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British Tugowners Association, 18th April 2018

TODAY'S TOPICS

INNOVATING THE INDUSTRY

THE BUSINESS CASE

A BROADER PERSPECTIVE

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THINKING OUT OF THE BOX

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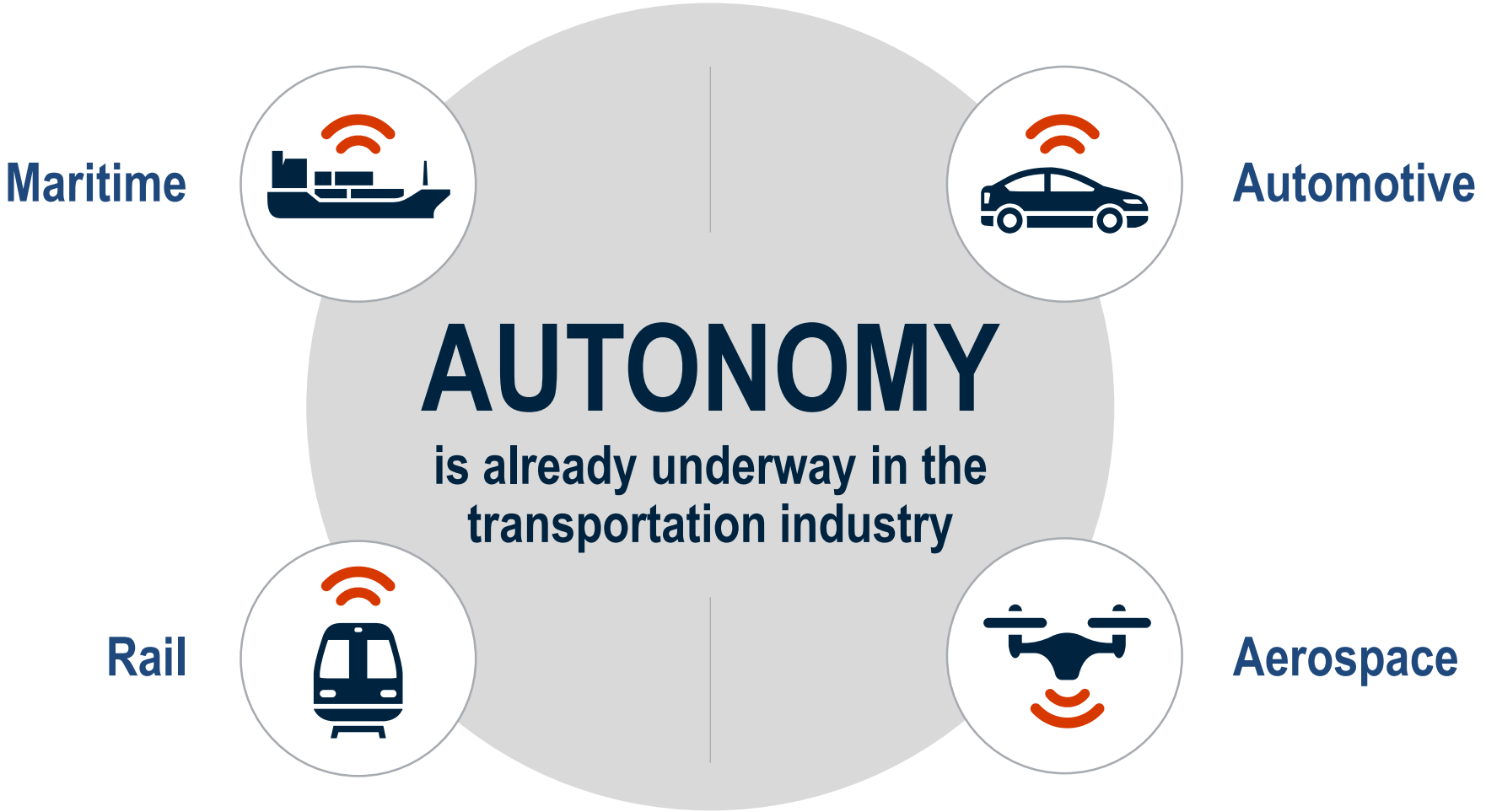
TRANSFORMING TRANSPORTATION



