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EVENT SUMMARY

Digitalization and the Future of Asset Management

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The Milken Institute is a nonprofit, nonpartisan think tank. We catalyze practical, scalable solutions to global challenges by connecting human, financial, and educational resources to those who need them.

We leverage the expertise and insight gained through research and the convening of top experts, innovators, and influencers from different backgrounds and competing viewpoints to construct programs and policy initiatives. Our goal is to help people build meaningful lives in which they can experience health and well-being, pursue effective education and gainful employment, and access the resources required to create ever-expanding opportunities for themselves and their broader communities.

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The Milken Institute Center for Financial Markets conducts research and constructs programs designed to facilitate the smooth and efficient operation of financial markets—to help ensure that they are fair and available to those who need them when they need them.

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Key Points

- **Technology has significantly improved productivity and cost-efficiency in the asset management industry through connectivity, automation, and data analytics.**
- **Amplifying technology's impact on the business requires deep integration, collaboration, and understanding between the technologists and executives on the business side.**
- **Customers today expect a much more personalized and intuitive experience at a moment's notice.**
- **Providing the education and skills training to succeed in the digital era is largely the responsibility of industry players.**
- **Improving access, opportunities, and affordability of education, learning, and training ensures that the free enterprise system continues to meet the needs of society.**

I. Introduction

Across the Milken Institute's conferences and convenings, the questions we ask industry leaders about what's driving change in their industries have often returned to technology. From productivity gains and cost reduction to analytics and automation, technological advancements in hardware and software continue to revolutionize how businesses operate, including production, supply chain management, customer engagement, risk assessment, and market access.

The asset management industry has benefited from advancements in digital technology. These breakthroughs have enabled greater connectivity, service personalization, data analysis, and automation and have catalyzed strategic and operational transformations over the last few decades. Such improvements have led to more customer-centric service and cost-effective operational processes. They have also led to more efficient asset allocation and technology-focused human resources development.

On March 4, 2021, the Milken Institute hosted a public plenary to discuss how technology continues to transform the asset management industry across business administration, human resources management, portfolio development, asset allocation, and risk assessment. The plenary was moderated by Mike Piwowar,



executive director of the Milken Institute Center for Financial Markets and former commissioner of the United States Securities and Exchange Commission (SEC). He was joined by Mohit Joshi, president of Infosys Limited, Lou Maiuri, chief operating officer at State Street Corporation, and Madeleine Dassule, co-head of technology at Wellington Management.

The plenary sought to address several overarching questions: How can asset managers integrate new digital capabilities effectively? How will technology change asset management and improve the client experience? What are the other opportunities for greater use and efficiency gains?

Throughout the discussion, the speakers talked about how they had experienced digital transformations in their institutions, how they use innovative digital tools from back to front office administration, and how the business and technology groups could work together to extract benefits from the data they owned.

II. Industrialization

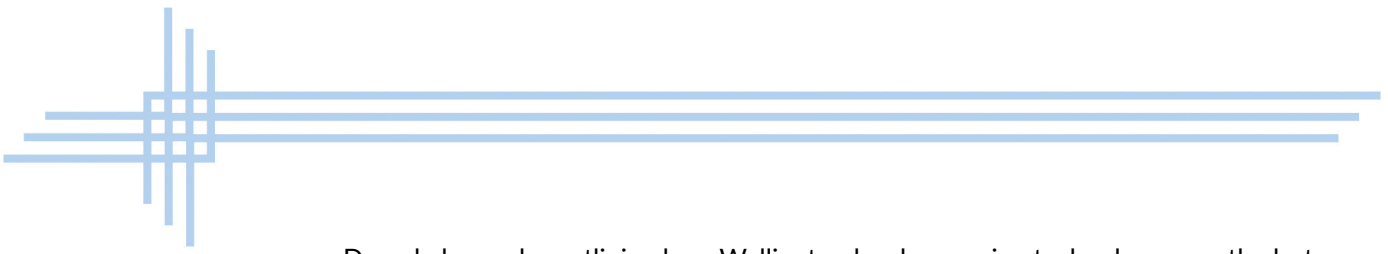
Technology-driven transformations in the asset management industry have occurred relatively quickly. Mohit Joshi, president of Infosys Limited (Infosys), a leading global digital services and consulting company, outlined that such transformations can be divided into three broad themes: industrialization, digitization, and organizational transformation.

Industrialization, said Joshi, refers to “a focus on the unit cost and a focus on productivity,” where technology helps to simplify the landscape and provides a more “platform view of the world.” This industrialization is partly driven by infrastructure transformations, such as the growth of private and public clouds.

