



RJIL/TRAI/2023-24/287

15th January 2024

To,

Shri Anand Kumar Singh,

Advisor (CA&IT)

Telecom Regulatory Authority of India,

Mahanagar Doorsanchar Bhawan,

Jawaharlal Nehru Marg, New Delhi - 110002

Subject: RJIL's comments on TRAI's Consultation Paper on "Encouraging R&D in Telecom, Broadcasting, and IT (ICT) Sectors".

Dear Sir,

Please find enclosed the comments of Reliance Jio Infocomm Limited (RJIL) on the Consultation Paper dated 22.09.2023 on "Encouraging R&D in Telecom, Broadcasting, and IT (ICT) Sectors".

Thanking you,

Yours Sincerely,

For **Reliance Jio Infocomm Limited**

Kapoor Singh Guliani

Authorized Signatory

Enclosure: As above

**Reliance Jio Infocomm Limited's comments on TRAI's Consultation on
"Encouraging R&D in Telecom, Broadcasting, and IT (ICT) Sectors"**

Preface:

1. Reliance Jio Infocomm Limited (RJIL) thanks the Authority for giving an opportunity to offer comments on the important consultation paper on **Encouraging R&D in Telecom, Broadcasting, and IT (ICT) Sectors**.
2. This is an important consultation that seeks to provide a **holistic framework to foster innovation and Research and Development (R&D) in ICT sector to facilitate inclusive growth in Indian economy**. The Government has already taken note of this requirement and the provisions for R&D activities in telecom sector have been made in the Telecommunications Act 2023.
3. The Authority has rightly noted that we need to address all aspects of the value chain for R&D activities. We submit that efforts in this endeavour start with imparting right tools and curriculum to the schools that will promote scientific temper in the students, which should encourage more students to pursue R&D at higher education level and address the skewed proportion of research professionals in the country.
4. **The Government needs to take major steps in making the research and related jobs attractive for Indian students. These pursuits should lead to gainful employment, which should be available across the country, only then we will be able to address the geographical disparities in R&D activities.**
5. There is a need to strengthen the R&D activities at local and state level colleges and universities. This can be done with help of direct participation and funding by the Governments and association with the public and private corporates.
6. The corporates can be persuaded to partner with universities and higher education centres on various research related activities and setting up laboratories, providing cutting edge tools and equipment, holding regular recruitment drives for R&D activities, setting up Trusts and scholarships to further encourage the interest in research pursuits by students.
7. The Government should facilitate participation by Corporates in R&D by fostering an enabling environment for cross sectoral, cross functional and cross technology research related collaborations, through measure like funding the public private collaborations at the initial stages, creating fully funded forums and initiatives that bring cross-section of researchers (both India based and outside India), startups, and innovators and industry

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on a single platform. **The Corporates should be rewarded with tax-holidays, tax-breaks, relief in levies etc. for their efforts.**

8. The Government of India is already focussing on fostering the start-up ecosystem under the Start-up India program and the efforts under this program should be supplemented by setting up a dedicated VC Fund. **Further, the global best practices for supporting the Start-ups should be implemented in India. The LINC (Leaders Industry-university Cooperation) programs of South Korea, that focuses on the amalgamation of industry and academia by providing training to start-ups should be adopted in India.**
9. Further, the Government should provide incentives, tax waivers and grants for investing in R&D to Start-ups and provide support with inclusive and growth-oriented Intellectual Property Rights (IPR) policies based on internationally accepted principles to remove any concerns regarding ownership and commercialization.
10. The awareness of IPR among researchers and the ICT industry in India should be fostered and the mechanism should be made user friendly by online and automation-based interface, speedy approvals, fee reduction, PCT filing subsidies, pro-bono services, and dedicated dispute resolution mechanism should be implemented basis the global best practices. The IPR related knowledge should be imparted as part of college syllabi.

Issue wise response:***Education and Training System***

Q.1. Whether current education system adequately promotes scientific temper and skills among students encouraging them to contribute towards Research and Development activities in ICT sector? If yes, please indicate what additional measures are needed to make them effective contributors of innovations to the industry. If not, please identify areas which need to be strengthened to orient students towards research and development activities in ICT sector.

RJIL Response:

1. Imparting scientific temper i.e., **the ability to not accept anything without proof, evidence-based search for knowledge and ability to discard pre-conceived notions, is a cherished educational principle, since independence and continues to be a main objective of our education system.**
2. It is also included in the Fundamental duties under the Article 51A of the Indian Constitution noting that:

“it is the fundamental duty of every citizen of India to develop the scientific temper, humanism and the spirit of inquiry and reform.”

3. One of the major impediments in developing scientific temper is over-dependence on text. **The education system needs to go beyond the textbooks and written examinations and move towards practical based education.**
4. The first step would be to teach the teacher. Over-dependence on textbooks by the teachers leads to suppression of scientific temper of children. Thus, the teachers need to be trained to be practical and live example oriented.
5. The Science curriculum has always endeavored towards developing scientific temper. However, the examination system needs to be re-oriented to be more inclusive of practical and evidence-based examination.
6. **Scientific research and results should be made comprehensible and available in local languages to inspire the new generation. Humanizing the scientific success stories will be important.** The focus should be to arouse curiosity and enthusiasm. Social media should be used to communicate with the public in an understandable and entertaining manner.

Q.2. What should be done to further strengthen the roots of R&D ecosystem in general and specially in the ICT sector of the country, which allows:

- a. Increase in number of post-graduates going for doctoral and post-doctoral programs in institutions other than IITs?
- b. Assured career progression opportunities in the field of Research and Development for students graduating from tertiary educational institutions?
- c. Researchers to continue entire career in advanced research.
- d. Increase in employability and career progression skills of students enrolled in STEM courses?

