

# The future of Ro-Ro and Ro-Pax shipping:

An innovation and policy roadmap for digitalising integrating ship operations



2022



01. AIS data used to coordinate the existing fleet

02. Automated mooring systems available



03. Fuel & cargo data used to audit vessel performance



06. Onboard sensor & equipment calibration via live video



07. Crew & staff have real-time performance analysis

2023

04. Hull & propeller maintenance supported by AI



05. Predictive maintenance tools available for engines & systems



08. Stability & trim optimised on data



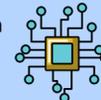
09. Voyage planning & execution supported by AI

2024

10. AI-enhanced cameras at terminals & onboard ships



11. Engine & subsystem maintenance supported by AI



12. Cargo ETA to terminal tracked & shared



13. Terminal operations & cargo stowage system integration



14. Aerial drones support ships' navigation & berthing



15. Cargo info shared in real-time across network



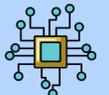
16. Contracts penalise late-arriving haulage carriers



17. Cargo condition data shared across network



18. Terminal operations & stowage aided by AI



2025

19. Vessels assessed & valued based on EEXI & MRV



20. International standards for maritime cyber security



21. Multipurpose drones stationed at ports



22. Voyage (noon) reports replaced by sensor and satellite data



23. Standards for sharing vessel positions across ports



24. IMO mandates cargo weight & dimensions

25. International vessel voyage codes for Ro-Ro vessels



26. Shipowners taxed on their CO2 emissions



2026

27. EU mandates cold ironing at ports for Ro-Ro vessels



28. Remote controlled terminal tugs (un-)load cargo



2027

29. 2nd generation AIS uses satellites



30. Bunker fuel taxed



31. International standards for sensor data logging & exchange

2028

32. Robots perform lashing operations



33. International cold ironing mandate implemented



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