

NEXT GENERATION INFRASTRUCTURE FOR FUND DISTRIBUTION

LEVERAGING THE POWER
OF DECENTRALISATION

DISCLAIMER

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Executive Summary

DISTRIBUTION ACTORS CAN GROW IN NEW DIRECTIONS WITH SHARED, DECENTRALIZED INFRASTRUCTURE

A real growth opportunity for the European fund industry lies in a vision that is focused on the end investor and fosters financial inclusion and savings, while fuelling the real economy.

At its most basic level, this means that the buying and selling of fund shares and units should be simple and straightforward. Currently, the process is difficult and time-consuming for individual investors.

There are two aspects to aspects to this. One is using the right technology for improved accessibility and the other is a change in operating and business models.

On the technology side, usage of fintech propositions is clearly the way forward. A rationalised investor onboarding and investment process is in everyone's best interests and enables many efficiencies, as well as makes the compliance process easier for all.

There are various drivers that are pushing the fund industry in Europe to increase the level of investment into investment fund products from retail investors, and to make this model work requires putting investors back centre stage and serving their needs.

Understanding the real needs of investors will help lead to the creation of new products and services but also to





a more personalized offering. Intermediaries in the fund distribution supply chain can better serve investors while giving access to products and services that are superior to those on offer today.

With data flowing throughout the fund distribution chain, investors can access much more readily the information they are seeking while wealth and asset managers can access the investor information they need. It will grow the investor base, open up new client segments and enable further advancement of the fund industry. Advanced blockchain distribution platforms make such a vision a reality.

A reorganisation or reengineering of the chain is in order. Any such transformation needs to be deep and designed for the long term. Building a totally new infrastructure involves cooperation across the fund industry and it also offers the opportunity to embed financial technology in every single step of the process.

Such a new infrastructure is all about streamlining operations and shared processes in such a way that transparency and efficiency work together for the benefit of all actors in the chain.

New directions for fund distribution: summary of advantages

 <p>ASSET MANAGERS — Cost reduction — More value creation through data usage and digitization</p>	 <p>DISTRIBUTORS — Cost reduction — Digital transformation of investment processes and improved investor experience</p>
 <p>TRANSFER AGENTS — Cost reduction — Creation of new added value products and true integration in the distribution chain</p>	 <p>PLATFORMS — Cost reduction — Creation of new added value products, more adequate products and improved investor experience</p>

Chapter 1

Market analysis



Trends — Times are changing

EU retail investments: strategy to increase retail investor participation

In its capital markets union action plan of September 2020, the European Commission announced its intention to publish a strategy for retail investors in Europe in the first half of 2022.

The participation of private investors in the EU capital markets being relatively low, the broad goal of the capital markets union (CMU) action plan is to ensure that retail investors can take full advantage of the markets and that the rules are consistent. This means, among others, open markets with a variety of competitive and profitable financial services and products, as well as access to understandable product information. Additionally, EU legislation should be forward-looking and reflect ongoing developments especially for digitization of processes and delivery.

As EFAMA, the European Fund and Asset Management Association, rightly points out “the investment funds and asset management sector, as a leading player in the financial market, has a crucial role to play in achieving the objectives of the CMU.”

Consumers become increasingly comfortable with technology

New technology is radically changing consumer expectations of service. In particular, the past few years has seen many advances in digital finance, especially in their take up and use in everyday life.

Consumers are much more comfortable with and accepting of digitally transacting via mobile devices. This trend to mobile is seen across the world, from consumers in developing countries who have leapfrogged traditional banks and banking infrastructure to the touchless self-checkouts in stores elsewhere.

In parallel with this fast-paced revolution, many countries are examining central bank digital currencies (CBDC) – some have already launched and Europe is investigating the use of a digital euro, which could bring numerous benefits.

Higher levels of digital service and focus on buyer experience

The shift to mobile digital payments goes hand in hand with online user and customer experience. As already seen in other sectors, digital platforms can deliver on demand services that are easy to use and which will become the primary investor interface in finance.

Investors now want and demand levels of service that are akin to what they have experienced for years in other areas. They expect the ability to search and buy best-value products and manage them in a way that is tailored to specific needs.

In asset management, this means direct or indirect closer relationship with end investors, greater transparency, removing inefficiencies and adding convenience, both at the point of sale and throughout the investment life cycle. It also implies greater use of data and increased skill at creating relationship value at a granular level.

Fund distribution is part of the larger trend

Incumbents and fintechs are now innovating in order to best adapt to historical downward pressure on fees, reduced profit margins and changing investor preferences.

All actors in the investment fund distribution chain are endeavouring to position themselves in order to remain competitive. New business models will emerge and the winners will be those that can transform their way of working and the industry itself.



**THIS WHITEPAPER LOOKS AT HOW
A BLOCKCHAIN-BASED MARKET
INFRASTRUCTURE CAN MAKE THE MOST
OF THESE TRENDS**

Challenges — What needs to change

The primary model for fund distribution in Europe is B2B2C, with asset managers distributing via distributors such as banks, financial advisors, platforms and insurance companies. Moreover retail investor participation is relatively low, with the majority of individuals in Europe preferring bank deposits to direct investment in funds. EFAMA figures for 2020 put assets held by retail investors (as opposed to pension companies and insurers, for example) at only 28 percent of the total.

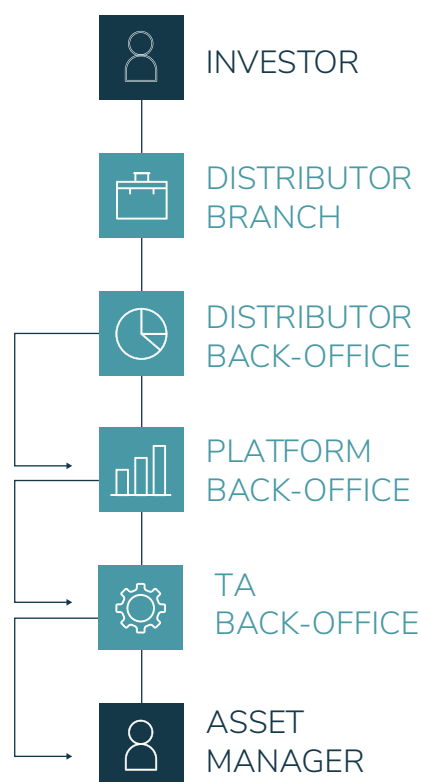
For many reasons, the current distribution chain has numerous inefficiencies.¹ In addition to the significant operational challenges discussed below, there is the fundamental problem of data and information about end investors. Large asset managers may be serving large numbers of investors but they have very little knowledge of who they really are and what they need. This situation exists due to:

- Use of nominee account structures at distributor level for the maintenance of investor identification documentation.
- The aggregation of investor orders by distributors.

The fund distribution chain is heavily intermediated with many redundancies and the various actors in the chain – asset managers, distributors, registrars, transfer agents and so on – are siloed and do not work together effectively or in a cost-effective manner. The same information and data may be held in unconnected and disparate data files and spreadsheets.

