

Processor Shakti

Prelims: Current events of national and international importance | Science & Technology

Why in news?

India's 1st 7 nanometer (nm) computer chip design to be ready by 2028: Announced by Union Minister Ashwini Vaishnaw

- It is India's **1st indigenously designed** 7 nm computer processor, is expected to be ready **by 2028**.
- Started in 2013, SHAKTI is based on open-source instruction set architecture, allowing anyone to adopt and use it freely without restrictions.
- **Developed by** - Reconfigurable Intelligent Systems Engineering (RISE) group at Indian Institute of Technology-Madras (IIT Madras), through its SHAKTI initiative.

"Shakti initiative" is a key program to develop indigenous, open-source microprocessors. Eg. Development of SHAKTI processor family.

- **Nodal Ministry** - Ministry of Electronics and Information Technology (MeitY).
- **Collaboration** - It fosters collaboration among academic institutions, startups, and industry to enhance R&D infrastructure and expand talent capacity.

Features & Applications

- **RISC-V** - Adopting **RISC-V** (Reduced Instruction Set Computer) **architecture**, an **open-source architecture** & a family of microprocessors is being developed based on different types of devices.
- **Performance & efficiency** - The system is designed for high

performance and energy efficiency and represents a major leap in semiconductor design.

- **Applications** - Deployed across financial services, communications, defence and other strategic sectors.
- **AI and 5G** - This will support emerging technologies like 5G, artificial intelligence, and supercomputing.
- **Future Roadmap** - Through sustained R&D and strategic investment, the nation aims to build chips in India for the world.
- **Reinforces** - India's strategic goal of ***technological self-reliance*** under the Atmanirbhar Bharat vision and aligns with India Semiconductor Mission.
- **Significance** - With this initiative, India aims to bridge the gap by reducing import dependency, and strengthening its position in global semiconductor innovation.

References

1. [PIB |Fueling innovation through indigenous 7 nm processor](#)
2. [Deccan Herald | 7 nm computer chip - ready by 2028](#)
3. [Manufacturing Today | India's 1st indigenous 7 nm processor](#)