

e B O O K

Proven mainframe modernization strategies

The business case for OpenFrame



OpenFrame from TmaxSoft is the most complete mainframe modernization solution on the market.

The OpenFrame platform uses multiple proven technologies that enable you to quickly move mainframe workloads to open system environments at a much lower cost and risk compared to other strategies and solutions. The result is dramatically lower annual hardware, license and maintenance costs while significantly improving your ability for continued modernization, flexibility and scalability.

Accelerate your legacy modernization with OpenFrame.


The case for change

For decades, most large-scale companies have used mainframes to host and run the software applications that make up their legacy systems. Often these mainframe computers and their applications are inherited from mergers and acquisitions, or from deferred IT investments. Today, it is estimated that more than half of core business processes may still run on a mainframe system. But maintaining and relying on these frequent legacy applications pose cost and modernization challenges.

Organizations are torn between the need to manage costs while maximizing the value of their mainframe. This leads them to ask, “If our system is not broken, why fix it?” But these companies are finding the status quo increasingly challenging to maintain, and are merely putting off the inevitable. Failure to modernize an obsolete system becomes an increasing liability over time, leading to ever-escalating costs, and the inability to take advantage of newer technologies. This puts an organization at a competitive disadvantage—a disadvantage that will only continue to grow.

Digital transformation facts

The time is now to digitally transform your mainframe applications and stay ahead of the competition.



\$24.8 Billion

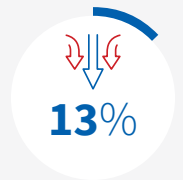
The projected global application modernization market size in 2030, assuming a Compound Annual Growth Rate (CAGR) of 16.8% over five years.

Source: Market Research Future Report



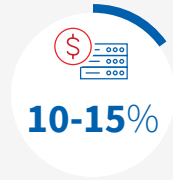
Percentage of Fortune 500 companies that still use mainframes.

Source: Forbes



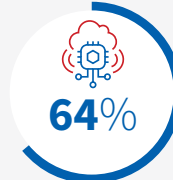
Percentage reduction in on premises workloads by 2025.

Source: LogicMonitor



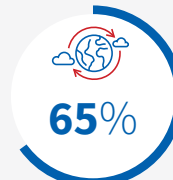
The annual percentage increase in costs of maintaining legacy applications and systems.

Source: Global Scape



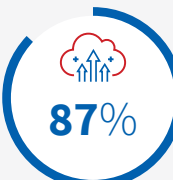
Percentage of decision-makers at enterprises that cite modernization as a top IT/operations priority over the next 12 months.

Source: Forrester



Percentage of North American enterprises that depend on public cloud platforms.

Source: Forrester



Percentage of enterprises accelerating their cloud migration in a post COVID-19 world (2020-2025).

Source: LogicMonitor

What is OpenFrame?

Doing a manual rewrite and rearchitecture of legacy applications can not only be costly but highly risky. Replicating the business logic that has been developed over many decades and getting a clear understanding of all the custom built functionality from poorly documented systems can be a monumental task.

OpenFrame, however, can protect your valuable application source code and business logic and migrate your existing applications to modern, distributed open systems in a cloud (public or private) environment. OpenFrame enables you to transform your legacy applications and environment while minimizing risk, cost and time.

It all starts with a detailed analysis of your existing mainframe application source code and environment.

The OpenFrame platform includes an automated analysis tool that can thoroughly inspect your source and cross reference elements, identify missing source code, dead code, unsupported functions and much more. Amazingly, this process can usually be completed in less than a week.

Once that is done, we generate a report that outlines the recommended mainframe transformation strategy with OpenFrame that best fits your organization.

OpenFrame supports three main strategies for transformation.

