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Association for Intelligent Information Management

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As we navigate the current "AI summer" and its associated hype cycle, I've been particularly fascinated by a noteworthy shift: the renewed attention being paid to legacy data systems. Organizations are mining historical records to train AI models while new technologies improve data accessibility. This creates both opportunities and challenges.

According to this research by Rocket Software, mainframe systems house some of the most sensitive and important transactional data in the enterprise, with 100% of surveyed respondents confirming they rely on these systems. Yet, seventy-six (76%) of leaders reported that they found accessing mainframe data and contextual metadata to be either very or somewhat challenging.

Mainframe systems have long carried a reputation for being complex pieces of technology that, while housing crucial data, would require excessive effort or outdated technical expertise to fully utilize. The key to overcoming these challenges involves identifying solutions and experts who can tackle these issues head-on—simplifying mainframe-to-cloud integration while providing solutions that make this valuable data accessible to non-technical users.

We are pleased to add this valuable report to AIIM's library of resources and extend our sincere thanks to Rocket Software for contributing this insightful research paper. This research and paper by Rocket Software provides a guide for organizations seeking to better understand and leverage mainframe data in their AI and analytics initiatives.

Sincerely,

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President & CEO
Association for Intelligent Information Management (AIIM)

Rocket software

Rethinking the Role of Mainframe Data in Enterprise AI and Analytics

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Introduction

Artificial Intelligence (AI) and advanced analytics are transforming how businesses operate. These technologies streamline operations by automating tedious, time-consuming tasks, enhancing security and compliance, improving application development, and unlocking new, highly valuable insights from data. But with this potential comes pressure: companies must rethink how they manage and leverage data, especially on the mainframe.

As AI applications and analytics continue to evolve, the competition is heating up. Standing still is not an option. However, simply implementing AI isn't enough. For AI and analytics to truly drive real-time, data-driven decision-making, businesses must unlock the full potential of their data.

The question is: how can organizations tap into mainframe data to maximize the impact of AI and advanced analytics, especially when that data plays such a critical role in their operations? While mainframe data holds immense promise for driving AI insights, integrating it into analytics can be complex. However, those who achieve this task will reap significant benefits that can help generate new insights, uncover opportunities for growth, and ultimately create a competitive edge in an increasingly tough market landscape.

To better understand how businesses are leveraging — or plan to leverage — mainframe data in their AI and analytics initiatives, Rocket Software, in partnership with Foundry, surveyed over 200 senior decision-makers in data analytics, data management, data engineering, data architecture between May 10 and May 27, 2024.

The findings reveal several significant challenges, longstanding perceptions, and new opportunities for businesses to capitalize on. Unsurprisingly, all respondents rely on the mainframe to store critical data — whether in telecommunications, retail and eCommerce, higher education, or other industries. Mainframe systems are a universal reality. Where the differentiation comes into play is what those organizations do or don't do with their mainframe data. Those who successfully integrate mainframe data with AI and advanced analytics stand to unlock a world of possibilities.

In this report, we'll examine what challenges matter most to senior leaders and decision-makers, what perceptions linger around mainframe data, and what steps should be taken to overcome them and get the most out of data-driven initiatives.
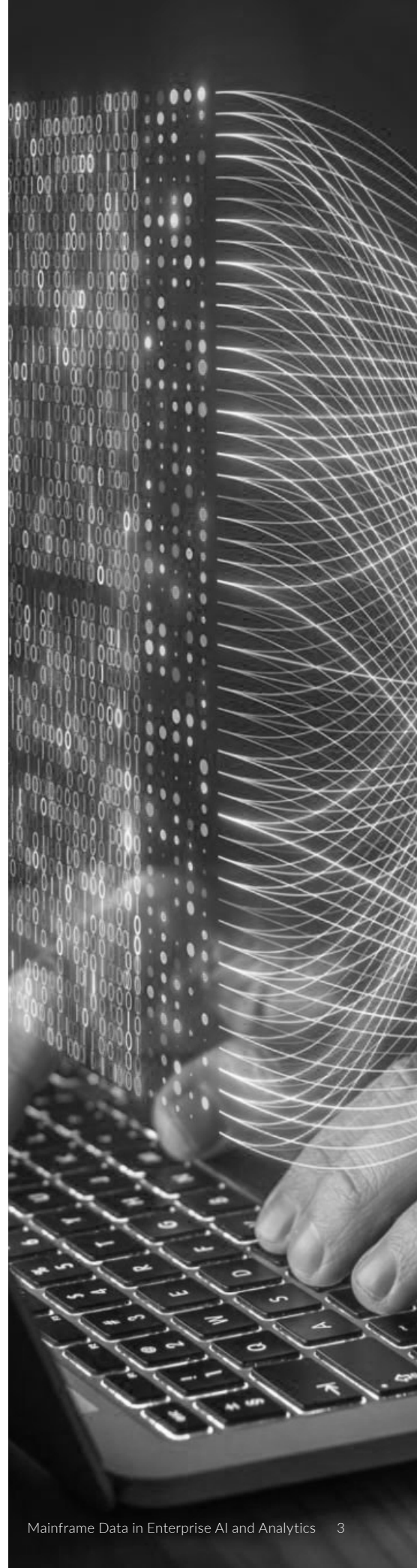
Businesses see the value of AI and analytics

