



الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري
Arab Academy for Science, Technology and Maritime Transport

THE GLOBAL SHIPPING AND THE FOURTH INDUSTRIAL REVOLUTION

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As the world changes, so, all aspects of the shipping industry are changed too. From logistics to building innovative vessels, everything is in constant motion. The shipping industry faces a new challenge: suddenly finding itself placed in a space that requires big, rapid changes, where tradition meets innovation. It has been forced out of its comfort zone



Due to the incredibly fast progress of technology ; artificial intelligence, the Internet of Things, and globalization are converging during this crucial time in world history, pointing towards a fourth Industrial Revolution, requiring the shipping industry to make adjustments, and reinvent the wheel, in order to stay relevant in the highly-competitive and ever-changing international market .



Although automation helps businesses cut costs and create more profit , adversely, it kills jobs. It actually makes our live easier, but the possible negative consequence of losing our jobs and means of income, means the world economy could suffer. Machines have been able to replace humans faster than jobs are created. A study showed that about 7 million jobs will be lost to automation, and only 2 million new jobs will be created.



As a result, the push for fully-automated terminals threatens thousands of high-paying dock jobs. They outperform humans many times over, and already an automated terminal in Southern California, where capacity and speed doubled in loading and unloading vessels, and cut carbon emissions in half.



Need for innovation in the global Shipping and port industry!

Increased complexity

- Technology challenges
- Sustainability and social license to operate
- Global trade flows

Pressure on revenue and costs

- Price volatility
- Operating costs
- Capital costs

Energy transition

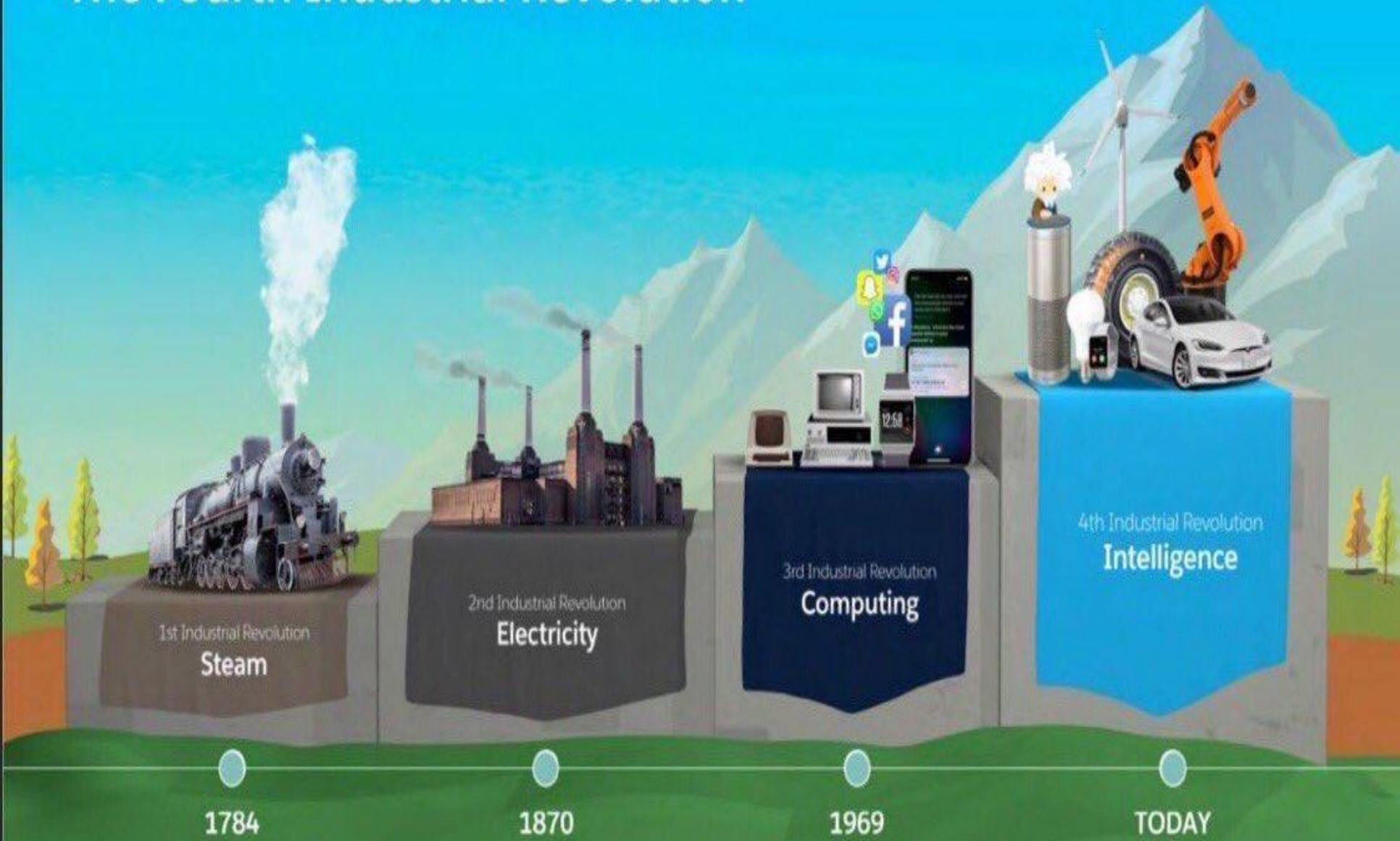
- Energy demand growth
- Energy mix and carbon shift
- Energy efficiency