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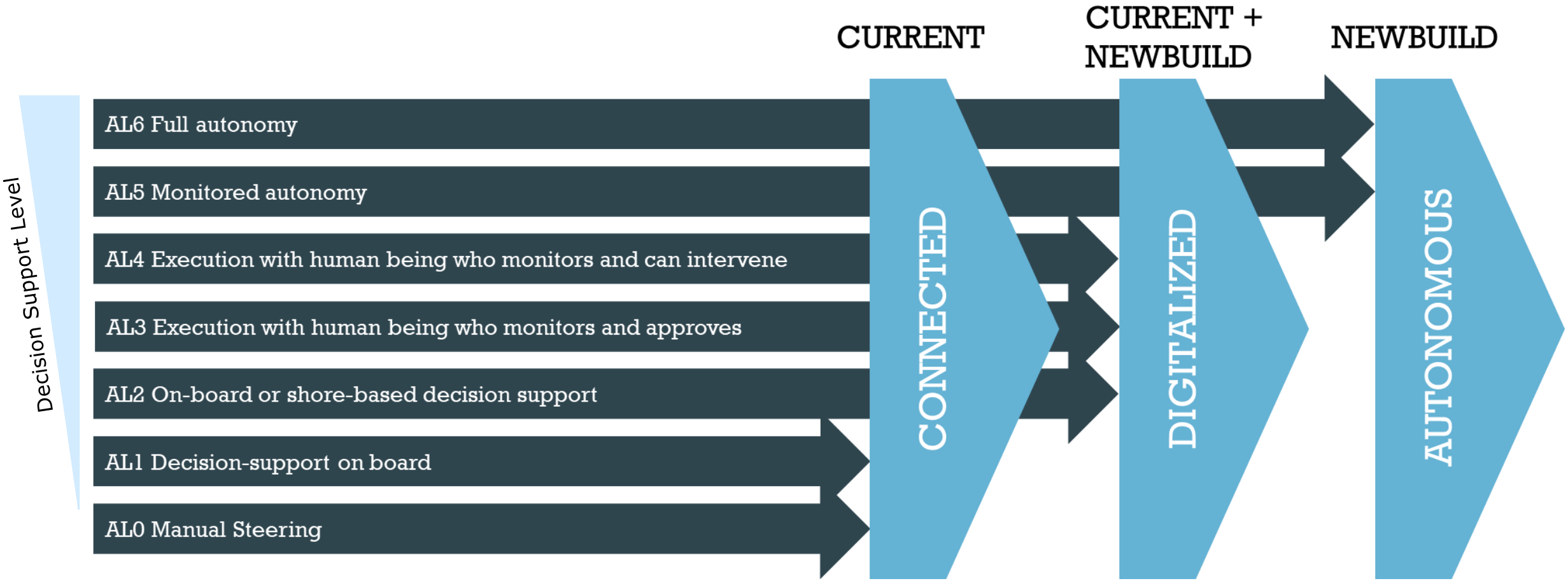
6 LEVELS OF AUTONOMY



Lloyd's Register Autonomy Levels (AL)

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AUTONOMY IS NOT THE GOAL

IMPROVING OPERATIONS IS …		
SAFETY	**RELIABILITY**	**EFFICIENCY**
▪ Collision avoidance ▪ Severe weather avoidance ▪ Improved visibility ▪ Enhanced situational awareness ▪ Reduced risk for crew	▪ Technical trouble shooting between vessel and office-based staff ▪ Early detection/alarms ▪ Predictive maintenance ▪ Simplified vessel design ▪ Centralized maintenance	▪ Reduced fuel consumption ▪ Port call optimization ▪ Real-time route optimization ▪ System wide energy efficiency ▪ Increased repeatability

