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The Sandbox Perspective

New Frontiers: How Sandboxes reshape regulation

2026

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Proactive regulation is a catalyst for innovation

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Regulation has always been more than a body of rules. It has become one of the most powerful instruments for shaping how innovation emerges, scales, and delivers value to society. In an era defined by the velocity of technological change, governments are presented with a pivotal opportunity in which they must design the rules that protect public interest, while actively fostering progress and innovation.

Sandbox Dubai represents a step-change in how Dubai approaches this opportunity, with the emirate strengthening its institutional capability to shape innovation deliberately and responsibly. As a flagship initiative of the Dubai Future Foundation, Sandbox Dubai introduces a world-first cross-government, cross-sectoral approach to regulatory experimentation, one that is systematised across the entire economy rather than confined to individual sectors or entities.

The logic of this model is both principled and practical. By bringing innovators and regulators together under a shared framework, Sandbox Dubai grants innovators with a structured environment to test, refine, and de-risk their solutions under regulatory supervision within defined safeguards and a time-bound setup. This model reflects Dubai's ambition to lead not only in innovation, but in how innovation is governed, bringing regulators and private-sector innovators together as partners in shaping the rules that underpin future growth.

With inaugural cohorts spanning the gig economy, health innovation, and property technology, Sandbox Dubai has moved decisively from concept to execution — demonstrating that regulatory experimentation is not an aspiration but now an operational reality. The result has seen the creation of a virtuous cycle, in which experimentation strengthens regulatory clarity and, where appropriate, informs regulatory evolution. Through this, Dubai is reinforcing its position as one of the most competitive, trusted, and forward-looking destinations in the world — ready not only to keep pace with the future, but to shape it with purpose and responsibility.

This paper sets out the rationale, design, and early trajectory of Sandbox Dubai as part of Dubai's broader commitment to future readiness. It is offered in the spirit that guides the Dubai Future Foundation's deepest work: the belief that the future belongs not to those who anticipate change, but to those who invest, early and deliberately, in the systems that govern it. Sandbox Dubai is one such system — and its significance will only grow as the pace of innovation continues to outrun the frameworks built to contain it.

Executive Summary

Dubai stands at a defining moment in its journey as one of the world's most future-ready economies, shaped by a combination of strategic government leadership, highly efficient public institutions, and a rapidly expanding private sector, animated by a dynamic investment ecosystem. **As capital flows increase, company formation accelerates, and new business models are deployed at scale,** the **Emirate's continued competitiveness increasingly depends on how effectively regulation enables progress** while safeguarding the interests of society.

New technologies and business models

Scaling globally in years, if not months, rather than decades

Innovation cycles worldwide have compressed dramatically, with new technologies and business models scaling globally in years, if not months, rather than decades. While innovation is primarily driven by private sector, particularly in mature economies, regulatory readiness ultimately determines where it scales. Jurisdictions that engage early with innovators and provide structured, predictable pathways to deployment, attract capital, talent, and industry leadership, while those that do not risk seeing high value activity concentrate elsewhere.

Traditional regulatory instruments, designed for stable and well-understood markets, struggle to govern fast-moving, cross-sector innovation. Many of today's solutions operate in "white spaces": domains that are not clearly regulated, or that cut across multiple authorities and policy mandates. In such environments, evidence often emerges only through real-world use, and fragmented oversight can create uncertainty, delay deployment, or discourage investment. Addressing this gap requires more than faster rulemaking; it requires new regulatory tools.

Sandboxes address this gap by enabling supervised experimentation, allowing regulators to learn alongside innovation and design proportionate frameworks, **while enabling innovators to test, refine and de-risk their solutions before full market deployment**. International experience shows that well-designed sandboxes generate a virtuous cycle: better regulation, faster innovation cycles, increased investor confidence, and market-shaping outcomes that compound over time. Case studies across sectors and jurisdictions demonstrate that sandboxes can deliver system-wide rule changes, when they are embedded as strategic instruments rather than one-off pilots.

Sandbox Dubai builds on these lessons with a world-first cross-government sandbox framework, designed for an economy where innovation is already happening at scale. Anchored within the Dubai Future Foundation and Dubai's Research, Development and Innovation program, it institutionalises regulatory experimentation across the entire economy, positioning regulators as co-architects, working hand-in-hand with private sector's innovators and investors. **Unlike traditional sector-bound sandboxes, Sandbox Dubai adopts a "one-government" approach that coordinates regulators across domains, enabling structured exploration of cross-sector innovations and emerging white spaces involving multiple mandates**.

Sandbox Dubai focuses explicitly on the deployment stage, where regulatory clarity determines whether investment translates into real-economy impact. Through a "one-government" approach, it enables coordinated experimentation across authorities, reduces uncertainty for innovators and investors, and ensures that regulatory learning becomes a shared asset rather than a siloed outcome.

Initial cohorts in areas such as the

- Gig economy
- Healthcare innovation
- Property technology

Initial cohorts in areas such as the gig economy, healthcare innovation, and property technology mark its transition from design to execution. **As evidence is generated, Sandbox Dubai is expected to yield regulatory outcomes, such as clarified guidance, adapted supervisory practices, or new licensing pathways, while supporting economic growth, societal outcomes, and long-term competitiveness.**

Sandbox Dubai is not a programme, but a permanent governance capability. It enables Dubai to govern innovation as it unfolds, ensuring that local private-sector dynamism is matched by regulatory confidence, coordination, and trust.

By embedding structured experimentation into policymaking, Dubai strengthens its ability to attract investment, unlock cross-sector innovation, and remain at the forefront of global competitiveness.

As stated by

> **"The future belongs to those who can imagine it, design it, and execute it. It is not something you await, but something you create."**

-His Highness Sheikh Mohammed bin Rashid Al Maktoum,

Dubai is not simply preparing for the future, it is actively building it.
If you are interested in learning more, please visit sandboxdubai.gov.ae

1 The case for regulatory innovation: from protective and reactive to proactive and catalytic policymaking

1.1 The compression of innovation cycles and the limits of reactive regulation

Innovation has long driven economic growth and societal progress, but regulation has typically lagged, and in some case constrained the deployment of those advances. This lag is not accidental, as regulatory change typically requires evidence that benefits are material and risk mitigation is manageable, cross-stakeholder consultation, legal drafting and impact assessment, and implementation capacity for supervision and enforcement.

In fast-evolving technology domains, these steps often unfold only once adoption is already underway, which makes regulation predominantly reactive, designed to correct outcomes after real-world effects have become visible.

Today, however, the gap is narrowing as adoption cycles accelerate, forcing regulators to respond at an unprecedented speed. This acceleration is driven by structural shifts that allow new technologies, business models, and services to scale globally within months rather than decades. Key drivers include:

- **Diffusion acceleration through supply chain globalization**: As global trade has expanded six-fold since the 1990s[1], firms increasingly design innovations for global rollout from launch, leveraging integrated supply chains and platforms[2]. This shifts adoption from a sequential, country-by-country process to near-simultaneous global scaling, dramatically accelerating how quickly new technologies reach mass adoption
- **Digital infrastructure & network effects**: Digital platforms enable exponential adoption by allowing new entrants to plug into existing user bases. Adoption timelines have compressed dramatically: 75 years for the telephone to reach 100 million users, 33 years for cars, 7 years for the internet, 3.3 years for WhatsApp, and only 2 months for ChatGPT[3], leaving little time for regulatory response before scale is achieved
- **Reduced information asymmetry**: Digital channels have transformed how information spreads. Research from MIT's Sloan School shows that product information now reaches potential adopters 10 to 15 times faster than in pre-internet era[4], compressing diffusion curves.

to reach
100 *million users*
it took

75 *years* for the telephone

33 *years* for cars

7 *years* for the internet

3.3 *years* for WhatsApp

2 *months* for ChatGPT

Faster visibility also accelerates competitive imitation, intensifying adoption pressure across markets

- **Lower adoption costs**: subscription-based and cloud-enabled models have shifted adoption from high stake commitment to low-risk experimentation, where subscription models replace large upfront investments. This reduces barriers to trial,increases the speed of user uptake, and allows innovations to scale before long-term impacts are fully understood.

$30Bn
in 2000
$445Bn
in 2021

- **Accelerated capital formation**: Capital now amplifies speed. Global venture capital investment rose from $30 billion in 2000 to $445 billion in 2021[5], enabling firms to fund rapid scaling, international expansion, and user acquisition early in the lifecycle of new technologies

Gen Z adopts new platforms around **40%** faster than Millennials

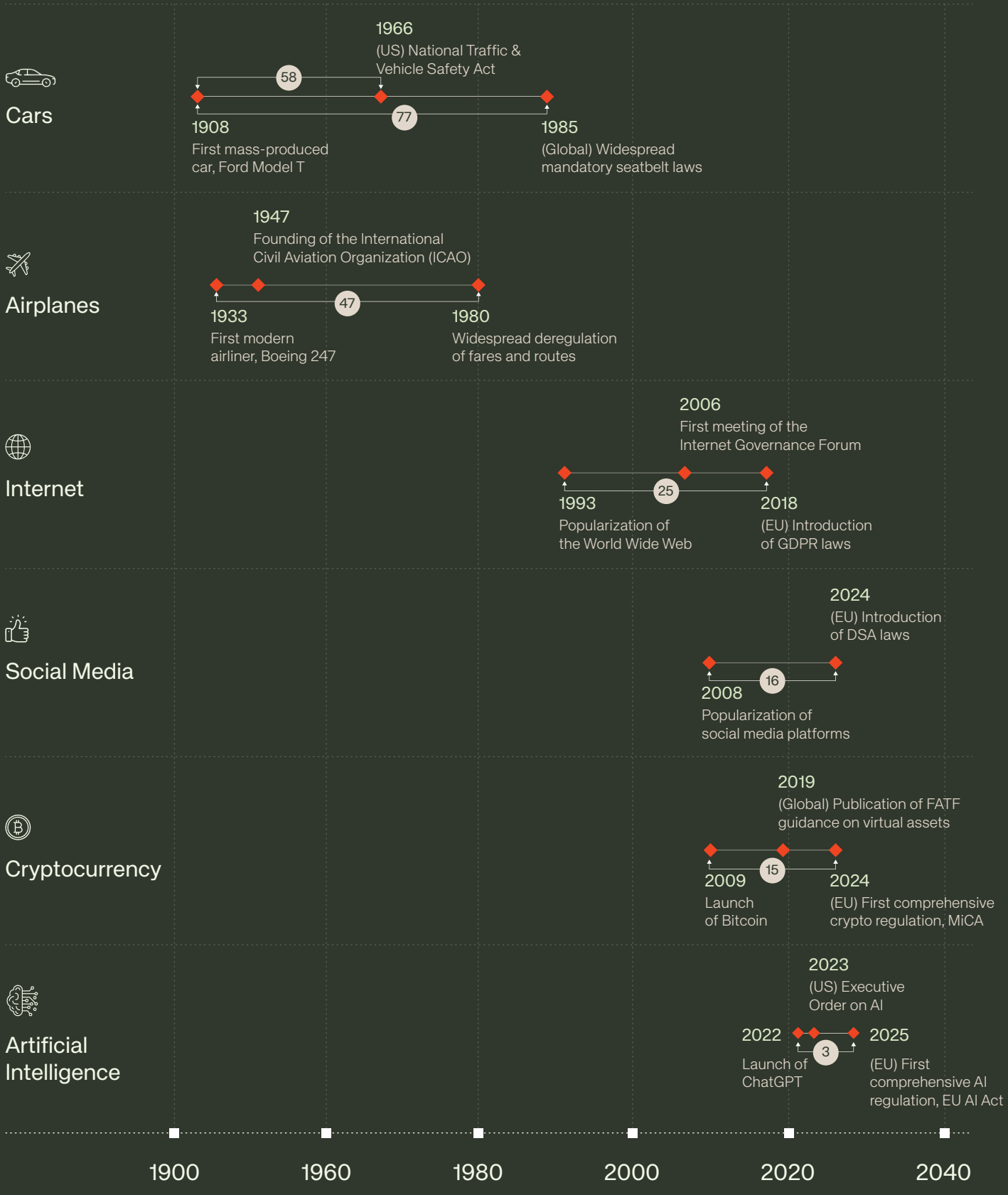
- **Demographic & cultural shifts**: Digital-native cohorts exhibit higher technology comfort, lower status quo bias, and greater openness to experimentation. Consumer research indicates that Gen Z adopts new platforms around 40% faster than Millennials, who themselves adopted faster than previous generations,further shortening adoption cycles[6]

Together, these forces transform innovation adoption from a gradual, linear process into a rapid, global phenomenon, significantly compressing the window in which regulators can observe, assess, and respond before new models reach scale.

