GUIDE TO PROMOTING FINANCIAL & REGULATORY INNOVATION

INSIGHTS FROM THE UK

MARCH 2018

英国驻华大使馆

浙江大学互联网金融研究院
ACADEMY OF INTERNET FINANCE , ZHEJIANG UNIVERSITY

Cambridge Centre for Alternative Finance

UNIVERSITY OF CAMBRIDGE
Judge Business School

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Forewords

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Kunal Khatri
Minister-Counsellor, Director for Financial and Professional Services
British Embassy Beijing

FinTech is transforming the world of financial services. From payments systems, to insurance services, to providing the infrastructure essential to the operation of the global financial institutions, FinTech is transforming the global industry.

FinTech also offers enormous potential to encourage greater financial inclusion. Through mobile phone banking services, micro-finance and access to financial advice, FinTech provides an opportunity to leapfrog traditional financial mechanisms and infrastructure and create new economic opportunities for some of the poorest and hardest to reach.

The UK has been a pioneer in the FinTech market, growing to become the global FinTech capital. There are over 1,600 FinTech companies operating in the UK, employing over 61,000 people, generating almost £7bn in revenue and spanning payments, to blockchain, to Regtech. Collectively these technological developments have kept the UK's financial services sector at the cutting edge of innovation, increased competition and choice in banking, and helped customers and businesses to get better services.

A key reason for the UK's strength is that it has one of the most sophisticated and varied FinTech ecosystems, with excellent access to capital, talent and, crucially, a strong and supportive regulatory environment. The UK's regulatory regime is a world leader for its simplicity, transparency and industry-led approach.

Through Project Innovate, the UK's Financial and Conduct Authority (FCA) has significantly simplified regulatory complexities for FinTech companies. One of the key innovations has been the creation by the FCA of a regulatory Sandbox, allowing new and innovative FinTech products to be tested against a broad range of scenarios and variables, helping to ensure that new products are robust and secure before they go to the market. The Sandbox has been invaluable in helping regulators work with firms to understand, assess and test new FinTech innovations, whilst also significantly helping companies navigate an otherwise complex regulatory authorisation process.

This guidebook aims to outline the UK's experience in regulating FinTech products, the development of our regulatory sandbox, and how some of the lessons we have learned along the way can help China. At the same time, there is much that the UK can learn from China. In Tencent and Alibaba, China has two of the world's leading FinTech creators and users, deploying world leading new innovation and technology. There are enormous opportunities for mutual learning and deeper UK-China regulatory and commercial collaboration across FinTech.

The UK's Prosperity programme, which funded the research and publication of this guidebook, aims to bring together the best of the UK's and China's experiences to help improve financial inclusion, support the growth and stability of both our financial service sectors, and identify opportunities for economic and commercial cooperation for Chinese and international business. We hope that this guidebook will help support those aims.

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Judge Business School

Kieran Garvey
Lead, Regulation & Policy
Cambridge Centre for Alternative Finance

Financial services are undergoing rapid and far-reaching structural changes which create both opportunities and challenges for financial regulators who must finely balance a range of sometimes competing institutional objectives & obligations.

The UK's Financial Conduct Authority was early to recognise the opportunity on offer to understand & engage with the array of new FinTech firms, technologies, products and services that have emerged in recent years to help meet its regulatory objectives of; protecting consumers, maintaining market integrity and promoting competition to ultimately ensure markets function well.

The financial innovations of the past decade have demonstrated their potential for bringing about benefits to consumers in terms of increased access, speed, quality, price and choice. However, innovations are not innately positive additions to the financial ecosystem. Innovations can equally give rise to new challenges and risks, which may actually lead to consumer detriment, undermine market integrity or perhaps even increase systemic financial risk.

To address some of these issues, the FCA has pioneered an innovative program of activities which is helping to build internal understanding, awareness & capacity with respect to the cascade of new financial products and services on offer. This program is aptly called 'Innovate' and this Guide has sought to review its constituent parts.

This Guide aims to provide a useful overview of how the FCA has approached financial innovation since 'Project Innovate' first emerged around 2014. The FCA's 'Innovate,' offers a great demonstration of how regulators themselves can become part of and internalise innovation as a means to improve financial regulation, processes and structures.

We recognise and appreciate the FCO's initiatives as an important channel to disseminate knowledge and best practice and aid policy learning and transfer to promote financial and regulatory innovation between the UK and China and we hope this Guide can be a useful tool to assist regulators and policymakers facing similar questions, similar challenges & similar opportunities in a time of change in the financial system.

Professor BEN Shenglin
Dean, Academy of Internet Finance, Zhejiang University

浙江大学互联网金融研究院
ACADEMY OF INTERNET FINANCE , ZHEJIANG UNIVERSITY

FinTech has surged on the back of recent technological progress featuring big data, artificial intelligence and blockchain technologies. It has entered into a phase of rapidly transforming development and this new era presents fresh opportunities for innovation and growth. China, among others, has established itself as one of the global leaders in FinTech development with its proliferation of business activities such as third-party online payment, marketplace lending and crowd funding facilitated by high levels of smartphone penetration, technological innovation, and the policy objective of the Chinese government to enhance financial inclusion through digital finance to promote innovation and growth.

While the FinTech innovation has brought about benefits to consumers such as the ease of cash-free transactions, the ¬regulatory efforts of the Chinese government have yet to lead to the establishment of a compatible and comprehensive framework. Its digital financial services remain under-regulated, and in some areas, unregulated. The rapid development of financial service innovations such as non-bank electronic payments and marketplace lending (peer-to-peer lending for instance) have often emerged prior to the establishment of a supporting regulatory framework and incidences of customer detriments such as illegal funding, fraudulent activities and reputational risks have been reported, often to take advantage of loopholes in existing legal and regulatory systems.

It has become evident that the FinTech boom necessitates a parallel evolution and development of a financial regulatory system which allows for both the sustainable development of FinTech sector and the provision of necessary supervision to guard financial stability and customer protection. Collaborated endeavors have been made to promote innovations for FinTech regulation on a global scale. The potential risks with the rise of FinTech have been recognised by international forums and organisations such as The G20, The Financial Stability Board (FSB), The International Monetary Fund (IMF), and The World Bank. In the 2016 G20 Hangzhou summit, for instance, the ‘G20 High level Principles for Financial Inclusion’ has been endorsed to advocate broader financial inclusion, particularly in the area of digital financial inclusion. Regulators around the world have taken initiatives in regulatory innovations such as the Regulatory Sandbox created by UK’s Financial Conduct Authority ‘A framework for Fintech’ launched by the US’s National Economic Councils, along with the establishment of Innovation Hubs and Innovation Accelerators to harness innovation and financial inclusion.

In this line of thoughts, the guide aims to:
- Provide a systematic overview of the UK approaches to FinTech regulation where regulators and policymakers can gain first-hand and up-to-date information on UK’s regulatory practices
- Complementary to the guide, a feasibility study on implementing a variant of best practices in FinTech regulation including Regulatory Sandbox in China is also offered where rigorous assessment of running the Sandbox in China and policy recommendations are provided.

We appreciate FCO’s initiatives to disseminate knowledge on regulatory innovation and support international collaboration between the UK and China to promote greater FinTech innovation and financial stability. We are grateful to the support of China Prosperity funds. We hope this guide could be useful to both regulatory authorities and FinTech firms, in China and globally.

Executive Summary

The financial services industry is undergoing rapid and far-reaching transformation, underpinned by new and emerging technologies and socio-economic drivers. This transformation is fundamentally changing market structures and opening up opportunities for both incumbents & challengers to create innovative, game-changing alternative products & services.

Thousands of new firms, products & services constitute a vibrant global FinTech ecosystem. Everything from blockchain-based digital assets to new wealth management services serving the masses, from online capital raising channels & instruments such as marketplace/peer-to-peer lending, crowdfunding, initial coin offerings (ICOs) to new payment systems, e-money, remittance and digital banking services – the financial services system is undergoing a full-scale, technology-driven transformation.

To address these systemic shifts, an array of regulatory issues and opportunities have emerged. Regulators globally are now grappling with new business models, risks and uncertainties that require new regulatory responses and approaches. There is also a grand opportunity for those regulators that embrace financial and regulatory innovation to stimulate local market development and attract top talent to their respective jurisdictions. Furthermore, regulators themselves are increasingly seeing the importance of becoming embedded and part of the innovation process itself, building in-house technical capacity to take advantage of the tools, products and services that can enhance supervisory, compliance and reporting functions - central to efficiently meeting regulatory objectives and obligations.

The UK's Financial Conduct Authority (the FCA) has been a pioneer amongst its peers globally with respect to its comprehensive regulation innovation agenda since 2013 embodied in Project Innovate.

This Guide has been created with the purpose of reviewing, synthesising and distilling the various regulation innovation initiatives of the FCA in recent years with a primary focus on Project Innovate and in particular, the much-lauded Innovate Regulatory Sandbox which has been replicated in well over twenty countries to date. The Guide seeks to provide valuable insights into the UK's experience of fostering financial innovation for the benefit of other regulators and authorities seeking to address and stimulate both financial and regulatory innovation in their respective jurisdictions and for their objectives.

While this Guide has been designed to be widely accessible to those interested in the FCA's innovation activities, this project emerged from an initiative led by the UK Foreign & Commonwealth Office (the FCO) to primarily assist regulators and policymakers in China to understand and gather insights on the UK's financial innovation activities. To this end, a Mandarin language version of this Guide has been produced alongside this English language version in addition to scheduled engagement and dissemination activities to be hosted in both China and the UK in 2018. The Cambridge Centre for Alternative Finance based at the University of Cambridge Judge Business School in partnership with the Academy for Internet Finance within Zhejiang University were commissioned to assist the FCO in promoting financial and regulatory innovation between the UK and China through this Guide as part of a wider agenda to promote FinTech innovation.

In terms of methodology, this Guide was created through the collaboration between the research teams at the Cambridge Centre for Alternative Finance and the Academy of Internet Finance. The project involved extensive desk-based research and literature analysis coupled with interviews with regulators, FinTech firms, Regulatory Sandbox participants and leading industry experts and practitioners in both the UK & China. The insights gathered from the interviews and literature analysis have gone on to inform the overall structure, contents and recommendations contained within this Guide.

For clarity, while insights have been gathered from various teams within the FCA, this Guide does not represent, nor purport to represent the FCA nor its official position. The FCA has not endorsed the contents of this Guide nor contributed directly to its formulation or creation. This project was commissioned by the FCO and the conception of this Guide was led by the Research Team at the Cambridge Centre for Alternative Finance and the Academy of Internet Finance.

The Guide is set out in accordance with the following structure:
- Overview of the UK's regulatory & institutional arrangements;
- The constituents of Project Innovate;
- The mechanics of the FCA's Regulatory Sandbox;
- Insights from the FCA's Sandbox FinTech firms;
- Key considerations for conceptualising, implementing and the post-implementation of a Regulatory Sandbox
- Review of the FCA's Direct Support, Advice & RegTech Team.

Throughout this Guide, there are a range of 'Guide Boxes' which highlight some specific best practice of recommendation in relation to each section of this report.

Key Guide Highlights

1. **Extensive Public Consultation & Engagement**
   The FCA and specifically the FCA's Innovate Team have made extensive use of public consultation through the ideation, creation and ongoing formulation of the regulatory Sandbox and the wider Innovate agenda. This has provided the FCA with external expertise, insight and continues to steer the direction and focus of the FCA's dynamic regulatory and financial innovation activities. It has also helped to increase the impact of Innovate far beyond the firms directly involved with the Innovate activities.

2. **Widespread Institutional Engagement**
   The FCA's Innovate agenda has been endorsed and ratified at the highest levels creating interest and buy-in throughout the institution. Widespread engagement throughout the regulator can contribute to creating a permeating culture of innovation that can help to support the UK in maintaining a leading position as an influential and trend-setting centre for financial and also increasingly - regulatory innovation.

3. **Meeting Mandated Objectives**
   While it is too early to draw firm conclusions, early indications suggest that Project Innovate is resulting in more and also new firms investing in next generation technologies and, as a result, are providing better and wider access to new financial products and services. This will support the FCA in meeting its mandated objectives to work in the interests of consumers, as well as promoting competition. Furthermore, regulator-supported developments in new technology may also build and increase the regulator's capacity to enhance the integrity of financial services in the UK.

4. **International Cooperation**
   Increasingly financial innovation requires cross-border regulatory coordination and collaboration. The FCA's Innovate initiative has made clear that promoting innovation is firmly on the regulator's agenda which has created a range of opportunities for both regulators and firms to work together to facilitate cross-border activities. The FCA's collaboration agreements with China, Singapore, Hong Kong, South Korea, Australia and Canada stand testament to this as do the many firms that have been introduced to or by the FCA with other regulators around the world thereby stimulating market development which has been a positive by-product of Innovate's core activities.

5. **Internalising Innovation**
   One of the stand-out features of the FCA's Innovate activities is how the regulator has sought to get fully involved in the innovation process as embodied in the RegTech Team's TechSprints [1] and their 12 Proof of Concepts [2]. While providing the environment to facilitate innovation within the market is an excellent outcome of the FCA's activities, it is also compelling to see that the FCA is contributing to and working closely with firms to develop, co-create and redefine the design, processes and approaches to supervision, monitoring and regulation itself.

The FCA's Institutional Objectives

The FCA has a single mandated strategic objective:

'To ensure relevant markets function well [3]'

To realise this overarching objective, the FCA has three operational objectives:

1. Protect consumers – to secure appropriate protection for consumers
2. Integrity – to protect and enhance the integrity of the UK financial system
3. Promote competition – to promote effective competition in consumers' interests

These interconnected institutional objectives provide an important backdrop to the innovation agenda developed by the FCA which underpins Project Innovate and within this, the Innovate Regulatory Sandbox.

Innovate: In the Interests of Consumers
According to Christopher Woolard, Director of Strategy and Competition at the FCA, the challenge for the regulator is, "how can we promote competition, free up the forces that drive innovation in the interests of consumers, but without falling into the trap of picking winners [4]."

Enabling desirable innovation ties tightly into the FCA's mandated objectives. Innovation in technology, products and services, business models and regulatory approaches has the potential to enable better protection of consumers and of course to promote competition by enabling new players to enter and compete in the market. Encouraging innovation in the interests of consumers is a core theme of Project Innovate that can help the FCA to induce a range of positive outcomes within the UK financial services industry for the benefit of both consumers and the wider market as depicted below.

The FCA on Innovation: 2012-2018

The FCA was early to recognise that digital technologies were creating new opportunities for products and services offered both by start-ups and established incumbents. Project Innovate was envisioned to facilitate the exploration of truly innovative ideas that inevitably require changes to the regulatory system itself due to the changing demands on regulation. Project Innovate thus emerged as a reaction to the rapid evolution of digital technology that is transforming financial services through the rise of the FinTech industry.

