

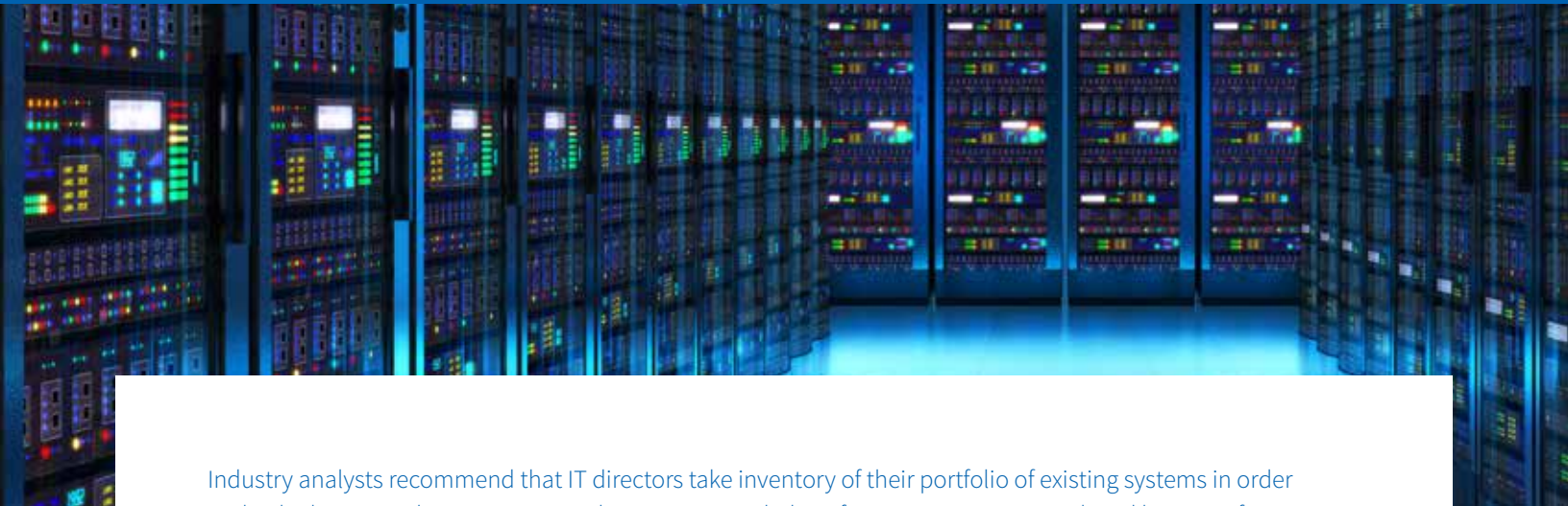
Mainframe modernization:

What are my choices?

Choosing the best legacy modernization option for your organization

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 as packaged systems or internally developed, and typically they do little to company competitiveness. An example 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. An example 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 six 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?

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 a 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 remains 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	\$30m savings over four years	12 Months
Insurance	CICS, DB2, JES, 2300 MIPS	\$35m savings over four years	11 Months
Insurance	CICS, DB2, JES, 1620 MIPS	40% TCO reduction over four years	12 Months
Securities	IDMS, DC/DB, COBOL, 970 MIPS	66% annual TCO reduction	18 Months
Securities	CICS, PL/I, JES, IMS, DB, VSAM, 163 MIPS	50% cost reduction	9 Months
Manufacturing	Fujitsu AIM, NDB, MSP, 30 MIPS	40% cost reduction	16 Months

