PROJECT NEW ERA | EXECUTIVE SUMMARY

A New Era for Money

February 2022

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Contents

Introduction[1]

Project New Era is a privately led initiative evaluating the path towards a retail Central Bank Digital Currency (CBDC) in the UK. The project proposes closer public-private collaboration in order to address key challenges and open questions relating to CBDC development.

The project commences with a Green Paper, co-developed by business leaders from across the financial ecosystem. The paper examines the case for retail CBDCs, details core design considerations, and proposes a roadmap for collective, public-private experimentation.

Definitions of core concepts and financial instruments vary significantly across existing CBDC literature. This paper attempts to standardise terminology, but recognises the diversity of perspectives that exist. For avoidance of doubt, the paper solely considers the development of a CBDC ecosystem, and does not focus on cryptocurrencies. In this paper, a retail CBDC refers to a digitised form of M0[2] money, coexisting alongside cash and issued by a central bank as a direct liability for general purpose, domestic circulation. We also raise the potential for CBDC to form a new monetary category beyond M0 money, including as an on-balance sheet commercial bank[3] liability to mitigate any potential bank disintermediation.

The paper is a call to action for industry stakeholders including businesses, central banks, regulators, government officials and researchers. This document exists to provide a summary of the Green Paper, which dives deeper into the issues and concepts highlighted here.

1. Unless stated otherwise, the use of 'CBDC' implies a retail (or general purpose) CBDC, as opposed to wholesale CBDC, which are not in the scope of this paper
2. M0: Comprised of banknotes and coin in circulation, plus central bank reserves; adapted from Bank of England
3. Commercial banks are defined as deposit-taking, credit institutions

Background: A platform for change

E-commerce and new digital payment methods, such as mobile wallets, continue to drive the displacement of cash payments (30% contraction globally in 2020 vs 2019), further intensified by COVID-19[4]. We note, however, that some segments in society will always prefer the use of cash, and circulation continues to grow across many economies[5]. In parallel with these changes, the next wave of disruption in payments has also begun, powered by Distributed Ledger Technology (DLT). DLT offers a new infrastructure for digital money, fulfilling traditional functions and providing new functionality like programmable payments. This could enable further innovation for all players in the market whilst enhancing customer experience.

Over the past few years, three categories of DLT-based digital currencies have emerged, fulfilling different functions in the market: cryptocurrencies, stablecoins (both unregulated[6]) and Central Bank Digital Currencies (CBDCs). Unlike cryptocurrencies, stablecoins are designed to maintain a fixed value through stabilisation mechanisms like collateralisation. This approach has enabled stablecoins like USDC and Tether to find some real-world utility as loan generating mechanisms in the burgeoning Decentralised-Finance (De-Fi) industry and for remittances. However, adoption as a means of payment for traditional goods, services, and assets remains limited.

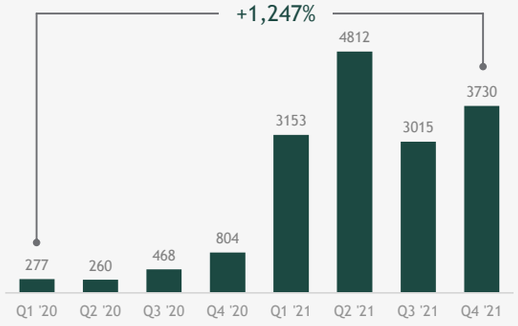
Corporations are also investing in stablecoins, including Diem by Meta (formerly Libra by Facebook[7]), recently acquired in an asset sale by Silvergate Bank[8]. Onyx was spun out by JP Morgan as a separate business unit focused on wholesale banking payments[9]. Visa has enabled transaction settlement in USDC and announced the UPC project, building interoperability between fiat and digital currencies[10]. Paypal is also exploring a stablecoin[11].

As seen in exhibit one, both cryptocurrency and stablecoin markets have experienced growth of >1000% since 2020. The very strong correlation between the two (R-squared value of 91%[12]) reflects a popular stablecoin use case: a fiat 'on/off-ramp[13]' for cryptocurrency trading. Stablecoins exploded to ~$6 trillion USD in on-chain volume in 2021[14], though this is a small fraction when compared to total global non-cash payment volume[15].

