ISG Provider Lens™

Mainframes – Services and Solutions

Mainframe Application Modernization Software

A guide for clients evaluating their mainframe commitment and modernization strategy

Customized report courtesy of:

avanade

QUADRANT REPORT | MARCH 2024 | AMERICAS

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Mainframe modernization shows momentum, with an increased vendor focus on mergers and acquisitions

With increased attention to cost savings and budget control observed in 2023, more enterprises are considering mainframe modernization to reduce their IT spending. Software maintenance license is a significant cost element that companies can drastically reduce by moving applications to the cloud.

IT organizations facing business pressure to reduce spending tend to prioritize replatforming their mainframes to the cloud, using partner tools such as OpenText (Micro Focus), TmaxSoft (OpenFrame), LzLabs and NTT DATA (UniKix) to rehost legacy applications to run in the cloud rapidly. However, replatforming does not eliminate programming language obsolescence, requiring companies to retain obsolete software engineering processes to develop and maintain outdated applications. More advanced methods include rewriting applications to Java, .NET or C# to introduce DevOps and Agile development methods. Automated rewriting tools generate maintainable application code integrated with modern application development workbenches. Reengineering automation takes longer than rewriting as it uses reverse engineering techniques to explain the legacy code, map data and application dependencies and expose business rules for human reviews. Reengineering allows companies to eliminate a dead code and update the business rules before automatically generating a new code. Rewriting and reengineering tools ensure like-for-like behavior and performance validated by intensive automated testing.

The high focus on GenAI in 2023 has positively impacted the global mainframe modernization market. Experimenting with GenAI tools allows clients to understand that automated code writing is possible. However, GenAI can only write pieces of code per a programmer's prompt and cannot replace rewriting and reengineering tools that consistently generate millions of lines of code (LOC) in minutes. Practical GenAI tools demonstrated by participants in this study

Business pressures to **reduce spending** drive the majority **of mainframe migrations** to cloud.

include business rules explanations and logic summarization to improve documentation and the creation of test cases. For example, the user can ask what the conditions are to calculate the insurance premium. Per the code, GenAI responds that for case XYZ, the conditions are A, B and C, and for case YYY, the conditions are B, D and E. Humans can find the same in the code, but GenAI does it much faster.

Despite continuous, nimble and new technological innovations, mainframes offer a stable technology and have some appropriate use cases. Several enterprises are not ready to exit mainframes due to their simplicity, reliable performance and security compliance. Some clients continue to see no value in investing to change something that works well. Mainframe to cloud migration is not a priority for many, and consider other investments that can produce better returns.

The market for **Mainframe Operations and MFaaS** continues to grow. Mainframe as a service (MFaaS) offers a cloud-like experience from the point of view that clients pay per use, similar to the cloud commercial model but running on a private cloud. Mainframe operations are more flexible, allowing clients to retain hardware and software ownership. In both cases, service providers operate the infrastructure and offer different levels of managed services. This year, ISG observes that more clients are moving from on-premises to outsourced data centers and MFaaS to decommission their facilities, accelerate sustainability programs and achieve carbon neutrality targets. Most service providers reported growth in 2023, with a few clients changing the incumbent system, and a majority of new deals refer to transferring on-premises installations to outsourcing data centers.

In Mainframe Optimization Services, service providers demonstrated more cases of clients implementing DevOps in their mainframe environment, transforming their software engineering processes to adopt continuous integration and quality assurance. Modernizations in this area include code repositories, such as GitHub, service automation, testing automation, cloud backup, API development and data integration with Model9, Precisely and other tools. More providers are talking about zLinux (Linux on mainframe hardware) and Java virtual machine (JVM) on the mainframe, but the number of cases continues to be small.

Companies that are late in modernizing their legacy applications with DevOps are waiting for the right time to exit the legacy platform. During this study, ISG observed that more companies understand waiting is not an option and that business demands agility and cloud integration. Mainframe optimization is an effective solution to address business demands without exiting the mainframe platform. ISG predicts that many large enterprises will need several years to exit mainframes, and optimizing the environment is an immediate necessity to address business agility and hybrid cloud integration.

In Applications Modernization Services in the U.S., companies are accelerating their modernization pace, emphasizing cost savings and focusing less on innovation. Clients want to reduce their technical debt, preferring to do so on a modern platform rather than investing in costly mainframes. Companies must also demonstrate their applications' compliance with the most recent regulations, including data privacy and employee access to databases and clients' information, confidential or not. Data access controls exist in mainframes, but demonstrating access controls and providing auditing traceability may require application code modernization, and showing compliance might be impossible without documentation. Clients should note that mainframe hardware and software are highly secure, but applications' compliance depends on programmers' discipline, methods and tools.

Modernizations with rewriting and reengineering technologies enable code quality checks and traceability. Clients should pre-assess their environments and clearly define requirements before engaging with service providers to modernize their applications. They must also consider whether the endeavor comprises a few applications or the entire portfolio. Some providers are exceptionally instrumental in handling large and complex application portfolios, which can be overwhelming and expensive to modernize a few applications. A few others are nimble and apply pragmatic approaches to modernize applications one by one at speed.