“From a technology perspective, we feel that the role of technology in reshaping the asset management business for the next decade will be very significant.”

Mohit Joshi, President, Infosys Limited

Mike Piwowar then turned to Madeleine Dassule of Wellington Management (Wellington) and Lou Maiuri of State Street Corporation (State Street) for examples of their industrialization journeys.



Dassule began by outlining how Wellington has been using technology over the last two decades. Fifteen to 20 years ago, in the first stage of its industrialization journey, Wellington mainly focused on capturing and storing data, which it then used for reports. Data capture was fragmented within the company and separated by various departments.

Stage two of the journey, which Dassule called the “transactional and resilience stage,” was catalyzed by the expansion of the firm with “technology enabling the core processing of a growing environment.” Given the increasingly large volumes of information Wellington processed, the firm realized it was highly inefficient for employees to go between multiple departments for information. This led to a push for greater connectivity among the various information systems, and Wellington decided to move its data centers out of each of the different departments and into proper data centers. This was relatively short-lived: Just five years after moving into data centers, the company fully migrated to the cloud.

Research Stats

“In a survey of 100 buy-side firms with AUM of \$10-100 billion in Europe and North America, **52% of firms currently use the cloud for data management** today and a further **28% plan to migrate data management to the cloud** in the next 12-18 months.”

Source: “[Taking Data Management to the Next Level](#),” IHS Market

To amplify technology’s impact on the business and extract the best outcomes, Dassule said that the technologists needed to understand the asset management business better, and the business executives needed to understand the technology better. This gap put Wellington on a path in which talent development shifted to promoting collaboration and learning, where business executives learned to lead technology teams, and where technologists were embedded in the firm’s business strategies.

Dassule said this collaboration was imperative when Wellington embarked on building its own trading platform as volumes grew. When the firm built its platform around 2006, it handled about 75,000 trades a day. In 2008, it thought it had hit its maximum daily trading activity at 150,000 trades. In March 2020, it averaged about 1 million trades a day. The only way Wellington successfully managed this volume on its platform was for executives and technologists to understand the business and the technology, and to collaborate. She said, “The blending of skills and the blending



of the teams started very early in trading. So we have great trading leaders who understand how to deploy technology in a very valuable way, in an efficient way, and an amplifying way. And we have great technologists who understand the trading business and have a true passion for the investment business.”

At State Street, the industrialization journey was driven by the need to keep pace with changing client needs, said Maiuri, especially as it related to the investment servicing side of the business. Serving clients no longer just happened at the front office but throughout the firm, including compliance, recording-keeping, and other back-office functions. While cost-reduction was an early goal, Maiuri stated that increasing productivity and improving efficiency framed its industrialization efforts.

One of the services that State Street provides through its investment services is fund accounting, and Maiuri talked about how the firm set out to automate some of those services. In the “old days,” it was the responsibility of a fund accountant at the end of each trading day to calculate the net asset value (NAV) of a (mutual) fund so clients could redeem and purchase shares. About 10 years ago, the firm set out to build a “driverless NAV,” a tool to automate calculations so fund accountants could increase their volume.

This driverless system worked for some time, but the next step was to boost service quality through greater machine learning. So, similar to the experience that Dassule described, Maiuri talked about how the firm assembled the technologists (a machine learning team from IBM) and those on the business side to develop the models and algorithms to automate fund pricing calculations based on historical fund performance, benchmarks, and market activity. These efforts, said Maiuri, have improved the productivity of its fund accountants by 25 to 30 percent.

“You can reduce operating expenses. You can move functions to lower-cost locations. You can try to do more with less. The important thing is that you don’t sacrifice quality. By keeping the focus on productivity, it implies also achieving a very high level of quality.”

Lou Maiuri, Chief Operating Officer, State Street Corporation



III. Digitization

Joshi said digitization refers to two key areas. The first refers to initiatives that provide a more customer-centric experience in which the engagement is both more intuitive and tailored to the customer's specific profile. The second refers to a firm's ability to launch products more quickly as customers' demands shift.

Joshi observed that "asset managers are now focused on hyper-personalization to a much greater degree." How can firms better serve customers? Data analysis will be key in providing a more personalized experience, both from the product development and investing perspective and from a customer experience perspective.

