



# BoE's Digital pound uses platform model to spur innovation!

Figure 1: The platform model of the digital pound



# Enabling innovation through a digital pound

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The relevant authorities in the UK have indicated that a central bank digital currency, in wholesale or retail form – known as a digital pound – is likely to be needed. One of the main motivations for a digital pound is that it should promote innovation in domestic payments. Against this backdrop, this article explores the academic literature on innovation for lessons on how to design a digital pound to encourage innovation in the payments ecosystem.

## 1: Introduction to CBDC

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The Bank of England (the Bank) has published several policy papers on central bank digital currency (CBDC)[2] and on the specific CBDC under consideration in the United Kingdom, known as the digital pound. These policy papers – most recently a [Consultation Paper](#) and [Technology Working Paper](#) – delve into such topics as the likely need for a digital pound, the features of its design, and how it might be used by consumers and businesses. We therefore do not intend to cover such well-trodden ground in this article. Let us take it as read that a CBDC is ‘an electronic form of central bank money that could be used by households and businesses to make payments and store value’.[3] And as for the motivations for exploring CBDC (a rich topic in itself), we need only focus on the catalyst CBDC could offer to payments innovation.

The vast majority of central banks globally are at least [researching the potential for CBDCs in their jurisdictions](#) [↗](#), with a handful having already launched.[4] In the United Kingdom, the Bank of England and HM Treasury recently stated that while it is too early to take the decision on whether to introduce the digital pound, [it's likely that a digital pound will be needed in the future](#).

In an increasingly digital economy, the UK authorities see a role for the digital pound in (a) maintaining public access to retail central bank money and (b) promoting innovation, choice and efficiency in domestic payments.[5] It is the latter motivation – and in particular the potential relationship between the digital pound and innovation – that is the focus of this article.

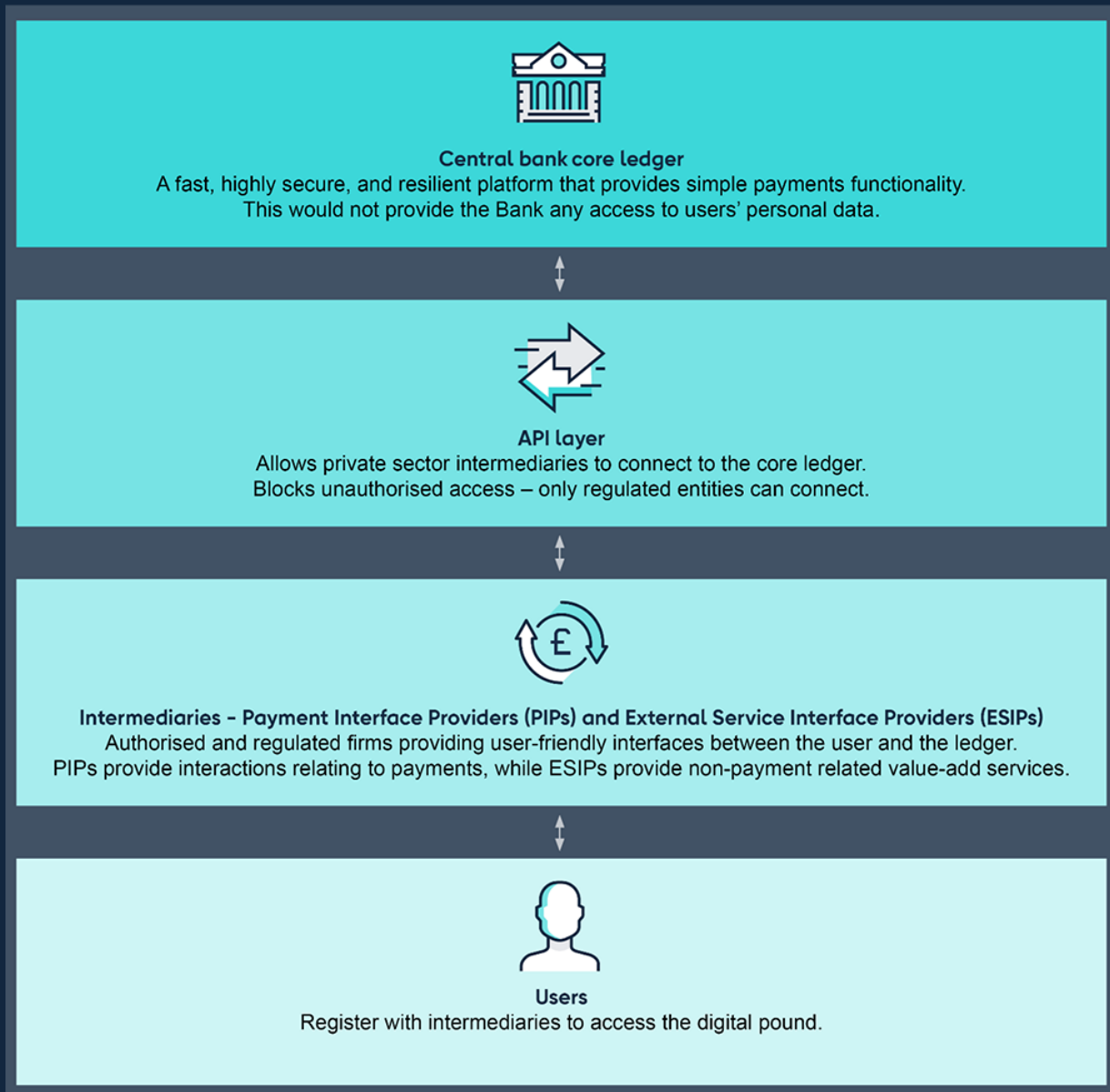
## 2: Why innovation matters for the digital pound

