

# JNPA Integrates Indigenous HMS and iVTS to enable Real-Time, Data-Driven Marine Operations

## Pilot “Thagaval” App digitises Vessel Movement and Pilotage Workflows across Port Ecosystem

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The Jawaharlal Nehru Port Authority (JNPA), India’s largest container port, has taken a significant step towards end-to-end digitalisation of its marine operations with the rollout of a comprehensive, paper-free Harbour Management System (HMS).



Recognising the complexity of marine operations and the critical importance of data security, JNPA opted against off-the-shelf solutions and partnered with the National Technology Centre for Ports, Waterways and Coasts (NTCPWC) to develop an indigenously designed Harbour Management System. The HMS integrates vessel scheduling, pilotage data, resource allocation, IoT-based inputs, safety monitoring, and sustainability tracking into a unified digital workflow aligned with global standards.



In parallel, JNPA has launched its own independent Integrated Vessel Traffic System (iVTS), moving beyond the earlier VTS arrangement implemented by Mumbai Port Authority with services provided by Wärtsilä. AIS-based vessel data collection through iVTS has already commenced, and once fully operational, the system will provide terminal operators and service providers with a real-time operational picture, enabling faster and more informed decision-making.

Expressing his views on these developments, Shri Gaurav Dayal, IAS, Chairperson, JNPA, said that digitalisation of marine operations is fundamental to ensuring transparency, efficiency, and safety in a landlord port environment. He noted that by adopting an indigenously developed Harbour Management System and real-time data platforms, JNPA is strengthening service delivery to all terminal operators while aligning with global best practices. He added that this transformation is already reflecting in improved performance outcomes and will further enhance the port's competitiveness.

As part of Phase-I digitalisation, all ship movement data is now being captured digitally through the JNPA Pilot "Thagaval" App, which has been in use for the past six months. The app records complete pilotage data, including the master's digital signatures, enables automated report generation, and is integrated with the port's billing system (FOCUS) and the National Logistics Portal (NLP). Manual data recording is being progressively phased out.

Phase-II trials are currently underway, extending digital data capture to all logistics assets, including tugs, pilot launches, and other marine crafts.



JNPA has also successfully shifted all marine operations, including VTS, to the newly established Port Facility Centre (PFC). The integrated facility houses all marine operational sections and allied authorities, including the Port Health Officer's office, and has been fully operational since January 1, 2026.

Under the landlord port model, while container, liquid, and multipurpose terminals are operated by private entities, JNPA continues to provide marine services to all operators. With five container terminals, two liquid terminal operators, and one multipurpose berth operator functioning at the port, ensuring transparent, fair, and efficient marine services has become critical. To meet this requirement, JNPA has transitioned its marine operations to a real-time, time-stamped digital platform, enabling precise performance monitoring and independent record-keeping for each terminal.

## About JNPA

The Jawaharlal Nehru Port Authority (JNPA) is one of India's premier container-handling ports. Since its inception on May 26, 1989, JNPA has evolved from a bulk cargo terminal into the country's leading container port. Currently, JNPA operates five container terminals—NSFT, NSICT, NSIGT, BMCT, and APMT. Spread across 277 hectares, JNPA also operates a state-of-the-art multi-product Special Economic Zone (SEZ) to promote export-oriented industries in India.

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