Exhibit 1 | Cryptocurrency and stablecoin volumes exploded in 2021

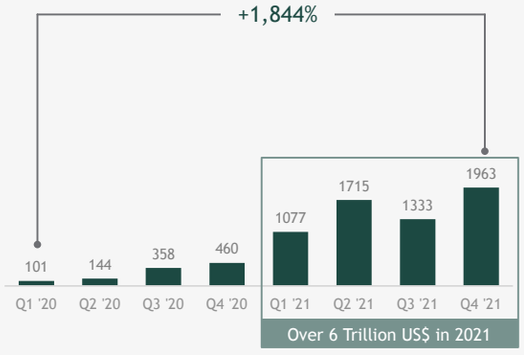
Cryptocurrencies

Monthly exchange volumes on major exchanges, ($bn)



Stablecoins

Adjusted on-chain volume of major stablecoins[1], ($bn)



1. USDT, USDC, DAI, BUSD, USDP, GUSD, HUSD

Source: theblockcrypto.com, 'The Block Legitimate Index', January 2021; BCG analysis

4. Worldpay from FIS, 'The Global Payments Report', 2020 and 2019 (BCG analysis)
5. Bank of England, 'Notes in circulation' data table, January 2022 and US Federal Reserve, 'US Federal Reserve - Currency in Circulation: Volume', January 2022
6. As of February 2022. In some markets, like Europe, requirements now exist to comply with AML/CFT regulation for business interacting with cryptocurrencies. However, there is little or no regulation on the tokens themselves. A good review of regulation around the world in this area is done by the Library of Commerce.
7. Diem, 'The historical white paper', April 2020
8. Financial Times, 'Facebook gives up on crypto ambitions with Diem asset sale', January 2022
9. Onyx by J.P.Morgan
10. Visa, 'Universal Payment Channels: An Interoperability Platform for Digital Currencies', September 2021
11. Coindesk, 'PayPal Is Exploring Creating Its Own Stablecoin as Crypto Business Grows', January 2022
12. Linear regression model, BCG analysis
13. On/off-ramping: Stablecoins act as a bridge between cryptocurrency and fiat currency, enabling traders to enter or exit a cryptocurrency investment by remaining on a blockchain. This avoids the delays and fees from entering or exiting directly into a fiat currency.
14. TheBlockCrypto, 'Stablecoin Supply Charts', January 2022 (BCG analysis)
15. BCG Global Payments Model, 2021

With growth and early real-world utility, regulators are increasingly concerned by the potential risks posed by unregulated stablecoins to consumers and broader financial stability. These include the lack of regulation around collateralisation, and the potential to trigger a 'run' where redeemability at par is thrown into doubt or 'breaks the buck[16]'. Risks also exist around consumer fraud and currency substitution by non-local currency stablecoins operating at a critical mass.

Consequently, there is increasing scrutiny in the industry, with regulators around the world pulling together regulatory frameworks to mitigate stablecoin risks. However, given the borderless nature of DLT, domestic regulation may be hard to enforce and alone may be an insufficient response. A coordinated, global effort by major jurisdictions and markets is necessary to make a meaningful impact, but is not yet in place. Some central banks are therefore accelerating research of general purpose or 'retail' CBDCs in response to this.

Retail Central Bank Digital Currencies (CBDC)

A retail CBDC is a digital asset issued by a central bank for general purpose, domestic circulation. As a central bank liability, a CBDC could be free of credit and liquidity risks. Unlike a wholesale CBDC, it would be made available to the general population and can generally take two forms:

1. **Conventional CBDC:** a digitised form of M0 money, co-existing alongside cash and issued by a central bank as a direct liability on their balance sheet; and
2. **Synthetic CBDC (sCBDC):** a digital settlement asset that is fully collateralised by central bank reserves but issued privately, similar to models used by some Electronic Money Institutions (EMIs)[17].

The distribution of CBDC in live implementations and pilots (including The Bahamas, Nigeria and China, with an Indian pilot due later in 2022) is through a 'two-tier', indirect approach[18]. A two-tier model distributes CBDC to citizens through commercial banks and non-banks in an open market model. The central bank overseas management of the central ledger, including net settlement. Commercial banks and non-banks are responsible for wallet issuing and the provision of financial services. This includes KYC, AML[19], transaction processing, customer onboarding and account management. The potential for commercial banks to hold CBDC as a direct liability in this model is unclear, but warrants further discussion and testing as a construct to avoid bank disintermediation that has monetary policy impacts.