Figure 1: Typical TCO results from OpenFrame

6

Porting to Open Frame

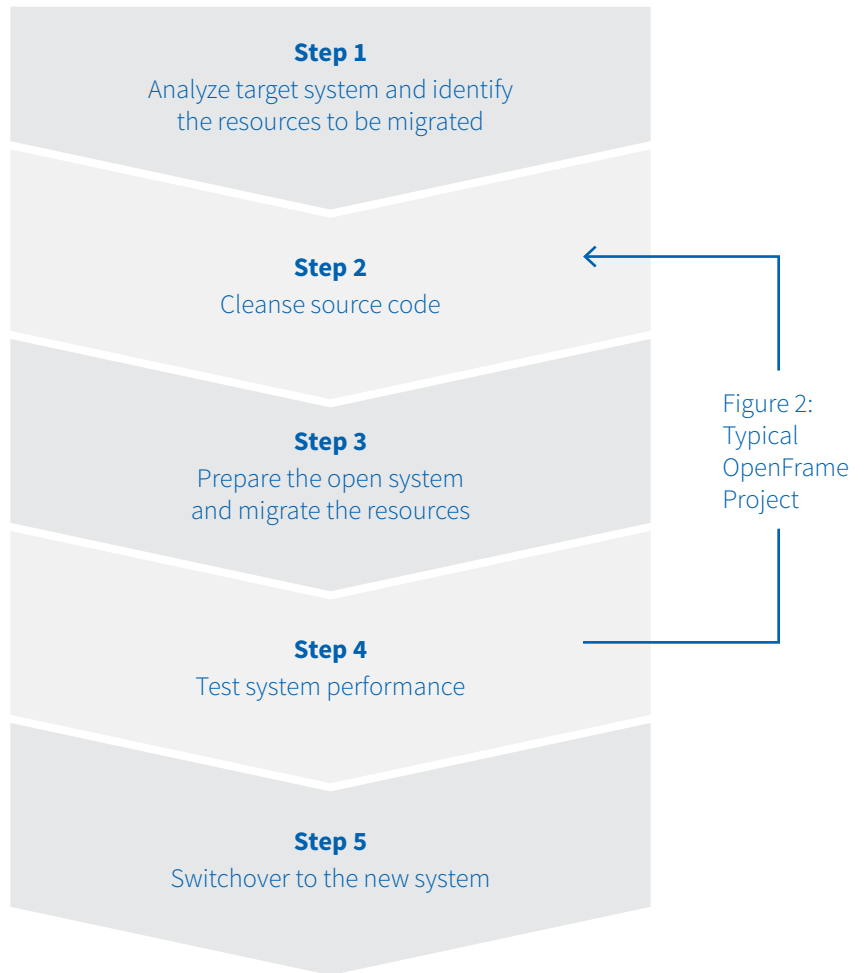
TmaxSoft has successfully provided mainframe migrations across a myriad of industries. Our experience that projects typically follow a similar pattern. The graphic below shows the sequencing of steps.

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.



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.

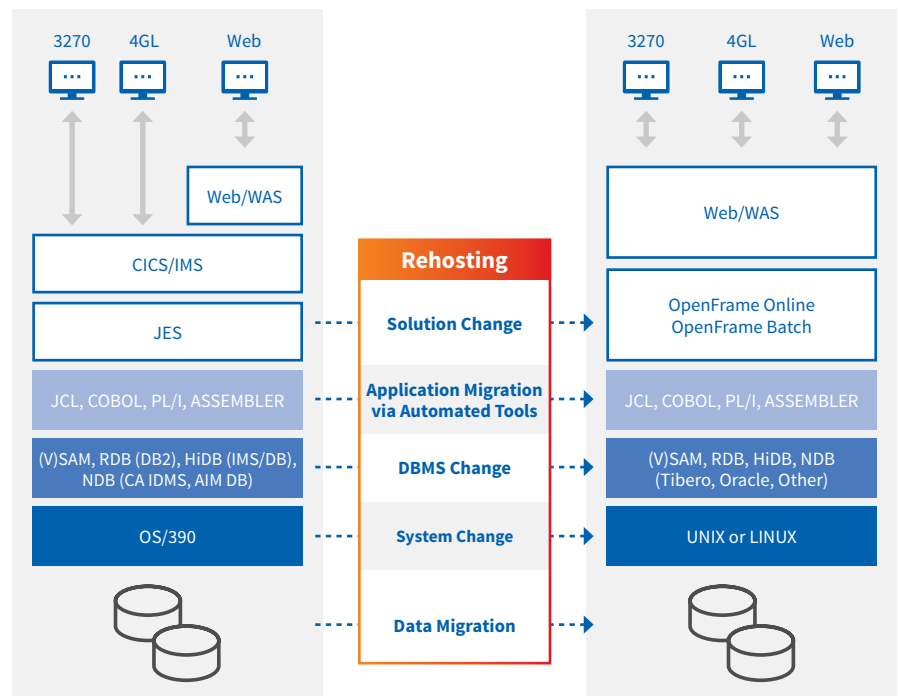


Figure 3: OpenFrame architecture

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 today to schedule a discussion and demo.

+1 312.525.8330 | sales@tmaxsoft.com



GLOBAL HQ

TmaxSoft, Inc.