Application Modernization Services in Brazil are flourishing and expected to grow in 2024. The largest banks have started their application modernization and cloud migrations, inviting attention from hyperscalers such as AWS, Microsoft, Google and Oracle that want to run these banks' huge number of processing hours — Brazil is the second largest IBM mainframe market after the U.S. The system integrators and software vendors expect that the millions of mainframe applications will require many years to modernize and migrate to the cloud.

Banco Itaú's modernization program is at center stage, with several cases promoted at AWS re:Invent in 2021, 2022 and 2023. The bank has a tradition of technological innovation and was a pioneer in online banking before the year 2000 and later by offering its mobile app in the Apple Store. It has questioned application reengineering and rewriting methods, requiring technology vendors to include innovation while modernizing applications instead of the conventional converting code for a like-for-like experience. The bank's questioning is pushing vendors to improve their application modernization technology.

The Application Modernization Software market is expanding rapidly, driving large vendors to invest in acquiring successful niche vendors. In 2023, IBM launched the IBM watsonx Code Assistant for IBM Z, using GenAI to assess legacy applications and rewrite new code. This year, IBM acquired the application modernization technology from Advanced. In 2023, OpenText acquired Micro Focus, and Amdocs acquired Astadia. Later the same year, Rocket Software acquired the modernization IP from OpenText. Years before, AWS acquired Blu Age, Avanade acquired Asysco, and Ensono acquired ExperSolve. ISG expects this M&A trend to continue in 2024 and 2025.

ISG qualified 25 vendors in this quadrant, and other smaller vendors were assessed but not qualified. ISG expects new solutions to emerge with GenAI maturity, which can happen quickly. IBM's recent announcements are particularly important because they show the company understands that mainframe applications will be replaced and wants to be part of modernization. IBM's change in strategy may motivate more clients to consider exiting the mainframe.

At present, GenAI cannot replace rewriting and reengineering software tools. With repetition being the most important characteristic of these tools, clients can reprocess the legacy code, but the generated code will always have the same output. When changing the source code and submitting it again for rewriting, the tool generates a code to pass quality and performance checks — repetition and consistency are considered crucial aspects of code rewriting. GenAI uses large language models (LLM), a method based on interpretation and creation that changes at every interaction. This detail may cause GenAI to be an additional tool rather than a replacement for application reengineering and rewriting.

Intense activity and discussions around GenAI in 2023 have positively impacted the mainframe modernization market, driving clients' curiosity and ingenuity. IT experts ask themselves if GenAI can write new code, why not use it to rewrite the valuable IP in our legacy applications?

Provider Positioning

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	Mainframe Optimization Services	Application Modernization Services, U.S.	Application Modernization Service, Brazil	Mainframes as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
Accenture	Not In	Leader	Leader	Not In	Not In	Not In
Adaptigent	Not In	Not In	Not In	Not In	Not In	Contender
Advanced	Not In	Product Challenger	Not In	Not In	Not In	Product Challenger
Astadia (Amdocs)	Not In	Not In	Not In	Not In	Not In	Leader
Atos	Product Challenger	Leader	Product Challenger	Product Challenger	Product Challenger	Not In
Avanade (Asysco)	Not In	Product Challenger	Not In	Not In	Not In	Leader
AveriSource	Not In	Not In	Not In	Not In	Not In	Product Challenger
AWS	Not In	Not In	Not In	Not In	Not In	Leader
BASE100	Not In	Not In	Not In	Not In	Not In	Product Challenger
BMC	Contender	Not In	Not In	Not In	Not In	Not In

Provider Positioning

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	Mainframe Optimization Services	Application Modernization Services, U.S.	Application Modernization Service, Brazil	Mainframes as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
BRQ	Not In	Not In	Contender	Not In	Not In	Not In
Capgemini	Leader	Leader	Product Challenger	Product Challenger	Leader	Not In
CloudFrame	Not In	Not In	Not In	Not In	Not In	Contender
Cognizant	Leader	Product Challenger	Not In	Leader	Product Challenger	Not In
Compass UOL	Not In	Not In	Contender	Not In	Not In	Not In
CPT Global	Product Challenger	Contender	Not In	Not In	Not In	Not In
Deloitte	Product Challenger	Product Challenger	Product Challenger	Not In	Not In	Not In
DXC Technology	Leader	Leader	Leader	Leader	Leader	Not In
Ensono	Leader	Product Challenger	Not In	Leader	Leader	Not In
Eviden (an Atos Business)	Not In	Contender	Not In	Not In	Not In	Not In