In this context, regulatory responses have accelerated sharply over the past century as innovations spread globally within years rather than decades. A century ago, it took roughly six decades from the mass adoption of automobiles for comprehensive safety regulation to emerge; today, for fast-scaling digital technologies such as cryptocurrencies[7] or artificial intelligence, regulators are introducing economy-wide frameworks within three to ten years of market emergence[8] (Figure 1).

This compression of regulatory timelines fundamentally challenges governance models designed for slower, sequential innovation cycles, requiring much shorter lead times between an innovation's launch and the establishment of clear regulatory frameworks.

Figure 1: The acceleration of regulatory response to selected innovations since the 20th century



This compression of regulatory timelines fundamentally challenges governance models designed for slower, sequential innovation cycles. Even as regulatory responses accelerate, by the time risks are fully understood and frameworks introduced, technologies and business models may already be deeply embedded, narrowing policy options and increasing the cost of correction.

In this context, reacting faster is no longer enough. Regulation must evolve toward a more anticipatory role, partnering earlier with emerging technologies, business models, and usage patterns.
Doing so allows regulators not only to manage risks, but also to influence the direction of innovation, steering it toward outcomes aligned with societal priorities, economic objectives, and public trust.
This approach has historical precedent. Since the 1970s, industrial policy models in countries such as China[9] and South Korea[10] have deliberately positioned regulator as an innovation partner, using regulation as a strategic instrument to shape markets, guide investment, and accelerate priority industries. In these settings, regulation functioned less as a constraint and more as a catalyst for growth shaping industries, guiding investment, and accelerating innovation.

As innovation now scales rapidly and globally, this logic becomes increasingly relevant.

Regulation can no longer operate solely as a safeguard introduced after adoption. It must also act as a forward-looking policy lever, capable of anticipating change, creating space for experimentation, and actively shaping how new markets emerge.

This shift, from faster reaction to proactive engagement, captures the essence of regulatory innovation and sets the foundation for the tools explored in the sections that follow.

1.2 First mover advantage and the cost of proactive regulation inaction

The competitiveness' stakes of proactive regulation are immediate. Innovation is largely private-sector led: startups, scale-ups, and incumbents deploy capital, test new models, and scale quickly when conditions allow.

When regulators engage early as partners, providing structured pathways and feedback, innovators move from experimentation to scale faster, and jurisdictions capture durable advantage.

First-mover advantage is therefore less about legislating first and more about being first to learn, adapt, and signal regulatory readiness. Proactive, evidence-based approaches reduce uncertainty at deployment, attract investment, and anchor high-value activity locally, allowing companies to focus on growth rather than regulatory navigation.

International evidence helps quantify the competitiveness implications of proactive regulatory approaches. In fast-moving fields with high growth potential such as healthcare, financial services, and artificial intelligence, innovators often need to test new technologies, business models, or operational concepts in real-world conditions before they can scale safely.

China's Civil Aviation Administration introduced controlled "drone sandbox" environments to test and scale drone delivery use cases...

...which enabled to seize a 70% share of the global drone commercial market

The commercial drone sector provides a clear example of how allowing controlled testing can help new industries grow faster. In the early 2010s, regulatory approaches differed markedly across jurisdictions. While many regulators adopted a precautionary stance, applying requirements such as licensed pilots, exemption-based approvals, and line-of-sight operations to ensure aviation safety during the technology's early development, China's Civil Aviation Administration introduced controlled "drone sandbox" environments and risk-based pathways that enabled supervised trials, including beyond-visual-line-of-sight use cases. These differing strategies shaped market trajectories: Chinese companies, supported by this experimental framework, were able to scale logistics applications earlier, with firms such as JD.com deploying large drone delivery networks years before similar models became feasible in other markets, capturing a share about 70%[11] of the global commercial drone market.

AED 300 billion in economic benefits circa 10,000 jobs over time.

In the United States, the FAA's Drone Integration Pilot Program enabled supervised trials of advanced commercial use cases (beyond-visual-line-of-sight operations, drone delivery, infrastructure inspection). By generating operational evidence with private partners, the program informed aviation rulemaking and is estimated to have unlocked up to AED 300 billion in economic benefits and circa 100,000 jobs[12] over time.

Similar effects can be observed beyond sectoral scopes. In South Korea, a cross-sector regulatory sandbox enabled private firms to test innovations facing regulatory uncertainty across mobility, healthcare, fintech, and smart infrastructure. Between 2019 and 2025, more than 500 companies received temporary exemptions, or tailored guidance, contributing approximately AED 2.6 billion in revenue and nearly 6,900 jobs[13]. Here again, early regulatory engagement acted as a catalyst for private sector growth.

Conversely, the cost of regulatory inaction is borne directly by the private sector, and by national competitiveness. Where regulatory pathways remain unclear or slow to evolve, firms delay deployment, redirect capital, or relocate high-value activity. In biotechnology, leading mRNA developers have placed major R&D hubs in jurisdictions offering faster and more predictable regulatory engagement, including commitments of several billion dirhams in long-term investment[14], demonstrating how regulatory confidence shapes where talent, jobs, and strategic industries concentrate.

Regulatory innovation does not substitute for private-sector initiative; it catalyzes it.

When regulators partner early with innovators and use real-world evidence to guide policy evolution, they unlock first-mover advantages that compound over time, determining which jurisdictions lead, and which follow.

2 Enabling regulatory innovation: Introducing the sandbox concept

2.1 Why traditional regulatory tools are no longer sufficient

As established in our previous chapter, the acceleration of innovation cycles requires regulation to become more **proactive**, engaging earlier with emerging models rather than intervening only after they have scaled. This shift is not simply a matter of speed; it reflects the growing limitations of traditional regulatory tools when applied to fast-moving, uncertain, and cross-sector innovation.

Conventional regulatory approaches, such as rules set before market deployment, guidance, or enforcement, are designed for environments where risks, technologies, and use cases are relatively well understood. These tools rely on stable definitions, historical evidence, and clear boundaries between sectors. In contrast, many contemporary innovations evolve rapidly, combine multiple technologies or services, and generate risks and benefits that cannot be fully anticipated in advance. In such contexts, applying fixed rules too early can constrain experimentation, while waiting too long can leave regulators without effective influence over market outcomes.

This challenge is structural. Regulatory processes are intentionally rigorous, requiring evidence, stakeholder consultation, and careful assessment of potential impacts. Yet the evidence needed to design proportionate and effective rules often only emerges through real-world use.

As a result, regulators may face a difficult choice: delay intervention until sufficient data becomes available, or impose conservative constraints based on incomplete information, both of which can limit public-interest value during early experimentation phases.

The evolution of telemedicine in Germany illustrates this gap. Initial restrictions on remote treatment[15] reflected legitimate concerns around patient safety, clinical effectiveness, and professional accountability[16]. Regulators moved to ease these constraints only once solutions had been sufficiently tested, safeguards validated, and providers certified. Following these evidence-based adjustments, adoption accelerated rapidly, with the number of accredited telemedicine providers doubling from 43 to 88 within a single year[17] (2024-2025). This experience demonstrates that effective regulation depended not on faster rulemaking alone, but on access to real-world evidence generated under controlled conditions.

Germany

telemedicine providers doubling from

43 → 88

within a single year thanks to real-world safety evidence generation

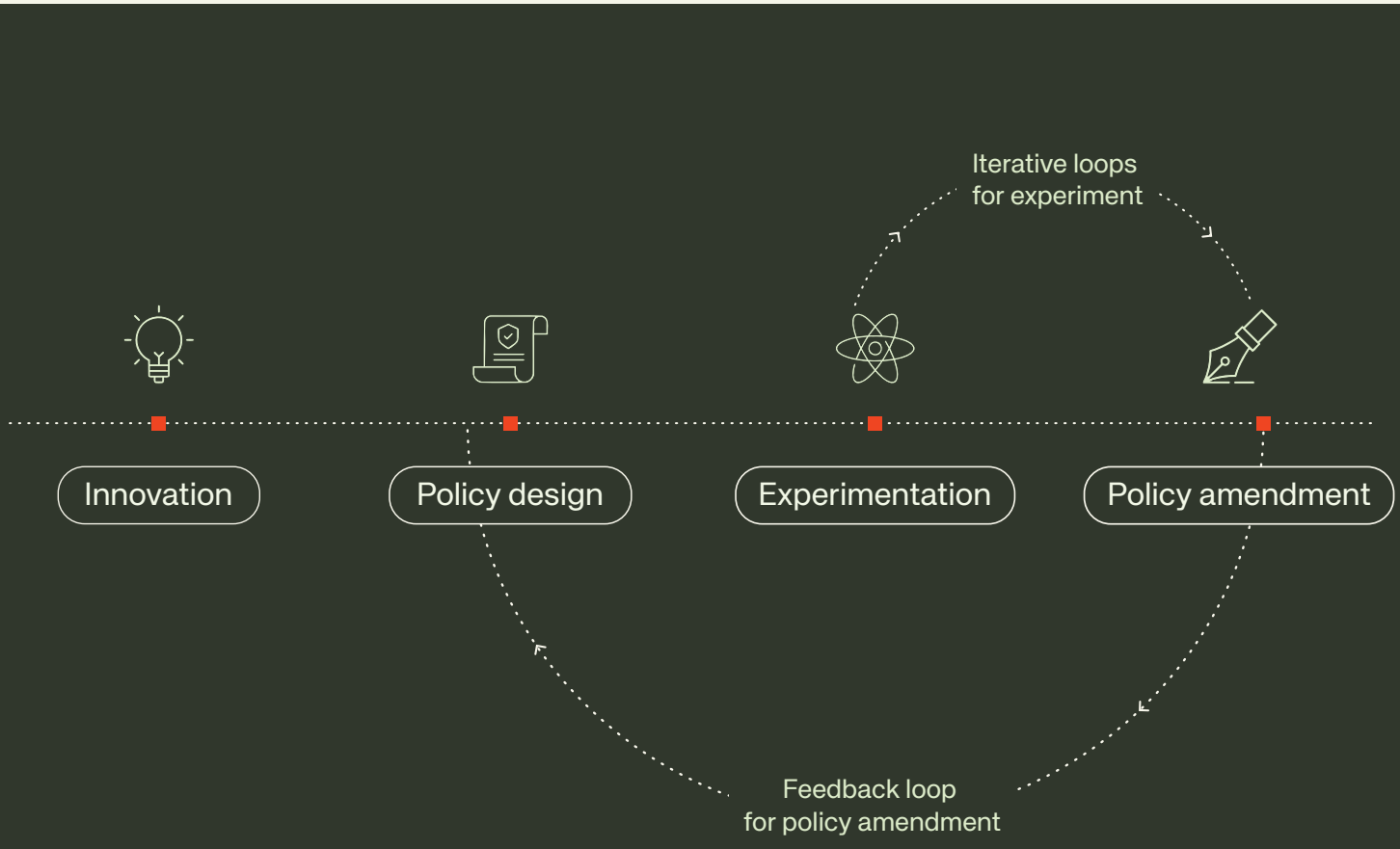
Building on such experiences, modern regulatory practice increasingly relies on risk-based, data-informed oversight that allows innovation to emerge while maintaining appropriate protections, aligned with public interest. In the case of telemedicine, regulatory adjustments were paired with clearly defined safeguards, such as mandatory provider certification, verification of clinical qualifications, adherence to medical-practice standards, and strengthened data-protection requirements, ensuring that flexibility did not come at the expense of safety or quality of care.

