ISG Provider Lens™

Mainframes – Services and Solutions

A research report comparing provider/software vendor strengths, challenges and competitive differentiators

Customized report courtesy of:

Capgemini

QUADRANT REPORT | FEBRUARY 2023 | EUROPE

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Legacy means different things to different people

Leaving the effects of the COVID-19 pandemic behind, businesses, and their IT departments, are slowly returning to normal. Modernization and innovation take the prime spot again, along with cost control. In this scenario, the mainframe is again seen as a factor that inhibits innovation and agility and generates significantly high costs for operation and maintenance. However, since the introduction of IBM S/360 in 1964, mainframe computer architecture has been highly relevant in many industries. Its software maps unique business processes, defines competitive advantages and allows highly complex business processes to work fast in a secure and precise manner.

Many companies, to date, cannot function without their mainframe environment. This is also due to mainframe reliability, availability and security features and the fact that software and data cannot be easily migrated to other systems. Billions of lines of code (which is often undocumented and has been changed and enhanced thousands of times by employees that have retired a long time ago) and huge databases need to be migrated to new, very different technologies while a company relies on the mainframe's daily availability.

Against this stands the inability of the mainframe to respond rapidly to the deployment of new or updated products in response to dynamic market changes. Companies have strong demands for fast-paced changes, Agile processes and DevOps methodologies, the integration of new, innovative technologies and on-demand cloud computing with its optimized cost model. The mainframe role has changed from a generalized does-all computing system to a highly specialized tool with extreme availability, security and still unmatched computing power. Every software that does not need these capabilities will be moved away from it.

The **mainframe** role has changed from a generalized does-all computing system to a **highly specialized tool**.

Therefore, as one of the providers stated in our interviews, "Legacy means different things to different people." Every mainframe migration project is different and needs dedicated methodologies and tools to be successful.

Cost reduction is not everything: According to IT service providers and migration specialists, mainframe modernization is highly attributed to cost-cutting and budget reallocation. There is no provider not talking about reducing IT costs while keeping stability, reliability, performance and security on the same level. Mainframe clients are struggling with the ongoing escalation of mainframe hardware acquisition and maintenance costs and high software license fees. Saving these costs certainly is important to clients, but it is not easy. The migration process might take a significantly long time and might be very expensive. High transformation costs are generated due to the time taken to refactor or rewrite and also due to the comprehensive testing of functional accuracy, data equivalence and non-functional requirements. Hosting costs for huge mainframe software applications — even when migrated to Java or C# — can be very high and can vary among hyperscalers. Along with these costs, other costs like networking and multiple parallel system installation expenses during migration must be considered. ISG believes that the innovation argument is given more importance than the cost argument.

The European mainframe market: Usually, the European IT market is highly fragmented, with success often depending on the local presence and the ability to provide specialists who speak the local language. Small, local IT service providers successfully compete with large multinationals within their respective country borders, often purely on the advantage of local cultural identity and trust. We found that the mainframe market is different; in this market, the only language that matters is COBOL. Smaller competitors exist based on their team of people; the skills they provide for some dedicated niches are rare and expensive. Unlike in other IT domains, small mainframe modernization companies offer their services to clients beyond their locality. They often offer niche specializations in dedicated areas of the modernization process because they want to utilize the full potential of their expensive staff. They also maintain robust partnerships with large service providers, adding competitive advantages to a joint offering.

However, the modernization market has started to disconnect from this development recently. It has taken a different turn with the entry of large hyperscalers into the market to buy software providers, with an aim to turn them into a tool to ensure the migration of software workloads to their respective cloud solutions. This year, we noticed that the pace had accelerated again. In the latest development, Avanade, a joint venture of Microsoft and Accenture, acquired Asysco, an indirect move from Microsoft to bring more migration loads to Azure. AWS, Google and Microsoft are significantly focusing on the market, developing their own innovative solutions and methodologies and presenting their partners' solutions on their platforms in an as-a-service model.

Automation on the rise: The increasing automation of migration processes is another significant trend we noticed. Technologies like ML and AI provide far more thorough and precise automation mechanisms during business logic and code analysis. They uncover relationships between functions, build and test new code parts, and regulate and compare system results more easily and faster than humans. Modernization software providers continue to enhance their automation capabilities quickly, and large IT providers and hyperscalers are moving quickly, given their big budgets and already-extensive ML and AI knowledge.

Automated testing comes into focus: Another big trend we saw is the automation of migration and testing processes. There is a lot of information out there about migration dispositions, but testing remains underrated. Testing needs to be comprehensive in case of rearchitecting or transcoding dispositions, as the code base is completely new and needs to be tested like any new application. Testing goes far beyond functional tests but expands into proving business relevance and testing the accuracy of the target system against the existing business processes. AI- and ML-based technologies already deliver proven testing methodologies and will dominate the testing market in the near future.

iSeries/AS/400 offerings on the rise: The

iSeries/AS/400 modernization market is much bigger than the market for z/OS® systems. More than 100,000 iSeries/AS/400 systems that are still active stand against about 8,000 zSystems® machines. Some providers have recognized this fact and extended their modernization offering to iSeries/AS/400, but the market, especially in Europe, is much more difficult to conquer. The IBM iSeries/AS/400 was designed especially for the midmarket and is still owned mainly by upper midmarket companies, making it even more difficult to gain a foothold without an extensive local presence in European countries. However, the market opportunity seems to be big enough, and ISG will continue to watch and report on how the market evolves.

Hyperscalers claim parts of the migration market: In last year's study, we saw the leading hyperscalers changing the market environment by purchasing software suppliers, adding to their own solution portfolio, and entering the market themselves. This year, we noticed that the pace has accelerated. Avanade's acquisition of Asysco is an example. Their strategies differ, but all hyperscalers want to ensure that they have the huge mainframe million instructions per second (MIPS) capacities needed by clients moving to their respective cloud environments. They are also significantly focusing on entering the market by developing innovative solutions and methodologies.

ISG believes that the innovation argument is given more importance than the cost argument.

Provider Positioning

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	Mainframe Modernization Services	Mainframe Application Modernization and Transformation Services	Mainframe as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
Accenture	Not In	Leader	Not In	Not In	Not In
Advanced	Product Challenger	Not In	Not In	Not In	Leader
Astadia	Not In	Not In	Not In	Not In	Product Challenger
Avanade (Asysco)	Not In	Product Challenger	Not In	Not In	Leader
Atos	Rising Star ★	Leader	Leader	Leader	Not In
AveriSource	Not In	Not In	Not In	Not In	Contender
AWS	Not In	Not In	Not In	Not In	Leader
BMC	Contender	Not In	Not In	Contender	Not In
Capgemini	Leader	Leader	Product Challenger	Leader	Not In
CGI	Not In	Contender	Not In	Not In	Not In

Provider Positioning

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	Mainframe Modernization Services	Mainframe Application Modernization and Transformation Services	Mainframe as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
CloudFrame	Not In	Not In	Not In	Not In	Contender
Cognizant	Product Challenger	Leader	Product Challenger	Leader	Not In
CPT Global	Contender	Contender	Not In	Contender	Not In
Deloitte	Not In	Contender	Not In	Not In	Not In
DXC Technology	Leader	Rising Star ★	Leader	Product Challenger	Not In
Ensono	Product Challenger	Product Challenger	Product Challenger	Product Challenger	Not In
FreeSoft	Not In	Not In	Not In	Not In	Product Challenger
Fujitsu	Not In	Leader	Not In	Not In	Not In
GFT	Contender	Product Challenger	Not In	Contender	Not In
Google	Not In	Not In	Not In	Not In	Leader

Provider Positioning

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	Mainframe Modernization Services	Mainframe Application Modernization and Transformation Services	Mainframe as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
HCLTech	Leader	Leader	Rising Star ★	Rising Star ★	Contender
Heirloom	Not In	Not In	Not In	Not In	Leader
Hostbridge	Not In	Not In	Not In	Not In	Contender
HPE	Not In	Product Challenger	Not In	Not In	Contender
IBM	Not In	Not In	Not In	Not In	Market Challenger
Infosys	Leader	Leader	Not In	Leader	Not In
Kyndryl	Leader	Product Challenger	Leader	Leader	Not In
LTIMindtree	Product Challenger	Product Challenger	Product Challenger	Product Challenger	Not In
LzLabs	Not In	Not In	Contender	Not In	Product Challenger
Micro Focus	Contender	Not In	Not In	Not In	Leader