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There has been significant innovation in the UK payments landscape in the past two decades, from the introduction of Faster Payments, to contactless card and smartphone transactions, to Open Banking to name a few. Still, the Bank and HM Treasury judge that there is scope for innovation to generate further efficiencies in payments and to respond to evolving payments needs.<sup>[6]</sup> Core infrastructure in any industry is often both costly to maintain and disruptive to improve – **hence the oft-debated challenges of ‘legacy infrastructure’ in banking** [↗](#). CBDC, as both a new type of money and a new payment system, presents an opportunity to reshape the contours of the financial system. Done well, innovation would be both an input and an output of a UK CBDC. The digital pound would build on innovations in digital banking and payments, and create opportunities to serve new payments-use cases.

A common theme of recent payment innovations is the role of public authorities in kickstarting their introduction and/or their widespread adoption. The development and implementation of both Faster Payments and Open Banking were encouraged, if not mandated, by the UK government.<sup>[7]</sup> And Transport for London’s early adoption of contactless payments for public transport fares **is seen to have helped catalyse the widespread use of contactless payments among consumers** [↗](#). But another common feature of these innovations was the role of the private sector in delivering them to end-users. And so, it is the Bank’s vision that a digital pound would be provided by a public-private partnership, via an architecture called ‘the platform model’.<sup>[8]</sup>

**Figure 1: The platform model of the digital pound**



The goal of the platform model is to enable a diverse range of organisations to join the digital pound ecosystem to provide innovative services to consumers and households, as either Payment Interface Providers (PIPs) or External Service Interface Providers (ESIPs). Major banks, small fintechs, established technology companies, wallet providers, charities or non-governmental organisations (NGOs) could all find a niche in enabling payments using a digital pound, or providing complementary services such as budgeting tools. Competition and innovation would thrive in this new market for digital pound services, resulting in a greater degree of choice for the end-user.

So far so good, but how do we arrive at this diverse and innovative digital pound ecosystem? How can central banks design CBDC to deliver this vision? The Bank has set out a few underlying principles of digital pound design that are fundamental, for example keeping regulatory barriers to becoming a PIP or ESIP proportionate and ensuring that the core infrastructure is open and accessible, plus extensible to future innovations.<sup>[9]</sup> But what does this mean in practical terms for digital pound design? Are there other principles for enabling innovation that we should keep in mind? What can CBDC designers learn from previous successful innovations and digital infrastructure projects?

The remainder of this article will attempt to answer these questions by exploring lessons from the literature on how one organisation can enable wider innovation in the ecosystem. From these theories and case studies, we hope to learn how the centralised provision of CBDC infrastructure (both hard infrastructure such as the core ledger, and soft infrastructure such as the CBDC payment scheme rules) can enable innovation in the digital pound ecosystem. We will distil this ‘how’ into lessons for CBDC design.