These dynamics highlight a fundamental limitation of traditional regulatory tools: they are poorly suited to environments where learning must occur alongside deployment.

Addressing this limitation requires regulatory instruments that enable structured experimentation under supervision,

This allows evidence to be generated before rules are finalised and feedback to be looped-in the regulatory process (Figure 2)

Figure 2: The principles of regulatory innovation



2.2. Introducing the sandbox concept

In the journey of regulators towards proactive regulation of innovation, sandboxes have emerged as a distinct regulatory instrument that enables authorities to learn alongside innovation, under controlled and supervised conditions, rather than intervening only after markets have already scaled.

UK's Financial Conduct Authority (FCA) launched the world's first regulatory sandbox in 2016.

The concept was first formalised by the UK's Financial Conduct Authority (FCA), which launched the world's first regulatory sandbox in 2016. The FCA framed the sandbox not as deregulation, but as a structured "safe space" in which businesses could test innovative products, services, business models, and delivery mechanisms in booming FinTech sector while remaining under regulatory oversight[18]. Through Project Innovate, the FCA combined temporary regulatory flexibility with close supervisory engagement, allowing firms to generate real-world evidence without immediately incurring the full consequences of standard regulatory compliance[19].

The success of this approach demonstrated that regulatory learning could be accelerated without lowering standards, and it sparkledglobal adoption.

- **200** sandboxes
- **50+** jurisdictions

By 2024, approximately 200 sandboxes had been established across more than 50 jurisdictions.

Initially concentrated in financial services, the sandbox model has since expanded across the economy, covering domains such as education, real estate, digital infrastructure, healthcare, and data-driven services. By 2024, approximately 200 sandboxes[20] had been established across more than 50 jurisdictions, growing at a 55% compound annual growth rate since the launch of the FCA sandbox (Figure 3).

OECD's Regulatory Sandbox Toolkit defines a Sandbox
As a controlled environment where new products, services, or business models can be tested with real users under regulatory supervision

As sandboxes proliferated, international institutions moved to clarify their defining characteristics and guardrails. While no single formal definition exists, policy literature and practical experience converge on a common understanding. The OECD's Regulatory Sandbox Toolkit[21] defines a sandbox as a controlled environment where new products, services, or business models can be tested with real users under regulatory supervision and with appropriate safeguards. This flexibility allows regulators to observe how innovation interacts with existing rules, identify unintended consequences, and design more adaptive frameworks in place of one-size-fits-all regulation.

World Bank's How to Build a Regulatory Sandbox guide

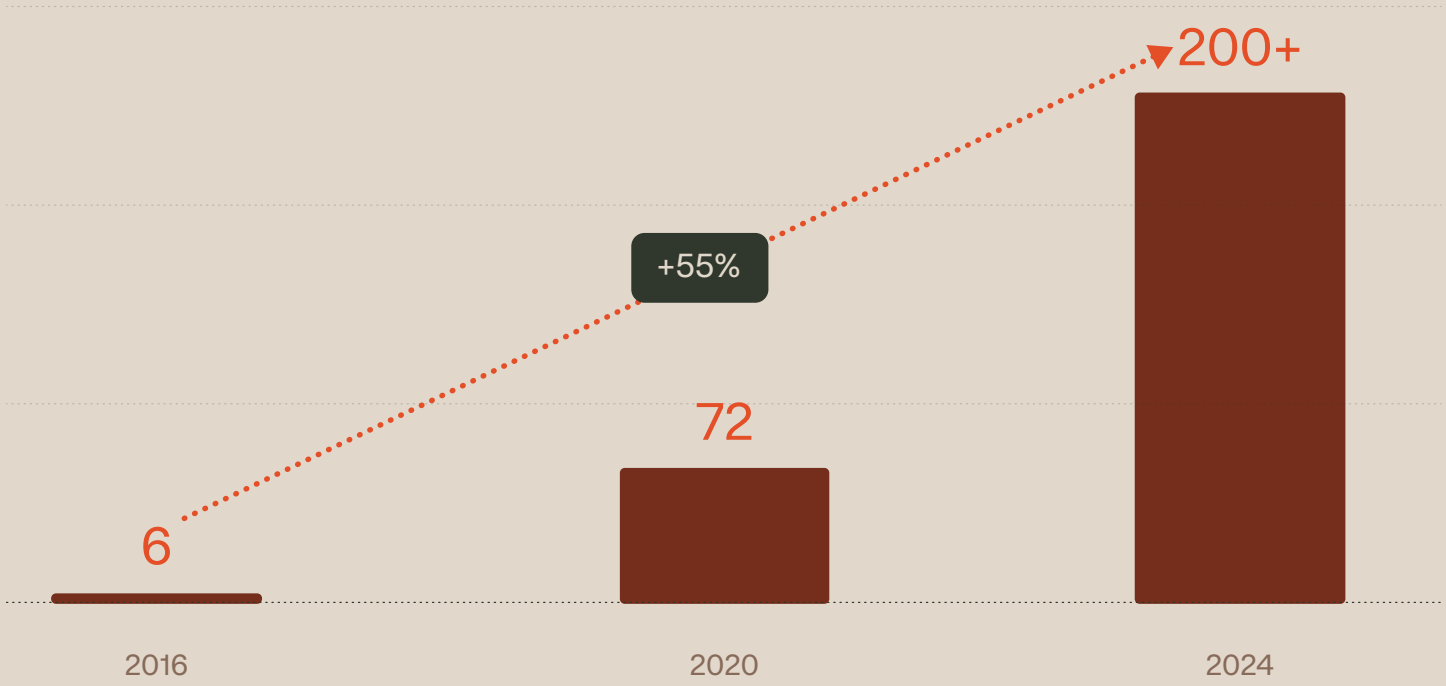
Emphasises the discipline required for sandbox effectiveness. It highlights that sandboxes must be

- time-bound
- selective
- purpose-driven
- clear eligibility criteria

Complementing this perspective, the World Bank's How to Build a Regulatory Sandbox[22] guide emphasises the discipline required for sandbox effectiveness. It highlights that sandboxes must be time-bound, selective, and purpose-driven, with clear eligibility criteria, defined monitoring arrangements, and explicit exit pathways.

Crucially, they are designed to generate evidence before policy decisions are finalised, enabling regulators to adjust rules, guidance, or supervisory practices based on observed outcomes rather than assumptions.

Figure 3: Rise of sandboxes since 2016 (Cumulative view, World bank)



These institutional perspectives distinguish sandboxes from traditional regulatory tools. A sandbox is neither an innovation programme nor a permanent exemption regime. It is a structured, temporary environment for supervised experimentation, designed to support learning, reduce uncertainty, and inform regulatory evolution before full-scale market deployment.

Sandboxes are therefore understood as controlled experimentation environments that allow innovation to be tested safely and selectively, while ensuring that insights generated are systematically fed back into broader regulatory and policy frameworks.

This definition provides the foundation for the sandbox archetypes, design principles, and system-level applications explored in the chapters that follow.

2.3. Different sandbox archetypes

Regulatory sandboxes are part of a broader family of experimentation tools, which differ in purpose depending on the maturity of the innovation and the nature of the uncertainty to be addressed. In practice,

Three main archetypes can be distinguished: innovation testbeds, hybrid testbed–sandboxes, and regulatory sandboxes. Together, they form a continuum that supports innovation from early validation through to market deployment.

Innovation testbeds
test a solution's safety, reliability and scalability

Innovation testbeds operate at the earliest stages of innovation readiness. Their primary objective is technical and operational validation, rather than regulatory change. They provide funding, infrastructure, and technical support to test new technologies or business models in controlled, market-like environments. At this stage, regulatory frameworks are generally not the binding constraint; the key question is whether a solution works reliably, safely, and at scale.

