

Technology Standards: Promoting Innovation and Competition in India

*Saket Sharma** and *Sumathi Chandrashekaran***

1 Introduction

Standards are all around us, whether it is in the size of the clothes we wear, or the dimensions of the turn of the screw, or the measurements of the electrical points in our homes. The taxonomy of standards is long and complex, and includes standards pertaining to safety, environment, quality, and interoperability. A small part of this vast canvas of standards is occupied by ‘technology standards’. These standards are responsible for, among other things, ensuring that the electronic devices we use are compatible and interoperable with each other. In technology-dependent domains, like mobile technology, ensuring compatibility and interoperability is extremely challenging, because the domain is growing at an unimaginably fast pace.¹

Standards create a common framework for innovation and establish the ‘rules of the game’. They set the framework by defining common vocabularies, establishing the essential characteristics of a product or service, and by identifying the best practice within the eco-systems that will ensure successful outcomes. Once these rules are in place, innovation can be accelerated and success will be much more likely.² Standardisation is a key feature of modern industrial society, and is increasingly regarded as the driver of modern economic growth. In his classic essay on the power of standards, US journalist James Surowiecki famously claimed that “without standardisation there would not be a modern economy.”³

Technology standards are important instruments for industrial and economic development in emerging nations like India, particularly because they can help gain market access for products in more advanced economies. At the same time, there are concerns that arduous standards can hinder innovation, or prevent smaller and newer manufacturers and service-providers from participating in the economy. There is some scope to better understand the benefits and disadvantages of standardisation in the Indian context. Compared to developed economies, that have a long history in standardisation, emerging economies have different needs, institutions and business models. Although technology standardisation is potentially an essential tool for improving India’s innovative capacity, very little is known about this critical building block.

“Without standardisation there would not be a modern economy”.
– James Surowiecki

This concept brief aims to understand how technology standards are formulated, and what role they play in promoting innovation. This also requires an understanding of the issues involved in

**Saket Sharma* is an Associate Fellow at CUTS Institute for Regulation & Competition (CIRC).

** *Sumathi Chandrashekaran* is an Adjunct Fellow, CIRC and a Senior Resident Fellow, Vidhi Centre for Legal Policy.

¹ See International Organisation for Standardization (ISO), ‘Benefits of International Standards’, available at: www.iso.org/iso/home/standards/benefitsofstandards.htm (last accessed: February 23, 2016) [ISO is an independent, non-governmental organisation made up of members from the national standards bodies of 162 countries.]

² www.bsigroup.com/en-GB/standards/benefits-of-using-standards/standards-for-innovation-and-growth/ (last accessed: February 13, 2016)

³ James Surowiecki, Turn of the Century, WIRED, January 2002, available at: www.wired.com/2002/01/standards-2 (last accessed: January 14, 2016)

the regulation of technology standards. The brief will also discuss the interface of patent law, contract law, and competition law in dealing with standard setting, and in particular, the role of Indian courts and regulators in this regard. Standardisation in the Indian context requires understanding how the country should tread the fine balance between strengthening domestic innovation and integrating into, and engaging more deeply with, the global economy. Ultimately, this Brief seeks to identify certain research questions that can be explored further in technology standards setting and regulation in India.

2 Importance and Need for Technology Standards

2.1 Definitional aspects

Broadly speaking a standard is an objective definition of a technical or quality requirement that an existing (or future) product, service or method may have to comply with. Standards are usually maintained (and updated) in publicly-available documentation⁴ that list out the requirements, specifications, guidelines or characteristics, to ensure that materials, products, processes and services are fit for their purpose.⁵ Standards are slightly different from ‘technical regulations’, which identify the requirements and specifications that products or services must comply with.⁶

The difference between a standard and a technical regulation lies in compliance. While conformity with standards is voluntary, technical regulations are mandatory, and thus, the two have different implications for international trade. The focus in this concept brief is on technology standards. Examples of technology standards abound. To facilitate connectivity, for example, smartphones incorporate hardware standards (Smartcard, Near Field Communication); wireless and wired connectivity standards (Wi-Fi, Bluetooth); audio standards (MP3); video standards (MPEG) and picture standards (JPEG, PNG).

2.2 Why do we need technology standards

Technology standards are widespread in the information and communication technology (ICT) and consumer electronics sectors.⁷ Over time, technology standards have become critical in supporting the roll-out of ICT-enabled services in areas, such as transportation, healthcare, and education, thereby influencing social development in many ways. Technology standards help facilitate interoperability, improve cost efficiency, encourage competition and innovation, and enhance consumer satisfaction.⁸

⁴ A ‘Standard’ is defined as the “Document approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, with which compliance is not mandatory. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method.” See WTO Agreement on Technical Barriers to Trade, available at: www.wto.org/english/docs_e/legal_e/17-tbt.pdf (last accessed: February 07, 2016)

⁵ ISO, What is a standard? Available online: www.iso.org/iso/home/standards.htm (last accessed: January 30, 2016)

⁶ A ‘Technical Regulation’ is defined as the “Document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, with which compliance is mandatory. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method.” See WTO Agreement on Technical Barriers to Trade, available at: www.wto.org/english/docs_e/legal_e/17-tbt.pdf (last accessed: February 07, 2016)

⁷ The role of the International Telecommunication Union (ITU) is pivotal in the field of technological standards. The ITU is the United Nations’ specialised agency for information and communication technologies ICTs. More information at: www.itu.int/en/about/Pages/default.aspx (last accessed: January 14, 2016)

⁸ See, for example, ITSC, ‘Benefits of Standards’, IDA Singapore, available at: www.itsc.org.sg/standards/benefits-of-standards (last accessed February 23, 2016)

The importance of standards for international trade was recognised in the General Agreement on Tariffs and Trade (GATT). Mandatory obligations governing technical standards were introduced in a special agreement⁹ of the World Trade Organisation (WTO) on Technical Barriers to Trade (TBT Agreement). The TBT Agreement encourages the use of technical regulations and standards, including packaging, marketing, labelling etc., but they should not be an unnecessary obstacle to international trade. In areas where international standards exist, member states must use the international standard as the governing norm. In order to improve the quality of international standards, the Committee on TBT agreed that there was a need to develop principles concerning transparency, openness, impartiality and consensus, relevance and effectiveness, coherence and developing country interests that would clarify and strengthen the concept of international standards under the Agreement and contribute to the advancement of its objectives.¹⁰

Recent World Bank research and operational work suggest that lowering technical barriers to trade and harmonising standards can enhance trade competitiveness, promote market access, and decrease unnecessary trade costs.¹¹ At the same time, outdated and overly burdensome standards and related measures can reduce competition, limit innovation, and increase trading costs. Thus, determining a common standard for consumers, producers and countries of various economic circumstances is a complex task.

