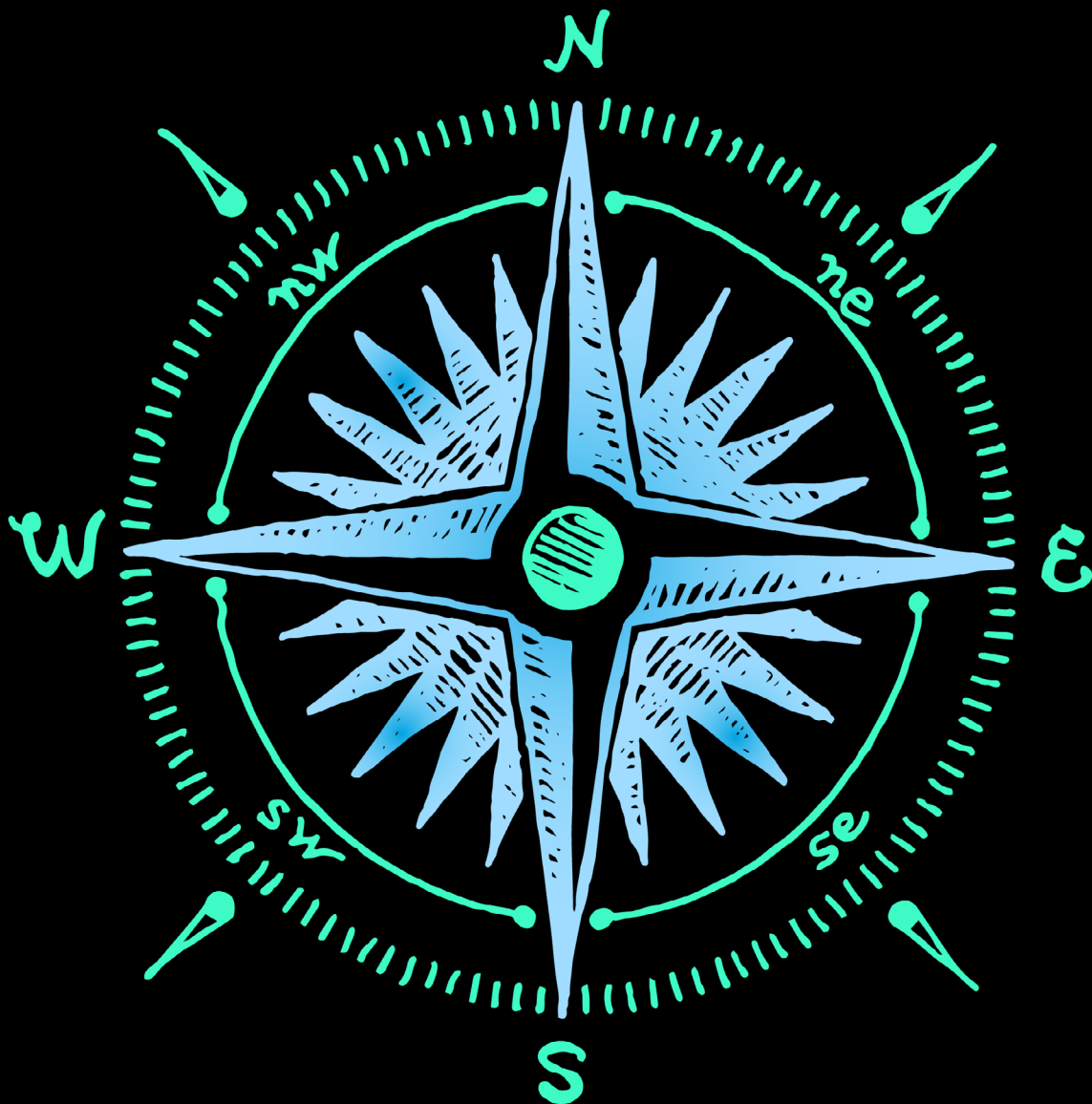


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Blockchain for Investment Managers
Are we there yet?

Introduction

As escalating costs, accelerating fee pressures and evolving buyer preferences continue to disrupt the investment management industry, the pursuit of innovative, non-conventional and differentiating solutions has become more important than ever. To stay ahead of the competition, leading investment management firms are cutting through the hype and taking meaningful steps toward exploring differentiating capabilities enabled by blockchain.