### 3: Ways in which one organisation can enable wider innovation, and lessons for digital pound design

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Much has been written on how innovation can be enabled by legislative frameworks, access to funding for research and development or technology startups, and accelerator programmes. But we do not consider these aspects here, since they are not directly relevant to a central bank's mandate: central banks do not legislate, and nor do they typically provide investment or expertise for entrepreneurs. Instead, we focus on how the centralised provision of a product/service/ infrastructure enables innovation in a wider ecosystem.

This is an emerging space for academic research and we are yet to find one particular framework that speaks directly to this question. Instead, in reviewing the literature, we came across several discrete bodies of research with relevance to CBDC design. This led us to identify four important (but non-exhaustive) ways in which an infrastructure provider can spark wider innovation:

1. Building a new technology.
2. Convening a new market.
3. Providing data.
4. Setting standards.

We will define each of these concepts in turn, draw out pertinent examples, consider their impact on wider innovation, and reflect on the lessons for CBDC design.

#### Building a new technology


When an individual or organisation creates a new technology, this is of course an innovation in itself. But it can also trigger further innovations when others are able to leverage that new technology and find valuable applications for it in different industries.

The quintessential example of this is a General Purpose Technology:<sup>[10]</sup> a new product or process that has an impact on a wide variety of sectors in the economy, and has the potential to lead to economy-wide growth. Familiar examples of General Purpose Technologies include the steam engine, electricity, and the computer. In the literature, these are 'characterised by the potential for pervasive use in a wide range of sectors and by their technological dynamism'<sup>[11]</sup>. According to Bresnahan and Trajtenberg, General Purpose Technologies have three core qualities<sup>[12]</sup>.




- They are pervasive – they spread to many sectors in the economy.
- They improve over time, and in doing so they lower the costs to their users.
- They play the role of ‘enabling technologies, spawning innovation through the invention of new products or processes’.

The ripple effects of such landmark technologies are clearly profound; for instance, the development of electricity was fundamental to a whole range of further inventions, from the lightbulb to the laptop.

Fast forwarding to the era of software development, the concept of an ‘enabling technology’ is also at the heart of the open-source movement. Open source is characterised by the practice of sharing source code for unrestricted use by others. This allows other software developers to challenge and improve code by suggesting ‘bug fixes’. It also enables developers to reuse and iterate on source code for their own projects, combining ideas and approaches into new products and services.<sup>[11]</sup> Open-source practices can therefore speed up the development of new software as well as helping developers hone their knowledge and skills. [A Harvard study](#)  found that higher participation in open-source communities in a given country correlates with an increased rate of entrepreneurship activity.

Applying these concepts to CBDC, it seems unlikely that a central bank would invent a new General Purpose Technology as part of developing a digital currency since it has neither the expertise nor the incentives to do so. But when making technology choices for a potential digital pound, the Bank will be mindful of the role it could play in spurring adoption of emerging technologies which themselves have the potential to make ripples across the economy (even if not meeting the high bar of becoming a General Purpose Technology). One example of this would be distributed ledger technology (DLT), which has applications to a wide range of industries beyond the financial sector but is not yet a widely used technology.

There is a vibrant industry debate about whether a centralised ledger or DLT is better suited to the digital pound’s core settlement infrastructure. In addition to this, the Bank will consider if and how the digital pound could be designed to be interoperable with specific DLTs. Interoperability could enable the digital pound to be used for purchases happening on external blockchains. There may be other emerging technologies that could be given an adoption boost by the digital pound, for example in the field of privacy-enhancing technologies, so the Bank will remain open to other innovative technologies too.

The Bank will reflect on whether there are opportunities to support innovation through the use of open-source approaches as part of our practical technology work. Open-source opportunities could arise from proof of concepts in the design phase, right through to provision of the live service. For example, [the Sand Dollar project in the Bahamas](#)  open sourced a white-label CBDC wallet to support the private sector in developing front-end services.

