A PRACTICAL APPROACH TO MAINFRAME MODERNIZATION

Introduction

As organizations work through their digital transformation, the role of the mainframe is questioned.

The mainframe provides levels of transactional performance unrivaled by other platforms, as well as enormous value as an authoritative and secure data repository. Yet we continue to hear client concerns about the platform which distill to agility and the enablement of the business, sustainability of the platform, and cost.

Migration away from the mainframe is an expensive and risky proposition which requires years to accomplish. What organizations need to begin the planning of such a transformation is a fact-based analysis based on the requirements of the business. We heard this expressed perfectly by the CTO of one of the world's leading consultancies: "'Cloud good – mainframe bad' – we're way past that kind of thinking."

These organizations need a clear view of what they are modernizing and why.

Is it for a new business capability that we do not believe the mainframe can support? Is it to increase the pace of change? Is there a concern about sustainability, for skilled staff and resources? Cost?

Different drivers lead to different paths forward.

Sustainability concerns can be managed and mitigated: talent remains available (GTSG for infrastructure, GTSG and others for application development).

Organizations need a **business-driven, platform-agnostic** approach to the analysis. Once the needs and priorities are established, we can look to the technology.
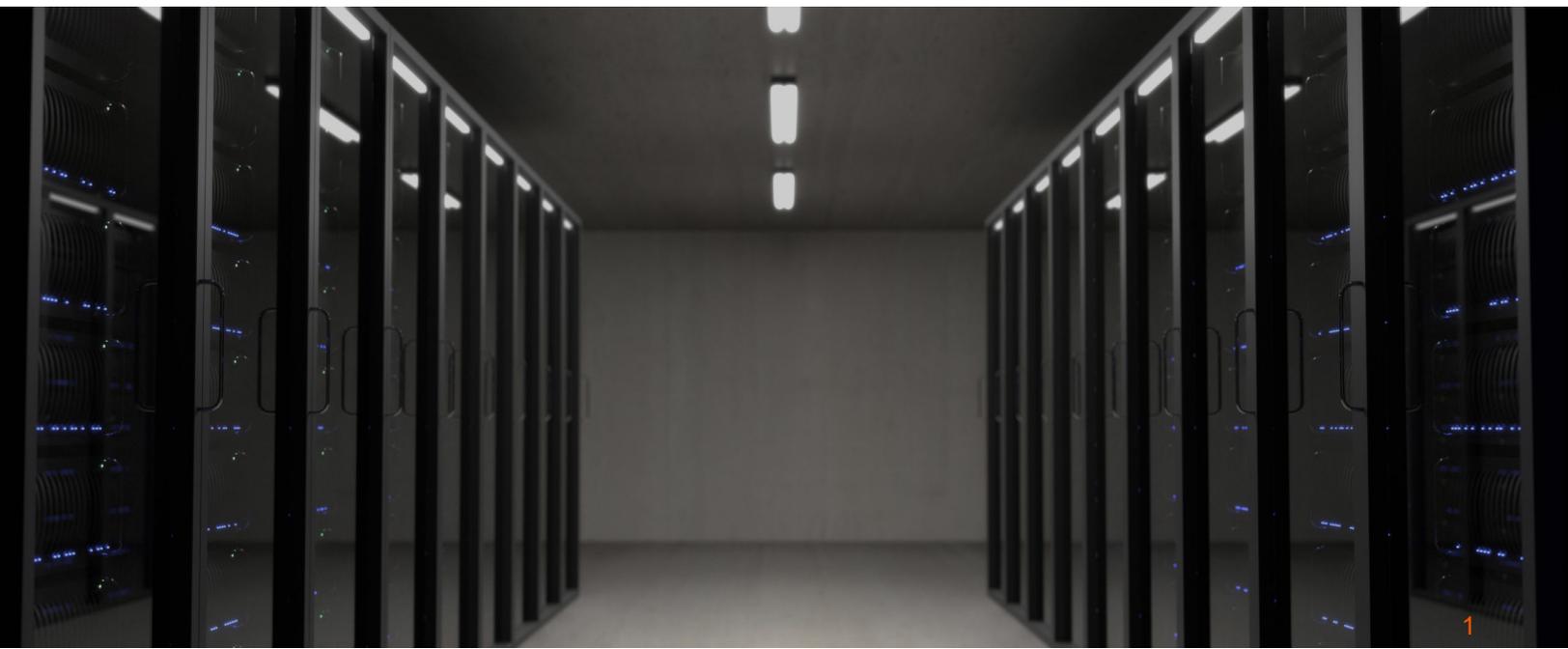
The technology exist to support the business.

Our understanding must include

- the business landscape (what is working; what is not; what is missing; competitive factors; customer feedback as to digital customer- facing satisfaction),
- known (perceived and actual) gaps by category: business enablement/agility; cost; sustainability; risk
- high-level inhibitors, including
    - non-technology: funding, especially for significant rewrite of code, etc.
    - technology: what needs to be provided by the technology layer and why it cannot do so
- in-flight projects (application development, sourcing, hosting), that might inform the path forward.