Hybrid testbed–sandboxes
solve a solution's technical uncertainty and regulatory interpretation

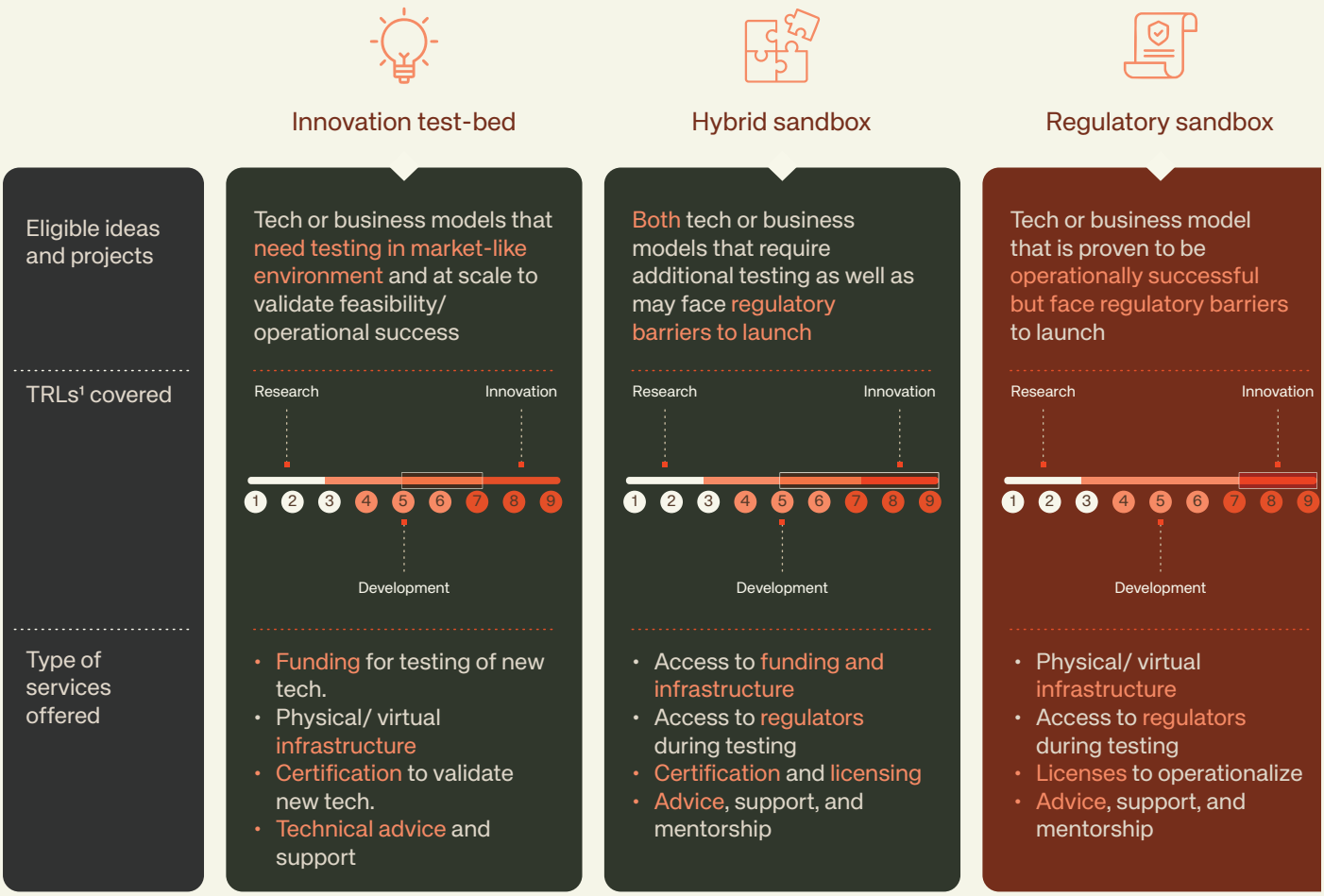
Hybrid testbed–sandboxes address a different challenge. They are designed for innovations that are sufficiently mature to warrant real-world testing, but where both technical uncertainty and regulatory interpretation remain unresolved. These models combine access to testing infrastructure with structured engagement from regulators, allowing innovators to validate performance while regulators observe how new solutions interact with existing rules. Hybrid sandboxes are particularly useful where regulatory clarity can be achieved through evidence, without requiring immediate changes to the regulatory framework.

Regulatory sandboxes
support operationally viable solutions to reach full deployment thanks to access to regulator

At the most advanced stage, **regulatory sandboxes** are designed for innovations that are already operationally viable, but face barriers to full-scale deployment due to unclear, outdated, or unsuitable regulation. In these cases, the core objective is not technical validation, but regulatory learning and policy evolution. Regulatory sandboxes allow innovators to operate under defined conditions, such as temporary exemptions, tailored approvals, or modified supervisory arrangements, so regulators can assess real-world risks, safeguards, and outcomes before determining how rules should evolve.

As illustrated (Figure 4), these archetypes align with increasing levels of innovation readiness and regulatory engagement. While their mechanisms differ, they share a common purpose: enabling controlled experimentation that generates evidence for better decision-making. Together, they allow innovators to progress from concept to commercialisation, while enabling regulators to learn in real time, adapt frameworks proportionately, and shape markets with greater confidence.

Figure 4: Three experimentation tools, serving various purposes



These frameworks allow innovators to operate under controlled conditions with regulatory oversight, temporary exemptions, or tailored approvals.

Together, these tools create a continuum of experimentation, enabling innovators to move seamlessly from concept to commercialization while allowing regulators to learn, adapt, and shape policy in real time.

1. Technology readiness level

2.4. A virtuous cycle: Outcomes and long-term benefits of sandboxes

As outlined in the previous sections, sandboxes provide a structured environment for supervised experimentation.

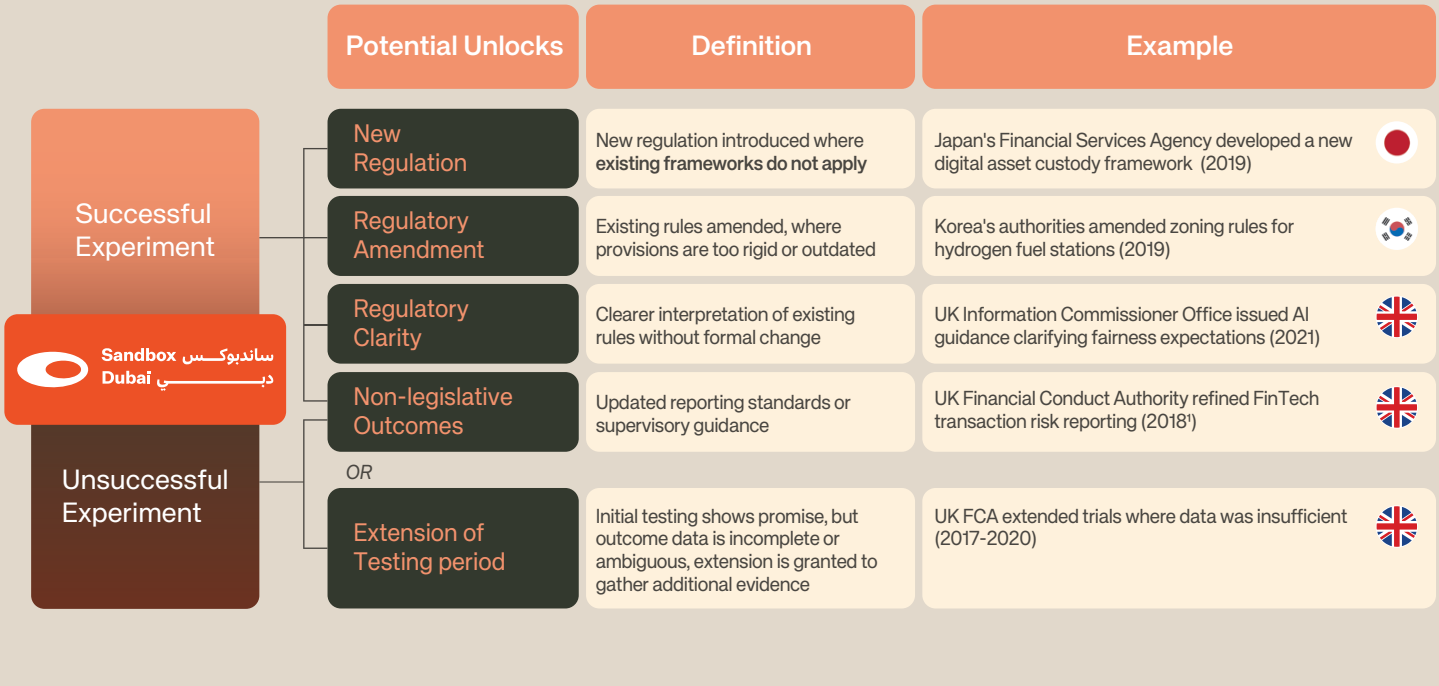
Their value lies not only in enabling testing, but in the concrete outcomes they generate for regulators, innovators, and the wider ecosystem.

Depending on the evidence produced through real-world trials, sandbox experiments can lead to a range of regulatory outcomes..

For regulators, successful experiments may inform the introduction of new regulation, targeted amendments to existing frameworks, or greater regulatory clarity through updated guidance and interpretative standards. In some cases, sandbox learnings result in non-legislative outcomes, such as supervisory guidance or standardised practices that can be adopted without formal rule changes.

Importantly, regulatory value is not limited to successful pilots. Experiments that reveal limitations, risks, or unintended consequences are equally valuable, as they enable authorities to refine assumptions, recalibrate safeguards, or determine where intervention is not yet appropriate. In this sense, sandboxing functions as a disciplined learning mechanism that improves regulatory decision-making while reducing uncertainty.

Figure 5: The regulatory outcomes of a sandbox



1. Following early cohorts in 2016

Beyond regulatory outcomes, international evidence shows that well-designed sandboxes generate lasting benefits for innovators and investment ecosystems. These benefits compound over time, creating a virtuous cycle between regulatory clarity, market confidence, and innovation scale.

Nearly half of regulators operating sandboxes globally have subsequently updated or introduced rules based on sandbox insights

- **Better regulation grounded in evidence rather than theory.** By observing new models in operation, regulators gain insight into real risks and safeguards, allowing outdated provisions to be revised, ambiguities clarified, and protections calibrated more precisely. Nearly half of regulators operating sandboxes globally have updated or introduced rules based on sandbox insights , strengthening consumer protection while reducing unnecessary barriers

R&D spend rising by up to **50%** among graduates

- **Faster innovation cycles and stronger firms.** Supervised testing with structured regulatory feedback reduces uncertainty around compliance and market entry, accelerating development and improving capital allocation. Studies show sandbox participation correlates with higher investment levels, stronger R&D pipelines, and increased patenting activity , with R&D spend rising by up to 50% among graduates

92% of firms completing the FCA sandbox progressed to full authorisation

- **Investor confidence and scaling effect.** Sandbox participation signals regulatory engagement and risk mitigation, increasing investor confidence. In the UK, 92% of firms completing the FCA sandbox progressed to full authorisation , with around 80% remaining active and raising on average 15% more capital than peers , illustrating how sandbox endorsement supports resilience and scale

PolicyPal, worked with the Monetary Authority of Singapore to define standards for digital insurance brokerage, paving the way for broader adoption

- **Market-shaping effects.** Sandbox experiments can catalyse new sectors and standards . In Singapore, early InsurTech sandbox graduates such as PolicyPal worked with regulators to define digital insurance brokerage standards, paving the way for broader adoption. Subsequent cohorts reinforced regulatory readiness, contributing to sustained sectoral cluster
- **Knowledge spillovers.** Guidelines, reports and reference frameworks produced through sandbox experiments inform future policymaking, investors assessment, and industry adoption, ensuring that benefits extend beyond individual pilots

These regulatory and systemic outcomes explain why sandboxes are increasingly used not as isolated initiatives, but as strategic tools of adaptive governance.

The following chapter illustrates how these dynamics have materialized across sectors and jurisdictions.

2.5. Sandboxes around the world: selected case studies

The outcomes described in the previous chapter are not theoretical. Across sectors and geographies, regulatory sandboxes have been used as practical instruments to generate regulatory learning, reduce market uncertainty, and enable responsible scaling. To illustrate how these dynamics materialise in practice, this section examines four sandboxes that have delivered tangible regulatory and ecosystem outcomes.

Selected for their diversity in scope, maturity, and institutional design, ranging from hybrid experimentation models to fully fledged regulatory sandboxes, these case studies span FinTech, EdTech, artificial intelligence, and digital financial services. Together, they demonstrate how

Sandboxes' structured experimentation can lead to a range of outcomes, from regulatory clarification and non-legislative guidance to system-wide rule changes and scalable market adoption.