In a hyper-competitive landscape, the time to act is now. AI and analytics aren't just competitive differentiators — they're fueling some of the most impactful data-driven initiatives, like a bank using AI to detect fraud before it happens.

92%
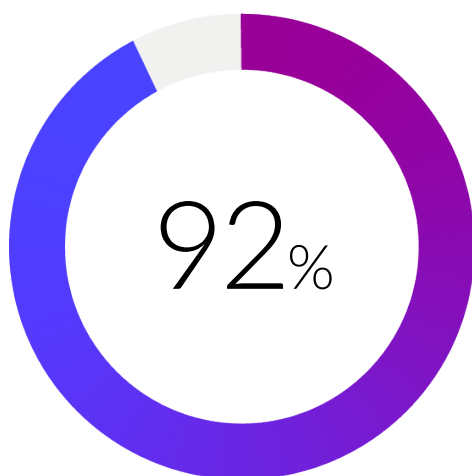
of survey respondents are actively pursuing AI to advance data and analytics initiatives, with on average five projects ongoing or planned.

Leading enterprises are highly engaged in data-driven initiatives with clear and intentional outcomes. These aren't just one-off projects either. A significant 92% of organizations are actively pursuing AI to advance data and analytics efforts, with many running up to five AI initiatives simultaneously.

AI and analytics are everywhere, but what's driving this widespread adoption?

There is a wide range of reasons to integrate AI and analytics within an organization, but Rocket Software's survey highlights three key drivers. Topping the list, 56% of respondents pointed to operational efficiency, using the technology to identify where IT systems are lagging behind, adding undue costs, or are redundant. This was followed by improved risk management (53%) and better decision-making (51%). Overall, 96% of respondents listed at least one of these in their top three.

Among these motivators, 85% of respondents stated they were focused on business optimization, aiming to enhance operational efficiency and risk management. At its core, this push for greater efficiency presents significant opportunities. With effective data analytics and AI, organizations can identify ways to improve processes and create better end-user and customer experiences.

Additionally, 81% highlighted a focus on innovation and optimization, driven by a desire to improve decision-making or increase revenue opportunities. A majority also agreed on the critical importance of AI and analytics for enhancing customer experience (CX) and driving innovation. Nearly three-quarters (74%) emphasized these areas as key to gaining a competitive advantage.

Top drivers for data analytics

Operational efficiency 56%

Improved risk management 53%
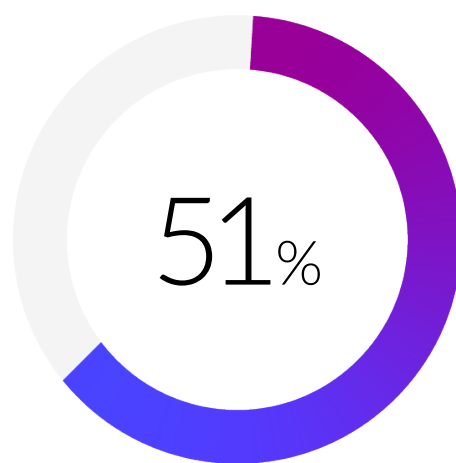
Improved decision-making 51%

Mainframe data and the shift to data-driven initiatives

Mainframe data presents a unique opportunity for businesses to capitalize on. Housing some of the most sensitive and important transactional data, mainframes are already a part of nearly every business's systems — 100% of surveyed respondents confirmed they rely on them.