Provider Positioning

	Mainframe Modernization Services	Mainframe Application Modernization and Transformation Services	Mainframe as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
mLogica	Not In	Not In	Not In	Not In	Rising Star ★
Model9	Not In	Not In	Contender	Not In	Contender
MOST	Not In	Not In	Not In	Not In	Contender
Mphasis	Contender	Product Challenger	Not In	Not In	Not In
NTT DATA	Not In	Contender	Not In	Not In	Contender
Raincode	Not In	Not In	Not In	Not In	Contender
Software AG	Contender	Not In	Not In	Not In	Not In
SysperTec	Not In	Not In	Not In	Not In	Contender
TCS	Leader	Leader	Leader	Leader	Product Challenger
Tech Mahindra	Product Challenger	Product Challenger	Not In	Not In	Not In

Provider Positioning

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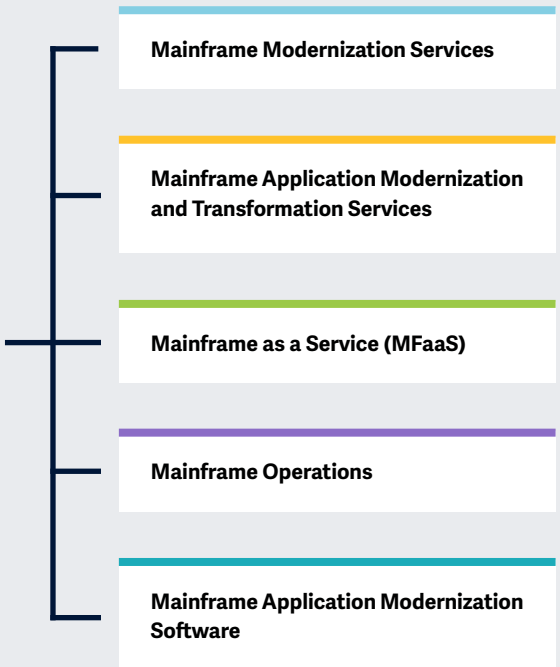
	Mainframe Modernization Services	Mainframe Application Modernization and Transformation Services	Mainframe as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
TmaxSoft	Not In	Not In	Not In	Not In	Leader
TSRI	Not In	Not In	Not In	Not In	Product Challenger
T-Systems	Product Challenger	Product Challenger	Leader	Product Challenger	Not In
Unisys	Product Challenger	Not In	Contender	Contender	Not In
UST	Product Challenger	Product Challenger	Not In	Contender	Not In
Verang	Not In	Contender	Not In	Not In	Not In
Wipro	Leader	Leader	Product Challenger	Product Challenger	Not In

This study focuses on what ISG perceives as most critical in 2023 for **Mainframes Services and Solutions**.

Simplified Illustration Source: ISG 2023



Definition

Digital business transformation has been pushing companies to become more agile in adapting to market changes. The cloud provides the core agility elements, including cloud-native AI, machine learning, serverless computing, database as a service, data services, full automation and many SaaS options to improve business performance.

The more advanced enterprises are prioritizing mainframe modernization. Mainframe systems are complex and slow to change, thus pushing back against agility. These enterprises have two options. They can migrate their legacy applications to the cloud or adapt the old applications with APIs, microservices and DevOps.

Mainframe systems combine high-performance hardware, software tools and large, individually programmed applications that are complex to replace. Thus, modernization is not a trivial task.

The market offers automation tools to transform legacy applications, without loss in functionality, into new ones in the cloud.

Such solutions enable the standardization of application languages and databases, including open-source tools.

However, many enterprises are not ready for a full exit from mainframes. They may prefer outsourcing or pay-as-you-go (PAYG) models to enable mainframe-as-a-service (MFaaS) – thus running their legacy applications on cloud-like mainframe data centers.

This study assesses service providers that modernize mainframe applications or convert applications to run in the cloud and those that offer mainframe outsourcing and MFaaS. Software vendors of automation tools for refactoring, rehosting, replatforming, rewriting and reengineering applications are also evaluated.

Scope of the Report

In this ISG Provider Lens™ quadrant study, ISG includes the following five quadrants: Mainframe Modernization Services; Mainframe Application Modernization & Transformation Services; 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/software vendors
- A differentiated positioning of providers by segments
- Focus on the regional market

Our study serves as the basis for important decision-making in terms of 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/ software vendors 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 of enterprise customers differ, and the spectrum of IT providers operating in the local market is sufficiently wide, 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 and Market Challenger, and Contender), and the providers are positioned accordingly. Each ISG Provider Lens™ quadrant may include a service provider(s), which ISG believes has 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 Modernization Services

Who Should Read This Section

This report is relevant to enterprises in Europe for evaluating providers offering mainframe modernization within mainframe environments.

In this quadrant, ISG assesses providers of legacy application modernization that introduce code repositories such as GitHub or equivalents, DevOps integration, testing automation and security testing.

The mainframe modernization services market is gaining momentum in Europe, primarily because many enterprises are focusing on IT infrastructure modernization and digital transformation. They continue to face challenges such integrating large and complex data sets and slow-pace migrations due to long project cycles. Most enterprises are facing concerns about access to the right IT talent to maintain and manage their legacy systems in-house. As many of them are now planning modernization for their core business activities, there is increased demand for third-party providers to help reduce the skill gap.

For enterprises that look to run applications on mainframes, it has become necessary to update their legacy applications to include Agile development practices and APIs and connect applications to cloud-based technologies.

Service providers are focusing on offering different modernization strategies to address the increased demand of enterprises to set free business data that resides on mainframe systems. Extensive use of the Internet and the scalability of cloud-native applications are projected to offer significant growth opportunities for the mainframe modernization services market in the future.

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

Mainframe technology leaders should read this report to understand their competitors and peers in the mainframe market in terms of their offerings, innovations, talent and portfolios.

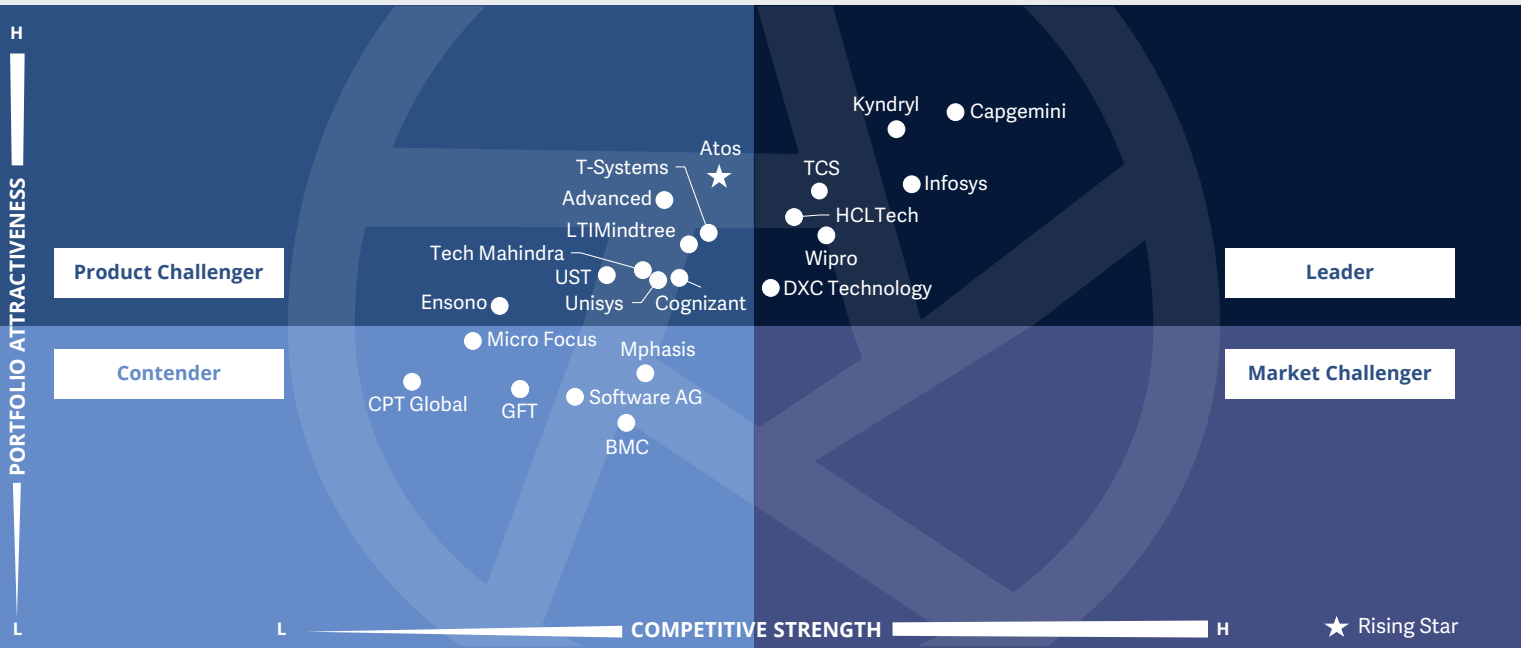
Technology leaders/CTOs should read this report to understand mainframe modernization's capability to enable better technology integration into products, services and business administration.

