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# Innovate or Stagnate

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Digitalization in Investment Management

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# Abstract

For decades, investment managers have been digitizing information and processes, but we've only recently moved into a new era where firms are re-engineering every facet of the business upon a digital foundation. This paper will explore the transformative technologies that will drive digitalization efforts in the future, how asset managers will need to differentiate themselves in the new digital landscape, and practical steps to embrace the digital frontier for organizations that are still held back by legacy technology, processes, and behaviors.

## Introduction

**Digitalization** is the use of digital technologies to fundamentally change a business model. Though often used interchangeably, it is different from **digitization** which is the simple transfer of information to digital format. We underscore this difference because it captures the sweeping and transformative nature of the digitalization trend.

What does it mean to take on digitalization within the asset management industry? As with several other transformative initiatives underway in our space, the lines are blurring across the front, middle, and back office in terms of what it means to "go digital." We're seeing an interest in digitalizing manual back office functions with robotics and cloud-based software playing a major role. In the middle office, sophisticated data architectures and tools hold promise for promoting operational efficiency across the enterprise. Moving to the front of the house, firms are increasingly asking themselves how they can use technology to strengthen their business via enhanced user experience, leverage new toolsets for complex investment strategies, or make better investment decisions through cognitive technologies.

In the past several years, commitment to a "digital first" approach has become top-of-mind with both asset managers and software vendors alike. The industry is growing cognizant of the need to develop and deliver a multi-channel digital experience for its various consumers, end users, and clients. Asset managers, asset owners, and service providers of all sizes and scopes are digitalizing their businesses; unsurprisingly, the larger players are



already heading down this path with "digital first" as a guiding principle regardless of their inclination to build or buy their next generation architecture platform. More specialized and boutique asset managers are partnering with an increasingly innovative vendor community—both established players and new entrants alike—pushing the envelope on their own digital transformation efforts.

To digitize or die, as some suggest, may be a bit strong; a more apt prediction might be "innovate or stagnate." In our view, the industry is finally shedding its legacy skin and moving into the new digital age.

### Embracing a Culture of Change

It is widely cited that the investment management industry is a technology laggard.<sup>1</sup> While many tech-focused and consumer based companies have been eager to adopt new technologies in order to gain a competitive edge, investment managers have taken a staid approach. This conservatism is in part due to the nature of the industry—managing risk is a pillar upon which an asset management firm is built. This is especially so with respect to the increased use of multi-asset and private market strategies to generate return which historically involved extremely

laborious and time consuming operational processes. Digitalization now offers the prospect of streamlining order process and assembly time for these strategies.

In recent years, innovative technology companies have focused on finding use cases within the asset management industry, filling capability gaps or targeting capabilities filled by archaic and inefficient processing. The industry's extremely high barriers to entry have slowed this process, widening the competitive gap between select institutions who have embraced innovation and the masses who are seeking to catch-up. The approach that many firms have undertaken is to introduce siloed innovation labs. This middle path bridges the gap between the new and old guard by continuing to function on established systems while experimenting with leading edge technologies.

While innovation labs within asset management, services and technology firms are leading much of the industry's progress, they don't always address the wider cultural change that must take place to embrace a new way forward. In our experience, legacy behavior is as much a challenge as legacy technology. In many cases, a firm will implement a highly sophisticated system only to mimic the same processes mandated by a legacy technology platform. By insulating the wider firm from

the culture of innovation, a disconnect may continue to grow between the processes in practice and promise offer by digital technologies. It's through cooperation and education at all levels of the firm that a culture of change will lay the foundation for the digital business. When this fails, new talent is required to drive the change.

The topics explored in this paper should be prefaced with the caveat that disrupting legacy cultures is the key hurdle that must be overcome to make true strides in the effort of digitalization.

## Digitalization Through Transformative Technologies

As new technologies come to the fore, it's important to understand the most transformative innovations in the asset management space. In this case, we define these as technologies that are poised to change the underlying processes across multiple touchpoints within the asset management ecosystem. While a new client reporting tool or accounting system can have significant impact on a firm's operations, it does not revolutionize a wide swath of standard processes that already exist—a fundamental element of digitalization.

There are four innovations that have the capability to transform functions, processes, and re-define the technology landscape in asset management. We view these as data lakes, process automation, cognitive technology, and blockchain. Though in various stages of maturity, these technologies and their applications underpin the digital transformation of asset management operations across the front, middle, and back office.