Provider Positioning

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	Mainframe Optimization Services	Application Modernization Services, U.S.	Application Modernization Service, Brazil	Mainframes as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
Evolveware	Not In	Not In	Not In	Not In	Not In	Contender
FNTS	Not In	Not In	Not In	Rising Star ★	Rising Star ★	Not In
FreeSoft	Not In	Not In	Not In	Not In	Not In	Contender
Fujitsu	Not In	Contender	Not In	Not In	Not In	Not In
GFT	Contender	Contender	Leader	Not In	Not In	Not In
Google	Not In	Not In	Not In	Not In	Not In	Leader
HCLTech	Product Challenger	Leader	Not In	Product Challenger	Product Challenger	Contender
Heirloom Computing	Not In	Not In	Not In	Not In	Not In	Leader
Hexaware	Not In	Leader	Not In	Not In	Not In	Not In
HPE	Not In	Not In	Not In	Not In	Not In	Contender

Provider Positioning

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	Mainframe Optimization Services	Application Modernization Services, U.S.	Application Modernization Service, Brazil	Mainframes as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
IBM	Not In	Not In	Not In	Not In	Not In	Contender
Infosys	Leader	Leader	Product Challenger	Product Challenger	Leader	Not In
INNOVA	Not In	Contender	Not In	Not In	Not In	Not In
Kyndryl	Leader	Rising Star ★	Product Challenger	Leader	Leader	Not In
LTIMindtree	Product Challenger	Leader	Not In	Product Challenger	Product Challenger	Not In
LzLabs	Not In	Not In	Not In	Not In	Not In	Product Challenger
Maintec	Not In	Not In	Not In	Contender	Contender	Not In
mLogica	Not In	Not In	Not In	Not In	Not In	Leader
MOST Technologies	Not In	Contender	Not In	Not In	Not In	Contender
Mphasis	Product Challenger	Leader	Not In	Not In	Contender	Not In

Provider Positioning

	Mainframe Optimization Services	Application Modernization Services, U.S.	Application Modernization Service, Brazil	Mainframes as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
NTT DATA	Not In	Product Challenger	Contender	Not In	Not In	Rising Star ★
OpenText	Not In	Not In	Not In	Not In	Not In	Leader
PSR	Not In	Not In	Not In	Contender	Contender	Not In
Raincode	Not In	Not In	Not In	Not In	Not In	Contender
Recovery Point Systems	Not In	Not In	Not In	Contender	Contender	Not In
SLK Software	Not In	Product Challenger	Not In	Not In	Not In	Not In
TCS	Leader	Leader	Product Challenger	Not In	Leader	Product Challenger
Tech Mahindra	Contender	Product Challenger	Product Challenger	Not In	Not In	Not In
TmaxSoft	Not In	Not In	Not In	Not In	Not In	Leader
TIVIT	Not In	Not In	Contender	Not In	Not In	Not In

Provider Positioning

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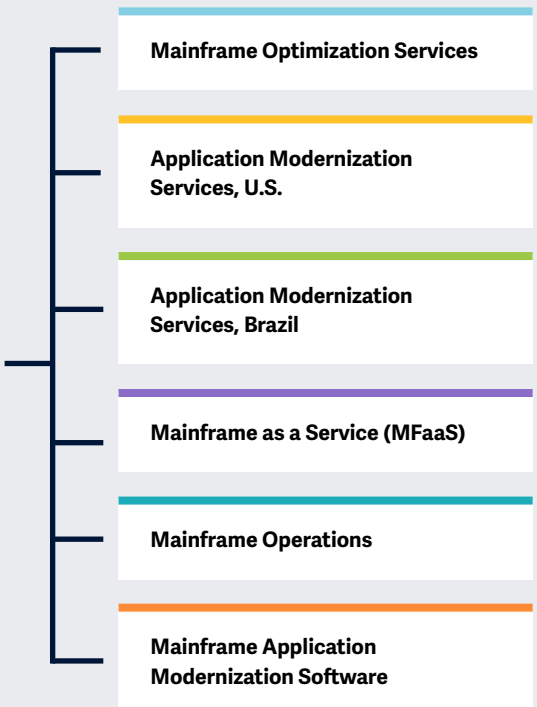
	Mainframe Optimization Services	Application Modernization Services, U.S.	Application Modernization Service, Brazil	Mainframes as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
TSRI	Not In	Not In	Not In	Not In	Not In	Leader
T-Systems	Not In	Not In	Contender	Not In	Not In	Not In
Unisys	Product Challenger	Not In	Not In	Not In	Product Challenger	Not In
Updraft	Not In	Not In	Not In	Not In	Not In	Product Challenger
UST	Contender	Product Challenger	Not In	Not In	Contender	Not In
Verang	Not In	Not In	Not In	Not In	Not In	Contender
Wipro	Leader	Leader	Leader	Leader	Leader	Not In

Key focus areas for **Mainframes – Services and Solutions 2024.**

Simplified Illustration; Source: ISG 2024



Definition

Clients consider mainframe modernization to reduce technical debt, enable AI technologies, allow data access for better business analytics and enhance compliance. New business resilience and carbon neutrality requirements push companies to rethink their data center strategies, favoring the public cloud for its resilience and carbon-neutral commitment.

Technology innovation continues to accelerate, impacting all industries and markets.

