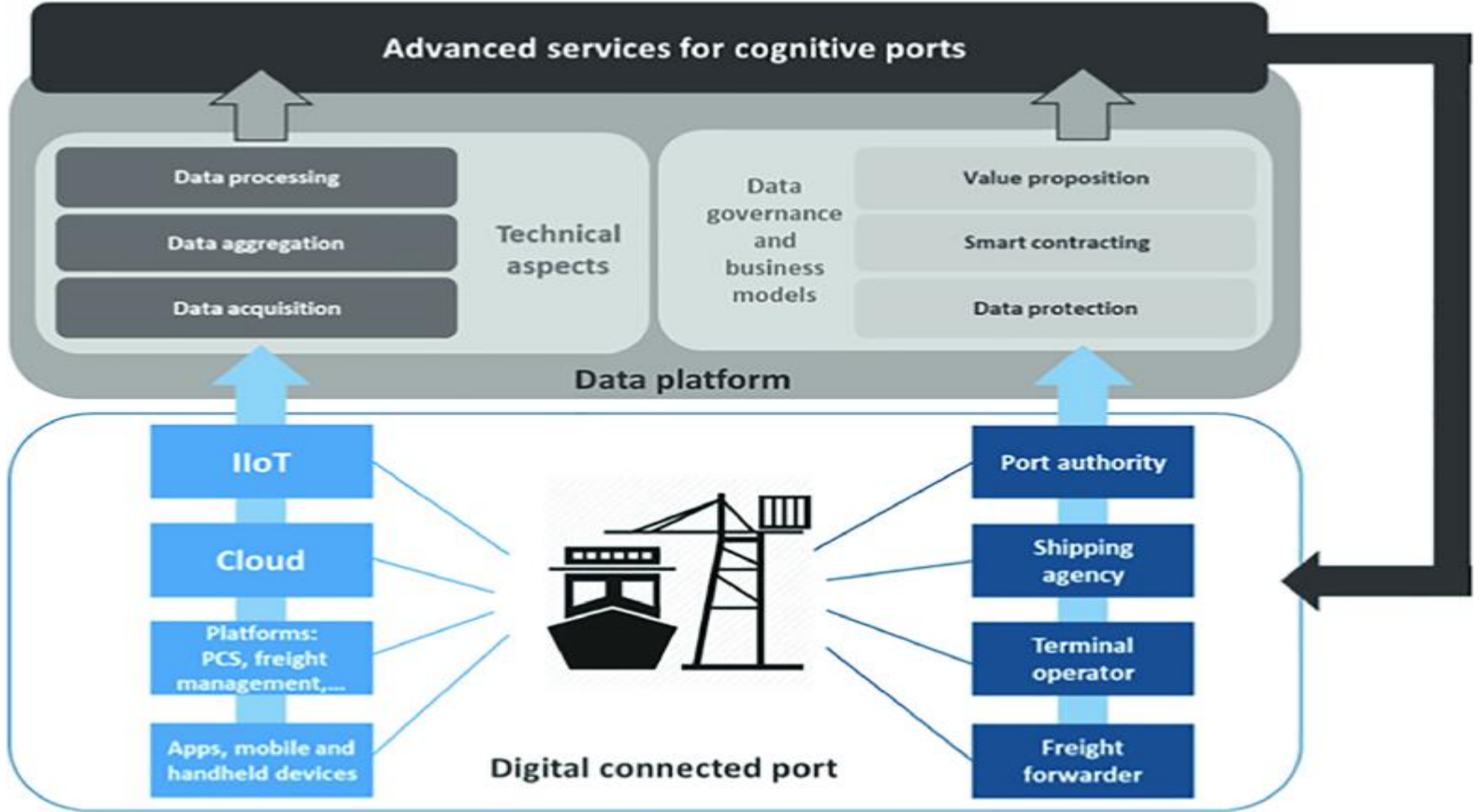




*Introduction on
Artificial Intelligence and
Machine Learning
in port, shipping and logistics*