### Data Lakes

Asset managers have made significant inroads in understanding the importance of data governance and technology to manage structured data. However, in many cases, operations teams are still stymied by redundant data sets, ineffective and inefficient quality validations, and the use of institutionalized spreadsheets. These firms are at a significant disadvantage to asset managers who have a mature data architecture which can be leveraged for digitalizing processes across the business.



One of the main advantages of expanding data capabilities is the ability to process against structured and unstructured data (e.g., images, text, documents, and social and online media) to inform investment decisions. A firm's investment strategy is undoubtedly the most important indicator of success and the advantages of being able to interrogate meaning from any form of data is growing exponentially as new technologies are introduced. Access to a rich universe of data is helping firms leverage sophisticated algorithms, rationalize market data from a variety of sources, and glean behavioral insights from investors and clients.

From a data architecture standpoint, managing this information is within reach through data lakes. A data lake serves as a central repository for all structured and unstructured data and is meant to complement data warehouses—downstream systems that have stripped out rich information.

Beyond investment strategy, data lakes can be used to create efficiencies within operational processes by establishing a single pool of rich data. By moving enterprise-wide data to a lake before any schemas are applied to that data, a firm can tap into all the organization's data to slice, dice, report, and analyze as end users require. This will enable a reliable self-servicing model, creating efficiencies in reporting, decision-making, and latency from the front of the house through the middle and back office.

## Process Automation

Over the past decade, some of the largest asset managers and service providers in the US market have looked to offshore as many standard processes as possible, largely using wage arbitrage to reduce cost. In many cases, where firms have moved these processes to offshore locations, they have looked to maintain service levels by increasing resources. Now that the cost savings have been realized, it is challenging to see how these processes can continue to be driven down. It is becoming increasingly clear that the only way to reduce cost and improve efficiency is not to add more human resources, but to utilize technology.

The most commonly offshored processes are those that are repeatable and consistent. The obvious "low



hanging fruit" for transformation through automation is within these same areas. Firms are now exploring how moving standard processes to robotic process automation (RPA) can further reduce overhead and cost. Servicing firms are seeking a healthier bottom line and more competitive partnership model, while asset managers are exploring whether RPA can provide an alternative approach to an offshore or outsourced model. The evolution of RPA will continue to extend further into the business, migrating from time-intensive technical tasks required to manage the health of key infrastructure and applications to core business and control functions such as reconciliations, collateral management, and process exception management. Quick to implement and low cost, adoption of RPA is set to accelerate and become a viable option for rote middle and back office tasks.

## Cognitive Technology

While related on a basic level to robotic process automation (RPA), cognitive technologies and artificial intelligence are far more sophisticated than RPA in that they can perform calculations and actions that replicate human behavior, taking unstructured and structured data in tandem and applying complex, pre-programmed logic. As these technologies have matured, developers have explored how to program applications to make higher-level decisions and store information to inform and refine future outputs. This form of artificial intelligence (AI)—known as machine learning—programs a system to program itself.

Perhaps the most compelling cases of progress here are coming from the hedge fund industry. The Man Group is a noted leader in the development of machine learning. After success using machine-learning models at its AHL Dimension fund, it has now expanded to three more money pools, collectively managing \$12.7B<sup>2</sup> with some form of AI. For firms like The Man Group, AI is being used successfully to manage risk exposure, identify signals and price movements, and analyze large volumes of market

research. In terms of pure AI and machine learning players, a report from the Financial Securities Board estimates they have about \$10 billion in assets under management and that figure is growing rapidly.<sup>3</sup>

While AI applications in the front office are an area of focus for most firms, the middle and back office are also poised to reap the benefits of cognitive technologies. Though still in its early stages in operational applications, machine learning is being used to generate natural language client reports, improve data quality in derivatives processing, assess compliance risk, and predict cyber threats. As cognitive technologies increase in sophistication, it is likely that these touchpoints will continue to grow and free human resources from error-prone and time intensive decision-making processes.

## Blockchain

Blockchain is a distributed ledger technology (DLT) that is verifiable by powerful computers that solve a cryptographic function to authenticate transactions. As more computers verify the ledger, the blockchain grows increasingly secure. Although the technology that underpins blockchain is complex, it's value is simple: it offers the ability to link a



transaction, settlement and recording of a transaction in one motion.

Blockchain's promise of simultaneous settlement could solve two of the industry's biggest operational challenges: post-trade processing and reconciliation. By offering an indisputable and singular record for each transaction, the gap between the trade and settlement is closed and the need for reconciliation is obviated. Unfortunately, the scale of adoption needed to realize this benefit pushes its reality out of the near-term. That said, there are a vast number of smaller scale applications that are finding success through internal and consortia-based experimentation.