Drivers for CBDC adoption vary significantly, with developing economies focused on financial inclusion and payment efficiencies - which are generally less relevant in developed economies. Developed economy interest in CBDC appears to have been mobilised more in response to privately issued digital currencies, although this is not typically positioned as a core driver.

The primary benefits of CBDCs include near-instant settlement, potential for reduced transaction costs (especially for merchants receiving card payments), fraud reduction and programmability. Programmable payments - a new breed of automated payment - is distinctive in enabling new forms of self-executing payments based on programmed code and external triggers for complex, conditional payment propositions. Secondary benefits such as financial inclusion vary by country, while effectiveness for monetary policy implementation and countering the threat of stablecoins is yet to be established.

By providing a regulated alternative, CBDCs may well offer some long-term mitigation to the threat of stablecoins in a future digital currency ecosystem. Superior end-user adoption, driven through enhanced end-user value like convenience and safety, could reduce the materiality of risks to financial stability. Having said this, the primary use cases for stablecoins remain related to cryptocurrency trading and De-Fi services. In the short-term, a CBDC will likely have limited capacity to take share of (digital) wallet from this market unless there is direct integration with public blockchains like Ethereum, where they reside. Due to compliance, cybersecurity and other regulatory concerns, this is an unrealistic outcome and others have made this observation too[20].

However, over the long term, there is clear potential for a CBDC - with the right design - to power a new financial services ecosystem that privately issued alternatives could otherwise fulfil. Although further fragmentation of payment methods in the market is likely, coexistence and seamless interoperability between all forms of money could increase consumer choice whilst maintaining financial stability.

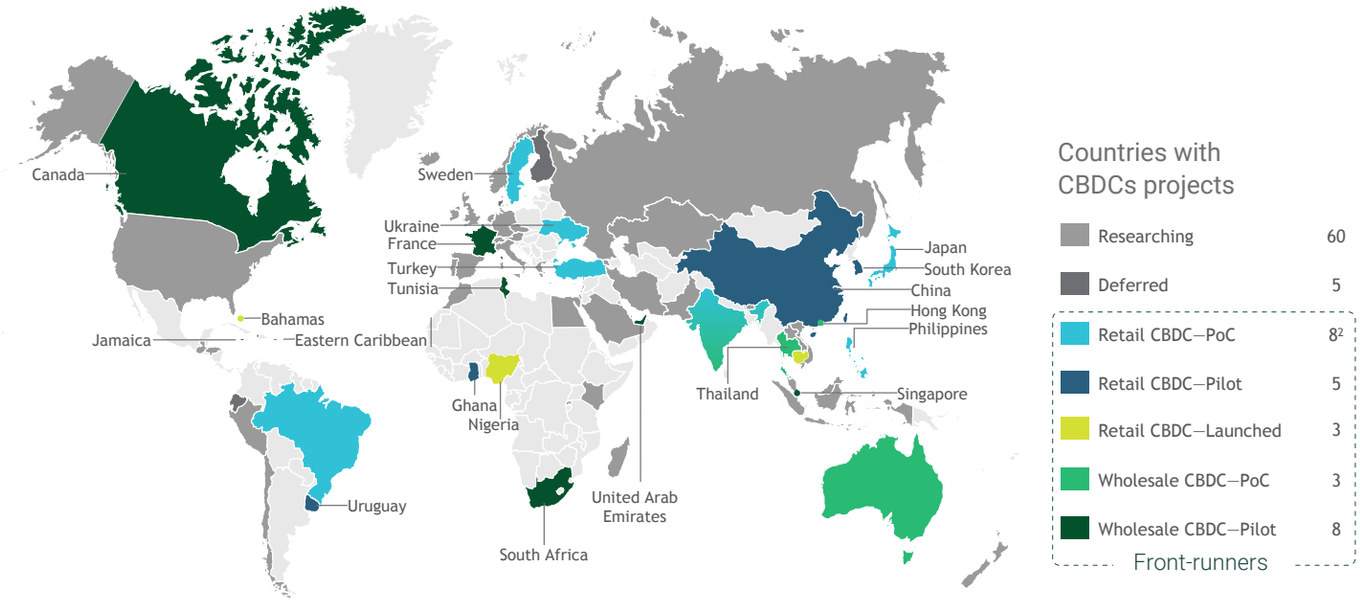
16. 'Breaking the Buck' typically refers to the net asset value of a money market fund, which uses amortisation to maintain a constant value of $1 USD, falling below $1 USD. We repurpose this concept for stablecoin collateralisation given the conceptual similarity.
17. Electronic Money Institutions issue E-money (Electronic money), defined by the Financial Conduct Authority as monetary value used to make payments and is represented by a claim on the issuer; issued on receipt of funds; stored electronically (including magnetically); and accepted by persons other than the issuer.
18. The alternative, 'direct' distribution model is understood as a central bank managing all aspects of a CBDC, without the involvement of banks and non-banks. This is a theoretical construct with limited real-world viability, and does not appear in any advanced CBDC initiatives.
19. KYC: Know Your Customer; AML: Anti-Money Laundering
20. Economic Affairs Committee, 'Central bank digital currencies: a solution in search of a problem?', January 2022