In short, if the industry wishes to grow and offer better services, the legacy technology is simply not up to the job. On the other hand, the chain, built up over many long years, contains much value that is untapped or underdeveloped.

Current Model: Different entities with different information systems, no shared information, poor UX, cost redundancy



¹ Sources for this section: ALFI, “*Digital fund distribution: recommendations for the Luxembourg fund industry*” and Deloitte Luxembourg, “*Europe’s fund expenses at a crossroads: The benefits of mutualizing the cost of distribution*”.

CHALLENGES IN THE DISTRIBUTION CHAIN

Account opening and investor onboarding

Account opening and onboarding covers a number of steps – such as identity verification, FATCA compliance, a MiFID questionnaire and so on – and is critical to all that follows in the distribution chain.

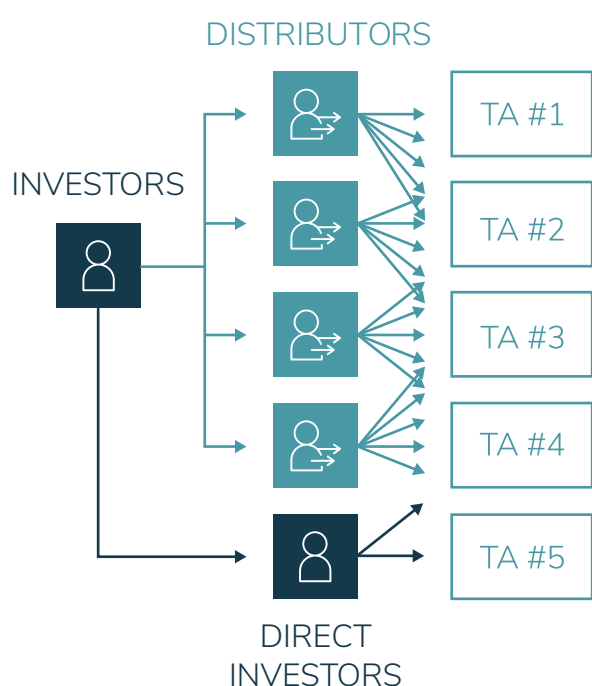
Long a constraint on greater participation in investment funds for retail investors, the onboarding process is manual, lengthy and not user-friendly. This applies to both retail and institutional investors. The existing process involves a significant amount of paperwork, including collecting and providing numerous documents evidencing personal details such as proof of identity, address and financial situation. Moreover, the same information is often needed over several stages.

Many transfer agents are not used to dealing directly with retail investors and have not invested in the process.

In the case of a D2C offer, where an asset manager uses its transfer agent as a direct client contact, the current model is unlikely to be fit for purpose and the cost of acquisition of an investor can become very high. This is due to changing customer expectations as well as the operational inefficiency and risk inherent in the largely manual processes.

Another issue is that due diligence checks are duplicated in the industry. The same investor is checked several times by different transfer agents and distributors.

Current AML/KYC Model



This is a suboptimal use of resources that leads to customer frustration and can create barriers to acquiring clients. In addition, any (perceived) redundancy bears the risk of these checks not being carried out with the appropriate rigor.

Transaction processing

Transaction processing is performed at every layer of the distribution chain and each intermediary provides a certain level of transactional aggregation. Transaction processing covers:

- Order routing, booking and confirmation of manual orders. Despite the increase in automation rates, this still represents 80 percent of order processing cost, mainly due to transfer agent and distributor processing time.
- Maintenance of automated bilateral connections via ISO standards (SWIFT) or proprietary FTP formats, i.e. the costs of maintaining multiple bilateral connections, parameterizing share classes correctly, SWIFT / FTP terminals and SWIFT messaging.

Position and account management

Retail investor positions in funds are aggregated at the distributor, platform or CSD level, meaning:

- Asset managers have insufficient information on their end investors, or in the best case are limited to high-level investor categories. Few other industries are likely to have such poor knowledge of their clients.
- In the current environment, fund managers develop funds and simply push new products to investors through intermediaries not knowing exactly whether these fit needs and objectives.
- Asset managers have to perform oversight of end investors as required by several regulations. They are therefore incurring heavy oversight and due diligence costs of their distribution networks.

Each company in the chain carries out its own account management and maintenance. Such redundancy requires important reconciliation efforts between actors. All this leads to high operational costs with low added value.

Under the current operational set-up, (e.g. manual KYC, manual transactions, no tools to ensure MiFid compliance, etc.), asset managers need simplification when launching D2C solutions because, among other reasons, transfer agents are unable to manage large volumes of retail investor accounts. It would be too expensive to serve such a high number of investor accounts. The market is used

to dealing with aggregated positions from distributors and largely runs on old legacy systems with low levels of true automation and no digital onboarding experience for investors.

Clearing and settlement of fund shares

Due to very different operating models and post-trade setups, purchasing a French or a Luxembourg fund does not result in the same experience (CSD versus transfer agent model). Overall in Europe, as regards clearing and settlement, there is a lack of harmonization. In the context of cross-border distribution, this results in the need for significant resources and raises costs.

Additionally, due to the large number of entities and process duplication in the supply chain, transaction processing and cash settlement are significantly delayed.

The process still includes many redundant manual tasks, such as the matching of cash data and reconciliation data.

Finally, intensive reconciliation work is required between the fund order received by the transfer agent and the cash received by the custodian bank. Furthermore, similar reconciliation exercises are also performed between each intermediary in the chain.



Intermediaries in the fund distribution supply chain perform redundant and manual tasks. Redundancy and complexity create high costs and lack of transparency on who ultimately is the client.

Transfers and corporate actions

High distribution costs are also influenced by other activities that are part of the investment life cycle, including transfers of shares and corporate actions processing.

Corporate actions processing also remains very manual and costly. Though the processing is automated, the input (ratio, date of the event, etc.) and the outputs (confirmation, notification and advice) remain very manual in terms of communication. Also, each of these events has to be replicated and duplicated at each layer of the supply chain at distributor, platform, CSD and TA level.

Around 10 percent of transaction volumes are transfers. STP rates for transfers are much lower than other transactions such as subscriptions and redemptions. In the existing chain, transfers are difficult and complex with much tracking and investigations needed.

The manual and bilateral processing of transfers between distributors and transfer agents constitutes the biggest portion of costs.

CHALLENGES FOR ASSET MANAGERS

The cost of the product

One of the major decision criteria for investors besides product performance is the cost of investment. Whether it is in the form of front-end loads or management fees, charges incurred by investors can be significant.

A correlation between investor preferences and fund expenses has been evidenced in the U.S., where assets tend to converge toward funds with low expense ratios. In Europe we see:

- Stronger competition from passive products (e.g. ETFs, smart beta funds and others)
- Increased investor awareness about product fee structures and competition between asset managers
- Increased transparency in a post-crisis environment
- Inducements ban post MIFID II.



Asset managers are not well-known brands in the retail mass market though they now want to distribute their funds to investors using a direct-to-consumer model in order to offer more personalized products and services, better user experience and cheaper products while increasing their margins.