The data that exists on mainframe systems is a goldmine, offering insights that span years of customer interactions and transaction histories. For instance, a retail business with a deep set of historical data on customer transactions may be able to identify ways to optimize processes and streamline experiences. Or a healthcare provider might leverage its mainframe data to feed AI models, making it easier to spot anomalies or system vulnerabilities to protect patient data. No matter the industry, using AI and advanced analytics with mainframe data can be transformative.

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51%

of respondents said building new analytical capabilities or business initiatives that were not previously possible was the most attractive use case for mainframe data.

Tapping into mainframe data provides leaders with access to a much deeper subset of information backed by years of transactions and historical insights. Accounting for all data, including mainframe data, also gives those business leaders increased visibility into their organization's operations and deeper insights that can help guide decision-making in real-time. That shift itself has implications for overall return on investment, folding in more contextual details that may otherwise be lacking in broader initiatives. From an end-user perspective, mainframe data opens a world of possibilities for building new analytical capabilities that support decision-makers objectives — particularly with initiatives that would otherwise be out of reach without this critical resource.

For many businesses, though, uncovering how to leverage their core transactional data on the mainframe remains a challenge.

Some, though, are beginning to scratch the surface and realize the value of their mainframe data. The business case for integrating mainframe data offers a tantalizing opportunity for operational improvement across various areas, including data quality, security, scalability, and process improvements, among others. In fact, 46% of respondents recognized mainframe data as a way to improve data quality, accuracy, and completeness of existing datasets. But it's not just about improvements to the data itself, 44% of leaders identified the potential to gain a holistic view of business operations.

They also consider mainframe data as an avenue to take analytics and AI even further. 46% of survey respondents said they viewed improving the quality, accuracy, and completeness of existing datasets as one of the most attractive use cases for mainframe data. To capitalize on this potential, organizations need a robust data management approach that ensures the integrity of mainframe data as it moves through various environments and supports data-driven initiatives. However, successfully integrating mainframe data requires overcoming a range of challenges first.

Challenges to mainframe data usage

The promise of AI and analytics appeals to businesses looking to carve out and maintain a competitive edge. From streamlining complex processes and unburdening IT teams from tedious, repetitive tasks to generating better data insights and improving the delivery of new tools and technologies, the possibilities seem endless. The caveat here remains: are these organizations fully leveraging their mainframe data?
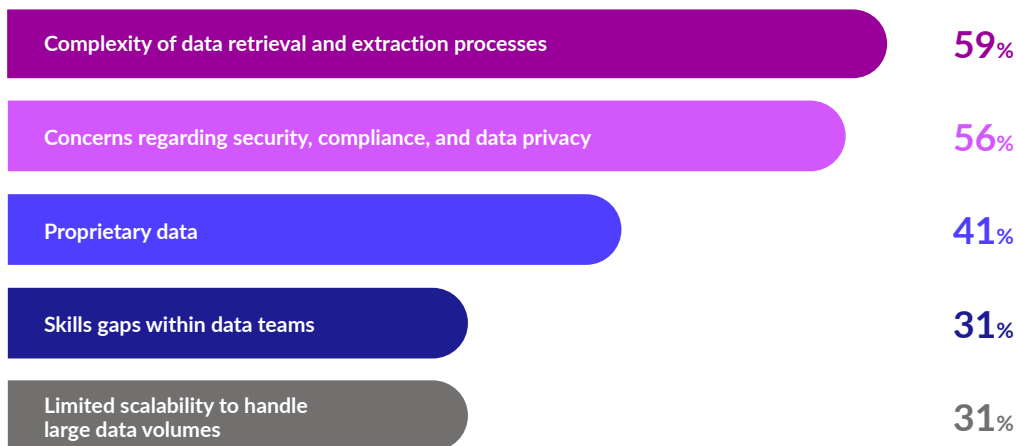
It's clear how powerful AI initiatives can be. So, why does the use of mainframe data in AI and analytics seemingly lack the same enthusiasm? While 73% of surveyed IT leaders report using it to some extent, less than a third use it extensively for data-driven projects.

