

Redefining Payments: A Case Study of J.P. Morgan’s Blockchain Payment System Kinexys

Future Liang

New York University

yifan.liang@nyu.edu

Linna Li

New York University

ll5744@nyu.edu

Jiaying Xie

New York University

jx2060@nyu.edu

Yanyu Chen

New York University


yc3823@nyu.edu

ABSTRACT

This paper examines Kinexys, J.P. Morgan’s blockchain-based payment platform, which applies Distributed Ledger Technology (DLT) to streamline cross-border payments. Kinexys operates as a consortium blockchain, balancing scalability, security, and regulatory compliance to meet institutional needs. Through an analysis of its development, strategic rebranding, and insights from reports on deposit tokens and programmable payments, we evaluate Kinexys’ potential to modernize financial workflows while addressing challenges such as scalability, interoperability, and governance. Positioned as a next-generation alternative to SWIFT, Kinexys represents a significant advancement in the evolution of global financial systems.

Key Words: Blockchain, Programmable Payment, Decentralized Finance, Institutional Finance

1 BACKGROUND OF KINEXYS & UNDERLYING BLOCKCHAIN TECHNOLOGY

 KINEXYS is J.P. Morgan’s blockchain-based platform, designed to modernize institutional finance. By integrating Distributed Ledger Technology and present banking systems, it streamlines cross-border transactions, enhances transparency for regulation, and promotes programmable workflows across different financial institutions. This section out-

lines its technological foundation, development history, and positioning as a consortium blockchain for regulated industries.

1.1 Distributed Ledger Technology and Decentralized Finance

Distributed Ledger Technology, according to the Phase 1 report of project Ubin [1], is a type of database that is spread across multiple sites, countries, or institutions. It allows for decentralized processing, validation, and authentication of transactions. Blockchain is

simply one kind of distributed ledger that has gained prominence as the core technology behind Bitcoin. This foundational technology has gained traction for its ability to reform traditional financial systems.

Defined by Investopedia [2], Decentralized Finance (DeFi), built on blockchain, creates a financial ecosystem that eliminates reliance on traditional intermediaries such as banks. DeFi leverages smart contracts, which are self-executing programs stored on blockchain platforms like Ethereum, to automate and secure transactions, making financial services accessible to anyone with an internet connection [1].

However, Kinexys adapts DeFi principles differently for institutional use. Rather than focusing only on individual users and exclude banks from the chain, Kinexys facilitates peer-to-peer transactions between banks and corporations using JPM Coin, a tokenized digital currency developed by J.P. Morgan. In short, Kinexys does not sell for no intermediaries in its blockchain, it is emphasizing security and easier access for regulatory entities across different countries.

This framework within financial institutions enables 24/7 cross-border and cross-currency settlement while removing the need for reconciliation, reflecting a tailored application of DeFi concepts within a regulated environment [3].

Eventually, the integration of these advanced technologies forms the foundation of Kinexys and paves the way for its development, as outlined in the next section.

1.2 Development History and Background of Kinexys

The evolution of Kinexys reflects J.P. Morgan’s ongoing exploration of blockchain technology from 2016 to 2024 [4]. The initiative began with the creation of Quorum, a permissioned blockchain platform based on Ethereum. Quorum was tested during Project Ubin [5], a collaborative experiment with the Monetary Authority of Singapore (MAS), which demonstrated the feasibility of blockchain for interbank payments in a single currency. Building on this foundation, J.P. Morgan launched the Interbank Information Network (IIN) in 2017 to streamline interbank data sharing and settlement workflows.

The introduction of JPM Coin in 2019 marked another milestone, enabling blockchain-based payments with enhanced efficiency and scalability. By 2020, IIN and JPM Coin were unified under the Onyx platform, providing a comprehensive infrastructure for digital assets and blockchain applications. This evolution continued in 2024 with the rebranding of Onyx to Kinexys, signaling the platform’s maturation.

Notable milestones along this journey are various. For instance, in 2021, a multi-bank blockchain network named Partior is co-found by J.P. Morgan, DBS Bank, and Temasek [6]. In 2022, Kinexys executed its first live DeFi cross-currency trade on the Polygon blockchain as part of MAS’s Project Guardian [4] [5]. By 2024, the publication of the white paper *Application of Programmability to Commercial Banking and Payments*

[3] underscored the real-world applicability of Kinexys.