The European fund industry must still overcome many challenges to secure and strengthen growth. Four trends that will directly impact future success are:

- The rise of non-European fund domiciles
- The development of regional passports and trade agreements (both a challenge and an opportunity)
- The financial requirements of an ageing population and the need to provide cost efficient pension solutions
- The demand for increased investor protection and systemic stability, with a potential growing role for non-bank financial solutions and intermediaries.

In light of these, the fund industry should control product expenses and limit distribution costs. While the former will help unlock the investment potential of European savings, still largely held in cash, the latter will improve the competitiveness of investment funds.

In their constant aim to improve efficiency, market players should assess the opportunity to mutualize elements of the distribution supply chain, hence reducing costs against the highly efficient nature of other, more mature, asset classes. In the general context of enhanced investor protection, the review of MiFID II will drive a significant reduction in European expense ratios, domestic and cross-border alike.

The combined effect of cost mutualization, fee transparency and tightened inducement rules will eventually trigger the long-awaited alignment of European fund expenses with their U.S. peers.

Difficulties to efficiently distribute the product

The cost of client acquisition is quite high and needs compensation by high levels of AuM. For asset managers, selling directly to end investors is not straightforward as they are not well-known, mass market brands and this means rethinking their marketing strategies.

The D2C model, by which asset managers build a direct relation with retail investors, is not widespread in continental Europe because:

- Banks and insurance companies retain the relationship with retail investors and remain the preferred investment advisors
- Asset manager brand awareness is low
- Asset managers do not want to compete directly with their distribution partners
- Asset managers do not have the operational capacity to manage large volumes of accounts and transactions
- Overall financial education of retail investors remains weak
- Third pillar and mandatory personal pensions are less mature.

Nevertheless, asset managers increasingly look to distribute directly to investors, aspiring to:

- Develop better products aligned with the right client segment and meeting the needs of individual investors
- Achieve disintermediation by reducing the number of counterparties involved in the investment process, thereby reducing fund distribution costs while providing better client advice
- Improve marketing, increase brand awareness and

enhance the client experience while developing client loyalty and trust when buying funds

- Solve future pension issues whereby retail investors will have to save in a more private and autonomous manner.

Regardless of distribution models and channels, whether they are D2C or a B2B2C, asset managers need to have closer relationships with end-investors.

Current TA model (mainly B2B)

Siloed environments replicate almost the same core operational activities



Fund distribution platforms, transfer agents and the one-to-many issue

While platforms and TAs have been and are still successful, none of them have been able to cover the full spectrum of services expected by both asset managers and distributors. They are all mature on core services (asset servicing, order routing/processing and settlement) but they still lack maturity in:

- Managing and using data for asset managers and distributors, i.e. delivering accurate and full fund data to buyers and providing investor data analytics to asset managers
- Regulatory compliance for distributors and asset managers (fund registration, tax reporting, MiFiD compliance, annual AML/CFT questionnaires and fund confirmation of AML/CFT compliance for distribution channels)

Transfer agents need to grow to encompass distribution integration and asset manager support



- Transparency on fees and beneficial owners i.e. facilitating the identification of beneficial owners for registration in the Register of Beneficial Owners
- User experience
- Profitability, due to their size and/or operating models
- TA services are often provided for “free” under a bundled proposition with fund custody, leading to low levels of new investment in added-value services and replacing legacy technology
 - » TA services have seen their turnover reduced due to increased intermediation reducing de facto the number of accounts (the omnibus account effect) and transactions, their two main drivers of revenues.
 - » Some platforms lack critical mass or deliver services to labour-intensive client segments.


Importantly, attempts to generate new revenues and diversify their product and services (data, enhanced client experience, better access and transparency) are hampered by their legacy systems.

A new operating model is required

Today, asset managers need to be able to anticipate where the distribution is going and keep up to date with changing end customer requirements. It requires new better integrated distribution and operating models with partners.

Best practice distribution models will require asset managers to:

- Enhance operating models to support evolving distribution
- Improve the efficiency of transfer agency
- Reduce complexity and better connect IT platforms
- Use and leverage data to support distribution
- Invest in infrastructure to enable clients to self-service
- Link up operations, distribution and portfolio management.

 **Fund distribution platforms and TAs have been unable to cover the full spectrum of services while the profitability of their operating model is questionable. Asset managers may raise issues linked to the viability of these models going forward.**

Opportunities — What can change

UNLOCK VALUE AND GROW BUSINESS

Clearly there is much value in the fund distribution chain and today almost all of it is either under-exploited or completely untapped.

To take advantage of all such hidden value, a reorganisation or reengineering of the chain is in order. Any such transformation needs to be deep and designed for the long term. Building a totally new infrastructure involves cooperation across the fund industry and it also offers the opportunity to embed financial technology in every single step of the process.

As it is now fund distribution is heavily intermediated with many redundancies. The first result of removing any such redundant activities is cost reduction but it is only a preliminary step.

With a next-generation distribution platform, actors can have a real-time view of both their own activities and the market as a whole. Additionally, intermediaries can be in position to share data and transaction information in a way that will open up new opportunities. To give a simple example, today, transfer agents have a wealth of data related to the buying and selling of funds, while asset managers struggle to have a comprehensive picture of their investors.

In short, advanced platforms will provide the means for fund distribution actors to develop their business and have a much better understanding of it.

OPPORTUNITIES THROUGH TECHNOLOGY

Blockchain

Blockchain removes the need to trust a third party to execute transactions, improving the speed of transaction processing. Transactions will be executed exactly as programmed, without the possibility to alter this process.



TRANSPARENCY

Knowledge on end investors (retail) and behaviours/needs for their key distribution partners in order to deliver added value services (B2B2C) OR access directly to this knowledge via D2C strategy and digital distribution. Single view of distribution network across fund domiciles (full issuance).



DIGITAL CLIENT EXPERIENCE

Access to unique experience via web or mobile app. Integration of all activities within UI (onboarding, transaction, settlement...)



COST REDUCTION

Products cost reduction via removal of technical barriers (D2C). Costs of operations through reengineering, rationalization of providers, and reduction of complexities (full issuance/B2B).



NEW BUSINESS OPPORTUNITIES

New channels of distribution, penetration of new geographies or new segments of clients. Reinforce some existing distribution channels by providing a competitive advantage.

Blockchain technology (and the broader distributed ledger technology) brings to fund distribution operations:

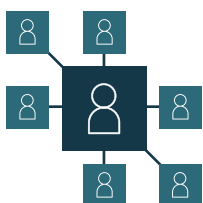
- **Improved profitability and quality:** automation (self-validating network + smart contracts enable auto execution of business rules), control at the individual data element level, maximum flexibility over what data is shared and how, full traceability, security but data encrypted and segregated at the data element level, speed and efficiency.
- **Increased transparency among parties:** distributed, holistic view single source of truth, all stakeholders see the same information to which they have access.