While the potential of blockchain to radically transform an already heavily disrupted industry is as real as it's ever been, several key challenges continue to slow progress. Why is blockchain disruption taking so long to materialize? What signals will provide an early indication of broader disruption? What are leading firms doing with blockchain today and how can others start experimenting to close the gap? These key questions are top of mind for executives of the world's leading investment management firms.

Potential to transform

Blockchain is a decentralized ledger that facilitates the transfer of value securely and cost effectively. Enhanced security is achieved through the use of cryptographic protocols and accuracy is assured by the consensus validation that takes place across copies of the ledger kept on multiple individual nodes prior to confirmation. Blockchain's applications have evolved in sophistication from mere recordkeeping to programmable smart contracts and the possibilities for its use are constantly evolving.

While its speed of adoption is slower than some expected, blockchain's disruptive application is undeniable. For investors looking for democratized investment options, blockchain could enable bonds that literally anyone can invest in and communities and/or groups can quickly aggregate spend to invest without an intermediary. For investors looking for increased transparency beyond what their Financial Advisors/custodians/consultants can provide, blockchain could offer real time (eventually to the minute) visibility into positions to better analyze portfolio exposure/performance. For investors looking for cheaper products without transaction fees, blockchain processing fees could be close to zero.



Slow to scale

Interest in blockchain amongst investment management firms has been apparent for some time now, fueled not so much by the fear of being disintermediated, but by the opportunity to create new product offerings and/or improve cost/efficiency in operations. While some investment management firms have developed a relative degree of maturity in their blockchain capabilities, most are still considering, or at best experimenting with, basic blockchain proofs of concept (POCs).

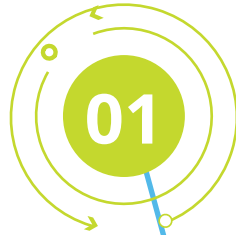
As an industry, investment management has been slow to embrace innovation in general, so it's not surprising the same can be said for the willingness of its members to innovate with blockchain. In addition to what could be called a pervasive culture of stagnation, regulatory uncertainty is another significant concern amongst financial institutions preventing them from experimenting with blockchain. Banks and financial institutions are accustomed to their complex and detailed legal frameworks (e.g., EMIR, MIFIDII) and are hesitant to move their offerings outside of regulated environments. Additionally, firms are fearful that a regulatory intervention could endanger any blockchain related initiatives they may be pursuing. This could be an overestimated concern however, given the fact that some regulators seem to be increasingly open-minded about cryptocurrencies. Finally, in many cases, the large scale of adoption needed across a wide range of market participants for many investment management blockchain solutions makes progress increasingly difficult to achieve.

A recent study conducted by Deloitte, shows that 55 percent of organizations believe that blockchain will cause disruption, while more than 60 percent believe they will lose a competitive advantage if they don't adopt blockchain.¹ Leading firms are carefully observing a set of clear indicators to help them understand when blockchain transformation is expected to further materialize, so they can be prepared for its inevitable disruption.

10 INDICATORS OF BLOCKCHAIN ADOPTION IN INVESTMENT MANAGEMENT

Collaborative industry culture:

Increased collaboration throughout the industry around blockchain will signify an overall readiness and willingness to enable scalable solutions.

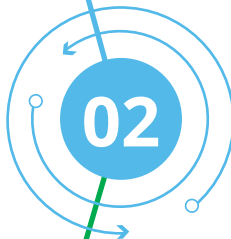


Watch for:

- Expanding blockchain ecosystem and partnerships across academia, industry and startups
- Collaboration amongst different blockchains serving different purposes - creating a new set of partnerships and processes
- Increased industry participation and adoption from companies working together in blockchain consortia

Strengthened security assurances:

Additional security measures and restrictions to address the universal transparency of blockchain's transaction history will reduce breaches of sensitive information and manipulation of data, increasing overall confidence.



Watch for:

- Increased cyber security and resiliency to attacks and fraud, addressing vulnerabilities in protocol security and software clients, while also solving for smart-contract bugs
- Further restrictions for exchanges, which have been the target of most recent successful security threats, when selecting cryptocurrencies that will be supported by their platforms²

Broader cost certainty:

Increased certainty around cost and estimated ROI, led by innovators and early adopters, will increase industry motivation and confidence to pursue blockchain solutions.



Watch for:

- Private networks lowering costs and overhead
- Cloud technology adoption to reduce cost by increasing the scalability of storage
- New players and startups that address storage challenges by presenting fixed cost solutions

Legacy system compatibility: Next generation blockchain solutions that present optionality to be backwards compatible with legacy systems will ease integration and reconciliation difficulties that arise from architectural design differences (e.g., relational databases vs. distributed/decentralized storage), while also reducing the cost of redesigning legacy systems.