The UK FCA Sandbox, from controlled FinTech experimentation
To regulatory and market transformation

France's CNIL EdTech Sandbox
Embedding privacy-by-design through regulatory innovation

Zurich AI Sandbox, From Experiment to Expertise
How Zurich Is Pioneering Responsible AI through its sandbox

Bank Negara Malaysia's e-KYC, Sandbox to System Change
How Malaysia Pioneered Remote e-KYC

Case study 1

United Kingdom Financial Conduct Authority (FCA) Sandbox: From Controlled FinTech Experimentation to Regulatory and Market Transformation

Launch Date
2016

Type
Regulatory Sandbox

Primary use case
FinTech products and services introduction[1]

Main outcomes

- **Regulatory amendments & guidance:** updated digital banking, payments & consumer protection frameworks
- **Licensing outcomes:** Up to full FCA authorization
- **Non-legislative outcomes:** Clarified regulatory expectations
- **Ecosystem outcome:** Cross-border regulatory cooperation through GFIN

The UK Financial Conduct Authority (FCA) launched the world's first regulatory sandbox for financial services in 2016, establishing a new model for regulating innovation through structured experimentation. The sandbox provides a controlled environment in which FinTech startups and established financial institutions can test new products, services, and business models across digital banking, payments, insurance and capital markets in live markets under close regulatory supervision.

Between 2016 and 2021, the FCA sandbox supported 166 firms across seven cohorts[31]. Rather than granting blanket regulatory exemptions, the FCA tailored supervisory support and, where appropriate, proportionate waivers or modifications to existing rules. It enabled participants to generate real-world evidence on consumer protection, operational resilience, and risk management while remaining within the regulatory perimeter.

From a regulatory perspective, sandbox experimentation strengthened the FCA's ability to engage directly with emerging financial models and risks. Insights generated through live testing informed updates to regulatory guidance in areas such as digital banking, payments innovation, and consumer safeguards, while highlighting where existing frameworks required modernisation. This two-way learning enhanced supervisory capability and improved clarity for the wider market.

The sandbox delivered measurable ecosystem outcomes. Around 40% of firms[32] in early cohorts secured investment during or shortly after participation, and over time, a majority progressed to full FCA authorisation.By helping firms address regulatory uncertainty earlier,the sandbox also reduced time-to-market and facilitated compliant market entry.

The FCA sandbox's influence extended internationally, helping establish the Global Financial Innovation Network (GFIN), a collaboration of more than 70 regulators and international organisations that enables cross-border testing and promotes greater alignment in regulatory approaches.

1. Including digital banking, payments, InsurTech

CNIL.

Case study 2

France's CNIL EdTech Sandbox: *Embedding Privacy-by-Design through Structured Regulatory Experimentation*

Launch Date
2021

Type
Hybrid test bed and sandbox

Primary use case
EdTech data compliance with GDPR

Main outcomes

- **Regulatory clarity:** Clarified GDPR implications on consent, data minimization, age-appropriate transparency, in education contexts
- **Non-legislative outcomes:** Guidance and best practices for innovators and educators
- **Institutional outcomes:** Reusable privacy-by-design models development
- **Ecosystem outcome:** Reduced uncertainty for innovators

France's data protection authority, the Commission Nationale de l'Informatique et des Libertés (CNIL), launched its regulatory sandbox (bac à sable réglementaire) in 2021 to support innovators in embedding data-protection requirements into new products and services from the outset. Grounded in the General Data Protection Regulation (GDPR), the sandbox was designed as a structured collaboration mechanism, enabling real-world experimentation while strengthening compliance and trust[33].

The second edition, launched in 2022, focused on the education sector, bringing together startups and public-sector actors developing digital tools that process children's and students' data. Over a six-month period, CNIL provided tailored legal and technical guidance on privacy-by-design and by-default, supporting participants in interpreting and applying existing GDPR requirements within innovative use cases[34], rather than granting regulatory waivers.

Across its first two editions, the CNIL sandbox supported eight pilot projects, including four in EdTech, spanning applications such as school-family communication platforms (e.g., Klassroom) to student personal cloud solutions (e.g., MyToutatice). Through hands-on engagement, participants received early regulatory feedback on issues including parental consent mechanisms, data minimization practices, age-appropriate transparency, and data governance[35], reducing uncertainty for innovators while ensuring alignment with fundamental rights.

From a regulatory perspective, insights generated through the sandbox informed publicly available sectoral recommendations, strengthening guidance for schools, local authorities, and EdTech providers on compliant data governance and contributing to best practices standardisation for children's online privacy.

Building on these outcomes, CNIL strengthened its institutional capability by developing reusable privacy-by-design frameworks and extending the sandbox approach to additional domains (incl. health and AI).

Kanton Zürich

Case study 3

Zurich AI Sandbox:
Advancing Responsible AI through Cross-Sector Regulatory Experimentation

Launch Date
2021

Type
Hybrid test-bed and sandbox

Primary use case
AI use in urban areas and public-services

Main outcomes

- **Regulatory clarity:** AI oversight guidance, privacy-by-design, & sectoral rules applicability
- **Non-legislative outcomes:** Public guidelines & reference frameworks
- **Operational outcomes** AI-enabled drone inspections validation
- **Ecosystem outcome:** Pathway from pilot to scalable business models

The Canton of Zurich launched its Innovation Sandbox for Artificial Intelligence in 2021 to enable AI innovators and public authorities to address regulatory, ethical, and operational challenges through controlled, real-world experimentation[36]. Unlike exemption-based models, the sandbox combines hands-on regulatory guidance, access to public-sector data, and live testing environments within defined safety and governance boundaries[37].

Between 2022 and 2024, the first phase admitted five AI projects across smart-city and public-service use cases, including infrastructure monitoring and mobility[38] Rather than suspending existing rules, regulators clarified regulatory interpretation during trials, for example, assessing when certain AI tools fell under medical-device or public-safety regimes. All five pilots were completed by March 2024, generating publicly shared guidance on privacy-by-design and oversight frameworks for autonomous and AI-enabled systems.

One illustrative project involved IBM Research Zurich and Pixmap GmbH, which tested AI-enabled drone inspections for critical infrastructure. Drones captured high-resolution images of an airport runway, while AI models detected structural defects with accuracy comparable to traditional inspections, delivering safer operations, more consistent assessments and reduced exposure of personnel to hazardous conditions.

Building on these results, Pixmap is developing scalable commercial drone-inspection services, while IBM continues to advance its AI models for broader infrastructure applications.

At the system level, the sandbox informed regulatory learning on AI risk management and contributed to Swiss health-data and AI policy discussions, while supporting graduates transition from pilot-testing to real-world deployment. Following strong demand, Zurich expanded the program into a second phase in 2024, admitting six additional AI projects through 2026.

BANK NEGARA MALAYSIA
CENTRAL BANK OF MALAYSIA

Case study 4

Bank Negara Malaysia e-KYC Sandbox:
From Pilot Testing to System-Wide Regulatory Reform

Launch Date
2016

Type
Regulatory sandbox

Primary use case
Financial onboarding digitalization

Main outcomes

- **New regulation:** National guidelines issued
- **Regulatory reform:** Transition to risk-based digital identity frameworks
- **Market-wide impact:** Market-wide solution authorization
- **Socio-economic outcome:** Improved access to financial services

Bank Negara Malaysia (BNM) launched its Financial Technology Regulatory Sandbox in 2016[39] to enable controlled testing of financial innovations that could not be deployed under existing regulations. Operating under close supervisory oversight, the sandbox generated real-world evidence to inform regulatory decisions while safeguarding financial integrity and consumer protection.

One of the most significant use cases tested was remote electronic Know-Your-Customer (e-KYC). In 2017, BNM admitted several firms, including WorldRemit[40], to pilot digital identity verification methods allowing customers to submit identification documents and biometric data remotely, at a time when regulation required face to face verification. The sandbox enabled BNM to assess whether these approaches could meet regulatory objectives around fraud prevention and anti–money laundering compliance.

Through live testing, BNM evaluated operational performance, fraud controls, and risk-mitigation measures. The pilots demonstrated that digital onboarding could be conducted securely while improving accessibility, particularly for remote and underserved populations[41] , and reducing onboarding friction for providers. Based on this evidence, BNM authorised WorldRemit to proceed with deployment and initiated a broader regulatory review.

Sandbox insights directly informed systemic regulatory reform. In 2020, following industry consultation, BNM issued comprehensive e-KYC guidelines applicable across the financial sector, enabling banks, insurers, and remittance providers to fully onboard customers online under defined safeguards. This framework reduced compliance costs, accelerated customer verification, and expanded access to financial services across the country.

3 Sandbox Dubai: A cutting-edge initiative by Dubai Future Foundation

3.1 Why does Dubai need a sandbox?

Dubai's case for a sandbox is anchored in the scale, speed and complexity of private-sector investment and deployment, and the need for regulatory pathways that can keep pace through structured, evidence-based experimentation.

Dubai consistently attracts large volumes of international capital and business activity. In 2024, the Emirate recorded more than 1,100 Greenfield Foreign Direct Investment (FDI) projects, ranking first globally for the fourth consecutive year, with AED 52.3 billion in estimated foreign capital[42]. This momentum has continued into 2025, with AED 40.4 billion in FDI capital attracted in the first semester of 2025 alone[43] , a 62% increase compared to AED 24.7 billion in H1 2024[44], alongside a 28.7% rise in announced FDI projects (from 847 to 1,090) and a 46.7% increase in estimated jobs created[45] (from 26,202 to 38,433). In parallel, the local business base continues to expand rapidly, with 70,500 new companies joining the Dubai Chamber of Commerce in 2024[46], bringing total active members close to 260,000[2] .

This momentum is increasingly complemented by a maturing risk-capital and scaling ecosystem. The UAE recorded 188 startup funding rounds in 2024, the highest in the region by volume , with total funding of approximately AED 2.3 billion[48], signalling an active pipeline of ventures moving from idea to deployment. In H1 2025, this trajectory remained strong, with 114 UAE-based startups[49] securing $541 million in capital, an 18% increase year-on-year, while Dubai Chamber of Digital Economy supported the establishment and expansion of 1,690 digital startups during 2025[50]. Dubai's role as a regional platform for global institutions is also deepening: the Dubai International Financial Centre (DIFC) reached almost 7,000 active companies in 2024, a 25% year-on-year increase[51], reinforcing Dubai's position as a hub where firms locate decision-making, capital, and operating capacity.

AED 52.3 Billion
in estimated foreign capital

AED 40.4 Billion
FDI capital attracted in the first semester of 2025

Total active members close to 260,000

Highest in the region by volume, with total funding of
AED 2.3 Billion

2 258,000 as of end of 2024

3.2. Sandbox Dubai: A cross-government approach, bringing regulatory innovation to Dubai

Building on this private-sector momentum, Sandbox Dubai provides the institutional mechanism required to engage with innovation at speed and at system level. As a flagship initiative of the Dubai Future Foundation and a cornerstone of the Emirate's Research, Development and Innovation (RDI) Program, Sandbox Dubai represents a bold shift from standalone regulatory pilots to a permanent, future-focused capability for shaping the rules that underpin sustained growth, productivity, and global competitiveness.

