

Semiconductor and AI Revolution

Powering the Future

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Powering the Future

From Chips to AI: Building India's Technology Leadership



Semiconductors are the foundation of modern technology, powering everything from smartphones and vehicles to satellites and AI systems. AI is now accelerating the demand for advanced chips, specialised processors and high-performance computing, making the two technologies increasingly inseparable. Recognising this convergence, India is building capabilities from chip design and fabrication to computing infrastructure and indigenous AI models. Government initiatives across both sectors are creating an integrated technology ecosystem that strengthens self-reliance, supply-chain resilience and innovation. This convergence is also opening new opportunities in advanced manufacturing, research, entrepreneurship and high-value employment. As India marks its **80th Independence Day**, these capabilities mark a decisive step towards global technology leadership and a Viksit Bharat.

Semiconductors: Foundation for Technological Self-Reliance

India is building domestic capabilities across the semiconductor value chain, from chip design and fabrication to advanced packaging, equipment and materials. By strengthening domestic capabilities today, India is positioning itself to shape the technologies of tomorrow.

Dedicated Mission Laid The Foundation For Self-Reliance

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- Semicon 1.0 laid the foundation with a ₹76,000 crore outlay to build India's semiconductor ecosystem.
 - It supports the entire value chain, spanning chip design, fabrication, packaging, testing, equipment, materials and skilled talent etc.
 - Semicon 2.0 is scaling this foundation into global ecosystem leadership, with a ₹1,27,500 crore outlay approved in July 2026.
 - Six strategic pillars drive Semicon India 2.0: chip design, semiconductor equipment and materials, fabrication facilities, advanced packaging, research and development, and talent development.

This integrated approach strengthens supply-chain resilience, expands domestic value addition and positions India for future semiconductor leadership.

- **12 semiconductor projects** have been approved across **six states**, with investments commitments exceeding **₹1.64 lakh crore**.
- Projects span silicon and compound semiconductor fabs, display fabrication and advanced packaging facilities.
- Three facilities have already commenced commercial production, marking India's transition from semiconductor policy to manufacturing.

Semiconductor facilities will supply critical components for automobiles, telecommunications, aerospace, power electronics and consumer electronics

Semiconductor fabs plants that build raw silicon wafers into functioning integrated circuits and microchips.

Display fabrication are Plants that build flat and flexible screens for phones, cars, and gadgets etc.

Advanced packaging methods that encase, wire, and shield fragile chips to make them run faster and last longer.

Developing Indigenous Semiconductor Design Capabilities

- To meet future workforce requirements, the Government has prioritised semiconductor skilling through initiatives such as Chips to Startup (C2S), under which,
- Electronic Design Automation (EDA) tools have been deployed in 320 academic institutions and
- Over 68,000 students trained, expanding access to advanced chip-design capabilities. [Click to Read More About: *Chips to Start-up \(C2S\) Programme*](#)
- 24 semiconductor design projects have also been approved for financial support and 105 startups/MSMEs for EDA tool support under DLI Scheme. [Click to Read More About: *Design Linked Incentive Scheme*](#)

Electronic Design Automation (EDA)

EDA tools are software platforms used to design, simulate, verify and optimize semiconductor chips. They manage complex chip designs, detect errors before manufacturing, and improve performance, power efficiency and reliability. By reducing design time, costs and manufacturing risks, EDA tools enable faster development of advanced chips for various applications.

- **211 chips were taped out by 75 institutions** by April 2026, demonstrating growing domestic design capabilities.
- **7 chips have been successfully fabricated at various nodes including advanced nodes such as 12 nm.**
- **Semicon 2.0 will further intended to support semiconductor IP, chip and system designs**, strengthening India's position as a global semiconductor design hub.

Global Partnerships

- Global partnerships with the United States, Japan, Singapore, the Netherlands, Germany and the European Union are strengthening technology collaboration and ecosystem development.
- Semicon India 2025 brought together 350+ exhibitors and participants from 48 countries and regions, strengthening India's global semiconductor engagement.
- The event recorded 35,000 registrations, 30,000 footfalls and 25,000 online viewers, reflecting strong global interest in India's semiconductor ambitions.

- 12 Memorandums of Understanding (MoUs) were announced to strengthen product development, services and semiconductor skill development.

