



# **TRAI Consultation Paper on Encouraging R&D in Telecom, Broadcasting, and IT (ICT) Sectors**



## Nokia response

This response addresses the “Consultation Paper (No. 19/2023) on Encouraging R&D in Telecom, Broadcasting, and IT (ICT) Sectors” released by the Telecom Regulatory Authority of India (TRAI).

The consultation paper focuses on various aspects of Research and Development including Education and Training requirements, Regulatory framework – Policies, Programs and IPR regimes.

Nokia appreciates the opportunity to provide inputs and recommendations to enhance the R&D facilities in India and create an encouraging environment to strengthen the R&D further.

Nokia has a very strong presence of R&D in India and our commitment to India is deeply engraved in the way we harness the potential of local talent for research and development. One of the 4 main global R&D sites for the company, the Bangalore R&D centre is undertaking research in various advanced global telecommunication technologies like telco cloud, big data analytics, software applications, next-generation core, IP, Optical, 5G and 6G.

Our Chennai R&D centre, the largest R&D facility for Fixed Networks, focuses on access broadband technologies including Copper, Fiber, Software Defined Access Networks, Management Solutions, Broadband Devices and Services. The centre has a best-in-class lab fostering innovation, defining the access market and promoting fiber for everything.

Please find below our comments and recommendations on the consultation paper for the questions relevant to Nokia.



### **The combined response of Questions 7, 11, 12, and 24**

- Q7** What role do you envisage for the service providers and industry in facilitating indigenous R&D in the ICT sector respectively? How can industry participation in R&D in the ICT sector be further improved? Please support your answer with justification and best practices in India and abroad in this regard.
- Q11** What are the steps required to strengthen government-industry-academia linkages in the ICT sector on long terms basis? Please support your answer with justification and best practices in India and abroad in this regard.
- Q12** Whether the current institutional mechanism is adequate to cater to the needs of R&D in ICT sector in India? Is there a need to create a separate agency to coordinate and look after R&D functions specifically in ICT sector? If yes, suggest a suitable framework for the overarching agency. If not, how can synergy between stakeholders be established to ease out processes and monitor timebound R&D outcomes? Please support your answer with justification and best practices being followed in other sectors nationally or internationally.
- Q24** What are the best practices which need to be adopted by India to promote private sectors investment in R&D activities? Please support your answer with suitable examples or frameworks and best practices in India and abroad in this regard.

#### **Nokia response:**

While the nature of the paper and the questions are related to ICT in general, our responses specifically focus on telecom sector, in particular the 6G technology development cycle and the national program and mission setup in the context of 6G.

We would like to draw attention to insights from successful R&D initiatives across the globe:

- The R&D agenda should be guided by the objective that effort is translated into commercially relevant technology, products and solutions, at a global scale.
- For any indigenous R&D mission to be successful, this is critically important that agenda must be developed and pursued in close collaboration with both demand and supply sides in the sector. The plan, effort and investment must make sure that the outcome of the R&D shapes up in line with the market requirements.
- As a result, the role of CSPs and OEMs is critical to the commercial success of the mission.
- In this context, on the demand side, CSPs are the ones who lead the evolution of transformation of their infrastructure subject to market pressures, capex constraints



and business models. R&D plans should be developed in integral and close engagement with CSPs. Therefore, the role of service providers is immensely important in that they create the market demand. R&D efforts should directly address their priorities and requirements in a standardised manner to derive best returns.

- On the supply side, the OEMs / manufacturers are the ones who understand the industrial value and implementation aspects of the concept and its competitive relevance at global scale. During this initial phase when our nation is kickstarting the ambition to become a significant player in global markets, indigenous industry lacks this vital experience as to the commercial and implementation aspects of the concepts.
- Telecom industry works on volumes and global interoperability. The prime strength of global OEMs lies in their longstanding experience in standards and technology development, their ability to benchmark what innovation and breakthrough can fructify and what not.
- Traditionally, India is known to be a big market, as a consumer of technology, but now India is turning to be a technology producer with its vibrant academic and startup ecosystem. This is also backed by policy directions like “Atmanirbhar Bharat”, the semiconductor Industry push, and PLI schemes to encourage technology development in India. Due to these concrete steps, things are moving on the ground in a concerted manner.
- Global companies, like Nokia, have been a critical part of communication services infrastructure for decades. They have the ability and interest to play a constructive and collaborative role in India’s journey to be a technology leader. They have cultivated invaluable experience by virtue of consistent and continuous participation in the 3GPP standardization process over decades and gained the visibility as to how this machinery works. The 3GPP process imparts vital expertise as to what works and what does not, and how to secure the global harmonization of solutions and concepts. This is time consuming and comes at an enormous cost and decades old engagement in the global process. Therefore, global OEM majors like Nokia offer a critical value to help shape and nudge the concepts in a direction that could secure larger acceptance and endorsement in 3GPP/ITU-R. Secondly, in the technology development cycle, they have reached a point where they have state-of-the-art research facilities and skills that are unmatched. Indigenous industry can reach that stage with a sustained investment of funds, resources, and time in the process. Therefore, to expect a grand success for R&D, it is inevitable to leverage the strength and experience of global OEMs as an invaluable offering. The standardisation process is by nature a complex process which entails local and global industries joining hands and working in collaboration for greater harmonization of concepts and solutions.