- 1. OpenFrame Re-Platforming:** Just recompile your existing legacy applications using the TmaxSoft OpenFrame compilers, migrate your data to one of many supported modern database platforms, and test. OpenFrame runs on standard hardware, supports all the major public cloud vendors, and maintains the look and feel of your legacy applications. Everything functions just as it did before, but in an open, distributed environment.
- 2. OpenFrame Refactoring:** In some instances, refactoring your legacy application code into Java or some other supported language is the best strategy for transformation. OpenFrame has automated refactoring tools that eliminate the need for a manual rewrite.
- 3. OpenFrame Rearchitecting:** For the ultimate in legacy modernization capabilities, OpenFrame can also automatically analyze and rearchitect your legacy COBOL programs into a modern Java microservices application.

The benefits of OpenFrame

It's comprehensive. OpenFrame has the broadest range of native support and integrations for end-user interfaces, application environments, programming languages, utilities, security and monitoring, and data sources.

It's reliable. OpenFrame eliminates the substantial risks you would incur if you rearchitected/rewrote applications that have been developed and enhanced over a period of decades.

It's proven. OpenFrame's long list of customer mainframe transformation success stories span across more than 17 years.

It improves performance. Re-platformed applications often see improvement in performance with less space, power and cooling requirements.

It's secure. Mainframe application security levels remain in place and can even be enhanced.

It saves you money. An open environment means reduced licensing costs, less expensive equipment upgrades, more vendor choice and more affordable support services. OpenFrame customers on average save from 50% to 70% on annual run costs, allowing for increased investment in innovation.

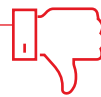
It's scalable. Mainframe systems are limited in scalability due to tightly coupled architecture (UI, application, data). OpenFrame has no such limitations and can easily scale to more than 100,000 MIPS.

Mainframe upgrading vs. rewriting or re-platforming



Upgrading

Staying with your existing mainframe or upgrading to a higher-capacity mainframe may seem like the safest option, but this strategy will most likely increase your annual run costs and will do little or nothing for your goals of modernizing your applications or environment.



Rewriting

A complete overhaul of mainframe applications through a manual rewrite process is by far the costliest, most time consuming, and riskiest option for modernization. A full-scale rewriting of mission critical applications can take years with no guarantee of success. The chances of extensive delays, data loss, cost overruns or errors are high.



Re-platforming

OpenFrame re-platforming delivers the benefits of a modernization project but with substantially lower costs and lower risk while taking much less time to implement than other options. OpenFrame provides a set of proven and established tools that recompile mainframe applications and migrate data to a new and modern platform. Your applications will work just as they always have, but in an open, secure, high performance and highly scalable distributed environment. The result is your legacy applications will run in a modern, open system environment that provides significant cost savings and technical agility to continue your ongoing IT transformation.

Legacy modernization strategies: re-platform, refactor, rearchitect

When it comes to legacy mainframe modernization, OpenFrame supports more legacy mainframe technologies than any other solution available in the market. The OpenFrame platform uses a multi-strategy approach that includes automated tools for re-platforming, refactoring and rearchitecting to support your IT transformation goals.



Re-Platform

This is the most cost-effective and lowest risk option available for modernizing your mission-critical legacy applications. With native support for COBOL, Assembler, PL/I, Easytrieve, JCL, CICS, IMS and many more mainframe technologies, OpenFrame preserves your valuable business logic and syntax in its original form. This reduces or eliminates the risk when migrating to a new modern platform.

- Recompile and Migrate
- Public or Private Cloud
- No Change in Application Business Logic or UI
- Modernize Data Tier
- TCO Reduction up to 80%



Refactor

Some outdated or unsupported legacy technologies are better handled by refactoring them into another supported form by using OpenFrame automated tools. This strategy modernizes the programs but preserves the original business logic.

- Restructure or Convert
- Remove Technical Debt
- Modernize the Technical Stack
- Supports Multiple Legacy Languages and RDBMS Stack



Rearchitect

The OpenFrame modernization platform also supports automated transformation of legacy applications into a modern Java microservices architecture. This strategy can be deployed as a “Phase 2” after re-platforming or in some cases as a one-step approach to modernization.

