

GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
RAJYA SABHA
UNSTARRED QUESTION No. 3163
ANSWERED ON 27/03/2025

NATIONAL MISSION ON INTERDISCIPLINARY CYBER PHYSICAL SYSTEMS

3163 SHRI KESRIDEVSINH JHALA:

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

- (a) whether it is a fact that Government has launched a National Mission on Interdisciplinary Cyber Physical Systems (NMICPS) for boosting technology development in cyber-physical domains like AI, Robotics, IOT;
- (b) if so, the details of the outcomes and achievements of the NM-ICPS;
- (c) the year-wise details of the budgetary provisions allocated under NM-ICPS by Government since its inception; and
- (d) the details of the number of jobs created through the Mission by imparting advanced skills and generating skilled manpower as per the requirement of the industry/society?

ANSWER

MINISTER OF STATE (INDEPENDENT CHARGE) FOR THE
MINISTRY OF SCIENCE AND TECHNOLOGY & EARTH SCIENCES
(DR. JITENDRA SINGH)

(a) Yes Sir, the Government has launched a National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) for boosting technology development in cyber-physical domains like AI, Robotics, IOT.

(b) The Department of Science & Technology (DST), Government of India is implementing the NM-ICPS, which was approved by the Cabinet on December 6, 2018 with an outlay of Rs. 3,660.00 crore. Under this mission, 25 Technology Innovation Hubs (TIHs) have been established in reputed academic institutions across India. Each TIH specializes in cutting-edge domains such as Artificial Intelligence (AI) & Machine Learning (ML), Robotics, Internet of Things (IoT), Cybersecurity, and FinTech etc.

Major activities under the mission include 1. Technology Development, 2. Human Resource Development 3. Entrepreneurship Development and 4. International Collaborations.

Significant achievements have been made under NM-ICPS, with a large number of technologies/ technology products developed in the various domains of cyber-physical systems. Some of the major technologies and technology products developed by the TIHs established under NM-ICPS are given in Annexure I. The details of other outcomes and achievements of the Mission are as follows:

S. No.	Mission Activity	Outcome	Total Number Achieved
1	Technology Development	Technologies / Technology Products commercialized	389
		Publications, IPR and other Intellectual activities	2710
		Increase in CPS Research Base	2895
2	Human Resource Development	Fellowships	6483
		Training Programs	2716
		Skill Development Beneficiaries	208669
3	Entrepreneurship Development	Start-ups & Spin-off companies	888
4	International Collaborations	Number of Collaborations	148

(c) The year-wise details of the budgetary provisions allocated under NM-ICPS by the Government since its inception are as follows:

S. No.	Financial Year	Total Budget Allocation (Amount in Rs. Crores)
1	2018-19	0.01
2	2019-20	123.83
3	2020-21	270.85
4	2021-22	0
5	2022-23	300
6	2023-24	435
7	2024-25	815
TOTAL		1944.69

(d) About 45,000 jobs have been created through the Mission by imparting advanced skills and generating skilled manpower.

Major Technologies and Technology Products developed under NM-ICPS

1. **Information Technology–Operational Technology (IT-OT) Security Operations Centre (SoC)**, for monitoring of cyber threats on both IT and OT infrastructure of an organization.
2. **Self-Sovereign Identity (SSI)**, for secure storage and management of Digital Credentials.
3. **Blockchain-based technology**, for maintaining tamper-proof records of Land Registry.
4. **Transferable Development Rights (TDR) system**, for maintaining secure, transparent and tamper-proof Development Rights Certificate used in land trading.
5. **Crypto forensic tools** for use by Law Enforcement Agencies (LEAs).
6. **CharakDT Platform** (Integrated Human Digital Twin System), for healthcare applications.
7. **Robotic Arms and soft grippers**, for automatic handling of objects in various manufacturing industries.
8. **Technology products for fully automated Drone operations** viz. Smart charging support, safe drone batteries, uninterrupted power supply for continuous drone operations etc.
9. **TiHAN Testbed**, a state-of-the-art testbed for autonomous navigation technology development, for both aerial and terrestrial autonomous vehicles.
10. **Agri-IoT Farm Management System**, to facilitate data-driven decision making by enabling real field monitoring for critical parameters viz. soil health, weather conditions, micro-climate conditions etc.
11. **Holographic Technologies for Mining**, for visualization of remote mines.
12. **ORAN (Open Radio Access Network) Massive MIMO (Multiple Input Multiple Output) 32TR (Transmit-Receive) radio unit**, to enhance 5G technology by utilizing large antenna arrays, thus enabling long-range connectivity for rural areas.
13. **iRASTE**, an application for enhancing road safety by using predictive capabilities of Artificial intelligence (AI).
14. **Artificial intelligence (AI) – based Oral Cancer screening and detection App**, incorporating Data collection features.
15. **Autonomous Weather Station: Smart Climate Monitoring Solution**, integrated with IoT enabled sensors, AI driven analytics and mobile-based alerts, to provide critical meteorological insights including temperature, humidity, rainfall, wind speed and soil moisture, thus enabling data driven decision-making.