## Convening a new market

Building a new technology or developing a new service is all well and good, but there is nothing inherently useful about things that are ‘novel’. For an innovation to take off, it needs to be applied to a valuable problem, meet the needs of target users, and find its way into their hands. Therefore, another mechanism for enabling innovation is to create new marketplaces which help innovators find customers and monetise their creations. The internet (or at least Web 2.0) has seen the rise of a specific type of new marketplace: the digital platform.

Digital platforms bring together two or more market actors and grow through network effects. In the literature, [Cusumano, Yoffie and Gawer \(2020\)](#) <sup>↗</sup> identify different types of platform as follows:

- Innovation platforms facilitate the development of new, complementary products and services, such as PC or smartphone apps, that are built mostly by third-party companies without traditional supplier contracts. Products are complementary in that these innovations add functionality or assets to the platform, which is the source of network effects.
- Transaction platforms are intermediaries or online marketplaces that make it possible for participants to exchange goods and services or information. The more participants and functions available on a transaction platform, the more useful it becomes.
- Hybrid models combine the two approaches.

Many central banks are considering a platform model for CBDC provision along the lines of the Bank of England’s approach. The digital pound ecosystem designed in this way could be an innovation platform. [Cusumano, Yoffie and Gawer \(2020\)](#) <sup>↗</sup> identify the four business challenges that platform companies must overcome, and these challenges are relevant to central banks as the platform providers for CBDCs:

- 1. Choose the key ‘sides’ of the platform (that is, identify which market participants they want to bring together, such as buyers and sellers, or users and innovators).** Lesson: during the Design Phase, the Bank will explore in greater detail (a) who the end-users of a digital pound should be and (b) the types of ‘supplier’ we envisage in the ecosystem, in terms of the products they will provide (payments or other value-add services) and the organisations that might provide them (banks, fintechs, NGOs, bigtechs, etc).
- 2. Solve a chicken-or-egg problem to jump start the network effects on which they depend.** Lesson: encouraging adoption is difficult! Payment schemes are two-sided markets, which require both payers (for example, consumers) and payees (for example, merchants) to adopt them. But CBDC adoption also requires PIPs and ESIPs to want to join the ecosystem to provide products to payers and payees in the first place.

3. **Design a business model capable of generating revenues that exceed costs of running the platform.** Lesson: while central banks are not profit-making entities, clearly the Bank aims to deliver value for money when developing new infrastructure such as the digital pound. Business model analysis will be important for determining how PIPs make money but also how they might pay for use of the platform. The Bank will assess both the commercial viability and the overall benefits and costs of the digital pound architecture as part of the design phase.
4. **Establish rules for using (and not abusing) the platform, as well as cultivating and governing the all-important ecosystem.** Lesson: in fulfilling its mandate for monetary and financial stability, the Bank understands the importance of trust. Provision of infrastructure like a CBDC platform is no different: end-users must trust that the Bank has vetted PIPs and ESIPs participating in the digital pound platform to give confidence they will provide safe and reliable CBDC products, in line with relevant regulations. So, the Bank must consider ‘scheme rules’ and standards for service provision to maintain trust in the central bank, and the platform that comprises the digital pound ecosystem. This too is key for adoption, as well as to prevent predatory or exclusionary behaviour from established participants and grant equal and equitable access to new entrants.

## Providing data

Mathematician Clive Humby’s 2006 declaration that [‘data is the new oil’](#) has been the subject of much debate and – excuse the pun – refinement. But few can doubt the significance of data to the 21st century economy. It drives the business models of some of the world’s most valuable listed companies, such as Alphabet, Amazon, Apple, Meta and Microsoft. If we accept that data has value, then questions around who owns data, and who can access and use data for various purposes, are important but complex.<sup>[12]</sup> And these questions lie at the core of how competition works in the digital economy, since [‘data may affect market structure toward greater concentration by creating barriers to entry that stifle competition’](#).

When governments or companies make their data available to others outside their organisations, they enable the development of new products, services and business models in a wider ecosystem. This could involve app developers accessing live public transport data, to serve up bus times and journey planners in a user-friendly way. Or it could mean analytics firms accessing operational data to train machine learning models to predict when a wind turbine might fail. But it is not enough to just provide access to data – for third parties to leverage the full potential of data, data sets have to be usable or ‘liquid’. Four factors contribute to this: [access, machine readability, cost, and rights to reuse or redistribute data](#).

