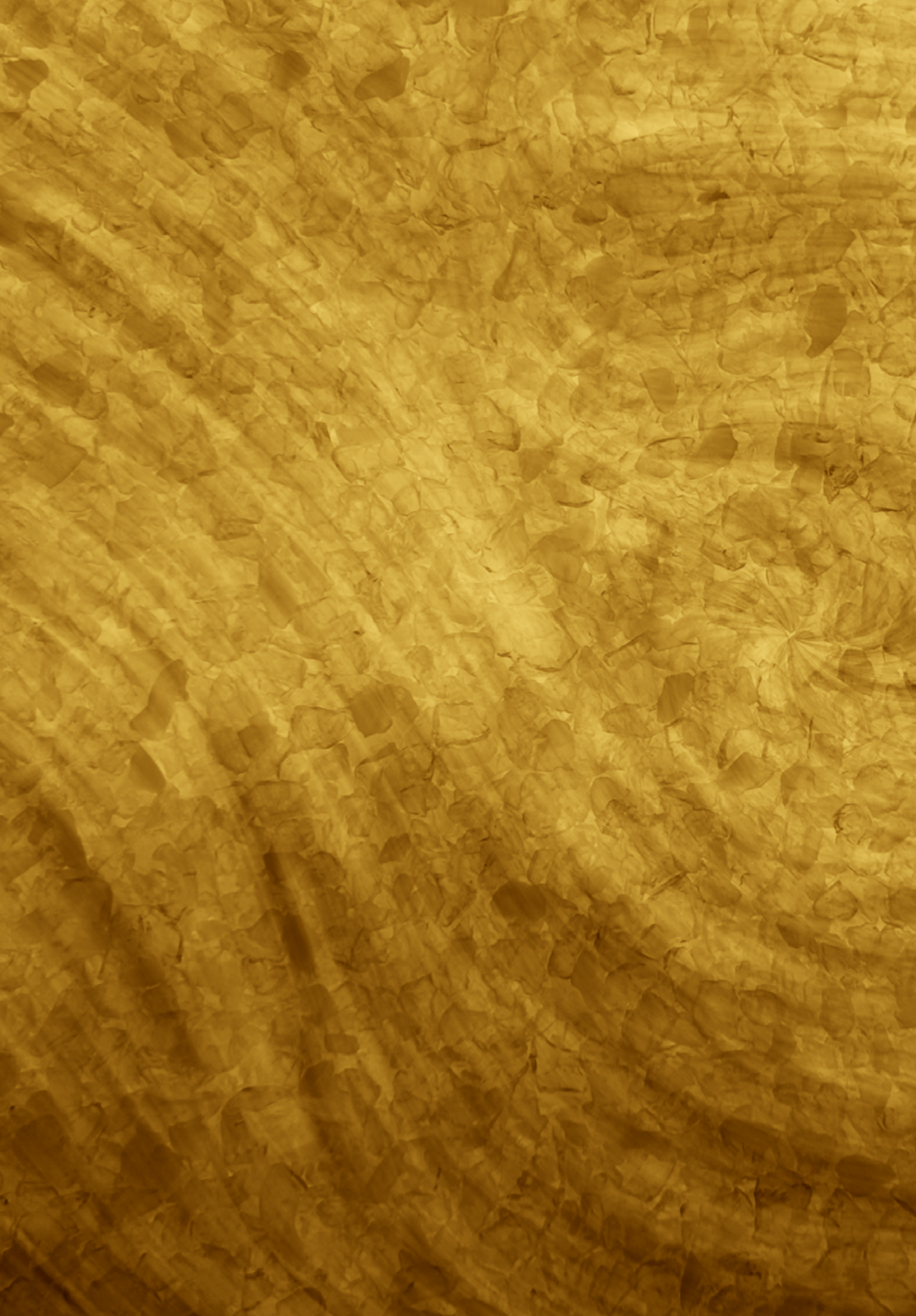
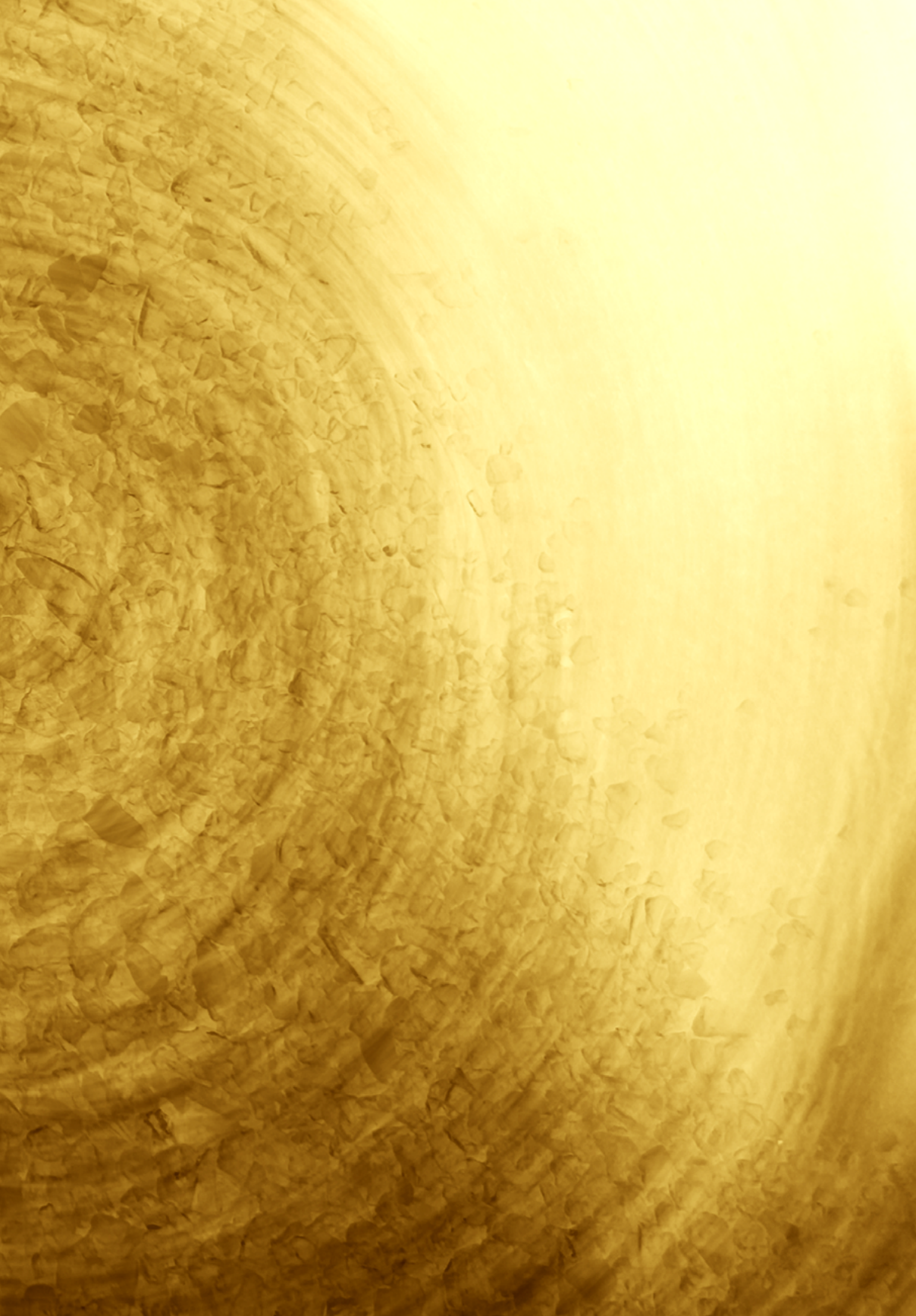




PRACTICAL GUIDE

Artificial Intelligence Regulatory Sandboxes

Lessons Learned from the United Kingdom in Artificial Intelligence Regulatory Sandboxes



How to Structure an Artificial Intelligence Regulatory Sandbox?