1.3 Public V.S. Private Blockchain: Positioning of Kinexys

Kinexys operates as a consortium blockchain, blending elements of public and private blockchain models to meet the unique demands of institutional clients. Public blockchains, such as Bitcoin, are open networks that allow anyone to participate, validate transactions, and access the ledger. These blockchains rely on consensus mechanisms such as proof-of-work (PoW), which is computationally intensive and slow, or proof-of-stake (PoS), which selects validators based on staked cryptocurrency to achieve greater efficiency [7], [8].

Private blockchains, on the other hand, restrict participation to authorized entities and are governed by a single organization [8, p. 6]. While they offer improved scalability, speed, and privacy, they lack the decentralization and transparency of public blockchains.

Consortium blockchains like Kinexys combine these approaches, allowing a group of trusted entities to govern the network collaboratively. Kinexys’ governance structure includes organizations such as J.P. Morgan, DBS Bank, Mastercard, and Temasek, ensuring compliance with regulatory standards while maintaining the transparency and security associated with blockchain technology [4]. Meantime, the clients of Kinexys are also included in this network, which provides further transparency and efficiency. This hybrid

structure enables Kinexys to cater specifically to the needs of financial institutions, offering a scalable and efficient solution for regulated industries.

1.4 Rebranding from Onyx to Kinexys: Strategic and Operational Implications

The rebranding of Onyx to Kinexys reflects J.P. Morgan’s strategic decision to align the platform’s identity with its broader vision of transforming global financial systems. The name “Kinexys,” derived from “kinetic,” symbolizes energy and interconnectivity, capturing the platform’s role in enabling seamless and dynamic financial operations [9]. Additionally, this change resolved potential legal and trademark issues associated with the term “Onyx” and established a distinctive identity for Kinexys in the competitive blockchain market [10], [11].

Kinexys is not merely a research prototype but a fully operational system integrated into J.P. Morgan’s financial infrastructure. It supports high-value transactions, including on-chain FX settlements for major currencies like USD and EUR, and demonstrates scalability in real-world applications. This success underscores Kinexys’ leadership in blockchain-based financial solutions, positioning it as a key player in the evolving financial ecosystem [9], [12].

2 COMPETITIVE LANDSCAPE & MARKET POSITION

Kinexys operates within a competitive landscape dominated by legacy systems like

SWIFT. Its innovative blockchain-based infrastructure, comprising the Digital Payment and Deposit system and the Liink network, aims to address inefficiencies in cross-border payments. This section explores Kinexys’ core components, client base, cost structure, and competitive positioning in the financial ecosystem.

2.1 Core Components of the Kinexys Blockchain Infrastructure

The Kinexys platform is built on two primary components: the Digital Payment and Deposit system and the Liink network. These components work together to provide a secure, scalable infrastructure for institutional financial operations [9].

The Digital Payment and Deposit system enables real-time, multi-currency payments through a blockchain-based deposit ledger, which improves the efficiency of cross-border transactions, reduces operational costs, and enhances liquidity management [13]. The Liink network facilitates peer-to-peer exchanges of payment-related information between institutions, validating account details before transactions to minimize errors and accelerate workflows [14].

Collectively, these components ensure that Kinexys can meet the complex needs of institutional clients while maintaining compliance with global regulatory standards [15].

2.2 Client Base and Cost Structure

Kinexys serves a diverse client base, including Siemens, BlackRock, and Ant Inter-

national. These organizations use Kinexys for applications ranging from cross-border payments to automated liquidity monitoring [3, pp. 19, 22]. For example, Siemens leverages the platform for 24/7 cross-border transactions, while BlackRock uses it to enhance efficiency and security in large-scale financial systems [3, p. 19]. Ant International integrates Kinexys with its treasury management system, streamlining real-time settlements using the JPM Coin platform [3, p. 15]. Additionally, Nium, a leader in cross-border payments, relies on Kinexys to validate bank account details for transactions in regions like Malaysia, Thailand, and Hong Kong, reducing errors and ensuring accuracy [16].

The cost structure of Kinexys varies based on transaction volume and selected services, though exact details are not publicly available. Clients incur fees for processing payments, liquidity management, and foreign exchange spreads. This flexible pricing model allows Kinexys to cater to multinational corporations with complex financial requirements while remaining competitive in the market [12].