The economic potential of open data is a relatively new area of study. A McKinsey report into the potential value of open data in seven global industries estimated it at more than US\$3 trillion a year. This is driven by the power of open data to facilitate entrepreneurship as well

as **'helping established companies to segment markets, define new products and services, and improve the efficiency and effectiveness of operations'** [↗](#).

With this in mind, the Bank will consider two big opportunities for open data in the digital pound. One opportunity is opening up macro-level data about use of the digital pound system and the economic activity happening across it – with the important caveat that all user data must be aggregated and anonymised across the population of CBDC users, to protect user privacy. This could be beneficial for a broad community of analysts who want to analyse payments and economic trends and glean insights into, say, opportunities for new digital products or developments in ecommerce. The digital pound could provide a high-quality, large-scale, privacy-preserving data set for digital companies to use to inform product development or train models – replacing (and improving upon) synthetic data.

The second opportunity is for an Open Banking style approach<sup>[13]</sup> which could require PIPs to help users share their CBDC data with other PIPs, and with ESIPs. This would aim to promote a competitive market of digital pound service providers<sup>[14]</sup> and help avoid a market structure whereby a large PIP entrenches its dominant position through control of valuable user data. We have already noted that network effects are at play in payment systems, and **'with data there are extra network effects. By collecting more data, a firm has more scope to improve its products, which attracts more users, generating even more data, and so on'** [↗](#). The design phase of the digital pound project will therefore consider whether open data could help to facilitate a wide range of businesses to harness data to design new, tailored and innovative products and services for end-users – and not just for their own, existing customers. Should the Bank decide to pursue an open-data approach for the digital pound, it could also set standards to ensure that data is 'liquid' by design. Any initiatives to harness digital pound data **must meet the Bank's principle to protect user privacy and give users control over who they share data with.**

## Setting standards

Standardisation is defined by the International Organization for Standardization (ISO) as **'the activity of establishing, with regard to actual or potential problems, provisions for common and repeated use, aimed at the achievement of the optimum degree of order in a given context'** [↗](#). In short, standards are **'a formula that describes the best way of doing something'** [↗](#).

Standards for a given process, product or service are based on consensus among the interested stakeholders – encompassing industry, users, interest groups and public authorities.

According to **Blind (2013)** [↗](#) and Swann (2000),<sup>[15]</sup> there are multiple ways in which standards support innovation:

1. Standardisation helps to build focus, cohesion and critical mass in the emerging stages of technologies and markets.
2. Standards help innovative companies to demonstrate to the customer that their products possess the features they claim to have, but also acceptable levels of risks (for example, risks for health, safety and the environment).
3. Standards codify and diffuse best practice in science and technology.
4. Open standards enable competition between and within technologies, and contribute to innovation-led growth.

The role of standards in supporting innovation are relevant for the digital pound, which aims to launch a new market of state-of-the-art payments services while enabling greater choice for consumers. The Bank will therefore consider the array of processes and services in the digital pound ecosystem which could benefit from standardisation. One example under the platform model is the application programming interface (API) layer, and indeed the Bank's Real-Time Gross Settlement Renewal Programme is already working closely with payments industry experts [on a draft framework for the domestic harmonisation of API technical standards](#). Interoperability inside and outside the CBDC ecosystem is another area where standards could really matter for innovation. For example, inside the system, a merchant should be able to follow the same standardised process to accept in-store payments via any PIP, to encourage wide usability and choice between PIPs. Standardisation should aim to reduce frictions between different actors and help the digital pound ecosystem to scale efficiently. This should provide space for PIPs and ESIPs to focus on how they innovate and differentiate their offerings above and beyond the baseline level of service that standards guarantee. It could also help end-users to understand and trust digital pound products and services, by generating consistency and familiarity.

The point about stakeholder consensus is an important one for the Bank to bear in mind. The leadership and convening power of the Bank should contribute to standards that level the playing field for innovation and competition. But the Bank cannot set standards on its own – we are not experts in, say, point-of-sale payments acceptance, or the smooth onboarding of new users to a payments wallet. The Bank will look to use existing standards where appropriate, and the adoption of open standards could be highly desirable. And wherever the Bank might decide to create standards, the input and buy-in from PIPs, ESIPs, merchants, and consumers will be important.


