

Managing Risk, Leveraging Technology and Building Resilience for the World's Official Institutions

A Conversation on Data Integrity and Systems for Investment Institutions



As data continues to grow in importance, official institutions today face increased complexity in operating models and require heightened diligence.

In this white paper series, State Street partners with Operational Risk Consulting to explore these challenges and engage in a discourse to navigate them.

How Investment Institutions Are Preparing for Effective Data Management

Investment institutions have significantly transformed in the last decade, owing to changing strategies, rising client expectations and evolving regulatory demands. Official institutions are expected to provide accurate data in a transparent way and in wide range of formats.

There is emphasis on efficient data systems that can enable investors to make informed decisions. For effective portfolio decisions, official institutions need the right tools to gain a competitive advantage. As data and analysis for alternative assets is gaining momentum, it is important that insights from multiple sources are harmonized and communicated in effective formats to different functions within an organization as well as to external stakeholders.

Organizations have started utilizing established methods such as cloud computing for easy data access to meet multiple operational requirements, but some remain wary of security implications.

Navigating through market complexities, organizations help clients strive to achieve data transparency for accurate insights that can lead to potential higher yields.

Our head of EMEA insights, James Redgrave talks to Riccardo Lamanna, our head of Global Exchange in EMEA and Stephen Johns, our head of Alpha Data Services in EMEA and Nigel Morriss, chief executive officer of Operational Risk Consulting to analyze and discuss the challenges and opportunities for institutions in data management and integrity.

A Conversation on Data Integrity and Systems for Investment Institutions



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Drivers of Change

James: Let's start by talking about what the main factors are that drive investment in data management and new data operations for investment institutions.

Nigel: When you think about the factors influencing data management, you have to appreciate that the investment world is inherently a different place now to what it was even 5 or 10 years ago. The complexity of investments has increased significantly in line with the changing needs of investors. Official institutions tend to invest across the spectrum of asset classes, resulting in data complexity and the need for accurate information to be able to report on those positions, whether they're liquid or illiquid across their portfolios. In response to that complexity, we see the need for a suitable investment data solution, a system that provides essentially a front-to-back offering across these diverse and complex investment strategies.

Stephen: I echo what Nigel described. A slightly different angle on the same view is that I think we're really seeing that technology and data need to be part of an official institution's competitive edge. Earlier it was, "Do you have great fund managers? Do you have great processes around fund management activity?" However, now very fundamental to that question is technology and access to data, and not just institutional data. It includes market data, index constituents, curves, environmental, social and governance data, etc. You're bringing in new instruments that are very data-hungry to drive the decision process. So, it's where we see technology and

then specifically the management of data as a key part of the competitive edge that these investment organizations are looking for.

Riccardo: Data is fundamental for the investment process that we have at the moment, but one thing to really understand is how you get all these data together to make them usable. I would say that there are two very distinct processes when you look at data. One process is to put yourself in the position to manage your investment activity and to collect data in a structured way, with efficient systems and technology. Second, you then generate valuable information that are used for subsequent analysis, for either reporting purposes or to find specific themes that can be part of or affect your investment process. So, there is a cycle. You need to process the data and then enter into the analysis that you need to do, both from an administrative point of view as well as from a value-added point of view. To do all of this, you need new technology, data management and the availability of the data in a system that can host a large quantity of data in an efficient way, i.e. the cloud.

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— NIGEL MORRISS

Data Systems and Infrastructure

James: So, data is becoming increasingly important across a very wide variety of business areas. But, I also hear that data systems must be interoperable: data is being used by multiple functions within an organization as well as inputted into systems run by third parties, coming from a variety of sources. What is it that investment institutions are doing, both in terms of reorganizing their own internal operations and systems, and also in terms of working with partners and other organizations, to get the benefits of this more efficient and widespread use of data?

