1. SEMICON India 2025 - Economy

India's first fully indigenous 32-bit microprocessor, Vikram-32, developed by ISRO's Semiconductor Laboratory (SCL), was presented to PM Modi at SEMICON India 2025, marking a milestone in India's semiconductor self-reliance journey.

SEMICON India Conference

Organisers - The event is jointly hosted by the India Semiconductor Mission (ISM) under the Ministry of Electronics and Information Technology (MeitY) and SEMI, the leading global semiconductor industry association.

Stakeholder Engagement - It acts as a convergence platform for industry leaders, policymakers, academia, startups, and global investors, encouraging dialogue and partnerships across the semiconductor value chain.

Catalytic Role - By fostering cross-border collaborations, technology exchanges, and showcasing India's growing potential, it positions India as a rising hub in the global semiconductor ecosystem.

Previous Editions - The first edition was held in 2022 (Bangalore), followed by 2023 (Gandhinagar), and 2024 (Greater Noida), each focusing on different aspects of semiconductor ecosystem building.

2025 Edition Highlights

Focus - Strengthening India's semiconductor ecosystem to be robust, resilient, and sustainable.

Features - Includes country pavilions, six international roundtable discussions, specialized zones for workforce development, and dedicated spaces for startup-led innovations in chip design and manufacturing.

Vikram-32 Chip

Development - Designed and developed by the Semiconductor Laboratory (SCL), Punjab, under the Indian Space Research Organisation (ISRO).

Space Validation - The initial Vikram 3201 variant was successfully tested in space during the PSLV-C60 mission, validating its reliability for future space missions.

Significance - Marks a major breakthrough in India's indigenous chip-making journey, showing rapid progress since the launch of the India Semiconductor Mission in 2021.

Technical Features

Processor - Built on a 32-bit architecture, capable of processing data in 32-bit chunks, with built-in support for decimal arithmetic operations.

Robustness - Engineered to withstand extreme temperature variations, radiation exposure, and pressure conditions of outer space.

Capabilities - Can handle large memory management, complex instruction executions, and mission-critical tasks for satellites and space vehicles.

Applications - Beyond space missions, the chip has potential uses in defence systems, aerospace technologies, automotive electronics, energy sector applications, and advanced industrial automation systems.

India Semiconductor Mission (ISM)

Establishment - Launched in 2021 with a financial outlay of ₹76,000 crore under the Ministry of Electronics and Information Technology (MeitY).

Objective - To establish a sustainable and self-reliant semiconductor and display ecosystem that strengthens India's integration into global electronics value chains.

Financial Support - Provides capital incentives, production-linked support, and design subsidies to companies investing in semiconductor fabs, display fabs, compound semiconductors, chip design, and packaging units.

Current Status - India has 10 approved semiconductor projects across six states, representing a cumulative investment of ₹1.6 lakh crore.

Example - The first commercial Silicon Carbide (SiC) fabrication plant is being set up in Odisha, showcasing diversification into advanced material-based semiconductors.

Mission Focus Areas

Chip Manufacturing - Establishing **world-class semiconductor fabs** for producing advanced nodes and specialized chips.

Packaging & Testing - Creating an ecosystem for Assembly, Testing, Marking, and Packaging (ATMP) and Outsourced Semiconductor Assembly and Testing (OSAT) facilities.

Startup Support - Encouraging Indian startups and design houses to innovate and contribute to chip design and embedded system development.

Skill Development - Training a new generation of semiconductor engineers and technicians to meet industry demands through academic-industry collaboration programs.

Global Investments - Actively working to attract multinational semiconductor giants to set up manufacturing and R&D bases in India.

Schemes under ISM

Scheme for Setting up Semiconductor Fabs in India - Provides financial support for establishing state-of-the-art fabs producing logic/memory chips.

Scheme for Setting up Display Fabs in India - Supports high-tech display panel manufacturing, crucial for consumer electronics and automotive sectors.

Scheme for Compound Semiconductors, Silicon Photonics, Sensors Fab & ATMP/OSAT Facilities - Promotes the creation of facilities for emerging semiconductor technologies and packaging infrastructure.

Design Linked Incentive (DLI) Scheme - Offers financial and infrastructure support to domestic chip design companies and startups, ensuring India builds a strong design-to-manufacture capability.

About Semiconductors

Semiconductors, often called 'chips,' are tiny electronic circuits containing transistors, diodes, capacitors, resistors, and interconnections. These circuits are intricately arranged on a silicon wafer.

Use - Semiconductors are employed in the manufacture of various kinds of electronic devices, including diodes, transistors, and integrated circuits. Such devices have found wide application because of their compactness, reliability, power efficiency, and low cost.

Availability - Currently, about 70% of the world's semiconductor manufacturing is concentrated in South Korea, Taiwan, China, the United States and Japan.

Source - https - //www.indiatoday.in/science/story/what-is-vikram-32-bit-chip-presented-to-pm-modi-at-semicon-india-2025-2780582-2025-09-02