



Economic, social and cultural rights in India: Opportunities for advocacy in intellectual property rights

Free and open source software (FOSS) and open standards

Sunil Abraham and Vidushi Marda

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This is part two of a three-part case study that considers the International Covenant on Economic, Social and Cultural Rights (ICESCR) through aspects of intellectual property in India, namely, mobile patents, free and open source software, and India's Traditional Knowledge Digital Library. Through these, it demonstrates the potential of these technologies in realising ESCRs and makes suggestions as well. The discussion below should be read in conjunction with the synthesis overview. These case studies have been produced as part of the Association for Progressive Communications (APC) research project Connecting your rights: Economic, social and cultural rights (ESCRs) and the internet.¹ This is a three-year project funded by the International Development Research Centre (IDRC).

¹For more information, see: <https://www.apc.org/en/projects/connecting-your-rights-economic-cultural-and-social>

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1. Background

When it comes to economic, social and cultural rights (ESCRs) in an information society, free software and open standards are both particularly significant. Software has become an integral part of myriad human activities; from education, to employment, to social services, to health care. When software is proprietary, access to these activities can be impeded. The study of computer science would not be possible without access to source code. Employees trained on proprietary software find that their skill sets are locked into these specific applications, placing an unfair restriction on users' employability and job mobility.

Free and open source software (FOSS) offers scalability, stability, and security. Linus' Law, put forth by Eric S. Raymond, states that "given enough eyeballs, all [software] bugs are shallow"; or more formally: "Given a large enough beta-tester² and co-developer base, almost every problem will be characterized quickly and the fix will be obvious to someone."³ To paraphrase, open software points at easier localisation and easier customisation.

Attempts to develop and produce FOSS alternatives that address the pernicious effects of proprietary software are contingent on the availability of open standards that facilitate interoperability between proprietary and FOSS alternatives in the market. In an environment where standard setting processes are largely dominated by organisations producing proprietary software,⁴ vested interests prevent the creation of truly open standards, in this way acting as a roadblock for the creation of effective FOSS alternatives.

This case study examines the policy justifications for FOSS as well as the need for open standards in the Indian context.

2. The usefulness of FOSS and open standards

Common to the definitions of FOSS offered by the Free Software Foundation and the Open Source Initiative⁵ are:

- Freedom to use for any purpose
- Freedom to study the code
- Freedom to modify
- Freedom to share either for free or for a fee. The lists of valid licences⁶ from the Open Source Initiative and the Free Software Foundation also predominantly overlap.

There are two types of FOSS licences that are deemed the most important: Copyleft and Copyleft.

²https://en.wikipedia.org/wiki/Beta_test

³Raymond, E.S. (2001). The Cathedral and the Bazaar. In E.S. Raymond (Ed.), *The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary*. 2nd ed. Sebastopol: O'Reilly. www.catb.org/~esr/writings/cathedral-bazaar/cathedral-bazaar/ar01s04.html

⁴See, for example, Weitzner, D. (2007, 4 September). Technical Standards and the Role of Democracy. *MIT Decentralized Information Group*. dig.csail.mit.edu, and the allegations of vote buying against Microsoft during the OOXML standardisation process at the ISO.

⁵While for practical purposes these definitions are the same, the OSI definition emphasises practical benefits, whereas the definition from FSF emphasises liberties. We are able to claim that these definitions are the same because the list of valid licences on both sites overlap.

⁶GNU Operating System Licenses: www.gnu.org/licenses/license-list.html and Open Source Licenses by Category: <https://opensource.org/licenses/category>

Copyleft is a general method for making software (or other copyrighted work) free, and requiring all derivative works to be made available under the original licence, and Copyleft licences allow the derivative works to be licensed under a) the original licence, b) a copyright/proprietary licence or c) a copyleft licence.

The umbrella term “open standard” lacks a universally acceptable definition. The FOSS community largely believes that an open standard is:

Subject to full public assessment and use without constraints [royalty-free] in a manner equally available to all parties; without any components or extensions that have dependencies on formats or protocols that do not meet the definition of an open standard themselves; free from legal or technical clauses that limit its utilisation by any party or in any business model; managed and further developed independently of any single vendor in a process open to the equal participation of competitors and third parties; available in multiple complete implementations by competing vendors, or as a complete implementation equally available to all parties.⁷

Though there may not be universal consensus, key elements of most definitions can be summarised as:

- Specifications are available.
- The standards development is transparent.
- Standard to be implementable by anybody.

The most disputed aspect of the definition of open standards is the acceptability of royalty, even for those falling under Free, Reasonable and Non-Discriminatory Terms (FRAND). According to Simon Phipps of Sun Microsystems, FOSS “serves as the canary in the coalmine for the word ‘open’. Standards are truly open when they can be implemented without fear as free software in an open source community.”⁸ However proprietary software vendors do not consider it necessary for open standards to be available on a royalty-free basis, as long as it is under a “reasonable and non-discriminatory” (RAND) licence.

RAND licences, however, impede the growth of FOSS because some jurisdictions in the world grant patents to software. Various distributions of GNU/Linux therefore do not officially include reverse engineered drivers⁹ or codecs,¹⁰ for example, to pre-empt legal actions for infringement. The requirement to pay royalties to use patented software that draws on open source code means restriction to access of drivers and codecs for a range of community-developed GNU/Linux distributions. This artificial restriction of competition limits the presence of community-driven projects in the market.