Enterprises must invest in technological adaptation to eliminate technical debt and enhance business agility. Mainframe software licensing, particularly third-party software and middleware, pushes mainframe budgets. Mainframe modernization aims to optimize resources and license costs while reducing or eliminating technical debt.

Generative AI (GenAI) is on top of the expectations. It can read and document legacy applications, and clients expect GenAI to create new code to replace them. GenAI has not reached this point, but it contributes to improving the automated tools that existed in the market years before.

Mainframe outsourcing and mainframe as a service (MFaaS) offer short-term cost savings and help clients integrate with cloud infrastructures. The market also offers automation tools to transform legacy applications for the cloud.

This study assesses service providers that modernize mainframe applications for the cloud and those that offer mainframe outsourcing and MFaaS. It also evaluates automation tool vendors for refactoring, rehosting, replatforming, rewriting and reengineering applications.

Scope of the Report

This ISG Provider Lens™ quadrant report covers the following six quadrants for services/solutions: Mainframe Optimization Services; Application Modernization Services, U.S.; Application Modernization Services, Brazil; Mainframe as a Service (MFaaS); Mainframe Operations; and Mainframe Application Modernization Software.

This ISG Provider Lens™ study offers IT decision-makers:

- Transparency on the strengths and weaknesses of relevant providers and software vendors
- A differentiated positioning of providers by segments (quadrants)
- Focus on the regional market

ISG studies serve as the basis for important decision-making by covering providers' positioning, key relationships and go-to-market considerations. ISG advisors and enterprise clients also use information from these reports to evaluate their existing vendor relationships and potential engagements.

Provider Classifications

The provider position reflects the suitability of IT providers for a defined market segment (quadrant). Without further additions, the position always applies to all company sizes classes and industries. In case the IT service requirements from enterprise customers differ and the spectrum of IT providers operating in the local market is sufficiently wide, a further differentiation of the IT providers by performance is made according to the target group for products and services. In doing so, ISG either considers the industry requirements or the number of employees, as well as the corporate structures of customers and positions IT providers according to their focus area. As a result, ISG differentiates them, if necessary, into two client target groups that are defined as follows:

- **Midmarket:** Companies with 100 to 4,999 employees or revenues between $20 million and $999 million with central headquarters in the respective country, usually privately owned.
- **Large Accounts:** Multinational companies with more than 5,000 employees or revenue above $1 billion, with activities worldwide and globally distributed decision-making structures.

The ISG Provider Lens™ quadrants are created using an evaluation matrix containing four segments (Leader, Product Challenger, Market Challenger and Contender), and the providers are positioned accordingly. Each ISG Provider Lens™ quadrant may include service providers that ISG believes have strong potential to move into the Leader quadrant. This type of provider can be classified as a Rising Star.

- **Number of providers in each quadrant:** ISG rates and positions the most relevant providers according to the scope of the report for each quadrant and limits the maximum of providers per quadrant to 25 (exceptions are possible).

Provider Classifications: Quadrant Key

Product Challengers offer a product and service portfolio that reflect excellent service and technology stacks. These providers and vendors deliver an unmatched broad and deep range of capabilities. They show evidence of investing to enhance their market presence and competitive strengths.

Leaders have a comprehensive product and service offering, a strong market presence and established competitive position. The product portfolios and competitive strategies of Leaders are strongly positioned to win business in the markets covered by the study. The Leaders also represent innovative strength and competitive stability.

Contenders offer services and products meeting the evaluation criteria that qualifies them to be included in the IPL quadrant. These promising service providers or vendors show evidence of rapidly investing in products/ services and a follow sensible market approach with a goal of becoming a Product or Market Challenger within 12 to 18 months.

Market Challengers have a strong presence in the market and offer a significant edge over other vendors and providers based on competitive strength. Often, Market Challengers are the established and well-known vendors in the regions or vertical markets covered in the study.

★ **Rising Stars** have promising portfolios or the market experience to become a Leader, including the required roadmap and adequate focus on key market trends and customer requirements. Rising Stars also have excellent management and understanding of the local market in the studied region. These vendors and service providers give evidence of significant progress toward their goals in the last 12 months. ISG expects Rising Stars to reach the Leader quadrant within the next 12 to 24 months if they continue their delivery of above-average market impact and strength of innovation.

Not in means the service provider or vendor was not included in this quadrant. Among the possible reasons for this designation: ISG could not obtain enough information to position the company; the company does not provide the relevant service or solution as defined for each quadrant of a study; or the company did not meet the eligibility criteria for the study quadrant. Omission from the quadrant does not imply that the service provider or vendor does not offer or plan to offer this service or solution.

Mainframe Application Modernization Software

Who Should Read This Section

This report is relevant to enterprises in the U.S. for evaluating vendors of mainframe application modernization software. In this quadrant, ISG assesses the current market positioning of vendors offering mainframe application modernization software to enterprises in the U.S. based on the depth of their service offerings and market presence.

