

A commentary paper by HP

Modernising Core IT



The Mainframe skills extinction point “may” be reached within the next 5 years.

The purpose of this document is to provide a dispassionate overview of where legacy Mainframe technology fits within the modern Information Technology environment.

The arguments presented are designed to help stimulate a dialogue that helps organisations review Mainframe operations and enable change be undertaken where this is desirable. The Mainframe holds a critical place in the Enterprise but transactional costs must be weighed up against the myriad of alternatives available.

Armed with this information, we hope that further considered analysis will help build a critical risk versus rewards overview that provides better outcomes for the owners and managers of “big iron” infrastructure.

The Mainframe

The Mainframe – just the name conjures images of an indestructible piece of engineering that would require a nuclear strike to prevent it from operating.

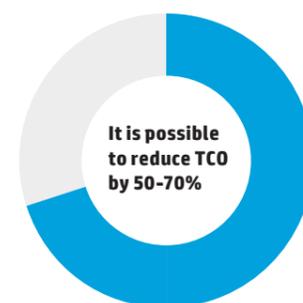
For more than 50 years, IBM’s “Big-Iron” has been ruling the roost in the world of mission-critical business transactions. The Mainframe still delivers nearly flawless uninterrupted service levels, but levies a massive ownership cost premium over comparable solutions that meet identical goals. To further complicate issues, many services residing on the Mainframe are not adapting quickly enough to the changing market environment. Therein lays the challenge for business managers.

The Mainframe is designed to perform a single task without interruption. It excels in this role, but the cost of ownership far exceeds the benefits in numerous applications where Mainframe systems are deployed. Because Mainframes are designed to deliver a single function, operating costs are exorbitant when compared with alternative technology that offers similar levels of performance.

To add to the Mainframe ownership challenge, skills and resources are not interchangeable, nor can they be easily amortised across the organisation efficiently. The silo topography and compartment structure commonly found in this working environment prevents this.

- Mainframe migrations realise between 50-70% cost savings based on independently audited data
- Cost premiums fail to deliver higher reliability compared with competitive market solutions
- In an era of “adapt or die”, Mainframe technology poses a threat to an organisation’s ability to quickly commercialise new income streams
- The Mainframe skills extinction point may be reached within the next 5 years. Many subject matter experts could possibly be retiring from the industry creating a daunting proficiency brain-drain for the Mainframe user community.

Total Cost of mainframe Ownership (TCO)



Reduce your costs in:

- maintenance
- licensing
- human resources costs

Over the years a mythical status has tempered the continued investment in Mainframe technology making it almost immune from oversight or cost saving measures. This is completely at odds with every other aspect of Information Technology where frugality and “doing less with more” are the indisputable measure of ROI.

Because of the uncompetitive nature of the Mainframe marketplace, normal checks and balances that should keep expenses down are not in place, leading to price distortion and inflated ownership costs.

Competitive landscape : 95%¹ market share

IBM commands 95% share of the Mainframe market¹: effectively they control the market. The percentage of market share is identical to Apple’s iPad market share in 2010. Apple’s seemingly insurmountable market dominance has been whittled away after three years of relentless competition. This has resulted in falling prices and seen the entry of innovative new players who are creating new products that are transforming consumer demand. Apple’s iPad now commands less than 40% of the global tablet market because of remorseless competition. What would IBM’s market share be in 3 years’ time without the competitive pressures that market forces deliver?

Open source software: how do you compete with free?

In the computer application market open source products have changed how business uses software. The trend began with GNU in the early 1990s followed by the development of open source X86 UNIX-like operating systems software. This later morphed into the generic version, commonly referred to as “Linux”. IBM understands the value of Linux in the Mainframe environment. They re-engineered the Mainframe software landscape to harness the capabilities of Linux and have seen their investments yield over 200% returns on their initial spend². Open source Linux has revolutionised how companies deliver computing services and has driven down costs in every aspect of technology. Linux powers many X86-based competitors that challenge IBM’s Mainframe market dominance.