Stephen: There's been a very distinct evolution in the industry. Nothing's fundamentally changed in the importance of data. Data has always needed to be accurate and timely, but what we have seen is the subsequent development of the relevant investment technologies. Official institutions have moved from needing to place reliance on a single point of data to needing aggregated data. Multiple financial services need to utilize golden sources of data to ensure lineage and data flow through a connected eco-system is hydrated and accurate. This needs to be the flow from the front office and the investment decisions through the middle office investment accounting and to the fund accounting in the back office, and all other services that need to hang off this cyclical flow.

The investment and technology industries have developed and changed over the last few years. The introduction of fintech has added to the changes. I see a clear drive for official institutions to harmonize the information they receive, to

look to one golden source of data they can use to make critical strategic investment decisions. There's also been a clear realization among official institutions that the power of the systems that they have internally and the data that they are consumers of is imperative.

Riccardo: With technology and infrastructure, data is key, but we first need to ingest, clean, make them transparent for official institutions and for their applications to consume. Similarly, we need to let third-parties' applications and services enrich and consume data. The key is to create an open and interoperable platform, where different parties (service providers, fintech, software providers) can link to, to deliver additional information and insights. At State Street, we have developed and implemented this platform to provide front-, middle- and back-office functions, in an open and interoperable manner. Other providers can access it and integrate with it to provide added value to their clients.

Nigel: I think it's clear that we're now in a period of harmonization. There's been a fundamental shift from a 'them and us' approach, where different entities were vying for opportunities to be the data owner. Now, with this complete holistic architecture that we are describing, with these advances in technology, we can provide and facilitate interoperability. It's what many investors have been looking for, because it facilitates that complementary set of benefits between the resources of global corporates with established and powerful platforms and smaller entities, like fintech and other data providers, that are able to connect into that architecture.

New Technology

James: Now, all of you have touched on technology and its role in driving some of these improvements in data management and use of data. Perhaps we could go into a little bit more detail about the types of new and emerging technology, which are making a difference here. Things like artificial intelligence (AI) and cloud. How are those things improving – and how are they set to continue to improve – the data landscape for institutions?

Stephen: I think a combination of technology evolutions is taking place. On the one hand, there are emerging fintech players and on the other, there are large, established players. Then there's collaboration between those two categories. You look at Amazon and Microsoft and there is your cloud capability. There's a huge progress with cloud and the speed with which you can establish some of the services and connectivity to drive architecture change.

One comment specific to official institutions: traditionally, some sovereign wealth funds (SWFs) have been reticent to use cloud-enabled services. They want to have the data directly in their architecture, to have a box and that box needs to run in their data center where they can see it and control it. There's now an acceptance that this isn't the route they will necessarily take as it is not as secure as a provider that's doing this very carefully and putting a lot of time and effort into the security around it.

Then I think, there are other technology advances that allow the normalization and the aggregation of data, where you've got emerging technologies

coming very quickly and giving a very powerful offering. Snowflake, for example, is enabling a next step in data sharing. There's a lot of scope for different types of technology organizations to provide offerings such as data dictionaries, lineage tooling and data catalogues. This is critical to the service in which a client and then a provider can deliver an interactive data service where the client still has full visibility of their data assets and feels in control. For example, take a piece of data that's appearing in an online factsheet. You can see and make sure it's the piece of data you wanted to use. You see that data journey all the way through the data flows, through the investment process, all the way to appearing in a factsheet. So, it's very exciting at the moment to see what's going on around the technologies available to help these kind of data services we're talking about and how State Street is building technology ecosystems to deliver data services upon.

Riccardo: The technologies, either already available or being developed, must satisfy three requirements: integration, integrity and intelligence. We need to integrate the data and that is what we are doing with sophisticated data management services and structures. We maintain the integrity and security of information using cloud technology. We should underestimate that the amount of data that we collect and store now is much higher than it was only 5 or 10 years ago. For example, State Street, as a security services provider, receives transaction records from clients which may be 50 to 60 data elements long. What we used to do in the past was to cut out everything

that we didn't need to perform the function that we were paid for like matching, settling and booking the transaction. What we do now, which is the real value of the new technology, is store all data elements and classify them intelligently to make them consumable. The cost of the storage of the data is not as expensive as it was before. So, we store this massive amount of information and secure in the cloud to let artificial intelligence and analytics, which is the third 'I', do their job efficiently. This is made available if you have good integration and storage.