U.S.-based enterprises aiming to modernize their applications often face challenges such as a shortage of both legacy and next-generation technical skills, insufficient partnerships with modernization vendors, and limited availability of modernization tools and platforms. Ultimately, the primary objective of modernizing legacy systems stems from the need to align business applications with current scaling requirements, ensuring that legacy systems remain updated to address modern business demands.

ISG observes a trend of many mergers and acquisitions occurring in the modernization software market, a trend expected to persist in the forthcoming years. There is a growing need in the U.S. market for modernization software capable of conducting code assessments and converting legacy applications in accordance with business requirements. Enterprises are prioritizing vendors' capabilities in modernizing legacy applications, and their needs are evolving according to the changes in IT infrastructure and business processes.

Enterprises are prioritizing the migration of their mainframes to cloud to reduce operating costs and avoid the need for additional investments in mainframe licensing and hardware upgrades. They are actively seeking software vendors capable of fully automating application coding, testing, database migration and offering a unique migration approach for every business process.

CIOs should read this report to understand the strengths and weaknesses of vendors, including the way they employ the latest technologies to deliver reliable offerings.

CTOs should read this report to understand the mainframe modernization capabilities of vendors to ensure suitable technology integration into products, services and business administration.

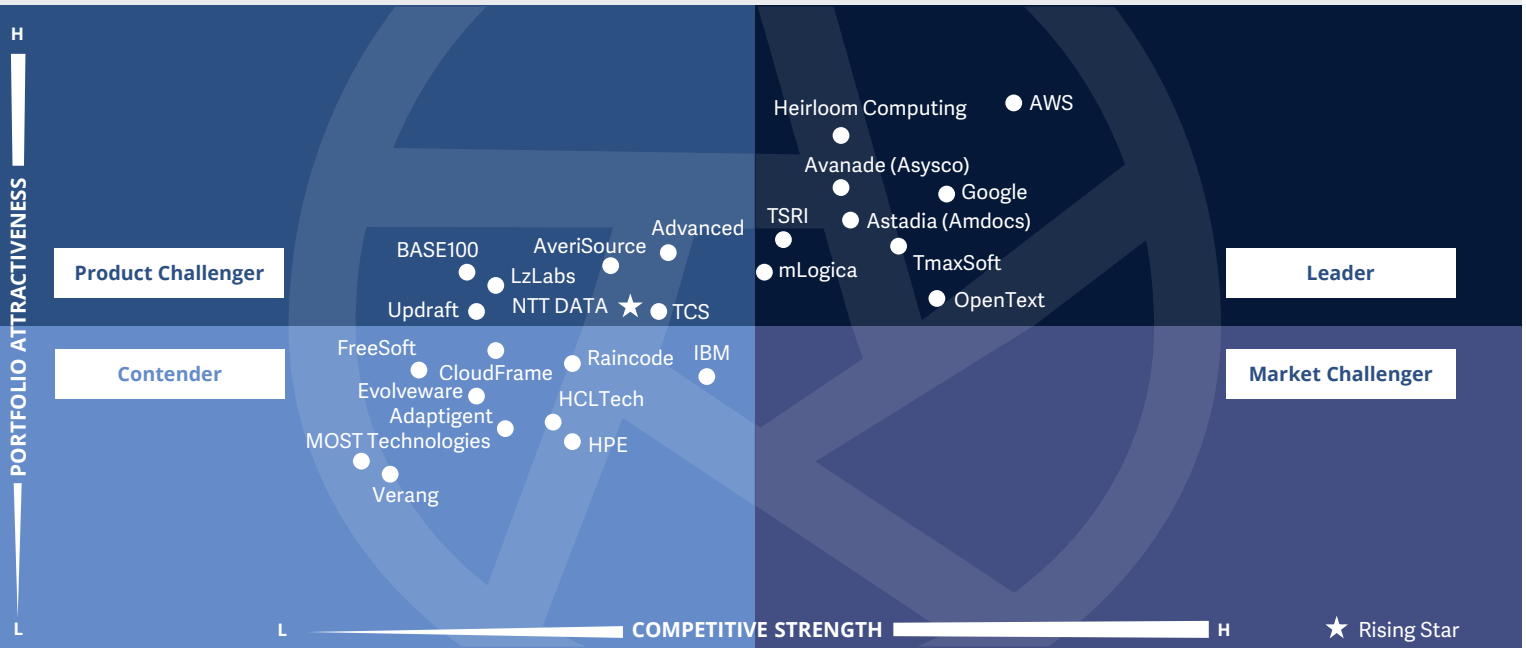
Application services and portfolio managers should read this report to understand the vendors in the application modernization software market in terms of their different offerings and innovations.

ISG Provider Lens™

Source: ISG RESEARCH

Mainframes – Services and Solutions
Mainframe Application Modernization Software

U.S. 2024



This quadrant assesses **modernization software** vendors that support clients with professional services to transform and migrate mainframes to cloud using automation for **rehosting, replatforming, reengineering or rewriting** applications.