Mainframe functionality will continue to stagnate without a searing competitive environment

Mainframe technology has failed to evolve because there are no commercial imperatives to drive change. Product or application development has arguably continued in a traditional manner, at great expense without concern for competitive advantage. Software and databases are typically proprietary, leaving users with few options to extend or modify their functionality without IBM endorsement. Supplier partners work with IBM and share in the rich feast of high software pricing, boosting their revenues.

Mainframe ROI isn’t about looking to the future but amortising the repayments of past investments

When IT professionals lacking experience in the Mainframe environment discover the licencing and maintenance costs associated with the technology, they are horrified. Anecdotal stories describing the exponential increase in charges or “just add a zero” to ownership costs are often repeated but seldom substantiated. “Commercial in Confidence” is a handy tool when comparing open source ROI with those of Mainframe proprietary systems. Another crucial difference is that Mainframe costs are so excessive that returns on investments for this technology are usually measured in decades!

Summary

Competition drives efficiency, product improvements and lowers operating costs. An absence of competing forces fosters complacency in the marketplace and permits market leaders to prosper unhindered; this is precisely what is happening in the IBM dominated Mainframe marketplace. To their credit, IBM has invested billions in re-invigorating and re-inventing their legacy platform to support and extend the life of software programming language COBOL by more than 50 years.

When reviewing technology investments, attention must be paid to the competitive market landscape and how this will affect the costs of delivering services that are aligned with your business vision. Does your investment enhance or retard the operating cost structure that is a vital component in delivering your competitive advantage?

- Single source of supply with IBM commanding 95%¹ market share
- No competitive pressures to hold ownership costs in check
- Mainframes are often benchmarked using the term “decades of investment”

Risk

The concept of a “single source” in any manufacturing supply chain sends cold shivers up the spine of risk analysts. If you are totally dependent on a single Vendor you can be held hostage to their marketing whims. Circumstances beyond your control can have a negative effect on your business operations

This should flag concerns in any comprehensive risk strategy if key parts of your business depend on Mainframe computing services.

Is your business held hostage by a single legacy IT technology? If you use Mainframe technology the answer is yes.

It's possible your organisation receives more competitive quotes for office supplies than for your Mainframe computing technology. It's hard to believe that coffee often receives more purchasing scrutiny than multi-million dollar IT procurement. Freedom of choice enables contingencies and backup plans that mitigate business risk. Until recent changes in consumer law, some Vendors placed onerous conditions on what was attached or installed onto their machines.

Are your Mainframe staff resisting all efforts to migrate applications off their “Big Iron”?

Mainframe administrators and application developers have a vested interest in their employers retaining legacy technology for as long as possible, or until they are ready to exit the workforce and retire. The truth is that critical Mainframe skills are in very high demand and command high salaries. Migrating applications to other platforms reduces risks and broadens the pool of available staff to develop and administer these systems. It also reduces staffing costs. Hiring graduates ensures that a greater depth of skills can be distributed across the business rather than relying upon subject matter experts, content with cooling their heels until retirement age. Broadening your organisation's skills base is a sensible risk mitigation strategy and a great way to rationalise remuneration costs.

The Risk and Reward paradigm

Every organisation takes pride in their commitment to maintaining quality standards. The challenge for the management team is accepting, that in spite of years of diligent effort, the complexities of the digital communications chain has devalued the significance of system uptime. If a network or power outage affects mission critical services, who is to blame? If it doesn't immediately affect your organisation, chances are that the taint of someone else's outage will affect how your entire industry is perceived. Automatic teller machines being rendered inoperable damages the whole financial industry, not just the individual organisation. Customers are bombarded with privacy breaches, outages, websites and technology they vehemently dislike, but begrudgingly accept.

Summary

Great technology and rock-solid reliability have succumbed to market pressures and the competing needs of customers. Price erosion has made every traditional method of delivering services transform and has seen process efficiency improve. Reliance on legacy infrastructure and willing acceptance of the cost penalty should be considered an onerous business risk. The risk posed by complete dependence on a single technology should face the unflinching scrutiny of a risk/reward analysis. Organisations need to determine if the costs required to mitigate the threat of a possible failure to business continuity is acceptable.