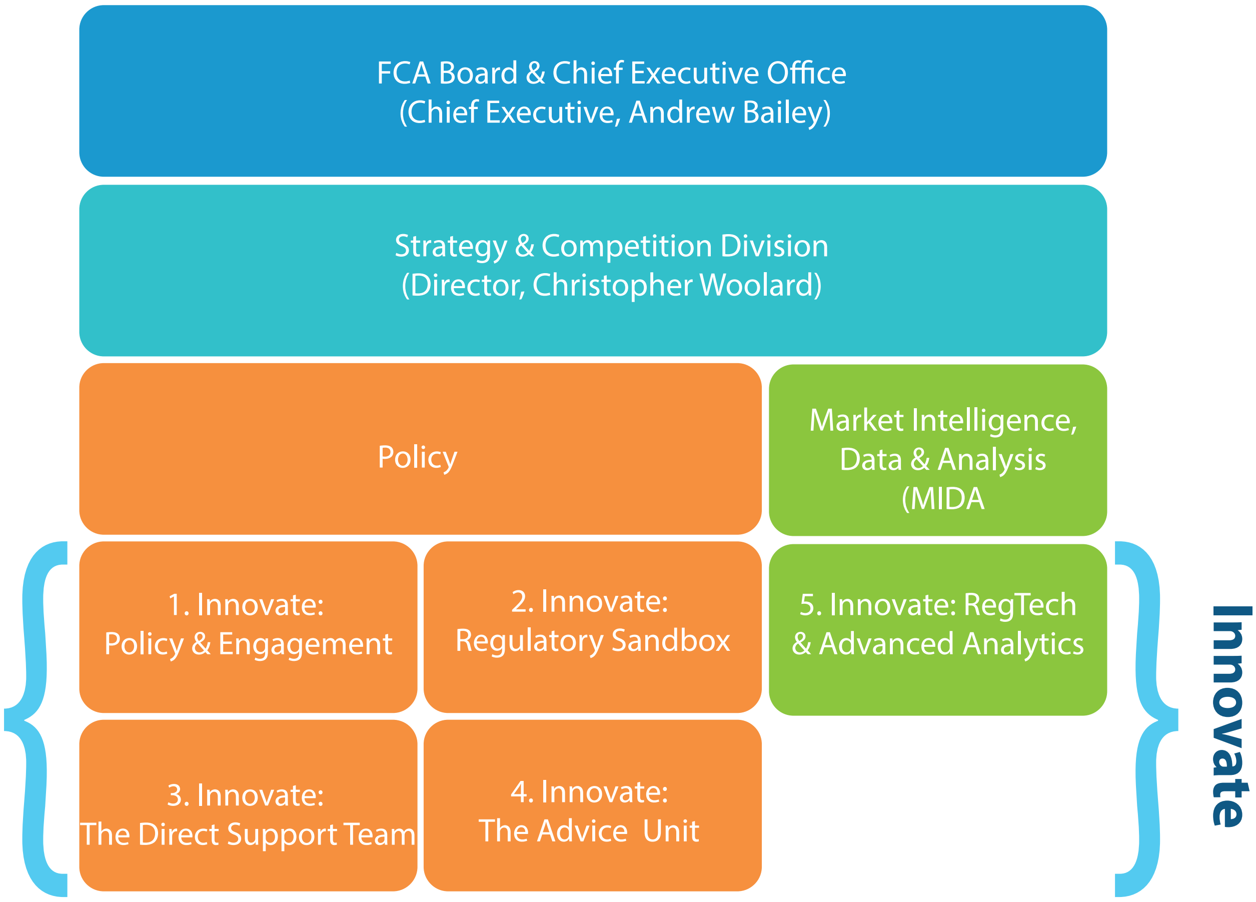
This infographic illustrates some of the highlights from the FCA's and wider UK regulatory innovation agenda since 2012.

Project Innovate

Project Innovate essentially began as a start-up within the FCA with a small team of 2-3 people in 2014. This team is now a substantial and growing number of many tens of people sitting across five different sub-units. Project Innovate, now known simply as 'Innovate,' is currently composed of five sub-units – four within the Policy Team and a fifth additional sub-unit, the RegTech Team, within the Market Intelligence, Data & Analysis (MIDA) Unit.

At present, all of these five sub-units sit within the Strategy & Competition Department. (For context, see Appendix 1 for details on the FCA's wider institutional structure). Given the fast-evolving, dynamic nature of innovation, it must be stressed that the FCA's Innovate structure may be subject to change at any time. The depiction below of the structure of the FCA's Innovate is based on the configuration when this study was published in Q1 2018.

Innovate: 5 Sub-Units



Purpose of FCA Project Innovate

Christopher Woolard, Director of Strategy & Competition at the Financial Conduct Authority stated that "the Innovation Hub was set up by the FCA to do two main things.

Firstly, it provides direct support to innovative firms who are trying to launch new products into the market that we think might benefit consumers, and the second thing is it's the centre for our innovation policy."

Innovate: Criteria for Selecting Innovation

Innovation is by its very nature a dymanic process and therefore any definition of innovation can be expected to shift over time. The FCA's Innovate sees innovation as a powerful driver of competition in the interest of consumers. Innovation helps to identify and filter out firms that can help to meet the FCA's institutional objectives; to protect consumers, promote competition and even arguably facilitate market integrity. The potential for consumer benefit is a key consideration that helps the Innovate team decide which firms and propositions to be prioritised in receiving support.

Guide Box: Regulators should be wary of defining innovation too specifically to prevent stifling the very essence of what is to be innovative. Doing something new is inevitably subject to change over time. Specifically defining what it means to be innovative, may soon prove to be outdated.

Innovate: How Innovators are Supported

The Innovate teams help firms to understand, explore and navigate the various parts of the UK's regulatory infrastructure. Both new and existing innovator businesses are welcomed to access the Innovate specialist support to assess how the FCA's regulatory framework may or may not apply to their business. This may include support in navigating the authorisation process but it also includes general advice and guidance about the mechanics and workings of the UK regulatory system and how it may apply to different business models and forms of financial services.

For innovator firms that seek to become authorised, they are typically allocated a named Case Officer who works closely to ensure the firms submit a high-quality application. This involves various meetings and correspondence to make sure firms really understand the authorisations process and expectations as well as offering a primary point of contact when queries arise. The individual Case Officers provide helpful, constructive advice and can engage relevant FCA expertise when needed. All this helps firms to understand their obligations and duties while also assisting the FCA to understand new and innovative business models. This mutual learning process helps to inform discussions about how different business models are compatible with the existing regulatory framework and explore whether changes to existing rules may be necessary to support innovation in the interests of consumers.

Guide Box: The Innovation Hub offers firms:

- A dedicated contact person for innovation-related queries – the 'Case Officer'
- Individual guidance and informal steers, as appropriate
- Continuation of additional support for up to a year after authorisation
- Enhanced understanding of the regulatory framework and how it applies
- Ongoing program of external engagement with innovators and other relevant entities
- Engage with firms on consumer research and trials of innovative tools
- Identifies areas where the regulatory regime needs to adapt to facilitate innovation
- Champions innovation within the FCA
- Uses new knowledge to inform innovation-friendly policy

The FCA aims to use its resources as efficiently as possible. Therefore, by focussing on genuinely, ground-breaking innovation, the FCA is able to filter out the firms that it can then focus and dedicate its limited resources to supporting. As well as using innovation as a filter, Innovate also seeks to ensure that it gives attention to innovator firms that need support most; whether in terms of their financial capacity or level of regulatory experience.

It is worth noting that not all innovation is positive in terms of consumer or the public interest. For example, innovation designed to avoid fiscal or regulatory responsibilities, or weaken consumer understanding is unacceptable. Therefore, Innovate aims to focus on innovation it deems to be in the interests of consumers or to meet its other institutionally-mandated objectives.

1. Innovate: Policy & Engagement

The FCA's Innovate is committed to encouraging innovation in the interest of consumers. One way in which this is achieved is through extensive engagement activities with the public, with industry and with experts and practitioners. The process of stakeholder engagement has been embedded throughout the ideation and creation of Project Innovate and the FCA continues to utilise various initiatives to seek external input and engagement from a whole range of different individuals and institutions.

The Project Innovate: Call for Input
On July 11th 2014, the FCA published its call for input [36] to answer 5 questions to help steer the FCA's future innovation-enabling agenda. This public engagement process helped to identify and also to confirm some of the key issues and challenges facing innovator businesses. It also sought to explore how different innovation solutions, facilitated by the FCA, could help to overcome these issues and to develop strategies to practically implement a range of initiatives in response. This process of public engagement has emerged as a hallmark and defining operational feature of the FCA Project Innovate.

Guide Box: The Project Innovate 'Call for Input' posed five questions for public feedback:

1. Is there anything about the regulatory system that poses difficulties for innovator businesses?
2. What practical assistance can a Hub usefully provide to small innovator firms?
3. Do you think it would be useful to establish an Innovation Hub function?
4. What criteria should be used to focus resources on 'genuine, ground-breaking' innovation?
5. Do you have any other feedback or suggestions?

Key Issues Highlighted

The call for input identified a number of issues that helped set the initial focal points for Project Innovate:

- Difficulties for innovators navigating the regulatory system – especially early stage firms.
- Lack of legal certainty and clarity creating challenges for innovative businesses.
- Uncertainty as to whether digital currencies would be regulated in the UK; preventing businesses from experimenting with related technologies that could benefit consumers.
- Smaller businesses noted difficulties in accessing bank accounts because some institutions refused to provide accounts to certain types of businesses.
- For many innovator businesses, the FCA website is the only direct source of information about the regulatory regime and the authorisations process. However, the website was widely thought to be inadequate and challenging to navigate.

To address these issues and more, Project Innovate sought to assist firms in navigating the authorisation process and provide a platform for engagement and support as well as ongoing dedicated support though an assigned case worker. This platform would also provide a means for the FCA to engage relevant expertise of its staff to understand and address the new opportunities and issues identified through this collaborative process.

Guide Box: When establishing a regulator-led financial and regulatory innovation initiative, extensive public consultation with industry leaders, academics, practitioners and other stakeholders helps to identify key issues and challenges facing the financial services sector and to position and focus the regulator's attention on issues and areas that should be prioritised.

Engagement Activities

Project Innovate has made extensive use of a variety engagement events [37] including:

- **Roundtables** [38] to focus on the FCA & the Innovation Hub asking for feedback to improve operations.
- **Surgeries** [39] to provide support to businesses experiencing specific and common issues working with the regulatory framework, including Q&A sessions to explore problems and coaching sessions to educate attendees.
- **Thematic workshops** [40] to draw on industry expertise to discuss emerging trends in the sector and consider potential impact from a regulatory perspective.
- **Monthly 'Showcase Events'** - to allow firms to talk through potential solutions to common problems.
- **Events and conferences** [41] to enable a wide range of stakeholders to participate and engage in a variety of issues, topics and themes.
- **Consultation processes** [42] that openly invite input and perspectives from a whole range of stakeholders, from industry experts and practitioners to the general public.
- **Innovation sprints** [43] to bring together multiple stakeholders to address and collectively solve a specific problem identified.

In addition to the above FCA-led events, the regulator is often invited to events such as workshops, roadshows, roundtables, conferences and panel sessions – hosted by other organisations that support innovation in financial services.

In early 2018, around 100 firms will have been involved directly with the Innovate Sandbox which is a material number of firms. However, the full impact of Innovate's activities, through the extensive engagement activities, extends the reach of Innovate into the many thousands of firms and individuals who are engaged in the financial and regulatory innovation process. The importance of high levels of external engagement with a wide variety of stakeholders is therefore an essential element to an effective and high impact process of innovation.

Guide Box: Why Innovation & External Engagement?

1. Engagement activities support the objective of fostering innovation, with lessons learned used to identify trends and potential issues at an earlier stage.
2. Ensures various individuals and teams at the FCA are fully plugged into ongoing industry developments within the evolving innovations of financial services
3. New external information can be used to identify possible policy and process changes.
4. Practical support for businesses can be complemented by an array of external events, including roundtables, surgeries and thematic workshops.
5. Provides a visible demonstration of the regulator's commitment to further innovation in financial services.
6. The consultative process is especially useful and relevant in markets whereincumbents may opposed pro-innovation initiatives.

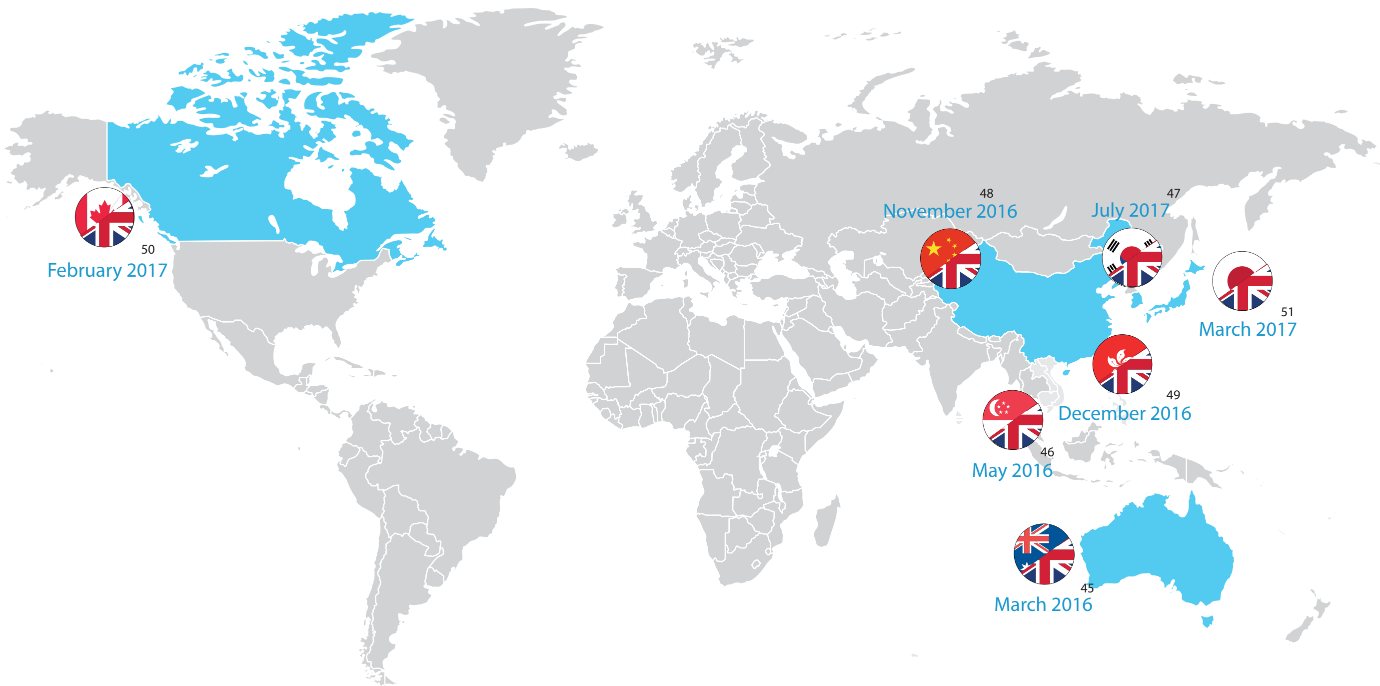
International Engagement

The FCA has engaged widely with international firms and regulators, which addresses its competition objective by promoting the UK as a centre for innovation in financial services. It does this by:

1. Facilitating the entry of innovative overseas firms to the UK, thereby increasing innovation and competition in UK financial services markets
2. Facilitating the expansion of UK-based innovative firms into overseas markets, making them potentially more sustainable challengers in the UK

The FCA collaborates closely with international financial services regulators to promote innovation in other markets. This includes signing Co-operation Agreements and frameworks. These agreements incorporate referral mechanisms for innovator firms seeking to enter other markets. The regulators provide support to innovative firms thereby helping reduce regulatory uncertainty & time to market. To qualify for the support offered by these agreements, firms in the UK and abroad must meet the required eligibility criteria of every participating jurisdiction. Firms interested in the UK market can access support via the FCA's website [44].

To date, the FCA has signed agreements with the following regulators internationally:



Guide Box: To reach scale and grow efficiently, innovative financial firms increasingly need to operate across multiple jurisdictions globally. However, lack of harmonization and legal and regulatory uncertainty hinders market development and creates high costs for firms. International cooperation amongst regulators in terms of enabling financial and regulatory innovation to permeate across borders is of paramount importance to facilitate the dissemination of financial innovation globally.

2. Innovate: Pioneering the Regulatory Sandbox

As part of Project Innovate, the FCA launched its Regulatory Sandbox in late 2015 to:

"Create a place for businesses to test new ideas to ensure they meet regulatory requirements and accelerate the development and testing of novel products which benefit consumers."

The FCA was the world's first regulator to launch a regulatory sandbox for financial services, underlining its commitment to innovation. The idea grew out of the FCA's Project Innovate, set up to foster competition and growth in financial services by supporting small and large businesses in developing products and services that could genuinely improve consumers' experiences and outcomes.

Regulatory sandboxes have since been established in well over 20 countries globally as demonstrated by Ivo Jenik and Kate Lauer at CGAP who provide an excellent overview of many of the different examples of regulatory sandboxes globally with a focus on financial inclusion [52]. These sandboxes are tailored regulatory environments for conducting small scale, live tests of new FinTech products and delivery models. These activities are important according to Schan Duff [53] as they, "bring regulators into the innovation process early providing an opportunity to tailor regulatory approaches that foster innovation while maintaining allegiance to regulatory objectives."

