

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

## An innovation and policy roadmap for digitalising integrating ship operations

2022

2023

2024

2025

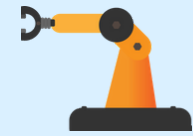
2026

2027

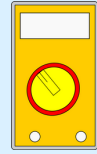
2028



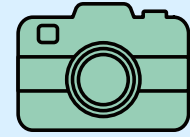
01. AIS data used to coordinate the existing fleet



02. Automated mooring systems available



06. Onboard sensor & equipment calibration via live video



10. AI-enhanced cameras at terminals & onboard ships



13. Terminal operations & cargo stowage system integration



17. Cargo condition data shared across network



21. Multipurpose drones stationed at ports



25. International vessel voyage codes for Ro-Ro vessels



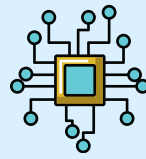
29. 2nd generation AIS uses satellites



03. Fuel & cargo data used to audit vessel performance



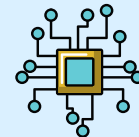
07. Crew & staff have real-time performance analysis



11. Engine & subsystem maintenance supported by AI



14. Aerial drones support ships' navigation & berthing



18. Terminal operations & stowage aided by AI



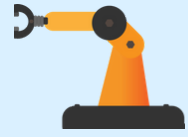
22. Voyage (noon) reports replaced by sensor and satellite data



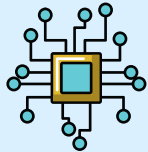
26. Shipowners taxed on their CO2 emissions



30. Bunker fuel taxed



32. Robots perform lashing operations



04. Hull & propeller maintenance supported by AI



08. Stability & trim optimised on data



12. Cargo ETA to terminal tracked & shared



15. Cargo info shared in real-time across network



19. Vessels assessed & valued based on EEXI & MRV



23. Standards for sharing vessel positions across ports



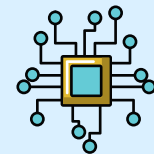
27. EU mandates cold ironing at ports for Ro-Ro vessels



31. International standards for sensor data logging & exchange



05. Predictive maintenance tools available for engines & systems



09. Voyage planning & execution supported by AI



16. Contracts penalise late-arriving haulage carriers



20. International standards for maritime cyber security



24. IMO mandates cargo weight & dimensions



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



33. International cold ironing mandate implemented