Open standards are a compelling argument for the following reasons:

- *Innovation/competitiveness*: Open standards create a level playing field that ensures greater competition between large and small, local and foreign, and new and old companies, that encourages innovation. Most of the services we use on the internet today were created by individuals and SMEs, not multinational corporations.

⁷Free Software Foundation Europe. Open Standards. fsfe.org/activities/os/def.en.html

⁸Abraham, S. (2008). Open standards. In Finlay, A. (Ed.), *Global Information Society Watch 2008*. www.apc.org/en/system/files/GISW2008_EN.pdf

⁹Cutts, M. (2013, 12 May). Reverse engineering a Windows USB driver. *Matt Cutts: Gadgets, Google, and SEO*. www.matcutts.com/blog/reverse-engineering-a-windows-usb-driver

¹⁰A codec is a device or computer programme for encoding or decoding a digital data stream or signal.

- *Greater interoperability*: Open standards enable different devices to interoperate seamlessly. It is due to open standards that consumers are able to seamlessly use products and services from competing vendors without having to learn additional skills or acquire converters.
- *Customer autonomy*: Open standards minimise the effort and cost involved in migrating from one product to another, preventing vendor lock-in.
- *Reduced cost*: Open standards reduce the cost of ownership by eliminating patent rents and thereby encouraging development of products and services that serve society better.
- *Accessibility*: Open standards facilitate greater access for people with disabilities, the elderly, neo-literate¹¹ and illiterate users to hardware and software such as screen readers, magnifiers, and keyboards.
- *Privacy/security*: Open standards are transparent and can enable the citizen to have access to communications between personal and state-controlled devices and networks when the state implements them. They also prevent corporate surveillance.

3. Defining the right

The rights relevant to the discourse on FOSS and open standards are found under Articles 13 and 15 (1) (b) of the International Covenant on ESCRs (ICESCR).

Article 13 deals with the right of all persons to education. Education must be directed towards the full development of the human personality, and must strengthen respect for human rights and fundamental freedoms. The state has a duty under Article 13 (2) to provide free and compulsory primary and secondary education, and equal access to education for all. Article 13(2)(c) states that higher education must be made equally accessible for all, in particular by the progressive introduction of free education.

When the government mandates the use of FOSS and open standards, the software procurement costs for government and educational institutions are brought down, as there is no licence fee. FOSS licences also provide for royalty-free distribution of the software and are obtainable at zero cost, thereby increasing accessibility to those who cannot afford the corresponding proprietary software. The 2012 United Nations Conference on Trade and Development (UNCTAD) Information Economy Report on the software industry in developing countries recognises the potential of FOSS to promote local learning, as it is “developed in a process of collaborative production with continuous sharing among peers, a setup that is conducive to the promotion of learning within and across borders.”¹²

There are various arguments that could be used for the promotion of FOSS for education:

- *Reduced cost for institutions*: The most important advantage that FOSS can boast is ultimately the reduced total cost of ownership of the software.
- *The tedious process of unlearning*: The first software a student is exposed to would be difficult to unlearn and there will always be inertia to shift to alternatives. The lack of a vendor-neutral curriculum makes the government an unpaid marketing agent for proprietary software companies mentioned in the curriculum. The UNCTAD report recognises this potential of less dependency on specific vendors and technologies, and highlights the fact that being locked into particular

¹¹ According to UNESCO, a neo-literate is an adult or an adolescent who did not or could not make use of the available educational opportunities on time, and who at a later stage acquired the skills of literacy through formal or non-formal approaches. The majority of neo-literates are economically poor and live in rural areas or urban slums. Read more: www.unesco.org/education/aladin/paldin/pdf/course01/unit_07.pdf

¹² UNCTAD. (2012). *Information Economy Report 2012: The Software Industry and Developing Countries*. unctad.org/en/PublicationsLibrary/ier2012_en.pdf

proprietary software also puts the educational institution in a weak bargaining position, with high licensing costs and ancillary services.¹³

- *Quality of education:* Estonia has a total population of 1.3 million but has produced Skype, a world class voice over internet protocol (VoIP) software. India on the other hand has over 4 million computer engineers, but the global market does not use any Indian products. The lack of software products being produced by India can be attributed to the present education system where students are not exposed to source code but only to the mere operation of technology. This is because the source code of proprietary software is not available. To use an analogy, a literature student studying without access to books in a library but merely from study notes, cannot be said to have read a book at the end of the course.
- *Certification:* The software industry faces two problems with respect to certification: a) educational institutions are not teaching what the industry considers relevant; and b) industry is forced to carry out their own testing to measure the quality of applicants because university certification cannot be relied on. But with free software, during their time in school or university, a student could be able to contribute to existing free software projects, and the whole world would know of her achievements in a publicly verifiable manner. There are a range of possibilities to contribute to projects, even if the student does not belong to an elite institution. She can code, report bugs, develop unit tests, write documentation, translate software to local languages and develop add-ons and plug-ins.

Article 15(1)(a) of the ICESCR mandates that the state parties recognise the right of everyone to take part in cultural life. FOSS is an important contributor to supporting local and domestic capabilities, without proprietary lock-in. Further, FOSS can be altered according to the needs of particular societies, linguistically, culturally and commercially, and does not require permission from original authors or corporations.¹⁴ This is particularly useful in the Indian context, where various languages are required.