And

Q.3. What measures should be taken pertaining to the tertiary institutions with a focus to encourage students towards advanced R&D at the university level?

RJIL Response:

1. **The most important step in strengthening the roots of R&D ecosystem in the country is to make scientific pursuits a socially and economically gainful endeavor. The sector specialization will follow once a sturdy R&D ecosystem is strengthened grounds up.**

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2. This can happen only through promoting and fostering a culture that values and rewards research. The first step in this direction, as always will be to allocate more funds and devote dedicated resources to foster R&D activities at all levels.
3. As direct Government funding at all levels is neither feasible nor optimum, it will be important to involve the public sector and Private sector organizations in developing the R&D ecosystems. **These organizations should be incentivized to align with currently non-research-oriented Universities/Institutions across the country and set up R&D facilities and help provide new age cutting edge equipment required for higher research. The Incentives for non-government participants can be in the form of relief in taxes and levies.**
4. The Government has already recognized the need to encourage and develop a robust Startup ecosystem by setting up Start up India under the Department for Industrial Policy and Promotion (DPIIT). This mission can be extended to provide support at research level that will eventually translate to Start-ups.
5. The Government can also explore the possibilities of tying up with global research institutions for developing research mindset and setting up research labs and skill development centres across the country to ensure a harmonious growth in research ecosystem.

Science System

Q.4. Whether current science system (network of public and private institutions involved in the production and consumption of R&D and innovation) is sufficient to foster R&D and innovation in India in general and ICT in particular? If not, what additional measures are required to strengthen science system of the country and ensure availability of adequate resources for the same? Please support your answer with justification and best practices being followed in India and abroad in this regard.

RJIL Response:

1. The Authority has noted that we neither have sufficient R&D professional in the country nor sufficient R&D activity is going on in the country. This deduction would imply that the current science system (network of public and private institutions involved in the production and consumption of R&D and innovation) is not giving satisfactory results.
2. Consequently, there is a need to foster R&D and innovation in the country in general and ICT in particular, as ICT is the growth engine of economies in modern technology led world. As mentioned before, the most critical input to strengthen the science

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system is to provide adequate number of personnel interested in research and the same can only happen by making the scientific and research jobs socially and economically gainful. Only then the young Indians in schools and colleges can be persuaded to take up research.

3. **This can happen only through promoting and fostering a culture that values and rewards research. The first step in this direction, as always will be to allocate more funds and devote dedicated resources to foster R&D activities at all levels.**
4. The Authority should recommend a multi-faceted comprehensive framework, involving all stakeholders in the value chain starting from students and going upto the Government. The programme should focus on following areas.
 - a. **Increased funding for R&D-** We understand that this will need to come from higher Government outlay for expanding the R&D facilities holistically across the country. This needs to be a long-term commitment.
 - b. **Increase in research fellowships and grants-** There is a need to involve private sector and trust funds in instituting grants and fellowship programs to facilitate researchers. There is a need to increase the number, amount, and geographical diversification of this program for national level impact. The industries can be persuaded to utilize CSR outlay for R&D investments.
 - c. **Top-down policy and Grounds up research facilities:** The central and State Governments should formulate the comprehensive policies for investment in school/college laboratories and libraries and to provide access to advanced equipment and technology at initial stages of research career.
 - d. **Experiment and evidence-based science curriculum:** The science education from school level should mold the students towards research related activities. Integrated curriculums should be supported to develop scientific temper in non-science students as well.
 - e. **Proof of concept of technology/solutions:** The government should facilitate deployment of the technology/solutions developed as proof of concept. This would not only provide the institutions/researchers with real life experience to improve the technology/solution but would also help showcase the viability of use of the technology/solution.

Q.5. How can the participation of public sector enterprises involved in R&D be augmented towards a synergized national effort in research, development, and innovation in ICT? Please support your answer with justification and best practices being followed in India and abroad in this regard.

RJIL Response:

1. One of the many relevant international examples shared by the Authority is LINC (Leaders Industry-university Cooperation) programs of South Korea, that focuses on the amalgamation of industry and academia by providing training to start-ups. Further, improvement in research infrastructure is carried out by opening laboratories and COE in the major universities.
2. We submit that the Government can initiate a similar model for participation by both public and private sector towards a synergized national effort in research, development, and innovation in ICT.

Q.6. What should be the prerequisites and key characteristics of an effective next-generation technology testbeds in India? Will defining national-level mission and strategic objectives for ICT help in their effective utilization? Please support your answer with justification and best practices in India and abroad in this regard.

RJIL Response:

1. The experience in setting up technology test beds has shown that this is a long-drawn process and requires detailed planning and investment and certain level of skills. Once the Government has decided the objective of the testbed, it is critical to identify the skillsets required to facilitate such testbed and seek collaborations with international experts, global OEMs etc. to set up the test bed. This is followed by building up the infrastructure and facilities required to set up the test bed.
2. The infrastructure needs to be flexible enough to support all sorts of related technologies and test cases while simultaneously being compliant with regulatory requirements and equipment standards. The infrastructure should be scalable to accommodate future growth and evolving technologies.
3. Another important feature for next-generation test beds would be the need for enabling interoperability testing, as convergence of technologies and services is a reality and test beds should be supportive of the same. The testbeds will also require a robust monitoring and evaluation system to ensure that the objectives are met.

Q.7. 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.

