

Consultation Paper No.09/2023



Telecom Regulatory Authority of India

Consultation Paper

on

**Encouraging Innovative Technologies, Services, Use Cases, and
Business Models through Regulatory Sandbox in Digital
Communication Sector**

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Stakeholders are requested to furnish their comments to Advisor (BB&PA), TRAI, by 17th July, 2023 and counter-comments, if any by 1st August, 2023. Comments and counter-comments would be posted on TRAI's website: www.trai.gov.in. The comments/counter-comments may be sent, preferably in electronic form, to Shri Sanjeev Kumar Sharma, Advisor (Broadband and Policy Analysis), Telecom Regulatory Authority of India, on the email id: advbbpa@trai.gov.in with a copy to jtadvbbpa@trai.gov.in. For any clarification/information, Shri Sanjeev Kumar Sharma, Advisor, (Broadband and Policy Analysis), may be contacted at Telephone No - +91-11-23236119

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CHAPTER 1

INTRODUCTION

- 1.1. The digital communication industry is a key driver of economic growth and development in India, contributing significantly to the country's GDP and employment. With the rapid advancement of technology and the emergence of new players in the market, there is an increasing need to promote innovation and entrepreneurship in the sector. Promoting innovation in the digital market is crucial for economic growth because it leads to the development of new and improved products and services, increased productivity and efficiency, and the creation of new industries and job opportunities. It drives competitiveness, higher profits, and investment in the economy. The digital market is transforming the way we live and work, and encouraging innovation in this sector is necessary for entrepreneurs, start-ups, and SMEs to compete with established players, stimulate economic growth and create new jobs and opportunities.
- 1.2. Continuous innovations are happening which at times may not fit in with the existing licensing and regulatory framework. Many a times testing innovations may require access to live customers and real time data. The conventional approach of doing Pilots or conducting lab tests which neither permit any exemption from regulatory and licensing requirements nor provide access to live telecom resources and real time data may not fulfill the purpose in such cases.
- 1.3. In addition to use cases designed and developed in India, use cases that are designed and developed in the western world may be required to be tested again in India. Such product or service may not work in India due to the massive scale of the Indian market, cost-related constraints, diverse socio-economic profiles, and other factors.
- 1.4. Therefore, there is a need to have a robust, well-defined, and well-oiled framework for testing innovations that can assure a high probability of

commercial success in the country after successful deployments in test environment. Testing innovations under real-world conditions in India can help identify potential issues and adapt the use cases to meet the unique needs of the Indian market, which can ultimately lead to greater success in terms of adoption and profitability. Additionally, a robust testing framework can also help attract investment and create opportunities for Indian companies to lead innovation in the digital communication industry.

- 1.5. One way to achieve this is through the implementation of a regulatory/licensing sandboxing framework that allows companies to test and experiment with new products and services in a controlled environment where they have access to live environment and real time data but may not be required to comply with the full range of regulatory requirements. A sandboxing framework is an alternative and additional approach to the existing ways (like carrying out pilots) for testing innovations. While some innovations may only require a pilot approach, others may require access to live data and subscribers, which can be achieved through a sandboxing framework. Further, such sandboxes can be of great help to small entrepreneurs. A robust and well-defined regulation framework that provides access to resources under real-time conditions for testing innovative products and services in digital communication sector is essential especially for the success of 5G/6G and for enterprise segment use cases. Supporting innovation in the digital communication industry can help in ensuring compliance and identifying potential issues with new products and services before commercial deployment.
- 1.6. Testing new ideas in the digital communication industry can be significantly different from testing ideas in other fields due to various reasons, such as:

- i. Scale: Digital communication products and services are typically deployed at a large scale, serving millions of customers simultaneously. Therefore, testing these products and services for their scalability and reliability is critical.
- ii. Real-world conditions: Digital communication products and services are often used in complex real-world conditions, which can be difficult to simulate accurately. Factors such as varying network conditions, different user profiles, and diverse use cases make it challenging to test these products and services comprehensively.
- iii. Regulatory compliance: The digital communication industry, being a strategic sector, is tightly regulated, and products and services must comply with various rules and regulations before they can be launched commercially.
- iv. High cost of failures: Innovation in the digital communication industry is critical for growth and staying competitive, and failure to innovate can indeed be a costly affair. This industry is highly capital-intensive, with high costs involved in developing and deploying new technologies and services. Therefore, any failure to commercialize the service after testing effectively, due to regulatory hurdles, can result in significant financial losses for the companies involved.
- v. Inter Sectoral Collaboration: Many of 5G/6G use cases will require close co-ordination with regulators and other stakeholders like Municipalities, Power Distribution Companies, State and Central Ministries, airports, ports, metro trains, Smart City Authorities etc.

1.7. As mentioned earlier, one strategy for overcoming these difficulties is to do pilot studies, laboratory testing, etc. Several 5G use cases through pilot

projects were tested by TSPs. Pilot projects on "Use of Street Furniture for Small Cells and Aerial Fiber Deployment" were also carried out by the Authority. Additionally, DoT has recently developed a 5G Test Bed for entrepreneurs to evaluate 5G use cases. Moreover, the establishment of Innovation Labs and Centers of Excellence (CoE) has been announced in the recent budget to encourage the testing of cutting-edge technologies like Artificial Intelligence (AI) and Internet of Things (IoT). Testing settings like pilots, test beds, labs, CoE, etc., only provide simulated or limited access to telecom resources. This might not be adequate to recognize every potential problem and difficulty that might appear when the goods or services are used extensively in a real-world setting.

- 1.8. When testing new technology use cases, collaboration with other sectors such as education, health, transportation, airport, and ports may be necessary to comprehend and meet the specific difficulties and requirements of each area. However, when working across industries, coordination with different stakeholders can be difficult as they may have diverse priorities, rules, and deadlines. The technical needs of each sector must be met, making collaboration a difficult and time-consuming process. Furthermore, the engagement of other sectors may necessitate additional funding and resources, which will complicate the process further. Despite these hurdles, cross-sector cooperation is necessary to maximize the potential of new use cases and promote innovation.
- 1.9. However, cross sectoral collaboration for testing innovative products and services requires a lot of time, effort and resources and may ultimately discourage small companies from innovating. A sandbox framework can overcome this difficulty by providing a common platform for interacting with stakeholders of other sectors while providing access to live network and real time data of large number of participating customers. A common platform would provide a unified space for stakeholders to exchange ideas, feedback, and requirements, which could help to streamline the testing process and improve the overall quality of the product. This approach

could also help to identify potential issues and challenges early on, reducing the risk of costly mistakes and delays. By bringing together stakeholders from different sectors, a sandbox framework with a common platform could help to unlock new use cases and applications for new technologies like 5G, 6G, AI, ML etc. and can help in driving innovation and growth across various industries.

- 1.10. A sandbox can also provide a platform for intra sector collaboration between different stakeholders in the digital communication industry, including Telecom Service Providers (TSPs), equipment manufacturers, academicians, and developers, which can lead to the discovery of new use cases and innovative solutions.
- 1.11. Sandboxing framework doesn't require creation of elaborate and differentiated testing infrastructure. Sandboxing tests are supposed to be performed at the place under the control of product or service owner like TSP and uses the existing infrastructure. The control and ownership of testing processes in principle remains with the owner. However, it is slightly adapted to the extent to create an oversight mechanism for licensor/regulator. At times, due to participation of large number of customers in live environment, testing process may need prior approval.
- 1.12. From the aforesaid, it can be inferred that regulatory sandbox approach can allow companies to experiment and innovate with new technologies and business models, with access to large customer base in real time conditions while ensuring that risks to businesses and consumers are managed and mitigated. Therefore, while the digital communication industry may have an established ecosystem for innovation, a sandboxing framework can be a complementary approach which offers far richer testing environment.
- 1.13. Having said this, it must also be brought out that regulatory sandbox approach can also have some risks and limitations. These risks and how they can be mitigated are explained below:

- i. Innovators may lose some flexibility and time in going through the sandbox process. However, having a definite timeframe for Regulatory Sandbox approval at each stage can mitigate this risk.
- ii. Case-by-case bespoke authorizations and regulatory relaxations can involve time and discretionary judgements. This risk may be addressed by handling applications in a transparent manner and following well-defined principles in decision-making.
- iii. Post-sandbox testing, a successful experimenter may still require regulatory approvals before the product/services/technology can be permitted for wider application. This issue can be handled by defining time frames for post sandbox testing.
- iv. There is potential for some legal issues coming up, such as those relating to consumer losses in case of failed experimentation. Such instances may not have much legal ground if the Regulatory Sandbox framework and processes are transparent and have clear entry and exit criteria. Upfront clarity that liability for customer or business risks shall devolve on the entity entering the Regulatory Sandbox will be important to mitigate such risks.