The potential of FOSS, however, was best realised in another developing country, Bhutan. In 2005, Microsoft banned the use of the official name of the Bhutanese language, "Dzongkha," in its software in an attempt to placate China, as Dzongkha "implies affiliation with the Dalai Lama, which is not acceptable to the government of China."¹⁵ This is despite the Bhutanese government's conscious effort and investment in developing support for Dzongkha in Microsoft Windows.¹⁶ At this time, the Bhutanese government turned to FOSS. As a result, the free software community developed a version of Debian Linux that supported Dzongkha,¹⁷ which is a local version of the free Linux operating system, whose source code is freely available and which is free from proprietary licensing and costs. This was done with a view to create an open source software that could cater to the specific needs of Bhutan while encouraging the use of ICTs among the majority of its population who did not speak English, and also to help in boosting e-governance.

Article 15(1)(b) mandates the state to guarantee to all the benefits of scientific progress and its applications. Access to the benefits of scientific progress not only allows improving one's socio-economic situation, but also gives the opportunity to take a meaningful part in the life of communities whether they

¹³Ibid.

¹⁴Ibid.

¹⁵ International Campaign for Tibet. (2005, 24 October). Microsoft sensitive to Chinese pressure on Bhutan Tibet Link. www.savetibet.org/microsoft-sensitive-to-chinese-pressure-on-bhutan-tibet-link/#sthash.I9sZPSHf.dpuf

¹⁶BBC. (2002, 1 August). Bhutan gets a taste of Windows. *BBC News*. news.bbc.co.uk/2/hi/technology/2164186.stm

¹⁷Dzongkha Linux Brochure. www.dit.gov.bt/sites/default/files/D126_DzongkhalinuxBrochure_English2.pdf

are local, national or international. Restriction of access to scientific progress may lead to stagnation and exclusion.

Therefore, making software publicly available when it is developed as part of publicly funded scientific research is an imperative on the government. Software under a FOSS licence can greatly benefit people to whom it is made available, and in turn their collaborative efforts can improve the software as well. This is exactly the objective of FOSS. When the source code is made accessible to the public, changes to the software can be made by anybody, and the software can be modified to suit various different needs. This contributes to scientific progress, and source code, must, in principle, be accessible for further improvements and modifications.

Article 15(1)(c) of the ICESCR guarantees a right "to benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author". This refers to the intellectual property (IP) regime, guaranteeing rights to attribution and economic benefits to an author of a creative work, discoverer or innovator, etc. It would seem that the FOSS movement runs contrary to the concept of IP rights. This, however, is a myth. The FOSS movement is actually made possible by IP rights. In most jurisdictions software is automatically protected by copyright as soon as an original work has been created. Copyright law grants copyright owners the exclusive right to reproduce, prepare other works based on the protected work, distribute, and publicly display the work. In general, FOSS licences use this system of rights, but ensure that the code remains open and accessible so that successive developers can innovate around it. Anyone violating the conditions of the FOSS licence may be held liable for copyright infringement. Rights holders and duty bearers

The most important rights holders in this context are the citizens of India.

Specifically, stakeholders most affected would be:

- Students
- The population using personal computers and mobiles
- The population using computers and mobiles at work
- Academia
- Entrepreneurs with capacity to leverage FOSS.

The duty bearers in this context are government institutions including:

- Ministry of Human Resource Development, Department of Electronics and Information Technology (DeitY).
- Boards of education: The Central Board of Secondary Education, Indian Certificate of Secondary Education/ Indian School Certificate. As duty bearers, their part would involve incorporating aspects related to FOSS into the curriculum. The first is to make the curriculum vendor neutral, the second is to mandate a FOSS curriculum, the third is to alter project requirements and assignments to allow for developing and incrementing FOSS.
- Regulatory bodies: University Grants Commission (UGC). The commission was established for the coordination, determination and maintenance of standards of university education for colleges and universities. The UGC advises the central and state governments on the measures which are necessary for the development of higher education, amongst other functions.
- All India Council for Technical Education (AICTE): The council grants approval for the introduction of new courses. The AICTE has delegated to the concerned state governments powers to process

and grant approval of new institutions, starting new courses and variations in the intake capacity for diploma-level technical institutions. It also lays down norms and standards for such institutions.

- Government departments and agencies procuring software.¹⁸

Other stakeholders in this context include:

- Communities of developers contributing to FOSS projects
- Producers, including developers and those who are contributing to FOSS projects (eg. JBoss India Chapter, Swatantra Malayalam Community)
- Consumers: users of FOSS such as SMEs, large enterprises and government
- Facilitators, like academia and FOSS solution providers. They connect producers and consumers, build a demand and supply chain around FOSS
- Multinationals that use FOSS such as Google, Apple, and Amazon that are not free software companies
- Ubuntu
- Start-ups that use free software.

4. Existing framework

The existing policy framework in India could be best delineated by explaining it in terms of the rights framework.

4.1. Article 15(1)(b) – Scientific progress

For the purposes of this research we would like to include the world of research and development into the category of scientific progress. While scientific progress and technology development are not strictly synonymous, they are closely linked because development of technology in many ways enables scientific progress, and vice versa. The government in India has significant market-shaping power, and its engagement in free software and open standards will strongly influence the behaviour of the market. In this context, it could be useful to look at the various government policies that have a bearing on the existing framework in India:

- *The National Policy on Information Technology, 2012*: One of the objectives of the policy is the “adoption of open standards and promotion of open source and open technologies.”¹⁹
- *Policy on Adoption of Open Source Software for Government of India*: The Department of Electronics and Information Technology formulated this policy in 2014 with the objective of encouraging the formal adoption and use of open source software in government organisations. Under the aforementioned policy, “the Government of India shall endeavour to adopt Open Source Software in all e-Governance systems implemented by various Government organizations, as a preferred option in comparison to Closed Source Software. Compliance is mandatory for all government organisations under the Centre, as well as under state governments that chose to adopt the policy. The Government has also undertaken to collaborate with academia and

¹⁸Government of India, Ministry of Communications and Information Technology, Department of Electronics and Information Technology. (2015). *Framework for Adoption of Open Source Software in e-Governance Systems*.

