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Mainframe Leap to Cloud

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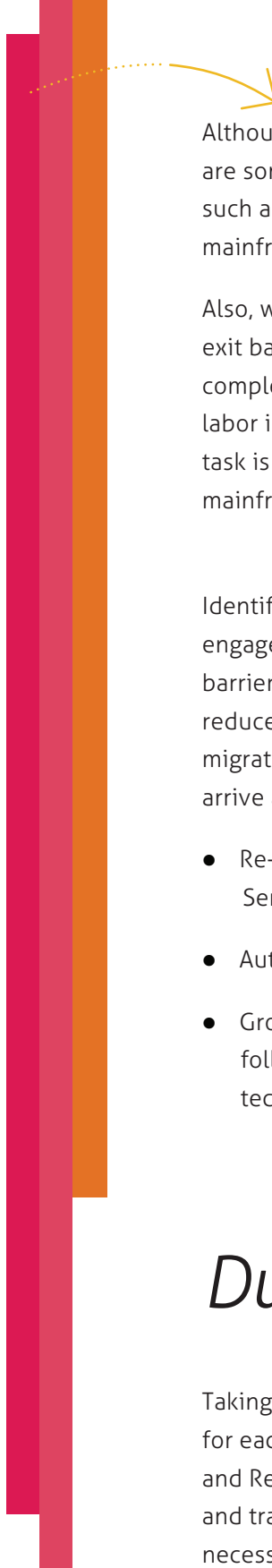
Although the mainframe remains as a core platform in many Fortune 500 companies, there are some significant pressures that mainframes face in a modern computing environment, such as costly to maintain, difficult to expose or integrate, and a clear skills shortage as most mainframe engineers are approaching retirement.

Also, when you do decide to migrate away from your mainframe, you encounter even more exit barriers. Since mainframes often provide services over a long periods of time, the complexity of the intertwined workloads can be difficult to untangle. Often, intensive expert labor is required and still many risks need to be navigated properly. The whole migration task is daunting but doable. The key to a successful migration is seeking an experienced mainframe migration partner.

Identification of the right modernization strategy is crucial for the success of modernization engagements. Using a score-based proven assessment framework can overcome those exit barriers. Additionally, the operating costs for ongoing application services can be dramatically reduced when migrating from a traditional mainframe data center to a Cloud platform. For migration of Mainframe workloads to Cloud, our proprietary assessment framework can help you arrive at one of the following solution approaches:

- Re-host: Lift and Shift approach using industry-leading products like Micro Focus Enterprise Server

- Automated transformation: Powered by in-house IP, as well as partner tools and products

- Ground-up transformation: Re-architect and rewrite with a reverse engineering approach, followed by a forward engineering approach to move Mainframe workload to a modern technology-based platform
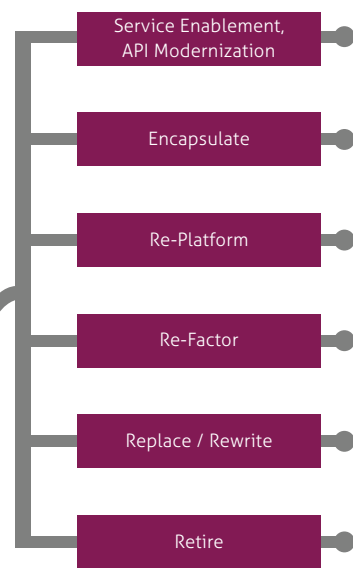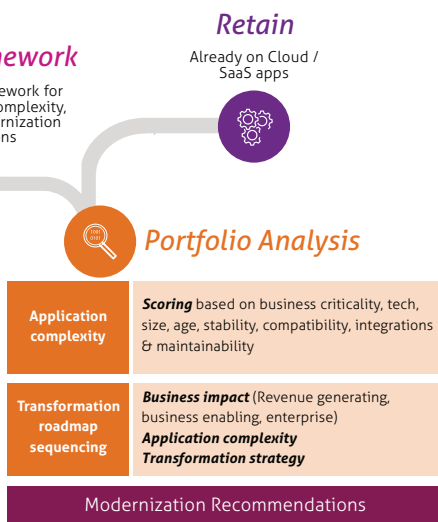
Dual Analysis Approach