A Practical Guide for Brazil in Light of the British Experience

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Executive Summary

This document provides a practical guide for public officials in Brazil interested in establishing regulatory sandbox environments focused on Artificial Intelligence (AI). Developed by the Institute for Technology and Society (ITS Rio) in collaboration with the British Government – through the UK-Brazil Tech Hub and the Science and Technology Network – this guide builds on a previous benchmark study that analyzed the United Kingdom’s experience with regulatory sandboxes. The main objective of this guide is to provide a clear and detailed approach to planning, implementing, and evaluating AI regulatory sandboxes in Brazil, adapting best practices from the UK to the Brazilian context.

The guide is organized into two parts. The first section presents an overview of regulatory sandboxes and their role in AI regulation, highlighting the UK approach and its key principles. The second section details the development process across four main phases: (i) defining objectives and scope;

(ii) design and implementation; (iii) testing and evaluation; and (iv) post-sandbox strategies. For each phase, the guide outlines essential steps, required resources, and indicative timelines, and includes a checklist to support practical implementation.

This document is not intended to serve as an exhaustive methodology, but rather as a flexible framework that enables public officials to adapt the proposed steps to their specific needs, budgets, and institutional capacities. Although grounded in the experience of the United Kingdom, the guide has been designed for Brazilian regulators, taking into account national particularities and current regulatory initiatives related to AI in Brazil. In addition, the guide incorporates examples from other sectors, such as finance and health care, to facilitate understanding and practical application.

Introduction

AI has established itself as one of the leading emerging technologies, affecting a wide range of sectors such as health care¹, finance², education³, and transportation⁴. In recent years, advances such as generative AI have further accelerated its adoption, creating unprecedented opportunities to increase productivity and address complex challenges, ranging from climate change to issues in medical research. However, alongside these benefits come significant challenges, particularly regarding governance, data privacy, transparency, and ethical considerations in the use of AI applications.

In Brazil, the development and adoption of AI have grown, with data indicating that 74% of Brazilian micro, small, and medium-sized enterprises already use AI always or frequently in their activities.⁵ Nevertheless, the country still faces barriers to integrating the technology safely and efficiently into its regulatory and strategic frameworks. One such barrier is the limited understanding of the political dimension involved in the adoption of AI systems,⁶ which inevitably reflect both the biases of developers – shaped by the data used to train them – and the interactions of users, whether in the public or private sector.

In this context, it is important to note that the Brazilian public administration has demonstrated growing interest in the topic and has introduced initiatives aimed at promoting innovation, which are currently at various stages of development. This indicates an open stance toward exploring regulatory testing methodologies⁷, which can be supported by a practical understanding of how they are implemented. Regulatory sandboxes, by enabling the creation of controlled environments for testing emerging technologies, offer an alternative approach to addressing these challenges. By providing spaces in which innovators can test AI solutions under regulatory supervision, these mechanisms facilitate the

development of evidence-based public policies, reduce regulatory uncertainty, and help identify risks before products are widely introduced into the market.

Although Brazil has taken important steps toward establishing sandboxes, as illustrated by tokenization initiatives,⁸ considerable progress remains to be made in the context of AI. Many of these initiatives remain concentrated in traditional sectors, such as finance, or are limited to specific technologies, such as blockchain. The use of sandboxes for AI in Brazil remains limited and currently relies primarily on the example of the National Data Protection Authority (ANPD)⁹, reinforcing the need for a practical guide to support public officials in implementing this type of methodology in a manner adapted to the national and local context.

This guide was developed to address this gap, offering practical guidance for the creation of regulatory sandboxes focused on AI in Brazil. It is based on the understanding that, as AI technologies become more accessible, the role of sandboxes should evolve from a testing environment into a platform for regulatory refinement.¹⁰ Accordingly, each regulatory authority should adapt the implementation phases of the tool presented here to its own needs, budgetary constraints, and available technical resources, ensuring that innovation serves both the public sector and society at large.

To this end, we will draw on the United Kingdom's well-established experience with initiatives aimed at fostering innovation through regulatory sandboxes for emerging technologies as a reference for identifying best practices that may inform the Brazilian process.

How to Use This Practical Guide

Part 1 – Understanding AI Regulatory Sandboxes

In the first section, we examine regulatory sandboxes with a focus on their application in the context of AI. We discuss the principles and frameworks developed in the

United Kingdom for their implementation. Part 1 is therefore essential for understanding the context and theoretical foundations of AI regulatory sandboxes.

Part 2 - Designing an AI Regulatory Sandbox

In Part 2, we present a practical guide that takes the reader through a step-by-step process for designing an AI regulatory sandbox in Brazil, drawing on lessons learned from the UK context. Each chapter is structured into four blocks:

- » **Checklist:** This section provides a summary of the main steps and requirements for each stage of designing the sandbox. The checklist serves as a practical tool to help managers remain focused on essential tasks and track their progress.
- » **Case Study:** Next, we present real examples of British sandboxes, illustrating how other organizations and regulators have addressed similar challenges. The case study offers practical insights and lessons learned, enabling the reader to understand best practices and usual challenges in implementing an AI sandbox.
- » **How Would It Work in Practice?:** This section proposes a hypothetical scenario illustrating how the recommendations could be applied in the Brazilian context, using the example of regulatory sandbox initiatives currently under consideration by different regulatory agencies. It adapts the insights drawn from the case studies to the local context, helping managers visualize how each stage might unfold, including estimates of the time and resources required.
- » **At the End of the Process, What Should the Regulator Evaluate?:** This concluding section summarizes the key aspects that public officials should consider when assessing the progress and results of each stage of the process. Critical evaluation of each phase is essential to ensure that the regulatory sandbox is implemented effectively and in accordance with its established objectives.

Overview of the Development Phases of an AI Regulatory Sandbox

Phase 1: Defining Objectives, Target Audience, and Scope

In Phase 1, the focus is on clearly defining the objectives of the regulatory sandbox and the scope of the project. Public managers must determine the primary purpose of the sandbox, which may include promoting technological innovation, evaluating new business models, mitigating risks, or supporting the development of new regulatory approaches. In addition, this phase establishes the eligibility criteria for participants and defines the target audience, taking into account the specific characteristics of the AI ecosystem. This stage also involves defining time-lines, identifying the necessary resources, and outlining the initial design of the project's governance structure.

Phase 2: Design, Implementation, and Communication

Phase 2 addresses the detailed design of the sandbox and the practical implementation of the structures defined in Phase 1. This includes developing the operational parameters of the testing environment, such as the rules for selecting participants and the model for collaboration among different regulators and participants. During this phase, communication plans and the platform for monitoring participants are also established. Implementation requires careful planning of all structural aspects in order to ensure an effective, secure, and transparent testing environment.

Phase 3: Testing and Evaluation

In Phase 3, the sandbox becomes operational. During this phase, AI solutions are tested in a controlled environment, and participants must comply with the requirements established in the previous phase. The regulator monitors the tests, collects data, and conducts ongoing assessments to identify risks and evaluate compliance with regulatory requirements. This phase is crucial for generating practical learning and for adapting regulatory approaches based

on evidence gathered in practice. At the end of the testing phase, the results are analyzed to assess the impact of the innovation on the market and on consumers.

Phase 4: Exit Strategy and Post-Sandbox Oversight

Phase 4 addresses the transition steps following completion of the sandbox. At this stage, the regulator must define the exit options available to participants, such as full market entry, extension of the testing period, or termination of the process. In addition, this phase highlights the need to establish a continuous monitoring plan to ensure that the tested solutions remain compliant with applicable regulations. It also involves documenting and disseminating the results of the sandbox and incorporating the lessons learned into the regulatory framework, with a view to continuously improving both innovation and regulatory processes.

