

End-to-End Automation and the Port of the Future

Chris Moody 10 March 2016

IN LEAN-BUSINESS, CYCLE TIME IS KING

- Marine transport is getting **slower** as ultra large container ships reduce their sailing speed to conserve fuel
- The primary driver for the shipping industry has been cost per ton shipped
- For the largest customers of containerised freight, they have leaned-out their supply chain in every aspect except the speed of marine transport .
- Do they want more control in order to speed up delivery and make their transport logistics more nimble?
- How will this impact ports and inland freight connections?



FREIGHT DELIVERY WILL BE THOUGHT OF AND MEASURED IN MINUTES NOT DAYS

- Consumers (all of us) want what everything to be where we want it, when we want it and at a price we are willing to pay
- Is the marine freight industry immune from this trend or ripe for disruptive change?

https://www.youtube.com/watch?v=MXo_d6tNWuY

WHAT MIGHT TRIGGER DISRUPTIVE CHANGE?

Are there significant *unmet needs* of our customers or stakeholders?

- Cost per ton shipped is very low, but is it fast enough?
- Bunker fuel and diesel are cheap but are they clean enough?
- Ultra-large container ships are good for the larger shipping companies and some ports.
- But what about the vast majority of ports in the world that cannot handle them?
- Are the inland freight issues created by ultra-large container ships increasing costs for our customers? Blocking faster delivery times? Creating serious traffic congestion and environmental problems?

CHALLENGES WITH ULTRA LARGE CONTAINER SHIPS

LIMITED NUMBER OF SUITABLE
PORTS CREATE INEFFICIENT
QUEUING OF CONTAINER
SHIPS OUTSIDE THE PORT

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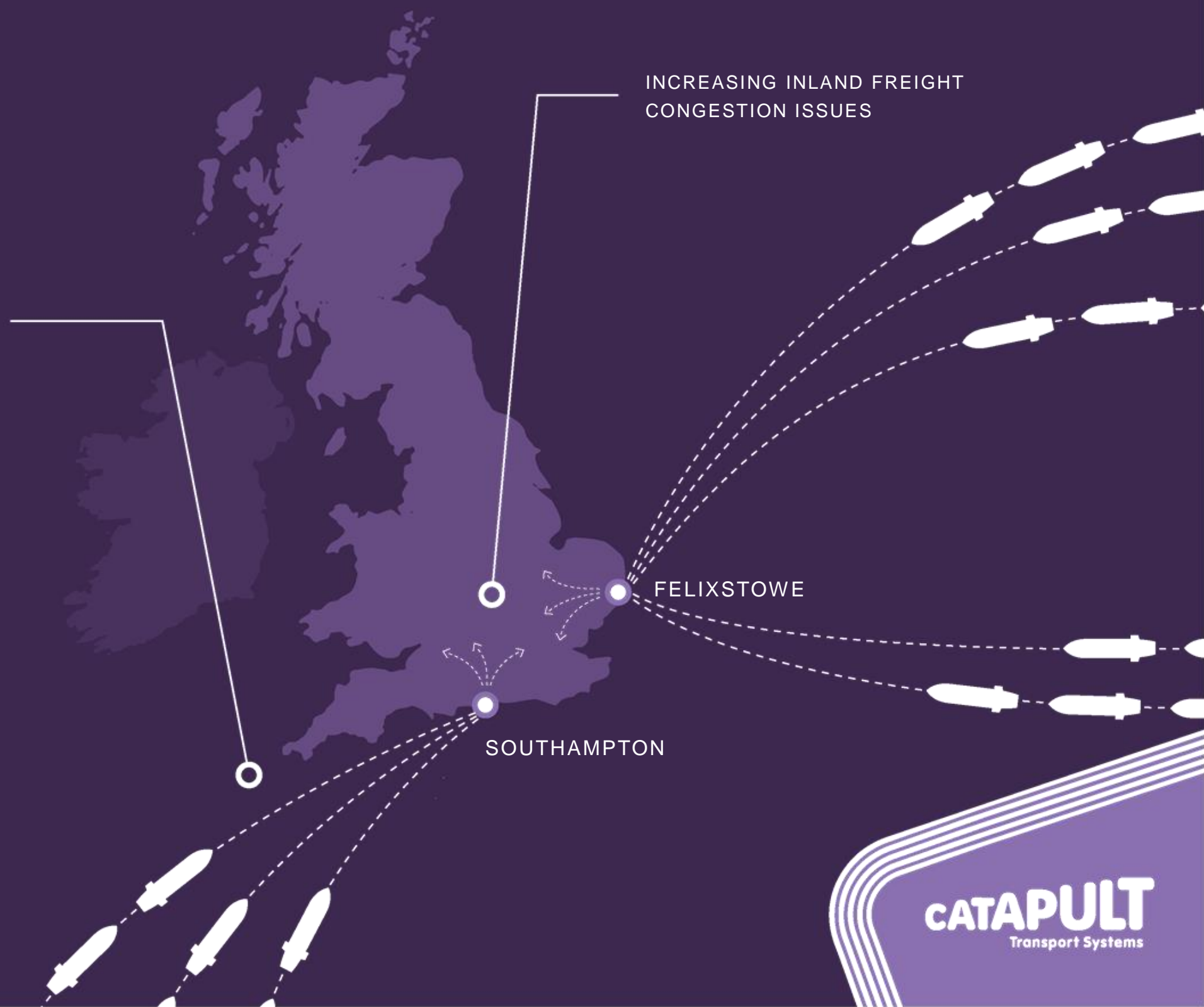
NUMBER OF UK
PORTS THAT CAN
HANDLE CARRIERS
OF 19000 TEU