1.14. It can be concluded that though testing in sandbox environment may have some risks and limitations, its benefits far outweigh it. However, it is important to ensure that while framing directions for sandboxing, the framework is focused on safeguarding consumers who are participating in sandboxing tests and not place excessive restrictions on sandboxing test itself.

Sandboxing framework in other sectors

1.15. Sandboxing regulations are most prevalent in the financial sector, particularly in the areas of financial technology (FinTech) and banking. This is because these industries deal with sensitive financial data and transactions, and the risk of fraud, cyberattacks, and financial instability

is high. Regulators in financial sector viz RBI¹ and SEBI² have already issued guidelines for conducting testing of innovative financial products under the Regulatory Sandbox framework.

- 1.16. In the FinTech industry, sandboxing regulations are used to allow startups and new entrants to test innovative financial products and services in a controlled environment before they are released to the market. This helps to reduce the risks associated with untested technology and provides a safe space for experimentation.
- 1.17. In the banking industry, sandboxing regulations are used to test new financial services and products, such as mobile banking applications, digital wallets, and blockchain-based solutions. The sandboxing approach allows banks to test these products and services without risking the security of their existing systems and customers.
- 1.18. Other sectors where sandboxing regulations may be prevalent include digital communication, healthcare, energy, and transportation, where new technologies and services may pose significant risks if not tested properly. However, the prevalence of sandboxing regulations in these sectors may vary depending on the country and the specific regulatory framework in place.

Sandboxing framework in digital communication sector in other countries

- 1.19. In recent years, few countries have implemented sandboxing frameworks in the digital communication sector, like Bahrain³, Columbia⁴ and Saudi Arabia⁵. These frameworks have been successful in promoting innovation and entrepreneurship in the sector and have led to the development of new

¹ [ENABLINGFRAMEWORK815099571ACC411F8B9C0EB6534E681F.PDF \(rbi.org.in\)](#)

² [SEBI | Revised Framework for Regulatory Sandbox](#)

³ [Press Releases | Telecommunications Regulatory Authority, Kingdom of Bahrain \(tra.org.bh\)](#)

⁴ [Case Study: Regulatory Sandbox Framework in Colombia | Digital Regulation Platform](#)

⁵ [Emerging Technologies Regulatory Sandbox \(cst.gov.sa\)](#)

products and services that benefit consumers. Some of these have been discussed in Chapter-II.

Sandboxing framework in digital communication sector in India

- 1.20. DoT in its recent Draft Indian Telecommunication Bill, 2022, circulated for stakeholder consultation, has given due importance to promotion of innovation by facilitating testing through Sandbox. Chapter 8 of the Bill, entitled “Innovation and Technology Development”, in Clause 32, contains the following provision:

*Regulatory Sandbox : The **Central Government** may, for the purpose of encouraging and facilitating innovation and technological development in telecommunication, **create a Regulatory Sandbox**, in such manner as may be prescribed. For the purpose of this sub-section, “Regulatory Sandbox” shall mean a framework of special terms and conditions of a license, registration, authorization or assignment that allows persons to conduct live testing of products and services in a controlled environment under the supervision of the Central Government.*

- 1.21. The Telecom Regulatory Authority of India (TRAI) recognized the potential benefits of sandboxing and in THE TELECOM COMMERCIAL COMMUNICATIONS CUSTOMER PREFERENCE REGULATIONS, 2018 issued on 19.07.2018, the Authority stated that it may set up or permit to set up a Regulatory Sandbox for testing implementation of regulatory checks using DLT networks and other technological solutions complementing DLT network(s) and to operationalize such regulatory sandbox, the Authority might, by order or direction, specify the requisite processes. Vide Para 3.3.28 of the EM of said regulation, Regulatory Sandbox was defined as:

“Regulatory Sandbox: In view of multiple DLT system operators, varieties of complementing technologies, number of probable solution providers and constantly evolving requirements, a test environment may be established (as required) where new functions and processes can be tested, or existing

functions or processes can be refined. This test environment may also provide possibilities to explore new ways and means to meet regulatory requirements or new service offerings. Such test environments in regulatory space are commonly known as “Regulatory Sandboxes” and the relevant practices in other jurisdictions have been described in Para 10. The interoperability of DLT networks with envisaged functions and changes required, if any, to meet the requirements can be identified in this environment. Various stakeholders participating in UCC eco system including principal entities and telemarketers can prototype technology solutions and evaluate processes and functions in the test environment. From a regulatory perspective, access providers and other participants would have to be exempt from certain kinds of regulatory action, while they are operating in the sandbox. Since there are uncertainties involved in testing these new solutions, only customers who have given specific consent voluntarily would be allowed to participate in the test. Mechanism may be required to be developed or measures may be taken to contain the impact within live system, in case, any deviation is observed in behavior of the system or the application under trial from the behavior for which it was intended. For conducting tests scientifically, test protocols and outcome indicators must be designed and set in advance. During the testing phase, additional steps which may be required to be taken to address regulatory concerns (when the system goes live) may also be identified. Regulatory Sandbox can also be useful to finalize APIs and specific details of implementation. In view of this the Authority has decided that it may set up or permit to set up a Regulatory Sandbox for testing implementation of regulatory checks using DLT networks and other technological solutions complementing DLT network(s) and to operationalize such regulatory sandbox, the Authority may, by order or direction, specify the requisite processes”.

- 1.22. TRAI in its Consultation Paper (CP) on “Leveraging Artificial Intelligence and Big Data in Telecommunication Sector” dated 05.08.2022⁶

⁶ [CP_05082022.pdf \(traigov.in\)](#)

emphasized the importance of Regulatory Sandbox for emerging technologies like AI and ML. Para 3.3.5 describes Regulatory Sandbox as part of ITU defined architectural framework of Machine Learning⁷. This CP discusses mechanisms to mitigate risks in developing and adoption of AI solutions states “Regulatory mechanisms may be developed through policy sandboxes and controlled deployments where market reactions and impact could be closely monitored”.

- 1.23. Recently the issue of Sandbox was also discussed in TRAI’s Recommendations on Rating of Buildings or Areas for Digital Connectivity, dated 20.02.2023, wherein the Authority had mentioned:

“Regulatory Sandbox: Introduction of new technologies on the one hand leads to an improved quality of life but on the other hand poses several challenges like complexity, uncertainty, risks and in many cases causes disruption. Introducing new and innovative solutions to co-design and co-create the DCI along with Rating of Buildings, has its own challenges viz. cross sectoral collaborations, enabling provisions in the extant legal framework, adoption by relevant stakeholders, etc. Thus, the development of DCI and Rating may require an experimentation platform to demonstrate various capabilities in a secured environment to overcome these challenges. Such demonstrations may also support in defining the standards, formulating the methodology and procedure to develop DCI and the Rating framework. Additionally, before deployment of an optimal solution in the field, there is a need to test the design in a similar environment considering all the aspects of the field. Thus, there is a need to develop platforms which best fit the above requirements for testing and demonstration”.

- 1.24. The Authority had decided that there is no immediate need of regulatory sandbox. However, in future, whenever it is required, TRAI will take appropriate action to examine the innovative solutions offered, its

⁷ [Y.3172 : Architectural framework for machine learning in future networks including IMT-2020 \(itu.int\)](#)

implementation feasibility and requirements in the sector, on a case-to-case basis using the regulatory sandbox approach.

Reference received from DoT.