Therefore this technology is a very suitable solution when it is required to:

- **Maintain the share/unitholder register(s)**
- **Process investor transactions (commitments/subscriptions) capital calls, redemptions, exchanges, transfers, distributions/ dividends**
- **Process reconciliations, distributed ledgers as a shareable infrastructure that facilitates maintenance of ownership details of investors, processing of transactions and automation of business processes.**

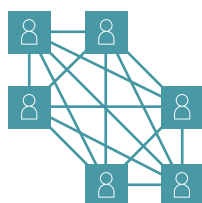
In this way, the existing distance and separation between trading and post-trading is much reduced. This means that both the transaction phase and the clearing-and-settlement phase can be carried out together automatically and rapidly. This automation is possible partly because of the programmed and pre-agreed conditions within smart contracts. It is all about dealing with a high number of investors in the most frictionless and automated way.

PRE-BLOCKCHAIN



Centralized ledger with **centralized** verification and computation

WITH BLOCKCHAIN

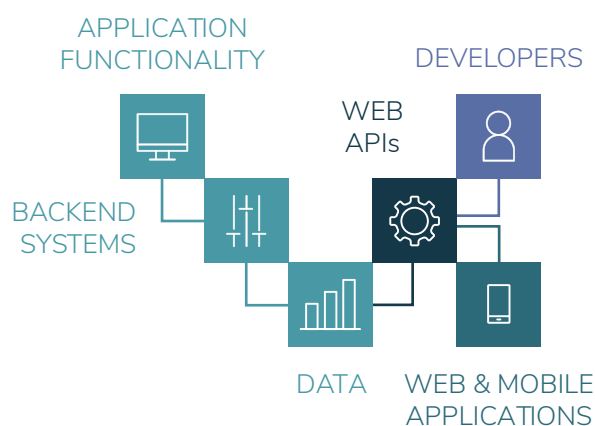


Distributed ledger with **decentralized** verification and computation

APIs

API stands for Application Programming Interface. APIs enable different programs or services to communicate with each other without requiring the API to know all underlying details of the software or system it is talking to. They allow companies to easily share data with users and greatly simplify development and deployment of services.

APIs foster collaboration and interoperability of an entire ecosystem and enable the emergence of new business models. FundsDLT provides a complete ecosystem of APIs and workflows that manage direct investor access to investment funds. It ranges from onboarding all the way to the investment process and includes all necessary regulatory and compliance controls.



Cloud

The cloud offers new ways to connect, collaborate, do business and build bridges between business processes. With the aim to improve the overall offer and future-proof their business, cloud migration is one of a suite of interconnected actions – such as use of APIs, artificial intelligence, big data analytics and blockchain processing with smart contracts – that asset servicers now need.

Cloud computing is based on a simple but powerful idea: remove the need for physical in-company servers through data centres. For companies, this results in much greater flexibility, allowing them to select the appropriate computing power, resources and IT services as the need arises and on a pay-as-you-go basis.

The ability to maintain a high level of operational resilience with a smaller outlay and less resources is also an important win for all companies.

Therefore, the cloud avoids the need for investments in standardised infrastructure, as well as activities and services such as hardware purchasing and lower-level operations and management. Because of this, companies are freed up to more fully focus on value creation and solutions.

The cloud enables software as a service (SaaS), meaning ready-to-use software with the entire infrastructure stack, security and services required.

Cloud migration enables companies to reach high standards of resilience at reasonable costs and combined with a high degree of flexibility and speed. These are distinct advantages of cloud services and which are much needed in today's changing investment fund industry.

Big data and data analytics

Big data and analytics refer to the statistical real-time study of a large amount of data. Data are extracted and categorised to identify patterns and construct narratives around the data. The analysis makes use of new technologies: powerful computational systems programmed with sophisticated algorithms have been developed and will enable asset managers to profile their clients' behaviour better, allowing for tailor-made products, and to adapt the whole chain of services to their clients' needs.

A decentralised infrastructure enables actors – meaning both investors and distribution actors – to access data, in a permissioned way, from other components of the infrastructure. Such an infrastructure is built around the idea of normalised data along all points of sales. This avoids the current multiplicity of variable quality or inconsistent sources, one for each point of sales.

Furthermore, shared decentralisation across the ecosystem eliminates the complex – and costly – steps currently needed for retrieval, aggregation and processing of data. It enables the capturing of data in real-time and thus opens up possibilities for real-time data analytics.

The clearest benefit arises from the fact that all actors have a much better view of the investor and investor behaviour. A blockchain-based infrastructure brings the asset manager closer to the point of sales and to an end-investor. This unlocks multiple attractive opportunities for better services and more competitive products.

Having better investor information to hand means that the ability to predict behaviour and tailor products is enhanced. The personalisation and hyper-personalisation that we see in other areas can be applied to savings. Beyond this and for day-to-day operations, because asset managers have so much more real-time information on subscriptions and redemptions they can have greater control in managing fund liquidity.



Chapter 2

Use Cases



Use Cases

Use case #1 represents the most basic use of DLT as applied to fund distribution. It is for asset managers who are ready to create a D2C side of their activity. It brings operational efficiency to the process and enables asset managers to significantly lower the cost of acquisition for these types of investors.

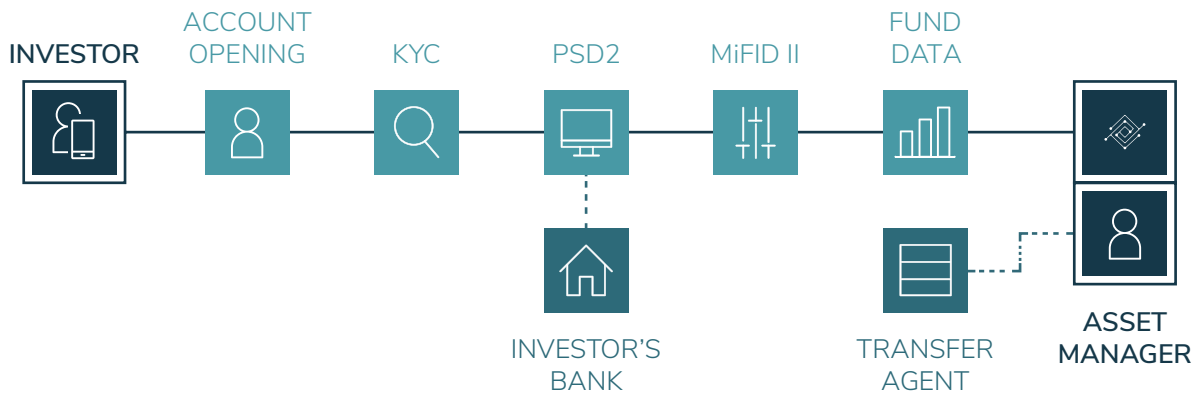
It especially responds to the needs for automation and scalability, which are essential in order to manage thousands of accounts and to provide a digital investor experience.

Asset managers, via an APP deployment, can thus have a cost-effective client-centric approach that can

leverage their own brand values. Investor onboarding can be done in minutes digitally and transaction processing is frictionless.

Managers can thus target and reach new segments and grow assets under management. Importantly, it also enables asset managers to obtain information advantage and data insight. They can thus easily and efficiently monitor, manage and advance D2C fund distribution.