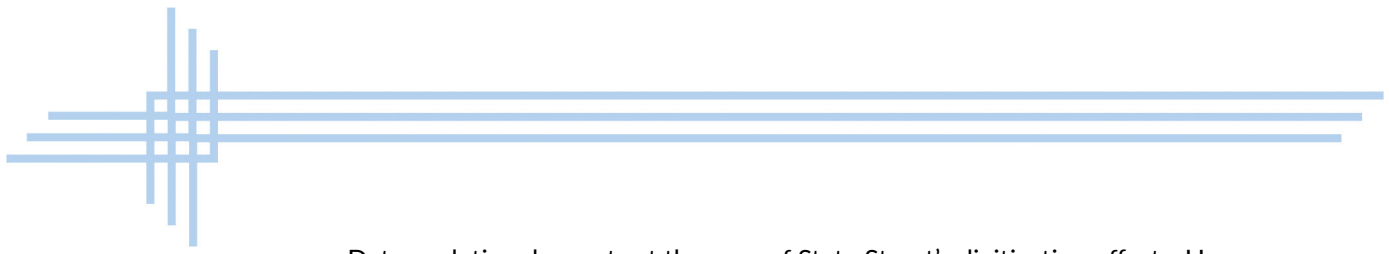
Joshi cautioned that rapid digitization also exposes institutions to a new range of cybersecurity risks, such as denial-of-service and ransomware attacks. But this shouldn't prevent institutions from digitizing, Joshi said, because such technologies are the key for businesses to scale up, provide new products, and offer a better, more tailored experience to customers.

In the digitization space, Wellington's migration to the cloud allowed the firm to "deploy technology extremely fast," said Dassule. The tools, computing power, and platform enabled large data sets to be quickly organized, linked, and analyzed to glean useful information for investors. "Data is incredibly powerful, but you need to know exactly what it is that you're looking at. So we have a lot of tools now around helping everyone throughout the chain: clients, investors, traders, operations folks, business developers get access to data themselves, be able to do enrichment and aggregation and run some analytics and modeling," Dassule said.

In this regard, Dassule said, the goal is to be able to "do enterprise data management to the point where we're really nimble and fast and bringing in all kinds of data, but not just bringing it in, but knowing what it is, knowing how good it is, and having the consumers have the skills to efficiently get the information that they want out of it." Extracting the most impact from data requires the blending of skills and teams. Dassule said that many junior staff now come with programming skills, but embedding those skills with the underlying core business ensures that investors and managers have the tools to best serve their clients and beneficiaries.

"We get the best outcomes from technology when we have a great partnership between business and technology folks, and really what we see the future as is that every business person will be a technologist and every technologist will be a business person."

Madeleine Dassule, Co-Head of Technology, Wellington Management



Data analytics also rests at the core of State Street’s digitization efforts. However, Maiuri mentioned it had already started doing “big data analysis” about 20 years ago, long before “big data” was an industry fad. Related to one of its research services, the firm decided to look through all the data it gathered and drew the insights it thought would be interesting. He said, “We don’t share customers. We don’t share securities that they’re purchasing. But we can tell folks where capital flows are going, where hedge funds are moving their capital, in what asset classes, and which countries. And that’s interesting for people in the markets because you want to know if flow is happening based on macroeconomic trends. And that was interesting. And I call that big data; take existing information and turning it into new insights.”

Research Stats

A 2020 survey by DHI Group that analyzes technology job postings from financial services organizations in the United States, the United Kingdom, and Singapore found that **job postings for .NET developers rose 49 percent year-over-year**. The survey also found that **application support engineers climbed 37 percent** due to engineer reliance on the .NET framework for app-building. Postings for **cybersecurity consultants rose 28 percent**, which is consistent with the need for financial organizations to stay ahead of hackers looking to take advantage of dispersed teams and networks.

Source: “[Competition Intensifies for Tech Talent in US Financial Services Market](#),” PR Newswire

IV. Organizational Transformation

The last theme that Joshi outlined was how technology was advancing organizational transformation. Talking about organizational transformation not just from a pre- and post-pandemic perspective, Joshi referred to organizational transformation as the ability of firms and their workforces to adapt, learn, and respond to new opportunities, more complex risks, and new regulations. Questions that organizations might be asking themselves include, “How do we build a more agile and responsive organization, not just from a technology perspective? How do we de-layer the organization? How do we create a focus on learning?”

One of the main forces driving organizational transformation and the reimagining of business has been the growth of ESG (environmental, social, and governance) and sustainability principles. There are two dimensions to this, as Piwowar pointed out.



The first is an internal shift towards sustainability principles. The second is a response to client demands and the fiduciary duty asset managers have to them.