## 4: Case studies of successful innovations in other sectors, and lessons for digital pound design

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Here, we highlight three case studies of successful innovations from different industries and different decades. The first two (GPS and the iPhone) are well known to consumers and covered prominently in the literature. The third (Aadhaar) is one of the most successful implementations of a digital public infrastructure in recent times. In this section we reflect on what made each innovation successful, how it catalysed wider innovation, and highlight the lessons for digital pound design.

### Global Positioning System (GPS)

The history and development of GPS is well documented; in brief, GPS was developed for US military use in the 1970s. Other countries followed in developing similar global navigation satellite systems, such as the European Union's Galileo.

What the US Department of Defense could not have envisaged back in the 1970s was the plethora of non-military-use cases for this technology, and ultimately its ubiquitous place in everyday life. Following the release of GPS for public applications in the mid-1990s, civilian use quickly outnumbered military utilisations.<sup>[16]</sup> GPS is a prime example of how an innovative new technology can trigger multiple layers of further innovation. At the device level, GPS enabled location-based services in smartphones, and later in smart watches. In turn, this functionality in smartphones facilitated the development of a whole range of use cases in consumer apps, from fitness tracking to finding nearby restaurants. There has even been innovation around how locations are defined and shared: the [What3Words service](#)  converts GPS co-ordinates into more memorable three-word addresses.

### iPhone

The iPhone was an innovation in 'successfully integrating cellular communication, mobile computing and digital entertainment technologies within a single device', or in other words, laying the foundation for the smartphone.<sup>[17]</sup> Central to the value proposition of the iPhone is the wide range of third-party applications that users can download, in addition to the core functionality supplied by Apple. Returning to our understanding of platform models, these downloads happen via an innovation platform known as the App Store.

The App Store is an application marketplace where business owners can reach customers around the world, developing mobile software to serve a wide variety of use cases from gaming to health monitoring, and from food delivery to journalism. [There are more than 1.8](#)



**million apps on the App Store, encompassing 175 countries and over 40 languages, with more than 180 local payment methods and 45 accepted currencies** [↗](#).

Apple has several revenue streams from the App Store, for example subscriptions levied on developers to access tools needed to develop, test, and distribute apps; a commission on app revenues; and paid-for ads to showcase specific apps to end-users within the App Store.

However, the fees charged by Apple on in-app purchases in particular have resulted in some of the larger app developers challenging the platform model. The consolidation of app development to the Apple and Google platforms **has led developers to allege that platform businesses are becoming anti-competitive, rather than encouraging innovation** [↗](#).

## Aadhaar

Aadhaar is India's national digital identity system. It was developed in part for inclusion reasons: **Aadhaar** [↗](#) aimed to address the large swathes of the Indian population who lacked any form of officially recognised identification documents, and who as a result were locked out of accessing important public and private sector services. The vision was 'to empower residents of India with a unique identity and a digital platform to authenticate anytime, anywhere'. Aadhaar provides citizens with a biometrically secured, 12-digit identification number, **where the biometrics used are iris scans and fingerprints** [↗](#).

A notable innovation in the space of identity provision which leapfrogs many developed nations, Aadhaar is API-based and has a deliberately simple design. When a verified organisation submits a user's ID number and biometrics data, the API returns a straightforward yes/no response to confirm identity. Aadhaar design was decoupled from particular use cases to begin with, despite pressure from various government departments to include more information to help target specific use cases. **This clear focus allowed the system to be delivered quickly and cheaply** [↗](#). Key use cases that emerged with time included direct transfer of benefits to bank accounts, e-KYC and digital document storage.

At the time that the ID infrastructure was designed, authorities also developed a set of standards for the applications via 'India Stack' – a set of open APIs. Some Aadhaar services, such as 'e-auth' and 'e-KYC' services are only available to banks, licensed non-banks, telecommunications companies and government bodies. Developers belonging to other organisations must use alternative solutions in order to prove a customer's identity using Aadhaar, **for example QR code scans** [↗](#). This tiering of service provision enables authorities to ensure a wide variety of businesses can participate in the Aadhaar ecosystem while managing the risks to both the central infrastructure and end-users.