29 4 2021

Connecting EU



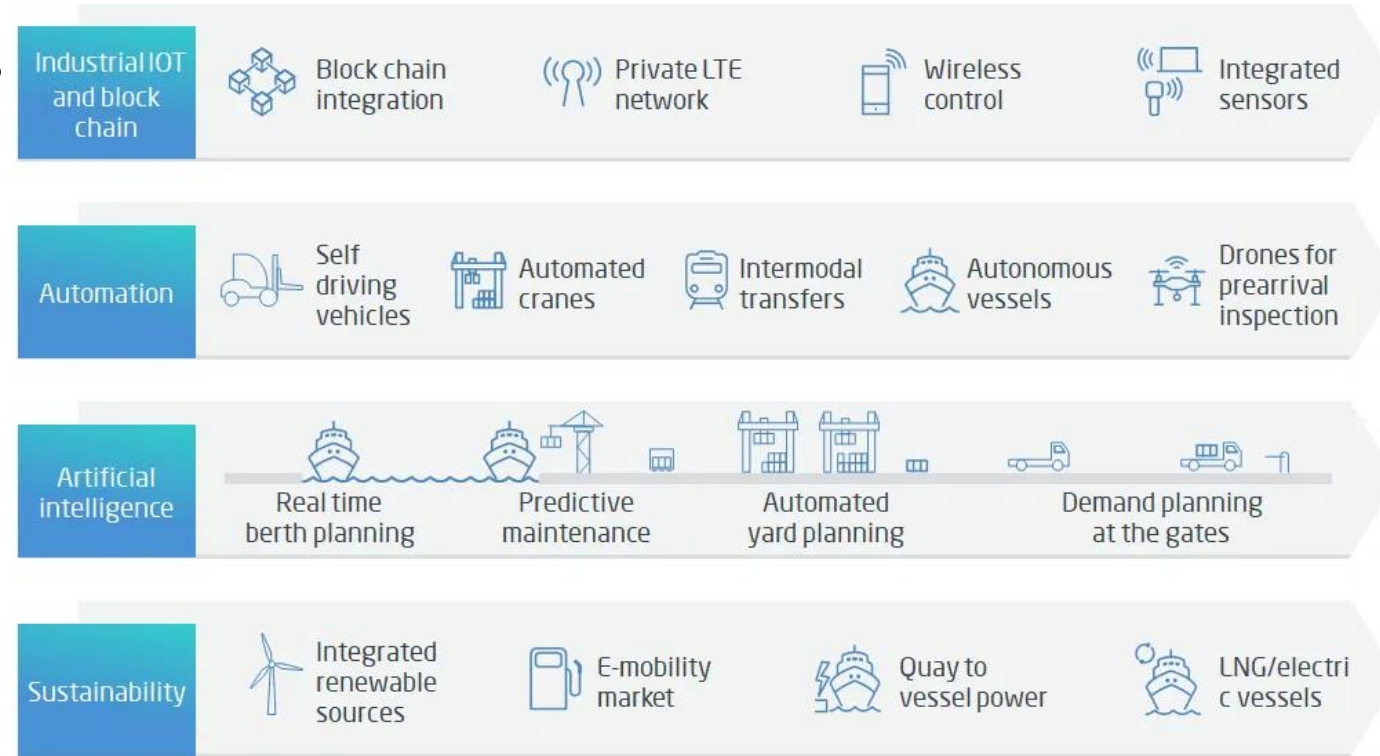


Artificial
Intelligence



Framework

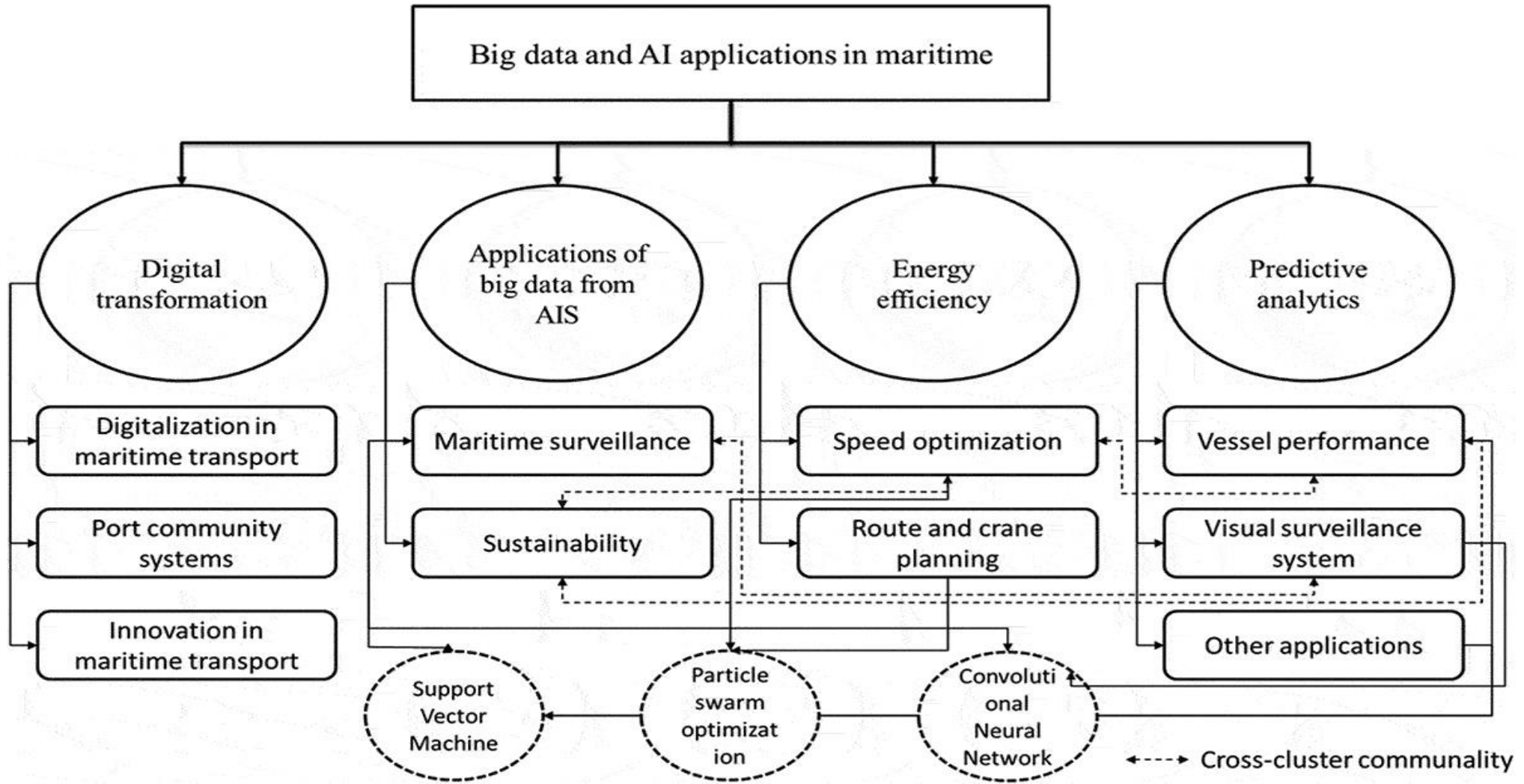
- Artificial intelligence (AI) consists of the assessment of data in order to take actions that help to maximize the chance of successfully achieving predefined goals.
- AI has also been implemented in the ports and maritime sector and some examples of its use are in the
 - berth planning,
 - predictive equipment maintenance,
 - automated yard planning or
 - demand planning at the gates based on data processing.



Challenges

- Introduction of the newest IoT sensor technologies
- Accurate big data transmission between on-site sensors and the terminal control
- Developing man-machine interface for assisting operator's prompt decision making,
- Renovating the current terminal operating system by employing AI based architecture,
- Introducing appropriate countermeasures against computer virus and hacking.