230 W. Monroe St., Ste. 1950
Chicago, Illinois 60606

TEL: +1.312.525.8330
Email: info@tmaxsoft.com
tmaxsoft.com

Korea Group HQ and R&D Centre

TmaxTower 45, Jeongjail-ro,
Bundang-gu, Seongnam-si,
Gyeonggi-do, Korea 13613

TEL: +82.31.8018.1000

AMERICAS

TmaxBrasil Sistemas E Servicos Ltda.

Alameda Rio Negro, 585,
Bloco A – Sala 25/26
Alphaville Barueri
Sao Paulo 06454 - 000

TEL: +55.11.4191.3100
Email: info.bra@tmaxsoft.com

TmaxSoft Canada, Inc.

2425 Matheson Blvd. East, 8th Floor,
Unit 824 Mississauga, Ontario,
L4W 5K4 Canada

TEL: +1.905.361.2888
Email: info.canada@tmaxsoft.com

EUROPE, MIDDLE EAST, AFRICA (EMEA)

TmaxSoft France

75 Boulevard Haussmann,
75008, Paris, France

TEL: +33.1.42.68.50.40
Email: info.france@tmaxsoft.com

TmaxSoft (Germany) DACH & Luxembourg

Maximilianstrasse 25, 80539,
Munich, Germany

TEL: +49.176.721621.97
Email: info.dach@tmaxsoft.com

TmaxSoft Russia Tmax Rus L.L.C.

Leninsky Prospekt, 113/1
(Park Place Moscow), Office
318e, Moscow, 117198, Russia

TEL: +7.495.970.0135
Email: info.rus@tmaxsoft.com

TmaxSoft Spain, Portugal & Andorra

Gabriel García Marquez, 4
28232 Las Rozas, Madrid, Spain

TEL: +34.911.190.518
Email: info.es@tmaxsoft.com

TmaxSoft Co., Ltd. Turkey

Windowist Tower, Eski Buyukdere Cad,
No.26, Maslak 34467, Istanbul, Turkey

TEL: +90.544.553.6045
Email: Info.tr@tmaxsoft.com

TmaxSoft UK, Ltd.

Office # 103, Rourke House,
Watermans Business Park,
The Causeway, Staines TW18 3BA, UK

TEL: +44.0.1784.895005
Email: info.uk@tmaxsoft.com

ASIA - PACIFIC (APAC)

TmaxSoft Australia TmaxSoft Proprietary Limited

L32, 101 Miller Street,
North Sydney 2060, Australia

TEL: +61.8019.7054
Email: info.aus@tmaxsoft.com

TmaxSoft China Beijing TmaxSoft System Software Co., Ltd.

Room 103, No.2 Huizhong Building,
Seven Street Shangdi, Haidian
District, Beijing, 100085, P.R. China

TEL: +86.10.6298.8827
Email: info@tmaxsoft.com.cn

TmaxSoft Hong Kong Co. Ltd.

26/F, Chubb Tower, Windsor
House, 311 Gloucester Road,
Causeway Bay, Hong Kong

TEL: +852.2824.8234
Email: info.hk@tmaxsoft.com

TmaxSoft India TmaxSoft Technologies Private Limited

Sobha Alexander Plaza,
3rd Floor, 16/2 Commissariat Road,
Bangalore, 560025

TEL: +91.80.4094.1100
Email: info.india@tmaxsoft.com

TmaxSoft Japan Co., Ltd.

5F Sanko Building, 3.12.16 Mita,
Minato-Ku, Tokyo, 108.0073, Japan

TEL: +81.3.5765.2550
Email: info@tmaxsoft.co.jp

TmaxSoft Malaysia SDN. BHD.

Unit 406, Level 4 Uptown 2, Jalan
SS21/37, Damansara Uptown 47400
Petaling Jaya, Selangor Malaysia

TEL: +60.3.7731.3916
Email: info.my@tmaxsoft.com

TmaxSoft Singapore Pte. Ltd.

430 Lorong 6, Toa Payoh
#10-02, OrangeTee Building,
Singapore 319402

TEL: +65.6259.7223
Email: info.sg@tmaxsoft.com

TmaxSoft Taiwan

Walsin Xinyi Tower 11/F, No.1,
Songzhi Rd. Xinyi Dist.
Taipei 11047, Taiwan

TEL: +886.2.87922192
Email: info.tw@tmaxsoft.com

TmaxSoft Thailand Co., Ltd.

Level 12 Zen World Tower
Rajdamri Road Pathumwan
Bangkok, 10330, Thailand

TEL: +66.819960565
Email: info.th@tmaxsoft.com