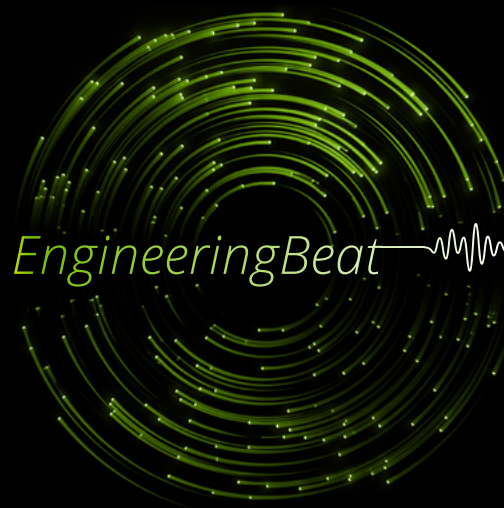


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EngineeringBeat: Transforming with mainframe modernization

Key insights for the investment and wealth management sector



In today's dynamic financial landscape, investment and wealth management (I&WM) firms are facing a strategic imperative to modernize their legacy mainframe systems to accelerate digital transformation—which will help them stay competitive and meet increasing demands of regulators and investors. Technological advancements are needed to help deliver on evolving customer expectations, such as increased digital self-service, while enhancing their ability to meet revenue and efficiency goals. Investors also increasingly view enhanced personalization and quicker interactions as criteria to engage with I&WM firms for their investment needs.

As a result, many I&WM organizations are adopting AI-assisted tools and quantum technologies to help increase efficiency and enhance client experience. For example, recent [Deloitte research](#) shows that 59% of financial services firms are implementing artificial intelligence (AI)/machine learning (ML) and 13% are adopting quantum technology. However, mainframe architectures inhibit adoption of these technologies—and digital transformation in general—for several reasons. They require more flexible, scalable, and cost-effective cloud-based solutions to implement; there's a shrinking mainframe talent pool; and development takes longer in a mainframe environment.

In contrast, mainframe modernization can provide access to these new technologies to more effectively meet increasing customer demands, the growing need for enhanced data analytics, and the requirement for real-time transaction processing. Modernization also aligns with broader industry trends toward sustainability and operational agility.

Modernization: an answer to complex business challenges

Modernization can help detangle several complex business challenges inherent in operating in a legacy environment—such as soaring costs, round-the-clock trading demand, a shrinking talent pool, and the critical need for scalability to fuel growth.

1 Mainframe costs are rising. Reduce them with cloud-based options.

The total cost of ownership for mainframe systems is rising due to several factors, including high data center expenses for hosting on-premises systems, increasing legacy system licensing and usage costs from vendors, and ongoing maintenance required for aging systems. Mainframe systems also require a larger codebase, written in legacy languages, to perform tasks that applications with modern code execute more efficiently. Further, quick fixes, such as scaling down mainframe processing demand and setting up incremental transfers of data to the cloud, can lead to data duplication and inconsistency, which creates significant technical debt over time.

Mainframe modernization can help lower costs by supporting the transition to more advanced tech environments—such as to cloud-based platforms—that reduces the need for costly physical infrastructure in favor of scalable, pay-as-you-go models. And, with cloud environments, businesses can also potentially lower operational headaches that come with bandage solutions, which can increase data consistency and improve system performance.

2 Trading has changed. Adapt with a unified, always-on experience.

Today's investors expect seamless, continuous access to an array of financial products including emerging product types and asset classes such as exchange-traded funds (ETFs), "retail" private alternatives, and digital currency products. Legacy mainframe systems are poorly equipped to handle these expectations because they're hobbled by scheduled downtimes that have an impact on the client experience.

Modernization helps overcome these challenges by facilitating the realignment of product and service offerings to more effectively serve both institutional and retail clients. Additionally, modernization can enable firms to consolidate separate platforms that support different asset classes into cohesive environments, which can accelerate the introduction of new features and improve system resiliency.

Modern systems enhance user experience by increasing availability, reducing time to market for new investment tools, and lowering costs.



3 The IT skills gap is very real. Bridge it with modern, web-first platforms.

As legacy codebases written in languages like COBOL become obsolete, financial management firms face a scarcity of internal talent fluent in these languages—which means there’s a critical lack in understanding of how these systems function. That lack is exacerbated by a shrinking external pool, as newer developers focus on modern languages such as Java, Python, and JavaScript, which are more aligned with modern, digital-first environments. This talent gap makes it difficult to maintain and evolve mainframe systems to meet current market trends and customer demands.