Big data analytics allow for a renewed vision on the complexity of supply chains

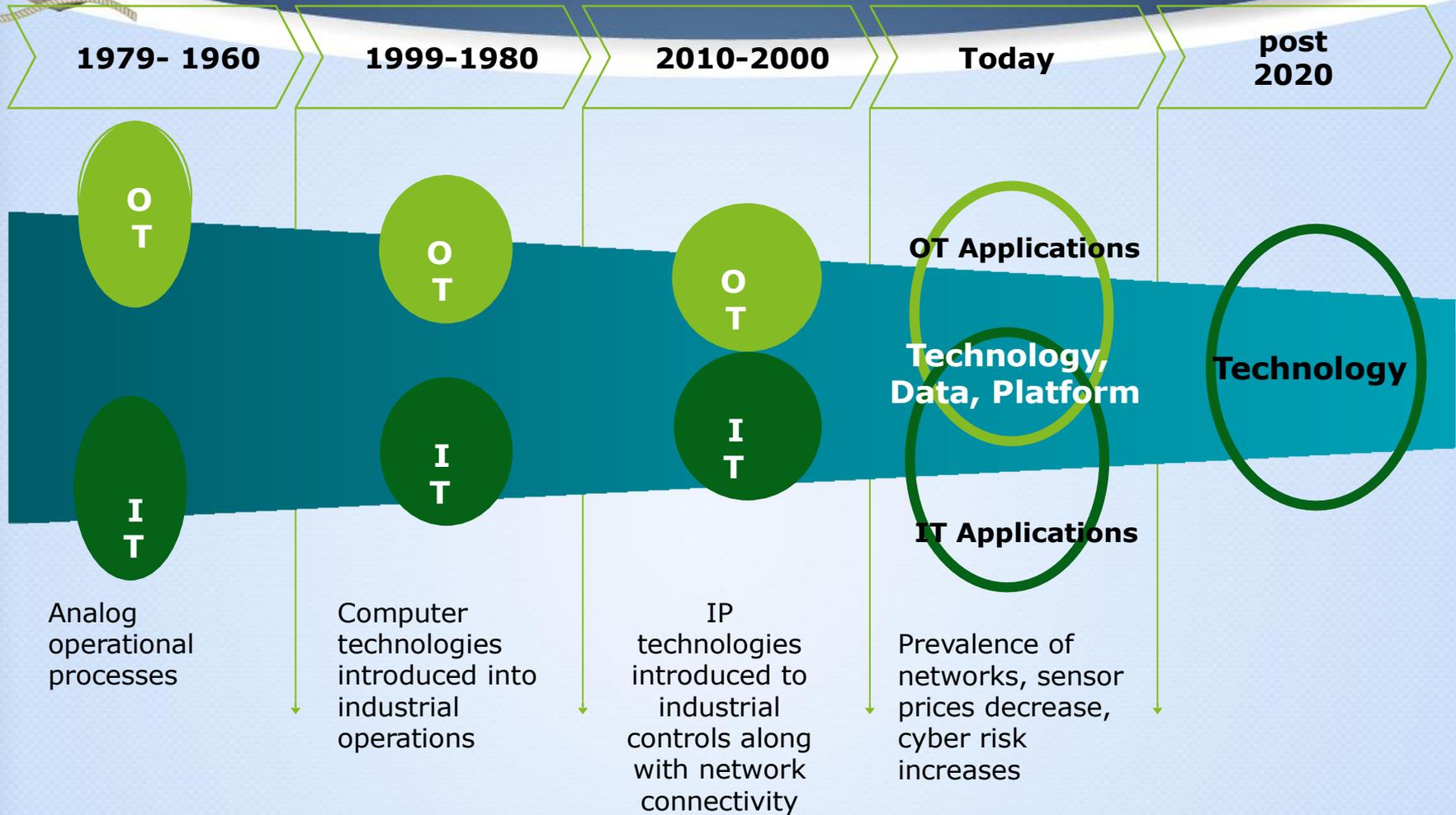
Technologies like predictive maintenance and automation allow for a reduction in opex