Research Stats

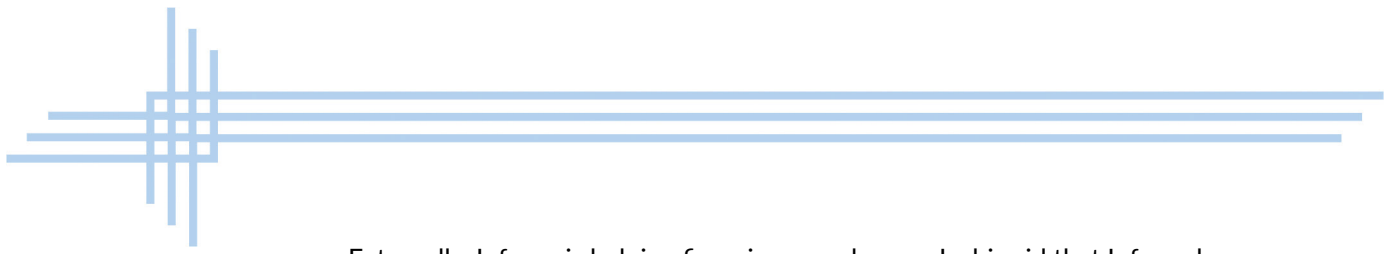
MCSI's 2021 Global Institutional Survey of 200 asset owners (\$18 trillion in assets) found that **“31 percent of the largest institutional investors say climate change will have the biggest impact on the way their organization invests over the next three to five years.** Seventy-three percent plan to increase ESG investment either 'significantly' or 'moderately' by the end of 2021. Seventy-nine percent of institutional investors with assets of \$200 billion or more have adopted an ESG policy framework.”

Source: [“Investment Insights 2021: Global Institutional Investor Survey,”](#) MSCI

Turning first to Joshi, Piwowar asked how Infosys helps asset management firms in their ESG and sustainability efforts. Joshi said that any effort to help others in their ESG or sustainability goals should only come after pursuing one's own ESG and sustainability goals. Regarding Infosys' environmental efforts, Joshi said that Infosys was already carbon neutral in its core supply chain and operations across (greenhouse gas protocol) Scope 1, 2, and 3 emissions, one of the first to do so 30 years ahead of the Paris goals. Infosys started on this journey early, investing in solar generation, wastewater recycling, and smart building design. Where possible, it avoided buying offset credits because that's the easy way out. While it has to use some credits, it also has invested in communities, specifically in solar power and biogas generators for electricity generation.

Second, Infosys' social efforts center around its education initiatives—digital skills development and training—because this is what drives technology forward. Joshi mentioned the firm's plans to train 10 million people worldwide in digital skills and training through classroom-style learning, internships, and online, collaborative platforms.

Finally, on governance efforts, Joshi talked about Infosys' independent board, independent chairperson, and high levels of disclosure. He also outlined Infosys' efforts in building up its core group of women engineers, saying, “If you look at the fresh intake of engineers at Infosys, about half of our intake are women engineers.” He added, “We are now focused on making sure that women have the same levels of representation in our leadership team as well.” He briefly mentioned that the pandemic helped keep women in the firm through flexible working arrangements.



Externally, Infosys is helping firms in several ways. Joshi said that Infosys has developed digital tools to help firms transition to less carbon, fewer resources, and less energy-intensive operations. He cited examples of waste reduction in the automotive industry and using digital tools in the hospitality industry. He encouraged firms to work closely with portfolio companies to reduce their carbon footprints.

But the greatest opportunity for asset managers, Joshi said, was to create more green assets and financial products. He thinks this will engage new audiences and bring in more money to the industry. What's currently lacking, however, are indexes or tools to more accurately measure ESG indicators, like carbon intensity, not just of physical assets but also of financial products like government bonds.

“There is also a gigantic opportunity for the asset management industry, and this will result in the creation of brand new products and expand the industry. There are very few green assets available, so a lot of money needs to go into the creation of these new industries and these new assets.”

Mohit Joshi, President, Infosys Limited

Dassule sees a much greater focus on the environmental piece today. On this front, Dassule said that Wellington Management had joined the Net Zero Asset Manager Initiative as a founding member, which signs firms up to target net-zero emissions by 2050 or sooner.

Regarding Wellington's use of technology on ESG principles, Dassule described the two areas where these efforts focused. The first area related to ESG research that it provides to investors. To support and improve these efforts, Dassule said that Wellington developed a tool called CERA (Climate Exposure Risk Analysis) that “takes the data from climate science and links it to security data at a very granular level.” The tool overlays numerous climate indicators and data and physical asset information (like production facilities or properties) onto geospatial maps to assess where a company might be exposed to climate risks and natural disasters.