Standards can facilitate the creation of markets; reduce uncertainty in the market place and lower costs and prices for downstream products. Standards also increase consumer choice by allowing complementary or component products from different manufacturers to be used together, thereby reducing costs also. Katz and Shapiro developed an oligopoly model analysing the social and private incentives for firms to produce compatible products.¹² They noted that consumers value a product more highly when it is ‘compatible’ with other products and termed this effect as ‘network externalities’. Benefits realised through standardisation like ease of access, affordability, interoperability, reliability, information, etc. also lead to consumer welfare.

For industry, motives for participating in standardisation processes vary from developing technology in dialogue with users (operators); ensuring interoperability of a firm’s technology with the technology of others; promote the adoption of one’s own intellectual property (IP); steering technological developments to complement one’s own IP; and keeping up-to-date about technological developments (knowledge management).¹³ Standardisation also helps in rapid dissemination of technical knowledge and innovation. Such technology standards can also be

⁹ Code of Good Practice for the Preparation, Adoption and Application of Standards, Annex 3 to WTO Agreement requires that technical regulations and international standards should be developed and implemented in a non-discriminatory manner, and without creating unnecessary obstacles to trade.

¹⁰ WTO, TBT Committee Decision on Principles For The Development of International Standards, Guides and Recommendations with Relation to Articles 2, 5 And Annex 3 Of The Agreement, G/TBT/9, 13 November 2000, para. 20 and Annex 4

¹¹ Wilson, John S, Standards and Technical Barriers to Trade: Prospects for Country-Level Reform, The World Bank, August 2012, available at: http://siteresources.worldbank.org/INTTRADERESESEARCH/Resources/544824-1320091873839/8238146-1340132024998/TradeCostsandFacilitation_Brief_TBTGoods_08_08.pdf (last accessed on February 23, 2016)

¹² Katz, Michael and Shapiro, Carl, (1985), Network Externalities, Competition, and Compatibility, American Economic Review, 75, issue 3, p. 424-40, available online at: <http://EconPapers.repec.org/RePEc:aea:aecrev:v:75:y:1985:i:3:p:424-40> (last accessed: February 06, 2016)

¹³ EU Commission Study “Patents and Standards: A modern framework for IPR-based standardization”, 2014, available online at: ec.europa.eu/growth/industry/intellectual-property/patents/standards/index_en.htm (last accessed: January 28, 2016)

beneficial for start-ups and small industry players because such standardised products will ensure easier access to markets, lower transaction costs, lower adjustment costs thereby offering greater legal and investment security for such players. An overview of possible advantages and disadvantages of standards, depending on the context in which standard is developed, is provided in Table¹⁴ below.

Possible Advantages of Standards	Possible Disadvantages of Standards
<p>1. Encourage innovation and competition</p> <ul style="list-style-type: none"> • More suppliers; lower risk for one-supplier dominated markets • More competition later in product lifecycle • Lower prices • Increased network value for users; greater offer and lower prices of complementary goods • Lower switching costs • Less risk of ‘tying’ • Easier evaluation of offerings • Easier communication between actors 	<p>1. Transfer power to participants in the standardisation process</p> <ul style="list-style-type: none"> • Less diversity between technical approaches, particularly early in product lifecycle • Biased to large vendors • Biased to large purchasers • Higher costs associated with gateways
<p>2. Facilitate interoperability</p> <ul style="list-style-type: none"> • Easier combination of products or services • Reduces risk of choosing a future loser • Easier interchangeability of products or services • Facilitates certification 	<p>2. Protect markets by obstructing their access</p>
<p>3. Increase cost efficiency</p> <ul style="list-style-type: none"> • R&D resources are combined • Less duplicity 	<p>3. Hamper competition through a reluctance to adopt new or improved standards</p> <ul style="list-style-type: none"> • Limiting performance or functionality
<p>4. Promote national development</p> <ul style="list-style-type: none"> • Facilitates market liberalisation • Opens access to international markets 	<p>4. Loss of variety</p> <ul style="list-style-type: none"> • Fewer products optimised for niche user groups, users with disabilities, etc.

Table 1: Possible Advantages and Disadvantages of Standards (Source: ITU, 2014)

¹⁴ International Telecommunication Union, “Understanding patents, competition and standardization in an interconnected world”, 2014, at pg. 25, available online: www.itu.int/en/ITU-T/ipr/Pages/Understanding-patents,-competition-and-standardization-in-an-interconnected-world.aspx (last accessed: February 04, 2016)

3 Patents in Technology Standards

India is currently witnessing fervent debate regarding framing of a National IPR Policy. A draft National Intellectual Property Rights (IPR) Policy¹⁵ has been made public, which highlights the need to create IP in India. It observes that an all-encompassing IP policy will promote a holistic and conducive ecosystem to catalyse the full potential of IP for India's economic growth and socio-cultural development. This draft policy recommends a study of the role of IP in setting standards in various areas of technology. The draft policy also recommends India's active participation in standards setting processes at national and international-levels, as also at industry Standard Setting Organisations, to encourage the development of global standards that are influenced by technologies and IP generated in India.

3.1 Role of patents in technology standards

The patent system rewards creativity by granting inventions that meet the requirements of patentability a temporary exclusivity. It gives innovators the right to exclude others from adopting and profiting from their inventions. This right to exclude others from making, using, selling or importing an invention, is typically granted to inventors for a period of 20 years. While patents provide exclusive rights and can limit access, standardisation seeks to scale-up the benefits of innovation by encouraging widespread adoption. Where a technology or a product is already protected by IP, innovation is possible through IP licensing agreements entered into between firms.