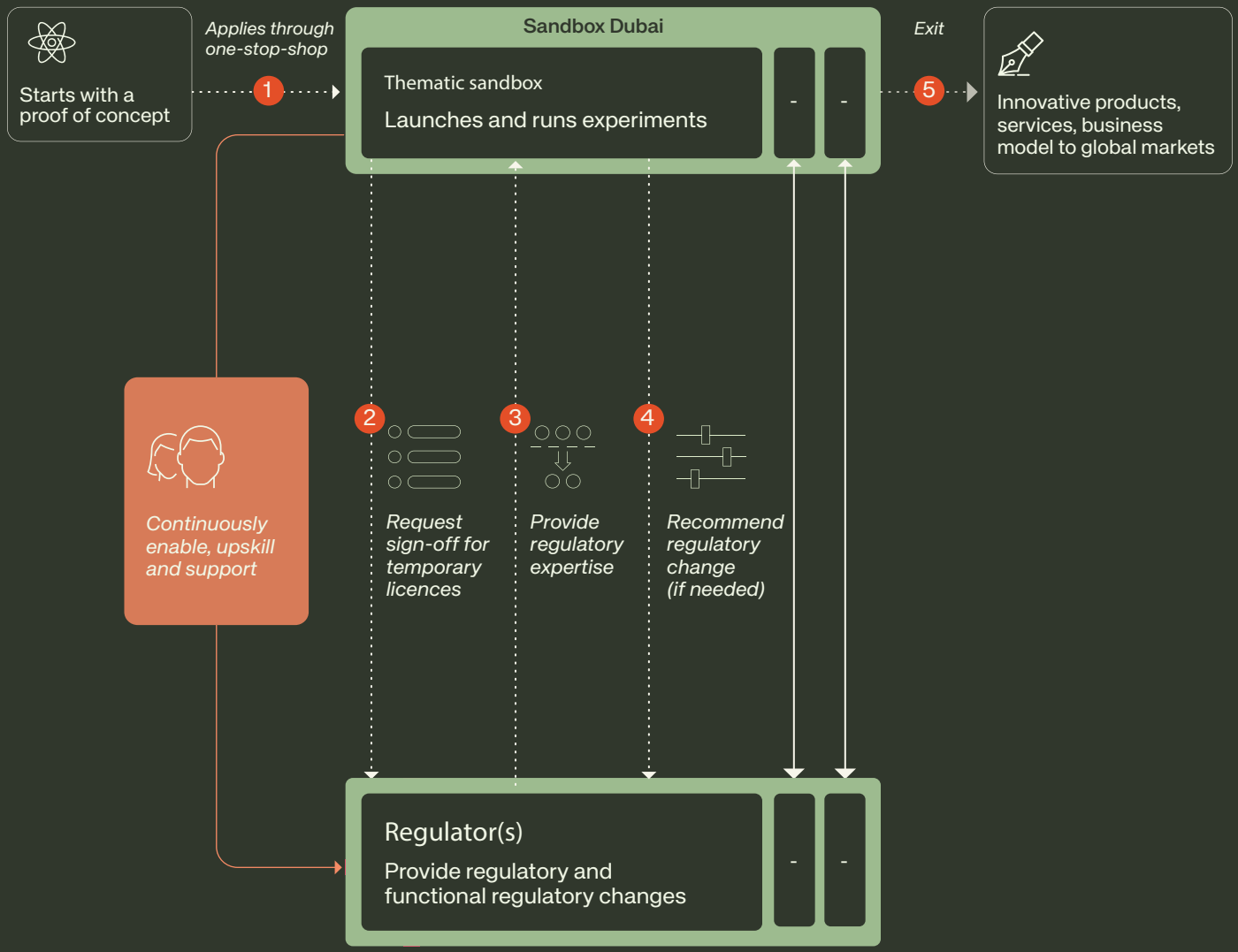
Sandbox Dubai is among the first initiatives globally to institutionalise regulatory experimentation across government, rather than within individual authorities or sectors. Innovation is driven by the private sector; Sandbox Dubai ensures regulation evolves in partnership with it, rather than in response to it. Central to this model are Dubai's regulators, whose leadership and active participation ensure that experimentation translates into credible, evidence-based outcomes that strengthen the enabling environment for investment, support high-skilled talent development, and allow innovation to scale responsibly in service of the public good.

Unlike traditional sandboxes operated within a single authority, Sandbox Dubai is intentionally designed as a cross-government platform. Many emerging solutions span multiple regulatory mandates, institutions, and policy objectives, requiring coordination rather than sequential oversight. Sandbox Dubai provides a unified framework for experimentation, temporary authorisations, and evaluation, enabling regulators to engage collectively while retaining the depth of expertise specific to each domain.

This "one-government" approach allow insights generated in context, such as data governance, proportional safeguards, or pathways to scale, to become system-wide assets that strengthen regulatory coherence.

Sandbox Dubai also addresses a critical transition point: deployment. While initiatives such as the RDI Grant Program[52] support discovery and research, Sandbox Dubai focuses on bridging the gap between promising ideas and real-world application. By convening innovators, regulators, and ecosystem partners in a shared, supervised environment, it provides a clear pathway for innovations emerging from Dubai's labs, universities, and startups to scale with confidence, reinforcing regulation as an enabler of adaptive governance and a catalyst for growth (Figure 6)

Figure 6: Sandbox Dubai's innovation catalyst approach



3.3. Sandbox Dubai: Core objectives and scope

Sandbox Dubai channels the collective ambition of regulators, innovators, and ecosystem partners into a focused agenda for shaping the technologies and industries that will define Dubai's next decade of growth. Guided by the RDI Program, it concentrates experimentation in strategic domains where Dubai is poised to lead, including Healthcare innovation, smart built infrastructure, AI and green technology, among additional high socio-economic value domains which might be activated in later stage, as priorities evolve.

Innovation in Healthcare

Health data access, longevity, next generation medical devices

Smart built infrastructure

Smart buildings, advanced construction materials, real-estate tokenization

Artificial Intelligence

Cross-sectoral use-cases to be announced

Green Technology

Use-cases to be announced

Since its launch in March 2024, Sandbox Dubai has begun translating this ambition into action. Three thematic sandboxes - Gig Economy, HealthTech, and PropTech - have been launched.

With additional waves in development. Each reflects a commitment to test, learn, and scale solutions that strengthen Dubai's economy and improve everyday life for residents.

Sandbox Dubai is designed to serve both innovators and regulators (Figure 6)

For **innovators,** it provides a structured pathway from concept to real-world deployment, including:

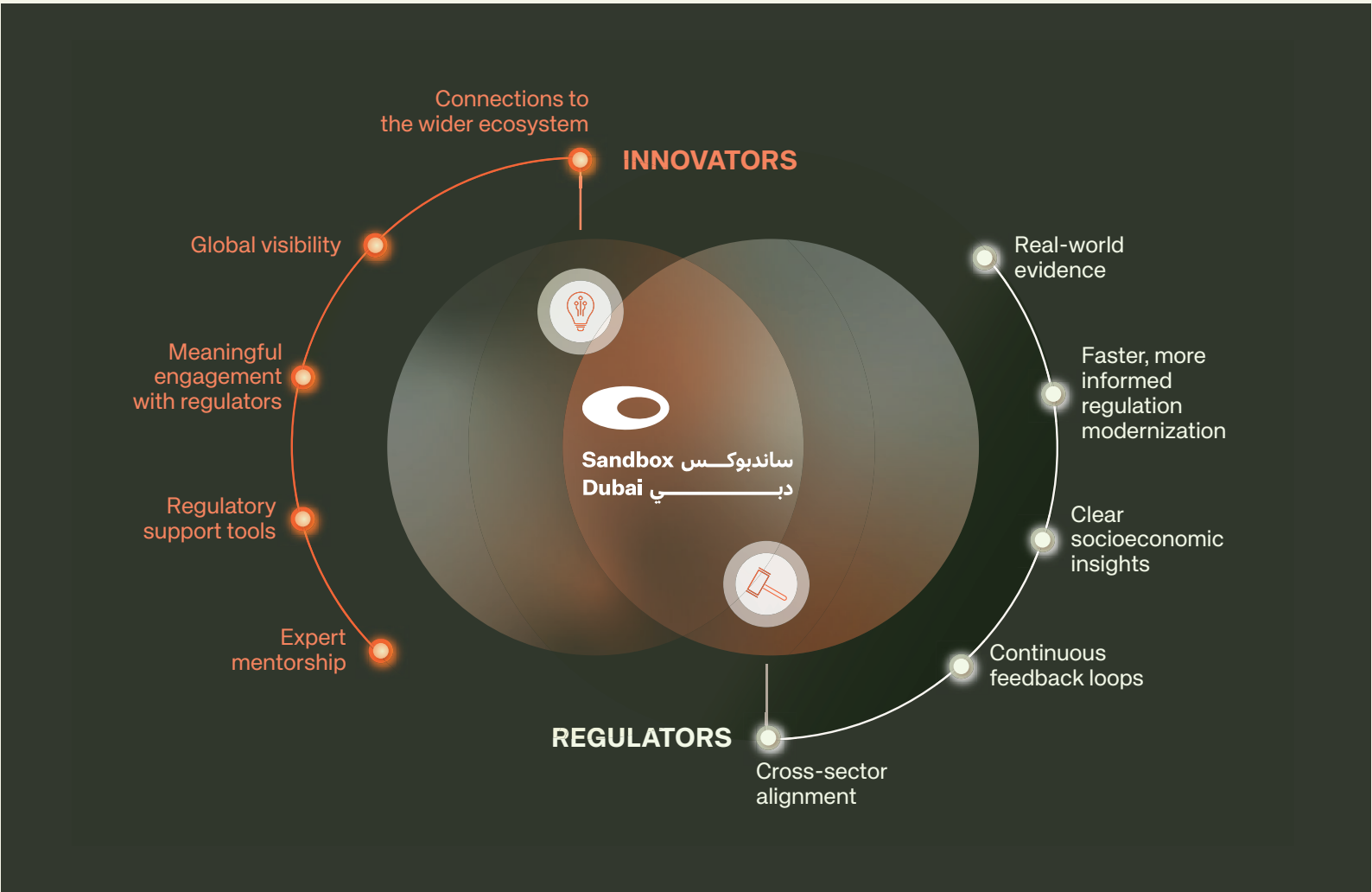
- **Targeted regulatory support tools** (e.g. fast-track approvals, temporary licences, secure data environments)
- **Early and continuous engagement with regulators** to resolve questions and test assumptions

- **Integration with the wider ecosystem**, including investors, corporates, and public-sector partners
- **Expert guidance** combining regulatory, technical, and commercial insight
- **Enhanced credibility** and **global visibility**

For **regulators**, Sandbox Dubai strengthens their role as architects of future-ready governance by providing:

- **Real-world evidence** to anticipate risks and calibrate safeguards
- **Faster, more informed regulatory modernisation**
- **Cross-sector alignment** and coherence
- **Clear insight** into socio-economic impact
- **Continuous feedback loops** to support iterative, evidence-based policymaking

In this way, Sandbox Dubai is more than a testing environment. It is a shared platform for shaping innovation trajectories in ways that advance Dubai's long-term prosperity and global leadership.