Early adopters started using blockchain for a myriad of use cases from bond trading to proxy voting to improvement of the netting process for repo transactions. In one notably successful pilot, blockchain was used to buy and sell mutual funds for 1,200 fund managers and distribution clients.<sup>4</sup> On a smaller scale, BNP Paribas Asset Management successfully used their proprietary blockchain platform to carry out a full end-to-end fund transaction test delivery of the order to the processing of the trade.<sup>5</sup> Meanwhile, Northern

Trust has showcased the potential for service providers to drive innovation this year by winning two patents for blockchain systems for private equity fund administration which they believe may be extended to back-office service applications for other types of asset management products.<sup>6</sup>

The variation in applications and diversity of early innovators may not prove that blockchain will come to fruition at scale, but they do showcase the breadth of potential applications. Whether blockchain will fundamentally change the investment lifecycle is debatable but it's likely to impact multiple touchpoints in asset management operations within the next 5-10 years.

## Digitalization to Achieve Competitive Advantage

With an understanding of the technologies poised to transform the asset management industry, a logical next step in defining a digital strategy is understanding where innovation can be leveraged to achieve competitive advantage.

The asset management industry is experiencing increasing fee compression and decreasing margins while simultaneously growing crowded, making this environment hyper-competitive. Despite these inhospitable conditions, competitive advantage is possible for firms who embrace digitalization.

### Scale

One of the primary means of achieving scale is through hosted and software as a service (SaaS) offerings. In recent years, hosted software has become a necessity for technology vendors to appease new and existing clients. Asset managers are prudent to shy away from the resource-intensive on-premises installs of the past. By embracing the cloud, firms can scale processing capacity and resources with their business, benefit from faster onboarding and continuous upgrades, and better manage technology risk. Another latent benefit is the agility that hosted offerings provide to firms who seek to leverage new technologies. As software vendors and service providers integrate digital offerings like process automation or blockchain in their own technology stack, clients will be positioned to reap these rewards without investment in research and development.



Similar to software as a service (SaaS), data as a service (DaaS) provides asset managers the ability to utilize processing capacity on an as-needed basis. As new and enhanced technologies introduce increasing volumes of data, the need for data scalability will grow. According to trade organization AlternativeData.org, asset managers' spending on "alternative data," has than more than doubled in the past two years and is projected to grow to \$1B by 2020.<sup>7</sup> In most cases, existing data architectures were not built to handle the stress of these data demands. DaaS offerings allows firms to leverage advancements like artificial intelligence, process automation, or distributed ledgers without changing their core infrastructure.

Process automation and cognitive technologies are among the most promising new avenues for asset managers to achieve scale. Increasing in size and investment strategy complexity without increasing headcount will only be possible through technology enablement. As RPA becomes more widely used for rote tasks, intellectual capital will be free to move to other areas of the business where support to enable growth is needed. Cognitive technologies leveraged for middle and back office tasks like compliance monitoring, client reporting, and trade processing will likewise help redeploy resources to value-add activities.

## Client Experience

For wealth managers, client experience has become a major area of focus. Silicon Valley tech giants excel in this space which is in sharp contrast to incumbents who still rely on paper reports and manual processes to service their clients. Digitalizing the client experience is an absolute necessity for such firms as robo-advisors continue to gain market share<sup>8</sup> and the threat of new entrants looms. As the next generation of wealth comes into force, real-time portfolio information and user-friendly tools across digital touchpoints will differentiate leading wealth managers.

Asset managers face less pressure when it comes to reporting and interaction—institutional clients typically require data in a specific format at defined intervals so they can query and generate reports within their proprietary reporting systems. However, where client experience is likely to come into play is within sales and marketing. Using data lakes to pair structured and unstructured data to analyze client needs will help

firms define their value proposition. Buyer preferences are quickly shifting to new strategies and competitive firms must be able to offer the type of products that appeal to their target market.

## Product Differentiation

The balance between passive and active strategies will continue to shift as economic and market conditions fluctuate. What remains constant is investors interrogation of the premium paid for active management strategies. Asset managers will continue to develop and market new products and strategies to offer value beyond passive management. The digitalization of asset management has the potential to benefit product differentiation in significant ways, enabling more sophisticated research and ideation capabilities within the front office while presenting opportunities for operational cost reduction.