¹⁹deity.gov.in/sites/upload_files/dit/files/policy_on_adoption_of_oss.pdf

developers of Open Source Software, to ensure that technological capabilities are available at the lowest costs."²⁰

- *Framework for Adoption of Open Source Software:* In pursuance of the policy, the government was also required to publish a framework for the rapid and effective adoption of open source software, covering the prioritisation of the application areas along with an illustrative list of open source software and open source software stacks required for various functional areas. This has been formulated in 2015 in order to provide a set of recommendations and procedures for promoting, managing and adopting open source software.
- *Policy on Open Standards for e-Governance:* The policy was formulated to identify open standards for the consistent, standardised, and reliable implementation of e-governance solutions, and to facilitate interoperability between systems developed by multiple agencies. The purpose of such a policy was to "cooperate, collaborate and integrate information across different departments"²¹. The standards are applicable at the interface and data-archival level of all prospective systems of e-governance, including those involving businesses: G2G,²² G2B,²³ G2E²⁴ and G2C.²⁵ Further, it is mandatory that legacy and existing systems adhere to open standards when interacting with other systems, and newer versions be in conformity with the standards. A Manual on the Implementation of Policy on Open Standards for e-Governance was formulated along with the policy in order to provide guidelines for implementation.
- *Technical Standards for Interoperability Framework for eGovernance in India:* The Department of Electronics and Information Technology has developed this document in pursuance of technical interoperability for e-governance systems in areas prioritised by the department. It articulates technical standards essential for the applications to interoperate.
- *Policy on Open Application Programming Interfaces for Government of India:* The policy seeks to encourage the use of open Application Programming Interfaces (APIs) to promote software interoperability between all e-governance systems
- *Electronic Accessibility Policy:* In 2010, the erstwhile Department of Information Technology circulated a draft consultation paper, the National Policy for Electronic Accessibility, that sought to regulate the provision of accessible electronics and ICT services and products and universal design concepts²⁶ for persons with disabilities. Post-consultation and deliberation, the government passed the National Policy on Universal Electronic Accessibility (National Policy) in 2013. The draft consultation paper provides that accessibility standards and guidelines be taken or modified from existing standards. The national policy specifically names existing accessibility standards and guidelines such as the W3C Accessibility Standards, the Authoring Tools Accessibility Guidelines (ATAG), and Web Content Accessibility Guidelines (WCAG 2.0), which specifically deal with how to make web content more accessible to the blind and differently abled.
- *UAAG (User Agent Accessibility Guidelines):* The FOSS Initiative Cell of the Department of Electronics and Information Technology has independently set up a series of initiatives for the development of the FOSS ecosystem in India. This includes organisations such as the National

²⁰Ibid.

²¹nisg.org/files/documents/A03020001.pdf

²²Government to government.

²³Government to business.

²⁴Government to employees.

²⁵Government to customer.

²⁶The term "universal design" was coined by the architect Ronald L. Mace to describe the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, ability, or status in life. Read more: https://en.wikipedia.org/wiki/Universal_design

Resource Centre for Free and Open Source Software, and the Centre for Development of Advanced Computing, which research and promote FOSS through collaborations with educational institutions.²⁷ An indigenous cloud-computing service, Meghdoot, has been developed using FOSS.²⁸

4.2. Article 13 – Education and Article 6 – Work

Organisations worldwide have adopted innovative alternative solutions in order to optimise costs by exploring avenues for FOSS. The government has also been promoting the use of open source technologies in the e-governance domain in India in order to leverage economic and strategic benefits. In September 2009, Rahul De, the Hewlett-Packard Chair Professor at the Indian Institute of Management, Bangalore, published a paper called “Economic Impact of Free and Open Source Software – A Study in India”²⁹ which estimated the total savings of government expenditure on education to be around Rs. 8,254 crores (approx. USD 1.24 billion).³⁰ This is apart from the intangible benefits that working with FOSS delivers.

The National Policy on Information and Communications Technology in School Education specifically states: “A software environment favouring a pedagogy of learning which promotes active learning, participatory and collaborative practices and sharing of knowledge is essential to nurture a creative society. Free and Open Source Software – operating system and software applications will be preferred in order to expand the range of learning, creation and sharing.”³¹ In a notice issued in pursuance of the same by the Ministry for Human Resource Development, states and universities of technology are requested to opt for free and open source alternatives in the curriculum to make education more cost-efficient and ethical.³²

However, independent initiatives aside, there seems to be no policy at the university level to foster skill development in free and open source software, akin to the National Policy on Information and Communications Technology in School Education. Certain universities, in recognition of the economic and ethical benefits of FOSS, have begun to offer degrees and programmes with a specific focus on FOSS. For instance, Anna University, Chennai, offers an M.Sc. in Free and Open Source Software in collaboration with the National Resource Cell for Free and Open Source Software. The All India Council for Technical Education had signed a memorandum of understanding (MoU) with Microsoft for compulsory installation of Microsoft 365, which was later rescinded on account of criticism from various fronts.³³ Microsoft has a history of entering into MoUs with educational institutions, for instance, with Jawaharlal Nehru Technical

²⁷Anna University, Chennai offers an M.Sc. in FOSS in collaboration with the National Resource Cell for Free and Open Source Software (NRCFOSS).

