

MEMORANDUM OF UNDERSTANDING
BETWEEN
INLAND WATERWAYS AUTHORITY OF INDIA (IWAI)
(Ministry of Ports, Shipping and Waterways, Government of India)
AND
IIT KHARAGPUR
FOR COLLABORATIVE RESEARCH, TECHNICAL CONSULTANCY, AND CAPACITY
BUILDING IN IN COMPREHENSIVE MODERNIZATION AND TECHNOLOGICAL
ADVANCEMENT OF INLAND VESSELS

This Memorandum of Understanding (hereinafter referred to as "MoU") is made and entered into on this 17 day of October, 2025.

BY AND BETWEEN:

- I. **INLAND WATERWAYS AUTHORITY OF INDIA (IWAI)**, an autonomous body under the Ministry of Ports, Shipping and Waterways, Government of India, established under the Inland Waterways Authority of India Act, 1985, having its Head Office at A-13, Sector-1, Noida – 201301, Uttar Pradesh (hereinafter referred to as "IWAI", which expression shall, unless repugnant to the context or meaning thereof, include its successors and assigns);

AND

- II. **IIT Kharagpur**, established at the Indian Institute of Technology Kharagpur (IIT Kharagpur), an institute of national importance under the Ministry of Education, Government of India, having its principal office at Kharagpur, West Bengal – 721302, renowned for its expertise in naval architecture, ocean engineering, and maritime technology (hereinafter referred to as "IIT Kharagpur", which expression shall, unless repugnant to the context or meaning thereof, include its successors and assigns).

(IWAI and IIT Kharagpur, are hereinafter collectively referred to as "the Parties" and individually as "Party").

WHEREAS:

- A. IWAI is the statutory body responsible for the development, maintenance, and regulation of inland waterways for shipping and navigation in India, including the promotion of modern and efficient inland water transport (IWT) vessels.
- B. The Government of India is committed to developing a robust and sustainable IWT sector, necessitating the modernization of the existing inland vessel fleet and the development of new, technologically advanced, and environmentally compliant vessels.
- C. IIT Kharagpur, established as a technology hub under the Ministry of Ports, Shipping and Waterways, Government of India, possesses specialized academic and research expertise, state-of-the-art laboratory facilities, computational modeling capabilities, and highly qualified faculty in naval architecture, ocean engineering, maritime technology, and related disciplines.

- D. Both Parties recognize the critical need to leverage scientific knowledge, cutting-edge research, and modern technological tools to enhance the efficiency, safety, cost-effectiveness, and environmental sustainability of inland vessels operating on India's national waterways.
- E. The Parties desire to enter into this MoU to establish a collaborative framework to harness IIT Kharagpur, specialized research and technical capabilities to support IWAI's mission of comprehensive modernization and technological advancement of inland vessels.

NOW, THEREFORE, THE PARTIES HEREBY AGREE AS FOLLOWS:

- 1. PURPOSE AND OBJECTIVES** - The primary purpose of this MoU is to foster a strategic partnership between IWAI and IIT Kharagpur, for collaborative research, technical consultancy, and capacity building, specifically focusing on the comprehensive modernization and technological advancement of inland vessels. The key objectives are:
 - a) To develop innovative, indigenous, and energy-efficient vessel designs optimized for Indian inland waterway conditions.
 - b) To enhance the efficiency, safety, and environmental sustainability of inland vessel construction, operation, and maintenance practices.
 - c) To provide expert technical advice and solutions for complex engineering challenges related to inland vessels.
 - d) To build and strengthen the technical competence and human resources within IWAI and the wider IWT industry through specialized training and knowledge transfer.
 - e) To promote the adoption of cutting-edge technologies and best international practices in the design, construction, repair, and operation of inland vessels.
- 2. SCOPE OF THE MoU:** This MoU outlines the framework for collaboration between IWAI and IIT Kharagpur, on various aspects related to the modernization and technological advancement of inland vessels. The scope includes, but is not limited to, the following areas:
 - a) **Innovative Vessel Design:**
 - i. Research and development of new hull forms, propulsion systems (including hybrid, electric, LNG, and other alternative fuels), and structural designs for cargo, passenger, and specialized inland vessels.
 - ii. Optimization of vessel hydrodynamics for improved efficiency, speed, and reduced emissions.
 - iii. Development of modular, scalable, and standardized vessel designs suitable for diverse inland waterway conditions.
 - iv. Incorporation of smart navigation systems, automation, and digital technologies in vessel designs.
 - b) **Efficient Construction & Manufacturing:**
 - i. Research and consultancy on modern shipbuilding materials, fabrication techniques, and quality control processes for inland vessels.
 - ii. Development of guidelines for efficient and cost-effective construction methodologies.
 - iii. Assessment and benchmarking of existing shipyard capabilities for inland vessel construction.
 - c) **Effective Repairs & Maintenance:**
 - i. Development of advanced diagnostic tools and predictive maintenance strategies for inland vessels.