Endnotes

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- ⁷ The guide draws on the United Kingdom's mature experience with initiatives designed to foster innovation through regulatory sandboxes for emerging technologies, using it as a reference to identify best practices that may inform the Brazilian process. At the federal level, for example, specialized government bodies operate different experimental regulatory environments tailored to their respective areas of responsibility. Among them are the (i) Brazilian Securities and Exchange Commission (CVM), the (ii) Central Bank of Brazil (BCB), the (iii) Superintendence of Private Insurance (Susep), the (iv) National Telecommunications Agency (Anatel), the (v) National Supplementary Health Agency (ANS), the (vi) National Land Transport Agency (ANTT), and the (vii) National Electric Energy Agency (ANEEL).
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- ⁹ In October 2023, the Brazilian National Data Protection Authority (ANPD) issued a public consultation call titled “Regulatory Sandbox for Artificial Intelligence and Data Protection in Brazil,” in partnership with the Development Bank of Latin America and the Caribbean (CAF), with the aim of gathering contributions on initiatives that could assess compliance with Article 20 of the Brazilian General Data Protection Law (LGPD), which addresses algorithmic transparency in the development of AI systems in Brazil. For further information, visit: <https://www.gov.br/anpd/pt-br/acesso-a-informacao/audiencias-e-consultas-publicas/consulta-a-sociedade-sandbox-regulatorio-de-ia.pdf>.
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Part 1:

Understanding AI Regulatory Sandboxes

AI Regulatory Sandboxes

The movement to regulate any new technology with the potential to generate large-scale societal impacts stems from the need to establish mechanisms to protect against potential risks. This is how laws governing the use of airplanes, boats, automobiles, radio, television, internet providers, and similar technologies have emerged around the world. What these technologies share is a clear conceptual definition that delineates the essential elements required to identify the risks associated with their operation and, conversely, indicates that if one of these elements is absent, the technology under analysis is mischaracterized.¹¹

When it comes to AI, however, several regulatory challenges must be highlighted. First, there is no single definition of what constitutes AI, particularly because different schools of thought within computer science itself adopt different criteria for identifying an AI system.¹² Second, the pace at which AI and its various models (generative, reactive, limited AI, among others) evolve and change in their capabilities is significantly faster than any legislative process that seeks to regulate them.

Therefore, by its very nature, AI – like other disruptive technologies – does not fit easily within traditional regulatory models. In response to this challenge, the United Kingdom has adopted an approach aimed at recalibrating the role of regulators and public managers so that they act not only as agents responsible for technology safety and compliance oversight, but also as facilitators actively engaged in fostering innovation.¹³ To achieve this, the country has adopted a more flexible regulatory stance, in which the government plays a strategic role in aligning the expectations of the public sector with those of the private sector – including micro, small, and medium-sized enterprises (SMEs) and startups – through the use of regulatory sandbox methodologies.

In addition, the British government has adopted a definition of AI based on two main characteristics: adaptability and autonomy. Adaptability refers to the capacity of AI systems to be trained and to learn patterns and relationships from data, thereby developing the ability to

make inferences not explicitly anticipated by their human programmers. Autonomy refers to the capacity of certain AI systems to make decisions without continuous human supervision.¹⁴ By focusing on functional capabilities rather than attempting to define AI rigidly, this approach allows the British regulatory framework to remain more flexible and responsive to rapid technological advances.

As for the strategy for developing AI regulatory sandboxes, the British government has considered four service model options that may catalyze both innovation and safety. These models are based on determining which regulators should be involved and which sectors will be affected throughout the regulatory testing project.¹⁵ These are:

Single sector, single regulator	Collaboration with a single regulator within a specific sector, helping innovators bring AI products to market.
Multiple sectors, single regulator	Support for AI innovators provided by a single regulator with jurisdiction across multiple industry sectors.
Single sector, multiple regulators	A sandbox operating within a single sector but involving multiple regulators required for the regulatory process in that specific sector.
Multiple sectors, multiple regulators	A sandbox that enables collaboration among one or more regulators across different sectors, helping AI innovators access multiple markets.

The British government's initial priority is a single-sector model involving multiple regulators, recognizing that AI innovations – such as generative models – have implications across several sectors. The objective is therefore to expand this model to multiple sectors in the future, prioritizing those with elevated levels of investment in AI and a stronger need for regulatory collaboration. In this sense, the UK demonstrates a preference for adopting a model of tailored support and specialized guidance as the most effective initial approach for helping innovators overcome regulatory barriers.

For Hannah Bowden, leader of the AI Airlock Programme developed by the Medicines and Healthcare products Regulatory Agency (MHRA), regulatory sandboxes create an important space for collaboration among stakeholders:

“These stakeholders may not necessarily be in the room to talk about these challenges on a normal day. So, I believe that the sandbox offers a good opportunity to bring them together, discuss the challenges, because we (MHRA) are only one part of the sector, and implementing AI in health care is complicated and goes beyond us.”

Principles for Developing Regulatory Sandboxes

Among the guidelines that structure AI innovation policies in the United Kingdom, several principles inform decision-making regarding the development of regulatory sandboxes, namely¹⁶:

Time Constraints	Projects should provide a time-limited opportunity for companies to test innovative proposals in the market with real consumers.
Technology Stage	The focus should be on areas where the underlying science or technology has reached a stage of development that enables significant technological breakthroughs.
Social Challenges	Projects should establish bold and ambitious approaches to addressing social challenges and/or leverage areas in which the country is positioned to become a global leader.

As for the design process for AI regulatory sandboxes, the guiding principles are:¹⁷

Targeted Signaling	Clear national and international signals should encourage participation by companies, based on well-defined eligibility criteria.
Timelines	Clear deadlines should be established for registration, alongside a consistent feedback cycle for participating companies.
Accountability and Transparency	Ethics, privacy, and consumer protection considerations must be addressed from the outset, involving respected consultants and regulatory bodies, as well as interactive engagement with participating companies.
Impact	Impact assessment criteria must be clearly defined in advance to guide the selection of companies and other stakeholders interested in participating, with the objective of minimizing risks during the delivery phase. Pro-innovation objectives and results should also be monitored regularly.
Guaranteed Exit	Ethics, privacy, and consumer protection considerations must be addressed from the outset, involving respected consultants and regulatory bodies, as well as interactive engagement with participating companies. Regulators should collaborate with standard-setting bodies to assess where standards may serve as an alternative or support outcomes-based regulation.
Synergy	Other complementary approaches should be considered alongside regulatory sandboxes, including dedicated advisory services for innovators, such as innovation hubs, pilot programs, guidance centers, and similar initiatives.
Lessons Learned	Mechanisms should be established to ensure that the lessons learned from regulatory experimentation are widely shared with the market, benefiting industry and innovation more broadly. These insights may also support the expansion of sandbox capacity across multiple industry sectors over time.

According to the UK government, establishing a sandbox under these principle – bringing together multiple regulators and subject-matter expert – has the potential to encourage companies to scale, expand investment opportunities, and promote greater regulatory compliance from the outset.

According to Russell Pearson, a member of the Medicines and Healthcare products Regulatory Agency (MHRA), regulatory sandboxes are environments designed to explore solutions from multiple perspectives:

“Creating a regulatory sandbox, in the end, means creating a space with the regulator to explore something – whether products, processes, regulations, or a combination of these elements. The reason it is called a sandbox is that it is meant for experimentation, exploration, and embarking on a new journey. Fundamentally, we are trying to use the sandbox to explore what works and what does not, from the perspective of manufacturers, government regulators, and our other partners.”

Regulatory Strategies to Foster AI Innovation in Brazil

To understand the synergy between the model adopted by the United Kingdom and the Brazilian context, it is necessary to conduct a comprehensive assessment of Brazil’s regulatory and strategic framework, taking into account both the opportunities and the challenges presented by AI.

At the time this guide was developed, AI regulation in Brazil was still under discussion, driven by strategic initiatives such as the **Brazilian Artificial Intelligence Plan (PBIA)**^{**18}, launched in 2024. This plan aims not only to establish guidelines for public investment in the AI ecosystem, but also to position Brazil as a global leader in the field. In addition, the PBIA emphasizes the importance of participatory governance and a robust budget, with an estimated total of approximately R\$23 billion allocated to finance both immediate and structural impact initiatives, including investments in AI infrastructure and workforce training, as detailed in its budget guidelines.

In the regulatory sphere, Bill No. 2,338/2023 was introduced as a comprehensive proposal to regulate AI in the country. The bill adopts a risk-based approach and,

in an innovative provision, includes the mandatory establishment of regulatory sandboxes as key instruments enabling public managers to develop and test innovation projects in controlled environments. These sandboxes are intended to mitigate risks and promote algorithmic transparency, while allowing adjustments to the regulatory framework based on evidence gathered during the testing process.¹⁹

Understanding the intersection between the strategies outlined in the PBIa and the transformative potential of the sandboxes proposed in Bill No. 2,338/2023 is therefore essential to equip public managers to navigate this process effectively. This includes planning, implementing, and evaluating the phases of these controlled environments, ensuring alignment with ethical principles, data protection standards, and the promotion of responsible innovation.