Guide Box: Purpose of Sandbox

- Remove unnecessary regulatory barriers to innovation;
- Reduces the time and cost of bringing new, consumer-friendly ideas to market.
- Ensure appropriate consumer protection & safeguards are built into new products & services.
- Promote more effective competition in the interests of consumers by allowing firms to test innovative products, services and business models in a live market environment, while ensuring safeguards are in place.
- Stimulate market development of a sector or group of firms such as FinTech firms in a given jurisdiction.

Considering the suitability of a regulatory sandbox

There may well be other means and methods of promoting regulatory and financial innovation that may be better suited to efficiently addressing regulatory objectives. Therefore, before establishing a regulatory Sandbox, it is worth exploring a number of key questions prior to ploughing forward with a regulatory Sandbox:

1. **Barriers:**
   What regulatory barriers do firms face when testing out new ideas? How and to what extent can they be lowered?
2. **Safeguards:**
   What safeguards should be in place to ensure consumers and the financial system are appropriately protected?
3. **Legal & Regulatory Framework:**
   What regulatory arrangements are within the mandate and authority of the regulator by law?

Structure of the FCA's Regulatory Sandbox [54]

Criteria for using Sandbox
Firm in Scope / Genuine Innovation / Consumer Benefit
Need for Sandbox / Background Research

1

Firm proposal to use sandbox
A firm submits a testing proposal to the FCA setting out the new solution and how it meets the criteria.

2

FCA assessment
FCA reviews the proposal
The proposal is accepted if eligibility criteria are met. A case officer is allocated as a contact person for the firm.

3

Firm and FCA collaborate and agree a testing approach
If the proposal is accepted, the FAC works with the firm to establish the best sandbox option, testing parameters, measures for outcomes, reporting requirements and safeguards.

4

Delivery of sandbox option
FCA allows the firm to start testing.

5

Testing and monitoring
The firm starts testing and engages with the FCA according to what was agreed in step 3.

6

Firm submits final report

FCA reviews final report
The firm submits the final report about the outcomes of testing and the FCA reviews the report.

7

Firm decides whether it will offer solution
After the FCA receives and reviews the final report, firm decides whether it will offer the new solution outside sandbox.

Guide Box: The Innovate Sandbox Eligibility Criteria:
Before being admitted into the Innovate Sandbox, the FCA will assess firms' applications against the following criteria:

- Is the firm in scope? Is the firm looking to deliver innovation which is either regulated business or supports
- regulated business in the UK financial services market?
- Is it genuine innovation? Is the innovation groundbreaking or constitutes a significantly different offering in the marketplace?
- Is there a consumer benefit? Does the innovation offer a good prospect of identifiable benefit to consumers (either directly or via heightened competition)?
- Is there a need for a sandbox? Does the business have a genuine need to test the innovation on real customers and in the FCA sandbox?
- Is the firm ready for testing? Is the business ready to test their innovation in a live environment?

1

[1] Full details of the Innovate Sandbox eligibility criteria can be found on the FCA website: https://www.fca.org.uk/publication/documents/sandbox-eligibility-criteria.pdf

Establishing a Regulatory Sandbox: Assessing the Benefits

Benefits to the Market

- Sets a publicised standard for dealing with innovations.
- Reduces time-to-market for innovations by streamlining the authorization process.
- Reduces costs for new innovations to get to market. Time is money.
- Improves innovative firms' access finance by reducing regulatory uncertainty.
- Helps firms to manage regulatory risks while testing their innovations.
- Incentivizes traditional authorised firms to speed up deployment of their innovations.
- May encourage mutually beneficial partnerships between large firms and start-ups in the sandbox.

Benefits to the Regulator

- Clearly signals to the market and regulatory staff that innovation is firmly on the agenda.
- Promotes open and transparent communication between regulators and sandbox firms.
- Promotes the national market as good place to do business.
- Helps regulators to learn from FinTech firms in a climate of open communication.
- Allows regulators to learn and identify key issues before major risks materialize.
- Promotes balanced practice of discretion, rather than focussed primarily on potential liability.
- Assists regulator to promote innovation within the financial ecosystem.
- Facilitates information sharing between innovators and regulators to identify regulatory issues
- Engages thousands of individuals and companies, well beyond those participating in each cohort [55].
- Enables regulators & innovators to collaboratively build innovative consumer protection safeguards.

Benefits to Consumers

- Provides focus on innovative propositions that stand to benefit consumers.
- Trials more solutions which may later be introduced to the market.
- Offers a safe space for live experiments with safeguards to contain potential harm to customers [56].
- Enables more innovative products to reach the market that may otherwise never have been tested.
- Promotes competition in the market which may encourage incumbents to provide better offerings.
- Reduces costs and increases access to financial products and services.

Establishing a Regulatory Sandbox: Assessing the Risks

Risks to the Market

- May create competition issues giving sandbox firms access to regulator advice & first to the market.
- May lead to selection bias as the selection criteria may be defined vaguely or lack transparency.
- Customers or partners may refuse to engage with sandbox firms as they are not fully regulated.
- Some firms may not be able to meet the conditions for authorisation of activities to be conducted.
- Firms may find it challenging to identify and secure necessary partners to execute their tests.

Risks for Regulators

- May lead to a race-to-the-bottom style competition and regulatory arbitration amongst regulators.
- Regulators may lack the experience or insight to deal with the risks created by adopting a sandbox.
- Regulators may make promises they cannot keep and need to backtrack.
- Regulators may inadvertently end up allowing unacceptable levels of risk to develop.
- Sandboxes may fail to capture both the standardization & cost reduction functions of law.

Risks to Consumers

- May result in poor selection of firms due to limited capacity to assess underlying technologies.
- Incompetent sandbox firms may lead to poor consumer outcomes.
- May result in liability issues when customers are harmed, threatening the regulator's reputation [57].
- Firms may not attract their target customers and thereby be unable to conduct their testing.
- Smaller firms will likely face bigger challenges to engage suitable customers.
- Risks for consumers and the financial system could materialize.

Guide Box: Highlights of the FCA's Innovate Sandbox
The Research Team have identified a number of highlights from the UK's Innovate Sandbox:

Benefits to Firms

- Opportunity to discuss their activities in detail with highly engaged case officers and overcome requirements and queries face-to-face, by phone or email.
- Small firms are able to engage directly with the regulator which may have otherwise been challenging; especially for entrepreneurs with no regulatory or sector experience.
- Firms can better understand where their proposition fits within the existing framework.
- Even firms that don't necessarily need to be authorised can still receive guidance to interpret regulations and best practice.
- Helps firms raise investment and is generaly a positive signal to prospective investors.
- Reduces costs such as those associated with compliance consultants and lawyers.
- Ensures documentation is only fully developed once it becomes clear where a firm sits in the regulatory framework rather than wasting time and resource on redundant documentation.
- Helps firms to fast-track the regulatory process.
- Provides enough flexibility and lenience so that business models can adapt and pivot.
- Helps firms to keep in the loop on upcoming relevant changes and with networking.

Benefits to the wider Market

- Providing helpful introductions to other regulators can help firms enter other markets thereby stimulating market development in other jurisdictions.
- Attracts firms from overseas.
- Very good learning opportunity for everyone involved.
- The sandbox can motivate partners to engage in a more innovate approaches and activities.

Benefits to the Regulators

- Improves user experience and products which is better for consumers.
- Helps to increase the integrity of innovative solutions and helps firms to really think through their operational and technical processes.
- 'Batched cohorts' are a more efficient way to focus regulatory time and resources.
- Great publicity for both firms and the regulator especially with the 'batched cohorts.'
- Provides firms with the impetus to create formal information documentation, internal policies and processes.
- The Sandbox process saves lots of time.

Guide Box: Recommendations for Opportunities for Improvements to the Innovate Sandbox:

The Research Team has identified a number of areas that could be improved within the UK's Sandbox that may be instructive for other jurisdictions:

- Although the Sandbox is a major help, there is still a great deal of work for the firms in terms of the process of filing forms and the heavy burden of documentation. It is however understandable that firms need to provide the necessary level of information to ensure firms operate in a competent, controlled manner to reduce risks to consumers.
- Compliance consultants and lawyers are often still needed, therefore firms need to manage expectations about potential cost reductions which are likely to be lower but not removed.
- Personnel changes in the process of the Sandbox can create issues.
- The Sandbox could provide more specific guidance on exactly how different models fit into the FCA's Handbook which still requires legal counsel to determine requirements. However, firms are still taken through the same process as any authorised firm but are provided with more input and time from FCA staff via the Sandbox than otherwise.
- The Sandbox helps to map out the areas that firms need to address to comply with the regulatory framework but the specifc details on how to rectify these issues are not provided – this is left up to the firm. While the FCA can provide guidance on where issues exist, it must be careful to not overstep the mark.
- The application cost still applies.
- Capital requirements for insurance offerings still required to comply with EU regulations.
- More face time with FCA staff would be helpful although clearly resources are always constrained so while this would be nice, it is not always realistic.
- It would be helpful to map out the post-test implementation process more clearly.
- It would be helpful to host an event for all participating firms in the sandbox to share knowledge and provide opportunities for further engagement.

Establishing a Regulatory Sandbox: Legislative Change Options [58]

The FCA had a number of options in terms of changes to legislation to enable the UK Sandbox to operate which may be instructive to other jurisdictions considering the establishment of similar regulatory innovation initiatives. However, clearly each jurisdiction has its own unique national regulatory and legal structural characteristics as well as obligations to supra-national governmental institutions or international organisations which may limit the capacity and options of a regulator.

In the case of the UK for example, certain EU legislation which supercedes UK law, cannot be amended or waived by the FCA for the purposes of facilitating innovation. Regulators in other more federalised jurisdictions may face similar dilemmas when determining their options to facilitating innovation. Due consideration must therefore be given to both the domestic and international constraints on the regulator in terms of their legislative options and tools available to enable the establishment of a Sandbox.

1. Introduce a New Regulated Activity: 'Sandboxing'

The FCA could have introduced a new regulated activity such as 'sandboxing for testing'. This would entail the creation of a new sandbox regime composed of new rules and requirement to make it more flexible than the existing regime. Such a new regulated activity could offer a more streamlined authorisation process and potentially less regulatory requirements to comply with when testing.

Benefits	Risks & drawbacks
More flexibility	Firms need some for of authorisation before testing.
Authorisation can encourage investors	Legislative change takes time and resource.
May make it easier to protect consumer rights	(EU law limits the flexibility of any new regimes.)
	International cooperation is vital given (temporary) exemptions to avoid regulatory arbitrage.

2. Amend the Waiver Test

The FCA's ability to issue waivers is curtailed by the the requirements of EU legislation and by the current waiver test provided in FSMA [59]. The Government could change existing rules [60] to make it easier for the FCA to waive rules which could be achieved by introducing a new test for sandbox firms. However, as EU legislation supersedes UK law, these rules cannot be waived in the current situation.

Benefits	Risks & Drawbacks
Waivers are the only option if an innovative test will breach an existing rule.	The FCA cannot waive requirements derived from EU law
Waivers allow firms to test quickly test before ensuring compliance with all relevant rules.	The FCA's power to issue waivers is limited by existing legislation which may require changes.
Waivers give firms certainty the FCA will not take enforcement action, providing conditions are met.	Compensation [61] is available only if there is a breach of general law requirements.

3. Introduce an Amendment to Exemption Rules

The Exemptions Order [62] could be amended to include bespoke exemptions from authorisation for sandbox firms seeking to conduct regulated activities [63]. The exemption would apply if the firm complies with sandbox conditions and the FCA confirms that it meets sandbox criteria. The existing exemption and exclusions can be found in the Perimeter Guidance manual under PERG 2.7 and 2.8 [64].

Operationalising the Innovate Sandbox: Tools and Enforcement Options

The Innovate Sandbox has a number of options available to aid the execution and testing of innovative propositions in a controlled setting. According to the FCA [65], these include:

1. **Restricted Authorisation**
   To conduct a regulated activity in the UK, a firm must be authorised or registered with the FCA unless certain exemptions apply [66]. Firms need to apply for relevant authorisation or registration in order to test within the Sandbox [67]. The authorisation process has been tailored for firms accepted into the Sandbox which is restricted to allow firms to only test agreed ideas. This truncated process makes it easier for firms to meet requirements and reduces associated costs and time to get the test operational. However, restricted authorisation still requires firms to apply for authorisations which takes time and still requires an application fee [68].

2. **Individual Guidance**
   When rules are unclear, individual guidance can help firms to understand how the FCA would interpret the requirements in the context of each specific test. Individual guidance may be resource-intensive and may require very specific disclaimers which may undermine and reduce the utility of this tool.

3. **Waivers or Modifications to Rules**
   It may be possible to waive or modify a particular rule or aspect of it for the purpose of the sandbox test [69]. However, waivers cannot apply to superseding national or international law – only the rules within the jurisdiction of the FCA. This can give firm clarity and certainty that no enforcement action would be taken under certain, agreed conditions. These tools are resource-intensive, complex to issue and require disclaimers. Such disclaimers may affect the usefulness of waivers or modifications to rules.

4. **No Enforcement Action Letters**
   In certain circumstances, the FCA can issue ‘No Enforcement Action’ Letters. Provided firms act transparently, keep to the agreed testing parameters and treat customers fairly firms can expect no disciplinary action. No Enforcement Action Letters only apply for the duration of the sandbox test and only to the disciplinary action of the FCA but does not limit any liabilities to consumers.

5. **Informal Steers**
   The Regulatory Sandbox can provide informal steers on potential regulatory implications of an innovative product or business model that is at an early stage of development.

Guide Box: A Regulatory Sandbox is only as powerful as the sum of its ability to enact discretion and exemptions from the existing rules and regulatory & legal framework. A regulator that does not have jurisdiction in a particular area or where there is law or regulations that supersede the powers of a regulator, the effectiveness of a regulatory sandbox will be severely curtailed. The FCA for example cannot exempt sandbox firms from anything that would contravene EU legislation.

Operationalising the Innovate Sandbox: Options for Authorised vs. Unauthorised Firms

Clearly both authorised and unauthorised firms engage in innovative activities. Nevertheless, the FCA has approached how it deals with these firms in different ways.

Unauthorised Firms

The Innovate Sandbox helps firms to more efficiently navigate the authorisation process to help trial new products or innovations. This authorisation for sandbox firms requires firms to meet proportionate requirements relative to their testing requirements. This process is often quicker than going down the route of full authorisation. As firms then seek to go onto full commercialisation, the sandbox firms do not have to go through the full authorisation process, but rather go through a gap analysis and are then assessed again once the identified gaps have been addressed.

This process should often be quicker than going through the full authorisation process especially given that the FCA will have gathered a bank of evidence on the firm during their Sandbox process which will help to speed along the post-Sandbox authorisation process. While the Sandbox process does have clear benefits, firms still need to meet authorisation requirements for their tests. This costs time and money which may be particularly challenging for earlier stage, resource-constrained startups.

For Authorised Firms and Outsourcing Arrangements

The FCA has a range of options for authorised firms as well as for those that outsource their authorisation arrangements via appointed representatives [70] which include:

1. Waive or modify particular rules for sandbox firms when it is obvious that the proposed tests do not meet FCA rules. A waiver or modification would allow a temporary halting of rules [71].

2. A Non-Action Letter (NAL) could be issued stating that no enforcement action will be taken against specifically-defined testing activities as the outcome is deemed to be good despite potentially breaching existing rules. In such circumstances, the FCA will not take action during the period from the issue of the NAL until the specifically-defined testing is completed.

3. Individual Guidance provides firms with an FCA interpretation of relevant rules relating to the testing activities that firms wish to undertake. If firms follow this guidance, it provides certainty that the FCA would not take action against them.

Attaining the Conditions for Authorisation

Firms do not need to be authorised to access the sandbox but firms must meet the conditions for authorisation for the activities they wish to conduct. Given the FCA's consumer protection mandate, firms must have the necessary competence and financial viability to protect the integrity of their operations and their customers.