3.2 Nature of standard essential patents

There are times when it is impossible to manufacture standard-compliant products without using a specific technology. If technology that is essential to a standard is covered by a patent, the patent becomes a standard essential patent (SEP). In the information and communication technology (ICT) sector¹⁶, more than 23,500 patents have been declared essential to the '2G' (GSM) and the '3G' (UMTS) mobile telecommunications standards, developed by the European Telecommunications Standards Institute (ETSI). These SEPs need to be implemented in virtually all smartphones and tablets.

When an SEP is identified, the patent gradually changes from being an ordinary exclusionary patent, to one that provides more market access. The incorporation of patented technology in technology standards requires balancing the interests of IP holders (*inventors*) and standards implementers. Technological innovations tend to be incremental in nature, and thus incorporate prior existing standards. Newer standards that might be developed as a result of these innovations, thus, will often accommodate prior standards, thus ensuring compatibility with

¹⁵ Draft National IPR Policy India, Department of Industrial Policy and Promotion, Government of India, December, 2014, at pg. 12, available online at: http://dipp.nic.in/English/Schemes/Intellectual_Property_Rights/IPR_Policy_24December2014.pdf (last accessed: January 19, 2016)

¹⁶ Note by the European Union to OECD, Intellectual Property and Standard Setting, DAF/COMP/WD(2014)117, December 2014, available online at: [www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/WD\(2014\)117&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/WD(2014)117&docLanguage=En) (last accessed: February 04, 2016)

older products (backward compatibility).¹⁷ The synergy between innovation, standards, and intellectual property can be described as a continuous virtuous cycle¹⁸ – innovate, patent, standardise, license, and innovate, as depicted in Figure 1.

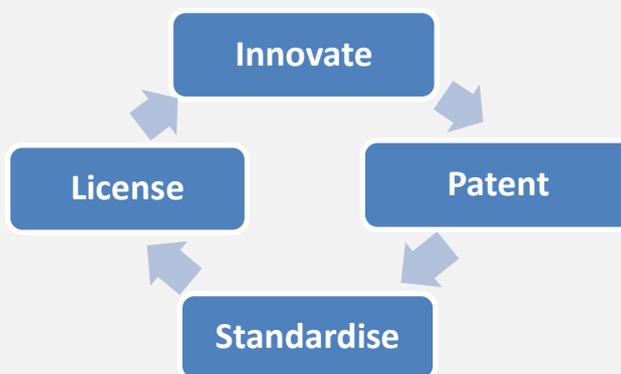


Figure 1 Technology Standardisation & Innovation Cycle

Just as businesses have incentives to innovate, in anticipation of rewards through the patent system, they also have incentives to participate in the standardisation process (see 2.2), such as promote the adoption of their own IP, or steer technological developments to complement their own IP. Businesses usually collaborate in this regard through standard-setting organisations (SSOs). As we briefly analyse later, such collaborative standard setting processes can raise anti-trust concerns as well.¹⁹

There are concerns that owners of SEPs might unduly gain economic value after a patent is incorporated in a standard; and such standards may encourage anticompetitive exercise of market power by the owners of the SEPs. Sometimes, a technology chosen as a standard might lack effective substitutes, or the costs of switching to an alternative standard may be high. In such cases, the owner of the concerned SEPs might be able to ‘hold up’ firms that want to implement the standard, by setting higher royalties and less favourable licensing terms than it would have done before the standard was set.²⁰ Opportunistic behaviour cannot be ruled out as once a standard is set, the firms will want to expropriate rents. However, it is not that simple as

¹⁷ International Telecommunication Union, “Understanding patents, competition and standardization in an interconnected world”, 2014, at pg. 9, available online: www.itu.int/en/ITU-T/ipr/Pages/Understanding-patents,-competition-and-standardization-in-an-interconnected-world.aspx (last accessed: February 04, 2016)

¹⁸ International Telecommunication Union, “Understanding patents, competition and standardization in an interconnected world”, 2014, at pg. 9, available online: www.itu.int/en/ITU-T/ipr/Pages/Understanding-patents,-competition-and-standardization-in-an-interconnected-world.aspx (last accessed: February 04, 2016)

¹⁹ European Commission’s Directorate-General for Competition has held that “[i]t suffices to stress that market power can be conferred by a single SEP” when the standard constitutes a barrier to entry. See EC (2012) Case No. COMP/M.6381 Google/Motorola Mobility, Regulation (EC) No. 139/2004 Merger Procedure, available: http://ec.europa.eu/competition/mergers/cases/decisions/m6381_20120213_20310_2277480_EN.pdf (last accessed: February 10, 2016)

²⁰ U.S. Department of Justice & Federal Trade Commission, Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition, 2007, at pg.13 available at: www.justice.gov/atr/public/bearings/ip/222655.pdf (last accessed: February 09, 2016)

the ‘hold up’ incentive of the inventor can be counterproductive and thus negotiations and bargaining between the ‘inventor’ and the ‘implementer’ is a natural outcome.

Patent ‘hold ups’ and consequently ‘locking in’ consumers to a standard by charging high royalties for using products that comply with the standard is a well-researched issue²¹. To counter this, some SSOs require firms to commit to license their patents under fair, reasonable and non-discriminatory (FRAND) conditions, if the adopted standard includes their patents. Where a product adopts a large number of SEPs, a potential manufacturer of that product might have to obtain licenses from multiple patent holders, and have to pay large amounts of royalty across potential licensors (a practice known as *royalty-stacking*).

The rights of SEP owners, as compared with the rights of owners of non-standard essential patents, are sometimes interpreted differently (see section 5). A much-debated issue is the right of an SEP owner to seek injunctions in cases of patent infringement. This has had mixed responses in various jurisdictions. Where an SEP holder’s right to seek injunctions is limited, there is a risk that the SEP holder might receive royalties that are below FRAND licensing rates (a practice known as ‘reverse hold-up’²² or ‘hold out’. To mitigate such risks, SSOs frame policies governing the use of IPR involved in standards that they set, which will be discussed in the following section of the Concept Brief.