- Critical staff are leaving the workforce and the requisite skills to replace them are unavailable
- Reliance upon a single computer technology poses grave business risks
- Mainframes will celebrate more than 50 years in the field - they are a legacy
- Risk vs Reward – when does the actuarial analysis justify a genuine business case and forgo emotional attachment to the good old days?
- There is no need to invest in a Mainframe to reap the advantages of reliability, availability and scalability when alternatives can deliver these features at a massive cost discount.

Skills



4 out of 5
Industry insiders predict that 4 out of 5 Mainframe Professionals may be leaving the industry in the next 5 years.

Even the toughest economic rationalist would have empathy for the career plight of Mainframe programmers. The writing is on the wall for arcane programming languages like COBOL that have dominated the market for 40 of the last 60 years.

Even so, this does not auger well for Mainframe owners reliant upon those skilled subject matter experts, at the twilight of their careers. Even if Mainframe skills continue to be in high demand, low cost competition coming from India and the Philippines is fracturing career prospects for younger entrants. There are no easy choices when trying to solve this problem.

Baby boomer exodus poses a measurable risk to the survival of the Mainframe platform

It's a brutal statistic for any manager required to provide a risk review as part of a business continuity strategy. 4 out of 5 of your key Mainframe personnel will be retiring from the business within the next 60 months⁴. In the Mainframe environment where metrics are calculated in years or decades, this ranks as the gravest risk to the longevity of the Mainframe as a viable production platform. Stakeholders with a vested interest can invest in low cost markets and import or outsource the requisite skills as required to meet short term objectives. The real challenge is the loss all that irreplaceable experience. The more your organisation is dependent upon mainframe skills then the greater the impact of the impending skills exodus.

The skills that are in demand attract the brightest and the best

Candidates entering the IT industry face more choices about who they work for or what they choose as a stimulating career path. Some prefer the staid and low stress workplace and thrive within this working environment. Others follow the money while their graduate colleagues seek challenges that are more aligned with aspirational or personal career objectives. Irrespective of the strategic career goals set by the individual, Mainframe languages like COBOL or other skills like IMS or CICS don't feature highly in the demand lists posted annually on the Internet. It's the catch-22 of software skills: market forces define the financial viability of what makes the syllabus in computing science courses. Vendors often invest and subsidise the skills transfer they require for their industry but students will pursue avenues of opportunity they see as more lucrative or personally fulfilling.

The twilight of COBOL – the demise of documentation

If you read press releases there's still a lot of life in stalwart legacy programming language COBOL. The people who add this skill to their curriculum vitae's are more often than not looking for a job rather than a career. As the collective memory dims another challenge comes to the fore. Is documentation up to corporate standards, and is development or change control able to continue without this vital reference material? A little known fact is that unless you dedicate a paid employee to the task of creating and managing documentation, it quickly dates. Engineers like playing with their “toys” and always postpone finalising the paperwork until coerced into completing the task. Manuals and specification guides created under duress seldom meet corporate quality standards without peer review or the scrutiny of a wide readership. It's the tick in the box that counts!

Summary

Information technology skills perplex managers because investment in staff competencies increases employee market value. Conversely, talented candidates are difficult to recruit and retain yet offer so much value to organisations' through greater efficiency drawn from experience. Technology enables exponential productivity improvements and provides the means to adapt and quickly capture new markets.

- Twilight technology fails to attract the best and brightest candidates
- Don't attract innovative and forward looking developers
- Mainframe professionals have a vested interest in maintaining an organisations' investment in Big Iron irrespective of the validity of a business case
- Limited career prospects if applications are migrated or hardware retired⁵

Agility and opportunity

An organisation's agility is inextricably linked to how quickly it can seize and capitalise on new opportunities. The much used cliché "adapt or die" is banded about with abandon.

The evidence to support how quickly industries can become extinct is all around us with publishers and retailers subsumed by their online competitors. Kodak held some of the most valuable patents in digital photography yet failed to adapt.