However, as sandbox firms are attempting new business models or approaches, this may be more complex than for traditional firms given the new untested structures. This may therefore require more extensive interactions and more information than is normally required. This may be an onerous process, especially for smaller firms, however it is a mutual learning opportunity for all parties.

Guide Box: Certain business models may face greater challenges in meeting the regulatory requirements of the Sandbox. For example, in the UK, firms seeking to offer insurance products may need to be fully authorised necessitating very high capital requirements due to EU legislation that may not be viable for a small startup. As an alternative, such firms could partner with incumbent insurers to underwrite their product instead. Such challenges make it difficult for certain firms to meet the conditions necessary for authorisation within the sandbox - particularly smaller start-ups.

Operationalising the Innovate Sandbox: Approaches to Consumer Safeguards

While promoting innovation is an objective of the FCA, consumer protection takes primacy. Therefore, an essential component of the Sandbox is to ensure consumers are safeguarded. When the FCA was determining their approach to designing the Innovate Sandbox [72], it reviewed a number approaches:

1. Only customers who give informed consent can participate in sandbox tests and must be well aware of the potential risks & available compensation.
   Positive: Flexibility to decide upon appropriate compensation terms.
   Negative: Only available to sophisticated consumers & firms whose awareness of testing limitations may distort outcomes creating a selection bias as more cautious customers opt out. Also, less sophisticated consumers may not fully understand the limitations on their rights.

2. Sandbox firms determine the levels of disclosure, safeguards and compensations provided and the regulator works with firms to ensure they comfortable with the proposals.
   Positive: Flexibility for firms to propose compensation arrangements. If safeguards are sufficient, testing with customers who are unaware of testing might be considered.
   Negative: If the agreed protection proves to be insufficient, may be to the detriment of customers.

3. Participating customers have the same rights as customers who engage with authorised firms (e.g. consumers can access the Financial Ombudsman (FOS [73]) & Compensation Scheme (FSCS [74]).
   Positive: The system is already in place and customers do not bear additional risks
   Negative: Sandbox firms must pay FOS & FSCS fees, and their financial exposure is higher than just compensating losses.

4. Sandbox firms agree to compensate any losses (including investment losses) to customers and can demonstrate that they have the resources to do so
   Positive: Unless firms become insolvent, customers bear no risk from transacting with sandbox firms which is a higher level of protection than with regular authorised firms.
   Negatives: Sandbox firms bear all risk making it unattractive and unaffordable especially for smaller firms. Also, if customers know that they have nothing to lose, this may distort testing outcomes.

Guide Box: Reasons that firms may have to be removed from a Regulatory Sandbox.

- Risks exceed the benefits to consumers or the financial system
- Non-compliance with laws or regulatory impositions
- The purpose of being in the sandbox not being achieved
- Regulatory risks due to non-compliance and poor conduct
- The Sandbox is not furthering innovation
- The firm wants to opt out either by shutting down or moving to become authorised

The FCA's Innovate Approach:

The FCA has sought to address its duties to both protect consumers while also promoting effective competition.
To address these while ensuring the sandbox is appealing to a variety of innovative firms the FCA has pursued the second approach which firstly encourages firms to develop and arrange for robust consumer protection safeguards,
while the FCA can then go on to ensure these safeguards are suitable and adequate.

An added benefit of this approach is that the FCA can also gather intel on new and innovative approaches to consumer safeguards.

Operationalising the Innovate Sandbox: Default Standards for Testing Parameters

Each firm that conducts tests within the Innovate Sandbox co-creates the specific parameters for their test proposition. In addition to these bespoke testing parameters, the FCA has developed a number of standardised testing parameters [75] that apply to all participating firms and summarised as follows:

Time Frame
The Sandbox permits testing for a limited time period. While testing duration should be long enough to enable statistically relevant data to be obtained it should not be too long. Based on feedback, the Innovate team has determined 3 to 6 months to be the optimal testing time frame.

Number of Customers
The Sandbox is designed for small scale testing with strict limits on the number of participating customers. The total number of customers should be sufficient enough to enable the collection of statistically significant data to be secured whilst also mitigating risks to customers.

Customer Selection
Firms are expected to identify and engage customers themselves for their testing in the sandbox. The type of customers should be appropriate for the type of innovation and the intended market, but also to the type of risks they are exposed to.

Customer Safeguards
The FCA ensures firms have appropriate customer safeguards in place agreed on a case-by-case basis underpinned by:

- Retail consumers [76] – this type of customer should not bear the risks of the Sandbox and so they must be able to complain to the firm, then to the Financial Ombudsman Service and have access to the Financial Services Compensation Scheme if a firm fails.
- Sophisticated customers – who give informed consent to limit their claim for compensation.
- Additional safeguards – depending on the size, scale and risks involved, additional safeguards may be necessary such as additional disclosure to enable the sandbox test to include retail consumers.

Disclosure
For customers engaging in the sandbox under informed consent, firms should disclose information about the test and available compensation (including in the event of firm failure).

Data
The FCA is not responsible for the provision of data to firms testing in the sandbox. Instead firms themselves must gather data from their test populations within the confines of their test parameters. This may prove challenging for firms to secure buy-in from a sufficient number of test customers.

Guide Box: Sandbox Testing Plans should include:

- A plan for testing in the sandbox including timeline & key milestones
- Measures for success for testing such as the successful use of a new technology by consumers or a data point to demonstrate a change in behaviour as a result of consumers using a new products or approach.
- Testing parameters (duration, customer/transaction limit)
- Customer safeguards
- Risk assessment
- Exit strategy

Post Implementation Review of the Innovate Sandbox: Types of Sandbox Innovation to Date

To date, the FCA has engaged over sixty firms across three cohorts with the fourth cohort currently accepting applications. The FCA has adopted a batched cohort approach in order to more efficiently utilise scarce resources and focus attention on firms over two intakes per year. The alternative would be to allow firms to enter on a rolling basis which requires lots of repetition and duplicated use of resources.

Guide Box: Types of Innovations Tested in the Innovate Sandbox to Date:
- Application Program Interfaces (APIs) – e.g. ThisisBud or Spherical Defence Labs
- Biometrics e.g. Nuggets or Yoti
- Insurance Mediation e.g. Blink Innovation or FlashFlood
- Mortgages e.g. Nested (Next Day Property) or Experian
- Online Platforms e.g. Issufy or nViso
- Personal Savings Tools e.g. Oval or Money Dashboard
- Payments & Remittance utilsing DLT e.g. Billon or Tradle
- Robo-Advice e.g. Nationwide & Moneyhub Enterprise
- Vulnerable Consumers e.g. Citizens Advice

Application Programme Interfaces (APIs)
Firms offering solutions that integrated with the APIs of other
Firms offering solutions that integrated with the APIs of other
financial services firms in order to offer consumers secure and convenient access to a range of financial information. Firms need to be able to access and share data in a secure and efficient manner. It is often difficult for firms to securely access data from large institutions as formal routes may be unavailable.
- Example: One firm developed a platform to aggregate users current account, credit card, and pension balances into a simplified format using APIs to integrate with a range of financial services companies. This gives the consumer the ability to access a range of financial services products in one platform, improving their understanding of their own financial position, enhancing awareness of the various products in the market, and resulting in a more convenient user experience.
- Example: Another firm sought to integrate with a range of financial institutions via APIs. However, the firm found that the nascent nature of APIs within financial services made it difficult to complete the integration process within the testing period.

Biometrics
A Number of firms have tested solutions that integrate biometric technology.
- Example: One firm tested a DLT platform to enable consumers to pay, login & verify their identity using biometrics.
- Example: Another firm used facial recognition technology to add to risk profiling assessments.

Insurance Mediation
A number of insurance intermediaries tested propositions aiming to add value to the insurance distribution process, and improve user experience. These innovations could improve the way insurance policies are distributed and managed, and how claims are made and processed as well as enhancing consumers' ability to understand their risk profiles and their ability to make informed decisions.

Mortgages
A small number of mortgage propositions have tested in the sandbox.
- Example: One firm tested a model for those looking to move to a new house which guarantees a sale of the customer's property within 90 days, or failing that, provides an interest free loan for 95% of the property's market value. The test gauged consumer demand and satisfaction for the service, and tested the firm's ability to sell within their 90-day timeframe.

Online Platforms
Firms bring traditional processes online to improve efficiency and effectiveness.
- Example: One Sandbox firm tested a solution to streamline the Initial Public Offering (IPO) distribution process to communicate information to relevant participants in a more efficient, effective and transparent manner.
- Example: Another firm tested the use of an online platform to increase SME access to FX options, at a lower volume and cost than currently available. The platform simplifies the process of hedging currency exposure, allowing users to purchase an option tailored to their needs.

Personal Savings Tools and Consumer Information
A number of tests employed innovative methods in personal financial management, savings, and investments to incrementally improve users' savings habits. Continued use of these tools has the potential to improve spending & saving behaviour among users, resulting in better long-term consumer outcomes.

Robo-Advice

Robo-advice is an emerging area of the advice market. A number of firms used the sandbox to test their models in a live environment. In addition to the Sandbox, firms have also benefited from support from the FCA's Advice Unit [77]. To mitigate risks that these models deliver unsuitable advice, firms had to build in additional safeguards before they begin testing often involving qualified financial advisers checking the automated advice outputs generated by the underlying algorithms.

- Example: One sandbox test involved an experienced adviser being present when a consumer received automated advice. This enabled the adviser to check and, if necessary amend, recommendations before the advice was delivered to the client. Amendments could then be made to the underlying algorithm based on expert assessments.
- Example: In another test, a firm tested the automation of the end-to-end advice process. Once a consumer submits their response to the online fact-find, they automatically receive their suitability report.
  Consumers were informed that they should not act upon the report until they have received a second notification confirming that the advice is suitable. This allowed a qualified financial adviser to check the output of the model and enabled the firm to test their proposition.

Vulnerable Consumers

A variety of sandbox firms sought to address the needs of more vulnerable consumers at particular risk of financial exclusion[78]. Attention has focussed on helping consumers prioritise and reduce high-cost credit. The use of technology to help users prioritise and better manage debt is an area of specific interest:

- Example: One firm developed an innovative way to help consumers on benefits feel more empowered by receiving & making payments for things such as rent, council tax, gas & electricity.
- Example: Another firm tested a mobile application using behavioural techniques to encourage consumers to set aside small amounts of money in a savings account to repay high cost credit obligations quicker and thereby reduce the number of customers going into arrears., particularly in light of recent changes in the debt management sector.
- Example: Another test looked to promote more consistent outcomes for consumers receiving face-to-face debt advice to see whether consistency could be improved using technology to help advisers determine appropriate next steps for clients, whilst account for their individual circumstances.

Guide Box: Sandboxes can address public and social policy issues.
A Sandbox can act as a powerful vehicle to focus innovators on addressing public and social policy issues by encouraging particular types of firms to apply to address specific public or social issues.

Post-Implementation Review of the Innovate Sandbox: Cohorts & Case Studies

Cohort #1:	Applications for the first Innovate Sandbox cohort closed on 8th July 2016. In the first cohort, 18 companies participated covering areas including blockchain, payments and investment platforms. 69 firms applied and 24 applications were accepted.
Cohort #2:	The second cohort started in June 2017 expanded to 31 companies. 77 firms applied and applications closed on 19 January 2017. Seven firms were not ready to begin testing. Cohort 2 therefore consisted of 24 firms.
Cohort #3:	61 applications received with 18 firms accepted to develop towards testing.
Cohort #4:	Applications open until 31st January 2018 [79].

Guide Box: Characteristics of participants in the first two cohorts:

1. Majority from the retail banking sector
2. Majority based in the Greater London but the mix is looking to diversify
3. Majority are start-up companies
4. Majority pertain to the new application of technologies to traditional products or services
5. Distributed Ledger Technology ('DLT') is the most popular technology deployed

FCA Sandbox: The First 2 Cohorts

- 146 applicant firms
- 50 firms supported towards designing, implementing and supervising their tests.
- 9 firms were unable to test their solutions for a variety of reasons e.g. unable to secure partners.
- Provided insights on the types of firms that request support, the technologies underpinning their innovations, and the common risks facing them and their customers.
- Majority of firms testing in the first two cohorts focussed on the retail banking sector.
- Majority of sandbox firms based in Greater London.
- Applications also received from firms outside of the UK e.g. Canada, Singapore and the US
- Most popular with start-up companies.
- Majority of accepted firms required restricted authorisation to carry out their test.
- Most firms applied existing technologies to traditional services; not entirely new products.
- 17 firms employed Distributed Ledger Technology (DLT) the most popular technology.

Innovate Sandbox: Cohort #1

Cohort #1	Description
Billon	A DLT e-money platform for secure transfer and holding of funds using a phone based app.
BitX	A cross-border money transfer service powered by digital currencies/blockchain technology.
Blink Innovation Limited	An insurance product with an automated claims process that allows travellers to instantly book a new ticket on their mobile device in the event of a flight cancellation.
Bud	An online platform enabling users to manage their financial products, with personalised insights, on a single dashboard interacting with various API integrations.
Citizens Advice	A semi-automated advice tool that allows debt advisers and clients to compare the key features of solutions to their debt problem.
DISC Holdings Limited	A technology provider that has partnered with the Department for Work and Pensions (DWP) make emergency payments using blockchain to allow the DWP to credit value to a mobile device to transfer the value directly to a third party.
Epiphyte	A payments service provider for cross-border payments using blockchain technology.
HSBC	An app developed to help customers better manage their finances.
Issufy	A web-based software platform that streamlines the overall Initial Public Offering (IPO) distribution process for investors, issuing companies and their advisers.
Lloyds Banking Group	An approach to improve the experience for branch customers aligned with the online and over the phone experience.
Nextday Property Limited (Nested)	An internet-based property company that will provide an interest-free loan for a guaranteed amount to customers if they are unable to sell their property within 90 days.
Nivaura	Uses automation & DLT for issuance & management of private placement securities.
Otonomos	A platform that represents private companies' shares electronically on the blockchain, enabling them to manage shareholdings, conduct book building and facilitate transfers.
Oval	An app that helps users to build up savings by putting aside small amounts of money. These savings can then be used to pay off existing loans early. Oval will be working with Oakam, a consumer credit firm, and a number of their customers during the test period.
SETL	A smart-card enabled retail payment system based on their OpenCSD distributed ledger.
Tradle	An app and web-based service that creates personal or commercial identity and verifiable documents on a distributed ledger for automated customer authentication.
Tramonex	An e-money platform based on distributed ledger technology that facilitates the use of 'smart contracts' to transfer donations to a charity.
Swave	A micro-savings app that provides an across-account view, enables a round-up service every time a user spends money and calculates an affordable savings amount based on behaviour.

Cohort #1 Insights

An FCA spokesperson described the first cohort as “an intense process for both firms and ourselves. [80]”24 candidates were accepted, including early stage startups, challengers & incumbents, from 69 applications.

The research team were able to interview 5 of the firms that participated in Cohort 1. These interviews have informed some of the key insights used to develop this Guide and some of their thoughts and perspectives have been summarised in the following sections.

Issufy: A web-based software platform that streamlines the overall Initial Public Offering (IPO) distribution process for investors, issuing companies and their advisers.

Insights: Before applying to the Sandbox, the Issufy team were introduced to the FCA Competition Team as it was unclear what regulation would apply to them as they were an ‘edge case’ as many Sandbox firms are. Luckily, the Sandbox was just launching so Issufy were pleased to join the Sandbox which they deemed to be a really important ‘safe harbour’ for testing new ground-breaking innovation. Each test in the Sandbox is different depending on the function of the company, what it is trying to achieve and what is achievable with limited resources and testing scenarios. The Issufy team saw great benefit from their ‘hands on project manager’ who regularly discussed their requirements - a really useful opportunity for a small firm to engage directly with the regulator to understand where their proposition fits in the existing framework.

Tradle: An app and web-based service that creates personal or commercial identity and verifiable documents on a distributed ledger for automated customer authentication.