- 1.25. The Department of Telecommunications, vide its letter dated 10.03.2023, has written to the Telecom Regulatory Authority of India that *a regulatory sandbox can be provided to digital communication startups/ digital communication technology developers/ innovative service providers / institutions to test out newer concepts and innovations in the controlled environment before launching it in the open market. Regulatory bodies in many countries have set up sandbox framework for digital communication tech innovation. Sandboxes operate under specific regulatory exemptions, allowances, or limited time-bound exceptions. It manages the contentions between regulators' urge to motivate and facilitate innovation and regulatory goals such as economic resilience and consumer protection. A good example of such a concept in the financial sector could be RBI's Sandbox regulatory framework.*
- 1.26. Accordingly, DoT has sought the recommendations of TRAI on “Framework for regulatory sandbox for emerging technologies, services, and business models in digital communication sector”. The Authority has been exploring the requirement of Regulatory Sandbox and has already made certain observations in the past (as discussed above). Now keeping in view, the reference received from DoT, the Authority has decided to seek views of stakeholders on “Encouraging Innovative Technologies, Services, Use Cases, and Business Models through Regulatory Sandbox in Digital Communication Sector”. Accordingly, this Consultation Paper is being issued.

- 1.27. This consultation paper comprises of three chapters:
- i. CHAPTER 1 introduces the subject of “Sandboxing”.
 - ii. CHAPTER-2 discusses the various international and national experiences in different sectors including Digital communication.
 - iii. CHAPTER -3 raises the various issues related to the introduction of Sandboxing in the digital communication sector of the country.

CHAPTER 2

International and national experiences in different sectors including Digital communication.

A. International Experiences in framing Sandboxing Policies in other sectors

- 2.1 Sandboxing regulations have gained traction in several countries around the world, as governments seek to promote innovation while also managing risks to consumers. Sandboxing frameworks were first tried out in the financial sector helping Fintech startups to innovate. The UK, Singapore, and Australia have established regulatory sandboxes to promote innovation and competition in the fintech sector while ensuring consumer protection. The United Kingdom's Financial Conduct Authority (FCA) introduced a regulatory sandbox in 2016, which has since supported the development of 104 innovative projects. In Singapore, the Monetary Authority of Singapore (MAS) launched a sandbox in 2016, which has seen the participation of more than 200 fintech companies. Australian Securities and Investments Commission (ASIC) also launched a regulatory sandbox in 2016, which has allowed 54 companies to test innovative financial products and services. These sandboxes have proven to be effective in promoting innovation and entrepreneurship while also managing risks to consumers. As a result, many other countries are now exploring the implementation of sandboxing frameworks in various sectors.
- 2.2 The United Kingdom was one of the first countries to introduce a regulatory sandbox⁸, under the guidance of the Financial Conduct Authority (FCA) in 2016. The sandbox was established to address the challenges faced by fintech startups in navigating the complex

⁸ <https://www.fca.org.uk/firms/innovation/regulatory-sandbox>

regulatory environment. The FCA received over 69 applications in the first cohort, and since then, it has received over 500 applications, with 104 applications accepted to date. The sandbox has proven to be an effective way to encourage innovation and competition, while also protecting consumers. The key features of the UK sandbox include a clear eligibility criterion, a defined testing period, the identification and mitigation of risks, and ongoing monitoring and evaluation.

- 2.3 Monetary Authority of Singapore (MAS)⁹ introduced a sandbox in 2016 as part of the country's Smart Nation initiative. The sandbox was established to provide a safe environment for fintech startups to experiment and develop new products and services, while also ensuring consumer protection. Since its inception, the MAS sandbox has seen the participation of over 200 companies, with many going on to secure regulatory approval and launch successful products. The key features of the MAS sandbox include a clear application process, a maximum testing period of 12 months, the identification and management of risks, and the requirement for participants to demonstrate a commitment to consumer protection.
- 2.4 Australia's Securities and Investments Commission (ASIC) launched a regulatory sandbox¹⁰ in 2016, with the aim of supporting innovation in the fintech sector, while also protecting consumers. The ASIC sandbox has seen the participation of 54 companies to date, with many going on to receive regulatory approval and launch successful products. The key features of the ASIC sandbox include clear eligibility criteria, a maximum testing period of 24 months, a requirement to identify and manage risks, and ongoing monitoring and evaluation. The ASIC sandbox also offers a "passport" system, which allows companies to test their products and services in multiple jurisdictions.

⁹ <https://www.mas.gov.sg/development/fintech/regulatory-sandbox>

¹⁰ <https://asic.gov.au/for-business/innovation-hub/enhanced-regulatory-sandbox/>

2.5 In each of these countries, the introduction of a sandbox was driven by a desire to entrepreneurship, while mitigating risks to enterprises and consumers. The procedures adopted by these countries vary slightly, but all share a focus on providing a safe and supportive environment for innovation. Sandboxes were designed to provide a safe environment for companies to experiment with new products and services, without the need to comply with the full range of existing regulatory requirements. The sandboxes have proven to be successful in promoting innovation and competition, while also ensuring consumer protection.

B. International Experiences in framing Sandboxing Policies in Digital Communication sector

There are several countries that have implemented sandbox frameworks in the digital communication sector. The Infocomm Media Development Authority (IMDA)¹¹ in Singapore, the Financial Conduct Authority (FCA) in the United Kingdom, Bahrain's Telecommunications Regulatory Authority (TRA)¹², and Colombia's Ministry of Information and Communication Technologies (MinTIC)¹³ have all implemented sandbox frameworks. These frameworks cover a range of issues, including cybersecurity, artificial intelligence, the Internet of Things (IoT), 5G technology, e-commerce, mobile applications, cloud computing, and consumer protection. All these countries provide a clear and transparent process for companies to apply for and participate in the sandbox, with a focus on managing the risks associated with their innovations. These examples can provide valuable insights and best practices for developing a sandboxing framework for the digital communication industry in India.

¹¹ [Approaches to Notice Consent and Disclosure v3.pdf \(ctfassets.net\)](#)

¹² [Press Releases | Telecommunications Regulatory Authority, Kingdom of Bahrain \(tra.org.bh\)](#)

¹³ [Case Study: Regulatory Sandbox Framework in Colombia | Digital Regulation Platform](#)

2.6 A brief on Sandbox policies of respective countries mentioned above is available in **Annexure-II**.

C. Indian Experiences in framing Sandboxing Policies in various other sectors

2.7 India has established regulatory sandboxes in multiple sectors to promote innovation while ensuring consumer protection. The Reserve Bank of India (RBI) issued the "Framework for Regulatory Sandbox"¹⁴ in August 2019 to promote innovation in the financial sector. The SEBI sandbox, on the other hand, was issued by the Securities and Exchange Board of India (SEBI)¹⁵ in May 2019 to promote innovation in the securities market. The Insurance Regulatory and Development Authority of India (IRDAI) issued an "Insurance Regulatory and Development Authority of India (Regulatory Sandbox) Regulations, 2019"¹⁶ to promote innovation in the insurance sector.

2.8 Each sandbox has clear eligibility criteria, defined testing periods (maximum of 6 to 12 months), risk management measures, and ongoing monitoring and evaluation. The RBI sandbox has seen the participation of several companies, including startups and established players, in various areas such as payments, lending, and insurance. Similarly, the SEBI sandbox has features such as clear eligibility criteria, a maximum testing period of 6 months, and risk identification and management. The IRDAI sandbox has a longer testing period of 12 months but shares the same key features as the other sandboxes.

2.9 A brief on Sandbox policies of RBI, IRDA, and SEBI is in **Annexure-II**.

¹⁴ <https://www.rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=938>

¹⁵ https://www.sebi.gov.in/sebi_data/meetingfiles/feb-2020/1582714278455_1.pdf

¹⁶ <https://irdai.gov.in/document-detail?documentId=392215>

CHAPTER 3

Assessing requirements of Sandboxing framework in field of digital communication in India

- 3.1. As has been discussed in Chapter I, a sandboxing framework for the digital communication industry in India can offer several potential benefits by facilitating testing of new technologies and services in a controlled environment, reducing the risks associated with innovation, and by allowing companies to identify and manage potential issues. For example, the UK's Financial Conduct Authority (FCA) sandbox has allowed companies to test new products and services, leading to better solutions for consumers. It also encourages competition and spurs innovation, providing a level playing field for new and established players, leading to a dynamic and vibrant market with a wider range of products and services. In Singapore, the Infocomm Media Development Authority (IMDA) sandbox has led to the development of new solutions such as 5G drones for emergency response and blockchain-based supply chain management. Further, it fosters collaboration among regulators, industry players, and other stakeholders, promoting knowledge sharing, and identifying and addressing regulatory gaps. For instance, the Australian Securities and Investments Commission (ASIC) sandbox has allowed regulators to work closely with companies to identify and address potential regulatory barriers to innovation, leading to a more streamlined regulatory environment.
- 3.2. While preparing a sandboxing framework for digital communication sector in India, the scope and objectives of the proposed framework need to be carefully considered to ensure that it aligns with the needs of all stakeholders. The framework should aim to strike a balance between encouraging innovation and managing risk, while also promoting competition and protecting consumers. The scope of the framework may cover a range of issues, including data privacy and

security, interoperability, consumer protection, transparency, confidentiality and regulatory compliance.