²⁸deity.gov.in/content/foss-products

²⁹De, R. (2009). *Economic impact of Free and Open Source Software - A study in India*. Bangalore: Indian Institute of Management. www.iimb.ernet.in/~rahulde/RD_FOSSRep2009.pdf

³⁰Alawadhi, N. (2015, 24 September). Open source software could help India save Rs. 8245 crore in education alone: Study. *The Economic Times*. articles.economictimes.indiatimes.com/2015-09-24/news/66854716_1_open-source-software-proprietary-software-such-software

³¹Department of School Education and Literacy, Ministry of Human Resource Development, Government of India. (2012). *National Policy on Information and Communication Technology (ICT) in School Education*. mhrd.gov.in/sites/upload_files/mhrd/files/upload_document/revised_policy%20document%20ofICT.pdf

³²Dated 17 June 2014. i.imgur.com/s1t1JuA.jpg

³³Staff Reporter. (2013, 9 May). AICTE rescinds Microsoft Office 365 mandate. *The Hindu*. www.thehindu.com/features/education/college-and-university/aicte-rescinds-microsoft-office-365-mandate/article4698205.ece

University,³⁴ and the Indian School of Design and Innovation.³⁵ It has partnered with state governments such as those of Assam, Karnataka and Gujarat, where students and educators are trained in curriculum developed by Microsoft.³⁶ While these arrangements are for the stated benign purpose of providing software and technology infrastructure, it also results in the institutions becoming dependent on a proprietary ecosystem.³⁷ The AICTE has now published a list of FOSS alternatives to commonly used commercial software.³⁸

Under the previous section we argued that the government has market shaping capacity in the global south. By configuring demand and supply, the government has the potential to encourage more free software enterprises to grow. Policy changes can increase demand and the use of free software will react to this increased demand for free software appropriately. In this context, all policies listed above also have the same potential.

5. Intellectual property and fair dealing

There are two ways in which the maximalist IP regime can be prevented. The first way is to create, protect and expand user rights, that is, fair dealing or fair use, also known as exceptions and limitations. For example, the exception to technological protection measures (TPM)³⁹ prescribes circumstances under which TPM may be ignored. There are certain exceptions for fair dealing of the programmes that allow use of protected works in a reasonable manner, without the owner's consent. Sections 52(1)(aa),(ab), (ac) and(ad) of the Copyright Act in India articulate these protections and protect a range of activities that would otherwise be considered infringement of copyright. This includes, by necessary implication, decompilation and reverse engineering of computer programmes protected under copyright for the purpose of achieving interoperability with them. Section 52(1)(ab)⁴⁰ creates a specific exception for this purpose.

Notably, the provision does not employ terms such as decompilation or reverse engineering. Section 52(1)(ab) is framed in broad terms to allow "any act necessary".⁴¹ The provision does, however, limit the purpose behind these acts to obtaining information that is essential for operating interoperability, and only by a lawful possessor of the programme. The exception also does not operate when the information

³⁴PTI. (2003, 23 June). Microsoft India signs MoU with JNTU. *The Economic Times*. articles.economictimes.indiatimes.com/2003-06-23/news/27552741_1_jntu-microsoft-india-academic-developer-programme

³⁵Patil, S. (2015, 24 June). India School of Design and Innovation & Microsoft India partner to launch ISDI Creative Accelerator. *Microsoft News Center India*. news.microsoft.com/en-in/indian-school-of-design-and-innovation-microsoft-india-partner-to-launch-isdi-creative-accelerator

³⁶zeenews.india.com/business/news/technology/assam-microsoft-in-learning-enhancement-pact_53662.html; www.schooleducation.kar.nic.in/pdf/files/projectshiksha.pdf; www.hindustantimes.com/education/microsoft-to-invest-in-gujarat-s-education-sector/story-g7dttygkLuRzM4wKsF2sQN.html

³⁷In response to reports that Visvesvaraya Technological University had entered into an MoU with Microsoft in the 2000s, the Center for Internet and Society (CIS) filed an application under the right to information (RTI) demanding details about the curriculum and why proprietary software had been given preference over FOSS alternatives.

³⁸www.aicte-india.org/downloads/Commercial%20Software.pdf

³⁹Technological protection measures is a broad term that covers many different types of technologies used to control access to copyright content, or to prevent users from copying protected content. Read more: www.smartcopying.edu.au/copyright-guidelines/hot-topics/technological-protection-measures

⁴⁰(ab) The doing of any act necessary to obtain information essential for operating interoperability of an independently created computer programme with other programmes by a lawful possessor of a computer programme provided that such information is not otherwise readily available."