Insights: Tradle benefitted greatly from the Sandbox as it provided an opportunity to overcome requirements and queries face-to-face. One key point of interest for Tradle was that firms could use the sandbox even though they didn’t necessarily need to be authorised, but still needed guidance to interpret regulations and best practice. The Sandbox process really helped to frame regulation, as well as providing helpful introductions to other regulators, opening the conversation to enter other markets. The FCA’s use of 6-month batches of firms was also noted as helping ensure resources are used efficiently by allowing focus on two groups of firms per year which also helped with building awareness of the firms in each cohort.

Billon: A DLT e-money platform for secure transfer and holding of funds using a phone based app.

The FCA Sandbox provided a perfect opportunity for Billon to obtain investment and establish their operations in the UK. Billon joined the FCA Sandbox as part of the first cohort and were attracted to the UK from Poland in part due to the Sandbox. As a result of the Sandbox, the firm was taken much more seriously by investors. While they still certainly needed compliance consultants, it would have been far more expensive without the Sandbox in terms of preparing the documentation towards authorisation as there was a simplified procedure in place. Having to develop documentation for a simpler procedure saves time and money especially when it is unclear which part of the regulatory framework your proposition will fall under. It is better not to waste time on something that proves to be irrelevant down the line. The Sandbox process led to substantial improvements in the Billon product when testing in a real environment as well as identifying issues with their partners that could be addressed much more easily. The FCA were helpful throughout and while there were personnel changes in the process of the Sandbox, nevertheless, still very helpful providing lots of comments on numerous occasions.

SETL: A smart-card enabled retail payment system based on their OpenCSD distributed ledger.

The team at SETL were the first organisation to deliver a successful test, which provided good publicity for the firm and helped raise awareness of the Sandbox for the FCA. For SETL, the ability to test its blockchain in a live environment together with the guidance and responsiveness of the FCA were very beneficial and positively received. The SETL team were constructively challenged on the integrity of their solution which helped them think through their operational and technical processes as they continued to refine their product. The Sandbox process also helped to provide assurance in the market on the suitability of SETL’s product for production implementations.

Nextday Property

The Next Day Property team were going through the normal authorisation process up until a few weeks before the launch of the Sandbox. At this time, they were a small four-people, pre-revenue startup. While there was quite a substantial amount of documentation required for the Sandbox process, such as business plan and financial models and policies in place, the process helped the firm to get everything in order more efficiently. After 9 or 10 months, the firm went on to secure full authorisation which seemed much faster than it would have otherwise have been in addition to receiving helpful additional guidance along the way.

Innovate Sandbox: Cohort #2

Cohort #2	Description
AssetVault	AssetVault enables consumers to catalogue all of their assets in a secure online register and better understand their total value. AssetVault then works with insurance providers to protect the consumer and their assets with appropriate insurance products.
Assure Hedge	A web-based platform offering forex (FX) options to assist SMEs and individuals to protect against losses incurred because of currency fluctuations.
Beekin	Leverages artificial intelligence and data sharing to build transparency and liquidity in alternative assets (real estate, angel investments), and offers risk management and analytics services to small investors.
BlockEx	BlockEx wish to test a bond origination, private placement and lifecycle management platform based on distributed ledger technology.
Canlon	An insurance policy that saves a portion of the net premium to reimburse policyholders if a claim is not made.
Disberse	A blockchain-based service provider that distributes and tracks development and humanitarian finance.
Evalue	An on-going, fully automated online streamlined advice process for employees in the workplace designed to help them set and achieve realistic retirement goals.
Experian	A mortgage eligibility tool that can be used to help consumers who are in the research phase of buying a home by increasing awareness of their eligibility, based on the lender's affordability.
FloodFlash	FloodFlash provides event-based flood insurance. Customers receive a pre-agreed settlement as soon as the company's sensor detects that flood waters have exceeded a certain depth.
Laka	An alternative insurance business model where the consumer makes payments at the end of the month, based on the exact cost of claims settled during that period.
Money Dashboard	A tool that offers an instant view of consumer affordability by aggregating and organising financial transactions from online accounts and mapping them to mortgage lenders' criteria, supporting a digital mortgage journey.
Moneyhub Enterprise	Moneyhub combines artificial intelligence, data analytics and psychology to nudge consumers to encourage affirmative financial actions.
Nimbla	Nimbla provides flexible trade credit insurance and credit and invoice management tools to UK SMEs, via an online platform
Nivaura	Nivaura's focus is on automating the primary issuance and administration of financial assets through a centralised system or a blockchain infrastructure.
Nuggets	A consumer blockchain application that gives users a single biometric tool for login, payment and identity verification, without sharing or storing private data.
nViso	An online platform providing advisors and clients behavioural assessment profiles generated by artificial intelligence and facial recognition.
OKLink	A money remittance service combining domestic e-money transfers on OKLink's cross-border blockchain settlement system.
Oraclize	A distributed ledger technology based e-money platform which turns digital identity cards into secure digital wallets through the use of smart contracts and fiat-backed tokens.
Paylinko	A DLT-based payments solution enabling users to send and receive payments using a link.
Sabstone	A blockchain based platform that aims to help companies receive early payments against invoices.
Saffe	A face recognition payments and authentication service provider.
Systemsync	An employee benefits comparison platform for SMEs
YouToggle	An app that uses mobile phone telematics to monitor a user's driving and create an individual score that can then be shared with a car insurer to obtain a discount. Driving information captured by the app could also be used as evidence in the event of motor accident.
ZipZap	A cross-border money remittance platform that chooses the most efficient means for a payment to reach its destination, including via digital currencies.

Cohort #2 Insights

There were 77 applications to Cohort 2 with 24 firms accepted. The Research Team interviewed 6 of these firms on their experience of the Innovate Sandbox and some of their insights are summarised as follows:

Sabstone: A blockchain based platform that aims to help companies receive early payments against invoices.
Insights: The Sandbox process saved a lot of time for sure. The opportunity encouraged the firm to relocate from India and the FCA were very helpful and provided 6 months worth of free support. The Sandbox provided lenience and flexibility so that business models could adapt and pivot. While the Innovate Team provided guidance where there were regulatory issues, the business decisions to solve these issues by creating legal terms or creating processes, were the firm's responsibility. This provided as very good learning opportunity.

Canlon: An insurance policy that saves a portion of the net premium to reimburse policyholders if a claim is not made.
Insights: The Sandbox process reduced the costs associated with regulation markedly and was much cheaper than getting an appointed representative. However, the application still cost the same and the firm still had to engage a compliance consultant. Thus, while the costs were reduced, they were not removed. In terms of speed, the Sandbox was much quicker than the alternative normal route. The sandbox process with the dedicated case officer took about a month as opposed to 7-12 months to go through the application process. Having the case officer was really valuable as having someone to call or email to provide advice and go through the firm's information documents was really helpful. For entrepreneurs with no regulatory or sector experience, the sandbox is a massive help.

Asset Vault: AssetVault enables consumers to catalogue all of their assets in a secure online register and better understand their total value. AssetVault then works with insurance providers to protect the consumer and their assets with appropriate insurance products.
The benefits of the Sandbox really depend on the stage of the firm. Extremely early stage firms may find the Sandbox process too challenging and resource intensive with a one or two-person team. One issue that emerged from the process was that some insurance partners were hesitant to collaborate with firms in the sandbox due to the temporary nature of the Sandbox. In some sectors, a temporary approval may actually count against you.

Paylinko: A DLT-based payments solution enabling users to send and receive payments using a link.
Insights: For Paylinko, the Sandbox process really helped the firm to get in the loop on upcoming relevant changes to payments regulation and to become embedded in the network. The weekly meetings with the case officer were extremely valuable although of course more face time would also be welcome.

Nimbla: Nimbla provides flexible trade credit insurance and credit and invoice management tools to UK SMEs, via an online platform
Nimbla recognised the additional benefits offered by the Sandbox such as enabling their underwriter to partner with the firm to test out their new proposition. The Sandbox enabled their partner to feel comfortable to work with them without the high capital requirements that would have normally been required by their firm due to the test conditions. The Sandbox process therefore helped to motivate their partner to engage in a more innovate approach and activity.

Beekin: Leverages artificial intelligence and data sharing to build transparency and liquidity in alternative assets (real estate, angel investments), and offers risk management and analytics services to small investors.
Startups don't want to hire full time compliance consultants and the Sandbox certainly helped to reduce legal and consultancy costs. Nevertheless, the Sandbox process required a material amount of the CEO's time. The FCA were really helpful with the answering questions and the whole process provided a good way to bring in entrepreneurs who were not regulated to learn about the process of the creation of regulation. The test was hard work but worth it and the Innovate team really understood the commercial perspective as well as knowing how to deal with early stage businesses.

Innovate Sandbox: Cohort #3

Cohort #3	Description
Barclays	RegTech proposition which tracks updates to regulations within the FCA Handbook and aligns their implementation to Barclays' internal policies.
Barkat Ventures	International money transfer platform that enables customers to send healthcare services along with their remittances.
Chynge	DLT-based cross-border money remittance system that incorporates a transaction monitoring system which is powered by a virtual, artificial-intelligence compliance bot to tackle money laundering, terrorism financing, and fraud more efficiently.
Curl	New consumer payment network designed around open banking APIs, which works via @usernames and direct bank transfers.
Economic Data Sciences	Technology solution that utilises artificial intelligence to provide fund managers with a mathematically-defined optimal trade-off among a number of risks and objectives during the investment selection process.
Etherisc	Uses smart-contracts on a blockchain to provide fully-automated decentralised flight insurance.
first direct and Bud	App which learns customers attributes from transactional and demographic data to identify financial and non-financial products from a marketplace of first direct, HSBC and external institutions.
FutureFlow	Transaction monitoring system that monitors the movement of money through the economy by tagging individual units of value in transaction amounts and facilitates the sharing of anonymised information between parties in order to help prevent financial crime.
Nationwide	Automated solution providing digital savings guidance and investment advice.
Orca	P2P investment aggregation platform that facilitates investment in a diversified portfolio of P2P loans.
Rebank	Platform that consolidates business bank accounts into one login. Using predictive algorithms, Rebank offers businesses the potential to improve the efficiency of their banking tasks and business payments.
ResonanceX	New electronic platform that enables end-to-end automation of price discovery, execution and life-cycle management of structured products using centralised or blockchain asset custody.
Sherpa Management Services	Insurance solution that offers members one account to set-up and manage multiple insurance risks. Sherpa offer dynamic products which provide the ability to increase and decrease the sum assured as needs change.
Solidi	Blockchain based payments platform that uses cryptocurrencies to facilitate money remittance at a faster speed and with lower transaction costs.
Spherical Defence Labs	Application Programming Interface (API) security system that detects advanced hacks and breaches in banks powered by deep learning and computational linguistics.
Square Book	New auction method of book-building for initial public offerings/private placements that aims to be fairer and more transparent than existing methodologies.
Wrisk	Usage-based contents insurance product with innovative risk scoring method.
Yoti	Technology provider that lets users create an encrypted, biometric digital identity linked to their government issued ID. Yoti lets users of the app actively consent to share their verified identity details with financial institutions for use in KYC verification.

Post-Implementation Review of the Innovate Sandbox: UK Market Impact & Lessons Learned

The impact of the Innovate Regulatory Sandbox was detailed in a report [81] published by the FCA in October 2017 reviewing and reflecting upon the key lessons and insights garnered since the establishment of the Sandbox in June 2016. Some of the key findings from this report are summarised as follows:

1. **Benefits of the Process**
   Access to the regulatory expertise of the sandbox reduces the time and cost of getting innovative ideas to market. Each firm's case officer works to develop a test, and facilitates engagement with subject matter experts from across the FCA. Direct feedback from firms both during testing and following testing in their final reports indicates that this aspect of the sandbox programme is valuable in helping them to understand how the regulatory framework applies to them, accelerating their route to market and reducing expenditure on external regulatory consultants. For larger firms, involvement in the sandbox has allowed innovative ideas to be tested more quickly

   Indicators of success:

- 75% of firms accepted into the first cohort successfully completed testing.
- ~90% of firms that completed testing in Cohort #1 continued to a wider market launch.
- Most firms with a restricted authorisation for their test went onto secure a full authorisation.
- 77% of firms accepted into the second cohort have progressed toward testing.
- Testing in the sandbox has helped facilitate access to finance for innovators
- Feedback from sandbox firms indicates that taking part in the sandbox programme provides a degree of reassurance to investors through the oversight the FCA has of the firms' tests and the increased regulatory certainty participation provides.

2. **Obtaining authorisation helps firms access funding.**
   For firms that are not yet authorised, the sandbox can offer a quicker route to authorisation, enabling them to provide more certainty to prospective partners and investors. Given the rapid pace of growth that many early stage firms experience, this can be especially beneficial in reducing constraints to growth and funding. Feedback received indicates that investors can be reluctant to work with fintech companies that are not yet authorised.

   Indicator of success:

- 40%+ of firms in cohort #1 received investment during or following their tests.
- Many firms use a sandbox test to assess consumer uptake and commercial viability.
- Testing in a live environment provides an opportunity to understand how receptive consumers are to different pricing strategies, communication channels, business models and to the new technologies themselves. This allows firms to continually assess and iterate their business model based on the feedback they receive.

3. **Post Testing Reporting**
   Once firms have finished testing, they must produce a final report summarising their findings and next steps. These often feeds into the next stage of product development, potentially reducing the cost of launching the product compared with an un-tested version. Following successful sandbox tests seen propositions from both small and large firms being introduced to the mass market.

   Indicators of success:

- Facilitated significantly higher number of tests than anticipated, across a range of sectors & product.
- Received 146 applications across the first two cohorts of the sandbox. Of these applicants, 50 were accepted and 41 tested or are currently testing a range of propositions in the sandbox.
- Around a third of firms that tested in the first cohort used the learnings to significantly pivot their business model ahead of launch in the wider market. The sandbox has allowed us to work with innovators to build appropriate consumer protection safeguards into new products and services

4. **Developing Business Models**
Working closely with the FCA has given firms the opportunity to develop their business models with consumers in mind and mitigate risks by implementing appropriate safeguards to prevent harm occurring.

5. **Safeguards**
Standardised safeguards are put in place for all sandbox tests, and additional bespoke safeguards are developed where these are relevant. For example, require all firms in the sandbox to develop an exit plan to ensure the test can be closed down at any point whilst minimising the potential detriment to participating consumers.

Indicators of success:

- All sandbox tests have adhered to standard safeguards.
- Worked with firms to develop bespoke safeguards for tests.
- One firm successfully triggered their exit plan due to lack of consumer uptake during the test.

6. Impact on Competition, Technology and Availability of Products & Services
It is too early to draw firm conclusions on the sandbox's overall impact on competition given their small scale of the initiative to date and the time it take for changes to take effect in the financial services ecosystem. Nevertheless, testing indicates that the sandbox is making progress towards promoting competition in the market as firms are investing in the next wave of technologies that have the potential to improve market efficiencies and effectiveness.

Improvements in competition can be expected to provide better value for consumers and other financial services users which seems to be beginning to take effect in terms of the price and quality or products and services available on the market. As more firms with better products and services enter the market, this is expected to put pressure to improve incumbent firms' consumer propositions. Nascent technologies can play a key role in delivering innovative products and services that can improve on those currently available. This can be by enhancing the quality or reducing the price of offerings, or by increasing access for consumers.

Regulatory Sandboxes: A Global Perspective

While the FCA has pioneered the Regulatory Sandbox methodology within financial services, a large number of financial regulators have sought to replicate similar innovation-inducing initiatives in their respective jurisdictions.