3.3. To achieve its objectives, the framework should provide a clear and transparent process for companies to apply for and participate in the sandbox. The framework should also provide opportunities for collaboration between regulators, industry players, and other stakeholders, to promote knowledge sharing and best practices.

3.4. Some key considerations for the framework could include:

- i. Eligibility criteria: The framework may clearly define the eligibility criteria for participation in the sandbox. This may include factors such as the size and stage of the company, the nature of the innovation being tested, and the potential impact on consumers.
- ii. Essential Conditions: The framework may clearly define the conditions an applicant has to meet to qualify for testing in a sandbox environment.
- iii. Approval Process: The framework may clearly define the complete approval process to be followed by companies.
- iv. Oversight: The framework may clearly define the structure of oversight mechanisms to ensure proper conduct of sandbox testing.
- v. Risk management: Companies participating in the sandbox may be required to develop and implement robust risk management strategies, including measures to protect consumer data and mitigate potential harm to consumers. Licensor/Regulator should work closely with companies to ensure that these strategies are effective and sufficient.
- vi. Reporting and evaluation: Companies participating in the sandbox may be required to report regularly on their progress and the outcomes of their testing. Licensor/Regulators may

use this information to evaluate the effectiveness of the sandboxing framework and make improvements as necessary.

- vii. Exit from sandbox: Companies participating in the sandbox may be required to clearly define how they plan to exit from testing environment in orderly manner.
- 3.5. The experiences of Singapore, the UK, and Bahrain also show that their sandbox frameworks require companies to meet eligibility criteria, including having a clear plan for testing and evaluation, developing risk management strategies, and providing regular progress reports. Companies are also required to demonstrate that their innovation offers a genuine benefit to consumers.
- 3.6. The governance and oversight of the sandboxing framework is crucial to ensure that it is effective and achieves its intended outcomes. Some key considerations for the governance and oversight of the framework could include:
- i. Clear Objectives: The sandboxing framework may have clear objectives and goals that are aligned with the overall regulatory objectives of the digital communication sector. This can help ensure that the framework is effective in promoting innovation while also protecting consumer interests.
 - ii. Flexibility: The sandboxing framework may be flexible and adaptable to changing market conditions and technological advancements. This can help ensure that the framework remains relevant and effective over time.
 - iii. Collaboration: Collaboration among regulators, industry stakeholders, and other relevant parties is critical for the success of the sandboxing framework. This can help ensure that the framework is informed by industry expertise and can help identify and address emerging risks and challenges.

- iv. Establishing an independent oversight body: An independent body may be established to oversee the operation of the sandboxing framework. This body may have the authority to make decisions on eligibility, set standards and requirements for participation, and monitor and evaluate the performance of companies in the sandbox.
- v. Ensuring transparency and accountability: The oversight body should be transparent in its decision-making processes and should be accountable to the public. The body should also have mechanisms in place to receive feedback and complaints from participants and other stakeholders.
- vi. Engaging with industry and other stakeholders: The oversight body may engage with industry and other stakeholders to ensure that the framework remains relevant and responsive to the needs of the sector. This may include establishing consultation mechanisms, holding regular meetings and workshops, and engaging with industry associations and other stakeholders and suggesting changes in the overall framework, if required.
- vii. Testing performance measurement: The effectiveness of a sandbox framework can be evaluated and monitored through performance metrics.

3.7. Existing sandbox frameworks in the UK, Australia, and Singapore have established effective governance and oversight structures, with an independent panel of experts making decisions on eligibility and monitoring participant performance. The implementation of sandbox frameworks in the US, Singapore, and the UK have implemented rigorous review processes, comprehensive regulatory frameworks, eligibility criteria, and robust governance and risk management

systems to address challenges related to consumer protection and regulatory compliance.

- 3.8. These examples demonstrate that the implementation of a sandboxing framework in India can be made safer by taking measures such as setting up robust regulatory oversight, engaging with stakeholders to build trust, and establishing a comprehensive risk management framework that includes risk assessment procedures, safeguards for consumer privacy and data security, and ensuring financial stability. Regular audits and reviews should also be conducted to ensure that the sandbox is operating as intended.
- 3.9. The effectiveness of a sandbox framework can be evaluated and monitored through performance metrics, independent reviews, and stakeholder feedback. Performance metrics may include both quantitative and qualitative measures to assess the impact of the sandbox on promoting innovation and protecting consumers. An independent review may be conducted periodically by an expert panel to evaluate the framework's strengths and weaknesses and suggest areas for improvement. Regular feedback mechanisms for stakeholders can also be established to evaluate the effectiveness of the sandbox and identify areas for improvement. Australia and Singapore have established regulatory sandboxes, and both countries have implemented monitoring and evaluation frameworks to assess the effectiveness of their sandboxes. The Australian Securities and Investments Commission (ASIC) required regular reporting from participants and conducted an independent review of the sandbox after its first year of operation. The Infocomm Media Development Authority (IMDA) in Singapore implemented a comprehensive evaluation framework that included regular reporting requirements and an independent review of the sandbox after its first two years of operation. These examples demonstrate that regular evaluation and monitoring of

the sandboxing framework is crucial for ensuring its effectiveness in promoting innovation and protecting consumer interests. Performance metrics, independent reviews, and stakeholder feedback are important measures that can be taken to evaluate and monitor the sandboxing framework.

- 3.10. While a sandboxing framework can provide numerous benefits for the digital communication industry, there are also potential risks and challenges associated with its implementation in India. One of the key risks and challenges to consider is related to Consumer Protection. It needs to ensure that appropriate safeguards are in place to protect consumers from potential harm, including data breaches, fraud, and other security risks.
- 3.11. The process for companies to exit the sandboxing framework and transit to full regulatory compliance will also need to be defined. This may include a review and assessment process, a transition plan, and full compliance with relevant laws and regulations. Examples of countries that have implemented similar processes include the UK and Singapore, where the FCA and MAS respectively require companies to develop a transition plan outlining how they will achieve full regulatory compliance. A clear and well-defined process is crucial for ensuring a smooth and successful transition.
- 3.12. Designing the sandboxing framework to encourage the participation of startups and small and medium-sized enterprises (SMEs) is crucial for promoting innovation and supporting the growth of these companies. The following are some steps that could be considered:
 - i. Simplified Application Process: The application process for participating in the sandboxing framework may be simplified and streamlined to make it easier for startups and SMEs to participate. This could include providing clear guidance and support for the application process and simplifying the documentation requirements.

- ii. **Reduced Regulatory Burden:** The sandboxing framework may aim to reduce the regulatory burden on startups and SMEs. This could include waiving certain regulatory requirements or allowing for a more flexible approach to compliance.
- iii. **Access to Resources:** Startups and SMEs may be provided with access to resources and support to help them participate in the sandboxing framework. This could include access to mentorship, funding, and other resources to help them develop and test their products and services.

3.13. In Singapore, the Monetary Authority of Singapore provides funding, support, and access to resources such as mentorship to participants. In the United Kingdom, the Financial Conduct Authority provides guidance, support, and access to funding and other resources to help startups and SMEs develop and test their products and services. Thus, both Singapore and United Kingdom have established regulatory sandboxes to encourage the participation of startups and SMEs. These examples demonstrate that designing the sandboxing framework to encourage the participation of startups and SMEs is crucial for promoting innovation and supporting the growth of these companies. Simplifying the application process, reducing the regulatory burden, and providing access to resources and support are key steps that can be taken to achieve this.

3.14. The regulatory sandbox framework for digital communication sector that should be put in place in India should:

- i. Have a defined objective which should inter-alia include objective of promoting innovation in digital communication sector.