Watch for:

- Development of blockchain integration technology with strong API capabilities that support linkages between multiple applications
- Increased consideration by key decision makers around interoperability between new and current systems

Innovate to operate transition:

As investments in blockchain continue to grow, the key signal will be a shift in initiative funding from technology/innovation CAPEX to OPEX funded core initiatives for the CIO/COO.³



Watch for:

- Increases in blockchain solutions funded by financial/operational spend as opposed to discretionary spend

Transaction speed and scalability:

Increased transaction processing speeds will enable firms to pursue large-scale implementations.

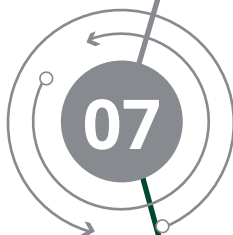


Watch for:

- Increased use of bidirectional channels (for example Lightning Network)
- Increased availability of advanced computing power solutions

Reduced ecosystem fragmentation:

Emergence of standards will establish interoperability across technologies, protocols, permissions and data definitions, which will improve systemwide security.



Watch for:

- Development of standards for interconnectivity across blockchain consortia
- Development of standards for interoperability across blockchain implementations
- Increased execution of cross-blockchain transactions

Robust governance frameworks:

Demonstrated control frameworks for blockchain implementation will ease uncertainty regarding future regulation changes, gaps in legal viability and enforceability of smart contracts, ultimately encouraging blockchain adoption.



Watch for:

- Involvement of legal stakeholders earlier in the blockchain solutioning process
- Increased due diligence on blockchain solutions to address unique issues concerning ownership of data residing on decentralized ledgers and intellectual property
- Increased smart contract experimentation/adoption to attract the attention of lawmakers

Growing education and awareness:

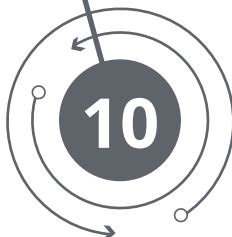
Leveraging of industry forums and blockchain consortia by investment management leaders will help them better understand the potential benefits of investment in blockchain, industry trends and key challenges.



Watch for:

- Further emergence of blockchain champions to advocate for its capabilities and encourage adoption
- Broader publication of blockchain use cases adopted by industry leaders
- Increased attendance at industry forums and consortia by practitioners

Changing public perception: A shift in public perception away from the negative headlines of cryptocurrencies such as Bitcoin (e.g., illicit transactions, market volatility, etc.) and toward the investor friendly improvements of blockchain technology will indicate public readiness for adoption of these solutions by their investment managers.



Watch for:

- Increased government and regulator activity related to blockchain solutions
- Improved headlines and media coverage around blockchain activity
- Further membership of leading firms in blockchain consortia

Successful initiatives

While awareness of blockchain's transformative potential for the asset management industry has been rising for years, there has still been only a limited number of use cases brought to production. While asset servicing firms have been slow to show interest in employing blockchain solutions, asset management firms have been amongst the most progressive in trialing blockchain technology within the world of financial services.

Two areas of the asset management value chain which have seen concentrated activity and attention are fund distribution and post-trade operations, where the focus has been reducing transaction times, achieving cost savings, enhancing reporting and offering new services to issuers and investors. One example of this was Deloitte Portugal's collaboration with the Portuguese Association of Investment Funds, Pension Funds and Asset Management (APFIPP) to develop a platform for the distribution of investment funds based on blockchain technology. This POC aimed to simplify and make the distribution of funds in Portugal more efficient and reduce the need for third-party intervention.⁴

While the investment management industry's vision for blockchain continues to evolve, there is now an ever-growing list of industry adopters experimenting with a variety of blockchain systems and applications.

Fund distribution and market infrastructure:

- IZNES, a joint effort between SETL and a consortia of asset managers, built a pan-European distribution and transfer agent platform for mutual funds, which is interoperable with existing distribution channels. Pierre Davoust, CEO of SETL France believes the core benefit of IZNES is that it "enables investors, distributors and asset managers to operate their usual internal tools to process their orders on the SETL blockchain."⁵
- SETL built an issuer Central Securities Depository platform, ID2S, that is connected to a Target-2 Securities platform, which accelerates processing of cross-border payments across the Eurozone. The CSD platform will optimize operational workflow, reduce transaction costs and deliver a high level of security for investors and asset managers.⁶

Trade processing:

- BNP Paribas Asset Management successfully completed a full end-to-end fund transaction using Fund Link and Funds DLT. This saw the French asset manager completing every part of the fund trade process on blockchain by joining two different blockchain systems. Fabrice Silberzan, Chief Operating Officer of BNP Paribas Asset Management noted that "while investors will benefit from reduced transaction time, [BNP Paribas] will also profit from a sleeker, more streamlined system underpinned by technology and relevant for all fund types and geographies."⁷
- Calastone has successfully used blockchain to buy and sell mutual funds with a distributed infrastructure model proving itself capable of processing transactions sourced from across Calastone's global transaction network. Chief Innovation Officer Campbell Brierley believes that "all participants benefit through the real-time view of each record and powerfully, from a data perspective, a single version of the truth."⁸

Post-trade operations:

- Utilizing Chain's blockchain infrastructure platform, Nasdaq and Citi have developed an "integrated payment solution that enables straight through payment processing and automates reconciliation by using a distributed ledger to record and transmit payment instructions."⁹

Other initiatives:

- Northern Trust launched the world's first functioning private equities blockchain along with IBM, with its private equity ledger going live in 2017. This development provides audit firms with access to a 'golden copy', or immutable master record, of the fund's data. Auditors can then either transfer the required data into internal applications to complete the audit process or develop new tools that allow them to complete the audit directly from the blockchain itself. In 2019, Northern Trust transferred the platform to Broadridge, with Pete Cherecwich, President of Corporate & Institutional Services for Northern Trust noting that
- For the benefit of our clients and the industry as a whole, it's now time to hand over the reins to a technology provider with deep FinTech expertise.¹⁰
- FNZ (UK) Ltd is using its blockchain-based solution, FNZ ChainClear, to substitute myriad copies of transactions and holdings with a single, secure and verifiable source of information, in the form of a legal register, that can be accessed by all involved parties from anywhere.¹²

Where to begin

As organizations strive to understand the extent to which blockchain can support their strategic goals, we believe they will benefit from a narrow focus. Prioritizing use cases which have the most disruptive potential to their specific segment/business may help garner the much-needed support from stakeholders and partners to adopt the technology. They will likely want to identify all the players necessary to bring their use case from POC to production and to clearly define all roles and responsibilities of ecosystem parties in order to have a sound working consortium. Additionally, a comprehensive governance structure should allow for smooth decision-making procedures, exit and entry to the consortium, and an overall more efficient ecosystem. While external blockchain solutions requiring market collaboration may take longer to materialize, firms can pursue internal blockchain experimentation to gain experience, build trust, establish standards and form the basis of collaborative engagements in new ways. Finally, as interest in blockchain grows, qualified IT professionals will be in high demand. CEO's, CIO's and CTO's of the world must consider training and developing internal talent while, simultaneously, leveraging external talent on an as needed basis in order to maximize returns on blockchain investments.

Asset Management firms considering implementation of blockchain technology for their business processes will want to clearly define a blockchain strategy that focuses on high value opportunities and understand how the technology will complement and leverage their existing systems architecture. This way firms can concentrate on transformative opportunities while managing and mitigating the risks associated with new technology adoption and process re-engineering. Opportunities generally stand the best chance of success when reviewed at the business line level and aggregated into the firms overarching strategy, as every organization needs to decide the right blockchain strategy that aligns to its business model, culture and technology roadmap.

Seven steps should be considered by firms wishing to experiment with blockchain:

1. Conduct research to learn and educate the firm around the benefits and potential use cases related to blockchain
2. Develop an initial strategy for blockchain taking into consideration the firm's existing internal capabilities
3. Identify blockchain use cases and begin experimenting (starting with those that may not require collaboration, ex: smart contracts); pay close attention to areas where a technology solution is not available on the market, or in the firm
4. Establish a center of excellence (CoE) consisting of both business and technology resources to oversee blockchain experimentation in conjunction with other technologies and internal initiatives
5. Execute prioritized use cases to demonstrate value and possibilities of blockchain at the firm
6. Use an agile methodology to execute prototypes with Minimum Viable Product (MVP) builds and rapidly refine and enhance based on feedback
7. Test, operationalize and scale

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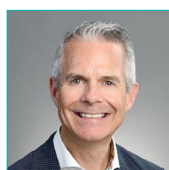


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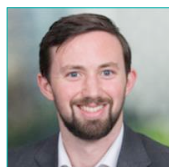
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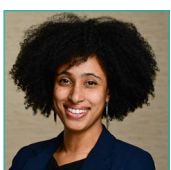
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