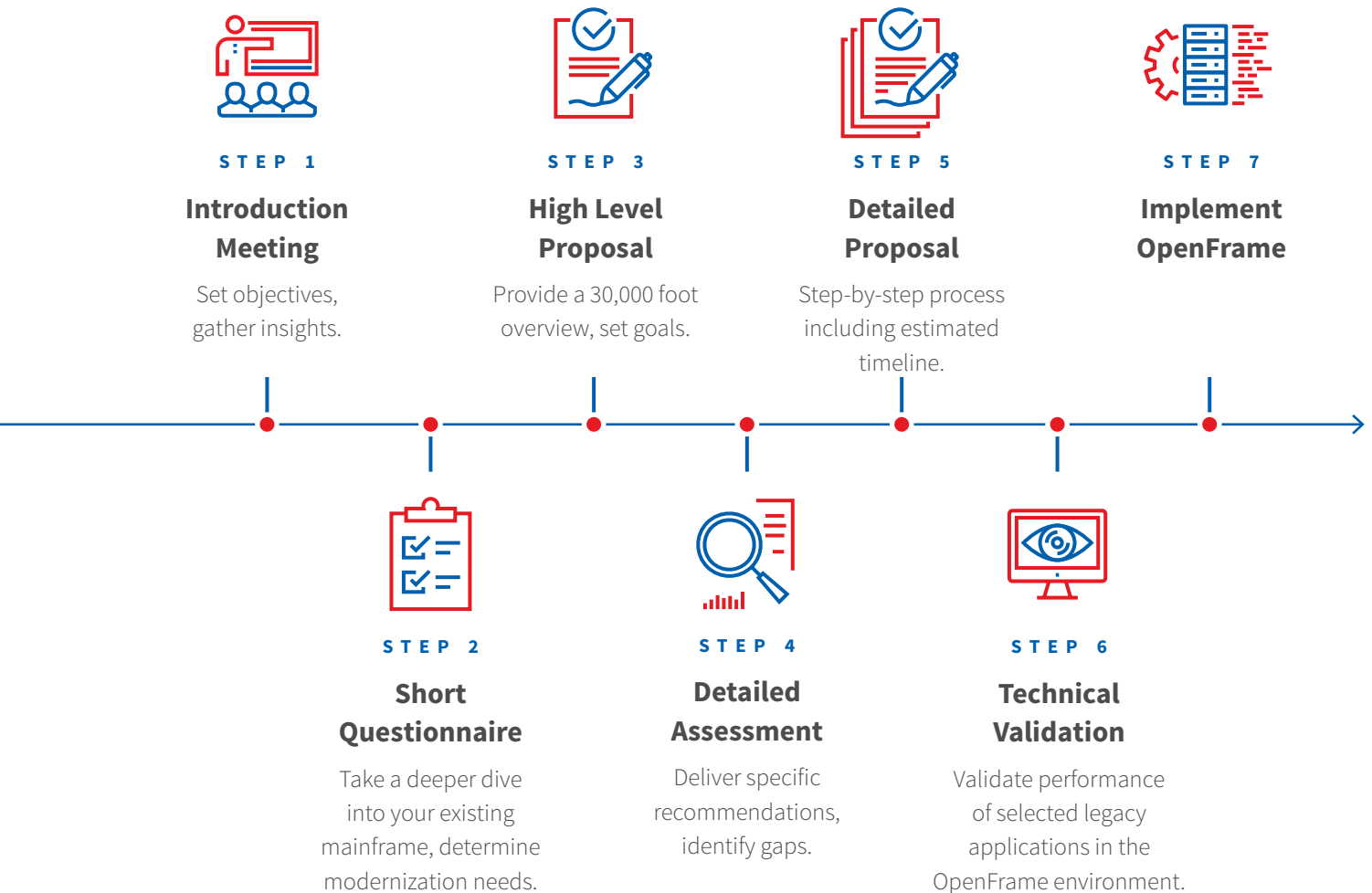
- Java Microservices Architecture
- Automatic Conversion (Source Code, Data, Security, Online/Batch)
- Modernize Code and Data Tier
- Cloud Native Technology Stack

