Expansion	1500	2021+
Patimban				0.32 (PI) to 7.37			P1 Early 2019

South Asia

Geopolitics is the buzzword in this region as Asian powers invest to increase influence in the Indian Ocean and develop better access to resources and future markets in Central Asia and the Middle East

- Combination of high GDP growth and decrepit port infrastructure in several countries, particularly India and Bangladesh
- A key Belt and Road region and home to its highest profile project
- Poor existing port infrastructure failing to meet demand, particularly in Pakistan, Bangladesh, Iran
- Enormous room for improvement in the quality of infrastructure, cargo handling processes and landside connectivity in India
  - > India's goals to increase export manufacturing and the desire to control more of its own transshipment business. Its Sagarmala program has development of coastal ports and regions at its core.
- Existing investment by major global terminal operators such as DP World and clear signals of interest in the potential for further investment in the region
- A geopolitical hotspot with China, India and Japan all vying for greater influence through port project investment

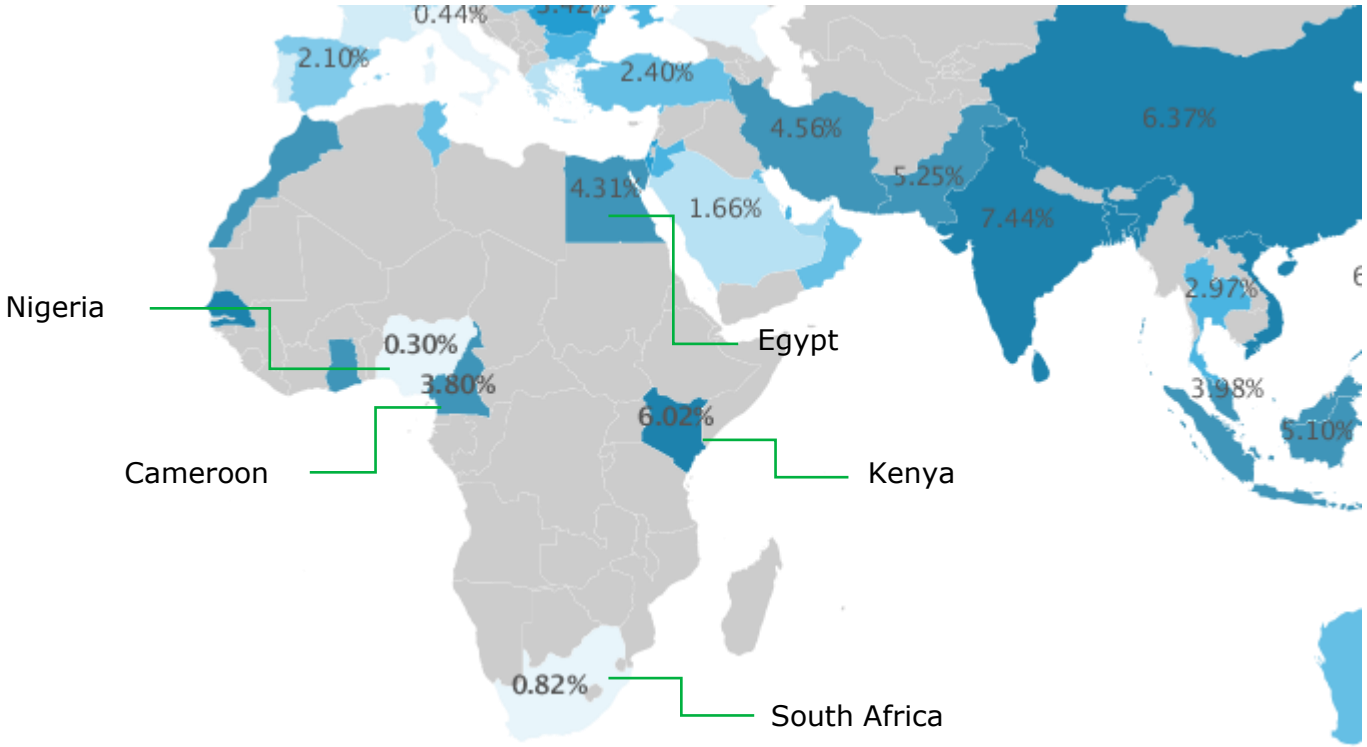
India: Sagarmala

Centered on the modernization of the country's ports and provision of infrastructure that can move goods to and from ports quickly, efficiently and cost effectively

Location	Project	Developer	Operator	Capacity (teu m)	Type	Cost (US$m)	Scheduled
Kolkota	Kulpi (Gouripur) Phase I&II	DP World	DP World	0.65	Greenfield	265	2017
Mumbai	Mumbai Offshore CT Phase I	India CT Pvt. Ltd. (ICT)	India CT Pvt. Ltd. (ICT)	1.24	Greenfield	315.5	2017
Mumbai J. Nehru	Bharat Mumbai 4th CT Phase I	PSA	PSA	2.4	Greenfield	700	2018
Vizhinjam port	Vizhinjam Int'l Seaport	Vizhinjam International Seaport Limited (VISL)	Adani Ports	1.0	Greenfield	830	2018
Paradip		Paradip Port Trust (PPT)	PICTPL	2.0	Expansion	68	2019 (pending finance)
Kolkota	Sagar Island – Phase I	Kolkata Port Trust and West Bengal government	TBD	0.4	Greenfield	225	2019 (delayed)
Kochi		DP World	DP World	2.0	Expansion		2021+
Enayam, Tamil Nadu	Transshipment Facility					6575 Crores	2020+

Africa: GDP growth lags other developing countries

Gross Domestic Product, Annual Percent Change, Real, 2017



Source: IHS Economics and Country Risk

African ports may be returning to growth

Ports showing steady y/y growth in 2017 after a lengthy period of decline due to low oil price

- Big decline in West Africa volumes recently (13% since 2014) driven by oil exporting countries of Nigeria and Angola, resulted in overcapacity and tariff pressure at many terminals
- Some lines dropped capacity (Maersk, CMA CGM): others (MSC) increased capacity to a significant degree
- Region continues to be impacted by vessel cascading. Average vessel size now up to 13,000 teu and the trend will mean more transshipment and hub development
- Recovery will take place over the longer term and key projects such as Lekki, Nigeria, will return
- Port development driven by project investment from China, Japan (Mombasa-Kenya, Mozambique, Cote d'Ivoire), UAE (Somaliland, Algeria, Djibouti, Egypt, Mozambique, Senegal, Lagos, Nigeria (?))
- Corruption, security, port capacity, and productivity constraints must be dealt with to support port and shipping sector expansion and consequent growth in trade
- Technology seen as the way to beat corruption and improve processes. Hinterland infrastructure a big challenge, with some operators choosing to invest in and control the trade transport infrastructure beyond the ports

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Thank you