- Nokia has one of the largest manufacturing hubs in India, established 15 years back, based out of Chennai and producing for world markets. The Chennai factory has played a key role in developing telecom equipment manufacturing in the country and building an ecosystem for progressively higher localization of components. Additionally, to back up this large-scale manufacturing base, it has also invested heavily in setting up a large expert team driving 5G-Adv/6G research and standardization in Bengaluru. This makes India the 3rd largest country for Nokia for engagement in 6G research and standardisation, not only in mobile but spanning across software, IP/Optical Transport domains. Nokia is an open and flexible global company which has set a goal to extend its capabilities and experience in realizing the Bharat 6G Mission. Nokia has started working on the 6G standards with multiple global initiatives, thus, demonstrating concretely Nokia's commitment, capability and openness to collaborate and contribute towards India's ambition to be a frontrunner in the 6G technology arena. Nokia is able and willing to take this vision to its fruition with greater success. It now eagerly awaits an encouraging environment under the Bharat 6G program, which allows Nokia to develop and drive strategic projects by forging a consortium of CSPs, Academia and other stakeholders. Such PPP projects can be the efficient vehicles of execution for the Bharat 6G Mission. A striking example of a successful PPP program is the Hexa-X flagship project led by Nokia (<https://hexa-x.eu/>) under the EU 6G research program, SNS-JU. The entire industry comprising operators, OEMs, application providers, academia, startups, Vertical MRPs (Market Representation Partners) are onboarded in Hexa-X through 6G-IA, which is a mega Industry Alliance. We will be happy to provide complete details in a session to TRAI.
- The global OEMs have the critical capability and experience to benchmark the potential of the technology concepts, which can come from academia, and convert these into real-life products at a global scale. The role of global standards is fundamental to global relevance and scale. Any R&D mission must keep in view that concepts and solutions are implementable and acceptable into global standards therefore close coordination and collaboration of industry and local R&D stakeholders is fundamentally important. In global standards, proposals have to pass through a rigorous process of securing support from relevant stakeholders before getting accepted. The factors that govern the success are the viability of concept/solution, technical merit and the support which it commands on the floor. This should start from the local SDO level and evolve into a converged and competitive view before tabling to 3GPP or other SDOs. A strong pre-standards framework facilitating collaboration and constructive alignment is essential.
- There are clear zones of industry and academia as far as research is concerned (please refer to Figure 1). The first zone is predominantly of academia, where its strength in exploring new frontiers, novel concepts and algorithms for upcoming technologies is



leveraged. This is the zone where there is little visibility as to the practical utility of commercial products and, hence, ridden with high risk and uncertainty. For their concepts and novelties to be converted to real-life commercial products, academia should seek collaboration and partnership with industry that can benchmark their potential and shape them into commercially viable solutions. This is the second zone, where there is a collaborator from industry, and both should work together to experiment, prototype and validate the concepts. The strength of the industry partner is to lead the concept for validation and subsequent standardization phase. After that, the third zone is the remit of pure product development, which is led by product manufacturers. Therefore, this cycle comprises three clear zones. Any attempt by academia to run in isolation from concept development and jump directly to standardization will be faced with failure. The experience in the 5G cycle confirms that. A clear demarcation would avoid unnecessary conflicts and produce optimum results. It is essential that policymakers ensure a clear separation of roles and help remove any overlap between industry and academia to see large-scale successful commercialization of concepts.

- Due to the high risk and uncertainties involved in the fundamental research phase, academic research needs to be funded by the governments. The second phase, industrial research, is the area where both work in collaboration can be funded in PPP mode by industry and government. The last phase of product development R&D is the exclusive zone for the industry.
- Therefore, it is imperative for the policymakers to plan and design the R&D programs and funding mechanisms properly. The role and scope of national technology development programs like the Bharat 6G Mission are entirely different. Its objectives and leading stakeholders are completely different. These programs are where the industry is the leading stakeholder. Academia should leverage these programs and engage to seek partners and collaborators for their topics and ideas/concepts. Specific to these programs, their success depends on how best industry can lead academia to work towards its practical implementation in commercial technology.
  - Programs like Bharat 6G must initiate calls for R&D projects (which target system-level aspects) and not individual topics of research. For example, the project may be defined for Green telecom, which includes multiple sub-topics like waveforms, error coding, modulation formats, cloud/AI architecture etc.
  - Such project proposals must ensure that it is led by a strong demand-side stakeholder like CSP / vertical industry and proven OEM / manufacturers equipped to convert into commercial realization. A project comprising academia alone creates conflicts from beginning to end in the entire development cycle, which should be avoided. Academic research is an area which falls under the



Department of Science & Technology under the HRD ministry and MeITY which deal with these research programs of academia.

- o The strength and capabilities of global OEMs must be leveraged to lead and guide the execution of these programs to enhance the success potential of R&D efforts in the global standardization and commercialization phase. Any exclusion of global players will fail to deliver the expected success of these programs in real terms. This is more important when we do not have global majors in indigenous industry with state of art facilities for research and commercialization. Experience in the 5G era confirms this.

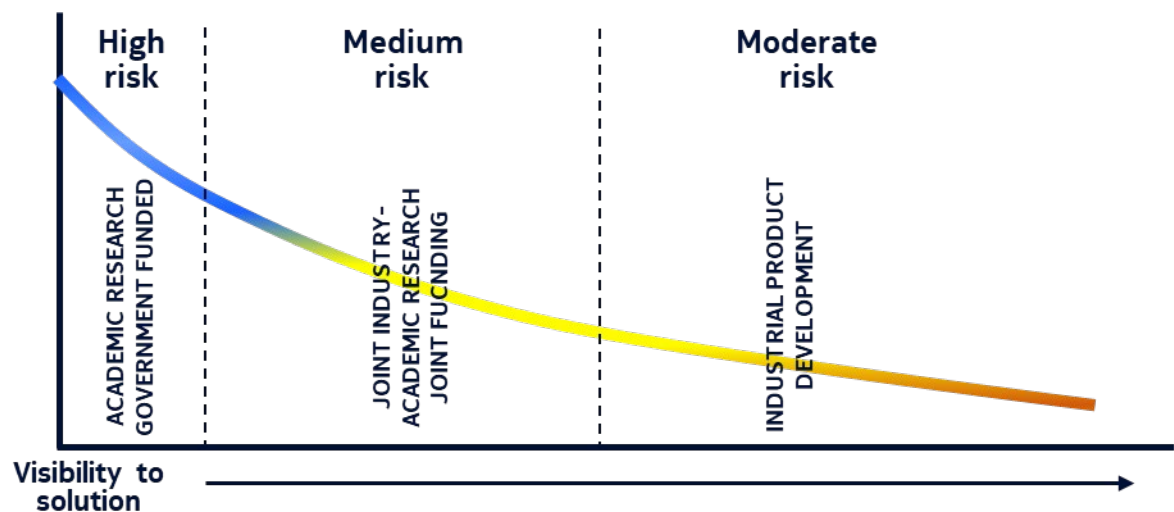


Figure 1 Segregation of roles in Innovation Development



### **The combined response for questions 8 and 9**

- Q8 How Telecom Centres of Excellence (TCOEs) can be made hubs of innovative product delivery to telecom industry? What can be done to further strengthen the TCOEs in order to provide an impetus to innovations in the telecom sector? Please support your answer with justification and best practices in India and abroad in this regard.**
- Q9 Is there a need to establish new Centres of Excellence for the broadcasting sector? What can be done to synergise telecom and broadcasting sectors for the objective of convergence? Please support your answer with justification and best practices in India and abroad in this regard.**

### **Nokia response**

NCDP-2018 has set a goal for the convergence of broadcast and broadband. This is a very timely and important policy ambition. The fundamental expectation of convergence is to utilise the same spectrum and network and device to deliver both services. Today India has 950mn smartphones, and 96% of internet access in India is through mobile phones. Today we have standardised 3GPP solutions which can allow delivery of both broadcast and broadband through a common 5G network using the same spectrum and end devices. These 3GPP standards-based technologies can support efficient delivery of all legs of the content lifecycle that is, production, contribution, and distribution flexibility. The solutions cater to both FTA and paid subscription delivery models. A converged 5G infra is the most efficient solution to cater to the content industry and MSOs for various applications of the content and media industry. This end-to-end convergence unravels unbelievable efficiencies in terms of spectrum and infra savings.