The preceding discussion makes it clear that the regulatory framework for SEPs is at the intersection of intellectual property law as well as competition law. The next section will discuss the underlying processes (that are voluntary and contractual) involved in the development of technology standards, and how such contractual negotiations play a critical role in understanding SEPs, and inform its regulatory framework.

4 The Standard Setting Process

Standards can be set in many ways.²³ Most often, standard setting takes place through initiatives led by the private sector, through industry collaboration. Sometimes, standard setting may be led by national governments. Less frequently, standards may be set through uncoordinated processes, where certain technological specifications become *de facto* standards in industry practices. Each of these is discussed in the following paragraphs.

Industry-led standard-setting processes tend to be in response to the challenges of rapid product and industry life cycles, and unprecedented growth in technology. The benefits of ‘networks’ in innovation (by way of pooling or sharing knowhow or resources) are increasingly understood to outweigh older practices, of keeping knowledge and skills proprietary and in-house.²⁴ To facilitate this ‘networking’, firms collaborate with each other, most commonly, through standard setting organisations (SSOs). SSOs are institutions with the specific mandate of standard setting.

Firms also collaborate through trade bodies, which have standard-setting as one of their objectives, but this is less frequent. Standards are usually set or finalised through a consensus

²¹ See Mark A Lemley & Carl Shapiro, “Patent Holdup and Royalty Stacking”, 85 TEX. L. REV. 1991, 2010 (2007)

²² For details see: Geradin, Damien, “Reverse Hold-Ups: The (Often Ignored) Risks Faced by Innovators in Standardized Areas”, 2010. Available at SSRN: <http://ssrn.com/abstract=1711744> (last accessed: January 28, 2016)

²³ OECD (2010), *Standard Setting*, Policy Roundtables, at page 23-25, available at: www.oecd.org/daf/competition/47381304.pdf (last accessed: February 3, 2016)

²⁴ Raina König (2008), “New ways of standard-setting in technology-driven industries: the case of automotive electronics in Japan and Germany”, *DRUID-DIME Academy Winter 2008 PhD Conference*, available at: www2.druid.dk/conferences/viewpaper.php?id=1888&cf=28 (last accessed: February 7, 2016)

mechanism, involving not just member-firms of the SSOs or trade bodies, but also non-members, such as consumers (both present and potential), who may have a stake in the acceptability and use of the standards. The International Organisation for Standards (ISO) and the International Telecommunications Union (ITU) are examples of international standard setting bodies. Organisations, such as these have national standard setting bodies as their members. India is represented at the ISO by the Bureau of Indian Standards (BIS)²⁵; and at the ITU by, among others, the Ministry of Communications and Information Technology. Bodies, such as ISO and ITU cover a vast range of standards, across various sectors and industries. SSOs with narrower mandates also exist, such as the European Technical Standards Institute (ETSI), which limits itself to standards for Information and Communications Technologies (ICT), including fixed, mobile, radio, converged, broadcast and Internet technologies.²⁶ Similarly, in India, the Telecommunications Standards Development Society, India (TSDSI) seeks to develop and promote India-specific requirements in the field of telecommunications.²⁷

The involvement of governments in standard setting may vary from active involvement in the setting of standards itself, to passive enforcement of standards after they have been identified and set. An example of the former is the GSM standard, which came into being after a group of European countries committed, by way of a Memorandum of Understanding in September 1987, to develop a mobile-phone system for the whole of Europe²⁸. As a result, all European service providers were mandated to adopt the GSM standard, which later spilled over into countries outside Europe as well.²⁹

There are different trade-offs in government- and industry-led standard setting processes. Governments, because of the regulatory and enforcement powers they possess, and because they act in singular, or lead the process, may have greater control over the actual setting of standards. Collaborating firms take longer to arrive at standards, because their processes tend to be consensus-driven, and potentially involve multiple stakeholders, with different constituencies to attend to (shareholders, boards, consumer groups, etc.). At the same time, firms can better forecast technological developments, and assess the future commercial successes of different standards. An amalgam of both types of standard setting processes might give optimal results, combining faster decision-making and better understanding of innovation and commerciality.³⁰

²⁵ International Organisation for Standards, “India (BIS): Member Body”, available at www.iso.org/iso/home/about/iso_members/iso_member_body.htm?member_id=1794 (last accessed: February 07, 2016)

²⁶ European Telecommunications Standards Institute, ‘About us’, available at: www.etsi.org/about

²⁷ Telecommunications Standards Development Society, India (TSDSI), available at <http://www.tsdsi.org/>

²⁸ ZDNet.com (2007), “Happy 20th Birthday, GSM”, 07 September, available at: www.webcitation.org/5yRRJnMZw (cached)

²⁹ The trajectory of equivalent second-generation mobile phone technology standards in the United States was very different, where standards development was left to the private sector. One standard, called the time division multiple access (TDMA) standard was initially led by one private firm and its collaborators. But the more dominant US standard was CDMA, which originated in the late 1980s, when another private firm developed a system known as direct sequence spread spectrum (DSSS) for mobile telephony, which was used, until then, mainly for covert communications. The company collaborated with two network operators in the US to develop a commercial version of the DSSS, which became the first version of the code division multiple access (CDMA) system. CDMA eventually evolved into a full-blown standard (which came to be known also as IS-95) See Dong Back Seo (2013), ed., “The 2G Second Generation Mobile Communications Technology Standards”, *Evolution and Standardization of Mobile Communications Technology*, at page 96-7, available at: https://books.google.co.in/books?id=O9aeBQAAQBAJ&pg=PA176&source=gbs_toc_r&cad=4#v=onepage&q&f=false (last accessed: February 03, 2016) and Ian Poole, “IS-95, cdmaOne”, *Radio-Electronics.com*, available at www.radio-electronics.com/info/cellular/telecomms/3gpp2/is95-cdmaone.php (last accessed: February 3, 2016)

³⁰ OECD (2010), *Standard Setting*, Policy Roundtables, at page 24-25, available at: www.oecd.org/daf/competition/47381304.pdf (last accessed: February 03, 2016)

A third type of standard setting may take place by circumstance rather than design. This is usually uncoordinated, and tends to be driven by market conditions. They may emerge, for instance, through contractual agreements between buyers and sellers; technical specifications issued by large buyers or sellers; consumer choices; owner-driven pricing and contracting, and so on.³¹ For example, the Windows operating system became a *de facto* standard operating system for personal computers, possibly because Microsoft's deliberate decision to unbundle the operating system from the hardware made it cheaper and easier for users to adopt this operating systems over other competing products.³²

4.1 The structure, policy and process of standard setting organisations

This concept brief focuses on standard setting by SSOs, because they are used most frequently in the domain of technology standards. The structures of SSOs vary, depending on the scale and industry that they deal with. SSOs, such as the ITU comprise representatives from industry, academia and government.