The greater threat doesn't come from evolving business processes but rather "disruptive technologies" that completely rewrite how commerce is transacted. Ensuring your employees and processes are nimble and can quickly adapt to new opportunities is paramount in meeting your organisation's continued growth and prosperity.

Your competitive advantage – how quickly can you seize new opportunities?

How quickly can you re-invent your business processes? Are you competitive within your existing market landscape? Is your IT Infrastructure ready to adapt with unplanned mergers or acquisitions? The heart of this question is whether your current technology inhibits or enhances your agility? The answer is what delivers the quickest return on investment and aids your corporate aspirations. Is continued Mainframe investment an enabler or inhibitor to quickly adapting to market dynamics?

Open standards and systems reduce costs and increase company agility

If you need a Server, Storage system or Networking equipment to quickly fulfil a business need you can be overwhelmed by the range of products and pricing points available to achieve the desired outcomes. Open standards drive interoperability, enabling flexibility and deft integration. The freedom of choice that open, market driven industry standards offer will never stop outpacing proprietary or single supplier offerings. Business requires an agile framework that can quickly adapt to change. What are your choices for adding innovative technology if your Mainframe vendor doesn't manufacture or support it?

The duplication of effort quandary – managing infrastructure from a single console

The concept of individual silos of computing is relegated to history. Business just can't afford the additional management overhead. This is not the case in the Mainframe operating environment however. This "duplication of effort" imposes additional outlays on operating costs. Vendor's specification's quote that their enterprise management suite will meet all of the needs of the entire production network. This is only partially true because Mainframes depend on specialists, whereas Open Systems are ubiquitous and able to draw on a vast pool of talent to provide a broad range of expertise.

One size fits all is an archaic and outmoded concept

The IT marketplace is littered with discarded trends and out-dated marketing hype. The repetitive cycle of old technology concepts becoming fashionable again is commonplace. The best solution for your organisation is one that provides the most cost-effective return on your investment. It must be easy to integrate, adapt, migrate or decommission depending on the prevailing business case. The trusty Mainframe fails when benchmarked against today's business deliverables and expectations.

Summary

Finding good people with the requisite skills is a challenge for business. Information Technology is no different with the best people commanding and receiving high salaries. The dilemma for management is balancing the requirements for generalists compared with specialists in areas of your business. The broader the skill-set, the more valuable an employee is to an organisation. Even more so when web enablement, information security and data networking are mission critical skills required by modern business operations. Is an investment in Mainframe skills adding to the value of your technology team? Is further investment in archaic programming language skills money well spent? Does your Mainframe increase flexibility and align with corporate goals when agility and flexibility are the hallmarks of modern business? Adapt or die!

- Are your IT skills adaptable and agile enough to quickly respond to market changes?
- Is multi-skilling delivering a satisfactory return on your training investment?
- Are Mainframe skills an enabler or inhibitor to sharpening your competitive edge advantage?
- How quickly can IT skills be adapted to you re-invent your business and services that you offer?

Dependencies and Assumptions



The weakest link in the chain is always the first to fail

Service delivery chains are increasingly complex. Networks were dedicated, then shared, and now are virtualised, all with the goal of lowering operating costs. To achieve economies of scale compromises are sometimes made, or expectations set too high. Competitive pressures drive this change. The quest for lower operating costs and increased productivity continue to drive cost-cutting measures. In spite of the best efforts of suppliers, corners must occasionally be cut to meet customer demands and comply with Service Level Agreements.

Have you conducted a cost versus benefit analysis on all of your business processes?

Understanding the total cost of the transaction cycle often reveals that gold plating one component is negated by corrosion or fatigue within the supply chain. An IT audit will reveal the relative strengths and weaknesses in your business processes and identify where your systems are vulnerable. Funds and resources can then be allocated to more deserving projects that offer a return for the business. Applying these benchmarks to Mainframe computing is revealing and often disconcerting⁶.