The map below details the regulatory sandboxes that were i.) in operation or ii) proposed

Regulatory Sandboxes Global Map

Operational Sandboxes (Green)

UK
Australia
Bahrain
Canada
Hong Kong
Malaysia
The Netherlands
Singapore
Thailand
UAE (Abu Dhabi)
USA

Proposed Sandboxes (Orange)

China
Brazil
Brunei
Denmark
Dubai
EU
Indonesia
India
Ireland
Japan
Jordan
Kenya
Luxembourg
Mauritius
Mexico
Morocco
Norway
Saudi Arabia
Sierra Leone
Spain
Sweden
Switzerland
Taiwan
Turkey
Russia
Uganda
Ukraine

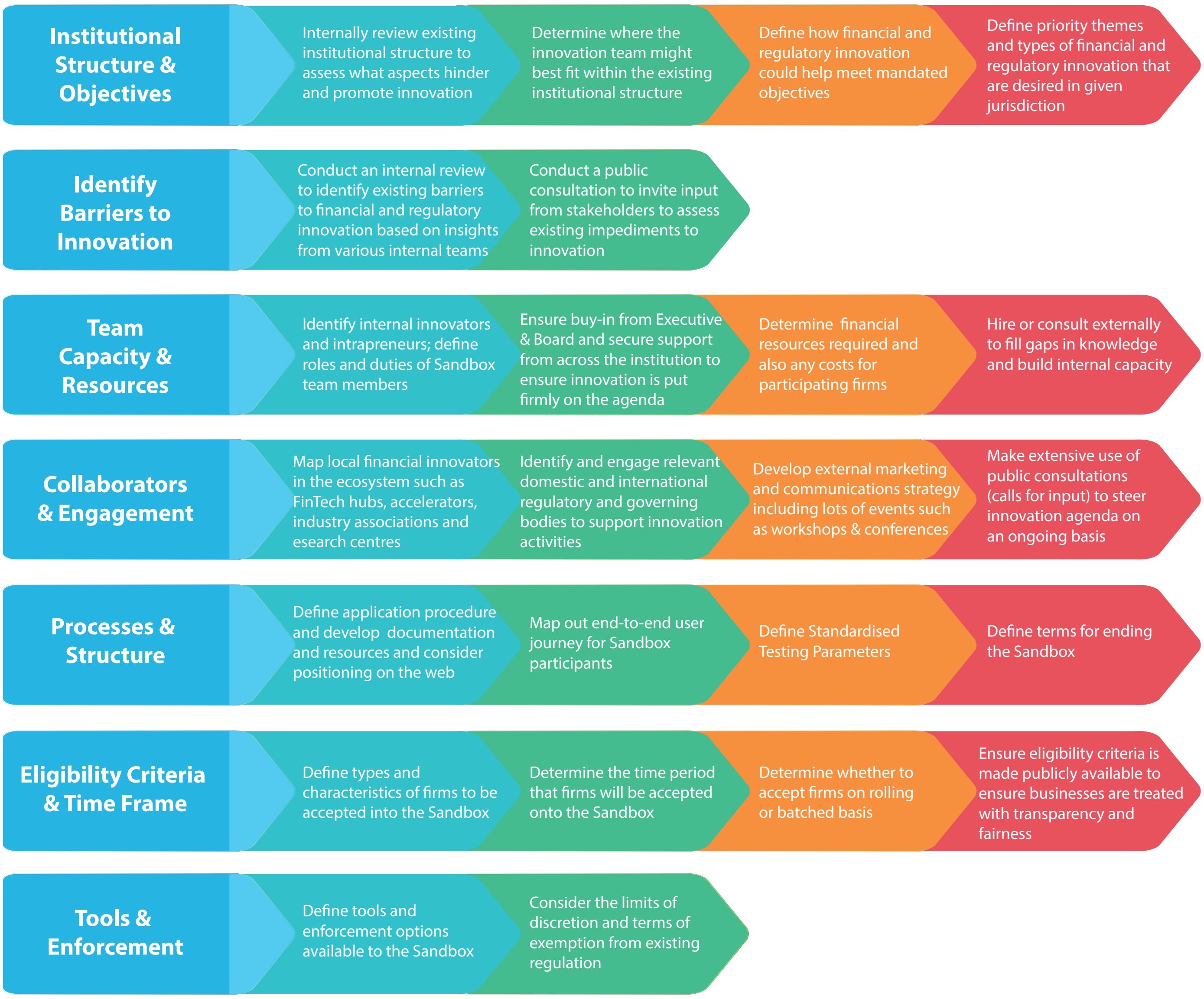
Establishing a Regulatory Sandbox: Key Considerations

Having reviewed the FCA's activities with respect to its Innovate Regulatory Sandbox, it is worth synthesising the key considerations and issues involved to successfully execute a similar regulatory innovation initiative. These key considerations have been grouped into the following three sections:

I) Conceptualising a Regulatory Sandbox
II) Operationalising a Regulatory Sandbox
III) Post-Implementation of a Regulatory Sandbox

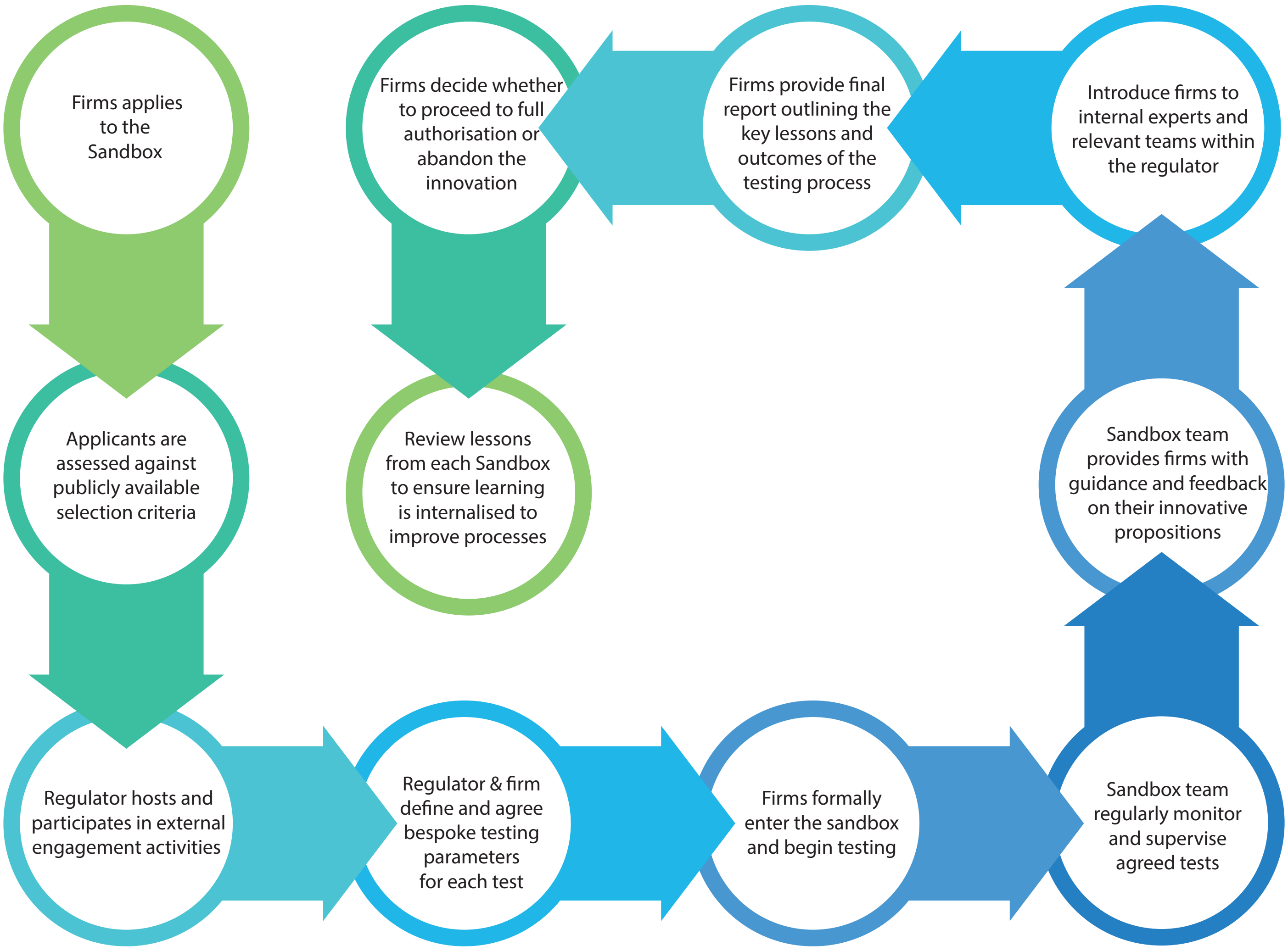
I) Conceptualising a Regulatory Sandbox

The following diagram depicts the various components that should be considered when conceptualising the formation of a regulatory sandbox. It must be noted that this does not represent a proposed chronological order but rather outlines the key areas that must be considered when conceptualising a regulatory sandbox.



II) Operationalising a Regulatory Sandbox

This flow chart depicts some of the key components necessary to operationalise a regulatory sandbox largely based on the FCA Innovate Sandbox process.



III) Post-Implementation Considerations of a Regulatory Sandbox

Each Sandbox provides an opportunity for reflection to internalise and on-board the lessons and insights garnered from each innovation process.

Gather & Share Data

- Keep track of a range of parameters to assess the impact of the regulatory sandbox e.g. number of firms authorised, investment secured, innovations that reach the market, types of firms and technologies seeking support, barriers to innovation identified.
- Track the availablity and pricing of new products and services in the market which may help to assess the impact of innovation on institutional objectives such as supporting consumers or promoting competition.

External Engagement & Collaboration

- Conduct post implementation reviews of the sandbox process to seek feedback from stakeholders beyond the participating firms which will help increase the reach and impact of the sandbox.
- Collaborate with academic institutions to gather external insights on the impact of the Sandbox on consumers.
- Host and participate in industry events to share insights and raise awareness of regulatory and financial innovation activities.

Ongoing Support & Feedback

- Maintain ongoing communications with Sandbox firms post-testing.
- Follow up with firms to track the evolving impact and results of their tested innovation.
- Provide time-bound support to firms who proceed to full authorisation post-testing within the Sandbox.

Internalise Lessons & Take Action

- Ensure there is a process to effectively internalise the lessons identified from each sandbox
- Identify areas of the existing regulatory framework that may need to be amended or revised and begin the process of change where relevant or possible.
- Identify opportunities to improve, change or amend the Sandbox

International Cooperation & Collaboration

- Identify strategic partnerships with regulators internationally and opportunities for harmonisation and collaboration to facilitate the disemination of regulation and financial innovation across borders.
- Support sandbox firms by making introductions to other regulators in other jurisdictions.

Knowledge Sharing & Transfer

- Publish & promote resources, reviews, updates on the lessons and insights gathered from the Sandbox to induce and encourage further innovation.
- Host & participate in external engagement activities to build internal capacity.
- Ensure the internal experience and new knowledge is shared across the institution to foster a culture of innovation amongst regulatory staff and departments.

3. Innovate: The Direct Support Team

In addition to the Innovate Policy & Engagement Team and the Innovate Sandbox, the third component of the FCA's Innovate Department is The Direct Support Team which offers innovative firms a dedicated contact when applying or considering applying for authorisation or a variation of permission. The Direct Support Team can also assist firms that do not need to be authorised but could benefit from support.

Guide Box: Direct Support Team Forms of Feedback
The Direct Support Unit provides firms with two forms of feedback:

- Individual regulatory feedback – for firms that meet the eligibility criteria, they are provided detailed regulatory feedback on their model and how it fits into the regulatory framework.
- Published resources consolidate learning and feedback from experiences with individual organizations and provides resources for all companies developing a range of offerings.

The purpose of the Direct Support Team is to help firms understand the regulatory regime as well as the challenges of developing an innovative product or business model. When seeking support from the Direct Support Team, firms provide basic information about their product or service, and about their business to assist the Team in directly and gathering the relevant information tailored to their specific requirements.

The Direct Support Team can assist firms by:

1. **Preparing for authorisation**

- A dedicated Direct Support case officer helps prepare a firm's application.
- The case officer works closely with firms to understand their business models and identify any additional information that may be required when applying for authorisation.
- The time required to prepare an application for authorisation depends on each case, but challenges are addressed and expectations are communicated throughout the process.

2. **Applying for authorisation**

- The Direct Support Team works with innovator businesses to ensure an application for authorisation or a variation of
- permission is accurate and complete.
- The case officers can address any issues or concerns throughtout the application process.
- The cost of applying for authorisation after engaging the Direct Support Team is as usual [1] however, the support provided by the Direct Support Team may reduce the overall costs firms incur from external legal professionals or consultants.

3. **Receive ongoing support**

- The Direct Support Team continues to support firms once authorised for up to a year.
- This could include assisting with regulatory returns or dealing with general queries.
- When this support is due to end, firms have an exit meeting and are provided with an 'exit pack' before entering the normal regulatory framework and processes.
- The ongoing support provided to innovator businesses is only for those that would not otherwise have a dedicated supervision.

4. Innovate: The Advice Unit

Advice Unit Scope

The Advice Unit is the fourth of the five sub-units within the FCA's Innovate and supports firms developing automated models to deliver lower cost advice and guidance to consumers which is sometimes referred to as 'Robo-Advice'. The Advice Unit focuses on models serving gaps in the current advice market [82] including:

- Investments
- Pensions
- Protection
- Mortgages
- Debt sectors

The Advice Unit accepts firms that want to provide guidance instead of regulated advice, as well as firms not intending to seek authorisation. Firms with innovative advice or guidance models in sectors not covered by the Advice Unit can apply to the Innovate Direct Support Team as outlined above. The Advice Unit provides 2 main services to firms:

1. Individual regulatory feedback
2. Published tools and resources for all firms.

1. Individual regulatory feedback

Firms that meet the Advice Unit's eligibility criteria (outlined below) are given regulatory feedback on their model. This could include:

- A meeting with the Advice Unit, and other specialist areas to discuss the proposition.
- A dedicated point of contact in the Advice Unit is provided to firms requesting ongoing engagement to provide regulatory input at agreed milestones.
- Specific feedback on the regulatory implications of the model – including follow-up meetings to discuss specific issues, informal steers, and individual guidance as appropriate.
- Input on how to apply for authorisation if the firm is currently unauthorised.

This feedback process supports firms in understanding the regulatory implications of their model. In the UK, the firms' senior management are responsible for ensuring they adhere to the relevant regulatory requirements so it is vitally important they understand the implications [2].

2. Published Tools and Resources

The FCA will continue to publish a list of tools and resources for firms developing automated advice or guidance propositions. To date, a useful set of sign posts have been developed to help guide firms through some of the most common frequently asked questions the FCA has identified through engaging with automated advice firms [83]. On 12 August 2017, the FCA Published its final streamlined advice and consolidated guidance FG17/18 which draws on the experiences of the Advice Unit [84].

The Advice Unit: Cohorts 1 & 2 [86]

Since 2016, The Advice Unit has accepted 17 firms across two cohorts. Going forward, firms can apply throughout the year rather than on a batched cohort basis as is the case with the regulatory sandbox.

Cohort 1: The application period ran from 31 May 2016 to 1 July 2016 and 19 applications were received with 9 meeting the eligibility criteria. A further firm was referred to the Advice Unit from the Sandbox.

Cohort 2: The second application period ran from 3 January 2017 to 3 February 2017 with 17 applications and 7 that met the eligibility criteria.

[2] Note on Consumer protection - Feedback from the Advice Unit does not reduce any of the existing consumer protections that apply in the UK, including threshold conditions and standards for authorising firms. Consumers who engage with authorised firms providing automated models have the same protection of the Financial Ombudsman Service and the Financial Services Compensation Scheme as they would do under more traditional models.

The Innovate Advice Unit Eligibility Criteria [85]

The FCA has created the following guide to support firms that may be interested in accessing the Advice Unit. To assess their eligibility firms can review the following:

Criteria	Positive Indicators	Negative Indicators
Potential to deliver lower cost advice or guidance to unserved or underserved consumers	Caters for consumers who do not have significant wealth or income.	
Serves consumers that are likely to benefit from advice or guidance but where existing barriers limit take up.		
Firm has considered its target market and the number of consumers that benefit.	Targeted at wealthier consumers or 'niche' consumer segments.	
Model is targeted at consumer segments where there is no evidence of supply/demand-side barriers limiting take up.		
The consumer segmentation and target market analysis is unclear.		
Genuine consumer benefit	Model is likely to deliver lower cost advice or guidance for target market consumers.	
Firm can demonstrate how model is likely to deliver positive outcomes for targeted consumers.	•	Firm cannot demonstrate that the model will deliver positive outcomes for targeted consumers.
Model offsets its lower costs by charging higher product costs to consumers.		
Automated proposition	Core element(s) of the customer journey are automated e.g. collecting fact find or underwriting information, customer risk profiling, suitability or appropriateness assessment, identifying suitable debt options, etc.	Limited parts of the model are automated.
Clarity of proposal	Clear proposal that outlines the consumer journey, outcomes and risk mitigation strategies.	
Consideration of how regulations may apply to their business model.	The proposal is not clearly defined.	
No regard has been given to regulatory obligations and the specific areas where Advice Unit input is required.		
Sector	Focused on the following sectors: investments, pensions, protection, mortgages, debt, general insurance.	Not focussed on delivering advice, guidance or discretionary investment management services in one of the sectors listed.
Need for regulatory input	Model raises questions in respect of the regulatory framework which are new or difficult for the firm to resolve through existing FCA rules.	The model does not raise new or difficult regulatory questions.
The firm has already launched its proposition in the UK.		