The National Data Protection Authority (ANPD) has taken an innovative step by developing a regulatory sandbox focused on AI, becoming a pioneer in this type of initiative in Brazil. This initiative reflects an important evolution in the country's regulatory approach, which already includes successful sandbox experiences in sectors such as finance and energy. The ANPD project seeks to promote algorithmic transparency, foster responsible innovation, and establish clear guidelines for the protection of personal data in AI systems, in line with the General Data Protection Law (LGPD). As part of this strategy, ANPD launched a public consultation in 2023 to engage stakeholders from multiple sectors and ensure an inclusive and transparent process of experimental regulation.

In this practical guide, we use a hypothetical example of a regulatory sandbox to illustrate how public managers can structure and implement experimental regulatory environments that promote both innovation and regulatory compliance.

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- Art. 53. The competent authority and the sectoral authorities that make up the SIA shall promote and authorize the operation of an experimental regulatory environment for innovation in artificial intelligence (AI regulatory sandbox), either on their own initiative or upon request by entities that apply and meet the requirements established by this Law and by subsequent regulations, including under public-private cooperation arrangements.

Part 2:

Designing an AI Regulatory Sandbox

Phase 1: Defining Objectives, Target Audience, and Scope

Defining Objectives and Scope

A regulatory sandbox should begin with a clear definition of its objectives and the scope of the experiment. This phase involves identifying the central purpose of the sandbox, whether it is to promote innovation, ensure consumer protection, or adapt existing regulatory frameworks. Below is a checklist to guide regulators through this process. We also present a case study from the United Kingdom illustrating how the Information Commissioner's Office (ICO) defined the objectives of its sandbox. Finally, we discuss how such an approach could operate in practice in Brazil, based on scenarios involving regulatory agencies with initiatives currently under development. At the end of the process, regulators should assess whether the objectives defined were clear and achievable.

Checklist

Defining Objectives

- Main objective: Identify the central purpose of the sandbox. For example, the sandbox may be used to promote innovation through the implementation of technological solutions, protect consumers through regulatory and security impact assessments, or test the market viability of new technologies. In addition, the sandbox may serve as a strategic instrument both for developing regulatory frameworks in sectors or areas that are not yet regulated – by generating evidence to support the creation of new rules – and for adapting existing regulations to the emerging characteristics of a sector, market, or technology, ensuring that regulatory standards remain relevant and effective in the face of social and technological change.

- **Specific objectives and expected results:** Establish clear goals that the sandbox seeks to achieve, such as developing regulatory approaches based on evidence gathered during the testing process or updating the regulatory framework governing the sector. The objectives should also specify the types of results expected, such as validating a new business model or monitoring the introduction of a new technology within a specific sector of the economy, following a logic of risk identification and mitigation.

Target Audience

- **Primary stakeholders:** Identify the actors directly involved, such as startups, technology companies, regulatory authorities, NGOs, and other relevant organizations connected to the sector of interest to the public manager.
- **Cross-sectoral Participation:** Consider including additional stakeholders – such as scholars, government representatives, civil society organizations, and industry or private-sector actors – to ensure that a diversity of perspectives enriches the process as a whole.
- **Communication and engagement:** Develop a strategy to engage the identified target audience based on the criteria above. This may include public consultations, workshops, and continuous communication with stakeholders to ensure clarity and transparency throughout the process.

Scope and Governance

- **Scope and participation requirements:** Define clear eligibility criteria for companies and organizations seeking to participate in the sandbox. For example, the regulator may determine whether the sandbox will be open only to established companies or also to new entrants that are not yet subject to regulatory supervision. It is also important to include specific incentives that make the sandbox more inclusive, such as technical support, financial assistance, tax incentives, or subsidies – particularly for startups and SMEs.
- **Testing limitations:** Establish operational restrictions, such as transaction limits or minimum security requirements. In the United Kingdom, regulators frequently limit the scale of testing to minimize potential risks to consumers.
- **Governance and internal structure:** Design the organizational structure of the sandbox, including the formation of a dedicated team responsible for coordinating activities. It is therefore essential to define the roles and responsibilities of each team member to ensure the proper functioning of the testing environment. In addition, governance rules should be established to address potential conflicts and to organize decision-making hierarchies among the actors involved.

Case Study: ICO Regulatory Sandbox with FlyingBinary

The United Kingdom's experience with AI regulatory sandboxes provides a practical reference for Brazilian public managers interested in adopting an effective testing model. In this case study, we examine how the Information Commissioner's Office (ICO) applied the concepts of objective setting, target audience definition, and operational design in one of its sandbox projects.²⁰

Defining Objectives

In the case of FlyingBinary, a technology company specializing in mental health solutions, the primary objective of the sandbox was to ensure compliance with the UK Children's Code and the General Data Protection Regulation (GDPR). The project sought to develop an application ("lookafterme") designed to support the treatment of young patients with eating disorders. The objectives included ensuring appropriate authentication mechanisms, applying the principle of data minimization²¹, and developing a customized Data Protection Impact Assessment (DPIA) capable of mitigating risks to children while prioritizing their best interests.

Target Audience and Scope

The ICO sandbox was designed for companies that process personal data in innovative and complex contexts, such as mental health and early childhood education. In the FlyingBinary example, the target audience included not only the children who would ultimately use the application, but also clinicians and researchers who would collaborate in the continuous development of the technological solution following its implementation.

Operational Design

The operational design of ICO sandboxes involves detailed planning of the steps and procedures to be followed throughout the testing process. In this case, FlyingBi-

nary worked with the ICO to develop an environment that would allow controlled testing of user authentication and access control mechanisms, thereby reducing the risk of exposure of sensitive data. Another crucial element was the implementation of data minimization practices, ensuring that only essential data would be collected and processed, in compliance with applicable legislation.

The project also incorporated data protection practices from the earliest stages of the application's design process ("privacy by design"). This included implementing systems that automatically adhered to privacy standards throughout the product lifecycle. This collaborative operational design enabled the ICO to provide real-time feedback regarding regulatory compliance and risk mitigation.

How Would It Work in Practice?

A regulatory authority may propose the creation of a regulatory sandbox with the objective of exploring, within a controlled and collaborative environment, the responsible application of new technologies while ensuring compliance with existing legislation or assessing the need for regulatory adjustments. In a hypothetical scenario, a regulatory sandbox could aim to facilitate the development of AI systems capable of reviewing and improving automated decision-making processes in sectors such as banking and insurance. By adopting this approach, the competent authority can align specific regulatory objectives with the broader goal of creating a replicable model that can be adapted to the needs and characteristics of different sectors or technologies.

Defining Objectives

The regulatory authority must first determine the central purpose of the sandbox. This objective may vary, ranging from promoting technological innovation to protecting consumers or generating evidence to support the development of new regulations or the adaptation of existing standards to emerging market demands. In the hypothetical example considered here, specific objectives could include: (1) testing the compatibility of new technological systems with applicable legislation; (2)

identifying regulatory gaps or challenges relevant to the sector; and (3) developing frameworks or methodologies that can be replicated and adapted in other regulatory contexts, thereby contributing to the development of broader innovation ecosystems.

Estimated duration: 2 –3 months

Resources required: Experts in AI and data protection – and in other related areas that may be involved in testing, depending on its scope – consultants to facilitate objective-setting workshops, and a regulatory compliance team.

Defining the Target Audience

In the hypothetical scenario under discussion, the competent authority should initially map the relevant actors beyond technology and AI companies. This may include sectors that use automated decision-making systems with significant impacts on individual rights, such as banks, insurance companies, and digital marketing firms. Public consultation sessions and collaborative workshops with these sectors can help refine the profiles of companies that would make up the target audience, encouraging the participation of those who already develop – or wish to improve – algorithmic transparency mechanisms in their systems.

Estimated duration: 1–2 months

Resources required: An engagement and communications team, along with a budget for public consultations and workshops involving representatives from the target sectors.