Leaders know just how powerful mainframe data can be, but the path to integration isn't straightforward. Many face a number of challenges that stand in the way of effectively using mainframe data in AI and analytics.

28%
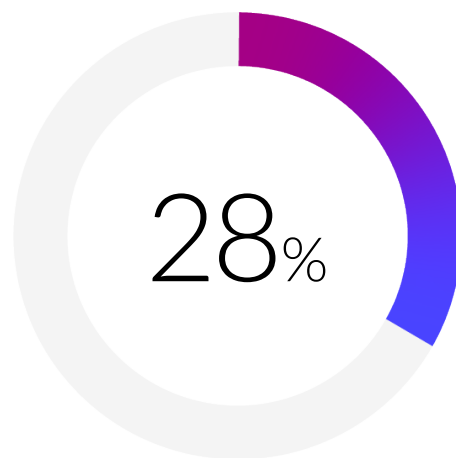
Less than one-third (28%) of survey respondents report using mainframe data extensively in data-driven initiatives.

Top Obstacles to Leveraging Mainframe Data

Obstacle	Percentage
Complexity of data retrieval and extraction processes	59%
Concerns regarding security, compliance, and data privacy	56%
Proprietary data	41%
Skills gaps within data teams	31%
Limited scalability to handle large data volumes	31%

Among survey respondents, 59% said that the complexity of data retrieval and extraction processes was a top obstacle to leveraging their mainframe data. Complexity in this area often comes down to the gap that exists between traditional and modern systems. Breaking through that barrier requires IT teams to seamlessly and securely replicate and synchronize live data into a cloud environment or wherever else it is needed. And that's where a tool like Rocket® Data Replicate and Sync is ideally suited to help break down the complexity and enable real-time, high-performance data replication and synchronization across diverse platforms, from on-premises mainframes to the cloud.

Mainframes are often touted for their security and house some of an organization's most sensitive data. With that, it's no surprise that over half (56%) of respondents would identify security, compliance, and data privacy as a top obstacle to leveraging mainframe data.

This is particularly prescient at a time when new regulations like the Digital Operational Resilience Act (DORA) are set to take effect in 2025. That's where it becomes crucial for organizations to identify and work with a partner that brings both security and compliance expertise. The combination of solutions and services included in Rocket® Mainframe Security encompass an approach that helps ensure the mainframe is monitored adequately — with, for example, a tool like the Rocket z/Assure® Vulnerability Analysis Program, which automatically scans for vulnerabilities in mainframe operating system code — and compliance standards are met, especially as mainframe data is leveraged for AI and analytics and moved between environments.

Other challenges leaders identified include proprietary data (41%), data team skills gaps within data teams (31%), limited scalability for to handle large data volumes (31%), and a lack of integration with modern tools and analytics frameworks (29%). Although these challenges ranked slightly lower on the list, they're still comprise a significant segment of respondents. All three indicate a clear need for businesses to find a technology partner that knows what it takes to modernize and fully leverage mainframe data. Entrusting a partner like Rocket Software with this task brings a deep knowledge of mainframe technology to help bridge the skills gap, easy-to-integrate solutions, and a path to easily scale and meet organizations at every stage of their journey.

Perceptions of mainframe data

Challenges aside, mainframe data also has a complicated perception among leaders. Mainframe systems themselves have a reputation for being complex pieces of technology that, while housing crucial data, would require too much effort or outdated technical know-how to fully extract value. Even as most survey respondents (76%) reported having a designated mainframe expert on staff, the perception that has long surrounded mainframe data compounds the challenges that come with accessing it.

A vast majority of respondents said they had found accessing their mainframe data and contextual metadata to be very or somewhat challenging. Among surveyed leaders, 42% said they considered integrating mainframe data with cloud data sources to be very challenging. That prevailing opinion makes leveraging this data a daunting or downright unappealing prospect for organizations that want to kickstart AI initiatives quickly.

Beyond that, there is also the added question of how accessible this data is for business and non-technical employees to fully utilize — a key factor in how effectively a business can put analytics insights into action across the enterprise. The survey results showed this fact was closely reflected among many respondents, with 64% of leaders saying that overall ease of use for business and non-technical users was a challenge for their organization and over one-third (36%) saying it was very challenging.