New players are targeted focused on renewable energies and alternative fuels

The Fourth Industrial Revolution



Benefits of IT and OT converge

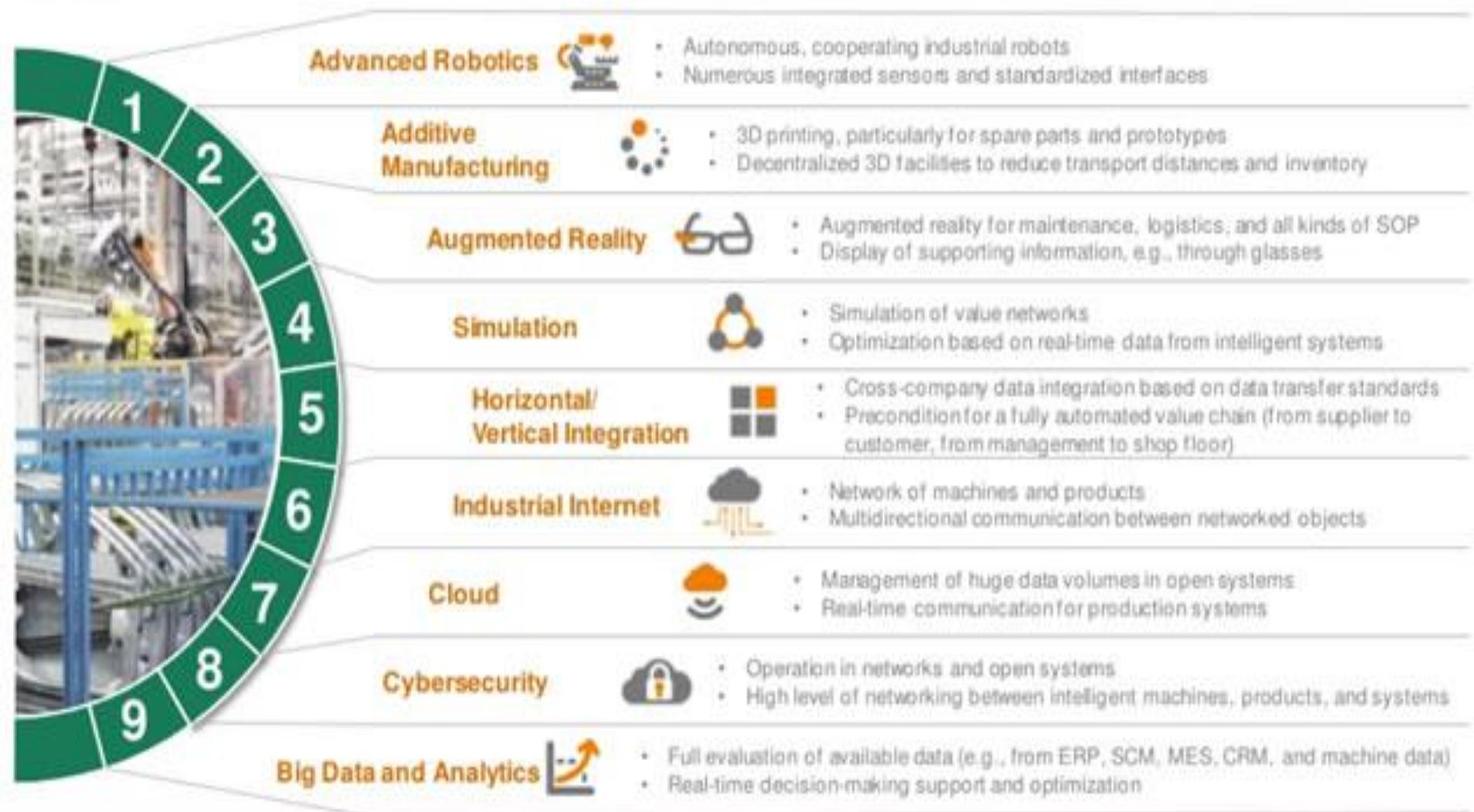




4th Industrial Revolution

Technologies and Applications

Industry 4.0 refers to the convergence and application of nine digital industrial technologies



Many application examples already exist for all nine technologies

18 Technologies that could transform the marine world



Big data analytics



Propulsion and powering



Carbon capture and storage



Communications



Robotics



Advanced materials



Human computer interaction



Shipbuilding



Deep ocean mining



Autonomous systems



Advanced manufacturing



Energy management



Smart ship



Human augmentation



Marine biotechnology



Sensors



Cyber and electronic warfare



Sustainable energy generation



An overview on the global logistics future

AMAZON is the best example of
logistics provider today and in the
future!

Amazon employs over 200,000 employees to run their business, but are looking for ways to replace them with automation.



Amazon has over 45,000 robots in its warehouses. Amazon is only one example of businesses that are looking to replace job with machines, where possible.