Taking a "dual" solution analysis can help improve the visibility of risks and select the optimal path for each application. Through a comparative analysis between Re-Platform/Re-Host (lift-and-shift) and Re-Factoring (transforming source code to a modern programming language) the challenges and trade-offs bubble to the surface to allow a closer examination. In some cases, it may be necessary to Re-Write small pieces of source code, but only as required to make a Migration successful. This dual solution approach is unique in the mainframe modernization marketplace and can help you leap from mainframe to cloud.
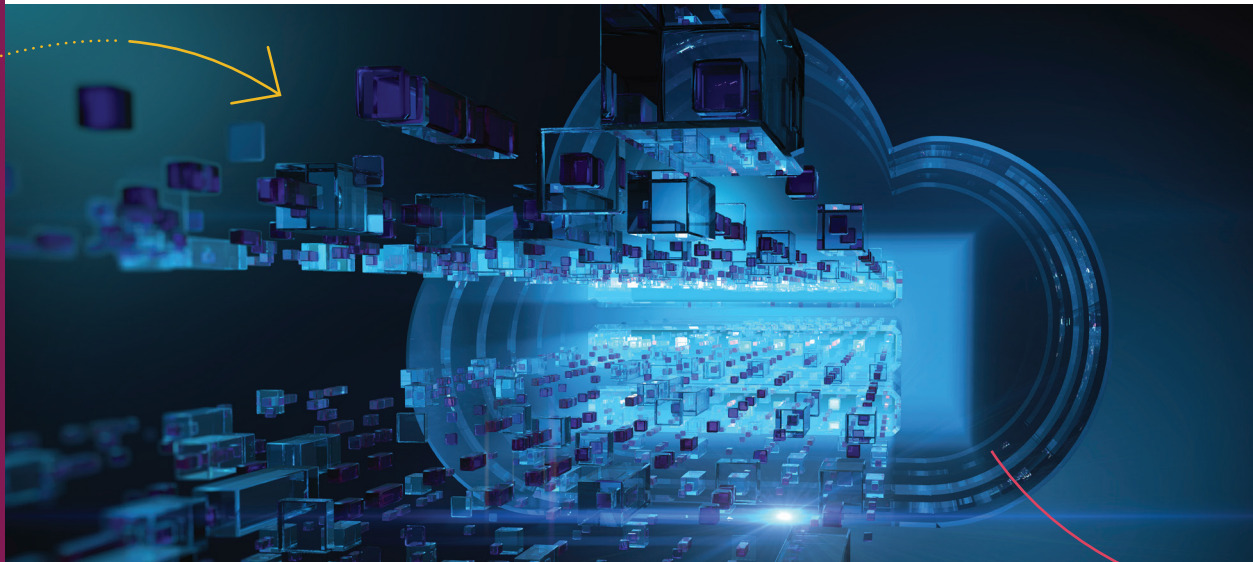
Analysis Framework

Build an analysis framework for Modernization – app complexity, sequencing and modernization recommendations

Retain

Already on Cloud / SaaS apps

Initial study and assessment for modernization

Portfolio Analysis

Application complexity	**Scoring** based on business criticality, tech, size, age, stability, compatibility, integrations & maintainability
Transformation roadmap sequencing	**Business impact** (Revenue generating, business enabling, enterprise) **Application complexity** **Transformation strategy**

Modernization Recommendations

- Service Enablement, API Modernization
- Encapsulate
- Re-Platform
- Re-Factor
- Replace / Rewrite
- Retire

Validate Modernization Approach

Perform due diligence and validate modernization approach

Modernize

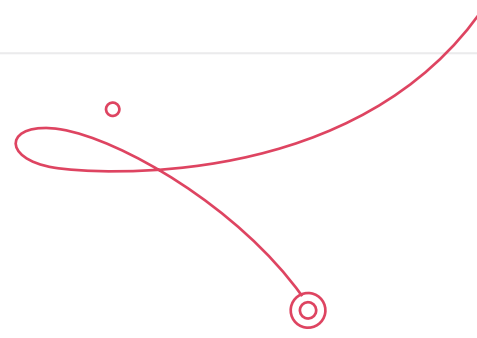Execute Modernization solution based on the finalized Approach

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Application Performance

The elastic nature of Cloud computing provides the ability to scale an application. Leveraging a proprietary Lift & Shift methodology developed and refined over two decades of experience helps cloud-based migration application environments to perform at levels equal to (or better than) the original mainframe platform. It also retains all the original application functionality in the same form as it appeared on the mainframe.