Central bank CBDC research is intensifying. Nearly 90% of central banks surveyed by the Bank for International Settlements (BIS) are actively researching CBDCs, with a focus on retail applications[21]. Developing economy research and progress is generally more advanced than developed economies, but only three full implementations are currently live (The Bahamas, Cambodia and Nigeria) See exhibit two for a snapshot of CBDC progress as of January 2022. Many others are in close pursuit, including the East Caribbean Currency Union DCash pilot[22] and China's expanding e-CNY[23]. The Reserve Bank of India has also announced the trialling of a Digital Rupee in 2022.

Early adopters are realising benefits by proactively shaping the role of digital money in their economies, guiding design and implementation choices to enable innovation in their markets. For example, initiatives in Nigeria and the Eastern Caribbean Currency Union are supported by private sector technology[24] and provide a clear steer on the broader, open market ecosystem supported by banks and other financial institutions through wallet issuing and service provision[25].

However, in many developed economies, considerable ambiguity remains regarding the direction of central bank plans for digital currencies. The current discourse is dominated by debates focused on issues rather than collaborative initiatives looking for constructive solutions. Current sentiment is that the first CBDCs in developed markets like Sweden will arrive between 2022 and 2023, with more to follow in subsequent years[26]. Collective initiatives need to be defined now to avoid further delays and find solutions that unlock benefits for all market participants.

Exhibit 2 | Emerging markets are the front-runners in retail CBDC development



1. Data from cbdctracker.org powered by BCG, last updated January 2022; 2. India CBDC categorised as retail

Note: If countries have multiple CBDC projects running in different phases, then 1 is selected in following order: Launched > Pilot > PoC > Research

Source: Data from cbdctracker.org powered by BCG, last updated January 2022

21. Cbdctracker.org, January 2022; BIS, 'Ready, steady, go? – Results of the third BIS survey on central bank digital currency', January 2021
22. Eastern Caribbean Currency Union website, January 2022
23. Reuters, '$9.5 billion spent using Chinese central bank's digital currency - official' November 2021
24. Reuters, 'Nigeria to partner with Bitt Inc to launch 'eNaira' digital currency | Reuters', August 2021 and Eastern Caribbean Currency Union website, 'Bitt Partners with ECCB to Develop World's First Central Bank Digital Currency in a Currency Union | Eastern Caribbean Central Bank', March 2021
25. See for example, Central Bank of Nigeria, 'Design paper for the eNaira', October 2021; and People's Bank of China, 'Progress of Research & Development of E-CNY in China', July 2021
26. Cbdctracker.org, January 2022; BCG expert interviews