- ii. Have well defined eligibility requirements for participation in the sandboxing framework whereby participation of even small players is encouraged but non-serious players are filtered out.
- iii. be designed to encourage the participation of startups and small and medium-sized enterprises (SMEs).
- iv. Have well defined governance and oversight mechanisms.
- v. safeguard consumer and government's interest from potential risks and challenges associated with the implementation of sandboxing.
- vi. be evaluated and monitored to ensure its effectiveness in promoting innovation and protecting consumer interests.
- vii. Have a well spelt put evaluation process and criteria
- viii. Have a well-defined process for companies to exit the sandboxing framework and transit to full regulatory compliance.
- ix. Have a defined validity period and extension conditions.

3.15. Based on above discussions and the lessons drawn from the regulatory sandbox frameworks that are existing both within India and outside, a draft framework has been prepared by the Authority and placed as ANNEXURE-I to solicit comments from stakeholders on Addition/Deletion/Modification to be done in above Draft Framework.

**DRAFT FRAMEWORK FOR
ENCOURAGING INNOVATIVE TECHNOLOGIES, SERVICES, USE CASES,
AND BUSINESS MODELS THROUGH REGULATORY SANDBOX (RS) IN
DIGITAL COMMUNICATION SECTOR**

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I. THE REGULATORY SANDBOX

1. In view of new technological developments, varieties of complementing technologies, number of probable product/service/application providers and constantly evolving requirements, a test environment needs to be established where new functions and processes can be tested, or existing functions or processes can be refined. This test environment may also provide possibilities to explore new ways and means to meet regulatory requirements or new service offerings. Such test environments in regulatory space are commonly known as “Regulatory Sandboxes”.
2. The Regulatory Sandbox (RS) usually refers to live testing of new product/service/application in a controlled/test regulatory/licensing environment for which regulators/licensors may (or may not) permit certain regulatory/licensing relaxations for the limited purpose of the testing. The Regulatory Sandbox allows the regulators/licensor, the innovators, the service providers (as potential deployers of the technology) and the customers (as final users) to conduct field tests to collect evidence on the benefits and risks of new innovations, while carefully monitoring and containing their risks. It can provide a structured avenue for the Licensor/Regulator to engage with the ecosystem and to develop innovation-enabling or innovation-responsive framework that facilitate delivery of relevant, low-cost service products. The Regulatory Sandbox is an important tool which enables more dynamic, evidence-based regulatory/licensing environments which learn from, and evolve with, emerging technologies.

II. OBJECTIVES AND SCOPE:

3. The sandboxing framework for the Digital Communication (DC) sector in India is aimed at promoting innovation, protecting consumer interests, and mitigating potential risks associated with new technology and business models. The objectives of the

framework are to encourage innovation, reduce regulatory burden on small and medium-sized enterprises (SMEs), and ensure consumer protection. Under this sandbox framework, entities shall be granted certain facilities and flexibility to experiment with telecom products/services/application in a live environment and on limited set of real customers for a limited time frame. These features shall be fortified with necessary safeguards for customer protection and risk mitigation. Various stakeholders can prototype product/service/application solutions and evaluate processes and functions in the test environment.

4. The scope of the sandboxing framework includes any new DC service or technology that requires testing in a controlled environment. This framework is applicable to all entities or individuals concerned to test products or services or applications related to DC technology.

III. ELIGIBILITY:

5. Any licensed Service Provider, called Principal Applicant, shall be eligible for testing in the regulatory sandbox subject to fulfillment of laid conditions. The other entities, called Applicant, willing to utilize the Sandboxing facilities of any licensed service provider may engage with it as Principal Applicants. In case licensed service providers are applying in their own capacity they need to fulfill conditions meant for Principal Applicant and Applicant both.
6. In cases where the Applicants find difficulty in associating with a Principal Applicant OR the product/service/application does not necessitates associating with a Principal Applicant, the Applicant can apply directly. However, in such cases they will have to give sufficient justifications for applying directly. The Applicant will also be required to provide documents indicating the efforts made by them to tie-up with a Principal Applicant.

IV. ESSENTIAL CONDITIONS TO BE FULFILLED BY PRINCIPAL APPLICANT AND APPLICANT:

7. The essential conditions required for testing under Sandbox regulations and details to be provided in applications are as follows:
 - i. **Only Indian entities eligible:** Principal Applicant/ Applicant should be a company incorporated and registered in India.
 - ii. **Required financial and technological capability:** Applicant shall have a minimum net worth of Rs. 25 lakhs as per its latest audited balance sheet. In addition, Applicant/Principal Applicant should demonstrate in the application that they possess the required financial and technological resources to take part in the sandboxing process.
 - iii. **Genuineness of innovation:** The product/service/application should be innovative enough to add significant direct or indirect value to the existing offering in the market. The same should be explicitly brought out in the application by the Applicant/Principal Applicant
 - iv. **Genuine need to test:** The Applicant/Principal Applicant should have a genuine need for live testing the product/service/application on real customers. Further, the Applicant/Principal Applicant should demonstrate that the product/service/application cannot be developed without relaxing certain regulations, if any, being sought.
 - v. **Limited prior testing:** Before applying for testing in sandbox, limited offline testing of the product/service/application should have been carried out by the applicant. The details of the same should be provided in the application by the Applicant/Principal Applicant.
 - vi. **Direct benefits to users:** The product/service/application should offer identifiable benefits (direct or indirect) to the retail or enterprise customers. The same should be explicitly brought out in the application by the Applicant/Principal Applicant.

- vii. **Risk Mitigation:** The product/service/application should have proper risk management strategy to incorporate appropriate safeguards to mitigate and control potential risks to any market participants/users/customers/government that may arise from the testing of the product/service/application and shall propose appropriate safeguards to manage the risks and contain the consequences of failure. In case any deviation in the behavior of the product/service/application is observed during trial, compared to the expected behavior, the Applicant/Principal Applicant must clearly specify the measures that may be required to be undertaken to contain the impact within the live system.
- viii. **Scope of testing:** To prevent any negative impact on the wider telecom market or the customers, the Sandbox environment should have a finite scope which is appropriate enough for testing the application/product/service.
- ix. **Realistic scenarios:** The Sandbox testing environment should simulate realistic scenarios and conditions that the product/service/technology is likely to face in the real world. The same should be explicitly brought out in the application by the Applicant/Principal Applicant.
- x. **Transparency:** The application for regulatory sandbox for a product/service/application should provide transparency to all stakeholders, including customers, about the nature and scope of the testing. Since there may be uncertainties involved in testing these new products/services/technologies, the transparency requirements, if any, should be clearly spelt out in the application by Applicant/Principal Applicant.
- xi. **Regulatory compliance & exemptions sought:** The Applicant / Principal Applicant should expressly spell out what regulatory requirements are being complied with and what exemptions from the existing regulatory regime pertaining to the product/service/application are sought under Sandbox testing.

It should also mention the authority which is responsible for permitting the required exemptions. Any other facilitation or resource sought, including spectrum, for the sandbox testing must also be specified.

- xii. **Consumer protection:** Applicant/Principal Applicant should demonstrate in application as to how the Sandbox testing would prioritize the protection of consumer interests and prevent any harm to consumers. If the case so requires, only such customers will be allowed to be on boarded who have given specific consent voluntarily. The Principal Applicant/Applicant shall be required to undertake indemnity insurance of an adequate amount and period, to safeguard the interest of the consumers. The adequacy of insurance cover shall depend on determination of the maximum liability based on, among others, the following factors – (A) maximum exposure to a single consumer (B) the number of claims that could arise from a single event (C) number of claims that may be expected during the policy coverage period. The policy cover shall extend to the period beginning from the start of testing stage and end two months after exit from the regulatory sandbox.
- xiii. **Demonstrate additional protections needed:** The Applicant/Principal Applicant should sufficiently describe the various protections that will be required to put in place in addition to those prescribed herein.
- xiv. **Monitoring and evaluation:** The Applicant/Principal Applicant should precisely define the test parameters, control boundaries, testing site, significant milestones, and anticipated outcomes for the technological proposal. The Sandbox testing should include a mechanism for monitoring and evaluating the testing process to ensure that the objectives of the testing are met and to identify any areas for improvement. The Applicant/Principal Applicant should provide an acceptable reporting schedule to report to the

Licensor/Regulator on the status and progress of development and testing of its technological proposal.