SAFER AND MORE RELIABLE OPERATIONS

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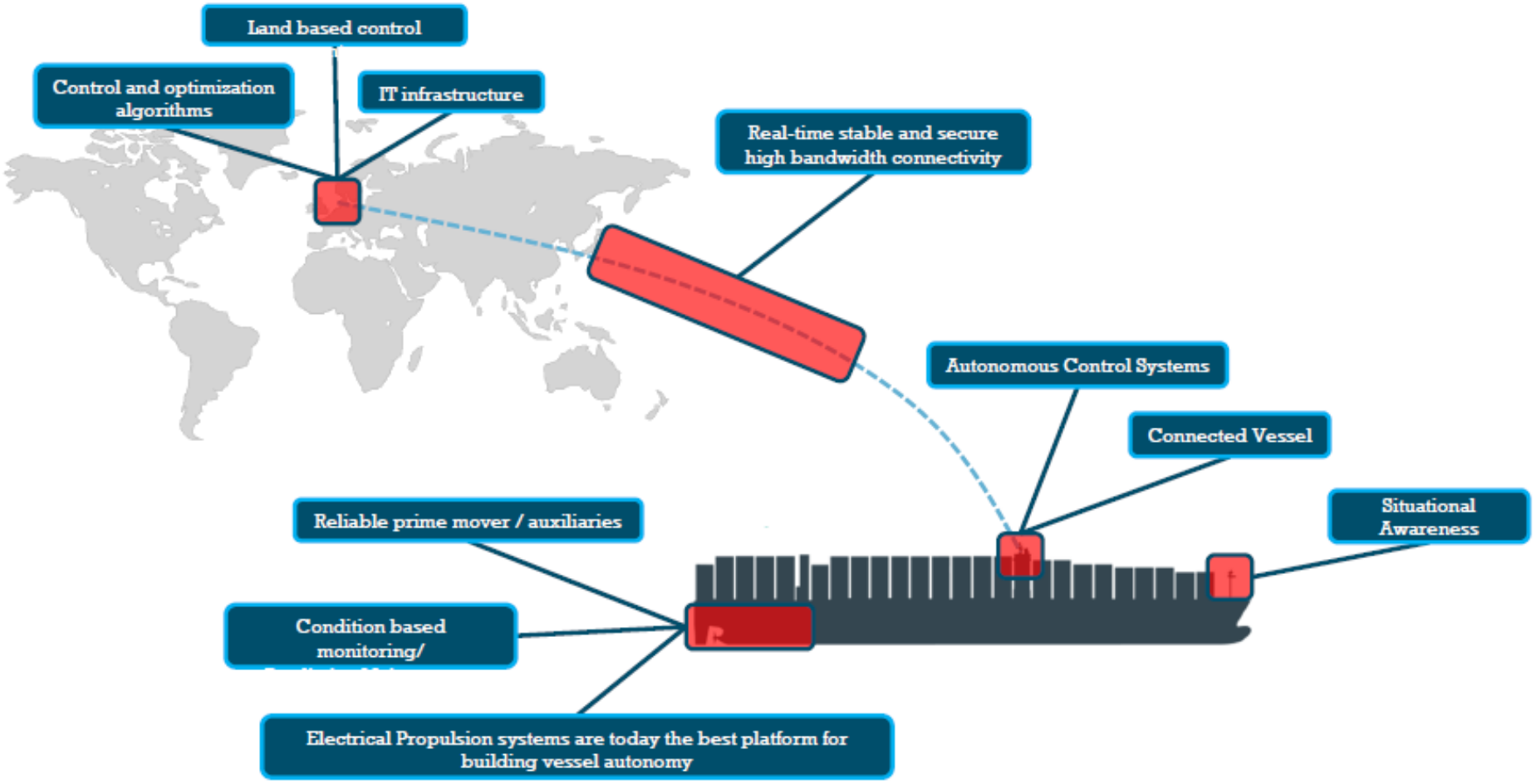
FROM TUG TO INFRASTRUCTURE