Pedro L Bicudo Maschio

Definition

This quadrant ranks software vendors that enable legacy application assessments and application transformations, such as replatform, rehost, refactor, rewrite or reengineer.

Typical clients are enterprises and service providers that need automation tools to perform mainframe application modernization and transformation to run on x86 servers or public cloud platforms. The modernization software can include reverse engineering, business logic mapping, business rules extraction, code review and inspection, documentation, emulators, compilers, frameworks and application development tools to accelerate application code refactoring and modernization to cloud-native architectures.

This quadrant covers vendors that supply the modernization toolset and can partner with global system integrators (GSIs) that deliver modernization services.

Mainframe modernization software outcomes include compiled code to run in the cloud, refactored code to run on emulators in the cloud or new source code from reengineering. The intermediary products include documentation, logic flows, data architectures, automation tools, test artifacts, testing tools, serverless functions, APIs and microservices that can accelerate the mainframe modernization program.

Professional services and consulting expertise can improve the vendor rating but are not a requisite if offered through certified partners.

Eligibility Criteria

1. The software should be licensed or delivered as a service to enable **client autonomy**
2. The vendor must have mainframe specialization and offer **mainframe-specific tools**. It doesn't include generic reengineering, code analysis and GenAI tools
3. The product must be **available and in use** by clients for longer than one year. The study doesn't include startup and lab tools
4. The vendor must have a robust **support organization** or service partner ecosystem to ensure enterprise-grade support
5. Assessment tools and **compilers are included**. Generic code conversion tools, BPM tools or wide-scope server/cloud optimization tools are not covered

Observations

Application modernization software vendors showed accelerated growth in 2023. Enterprises migrate mainframes to cloud to reduce operating costs and avoid new investments in mainframe licensing and hardware upgrades.

Automated software tools can modernize the most common legacy languages, such as COBOL, Natural, PL/1, Assembler, JCL, REXX and Easytrieve. Clients should identify which languages they have in production prior to selecting modernization vendors. It is very common to use two or three vendor tools to modernize an application portfolio. Clients also need attention to billing and license fees to avoid surprises at the end. Commercial models include charging by converted lines of code (LOC), by the runtime, by users or a combination of those. Pricing by LOC can become expensive for large portfolios, and runtime fees can accumulate after modernization. Understanding the commercial model impact should not prevent modernization but is required for planning clients' modernization programs.

The application modernization software market is going through M&A and expansion at the same time. The rising demand for modernization has captured large vendors' attention. In 2020, Google acquired Cornerstone Technology and rebranded it to G4. In 2021, AWS acquired Blu Age, and Astadia acquired Anubex. In 2022, Avanade acquired Asysco, and Ensono acquired ExperSolve. In 2023, OpenText acquired Micro Focus, and Amdocs acquired Astadia. Subsequently, in 2023, Rocket Software acquired the modernization IP from OpenText. In 2024, IBM acquired the modernization IP from Advanced (the IP was known as Modern Systems). ISG expects that the trend of M&A will continue.

From the 57 companies assessed for this study, 26 qualified for this quadrant, with nine being Leaders and one a Rising Star.

Astadia

Astadia (Amdocs) offers a fully automated platform and fabric approach that enables the company to scale globally. Its testing automation technology is a clear differentiator. The company has expanded its partner network and gained market share.

avanade

Avanade (Asysco) has a large global presence. Avanade invested in developing Asysco's delivery capabilities after its acquisition in 2022. It took Asysco to large account clients and gained traction among Microsoft clients migrating mainframes to Azure.

aws

AWS Mainframe Modernization service includes AWS Blu Age, a reengineering platform. In 2023, AWS expanded the product's support capacity and partner network. Partner solutions complement rehosting and automation for a full-scope modernization offering.

Google

Google offers G4, a fully automated application reengineering toolset. It uses partner tools for rehosting, offering end-to-end modernization. It differentiates itself by offering Dual Run and data tools to modernize mainframe data.

Heirloom Computing

Heirloom Computing offers a differentiated replatforming and refactoring technology renowned for its rapid processing of large code bases. It generates native Java applications that run on any cloud, enabling clients to retain source code on COBOL or Java.

mLogica

mLogica offers LIBER*M to rewrite applications to run on any cloud. Clients can choose to compile COBOL to Java binaries (replatforming) or to write Java or C# source code (refactoring). It differentiates itself by supporting Easytrieve and Assembler.

OpenText

OpenText acquired Micro Focus in 2022 and offers a suite of Micro Focus and OpenText IP to rehost mainframes to any cloud while enhancing its management and security toolset. With the largest market share and a robust partner ecosystem, it stands out in the Americas.

TmaxSoft offers OpenFrame, a comprehensive rehosting platform. It supports most legacy languages, databases and data storage technologies, providing an end-to-end solution comprising data, applications, operational tools, subsystems and middleware.

TSRI differentiates itself with a significant software reengineering capacity, covering the largest number of legacy programming languages. It uses the AI-automation *JANUS* Studio® framework to reengineer applications to many modern languages, including Java and .NET.