The agenda for standard setting is usually driven by a demand initiated by a consumer group or a firm, which informs the SSO (or its member organisation) of the need for a particular standard. SSOs usually have technical groups or committees (comprising industry experts) that examine all aspects of the standard, including definitions, scope and content.³³ (See, for example, ITU's Telecommunication Standardisation Sector (ITU-T)).³⁴

The actual setting of the standard involves obtaining consensus from all stakeholders. Members of the SSO are informed about the standard setting, who then attend meetings, vote on standardisation decisions, and make technical contributions, where required.³⁵ The establishment of the standard itself is a competitive process, where members are likely to lobby for those standards that best suit their business models and strategies.

The standard that is finally selected might be based on technology that is patented or in the public domain. Some SSOs might ask members and participants in the standard setting process to disclose patents or patent applications that pertain to the standards in question. If such patents or patent applications exist, the implementation of the standard may require members to obtain licenses from the patentees in the future. To ensure that the implementation or conformity process is not abused, SSOs may require members who own the patents or have filed the patent applications to commit to eventually license their patents under fair, reasonable and non-discriminatory (FRAND) terms and conditions.

³¹ Justus Baron and Daniel F Spulber (2015), Technology Standards and Standards Organizations: Introduction to the Searle Center Database, September 08, available at: www.law.northwestern.edu/research-faculty/searlecenter/innovations/economics/documents/Baron_Spulber_Searle%20Center_Database.pdf (last accessed: January 27, 2016)

³² OECD (2010), *Standard Setting*, Policy Roundtables, at page 25, available at: www.oecd.org/daf/competition/47381304.pdf (last accessed: February 03, 2016)

³³ Justus Baron and Daniel F Spulber (2015), Technology Standards and Standards Organizations: Introduction to the Searle Center Database, September 8, available at www.law.northwestern.edu/research-faculty/searlecenter/innovations/economics/documents/Baron_Spulber_Searle%20Center_Database.pdf (last accessed: January 27, 2016)

³⁴ International Telecommunications Union, "The framework of ITU-t", available at: www.itu.int/en/ITU-T/about/Pages/framework.aspx (last accessed: February 07, 2016)

³⁵ Justus Baron and Daniel F Spulber (2015), Technology Standards and Standards Organizations: Introduction to the Searle Center Database, September 08, available at: www.law.northwestern.edu/research-faculty/searlecenter/innovations/economics/documents/Baron_Spulber_Searle%20Center_Database.pdf last accessed: January 27, 2016)

4.2 Regulatory perspective: International norms in standard setting

The collaborative approach followed by SSOs has distinct benefits, for it prevents bias in favour of individual members who may have economic interests in the final standard/s being identified and chosen. A collaborative process also helps members share knowledge and information about the product or process. Interoperability standards have particular benefits, in ensuring that products made by different manufacturers work together. Markets, such as mobile communications thrive on network effects (i.e., where the benefits accrued as a result of being part of a larger user base are greater than the benefits of remaining an isolated user). If there were no standards in mobile communications, devices would not necessarily be compatible or interoperable with each other. Consumers would acquire these devices, without information about, or without assessing, the compatibility or interoperability of their devices with those acquired by other consumers, thus defeating the objective of using the device to ‘communicate’. Collaborative standard setting by SSOs can pre-empt such market failures, and avoid the eventuality of a standards war that might otherwise occur. This can have a cascading effect on lowering transaction costs for consumers, increasing uptake of newer products and services, and increasing the pace of innovation.³⁶

While there are evident benefits from collaborative standard setting, there are also potential costs that the process might incur. Members may attempt to use collaborative processes to exclude rivals from the market, leading to unreasonable restraints on competition. When a standard involves IP owned by a member, that member/IP owner stands to gain clear benefits, which are open to potential abuse, such as overzealous infringement actions, higher royalties, and expensive licensing terms. A manufacturing firm that has to obtain licenses on such IP will likely pass on these expenses (royalties, licensing fees) to consumers as well. There is also the risk of a patent ambush, where a member may withhold information about patents owned or applied for, that relate to a particular standard; and once a standard is introduced and enforcement commences, that member might assert ownership rights through infringement actions against others.³⁷ Further, there might be significant risks and costs in switching to a particular standard, as well losses on the IP that others might have acquired for technology that had to be abandoned due to the final standard being selected³⁸.

Truly collaborative standard setting processes are possible only when the processes are open to all stakeholders in the final product or service in connection with which the standard is being

³⁶ For a more detailed discussion on the pro-competitive and anti-competitive effects of a collaborative standard setting process, see United States (2014), “Intellectual Property and Standard Setting”, Note submitted for Item VII of the 122nd meeting of the OECD Competition Committee on 17-18 December, available at: www.ftc.gov/system/files/attachments/us-submissions-oecd-other-international-competition-fora/standard_setting_us_oecd.pdf (last accessed: January 28, 2016)

³⁷ The US firm, Rambus Inc., was accused of infringing European law for abusing its dominant position in the market for ‘Dynamic Random Access Memory’ chips (DRAMs), which had been adopted as an industry-wide standard for use in personal computers. According to the European Commission (EC), Rambus “engaged in a so-called ‘patent ambush’, intentionally concealing that it had patents and patent applications which were relevant to technology eventually included in the standard, and subsequently claiming royalties for those patents”. Rambus eventually agreed cap its royalties on the products in question for five years. For a detailed case study on this, see, Ruben Schellingerhout and Piero Cavicchi (2010), ‘Patent ambush in standard-setting: the Commission accepts commitments from Rambus to lower memory chip royalty rates’, European Commission, available at: http://ec.europa.eu/competition/publications/cpn/2010_1_11.pdf (last accessed: January 30, 2016).