How OpenFrame works

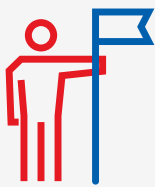
OpenFrame provides all the technology required to implement a multi-tiered technology stack. Once completed, OpenFrame allows you to integrate applications and data more easily with the re-platformed applications. Existing distributed applications including data analytics tools are more easily integrated, and the look and feel of your legacy applications stay the same. Mobile support and access can be enabled. Security is also enhanced because the existing mainframe security is retained, and additional security provided by modern SQL databases (Tibero) can now be employed.

TmaxSoft has successfully provided mainframe migrations across a myriad of industries. Typically, after a detailed assessment of the source system and anomalies are identified and addressed, the mainframe workload is re-platformed, breaking free from their previously outdated mainframe environment. This also unlocks the value of mainframe apps by exposing them to web services for mobile and digital applications. Because the operating systems are open with multiple database and utilities options, they integrate well with the newer technology required.

OpenFrame step-by-step



OpenFrame at a glance



100%
Project success rate



> 100,000
MIPS capacity



0
Change in business logic or end-user experience



6-12
months
Average time of deployment



50-75%
Reduction in annual costs



Improved performance and **security**



Infinite
Flexibility to meet digital transformation goals

OpenFrame shrinks costs



GE Capital

GE Capital reduced maintenance costs by 66%

GE Capital, the financial services unit of General Electric, provides commercial lending and leasing, as well as financial services to consumers. They were hindered by their inefficient mainframe environment. What had started as a homegrown system built out of necessity had expanded to become the central nervous system of both GE Capital's direct and indirect business units. But the aging hardware demanded high maintenance and procurement costs, and its excessive complexity slowed GE Capital's ability to innovate.

Using such a legacy system was also risky. Their system processed five million account schedules, 382 interfaces, 1,700 concurrent users and 3.5 million transactions per day. If the system went down, so would their business.

GE Capital selected TmaxSoft to deliver the solution. They wanted to move fast, so testing was implemented almost immediately. Says Marc Rubel, the Executive Director of Application Development at GE Capital, "We spent a very little amount of time and money. And we completed a proof of concept within a month."

GE was certain they had made the right choice. So, TmaxSoft got right to work moving GE Capital's legacy applications to OpenFrame. The modernization of their system took around a year to complete, which is a fraction of the time it would have taken to move the massive 71 million lines-of-code from its ancient mainframe environment using another, and likely a substantially riskier, option. As a result, GE Capital lowered their annual maintenance costs by 66%, reduced the time it would take for the system to recover from disaster by 240% and moved to a platform that integrated with the rest of the business and supported growth and innovation.

The results included:

- Moving to a more reliable, flexible and automated platform without the need to redevelop or modify applications
- Reducing 71 million lines of code to only 16 million
- Improving employee user experience and increasing agility
- Establishing the foundation for building the next generation PMS system

OpenFrame boosts productivity



LION improved performance by 30%

LION is a Japanese consumer goods company created from a merger of two century-old companies. They sell a wide-range of products including detergent, hair care and skin products, healthcare products and kitchen products both domestically and overseas. In 2018 LION's revenue was \$3.26 billion.

LION relied on a 30-year-old mainframe, with aging legacy applications and data that could not be used for business intelligence. Not only were its maintenance and support costs exceptionally high—leaving no IT budget for new development—but the maintenance resources they relied on were retiring, with few replacements available.

LION knew they needed to address their aging mainframe, its legacy applications and overly complex data management. They considered many options, including rebuilding, but rejected it due to migration difficulty, high risks and questions around accessing source codes. They decided migrating the host system to a virtual server was their best option. They chose TmaxSoft OpenFrame as the best solution.