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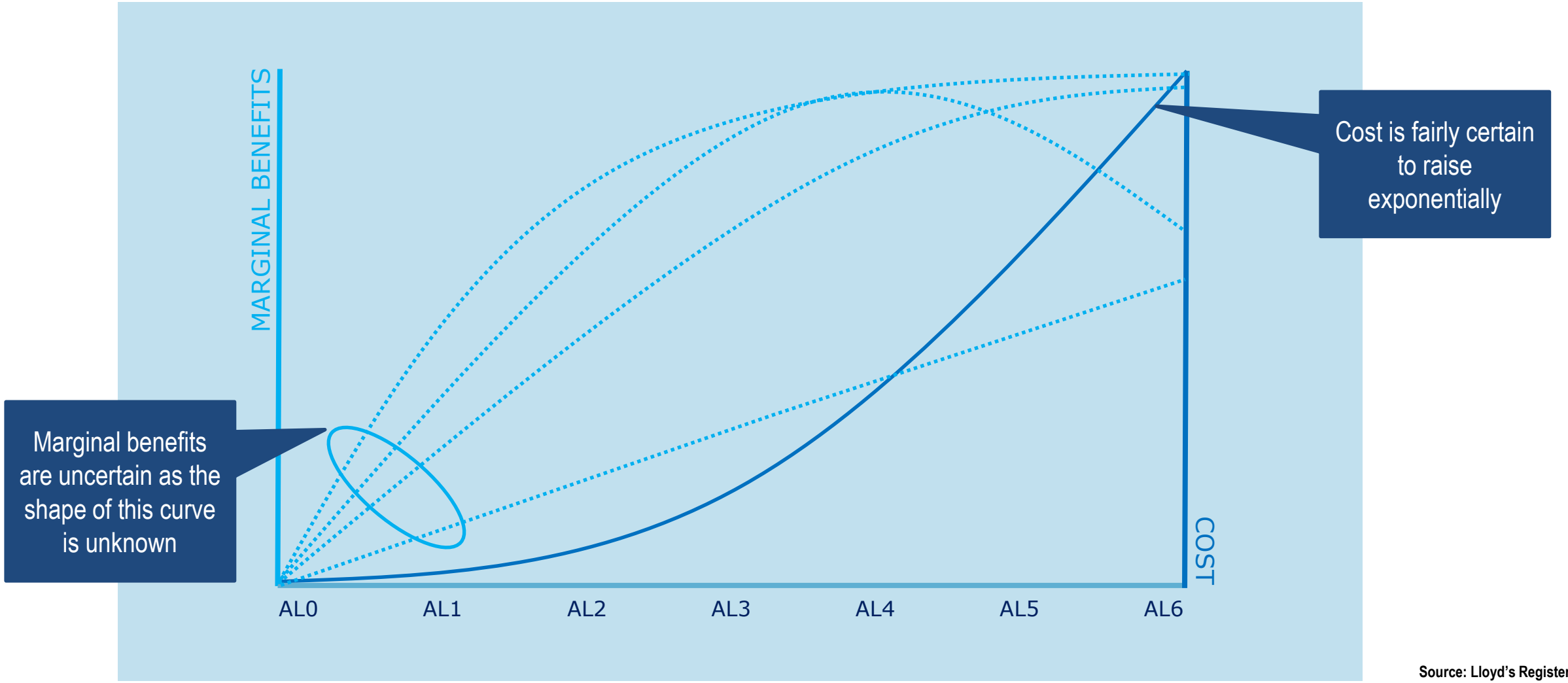
ENABLING THE REGULATORY PROCESS

WHERE IS THE BUSINESS CASE?