ISG Provider Lens™

Mainframes – Services and Solutions
Mainframe Modernization Services

Source: ISG RESEARCH

Europe 2023



This quadrant assesses consulting and professional service providers that **optimize and modernize mainframe systems** and enable agility in legacy mainframe environments by automating processes, **analyzing and modernizing application code**, and deploying DevOps.

Oliver Nickels

Definition

Service providers in this quadrant offer mainframe application modernization and can introduce code repositories such as GitHub or equivalents, DevOps integration and testing automation, and security testing. Modernization retains the original programing language, such as COBOL, adding architecture optimization and documentation to enable agility. After the modernization is complete, clients can embrace agile methodologies for the development and maintenance of applications running on mainframe systems, including code repositories, quality assurance and DevOps.

These providers can assess a client's application portfolio to deliver a modernization plan with guidance on what applications should be retained on the mainframe platform. They also help enterprises decide on the type of applications that can be transformed and migrated to other platforms, thus enabling cost and performance optimization.

Eligibility Criteria

1. The participant should provide **case studies** around mainframe modernization of either IBM Z, IBM AS/400, IBM iSeries, HP, Cray, Fujitsu or Unisys mainframe applications.
2. Case studies must include **DevOps tools integration**, including code repository.
3. Modernization must enable legacy programming languages to build and deploy in line with modern **continuous integration** and deployment best practices (for example, implementation of COBOL CI/CD pipelines).
4. Services must include **portfolio and application assessments**.
5. Ideally, the provider can plan for phased modernization with robust testing and quality assurance.
6. The provider **can decouple applications**, develop APIs and integrate with applications outside the mainframe environment.
7. The provider offers guidance for future-state application **governance**.
8. The provider delivers services with its own employees, with adequate **expertise in COBOL** and other mainframe programming languages. It does not subcontract this core competency.

Observations

In last year's study, ISG noted an increasing number of companies citing data access as the main reason to modernize their mainframes. While this continues to be a main factor driving mainframe modernization, the high operational cost for mainframes has become a challenge and is standing in the way of implementing agile development practices, cloud-based technologies and AI services. The use of mainframes has been hindering innovations as well.

The lack of skilled resources continues to be another main factor driving mainframe modernization. Some clients are no longer able to utilize their mainframe systems to their full potential at reasonable costs, making each upgrade risky and affecting the delivery quality. The decreasing number of mainframe experts due to retirement, the young generation's lack of interest in gaining mainframe knowledge and an increasing requirement for staff augmentation services are some of the other key factors driving the need for mainframe modernization.

To address resource scarcity, many providers have integrated their modernization, MFaaS and mainframe operations offerings into one optimized service offering, often with support from large offshore facilities. Providers such as HCLTech, Infosys, TCS and Wipro have established modernization strategies involving offshoring, often combined with dedicated talent creation programs, both onshore and offshore.

From the 56 companies assessed for this study, 22 have qualified for this quadrant, with seven being Leaders and one a Rising Star.

Capgemini

Capgemini has one of the largest mainframe resource pools in Europe. The company has a focus on the mainframe-to-cloud transformation, supported by its large partner ecosystem. Its CAP360 tool suite is deeply integrated into its overall ADMnext offering and to-date has analyzed a total of 1.2 billion lines of mainframe code.

DXC Technology

DXC Technology takes a holistic, business-driven approach to mainframe modernization. Its services focus on consulting and TCO optimization. It makes dedicated efforts to win small installations with fast and effective strategies for rehosting and replatforming.

HCLTech

HCLTech combines its mainframe modernization services with its extensive mainframe-as-a-service (MfaaS) capabilities and wide range of partner solutions to provide an integrated offering. Clients are served through a combination of local teams and many local delivery centers and are supported by the company's large outsourcing capacity in India.

Infosys

Infosys has a longstanding reputation in mainframe services and modernization. The company focuses on a smooth transformation, with a clear consulting-driven strategy, modular toolsets for multi-cloud environments and an experienced local team supported by extended offshore capabilities in India and China.

Kyndryl

Kyndryl uses a holistic approach to mainframe modernization, taking the whole client environment into consideration. The company provides a large support network in Europe. Kyndryl views itself as a large startup with flat hierarchies and a highly adaptive and flexible mindset.

TCS has one of the longest-standing reputations in the mainframe business and offers the complete modernization services spectrum. The company has highly skilled experts and a strong presence in Europe, along with a network of support centers dedicated to specific mainframe and cloud solutions and large offshore capacities.

Wipro has strong mainframe modernization skills combined with an innovative toolset and a business-aligned consulting approach. The company takes a very individual perspective on clients' modernization projects and can shift the focus to wherever it is required the most.

Atos (Rising Star) has a strong market presence in application development and has continuously expanded its position in the mainframe modernization market. Atos offers an integrated toolset and accelerated testing capabilities, works with several partners and hyperscalers and has a strong partnership with AWS.

Leader

"Capgemini grows strongly in mainframe modernization with a proven track record, end-to-end services and a complete toolset."

Oliver Nickels

Capgemini

Overview

Capgemini is headquartered in Paris and operates in 50 countries. It has more than 358,400 employees. In FY21, the company generated $21.9 billion in revenue, with Applications and Technology as its largest segment. Mainframe services are one of Capgemini's core competencies, supported by more than 16,500 mainframe experts globally and many client relationships of more than 20 years. Europe is Capgemini's largest region, with more than 55 out of 140 global mainframe clients and 5,600 full-time employees dedicated to mainframes.

Strengths

Full scope and proven track record: Capgemini's mainframe revitalization solution offers the full scope of end-to-end mainframe modernization and mainframe managed services. The company has a proven track record in successful mainframe-to-cloud modernization, with more than 45 big-ticket engagements, globally, across various customer domains.

Partner network: Capgemini has a strong partner network and alliances with all large hyperscalers. In Europe, the company also works with several boutique players in the refactoring and reverse engineering space, such as Jumar and BASE100.

CAP360 tool suite: Code Analysis Platform 360 degrees (CAP360) includes several proprietary tools for legacy transformation and modernization. Combined with Capgemini's extensive next-gen ADM skills, it offers automated legacy code analysis, reverse engineering, business rules extraction from legacy programs, relationship and dependency analysis, data migration, conversion and comparison, DevOps maturity monitoring and more. To date, Capgemini has analyzed 1.2 billion lines of mainframe code with its CAP360 analyzer.

Caution

Capgemini focuses on large accounts involving long-term engagements. Clients considering one-time optimization projects or short engagements should discuss the scope of their requirements early in any engagement with the company.