RJIL Response:

1. The industry has a major role in facilitating indigenous R&D in the ICT sector. **RJIL is already engaged in R&D in a major way, and we have been seeing a lot of success with many network elements already deployed in our FTTX network and 5G network.** RJIL's indigenous 5G stack has major export potential. We understand that with fast changing technology cycles and an ambition to become global technology leader, it is imperative that the industry leads the innovations in ICT sector.
2. The Government needs to further facilitate this participation by fostering an enabling environment for cross sectoral, cross functional and cross technology research related collaborations, through measure like funding the public private collaborations at the initial stages, creating fully funded forums and initiatives that bring cross-section of researchers (both India based and outside India), startups, innovators and industry on a single platform.
3. The Government should provide incentives, tax waivers and grants for investing in R&D. Support with inclusive and growth-oriented IP policies based on internationally accepted principles to remove any concerns regarding ownership and commercialization.
4. These Forums/platforms and financial support would incentivize Industries to develop and support customized R&D efforts as per their priority areas, which in turn will help align the research activities with market demand leading to commercialization.

Q.8. 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.

And

Q.9. Is there a need to establish new Centres of Excellence for the broadcasting sector? What can be done to synergize 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.

RJIL Response:

1. We understand that the contribution of the Telecommunication Centers of Excellence (TCOEs) has not been upto the expectations and therefore the Government should

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focus on other modes to help build a skilled workforce in advanced telecom technologies.

2. The innovative approach should incentivize the industries to take initiatives and collaborate with academia to deliver innovations in telecom and associated sectors. We should not go by the percentage of technologies that were commercialized and instead target to deliver more innovative solutions with cutting edge technologies and industry collaboration.
3. The Telecom sector is already having the exposure of working with academia under TCOEs and can take the lead in developing innovative solutions with academia. Further, the Government should encourage participation by associated sectors like Broadcasting, device manufacturers and also involve the beneficiary sectors under Industry 4.0. This will ensure adequate financial resources for cutting-edge research and development activities involving the emerging technologies under 5G, Internet of Things (IoT), artificial intelligence (AI), and edge computing.
4. **The broad-based partnership with industries will also facilitate smooth technology transfer from academia to industry partners and will help in commercialization and cross-disciplinary research.**

Q.10. What are the reasons behind MNCs primary focus on software rather than hardware in India? What measures can be taken to promote basic/applied research by MNCs strengthening the current R&D efforts in software and improving R&D efforts in hardware? Suggest a suitable mechanism to establish a balanced R&D Science System in the country.

RJIL Response:

1. We submit that the reasons for Multinational Corporations (MNCs) focus on software rather than hardware in India is well documented and recognized by the Government and relevant Authorities. The major reasons are the cost efficiency and skilled workforce proficient in English language provided by India. The lower cost of investment and OPEX in software implies that most technology companies make initial forays only in software. Further, software development has a smaller incubation timeframe and has the agility to keep up with the fast -moving innovation cycles unlike hardware.
2. Previously, hardware also had the added disadvantage of low Ease of Doing Business (EODB) ratings. However, the Government has taken major steps in last few years to address the same. Hardware R&D also needs linkages to the prototyping. The Make in India and innovative PLI schemes have been launched to facilitate manufacturing in

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India which would also help in prototyping. Thus, the Government is already providing incentives and benefits to MNCs to invest in hardware manufacturing facilities in India and this can be further augmented by tax breaks, subsidies, or other financial incentives.

Q.11. 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.

RJIL Response:

1. We agree with the Authority that better government-industry-academia linkages is required in ICT sector to foster the R&D culture and ecosystem. We have already submitted that the industries should be engaged with the Universities and centres of higher learning to foster research and development efforts. **This can be further facilitated by a designated central body like TRAI or DoT providing a neutral platform for collaborative activities between academia and ICT companies.**
2. The Government can moot new research programs in association with academia and service providers and fully fund this research. The academia can be initiated into real life workings by participating in the training programs that can be on reciprocal basis.

Regulatory Framework: Policies and Programs

Q.12. 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.

And

Q.13. What steps must be taken to ensure a transparent mechanism for adequate and timely disbursement of funds for R&D programs? What should be indicators for the tracking mechanism for the funds and outcomes of R&D programs? Please support your answer with suitable examples or frameworks and best practices in India and abroad in this regard.

RJIL Response:

1. We do not believe that an additional institution is required to cater to the needs of R&D in ICT sector. The ICT sector is well governed sector with multiple governance agencies including DoT, TRAI and MeitY.

2. **The Government has already given a direction to R&D in telecom sector by including the same in Indian Telecommunication Act 2023. The requirement now is for these agencies to agree among themselves on the broad framework for R&D efforts in the ICT sector. Since the funds from the Digital Bharat Nidhi is also proposed to be used for supporting R&D in the telecom sector, in order to ensure judicious, transparent and outcome based usage, it is essential that the associated rules under the act are finalized in consultation with all stakeholders.**
3. The Government has considerable experience and well-established models for transparent and timely disbursement of funds to beneficiaries and the exact modalities can be discussed and finalized in consultation with all stakeholders once the program is finalized.

Q.14. How can participation of private sector in R&D be encouraged? Which incentivization model(s) or combination thereof would produce better results:

- (i) Tax-break model, or**
- (ii) Product-Linked Incentivization model**
- (iii) Any other model.**

Please provide details of the suggested model(s) in terms of structure, functioning, monitoring, and evaluation.

RJIL Response:

1. We submit that the PLI model is a popular model for manufacturing, however, in case of R&D, there may not be sufficiently quantitative measurables for encouraging the participation of private sector in R&D, therefore, it seems that the tax-break model might be most suitable model.
2. **The TSPs can be incentivized to invest in R&D by providing them AGR deduction equivalent to twice the amount invested in R&D activities. The amount can be on the basis of the audited returns of the company. We are proposing 2 times deduction as there will be many non-measurables involved in the R&D activities and to provide substantial incentives to foster innovation, the benefits should at least exceed the cost of outlay.**
3. The private sector investment can be in the form of grants, aids, setting up school level laboratories, Start up support and collaboration with academia. All these activities should be considered for tax-breaks.