USE CASE #1: DIRECT FUND DISTRIBUTION BY AN ASSET MANAGER



Use case #2 is for asset managers seeking to simplify and streamline their business and operating models by bringing the transfer agency function in-house.

Currently for many, transfer agents are the gateway to distributors and investors and are the first point of contact for client experience, for intermediated business. Asset managers want to offer better services, above all for a new generation of intermediaries – both financial and non-financial institutions (embedded finance) – that are very much set up for delivering digital services.

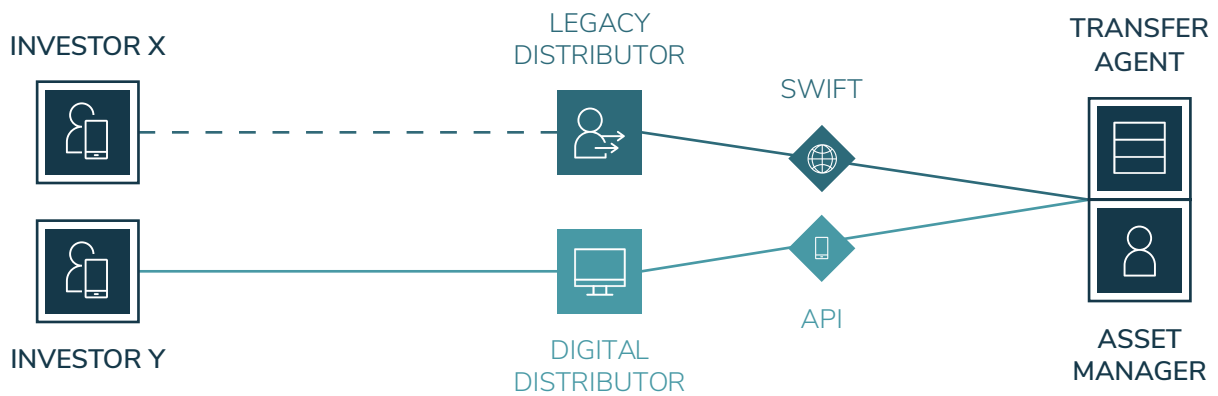
This solution brings all the benefits of the above use case #1 -- rapid investor onboarding and processing at scale and so on – but additionally includes a “digital TA” within asset manager activity, as part of its plug and play architecture. It also enables greater automation and workflow management.

Importantly, it permits the asset manager to preserve flows with existing distributors that are using legacy systems while allowing the managers to open up opportunities with new digital distributors via APIs.

On the data side, transparency can be enhanced. It removes the need for aggregation of investor orders at transfer agent level, giving asset managers immediate transparency.

Overall, this use case brings much needed rationalisation and cost reduction.

USE CASE #2: RE-INSOURCING THE TRANSFER AGENCY FUNCTION

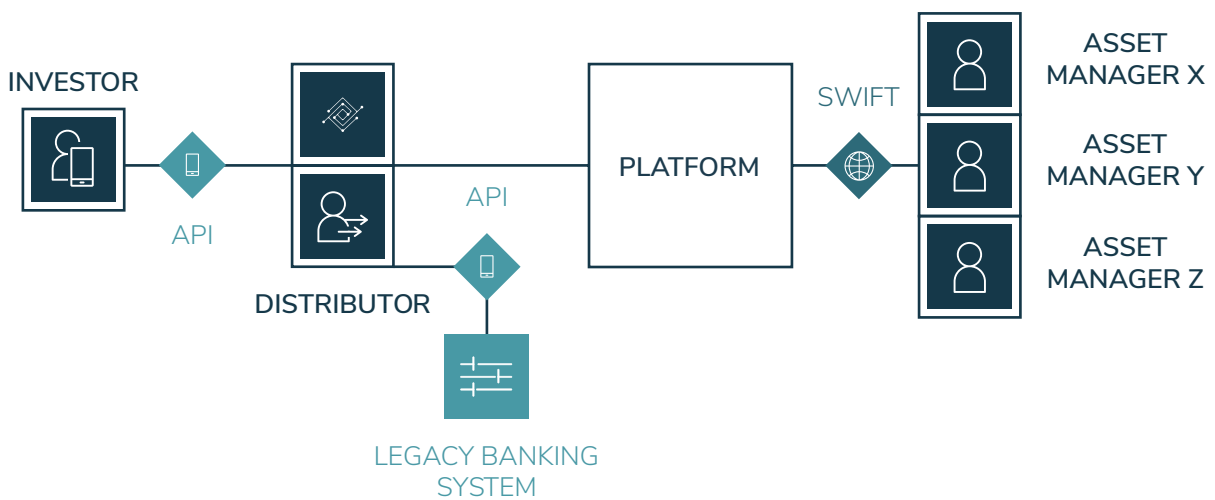


Use case #3 is specifically for banks distributing funds who are in their digital transformation process and reshaping their technology stacks by using cloud computing. These institutions need wider access but without the current problems and inefficiencies related to risks when aggregating and costs of reconciling between their clients and third-party funds positions.

With a plug and play architecture, it enables these actors to be in a position to deliver value within a next-generation distribution ecosystem, focused on interoperability.

As for use case #2, it creates the conditions for rationalisation and cost reductions, providing distributors the opportunity to offer investors multiple products without complexity, as well as enabling automation and workflow management.

USE CASE #3: BANK DISTRIBUTING INVESTMENT FUNDS VIA A MOBILE SOLUTION



Use case #4 represents a fully-fledged fund distribution ecosystem operating within a group of companies and sharing a decentralized infrastructure.

Even within the same banking group, most of the time, information flows between points of sales and financial production centres is inefficient and insufficiently transparent.

By operating within a new generation of infrastructure, these companies can leverage the advantages of cloud-based solutions and greatly reduce costs by simplifying business and operating models.

