



# Mainframe Modernization: What are my choices?

*Choosing the best legacy modernization option  
for your organization*

# Introduction

For decades, most large-scale companies have used mainframes to host and run the software applications that make up their legacy systems. Indeed, most enterprise-level systems in operation today reside within mainframe machines, while COBOL applications (the primary language used with mainframes) continue to handle the vast majority of modern enterprise-level computer transactions. But analysts today emphasize that CIOs need to speed up legacy modernization in their organizations for many reasons, not least of which are remaining competitive and being able to respond quickly to market threats and opportunities.

Industry analysts recommend that IT directors take inventory of their portfolio of existing systems in order to divide them into three categories. This exercise can help IT focus on improving its digital business focus:

- **Systems of Record.** These can be purchased packaged systems or internally developed, and typically they do little to company competitiveness. Examples might be back office accounting.
- **Systems of differentiation.** Typically, these are internally developed and provide some level of distinction from the competition. An example might be an improved customer interface and experience.
- **Systems of innovation.** These systems provide true company value and often its Intellectual Property. This is where innovation needs to be focused and budgets spent. Examples can be a risk rating system for insurance companies.

The next step is to look at the percentage of budget each category currently absorbs. If too much is being spent on Systems of Record (typically mainframe applications), and not enough is being spent on Systems of Innovation, your competitors are probably closing in.

In some verticals, up to 50%-60% of core processes still run on mainframe systems. However, some organizations retain the platform because they are challenged from a cost and integration point of view. Others may have legacy systems and applications inherited from mergers and acquisitions or from deferred IT investments, etc.

If you see your company in this position, you need to act. If you already know you need to act but do not know what the options are, this paper discusses those for you. You need to re-think your IT infrastructure. You can't afford to let the prospect of a complex project hinder your efforts.

The good news is, there are options which permit taking one step at a time. As a result, risk and complexity can be reduced down to manageable levels.

So, what are your options?

# 1. Maintain Status Quo

Some CIOs look at legacy modernization and ask: “If our system is not actually ‘broken’, why fix it?” To take no action is certainly one option for companies, especially for companies whose systems do not immediately require any new functionality. However, if you do not modernize an obsolete system it will become an increasing liability over time as your competitors modernize to take advantage of newer technologies.

One major risk is if there is important data locked in the mainframe and not easily available, big data analytics tools may provide misleading or erroneous results. Another risk is that many users today require mobile support. Older systems are typically not that friendly to new user interfaces or the need for more flexible formatting.

Finally look around. The market, for good reason, is moving to cloud based architectures. Less expensive x86 and virtualization technologies have dramatically affected the design and cost of enterprise data centers. Why isolate the applications and data on your mainframe? Why continue to pay for expensive and unnecessary proprietary hardware instead of using commodity x86 systems? And why support file oriented, non industry standard data stores when SQL alternatives exist?

## What’s the biggest risk of doing nothing?

Your CEO and CFO likely expect the percentage of revenue that can be attributed to digital services to increase significantly over the next couple of years, but that won’t happen without addressing your mainframe assets.

Ask yourself these 6 crucial questions:

1. How much of my budget is tied up in maintaining older mainframes instead of being used on innovation and differentiation?
2. Is any of the software on my mainframe authored by a company no longer in existence?
3. What is the true cost of maintaining my existing mainframe in terms of purchase, install, cooling, power, and support?
4. Can I modernize my existing mainframe to meet newer needs like those of mobile users?
5. Is the data in my mainframe available to my data analytics?
6. How well are my mainframe systems documented? Are there personnel with the knowledge and skill set to adequately support in case of a failure?

## 2. Mainframe upsizing / upgrading

For legacy systems that only need more capacity, one possible approach is to simply add more system hardware or to switch to a higher capacity mainframe machine. This would increase capacity and boost system performance but also increase maintenance and licensing costs. Ultimately, it will contribute nothing towards addressing the core shortfalls of mainframe systems: the platform's inflexibility, rising maintenance costs diminishing skilled labor, etc.

### What's the biggest risk of simply increasing capacity?

Your legacy systems will continue to hold you back from reaping the benefits and lower costs of new available technologies, dragging down innovation. It also continues the status of mainframe applications to an "outsider" status, not in line with modern, private cloud based architectures. Why kick the can down the road?

Without modernization, your system will continue to grow more complex as you patch, update and modify.

## 3. Re-Writing Source Code

The most aggressive legacy modernization option is to embark upon a full-scale re-writing of the application source code while re-architecting for database and application tiers. However, a major rewrite brings its own risks. Developed business logic needs to be completely redeveloped, increasing the chances of getting it wrong and requiring extensive user testing. Further, some sort of translation table may need to be developed to bring the data stores to a SQL environment and to isolate the data functionally to its own tier.

### Key Questions to Ask:

- What is the true cost inhibitor in your mainframe system? Is it just the source code language or is it just the underlying architecture? What provides the greatest and quickest ROI?
- How risky is changing the business logic?
- What other applications and data stores are affected by a rewrite?
- How long will the project take, including functional testing, user testing, and parallel operation?
- Do I have staff to undertake such a major re-write project in the immediate future?