We must also take cognizance of the reality that content consumption pattern is changing. More than 90% of users consume content on smartphones and through OTT applications like Netflix and Prime Video.

At the same time, we should also understand that in India, we have only one broadcaster which is national broadcaster Prasar Bharati. The relevance of linear content is mostly in rural and remote users, for which mainstream delivery is through DD DTH Dish, which is widely used in rural to see DD content.

We also need to see that any delivery approach of content aggregators or MSO (Multiple System Operator) does not create any imbalance in the telecom industry. Spectrum efficiency is important. Having deployed billions into 5G, CSP is looking to monetise the 5G infrastructure. It is in the national interest to save spectrum resources and utilise a





converged platform of additional monetisation for the widest possible applications and services like broadcast and connected vehicles, healthcare, etc.

Our focus should be on the national policy framework and strategic roadmap, which can be developed by existing think tanks and concerned ministries along with Niti Ayog.

### **Response for question 27**

**Q 27 What should be the regulatory framework for R&D efforts in the ICT sector for establishing an outcome-based measurable system? Please suggest changes required in the present laws or creating new policies or regulatory frameworks with regard to carrying out R&D, testing of products allotment of spectrum and commercializing of products in ICT Sector.**

#### **Nokia response (only for the underlined part)**

The most important outcome for any R&D effort in telecom is its successful inclusion in global standards. Inclusion in global standards is a prerequisite for it to be successfully implemented in commercial products which are relevant to global markets.

In this direction, standards-driven research is the key principle to follow.

Therefore, any R&D work should be benchmarked for its technical, commercial and implementation potential. Here comes the strength and experience of global majors who have been through this cycle and have decades of experience to evaluate the viability of the concepts with respect to the aforementioned parameters.

This strength of global companies is of immense importance for local stakeholders. If a productive collaboration is affected, it would develop work areas which truly hold high value for industrial applications with a global implementation scale.

To achieve this, national research / R&D programmes should enable and encourage Public Private Partnership (PPP) Model that allows all stakeholders to join their strengths together in not only technology research to address challenges of the highest priority for India, but also to create an ecosystem for successful deployment to deliver the promise of technology to the society. It is to be noted that such a collaborative PPP consortium-based model has also been included as part of the recommendations in the Bharat 6G vision document released by honourable Prime Minister Mr Narendra Modi in March 2023.

A leading example of a successful PPP model is in Europe. The 5GPPP (5G Infrastructure Public Private Partnership Project) initiative, launched in 2013, between the European Commission and the European and ICT industry, including manufacturers, telecom operators, service providers, SMEs and research institutions, with an aim to accelerate research developments



in 5G technology has been a successful example of how a structured and inclusive approach enabled leadership in critical technology development and adoption.

Inclusivity and collaboration have been the bedrock of the PPP model, and these best practices should be considered in the regulatory and funding framework as we plan for India's leadership journey towards 6G.

Nokia has been part of 5G-PPP, and its 6G avatar Smart Networks and System (SNS) Joint Undertaking, in leadership positions, and is motivated to help adoption of some of the relevant best practices in the Indian context. PPP mode collaboration framework allows global technology leaders like Nokia to scale out their facilities to extend the labs and skills working with Indian academia and startups. This is a sure proposition that would multiply the success prospects of India's quest to leadership in telecom technologies and 6G.

An example of regulation that supports such a framework is seen as part of the EU 6G research program, SNS-JU. Dr Colin Willcock from Nokia is currently the chairman of the Governing Board of SNS JU and 6G-IA and is involved in EU-India collaboration efforts. Dr Mikko Uusitalo from Nokia Bell Labs is the technical program manager of the EU flagship 6G project, Hexa-X. Nokia, with its involvement in both regions, can help facilitate the conversation and collaboration with these programs.



## Regulatory Framework – IPR Regime

### Introductory Remarks

#### *The importance of a balanced framework for licensing SEPs*

The benefits of open standards and licensing on fair, reasonable and non-discriminatory (FRAND) terms and conditions are widely acknowledged.<sup>1</sup> Open standards development supports market entry, encourages innovation, and benefits society generally by increasing consumer choice. The global framework for the FRAND licensing of SEPs enables broad access to standardised wireless technology to users across numerous sectors and for all actors in the relevant value chains.

Indeed, open standards and SEP licensing have fostered a thriving ecosystem,<sup>2</sup> which enables new manufacturers to enter markets without having to invest in high-risk technological research by themselves. For example, in the smartphone sector, historically, there were few handset makers, and most consumers had devices from Nokia, Ericsson and Blackberry. However, in the 2000s, Apple and Samsung entered the global market, as did many others such as Huawei, LG, Lenovo and Xiaomi. India also has many important smartphone manufacturers, such as Lava, Karbon Mobiles and Micromax.