INCREASING INLAND FREIGHT
CONGESTION ISSUES

FELIXSTOWE

SOUTHAMPTON

CATAPULT
Transport Systems



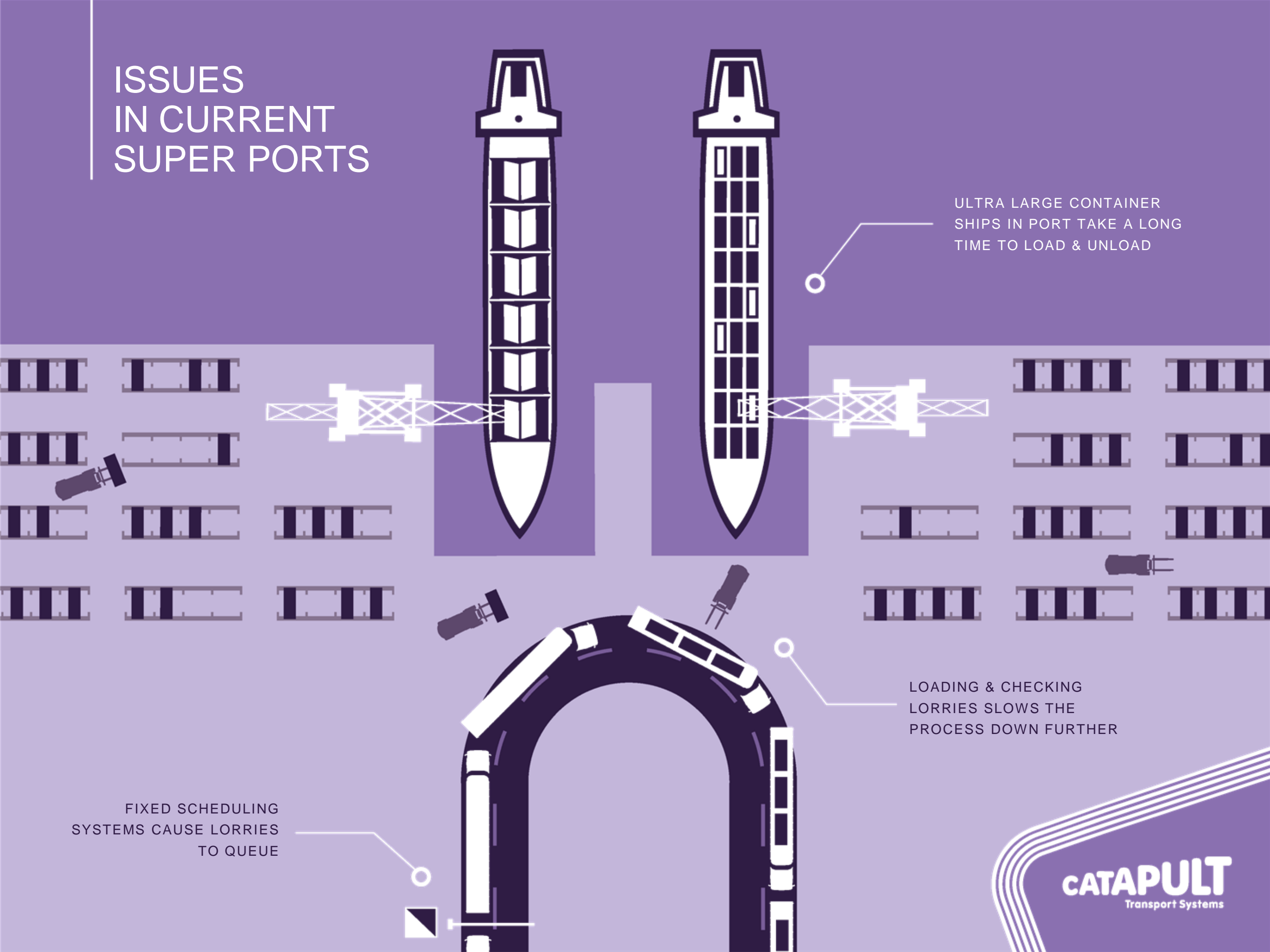
ISSUES IN CURRENT SUPER PORTS

ULTRA LARGE CONTAINER
SHIPS IN PORT TAKE A LONG
TIME TO LOAD & UNLOAD

LOADING & CHECKING
LORRIES SLOWS THE
PROCESS DOWN FURTHER

FIXED SCHEDULING