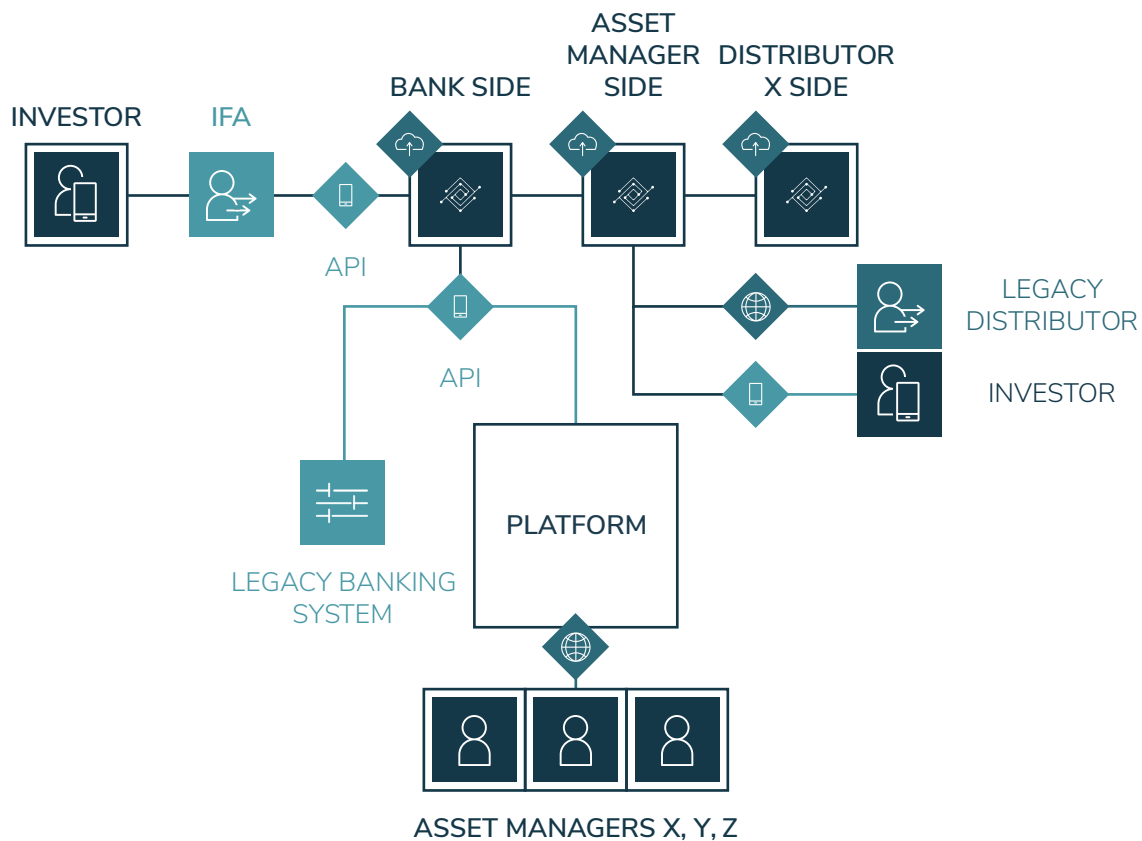
Furthermore, shared decentralisation eliminates the complex steps currently needed for retrieval, aggregation and processing of data. It enables the capturing of more and better quality data in real-time and thus opens up

possibilities for real-time data analytics. A decentralized infrastructure allows information to be readily accessed in an effective manner beyond internal boundaries and can help solve many of today’s issues.

As for the previous use cases, this enables frictionless transaction processing and automation and workflows management. With a plug and play architecture, it provides better interoperability between the broadest possible range of actors, including with existing banking systems.

In this manner, the boundaries between internal and external business environments can be eliminated.

USE CASE #4: GROUP SHARING A DECENTRALIZED INFRASTRUCTURE BETWEEN ENTITIES (AM & BANK)



Chapter 3

FundsDLT solution

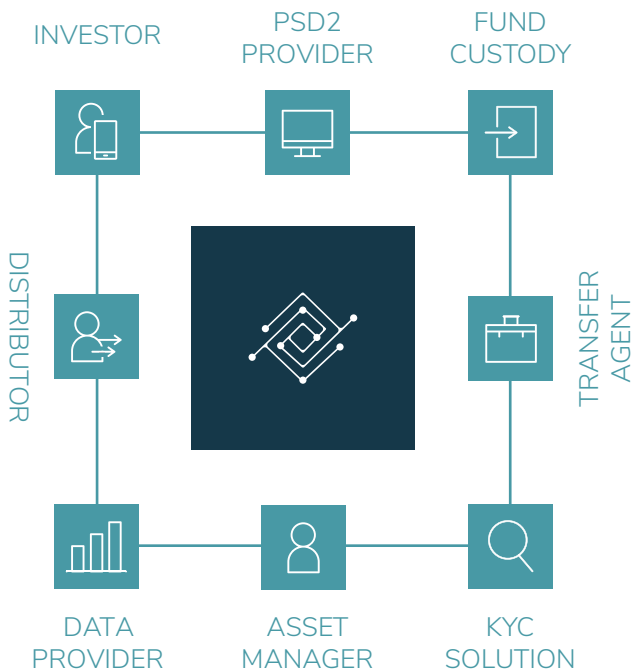


Solution — Change is here

FundsDLT has created a next-generation, decentralised infrastructure for fund distribution. It enhances trade processing, reporting, eradicates the need for duplicated activities and enables peer to peer interaction with end investors on a scalable basis.

We have concentrated on critical and essential processes such as registrar and account opening, transaction processing, cash settlement and reconciliation, as well as interoperability, while never losing sight of the fact that for our clients all innovations must enable efficiency gains and cost reductions. With these in place, the power of technology to open up real time reporting and analytics is realised and digital transformation is accelerated.

Our founding shareholders comprise institutional leaders in market, post-trade infrastructure and services joined by two major companies active in asset management and fund services. They enrich FundsDLT knowhow, combining expertise from the technical side with deep knowledge of the investment fund business.