It is unsurprising, therefore, that the benefits of open standards and FRAND licensing have been recognised by authorities across the globe. For example, the European Commission's recently revised Horizontal Guidelines provide that:

*Standardisation agreements generally produce significant positive economic effects, for example by promoting economic interpenetration on the internal market and encouraging the development of new and improved products or markets and improved supply conditions. Standards thus generally increase competition and lower output and sales costs, benefiting economies as a whole. Standards may maintain and enhance product quality, safety, provide information and ensure interoperability and compatibility (thus increasing value for consumers).*

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<sup>1</sup> Industry commentators and academics alike have recognised that standardisation plays a fundamental role in the development and implementation of the foundational technologies central to critical global infrastructure. Effective protection and enforcement of SEPs ensure the continued investment necessary to develop and contribute technology to global standards, while commitments to (FRAND) licensing terms and conditions encourage and enable implementation of these standards at scale. See, for example, Justus Baron, Kirti Gupta, 'Unpacking 3GPP Standards' (2018) 27 *Journal of Economics & Management Strategy* 433

<sup>2</sup> For discussion on the success of markets employing cellular standards see, for example, the Boston Consulting Group reports on '[The Mobile Revolution: How Mobile Technologies Drive a Trillion-Dollar Impact](#)' and '[Growth of the Global Mobile Internet Economy](#)' and Bowman Heiden '[The Value of Cellular Connectivity: From Mobile Devices to the Internet-of-Things \(IoT\)](#)' (2021). Today there are approaching 12 billion mobile subscriptions and more than 5,5 billion unique mobile subscribers (source: <https://www.gsma.com/>).



and that:

*Standardisation agreements frequently give rise to significant efficiency gains. For example, Union-wide standards may facilitate market integration and allow undertakings to market their goods and services in all Member States, leading to increased consumer choice and decreasing prices. Standards which establish technical interoperability and compatibility often encourage competition on the merits between the technologies of different undertakings and help prevent lock-in to a particular supplier. Furthermore, standards may reduce transaction costs for sellers and buyers. Standards relating to, for instance, the quality, safety and environmental aspects of a product may also facilitate consumer choice and may lead to increased product quality. Standards also play an important role for innovation: they can reduce the time it takes to bring a new technology to the market and facilitate innovation, by allowing undertakings to build on top of agreed solutions.<sup>3</sup>*

Likewise, when three United States government agencies – the Department of Justice, the Patent and Trademark Office, and the National Institute of Standards and Technology – announced the withdrawal of their 2019 Standards-Essential Patents policy statement, they stated that they had concluded the withdrawal “best serves the interests of innovation and competition” and acknowledged that:

*Standards-developing organizations (SDOs) and the widespread and efficient licensing of SEPs on reasonable and non-discriminatory (RAND) or fair, reasonable and non-discriminatory (FRAND) terms (collectively F/RAND) help to promote technological innovation, further consumer choice, and enable industry competitiveness, including in emerging technologies and by new and small- to medium-sized market entrants.<sup>4</sup>*

The smooth functioning of a dynamic licensing market is critical to retaining incentives to participate in standards development and to contribute advanced, innovative technologies to standards. It creates a competitive element in standardization, ensuring the best technologies are contributed to and incorporated into global standards, from a wide variety of market participants. Well-functioning licensing markets also ensure a balance between the contributors of innovative technologies to standards as well as the users of them. Those who invest in intensive R&D and into developing standards can obtain royalties from the users of

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<sup>3</sup> See Commission, ‘[Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Co-operation Agreements](#)’ [Communication] 2023/C 259//01 (the “Horizontal Guidelines”), paragraphs 439 and 475, respectively.

<sup>4</sup> See [The Department of Justice, U.S. Patent and Trademark Office and National Institute of Standards and Technology withdraw 2019 Standards-Essential Patents \(SEP\) policy statement \(govdelivery.com\)](#).



the standards, which they can then reinvest into developing future standards – thereby creating a virtuous circle of R&D, patenting, licensing and re-investment into R&D for new standardised technologies, e.g. 6G, while also enabling manufacturers to continue to introduce the best products for consumers. A fair and balanced framework for the licensing of SEPs is, therefore, critical for India’s current objectives and long-term strategy to encourage IP-led technological innovation.<sup>5</sup>

Nokia’s dual role, as both a developer and implementer of open standards, gives us an even-handed perspective. Since 2000, Nokia has invested more than €140bn in research and development, including over €4.5bn in 2022 alone (representing nearly 20% of Nokia’s annual revenue). Our patent portfolio consists of SEPs for cellular communications, wireless LAN (WLAN) and multi-media technologies. We have over 20,000 patent families, of which more than 6,000 have been disclosed as essential for 5G. In 2022, we generated over 1,700 new patented inventions. We have also achieved the highly respected ISO 9001 certification for Nokia’s high-quality patent portfolio management. Nokia licenses its SEP portfolio under FRAND principles, and we currently have around 200 licensees. We believe in a fair licensing approach that strikes a balance between the needs of those who develop and contribute technologies to open industry standards globally and those who implement and use them.

### ***The lack of incentives for implementers to take licences***

Implementers have access to SEPs without FRAND licenses. They can, and do, design, sell, and profit from products implementing mobile cellular standards without first taking a license because standards are by their nature publicly accessible to and implementable by all.

Such a situation leads to a “hold out” problem, in which implementers who are using standardised technology in their products wait and refuse to take licences because they believe it will be financially better for them to force patent holders to sue for infringement.<sup>6</sup> Hold-out by unwilling licensees looking to delay or avoid taking FRAND licences is a serious impediment to a fair, balanced, and effective SEP ecosystem. It threatens the virtuous cycle of innovation. Hold-out creates significant market distortions and is a major threat to the creation of research-intensive innovations advancing of open standards. It also gives

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<sup>5</sup> India National Intellectual Property Rights Policy (12 May 2016).

<sup>6</sup> Evidence of (unilateral and coordinated) hold-out is well-documented, in particular in the case-law of various jurisdictions, notably in the national courts across Europe and is acknowledged by industry experts and commentator globally. See, for example, Bowman Heiden, Justus Baron, ‘[The Economic Impact of Patent Holdout](#)’ (2023); Gerard Llobet, Jorge Padilla, ‘[A Theory of Socially Inefficient Patent Holdout](#)’ (2022) 32 *Journal of Economics & Management Strategy* 424; Bowman Heiden, Nicolas Petit, ‘[Patent Trespass and the Royalty Gap: Exploring the Nature and Impact of “Patent Holdout”](#)’ (2018) 34 *Santa Clara High Technology Law Journal* 179; IP Europe, ‘[Efficient infringement of SEPs](#)’ (2021); IP Europe ‘[Unwilling SEP Licensees: Hold-out Strategies](#)’ (2021); Keith Mallinson, ‘[Sharp – Not Weak or Late Enforcement is Required Against Recalcitrant SEP Implementers](#)’ (24 January 2022) *RCR Wireless News*; 4iP Council ‘Case Summaries on Hold-out’ available at: <https://caselaw.4ipcouncil.com/search/tag/hold-out>



unlicensed implementers a competitive advantage over rival licensed businesses that respect IPRs.

