

# Conférence à Cherbourg



ASSOCIATION POUR L'AVENIR  
DES PORTS DE  
CHERBOURG-EN-COTENTIN

ASSOCIATION REGIE PAR LA LOI DU 1<sup>ER</sup> JUILLET 1901  
CCI - HOTEL ATLANTIQUE - Bd FELIX AMIOT  
BP 839 - 50108 CHERBOURG-EN-COTENTIN

## Who Will Pay for a Port Productivity Revolution?



The COFASTRANS team

Gordon Rankine

24 November 2022



**BECKETT RANKINE**  
Marine Consulting Engineers

## Agenda

1. Introduction to Beckett Rankine
2. Container Handling in Ports
3. COFASTRANS Highlights
4. Opportunities and Plans
5. Conclusions and Next Steps



**BECKETT RANKINE**  
Marine Consulting Engineers



- Specialists in Port Planning, Concepts and Development
- Long history associated with significant port projects
- Innovative Civil Engineering Concept Development
- Over 20 years of Indented Berths and COFASTRANS
- UK based SME with worldwide reach



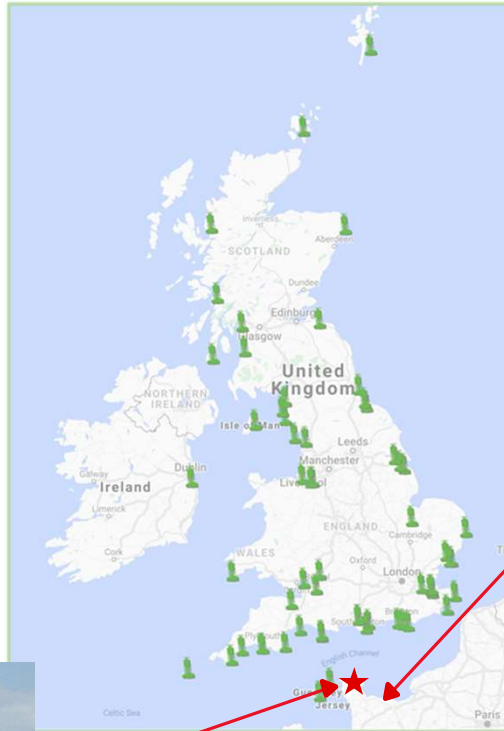
- Greenfield and Brownfield port sites
- Modernisation & new layout options
- Performance optimisation
- Upgrading for Larger Vessels
- Change of use for new cargoes
- Congestion reduction
- Environmentally sensitive
- Carbon reduction