Scope and Governance

After mapping the relevant stakeholders, the agency should proceed with establishing clear, objective, and transparent eligibility criteria for potential participants, aligned with the sandbox's objectives. This will enable the identification of the most suitable candidates for participation. In addition, the public manager should design a robust governance structure, including a dedicated team responsible for coordinating sandbox activities. Clearly defined governance rules will be necessary to resolve conflicts and ensure effective interaction among the different actors involved. The agency should also conduct ongoing evaluations of the organizational structure to ensure that participants' expectations remain aligned with the sandbox's core objectives.

Estimated duration: 3-4 months

Resources required: Development and maintenance of a digital platform to monitor the process, as well as technical and legal support staff to respond to regulatory and technical inquiries.

At the End of the Process, What Should the Regulator Evaluate?

At the end of this phase, the regulator should assess whether the stakeholders identified as the target audience are aligned with the central objective of the regulatory sandbox under development and whether the engagement strategies are likely to be effective in fostering a collaborative environment. In addition, it is essential for the regulator to verify whether the proposed governance structure is effectively organizing the roles of each actor and addressing any initial uncertainties or conflicts that may arise during the process.

Endnotes

²⁰ These examples have already been discussed earlier in the benchmark analysis; however, here we present in practical detail how the regulatory sandbox projects were developed.

²¹ According to Luiz Carlos Buchain (2022), “as a result of the data minimization principle (and the subprinciple of proportionality) established in Article 6(III) of the General Data Protection Law (LGPD), personal data must be relevant and limited to what is necessary to achieve the purposes for which they are processed. The controller must limit the collection of personal data to what is necessary to achieve its purpose, retaining such data only for the period necessary to fulfill that purpose.”

Phase 2: Design, Implementation, and Communication

Phase 2 is essential to ensure that the sandbox design and the participating parties are aligned with the objectives established in the previous phase. Below, we present a checklist to assist regulators in structuring this process efficiently. We also include a case study from the Information Commissioner's Office (ICO) illustrating how the participant selection and implementation processes were conducted. Next, we outline how this phase could be implemented in practice in Brazil. At the conclusion of this phase, the regulator should evaluate whether the selection of participants was appropriate and whether the governance structure and eligibility criteria established in the previous phase have been properly applied.

Checklist

Staff and Selection Process

- ☐ Selection process: Implement a transparent application and selection system in which candidates submit proposals to participate in the sandbox. This process may include an initial screening of proposals, interviews, and an assessment of feasibility.
- ☐ Evaluation criteria: Define the criteria according to which proposals will be evaluated, taking into account factors such as the degree of innovation, team capacity, potential social impact, data security, and compliance with applicable sectoral regulations.
- ☐ Participant handbook: Prepare a handbook containing guidelines and resources for participants, facilitating their adaptation to the sandbox environment, and ensuring compliance with regulatory requirements. The handbook

should include guidance on how to report results and challenges during the testing period, as well as procedures for maintaining regulatory compliance and safeguarding data protection and other relevant consumer rights.

Communication Plan

- **Develop communication plans:** Establish outreach and promotional strategies for the sandbox, including events, informational sessions, and communication campaigns. These activities should engage stakeholders from government, the private sector, and development partners, raising awareness and encouraging participation in the regulatory sandbox.
- **Appoint sandbox “ambassadors”:** Designate representatives responsible for engaging with the AI and innovation communities, actively promoting the sandbox, and implementing the communication and engagement strategy. These ambassadors should help maintain a strong connection with the innovation ecosystem and encourage participation.
- **Launch a sandbox portal on the regulatory authority’s public website:** Provide access to application materials, FAQs (Frequently Asked Questions), guidance documents, and a dedicated email address for inquiries. A well-structured portal facilitates access to information and streamlines the application process.
- **Appoint a sandbox manager:** This professional will serve as the main point of contact for responding to questions from potential applicants, coordinating targeted outreach activities, and documenting lessons learned in real time. This role is critical to ensure that participants understand the process and submit their applications correctly.

Documentation and Transparency

- **Document progress:** Implement a system to record and track feedback received throughout the process, ensuring that contributions are documented and that relevant suggestions are considered.
- **Publication:** Publish periodic progress reports and updates to the regulatory sandbox process, ensuring transparency for all stakeholders involved.

Ongoing Engagement and Technical Feedback

- **Technical support:** Designate a technical support team responsible for addressing specific questions from participants and resolving technical issues throughout the process.
- **Feedback:** Organize regular meetings with stakeholders to review progress, discuss technical challenges, and adjust strategies as necessary.

Case Study: ICO Regulatory Sandbox with the Global Cyber Alliance (GCA)

The Global Cyber Alliance (GCA) case within the ICO regulatory sandbox focused on assessing the compliance of the Domain Trust platform, which is designed to share data on malicious domains and combat cybercrime.²² During their participation in the sandbox, the ICO and GCA worked toward several specific objectives, including evaluating the feasibility of integrating ICO investigative data into the platform, analyzing the implications of evolving personal data processing practices, and developing robust documentation such as Data Protection Impact Assessments (DPIAs). These efforts aimed to ensure that Domain Trust operated in compliance with the General Data Protection Regulation (GDPR) and the UK Data Protection Act.

Staff and Selection Process

The adoption of a rigorous and structured selection process for the ICO regulatory sandbox reflects the need to ensure that selected participants are strategically aligned with the project's objectives and possess the technical capacity to carry out the proposed activities. In the case of GCA, the selection process prioritized proposals that not only met the criteria for innovation and positive social impact but were also capable of contributing meaningfully to advances in data protection and cybersecurity.

The selection criteria included the relevance and clarity of the proposed objectives, the potential for innovation, and a strong commitment to data protection, ensuring that participants demonstrated a strategic vision aligned with the sandbox's goals. In addition, the profiles of candidate organizations were thoroughly assessed, with particular attention to those demonstrating robust technical capabilities, proven experience in data protection and information security, and a willingness to collaborate openly and proactively with the regulator.

GCA was selected because of its expertise in

cybersecurity and its ability to develop practical and innovative solutions within a regulatory environment. This careful selection process was essential not only to ensure the success of the sandbox but also to foster a collaborative and mutually beneficial learning environment between the regulator and participating organizations, thereby strengthening the foundations for more effective regulatory approaches in the future.

Communication Plan

The ICO implemented a comprehensive communication plan to promote the sandbox and engage relevant stakeholders. This plan included both public and private sessions with regulators, technology companies, and data protection experts to encourage participation and clarify the objectives of the sandbox. In addition, the ICO created a dedicated portal on its website, providing FAQs, detailed information on the application process, and a direct contact channel for specific inquiries. This portal served as a resource for potential applicants and partners, ensuring transparency and accessibility throughout the process. For further information on the ICO's sandbox framework, see *The Guide to the Sandbox*²³ and additional supporting materials.²⁴

Documentation and Transparency

Transparency was one of the central pillars of the ICO sandbox. In the case of GCA, the ICO required the preparation of Data Protection Impact Assessments (DPIAs) and detailed reports describing the data protection practices applied to the Domain Trust platform. These documents were reviewed jointly to ensure that all relevant data protection risks had been carefully considered and mitigated. The ICO worked closely with GCA to continuously improve the documentation, providing guidance on adjustments that would strengthen transparency and compliance with data protection standards, particularly when the processing of sensitive personal data was involved.

Participant Handbook

To support participating organizations, the ICO developed clear and practical guidance on participation in the sandbox. Through its involvement in the sandbox, GCA received direct support from the ICO to understand and

implement best practices in data protection, as well as tailored guidance to ensure compliance with the GDPR and other applicable regulations. The handbook covered the full lifecycle of data processing – from data collection to processing – providing detailed guidance on risk mitigation and the implementation of information security measures. These guidelines enabled GCA to adapt its project to meet regulatory expectations while maintaining its capacity for innovation.

Ongoing Engagement and Technical Feedback

Ongoing engagement was another key feature of the ICO regulatory sandbox. During GCA's participation, regular meetings were held to assess the progress of the project and to provide technical feedback on security practices and regulatory compliance.²⁵

In addition, the ICO organized internal workshops with members of its own staff to examine the data protection and security implications of integrating the regulator's investigative data into GCA's Domain Trust platform.