Nigel: I think this is a brilliant way to articulate an approach to data – this journey of integration, integrity and intelligence. In any entity that owns the assets, operations is the gatekeeper of data.

They must ensure all data, which come from custodians, fund administrators and a myriad of different entities, is absolutely accurate before it is passed on to the investment team. Of course, this is the role of each provider, but the asset owner's operations team must still act as an overlay before passing on this information to the investment team. The investment team needs to act on it promptly and make some potentially significant investment decisions off the back of the data that it receives. When so many data sets are being consumed and aggregated, those enhancement processes and protocols are of critical need. Think of the nature of these asset owners that we're talking about here. They, like many institutions in the world, are responding to a set of challenges such as the world has never seen before. Strategic decisions of huge importance need to be made daily. As the evolution rate is fast

within these organizations, they need to be able to move quickly. Therefore, it becomes imperative that they have access to quality data.

James: Regarding the rate of evolution in this area and how quickly institutions are changing as the circumstances around them and the technology changes, what's going to develop in the relationship between the institution and the provider? What do you see the future looking like compared to the point to which it's evolved today?

Nigel: I think we must start with the premise that if we build today, we have to build for the future. Build the house today that you need for today but allow for extensions to be added to grow the property. When we've talked about fundamental shifts in people's thinking in this area, it isn't just thinking about their relationship with custodians and fund administrators. It's clear to me that as prescient, highly sophisticated investors, official institutions are looking to continue to work with all these parties, but also to harmonize those relationships when it comes to data. Several entities have asked me how they can utilize AI and there are many different levels of complexity to where and how it could be harnessed in financial services. Investors are willing to engage in those conversations about how they can be educated about it. I would also say that core data and system offerings that are already available were developed hand-in-hand with major clients. Take them on the journey when planning for the future. Don't try to go off and do it independently. Open up a critical dialogue between data users and consumers.

Stephen: I agree. For example, we've worked with a SWF over the last couple of years that had their books of business separated across four providers. They were all running custodian and fund accounting processes, so that their assets were separated. That was good for them in the past. Those providers have a rich relationship that's not going to necessarily change, but they now need to pull that data together. It's no longer acceptable to that organization to have four separate books of business. This is where the data service comes in. We can stitch it all together. So, that's a step that we see becoming a reality. Some of the things we've already talked about are automatic checks of data through its lifecycle. I think we're going to see that shift into AI. Now, can we have some of the platforms themselves flagging insight rather than having lots of human intervention? I think this foundation of the data architecture – standardization and aggregation – is now going to be the platform that AI and insights can really grow upon.

Riccardo: I think it's very important to understand that we use AI on a day-to-day basis in our processing. We collect data, transform it into usable information and through the use of AI, we anticipate issues. We can see when trades are not being matched properly and we try

to anticipate an issue with certain securities depository or a certain broker. This helps our clients with liquidity management. One other way in which a provider like us is using AI is in trend analysis based on data we collect while providing our services to identify macro trends and provide valuable information to our clients. Clients want us to take risks, to make investments, to consider their needs and integrate them in our systems and offering. When something really special comes out, we develop it with the client and take it as an opportunity to create a solution that could be made widely available. This has proven to be more powerful than single way development.

Stephen: Technology and business knowledge are really coming together. We have data scientists, data architects, but they really have to understand the clients, the financial processes that they're dealing with and that's something that I've seen develop in recent years.

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— STEPHEN JOHNS

About State Street

State Street Corporation is one of the world's leading providers of financial services to institutional investors including investment servicing, investment management and investment research and trading. State Street partners with official institutions, sovereign wealth funds, central banks and other official institutions globally to help address their biggest challenges.

About Operational Risk Consulting

Operational Risk Consulting or 'ORC' is a UK-based specialist risk management advisory firm, which advises institutional asset owners on managing the operational risks associated with investing. ORC's key objective is to help raise investment operations standards.

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