76%
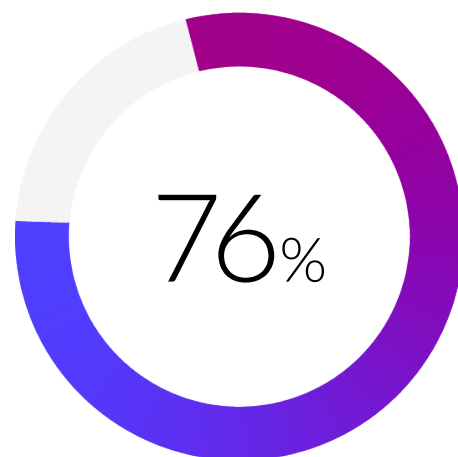
of leaders said they found accessing mainframe data and contextual metadata to be either very or somewhat challenging.

Nearly half of surveyed leaders (42%) said they considered integrating mainframe data with cloud data sources to be very challenging.
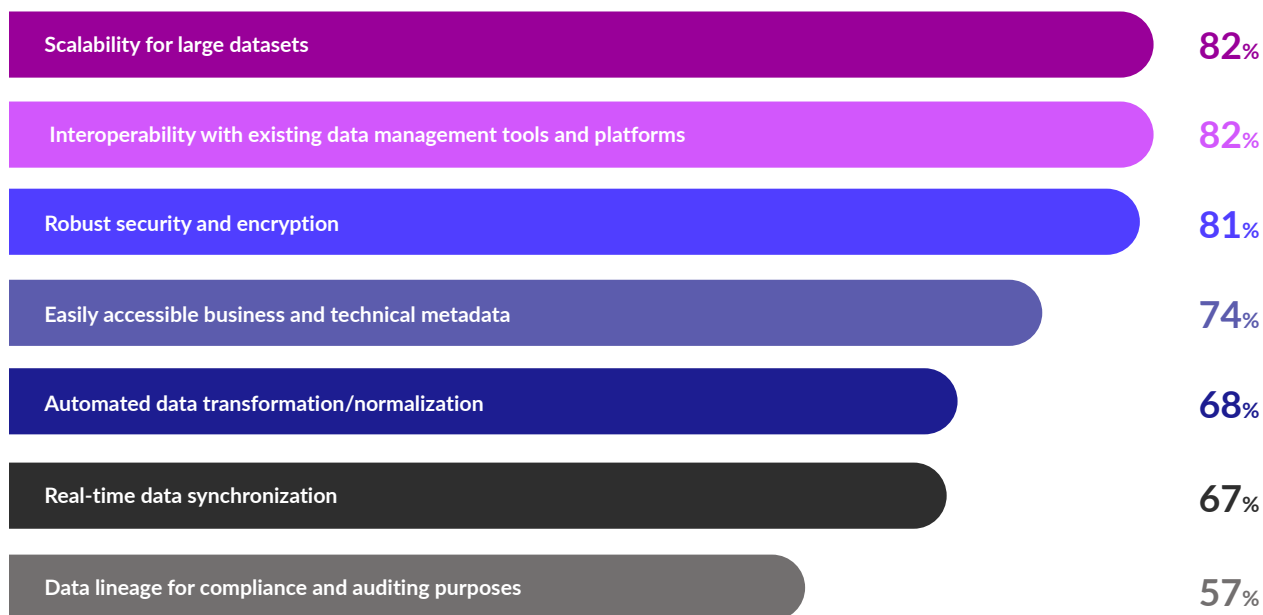
Navigating a shift toward hybrid cloud

Achieving 'data nirvana' is essential for overcoming both real and perceived challenges. For businesses, this means identifying and deploying a holistic set of solutions tailored to recognize unique risk and operational profiles. As leaders push forward with implementing new data strategies — especially those adopting a hybrid cloud approach — there are several considerations that factor into their preferred path toward full integration of mainframe data with cloud data.

The survey revealed that IT leaders are looking for solutions that not only meet current data management needs but also offer the flexibility to support future needs as volumes grow over time. Over half (51%) of respondents said one of their top considerations was aligning with their capabilities and available resources for managing integrations.

50% of leaders also said they consider the ability to take advantage of scalability features that allow for easy expansion as data volumes grow. Security ranked as an important factor among respondents as well. 43% of leaders identified managing risk — including considering vendor reliability and data security.

How important are the following features or benefits to your data team when considering solutions that enable the integration of mainframe data with cloud data?