Feedback from these engagement sessions enabled GCA to refine its product based on specific recommendations, strengthening its approach to personal data processing. Technical support from the ICO ensured that the project could evolve safely and in compliance with applicable data protection regulations, while maintaining an open channel for questions and continuous improvement.

In summary, GCA's participation in the ICO sandbox illustrates a robust and collaborative framework in which the regulator and the participating organization worked together to balance innovation and regulatory compliance. The experience underscored the importance of careful participant selection, transparent communication strategies, rigorous documentation, clear operational guidance, and continuous engagement for the success of a regulatory sandbox.

As Alain Kapper, a member of the Digital Regulation Cooperation Forum (DRCF), noted regarding the importance of communication strategies specifically targeted at SMEs:

“If you want to support innovators and SMEs, you need to reach them directly, [establish] communication strategies that are truly

targeted at them, rather than at large companies, which will eventually continue to be the incumbents in the markets and continue to prosper. This way, you can target your actions and ensure that they understand what you do, who you are, and what benefits they can gain from contacting you, which is the most important thing.”

How Would It Work in Practice?

Staff and Selection Process

The selection phase involves carefully defining which AI actors and projects will be admitted to the sandbox. To this end, the competent authority must establish eligibility criteria that prioritize the relevance of each project to the central regulatory issue. This may include, for example, assessing companies’ technical capacity to comply with algorithmic transparency requirements.

Estimated duration: 1–2 months

Resources required: An evaluation team composed of experts in data protection, regulation, and technology, as well as an online portal for submitting proposals.

Communication Plan

To ensure broad participation and engagement, it is also essential to develop a communication strategy. This may include informational campaigns and outreach sessions aimed at raising awareness among companies and the broader public about the importance of participating in the sandbox, particularly from the perspective of protecting rights and promoting safe innovation.

Estimated duration: 1–2 months

Resources required: A communications and marketing team, a budget for online and in-person events, and the development of explanatory materials.

Documentation and Transparency

The competent authority should establish clear guidelines for documenting the process and producing periodic reports. Documentation should include information on testing results, transparency practices, and mechanisms for reviewing automated decision-making processes.

Estimated duration: Ongoing, throughout the testing period

Resources required: A compliance and legal team to review reports and ensure that documentation adheres to current data protection regulations.

Participant Handbook

A guidance handbook should be developed to assist participating companies in complying with regulatory sandbox requirements. This manual should clearly outline the competent authority's expectations regarding algorithmic transparency, the rights of data subjects, and best practices in security and data minimization.

Estimated duration: 1–2 months for preparing the materials

Resources required: Regulatory and AI specialists, as well as support from technical writing professionals to produce a clear and accessible guide.

Ongoing Engagement and Technical Feedback

To ensure that the sandbox operates collaboratively and responds to participants' needs, the competent authority should hold regular feedback sessions and technical consultations. These meetings are essential for adjusting compliance practices and sharing the challenges and progress observed during the testing phase.

Estimated duration: Ongoing, throughout the testing period

Resources required: A technical and regulatory support team to provide continuous assistance, bi-monthly feedback meetings, and data analysis tools.

At the End of the Process, What Should the Regulator Evaluate?

At the end of this phase, the regulator should conduct a comprehensive assessment of all structural and operational elements implemented throughout the process. First, it is essential to review the participant selection process to ensure that the criteria applied enabled the selection of actors and technologies aligned with the objectives of the regulatory sandbox, promoting innovation while maintaining safety and regulatory compliance. Next, the effectiveness of the communication plan should be analyzed in order to determine how engagement with the target audience contributed to the visibility of the initiative and participation in the project. Transparency in documentation and clarity of the sandbox handbook for participants are equally critical, as they ensure that all parties involved understand their responsibilities and expectations. The regulator should also evaluate the effectiveness of ongoing engagement and technical feedback mechanisms, verifying that these processes facilitated meaningful information exchange and enabled the adjustments necessary to achieve the objectives established in the first phase.

Endnotes

²² Information Commissioner's Office (ICO). Regulatory Sandbox Final Report: Global Cyber Alliance – A summary of the Global Cyber Alliance's participation in the ICO's Regulatory Sandbox. Date: March 2022. Available at: https://ico.org.uk/media/for-organisations/documents/4019931/gca-sandbox-exit-202203.pdf?_gl=1*1gx27ml*_gcl_au*N-TE5MTE2NjEzLjE3MjkwMzc4MzA.

²³ UK Government. Information Commissioner's Office (ICO). The Guide to the Sandbox. Available at: <https://ico.org.uk/for-organisations/advice-and-services/regulatory-sandbox/the-guide-to-the-sandbox/UK>.

²⁴ UK Government. Information Commissioner's Office (ICO). Regulatory Sandbox. Available at: <https://ico.org.uk/for-organisations/advice-and-services/regulatory-sandbox/>

²⁵ Information Commissioner's Office (ICO). Regulatory Sandbox Final Report: Global Cyber Alliance – A summary of the Global Cyber Alliance's participation in the ICO's Regulatory Sandbox. Date: March 2022. Available at: https://ico.org.uk/media/for-organisations/documents/4019931/gca-sandbox-exit-202203.pdf?_gl=1*1gx27ml*_gcl_au*NTE5MTE2NjEzLjE3MjkwMzc4MzA.

Phase 3: Testing and Evaluation

In Phase 3, the sandbox becomes operational. During this phase, AI solutions are tested within a controlled environment, while the regulator monitors the tests, collects data, and conducts ongoing assessments to identify and mitigate risks, as well as to evaluate compliance with applicable regulatory requirements. This stage is essential for generating practical learning and adapting regulatory approaches based on the evidence collected. At the end of the testing and evaluation phase, the results are analyzed to determine the impact of innovation on both the market and consumers.

Checklist

Test Plan Objectives and Evaluation

- ☐ Evaluation of the proposed test plan: Test plans must be submitted by sandbox participants and evaluated individually by the sandbox management team.
- ☐ Objective: The plan presented by participants should be designed to generate evidence regarding specific regulatory issues associated with the proposed innovation, in line with the overall objective of the regulatory sandbox defined at the beginning of the process.
- ☐ Expected outcome: The regulator should be confident that, once the test has been conducted as planned, it will be possible to determine the next steps and define an appropriate exit strategy indicating the viability – or otherwise – of the final product in relation to its target market.
- ☐ Define schedule and budget: Establish a clear timeline and budget for the testing period.
- ☐ Identifying the scope of the test: Clearly specify what is being tested, including the testing methodology and the rationale behind it.

- Establishment of milestones and success criteria: Define clear milestones and criteria for evaluating the success of the tests, enabling the regulator to assess outcomes once the testing phase has concluded.

Risk Identification and Mitigation Measures

- Risk identification: Assess the types of risks involved in the testing phase (regulatory, economic, ethical, and others) and define mitigation measures to minimize potential negative impacts.
- Defining roles and responsibilities: Assign clear roles and responsibilities to all parties involved in the testing process, including both participants and the regulatory team. This is directly related to the establishment of robust governance structures, as discussed in Phase 1.
- Rules for interaction and reporting: Establish rules governing ongoing engagement and communication between sandbox participants and the regulator throughout the testing phase, including the preparation and submission of reports for technical analysis.

Case Study: Ofgem Regulatory Sandbox in the United Kingdom

The regulatory sandbox of the Office of Gas and Electricity Markets (Ofgem),²⁶ the United Kingdom's energy regulator, illustrates how a regulatory environment can be structured to support innovation in the energy sector. Established to identify regulatory barriers and allow innovators to test their solutions in a real-world setting, the sandbox provides comprehensive support, ranging from tailored guidance to the granting of temporary exemptions from specific regulatory requirements.

Ofgem's initiative is ongoing and forms part of a broader innovation hub that offers support and funding to innovators seeking to test or launch new products, services, methodologies, or business models in the UK energy market. Ofgem recognizes that, although the results of a regulatory sandbox cannot automatically be translated into permanent policy changes – which depend on more rigorous legislative processes – positive test outcomes demonstrating a product's capacity to operate effectively in the market may justify the granting of temporary exemptions. Under such exemptions, specific regulatory requirements may be suspended or adjusted, allowing the activity or product to continue operating under defined conditions.