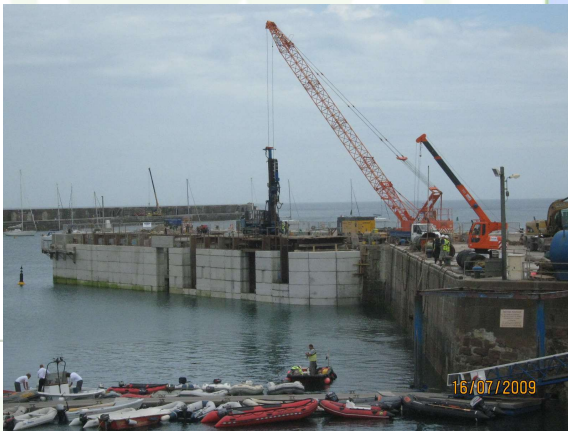
Ras Laffan



Port design  
close to  
Cherbourg



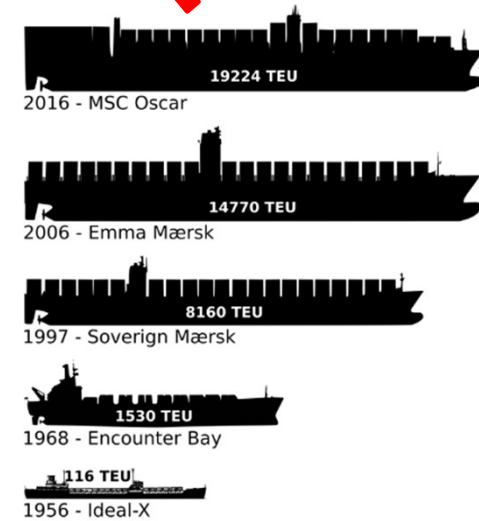
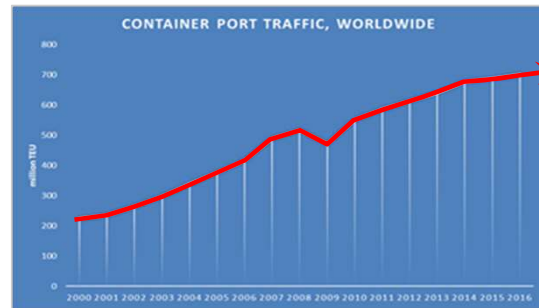
Alderney 2009



# Container Shipping

- Growth in containerised trade continues.
- Shippers have driven the trend for larger ships.
- Port cargo handling rates slow to improve.
- Enlarging existing methods creates bottlenecks.

**\*2019 – 21,000+ TEU:** Now there are over 60 ships bigger than this one – and more on order!



**COFASTRANS:**  
*To enable faster loading and unloading of the new mega container ships (ULCVs), while reducing traffic congestion at the berth and linking with the latest terminal handling equipment.*

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Singapore 1972



Malaysia 2016



COFASTRANS 202X

## Problems to solve:

- 1 Conventional cranes cantilever great distances to service bigger ships.
- 2 Traffic congestion from deluge of containers at short quayside reduces productivity.
- 3 Faster crane movements needed over wider ships just to maintain productivity.
- 4 Heavy loads from conventional cranes make quay walls expensive.

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# Container Terminal Expansion

Right now if a container terminal needs more capacity, it's just a question of adding another kilometre or two of berth and fitting it out with the latest gigantic cantilever cranes, suitable container handling and storage systems.

This is not sustainable in the long term and cannot go on forever. Straight line berths might be flexible and convenient for berthing vessels. But extending into the distance is not environmentally friendly and can be inefficient with long inter-berth journeys and extensive coastal land take.

When will this change?



# Mega Container Vessels

Around 20,000 TEU (ie 10,000 40ft containers), stacked up to 10 high above and below deck hatches and 23 rows wide.

EEE vessel:

- 400m long x 59m beam.
- Maximum draught: 16.5m.
- 24 Cargo holds.
- Height above keel: 73m.



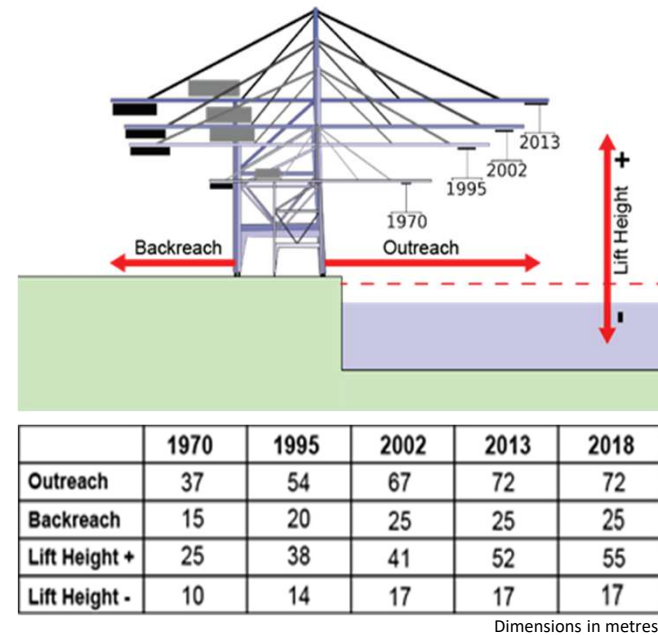
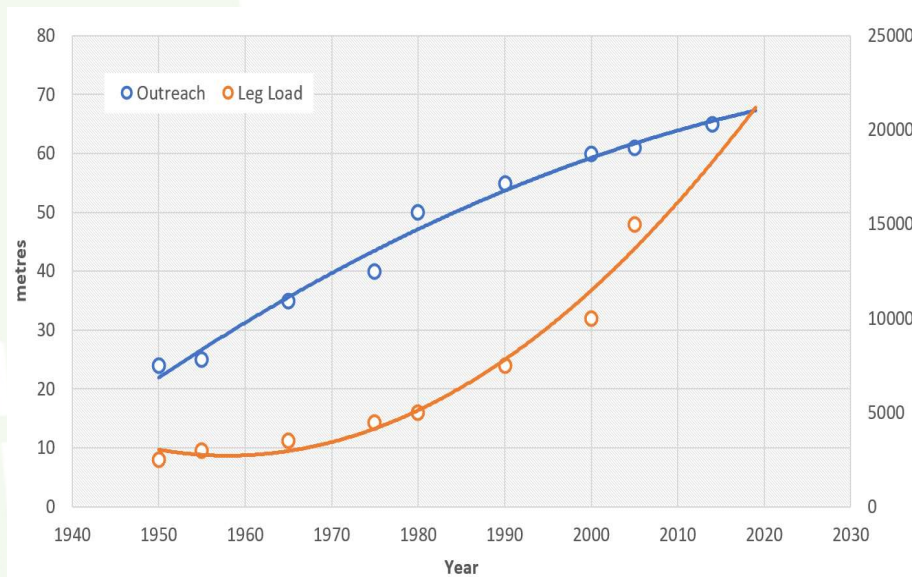
Could the next vessels be even wider if not constrained by STS cranes dimensions?