Mainframe Migration Considerations

There are a plethora of considerations and risks for a mainframe migration, any one of which could derail your success:

Risks	Mitigation Approach
Inadequate planning related to time, effort and cost to modernize	**Automation First Approach**
Incomplete Coverage of migration scope	Exhaustive **business rules extraction** with end-to-end traceability with system test cases to ensure 100% **coverage of migration**
Inadequate Handling of critical interfaces	Comprehensive **parallel run & interim state solutions** to ensure zero business disruption
Poor assessment of risk due to performance impact	**Comprehensive performance testing plan** addressing applicable NFRs.
Lack of proper documentation with knowledge in silos	Tool based, semi-automated documentation & robust transition plan.
Lack of migration experience	Leverage niche skills of partners, particularly those with prior experience with similar migrations, or established frameworks for mainframe migration.

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Factory Migration Model

The migration execution itself provides several opportunities for acceleration and risk attenuation by allowing parallel migration streams to occur simultaneously. With an established Factory Model, imagine a factory-like assembly line with several independent stations, where each station only performs a limited set of activities, and then passes the workload to the next station:

- **Reverse Engineering Team** – Engaged with analysis of existing Mainframe portfolio to un-earth business rules
- **Data migration team** – Understand the existing data model and architect a target platform data model with a plan for data migration
- **Forward engineering Team** – Understand the rules un-earthed by the reverse engineering teams and carve the best-suited approach for the identified target platform
- **Modernization lab** - This is a lean team with the responsibility of finding all possible automation candidates during various phases of project execution

Establishing a factory model assembly line can be accomplished based on either a "CALL TRACE" approach, or Exploration-led approach:

- **CALL TRACE:** follow the CALL trace forward and backward for an application to different services to generate a migration stream of dependent calls.
- **Exploration led:** involving the following steps –
  - Conceptualize and brainstorm the Proof of Concept(POC)
  - Integrate the results of PoC with the factory model framework
  - Build and deploy

Multiple migration assembly lines should be created to provide scale. In such a factory model of multiple assembly lines (and each assembly line with multiple stations), if one migration assembly line encounters delays or failures, the other parallel assembly lines and stations can usually continue. Additionally, several stages of a factory model can be automated to expedite the migration process.

Rene Head

Global VP Infrastructure Services, Mindtree

Seasoned Business and Technology Services Leader with over 25 years of experience. Successful at helping clients monetize disruptive technology and adopt new Digital business models. Broad profit & loss accountability in Information Technology: Services sales, IT Professional Services, Technology Consulting, Management Consulting, Business Process and Technology Outsourcing, Next-generation Cloud-based solutions, Managed Services, and Infrastructure support.

Praveen Sinha

Global Head - Mainframe and Midrange Practice, Mindtree

Praveen has more than two decades of experience in helping Mainframe and AS/400 customers to bring agility and innovation in their business. In the journey, Praveen worked with multiple customers using legacy systems to understand their business, technology, and pain areas to bring the most appropriate recommendation. Besides, Praveen also has P&L responsibility for his unit and to show continuous growth.

David McSwain

CTO office, Astadia

Dave MacSwain brings over 30 years of IT experience in a wide range of positions within the commercial and federal government segments. Currently, he is a part of Astadia's Office of the CTO and is responsible for driving strategy and alignment in their DevOps and Migration services. David's area of expertise falls under legacy modernization services and solutions.

Special thanks to Astadia team for their contribution to the Whitepaper!

About Mindtree