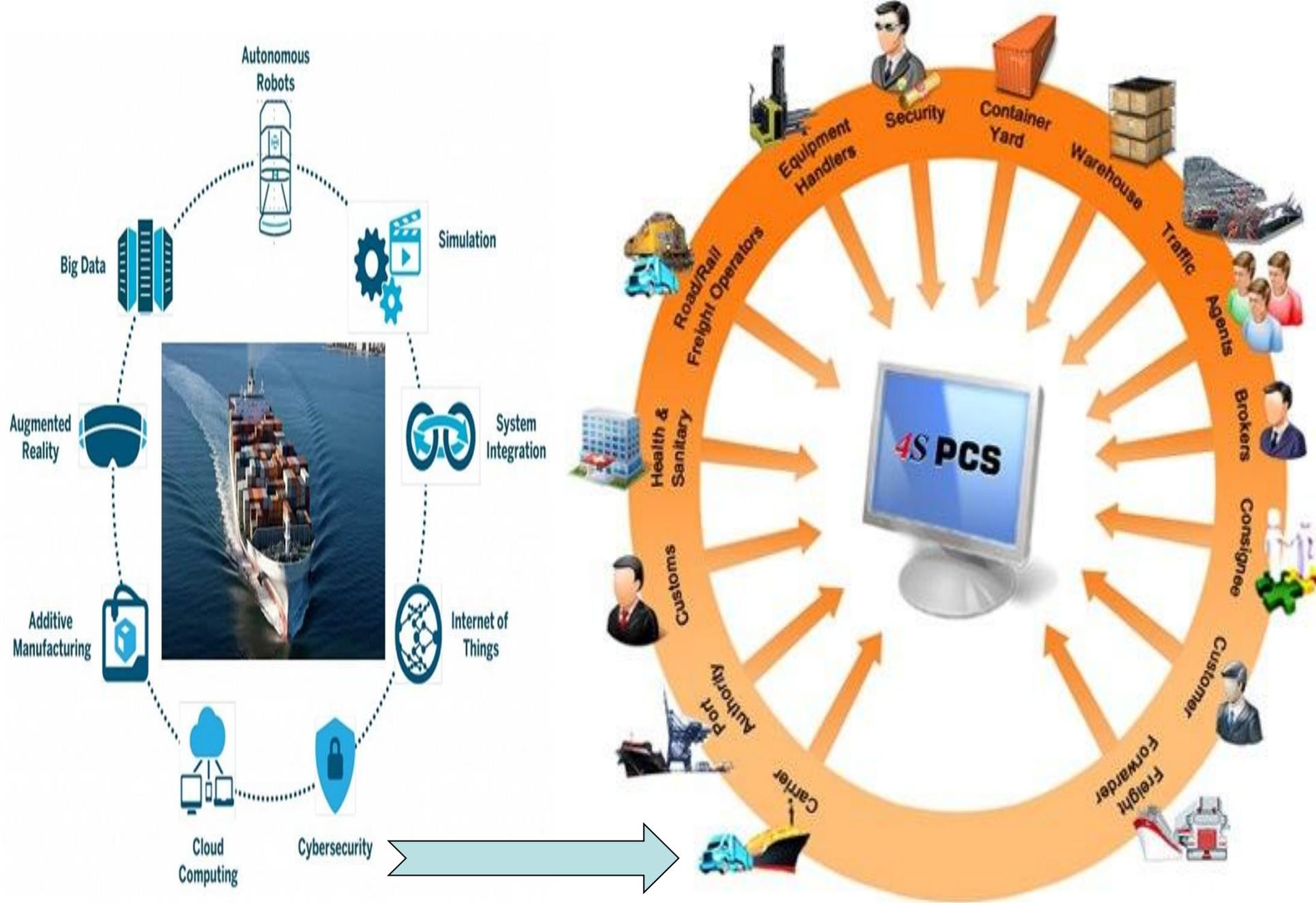
Amazon will have their own logistics and distribution hub, a revolutionary system that will automate the entire international supply chain by eliminating document handling and freight booking.



with the launch of Amazon Prime Air, drones will deliver packages directly from a distribution center to the customer. Additionally, the advancement of technology is disrupting the industry through cyber attacks, such as the one that ended up costing Maersk \$300 million this summer



**PCS is the best example of the
global logistics integration !**





Role of the port authorities in the new era

- *Support the port cluster in a sustainable manner
- *Facilitate the transition to a new digital workforce
- *Be resilient and adapt to change in a successful manner
- *Reward green initiatives
- *Create awareness surrounding cyber security in the cluster
- *Be ready to cooperate / integrate



- *Accelerate the development of all common standards
- *Increase the attractiveness to investments in digital services and products
- *Increase the level of digital skills amongst the current working community
- *Push our cyber security standards further and further



THE FUTURE OF GLOBAL SHIPPING & PORT INDUSTRY



- The future of the ports is challenging but bright since innovation will have a greater role to play and will enable the port to **generate significant value for customers, shareholders and employees**
- The regulator and port authority must strive to guide ports through these turbulent times as well as **facilitate them in this process of change**
- **Collaboration is critical** on both a horizontal and vertical level and nurturing an ecosystem where innovation can truly thrive is now essential



- How change and manage your port , and how to develop specific strategies for transformational innovations? So, be bold, set up a specific structure operating with protected funds, measure and incentivize with non-economic metrics
- Need to manage the risks of innovation in proactively and prepare our workforce and organizations for the impact of digitalization and automation



So, with all of the changes that the shipping industry is facing now a days, it still remains the driving force behind the global economy, and it could take a new direction, should he ever want to tap into this industry...

Let us wait & see!



About the Author:

Abdulla Wanis is an expert in the commercial maritime field from Libya. He has a Master degree from LJMU in Maritime economics (specialization in international transport , trade and logistics 2009), and worked for more than 20 years as : commercial marine officer, marine pilot as well as lecturer of maritime transport , management & strategic planning.

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