

Enterprise Architecture: Application Rationalization Playbook



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The Application Rationalization Playbook is designed to be an iterative document that evolves over time to reflect learning and changing information technology landscape.

It also includes information on the application rationalization data dictionary which aims to **help organizations strategically and systematically identify business applications and determine which should be kept, replaced, retired, or consolidated.**

This includes developing a detailed inventory, with attributes and functionality, determining **business value** and **Total Cost of Ownership (TCO)** and then comparing or rationalizing that inventory of applications as a whole to **eliminate redundancies, lower costs and maximize efficiency.**

Application rationalization helps portfolio manager's improve their approach to IT modernization. There is no one size fits all application modernization process, rather companies should tailor their approach to fit mission, business, technology, human capital and security needs.

Successful application rationalization efforts require buy-in from critical stakeholders across the enterprise including **Senior Leaders, IT Staff, Cybersecurity Experts, Program Owners, Financial Practitioners, Procurement Experts and End User communities.**

Rationalization efforts rely on leadership support and continual engagement with stakeholders to deliver sustainable change.

Key Terms

Definition of key terms used throughout this playbook.

- **Application:** — A software program used directly or indirectly to support the program office in delivering on a business or mission function.
- **Application Owner:** — The individual or group within the program office that directly oversees an application.
- **Business Value:** — Qualitative and quantitative measures of an application's value.
- **Component:** - A discrete unit within a company, such as a department.
- **Enterprise:** - An entire company, including program offices and components.
- **Portfolio Manager:** - The individual or office responsible for executing application rationalization for the entire organization.
- **Technical Fit:** - A measure of an application's technological health.

A Six Step Process for Application Rationalization

- **Identify needs and conduct readiness assessment:** Work with critical stakeholders to conduct an application rationalization readiness assessment, develop the application questionnaire, and create a baseline inventory.
- **Inventory applications:** Conduct an environmental scan to identify applications not in the baseline inventory and send the questionnaire to the stakeholders to capture relevant data pertaining to each application.
- **Assess the business value and technical fit:** For each application in the application inventory, analyze and validate business value and technical

fit data captured in the questionnaire. Engage program offices ensures data quality. Review the application inventory to identify dependencies and duplication.

- **Assess the total cost of ownership:** Assess each application's TCO captured in the questionnaire. Compare TCO in the current state against estimated TCO in future-state architectures.
- **Score Applications:** Based on the business value, technical fit and TCO, score all applications and determine whether each should be reviewed, rewarded, removed or refreshed.
- **Determine application placement:** Based on the application scores, develop and execute a change management and application migration strategy for future iterations.



The above figure shows application rationalization as an ongoing best practice for good IT Portfolio management. We must routinely update and rationalize their portfolios to enable IT Managers to make informed business decisions. Application rationalization uncovers issues such as application duplication, siloed business units, and unnecessary IT costs so that it can be addressed head-on.

Step 1: Identify needs and conduct readiness assessment:



Determine the scope and set governance for the application rationalization effort, then develop a standardized questionnaire and templates for all resources shared with program offices during the application rationalization effort.

- **Conduct Readiness Assessment:** Before jumping into application rationalization, we should complete an application rationalization readiness assessment.

As part of readiness step, Establish a business case for application rationalization, engage CIO/CTO and executive leaders from across the enterprise to ensure buy in for the effort.

A good place to start when developing the baseline application inventory is with the Organization's Disaster Recovery and continuity of operations plans which must take into account contingency planning and backups for critical applications and services.

- **Identify Requirements:** Determine the scope of application rationalization effort in this step of the process. Ensure the application rationalization effort aligns to current priorities and policies.
- **Develop a questionnaire:** Develop a questionnaire that will be sent to each application owner in application rationalization process. The questionnaire is the primary data collection tool that will be used to compare applications across the enterprise. The questionnaire should at minimum capture business value, technical fit and TCO for each application.