⁴¹Indian Copyright Act, 1957. copyright.gov.in/documents/copyrightrules1957.pdf

(essential for interoperability) is otherwise readily available. The scope of the exception is broader than other jurisdictions in that there is no limitation on permissible acts, as long as they are for the purpose of achieving interoperability. The protection granted by these provisions only helps prevent vendors from locking down their proprietary software and barring interoperability with free and open source alternatives. Further, there are still some legitimate purposes for decompilation and reverse engineering of proprietary software not protected by the provision, such as fixing critical flaws in the programmes. The second way is to re-evaluate the scope of IP protection. What can be protected, for how long, and what rights accrue by virtue of IP protection are important considerations. India resisted the broadcast treaty at WIPO as there was an asymmetry in the level of protection afforded to broadcasting organisations. The growth of free software is dependent on patented technology entering the public domain and being implemented in free software projects. Computer programmes are within the definition of "literary works" under Section 2(o) of the Copyright Act, and are therefore offered similar protection under the Act. This is for the purpose of safeguarding the economic and moral interests of the creators or owners in order to encourage innovation, creativity and investment.

5.1. The Microsoft story in India

The following story shows how proprietary companies interfere in decisions of states, and in the process violate the rights of citizens.

From 2003 the growth of open source policies was so noticeable that the CSIS published an annual survey which "tracks governmental policies on the use of open source software as reported in the press or other media."⁴²

Following this, proponents of proprietary software started lobbying against this movement. Microsoft's CEO Steve Ballmer even referred to it as "cancer"⁴³ and "communist".⁴⁴

After this attack, the free software community wanted to become more neutral. They shifted from a pro-free software posturing to level-playing-field posturing. They slowly moved from free software to open standards.

From 2005, following this move, open standards began to blossom. The most controversial standard at the time became the Office standard, which was interfering with the proposed migration to open standards. To combat this, the government started using "odf" (open document format).

Microsoft realised their market would be affected by odf and they needed to have an open standard. They called this open standard OOXML. They participated in the fast-track process at the International Organization for Standardization (ISO) to get OOXML approved as an open standard, which met with a vote of disapproval in India.⁴⁵

⁴²Center for Strategic and International Studies. (2007). *Government Open Source Policies*. csis.org/files/media/isis/pubs/070820_open_source_policies.pdf

⁴³Greene, T.C. (2001, 2 June). Ballmer: "Linux is a cancer". *The Register*. www.theregister.co.uk/2001/06/02/ballmer_linux_is_a_cancer

⁴⁴Lea, G. (2000, 31 July). MS' Ballmer: Linux is Communism. *The Register*. www.theregister.co.uk/2000/07/31/ms_ballmer_linux_is_communism

⁴⁵ET Bureau.(2008, 13 June). OOXML put on hold amidst opposition from India. *The Economic Times*. economictimes.indiatimes.com/tech/software/ooxml-put-on-hold-amid-opposition-from-india/articleshow/3124543.cms?intenttarget=no

Microsoft then began filing complaints to various Indian authorities in early March 2008, claiming bias on the part of several members of the committee because of their presumed membership of a group called "ODF Alliance India" and insinuated that these organisations and their representatives, including the Indian delegation which attended the Ballot Resolution Meeting, were acting against Indian national interests.

The Ballot meeting of the committee on 20 March 2008 had clearly and unambiguously finalised the Indian position of retaining the earlier vote of disapproval. In spite of this, Microsoft continued to make representations to the top Indian leadership, pressurising them to change the Indian vote. Mr. Deepak Pathak, an academic from the Indian Institute of Technology, Bombay, said: "[This] goes well beyond the behavioral boundaries for a non-Indian commercial entity, amounting to interfering with the governance process of a sovereign country."⁴⁶

6. FOSS in other countries: An overview

While the government has formulated a comprehensive scheme of policies with respect to the adoption of FOSS and open standards in governance, there is no explicit mandate for the government itself to develop FOSS, or make software developed by it available under FOSS licences. As discussed, software developed from public funding should be made available freely for public use – an extension of the state's obligations under Article 15 of the ICESCR.

Recommendations for the use of FOSS in public administration have been made in several countries such as Argentina, Australia, Belgium and Brazil.⁴⁷ The government of Brazil also proposes to switch 300,000 computers from Microsoft Windows Operating Systems to Linux.⁴⁸ In Bulgaria, the UNDP and the Internet Society of Bulgaria have launched a project to help municipal governments in Southeastern Europe with FOSS.⁴⁹

Public management and administration in all Nordic countries use FOSS. In Denmark, work is at present being carried out with the aim of producing a strategy for how FOSS should be used in public administration. The government in Denmark adopted a 'Software Strategy' emphasising value for money, competition, freedom of choice, and interoperability.⁵⁰

At this time there at least twenty countries all over the world where governments have taken a position in favour of FOSS. A number of these countries have chosen to make new laws on the use of FOSS.

Germany is perhaps the most active country in Europe with a number of pilot projects for the introduction and use of FOSS. The Netherlands has recently put forward a three-year plan of action for open standards and FOSS in public administration. In the United States, the Department of Defense is a long-standing proponent of FOSS. In France, most government ministries use FOSS in their functioning.⁵¹

⁴⁶Pathak, D. (2008, 28 May). Finally, my open letter on OOXML happenings in India. *Deepak Pathak's Blog*. deepakphatak.blogspot.in/2008/05/this-is.html

⁴⁷Center for Strategic and International Studies. (2010). *Government Open Source Policies*. csis.org/files/publication/100416_Open_Source_Policies.pdf

⁴⁸Kingstone, S. (2005, 2 June). Brazil adopts open-source software. *BBC News*. news.bbc.co.uk/1/hi/business/4602325.stm

⁴⁹UNDP. (2004, 7 June). Bulgaria to Enhance e-Governance Initiatives by Launching Free and Open Source Software Project. www.undp.bg/uploads/images/862_en.pdf