These partnerships are helping integrate Indian companies into global semiconductor value chains and accelerate domestic capabilities.

IndiaAI Mission: Building India's Sovereign and Inclusive AI Ecosystem

The IndiaAI Mission, approved with an outlay of about ₹10,372 crore, has made significant strides over the past year. The Mission's ambition is focused on building capabilities that are **secure, inclusive and rooted in Indian needs**. It aims to make AI a **strategic capability for innovation, economic growth and public service delivery**.

Sovereign AI Computing Capacity At Scale

- The IndiaAI Mission has expanded shared compute capacity to 45,000+ Graphics Processing Units (GPUs), as of June 2026.
- By August 2026, 237 projects had accessed subsidised AI computing, covering 93.18 lakh GPU hours. This provides affordable high-performance computing for AI model development, training, testing and research, lowering entry barriers for Indian researchers, start-ups and innovators.

Graphics Processing Unit (GPU)

A GPU is a specialised electronic processor designed to accelerate **graphics, image processing and other data-intensive computing tasks**. GPUs are widely used in **computers, smartphones, servers and other digital devices**.

Foundational AI Models

- From 506 applications received, the Government has selected 20 indigenous foundation model proposals, including 12 Large Multimodal Models and 8 Small Language Models.
- This strengthens India's capabilities in developing AI models suited to Indian languages, needs and contexts.

Digital Backbone For AI Models

- As of July 2026, AI Kosh hosts over 14,000 datasets and 331 AI models, providing researchers, developers and innovators access to critical resources for building and scaling AI solutions.

From Laboratories To Real-World Governance

- As on Aug 2026, IndiaAI initiatives have developed 62 AI prototypes and deployed 20 AI solutions across public-sector institutions.
- 11 national-level hackathons and innovation challenges are further expanding the pipeline from ideas to deployable solutions.

Innovation Via Centres Of Excellences

- As on Aug 2026, 58 Artificial Intelligence Centres of Excellence (AI CoEs) have been approved across States and Union Territories.

- 22 CoE already approved and initiated across 13 States/UTs.
- These centres are strengthening domain-specific research, innovation and application development.

Building The Talent And Deep-Tech Ecosystem

- The National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) has established 25 Technology Innovation Hubs across leading academic institutions.
- These hubs support research, skills, start-ups and technology transfer across AI, robotics, cybersecurity, quantum technologies and other emerging fields.

Trusted AI Alongside Rapid Adoption

- As of July 2026, the Indian government approved 13 Responsible AI projects under the Safe & Trusted AI pillar of the IndiaAI Mission. These projects tackle critical challenges like bias mitigation, machine unlearning, deepfake detection, privacy-preserving AI, explainability, and AI risk assessment.

Expansion of Data Centre Capacity to Support AI Infrastructure

- Data centres are located across the country such as Mumbai, Navi Mumbai, Chennai, Hyderabad, Bengaluru, Delhi NCR and Gujarat.
- The installed capacity has grown from 375 MW in 2020 to current capacity of about 1,575 MW.
- The Data Centre industry is now further expanding in states like Andhra Pradesh, Madhya Pradesh, Chhattisgarh & West Bengal which are coming up with new investment destinations.

Global Recognition

- The Stanford Global AI Vibrancy Report 2025 ranked India third globally in AI competitiveness and ecosystem vibrancy.
- In 2025, India was the second-largest contributor to GitHub AI projects, reflecting the strength of its developer and innovation community.
- The India AI Impact Summit 2026 was held in February 2026. Participation from delegations from more than 100 countries and 20 international organisations, with the declaration adopted by 92 countries and organisations.
- India joined the Pax Silica coalition at the India AI Impact Summit 2026, working with the United States and other partners to strengthen resilient global silicon supply chains.
- This complements India's domestic efforts to build a self-reliant, inclusive and globally competitive AI ecosystem.

Sustaining Momentum in Chips and AI

India's semiconductor programme is progressing from approvals and design support to commercial production. The next phase, Semicon 2.0, broadens the focus to equipment, materials, advanced packaging, research, indigenous intellectual property and talent. The IndiaAI Mission is building shared compute and supporting applications across government, industry, academia and start-ups. This integrated approach is strengthening technology capabilities, enabling responsible AI governance and supporting sustained innovation.

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