NTT DATA (Rising Star) offers UniKix, a rehosting platform. It improved its market relevance by achieving a higher AWS partner recognition and launching a comprehensive bank modernization suite. It also partners with Azure and has UniKix running on all clouds.

Leader

"Avanade has taken Asysco to a higher competitive level, providing it with accelerated market growth. It offers a practical modernization solution, enabling a seamless experience for programmers and developers working with legacy and modern languages."

Pedro L Bicudo Maschio

Avanade (Asysco)

Overview

Avanade acquired Asysco in 2022. Avanade is a joint venture between Accenture and Microsoft, headquartered in Washington, U.S. It has more than 60,000 employees across 90 offices in 26 countries and approximately $2 billion in sales.

Avanade provides IT consulting and services focused on the Microsoft platform, encompassing AI, business analytics, cloud solutions, application services, digital transformation, modern workplace solutions, security services, technology and managed services.

Asysco developed AMT to automate mainframe application replatforming and refactoring, ensuring a like-for-like migration while allowing clients to gradually transfer knowledge across platforms.

Strengths

Global scale: Avanade's global organization has significantly scaled up Asysco operations and expanded its addressable market. AMT has a sizable track record of successful modernization projects, with a benchmark of over 29,000 MIPS on Azure. Avanade provides consulting to better align modernization efforts with business priorities and enhances cloud architecture design, thereby improving the performance of mainframe applications on cloud.

Flexible development workbench: Avanade's AMT functions as a translator rather than a compiler, ensuring that both legacy and new source code can be read by humans with equal functionality. It integrates with application development platforms to generate Java source code each time a programmer publishes changes in the legacy source, enabling maintenance in Java, .NET and legacy code such as COBOL.

Investments in innovation: Avanade continues to invest in improving its modernization capacity. It is experimenting with GenAI tools to accelerate code writing and improve legacy code documentation. Avanade is also using a custom GenAI engine to drive greater testing automation. Clients can expect to merge AMT and GenAI into Microsoft Visual Studio, bringing a unified programmer experience.

Caution

AMT does not support Assembler, and Avanade uses partner tools in this case.

Avanade focuses on migrating mainframe workloads to Azure. Clients targeting migration to other clouds should engage with its parent company, Accenture.

Star of Excellence

A program, designed by ISG, to collect client feedback about providers' success in demonstrating the highest standards of client service excellence and customer centricity.

Source: ISG Star of Excellence™ research program, Insights till January 2024

In the ISG Star of Excellence™ research on enterprise customer experience (CX), clients have given feedback about their experience with service providers for their **Mainframes** services.

Based on the direct feedback of enterprise clients, below are the key highlights:

Client Business Role

▲ **Most satisfied**
Procurement

▼ **Least satisfied**
IT Vendor Management

Region

▲ **Most satisfied**
Central/South America

▼ **Least satisfied**
Middle East

Industry

▲ **Most satisfied**
Oil & Gas

▼ **Least satisfied**
Business Services

Industry Average CX Score

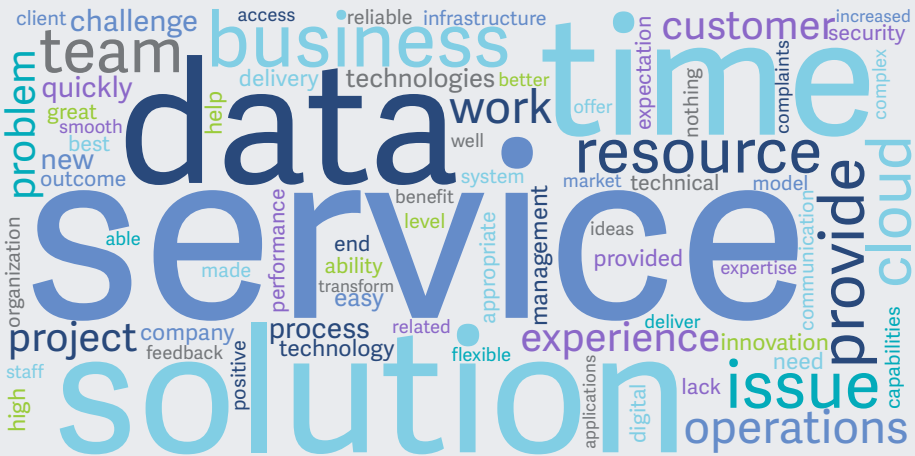
▲ Highest CX: 84.4
▼ Lowest CX: 58.5

CX Score: 100 most satisfied, 0 least satisfied
Total responses (N) = 197

Most Important CX Pillar

Execution and Delivery

Service Delivery Models	Avg % of Work Done
Onsite	52%
Nearshore	20%
Offshore	28%



Appendix

The ISG Provider Lens 2024 – Mainframes – Services and Solutions study analyzes the relevant software vendors/service providers in the U.S. and Brazil, based on a multiphased research and analysis process, and positions these providers based on the ISG Research methodology.