The assumption is often made that Mainframe investments are above scrutiny

No part of any competitive businesses' infrastructure is beyond the scope of a grilling business audit. Not all processes demand the high transactions costs that Mainframe processing time commands. An audit could reveal that many processes could be migrated with little effect on the quality or timeliness of service delivery. By understanding the real cost of transactions, meaningful data can be reviewed and informed decisions arrived at. On occasion, it becomes necessary to disrupt the status quo. Corporate graveyards are littered with organisations which chose to ignore disruptive, game-changing innovations.

- Outages in peripheral pieces of the service delivery mix can affect the outcomes adversely irrespective of the resilience of core processing
- Increasingly complex service delivery chains are interdependent
- Open systems allow costs to be amortised across a greater technology surface area

"By April we had 99 per cent stability; by Autumn we had our best reporting status ever: just one stop. We regard it as more stable than the mainframe environment, which we never thought would happen. The mainframe is thought of as the ultimate in stability. The HP solution has so far proven to be even better for us."

Pål Knutsen, IT director, MøllerGruppen

When an outage that affects a high profile organisation occurs, the assumption is made that a piece of technology has failed and prevented service delivery. This is often correct with software upgrades proving notorious for creating system uptime issues. In other cases the culprit is the data network.

Dependencies on electricity and data networks are just as critical to ensuring service delivery as is a reliance on bulletproof Mainframe systems crunching transactions in your mission critical data centre.

1998

HP Mainframe Migration Centre of Expertise (CoE) established

370,000 MIPS

Migrated off Mainframes by HP

Refer to Gartner document G00171622 for additional information on migration and re-hosting

Conclusion

Mainframes serve one purpose in today's business operations: crunching transactions in batch processes. They are the master of this operating environment in spite of the fact that comparable performance is available from competitors' open platform based technology.

The sad fact is that perceptions and "money-is-no-object" mind-set drive purchasing in the Mainframe market sector. Market leader IBM is in no hurry to dispel these perceptions with the revenues it raises from Mainframes sitting at around 12.5% of turnover based on anecdotal evidence from analysts and best estimates from industry pundits.

If your competitors are moving specific applications off the Mainframe to achieve savings why aren't you?

If your comparative advantage is being whittled away because your rivals are adopting technology that enables lower transaction costs then how must you respond to meet these competitive pressures? Migration may or may not make sense based on your unique business needs but cursory analysis of the variables can arm you with the facts that help reveal whether a business case exists.

Do you know if all of your current Mainframe hosted applications must reside on that platform?

It's astounding how quickly vital becomes irrelevant in business operations. Identify the three least mission critical business processes and consider a pilot migration program. Even if the exercise fails to discover inefficiencies, an analysis of your dependence on Mainframe processing may reveal more efficient ways to complete tasks and assist in lowering operating costs.

"FUD is the fear, uncertainty, and doubt that IBM sales people instil in the minds of potential customers who might be considering Amdahl products."

Dr Gene Amdahl – Founder of Amdahl Corporation 1975

A second opinion can't hurt. Talk to HP about their Mainframe Alternative program

HP offers a vast wealth of expertise to help you review and re-engineer your Mainframe processes. Our successful implementations yield between 50-70% reductions in operating costs. With Mainframe budgets measured in millions of dollars, this bottom line improvement can make a big difference to your competitive market position.

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1. <http://opensource.com/business/13/10/ibm-roi-investment-linux>
2. IBM market share figures are privately acknowledged at approximately 95% by industry insiders but because IBM consolidate server sales numbers independent auditable sales revenues are unavailable.
3. For further reference refer to this white paper that provides analysis of Mainframe migration costs. Mainframe Migration Case Studies: A Total Cost Comparison – Alinean, July 2010
4. <http://h20195.www2.hp.com/V2/GetPDF.aspx%2Fc02586569.pdf>
http://www.itnews.com.au/News/300815_allianz-taps-finance-it-overhauls-for-cobol-skills.aspx
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<http://www.longpelaexpertise.com.au/ezone/MainframeSkillsShortage.php>
5. For further information please refer to this Gartner report: <https://www.gartner.com/doc/502222>
6. <https://www.gartner.com/doc/1275824/mainframe-modernization-migration-answer>

