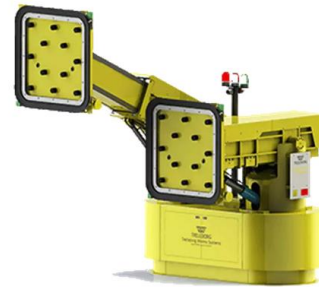




Virtual Workshops (Focus Groups)
on user requirements

Autodock system



Trelleborg

Autodock System

- 1. The context. Key challenges for mooring system**
- 2. Design input. Meeting the requirements of future shipping**
- 3. The smart approach**
- 4. Some area's we want to explore with WP partners**

Key challenges for future mooring system

MOSES Objective: make berthing operations smarter, safer and more competitive

MOSES Autodock faces important challenges for providing a smart mooring solution for future shipping

Larger vessel



New materials



High degree of automatization



Meeting the requirement of future and smart shipping

- The new generation of container and cruise ships are significantly bigger in length, putting into question the practice of using spring lines
- Autodock system will reduce the docking and mooring time
- The green shift in shipping is demanding more use of shore power, mandating stricter mooring parameters and heightened safety measures

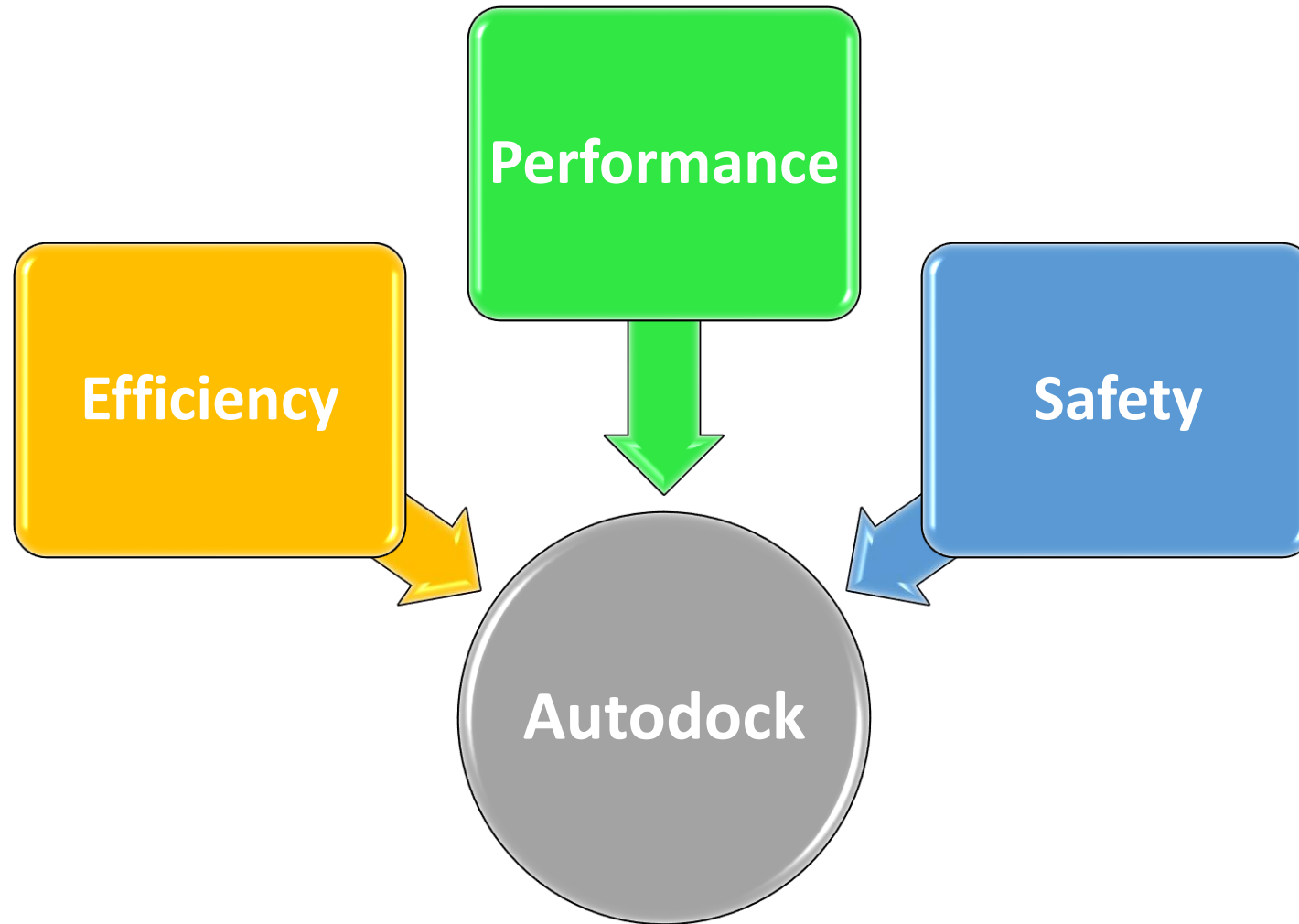


Meeting the requirement of future and smart shipping

95 percent of personal injury incidents are caused by ropes and wires, and 60 percent of these injuries happen during mooring operations.



Meeting the requirement of future and smart shipping



The smart approach

Enhance the Technology factor

Highest degree of automatization

Use of new connection methods (Port to vessel)

Communications between all players

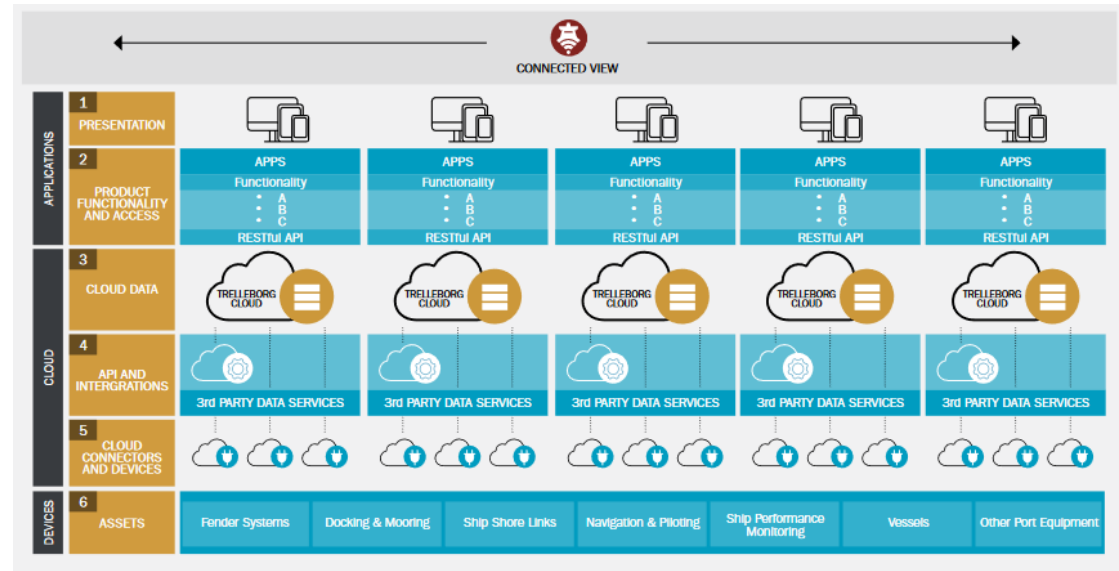
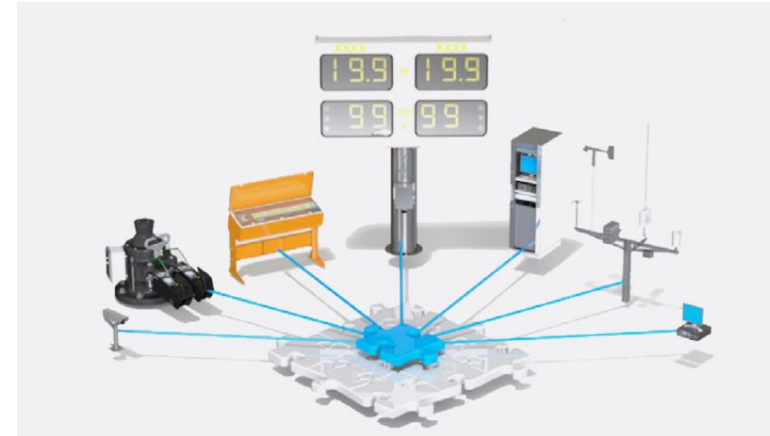
Specific site requirements

