



National Mission on Interdisciplinary Cyber-Physical Systems

For Prelims: Cyber-Physical Systems, Technology Innovation Hubs, SMART Cities, Sustainable Development Goals (SDGs).

For mains: Objectives and Significance of National Mission on Interdisciplinary Cyber-Physical Systems.

Why in News?

Recently, the Ministry of Science and Technology has organised a workshop to discuss joint research projects under [NM-ICPS \(National Mission on Interdisciplinary Cyber-Physical Systems\)](#).

- A total of 35 joint projects have been identified which will be implemented by **TIHs (Technology Innovation Hubs)** and research institutions from the USA.
- This endeavour will help achieve **collaborative research and development between the two countries in the area of CPS (Cyber-Physical Systems)**.

What are Cyber-Physical Systems?

- **About:**
 - Cyber-physical systems **integrate sensing, computation, control and networking into physical objects and infrastructure**, connecting them to the Internet and to each other.
- **Applications:**
 - **Driverless cars** that communicate securely with each other on smart roads,
 - **Sensors in the home to detect changing health conditions**
 - Improving agricultural practices and **enabling scientists to address issues arising out of climate change**, etc.
- **Significance:**
 - Advances in cyber-physical systems will enable capability, adaptability, scalability, resiliency, safety, security and usability that will far exceed the simple embedded systems of today.

What is National Mission-Interdisciplinary Cyber-Physical Systems?

- **About:**
 - It was launched in 2018 by the Ministry of Science and Technology with an outlay of **Rs. 3,660.00 crore for a period of five years** to encourage innovation in new age technologies.
 - It covers the entire India which includes Central Ministries, State Governments, Industry and Academia.

▪ **Objectives:**

- The NM-ICPS is a **comprehensive Mission which would address technology development, application development**, human resource development & skill enhancement, entrepreneurship and start-up development in Cyber Physical System (CPS) and associated technologies.
- The Mission aims **at the establishment of 15 Technology Innovation Hubs (TIH)**, six Application Innovation Hubs (AIH) and four Technology Translation Research Parks (TTRP).
- These Hubs & TTRPs will connect to **Academics, Industry, Central Ministries and State Government in developing solutions** at reputed academic, R&D and other organizations across the country in a hub and spoke model.
- The Hubs & TTRPs have **four focused areas along which the Mission implementation** would proceed, namely:
 - Technology Development,
 - HRD & Skill Development,
 - Innovation, Entrepreneurship & Start-ups Ecosystem Development, and
 - International Collaborations.

▪ **Significance:**

- CPS technologies provide a **cutting edge to a Nation's scientific, engineering, and technologically innovative capabilities**, support other missions of the government, provide industrial and economic competitiveness and have truly become a Strategic Resource.
- The Mission can act as an **engine of growth that would benefit national initiatives in health, education, energy, environment, agriculture**, strategic cum security, and industrial sectors, **Industry 4.0, SMART Cities, Sustainable Development Goals (SDGs)** etc.
- CPS is an integrated system of upcoming technology, which in turn is being taken up on priority basis by countries in the race for development. **CPS will indeed bring a paradigm shift in entire skill sets requirements.**
- The job opportunities **will be enhanced through the Mission by imparting advanced skills and generating skilled manpower** as per the requirement of the industry/society.

Source: PIB

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