# Ship-to-Shore Cranes

Greater outreach and height to match larger ship size.

Close to practical limits for cantilever structure.



# The COFASTRANS Solution

...brings the ship into the heart of the port...

- Maximise number of hooks over the ship.
- Unload / load to quayside on both sides.
- Intensive work area all around ship.



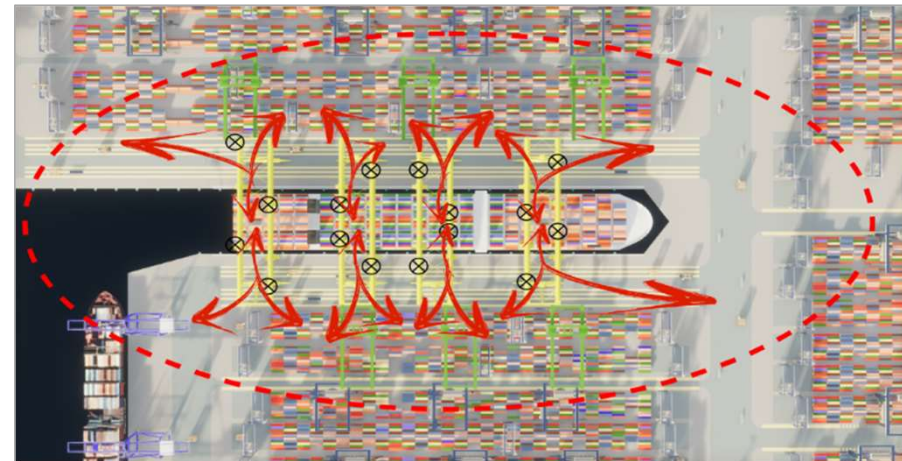
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# Indented Berth

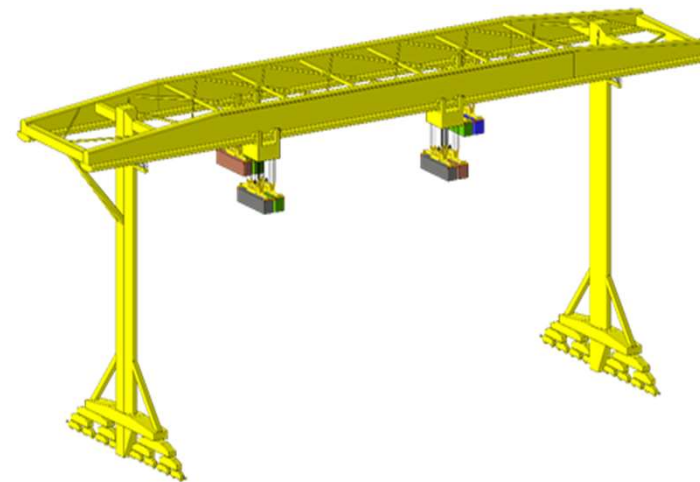
- Cargo handling over both sides of ship.
- Access to maximum quayside space.
- Intensive activity zone around the ship.
- Controlled, protected environment.
- Well suited to automation.