The issue of hold-out is increasingly being acknowledged by policymakers.<sup>7</sup> For example, the European Commission's revised Horizontal Guidelines refer explicitly to situations where *"licensing negotiations are drawn out for reasons attributable solely to the user of the standard. This could include for example a refusal to pay a royalty fee on fair, reasonable and non-discriminatory ('FRAND') terms, or using dilatory strategies ('hold-out')"* and further observe that *"hold-out by an implementer unwilling to take a licence ... follows from the fact that IPR holders can ultimately only prevent unlicensed use by court action"*, referring to the *"requirements imposed by the Court of Justice in Huawei v ZTE on implementers of standard-essential IPR to avoid being subject to an injunction by a national court."*<sup>8</sup>

Given that free and unfettered access, there is little incentive for unwilling implementers to negotiate and timely conclude FRAND licences. In the event negotiations with such implementers fail, it is often only the reality of litigation and its potential consequences that eventually convince such implementers to negotiate in good faith and conclude FRAND licences.<sup>9</sup>

The fact that implementers have access to standardised technologies without a licence explains why the possibility of injunctions is a necessary component of FRAND licensing. If the availability of injunctions for SEPs is unduly limited from a policy perspective, this would make it even more difficult for SEP holders to obtain FRAND royalties from implementers who are unwilling, but who nevertheless have policy protections in their favour. If the available remedies for infringement of SEPs do not result in the timely conclusion of FRAND licences, the result will reduce incentives for investment in technology standards.

Damages are unlikely to be an adequate remedy in the case of global SEP portfolios. A SEP holder would have to litigate patent-by-patent, in multiple jurisdictions to collect damages for its entire SEP portfolio. Courts generally do not allow patent owners to assert more than a limited number of patents at once. Even if litigating every patent in a global SEP portfolio was judicially manageable, given the sheer number of patents typically involved, the practicalities and costs associated with doing so would be prohibitive. Moreover, damages for the infringement of a limited number of asserted patents may only represent a fraction

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<sup>7</sup> See, for example, Commission, ['Setting Out the EU Approach to Standard Essential Patents'](#) [Communication (2017) 712 final and the discussion on "Hold-Up versus Hold-Out" in the [Report from the Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group'](#) (2021).

<sup>8</sup> Horizontal Guidelines, paragraph 444 and footnote 316, citing Case C 170/13, [Huawei Technologies Co. Ltd v. ZTE Corp](#) [2015] ECLI:EU:C:2015:477.

<sup>9</sup> The vast majority of Nokia's licence agreements are concluded amicably. Regrettably, litigation is sometimes the only way to respond to implementers who choose not to play by the internationally established and accepted rules. Litigation is always a last resort and much less common than people may realise. To put this into context, since 2017, Nokia has concluded or extended over 200 licences and engaged in just 6 litigation campaigns.



of a FRAND royalty for a global SEP portfolio. Therefore, leaving the SEP holder to simply obtain damages, even enhanced damages, on a patent-by-patent basis would leave the patent holder very far from the position where it would be if a portfolio licence had been reached timely and in good faith.

### ***Implementers are protected against hold-up***

It has been argued by some implementers that they may be under the risk of hold-up, meaning that a SEP holder could supposedly use the threat of injunctions to pressure implementers to take excessive non-FRAND licensing terms. However, as numerous commentators have observed, empirical evidence has not found the negative market effects associated with the patent hold-up theory.<sup>10</sup> Quite the opposite, SEP licensing markets have witnessed sustained growth, new market entry and significant investments in R&D of new technologies.<sup>11</sup>

The reason why hold-up is only a misplaced theoretical concern is because of a FRAND commitment. Courts would not entertain the request for an injunction unless a SEP owner has negotiated in good faith and offered a FRAND license. They would typically look carefully at the behaviour of both parties. In this regard, we note that the seminal ruling of the Court of Justice of the European Union (CJEU) in *Huawei v ZTE* provided a well-balanced and flexible framework focused on the good faith conduct required of both parties in SEP licensing negotiations.<sup>12</sup> If not compliant with the *Huawei v ZTE* framework, the SEP owner may not

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<sup>10</sup> Alexander Galetovic, Stephen Haber, Ross Levine, 'An Empirical Examination of Patent Holdup' (2015) 11(3) *Journal of Competition Law & Economics* 549; David Teece, 'The "Tragedy of the Anticommons" Fallacy: A Law and Economics Analysis of Patent Thickets and FRAND Licensing' (2017) 32 *Berkeley Technology Law Journal* 1490; Jonathan Barnett, 'How the Academy Led Patent Law Astray?' (2017) 32 *Berkeley Technology Law Journal* 1313; Alexander Galetovic, Stephen Haber, 'The Fallacies of Patent-Holdup Theory' (2017) 13 *Journal of Competition Law & Economics* 1; Daniel Spulber, 'Licensing Standard Essential Patents with FRAND Commitments: Preparing for 5G Mobile Telecommunications' (2020) 18 *Colorado Technology Law Journal* 79.

<sup>11</sup> GSMA, '[The Mobile Economy 2023](#)' (In 2022, over 5.4 billion people globally subscribed to a mobile service, including 4.4 billion people who also used the mobile internet. mobile technologies and services generated 5% of global GDP, a contribution that amounted to \$5.2 trillion of economic value added, and supported 28 million jobs across the wider mobile ecosystem); Stephen Haber, Lew Zaretski, 'Is There an Anti-Commons Tragedy in the Smartphone Industry' (2018) 32 *Berkeley Technology Law Journal* 1527.

