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PUBLIC BLOCKCHAIN AS A TRANSFER INFRASTRUCTURE IN THE REGULATED SECTOR

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GFTN
GLOBAL FINANCE & TECHNOLOGY NETWORK

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The Global Finance & Technology Network (GFTN) (formerly known as Elevandi) is a not-for-profit organisation established by the Monetary Authority of Singapore (MAS) in 2024 to harness technology and foster innovation for more efficient, resilient, and inclusive financial ecosystems through global partnerships. GFTN organises convening forums, offers advisory services on innovation ecosystems, provides access to transformative digital platforms, and invests in technology startups with the potential for growth and positive social impact through its venture fund.

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FINMA is Switzerland's independent financial-markets regulator. Its mandate is to supervise banks, insurance companies, financial institutions, collective investment schemes, and their asset managers and fund management companies. It also regulates insurance intermediaries. It is charged with protecting creditors, investors and policyholders. FINMA is responsible for ensuring that Switzerland's financial markets function effectively.

Executive summary

Public blockchain technology has the potential to transform the financial sector by increasing efficiency in transactions through programmability, composability, and interoperability. However, its use in regulated environments poses challenges around operational stability, transaction finality, integrity and accountability. A roundtable of experts, hosted by Swiss Financial Market Supervisory Authority FINMA, highlighted both the benefits and risks of adopting public blockchains in regulated areas.

Introduction

While public blockchain technology has the potential to impact the financial sector by providing a new way to transfer assets and data, its potential in the regulated sector is still being explored. The Point Zero Forum roundtable "Public Blockchain as a Transfer Infrastructure in the Regulated Sector", organised by FINMA, discussed the potential risks and opportunities of adopting public blockchain technology in regulated areas.

Potential of public blockchains

Public and permissionless blockchains are typically decentralised networks that allow anyone to participate, view transactions, and engage in the consensus process. This openness could provide for an interoperable platform and encourage the development of new financial services. Public blockchains could help increase efficiency by enabling for programmability of applications and transactions, composability and interoperability.

Efficiency: Public blockchains could potentially facilitate more efficient international transactions, reducing the time and cost of cross-border payments, securities settlement, and trade finance. Smart contracts, digital programs stored on a blockchain that are automatically executed when predetermined terms and conditions are met, could automate processes, reducing administrative costs and errors. In particular, public blockchains could increase efficiency in complex transactions, involving more than one counterparty and/or more than one jurisdiction.

Programmability: Public blockchains could allow different parties to build applications and program assets. This multitude of applications can then be composed (Composability) and transactions can be combined so that either both or neither of transactions succeed or fail (Atomicity). Blockchains can allow inseparable transactions with many steps in between by programming complex smart contracts.

Composability and Atomicity: Public blockchains could facilitate complex transactions and their near-instantaneous settlement, but this only works within the same ledger. Therefore, composability and atomicity drive network effects that could lead to one dominant settlement layer. Having more than one settlement layer

increases operational risks and poses significant composability issues. In addition, certain security properties of one blockchain may not be transferable to the other.

Interoperability: The openness of the technical standards of public blockchains could provide a platform for financial service providers to develop different applications that complement each other. Interoperability could also allow traditional financial institutions to connect to public blockchains and use them as a settlement infrastructure.

As the public blockchain infrastructure is product agnostic, these can be payments as well as securities transactions. Programmability for example could enable complex delivery-vs-payment or escrow functions and composability could allow multiple functions to be linked in a simple way.

Challenges and possible solutions

Public blockchains also present challenges in terms of user integrity and operational stability. Technology-neutral regulatory requirements and privacy concerns must be addressed. A permissioned layer on top of the public blockchain can address several user and transaction integrity concerns. This would allow for control of users and participants as well as enhanced privacy, addressing some of the limitations of public blockchains.

A decentralised architecture could address some of the common business continuity management issues, such as backing up of data. But even with a permissioned layer the use of a public blockchain still raises questions about operational stability, finality of transactions and accountability for the operation of the infrastructure.

To evaluate such operational issues, key functions in the ecosystem can be defined and additional metrics such as the size and decentralisation of the network or the accountability of node operators can be considered. Finally, the governance of the public blockchain needs to be closely monitored to keep pace with potential major changes.

One way to mitigate the risks of public blockchains can be to link the public blockchain to a permissioned, centralised system with permissioned accounts that registers the transactions on the public blockchain and ensures finality and legal certainty. The finality of transfers is based on the replication of transactions on the centralised system.

However, it is important to note that a centralised system does not automatically provide more protection and appropriate risk mitigation and control measures are required.

Conclusion

While experts recognise the potential benefits of public blockchains, their use as a transfer infrastructure in a regulated environment poses several challenges as the integrity and operational reliability of the network can be compromised.

Public blockchains have some characteristics that make them attractive as settlement infrastructure on an international scale such as round-the-clock settlement on a global scale and some degree of standardisation or additional scalability in the case of a network with a large number of node operators. Public blockchains can help increase efficiency by enabling application and transaction programmability, composability and interoperability.

Economic dynamics in the form of network effects, driven primarily by composability and atomicity, could push toward one dominant base layer (i.e. settlement layer).

Permissioned environments on top of the public blockchain can solve or at least address concerns about user and transaction integrity.

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