³⁸ For a more detailed discussion on the pro-competitive and anti-competitive effects of a collaborative standard setting process, see United States (2014), “Intellectual Property and Standard Setting”, Note submitted for Item VII of the 122nd meeting of the OECD Competition Committee on 17-18 December, available at: www.ftc.gov/system/files/attachments/us-submissions-oecd-other-international-competition-fora/standard_setting_us_oecd.pdf (last accessed: January 28, 2016)

developed. The openness or accessibility of a standard setting process can be determined by various factors, including the criteria for including (or excluding) firms in the process, the necessity for consensus in decision making, and transparency in the procedures.³⁹ The ITU, for example, defines its process of developing open standards as those that are “made available to the general public and are developed (or approved) and maintained via a collaborative and consensus driven process”. The ITU defines ‘collaborative process’ further, to mean “voluntary and market driven development (or approval) following a transparent consensus driven process that is reasonably open to all interested parties.”⁴⁰ (It is relevant to note, however, that ITU’s standard setting process has been also described as ‘opaque’, ‘undemocratic’ and even ‘totalitarian’ by commentators, for its excessive reliance on formal committees, governmental representation and bureaucratic process⁴¹. It has also been criticised for conducting deliberations ‘behind closed doors, with only governments and major telecommunications incumbents invited to participate.’⁴²)

4.3 The participation of developing countries in the standard setting process

The participation of developing countries in the standard setting process has been historically poor. In 2000, a task force of twelve ISO member countries was set up to study the participation of developing country members. The survey found many disparities in the maturity, size and level of activities of the representative bodies of developing countries. It was found that most developing country members did not participate in any ISO technical committees, steering committees or working groups. There was relatively stronger participation from South America and Southeast Asia, but weak participation from Africa. The lack of participation was found to be due to “lack of funds, awareness, expertise and information, and lack of adequate involvement in the governance of ISO”⁴³.

India’s participation in international standard setting processes at bodies like the ISO, IEC, and ITU takes place at the level of government ministries. Even within a Ministry, several departments may have separate responsibilities in the process, depending on their area of competence⁴⁴. Evidence suggests that India participated in 610 technical and steering committees of the ISO by the end of 2012 (out of a total of 737 such committees), placing its participation at a healthy 83 percent, and ranked 13 among all countries participating in the ISO processes⁴⁵.

³⁹ See, Valerio Torti (2015), *Intellectual Property Rights and Competition in Standard Setting: Objectives and Tensions*, Routledge, at page 54

⁴⁰ ITU, ‘Definition of ‘Open Standards’, available at: www.itu.int/en/ITU-T/ipr/Pages/open.aspx (last accessed: February 07, 2016)

⁴¹ Patrick S Ryan (2012), ‘The ITU and the Internet’s Titanic Moment’, 2012 STAN. TECH. L. REV. 8, available at: <http://stlr.stanford.edu/pdf/ryan-theituandtheinternetstitanicmoment.pdf> (last accessed: January 28, 2016)

⁴² Timothy B Lee (2012), ‘Why the ITU is the wrong place to set Internet standards’, *Ars Technica*, 14 December, available at <http://arstechnica.com/tech-policy/2012/12/why-the-itu-is-the-wrong-place-to-set-internet-standards/>

⁴³ Dr. S Sothi Rachagan, ‘International Standards-Making: Ensuring an open-door policy Bringing developing countries into the standards development process’, *Consumers International Asia Pacific Office*, available at: www.iso.org/iso/livelink/getfile?llNodeId=22199&llVollId=-2000 (last accessed: January 25, 2016)

⁴⁴ For example, within the Ministry of Communications and Information Technology, the Department of Telecommunications (DoT) is a member of ITU, responsible for developing and monitoring national telecommunications standards, policies and legislations; whereas Department of Electronics and Information Technology (DeitY) is responsible for the electronics and IT industry and cover rest of the ICT standards; For example, for Internet, e-governance, cyber security, national knowledge network, R&D in electronics and IT etc. For more discussion, see ‘Indian Standardisation’, available at: <http://eustandards.in/indian-standardization/> (last accessed: February 07, 2016)

⁴⁵ Dong Geun Choi and Erik Puskar (2014), ‘A Review of U.S.A. Participation in ISO and IEC’, National Institute of Standards and Technology, June, available at: <http://nvlpubs.nist.gov/nistpubs/ir/2014/NIST.IR.8007.pdf>

Anecdotal evidence, however, suggests that participation might not be sufficiently substantial or effective, as a result of which India appears to be ‘far from making significant impact’ in the standard setting process at the global-level.⁴⁶

5 Concerns Related to Standard Essential Patents

5.1 Specific SEPs Challenges Faced by Courts and Regulators

The enforcement of Standard Essential Patents (SEPs) in courts and by regulators has involved a complex intersection of contract, patent and competition law issues. Some contractual questions pertain to the obligations of SEP owners in the process of standard setting and subsequent licensing, as well as the enforcement and scope of FRAND agreements. Patent law issues surrounding SEPs tend to deal with questions of infringement, enforceability of patent rights, determination of royalties, and injunctive reliefs. There are also questions of competition law that emerge, which relate mainly to the potential for abuse of dominance in a given market by SEP owners, but also to issues of patent ambush, non-disclosure of essential IP, refusal to adhere to FRAND commitments, as well as injunctive reliefs.⁴⁷ As a result of this, there are also fundamental jurisdiction issues that crop up, because the determination of these questions can involve a cross-section of regulatory bodies across domains (e.g., competition regulator; patents office) as well as courts.

Courts and regulators across the world have been grappling with many of these questions, particularly with regard to calculating the royalty base for SEPs offered under FRAND licensing terms, as well as the considerations for granting injunctive relief in cases of infringement of SEPs (as compared with infringement of non-SEPs)⁴⁸. Indian jurisprudence on these issues is still emerging, but there has been some early discussion on these two questions in Indian law and practice.