Feature	%
Scalability for large datasets	82%
Interoperability with existing data management tools and platforms	82%
Robust security and encryption	81%
Easily accessible business and technical metadata	74%
Automated data transformation/normalization	68%
Real-time data synchronization	67%
Data lineage for compliance and auditing purposes	57%

% of respondents who chose critical or very important.

Importantly, leaders want to be confident that any solution they adopt will be scalable as data volume expands and operations accelerate. Other factors in leader evaluations include easily accessible business and technical data (74%), automated data transformation/normalization (68%), and real-time data synchronization (67%).

When implementing solutions, 42% of respondents preferred to adopt a prebuilt solution to integrate mainframe data with cloud data. This compares to just 28% of leaders who said they would favor building an in-house solution. Additionally, over half (58%) of leaders reported using either a data mesh or data fabric approach in their current strategies.

Many of these considerations come down to scalability, the ability to access real-time data, and challenges around data security and reliability. Prioritizing hybrid cloud solutions is critically important for organizations looking to make the most of mainframe data. The solutions that comprise Rocket Software's Hybrid Cloud Data Suite make it easy for organizations to address those considerations to get the best of mainframe and cloud infrastructure. Integrating cloud and mainframe data helps organizations tap into more scalability and create a simplified view of their structured and unstructured data between on-premises infrastructure and the cloud.

Taking AI and analytics to the next level with mainframe data

AI and analytics have become the standard for businesses looking to build a competitive edge, with some organizations reporting having as many as five initiatives ongoing at a time. Overall, business leaders who currently hold critical data in the mainframe understand its value — many even have personnel designated as mainframe experts in place. But even with that understanding and expertise already in the organization, some have yet to fully tap into the power of their mainframe data. Challenges, both real and perceived, have led many to struggle when it comes to integrating mainframe data into their AI and analytics capabilities.

Even as more organizations recognize the value of mainframe data, there are a wide variety of very real challenges — and plenty of perceived challenges — that can make integration seem overly daunting and result in pushing initiatives off altogether. Issues like data retrieval, security, compliance, and scalability often hinder the integration of mainframe and cloud data.

However, the benefits of leveraging mainframe data for AI and advanced analytics are immense — enhanced decision-making and deeper insights into operational efficiency are just a few. A partner like Rocket Software has the solutions and expertise to tackle these challenges head-on, simplifying the mainframe-to-cloud integration while also providing solutions that make it accessible to non-technical users.

No two organizations are alike. Likewise, no two approaches to AI and advanced analytics — or modernization — are the same. Ultimately, there is no one-size-fits-all approach to data management. Just under half of the leaders surveyed said they prefer a pre-built solution to working with what they have in-house. So, the need is real and pressing. But it's not merely enough to identify a modernization partner, adopt a bundle of tools and technologies, and then start trying to fit existing systems into that model.

Rocket Software brings a unique level of understanding and capabilities to organizations, meeting them wherever they are on their modernization journey. Having a tailor-made solution that provides crucial scalability and interoperability with existing data is among the most important requests. And for good reason — as organizations evolve and grow, they need the solutions supporting them to go along with them on that journey well into the future.

Wherever your organization is — early stages or deep into modernization efforts — learn more about how Rocket Software solutions are ready to help accelerate your modernization journey and maximize the value of your mainframe data for AI and advanced analytics.

Methodology

Foundry surveyed 213 business leaders and decision-makers, including those employed in data analytics, data management, data engineering, or data architecture roles between May 10, 2024, and May 27, 2024, to understand how organizations are leveraging or planning to leverage mainframe data as part of their AI and analytics initiatives to drive strategy, improve operational efficiencies, and enhance competitive advantage.

About Rocket Software

Rocket Software is the global technology leader in modernization and partner of choice that empowers the world's leading businesses on their modernization journeys, spanning core systems to the cloud. Trusted by over 12,500 customers and 750 partners, and with more than 3,000 global employees, Rocket Software enables customers to maximize their data, applications, and infrastructure to deliver critical services that power our modern world. Rocket Software is a privately held U.S. corporation headquartered in the Boston area with centers of excellence strategically located around the world. Rocket Software is a portfolio company of Bain Capital Private Equity. Follow Rocket Software on LinkedIn and X.

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