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4. Government could also bring in Innovation Challenges like it did for Video Conferencing solution where it supported in the 3 stages i.e., Ideation, prototype and solution building.

Q.15. Is there a need for a mechanism to promote research, development, and innovation at the state level? Will a ranking mechanism for the states help to promote the spirit of innovation? If yes, please comment on the structure of such a mechanism with key performance indicators.

RJIL Response:

1. We submit that the states are part of the Union and once the Top-down approach and program to promote research, development, and innovation is finalized, the same can be easily percolated to state levels. The states can involve local science colleges, schools, and entrepreneurs.
2. While the central program should address the need for R&D at state level, the states should also be encouraged to form state-funded institutions for these activities.
3. The ranking of states on a well-defined parameter can help unleash the competitive forces, however, the exact contours of the same will be decided only post the complete program is available.

Regulatory Framework: IPR Framework

Q.16. How can awareness about IPR be increased among the researchers and industry in ICT sector? Suggest action points for making IPR as a part of syllabus in graduation /post-graduation level in colleges. Please support your answer with justification and best practices in India and abroad in this regard.

RJIL Response:

To enhance awareness about Intellectual Property Rights (IPR) among researchers and the ICT industry in India, and to incorporate IPR into college syllabi, the following action points can be considered:

1. **Incorporate IPR into the Curriculum:** Integrate IPR as a mandatory component of the curriculum in ICT-related courses at the graduation and post-graduation levels. This can include dedicated courses or modules on IPR.

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2. **Industry-Academia Collaboration:** Promote collaboration between academia and industry. Industry experts can be invited to deliver guest lectures, workshops, and case studies on the practical application of IPR in the ICT sector.
3. **Workshops and Seminars:** Conduct regular workshops, seminars, and awareness programs on IPR for students, faculty, and industry professionals.
4. **Online Resources:** Develop and provide free online resources and courses on IPR, making them accessible to a broader audience.
5. **Internships and Projects:** Encourage students to undertake research projects and internships where IPR issues can be understood and protected in the ICT sector. This provides practical exposure and experience.
6. **Government Initiatives:** Promote government initiatives that support IPR awareness, such as India's National Intellectual Property Rights Policy, and actively involve academic institutions in these programs.
7. **International Best Practices:** Learn from best practices abroad, such as the integration of IPR into education and industry collaboration in countries like the United States, where IPR is a fundamental part of tech education.
8. **IPR Teacher Trainers:** IP Experts/Trainers may provide training to Teachers, Professors and other academia members so as to educate them and make them as IP Champions for motivating students to innovate and protect IP.

Q.17. What essential steps can be taken to further improve the speed and efficiency of the patent approval process for ICT in India? Please support your answer with justification and best practices in India and abroad in this regard.

RJIL Response:

To enhance the speed and efficiency of the patent approval process for ICT in India, the following steps can be taken:

1. **Dedicated ICT Patent Examination:** Create a specialized division within the Indian Patent Office focused on ICT-related patents to expedite the examination process.
2. **Prioritized Examination:** Introduce a prioritized examination system for ICT patents, allowing innovators in this sector to fast-track their applications.

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3. **Reduced Documentation:** Streamline the documentation and information required during the patent application process, focusing on essential technical details.
4. **Examiner Training:** Invest in training patent examiners in ICT technology to improve the quality and efficiency of patent examination.
5. **Collaboration with International Patent Offices:** Collaborate with international patent offices to leverage their expertise and reduce duplication in patent examinations.
6. **Automation:** Implement advanced automation and AI tools for preliminary patent checks and data analysis to reduce the workload on human examiners.
7. **Regular Updates:** Continuously update patent laws and regulations to adapt to the evolving ICT landscape.

Q.18. Is there a need to reduce the cost of filing patents in India? If yes, how can it be done? Please support your answer with justification and best practices in India and abroad in this regard.

RJIL Response:

Reducing the cost of filing patents in India can encourage more innovators to protect their intellectual property. Possible strategies include:

1. **Fee Reduction:** Consider reducing government fees associated with patent filing for ICT inventions, especially for startups and small and large businesses.
2. **PCT Filing subsidies:** Consider reducing government fees associated with PCT patent filing for ICT inventions.
3. **Subsidies for Innovative Companies/Startups:** Offer subsidies or financial incentives for ICT startups to file patents.
4. **Pro Bono Services:** Establish a pro bono patent assistance program, where qualified professionals offer free or low-cost legal and technical help to inventors.
5. **Fast-Track for Economically Disadvantaged:** Implement a fast-track system for economically disadvantaged inventors, who could have their patent applications expedited at a reduced cost.

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6. **Public-Private Partnerships:** Encourage public-private partnerships to support cost-effective patent filing services.
7. **International Comparisons:** Benchmark patent filing costs in India with other countries and adjust fees accordingly to remain competitive.
8. **Fee Waivers for Educational Institutions:** Consider waiving or reducing fees for educational institutions filing patents related to ICT research.

These steps can help make patent filing more accessible and affordable, stimulating innovation in the ICT sector in India.

Some of the examples in other countries are as follows:

Best Practices Abroad (for reducing filing cost):

- **United States:** The U.S. offers reduced filing fees for small entities, micro-entities, and nonprofits. It also has a pro bono program for inventors who cannot afford legal assistance.
- **Japan:** Japan has a prioritized examination system with higher fees, which allows applicants to receive a quicker patent decision.
- **Europe:** Many European countries offer reduced fees for SMEs and universities. Some countries provide fee waivers for inventors with limited financial means.
- **South Korea:** South Korea provides support for patent filing through grants and subsidies for startups and small businesses.