This is especially so with respect to the increased use of multi-asset and private market strategies to generate return. Historically laborious and time consuming due diligence, investment, and operational process, digitalization offers the prospect of streamlining order process and assembly time. Another prime example is determining corporate governance (environmental, social, governance) quality, and a manager's ability to differentiate itself based on proprietary modeling of investment quality based on masses of public and private data.

# Actionable Steps to Embrace Digitalization

## Analyze current state

A current state assessment will analyze an asset manager's data, technology, and operational processes for functions across the organization. This exercise is often under-utilized by firms looking to make a change to their technology or operations but is a critical component of taking on a new digital strategy.

Completed successfully, this assessment will identify gaps in the current systems architecture or operational processes, unveil pain points and bottlenecks, and highlight areas that are well-suited to optimization. This analysis will often take the form of workflow process diagrams that capture the asset manager's individual

products, markets, and asset class make up. These diagrams will help distill a firm's core competencies and current deficiencies to determine which changes could provide the greatest impact and shape in the future state operating model.

A scenario that would lend itself well to benefiting from a current state analysis is streamlining error-prone, manual, or rote tasks. Identifying these bottlenecks is the first step in laying out future state options for process improvement where RPA may be a viable option. Taking a wider view, the current state analysis will help prioritize largescale technology initiatives and form the foundation of a future state and roadmap.

### Understand vendor initiatives

Long-term digital strategies will lean heavily on vendor partnerships to come to fruition. Asset managers should select and assess their partnerships with thorough due diligence to understand how their software or service provider can help them achieve their goals. At a base level, firms should actively participate in vendor user groups and client conferences. These opportunities for networking will help firms understand how their peers are leveraging technology and how their goals can be aligned with the systems available to them.

Forward-looking asset managers should take their vendor relationships a step further and assess how their software and services are likely to evolve over time. Understanding a vendor's product roadmap is the first step in aligning long-term goals with technology. If a provider's roadmap aligns with a firm's strategy, the next step is to assess their research and development. Beyond using R&D re-investment as a benchmark of product health, asset managers can gain an understanding of how they might benefit from digital technologies over a long-term development horizon. In many cases, vendors are looking to their clients to determine which innovations will be most meaningful to their business and how they can channel resources to the right technologies. Firms should use their influence to benefit from vendor experimentation.

### Pinpoint cultural resistance

Legacy technology is just part of the barrier of digitalization efforts—it's often legacy behaviors that hold firms back from making progress. In many cases, an



asset manager will invest years of effort and resources in a transformation program, only to meet internal resistance.

Part of this problem is due to lack of appropriate talent. As data science and development become integral to technology in asset management, a shift in the talent pool will need to take place. Many firms are struggling to make this change as the type of skillset needed in the digital landscape is notoriously difficult to attract.<sup>9</sup> What's left are staff who may still be utilizing error-prone processes or using workarounds rather than learning new technology.

While most firms will find difficulty attracting a team of highly skilled data scientists, there are small cultural shifts that can be made to instill the importance of innovation across the enterprise. At a minimum, asset managers should identify the teams that will be impacted by a technology change and dedicate time and resources to education and communication. Ideally, forward looking firms will begin to infuse the "innovation lab" culture throughout the organization. Digital progress will no doubt be incremental, and it's critical for all teams to collaborate on a technology transformation in order to generate sustainable change. This will grow in importance as investment in technology increases and long-time staffing models are transformed.



## Plan future state and roadmap

A future state design will apply available technology options to the analysis generated in the current state assessment. At present, future state designs generally focus on options analysis for operations' target state systems applications using existing and market-ready solutions; however, these roadmaps will soon evolve to include more experimental technologies.

The future state design options should be derived through an open dialogue with vendors about their current and future product offerings. In the case of a service provider, investment in digital technologies will be a particular draw based on the firm's goals. Leveraging the resources and scale of an external provider helps asset managers mitigate risk by minimizing initial investment and leveraging technologies tested by a subset of their peer group. These considerations will become increasingly important components to a future state options analysis as the competitive landscape shifts to automation, processing of complex data, and sophisticated AI toolsets.

Using a future state operating and architecture model as a guide, the roadmap will define the steps needed to achieve the firm's goals. At present, a roadmap tends to include search and selection, evaluation, implementation, and transition for in-house and outsourced technologies. However, as the digital landscape changes, the roadmap should include goals for long-term digitalization and the intermediate steps to get there.