Mainframe Application Modernization and Transformation Services

Who Should Read This Section

The report is for Europe-based enterprises that are evaluating the providers of services for transforming and modernizing mainframe applications to a cloud-based environment.

In this quadrant, ISG assesses the current market positioning of providers of mainframe application modernization and transformation services for enterprises looking for modernization that can help save costs, achieve greater flexibility and accomplish adaptability to demands that are dynamic.

Enterprises are facing challenges in prioritizing application modernization and in determining and identifying the destination for modernized applications. Given the significant shortage of skilled professionals, enterprises are increasingly turning to service providers that can assess and rewrite legacy programming language applications based on different business needs.

Enterprises are investing in enhancing their application portfolios, including legacy modernization and other application modernization efforts. This means optimizing business operating models within a hybrid cloud strategy to drive cost efficiency, increase productivity and create opportunities for innovation.

European enterprises are emphasizing that service providers have capabilities that can offer mainframe continuous integration/continuous development (CI/CD), rehosting mainframe to cloud (6R strategy), secure host access and more. Providers in Europe are offering proprietary integrated toolsets to support application transformation in core applications, integrating automation capabilities in analytics and ML in software testing.

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

Mainframe technology leaders should read this report to understand their competitors and peers in the mainframe market in terms of their offerings, innovations, talent and portfolios.

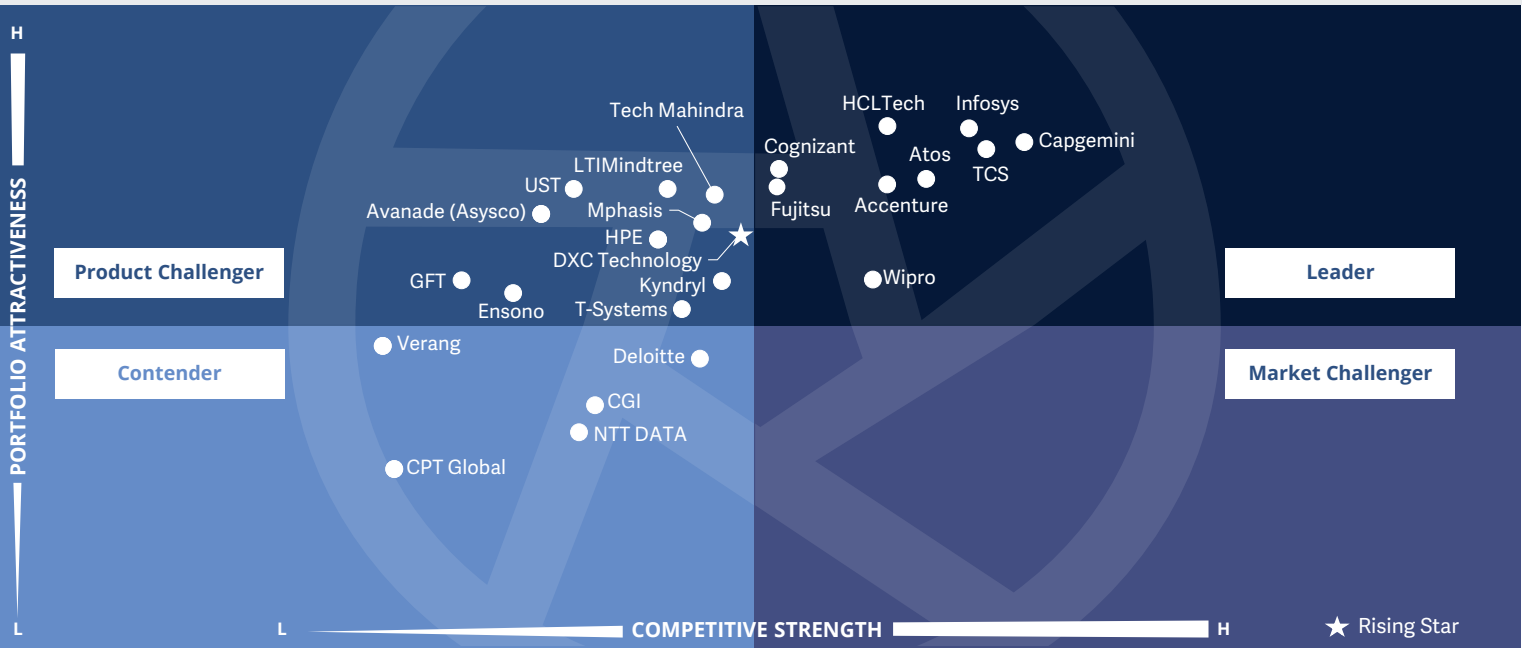
Technology leaders/CTOs should read this report to understand mainframe modernization's capability to enable better technology integration into products, services and business administration.

ISG Provider Lens™

Source: ISG RESEARCH

Mainframes – Services and Solutions
Mainframe Application Modernization and Transformation Services

Europe 2023



This quadrant assesses service providers that focus on **rehosting, refactoring or reengineering** mainframe applications to run on cloud. These providers combine mainframe experience, software engineering skills, **business centric** project management and use **automated modernization** tools.

Oliver Nickels

Definition

This quadrant evaluates providers of application services that use advanced application modernization methodologies to assess and rewrite legacy programming language applications. These providers partner with tool vendors to automate code writing, data conversion, database migration and cloud migration.

Typical legacy applications use COBOL, RPG, Fortran, PL/1, Natural and other languages that typically run on mainframes. The capacity of covering a large number of legacy languages contributes to the service provider rating. Thus, providers that use more vendor tools may have better appraisals.

The main target programming languages may include Java, .Net, C# and Python, among others. The number of destination languages does not impact a provider's rating because past studies show a prevalence of Java and .Net, which most providers can address. Providers may also use emulators and compilers to replatform rather than rewrite (not converting the source code), and this does not impact their rating.

The service provider can offer refactor, rehost, encapsulate, replatform, rewrite or reengineer strategies. More options provide a better rating. A complete transformation should include user interface (UI) translation services that can eliminate green screens while introducing a modern graphic user interface (UI) for a better user experience (UX).

Eligibility Criteria

1. The service provider should be able to reverse engineer legacy applications to provide application logic **documentation**.
2. It must be able to **automate code conversion** with tools to reduce the time required to transform the applications.
3. Optionally, it may offer emulation systems to run legacy applications on other platforms without refactoring code. However, the provider should offer convincing case studies that **demonstrate the viability** of the emulation to be considered.
4. Services must include application **assessment**, application **decoupling**, system **architecture, API development** and future-state application governance.
5. The provider should offer phased transformation with **robust project management**, **testing** and quality assurance.
6. The transformation should enable the enterprise client to operate **agile development and maintenance** with CI/CD automation.
7. Legacy platforms can include IBM Z, AS/400, HP, Cray, Fujitsu and Unisys mainframes.

Observations

Service providers in this quadrant provide tools and services to clients that want to migrate mainframe applications and technologies to cloud platforms and modernize them. Business-centric thinking and robust, end-to-end project management have been quoted by providers and clients as crucial capabilities in this task. All providers, regardless of their position in this quadrant, have the tools and experience to simplify and accelerate the migration from mainframes to cloud, considering the changing business requirements of clients.

Service providers use a common term in the market — the 7Rs, which refer to the possible outcomes for a legacy application: rehost, refactor, reengineer, rearchitect, rewrite, replace and retire. Except for replace and retire, all other terms denote reworking an application to run on x86 hardware.

In the last year, with business normalizing and IT coming out of the exceptional situation it was forced into by the COVID-19 pandemic, cost control came back into focus. Mainframe modernization has become the number-one budget opportunity for IT because of the cost savings it promises, especially when combined with MFaaS and mainframe operations. All providers we spoke to mentioned cost savings at least once as a driving factor.

AWS, Microsoft and Google are the major modernization cloud providers currently. We noticed that IBM and Oracle have moved into a niche position, which is especially remarkable for IBM, as the company continues to lose a lot of mainframe computing power to other hyperscalers. IBM's strategy to compete with AWS, Google and Microsoft in the cloud provider market has not yet worked out. Furthermore, we noticed that these hyperscalers offer more and better solutions to move mainframe MIPS to cloud, with Google Dual Run being just one great example.