- Questions related to business value should assess the following factors for each application.
 - Effectiveness- The extent to which an application is a solution for the goal organization are trying to achieve.
 - Mission Criticality- The degree to which an application is critical in supporting and executing the organization mission.
 - Utilization-Usage data for the application.
 - Complexity- The customizations, unique features and functions enabled by the application. Applications with greater complexity typically require unique skills to develop and maintain, satisfy more technically difficult requirements or pull from multiple data sources.
 - Usability- How easy it is for the user or customer to operate or learn.
- Questions related to technical fit should assess the following factors for each application.
 - Technical Requirements-What levels of storage, bandwidth, data, maintenance and support are needed to make an application run.
 - Software and Hardware Version Control- How often is an application updated and how much marginal effort does each update require from administrators and users.
 - Dependencies and Interoperability-To what degree other applications or systems depend on this application to run, and what disruptions in other applications would affect it.
 - Scalability and Adaptability- Can an application be scaled to onboard new users and can it be augmented to fit the needs of new user groups.
 - Security Standards- Is an application vulnerable to security attacks and does it fit into organization's risk tolerance models.

Step 2: Inventory Applications



In step one of the process, We conduct a readiness assessment, develop a questionnaire that teases out relevant application information, and create a baseline application inventory.

In Step two of the process, Enterprise Architecture team deploy the questionnaire to application owners to collect relevant information on each in-scope application.

- **Send Questionnaire** — Send the questionnaire to application owners for each in-scope application. This ensures uniform and reliable data collection, allowing the team to compare across applications.
- **Validate Responses** — Review questionnaire responses for completion and accuracy, and then compare them with existing inventory sources. Follow up with the application owner if there are any discrepancies between the response to questionnaire and information from existing inventory sources. The team now have an authoritative application inventory.
- **Create Application Onboarding Process** — Work with the relevant stakeholders within the CIO and CTO office to ensure new applications and services are added to the authoritative application inventory going forward. This ensures that the application inventory is continuously updated and provides value in the future.

Application rationalization is not a one-time exercise but should become part of normal business operations within the organization.

Step 3: Assess Business Value and Technical Fit



In step two of the process, Enterprise Architecture Team inventory applications by sending the questionnaire to each application owner, validate those responses and develop a process for maintaining the application inventory in the future.

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In step three, compile the responses to the questionnaire and **assess the business value and technical fit for each application relative to all the applications in the inventory.**

- **Review Business Value and Technical Fit Responses** — At minimum, Collect information related to business value and technical fit of each application.
Often legacy applications are used past their support horizons, which

increases operating costs and the risk of security vulnerability. Weigh the business value and technical fit responses based on unique business needs. For example, application's ability to perform core functionality is often the most important factor when assessing business value and technical fit. There is no one-size fits all application methodology.

- **Determine Application Dependencies** — The questionnaire responses should determine dependencies for each application in the inventory. Identifying upstream and downstream dependencies is critical for application rationalization because applications with many dependencies tend to have higher business value.
- **Identify Application Duplication** — Review the application inventory for duplication. If components are using different applications to perform similar standardized software functions, there is likely a good business case for an enterprise solution or shared service. It's common for components to be uncoordinated when purchasing applications, which leads to redundant purchases.

Step 4: Assess Total Cost Of Ownership



In step three of the application rationalization process, The business value and technical fit for each application gets assessed.

Step three of the process builds off step three and looks at each application's total cost of ownership (TCO).

Often organizations cite TCO as the most challenging part of the application rationalization because there are often hidden or unknown costs.

In this step of the process, organizations will assess TCO information from the questionnaire, identify cost outliers in the inventory, and provide IT Investment recommendations based on priorities and current spend.

- **Determine Current State TCO** — The questionnaire provides TCO information for each application in the inventory. Often organizations struggle to determine the exact cost of ownership for each application because of the hidden costs, considerations around projected future costs, depreciated value, how to accurately account for cost savings and avoidances, convoluted service level agreements (SLA), terms of service and other unknown costs.

Ideally the best practice is to simplify the complex process of determining to the penny the total cost of ownership for each of the application. rather, questionnaire sent to application owners in step two should prompt respondents to provide cost estimation for their applications within given ranges.

The precise cost of ownership is less important then the approximation of that cost with the added context of application's business value and technical fit relative to the organization's business priorities.