## Lessons for digital pound design from the case studies

A number of lessons can be drawn from the case studies when considering the design of the digital pound.<sup>[18]</sup> Firstly, given the natural and widespread evolution of GPS use cases from its military origins, as well as the use case neutral design of Aadhaar, it would seem that there are merits to allowing innovation to happen organically. In both case studies, a technology was opened up to a diverse range of actors and industries to use, without the organisation responsible 'picking winners' from potential use cases or further innovations. The lesson here for the Bank then is to avoid designing the digital pound to support particular, precisely targeted, future innovations or use cases, since it is difficult to predict how an infrastructure with such a wide user base will be adopted. While it's important to monitor trends and to have a view on how payments could evolve in the future, it is wise not to nail one's colours to the mast of any particular payment innovation, for example, smart contracts or micropayments. There is clearly a danger of taking this approach too far and adopting a 'build it and they will come' attitude, which could result in a design that serves no specific use case well and therefore struggles to gain traction. Therefore, the takeaway for the Bank should be that the ultimate way to gather feedback on how a new technology or infrastructure will be adopted is to put it (safely) in the hands of the market. This lesson should emphasise the value of practical experimentation and pilots, and consideration of an agile approach to delivery ie, launching some functionality and use cases sooner, and iterating towards a full solution.

A related lesson from the success of Aadhaar is to design a core infrastructure that is simple and flexible, for the private sector to innovate on top of. Under the digital pound's platform model, this could mean two things. Firstly, it implies that the Bank should ensure that PIP and ESIP integration with APIs is as straightforward as possible – in line with the lessons around standardisation. And secondly, it supports the principle of a simple ledger design, whereby the ledger is focused on delivering core functionality required to enable settlement and the holding of balances. Any more complex functionality specific to different use cases is likely best delivered by the private sector at PIP and ESIP level.

A third lesson around ensuring that a wide variety of firms can participate in an ecosystem is to allow tiered authorisation of participants as Aadhaar does. In this way, the level of access to the CBDC ledger can be tailored to the risk that a certain organisation poses to the ecosystem. This lowers regulatory or 'scheme rules' barriers to entry for non-traditional financial firms, and could enable smaller firms to offer some innovative services to end-users in a controlled way. This lesson would need to be incorporated in the scheme rules of the new digital pound payment system. Under the platform model, tiered authorisation could be mapped to PIPs and ESIPs, with the latter having a lower level of access to the ledger and therefore requiring less stringent regulation.



A final lesson from the App Store example of a platform business is that there are risks to platform providers, and to innovation more generally, from runaway success in the ecosystem. The risk to the platform provider is that in enabling innovation it kickstarts highly successful new businesses, which eventually become powerful enough to challenge the platform itself. For CBDC, this could manifest as PIPs seeking to change the rules or cost model of the platform ecosystem in line with their own interests – or even seeking to bypass the platform completely. The risk to innovation more generally in digital money is that a single platform-based ecosystem – be that a digital pound or a stablecoin – becomes so successful that it evolves into a monopoly provider of digital money, crowding out other innovations in this space. The lesson for the Bank is that, across its responsibilities for digital pound design and stablecoin regulation, it is worth considering how best to facilitate a state of the world where CBDCs and stablecoins co-exist. In particular for digital pound design, a CBDC should be highly interoperable with regulated payment stablecoins and could be designed to be a digitally native ‘bridging’ asset between different forms of digital money – hence limiting the dominance of one digital money ecosystem.

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## 5: Conclusions








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Innovation should be both an input and an output of the digital pound. On the inputs side, an important driver of the likely need for a UK CBDC is the innovation that has already happened around how we hold money and make purchases. And whatever technology choices are made as part of the design of a digital pound, the Bank will leverage a whole range of previous innovations, from APIs to digital wallets to privacy-enhancing technologies.