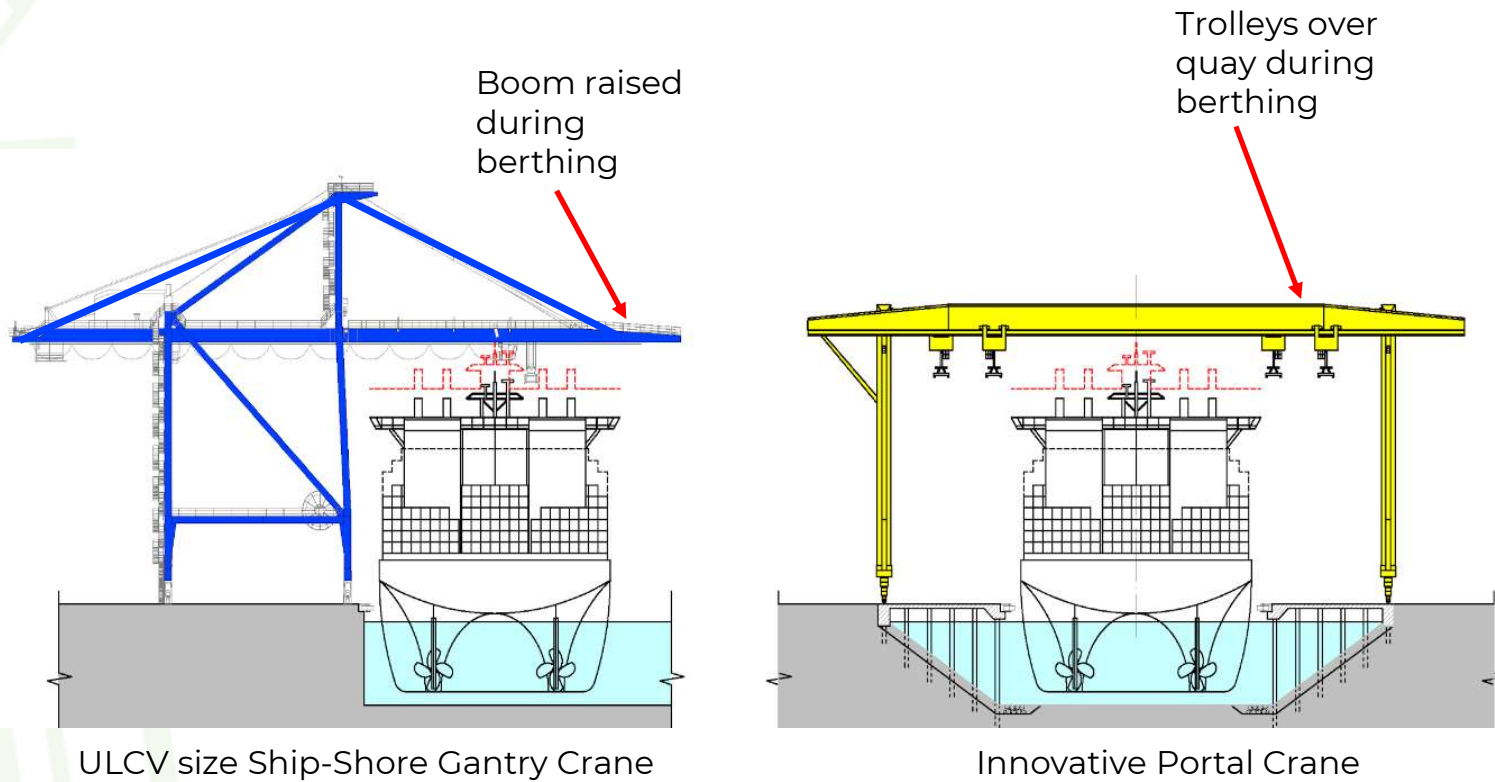


# Innovative Portal Crane

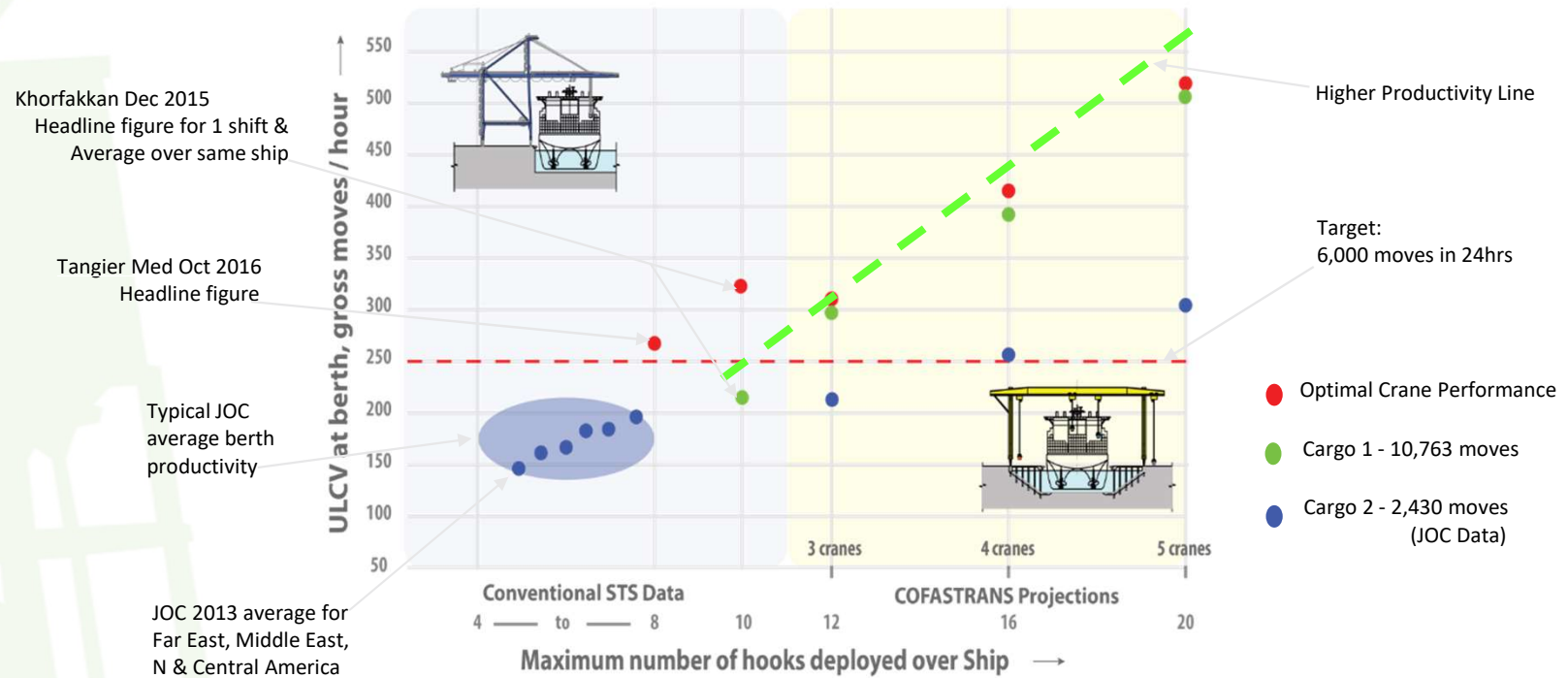
- 2 trolleys on each beam.
- 2 beams work over non-adjacent holds in ship.
- Transfer containers over both sides of ship.
- One leg on each quayside, set back from edge.
- Efficient, robust and durable structure.
- Heavy lift capacity.