Guiding Principles are critical to aligning technology decisions with the business requirements.

We reach broadly into the organization to identify stakeholders, with whom we develop well-defined Guiding Principles that will be used to steer the business & architecture decisions. Concise measurement criteria are used to objectively assess options later in the engagement, helping to ensure adherence to the business objectives. We map 2-3 transactional flows which will represent the in-scope applications to be used for the assessment – so that we are grounded as we move forward.
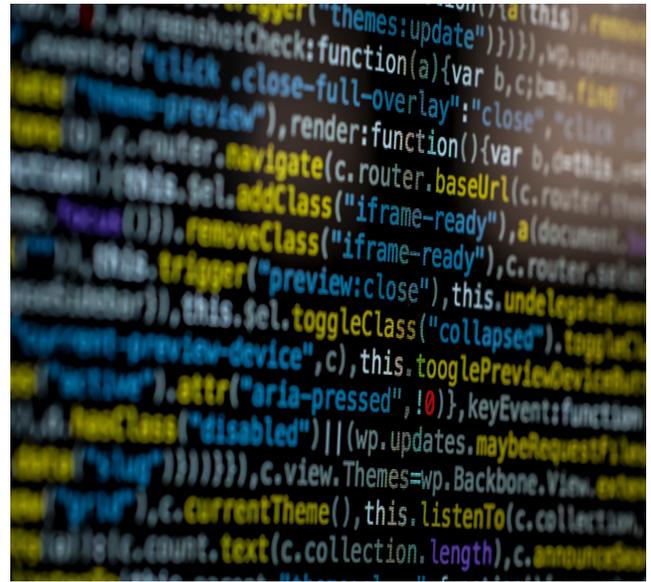
Understand the workloads

Before we look at alternatives, we understand workloads and interdependencies.

We utilize workshops, interviews, data and (depending on scope) discovery tools to discover everything that might impact the performance, availability and cost of these workloads during a transition, including

- interdependencies among applications and databases, for mainframe, and associated distributed, and cloud workloads
- infrastructure including connectivity, software configuration, subsystem and transaction server configuration; operational procedures
- other inflight development and hosting initiatives that will impact these workloads.

We then build a TCO model for each workload.

This is an application workload-based model capturing business function and resource consumption including system utilization, licensing, leases, facilities, personnel, etc., and interdependencies with all other applications.

…and understand the relative resource consumption of each workload.

Using system mainframe measurement and reporting tools, we calculate the relative infrastructure resource consumption of each application workload.   We also document its relative business impact and identify and document its application support resource requirements.

We build on, and ground ourselves in, the 2-3 transactional flows discussed earlier.

We map flows using existing information, and/or "mini-workshop" meetings to understand the current system build. We identify and review platform-specific configuration and capabilities for "new business" initiatives underway; understand how legacy information is utilized; and review the in-scope applications in their current, interim, and future states as much as can be deduced from the guiding principles and objectives.


We now have a solid foundation upon which we can analyze alternatives.

We review the existing disaster recovery environment and requirements to inform the architecture decisions to be proposed later on.

We develop a tactical plan to address any upcoming mainframe technology infrastructure upgrades or other requirements, or evaluate cloud or hosting options. Finally, we document the above items with commentary for each (where applicable) in a SWOT or other relevant format.

These deliverables combine to determine transactional connectivity and database flows so that our client can assess

- **capabilities** required for a future state,
- **dependencies** on authoritative data,
- **data** ownership, creation and residency,
- **APIs** currently in place for authoritative reading
  – at least in an interim state.
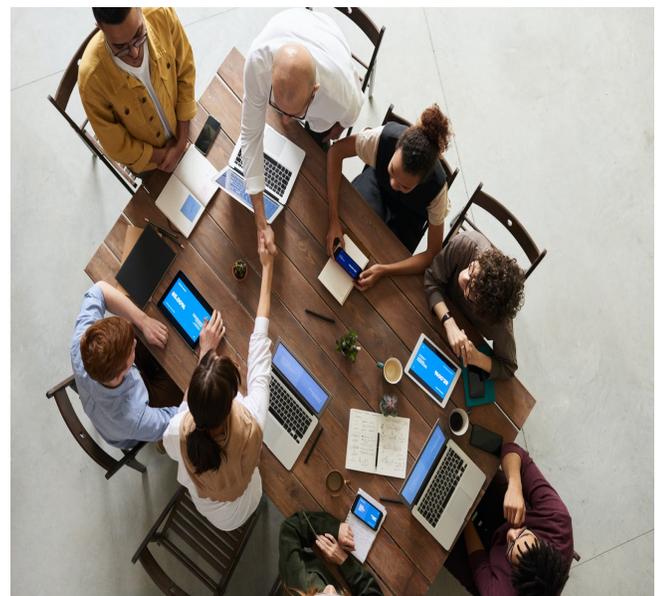
Digging deep: analysis of alternatives

Once we understand the workloads, we can identify the legitimate future options for each mainframe-dependent business capability.