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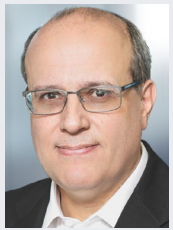
The research and analysis presented in this report includes research from the ISG Provider Lens program, ongoing ISG Research programs, interviews with ISG advisors, briefings with services providers and analysis of publicly available market information from multiple sources. The data collected for this report represents information that ISG believes to be current as of March 2024, for providers who actively participated as well as for providers who did not. ISG recognizes that many mergers and acquisitions have taken place since that time, but those changes are not reflected in this report.

All revenue references are in U.S. dollars ($US) unless noted.

The study was divided into the following steps:

1. Definition of Mainframes – Services and Solutions market
2. Use of questionnaire-based surveys of service providers/ vendor across all trend topics
3. Interactive discussions with service providers/vendors on capabilities & use cases
4. Leverage ISG's internal databases & advisor knowledge & experience (wherever applicable)
5. Use of Star of Excellence CX-Data
6. Detailed analysis & evaluation of services & service documentation based on the facts & figures received from providers & other sources.
7. Use of the following key evaluation criteria:
   * Strategy & vision
   * Tech Innovation
   * Brand awareness and presence in the market
   * Sales and partner landscape
   * Breadth and depth of portfolio of services offered
   * CX and Recommendation

Author



Pedro L Bicudo Maschio
Distinguished Lead Author

Distinguished analyst and author, Pedro Maschio brings extensive experience in the research of the SEMEA (Southern Europe Middle East and Africa) and the Americas service markets. With more than 30 years of experience in sourcing, he has developed vendor assessments plus contract restructuring, services scope and IT benchmarking programs for diverse vertical markets in the Americas and APAC.

Before joining ISG, Pedro was a partner of TGT Consult and managing vice president at Gartner Inc., responsible for the consulting business in APAC and Latin America.

Enterprise Context and Overview Analyst

Manoj M
Research Analyst

Manoj is a research analyst at ISG and supports ISG Provider Lens™ studies on Private/Hybrid Cloud – Data Center Services, Mainframes and Public Cloud Data Center Solution and Services. He also supports the lead analysts of multiple regions in the research process. Prior to this role, he supported the ROI process in sales intelligence platform and was an individual contributor in handling research requirements for advanced technologies in different sectors.

He has considerable expertise in predicting the automation impact by considering certain parameters such as productivity, efficiency and time reduction. During his tenure, he has supported research authors and authored Enterprise Context and Global Summary reports with market trends and insights.

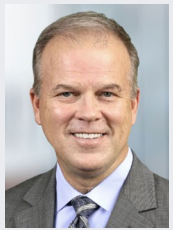
Study Sponsor

Heiko Henkes

Director and Principal Analyst

Heiko Henkes is a Director and Principal Analyst at ISG; in his role as Global ISG Provider LensTM (IPL) Content Lead and Program Manager, he is responsible for strategic business management and acts as thought leader for IPL Lead Analysts. In his role as Star of Excellence (SOE) Product Owner, he leads the program design and IPL integration. His core competencies are in the areas of defining derivations for all types of companies within their IT-based business model transformation. Within this context, Mr. Henkes supports companies to undergo continuous transformation, combining IT competencies with sustainable business strategies and change management. He acts as Keynote speaker in the context of digital innovation.

IPL Product Owner



Jan Erik Aase

Partner and Global Head – ISG Provider Lens™

Mr. Aase brings extensive experience in the implementation and research of service integration and management of both IT and business processes. With over 35 years of experience, he is highly skilled at analyzing vendor governance trends and methodologies, identifying inefficiencies in current processes, and advising the industry. Jan Erik has experience on all four sides of the sourcing and vendor governance lifecycle - as a client, an industry analyst, a service provider and an advisor. Now as a research director, principal analyst and global head of ISG Provider Lens™, he is very well positioned to assess and report on the state of the industry and make recommendations for both enterprises and service provider clients.

ISG Provider Lens™

The ISG Provider Lens™ Quadrant research series is the only service provider evaluation of its kind to combine empirical, data-driven research and market analysis with the real-world experience and observations of ISG's global advisory team. Enterprises will find a wealth of detailed data and market analysis to help guide their selection of appropriate sourcing partners, while ISG advisors use the reports to validate their own market knowledge and make recommendations to ISG's enterprise clients. The research currently covers providers offering their services across multiple geographies globally.

For more information about ISG Provider Lens™ research, please visit this webpage.

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ISG

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Founded in 2006, and based in Stamford, Conn., ISG employs 1,600 digital-ready professionals operating in more than 20 countries—a global team known for its innovative thinking, market influence, deep industry and technology expertise, and world-class research and analytical capabilities based on the industry's most comprehensive marketplace data.

For more information, visit isg-one.com.

ISG Provider Lens™

MARCH, 2024

REPORT: MAINFRAMES – SERVICES AND SOLUTIONS