- xv. **Testing readiness of the product/service/application:** For conducting tests scientifically, test protocols and outcome indicators must be designed and set in advance. The interoperability of networks and services with envisaged functions and changes required, if any, needs to be identified for the testing. The Applicant/Principal Applicant should have the necessary resources to support testing in the sandbox and must demonstrate well developed testing plans with clear objectives, parameters, and success criteria. During the testing phase, additional steps which may be required to be taken to address regulatory concerns (when the system goes live) may also be identified and spelt out in advance.
- xvi. **Exit strategy:** The Sandbox regulations should include a clear exit strategy that outlines the process for exiting the testing phase and launching the product/service/technology in the wider market. The impact of exit on on-boarded customers should be clearly defined in application and also be informed to such customers. Documented proof of the same will be required.
- xvii. **Deployment post-testing:** Applicant/Principal Applicant should demonstrate the intention and ability to deploy the product/service/application on a broader scale. To this effect the Applicant/Principal Applicant should share a proposed transition strategy along with sandbox exit strategy.
- xviii. **Statutory and Legal Issues:** DoT/TRAI is not and shall not be liable for any acts of omissions, commissions, breaches, or any kind of culpability arising out of or in relation to the sandbox process and any liability arising as such will be borne by the Principal Applicant/Applicant. The Principal Applicant/Applicant will be required to submit an undertaking to this effect.

xix. **Publication of information:** The Regulator/Licensor shall reserve the right to publish any relevant and generic information about the Regulatory Sandbox applicants on its website, for the purposes it deems fit, which may include, but are not limited to, knowledge transfer, collaboration with other national and international regulatory agencies, etc., without revealing any proprietary/intellectual property rights related information. Principle Applicant/Applicant would be required to submit an undertaking to this effect and/or should submit details of such information which can't be put under public domain.

8. Applicant must provide necessary supporting documents and undertaking to substantiate its claim of fulfillment of above Essential Conditions. However mere fulfillment of Essential Conditions doesn't automatically qualify Principal Applicant/Applicant for Sandbox testing. An application fulfilling all essential conditions can be rejected even later at Evaluation Stage post assessment of various aspects including potential risks, exemptions sought, direct/indirect benefits etc.

V. SUPPORTING DOCUMENTS REQUIRED TO BE SUBMITTED WITH APPLICATION

- i. Certificate of Incorporation and Registration with the Registrar of Companies of Principle Applicant/Applicant.
- ii. The latest audited Balance Sheet showing a net worth of at least Rs. 25 lakhs of Principle Applicant/Applicant.
- iii. Document explicitly bringing out the innovation and identifiable benefits (direct or indirect) of the product/service/application offered to retail or enterprise customers.
- iv. Explanation of the need for live testing and how certain licensing/regulations need to be relaxed for testing purposes.
- v. Provide the complete list of regulatory and/or licensing exemptions required and the extent of such exemptions.

- vi. Report on prior lab/field testing carried out on the product/service/application.
- vii. Explanation as to how the product/service/application offers identifiable benefits to retail or enterprise customers.
- viii. Details of the potential risks to market participants/users/customers/government due to any exemption granted or otherwise and Risk management strategy and proposed safeguards to mitigate such potential risks.
- ix. Details of Scope of the Sandbox environment and its limitations.
- x. Details of realistic scenarios and conditions that the product/service/technology is likely to face in the real world and how these conditions are to be simulated during Sandbox testing.
- xi. Details of the process for taking customer and other participants consent and conditions to be communicated to such customer and other participants before taking consent.
- xii. Details of safeguards planned for protection of consumer interests and prevents any harm to consumers.
- xiii. Testing plan, test parameters, control boundaries, testing site, significant milestones, and anticipated outcomes for the technological proposal
- xiv. Exit strategy and proposed transition plan after Sandbox testing.
- xv. Details of the impact of Sandbox exit on on-boarded customers.
- xvi. Details of proposed transition strategy and ability to deploy the product/service/application on a broader scale.
- xvii. Undertaking indemnifying DoT/TRAI about any risk or damage caused to any stakeholder due to any direct or indirect action taken by principal applicant/applicant during sandbox testing.

VI. APPLICATION EVALUATION CRITERIA

- 9. The applicant may be evaluated based on the parameters given below:
 - i. Complete Application form along with all supporting documents
 - ii. Profile of the applicant

- iii. Arrangement between Principal Applicant and Applicant, if any.
- iv. Required financial and technological capability to take part in the sandboxing process.
- v. How the innovative product/service/application adds significant direct or indirect value to the existing offering in the market.
- vi. Identifiable benefits (direct or indirect) to the retail or enterprise customers.
- vii. Potential benefits of the product/service/application to the disadvantaged sections of the society, such as women and tribal populace, role of the said product/service/application in empowerment of the masses, and the impact of product/service/application in furthering digital inclusion.
- viii. Offline testing of the product/service/application and results thereof prior to requesting sandbox.
- ix. Defined mechanism for monitoring and evaluating the testing process including the test parameters, control boundaries, testing site, significant milestones, and anticipated outcomes
- x. Proposed strategy for exiting the testing phase and launching the product/service/technology in the wider market.
- xi. Ability to deploy the product/service/application on a broader scale and proposed transition strategy for same.
- xii. Defined grievance redressal mechanism and user rights.
- xiii. Mechanisms suggested for disclosure of the potential risks to participating users and process suggested to take explicit consent from participants.
- xiv. Any other factors considered relevant by DoT/TRAI.

Provided that failure to fulfill one, or more than one, of the essential eligibility conditions as outlined in Part IV above, may entail outright rejection of the sandbox application.

Provided further that DoT/TRAI or its designated agency, may waive off any essential condition(s) on need basis if it finds that the

product/service/application may have substantial positive impact on society/economy, if deployed on wider scale after successful sandbox testing.

VII. APPLICATION AND APPROVAL PROCESS:

10. The application and approval process will be as follows:
 - i. Applicant or Principal Applicant, as the case may be, desiring to test under Regulatory Sandbox in India shall make an application to the DoT/TRAI electronically in the specified form.
 - ii. The application shall be accompanied by a non-refundable processing fee of ten thousand rupees.
 - iii. The Principal Applicant/ Applicant shall ensure that the specified eligibility criteria are satisfied while submitting the application to DoT/TRAI. The necessary supporting documents and undertaking to substantiate its claim of fulfillment of Essential Conditions as detailed above should be provided with the application. The application form shall be signed by the officer duly authorized by the company board. The complete application must be submitted to: XXXXXX or by email at XXXXXX.
 - iv. DoT/TRAI will transparently communicate with the applicant during evaluation phase of the sandbox application, and during the testing phase.
 - v. At the “**Application Stage**”, DoT/TRAI shall review the application and inform of its potential suitability for a sandbox within 30 working days from the submission of the complete application. DoT/TRAI may issue appropriate instructions to the Principal Applicant/ Applicant according to the specific characteristics and risks associated with the proposed product/service/application. DoT/TRAI, if necessary, may also consult Service Providers, domain experts, etc. to evaluate the application. If the product/service/application has significant impact on any sector, then consultations may be held with the concerned ministries and sectoral regulators also.

- vi. At the “**Evaluation Stage**”, DoT/TRAI shall work with the Principal Applicant/ Applicant to determine the specific regulatory requirements and conditions (including test parameters and control boundaries) to be applied to the proposed product/service/application in question. The Principal Applicant/ Applicant shall then assess if it is able to meet these requirements. If the Principal Applicant/ Applicant is able and willing to meet the proposed regulatory requirements and conditions, the applicant shall be granted permission to develop and test the proposed innovation(s) in the sandbox. However, in case there are certain conditions licensing or regulatory which may not be fulfilled due to design aspect of that product/service/application, DoT/TRAI shall evaluate the possibility of granting exceptions for limited period so that to fulfill testing requirements. DoT/TRAI will establish a mechanism to grant such exemptions expeditiously, if feasible, within 45 days or communicate the reasons of rejection. The exemptions are to be granted considering potential of product/service/application, risk of causing potential harm to consumer or government interests, risk of misusing the exemption etc. In certain cases, exemptions may be required from other ministries or sectoral regulators or other entities, in such cases DoT/TRAI shall establish mechanism to approach such entities and coordinate for grant of exemptions to Principal Applicant/Applicant in time bound manner preferably 60 days. However, Applicant or Principal Applicant may not claim any right on an exemption granted by any entity on pretext that it has been granted in a previous case. DoT/TRAI decision on granting exemptions by itself or by other entities and duration for granting such exemptions, shall be final.
- vii. Upon approval, the application shall proceed towards the “**Testing Stage**”. The participant shall disclose to its users that

the product/service/application shall operate in a sandbox and the potential key risks associated with the product/service/application. The Principal Applicant is also required to obtain the user's acknowledgement that they have read and understood the risks. The Principal Applicant shall define a clear mechanism to take explicit consent of participating users, if required. Documentary proofs of such communications/consents may be submitted to Licensor/Regulator.