- ii. Research on sustainable repair techniques, corrosion control, and life extension of vessels.
- iii. Optimization of dry-docking procedures and maintenance schedules to minimize downtime.
- iv. Providing technical assistance for major vessel repairs and retrofitting projects.
- d) Sustainable Operational Practices:**
 - i. Studies on energy efficiency measures, fuel optimization, and emission reduction technologies for inland vessels.
 - ii. Development of best practices for waste management, ballast water management, and pollution prevention on board.
 - iii. Analysis of human factors in vessel operations and development of ergonomic designs and operational procedures for enhanced safety.
- e) Regulatory & Standards Development:**
 - i. Providing technical inputs for the formulation and updating of inland vessel building and classification rules, standards, and regulatory frameworks.
 - ii. Benchmarking Indian standards with international best practices.
- f) Research & Development:** Collaborative and sponsored research projects addressing specific technological gaps and operational challenges in the IWT sector.
- g) Technical Consultancy & Advisory Services:** Providing expert opinions, feasibility studies, design reviews, and problem-solving support to IWAI and IWT stakeholders.
- h) Capacity Building:** Conducting customized training programs, workshops, short courses, and exchange programs for IWAI personnel, vessel operators, shipbuilders, and regulators on advanced vessel technologies, design, construction, and maintenance practices.

3. TERM AND REVIEW

- a) This MoU shall come into effect from the date of its signing and shall remain in force for a period of five (5) years, unless terminated earlier in accordance with the provisions herein.
- b) The MoU may be extended for further periods upon mutual written agreement of both Parties, based on a review of its effectiveness and continued relevance.
- c) The Parties shall review the progress and implementation of this MoU annually through the Joint Working Group.

4. AMENDMENT:

This MoU may be amended or modified at any time by mutual written agreement of both Parties. Any such amendment or modification shall form an integral part of this MoU.

5. TERMINATION:

- a) This MoU may be terminated by either Party by giving six (6) months' prior written notice to the other Party, without assigning any reason.
- b) This MoU may be terminated by either Party immediately if the other Party commits a material breach of any of the terms and conditions of this MoU and fails to remedy such breach within ninety (90) days of receiving written notice of such breach.
- c) Notwithstanding termination, any liabilities or obligations incurred prior to the effective date of termination shall remain binding on the respective Parties.
- d) In case the MOU becomes unsuccessful or the Parties do not renew the term of this MOU: Promptly after termination and subject to further renewal of the term of this MOU,

IWAI shall erase all CICMT's data in IWAI's possession or control, including without limitation in the possession and control of their associates, affiliates, subcontractors, agents, employees, successors and assigns subject to IWAI's rights (if any). In erasing CICMT's Data as required under this MOU, IWAI shall leave no data readable, decipherable, or recoverable on its computers or other media or those of their associates, affiliates, subcontractors, agents, employees, successors and assigns using the best methods commercially feasible. Promptly after any erasure of CICMT's Data or any part of it, IWAI shall certify such erasure to CICMT in writing.

6. DISPUTE RESOLUTION: Any dispute, difference, or question which may arise between the Parties concerning the construction, meaning, or effect of this MoU, or the rights or liabilities of the Parties hereunder, shall be resolved amicably through mutual discussions and negotiations. If no amicable resolution is reached within sixty (60) days, the dispute shall be referred to the Chairman, IWAI, and the Director, IIT Kharagpur, for their joint intervention and resolution.

7. GOVERNING LAW AND JURISDICTION This MoU shall be governed by and construed in accordance with the laws of India. The Courts in New Delhi shall have exclusive jurisdiction to entertain any suit or proceeding arising out of this MoU.