# Ship/Crane Interface



# Berth Productivity



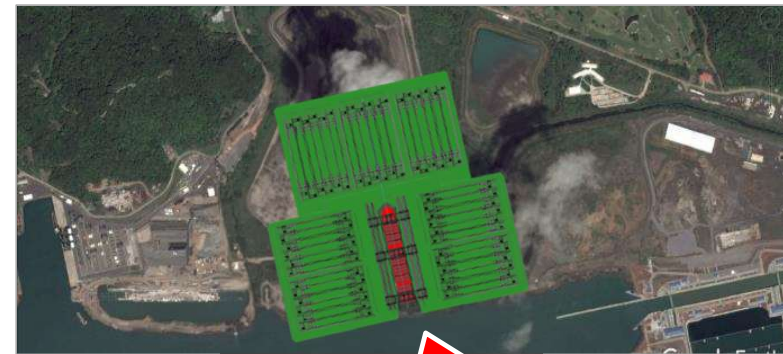
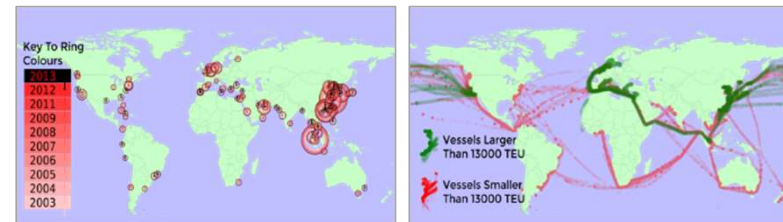
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# Suitable Locations

- Largest ships trade on Asia - Europe routes
- Also Asia - West coast US.
- Adjacent to existing terminal needing to expand.
- Terminals constrained by limited sea frontage.
- New transshipment destinations.
- All locations different – bespoke designs needed.



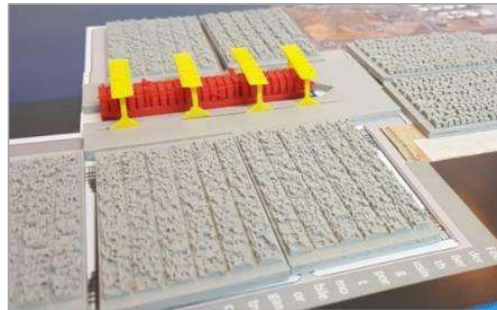
Map data Google, DigitalGlobe

**Possible location for COFASTRANS, adjacent to conventional terminal**

# PIANC World Congress Panama May 2019

- Stakeholder engagement
- Peer assessment
- Navigation details
- Layout concepts

R&D



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# COFASTRANS:

- Disruptive technology....breaks the mould
- Unlocks opportunities to increase berth productivity
- Bespoke concept planning required – every site is different
- With positive gains for end users, environment and safety



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# Looking forward....

## Benefits

- Wraps port around the ship – compact terminal
- Halves cargo over each quayside
- Faster ship turnaround
- Reduced berth congestion
- Lower mechanical maintenance
- Improved safety – no ship crane collisions
- Compatible with all new technology.



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## Opportunities

- New / expanded hub destinations
- Brownfield site optimisation
- Coordination with ship design
- Enables use of wider ships
- Heavier lifts with multiple containers?
- Environment - reduced coastal length
- Helps to reduce carbon footprint



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## Challenges

- Big change for conservative industry
- Who will take the first step?
- Ports to invest, shippers to benefit?
- Recent heavy investment in ports
- Multiple destinations – cargo planning
- Post COVID - Build Back Better
- Don't miss the boat!



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# COFASTRANS ANIMATION

- Faster
- Greener
- Safer

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# CONCLUSION & NEXT STEPS

## *The route to COFASTRANS delivery and implementation:*

- Identify potentially suitable port locations and commercial partners
- Discuss and agree high level goals for port expansions and align concepts with COFASTRANS
- Agree framework for concept confirmation
- Identify and optimise specific locations to best suit and maximise efficiency of COFASTRANS
- Feasibility study to confirm technical and financial performance to meet client requirements

## *Leading to....*

- Planning, design, fabrication, construction and implementation of the project.



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