5. Innovate: RegTech

The fifith and final component of the FCA's Innovate in the RegTech Team. RegTech is a blend of the words regulation and technology and references firms adopting and applying innovative technologies to facilitate the delivery of regulatory requirements and services to regulators and the regulated. As outlined in their Mission [87], the FCA aims to regulate efficiently and cost-effectively to deliver the greatest public value. Regulation that involves high costs and inefficient processes can inhibit competition and can mean that firms pass higher costs on to consumers. By using technologies specifically designed to overcome the regulatory challenges faced by firms, the FCA can add to the public value they deliver as a regulator.

Responses to their 2015 RegTech Call for Input [88] showed that the industry believes the FCA should support initiatives that encourage the adoption of RegTech, whether at idea, development or exploration stage.

The FCA does this by encouraging people and institutions from across financial services to work together to generate ideas and concepts to solve common problems. Their competition remit limits how they can offer help and they cannot generally endorse specific technology or solutions. Instead, FCA encourages firms to innovate, adopt and collaborate to address the complexity and cost of regulation in new, creative ways. The FCA has identified three broad types of RegTech solutions including:

- Help firms meet their regulatory obligations
- Help our supervisory and market monitoring functions
- Re-shape current regulatory processes and systems.

An important part of the FCA RegTech strategy is to hold TechSprint events. These bring together financial services providers, technology companies and subject matter experts to develop solutions that solve regulatory challenges. Likewise through the recent establishment of an Analytics centre of excellence, FCA are exploring how innovative technology and techniques, including artificial intelligence/machine learning, can be applied internally.

3

Guide Box: The FCA's RegTech Working Principles of Collaboration
The Innovate RegTech Team is regularly approached to endorse various RegTech solutions and initiatives. However, given competition issues, there are limits to how it can engage with firms. As a matter of policy, it does not endorse proprietary technology or solutions. Instead:

1. Solutions should enhance regulatory compliance outcomes, or outcomes for consumers.
2. Initiatives must be led by industry, characterised by multi-firm collaboration and participation.
3. Solutions should be developed in an open and transparent manner.
4. Initiatives must be made public, ensuring that other participants can be involved.
5. Can participate in the discussion, but cannot be asked to endorse the approach.
6. Participation and learning is more important than the initiative's success.

[3] The FCA's RegTech team's working principles of collaboration are outlined on the FCA website: https://www.fca.org.uk/firms/regtech/working-us

Twelve RegTech Proof of Concepts (PoCs) [89]

The RegTech Team aims to keep abreast of the dynamic, rapidly growing RegTech industry while seeking to internalise best practices & approaches. Akin to the rest of Innovate, the RegTech Team widely utilise calls for input, invites demonstrations from RegTech firms and co-hosts a schedule of TechSprints which have led to identification of four focus areas which have evolved into a twelve proof of concepts (PoC [90]) that are envisioned to redefine regulatory reporting for both the regulated and the regulator.

I) Efficiency and Collaboration

1. Modernising the Handbook – Using Semantics of Business Vocabulary and Business Rules (SBVR) and Natural Language Processing (NLP) to create machine-readable versions of the Handbook.
2. Model Driven Regulation – Exploring the use of semantics and triples (a statement in subject/predicate/object form) in order to map and translate multiple internal and external data structures from different domains into a universal format.
3. Model Driven & Machine-Readable Regulation [91] – Building on the above two PoCs to link regulation (the FCA [92]/PRA[93] handbooks), compliance procedures, databases and data standards together into a universal machine-readable format [94].

II) Integration, Standards and Understanding

4. MITOC/ISDA [95] – A standardised model for expressing data and processes with the aim of expressing transactions as collections of economic features and trade events.
5. RegHome – Creating a platform for intra-bank knowledge exchange on regulatory related matters. Adopting a Wiki-style approach aims to enable the crowdsourcing of best practices and knowledge.
6. ITRAC - Exploring the possibility of a banking industry key global IT risk and controls framework assisting to resolve key challenges in leveraging new technology.

III) Predict, Learn and Simplify

7. Intelligent Regulatory Assistant – an intelligent assistant that acts as a regulatory lawyer, and interacts with a client to attempt to populate the Authorisation forms for regulatory approval.
8. Intelligent Regulatory Advisor – an intelligent (Robo-advisor) front-end to a regulatory handbook that guides an applicant through the authorisations process via basic automated advice.
9. Ascent Experiment - Working with Commonwealth Bank of Australia, ING and Pinsent Masons to test the possibilities of using NLP (Natural Language Processing) and Artificial Intelligence (AI) technologies to interpret Markets in Financial Instruments Directive II (MiFiD-II) regulations, and automatically build and manage a compliance programme.

IV) New Directions

10. BARAC [96]- Investigates the possibility of using blockchain technology for automating regulation and compliance.
11. SmartReg - TechSprint partners UCL and Santander are working on a project to use smart contract and distributed ledger technology to allow the FCA to verify compliance.
12. Project Maison - working with R3, RBS and another global bank to explore the possibility of using distributed ledger technology for regulatory reporting. The first stage of this programme has been successful - now seeking to move to a pilot with live data.

Guide Box: The Innovate RegTech Team's use of Proof of Concepts provides a useful example of how a regulator can collaboratively define a set of common challenges and organize long-term and ongoing projects to find and generate innovative solutions.

RegTech TechSprints

The Innovate RegTech team have sought to use TechSprints to bring market participants together to work collaboratively on shared challenges to assess and solve important issues in financial services [97]. TechSprints are two-day events that convene participants from across and outside of financial services to develop technology-based ideas or proof of concepts to address specific industry challenges. These hackathon-type events help to identify issues and awareness of potential solutions.

TechSprint #1: Consumer Access [98]

- The first TechSprint event was piloted in April 2016 to identify solutions to access issues in FS.
- This event [99] is believed to be a global first for a regulator to hold an event of this kind.
- The first event focused on developing practical outcomes using API-accessible data to help overcome consumer access issues to appropriate financial services.
- Ten organisations participated, six of whom took part in the development event itself and others performed supporting (hosting and technology) and judging roles.
- Three of the ideas generated were explored commercially as products to bring to market.
- This event showed the benefits of collaboration between traditional financial services providers and the FinTech and RegTech communities.

TechSprint #2: Unlocking Regulatory Reporting [100]

- In November 2016, the second TechSprint aimed to identify potential solutions to help improve the efficiency of regulatory reporting.
- Around 100 developers from across 30 organisations took part.
- The ideas generated spanned the whole process of regulatory reporting, starting with converting the Handbook into machine-readable text and using this to enable automated advice or personalised filtering that uncover which parts of the Handbook would apply to a given type of firm.
- Other teams re-interpreted how regulatory reporting could be undertaken – moving from firms ‘pushing’ reports into the FCA, with the regulator storing this data, to a possible scenario of the FCA ‘pulling’ the agreed data instantaneously from firms as required.

TechSprint #3: Money and Mental health [101]

- In March 2017, the third TechSprint was held in partnership with Money & Mental Health [102].
- This TechSprint supported commitment to help consumers in vulnerable circumstances, including those with mental health problems, receive fair treatment from their financial services.
- Over 100 developers, mental health and technology experts from over 30 organisations
- Strong focus on designing concepts that encouraged people to continue to manage their own finances but put in place safeguards to help them when they felt they needed it most.
- A common theme was to designate a buddy or guardian who would be asked to check unusual activity on a current account or verify a purchase.
- The concepts developed also linked into budgeting and being able to see what you are spending and when. This meant that many of the tools could be used by a wide range of people.

TechSprint #4: Model Driven Machine Executable Regulatory Reporting [103]

- In November 2017, the fourth TechSprint was held building upon the second TechSprint which focussed on ‘unlocking regulatory reporting’.
- Sought to address opportunities to reduce the resource-intensiveness of regulatory reporting.
- The TechSprint successfully demonstrated the capacity to take regulatory requirements in the FCA Handbook and turn it into a language that machines can read and execute by pulling information directly from regulated firms.
- Following this TechSprint, a group of participants went on to publish a WhitePaper on model-driven achine executable regulatory reporting [104].
- A range of follow up events are scheduled to further explore machine-executable regulations [105].

Distributed Ledger Technologies & Crypto-Assets

Having reviewed the FCA's Innovate Department, it is worth finally exploring one of the most innovative, fast moving and disruptive areas of financial innovation in recent years, namely distributed ledger technologies and various crypto-assets.

In April 2017, the FCA released its Discussion Paper on Distributed Ledger Technology [106] (and digital currencies) inviting feedback from industry and other interested stakeholders on the future development of DLT in the markets the FCA regulates. The FCA received 47 responses from a wide range of stakeholders. In December 2017, it then published its Feedback Statement on Distributed Ledger Technology [107].

Guide Box: The FCA's Future Approach to DLT-related Innovation:

- **Observe** - Continue monitoring DLT-related market developments and engage with stakeholders while continuing to explore other technological advances, such as machine-executable regulation.
- **Engage** - Maintain direct engagement with FS and tech firms that propose new ways of delivering financial services. Host events for stakeholders and continue developing in-house tech capabilities.
- **Gather evidence on ICOs** - Conduct a deep examination to determine whether there is need for further regulatory action. Innovative businesses whose proposition includes an ICO can have access to Project Innovate, including the regulatory Sandbox, if the relevant eligibility criteria are met.
- **Collaborate Internationally** – Work closely with industry and regulatory bodies and global standard-setters and shape international discussions and efforts to a globally harmonised approach.
- **Collaborate Domestically** - Engage with domestic stakeholders, such as the Bank of England and the Information Commissioner's Office, to ensure a coordinated approach towards DLT in the UK

FCA on Cryptocurrencies

On 14 November 2017, the FCA issued a consumer and investor warning about the risks involved in investing in cryptocurrency contracts for differences (CFDs) [108]. While all CFD providers need to be registered with the FCA (meaning that investors will have the protections offered by the UK's financial services regulatory framework), the increasing number of retail investors trading in CFDs led to the FCA warning consumers and investors about the potential trading losses incurred by these "extremely high-risk, speculative investments".

In terms of providing some in depth research on the growth and development of crypto-currencies, the Cambridge Centre for Alternative Finance published a global crypto-currency benchmarking study which provides a helpful global perspective to the rapid development of crypto-currencies around the world [109].

FCA on ICOs

On 12 September 2017, the FCA published a consumer and investor warning about the potential risks of ICOs on their website, following similar actions of the Singaporean MAS, the United States Securities and Exchange Commission, the People's Bank of China, and the Hong Kong Securities and Future Commission, among others [110]. The note provides a general description of ICOs – deeming them as "very high-risk, speculative investments" – and highlights the risks involved for investors in token sales. Moreover, it encourages investors to report ICOs suspected to be scams to the FCA by filling out a standardised form for reporting scams and unauthorised firms. [111] Interestingly, the FCA states that "whether an ICO falls within the FCA's regulatory boundaries or not can only be decided **case by case**", and suspects that "many ICOs will fall outside the regulated space". Unlike the United States, the United Kingdom does not have a rule such as the 'Howey Test' that allows to quickly test whether a public offering can be considered a security. This requires the FCA to take a more flexible approach with regards to token sales. As a result, they recommend to organisations involved in token sales to carefully examine whether their activities would fall into the category of regulated financial instruments. In addition, the FCA also warns digital currency exchanges that they may need to be authorised if they are engaged in the trading of certain tokens that would fall under the category of regulated financial instruments.

FCA on Distributed Ledger Technology

On 10 April 2017, the FCA launched a discussion paper that contained a series of 17 questions around DLT, inviting users and providers of DLT services to submit their thoughts on the implications of the technology by 17 July 2017 [112]. The idea was to create a dialogue with the industry and users to better assess the potential as well as the limitations and risks of DLT in the markets that the FCA regulates, with the goal of developing a policy that finds the right balance between risks and opportunities.

The FCA describes distributed ledger technology (DLT) as a “set of technological solutions that enables a single, sequenced, standardised and cryptographically-secured record of activity to be safely distributed to, and acted upon by, a network of varied participants”. This includes both open, permissionless networks such as Bitcoin and Ethereum that feature their own cryptocurrency or token, as well as closed, permissioned networks that restrict access to a limited set of vetted participants (typically ‘enterprise’). The Cambridge Centre for Alternative Finance

The FCA has planned a series of events, roundtables and bilateral discussions on DLT. Moreover, the FCA is involved in Project BARAC, a multi-disciplinary project involving the participation of academic and financial institutions to investigate the potential of DLT for automating regulation and compliance [113].

Following a series of speeches by FCA Director of Strategy and Competition Christopher Woolard in 2016 and 2017 where DLT was occasionally mentioned, the FCA released a discussion paper on DLT where they present their view on the technology, discuss their role in potentially regulating DLT, and focus on the risks and benefits of DLT in areas such as governance, technology resilience, distributed data, recordkeeping and auditability, smart contracts, and the use of cryptocurrencies in financial services.
The FCA sees DLT as a tool that potentially provides significant advantages in recordkeeping and auditability in financial markets. Widespread adoption of DLT would contribute to higher transparency and visibility, thereby facilitating regulatory oversight. DLT may also help improve accuracy and clarity in relation to the ownership of assets. Moreover, DLT has the potential to improve efficiency of activities conducted by regulated entities and could result in considerable cost savings. On the other hand, the FCA acknowledges that there are non-negligible risks involved in deploying DLT, and specifically highlights the inherent limitations that the use of cryptocurrencies entails (e.g., unreliable confirmation times, lack of liquidity for specific trading pairs, etc.).
In 2017, the Cambridge Centre for Alternative Finance conducted the first Global Blockchain Benchmarking Study which provides an in-depth guide to the recent developments and use cases of blockchain by both the private and public sector. The study involved a survey of 35 central banks that are utilising blockchain-based applications. This research is available on the CCAF website [114].

DLT in the Innovate Sandbox

In total, 17 companies out of 41 organisations accepted in the FCA’s regulatory sandbox (both cohorts 1 and 2 combined) have an offering based on distributed ledger technology and/or cryptocurrencies. While the absolute number has been constant for each cohort (9), the percentage of blockchain-based solution providers has decreased from 50% in cohort 1 to 38% in cohort 2 [115]. It appears that the majority of companies are focusing on closed, private, permissioned blockchains and distributed ledgers; but a number of organisations have incorporated open, public, permissionless blockchains such as Bitcoin and Ethereum and their respective cryptocurrencies (bitcoin and ether) in their offering as well.

Cohort 1 [116] - 9 out of 18 companies (50%) in cohort 1 are engaged in activities related to the use of distributed ledger technology and cryptocurrencies.
Cohort 2 [117] - 9 out of 24 companies (38%) in cohort 2 are engaged in activities related to the use of distributed ledger technology and cryptocurrencies.

Testing DLT propositions in the sandbox gives firms in this space the ability to better understand and manage these risks. It also allows the FCA to observe more closely the potential risks DLT may present and to feed into these tests to ensure appropriate safeguards are in place and potential consumer detriment is minimised. For example, in many instances where firms were testing the use of digital currencies in money remittance, required the firms to guarantee funds being transmitted to deliver full refunds in the case of funds being lost.

Through the sandbox, the FCA were able to observe new information on trade execution times were, varying volatility in the value of digital currencies, liquidity requirements, transaction fees and the availability of exchanges that have all proved to be limiting factors to the success of tests in this area. Firms need to carefully manage these risks and others if these services are offered on a wider scale. The ability to test on a small scale has allowed the firms to prove the potential benefits, better understand the risks involved and improve their risk management processes in preparation for a full-scale launch.