## 4. Rehosting

*Introducing TmaxSoft OpenFrame: A complete rehosting solution that can move mainframe applications into a multi-tiered, SQL based, x86 environment.*

Rehosting is an option whereby existing mainframe applications move unchanged to an modern open environment. Applications may be written in COBOL, PL1, or other languages, and mainframes may be from IBM, Fujitsu, and other vendors. When performed properly, rehosting provides many of the benefits of a rewrite but with reduced cost and reduced risk.

Re-hosting also can act as a beneficial first step to a subsequent, less complicated and therefore less risky source code rewrite. An OpenFrame conversion provides all the technology required to break the mainframe application into isolated database and application tiers, required for any rewrite. Further, OpenFrame provides a conversion table to move mainframe data to an isolated database tier supporting industry standard SQL databases, again, required for any subsequent rewrite. Finally, OpenFrame provides code inspection and cleansing features, eliminating redundant code or unused forks. This means re-hosted code can be running much more efficiently than its original state.

Once completed, an OpenFrame solution allows access to your mainframe data by existing data analytics tools. Mobile support can be enabled with existing presentation tools addressing the application layer . Complex applications requiring access to mainframe data stores can be enabled with existing development tools.

And security improves as well, both because existing mainframe security is retained, and additional security provided by modern SQL databases can now be employed.

# Benefits of Rehosting

- **Reliability and Scalability**

- Mainframe systems have limited scalability and performance due to tightly coupled architecture (UI, application, data) while open systems, with loosely coupled architecture, offer maximized scalability for bottleneck areas
- Customers can use industry standard SQL databases, like TmaxSoft Tiberio
- Mainframe application security unchanged

- **Reduction in Hardware Costs**

- Use of x86 systems mean lower purchase costs, increasing CPU performance, less expensive upgrades, more vendor choice, and less expensive support
- Newer systems provide less space, power, and cooling requirements

Industry	Mainframe Environment	TCO Savings	Project Duration (including testing)
Insurance	CICS, COBOL, PL/I, DB2, JES 7500 MIPS	• <b>\$30m savings over four years</b>	12 Months
Insurance	CICS, DB2, JES, 2300 MIPS	• <b>\$35m savings over four years</b>	11 Months
Insurance	CICS, DB2, JES, 1620 MIPS	• <b>40% TCO reduction over four years</b>	12 Months
Securities	IDMS DC/DB, COBOL 970 MIPS	• <b>66% annual TCO reduction</b>	18 Months
Securities	CICS, PL/I, JES, IMS DB, VSAM 163 MIPS	• <b>50% cost reduction</b>	9 Months
Manufacturing	Fujitsu AIM, NDB, MSP 30 MIPS	• <b>40% cost reduction</b>	16 Months

Figure 1: Typical TCO Results from OpenFrame



# Porting to Open Frame

TmaxSoft has successfully provided mainframe migrations across a myriad of industries. Our experience that projects typically follow a similar pattern. The graphic below shows the sequencing of steps.

After an examination of the source system and some cleansing, a prototype subsystem is chosen to test the first conversion. Once any system anomalies are identified the remaining systems are brought across.

Worth noting is that the data cleansing step often identifies unused code and forks, helping to reduce the size of the code base and increasing performance.

Projects can run from 9 to 18 months, depending on the condition and size of the existing mainframe environment.

Our customers have found that because of the cost reduction realized for the re-hosted environment, payback occurs within a year or so of completion.

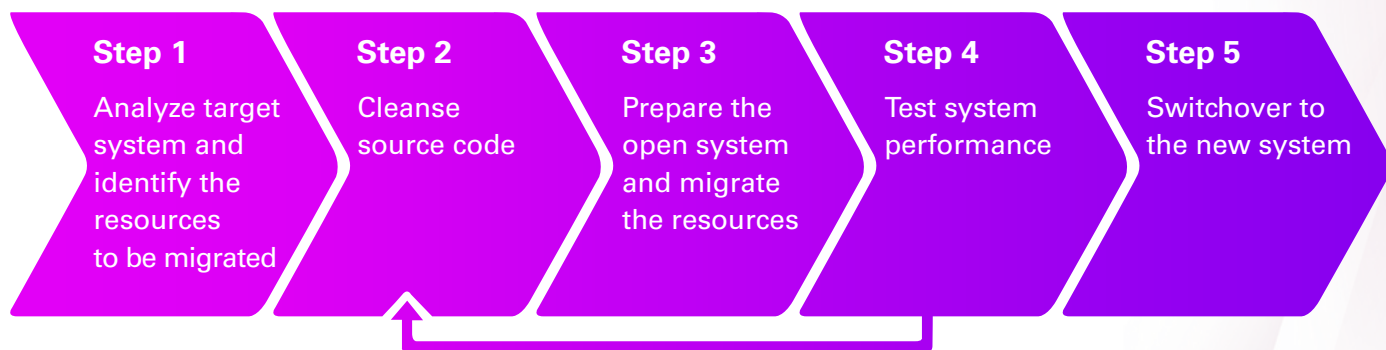


Figure 2: Typical Open Frame Project

# Conclusion

When considering legacy modernization, companies who choose to do nothing or merely upsize their mainframe systems will continue to experience higher costs. Ultimately, such companies will suffer as competitors move ahead to take advantage of the newer, cheaper and more flexible technologies.

