Autonomous Ship Project Team

This project teams aims to commercialize technologies for automated vessels, such as automated systems that function properly in navigational environments, remote ship operations from shore, and systems that support seafarers by suggesting actions and presenting information using AI. In addition, as safety assessment technology, we have developed a modelling method for autonomous ships, a risk analysis method using this method, and an assessment method for the elemental technologies used in automatic navigation, thereby contributing to the social implementation of autonomous ships.

Research and development of automatic navigation and support technology

Automated systems and support systems that function in various navigational environments, such as collision avoidance during navigation and automatic berthing and unberthing system, as well as technology to recognize the navigational environment, e.g. through cameras, are developed.



Camera monitoring system [Movement of detected ships are transmitted to the automatic collision avoidance system]



Conceptual drawing of an autonomous ship [Development of system that continuously controls unberthing, navigation, and berthing operation]

Research and development on remote monitoring and ship operation



Monitoring systems to monitor the condition of ships from shore and technology to maneuver ships are developed. The prototyped functions related to remote monitoring and ship maneuvering are verified and confirmed using actual ships at a distance.





Remote monitoring and ship handling screens (Tokyo, Japan)

Trajectory during remote ship-handling test Remote monitoring and operation of the experimental ship "Simpo" (Hiroshima, Japan)

from the Research Institute (Tokyo, Japan)

Research and Development of Risk Analysis

In order to extract safety requirements for autonomous ships and ships equipped with digital technology, we are developing methods for modelling system configurations and operational methods, and methods to derive hazards systematically as well as risk quantification methods that take into account uncertainties arising from the new concept.

Event			
Observation	Cognition	Plannning	Action
(1-P _{A1})			
P _{A1}	(1-P _{A2})		
	P_{A2}	(1-P _{A3})	
		P _{A3}	(1-P _{A4})
			P A4

Risk model for collision of autonomous ships



Qualitative risk assessment methods for autonomous ships