3.4. Designing a successful sandbox for Dubai: Core principles informed by international best practices

International experience demonstrates that sandbox success depends on strong institutional support, effective multi-agency coordination, a clear and accessible "front door" for innovators, and tight integration with broader research, development, and innovation strategies.

Drawing on this global evidence base, the examination of leading sandboxes revealed a consistent set of design principles that have directly informed the structure and operations of Sandbox Dubai:

FCA sandbox (UK)
runs biannual cohorts with a repeatable -5step process

- **A structured process to ensure efficient execution and scalability**. For instance, FCA sandbox (UK) runs biannual cohorts with a repeatable 5-step process[53] (from application to selection, testing, evaluation and finally exit), ensuring scalability over more than 8 years of operation. Sandbox Dubai applies a similarly structured cohort-based approach to ensure consistency, predictability, and scalability across sectors such as HealthTech, PropTech, and the gig economy.

CNIL sandbox (France)
requires projects to demonstrate a clear societal benefit

- **Clear eligibility and exit criteria** anchored in public-interest outcomes. For example, CNIL sandbox (France) requires projects to demonstrate a clear societal benefit (privacy, trust, patient rights) and publishes exit reports[54] to enhance accountability. Similarly, Sandbox Dubai applies a weighted, evidence-based eligibility framework that admits only solutions demonstrating measurable public benefit, clear regulatory relevance, real-world testing readiness, and a well-defined experimentation plan capable of generating insights for future policy and ecosystem scaling[55]

Singapore Building & Construction Authority (BCA) sandbox
imposed for instance caps on number of lifts and buildings

- **Proportional guardrails** like caps on users, transaction limits, and data protection. Singapore Building & Construction Authority (BCA) sandbox[56] imposed for instance caps on number of lifts and buildings that could trial predictive maintenance solutions, while mandating strict data-protection standards for IoT monitoring. Similarly, Sandbox Dubai applies proportional safeguards for HealthTech trials (e.g., data anonymisation) and gig-economy experiments (e.g., caps on participant numbers or geographic scope).

NHS' Airlock sandbox (UK)
for example tested remote monitoring and AI diagnostics in real-world hospital settings

- **Real-world trials anchoring the experiment** within actual challenges, with transparent reporting requirements. NHS' Airlock sandbox (UK) for example tested remote monitoring and AI diagnostics in real-world hospital settings, with public outcome reports documenting reductions in emergency incidents and improved patient adherence[57]. Similarly, Sandbox Dubai's PropTech sandbox enables innovators to test solutions in live real-estate and urban environments

(e.g., digital property transactions, smart building technologies, or new ownership models, working directly with relevant authorities and market participants to generate evidence that can inform future regulatory frameworks).The same real-world testing logic underpins Sandbox Dubai's HealthTech and gig-economy cohorts.

Singapore Telemedicine sandbox's digital health and mobile medicine trial

- **Structured feedback loops** so insights translate into updated guidance, licensing pathways, or in some cases, primary rules. For instance, Singapore Telemedicine sandbox's digital health and mobile medicine trial findings directly informed new country telehealth licensing guidelines and patient safety standards[58]. Sandbox Dubai is similarly designed to ensure that evidence from sandbox cohorts feeds systematically into regulatory clarification and policy evolution.

- **A clear policy intent to use the sandbox as a regulatory learning tool rather than a showcase.** The UK FCA sandbox was explicitly created to inform regulatory updates, expand consumer choice, and modernise financial frameworks. Sandbox Dubai adopts the same intent, positioning experimentation as an input into regulatory change across priority domains.

UK FCA sandbox for example, built structured post-exit options (e.g., full authorization, adjusted licensing, or redirection to innovation pathways)

- **Post exit pathways defining clear transition routes for participants,** from testing to full market entry or regulatory reform, to ensure successful experiments translate into scale and systemic change. UK FCA sandbox for example, built structured post-exit options (e.g., full authorization, adjusted licensing, or redirection to innovation pathways), which gave firms and investors confidence and helped scale adoption.

Taken together, these internationally proven design principles have been deliberately embedded into Sandbox Dubai's architecture. When experiments are structured, supervised, and connected to clear regulatory pathways, they turn into durable regulatory capability, supporting continuous improvement, investment attraction and ecosystem deployment.

3.5. Sandbox Dubai contribution to advancing Dubai's agenda

October
2024
Gig Economy sandbox launched

November
2025
Health data open call initiated

Sandbox Dubai has now moved from design into execution. With the Gig Economy sandbox launched in October 2024 and the Health Data open call initiated in November 2025 , live cohorts are generating regulatory learning and evidence. As experimentation progresses, outcomes such as clarified guidance, adapted licensing pathways, and longer-term policy reform will emerge iteratively.

Beyond testing individual solutions, Sandbox Dubai acts as an engine for economic vitality and societal impact.

Impact assessments indicate potential contributions to GDP growth, job creation, productivity gains, and regulatory modernisation across priority sectors.

In healthcare, sandbox-enabled innovation is expected to accelerate diagnostics, enable more personalised and preventive care pathways, support advanced therapies shaping the future of longevity, and improve system efficiency, generating spillovers across healthcare and life sciences.

In the built environment, sandboxing supports smart construction, energy-efficient buildings, and digital real-estate platforms, positioning Dubai as a global benchmark for future-ready urban development.

Beyond economic indicators, the societal impact is equally significant. Healthcare innovation can reduce waiting times[5,59], lower out-of-pocket costs[6,60], and improve life expectancy[7,61], through earlier intervention. In PropTech, sandboxing supports more transparent markets, streamlined transactions, and inclusive access to housing.

His Highness Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum

For research, development, and innovation to contribute

Dh20Bn

Annually to Dubai's GDP by 2034

These efforts reflect a broader aspiration: Sandbox Dubai is shaping a society where regulation accelerates progress, innovation serves the public good, and growth is sustainable and trusted. In this context, Sandbox Dubai supports the ambition articulated by His Highness Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum for research, development, and innovation to contribute AED 20 billion annually to Dubai's GDP by 2034, not as a direct delivery mechanism, but as an enabling system that ensures innovation can scale responsibly and predictably.

With Sandbox Dubai, Dubai is not just preparing for the future; it is actively building it.

5. by up to 35%
6. by as much as 40%
7. By up to three years for eligible populations (featuring genomic cancer or inflammatory heart failure). For specific Sandbox cohorts, e.g., enabling cell and gene therapy trials.

4 What's next for regulatory innovation and Sandbox Dubai

Sandbox Dubai is entering its next phase of maturity, moving from initial activation to execution and learning at scale. With early cohorts now underway, the focus shifts to disciplined delivery: running experiments in real-world conditions, generating evidence, and refining how regulators and innovators collaborate. This phase is essential to demonstrating that regulatory experimentation can be rigorous, selective, and directly relevant to policy decisions.

As learning accumulates, Sandbox Dubai will progressively broaden its portfolio of use cases, guided by insights from existing cohorts and sustained engagement with the private sector.

Expansion will remain deliberate, ensuring alignment with regulatory readiness, policy priorities, and public-interest value, while staying responsive to evolving innovation and investment patterns.

At the same time, the first regulatory outcomes will begin to materialise. These may include clarified guidance, adapted supervisory practices, or new licensing pathways, depending on the evidence generated. Sandbox Dubai does not predetermine outcomes; it enables regulators to act with greater precision once risks, behaviours, and safeguards are observed in practice, marking a shift toward evidence-led regulatory evolution.

Over successive cycles, experimentation will strengthen regulatory capability across government, improving coordination, reducing fragmentation, and providing clearer signals to market participants. As this capability compounds, regulation becomes more coherent, predictable, and supportive of responsible scaling.

Looking ahead, Sandbox Dubai positions Dubai to engage with innovation as it unfolds, embedding experimentation into governance so regulation remains adaptive, timely, and trusted. More than a programme, Sandbox Dubai is a permanent governance capability, one that enables innovators to scale with confidence, regulators to learn continuously, and public interest to remain central.

In a global race to keep pace with the future, Dubai is demonstrating what it looks like to shape it.

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References

1. UN Trade & Development (UNCTAD), Global Trade Update 2025, Global trade poised for a record-breaking 2025 as flows expected to surge past $35 trillion, 2025, <https://unctad.org/publication/global-trade-update-december-2025-global-trade-poised-record-breaking-2025-flows>, accessed on Feb. 9th, 2026

2. Nagwa Riad, Luca Errico, Christian Henn, Christian Saborowski, Mika Saito, and Jarkko Turunen, Changing Patterns of global trade, IMF, 2012, < https://www.imf.org/external/pubs/ft/dp/2012/dp1201.pdf>, accessed on Jan. 23rd, 2026

3. World bank, Digital Progress and Trends Report 2025: Strengthening AI Foundations, 2025 – cit. Ebert and Louridas 2023, https://documents1.worldbank.org/curated/en/099112525160536089/pdf/P505350-59c98ca8-0803-4f23-b470-17f3dab010ab.pdf, access on Jan. 23rd, 2026

4. Soroush Vosoughi, Deb Roy, and Sinan Aral, The spread of true and false news online, Science, 2018, https://www.science.org/doi/10.1126/science.aap9559#main-content-focus, accessed on Jan 23rd, 2026

5. Growth equity, https://growthequityinterviewguide.com/venture-capital/venture-capital-resources/venture-capital-statistics, accessed on Jan. 23rd, 2026

6. Jalali, Mohammad S. et al., Information Diffusion through Social Networks: The Case of an Online Petition, Expert Systems with Applications 44, MIT Library, https://dspace.mit.edu/bitstream/handle/1721.1/113704/Journal%20submission_revised_Final.pdf?sequence=1&isAllowed=y, accessed on Jan. 23th, 2026

7. Governments around the world have progressively developed regulatory approaches, culminating in comprehensive frameworks such as the EU's Markets in Crypto-Assets Regulation, adopted in 2023 and applicable as of late 2024 , European Securities & Market Authority , < www.esma.europa.eu>, accessed on Jan. 24th, 2026

8. Max Roser,Technology over the long run, Our world in data, 2023, https://ourworldindata.org/technology-long-run, accessed on Jan. 23rd, 2026

9. H. Fang, M. Li & G. Lu, Decoding China's Industrial Policies , National Bureau of Economic Research , 2025 , <abfer.org/media/abfer-events-2025/annual-conference/papers-trade/AC25P4015_Decoding-Chinas-Industrial-Policies.pdf>, accessed on Jan. 23rd, 2026

10. OECD , Procompetitive Industrial Policy – Note by Korea , 2024 , <one.oecd.org/document/DAF/COMP/WD(2024)44/en/pdf>, accessed on Jan. 23rd, 2026

11. As of 2025. Commercial Drone Report. Special Competitive Studies Project , www.scsp.ai/reports/2025-gaps-analysis/gaps-analysis/commercial-drones, accessed on Jan. 23rd, 2026