Q.19. As far as the ICT sector is concerned, suggest measures to enhance filing of patents in India in general and by resident Indians in particular. Do we need a mechanism for handholding in patent filing? Do we need a mechanism of IPR sharing for collaborative research projects? Please support your answer with justification and best practices in India and abroad in this regard.

RJIL Response:

To promote patent filing in the ICT sector in India, especially among resident Indians, several measures can be considered:

1. **Educational Initiatives:** Increase awareness of the importance of patents through educational campaigns, workshops, and seminars. Implement dedicated programs targeting ICT students and professionals to encourage them to file patents.

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2. **Reduced Costs:** As mentioned in the previous response, consider reducing government fees for patent filing, offering subsidies, and providing incentives for residents and startups in the ICT sector.
3. **Handholding Mechanism:** Establish a handholding mechanism to assist innovators throughout the patent filing process. This could include providing guidance, mentoring, and support in preparing and submitting patent applications. Patent Facilitators have been nominated by the Patent Office to assist for handholding.
4. **Patent Clinics:** Set up patent clinics at universities and institutions, where experts provide free or low-cost assistance to inventors and startups in preparing their patent applications.
5. **IPR Sharing for Collaborative Research:** Encourage IPR sharing agreements for collaborative research projects in the ICT sector. This promotes collaboration and knowledge exchange while ensuring that the intellectual property rights of all participants are protected. This approach is in line with best practices in many countries.
6. **Patent Acceleration Programs:** Introduce programs that accelerate the patent examination process for resident Indians in the ICT sector, similar to the Track One Prioritized Examination program in the United States.
7. **IPR Incentives:** Offer tax incentives and financial benefits to individuals and companies that actively engage in patent filing and innovation in the ICT sector.
8. **Streamlined Processes:** Simplify and streamline patent filing processes to make it more user-friendly, reducing the bureaucratic burden on applicants.
9. **Government-Industry Collaboration:** Foster collaboration between government bodies, industry associations, and research institutions to collectively promote and support patent filing in the ICT sector.
10. **Online Resources:** Develop and maintain an online platform that provides guidance, resources, and tools for patent filing, making the process more accessible and understandable.
11. **Monitoring and Evaluation:** Regularly assess the impact of these measures to ensure they are effective in increasing patent filings and innovation in the ICT sector.

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Many countries, including the United States, Japan, and South Korea, have implemented various measures to boost patent filings and innovation, and India can draw inspiration from these practices. Additionally, India should consider its unique context and tailor these measures to address the specific needs and challenges of the ICT sector and its innovators.

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?

(b) How can small innovators be protected from the predatory practices?

Please support your answers with justification and best practices in India and abroad in this regard.

RJIL Response:**(a) Fair, Reasonable, and Non-Discriminatory (FRAND) Mechanism for SEPs Licensing:**

The FRAND mechanism for licensing Standard Essential Patents (SEPs) is designed to ensure that essential technologies are accessible to all industry players at reasonable terms. However, its effectiveness can be subject to debate, and there are potential areas for reform. Here are some considerations:

Challenges:

1. **Licensing Terms:** Ambiguity in what constitutes "fair" and "reasonable" terms can lead to disputes. Different interpretations of FRAND can result in legal battles and market uncertainty.
2. **Royalty Rates:** Determining reasonable royalty rates for SEPs is a challenge. Small innovators or new entrants might face difficulties negotiating fair rates with established patent holders.
3. **Injunctions and Hold-Up:** Patent holders, especially large companies, can employ injunctions and the threat of litigation to extract higher royalties, potentially stifling innovation and competition.

Reforms:

1. **Clarity in FRAND Terms:** Developing clearer and more specific guidelines for what constitutes FRAND terms can reduce disputes and promote a more effective system.

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2. **Independent Mediation:** Establishing an independent mediation or dispute resolution mechanism can help small innovators and companies with limited resources negotiate FRAND licenses more fairly.
3. **Transparency:** Encourage transparency in licensing negotiations and agreements to prevent "hold-up" situations and ensure that terms are consistent with FRAND principles.
4. **Global Standards:** Promote the adoption of global standards for FRAND licensing, which can simplify negotiations and reduce the complexity of international licensing.

(b) Protecting Small Innovators:

To protect small innovators from predatory practices, a few steps can be taken:

1. **Patent Pools:** Encourage small innovators to participate in patent pools, which can provide collective bargaining power and reduce the risk of patent infringement lawsuits.
2. **Educational Programs:** Provide educational resources and programs to help small innovators understand patent law, licensing, and negotiation strategies.
3. **Legal Aid:** Offer legal assistance and support to small innovators who may not have the financial resources to defend themselves in patent disputes.
4. **Incentives for Licensing:** Implement incentives for large companies to provide favorable licensing terms to small innovators, such as tax breaks or other benefits.
5. **Dispute Resolution Mechanisms:** Establish efficient and cost-effective dispute resolution mechanisms to address patent-related disputes without burdening small innovators with extensive legal costs.
6. **International Collaboration:** Collaborate with international organizations and other countries to develop a unified approach to protecting small innovators in the global marketplace.

In summary, while the FRAND mechanism for SEPs licensing has its merits, it may benefit from reforms to enhance clarity, transparency, and fairness. Protecting small innovators from predatory practices requires a combination of legal measures, education, and support to ensure they can compete on a level playing field with larger patent holders. These strategies can draw on best practices from various jurisdictions worldwide.

Q.21. (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? Please support your answer with justification and best practices in India and abroad in this regard.