Source: Lloyd's Register

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BUILDING AN AUTONOMY ROADMAP

Our strategy

- Customer First
- Cost Leadership
- Growth
- Digital Innovation

Our assets

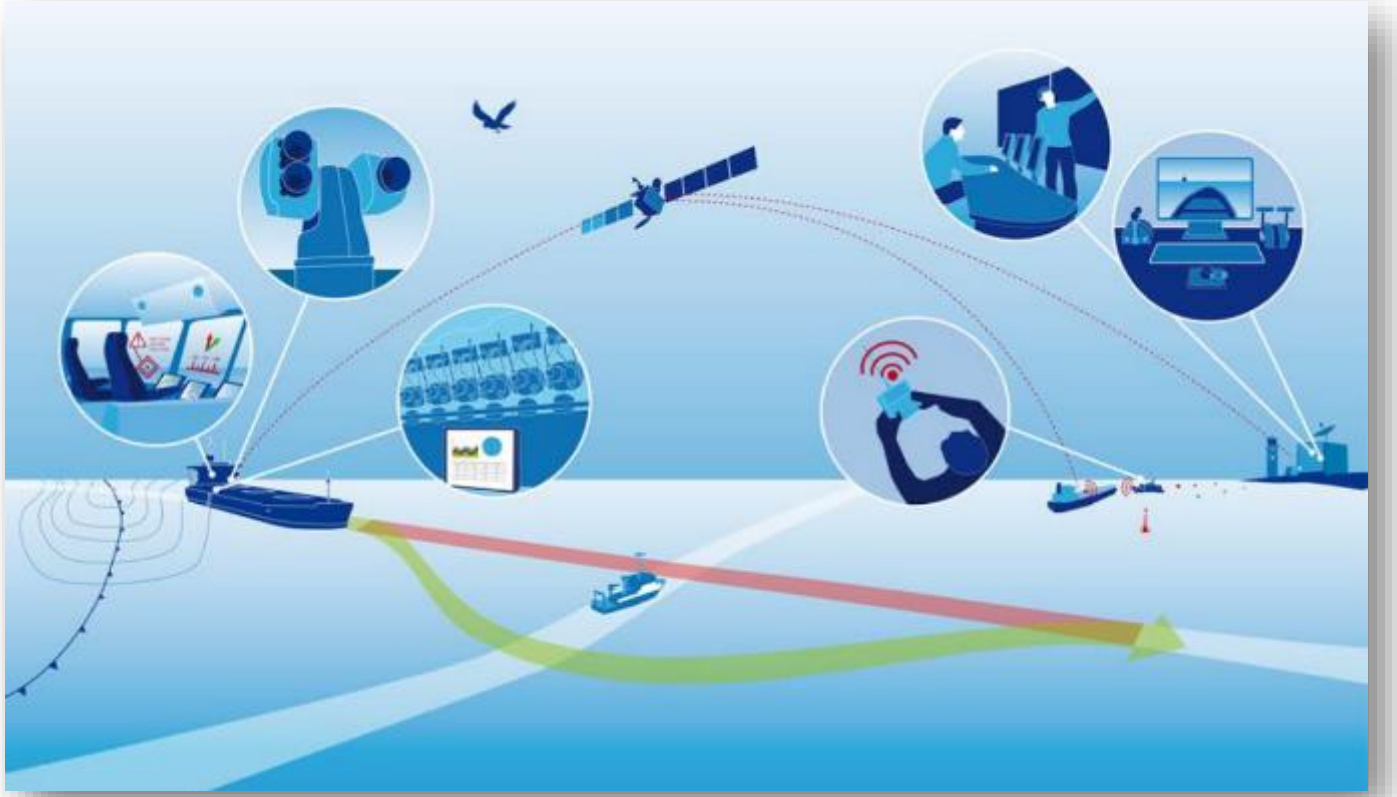
Our autonomy focus

- Situational Awareness
- Shore based control center
- Control and optimization algorithms
- Autonomous Navigation Systems

Questions to be answered

- What type and degree of autonomy is beneficial?
- What are the key technologies and opportunities?
- What is the outlook for maturity and cost?
- Who are the relevant technology providers?
- Which regulatory barriers do we need to consider?