The team at LION chose OpenFrame because it offered few risks, especially when compared to rebuilding. LION could continue to use their source code easily, and there were no internal design changes. No additional resources or skills were needed for migration. Plus, OpenFrame would ensure the independent operation of online and real-time processing, and would help unify the distributed data.

As a result of their migration, LION's IT maintenance and operating costs plummeted, while productivity, performance and data access improved measurably.

The results included:

- 60% reduction in maintenance and support costs
- Improved maintenance productivity
- Easier access to data for analytics and business intelligence
- 20-30% improvement in performance
- Development environment set up for IT business continuity planning

OpenFrame key references

OpenFrame can save significant operating costs, and can be implemented in less time than other options. Complete migration can often be completed in 6-12 months, depending on the size and complexity of the existing system.

| Industry | Mainframe Environment | TCO Savings | MIPS |
|------------|---|--|-------|
| Insurance | CICS, COBOL, PL/I, DB2, JES | \$30M savings over four years | 8,000 |
| Retail | COBOL, CICS, JCL, IDEAL, Datacom, ASM, Java | 75% annual cost reduction | 700 |
| Retail | COBOL, CICS, JCL, DB2 | 60% annual cost reduction | 1,500 |
| Insurance | CICS, DB2, JES | \$35M savings over four years | 2,300 |
| Securities | IDMS, DC/DB, COBOL | 66% annual TCO reduction | 970 |
| Retail | IMS-DB/DC, COBOL, Quikjob, Assembler, VSAM | 50% reduction in TCO within 48 months | 200 |
| Finance | COBOL, CICS, JCL | 50% annual cost reduction | 240 |
| Aerospace | COBOL, PL/I, IMS-DB/DC, JCL | 50% operational and cost savings | 400 |
| Energy | COBOL, DB2, PL/I, IMS-DB/DC, Assembler | More than 70% decrease in annual run costs | 200 |

The unlimited scalability of OpenFrame

As demand and MIPS increase, mainframes are ill-equipped to scale up easily or affordably. More equipment, more costs and more fragmentation are likely the result.







OpenFrame, however, has no limitations on size, or costly capital expenditures associated with that scalability. Agile and flexible, it provides both horizontal and vertical expansion that can be dynamically invoked as needed. OpenFrame is comprised of multiple nodes linked together. So in high load situations, more nodes can simply be added. OpenFrame has powerful balancing features that distribute transaction requests among the nodes to ensure a continuous, full and efficient use of system resources.

OpenFrame post-migration tools

OpenFrame includes a comprehensive and robust set of developer tools, such as OFStudio, to develop, control, manage and debug applications. Minimal developer training is needed. OFManager provides a set of online tools to monitor and manage your batch and online workloads as well as your security environment.

End-users will see a familiar interface that is now additionally accessible via web browser technology. No productivity is lost through retraining or relearning a new workflow. In fact, with a higher resolution view, the end-user experience is improved.

OpenFrame supports the following platforms:

| Platform Options | CLOUD | ON PREMISE |
|---|-------------------------------------|-------------------------------------|
|  vmware® | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|  docker | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|  Linux | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|  amazon web services | <input checked="" type="checkbox"/> | |
|  Microsoft Azure | <input checked="" type="checkbox"/> | |
|  Google Cloud | <input checked="" type="checkbox"/> | |

Case closed: OpenFrame

Companies that choose to ignore mainframe modernization will continue to experience higher costs and may be unable to innovate quickly.

But while organizations have numerous mainframe modernization strategy options, only OpenFrame consistently delivers the advantages of reduced costs and labor, eliminating full-scale system retraining and providing the freedom to reduce, re-platform or replace. With OpenFrame, companies can not only modernize their environment today, but are poised to keep pace with the innovation demands of tomorrow.

OpenFrame delivers multiple ways to achieve mainframe modernization. To learn more about how TmaxSoft can help you modernize your legacy systems, please contact us to schedule a discussion and demo.

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