RJIL Response:

(a) Strengthening IPR Dispute Resolution Mechanism:

1. **Specialized IP Courts:** Establish specialized Intellectual Property Courts to handle IPR-related disputes. These courts can have judges with expertise in intellectual property law, ensuring a better understanding of the complexities involved.
2. **Fast-Track Procedures:** Implement fast-track procedures for IPR disputes, particularly for cases where confidentiality is crucial. This would ensure that disputes are resolved more quickly.
3. **Confidentiality Agreements:** Encourage parties involved in IPR disputes to sign confidentiality agreements, protecting sensitive information during the resolution process.
4. **Mediation and Arbitration:** Promote the use of mediation and arbitration as dispute resolution methods. These processes are often quicker and more confidential than traditional litigation.
5. **Online Dispute Resolution (ODR):** Develop and implement ODR platforms for IPR disputes, allowing parties to resolve conflicts online, which can be both time-efficient and confidential.
6. **Evidence Preservation:** Ensure mechanisms are in place to preserve evidence while protecting confidentiality. This can help in maintaining the integrity of the dispute resolution process.
7. **Mandatory Preliminary Negotiations:** Make preliminary negotiations a mandatory step before initiating formal legal proceedings. This can encourage parties to reach an amicable resolution more quickly.

(b) Improving Alternate Dispute Resolution (ADR) Mechanisms:

1. **ADR Training:** Train mediators and arbitrators specifically in intellectual property disputes. They should have a strong understanding of IPR laws and practices.
2. **Standardized ADR Procedures:** Establish standardized ADR procedures for IPR disputes to streamline the process and make it more accessible and predictable.
3. **Enforceability:** Ensure that decisions reached through ADR are enforceable in court, providing parties with a reliable resolution mechanism.
4. **Public Awareness:** Increase public awareness of the benefits of ADR for IPR disputes, encouraging more parties to consider these mechanisms as alternatives to litigation.
5. **Hybrid Approaches:** Allow for hybrid ADR methods where parties can first attempt mediation or negotiation and, if unsuccessful, move to arbitration or litigation.
6. **ADR Centres:** Develop specialized ADR centres for IPR disputes, staffed with experts in the field who can efficiently handle these cases.
7. **Feedback Mechanisms:** Implement feedback mechanisms for ADR processes, allowing parties to provide input on the effectiveness and fairness of the process.
8. **Cost Incentives:** Offer financial incentives for parties choosing ADR over litigation, such as reduced fees or quicker resolution times.
9. **Multi-Jurisdictional ADR:** Promote multi-jurisdictional ADR solutions for international IPR disputes, where parties from different countries can access a consistent and neutral resolution process.
10. **Continuous Monitoring and Improvement:** Continuously monitor and improve ADR mechanisms based on feedback and emerging best practices.

In summary, strengthening the IPR dispute resolution mechanism and improving ADR for IPR disputes are critical to protecting innovation and ensuring timely and confidential resolution of disputes. These measures draw on the experiences of various countries and organizations to develop a robust and effective system.

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Q.22. Whether there is a need to introduce IP-backed financing system in India for ICT sector? If yes, what could be the framework to recognize IP as a collateral? Please support your answer with suitable examples or frameworks and best practices in India and abroad in this regard.

RJIL Response:

Introducing an IP-backed financing system in India for the ICT sector can have significant benefits in promoting innovation and economic growth. Such a system would recognize intellectual property (IP) assets as collateral for securing loans and investments. Here's why it's important and how it can be implemented:

Importance of IP-Backed Financing:

1. **Unlocking Value:** IP assets, including patents, trademarks, and copyrights, often represent valuable intangible assets that can be used to secure financing. Utilizing IP as collateral allows businesses to unlock the value of their IP assets without selling them.
2. **Promoting Innovation:** IP-backed financing can provide a vital source of funding for research and development, particularly in the ICT sector, where innovation is rapid and capital-intensive.
3. **Access to Capital:** It offers an additional avenue for businesses, especially startups and small and medium enterprises (SMEs), to access much-needed capital for growth and expansion.

Framework for Recognizing IP as Collateral in India:

To recognize IP as collateral in India, a comprehensive framework is needed, which could include the following components:

1. **Legal and Regulatory Framework:** Develop clear and enforceable laws and regulations that define and protect IP rights and specify the conditions under which IP can be used as collateral. Ensure that secured transactions and IP-specific laws are aligned.
2. **Valuation Standards:** Establish standardized methodologies for valuing IP assets to determine their worth as collateral. This can be based on recognized international valuation standards.

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3. **IP Asset Registry:** Create a centralized IP asset registry where businesses can register their IP assets. This registry should be accessible to lenders and investors, providing transparency and verification of the collateral.
4. **Risk Mitigation Measures:** Implement mechanisms to mitigate risks associated with IP-backed loans, such as insurance and recourse arrangements, to protect lenders in case of default.
5. **Lender Education:** Develop educational programs for lenders to understand the value and risks associated with IP assets. This can increase their willingness to accept IP as collateral.
6. **Standardized Agreements:** Develop standardized agreements for IP-backed loans to simplify the process and reduce legal costs for businesses and lenders.

Best Practices and Examples:

1. **United States:** The United States has a well-established IP-backed financing ecosystem. The U.S. Small Business Administration offers IP-backed loans to SMEs, and organizations like the U.S. Patent and Trademark Office (USPTO) provide resources for valuing and leveraging IP assets.
2. **European Union:** The European Investment Fund (EIF) has programs that support IP-backed financing through venture capital and guarantees. European countries like the UK have also introduced initiatives to facilitate IP-backed loans.
3. **South Korea:** South Korea's Intellectual Property Financing Service program helps businesses secure financing using IP assets as collateral, enhancing their access to capital.
4. **Japan:** Japan's IP Bridge Corporation actively manages IP assets and collaborates with financial institutions to promote IP-backed financing for startups and businesses.