Modernization helps bridge the gap by replacing outmoded codebases with modern, web-first platforms and languages. By doing so, organizations can tap into a broader, younger talent pool trained in modern languages. This shift can reduce dependency on hard-to-find legacy system talent, streamlining development, and making systems easier to support and innovate with.

4 Scalability is critical for growth. Get it with a modernized tech stack.

In 2024, between January and October, the Nasdaq witnessed average daily trade volumes of 35.2 million shares, a low of 23.9 million shares and peak of 57 million shares.¹ It’s difficult to scale legacy systems on demand to manage such volatility, especially when much of the IT team is focused on maintaining routine operations rather than driving innovation. In sectors like retail equity trading, hundreds of batch jobs need to be supported regularly, consuming valuable time and resources. Additionally, the democratization of cloud technology has enabled fintech firms to compete aggressively with traditional financial institutions. These newer players are not only more agile but also outperform established firms in usability and innovation—which means they’re attracting a growing user base.

Mainframe modernization offers a scalable, flexible solution that helps businesses stay competitive. By modernizing technology stacks, application platforms, and engineering processes, I&WM firms can better position themselves for growth. A key aspect of this process involves rationalizing redundant applications, systems, and processes. This rationalization can improve efficiency, enabling firms to scale their operations and respond to new market demands more quickly to achieve sustainable business growth.



Mainframe modernization in action

How one global financial services firm modernized its mainframe capabilities to enable transformation



The firm needed to exit their mainframe systems by a set date. It operated an expensive, monolithic system with **50 million lines of code and 10,000 database tables**, mixing client data from multiple business domains in a single datastore. The complexity slowed product launches and affected investor experience, while operational overhead kept increasing due to licensing and support costs.

Using legacy analysis tools such as [innoWake](#), which is part of [Deloitte Ascend™](#), Deloitte engineers detangled the data into separate business domains with tailored applications and leaner storage. They rearchitected retail applications and optimized processing platforms, APIs, and databases. In the next 24 months, the organization will complete conversion of 20 million lines of code while achieving 100% functional equivalence with legacy systems.

As a result, the organization will be able to achieve a timely mainframe exit. Further, in the retail space, more than 30 functions were modernized in three years, with 50% ready as cloud “gold copy.” Time to market decreased, which led to 25% more deployments in the first year alone. Cloud scalability also enabled new features, increased investor-critical availability to 99.99%, and reduced the number of batch jobs by 60%. Cloud now supports 25% of trading volume.

Benefits of modernization efforts

Enhanced customer experience: With modernized systems, organizations can offer personalized, real-time services that meet evolving customer expectations and increase client engagement and satisfaction.

Improved operational efficiency: A modern, cloud-based architecture can reduce the data center footprint and upfront investments in legacy hardware, decrease maintenance costs, and optimize resource allocation.

Operational excellence and reduced risk: With modernization, firms can replace legacy systems with scalable platforms—ensuring agility and resilience in a rapidly changing environment.

Quicker time to market: Modern platforms significantly reduce the time required to launch new products and features, helping firms remain competitive and responsive to market demands. This increased agility also provides the flexibility needed to quickly adjust to sudden market changes, ensuring businesses stay ahead of emerging trends.

Reduce reliance on niche skills: Adopting modern technologies and codebases helps reduce reliance on legacy system talent—which decreases key-person risks and helps build a versatile talent pool with in-demand skills.

All of the above benefits ultimately enable investment and wealth managers to focus on generating additional flows, improving investment performance, increasing revenue and margin, and enhancing product competitiveness through more attractive fee structures.

Modernize to adapt and innovate

Mainframe modernization isn't just a technological upgrade; it's a strategic imperative for investment management firms intending to stay competitive. By transitioning to modern, scalable, and cost-effective cloud-based solutions, organizations can enhance operational efficiency, accelerate time to market, and unlock new revenue streams. Embracing modernization can also position firms to meet evolving customer expectations and adapt swiftly to market changes, helping to ensure sustained growth and innovation in a dynamic financial marketplace.



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Endnotes

1. [NasdaqTrader.com](https://www.nasdaqtrader.com) market research performed on website November 20, 2024.

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