The Open-Source Mission for India

This editorial is based on "It's in India's National Interest to Promote Open Source Software" which was published in Livemint on 03/01/2022. It talks about the increased importance of Free and Open Source Softwares (FOSS) and its role in India's technological development.

For Prelims: Free and Open Source Software, #FOSS4GOV Innovation Challenge, GovTech 3.0, Gig Economy.

For Mains: Scope of FOSS in India, Challenges Associated to Adoption of FOSS, Encouraging FOSS Ecosystem in India, Significance of FOSS in GovTech 3.0

One of the most awe-inspiring tech developments in the last 20 years has been the rapid growth of **Free and Open Source Software (FOSS)** worldwide.

Most digital experiences are powered by FOSS today, with more than **85% of India's Internet running actively on FOSS.** Major institutions like the **courts, IRCTC, and the State Bank of India rely on FOSS** to scale operations and provide timely and efficient digital services to millions.

FOSS democratises technology and enables fast innovation by giving organisations access to a global pool of talent and the tools needed to develop secure, reliable and scalable software.

It is in India's national interest to promote free and open source software as it will help in making India self-reliant in the field of science and technology.

Free and Open Source Softwares

- **About FOSS**: A FOSS **doesn't mean software is free of cost**. The term "free" indicates that the **software does not have constraints on copyrights.**
    - It means that source code of the software is **open for all and anyone is free to use, study and modify** the code.
    - It allows other people also to contribute to the development and improvement of the software like a community.
    - The FOSS may also be referred to as **Free/Libre Open Source Software (FLOSS).**
    - Examples of FOSS include **MySQL, Firefox, Linux,** etc.
- **Significance of FOSS**: FOSS today presents an **alternative model to build digital technologies** for population scale.
    - Unlike proprietary software, everyone has the **freedom to edit, modify and reuse open-source code.**
    - This results in many benefits — **reduced costs, no vendor lock-in, the ability to customise for local context,** and greater innovation through wider collaboration.
    - FOSS communities can examine the open-source code for **adherence to data privacy**

principles, help find bugs, and ensure transparency and accountability.

- **India and FOSS:**
  - **Initial Attempts:** The earliest attempts by governments to promote open source have mostly involved **adopting Linux-based operating systems and open document formats.**
    - However, it failed because governments couldn't build better consumer products than corporations or open-source communities.
  - **Current Scenario of FOSS Developers:** Indian developers are major players in this ecosystem. According to **GitHub**, more than 7.2 million of its 73 million users in 2021 were from India, placing it **at third position behind China** (7.6 million) **and the US** (13.5 million).
    - But the Indian developer base is growing faster, close to 40% in 2020-21 compared to 16% in China and 22% in the US.
      - GitHub expects to see 10 million Indian developers on its platform by 2023.
    - Millions of Indian developers plugged into the global open-source ecosystem is a good sign and can be a **source of competitive advantage for India** in high-technology geopolitics.
  - **Related Initiative:** In April 2021, the Ministry of Electronics & IT (MeitY) announced the **#FOSS4GOV Innovation Challenge** to accelerate adoption of Free and Open Source Software (FOSS) in Government.
    - It will **harness the innovation potential of the FOSS community and start-ups** to solve critical issues in Government Technologies (GovTech).
    - It is a **key component of** GovTech 3.0, which is about building secure and inclusive Open Digital Ecosystems (ODEs).

Challenges Associated

- **India Lacks in Domestic FOSS Innovations:** Despite a strong consumption, India lags behind the global landscape **in building sustainable home-grown FOSS innovations.**
  - The **lack of substantial FOSS contributions** from India has resulted in having a software ecosystem that lacks representation from India's diverse languages, cultural contexts, and lived experiences.
  - These factors **restrict scaling digital adoption for the majority** of first-time internet users.
- **Misconceptions Regarding FOSS:** "Free" in FOSS is perceived to be "free of cost" and hence **many think that the solutions based on FOSS are not good enough.**
  - For example, FOSS is **often mistaken to be less trustworthy and more vulnerable,** whereas it can actually create more trust between the government and citizens.
- **Lesser Accountability in FOSS**: Another important issue is that it can feel easier to deal with a proprietary software vendor who builds a bespoke software and can be held accountable for any failures.
  - In the case of FOSS, there **appears to be an absence of one clear "owner",** which makes it **harder to identify who is responsible.**
- **Operational Insufficiencies:** The use of open-source components can **create a lot of additional work.**
  - One must keep track of what components are used, what version is the software and how they might interact with other components in use.
- **Intellectual Property Issues**: There are over 200 types of licenses that can be applied to open-source software.
  - Many of these licenses are incompatible with each other, meaning that **certain components cannot be used together since one has to comply with all terms** when using open-source software.
  - The more components are used, the more difficult it is to track and compare all of the license stipulations.

Way Forward

- **FOSS in GovTech:** The first step is to incentivise the **uptake of FOSS in government.** The government's policy on the adoption of open-source software requires all tech suppliers to submit

bids with open source options.
    - A policy framework will go a step further by **formally giving greater weightage to FOSS-specific metrics** in the evaluation criteria in RFPs (request for proposals), and **offering recognition to departments that deploy FOSS initiatives,** such as, a special category under the **Digital India Awards**.
- **Open Source Technology in National Interests:** India must **maximize its independent technological power.** Indeed, open-source software is in India's national interest, given the unfolding economics and politics of the technology space.
    - Focusing on open-source projects is far more productive than attempting technological sovereignty by reinventing everything and insisting on localization.
    - It is a **reliable way to reduce dependence on transnational technology companies** (and the governments behind them).
- **Promoting Open-Source Economy:** India must now promote an open-source economy by pushing a number of policy levers to **create incentives for developers and firms to invest more** in building open-source software.
    - It should aim to **create globally-competitive developers** and firms that become important nodes in the tech ecosystem.
    - The **gig economy** will grow in the post-pandemic world and hence, it **shall be encouraged to contribute in this field.**
- **Role of Technology Institutions:** Engineering **colleges shall encourage their students to participate** in open-source projects.
    - Ensuring a healthy open-source ecosystem is in fact a matter of **social responsibility for a country with a big IT industry.**
    - If support for open-source projects is recognized as satisfying **Corporate Social Responsibility (CSR)** commitments, more developers will be drawn towards them.
        - It will reduce the chances of dependence on just a few individuals to hold up a crucial piece of the world's information infrastructure.
- **A FOSS Centre of Excellence:** A **credible institutional anchor** is needed to be a home for FOSS led innovation in India which can bring together FOSS champions and communities scattered across India.
    - **Kerala's International Centre for Free & Open Source Software (ICFOSS)** is one such institution that led to Kerala being a pioneering state in the adoption of FOSS.
    - A national **"FOSS Centre of Excellence"** can convene capital, resources and capacity-building support, creating the much-needed momentum to build world-class "made in India" FOSS products.

Conclusion

India is at an inflection point in its journey towards greater adoption of FOSS in GovTech. With an IT workforce of more than four million employees and a software industry that is the envy of the world, India already has the required talent and what more is needed is a concerted push to harness the biggest promise that FOSS holds — the possibility of collaborative technological innovation.

Drishti Mains Question

Discuss the steps that India can take to transform itself into an Open-Source Economy.