As for outputs, the digital pound would aim to create a diverse, competitive, and innovative ecosystem of PIPs and ESIPs that provide a range of value-added services associated with digital central bank money. In order to achieve this, the Bank is designing the digital pound with careful consideration of the risks and opportunities for innovation. There are important lessons from the literature on how one company or infrastructure provider can enable wider innovation, and these lessons touch on a range of design aspects of the digital pound. We can summarise the lessons as follows:

Lesson	CBDC design aspect(s) affected	Innovation goal(s)
Some new technologies have a ripple effect on innovation.	Ledger design and interoperability with DLT; privacy design.	Support emerging technologies.
Open-source development supports wider entrepreneurship.	Openness around technology experiments.	Kickstart PIP and ESIP development work ahead of launch.
Platform businesses face multiple challenges around convening a new market.	Target end-users and types of PIP and ESIP; strategies to encourage adoption; platform fees and cost recovery; scheme rules.	Ensure the new market for digital pound services has critical mass and rules to support a range of PIPs and ESIPs.
Open access to 'liquid' data can support innovation in both established companies and new entrepreneurial businesses.	Provision of macro-level data around use of the digital pound; scheme rules for end-users to share their data with other PIPs/ESIPs.	Support research into economic trends; promote competition between PIPs and ESIPs.
Setting standards helps to build focus, cohesion and critical mass in a new market/technology.	Multiple aspects, for example, API provision, interoperability – a broad review required of where standards could be helpful.	Help the digital pound ecosystem to scale efficiently, enabling PIPs and ESIPs to innovate on top of a baseline level of service provision.
There are merits to allowing innovation to happen organically.	Payments use cases in scope; extensibility of infrastructure; API provision.	Support multiple future states of the world.
Tiered authorisation supports a wide range of intermediaries.	Scheme rules.	Lower regulatory or 'scheme rules' barriers to entry for non-traditional financial firms.
Platforms and their participants can become so successful as to hinder innovation.	Vision for co-existence with stablecoins; interoperability and role as a 'bridging asset'.	Avoid emergence of one ecosystem as a digital money monopoly.

Entering the design phase, there is much for the Bank – and other central banks exploring CBDCs – to consider when pursuing innovation.

1. The author would like to thank Tom Purnell, Katie Fortune and Tom Mutton for their help in producing this article.
2. See, for example, [Central Bank Digital Currencies: Opportunities, challenges and design](#); [New forms of digital money](#); and [The digital pound: a new form of money for households and businesses?](#)
3. [Central Bank Digital Currencies: Opportunities, challenges and design](#), page 7.
4. As of early 2023, [CBDCs had been launched in the Bahamas, the Eastern Caribbean, Jamaica and Nigeria](#) .
5. [The digital pound: a new form of money for households and businesses?](#), page 7.
6. [The digital pound: a new form of money for households and businesses?](#), page 30.
7. The 2000 Cruickshank Report triggered a series of changes to the governance of the payments industry, which [contributed to the creation of Faster Payments](#) . The Competition and Markets Authority and UK government [mandated nine of the largest banks](#)  to implement common standards for Open Banking.
8. See [Consultation Paper, Section D](#).
9. [The digital pound: a new form of money for households and businesses?](#), page 55.
10. As discussed by Timothy F Bresnahan and Manuel Trajtenberg in their 1992 article [General purpose technologies: Engines of growth?](#) .
11. Open infrastructure and infrastructure-as-a-service have similar efficiency benefits, in that they can be leveraged by multiple organisations.
12. The Bank recognises the importance of privacy and user consent when it comes to data.
13. [Open Banking enables the secure sharing of customer data with authorised third-party providers](#) , at the customer's request. These providers then use the data to provide innovative services for personal or business customers, such as automatic switching or better account management.
14. [Open Banking was a response to the CMA's conclusion that big banks dominated the UK retail banking market](#) , and consumers and small businesses would benefit from increased competition.
15. The article by Blind summarises Swann (2000).
16. Mazzucato, M (2013), 'The Entrepreneurial State', Anthem Press.
17. Mazzucato, M (2013), 'The Entrepreneurial State', Anthem Press; and [This Is Why the iPhone Upended the Tech Industry](#) .
18. Note that these are general lessons, and in the case of Aadhaar do not imply any links between the digital pound and Digital ID. In the UK, digital identity is private sector led under the UK Digital Identity and Attributes Trust Framework.

Enabling innovation through a digital pound

Share your thoughts with us at [✉ QuarterlyBulletin@bankofengland.co.uk](mailto:QuarterlyBulletin@bankofengland.co.uk).