<sup>12</sup> When considering whether a request for an injunction for infringement of an SEP infringes Article 102 of the Treaty of the European Union (concerning anti-competitive abuse of a dominant position), the CJEU held that national courts are required to consider the following actions of the parties: (i) did the SEP holder notify the implementer of the infringement, providing details of the infringed patents?; (ii) has the implementer diligently expressed its willingness to conclude a FRAND licence?; (iii) did the SEP holder then make a written FRAND offer for a licence, specifying the royalty rate and how it was calculated?; (iv) did the implementer diligently respond, either accepting the offer or making a prompt written FRAND counter-offer?; and (v) if the SEP holder rejected the counter-offer, has the implementer provided appropriate security and rendered accounts? The CJEU refrained from specifying the detail or scope of every obligation imposed on the parties as each case is fact specific.





obtain an injunction for the infringement of its SEP (thereby preventing hold-up), while the implementer which does not comply risks being injuncted (disincentivising hold-out).<sup>13</sup>

Likewise, the US authorities recognised that FRAND is a two-way street, and the conduct of both parties should be analysed. Following the withdrawal of the 2019 DOJ/PTO/NIST joint policy statement on remedies for enforcement of SEPs, the Justice Department stated that, in exercising its law enforcement role, it will review conduct by SEP holders or standards implementers on a case-by-case basis to determine if either party is engaging in practices that result in the anticompetitive use of market power or other abusive processes that harm competition.<sup>14</sup>

**Provided below are our responses to certain key questions concerning IPR:**

**Q.20. (a) Is the Fair, Reasonable, and Non-Discriminatory (FRAND) mechanism for licensing of Standard Essential Patents (SEPs) functioning satisfactorily and effectively? Is there a need for any reforms in this aspect?**

**Nokia Response:**

We note that Indian courts have experience with SEP cases and have proven to be capable of resolving SEP-related issues. They have shown a deep understanding of relevant SEP cases in Europe, the US and China and seem to have taken the approach of the CJEU in *Huawei v ZTE* of analysing the conduct of both parties. For example, a recent *Intex v Ericsson* judgment, the High Court of Delhi noted that “*FRAND obligations have been interpreted to impose a burden not just on Standard Essential Patent holders, but on implementers as well. The Standard Essential Patents regime incorporates mutual reciprocal obligations on both the Essential Patent holder and the implementer. It is not a ‘one way street’ where obligations are cast on the Essential Patent holder alone*”.<sup>15</sup> According to the Court, the conduct of the parties during negotiations “*is one of the key factors to be kept in mind while assessing whether a potential licensor and licensee were a willing licensor or a willing licensee*”.<sup>16</sup> The

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<sup>13</sup> *Optis v Apple* [2023] EWHC 1095 (Ch) para 370 (explaining how “the problem of Hold Up is substantially eliminated” by the UK’s legal regime which would not grant an injunction unless the court has determined FRAND terms which the implementer does not accept).

<sup>14</sup> See [The Department of Justice, U.S. Patent and Trademark Office and National Institute of Standards and Technology withdraw 2019 Standards-Essential Patents \(SEP\) policy statement \(govdelivery.com\)](https://www.govdelivery.com/topics/usa/department-of-justice/patent-and-trademark-office-and-national-institute-of-standards-and-technology/withdraw-2019-standards-essential-patents-sep-policy-statement). Assistant Attorney General Jonathan Kanter further explained that: “*The Antitrust Division will carefully scrutinize opportunistic conduct by any market player that threatens to stifle competition in violation of the law, with a particular focus on abusive practices that disproportionately affect small and medium sized businesses or highly concentrated markets,*” stating that: “*I am hopeful our case-by-case approach will encourage good-faith efforts to reach F/RAND licenses and create consistency for antitrust enforcement policy so that competition may flourish in this important sector of the U.S. economy.*”

<sup>15</sup> *Intex v Ericsson* 2023:DHC:2243-DB, para 73.

<sup>16</sup> *Ibid.*





High Court of Delhi correctly recognised that injunctions for SEPs are available “*if an infringer is deemed by a Court to be an “unwilling licensee,” often as indicated by the use of “stalling” and other opportunistic bargaining and litigation tactics.*”<sup>17</sup> In *Nokia v Oppo*, the High Court of Delhi also considered the *Huawei v ZTE* framework and noted that the “*payment of a pro-term security is the implementer’s obligation in the negotiation phase itself.*”<sup>18</sup>

We would like to stress that achieving TRAI’s objectives of encouraging R&D requires a balanced approach to the protection and enforcement of SEPs to create a fair and efficient licensing ecosystem that incentivises both sides to conclude timely SEP licences on FRAND terms. To achieve this goal, policymakers should recognise that:

- Implementers are able to implement and use (“access”) standardised technologies prior to concluding any FRAND license – because of this hold-out is a significant issue.
- Both parties should adhere to the conduct provided by the CJEU in *Huawei v ZTE*, which has been cited with approval by Indian courts.
- The availability of injunctions (both at the interim and the final stage of the lawsuit) for the wilful infringement of SEPs is necessary because implementers have access to standardised technologies prior to concluding a FRAND licence and because damages are almost never an adequate remedy for the infringement of a large SEP portfolio because such damages only relate to the patents in suit and not to the entire portfolio.<sup>19</sup>
- An enforcement regime where the loser pays reasonable and proportionate legal costs would help discourage bad actors from bringing weak infringement proceedings and also encourage licensees to conclude timely licences without forcing the patent holder to litigate and not to engage in hold-out.<sup>20</sup>
- Royalties for SEP portfolios should be based upon the value created by the standardised technology and not upon the price of a component which has no

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<sup>17</sup> Ibid, para 91.

<sup>18</sup> *Nokia v Oppo*, 2023:DHC:4465-DB, para 51.

<sup>19</sup> The High Court of Delhi correctly recognised the dangers of holdout if injunctions are not available within reasonable time, See *Intex v Ericsson* 2023:DHC:2243-DB, para 90 (“*absent any realistic prospect of an injunction within a reasonable period of time, the implementers enjoys access to the innovator’s technology, deriving revenues from the products and services that embody that technology, while, during the negotiations and litigation, the innovators earns nothing from the same technology that it developed at great costs and risk ... this effectively transfers wealth from firms that specialize in developing technologies to firms (including some of the world’s most valuable companies) that specialize in using and integrating those technologies in branded devices/products sold to consumers*”).

<sup>20</sup> We note that similar sentiments have been expressed by Indian judiciary, including in the recent decision of the Supreme Court of India, see *Uflex Ltd v. State of Tamil Nadu*, Civil Appeal Nos. .4862-4863 of 2021, para 56 (“*... in carrying on commercial litigation, parties must weigh the commercial interests, which would include consequences of the matter not receiving favorable consideration by the courts ... Suffice to say that all the parties before us are financial strong and took a commercial decision to carry this legal battle right up to this Court. They must, thus, face the consequences and costs of success or failure in the present proceedings*”).



relationship to that value. The difference in prices between similar products with and without mobile connectivity (for example tablets or smart watches) is more relevant to the value of connectivity than concepts such as the “smallest saleable patent practicing unit” (SSPPU).