12. USD 82 billion in the text. Attrey, A., M. Lesher and C. Lomax , The role of sandboxes in promoting flexibility and innovation in the digital age. OECD Going Digital Toolkit Notes , , OECD Publishing, Paris , 2020 www.oecd.org/content/dam/oecd/en/publications/reports/2020/06/the-role-of-sandboxes-in-promoting-flexibility-and-innovation-in-the-digital-age_ddcd3d40/cdf5ed45-en.pdf, accessed on Jan. 23rd, 2026

References

13. USD 720 million in the text. [Editorial] Sandbox, not straitjacket , The Korea Herald , 2025 , < www.koreaherald.com/article/10524048>, accessed on Jan. 24th, 2026

14. USD 1 billion in the text. BioNtech press release, BioNTech Expands Partnership with UK Government to Broaden Regional Research and Development Activities, 2025, https://investors.biontech.de/news-releases/news-release-details/biontech-expands-partnership-uk-government-broaden-regional, accessed on Jan. 23rd, 2026

15. Telemedicine: remote treatment as a legal challenge , Oppenhoff newsletter , 2022 , www.oppenhoff.eu/en/news/detail/telemedicine-remote-treatment-as-a-legal-challenge, accessed on Jan. 23rd, 2026

16. U. Grau, Telemedicine in Germany: legal framework, challenges and perspectives , International Bar Association , 2025 , < www.ibanet.org/telemedicine-germany-frameworks>, accessed on Jan. 23rd, 2026

17. E. Burk, C. Schoppe , Telemedicine opportunities in Germany: Steady Progress amid complexity and conflicting interests , Gleiss Lutz's perspective on Healthcare and Life Science , 2025 , < www.gleisslutz.com/en/news-events/know-how/telemedicine-opportunities-germany-steady-progress-amid-complexity-and-conflicting-interests>, accessed on Jan. 24th, 2026

18. Financial Conduct Authority, Regulatory Sandbox, 2015, < https://www.fca.org.uk/publication/research/regulatory-sandbox.pdf>, accessed on Jan. 29th 2026

19. United Nations Secretary-General's Special Advocate for Inclusive Finance for Development, FinTech Sub-Group , Briefing on Regulatory Sandboxes , FinTech briefing paper , 2020 , ibid

20. Ibid.

21. OECD , Regulatory sandbox toolkit: A comprehensive guide for regulators to establish and manage regulatory sandboxes effectively , OECD Publishing, Paris , 2025 , <https://doi.org/10.1787/de36fa62-en>, accessed on Jan. 29th, 2026

22. Duff, Schan; Jeník, Ivo , How to Build a Regulatory Sandbox : A Practical Guide for Policy Makers (English) ,Washington D.C., WorldBankGroup , <documents.worldbank.org/curated/en/126281625136122935>, accessed on Jan. 29th, 2026

23. Appaya, Mandepanda Sharmista; Gradstein, Helen Luskin; Haji Kanz, Mahjabeen , Global Experiences from Regulatory Sandboxes (English) , Fintech Note , No. 8 Washington, D.C.: World Bank Group , 2020 , http://documents.worldbank.org/curated/en/912001605241080935, accessed on Jan. 29th, 2026

24. Reported by Singapore Economic Development Board and SGInnovate, How Singapore's FinTech Regulatory Sandbox is helping fintech innovators accelerate time to market, 2022, < www.edb.gov.sg/en/business-insights/insights/how-singapore-s-fintech-regulatory-sandbox-is-helping-fintech-innovators-accelerate-time-to-market.html>, accessed on Jan. 29th 2026

References

25. Act on the Safety of Regenerative Medicine" categorises regenerative medical products into risk-based classes, streamlining the approval process and ensuring safety, thereby encouraging R&D in alternative therapies, 2024, < https://elaw.klri.re.kr/eng_mobile/viewer.do?hseq=68827&type=part&key=37>, accessed on Feb. 4th, 2026

26. Interview with Andrea Roda, Balderton Capital, 2025, BCG Analysis

27. Financial Conduct Authority, Innovation & Regulation: Partners in the Success of Financial Services, www.fca.org.uk/news/speeches/innovation-regulation-partners-success-financial-services, accessed on Jan. 29th, 2026

28. Bank for International Settlements (BIS) , Grigoli, F & D. Sandri , Working Paper No. 1082 , 2023, www.bis.org/publ/arpdf/ar2023e2.pdf, accessed on Jan. 29th, 2026

29. Appaya, Mandepanda Sharmista; Gradstein, Helen Luskin; Haji Kanz, Mahjabeen , Global Experiences from Regulatory Sandboxes (English), Fintech Note, No. 8 Washington, D.C.: World Bank Group, 2020, <http://documents.worldbank.org/curated/en/912001605241080935> accessed on Jan 21st, 2026

30. Monetary Authority of Singapore, 'PolicyPal First InsurTech Firm to Graduate from MAS Sandbox, 2017, www.mas.gov.sg/news/media-releases/2017/policypal-first-insurtech-firm-to-graduate-from-mas-sandbox, accessed on Jan 29th, 2026

31. FCA - www.fca.org.uk, accessed on Jan. 29th, 2026

32. Sandbox To Society, Fostering Innovation in Southeast Asia ,Tech for Good Institute , 2024, < https://techforgoodinstitute.org/research/tfgi-reports/sandbox-to-society-fostering-innovation-in-southeast-asia/>, accessed on Jan 29th, 2026

33. UNICEF , Regulatory Sandboxes Case Study , UNICEF Innocenti – Global Office of Research and Foresight , 2025 , <www.unicef.org/innocenti/media/11091/file/UNICEF-Innocenti-Regulatory-Sandboxes-Case-Study-2025.pdf>, accessed on Jan 29th, 2026

34. Ibid.

35. CNIL , Digital health and EdTech: the CNIL publishes the results of its first "sandboxes", 2023, Ibid.

36. AI sandbox for greater Zurich area has a positive impact , Great Zurich Area , 2024 ,<zh.ch>, accessed on Jan. 21st, 2026

37. Innovation Sandbox for Artificial Intelligence (AI) , Great Zurich Area , 2024 , <zh.ch>, accessed on Jan 21st, 2026

38. AI sandbox for greater Zurich area has a positive impact , Great Zurich Area , 2024 , ibid.

39. S. Ali, Assistant Governor of the Central Bank of Malaysia (Bank Negara Malaysia) , Opening remarks – Sandbox Open Day , 2024 , <BIS.org> accessed on Jan. 29th, 2026

References

40. United Nations Secretary-General's Special Advocate for Inclusive Finance for Development (UNSGSA) FinTech Sub-Group , Briefing on Regulatory Sandboxes, FinTech briefing paper , 2020 , Ibid.

41. Bank Negara Malaysia Unveils New eKYC Guidelines Ahead of Its Virtual Banking Framework , Fintech News Malaysia , 2020 , <fintechnews.my/24197/digital-transformation/ekyc-malaysia-guideline-bnm/>, accessed on Jan. 26th, 2026

42. Dubai FDI Annual results and ranking, 2024, < https://www.dubaidet.gov.ae/en/research-and-insights/-/media/files/invest-in-dubai/fdi/dubai-fdi-annual-results-and-rankings-2024-highlights-report.pdf>, accessed on Feb. 2nd, 2026

43. Government of Dubai Media office, https://www.dubaidet.gov.ae/en/newsroom/press-releases/greenfield-fdi-projects, accessed on April 8th, 2026

44. Ibid.

45. Ibid.

46. Ibid.

47. Enterprise AM, The UAE saw the most funding rounds in the region in 2024, despite a dip in overall funding, Jan. 9th, 2024, < https://enterpriseam.com/uae/2025/01/09/the-uae-saw-the-most-funding-rounds-in-the-region-in-2024-despite-a-dip-in-overall-funding >, accessed on Feb. 2nd, 2026

48. USD 613 million. As per MAGNiTT summary reporting, quoted in Enterprise AM, The UAE saw the most funding rounds in the region in 2024, despite a dip in overall funding, Jan. 9th, 2024, < https://enterpriseam.com/uae/2025/01/09/the-uae-saw-the-most-funding-rounds-in-the-region-in-2024-despite-a-dip-in-overall-funding >, accessed on February 2nd, 2026

49. As per MAGiTT reporting. < https://magnitt.com/news/mena-vc-funding-hits-1-5b-in-h1-2025-strongest-first-half-since-2022-54003>, accessed on April 8th, 2026

50. Government of Dubai Media office, < https://mediaoffice.ae/en/news/2026/january/22-01/dubai-chamber-of-digital-economy-digital-startups#:~:text=Dubai%20Chamber%20of%20Digital%20Economy%2C%20one%20of%20the%20three%20chambers,by%20the%20chamber%20during%202025.> , accessed on April 8th, 2026

51. Government of Dubai's media office, < https://mediaoffice.ae/en/news/2025/february/18-02/difc-delivers-historic-performance-in-2024>, accessed on Feb. 2nd, 2026

52. < https://dubairdi.ae/>, accessed on Feb. 2nd, 2026

53. FCA website, < https://www.fca.org.uk/firms/innovation/regulatory-sandbox>, accessed on Feb. 2nd, 2026

54. CNIL website, < https://www.cnil.fr/en/artificial-intelligence-and-public-services-cnil-publishes-results-its-sandbox>, accessed on Jan. 29th, 2026

References

55. Beyond the requirement to be registered locally

56. Singapore BCA Media Release, 2022, < https://www1.bca.gov.sg/docs/default-source/docs-corp-news-and-publications/circulars/sensors-big-data-and-ai-to-enable-remote-monitoring-diagnostics-and-predictive-maintenance-regime-for-lifts.pdf>, accessed on Jan. 29th, 2026

57. NHS website, < www.gov.uk/government/collections/ai-airlock-the-regulatory-sandbox-for-aiamd>, accessed on Jan. 29th, 2026

58. Singapore Medical Association, < https://www.sma.org.sg/UploadedImg/1622530784_2021MayInsight.pdf>, accessed on Jan. 29th, 2026

59. Government of Dubai's media office, October 23rd, 2024, https://mediaoffice.ae/en/news/2024/october/23-10/dubai-future-foundation-launches-gig-economy-and-proptech-sandboxes , accessed on Feb. 2nd, 2026

60. <https://sandboxdubai.gov.ae/health-data-sandbox>, accessed on Feb. 2nd, 2026

61. Extrapolated. JAMA , Real Time Prescription Benefit randomised evaluation, 2022, Analysis by BCG for Sandbox Dubai, 2025

62. Extrapolated NIH, NIH Remote patient monitoring systematic review, 2024, Mount Sinai Home-Hospital RCT. Weighted modelling based on Dubai's expenditure profile and international reductions, BCG analysis for Sandbox Dubai, 2025

63. Extrapolated from NIH, NIH Remote patient monitoring systematic review, 2024, Mount Sinai Home-Hospital RCT. Weighted modelling based on Dubai's expenditure profile and international reductions, BCG analysis for Sandbox Dubai, 2025

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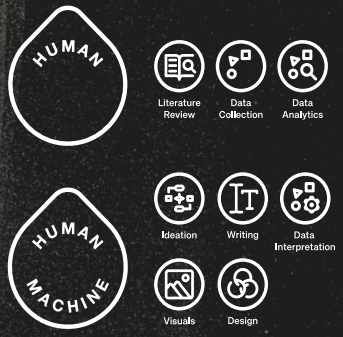

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