CIOs benefit when they resist looking at legacy modernization as “one-off” projects. By looking at systems both in terms of their life-cycle as well as their contribution within the systems portfolio, risk reduction and more effective budgeting can result.

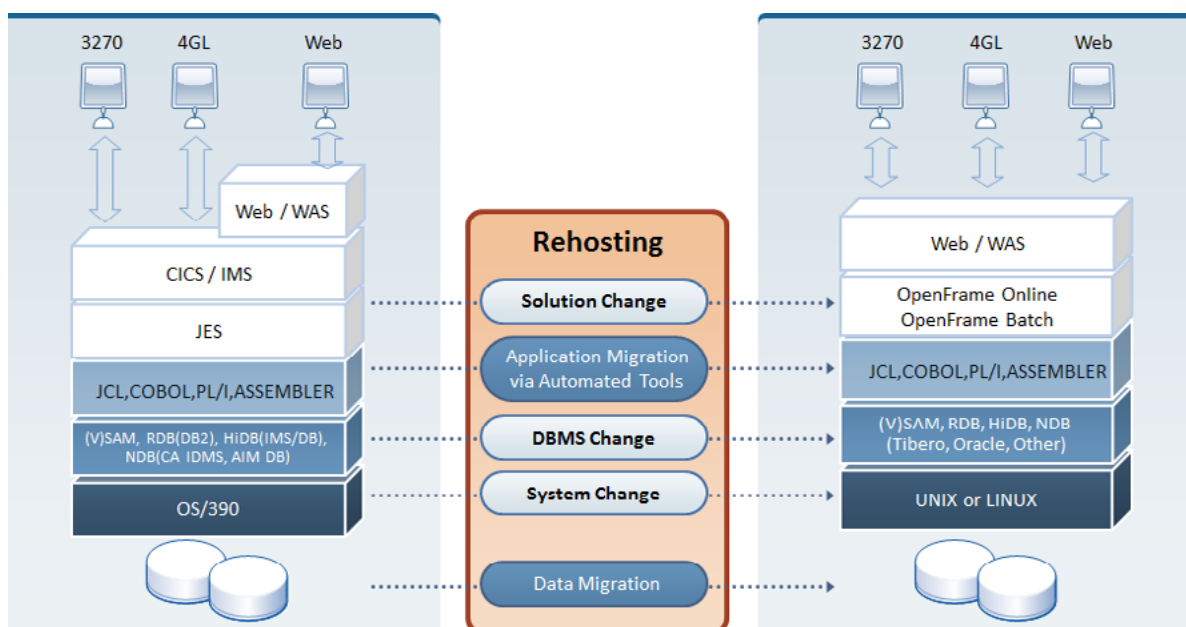


Figure 3: OpenFrame Architecture

TmaxSoft’s OpenFrame rehosting reduces risk through the use of an industry standard OS, standard x86 systems, standard SQL databases, and standard cloud infrastructure. Simultaneously, it provides improved integration, improved security, and lowered costs.

To begin a conversation around how TmaxSoft can help you modernize your legacy systems, please call or [email us](mailto:sales@tmaxsoft.com) today to schedule a discussion and demo.

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sales@tmaxsoft.com


# Company Overview


 **Established** June 1997


 **Sales** US \$75M (2014)

 **Employee** 700

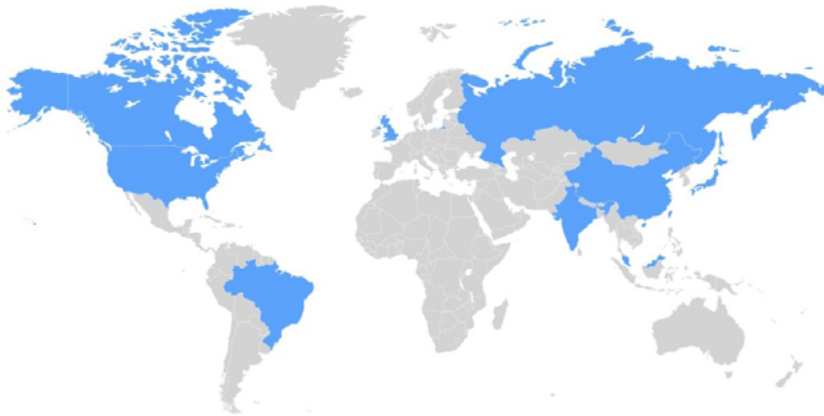


 TmaxSoft invests  
40% of sales in R&D

 63% of TmaxSoft are  
technical employees

 215 R&D employees  
(53% master's or doctorate)

**TmaxSoft**  
Infrastructure Software, *Redefined*



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