- The *sine qua non* of the FRAND commitment is to make standardised technology accessible for all, not licensed to all, implementers of the technology. “Access” should not be equated to “licence”. There can be no requirement to “license to all”. This should be self-evident from the fact that a single patent cannot be licensed to multiple suppliers in a supply chain due to the laws on patent exhaustion.
- A patent holder should be able to determine the level in a supply chain to license its patents.

Against the background of the current jurisprudence in India, we believe the system for resolving SEP disputes in India is functioning satisfactory and there is no need for regulatory reforms in this respect. Recent legislative reforms such as the Commercial Courts Act, 2015; the Delhi High Court’s IP Division Rules, 2022 and Delhi High Court Rules Governing Patent Suits, 2022 have created an environment for quick adjudication. However, it will take some time until the results materialise. Until then, it is important to ensure that a party does not have to wait a long time for the final decision before having its legal and commercial interests protected. Interim reliefs should be available to patent owners in such circumstances. We note that Indian courts have observed the possibility of awarding interim relief in SEP cases, as well as providing such remedy on the first or second day of a patent lawsuit (if the plaintiff can establish a *prima facie* case). A recent example is *Atlas Corporation v. TP Link*, where the court ordered the security amount to be deposited on the second day of the lawsuit.<sup>21</sup>

It might also be helpful if trusted public authorities, such as TRAI or perhaps TSDSI as well,<sup>22</sup> were to provide more information, education and guidance about standardisation, SEPs, and best practices for licensing aimed especially at the sectors of the economy, which are increasingly keen to embrace and implement connectivity standards.

This could include greater efforts in educating industries, including SMEs, who may be new to SEP licensing about SEPs and relevant legal and practical considerations so they can build this into their business modelling in an informed way. In this regard, we suggest potentially endorsing some useful references, such as the Q&A in a CEN-CENELEC Workshop Agreement, which Nokia helped create with other companies – many of whom are both SEP licensors and licensees. See: “Principles and guidance for licensing Standard Essential Patents in 5G and the Internet of Things (IoT)”.<sup>23</sup> That document also contains a number of high-level principles supported by these companies. The Japanese Patent Office also has previously published

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<sup>21</sup> *Atlas Corporation v. TP Link* 2023:DHC:6256, para 40.

<sup>22</sup> Telecommunications Standards Development Society India.

<sup>23</sup> <https://www.ipeurope.org/wp-content/uploads/2019/09/CWA17431.pdf>



(and revised in 2022) a “Guide to Licensing Negotiations Involving Standard Essential Patents” that incorporated input from many stakeholders familiar with such processes.<sup>24</sup> It can serve as a useful roadmap for those who are newly incorporating standardised technology into their products or licensing SEPs to implementers.

## **Q20. (b) How can small innovators be protected from the predatory practices?**

### **Nokia Response:**

With respect to small innovators, evidence shows that, in practice, small business owners are less likely to be the target of SEP litigation. Litigation is an expensive and risky enterprise. It can only be justified if the returns would substantially exceed the costs. Assertions against small businesses generally will not provide returns that merit litigation. This is not to say that small businesses should not conclude FRAND licenses but rather that they are unlikely to become the target of SEP litigation. On the other hand, SEP holder SMEs may need to resort to litigation themselves to conclude a license with other reluctant parties.

We are not aware of any SEP litigation against SMEs in India, nor of any “predatory practices”. Even if such litigation is to arise, we believe courts in India have shown to be capable of understanding complex issues and could provide relief to small innovators.<sup>25</sup> There are in-built checks and balances which are provided for in procedural laws such as the Code of Civil Procedure 1908, which would burden an abusive plaintiff with the dismissal of the suit, heavy penalties, costs and/or damages.

Understandably, start-ups and SMEs may not have internal teams of dedicated experts experienced in dealing with issues such as SEP licensing. Nevertheless, these small firms must deal with other aspects of the legal and regulatory environment. If they need tax advice, law firms, accountants and other consultancies are available. If a biotech startup happens upon a promising therapy, it will need to secure expert advice to navigate the extensive regulatory requirements for the approval of a new drug or medical device. Various consultancies are available and used to serve this need. Certainly, SEPs cannot be the one and only area where start-ups and SMEs are not expected to obtain the necessary support from appropriate experts and consultants, of which there are many.

SME implementers should be aware that when including standardised technologies in their products or services, they may need to take SEP licenses at some point in the future and build this into their business models to avoid surprises later. This is a matter of education and awareness around SEPs, particularly for SMEs and start-ups. Businesses are accustomed

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<sup>24</sup> [https://www.jpo.go.jp/e/news/public/document/220509\\_hyojun-hissu\\_e/01\\_e.pdf](https://www.jpo.go.jp/e/news/public/document/220509_hyojun-hissu_e/01_e.pdf)

<sup>25</sup> We note that Section 140 of the Patent Acts already provides protection against certain restrictive conditions that might be useful for SMEs.



to dealing with imprecise information in many aspects of their business, particularly in the early stages, and it is no different for SEPs and their licensing.

**Q21. (a) What additional measures should be taken to strengthen IPR dispute resolution mechanism to ensure confidentiality of the innovation and time-bound disposal of IPR-related disputes?**

**(b) How can Alternate Dispute Resolution (ADR) mechanisms for IPR disputes be improved?**

**Nokia Response:**

ADR mechanisms, such as mediation and arbitration, should be desirable to both patent holders and implementers in the FRAND licensing context.

Mediation can be useful, depending on the skills of the mediator and the willingness of both parties to conclude a FRAND license. This is more likely where there is not a large difference between offers/positions, or where a party may be unfamiliar with SEP licensing. An experienced mediator can help give an objective perspective (in particular as to confidential terms and rates that cannot be disclosed to the other party) which may not be trusted if offered by one or other of the parties. However, mediation can and should not be used as a tool to further delay negotiations and avoid taking a license.

Arbitration is very useful if it is binding, and the parties seek to reasonably limit the issues between themselves and the evidence to be exchanged - in order to limit the costs and length of the arbitration. However, arbitration requires both parties to agree to it, which means that it is unfortunately rarely used to settle FRAND disputes, as it is often difficult to agree to the terms under which it will be conducted. Also, as FRAND is functionally a commercial issue, it is important that the arbitrators and institutes appointed have experience in dealing with these types of disputes, as well as handling technical issues. Nokia has been involved in some arbitrations concerning FRAND licensing. However, we would welcome the creation of possible incentives to encourage implementers to willingly engage in arbitration to resolve issues concerning SEP licensing.