AUTONOMOUS COLLISION AVOIDANCE A CRITICAL TECHNOLOGY FOR FUTURE NAVIGATION SOLUTIONS



- Autonomous collision avoidance through the **removal of human error** could provide reductions in collisions and groundings
- The technology is in a very early stage. It will take **vast amounts of data to teach the machine** how a human reacts in certain situations
- **Technology providers cannot develop this without a ship owner** willing to let them install data collection devices on their vessel and share this data
- This technology is also the ***first must have*** in order to develop autonomous navigation

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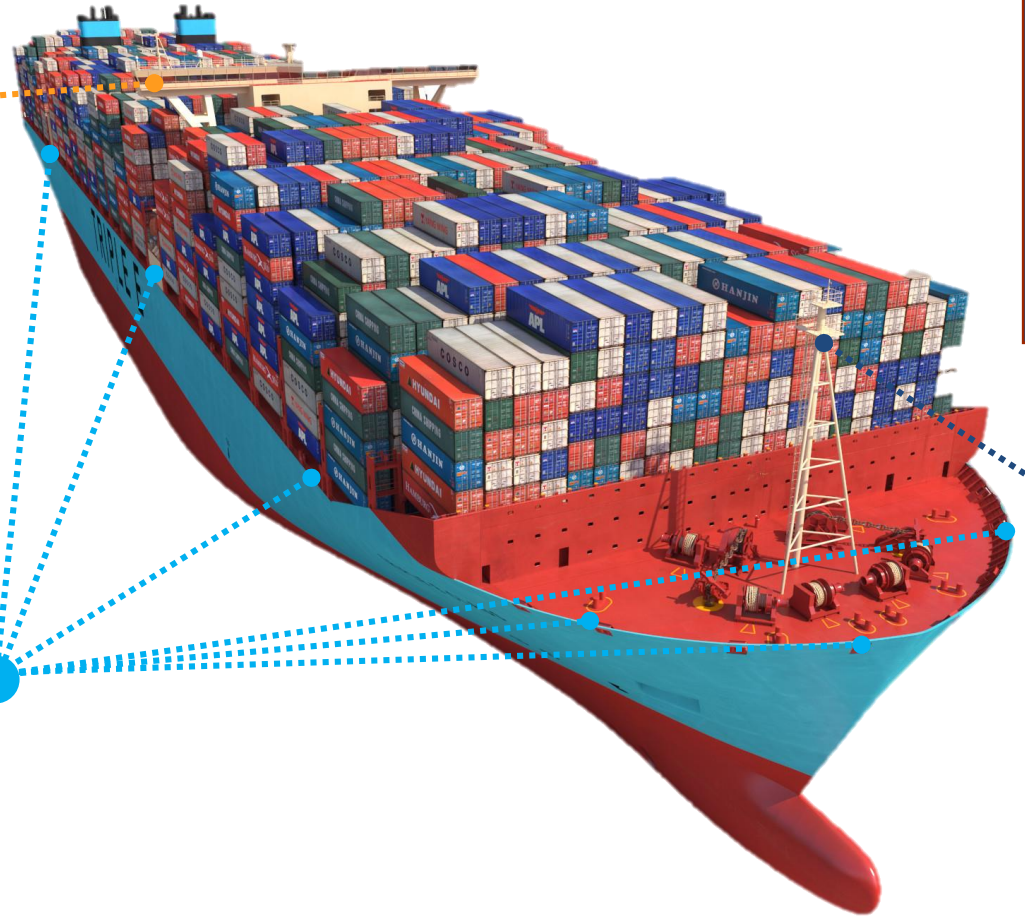
SITUATIONAL AWARENESS FOR CONTAINER VESSELS

SCREENS

CAMERAS



AIM OF TEST

1. Proof of durability and crew acceptance
2. Replace line of sight through situational awareness
3. Collect data for autonomous collision avoidance development