Test Objectives and Evaluation

During the sandbox testing phase, Ofgem establishes specific objectives for each project, ensuring that these objectives are aligned with both the intended innovation and applicable regulatory requirements. The purpose of the testing phase is to assess the technical feasibility of the innovations, their impact on the market, and their potential benefits for consumers. Each selected project must submit a detailed testing plan that includes the intended objectives and key performance indicators (KPIs) to be monitored throughout the testing period.

This approach enables Ofgem to determine whether the proposed innovations can comply with regulatory requirements and achieve the expected results before being implemented on a broader scale.

Test evaluation is conducted on an ongoing basis, with interim reports and a final assessment that includes an analysis of performance against the established KPIs. Ofgem reviews these results to determine the effectiveness of the tested solution and its alignment with the standards of the energy sector. This comprehensive assessment helps ensure that emerging technologies meet safety and quality requirements before entering the market on a permanent basis.

Risk Identification and Mitigation Measures

Ofgem adopts a proactive approach to identifying and managing risks throughout the sandbox process. Before testing begins, participants are required to submit a detailed risk analysis addressing the potential negative impacts of the proposed technology.²⁷ Ofgem evaluates these risks through a specialized team, taking into account factors such as data security, the integrity of energy networks, and the potential effects on end consumers. This analysis covers both technical and regulatory risks, with a focus on minimizing issues that may arise during the testing phase.

To mitigate the identified risks, Ofgem implements a series of measures that include safety protocols, operational limits, and specific safeguards designed to protect both consumers and the energy sector.²⁸ These measures are continuously reviewed throughout the testing period, allowing adjustments to be made when necessary.

The sandbox also allows Ofgem to conduct simulations and scenario-based testing, helping to anticipate how technologies may respond under adverse conditions and ensuring that the testing environment remains safe and controlled.

As Reuben Binns, a former member of the Information Commissioner's Office (ICO), highlights, it is important to maintain flexibility in the sandbox environment:

“You need to be more creative in figuring out how existing legislation can be applied,

while at the same time being more willing to allow failures in the sandbox. You must be willing to select projects that may not work without putting any of the parties in a difficult position, whether it be the organization that is innovating or the regulator.”

How Would It Work in Practice?

Test Objectives and Evaluation

At this stage, the competent authority should define clear objectives for each test conducted within the sandbox, as required by the applicable legislation. The evaluation process should include the definition of specific milestones and indicators to measure the effectiveness of the tests, such as the degree of compliance with principles of transparency and accountability. In addition, the competent authority may monitor the progress of the tests through periodic reports submitted by participants, allowing adjustments to be made when necessary to ensure alignment with the established objectives.

Estimated duration: 3–4 months.

Resources required: A team of experts in data protection and other relevant fields affected by the technology under evaluation, consultants to assist in the development of evaluation metrics, and a digital platform for monitoring and reporting.

Risk Identification and Mitigation Measures

At this stage, the competent authority may identify the main risks associated with the use of AI, particularly those that may affect individual fundamental rights, such as discrimination or lack of transparency. The risk analysis would include a detailed assessment of the potential impacts of automated decision-making and the mitigation strategies that participants may implement, such as data minimization practices and decision review mechanisms. Sandbox participants should be encouraged to adopt preventive approaches such as “ethics by design”²⁹ and to document each identified risk together with the corrective measures implemented. The competent authority may also conduct compliance audits to ensure that risks are monitored continuously throughout the testing phase.

Estimated duration: 2–3 months.

Resources required: A regulatory compliance team, consultants specializing in data security and ethics, and risk monitoring tools.

At the End of the Process, What Should the Regulator Evaluate?

At the end of this phase, the regulator must conduct a rigorous assessment to determine whether the testing stage was successful according to the previously established criteria. This evaluation should include verification of compliance with mandatory legal requirements applicable to the authority, as well as an analysis of the product's impact on consumers – even in cases where the regulator exercised discretion to temporarily relax certain consumer protection rules during the testing period. The evaluation should culminate in a clear decision regarding the exit options available to participants, which may include granting a license, allowing the product to operate in the market under specific exemptions, or recommending regulatory or legislative changes to accommodate the tested innovation. This process ensures that the outcomes of the sandbox contribute effectively to improving the regulatory framework while mitigating risks for both the market and consumers.

Endnotes

²⁶ UK Government. Ofgem. Guidance for Innovators Energy Regulation Sandbox. Available at: https://www.ofgem.gov.uk/sites/default/files/docs/2020/07/sandbox_guidance_notes.pdf.

²⁷ UK Government. Ofgem. Guidance for Innovators Energy Regulation Sandbox. Available at: https://www.ofgem.gov.uk/sites/default/files/docs/2020/07/sandbox_guidance_notes.pdf.

²⁸ Ibidem.

²⁹ For further information on ethics by design, see Section 3.2 of this series' benchmark report.

Phase 4: Exit Strategy and Post-Sandbox Follow-Up

The exit strategies and post-sandbox follow-up phase involves defining how participants will transition once the sandbox concludes. The regulator should establish clear exit options, such as full or partial integration of the solution into the market, a temporary extension of the testing period to gather additional data, or the discontinuation of the project, depending on the results obtained.

Below, we present a checklist to guide regulators through this process, together with a case study from Ofgem illustrating how exit planning has been conducted in the energy sector. We then describe how this phase could be applied in practice in Brazil. Finally, regulators should assess whether the exit options were appropriate and whether post-sandbox monitoring effectively ensures the continued regulatory compliance of the tested solution.

Checklist

Exit Strategy Planning

- ☐ Define test completion criteria: Establish clear and measurable criteria indicating when a test can be considered successfully completed. For example, assess whether the test objectives have been achieved and whether the identified risks have been adequately mitigated.
- ☐ Identify exit options: Determine the possible exit pathways for participants, such as:
 - ☐ i. Full or partial market integration, provided that regulatory compliance requirements are met;
 - ☐ ii. Temporary extension of the sandbox if the objectives have not yet been fully achieved;
 - ☐ iii. Termination of the test if the risks outweigh the potential benefits.

- Develop a gradual transition: Provide an adaptation period for participating organizations as they exit the sandbox, allowing them to adjust their operations to the applicable regulatory environment.

Post-Sandbox Follow-Up

- Final evaluation and documentation: Review all testing data and results to compile and publish a Final Sandbox Report, including:
 - i. Results and key insights;
 - ii. Lessons learned and challenges encountered;
 - iii. Recommendations for future regulation or regulatory revision;
 - iv. Interviews or questionnaires capturing participant feedback on the regulatory sandbox process.
- Establish an ongoing monitoring plan: After participants exit the sandbox, monitor their operations to ensure continued compliance and the effective implementation of the lessons generated during the sandbox process.
- Monitoring KPIs: Develop sector-specific Key Performance Indicators (KPIs) to track the performance of former participants operating within the full regulatory environment.
- Offer technical and regulatory assistance: Provide access to a support team capable of offering regulatory or technical guidance during the transition period following the sandbox.
- Establish communication channels: Maintain a direct communication channel with former participants to address questions, receive updates, and respond to emerging challenges.

Incorporating Results

- Incorporate insights into the regulatory framework: Assess whether the lessons learned justify adjustments to existing regulations or the development of new regulatory instruments, based on the data and evidence generated by the regulatory sandbox.
- Share sandbox results: Publish the results report in an accessible format, allowing other companies and stakeholders to benefit from the findings and supporting broader innovation.
- Promote best practices: Disseminate best practices identified during the sandbox process to the relevant industry, encouraging the adoption of effective compliance practices.
- Review and adjust the sandbox process Based on the feedback received, refine internal procedures and the sandbox structure in order to improve the design and effectiveness of future editions.