Nokia believes that independent, legally binding arbitration is the best and fairest solution in circumstances where a willing licensee and licensor want to sign a FRAND license but are unable to agree on price. Nokia has proposed that arbitration should follow the International Chamber of Commerce's Rules of Arbitration. There should be a panel of three arbitrators. Each party would nominate one arbitrator, and the two party-nominated arbitrators or the ICC should nominate the third arbitrator who would Chair the panel. None of the three arbitrators should be citizens from the two companies' home markets and ideally the venue would be in a neutral location. And the arbitration panel's decision should not take more than



eighteen months from the constitution of the panel. Nokia believes that this is a better way to resolve global FRAND disputes and address any jurisdictional issues.

TRAI, together with other governmental bodies and TSDSI, may wish to consider working with WIPO, ICC and other ADR *fora* to attempt to publicise the availability of ADR mechanisms and increase their attractiveness.

**Q.25. Is there a need to introduce avenues for continuing patents in India such as provisions like “Continuation-in-part Application” in the USA? Please support your answer with justification, strategies, and best practices in India and abroad in this regard.**

**Nokia Response:**

The Indian legislature had the foresight to provide all the tools necessary for an innovator to continue to innovate and protect his/her patent rights. This is apparent from the provision related to “Patent of Addition” under Section 54, which is akin to continuation-in-part applications under the US patent system. Thus, any innovator could file for protection of any improvements made on the parent application.

Moreover, the Indian patent system also has provisions akin to continuation applications under the US patent system wherein the subject matter “disclosed” in the parent application could be covered under one or more further applications by dividing the parent application under Section 16.

Therefore, the Indian Patents Act already incorporates relevant provisions to provide for the continuation of patents, and hence, no additional measures are required.

**The combined response for questions 26, 30 and 36**

**Q.26. In view of the best practices being adopted by the global leaders in R&D in general and ICT in particular, which are the policies, programs and incentives which need to be adopted by India? Please support your answer with suitable examples or frameworks and best practices in India and abroad in this regard.**

**Q.30. What interventions are necessary at policy or governance level to facilitate the growth of knowledge-based industries in India with respect to ICT sector?**



**Q.36. What should be the best practices followed in India to make it a favorable destination for IPR and Patent award nation? Please support your answer with justification, frameworks and best practices in India and abroad in this regard.**

**Nokia Response:**

The immediate requirement of knowledge-based industry is expeditious protection of IP in addition to expeditious resolution of any IP related disputes. In this regard, please refer to our suggestions in response to question number 26, wherein several suggestions to expedite the grant and enforcement processes have been elucidated. All such suggested measures require changes at the policy and regulation level. Apart from the suggested changes, there is no need for any changes to be introduced at the governance levels because subject matter relevant to business aspects should ideally be allowed to be regulated by free market forces and guided by global industry practices. For instance, throughout the world, it has been observed that governments do not interfere in licensing engagements between SEP holders and implementers because the global jurisprudence and prevalent industry practices guide such engagements. This is important because not every business engagement is alike and involves its unique set of facts and circumstances, and it should be best left to the parties involved in the engagement to mutually figure out a solution or common ground that works for both of them. It will be difficult for the Government to govern such engagements by applying a common yardstick as it may not have relevant resources at its disposal to be able to rightfully govern such engagements. Any disputes arising out of the failure of the parties to reach common ground could be handled by the Courts, as already explained earlier, thereby providing a mechanism for the resolution of any disputes/disagreements. Thus, no interventions at the governance level are required to be introduced as they may go beyond the mandate of the Government.

India could adopt provisions such as PPH and also focus on reducing the administrative burden on patentees such as section 8 and working statement requirements under form 27.

Moreover, efficient and timely training of examiners to better appreciate incremental inventions would go a long way to make India a more sought-after destination for patent filing.



**Q.37. What measures should be taken for quick disposal of IPR or Patent related disputes? Is there a need to create a specialized legal platform for the same? If so, what steps may be taken to adopt them? Please provide your answers for above questions, quoting the best practices being followed globally.**

**Nokia Response:**

The Indian statutes governing patents and contracts are robust, and the Indian judiciary is competent and able to apply the law, as written, to licensing-related disputes. Recent cases (*Intex v. Ericsson*, *Nokia v. Oppo*, *CCI v. Ericsson*) are excellent examples of the courts' competent jurisprudence. Licensing negotiations that lead to FRAND outcomes work quite well, as evidenced by thousands of FRAND license agreements signed between SEP holders and implementors since the early days of 2G standards.

While India has taken some cues, such as the IP specific courts, from some of the most robust patent systems to strengthen its IP system, there are still several challenges which need to be tackled. The effectiveness of any patent system depends majorly on the speed of disposal of cases. Today, any patent application being pursued through the normal route of patent prosecution may take at least three years to reach the final disposal stage. To be considered a favourable destination for IPR filings, India needs to considerably reduce the disposal time. This shall require more examiners/controllers who have legal experience, besides being adept in the technical field, to evaluate the patent applications efficiently and effectively. The patent examiners/controllers need to continually update themselves with the global and practical developments in the IP field. Thus, there needs to be an emphasis on legal training of the examiners/controllers by engaging patent practitioners and academics.

Further, Rule 24C (1) (i) of the Patent Rules provides that:

*An applicant may file a request for expedited examination in Form 18A along with the fee as specified in the first schedule only by electronic transmission duly authenticated within the period prescribed in rule 24B on any of the following grounds, namely:*

.....

.....

*(i) that the application pertains to a sector which is notified by the Central Government on the basis of a request from the head of a department of the Central Government.: Provided that public comments are invited before any such notification;*

If required, specific technological sectors, as deemed fit, may be notified under the said provision for being processed through the expedited route, thereby enabling faster grants.



The problem of the long pendency of cases before the Indian judiciary is well known. However, what aggravates the problem is the constant rotation of judges, which usually happens every six months, if not earlier. It has been observed that this may result in large legal costs for the litigants, who may sometimes have to start afresh before a new judge who assumed charge under the rotation policy as the erstwhile judge could not conclude the hearings. In IP disputes, this results in a significant financial burden to both parties owing to higher stakes being involved. This problem could be mitigated by either tying the judges to the matter assigned to them in a particular roster or at least by increasing the time duration between two rotations of the benches.