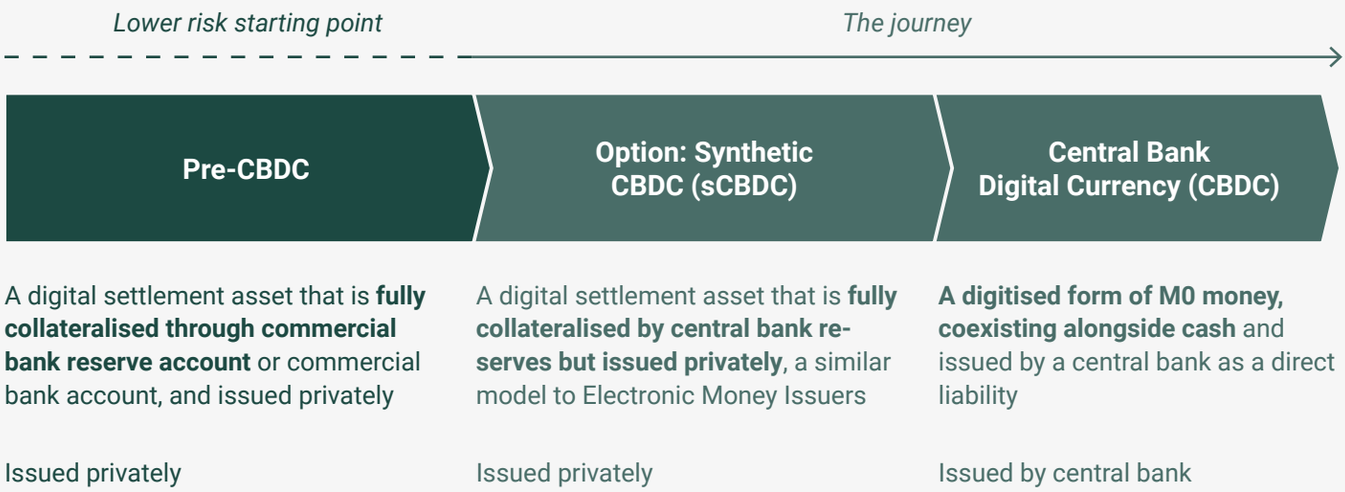
A call to action

We encourage central banks to drive the process and provide clarity on the architecture of a future digital currency ecosystem. There is an opportunity to bring the industry together and define a clear framework for collaboration - with a roadmap to address open questions, risks and intended roles left to the private sector.

Bank disintermediation and 'flight-to-safety' liquidity crunches during crises are high priority risks to manage. Options for effective mitigation are possible through collaborative, public-private design with a diverse range of inputs. For example, central banks can consider options for CBDCs as on-balance sheet liabilities for commercial banks, along with withdrawal limits and other disincentives to mitigate any future risks to the supply of credit in the market.

The Green Paper therefore proposes a roadmap, summarised in exhibit three, advocating for a real-world pilot to enable an exploratory journey towards CBDC. This is a simple, cautious and progressive framework that features the use of a 'pre-CBDC' asset as a first step for the purpose of testing, a 'synthetic' CBDC as an optional next step, and a conventional CBDC as an end state (all defined in exhibit three).

Exhibit 3 | A roadmap for public-private partnership towards CBDC introduction



The proposed pilot

The objectives of the pilot are as follows:

1. Resolving open questions and topics of debate in the market through intelligent, inclusive design (such as options for commercial bank liability);
2. Providing inputs to help inform regulation and enable relevant authorities to take policy decisions that incorporate multiple feedback loops from all industry stakeholders; and
3. Validating the four use cases highlighted in this paper, pressure-testing value potential and providing data to central banks and regulators on how best to deploy a CBDC.

The project proposes to form a private consortium, called 'Digital FMI Consortium', to issue the pre-CBDC asset and execute the pilot, transferring the risk and overheads to the private sector. The 'pre-CBDC' asset will be referred to as 'dSterling', with backing at a one-to-one collateral ratio in a commercial bank reserve account, or commercial bank account, to reduce risk. This is only intended to be used for the purposes of the pilot. It enables rigorous testing of a CBDC-like asset and simpler future transitions for central banks into synthetic or fully-fledged CBDC. Central banks and regulators will be kept informed of progress.

dSterling merges the benefits of open blockchains such as instant settlement and cost efficiencies, with the necessary data privacy, regulatory compliance, cybersecurity framework and oversight required by a CBDC solution. dSterling also mimics the design of an sCBDC, enabling the testing of different models before deciding. This could also enable faster speed-to-market.

Should central banks choose to provide direct reserve account access for dSterling collateral, the asset would morph into an sCBDC. An sCBDC is functionally equivalent to a CBDC, but is issued privately, similar to an e-money model used by some EMIs. This is an effective precursor to test the two-tier CBDC distribution defined earlier. Finally, when central banks are prepared for broader involvement in the technical CBDC infrastructure and governance, the asset could be repurposed into a two-tier, conventional CBDC.

Use cases

The adoption of digital money rests on its ability to offer value to end-users, which is in turn driven by the use cases it can fulfil. We deconstruct four use cases in the Green Paper: Retail payments, Cross-border transactions, Tokenisation-as-a-Service and Servicing PI/EMIs. The pilot will narrow down the use cases to test potential design questions and other areas of a future CBDC financial market infrastructure.