2.3 Competition with SWIFT

Kinexys competes with SWIFT, the dominant network for cross-border payments, by addressing its key limitations, including slow processing times, high costs, and dependence on intermediaries. While SWIFT processes an estimated \$150 trillion annually, its reliance on multiple correspondent banks often results in delays and increased transac-

tion costs [17]. Kinexys eliminates these inefficiencies by leveraging blockchain technology to enable near-instantaneous settlements. Additionally, the immutable nature of blockchain reduces fraud risks and enhances trust, offering a significant advantage over SWIFT [18]. While SWIFT benefits from its extensive network of 11,000 institutions and decades of adoption, Kinexys is gaining traction by focusing on speed, cost-efficiency, and automation [19].

2.4 Transaction Volume and Market Penetration

Since its inception, Kinexys has processed over \$1.5 trillion in transactions, averaging more than \$2 billion daily [9]. While these figures are impressive for a blockchain platform, they pale in comparison to SWIFT’s annual volume of \$150 trillion and daily throughput of 44.8 million messages [19].

Kinexys’ smaller scale reflects its relative infancy compared to SWIFT’s decades-long global adoption. However, its focus on blockchain’s speed, cost-efficiency, and automation positions it as a next-generation alternative for financial institutions. To compete effectively, Kinexys should scale its transaction volume, expand its network, and increase institutional participation, bridging the gap with established systems like SWIFT.

Yet, an undeniable fact is the cross-border payments market is still dominated by SWIFT in present days. Kinexys, established for less than one year until now, can hardly threaten the SWIFT. However, more diverse choices

for global payments is always a good thing. Kinexys may not be an equivalent competitor to SWIFT, but it provides alternative solution to complete global transactions. Not to mention, as a newborn, it possesses much potential in the future. Luckily, we can witness how this innovation might change the world.

3 INSIGHTS FROM KEY REPORTS

The *Deposit Tokens* report introduces deposit tokens as an innovative application of blockchain technology in institutional finance. These tokens are conceptualized as blockchain-native equivalents of traditional bank deposits, designed to offer significant advantages such as faster settlement times, improved transparency, and enhanced programmability [20]. Backed by commercial banks, deposit tokens operate within established regulatory frameworks, making them an appealing option for institutional clients who require both reliability and compliance [20]. Unlike stablecoins, which are often issued by private entities, or central bank digital currencies (CBDCs), which are issued and managed by central banks, deposit tokens bridge the gap between decentralized blockchain technology and traditional financial systems. Their programmability allows for conditional transactions, enabling more efficient and automated financial workflows [20].

Despite their potential, the report underscores the experimental nature of deposit tokens, noting that several challenges must be addressed before widespread adoption can occur [20]. Scalability remains a critical is-

sue, as blockchain networks must be able to handle high transaction volumes without compromising efficiency or security. Integration with legacy systems poses another challenge, as many financial institutions still rely on outdated infrastructure that may not easily interface with blockchain-based solutions. Furthermore, interoperability across different blockchains and financial systems is essential for deposit tokens to achieve their full utility. Without a standardized framework, the risk of fragmentation could limit their effectiveness [20]. For Kinexys, the insights from this report highlight the strategic importance of deposit tokens in enhancing its platform. By incorporating deposit tokens, Kinexys could further streamline cross-border payments and settlement processes while providing a programmable, compliant solution for its clients. However, overcoming these systemic challenges will be critical to their successful implementation [20].

The white paper *Application of Programmability to Commercial Banking and Payments* delves into how programmability in blockchain systems can transform financial processes. Programmable payments are a central focus of the paper, highlighting their potential to automate complex financial operations and reduce manual intervention [3]. By embedding conditional logic into transactions, programmable payments enable tasks such as treasury management, liquidity optimization, and cross-border settlements to be executed with minimal human oversight. This capability is particularly relevant for large-scale insti-

tutions, where operational efficiency and precision are paramount [3].

The concept of “bank-side programmability” is a key innovation discussed in the white paper. Unlike client-side programmability, where logic resides on the client’s system and depends on external execution, bank-side programmability allows programmable instructions to be executed directly within the bank’s infrastructure. This approach reduces delays caused by external dependencies, improves reliability, and allows for greater customization [3]. JPM Coin is used as a case study to demonstrate these capabilities. Examples include dynamic treasury management, where surplus funds are automatically transferred to higher-yield accounts, and margin funding, where automated adjustments mitigate liquidity shortfalls during market fluctuations [3].