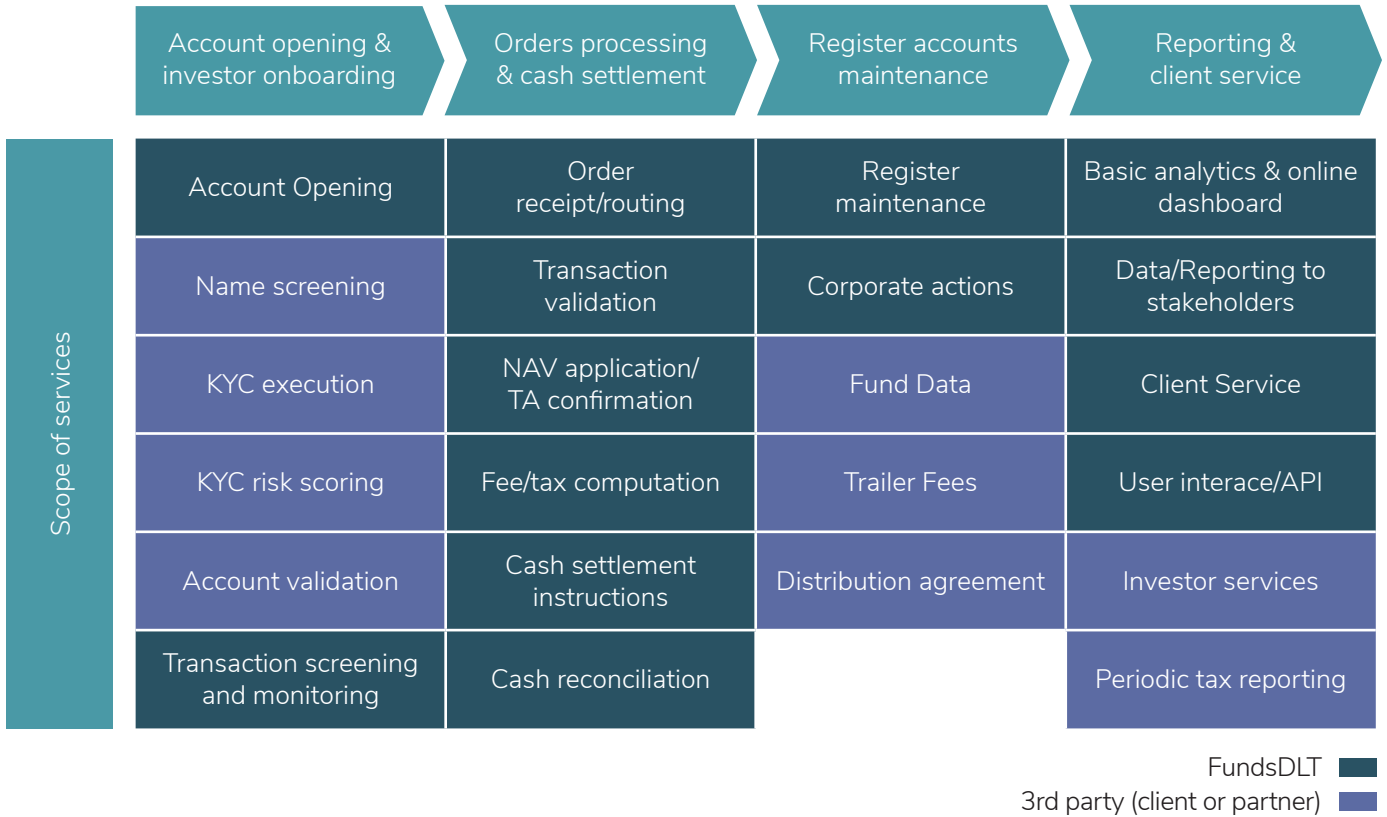
We deliver

- Register and account amangement
- Transaction processing, commission and tax
- Cash settlement
- Reporting and analytics

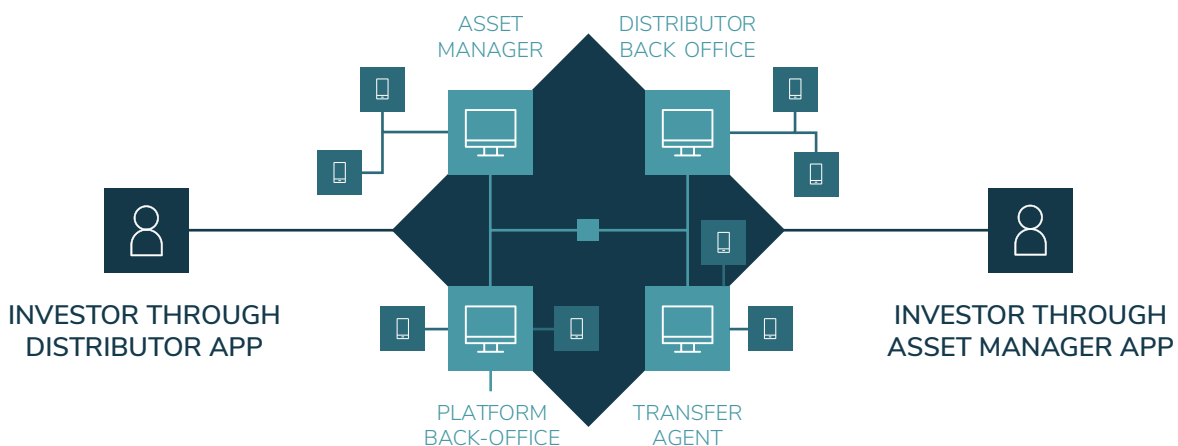
We integrate

- Automated Cash Settlement
- KYC platform with digital investor onboarding
- Data Hub for investors and fund management
- User interfaces (Web or App)

FundsDLT provides a solution to efficiently onboard retail clients, ensure products suitability and compliancy and manage transactions and cash settlement automatically



The new model: a shared fund register amongst all intermediaries providing better investor experience, transparency, cost efficiency, more digital and personalized service



Chapter 4

Technology



PUBLIC CLOUD, PRIVATE BLOCKCHAIN

FundsDLT is built on Quorum, a complete open source blockchain platform for businesses. All applications developed and provided by us are cloud native and based on microservices.

We run a unique combination of public cloud and DLT and have a 100% cloud strategy. Our solution is based on cutting-edge IT architecture and technologies. The infrastructure is outsourced to the public cloud to enhance quality, scalability, speed of delivery, so FundsDLT can focus on business applications and service delivery.

- Usage of blockchain to mutualize redundant activities across intermediaries and reduce costs
- Transparency all along the supply chain and ability to share data between all actors while maintaining confidentiality amongst participants
- Usage of APIs to ease access to the platform and data
- Usage of cloud services to ease development and reduce infrastructure costs
- Ecosystem improving current operating and business models through API integration.

The FundsDLT stack is based on public cloud, Docker, Kubernetes, cloud based distributed databases, and event streaming platform, DLT, microservices, API management and web applications.

Delivered services are based on 3 datacenters hosted on Azure. The “node” delivered by FundsDLT contains the microservices and the client APIs, databases and DLT nodes. The databases are essentially used for caching, as the DLT is optimized for distributed storing of data and event triggering for new updates.

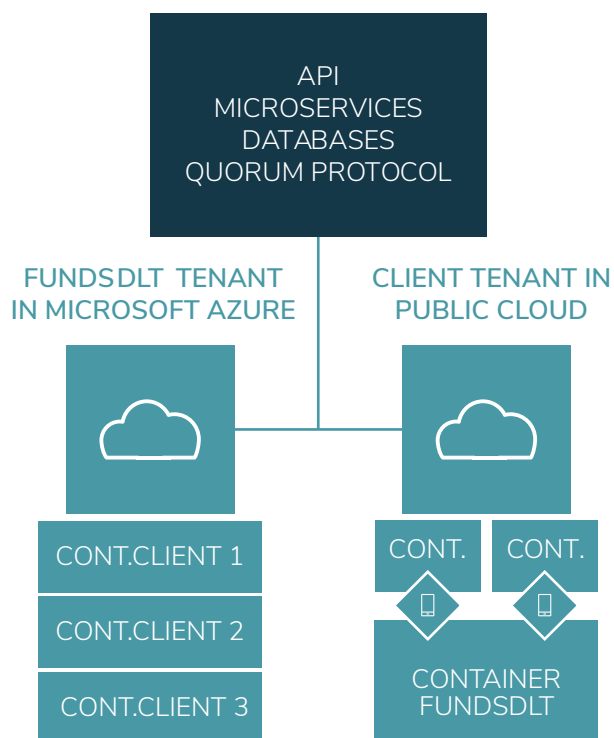
Microservices are deployed through containers managed on Kubernetes to limit lock-in and to be able to deliver the service on other cloud providers and potentially to local infrastructure if needed.

2 models

FundsDLT delivers two models:

- As Software as a Service (SaaS) provider, delivering the full applications stack based on Microsoft Azure
- As a software provider, delivering a full application stack and tools deployed on a Client cloud.

FUNSDLT CONTAINER IN...



The Public Cloud is used to enhance quality, scalability, speed of delivery

In the SaaS solution the infrastructure is outsourced to Microsoft Azure Public Cloud to enhance quality, scalability and speed of delivery.

The technical architecture is designed as single tenancy where each client has its own independent instance of the software.