From the 56 companies assessed for this study, 25 have qualified for this quadrant, with nine being Leaders and one a Rising Star.

accenture

Accenture offers a clear strategy and execution roadmap for complex mainframe modernization, focusing on business-centricity, realistic schedules and clear communication among all involved participants on the client and provider sides. The company has powerful alliances with Google and Microsoft.

Atos

Atos has a longstanding reputation in the market for successfully delivering large-scale mainframe modernization projects. The company provides an integrated strategy and an extensive transformation toolset. Clients are supported by Atos mainframe hubs and a large network of local partners.

Capgemini

Mainframe services are one of **Capgemini**'s core competencies. The company offers a variety of individual mainframe exit strategies, many proprietary tools and frameworks, and one of the largest support teams in Europe, supported by three large offshore modernization labs.

cognizant

In addition to the services, innovative frameworks and integrated solutions **Cognizant** provides for transforming large mainframe installations, it specifically targets the large iSeries/AS/400 market in Europe with a dedicated and highly flexible modernization offering.

Fujitsu

Fujitsu announced the end of life of its own mainframe server line in 2020 and expanded its mainframe modernization unit to serve Fujitsu's and IBM's mainframe clients with its global delivery center network. Fujitsu also provides technical assistance for clients that wish to modernize on their own.

HCLTech

HCLTech offers a business architecture-led approach to mainframe transformation. Clients can rely on the company's proprietary integrated tools and frameworks, its network of partners and its large offshoring capabilities. HCLTech works intensively with Microsoft and AWS.

Infosys has a longstanding reputation for successfully completing mainframe migration projects of all sizes and complexities. The company serves its clients with local centers and a large partner network and has large offshoring capacities in India and China. Infosys offers dedicated mainframe learning environments for partners' and clients' employees.

TCS is one of the oldest service providers in the mainframe market, with clients being served for more than 35 years. The company offers complete mainframe modernization services, a business-aligned transformation framework, a proprietary transformation software solution and a large partner network.

Wipro has a large European mainframe modernization practice. Its modernization framework is integrated into its extensive IT solution ecosystem and compatible with all cloud and database ecosystems. Wipro takes an innovative approach to mainframe modernization and has included Google Dual Run in its offering.

DXC Technology

DXC Technology (Rising Star) keeps increasing its presence in the European mainframe modernization market with end-to-end transformation services that are integrated into its MFaaS and MFOps capabilities, modernization studio approach, and innovative pricing and contract offers. In Europe, DXC Technology has a focus on small installations.

Leader

"With a clear strategy, an excellently skilled team in Europe and a wealth of tools, Capgemini is an excellent partner for mainframe transformation."

Oliver Nickels

Capgemini

Overview

Capgemini is headquartered in Paris and operates in 50 countries. It has more than 358,400 employees. In FY21, the company generated $21.9 billion in revenue, with Applications and Technology as its largest segment. Mainframe services are one of Capgemini's core competencies, supported by more than 16,500 mainframe experts globally and many clients with 20+ years of relationship. Europe is Capgemini's largest region, with more than 55 out of 140 global mainframe clients and 5,600 dedicated mainframe full-time employees.

Strengths

Multiple options: Capgemini's services for mainframe modernization and transformation include both a mainframe exit strategy with QuittéFrame (covering rehosting, rewriting, automated refactoring and mainframe replacement) and a modernization and hybrid co-existence with EnabléFrame (exposing mainframe functions as microservices via APIs and data augmentation to modern target platforms and the adoption of CI/CD principles on mainframes). The services are supported by Capgemini's CAP360 tool suite.

Wealth of proprietary tools and accelerators: Capgemini's CAP360 performs inventory analysis of the mainframe landscape, and its DevOps Maturity Monitor DAMM provides recommendations for the most-suited tool chains. CAP360 BREAD supports automated business rules extraction and documentation. The company also offers tools for automated code conversion, data migration and decommissioning analysis.

Centralized labs: Capgemini runs three centralized modernization labs in Chennai, India — IBM UX Zones to improve productivity with modern development toolsets, Rehosting Labs and Code Conversion Labs. All labs are run together with partners and driven by Capgemini's toolsets.

Caution

Capgemini does not offer its own MFaaS but works with IBM zCloud services.

Long-term engagements and large accounts with complex application portfolios are the target markets for Capgemini's solution; clients with small modernization projects might have to discuss their options first.

Mainframe as a Service (MFaaS)

Who Should Read This Section

This report is relevant to enterprises in Europe that are evaluating providers offering mainframe as a service (MFaaS) within mainframe environments.

In this quadrant, ISG assesses the current market positioning of providers of MFaaS in Europe based on the depth of their service offerings and market presence.

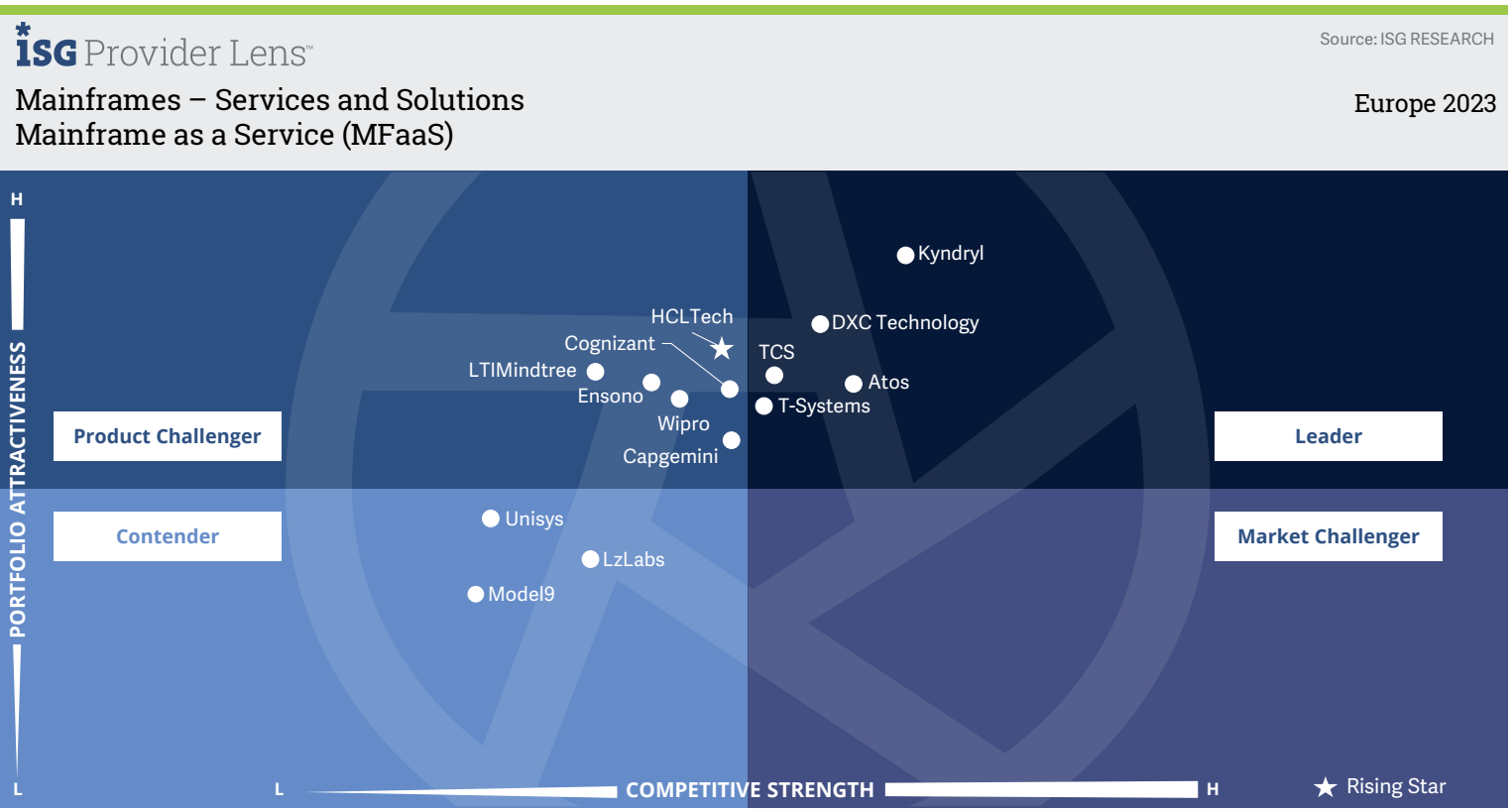
The mainframe market in Europe is largely driven by a rise in demand for high-performance computing, an increased amount of large data sets, the development of the IoT landscape and the general growth in adoption of off-premises hardware installations based on the as-a-service model. Enterprises are increasingly focusing on allocating a large portion of their budget for maintaining aging mainframe computers. Hence it is advisable to choose MFaaS for core business processes. MFaaS delivers the benefits of a mainframe computing platform without the responsibility of keeping the hardware updated or retaining and training staff, allowing enterprises to focus on high-value digital initiatives throughout the mainframe service journey.