- viii. During the testing stage, the applicant shall take prior approval from DoT/TRAI to affect material changes, if any, to the product/service/application.
- ix. DoT/TRAI will designate one officer who will have primary responsibility of coordinating the sandbox testing. Each applicant shall assign a contact person to coordinate with a designated officer of DoT/TRAI.
- x. The duration of the sandbox testing stage shall be a maximum of twelve months. In exceptional cases which demonstrate requirement for longer durations in their application, the duration of more than twelve months may be allowed. On request of the applicant, DoT/TRAI can extend the duration on case-to-case basis after detailed examination.
- xi. In case an application is rejected at any stage, the applicant shall be informed accordingly. The reasons for rejection could include failure to meet the objective of the sandbox or any of the eligibility criteria. The applicant may re-apply for the sandbox when it is ready to meet the objective and eligibility criteria of the sandbox, subject to an appropriate cooling off period, if any, as decided by DoT/TRAI.
- xii. Principal Applicant/ **Applicant** must undertake to keep record of all testing steps/consent records for the period not less than one year after exit from Sandbox environment.

VIII. WAIVERS OR MODIFICATIONS TO RULES

11. DoT/TRAI shall have the right to waive or modify conditions for the purpose of the test on a case-to-case basis.

IX. VALIDITY PERIOD

12. The permission granted under the regulatory sandbox will have a validity period of up to 12 months for the applicant to test its product/service/application. At the end of the validity period, the applicant will stop testing his product/service/application. The approval of product/service/application for testing under regulatory sandbox does not mean (or guarantee) approval from DoT/TRAI to use this product/service/application after the testing period.
13. An extension of validity period can be granted by competent authority based on prevalent conditions of tests, potential benefits, cost involved, complexity of test etc.

X. REVOCATION OF PERMISSION

14. DoT/TRAI may revoke the permission so granted at any time if it is of the view that-
 - i. The permitted applicant is failing, or is likely to fail, to satisfy the conditions established above; that guarantee qualification to the Regulatory Sandbox.
 - ii. The permitted applicant has committed a contravention of the regulations, or any rules, guidelines, or standards or exemptions allowed if any.
 - iii. The conducted test conflicts with the exigencies of the public interest.
 - iv. The activities carried out do not meet the conditions given in the permission letter or are in violation of the provisions of the applicable laws.
 - v. The Applicant/Principal Applicant has submitted forged undertakings/records/documents.

Provided that before revoking the permission, the applicant shall be given an opportunity of being heard.

15. An applicant may also file for early termination of the proposal in DoT/TRAI if it is felt that the proposal shall not be able to meet the desired objective. DoT/TRAI shall consider the request on merits and advise the applicant accordingly subject to such conditions as it deems fit.

XI. COMPLETION OF THE RS TESTING AND REPORTING

16. On completion of the allocated time or size of the proposal specified, the applicant shall submit a report to the DoT/TRAI within 60 days on how the proposal met the objectives along with feedback from the stakeholders and such other information or details as specified. The applicant shall also submit a plan of action as to what amendments in the extant licensing/regulatory framework are required, along with a time frame for proposed commercial launch of the product/service/application.

XII. OVERSIGHT AND GOVERNANCE BODY

17. DoT/TRAI or any other entity so authorized by it will oversee the sandboxing process and ensure that it is conducted in a transparent and accountable manner.
18. The oversight and governance of the sandboxing framework will be crucial to ensure its effectiveness and accountability. The overseeing body will establish a monitoring and evaluation framework to assess the performance of each sandboxing project and provide recommendations for improvement. The overseeing body may also provide necessary directions on potential regulatory implications of an innovative product or business model that is at an early stage of development. The Principal Applicant/Applicant must make necessary arrangements to make the Sandbox product/service/application accessible during testing, both

physically and online, and provide all necessary tools, testers, and software necessary to monitor the product/service/application by the overseeing body. This will ensure that the sandboxing process is conducted transparently, and the overseeing body has the necessary resources to effectively oversee and evaluate the testing of innovative product/service/application.

XIII. FUNDING OF INNOVATION FOR INCLUSIVE SOCIETAL ADVANCEMENT AND GROWTH OF ECONOMY

The government can play a crucial role in promoting innovations in Digital Communication sector for the advancement of society. Some innovations, which might be very promising, may lack adequate funding support. Financial incentives and operational support needs to be provided to Innovative products/services/applications having potential to bridge the digital divide and bring socio-economic advancement to underprivileged sections of society, if deployed on a wider scale. Therefore, DoT/TRAI are open to proposals for providing funding support to deserving products/services/applications during Sandbox Testing. The Applicants who desire to avail such funding may indicate so along with the details of funding sought. Such proposals will be evaluated by a panel of experts appointed by DoT/TRAI. The Applicants may note that proposals that do not seek Government funding will have higher chances of acceptance and therefore Applicants should make their own arrangements for funding the proposal. Proposals not found deserving enough for funding support, will be summarily rejected.

BRIEF ON SANDBOX POLICIES

1. United Kingdom:

The Financial Conduct Authority (FCA) is an independent regulatory body in the UK that oversees financial markets and protects consumers. The FCA launched its Regulatory Sandbox in 2016, which is designed to help innovative businesses test their products and services in a safe and controlled environment. The sandbox is a space where businesses can test new ideas without the fear of breaking existing regulations or facing penalties.

To participate in the Regulatory Sandbox, firms must apply to the FCA and demonstrate how their product or service meets the eligibility criteria. The criteria include demonstrating genuine innovation, providing clear benefits to consumers, and having a strong focus on meeting regulatory requirements. If accepted, firms are given a "safe space" to test their product or service for a limited period.

The Regulatory Sandbox has been successful in helping firms bring new products and services to market, with over 500 firms applying since its launch. It has also enabled the FCA to better understand the challenges faced by innovative firms and how to best support them. The FCA has published several reports detailing the lessons learned from the Sandbox and how it plans to continue supporting innovation in financial services.

Overall, the Regulatory Sandbox has provided a valuable platform for innovative businesses to test new ideas in a safe and controlled environment. It has helped firms bring new products and services to market while also providing valuable insights for regulators.

2. Singapore:

The Monetary Authority of Singapore (MAS) is the central bank and financial regulator of Singapore. In 2016, the MAS established a regulatory sandbox to encourage innovation in the fintech sector while ensuring regulatory compliance.

The MAS regulatory sandbox is designed to help fintech companies address the challenges of regulatory compliance and facilitate their entry into the financial services industry. The sandbox provides a safe space for fintech companies to test their products and services and receive feedback from regulators. The MAS monitors the sandbox and provides guidance and support to the fintech companies participating in the program.

Since the launch of the regulatory sandbox, the MAS has received numerous applications from fintech companies, with several successful cases. The sandbox has helped companies develop and test new financial products and services, such as mobile payments, remittance services, and digital wealth management platforms.

The regulatory sandbox has played a crucial role in Singapore's fintech industry growth and has helped the country become a leading fintech hub in the Asia Pacific region. The MAS has also shared its experience and expertise with other regulators globally, promoting collaboration and cooperation among regulators to support fintech innovation. Overall, the MAS regulatory sandbox has been a successful initiative, fostering innovation and driving digital transformation in the financial services industry while maintaining regulatory compliance.

3. Australia:

The Australian Securities and Investments Commission (ASIC) launched its Innovation Hub in 2015 to help fintech startups navigate the regulatory framework and encourage innovation in the financial services industry. In 2017, ASIC enhanced its regulatory sandbox to provide further support to

fintech startups. The enhanced regulatory sandbox provides a controlled environment for startups to test their innovative financial products and services for up to 24 months without needing to hold a financial services license.

The ASIC regulatory sandbox is designed to foster innovation, reduce regulatory barriers, and promote competition in the financial services industry. The enhanced sandbox includes new features, such as a broader range of financial services and products that can be tested, additional testing time, and relaxed disclosure requirements for certain tests.