Private Blockchain

Being built on Quorum enables us to leverage the Ethereum open-source protocol, integrating privacy and a set of high-value blockchain modules delivered by ConsenSys.

Quorum was initially developed by JPMorgan as a blockchain based on Ethereum, adding enhancements such as privacy, new consensus protocols to achieve speed and developer and monitoring tools for deploying financial industry applications.

ConsenSys acquired Quorum in August 2020 to further drive developments and deliver added-value services and production grade support. JPMorgan is now a ConsenSys customer and all enterprise work being done at ConsenSys is under the new “ConsenSys Quorum” brand. ConsenSys plans to merge its existing protocol engineering roadmap with Quorum, leveraging the best of both codebases.

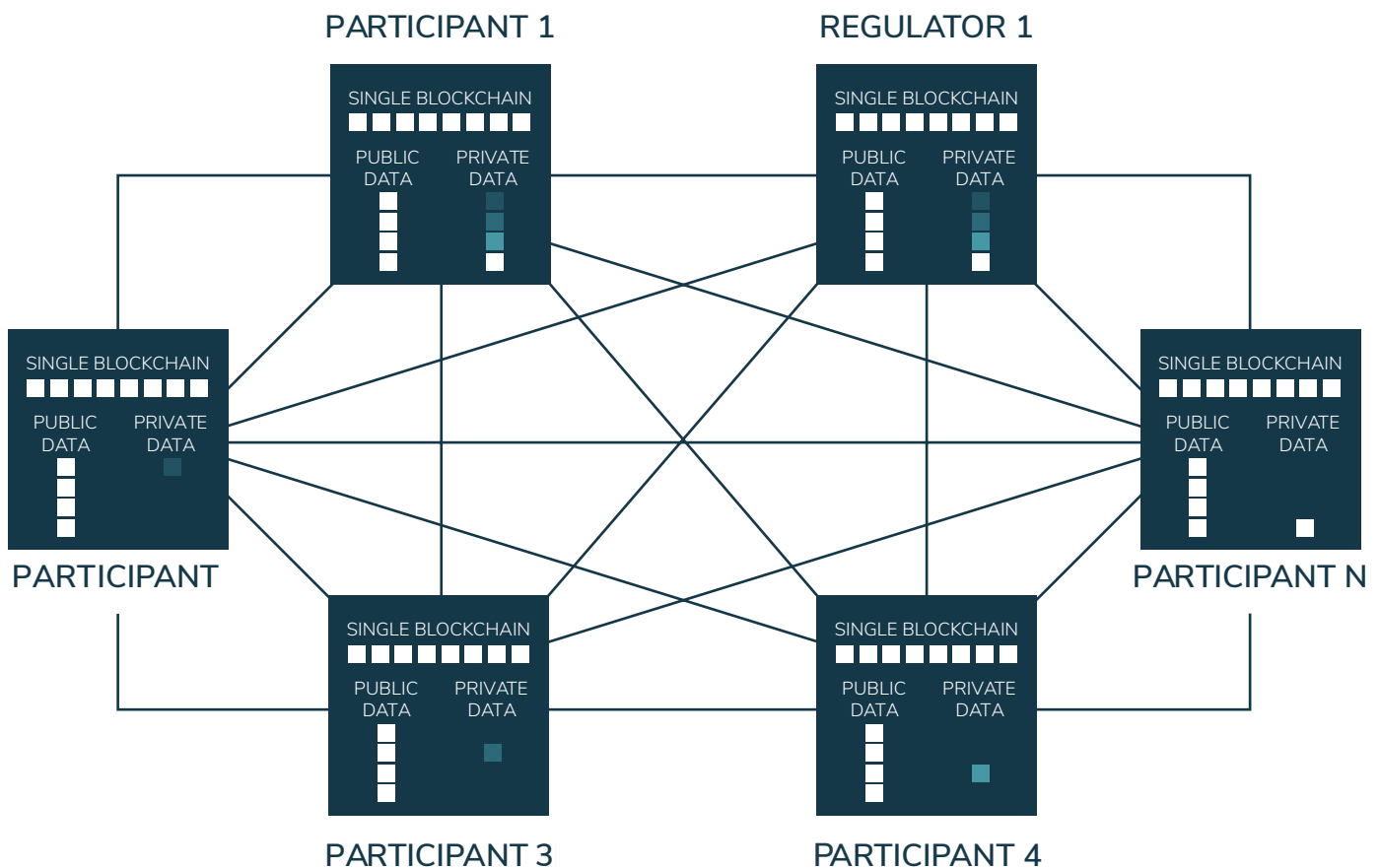
Additionally, JPMorgan made an undisclosed strategic investment in ConsenSys.

Quorum is a blockchain where the consensus process is controlled by a pre-selected set of nodes; for example, one might imagine a consortium of 15 financial institutions, each of which operates a node and of which 10 must sign every block in order for the block to be valid. The right to read the blockchain is restricted to participants.

- Quorum is an enterprise-focused version of Ethereum.
- Quorum is ideal for any application requiring high speed and high throughput processing of private transactions within a permissioned group of known participants. Quorum addresses specific challenges to blockchain technology adoption within the financial industry, and beyond.
 - » Privacy and transparency: Quorum supports both transaction-level privacy and network-wide transparency, customizable to business requirements.
 - » Performance and throughput: Quorum supports high institutional transaction volumes.
 - » Permission and governance: Quorum supports blockchain transactions among a permissioned group of known participants.

- Quorum is very adapted to smart contract development and tokenisation processes.
- Development has been performed in a way that FundsDLT could eventually migrate from one technology to another.

Data privacy in Quorum is achieved through cryptography and segmentation. Cryptography is applied to the data in transactions, which everyone sees on the blockchain. Segmentation is applied to each node's local state database which contains the contract storage and is only accessible to the node. Only nodes party to private transactions are able to execute the private contract code associated with the transactions which results in updating the private contract data storage in the local state database. The result is that each node's local state database is only populated with public data and private data they are party to.



Now is the time

Fund distribution actors are seeking to address the issues the funds industry is currently facing and to future proof and grow business. These issues require a serious and far-reaching response, one that involves profound changes in systems and operations.

Creating a new infrastructure for the distribution chain for all actors, large and small, will result in new operating and business models that are streamlined, more agile and more intelligent. Such an infrastructure, built on a backbone of distributed ledger technology and shared across all actors, enables the fund industry to step up its game.

There are already clear business opportunities present and now is the time to begin the process.

Running day-to-day operations via a DLT infrastructure is a truly fundamental change. For operations, it brings process automation and efficiency as well as cost effectiveness. Front, middle and back offices, across organizations and entire value chains, can be transformed to enable data and information to flow seamlessly between all actors. The complete process is greatly simplified and made much faster.

Meeting this challenge means partnerships and working with fintechs that can provide very specific services and tools and thus help optimise business and operational processes. It also means adopting an “as-a-service” mindset that uses the fintech ecosystem to the best advantage of a company.

Built on solid foundations by an expert team and leading industry players, FundsDLT represents a trusted partner for the investment fund industry in its transformation to next-generation distribution.

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