Case Study: Ofgem Regulatory Sandbox in the United Kingdom

Exit Strategy Planning

In the Ofgem regulatory sandbox described above, the selection of exit pathways for participating companies was based on specific criteria designed to ensure alignment between the sandbox's objectives and regulatory certainty within the energy market. Each exit option was defined according to the level of compliance demonstrated by participating companies, the maturity of the innovations tested, and the potential impacts on the sector. The available pathways included:⁵⁰

- v. Full integration into the regulated market: This option was reserved for participants who fully met the applicable compliance requirements and demonstrated that their innovations were safe, effective, and beneficial for both consumers and market operators.
- vi. Temporary extension of the sandbox: This option applied to promising projects that required additional adjustments in order to achieve full compliance or mitigate residual risks before entering the market. In this model, Ofgem may issue letters of derogation to temporarily relax specific regulatory requirements, allowing companies to explore innovative business models without compromising safety and quality standards.
- vii. Project closure: This pathway was applied in cases where the risks associated with implementing the innovation outweighed the expected benefits, even after adjustments. This ensured that the sandbox did not promote solutions that could generate negative impacts on the market or on consumers.

The criteria underlying the choice among these options included the ability of the innovation to generate clear benefits for consumers, comply with the sector's safety and efficiency standards, and demonstrate potential for sustainable integration into the regulatory framework. This process allows Ofgem not only to evaluate the innovations tested but also to gather valuable insights that may inform future adjustments to both the regulatory framework and the management of the sandbox itself.

Post-Sandbox Follow-Up

Throughout the development of the testing phase, Ofgem implemented several mechanisms to monitor the performance of participating companies once operating within the full regulatory environment. The regulator reviews the data collected during testing, assesses requests for deadline extensions or additional letters of derogation, and evaluates the final reports submitted by sandbox participants. In addition, Ofgem maintains a support team available to provide regulatory and technical guidance, assisting companies in the practical implementation of any necessary adjustments. To ensure transparency, Ofgem also maintains a cyclical schedule for collecting feedback from participants regarding the sandbox process, thereby contributing to the continuous improvement of future initiatives. This approach can be observed in most regulatory sandboxes developed by UK authorities.

Incorporating Results

A practical example of incorporating sandbox outcomes can be seen in the case of Emergent Energy, a technology company specializing in decentralized energy solutions. The company participated in Ofgem's regulatory sandbox to test an innovative community-based energy management model. Emergent Energy proposed the creation of an energy-sharing system within local communities, allowing consumers and small-scale producers – such as households equipped with solar panels – to exchange electricity directly with one another. As a result of the testing process, Emergent Energy received a letter of derogation from Ofgem³¹ granting temporary exemptions from certain electricity market regulations.

The main regulatory flexibilities granted included: (1) Permission to operate without the traditional licenses required for energy supply, provided that specific safety and consumer protection requirements were met; (2) flexibility to implement customized pricing models for energy exchange among participating community members; (3) adaptation of regulatory standards to accommodate the technical characteristics of localized energy systems. This experience provided Ofgem and other stakeholders with a practical example of how decentralized energy solutions

can benefit consumers, reduce costs, and promote sustainability. The final results of this initiative are expected to be published in May 2027.

As Reuben Binns, former member of the Information Commissioner's Office (ICO), explains, regulatory sandboxes are useful not only for addressing regulatory gaps but also for clarifying ambiguities in the interpretation of existing legal frameworks:

“[...] In the context of AI, the UK Data Protection Act includes annexes that complement the GDPR, particularly regarding the processing of sensitive data or special categories such as race, religion, or trade union membership. These types of data are subject to additional protections, and the conditions for their processing are limited. Initially, there was an assumption that such data could not be used to test for biases in AI systems – for example, racial bias in facial recognition systems. However, the Data Protection Act includes an annex that allows the processing of special category data for purposes such as equality monitoring, originally intended for organizations seeking to ensure diversity in recruitment. Through the sandbox, there was a case involving an organization with a facial recognition system that wanted to assess and mitigate racial biases. ICO lawyers analyzed this provision and concluded: ‘in fact, this condition can be used as a legal basis for processing this data.’ This was an example where the sandbox helped us identify that there was no gap in the law. The legislation did allow this, but perhaps people had not made the connection with discrimination in AI. We were therefore able to use the sandbox experience to produce guidance clarifying this issue.”

How Would It Work in Practice?

Exit Strategy Planning

At this stage, the competent authority would define the criteria for completing the testing phase, establishing clear and measurable parameters to determine the success of the sandbox, such as obtaining evidence of compliance with applicable legislation and the development of best practices. To ensure a smooth transition to the full regulatory environment, the competent authority would also propose exit options, including the possibility of extending the sandbox for participants who have not yet achieved all regulatory objectives.

Estimated duration: 1–2 months for exit strategy planning.

Resources required: A legal and regulatory team, data analysts, and a budget allocated for the publication and dissemination of the final report.

Post-Sandbox Follow-Up

After participants exit the sandbox, the competent authority would conduct a final evaluation of the testing results, compiling the data into a comprehensive report that would include lessons learned, challenges encountered, and recommendations for future regulatory initiatives. In addition, the competent authority would implement a continuous monitoring plan to track the compliance of former participants. This would involve developing specific KPIs and providing technical and regulatory support to assist participants during the transition and adaptation period.

Estimated duration: 3 to 6 months, depending on the complexity of the subject matter and the level of demand from former participants.

Resources required: A performance monitoring and analysis team, data analytics tools, and a technical support team available to respond to inquiries and guide former participants.

Incorporating Results

Finally, the competent authority would use the insights and results generated through the sandbox to strengthen the regulatory framework and promote a clearer understanding of how companies and other private-sector

actors can apply the legal bases examined during the regulatory sandbox in the development of their products. This phase would be essential for identifying gaps in the private sector's understanding of the practical application of regulation and for developing clearer and more effective guidance for companies working with AI. It would also involve the public dissemination of the results obtained, the best practices identified, and the challenges encountered. Such dissemination would help promote a culture of transparency, multisector collaboration, responsible innovation, and regulatory compliance in the use of AI.

Estimated duration: 3–4 months.

Resources required: A legal and regulatory team, data analysts, and a budget allocated for the publication and dissemination of the final report.

At the End of the Process, What Should the Regulator Evaluate?

At the conclusion of the regulatory sandbox process, the regulator should carefully assess the effectiveness of the criteria established for concluding the testing phase, the quality of the data and insights generated, and the lessons learned throughout the process. It is essential to verify whether the initial objectives were achieved and whether the identified risks were adequately mitigated. Feedback from participants should also be taken into account in order to improve the design of future sandbox editions.

This evaluation should include not only a detailed analysis of the KPIs established for the program but also an assessment of the sectoral impacts generated, such as the economic benefits or operational challenges experienced by participating companies. Monitoring these impacts makes it possible to understand how the innovations tested influence the sector, including their effects on competitiveness and compliance with regulatory standards. Finally, the regulator should assess whether the insights generated during the sandbox should be incorporated into the existing regulatory framework and whether good practices should be promoted across the sector. The results and recommendations arising from the sandbox should be widely disseminated in order to support the development of safe, economically viable innovations that remain aligned with regulatory compliance.

Endnotes

30 UK Government. Ofgem. Guidance for Innovators Energy Regulation Sandbox. Available at: https://www.ofgem.gov.uk/sites/default/files/docs/2020/07/sandbox_guidance_notes.pdf.

31 UK Government. The Office of Gas and Electricity Markets (Ofgem). Sandbox Consent to not comply with Standard Licence Condition. November 2024. Available at: https://www.ofgem.gov.uk/sites/default/files/2024-11/Emergent_sandbox_decision_letter_updated_11.11.24.pdf.

Conclusion

This guide was developed to serve as practical and strategic guidance for the implementation of AI regulatory sandboxes in Brazil, drawing on successful experiences from the United Kingdom. Each chapter addresses key components of the sandbox lifecycle – from defining objectives and engaging stakeholders to exit strategies and post-sandbox follow-up – providing a clear framework that enables Brazilian public authorities to apply these guidelines in an efficient and adaptable manner.

By highlighting the opportunities for strengthening regulatory frameworks offered by regulatory sandboxes – particularly in the context of emerging technologies such as AI – this guide also reflects the longstanding and productive partnership between Brazil and the United Kingdom in the field of public policy for technology and the internet. From the establishment of collaborative initiatives such as the UK–Brazil Tech Hub to joint efforts in innovation and digital regulation, the two countries have worked closely to promote an environment that supports safe and ethical technological development. This history of international collaboration reinforces a shared commitment to effective regulation that balances the protection of individual rights with the promotion of technological progress.

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