Startups that participate in the regulatory sandbox must meet specific eligibility criteria and obtain approval from ASIC. The criteria include demonstrating that the product or service is innovative, providing a clear benefit to consumers, and having a robust plan for managing risks and complying with relevant laws and regulations.

The enhanced regulatory sandbox has been successful in helping startups develop and test their innovative financial products and services. It has also enabled ASIC to better understand the challenges faced by startups and how to best support them. ASIC has published several reports detailing the lessons learned from the sandbox and how it plans to continue supporting innovation in financial services.

Overall, the ASIC enhanced regulatory sandbox has been a valuable initiative, supporting the growth of fintech startups in Australia and promoting innovation in the financial services industry. The sandbox has helped startups navigate the regulatory framework, reduce costs, and time to market, and enhance consumer outcomes.

4. Bahrain:

The Central Bank of Bahrain launched its regulatory sandbox in 2017. The Bahraini sandbox is open to all firms, including fintech startups and established companies. The Central Bank of Bahrain provides support to

companies by offering guidance and feedback during the testing process. The Bahraini sandbox has been successful in attracting a range of fintech companies, including those focused on blockchain and cryptocurrencies. The Bahraini sandbox also has a specific focus on Islamic finance, which reflects the importance of this sector in the region.

5. **Columbia:**

In May 2020, the Regulation Communications Commission (CRC) in Colombia adopted Resolution, creating a regulatory sandbox for communications services. The aim of the sandbox is to encourage innovation and enable telecommunications network and service providers, as well as content and application providers, to test new business models under the CRC's supervision. The CRC intends to use this flexible environment to inform future regulatory frameworks, which may lead to modification or elimination of current rules deemed overly stringent. The licensing process for the sandbox will take place in four phases: application, evaluation, experimentation, and exit. The CRC will conduct an initial review of proposals, followed by an evaluation phase, where greater scrutiny is applied, and applicants must demonstrate that their project offers innovative products and services not currently available in the market. Those approved will enter the experimentation phase, where they will have authorization to test their product within a specified geographic area for 12 months, with the possibility of extension for another 12 months. After the experimentation phase, participants must either dismantle the project or transition to the general regulatory framework. All entities selected to participate in the regulatory sandbox must report information on the project's progress to the CRC, and proposed projects must not negatively impact competition or consumers in the communications market.

6. **Saudi Arabia:** The Communications and Information Technology Commission (CITC) has designed an Emerging Technology(ET) Regulatory

Sandbox to help businesses successfully launch innovative business models, products and services in the Kingdom of Saudi Arabia (KSA). It aims to foster economic growth, encourage investment activities, and contribute to the digital economy. The ET Regulatory Sandbox Lifecycle comprises five stages: submission of applications, checklist to ensure completeness, application assessment against acceptance criteria, approval of successful applications, finalization of sandbox plan, mobilizing team & processes to conduct tests, securing approvals, registration with CITC & onboarding, deployment of resources and launch of testing, periodic monitoring and reporting, possible review and amendments, conclusion of testing & settlement of obligations, submission and review of final report, & approval for exit. The Application and Acceptance Stage is the assessment of a Participant's application against the Emerging Technology Sandbox Acceptance Criteria. There are six key acceptance criteria: Innovativeness, Need for Regulatory Waiver, Technological Readiness, Consumer Benefits, Commercial Potential, and Testing and Exit Plan.

Participants must provide proof that the innovation proposed has strong commercial viability with a commercial presence, robust business plan, and proof of business financial viability/funding. They must produce a testing and exit plan that includes a comprehensive testing plan with key milestones and detailed timelines, a clear methodology of the testing and controls required, a test team named with details of their roles, a reporting schedule, plans to scale-up its innovation to a larger market, and clear and measurable consumer safeguards. The CITC Sandbox Team is responsible for preparing and submitting periodic reports to participants, with interim reports to be submitted monthly. Exiting the Sandbox involves five key steps: testing completion and wrap-up, settlement of obligations, achievement of outcomes, and final report submission.

7. India:

- a) RBI: The Reserve Bank of India (RBI) is the central bank of India and the regulator of the country's financial system. In 2019, the RBI issued an enabling framework for Regulatory Sandbox (RS) to promote fintech innovation in the country. The framework is designed to help fintech companies test innovative products and services in a controlled environment and determine their viability before launching them in the market. The target applicants for entry to the RS, are FinTech companies including start-ups, banks, financial institutions, any other company, Limited Liability Partnership (LLP) and partnership firms, partnering with or providing support to financial services. The focus of the RS will be to encourage innovations intended for use in the Indian market in areas where there is absence of governing regulations there is a need to temporarily ease regulations for enabling the proposed innovation.

The RS has several benefits, such as allowing regulators to learn about emerging technologies, enabling users to test product viability before launch, and promoting financial inclusion. Some of the risks associated with the RS include the potential for innovators to lose flexibility and time in going through the sandbox process and the possibility of legal issues arising. The eligibility criteria for the RS are based on the product's innovative use of technology and its potential to address a problem and bring benefits to consumers.

- b) IRDA: IRDAI has introduced the Regulatory Sandbox Regulations, 2019 to create a testing ground for new business models and innovations in the insurance sector in India. The regulations provide a framework for applicants seeking permission to promote or implement innovation in insurance in India. The application is required to be made in a specified form along with a non-refundable processing fee. The Chairperson of the Authority may grant permission for a period of six months subject

to compliance with relevant provisions of the Insurance Act, 1938, and the Insurance Regulatory and Development Authority Act, 1999.

- c) SEBI: Based on the recommendations of CFRT, SEBI vide circular SEBI/HO/MRD/2019/P/64 dated May 20, 2019, stipulated a framework for an industry-wide Innovation Sandbox. Under this framework, FinTech startups and entities not regulated by SEBI have access to market related data, particularly, trading and holding data in an anonymized form, which is otherwise not readily available to them. They can use the data to test their innovations effectively before the introduction of such innovations in a live environment subject to fulfillment of certain eligibility criteria.
- d) The framework covers eligibility criteria of the project such as genuineness of innovation, genuine need to test, limited prior testing, direct benefits to users, risks to the financial system, testing readiness of the solution, deployment post testing, fit and proper criteria etc. Further, the framework also covers circumstances under which testing is not permitted under the sandbox, identification of potential risks to any market participants arising from the testing of the solution, procedure for submitting the application and approval process, proper maintenance of records during the testing period, rights and obligations of the user, conditions for revocation of the approval, etc.
- e) Overall, the SEBI regulatory sandbox framework is a significant step towards promoting fintech innovation in India's securities market. It provides a supportive environment for fintech companies to test their products and services, fosters collaboration between regulators and innovators, and contributes to the growth of the Indian fintech industry.

List of Acronyms

S. No.	Acronym	Complete Text
1	5G	Fifth Generation
2	6G	Sixth Generation
3	BB&PA	Broadband and Policy Analysis
4	AI	Artificial Intelligence
5	API	Application Programming Interface
6	ASIC	Australian Securities and Investments Commission
7	CITC	Communications and Information Technology Commission
8	CFRT	Committee on Financial and Regulatory Technologies
9	CoE	Centre of Excellence
10	CRC	Regulation Communications Commission
11	DCI	Digital Connectivity Infrastructure
12	DC	Digital Communication
13	DLT	Distributed Ledger Technology
14	DoT	Department of Telecommunications
15	EM	Explanatory Memorandum
16	ET	Emerging Technologies
17	FCA	Financial Conduct Authority
18	GDP	Gross Domestic Product
19	IMDA	Infocomm Media Development Authority
20	IoT	Internet of Things
21	IRDAI	Insurance Regulatory and Development Authority of India
22	IT	Information Technology
23	LLP	Limited Liability Partnership
24	MAS	Monetary Authority of Singapore
25	MInTIC	Ministry of Information and Communication Technologies
26	ML	Machine Learning
27	RBI	Reserve Bank of India
28	Rs	Rupees
29	RS	Regulatory Sandbox
30	SEBI	Securities Exchange Board of India
31	SMEs	Small and Medium-sized Enterprises
32	TRA	Telecommunications Regulatory Authority
33	TRAI	Telecom Regulatory Authority of India
34	TSP	Telecom Service Provider
35	UCC	Unsolicited Commercial Communications
36	UK	United Kingdom
37	VNO	Virtual Network Operator

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