Japan Marine United Corporation

14 April 2026

JMU Obtained Approval in Principle (AiP) for the Basic Design of an Operational Concept for Autonomous Vessels

We are pleased to announce that the operational concept for an autonomous navigation system developed by JMU, "JAVC-C: JMU Autonomous Vessel Concept for Coastal," has obtained Approval in Principle (AiP) from ClassNK (Nippon Kaiji Kyokai).

JMU has been engaged in the development of autonomous vessels since 2018. Within this effort, JAVC-C systematically summarizes the operational philosophy, usage methods, and overall system configuration of autonomous navigation systems, and serves as a fundamental framework for planning autonomous vessels. The various regulations and notations required for the realization of autonomous vessels are stipulated in the Guidelines for Autonomous and Remote-Controlled Ships issued by ClassNK. JAVC-C has been confirmed to comply with these guidelines, leading to the acquisition of AiP.

The newly developed JAVC-C is intended for coastal vessels and is designed to enable autonomous navigation under the supervision of a single crew member in coastal waters (see Table 1 below for autonomous navigation functions by navigation area).

The concept consists of multiple subsystems that replace navigation tasks traditionally performed by crew members. Information such as system status, vessel position, and planned routes is transmitted via ship-to-shore communication to an onshore cloud server, allowing monitoring and access from office PCs and other terminals (see Figure 1 below for the configuration of the autonomous navigation system).

Furthermore, the concept incorporates automatic control of generator and thruster start/stop operations in preparation for port entry and departure—tasks that were previously performed by crew members—as well as automated health assessment of the machinery plant required to determine the feasibility of autonomous navigation. By optimizing both newly developed and existing systems, the concept enables seamless autonomous navigation across different navigation areas.

JMU will continue to work toward reducing crew workload and ensuring safe vessel operations through the development and social implementation of autonomous vessels.

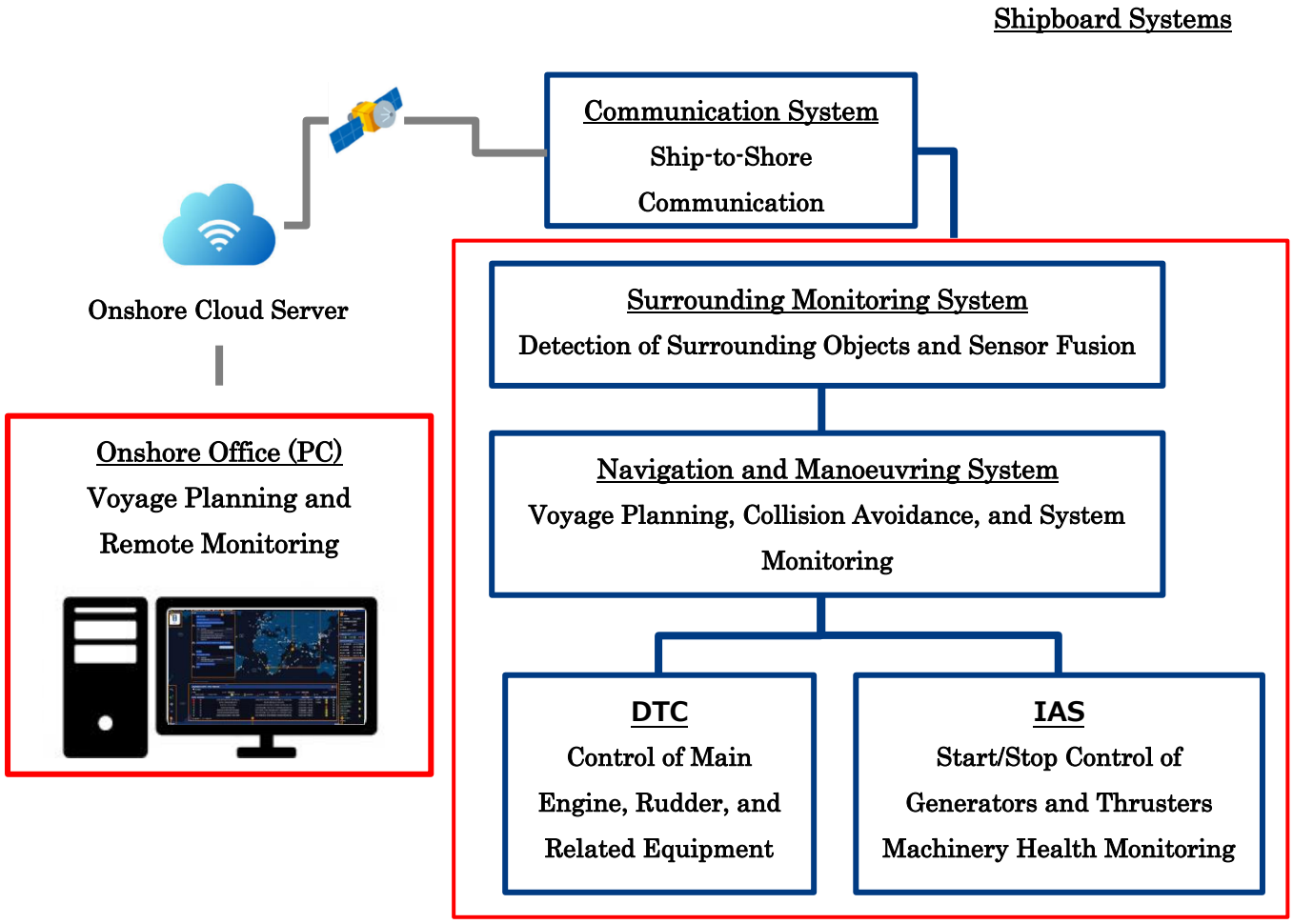

Figure 1 System Configuration of JAVC-C

DTC : Drive Train Controller(Propulsion Control System)
IAS : Integrated Automation System(Propulsion System and Machinery Integrated Control System)

Table 1 Autonomous Navigation Functions by Navigation Area

Item		**Berthing/ Unberthing**	**Leaving/Approach**	**Harbor in/out**	**Coastal**
Definition of Navigation Area		Waters up to just before berthing / just after unberthing	Designated traffic routes	Coastal waters (low-speed area)	Coastal waters
Level of Autonomy		Manual operation	Autonomous navigation support (Route tracking)	Autonomous navigation under crew supervision	
Navigation System	Voyage Planning Function	–	Route tracking (with obstacle avoidance)	Autonomous navigation (with collision avoidance)	
	Hull Control Function	–	DTC control		
Machinery System	Machinery Monitoring and Control	–	Machinery system health assessment and start /stop control	Machinery system health assessment	
NK MASS Notation	Applicable Notation (Planned)	Not Applicable	AUTO-Nav 1 (Na): Level 1 – Support (Partial automation, decision-making by human)	AUTO-Nav 2 (Co): Level 2 – Conditional automation (Human intervention required when necessary)	