Service providers are expected to provide the IT infrastructure and support for running mainframe applications and continuously optimizing the environment. Thus, clients pay for the consumption of those services along with any of their own requirements related to coding (such as Java and COBOL) to run their batch processes. Enterprises' top priorities while opting for MFaaS are to reduce operational costs, lower the risk of understaffing, improve agility, achieve quick turnarounds and improve customer satisfaction.

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

Technology leaders/CTOs should read this report to understand mainframe modernization's capability to enable better technology integration into products, services and business administration.

Procurement and sourcing specialists should read this report to better understand outsourcing deals and develop a better landscape for mainframe consulting and transformation services.



Clients continue to leverage the advantages of the mainframe architecture by using MFaaS to **reduce TCO**, deal with skill shortages and achieve the flexibility of a **cloud-like mainframe application hosting** experience.

Oliver Nickels

Definition

This quadrant assesses infrastructure service providers that offer shared IBM mainframes under a pay-per-use contract model.

The MFaaS offering's scope must include facilities, hardware, connectivity, mainframe network management, operating system and subsystems, licensing and tools. It must also offer all maintenance services that are required to keep workloads running to meet the expected performance metrics established upfront.

Typically, MFaaS is offered on the provider's data centers, but colocation partners are also considered as long as the MFaaS offers a cloud-like experience; clients should not have to check and audit the underneath infrastructure. Thus, high availability and disaster recovery are included in the default scope.

For a cloud-like experience, the service provider offers clients a self-service portal with rich service catalogs covering approval workflows, security, compliance and automated service provisioning, enabling them to increase and decrease utilization.

Service providers typically offer application migration services to onboard clients. The migration can include application modernization and operating system upgrades to run clients' workloads on a shared mainframe environment.

Eligibility Criteria

1. The service provider should offer **robust and secure data centers** that can deliver high performance and availability as expected from mainframes.
2. Services include job scheduling automation, performance optimization, CICS, batch, backup, restore, system upgrades, security patches and other **typical mainframe operations**.
3. Provider must demonstrate proven **disaster recovery** effectiveness for its MFaaS infrastructure.
4. Hosting facilities offer **low-latency connections** to clients' locations and the public cloud, such as AWS Direct Connect, Azure Route, and GCP Direct Connect. Carrier-neutral data centers are preferred.
5. The provider must demonstrate the **financial capacity** to invest in and grow its mainframe operations.
6. It should have a **hiring and training program** to ensure skills availability in the future.
7. It must ensure high performance and security as per **service level agreements** (SLAs) and corresponding contractual penalties.
8. Platforms can include IBM Z and IBM Power Systems (AS/400/iSeries).

Observations

Typical MFaaS clients want to save IT costs and reduce the risk of running their own mainframes, given the rising cost pressure and shortages of younger employees with mainframe administration skills. The participants in this quadrant have full capacity to help such enterprise clients reduce their MIPS needs by optimizing the environment and improving the mainframe performance before integrating a client's mainframe MIPS into their own environment.

Most of the providers run stringent mainframe optimization programs that bring software licenses, machine operations and MIPS consumption, security and other features up to date before starting the migration process. Kyndryl goes so far as to put specific requirements on the client's installation before the company even starts to move the loads into its environment. Some providers have started to offer pricing models based on consumed MIPS and storage capacities. This procedure is not just an opportunity to check the installation; it also helps optimize costs as a priority.

From the 56 companies assessed for this study, 14 have qualified for this quadrant, with five being Leaders and one a Rising Star.

Atos

Atos uses its proven mainframe-to-cloud framework to optimize clients' workloads before it migrates installations to its own environment. Atos' mainframe services focus on robust global mainframe operations and are highly innovative.

DXC Technology

DXC Technology provides MFaaS via client-owned or DXC Technology's own large European installations. The company combines its offering with its other mainframe modernization services and offers many innovative features, options and add-on services to drive innovation in its clients' environments.

Kyndryl

Kyndryl has by far the largest mainframe installation globally, which is integrated into its cloud environment. Kyndryl's offering is supported by many standard services to optimize various aspects of the environment during the integration and transition phases. Kyndryl provides a variety of MFaaS delivery models.

TCS TATA CONSULTANCY SERVICES

TCS offers MFaaS as an integral part of TCS Enterprise Cloud to implement a seamless hybrid cloud environment based on a consumption model. The company also offers a unified approach to modernizing its clients' environments, including the complete spectrum of optimization and migration services.

T-Systems

T-Systems' range of MFaaS offerings is based on consulting. It focuses on securing clients' business operations in terms of business criticality and technical and functional complexity as a first step to cloud migration. T-Systems' data center locations offer high-bandwidth connections combined with high network security standards.

HCLTech

HCLTech (Rising Star) has a growing MFaaS business in Europe based on its traditionally strong ties to IBM and its 2016 acquisition of part of Volvo's IT organization. It encourages small and midsize customers, with less than 8,000 MIPS, to adopt the mainframe-consumption–based model or rehosting. It provides continuous recommendations for transformation as part of its MFaaS offering.

Mainframe Operations

Who Should Read This Section

This report is for Europe-based enterprises evaluating providers of operations related to mainframe applications.

In this quadrant, ISG assesses traditional outsourcing providers with extensive experience in offering mainframe services.

Enterprises face a lack of experts with mainframe operation skills in the market and, thus, higher operation costs. In some cases, this has already reduced the reliability of mainframe operations for core business processes. Together with consistently tight budgets, these challenges lead to significant delays in core business modernization. Therefore, enterprises can engage with a service provider to get operations services that can lead to incremental modernization of infrastructure and applications, which can help in the migration of legacy systems.

Mainframe operations define, create and control all automated operations using programming tools, and they deliberately support core business applications across frameworks. There is a necessity for mainframe operation support services to provide organizations with the flexibility, cost-effectiveness, and high-quality staff and processes needed to meet changing business needs.

Enterprises in Europe are seeking mainframe operations management to integrate their mainframe environments with their organizations' overall service management strategies. They are ensuring that business priorities are aligned across IT infrastructure for greater efficiencies, thus reducing operating costs and the risk of downtime.

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

Sourcing and procurement leaders should read this report to better understand outsourcing deals and develop a better landscape for mainframe consulting and transformation services.

Technology leaders/CTOs should read this report to understand mainframe modernization's capability to enable better technology integration into products, services and business administration.

ISG Provider Lens™

Source: ISG RESEARCH

Mainframes – Services and Solutions
Mainframe Operations

Europe 2023

This quadrant assesses service providers that **operate mainframes on-premises** on behalf of their clients, managing all aspects of day-to-day operations and continuously **optimizing the system** with innovative services.

Oliver Nickels

Definition

This quadrant assesses traditional outsourcing providers with extensive experience in mainframe services. Typical participants employ experienced practitioners to cover legacy mainframe technologies and the most recent mainframe releases. They typically have skilled teams to keep clients' mainframes running.