Looking at the findings from the current state analysis, it will be apparent where rote tasks can be automated, where stakeholders will benefit from self-servicing of data, and where an algorithm can assist in decision-making or issues resolution. What's less clear is the path to achieving a digital business. Undoubtedly, one of the most important paths will be building a strong data architecture and data governance program. During the current state assessment, a firm may benefit from using a benchmarking metric like the EDM Council's data management capability model. According to the EDM Council's 2017 Data Management Industry Benchmark study, "We haven't escaped the tyranny of manual reconciliation. Overall the industry is still mired in the tactical mapping of data from physical repositories

to applications and reports."<sup>10</sup> This finding reinforces the importance of laying a foundation with a practical and achievable roadmap for systems and data architecture in the near-term before jumping into digital initiatives.

## Conclusion

As we move into an increasingly competitive industry, the pace of innovation in investment management will accelerate. There is little question that digitalization is transforming investing and investment operations but it's yet to be determined whether incumbent asset management, services, and vendor firms will lead this change or be displaced by technologically advanced entrants.

Money managers must determine how their business will be differentiated in a crowded field—whether through scale, client experience, product differentiation, or a balance of these three. The path to achieving competitive edge through these avenues will be driven by digital efforts. Firms should look to the technologies that have transformative potential across multiple touchpoints of the investment lifecycle and determine where these can fit into their strategy. By analyzing their current state, working with vendors, and laying out a roadmap for incremental change, digitalization will be within grasp.

Despite the best laid plans, success through digitalization will come from within—only those firms that instill a culture of innovation will be capable of transformation. Investment managers that allow resistance to change to influence their strategy will incur significant cost and be unlikely to generate sustainable change. All levels of the organization must embrace a resounding credo: innovate or stagnate.

# References

<sup>1</sup>Thompson J. Slow adoption of technology hurts asset managers. The Financial Times [Internet]. 2017 June. Available from: <https://www.ft.com/content/fae881ec-4c5f-11e7-919a-1e14ce4af89b>

<sup>2</sup>Satariano A, Kumar N. The massive hedge fund betting on AI. Bloomberg [Internet]. 2017 Sept. Available from: <https://www.bloomberg.com/news/features/2017-09-27/the-massive-hedge-fund-betting-on-ai>

<sup>3</sup>Artificial intelligence and machine learning in financial services: market developments and financial stability implications. Financial Stability Board. 2017 Nov. Available from: <http://www.fsb.org/wp-content/uploads/P011117.pdf>

<sup>4</sup>Mooney A. Blockchain successfully tested in sale of mutual funds. The Financial Times [Internet]. Available from: <https://www.ft.com/content/5927fa2c-4c73-11e7-919a-1e14ce4af89b>

<sup>5</sup>BNP Paribas Asset Management completes fund transaction blockchain test [Internet]. 2018 Jan. Available from: <https://www.finextra.com/newsarticle/31512/bnp-paribas-asset-management-completes-fund-transaction-blockchain-test>

<sup>6</sup>Northern Trust's Innovative Distributed Ledger Technology Drives Efficiency, Transparency and Security in the Investment Lifecycle [Internet]. 2018 June. Available from: <https://www.businesswire.com/news/home/20180605005770/en/Northern-Trust%E2%80%99s-Innovative-Distributed-Ledger-Technology-Drives>

<sup>7</sup>Morris J. Spending on 'Alternative Data' Skyrocketing. Ignites [Internet]. 2018 May. Available from: [https://www.ignites.com/c/1967054/230684/spending\\_alternative\\_data\\_skyrocketing?referrer\\_module=categoryListing&module\\_order=14](https://www.ignites.com/c/1967054/230684/spending_alternative_data_skyrocketing?referrer_module=categoryListing&module_order=14)

<sup>8</sup>Fitch: Robo-Advisory Could Mark Shift for US Wealth Managers. Reuters [Internet]. 2017 July. Available from: <https://www.reuters.com/article/fitch-robo-advisory-could-mark-shift-for/fitch-robo-advisory-could-mark-shift-for-us-wealth-managers-idUSFit2nNqj5>

<sup>9</sup>Baert R. Millennials pose hiring challenge. Pensions and Investments [Internet]. 2018 June. Available from: <http://www.pionline.com/article/20180611/PRINT/180619989/millennials-pose-hiring-challenge>

<sup>10</sup>2017 Data Management Industry Benchmark Summary. EDM Council. Available from: [https://www.edmcouncil.org/downloads/2017\\_Data\\_Management\\_Industry\\_Benchmark\\_Summary.pdf](https://www.edmcouncil.org/downloads/2017_Data_Management_Industry_Benchmark_Summary.pdf)



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