SYSTEMS CAUSE LORRIES
TO QUEUE

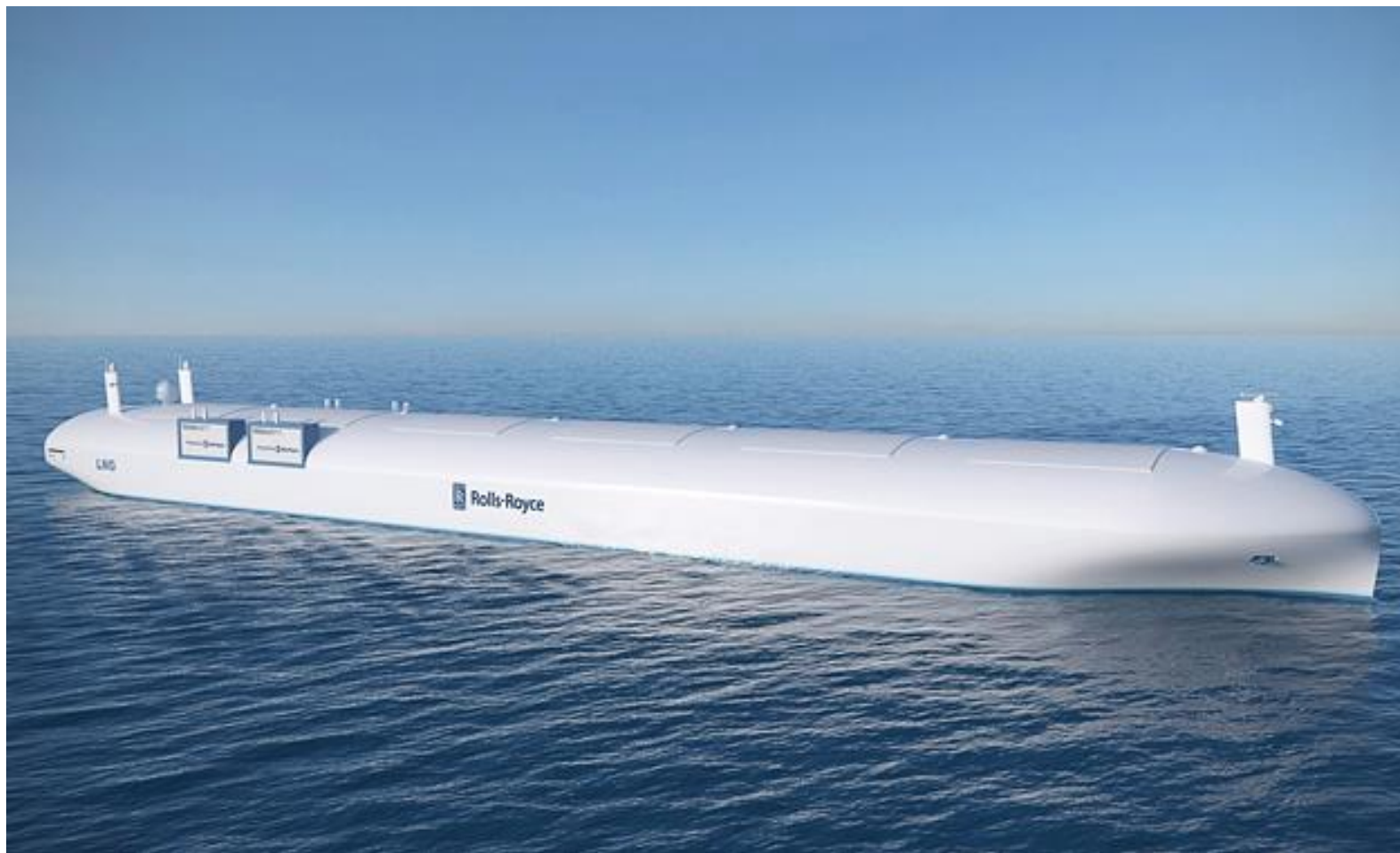
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WHAT MIGHT A FUTURE MARINE TRANSPORT WORLD LOOK LIKE?

Some of the possible innovations:

- More nimble point to point delivery
- Faster
- Cleaner
- Fully automated end to end



THE CONTAINER SHIP OF THE FUTURE?