The second area relates to a company's ability to respond to change—what Dassule called “transition risks”—especially to changing government regulations like taxes or standards rules, such as those common in manufacturing and other heavy industries. As regulations and requirements change, CERA can help investors and managers address new complexities by providing valuable data linking and analytics.

Perhaps the most visible of State Street's gender and diversity efforts is the “Fearless



Girl” statue that the firm’s asset management business, State Street Global Advisors, placed in the heart of Wall Street. But more importantly, said Maiuri, such efforts “should be in everything we do, meaning we don’t think of this as an investment strategy, we don’t think of it as a product; it should be in everything we do.” Today, State Street’s lead director on its board is a woman, and women hold numerous key roles within the executive leadership team. But moving forward, Maiuri said that the firm was working to increase representation from the Black and Latinx communities.

Externally, State Street helps customers in these efforts by providing tools to measure performance and ESG scores. For example, State Street Global Advisors developed Responsibility-Factor, or R-Factor, which is “the first ESG scoring system to measure the performance of a company’s business operations and governance as it relates to financially material ESG challenges facing the company’s industry.”

Additionally, State Street provides a range of regulatory and compliance reporting and scenario analysis. “So if you want to decarbonize your portfolio or conduct scenario analysis around climate change, we’ll show you the impact to your portfolio from a risk perspective,” Maiuri added. Finally, as a passive manager in other companies, State Street has taken a “stewardship role through proxy voting and thought leadership. We’re working closely with firms on ESG issues, certainly encouraging them to have gender and racial diversity on their boards and all levels of their organizations. So we really incorporate this in everything we do from the beginning, and from the back office all the way to the front office.”

“It’s a really great time to be in technology as an asset manager because we can have this amplified ability to further the mission, and the mission is to get great outcomes for the clients and the end beneficiaries. And if you think about those end beneficiaries, they are pension fund holders, and they’re people all over the world.”

Madeleine Dassule, Co-Head of Technology, Wellington Management



V. Ensuring Societal Progress for Future Generations

To close the discussion and provide thoughts on maintaining forward momentum, Michael Milken, chairman of the Milken Institute, began by reiterating the importance of the free enterprise system in meeting society's needs. The creativity and innovation engrained in this system have enabled Wellington and State Street to strategize and implement cutting-edge digital tools and improve their workforce's efficiency. The innovation rooted in this system has allowed people who never walked into a bank to access a range of financial services through their mobile devices.

But the free enterprise system, Milken said, faces enormous challenges, including income inequality and other issues, not just in the United States but also worldwide. To ensure that the free enterprise system continues to meet society's needs, businesses and industries must provide workforce development opportunities to remain productive in today's digital era. Milken commended Infosys specifically for its initiatives to partner with community colleges in the United States to teach students the digital skills to succeed in today's digital economy and fill skills gaps.

Research Stats

In a 2020 Infosys survey looking at the future of work, when asked who is responsible for skills training by various institutions, **27 percent (the highest of any category) of respondents rated “on-the-job-training as the most important modality of skills training and a university degree as the least important.**

Businesses play an indispensable role in this regard. Nonetheless, a degree and relevant work experience are needed to be hired in the first place. Partnerships between industry and higher education institutions can address both these issues by incorporating flexibility into training schedules, allowing students to gain real working experience, orienting curricula and research towards market needs, and cultivating a longer-term talent pipeline from local schools.”

Source: [“Future of Work: Insights for 2021 and Beyond,”](#) Milken Institute



Technology acting on education and skill training has opened new opportunities and expanded access. Milken cited the examples of the democratization of gamification and availability of simulations as avenues for more people of all socioeconomic backgrounds to learn, understand, and participate. Similarly, technology's ability to give millions of people worldwide greater access to financial services has provided capital that leads to active, healthy living and gainful training and employment. It shouldn't come as a surprise that Visa is more valuable than any Wall Street investment bank. In 2020, Milken noted that PayPal's value increased to more than the combined worth of Goldman Sachs and Citibank.

This cycle of financial inclusion and access to capital isn't just about helping institutions grow, said Milken, but rather "is essential for perpetuating the free enterprise system and meeting society's needs. In the long run, your organizations will, in many ways, provide the capital for companies to grow directly with individuals intersecting with you."

For the free enterprise system to continue meeting society's needs, institutions must ensure that people of all socioeconomic levels can experience upward mobility. This will depend on expanding education, knowledge, and skills training, and access to financial services, which will, in turn, expand free enterprise and generate more opportunities for people.

“What we’ve talked about is not only essential for the growth of your own organizations, but also for the preservation of the free enterprise system and the needs of society.”

Michael Milken, Chairman, Milken Institute



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