Services can be delivered on any hosting facility (clients' data centers, provider-owned and colocation facilities). These services, which have long been in existence, include job scheduling, performance optimization, CICS, batch, backup, restore, system upgrades, security patches and other typical mainframe operations.

Multiple options exist for hardware and software ownership, upgrades and modernization responsibilities. A typical deal structure includes clear service levels and a responsibility matrix that can be simplified as follows:

- The client owns the data center, hardware and software. The provider delivers services on-site.
- The client owns the data center, hardware and software. The provider delivers services remotely, nearshore or offshore.
- The client owns the software. The provider owns the data center and hardware.
- The client owns the data center. The provider owns hardware and software.
- Full outsourcing: The provider owns data centers, hardware and software.

The owned data center can be in colocation facilities. Services delivered on-site typically include staff augmentation. All the above service scope models are considered in this quadrant.

Eligibility Criteria

1. The provider should demonstrate a strong mainframe **operation capacity** through case studies.
2. The provider should have a **hiring and training program** to ensure skills availability in the future.
3. The provider offers **management and monitoring** of CPUs, memory, databases, operating systems and tools.
4. It offers **professional services** to install and replace hardware, software and tools.
5. Professional services must include patching services for operating systems, middleware and applications, system upgrades, data center security, network configuration and system integration.
6. The provider enables clients' access to **management dashboards**, including utilization reports, performance indicators, chargeback and other **reporting functionality**.
7. Services must comply with IT service management (**ITSM**) best practices and include incident management, problem management and release management.
8. Outsourced platforms can include IBM Z, AS/400 and iSeries, HP, Cray, Fujitsu and Unisys mainframes.

Observations

Mainframe operations was one of the earliest services in the IT sector, and some of the companies in this quadrant have been providing mainframe services for more than 40 years. These service providers have extensive knowledge of mainframe operations and continuous optimization.

All providers in this quadrant are expanding their operations solutions with modernization and transformation services. Their goal is to move clients away from the mainframe slowly and continuously, which allows them to divest their own facilities. Some providers keep their facilities up to date and expand their mainframe operations offering, but the market demands operations in combination with modernization and often a first migration to an as-a-service hardware environment.

Mainframe operations services are executed more out of large offshore service centers; thus, providers optimize the capabilities of their skilled staff. Some providers use dedicated teams for individual clients so that they get a better understanding of the client's infrastructure within the long-term contract period. Thus, they can react better, faster and in a more targeted manner if there is an issue.

From the 56 companies assessed for this study, 17 have qualified for this quadrant, with six being Leaders and one a Rising Star.

Atos

Atos combines mainframe operations with its MFaaS offering, targeting cost control and optimization and offering a path to modernization. As part of operations, Atos uses mLogica's LIBER™ software suite to identify and replatform applications and optimize workloads in clients' environments.

Capgemini

Capgemini has a proven and growing record of mainframe client projects. As an integral part of its ADM services, the company offers innovative contracting models, covering everything from staff augmentation to complete mainframe managed services, including specific add-on services for mainframe optimization.

cognizant

Cognizant delivers operations, production control and system engineering support through its general managed services offering, including the management of infrastructure, hardware and software. Mainframe operations are considered the first phase in Cognizant's mainframe modernization solution.

Infosys

Infosys provides a broad scope of mainframe operation services centered around mainframe operations offshore from one of Infosys' large remote centers. Operations services are deeply integrated into Infosys' overall mainframe modernization, MFaaS and mainframe optimization services offerings.

Kyndryl

Kyndryl offers a multitude of services within its managed infrastructure services for all IBM environments on its own large data centers. Kyndryl requests clients to meet its well-defined technical and operational requirements to enable Kyndryl's best practices for operating clients' systems.

TCS TATA CONSULTANCY SERVICES

TCS's mainframe operations services focus on continuous improvement, on-time delivery, defect prevention and cost optimization. TCS combines its mainframe services stack into a unified approach to modernize clients' environments and move them to cloud. TCS is particularly strong in Germany, the U.K. and the Nordics.

HCLTech

HCLTech (Rising Star) provides a broad and deep scope of mainframe operations services, tools and frameworks designed to optimize application performance, site reliability and DevOps enablement. Operations delivery is strongly bundled with HCLTech's MFaaS offerings and operated out of the company's offshore locations.

Leader

"Mainframe operations is a core competency of Capgemini, with a growing market presence and an integrated offering."

Oliver Nickels

Capgemini

Overview

Capgemini is headquartered in Paris and operates in 50 countries. It has more than 358,400 employees. In FY21, the company generated $21.9 billion in revenue, with Applications and Technology as its largest segment. Mainframe services are one of Capgemini's core competencies, supported by more than 16,500 mainframe experts globally and many client relationships of more than 20 years. Capgemini's mainframe operation service, Runframe, is part of its ADM offer called Next Generation AM Platform.

Strengths

Innovative solutions: Capgemini offers innovative contracting models, from staff augmentation to complete managed services. The company provides end-to-end mainframe systems support, including day-to-day L1 mainframe monitoring and L2/L3 support as required for upgrades. Mainframe operations are considered one of the company's core competencies, and it has had an excellent record of contract renewal or upgrades in the past years.

Successful market presence: Capgemini has a proven and growing record of client projects, with more than 100 mainframe landscape assessments and more than 20 application portfolio assessments in 2022 alone, globally. Security assessment is always part of the process. Capgemini also offers a wealth of consolidation and decommissioning services and tools to optimize clients' mainframe configuration.

Add-on services: Capgemini offers specific add-on services for mainframe optimization as part of cost optimization. It also offers technical debt reduction and DevOps implementation to improve client agility. Another set of services focuses on carbon footprint reduction. In the U.K. and the EU, Capgemini also offers disaster recovery to end-to-end clients.

Caution

Despite its excellent mainframe operations offering, Capgemini does not directly offer mainframe on cloud or MFaaS in Europe. Instead, Capgemini has partnered with Kyndryl, Ensono, FIS, FNTS and others that offer services to clients through their data centers in Europe, depending on geography. This might cause confusion among clients that want to use MFaaS within their migration efforts.

Mainframe Application Modernization Software

Who Should Read This Section

This report is relevant to enterprises in Europe that are evaluating vendors of modernization application software within the mainframe ecosystem.

In this quadrant, ISG assesses the current market positioning of vendors offering mainframe application modernization software to enterprises in Europe based on the depth of their service offerings and market presence.

European enterprises that intend to modernize their applications often face challenges such as a short supply of legacy and next-gen technical skills, a lack of partner relationships with modernization vendors, and limited availability of modernization tools and platforms. The major intention of modernizing legacy systems is based on the current scaling of business applications, and legacy systems must be kept updated to address modern business demands.

ISG sees a growing need for modernization software that enables code assessments and code conversion of legacy applications in accordance with business requirements.

Enterprises are prioritizing their provider's capabilities in modernizing legacy applications, and their needs are changing according to the IT infrastructure and business processes.

Service providers in Europe are expected to fully automate application coding, testing and data base migration, providing enterprises with a unique migration approach for every business process. The adoption of application modernization software continues to rise among enterprises that are modernizing and transforming applications based on the number of business cases on legacy systems.

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

Application services and portfolio managers should read this report to understand their competitors/peers in the application services market in terms of their offerings, innovations and portfolios.