In conclusion, recognizing IP as collateral through an IP-backed financing system in India is essential for fostering innovation and economic growth, especially in the ICT sector. By implementing a robust legal and regulatory framework, valuation standards, and supporting infrastructure, India can follow the best practices of other countries to facilitate this financing mechanism effectively.

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Global Leaders in R&D

Q.23. What measures should be taken to strengthen international collaborations in the field of STEM by the Government of India? Please support your answer with suitable examples or frameworks and best practices in India and abroad in this regard.

RJIL Response:

We submit that the fields of Science, Technology, Engineering, and Mathematics (STEM) are the most critical ingredients for fostering innovation and R&D. Although Indian students are known to be leaders in STEM, we can certainly improve the institutional framework to strengthen STEM basis global experiences. We should target that a large number of our STEM institutions are of global standards and competitive at global scale. For this, the Government need to take lead and have partnership with other leading countries for STEM and have educational and research partnerships, while maintaining a sizable presence at global forums.

Q.24. 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.

And

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.

And

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.

RJIL Response:

1. We submit that the global best practices that stand out and can be introduced in India are detailed in following paras.
2. Large spend on R&D, many countries spend is as high as over 5% of the GDP. Even neighboring countries like China have R&D spend of over 2% of GDP.
3. Extensive spend on education with Sweden going as high as around 7.6% of the GDP.

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4. Prevalence of Top-down approach with heavy investment and dedicated programs to fostering innovation and R&D. We can imbibe the toolbox approach of Israel with dedicated divisions for start-ups, growth, infrastructure, and international collaboration etc. and a customized and comprehensive incentive program.
5. Extensive support to start-ups, with investments, tax breaks, dedicated industrial areas. Leading example of South Korea with incentive programs for start-ups in the form of R&D support; Safe Harbor for SMEs and support for global expansion.
6. Programs for private participation like LINC (Leaders Industry-university Cooperation) program of South Korea, discussed in the previous section. Triple Helix Model of Sweden which brings together government, industry, and academia to work on innovative technologies.
7. Most leading countries provide massive tax reliefs and R&D expense deduction schemes to the companies involved in R&D activities. A few of the examples that can be implemented in India are as below:
 - a. **Israel:** Under business asset rollover relief scheme, capital gains tax relief is provided to R&D intensive companies that transfer certain assets to another company to raise capital for R&D activity.
 - b. **South Korea:** Hybrid Tax carry-forward for 10 years; Tax exemptions for companies in R&D Special Zone (Technology Zones); The expenses incurred for innovative growth-related technology investments are covered under tax exemptions. 100% tax-free for investments by Angel investors
 - c. **United States:** Tax Carry-forward: In case of insufficient tax liability, unused tax credits can be carried forward for 20 years. Unused research credits may be carried back for 1 year and carried forward for 20 years. Eligible start-up companies that do not have a federal income tax liability because they may be eligible to use the credit to offset up to \$250,000 of their federal payroll tax liability. The tax deduction is permitted for 100% of R&D expenses for federal and state tax purposes.
 - d. **Japan:** Tax credits of up to 10% are provided for general R&D expenses and credit for special open innovation R&D expenses.
 - e. **Germany:** 25% tax incentive for in-house R&D activities. The incentive is provided as a tax credit.

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- f. **Finland:** Entities that are conducting R&D activity with a research organization can make a 150% deduction on R&D subcontracting costs.

Key Learnings from International Experience

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.

And

Q.28. In the context of India, whether top-down or bottom-up approach, or combination thereof should be preferred to facilitate indigenous R&D? Please support your answer with suitable examples or frameworks and best practices in India and abroad in this regard.

RJIL Response:

1. The fact that current mixed approach of bottoms up and top-down model for R&D, has not yielded satisfactory results indicates that we need to follow well defined process to foster R&D in the country. We agree with the Authority that there is a need for an enabling regulatory framework with streamlined and simplified regulatory processes, robust guidelines, high predictability, increased capacity, and strong governance is one of the building blocks of a strong innovation ecosystem for the ICT sector.
2. From the international experiences we can deduce that barring some exceptions, Top-down approach has been more successful. Therefore, we should follow an approach centralized approach governed by existing agencies.
3. This will ensure coordination between R&D projects undertaken by different stakeholders and will also ensure a well-defined single window monitoring mechanism to ensure that desired results are achieved.
4. On a national level, a sense of coherence should be derived for most relevant national policies like National Policy on Electronics 2019, National Education Policy, National Policy on IT, draft STIP 2020, National strategy on AI, NDCP-2018, Policy to catalyse R&D and innovation in the Pharma-MedTech Sector, etc. We agree with the Authority that a coherent, consistent, and favorable policy landscape along with a defined plan for commercialization and IPRs is an important building block to a strong innovation ecosystem, especially for the ICT Sector.

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Q.29. Apart from the measures indicated under New Education Policy what additional measures should be taken to establish a framework at initial stages of education to encourage students for opting experiment-based learning (learning by doing), rather memory-based learning? Please provide your answer quoting the best practices being followed internationally.

RJIL Response:

1. The National Education Policy (NEP) 2020 has been launched recently and has a focus on increasing spending on education and to encourage R&D in India. The policy talks of all the correct things in this direction and also provides for establishment of a National Research Foundation (NRF) to fund outstanding peer-reviewed research and to actively seed research in universities and colleges.
2. We submit that this is an important measure and this along with increased outlay on education and R&D should provide required impetus to grow the R&D by way of building a comprehensive research ecosystem in the country. In addition, we have already submitted our view on need for experiment based and evidence-based education in previous sections and the need to invest in research at grassroot levels.