8. GENERAL PROVISIONS

- a) **Non-Binding Nature:** This MoU represents the mutual understanding and intent of the Parties and is not intended to create any legally binding financial obligations beyond the express provisions outlined herein. It serves as a framework for a more detailed agreement or project-specific contracts if required.
- b) **Confidentiality:** Both Parties agree to maintain confidentiality of any proprietary or sensitive information shared during the course of this collaboration.
- c) **Severability:** If any provision of this MoU is held to be invalid or unenforceable, the remaining provisions shall remain in full force and effect.
- d) **Force Majeure:** Neither Party shall be held liable for non-fulfillment of their obligations under this MoU if such non-fulfillment is due to a Force Majeure event (acts of God, war, natural calamities, pandemic, etc.), provided prompt notice is given to the other Party.
- e) IIT Kharagpur shall be performing the responsibilities through CICMT.

9. Data Protections and Intellectual Property Rights:

Treatment of client data

(a) IWAI recognises and agrees that CICMT possesses and retains all right, title and interest in and to its Data, and IWAI's use and possession thereof is solely on CICMT's behalf. IWAI further recognises and agrees that: (i) CICMT's Data is valuable property of CICMT; (ii) CICMT hereby grants IWAI access to its data only for achieving the Purpose and Objective as mentioned in this MOU.

(b) IWAI shall comply with all applicable laws and regulations governing IWAI's access to, use of, and handling of CICMT's Data.

(c) IWAI shall not transfer CICMT's Data (or allow its affiliates, subcontractors, successors and assigns to transfer CICMT's Data outside India, unless it receives CICMT's prior written consent.

(d) IWAI shall implement and maintain a program for managing unauthorized disclosure of, access to, or use of CICMT's Data ("Data Incidents"). In case of Data Incident, IWAI shall: (i) promptly, and in any case within 48 hours, notify CICMT by telephone, in-person, or by other real-time in-person communication.; (ii) cooperate with CICMT and law enforcement agencies, where applicable, to investigate and resolve the Data Incident, including without limitation by providing reasonable assistance to CICMT in notifying injured third parties.

(e) IWAI shall defend and indemnify CICMT and CICMT's indemnified associates against any "Indemnified Claim", meaning any third-party claim, suit, or proceeding arising out of or related to a Data Incident, caused by the act or omission of IWAI or any of their associates, affiliates, subcontractors, agents, employees, successors and assigns (an "Indemnified Claim"). Indemnified Claims include, without limitation, government enforcement actions.

(f) **Intellectual Property:** The Parties agree that all intellectual properties, including but not limited to trade secret(s), copyrights, know-how, or patents, owned or possessed by either Party on the date of signing of this MOU shall remain the property of the said Party. Nothing contained in this MOU shall, by express grant, implication, estoppel or otherwise, create in either Party any right, title, interest, or license in or to the intellectual property of the other Party. If one Party receives any intellectual property from the other Party under a clearly defined non-disclosure agreement, necessary and reasonable care will be taken to protect the intellectual property received. However, ownership and license rights in respect of all intellectual property that may be developed or created by the Parties during the term or as a result of the cooperation as described in this MOU, shall devolve on the Parties jointly. Any transfer or commercialization of such jointly owned intellectual property and associated sharing of revenue shall be governed by a separate agreement.

IN WITNESS WHEREOF, the Parties hereto have executed this Memorandum of Understanding on the date first above written.

For & on behalf of Inland Waterways Authority of India (IWAI):  A.K. Mishra Chief Engineer (JMVP) Inland Waterways Authority of India (Ministry of Port, Shipping & Waterways, Govt. of India) A-13, Sector-1, Noida-201301 (U.P.)	For & on behalf of IIT Kharagpur:  प्रो. सूर्यकांत पाल Prof. Surjya Kanta Pal संकायाध्यक्ष (राष्ट्रीय विकास) / Dean (R&D) भारतीय प्रौद्योगिकी संस्थान खड़गपुर Indian Institute of Technology Kharagpur खड़गपुर/Kharagpur-721302
Witness: 1.  KAROR SINGH DY. DIRECTOR (JMVP) 2.  DR. PRAKRITIK MISHRA SR. CONSULTANT (JMVP)	Witness:  ANANDARUP BHATTACHARYA Dean IR, IIT Kharagpur 2.