The question of reasonable royalty rates for SEPs revolves around the product on which royalty should be calculated. Should it be the entire product that contains an SEP, or should it be the smallest saleable part of the product that contains the SEP (also referred to as the *smallest saleable patent-practising component*). Initial regulatory decisions by the Competition Commission of India (CCI) directing its Director-General to investigate certain cases suggest that the CCI is inclined to regard the ‘smallest saleable patent-practising component’ as the royalty base to determine FRAND royalty.

The Delhi High Court, however, in multiple decisions, has held that the net selling value of the final ‘downstream’ product should be used as the royalty base. This is aligned with decisions from other jurisdictions, such as the US and China. The Court also held that FRAND royalties

⁴⁶ See, for example, Srinivas Poosaria (2015), ‘Participation of the Indian industry in shaping standards on security and privacy’, *Data Protection, Cyber security and Privacy blog*, Data Security Council of India, October 20, available at: <https://blogs.dsci.in/participation-of-the-indian-industry-in-shaping-standards-on-security-privacy/> where the author writes, “I was perturbed to see only three of us from India whereas the participation from several other nations was in large numbers – that too when India’s status in ISO is ‘participating country’ rather than ‘observer country’. Remote participation does not help since the inputs of those members who do not attend but send comments by email, are not considered. We like it or not, the process requires members to be physically present, support and articulate during the meeting to the committee why their views are important and should be considered. Also, since there are multiple parallel sessions on various working groups at any time, attending in small numbers does not help much”.

⁴⁷ Ravikant Bhardwaj (2013), ‘Standard Setting in India: Competition Law and IP Issues’, *IMJ*, April-December, Vol. 5, available at: www.imidr.ac.in/wp-content/uploads/Standard.pdf (last accessed: February 07, 2016)

⁴⁸ See, for example, Jones Day (2013). ‘Standard-Essential Patents and Injunctive Relief’, April, available at: www.jonesday.com/files/Publication/77a53dff-786c-442d-8028-906e1297060b/Presentation/PublicationAttachment/270fc132-6369-4063-951b-294ca647c5ed/Standards-Essential%20Patents.pdf (last accessed: February 07, 2016)

should be determined by relying on comparable licences signed between the patent-enforcing entity and other parties.⁴⁹ It has been suggested that benchmarking to comparable licenses makes good economic sense, because it provides a real-world market valuation of the SEPs. This is because other market players would have made independent assessments of a fair valuation of the SEPs, and priced it accordingly, thus offering an indication of what would be an appropriate market value for that SEP.

The granting of injunctive relief in SEP cases is another issue. There are concerns that Indian courts are using the same test for granting injunctions in cases involving infringement of non-SEPs and SEPs. Commentators argue that the two should be distinguished as follows: a patent grants a monopoly right, but the owner of an SEP, i.e., a patent that has become a standard, is deemed to have agreed to be willing to offer licenses under FRAND terms. An SEP owner, therefore, does not seek to create a monopoly (although some rent-seeking for winning the standards race would be considered acceptable), but offers the rights to use the patents under FRAND licenses, in exchange for adequate royalty payments.⁵⁰

Decisions in other jurisdictions suggest that SEP owners who commit to issuing their patents under FRAND licenses have limited rights when seeking injunctions against infringers. These include at least two US federal courts, the US competition regulator (the Federal Trade Commission), the US Patent and Trademark Office, as well as courts in Germany, the Netherlands, Japan, and China. According to a decision of the European Court of Justice, an SEP holder must inform a user of that SEP of any infringement, and make a license offer on FRAND terms. This suggests that SEPs might be used before a license is actually entered into, but the judgement also states that the SEP user must make a *counter-offer* on FRAND terms (or accept the offer made by the SEP owner), and provide appropriate security or compensation for the prior use of the SEP.⁵¹

A related question arose in a case before the Delhi High Court, where the court concluded that the licensee's unwillingness to execute a FRAND agreement was a major reason for granting an interim injunction to the SEP holder.⁵² Jurisprudence on this question is still emerging. It appears

⁴⁹ J Gregory Sidak (2015), 'FRAND in India: The Delhi High Court's emerging jurisprudence on royalties for standard-essential patents', *Journal of Intellectual Property Law & Practice*, Vol. 10, No. 8, available at: www.criterioneconomics.com/docs/frand-in-india-royalties-for-standard-essential-patents.pdf (last accessed: January 27, 2016)

⁵⁰ The Delhi High Court had granted injunctions against iBall, preventing the latter from importing and selling mobile handsets and other devices that allegedly infringed SEPs owned by Ericsson. The injunction was granted on grounds that the defendant was aware of Ericsson's SEP claims, that Ericsson had made out a case for infringement, and that the balance of convenience also lay in Ericsson's favour. Several other injunctions have also been granted, in similar cases, some of which have been *ex parte* as well (i.e., without allowing the defendant an opportunity of being heard). In some cases, the defendant has been allowed to continue selling devices, but only after depositing interim payments at a specified rate pending final decision. For more details, see, Madhur Singh (2015), 'Indian Court Issues Injunction in Ericsson Standard Essential Patent Infringement Suit', *World Intellectual Property Report*, Vol. 29, No. 10, October, available at: www.khuranaandkhurana.com/pdf/INSEPs.pdf. (last accessed: January 27, 2016)

⁵¹ Cleary Gottlieb (2015), 'Enforcing Standard-Essential Patents – The European Court of Justice's Judgment in Huawei v ZTE', August 13, available at: www.cgsb.com/files/News/d23034e9-186e-4b11-a120-b3acf065e45/Presentation/NewsAttachment/cbc6c8d2-4f4a-418c-a0ad-b54908830217/Alert%20Memo%20%28PDF%20Version%29%202015-62.pdf (last accessed: February 27, 2015)

⁵² See, *Telfonaktiebolaget LM Ericsson (PUBL) v. M/s Best IT World (India) Private Limited (iBall)*, Order delivered on September 02, 2015

that owners of SEPs who attempt to enforce patents under FRAND obligations may invite investigations by competition authorities, as has been the case both in the US and Europe.⁵³