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?

RJIL Response:

1. We submit that the focus should be rather holistic to ensure that knowledge-based economy prospers in the country. India with a large pool of young population and large number of students going for engineering studies, has sufficient resources to quickly turn into a knowledge-based economy.
2. However, as discussed in previous sections, this will require focused education and training, facilitative regulatory framework supportive of innovation and entrepreneurship, easy access to finance and tax reliefs for Corporates to invest in R&D.
3. Additionally, a well-developed IPR regime is a prerequisite for a knowledge-based economy as a strong patenting system is required for technological innovation and scientific research. We agree with the Authority that we should fast track setting up of effective intellectual property (IP) system to enable the thriving startup ecosystem in India to help transform India to a knowledge-based economy.

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Q.31. How educational institutions can be linked with industries on long term basis for basic R&D, development and commercialization of innovative products on self-sustainable model? Is there any policy intervention also needed? Please support your answer with the best practices being followed in India, or internationally.

RJIL Response:

We have already submitted the measures to involve industries, both public and private, with educational institutes and those need to be followed. We understand that initially a large investment in the form of grants and aids will be required to take these collaborations to the eventual goal of self-sustaining model basis commercialization of the R&D efforts.

Q.32. Start-ups are carrying out some outstanding work in all kinds of industries. What additional incentives can be given to start-ups to take up R&D activities in the ICT sector? In this regard, will establishing an exclusive venture capital (VC) fund for ICT help startups in the ICT sector to flourish and prosper in India? If yes, please provide a mechanism for the same.

RJIL Response:

1. As noted in the international experiences shared by the Authority, most Governments understand the importance of Start-ups in fostering R&D and their impact in transforming economies. The big players of today are invariably the yesterday's start-ups, as seen in bigtech, the entire industry of trillions of dollars was created in last 2-3 decades.
2. Therefore, it is important to provide special fiscal incentives for increased spending on R&D by Start-ups. We should follow the global examples of redesigning their R&D tax incentives to make them more effective for budding entrepreneurs. The Authority has rightly proposed that in India the funding programs should be for the entire innovation lifecycle (Ideation, POC, Prototype, Commercialization). This will help overcome the final barrier of commercializing the inventions.
3. The Government has already set up a dedicated program under the "Startup India", to provide a platform for connecting with mentors and to improve learning by means of online courses for entrepreneurs to develop business and technology skills, and a Startup guidebook. These programs are further supported by various initiatives like Atal Innovation Mission to set up Incubation centres at universities. We understand that these initiatives will have a positive impact on the start-up ecosystem in India.

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4. Further, a new VC fund, if required should also be set-up under the aegis of Start-Up India only.

Q.33. Suggest ways and means to improve the acceptance of Indian technological innovations globally? Do you envisage the need for a Technology Transfer Organization at the national level to help towards commercialization of innovations in ICT? Please support your answer with justification, frameworks and best practices in India and abroad in this regard.

RJIL Response:

1. There are no short cuts for global acceptability of technological innovations at global scale. The idea is to make all innovations as much as relevant as possible, and the global acceptability will come if the innovations are relevant and save costs or provide new solutions.
2. Further, we do not think that the global acceptance should be the guiding benchmark. The size of Indian economy and the disparity in incomes, digital inclusion, availability of education, healthcare etc. indicate that any innovation that can solve Indian problems would have huge economic potential at the national level only and can be modified and scaled up later for global acceptance.

Q.34. ICT sector is enabler for fin-tech, health-tech, ed-tech and a host of other applications. In such a scenario, what should be the specific focus areas for R&D in ICT sector? Please support your answer with suitable examples or frameworks and best practices in India and abroad in this regard.

RJIL Response:

We submit that with Industry 4.0, IOT, AIML and Big Data, ICT sector has its footprints all over the economic spectrum and we need innovations and R&D in all sectors for holistic and inclusive growth. Therefore, there is no need to mandate focus areas for research and instead a comprehensive and facilitative framework should be provided for innovations and R&D at holistic levels.

Q.35. Is there a need for additional tax or fiscal incentives to support R&D activities in emerging technologies in ICT sector? If yes, please give suggestions with justifications and best practices in India and abroad in this regard.

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RJIL Response:

As noted by the Authority, globally tax relief provisions are the most popular provisions to foster innovation and R&D. We reiterate our submission in response to Q.24, 25 and 26, and submit that it is important to implement the global best practices like Tax Carry Forward, Tax Breaks, Tax Holidays and Tax Credits. These measures will incentivize public and private participation innovation and R&D activities.

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

And

Q.37. What measures should be taken for quick disposal of IPR or Patent related disputes? Is there a need to create a specialised 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.

RJIL Response:

1. We reiterate our submissions made in response to Q19 detailing the measures to enhance filing of patents in India in general and by resident Indians in particular. Further, we agree with the Authority's analysis that to support R&D and innovation in the country it is important to strengthen the IPR framework and make the country a favorable destination for IPR.
2. It is equally important to provide for special IP courts for quicker resolution of cases. As noted by the Authority, a large number of the top ten global frontrunners in R&D sphere have provisions for adjudication through the special IP courts, which lead to fair and faster dispute resolutions.
3. We can adopt the US model of having a dedicated IP Court to accelerate IP infringement cases. This will be a special court that will handle only patent related cases and the Judges will be technically trained in relevant laws, global precedents, and best practices. This will lead to expeditious resolution of the patent related cases and reduce the cost for innovators and start-ups.

Others

Q.38. Please comment on any other related issue to promote R&D in the ICT sector in India. Please support your answer with suitable examples and best practices in India and abroad in this regard.

RJIL Response: None