

Shipyard 4.0 An innovation and policy roadmap for digitalising shipyard operations

2023

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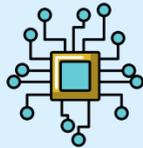
2030



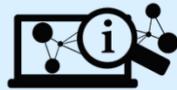
01. Real-time planning tools track progress & report problems



02. Welding quality is digitally monitored in real-time.



03. AI-enhanced documents anticipate, forecast, and warn on events



04. Digital databases improve task training and handover



05. Biocide-free coating innovations surpass toxic anti-fouling paints



06. AR, VR, and 3D simulation used in task training



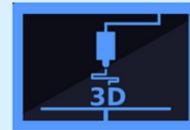
07. AI systems control and manage warehouse inventory



08. 3D Scanning is standardised for ship inspections



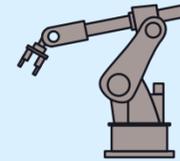
09. Aerial drones perform incremental 3D scans at yards



10. Additive manufacturing of spare and missing parts



11. Microgrids supplement yards' electricity needs



12. Autonomous and flexible robots weld in hard-to-reach places



13. Digital twin files are shared across stakeholders



14. Aerial drones perform basic services



15. Digital twins are used for virtual delivery inspections



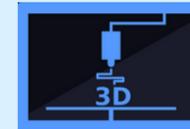
16. Unmanned lifting vehicles displace tractor operators



17. Digital twins are used in planning repairs



18. Warehouse operations performed by automated drones



19. 3D printers are used to print large blocks



20. Composite materials are used for large vessel hulls