⁵⁰ICA Country Report: Denmark 2003. www.ica-it.org/conf37/docs/Conf37_CountryRep_Denmark.pdf

⁵¹Marson, I. (2005, 5 December). One City's Move to Open Source. *CNet News.com*. <https://www.cnet.com/news/one-citys-move-to-open-source>

The UNDP also actively promotes government open source software adoption. The Asia Pacific Development Information Programme (APDIP) of the UNDP launched the International Open Source Network to aid countries in sharing information on open source software. UNDP is implementing the DOT Force action items on software development by promoting the use and dissemination of open source software within developing countries.⁵²

7. What is the ask from civil society?

The following positions need to be advocated for by civil society:

- In terms of intellectual property, there is a need for the expansion of a FOSS-positive agenda. Global priorities, and in turn India's priorities, need to be engineered in order to encourage methods of education and learning that promote FOSS. Education treaties must look to encourage remote learning using FOSS and, in this way, lifelong learning. The treaty for exceptions and limitations for libraries and archives⁵³ must reflect broad exceptions to software use so public and private libraries can work to encourage education and learning.
- There also exists a negative agenda, where software patents must continue to be blocked. Proprietary software can be potentially dangerous to the guaranteeing of ESCR rights, and it is the duty of the state to mandate, wherever possible, the use of FOSS, and the implementation of open standards. For example, in education, there are two main 'asks' in the realm of education that could promote the use of FOSS. The first is to make the curricula vendor neutral, and exposing students to FOSS as the introductory software on which they learn, and the second is through certification reform that ensures the reliability of certified experts and the relevance of curricula.
- At the international level, states need to cooperate in designing policies that encourage the use of open source software, and collaborate in setting open standards, rather than standardising proprietary formats. In a world where documents are being digitised at the level of government, where education is being supplemented by the use of technology and employment relates directly to the use of certain kinds of software, it is important that every person is able to access this software. The greatest benefits of open source software and open standards have been in terms of answering the difficulty of accessibility. Costs are economical, if not zero, and software applications are improved constantly by user experience and made more intuitive. A visually challenged person who cannot access the Jaws software is much more disadvantaged than someone who can access and use this software. Here, if such software is made free and open source, the benefits of such accessibility are enormous.
- In developing economies, open source software and open standards have a huge role to play in disseminating knowledge and encouraging scientific research and the study of computer science. Poverty analysts have argued that the problem underlying poverty is one of capabilities - of converting available resources to functioning, depending on each person's social standing and other factors such as gender, disability etc. that impact on her use of resources.⁵⁴ In this context, open source software and open standards have a role to play in ensuring that everybody has

⁵²United Nations Conference on Trade and Development. (2003). *E-Commerce and Development Report 2003*. United Nations. www.unctad.org/en/docs//ecdr2003_en.pdf

⁵³Saez, C. (2015, 26 June). Two Sides Of Copyright Law To Be Considered By WIPO Committee Next Week. *Intellectual Property Watch*. www.ip-watch.org/2015/06/26/two-sides-of-copyright-law-to-be-considered-by-wipo-committee-next-week

⁵⁴Nussbaum, M. C. (2003). Capabilities as Fundamental Entitlement: Sen and Social Justice. *Feminist Economics*, 9(2-3), 33-59.

equal access to technology, thereby enabling opportunities for education and employment that would otherwise not have been available to them.

- In India, most users like developers and hobbyists are attracted to FOSS because it is free of cost, and not for its benefits such as software freedom, or opportunities for collaboration and participation. There is a need for proper advocacy to build their practical and political confidence related to the use of FOSS.
- While experts say that to build up a local ecosystem of supporting organisations and businesses, the benefits of open source need to be communicated effectively, they also feel the advocacy limitation at another level. While customers in India are changing their vision of open source software, acknowledging benefits other than cost, the lack of independent software vendors is hampering consumption. Advocacy at this level is needed to help consumers adopt software smoothly.⁵⁵

8. Advocacy actors

Key advocacy actors to achieve the above in India are the following:

- *Bharatiya Janata Party (BJP)*: In 2009, the BJP released an IT Vision Document which pledged to use software based on open standards, or open source, in all government-related matters if it came to power. It recognised the potential of such a move in helping India “create productive employment opportunities on a large scale; accelerate human development through vastly improved and expanded education and healthcare services; check corruption; and make India's national security more robust.”⁵⁶
- *Communist Party of India (Marxist) (CPI(M))*: In 2007, the CPI(M) asked the central government to shift to free and open source software in all its e-governance programmes as a major step towards breaking the monopoly of proprietary software and in turn, the monopolisation of knowledge and information.⁵⁷
- *Linux User Groups/Free Software User Groups (LUG/FSUG)*: These are user groups that help in spreading FOSS. During the early days of the Free Software Movement in India, there were city-level LUGs. About 10 years ago, they started to balkanise⁵⁸ and the membership thought that the premise of “LUG” was too generalised. As a result they made specific LUGs for Ruby on Rails,⁵⁹ Python⁶⁰ and PHP.⁶¹
- *IT for Change*: A founding member of the National Coalition of Free and Open Source Software. This NGO, in Bengaluru, “seeks to promote innovative and effective use of information and communication technologies (ICTs) for socio-economic change in the global south.”⁶²

⁵⁵Joseph, V. (2010). Can India Ever Become A Global FOSS Hub? *Linux for You*, September. www.mindtree.com/sites/default/files/mindtree-thought-posts-can-india-ever-become-a-global-foss-hub.pdf