LIDAR

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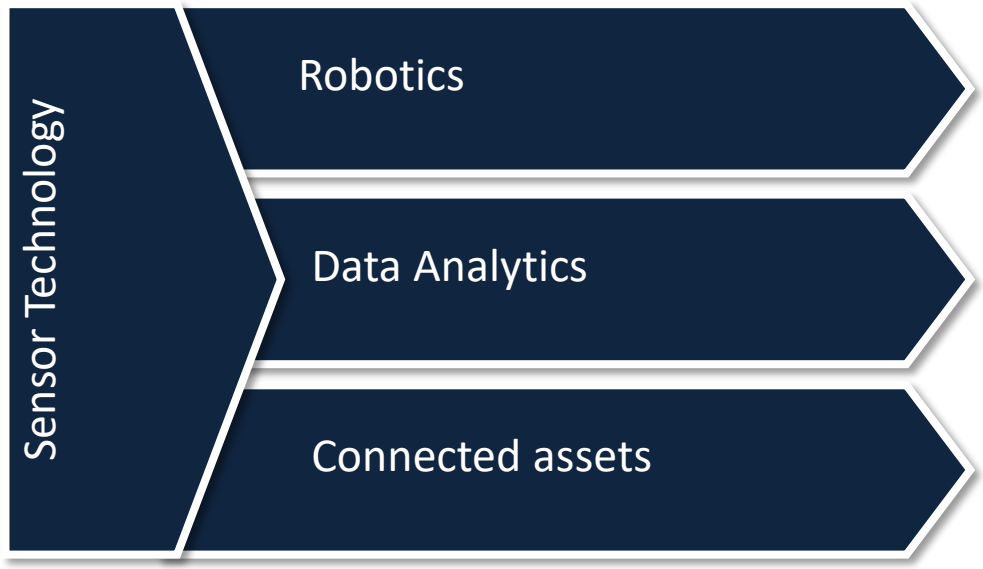
DIGITALIZATION WILL OFFER NEW OPPORTUNITIES TO PEOPLE

Digitalization offers opportunities on a finger swipe or a button press away from us…



The intelligent ship

To embrace this development shipping needs to develop and acquire new competences

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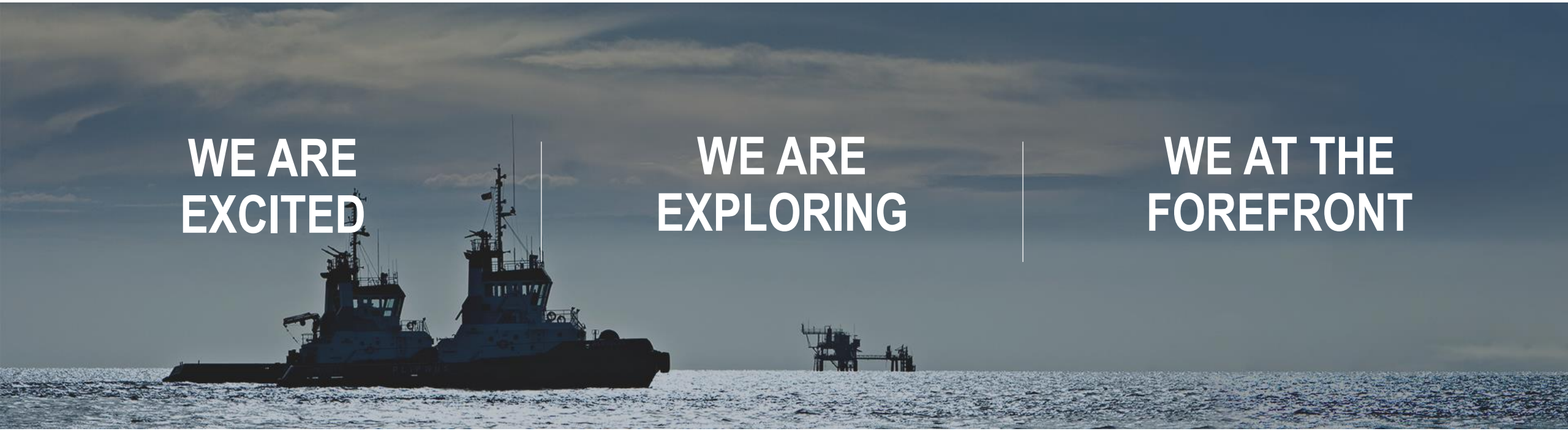
TO SUM UP



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THANK YOU

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