ELECTRIC DRIVE
PHOTOVOLTAICS
WIND ASSIST
NATURAL GAS HYBRID

FULLY AUTOMATED

FITS INTO SMALLER PORTS



500 TEUs

FAST - 20+ NM/HR

Mass produced

Auto load / unload

Platooning

Environmentally
friendly & efficient



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AUTOMATED PORT AT SEA

DEEP OCEAN CARGO
TRANSFER OCCURS
BETWEEN SHIPS AT
SEA SO THEY'RE OPTIMISED
FOR THEIR DESTINATION



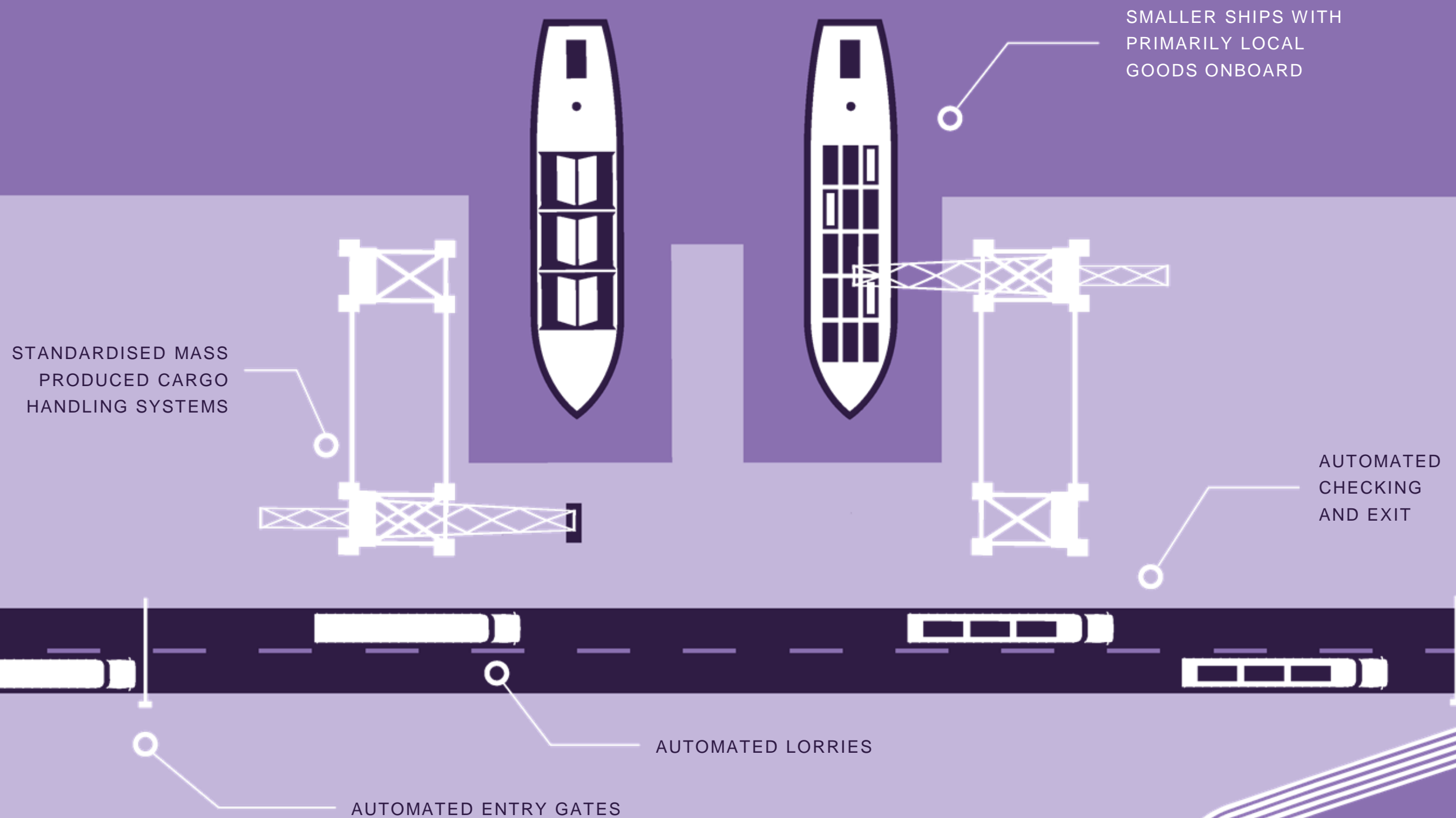
VARIABLE LOCATION
OF AUTOMATED PORT

LIVERPOOL

SHIPS MANAGED IN OFF SHORE
PORTS SO THEY COME INLAND
WITH CARGO NEEDED FOR
THAT PORT

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THE PORT OF THE FUTURE?



OTHER INNOVATIONS IN PORT OPERATIONS



- Fully automated container handling point-to-point
- Automated lorries picking up and dropping off containers
- Virtual port gates allow automated entry and exit
- Paperless freight and customs documentation
- Electronic security seals, verification and tracking for containers
- Automated submersible and surface craft for harbour and quay inspections
- Automated flying vehicles for crane and terrestrial port inspection
- Dynamic, real-time scheduling for ports and motor freight operators



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www.imexchange.co.uk

The TSC's online forum for discussing Intelligent Mobility.

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