Development of a smart system that can accommodate a wide range of vessels, vastly different environmental conditions and with each berth being unique in shape, size and capacity in order to maximise efficiency and provide options for port operators and vessel owners.



The smart approach

Development of a SmartPort for interconnected port operations, for improving asset performance, day-to-day decision making and long-term operational improvements.



Some area's we want to explore with WP partners

Trelleborg: our main focus is within WP5 and WP7

- WP5 - Development
 - Develop small-scale automated mooring system to moor autonomous tugboat for demonstration
 - Integrate AutoMoor control with MOSES autonomous control system – with assistance from other consortium partners
- WP7 – Demonstration
 - Build and demonstrate small scale automated mooring system to moor workboat
 - Demonstrate integrated AutoMoor control with MOSES autonomous control system – with assistance from other consortium partners



Some area's we want to explore with WP partners

Area's to explore further with other partners as the project develops:

1. Physical connection of the autonomous tugboat and a small scale Automoor unit (suitable atatchment area's, hull strength, jetty arrangement)
2. The oceanographic and environmental factors that influence autonomous tugboat motion (wave period, height, wind speed etc)
3. Communications and control interfaces between the Automoor control system and the autonomous control system
 - A. Process to prepare, connect and disconnect the autonomous tugboat with Automoor
 - B. Methods of communication, protocols, backup/redundancy options, failsafe behaviour
 - C. Hardware and software to be used within the solution

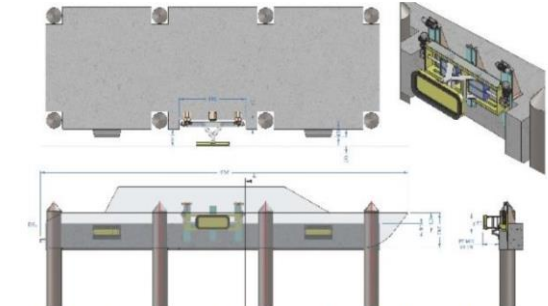
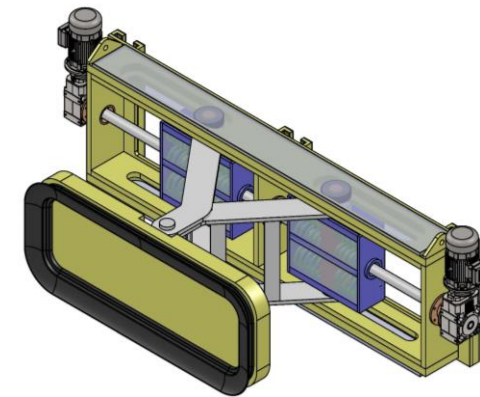


Figure 4: Trelleborg AutoMoor system for automated mooring (left) and a conceptual adaptation for small vessels (right).



Questions

- How important is for your company to optimize the docking and mooring time?
- Do you believe that mooring system will improve the loading/unloading process as reduces the vessel's movements?
- In which conditions do you substitute the traditional ropes for this system?
- How Autodock can contribute to improve your business?

MOSES

Thank you for your attention!



Trelleborg



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