Research Team

Kieran Garvey
Kieran is the Lead on Regulation & Policy at the Cambridge Centre for Alternative Finance, Cambridge Judge Business School. His research interests include the application of alternative finance with respect to financial inclusion, early stage ventures, regulatory & policy evolution and technology.

Professor Ben Shenglin
Prof. BEN Shenglin is professor & chair of department of finance & accounting, and dean of academy of Internet Finance, Zhejiang University. Before joining Zhejiang University as a full-time professor in May 2014, Dr. Ben served in financial services firms like ABN AMRO, HSBC and lastly JP Morgan Chase as CEO, JP Morgan Chase Bank (China) Co Ltd. Dr. Ben has a bachelor's degree in engineering from Tsinghua University, a Master's degree in management from Renmin University of China and Ph.D. degree in Economics from Purdue University, USA. His research areas include: International Finance, New Finance (Internet Finance, FinTech, Entrepreneurial Finance), Global Business.

Tania Ziegler
Tania is the Senior Research Manager at the Cambridge Centre for Alternative Finance, Cambridge Judge Business School. She leads the global alternative finance benchmarking initiative at the Centre, spanning Europe, the Americas, Asia-Pacific and Middle East and Africa. She has co-authored ten industry reports with the Centre since 2016, and leads the SME Access to Finance Initiative in Latin America and the Caribbean. Her research interests include small business economics and SME utilization of alternative funding models. Tania holds a master's degree from the London School of Economics and was a Fulbright Scholar in 2009-2010 in Beijing, China.

Robert Wardrop
Robert's current research focuses on small and mid-sized firms that issue bonds as an alternative to bank financing, with the aim of better understanding the decision-making behaviour of firm owners and classes of investors across different economies. In addition to his academic role at Cambridge, Robert currently serves on the Global Advisory Boards of the University of Chicago Booth School of Business and the School of Business at Queen's University in Kingston, Canada.

Wenwei Li
Dr. Wenwei Li is a research fellow at Shanghai Gold Exchange and Academy of Internet Finance□Zhejiang University. His research focuses on risk management, asset management, financial stability, and digital finance.

Dr. Rui Hao
Dr. Hao is currently a research associate and data scientist at the Cambridge Center for Alternative Finance, Cambridge Judge Business School. She is specialized in database design, big data analysis and machine learning.

Bryan Zhang
Bryan is a Co-Founder and Executive Director of the Cambridge Centre for Alternative Finance and a Research Fellow in Finance at the Cambridge Judge Business School. Bryan has led and co-authored many of the most influential industry reports on the alternative finance industry since 2013.

Michel Rauchs
Michel Rauchs is a Research Assistant at the Cambridge Centre for Alternative Finance. Cryptocurrencies and distributed ledger technologies have been the topic of his academic studies for the last two years, and his Master's thesis visualised the evolution of the Bitcoin business ecosystem from 2010-2015 using a unique longitudinal dataset of 514 companies and projects. He is also the co-author of the CCAF's first Global Cryptocurrency Benchmarking Study. He holds a Bachelor in Economics from HEC Lausanne and graduated from Grenoble Ecole de Management with a Master's degree in International Business.

Raghavendra Rau
Raghu is the Director (Research), Cambridge Centre for Alternative Finance and Professor of Finance at Cambridge Judge Business School. He is the Head of the School's Finance & Accounting subject group and a past president of the European Finance Association. Raghu is Co-Editor of Financial Management and an Associate Editor of the Journal of Banking and Finance, the International Review of Finance and the Quarterly Journal of Finance.

Philip Rowan
Philip leads on the international aspects of CCAF's financial innovation and financial inclusion initiatives. Philip was previously a regulator specialising in FinTech, competition policy and financial inclusion, focusing on enabling supportive regulatory environments for development. He closely supported dozens of financial services regulators and governments in their efforts to promote innovation in financial services, including those in developing markets.

Dr. Hung-Yi Chen
Hungyi's research focuses on financial technologies regulation, specifically in crowdfunding, peer-to-peer lending and online payment. Recently he has researched crowdfunding and its interaction with urban development, especially in the field of renewable energy.

Acknowledgements

We would like to thank the the various FinTech firms, regulators and industry experts who have kindly contributed their time and expertise to enable the creation and publication of this Guide book.

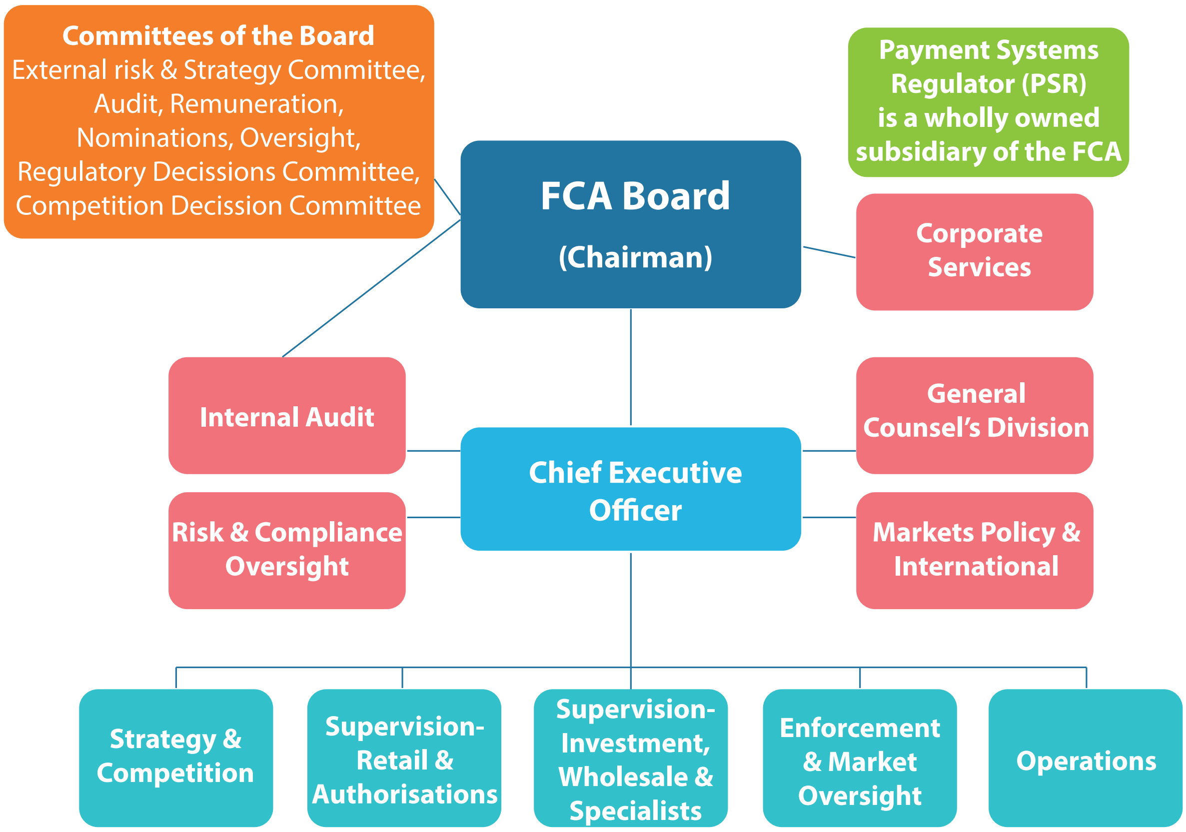
We would also like to specifically thank the following individuals for their generous help and assistance throughout the research process:

Ivo Jenik (CGAP), Schan Duff (Aspen Institute), Jon Frost (FSB), James Turford (Next Day Property), Fleming Bengsten (Nimbla), Nikos Yerolemou (Deutsche Finance International), Katarzyna Sosin (Billon), Mateusz Pniewski (Billon), Tobias Taupitz (Laka), Xinping Jia (LSE), Gabriele Muse (PayLinko), Nawaz Imam (Issufy), Ania Kubow (Nimbla), Anjou Dargar (Thomson Reuters), Fran Chen (University of Cambridge), Emmanuel Schizas (JWG), Alan Barrell, Reijo Pold (BBD), Erik Plante (Tramonex), Charles Cammiade (REIO), Kate Belger (CCAF), Paul McNamara (eValue), Tim Llewellynn (nViso), Nishant Singh (Sabstone), Gene Vayngrib (Tradle), Katherine Kennedy (SETL), Marija Rattigan (SETL), Shanshan Fu (Issufy), Virun Gupta (Beekin).

Appendices

Appendix 1: The Institutional Structure of the Financial Conduct Authority (the FCA)

Before reviewing the FCA's Project Innovate and its wider innovation agenda, it is helpful to provide some context on the overarching structure and functions of the various FCA departments



- **The FCA Board** [118] - Keeps a close watch on business operations and holds the FCA accountable. It is made up of executive and non-executive members and has several committees which delegates certain functions and powers and consists of 11 persons.
- **Committees of the Board** [119] – The Board has several committees with certain function/powers [1].
- **Corporate Services** – Provides a list of authorised firms and other services.
- **Internal Audit** - An independent division to review adequacy and effectiveness of the FCA's governance, processes, controls and risk management. It provides the Board, the Audit Committee and all levels of management with an objective opinion on the results of its reviews.
- **Chief Executive, FCA** [120]- Andrew Bailey is the current Chief Executive of the Financial Conduct Authority from July 2016. He was previously Chief Executive of the Prudential Regulation Authority.
- **Risk & Compliance Oversight** – this division works to manage internal and external risk.
- **Strategy & Competition** [121] – Led by Christopher Woolard, this division focusses on strategy, market intelligence, data & analysis, domestic & international policy, communications & competition. Project Innovate is housed within this Department.
- **Supervision – Retail & Authorisations** – This department supervises over 56,000 firms with 3 main approaches for two categories of firms – i.) 'Fixed Portfolio Firms [1]' and ii.) 'Flexible Portfolio Firms. In addition, this department is responsible for the prudential regulation of 16,000+ firms.
- **Supervision** – Investment, Wholesale and Specialists – This division supervises producers and distributors of financial products, such as asset managers or investment banks overseeing both buy-side activities of investment managers & sell-side trading activities of investment markets.
- **Enforcement & Market Oversight** - This division uncovers evidence of misconduct such as insider trading or price manipulation and enforcement action can include fines, bans and convictions. It also houses the UK Listing Authority [122], which regulates issuers on the London Stock Exchange.
- **Operations** – This division provides operational and regulatory support to the two Supervision Divisions and supports the development & maintenance of the supervisory framework.
- **Payment Systems Regulator** [123] **(PSR)** - Established in 2015 to regulate payment systems in the UK. The PSR's objectives are to ensure payments systems promote the interests of all that use them, to promote effective competition, and to development innovation especially in infrastructure.

Appendix 2: UK Institutional Regulatory Structure

Before exploring the FCA's activities promoting financial &regulatory innovation, it is worth reviewing the UK's institutional background and structure to help provide some context to the core focus of this Guide.

From 1985, the UK financial services sector was regulated by the Securities and Investment Board (SIB) in a period characterised by a culture of industry self-regulation [124].
From 1998 to 2010, in response to the Baring crisis [125] and a change in administration, the UK adopted a more integrated regulatory approach with a single regulator responsible for investor protection, market conduct and prudential regulation of the entire financial services sector and for all financial institutions, including banks [126]. This single integrated regulator was the Financial Services Authority – the FSA.

Since 2010, in response to the Global Financial Crisis (GFC), the UK subsequently adopted a 'Twin Peaks [127]' approach to regulating the UK financial services sector, separating out both prudential regulation on the one hand and market conduct & consumer protection on the other. The UK's financial services regulatory regime therefore comprises two primary regulators, the FCA & the PRA, whose respective objectives are:

i) Market conduct, consumer protection, competition (and innovation) – the FCA.
The Financial Conduct Authority (the FCA) was officially formed on the 1st April 2013 with the primary objective of promoting good market conduct and ensuring consumer protection. The FCA is also mandated to facilitate market competition. The FCA has identified innovation as an important component and tool to achieve these objectives as will be reviewed in detail.

ii) Safety, soundness and security of regulated firms (and competition) – the PRA.
The Prudential Regulation Authority (the PRA) was officially formed on 1st April 2013* and is the other core financial services regulatory authority, housed as a division within the Bank of England. The PRA is responsible for promoting the safety and soundness of the firms it regulates with respect to insurers, and securing the protection of policyholders [128].

Financial Conduct Authority (FCA)	**Prudential Regulation Authority (PRA)**
Protecting Consumers	Ensure effective competition between firms
Enhancing Market Integrity	Promote safety & soundness of firms
Promoting Competition	Secure Protection of (Insurance) Policyholders
(Innovation)	

In practice, the FCA and the PRA started operating in 2011-12 led by two individuals [129] who went on to become the chief executives of these regulatory authorities. However both officially formed on April 1st 2013.

While this Guide focuses primarily upon the financial and regulatory innovation activities of the FCA, with particular attention on the activities of 'Project Innovate', it is worth noting a number of other relevant UK agencies, government departments and regulators which work in close collaboration with the FCA on a variety of issues to enact the UK's regulatory regime of the financial services sector.

Appendix 3: Relevant UK Agencies, Government Departments & Regulators

In addition to the 'Twin Peaks' of the FCA & PRA, the UK's approach to financial regulation in its broadest sense involves several other bodies, each with their own responsibilities and objectives. A number of these entities have a range of innovation initiatives such as the Bank of England's FinTech Accelerator [130], the British Business Bank Investment Programme to support the FinTech industry [131], the London Co-Investment Fund to support investment in early stage technology, science and digital firms [132], the Department for International Development Initiative to support energy firms in Sub-Saharan Africa via crowdfunding [133], and HMRC's Seed Enterprise Investment Scheme [134], Enterprise Investment Scheme [135], and the Innovative Finance Individual Saving Accounts [136] that is widely used by a wide variety of FinTech firms all of which have contributed to promoting financial innovation in the UK.

In terms of other UK institutions involved in the regulation of the UK financial services industry:

Institution	Description
The Bank of England [137]	Statutory responsibilities for setting policy – for interest rates, for financial stability, and for the regulation of banks and insurance companies.
The Financial Policy Committee [138]	Situated within the Cank of England, the FPC Identifies, monitors and takes action to remove or reduce systemic risks to protect and enhance the resilience of the UK financial system.
Her Majesty's Treasury [139]	The government's economic and finance ministry maintains control over public spending, setting economic policy and working to achieve strong growth.
The Department for Business Innovation & Skills [140]	Responsible for company law and insolvency matters and for most investigations & prosecutions under the Companies Acts [141].
The Department for Work & Pensions [142]	Responsible for public policy on pensions and for the Pensions Regulatory Authority [143].
The Pensions Regulator [144]	Regulates occupational pension schemes.
The Payment systems Regulator [145]	A subsidiary of the FCA acting as the independent economic regulator for the payment systems industry in the UK.
Money Advice Service [146]	Provides free, impartial financial information and education.
The Serious Fraud Office [147]	Investigates serious and complex fraud, and prosecutes fraudsters.
The Financial Ombudsman Service [148]	The independent body which settles complaints about financial services firms.
The Financial Services Compensation Scheme [149]	The independent body which handles claims for compensation from consumers when regulated firms become insolvent.
The National Crime Agency [150]	A UK national law enforcement agency with responsibility for the intelligence & operational response to serious crime
The UK Competition Network [151]	An alliance of UK sector regulators which have a duty to promote competition in the interests of consumers, including the FCA and the Competition and Markets Authority.
The UK Regulator's Network [152]	An initiative among UK regulators, including the FCA, to enhance collaboration on issues of shared relevance.
British Business Bank [153]	The British Business Bank is 100% Government owned, but independently managed bringing expertise and Government money to the smaller business finance markets.

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ART&DESIGN

Cambridge Centre for Alternative Finance
10 Trumpington Street
Cambridge CB2 1QA
United Kingdom
Email: ccaf@jbs.cam.ac.uk
Tel: +44 (0)1223 339111