The business drivers of the modernization determine the path. It is vital to have a clear view of expected benefits which support a well-understood investment.

We must distinguish among modernization approaches which have been effective and those which remain "aspirational."

Candidly, there is a lot more marketing out there than independent research.

We also need to understand the approach to development for new workloads: cloud-first, cloud-smart, choice of development platform, and other dynamics impacting the workloads currently on the IBMz. We also recommend evaluating the potential of mainframe DevOps with the right tool support to close the agility gap.

We develop and document a matrix for assessing options, using our Guiding Principles and Decision Modeling Criteria.

We engage client and vendor SMEs (as appropriate) for objective discussions of capability pertaining to platform capabilities. We then develop a high-level skill matrix with "+/-" indication of requirements based on our client's assessment, with our input (where the client requests).

We document selected alternative end states and high-level artifacts for cost, skills, risk and other measurement criteria as established earlier on. We conduct "mini-workshops" with participants to review and refine the alternative end states.

A realistic business case is essential. Whether retaining, downsizing or even sunsetting the mainframe, we need to understand the extra costs and complexities during – and after – transition… including those created by provider pricing models.

We worry for the customer that has high tens or low hundreds of data source update interfaces. They can't be converted all at once – so the mainframe remains the authoritative data source.

Latency implications must be considered if the refactored applications are in a cloud, or even a colocation facility geographically separate, and you're returning to your mainframe for data.

Increased complexity – or even old fashioned "finger-pointing" – manifests itself in even simple environments. The developers of the "new" applications are (usually) convinced their application is invincible, so the burden of proof is back on the mainframe folks.

One element of complexity that certainly adds to cost is the need for a brand new disaster recovery plan, and the supporting tools and contracts. The mainframe's one-stop recovery is gone, and resiliency must be rearchitected to match the new environment. (And while this is an absolute necessity, it is frequently missed in the feasibility assessment.)

The non-negotiable end game is an air-tight business case. Modernization plans must be well-vetted; the cost case presented realistically up front.

When building the decision model, we include the costs of transition, including platform migration, the additional mainframe workload during transition, and duplicate environments, with consideration of the impact on skills & resources, and on contracts.

For each workload, we will update the TCO model and then determine the desired end state… again, separating the sourcing decision from the architectural.

Build the Roadmap

Finally, we build a roadmap which balances business priorities with financial constraints, and includes focus on optimization during transition

The multi-year roadmap is the starting point to balance business priorities, cost implications/available funding, and the need for ongoing optimization and sustainability.

We develop a small number of work packages required to deliver each business capability defined by the alternative end states, which contain:

- Hardware, software, and cloud requirements
- Skill requirements for both migration, where applicable, and long-term care
- Rough order of magnitude estimates for
    - Sequencing
    - Dependencies and prerequisites
    - Risks
    - Estimated costs

In a transition period between platforms, mainframe cost and performance become even more challenging.   We build an aggressive plan to manage both.

We revisit inflight projects and priorities to assess impact to the roadmap and assess impact of prerequisite activities that might exist in the inflight project schedule.

If the mainframe is to be sunset, or even if workload is to be reassigned, interim cost and performance must be aggressively managed. We institute the rightsized level of performance, capacity and workload management for hardware optimization (along with its software sizing implications), and resource modeling, including provider management, to sustain a competitive environment. We also can assist in the frequently difficult negotiations with software providers.

Finally, we draft a multi-year roadmap view of all of business capability work packages and enabling activities and conduct iterative reviews to arrive at consensus.

When we are asked, we are delighted to prepare for and participate in presentations to Executive Sponsors and the other stakeholders that have an interest in the success of this program.

If you'd like to discuss planning the future of your mainframe workloads, please reach out to Mainframe@GTSG.com.

HYBRID CLOUD STRATEGY AND MIGRATION	INFRASTRUCTURE TRANSFORMATION
Strategic Approach • Business case development • Transition planning • Technical modeling • Non-disruptive execution **Application Analysis Methodology and Tools** • Decomposition • Affinities • Wave planning **Project Leadership** **Implementation Subject Matter Expertise**	**Transition Services** • Insourcing/Outsourcing • Knowledge transfer and interim support • Application migration • Service management design **Disaster Recovery Design and Implementation** **High Availability Design and Implementation** **Application Assessment and Deployment** • Reference Architecture • Infrastructure Alternatives/Recommendations • Implementation/Migration
INFRASTRUCTURE SUPPORT SERVICES	INFRASTRUCTURE OPTIMIZATION
Managed Services • Multi-platform including DB & MW • Service-level based or FTE-based • Architecture, administration, programming, systems management • Remote or Onsite **Project Based Services** • Platform upgrades • Workload migrations • Implementation services • Consulting and Assessment (performance, DR, HA.) • Project Management	**Architecture Assessment and Design** **Server Virtualization/Consolidation** **Storage Optimization** **Data life-cycle management** • Tiering • Standardization/Automation **Application Decomposition Application** **Re-design/Remediation Performance** **Management and Tuning Latency** **Analysis and Consulting**