Big data and AI



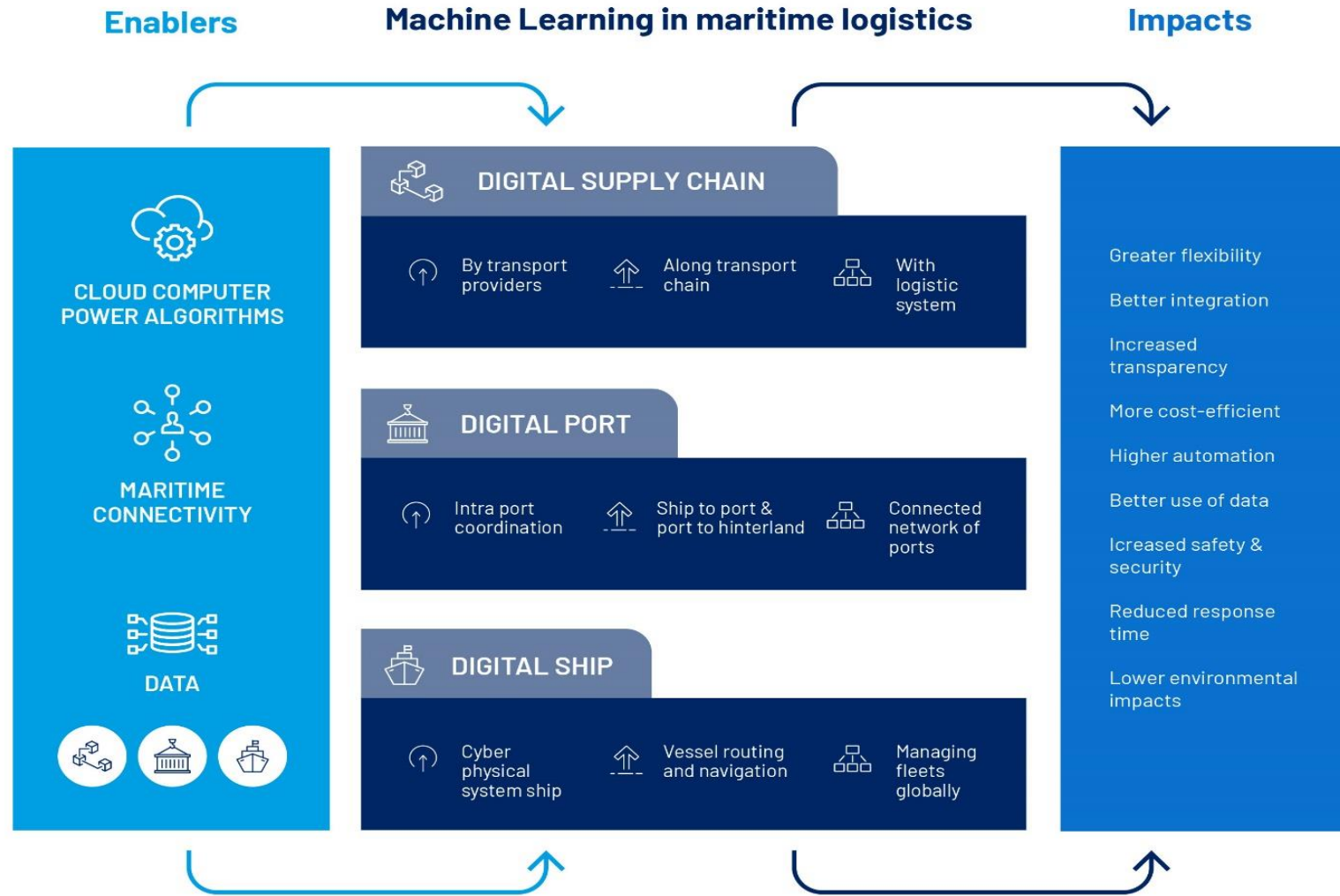


Machine Learning



Framework

- Machine learning consists of “teaching” machines to learn by themselves so that their work is optimized and are able to distinguish what data is or is not useful.
- The devices that capture the information are the equivalent of the senses: they generate a series of data that is processed and organized from an algorithm, which is gaining in precision as it is trained with simulations and accumulates more data from the sensors. Thus, it completes its learning and improves its functionality.



Source: Machine Learning in Maritime Logistics report by Fraunhofer CML

Potential of machine learning:

- Automation and improvement of certain daily operations, such as the movement of containers and the reduction of waiting time for trucks that access port facilities.
- Predictive models can help forecast traffic volume growth in order to adapt infrastructure.
- The information stored by the AIS systems used to create a database with the navigation patterns of a merchant fleet as a whole and of the individual behavior of a vessel leading to the forecast of traffic density and frequency, risk scenarios in restricted waters or the detection of abnormal behaviors that help avoid collisions.



Thank you for your attention

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