



## Deep Tech Startups

**For Prelims:** Deep Tech Startups, Deep Tech, Artificial Intelligence, Machine Learning, Internet of Things, Big Data, quantum computing

**For Mains:** Deep Tech Startups and India

### Why in News?

Government will launch the **Digital India Innovation Fund** to support **deep tech startups**.

### What is Deep Tech?

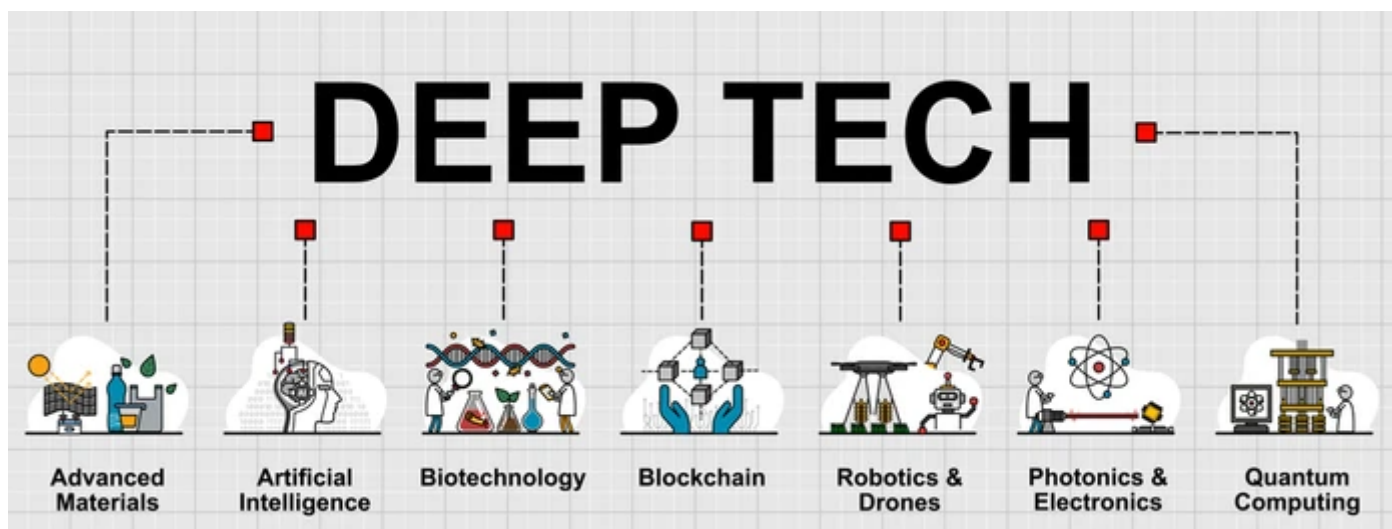
#### ▪ About:

- Deep tech or deep technology refers to a **class of startup businesses that develop new offerings based on tangible engineering innovation** or scientific discoveries and advances.
- Usually, such startups operate on, but are not limited to, agriculture, life sciences, chemistry, aerospace and green energy.
- Deep tech fields like **Artificial Intelligence**, advanced materials, **blockchain**, **biotechnology**, robotics, **drones**, photonics, and **quantum computing** are moving more and more quickly from early research to market applications.

#### ▪ Characteristics of Deep Tech:

- **Impact:** The deep tech innovations are **very radical and disrupt an existing market or develop a new one**. Innovations based on deep tech often change lives, economies, and societies.
- **Time & Scale:** The time required for deep technology to develop the technology and reach the market-ready maturity is way more than shallow technology development (like mobile apps and websites). It took decades for artificial intelligence to develop and it is still not perfect.
- **Capital:** Deep tech often requires a lot of early-stage funding for research and development, prototyping, validating hypothesis, and technology development.

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## What is the State of India's Deep Tech Startups?

- India had over 3,000 deep-tech start-ups, dabbling in new-age technologies like **Artificial Intelligence, Machine Learning (ML), Internet of Things**, Big Data, **quantum computing**, robotics, etc., at the end of 2021.
- According to **NASSCOM**, deep-tech start-ups in India raised USD 2.7 billion in venture funding in 2021, and now account for over 12% of the country's overall startup ecosystem.
- In the last decade **India's deep tech ecosystem has grown 53%** and is at par with that in developed markets like the US, China, Israel, and Europe.
  - Bengaluru accounts for 25-30% of India's deep-tech start-ups, followed by Delhi-NCR (15-20%) and Mumbai (10-12%).
- Deep-tech start-ups are making their **presence felt across sectors like drone delivery and cold chain management** to climate action and clean energy.

## What are the Challenges Faced by Deep Tech?

- For deep-tech startups, **funding is one of the biggest challenges**. Less than 20% of startups receive financing.
  - Government funds are underutilized, and domestic capital is lacking for such startups.
- **Talent and market access, research guidance, investors' understanding of deep-tech**, customer acquisition and cost for talent are the major challenges faced by them.

## What are the Related Initiatives?

- The **Atal New India Challenge** has been launched under the **Atal Innovation Mission (AIM) of the Niti Aayog**, with an objective to serve as a platform for the promotion of Innovation Hubs, Grand Challenges, startup businesses, and other self-employment activities, particularly in technology-driven areas.
- Launched in 2021, **NASSCOM's Deep Tech Club (DTC) 2.0** is aimed at scaling the impact to over 1,000 firms that are leveraging technologies such as AI, ML, Internet of Things, robotics, and blockchain.

## Way Forward

- **Reevaluate the Roadmaps:**
  - As the continual growth of the Indian start-up ecosystem is fueled by the ongoing era of constantly emerging new technologies, **organizations and the government would need to reevaluate their roadmaps for adopting deep tech**.

- As technologies such as **5G, understandable artificial intelligence, quantum computing**, cloud-native technologies, cybersecurity meshes, and customer data platforms will be used in the future. There are a **number of factors that can help the booming and resilient Indian startup ecosystem become global leaders** in deep technology.
- **CSR Budget Utilization:**
  - The social sector has traditionally benefited from **Corporate Social Responsibility**. However, this growing corpus should also be used to develop strategic technologies.
  - A large corporation can be encouraged to contribute to the strategic needs of the nation with some of its budget. There is a need for the government to allow these funds to flow into certain strategic tech startups.

## UPSC Civil Services Exam Previous Year Questions (PYQ)

### Q. Atal Innovation Mission is set up under the (2019)

- (a) Department of Science and Technology
- (b) Ministry of Labour and Employment
- (c) NITI Aayog
- (d) Ministry of Skill Development and Entrepreneurship

**Ans: (c)**

**Source: PIB**

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