Swadeshi Microprocessor Challenge

Why in News

The **Ministry of Electronics and Information Technology (MeitY)** has announced **'Swadeshi Microprocessor Challenge- Innovate Solutions for #Aatmanirbhar Bharat'** to provide further impetus to the **Start-up ecosystem, innovation and research** in the country.

- MeitY has taken various initiatives and measures to improve innovation-led ecosystem with a **Technology Incubation and Development of Entrepreneurs (TIDE) scheme, Centre of Excellences in IoT/**FinTech **space,** etc.

Key Points

- **About the Challenge:**

  - **'Swadeshi Microprocessor Challenge- Innovate Solutions for #Aatmanirbhar Bharat'** seeks to invite **innovators, startups and students to use microprocessors,** developed by IIT Madras and C-DAC, to **generate various technology products.**

    - **IIT Madras** and **Center for Development of Advance Computing (C-DAC)** have developed two microprocessors named **SHAKTI (32 bit)** and **VEGA (64 bit)** respectively using **Open Source Architecture** under the aegis of **Microprocessor Development Programme** of MeitY.

  - The Challenge demands contestants to not only **tinker with the Swadeshi Processor IPs** and facilitate them with **innovating the economical solutions for societal needs** but also make available the entire **home-grown ecosystem around Swadeshi Processors** to develop the complex designs for catering to both global and domestic requirements in near future.

  - The Challenge spread over **10 months,** kick-started with the **registration process through MyGov Portal** on **18th August 2020** and will culminate in June 2021

- **Significance:**

  - Under the **Aatmanibhar Bharat Abhiyan**, there is a **growing need for Swadeshi Compute Hardware,** that shall be part of every smart device deployed in different domains, including **electronics** for public utility services such as surveillance, transportation, environmental condition monitoring, to commodity appliances like smart fans/ locks/ washing machines.

  - In addition, with **growing penetration of smart electronics in strategic areas including space, defence and nuclear energy,** the need for Swadeshi Compute Hardware is crucial.

  - The **dependence on external vendors,** quick enhancements to suit the ever-growing requirements, and most-importantly **security,** further drives self-reliance in the hardware domain.

Microprocessor Development Program

- It was approved in **August 2017** with **Rs. 289.21** crore earmarked for the programme over four

years.

- **C-DAC, Indian Institute of Technology (IIT) Madras** and **IIT Bombay** were roped in for implementation of the project.

    - **C-DAC is the premier R&D organisation of the MeitY** for carrying out R&D in IT, Electronics and associated areas.

- The **development of an indigenous microprocessor is necessary** to meet domestic needs and shield the country from potential future embargoes on transfer of critical technology.

    - A microprocessor is an **Integrated Circuit (IC)** that contains a few millions of transistors (semiconductor-based electronic devices) fused on a semiconductor chip. It is just a few millimetres in dimension and is used in almost every electronic device—from the microwave and washing machine in homes to advanced supercomputers of a space station.

- The MDP was expected to lead to a **reduction in overall cost of production, maintenance and upgradation of electronic products and systems** in India, and cut foreign exchange outgo.
- Under the program, not only industry-grade microprocessors have been designed from the scratch but also the 'compute ecosystem' around them has been evolved as a step towards meeting India's future requirements. **SHAKTI** and **VEGA** are two microprocessors developed under the programme.

Open Source Architecture

- Open-source architecture is a concept that combines the advances in design and technologies with the practices and ideas from open-source projects to help reframe an architectural design as a collective and collaborative endeavor.
- Some of its **features** are as follow:

    - The solutions provided are not restrictive. Future modifications or add-ons to the architecture are possible for the best interest of the end user.
    - It helps in the integration of the widest range of technologies and components.

- The **proprietary design or technique** is one that is owned by a company. It also implies that the company has not divulged specifications that would allow other companies to duplicate the product.

MyGov

- MyGov platform was launched in **2014** by the Prime Minister of India.
- It is a unique first of its kind **participatory governance initiative** involving the common citizen at large.
- The idea of MyGov brings the government closer to the common man by the use of an online platform creating an interface for healthy exchange of ideas and views involving the common citizen and experts with the ultimate goal to contribute to the social and economic transformation of India.

Source: PIB

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