A contractual question that has emerged in India on SEPs relates to the doctrine of privity of contract (i.e., the relation between contractual parties which entitles them to sue each other but prevents a third party from doing so), and the enforceability of licensing of SEPs on FRAND terms (for example, can a mobile manufacturer approach the standard-setting body to require an SEP owner to fulfil their obligations to license SEPs on FRAND terms?).⁵⁴

Since SEPs and FRAND licenses are an emerging area not just in India, but all over the world, a host of other questions remain unanswered.⁵⁵ For instance, if royalty for an SEP is to be based on the smallest saleable unit or component of the product, how is this unit to be determined? Similarly, if royalty is to be based on comparable licenses, what are the characteristics for testing for comparability? Further, an SEP owner may challenge the ‘essentiality’ of a patent in question, in which case, the issue of establishing FRAND obligations comes into play.⁵⁶

5.2 SEPs and larger policy questions

The debate around SEPs and FRAND licenses has emerged mainly in the sector of mobile technology. But the issue of standards and essentiality is a much more generic question that straddles technology domains. The mobile technology industry may well be the testing ground for many of the questions surrounding the process of standard setting and its subsequent enforceability. The same questions, for instance, might appear in other sectors as well, particularly those that are technology-dependent (such as, automobiles, other electronics, green technology). Arguably, nuances in different domains may have to be separately addressed. But the solutions to these questions should be technology-neutral. This will ensure a seamless application of principles of contract, competition and patent law as and when they emerge, regardless of industry or context.

6 Observations and insights for further research

It can be understood from the discussion above that the standard setting process is complex and even developed jurisdictions face problems regulating this field. Continuous innovation, evolution of disruptive technologies and the underlying standardisation process raise challenges in ensuring the balance between intellectual property holders and standards implementers. Having interfaces with patent law and competition law, the contractual aspects of standard setting and implementation raise jurisdictional questions and can also give rise to forum shopping and regulatory turf wars.

⁵³ Jones Day (2013). ‘Standard-Essential Patents and Injunctive Relief’, April, available at: www.jonesday.com/files/Publication/77a53dff-786c-442d-8028-906e1297060b/Presentation/PublicationAttachment/270fc132-6369-4063-951b-294ca647c5ed/Standards-Essential%20Patents.pdf (last accessed: February 07, 2016)

⁵⁴ Madhur Singh (2015), ‘Indian Court Issues Injunction in Ericsson Standard Essential Patent Infringement Suit’, World Intellectual Property Report, Vol. 29, No. 10, October, available at: www.kburanaandkburana.com/pdf/INSEPs.pdf. (last accessed: January 25, 2016)

⁵⁵ See Edith Ramirez (2014), ‘Standard-Essential Patents and Licensing: An Antitrust Enforcement Perspective’, Address by FTC Chairwoman, 8th Annual Global Antitrust Enforcement Symposium, Georgetown University Law Center, Washington, DC, September 10, available at: www.ftc.gov/system/files/documents/public_statements/582451/140915georgetownlaw.pdf (last accessed: February 27, 2016)

⁵⁶ Covington & Burling LLP (2013), ‘SEP Litigation—Emerging Issues’, December, available at: www.law.berkeley.edu/files/Panel_06_Fram%28b%29.pdf (last accessed: February 07, 2016)

Further, it can be observed that the participation in the standard setting activities at the international-level requires technical capacity and resources that is challenging task for developing countries. An ITU study⁵⁷ assessing the standards capabilities of developing countries under the four levels on the National Standards Capability Scale⁵⁸ found various reasons for the digital divide between the developed and developing worlds. Such reasons include lack of government understanding about the critical role of standards in promoting national economic competitiveness and innovation, lack of numbers of standards experts in government, industry and academia necessary to improve national standards capability, low levels of private sector involvement in standardisation, low priority attached to ICT standardisation activities by governments, lack of sufficient funds to support standardisation.

While steps need to be taken at the policy-level for effective participation of India in the technology standardisation, the regulatory framework needs to be robust enough to tackle the challenges raised during the implementation of technology standards so as to achieve the desired balance between access and innovation.

Project CompIP

Intellectual property plays a key role in almost every sector and has become a crucial factor for investment decisions by companies. Success of India's ambitious development and growth initiatives, like 'Make in India' and 'Digital India', will depend on creation of IP and access to technology, which in turn needs an enabling regulatory framework for IP. In this backdrop, CompIP programme is a modest research and advocacy initiative from CUTS and CIRC to feed into the policy discourse and represent consumer interest. This concept brief is one of the research outputs of this project.

More details available at project website compip.circ.in

⁵⁷ Study to Assess the Standards Capabilities of Developing Countries- Bridging the Standardization Gap, International Telecommunication Union, 2012, available online at: www.itu.int/dms_pub/itu-t/oth/0B/1F/T0B1F0000013301PDFE.pdf (last accessed: February 05, 2016)

⁵⁸ Countries are categorised under the four levels on the National Standards Capability Scale (a tool developed by ITU in 2009): low standards capability, basic standards capability, intermediate standards capability and advanced standards capability. For further details, please visit: www.itu.int/dms_pub/itu-t/oth/0B/1F/T0B1F0000013301PDFE.pdf (last accessed: February 07, 2016)

About CIRC

CUTS Institute for Regulation & Competition (CIRC) was established in 2008 by Consumer Unity & Trust Society (CUTS International). CUTS was established in 1983 and has been a leading NGO in the world working on competition law and policy issues (www.cuts-international.org). With this legacy, CIRC is an initiative towards creating an intellectual and knowledge base on competition policy and law and issues relating to infrastructure regulation such as public-private partnerships, regulatory impact assessment. It is governed by a 17 member Governing Council, presided over by Mr Nitin Desai, former Under Secretary General of the UN. Its founder President was Dr. C. Rangarajan, Chairman Economic Advisory Council to the Prime Minister of India, who is now President Emeritus. The Council includes several eminent persons from among economists, judges and government officials. CIRC and CUTS have conducted many programmes on Competition Policy and Law in India and abroad. (For further details, please visit www.circ.in)

CUTS Institute for Regulation & Competition

D-72, First Floor, Hauz Khas, New Delhi -110016

Ph: +91.11. 26863022/23, 41621232

www.circ.in