However, the paper also identifies significant risks associated with implementing programmability in financial systems. Governance remains a critical concern, as allowing clients to define and deploy logic within a bank’s infrastructure requires stringent oversight to prevent errors or misuse. Cybersecurity vulnerabilities in smart contract code pose another challenge, as errors or exploits could result in financial losses or reputational damage. Additionally, the computational limits of blockchain networks constrain the complexity of programmable instructions, particularly in high-frequency or resource-intensive scenarios [3].

For Kinexys, the adoption of programmable payment capabilities offers an op-

portunity to further enhance its platform’s efficiency and relevance. Programmability could enable Kinexys to automate many aspects of financial workflows, reducing operational costs and improving the user experience for its clients. However, as with deposit tokens, the integration of programmability requires careful consideration of governance, security, and scalability. Ensuring that programmable systems are secure, reliable, and compatible with institutional requirements will be critical to their success [20].

Above all, these reports underscore both the opportunities and challenges of integrating blockchain innovations into financial systems. Deposit tokens and programmable payments represent transformative possibilities for modernizing institutional finance, offering enhanced efficiency, transparency, and flexibility. However, the practical implementation of these technologies requires addressing significant hurdles, including interoperability, regulatory compliance, and the complexity of large-scale deployment. For Kinexys, these findings provide a roadmap for its development. By strategically incorporating deposit tokens and programmability, Kinexys has the potential to redefine cross-border payments and institutional finance. Yet, success will depend on its ability to navigate these challenges effectively, ensuring that these innovations deliver real-world benefits to its clients and the broader financial ecosystem [3], [20].

4 FUTURE PROSPECTS & CONCLUSION

The future of Kinexys and blockchain infrastructure in commercial banking services appears promising, as the financial industry increasingly adopts decentralized and digital solutions to address long-standing inefficiencies. Kinexys, with its consortium blockchain model, is positioned to capitalize on this trend by offering a secure, scalable, and compliant alternative to traditional systems [21].

One key area of growth for Kinexys lies in expanding its network of participating institutions. While the platform has already been adopted by major players like Siemens, BlackRock, and Ant International, broadening its reach to smaller banks and fintech companies could significantly increase its transaction volume and market penetration [9]. Furthermore, partnerships with central banks in developing CBDC frameworks could enhance its relevance in the global financial ecosystem. The platform’s prior collaboration with MAS, DBS Bank, and Banque de France demonstrates its potential for leading cross-border CBDC initiatives [4].

Another critical aspect of Kinexys’ future is its ability to innovate within the realm of programmable payments and composable financial solutions. According to J.P. Morgan’s 2024 white paper, programmable smart contracts have the potential to automate complex financial workflows, such as escrow arrangements, supply chain financing, and regulatory compliance checks [3]. By incorporating advanced features like identity management and privacy-preserving mechanisms, Kinexys

can further distinguish itself in the competitive blockchain landscape [3].

The competitive landscape will also influence Kinexys' trajectory. Platforms like SWIFT, which dominate traditional cross-border payment networks, are evolving to include their own blockchain-based initiatives. However, Kinexys' ability to eliminate intermediaries, reduce transaction costs, and provide near-instantaneous settlement positions it as a robust challenger. Its scalability, security, and compliance with global regulatory standards make it particularly attractive to financial institutions seeking to modernize their operations [9].

Despite these opportunities, Kinexys faces challenges that must be addressed to ensure long-term success. The platform's current transaction volume, while significant at \$1.5 trillion, is relatively small compared to SWIFT's \$150 trillion annual volume [9], [19]. Achieving the scale necessary to rival traditional systems will require continued investment in infrastructure, enhanced interoperability with existing financial networks, and expanded use cases beyond payments, such as trade finance and tokenized asset management [20].

In conclusion, Kinexys represents a significant step forward in the application of blockchain technology to commercial banking. By leveraging its consortium model, real-time settlement capabilities, and programmable infrastructure, Kinexys has the potential to transform global financial operations. Its ability to innovate and scale will determine its role

in shaping the future of finance, as blockchain technology becomes an integral part of institutional banking services [3]. As J.P. Morgan continues to invest in its development, Kinexys is poised to remain at the forefront of this rapidly evolving landscape.

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