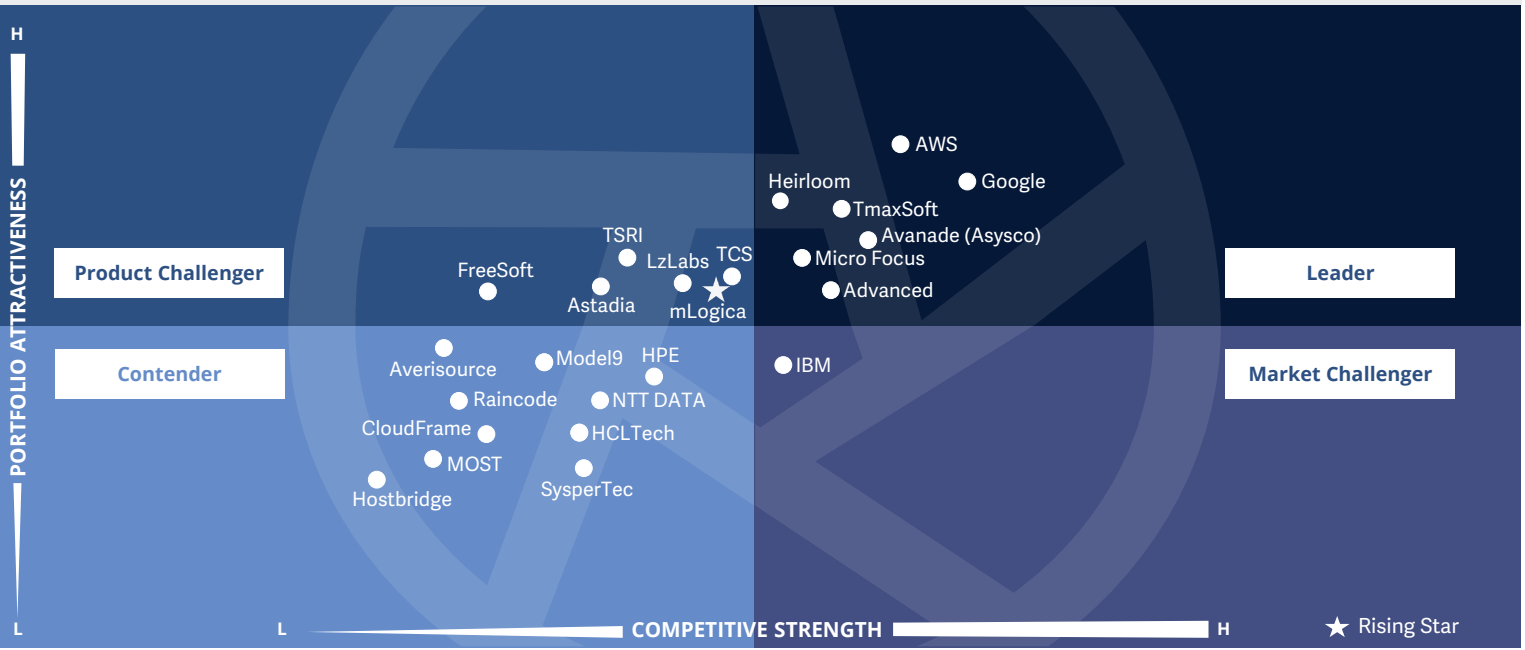
Technology leaders/CTOs should read this report to understand mainframe modernization's capability to enable better technology integration into products, services and business administration.

ISG Provider Lens™

Source: ISG RESEARCH

Mainframes – Services and Solutions
Mainframe Application Modernization Software

Europe 2023



This quadrant assesses software vendors that specialize in **analyzing and migrating** mainframe applications to modern software languages to allow further use in an **innovative and cloud-based** environment.

Oliver Nickels

Definition

This quadrant ranks vendors of software and toolsets that enable legacy application assessments and application conversion (replatform, rehost, refactor, rewrite or reengineer).

Typical clients are enterprises and service providers that need automation tools to perform mainframe modernization and transformation. 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 code modernization and application modernization.

This quadrant covers vendors that supply the modernization toolset and can partner with global system integrators 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 these are offered through certified partners.

Eligibility Criteria

1. The software should be licensed or delivered as a service to enable **client autonomy**. The global systems integrator's proprietary tools are not included, except if clients can acquire the tool without global system integrators' services.
2. The vendor must have mainframe specialization and offer **mainframe-specific tools**.
3. The product must be **available and in use** by clients for longer than one year. Startup and lab tools are not included.
4. The solution 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 or wide-scope server/cloud optimization tools are not covered.

Observations

The leading three hyperscalers continue to accelerate the pace at which this market changes. Google, AWS and Microsoft want to ensure that the huge mainframe MIPS capacities clients need to move goes to their respective cloud environments. They continue to develop innovative solutions and methodologies for mainframe modernization. Also, AWS started to build their own service capabilities. In the latest move, Avanade, a joint venture of Microsoft and Accenture, acquired Asysco, an indirect move from Microsoft to create direct access to mainframe workloads and to migrate loads to Azure.

Another big trend we see is the automation of migration processes. Technologies such as ML and AI allow much deeper and precise automation mechanisms during business logic and code analysis, to find relations between functions, to write and test new code elements and to control and compare outcomes between systems. Modernization software providers continue to enhance their automation capabilities. Large hyperscalers are again setting a fast pace here; they have big budgets and extensive experience with ML and AI. However, the real challenge is that within a few years, smaller software providers might fall behind or have to change into specialized niche providers for individual migration tasks.

From the 56 companies assessed for this study, 24 have qualified for this quadrant, with seven being Leaders and one a Rising Star.

Advanced

Advanced is based in the U.K., with a legacy of 2.5 billion lines of code processed in core transformations over the past 35 years. The company has a full modernization software portfolio that is available as a service, works with all major hyperscalers and has its own modernization services offering.

Avanade (Asysco)

Avanade (Asysco): Asysco was acquired by Avanade in 2022 and will be rebranded as such. Avanade uses former Asysco's Automated Migration Technology (AMT) solution to convert all legacy applications to x86-based technologies. Being a joint venture of Accenture and Microsoft, the company offers unmatched Microsoft integration capabilities and skills.

AWS

AWS integrated Blu Age into its cloud-native platform that migrates, modernizes, executes and operates mainframe applications to its own cloud. The company keeps expanding its offering, integrating other providers' services into its platform, and building its own migration consulting and services organization.

Google

Google continues to invest in mainframe modernization technology, with Dual Run being the latest portfolio expansion. It enables an end-to-end parallel execution of processes between an existing physical mainframe and the environment running on Google Cloud Platform (GCP). Google also gives its clients the possibility to use their own local data centers for compliance and regulatory needs.

Heirloom

Heirloom partners with global system integrators and cloud service providers to deliver mainframe transformation to cloud projects. Heirloom's technology is based on compilers that execute applications exactly as written, allowing low-risk replatforming projects and significantly high flexibility in the transformation process.

Micro Focus

Micro Focus offers solutions for software change and development for z/OS and mainframe application hosting. The company has a large partner network, including hyperscalers and systems integrators, and was quoted as a highly reliable solution provider.

TmaxSoft

TmaxSoft offers a growing portfolio of software products for low-risk refactoring and rehosting mainframe environments. TmaxSoft's OpenFrame solution migrates legacy mainframe applications and databases, with no changes to the business logic, to a variety of platforms and architectures.

mLogica

mLogica (Rising Star) shows strong growth and works with a wide range of sales and service partners. The company offers an integrated set of modernization tools based on the acquisition of LIBER™ from Atos, which it combined with its own and acquired solutions. Clients do not need to retain the software after modernization.

Appendix

Methodology & Team

The ISG Provider Lens™ 2023 – Mainframe Services and Solutions analyzes the relevant software vendors/service providers in the Europe market, based on a multi-phased 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 December 2022, 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

Lead Author

Oliver Nickels
Lead Author

Oliver Nickels has in-depth technical and business knowledge and more than 25 years of experience as management consultant, IT-analyst, marketing manager, and startup entrepreneur to contribute to ISG customer projects. His focus areas are Organizational Change through digital & AI-based technologies, Internet of Things and the Digital Customer Journey.

Oliver works as free-lance consultant to help ISG customers with all issues related to the digital customer journey and digital marketing. Before, Oliver worked many years in various national and international roles for a leading global IT company, in his last position as digital marketing manager with responsibility for the digital customer communications of a business unit and as advisor for the management board.

Oliver holds a degree in computer sciences of the University of Bremen and is a certified marketing assistant and business model developer.

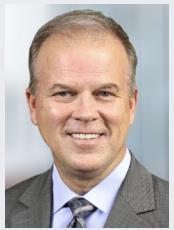
Lead Author

Manoj M
Research Analyst

Manoj is a research analyst at ISG and supports ISG Provider Lens™ studies on Mainframes Services & Solutions, Cloud Native Services & Solutions 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 the 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.

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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