⁵⁶Rediff.com. (2009, 14 March). What does BJP's IT Vision Document Say. *Rediff News*. www.rediff.com/news/2009/mar/14loksabhapoll-bjp-to-promote-free-open-software.htm

⁵⁷Special Correspondent. (2007, 4 March). CPI(M) for Free And Open Source Software. *The Hindu*,. www.thehindu.com/todays-paper/tp-national/tp-andhrapradesh/cpim-for-free-and-open-source-software/article1805673.ece

⁵⁸For a mapping of these LUGs please refer to: www.wikiwikiweb.de/LugsList

⁵⁹groups.yahoo.com/neo/groups/ruby-india/info

⁶⁰groups.yahoo.com/neo/groups/bangpypers/info

⁶¹groups.yahoo.com/neo/groups/in-phpug/info

⁶²itforchange.net/aboutus

- *The Software Freedom Law Centre (SFLC)*: The SFLC promotes innovation and open access to knowledge by helping developers create FOSS.⁶³ It provides free legal aid for non-profit FOSS projects spanning copyright and licensing, trademark counselling, FOSS audit and compliance, software patents, incorporation, licence defence and litigation support.
- *The Free Software Foundation*: An Indian sister foundation was established in 2001. Its activities for promoting free software extend to education and promotion of use and development of free software.
- *The Free Software Movement of Karnataka*: Inspired by the Free Software Foundation, it is an NGO that organises GNU/LUGs and engages with universities, free software advocates, governance and NGOs.⁶⁴
- *The International Centre for Free and Open Source Software (ICFOSS)*: An organisation that coordinates FOSS initiatives in Kerala and also coordinates similar efforts worldwide “in order to push the agenda of promoting democratic access to information and knowledge through equitable models of production and distribution of software in particular and knowledge in general.”⁶⁵
- *The Centre for Development of Advanced Computing (C-DAC)*: An R&D organisation within DeitY that currently leads two important initiatives: the NRCFOSS (National Resource Centre for Free and Open Source Software) and BOSS (Bharat Operating System Solutions).⁶⁶
- *Knowledge Commons*: An NGO set up in Delhi in 2007, with the aim to “leverage the tremendous potential of the ‘collaborative innovation’ model for knowledge generation that has led to the growth of the Free and Open Source Software community (FOSS) around the world.”⁶⁷
- *Small businesses*: While the usual international suspects such as Google are supportive of the FOSS cause, and the traditional IT services industry has some token adherence to free software,⁶⁸ it is the emerging small and medium start-ups in India that are interested in products built on free software.

⁶³sflc.in/about-us

⁶⁴https://en.wikipedia.org/wiki/Free_Software_Movement_of_Karnataka

⁶⁵icfoss.in

⁶⁶cdac.in/index.aspx?id=st_oss_free_open_source_software

⁶⁷www.knowledgcommons.in/about-us

⁶⁸One example of this is the “free software user group” inside Infosys.

9. Nodes of engagement

9.1. Government

Government needs to be involved at the awareness-raising, adoption and development level in order to make India emerge as a FOSS hub. Not only should it become a large consumer, but it also should create a supportive policy environment for FOSS companies to grow. We also need more FOSS projects to be initiated by the government, much like the UK government. The government has the capacity to accelerate the adoption of FOSS by providing a large customer base for FOSS products through deploying them in governance systems, but also by creating a workforce skilled at using FOSS applications. The higher mobility of such a skills set further improves the adoption of FOSS alternatives to proprietary software. The Ministry of Communications and Information Technology's role in implementing and popularising FOSS is primarily spearheaded by its Department of Electronics and Information Technology. DeitY has, as mentioned above, undertaken various steps to carry out its mission to promote e-governance to empower citizens and will continue to be an important node of engagement.

9.2. Civil society

A thriving FOSS ecosystem requires active involvement from a range of stakeholders, and community participation is essential. The widespread adoption of FOSS in India is impeded by a dearth of talent, and civil society must attempt to create a base of developers and contributors. A good example of developing this base is Red Hat India, which has a team of experts who work with the community to make FOSS projects available in more than a dozen Indian languages.⁶⁹ Possibilities for sustained engagement from civil society include monitoring all tenders in central or state governments to look for opportunities and methods to encourage and promote FOSS. Civil society must also continue to leverage the Right To Information (RTI) Act to obtain information about requirements for FOSS in government contracts. Using methods like auditing and public accountability can also go a long way in ensuring greater compliance with those policies for free software, open standards and accessibility. Engagement with policy changes like those contemplated by the software patent manual, the computer-related inventions manual, and copyright rules etc. are also important methods of engagement.

9.3. Education

Educational institutions across the board incorporate e-literacy and information and communications technology into their curriculum. This is the first stage at which students need to be exposed to FOSS and vendor-neutral curriculum. Access to source code enables a deeper understanding of software that is taught, and as discussed, makes evaluation transparent and accurate. While the National Policy on Information and Communications Technology in School Education emphasises the importance of FOSS, school boards need to actively promote the incorporation of FOSS into curriculums. At the University level, governing bodies such as the UGC, IIT Council and AICTE should mandate that computer and technology infrastructure employ FOSS alternatives. While some institutions such as Anna University, Chennai, offer degrees specifically in FOSS, all academic institutions should ensure, wherever possible, that FOSS is the medium as well as the subject of instruction.

⁶⁹Joseph, V. (2010). Op. cit.