- **Retail payments:** Delivering benefits of shortened payment settlement cycles and potential to reduce transaction costs for merchants when compared with card payments. Programmability enabling innovative use cases like conditional payments, and near real-time pay-per-use micropayments.
- **Cross-border transactions:** Enabling near-instant settlement, reduced transaction costs, and enhanced payment traceability compared with existing solutions. This use case requires collaboration with other CBDCs globally and the pilot will explore interoperability requirements to future-proof the digital financial market infrastructure (Digital FMI)
- **Tokenisation-as-a-Service:** Providing infrastructure for future use cases that enables private organisations on the Digital FMI to tokenise and transact assets for use in closed ecosystems with customers or suppliers. The assets can be financial, utility-based, or physical.
- **Servicing Payment Institutions (PIs) and Electronic Money Institutions (EMIs):** Enabling PIs and EMIs to use the dSterling as a secure, liquid asset with regulatory acceptance for safeguarding. The asset also enables access to an alternative payment rail, given challenges in the industry around non-bank access to banking.

We note these use cases represent just the 'tip of the iceberg', existing to identify 'day-one' value and provide a directional view on where the dSterling asset could deliver benefits as part of the broader exploration of a CBDC. Future innovation in the market will continually introduce new use cases and greatly enhance the existing ones.

The way forward

Project New Era will now aim to bring the Digital FMI Consortium together in the UK, led by the private sector and with central banks, regulators, and government kept informed of progress. The outcome of the pilot will be shared openly with central banks, regulators, and governments to inform their decision making and ongoing CBDC and regulatory research.

This Green Paper, and the broader New Era project, exists to stimulate debate and bring about progress towards a general purpose, retail CBDC. We believe that the successful execution of the Digital FMI pilot is the first critical step on this journey.

To gain a deeper understanding of the points covered in this document, please download the Green Paper here, which summarises months of dedicated research. You can express your interest in the Digital FMI Consortium by signing up online.

Acknowledgements

We thank the many stakeholders across the payments and banking industry for their open and supportive contributions. We acknowledge the efforts of all Syndicate Leaders and Syndicate Members whose insights have enabled this report to reflect the latest developments on the front line of payments and fintech innovation. We are also grateful for Brunello Rosa and Nouriel Roubini's independent evaluation of the proposals made for the Consortium in their capacity as economic advisors to this initiative.

Without these contributions, this report would not have been possible.

Syndicate Leaders

Paul Sisnett
CEO

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The mass adoption of any new form of money will shape the future of our global civilization. As innovators and disruptors, we must carefully examine societal impacts in the design of CBDCs and other digital currencies. We must recognise our responsibility to future generations who will ultimately be shaped by the execution of our ideas. paywith.glass is intelligent Digital Currency/Electronic Payments (iDC/EP) infrastructure which has been designed through careful academic research and industry collaboration at every step. Its development has considered the societal impact and the technical and economic risk factors that must be mitigated for it to be deemed fit for purpose. We are proud to lend our experience alongside input from the brightest minds of our generation, as we contribute to shaping the new era of money.

Daniel Holden
Group CEO

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Innovation creates change. As digital currencies expand their reach and become mainstream, there will be an explosion of use-cases and practical benefits to their adoption.

Trust Payments is very proud to support the thought-leadership in this area. As an innovative disruptor in the fintech space, we have been strong advocates of digital currencies, in responsibly regulated environments. Trust Payments is investing heavily to support this new era in retail payment experiences, which can be realised through digital currency adoption.

This paper sets out a way forward to leverage new regulation and technology to significantly enhance future payment utility and effectiveness. Change can now create great benefits.

Amit Sharma
Founder, CEO

FinClusive

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FinClusive is a hybrid fintech/regtech company that connects traditional banking with the blockchain-enabled payments and virtual asset networks and exchanges—with an embedded full-stack Compliance-as-a-Service (CaaS) platform. CaaS provides global-standard KYC/KYB coverage, client and transaction monitoring, watchlist/sanctions screening, and a full array of due diligence and analytics in one application. Built for both traditional (Tradfi) and decentralized financial services (Defi), FinClusive issues compliance backed digitally verifiable credentials--and legal entity identifiers (LEIs)--to clients enabling a secure KYC/KYB verification utility across providers globally.

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If you would like to discuss this report, please contact Kunal Jhanji (Jhanji.Kunal@bcg.com) or Kaj Burchardi (Burchardi.Kaj@bcgplatinion.com).

Download the full Green Paper here:

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