- **Identify Cost Outliers** — Work with application owners to ensure the most accurate and complete current-state TCO information is captured in the questionnaire, especially in the event that outliers are identified, such as **COTS (Commercial Off The Shelf)** business applications that far outpace the cost per user compared to similar projects on the market and within the organization.

Cost outliers that don't have corresponding high business value or technical fit are good candidates for review.

Step 5: Score Applications



In step three and four of the process, We assess the business value, technical fit and TCO for each application in their inventory based on the application rationalization questionnaire responses.

Step five of this process compiles data into a single score for each application that can be used to easily and succinctly compare applications to each other.

- **Develop a consistent scoring methodology** — To score each application, develop a consistent scoring methodology that is applied to all applications. This methodology should weigh all factors relevant to business needs. A consistent scoring methodology ensures scores are unbiased and clear.
- **Review Application Scores** — Review the application scores for each application in the inventory to ensure consistency. The application score should incorporate the business value, technical fit and TCO factors collected in the application rationalization questionnaire sent to application owners.

There is no single framework or template for scoring applications

because the score should be weighed based on the specific requirements and priorities of the organization.

- **Engage Stakeholders** — It is important to re-engage these stakeholders to make sure they understand how the data they provided will be used. To that end Team should...
 - Develop a **communications strategy** that enables stakeholders to **learn about the scoring process**, understand how information will be shared, and provide feedback.
 - **Share application scores** with all the application owners, to provide transparency into how applications perform across the enterprise.
 - **Promote internal discussion** around solutions to better meet business or technical requirements.
 - Refine the scoring methodology based on **stakeholder feedback** and input.
 - Anticipate that some application owners or program offices will be **reluctant to share information on their applications**. To mitigate resistance and promote collaboration, be **proactive in soliciting feedback from the application owners**.
 - **Host office hours** for application owners to talk to the application rationalization team.
 - **Create FAQ's** about the scoring process and the rational behind the questionnaire.

Regular, Ongoing communication can foster trust in the application rationalization process and make stakeholders more willing to engage the team in future steps and iterations of the application rationalization effort.

The more iterative, agile and collaborative the process, the more likely application owners are to support the effort.

Step 6: Determine Application Placement



In step five of the process, We compile information related to each application's business value, technical fit and TCO to come up with an application score that can be used to compare applications.

Step six of the process incorporates relevant information to determine the best placement for each application in the inventory.

- **Group Applications Based on Application Scores** — Group applications into the appropriate categories and develop a structured process to assess the hosting option for each application.

In the template, applications are grouped into four categories:

- **Review**- Applications with low business value and high technical fit. These applications are candidates to maintain current funding levels, explore opportunities to enable greater business value, and consider lower-cost alternatives.
- **Reward**- Applications with high business value and high technical fit. These applications are candidates for increased investment, enhanced functionality and expanded use across the enterprise.
- **Refresh**- Applications with high business value and low technical fit. These applications are candidates for increased investment to ensure the same high-level business value is delivered by more modern and secure

systems.

— Remove- Applications with low business value and low technical fit.

These applications are good candidates to decommission or to consolidate their functions within another application.

- **Assess Future-State TCO and Hosting Options** — Future-state TCO is an important factor in assessing hosting options, but improved service delivery and customer satisfaction are major goals as well.

Just because a hosting option saves money does not necessarily mean it is the option organization should choose.

Hosting options should be compared by costs, resiliency, reliability, agility, security, and service delivery and weighed in a manner consistent with organization's business and mission goals.

The process of assigning weights should be conducted in a transparent manner, with input from major stakeholders across the enterprise.

- **Analyze Hosting Alternatives for On-Premise Applications** — When migrating from an on-premise solution to a new hosting environment, there are up-front costs associated with:

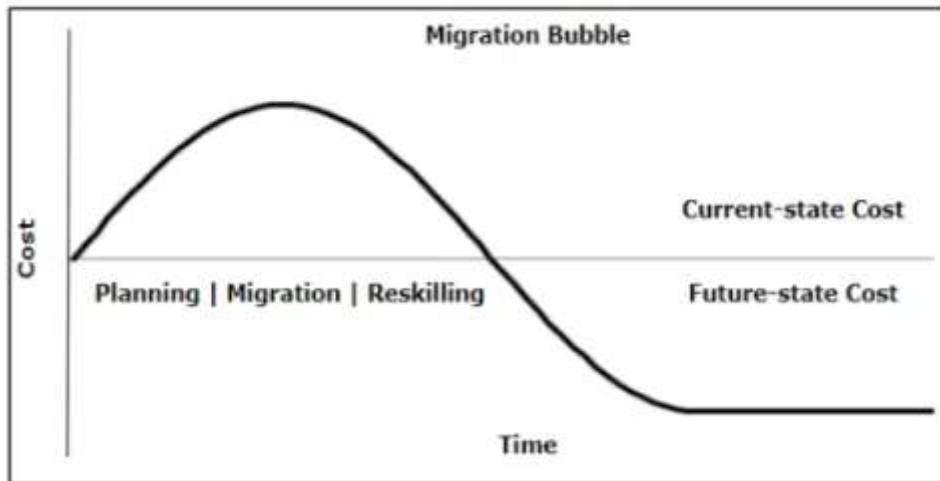
- Assessing the Current State
- Planning for Migration
- Getting Stakeholder Buy-In
- Running Parallel Systems
- Vendor Management
- Training and reskilling
- Refactoring and replatforming existing applications if necessary.

Organizations will often experience a “Migration Bubble” caused by the increased up-front costs of migrating, followed by cost savings and avoidances in the future.

These cost savings can be brought about by increased worker productivity,

greater scalability or more operational resiliency in the new hosting environment.

This establishing a new cost baseline resulting in eventual cost savings.



Migration Bubble for current and future state

The above figure illustrates up-front costs increases caused by running current-state and future-state systems in parallel. While the future state shows a rebaselining of costs below the current-state costs.

The actual cost of operating future-state systems depends on how many servers and support systems can be decommissioned or consolidated as part of the application rationalization effort and whether the future-state hosting environment is more efficient than the current-state.

Hybrid solutions, where applications or systems are run in the cloud and on-prem simultaneously, can greatly increase the size of this migration bubble. In such cases, the technological solution has to be weighed against the increase in costs.

Many applications cannot be effectively lifted and shifted into cloud environments without significant refactoring and modernization.

Lift-and-Shift is the least mature cloud migration option, so organization are unlikely to realize all of the benefits of cloud until they consider. For example A Containerization or Serverless Model.

It is important to keep in mind that beyond a certain point, marginal improvements in service delivery from advanced cloud services may not realize the cost savings.

As automation and abstraction capabilities mature, Organization can focus more on service delivery while also streamlining their business functions.

Automation can increase productivity as staff members are freed from low-level maintenance on applications and can spend time innovating or focusing on other high-priority issues.

- **Develop Migration Strategy and Change Management Plan** — To achieve the benefits of application rationalization, We require cultural buy-in from across the organization.
- **Successful IT migration strategies require:**
 - Buy-In from senior leadership, The CIO and The CFO to provide funds and backing for the migration effort.
 - A communications strategy to inform and continually engage stakeholders.
 - A vendor management plan to ensure contracts align to migration strategy.
 - A workforce development plan to help end users adapt to the new environment.
 - A migration timeline and workflow map to execute migration strategy.

- **Application Placement** — Since migrating to a new environment is both a technical and cultural challenge, successful migration plans must account for both.
 - **Cloud roadmap** — The roadmap documented the objectives of the cloud migration effort, identified key stakeholders, and developed a project plan to execute the migration.

~~The purpose of the roadmap was to document the current environment~~

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- **Network Mapping** — The organization mapped its full network topology to understand application and data connections. This information allowed the organization to move to migrate to the cloud environment and quickly identify the cause of service outages as they arose.
Engaging network service providers and incorporating organization's network experts early in the migration process were critical success factors.
- **Lift and Shift, refactor, rehost** — Before moving any application into the cloud, the component had to determine which method it would use to deploy applications.
Depending on their business value, costs and technical capabilities, the component determined that certain applications were ready for lifting and shifting into the new environment while the others needed code updates to operate in the cloud.
Because the component recognized that different applications needed to be treated differently, the method of delivery also required application-specific resources and planning.

In the long-term, the component is going through a major system

modernization effort to update their application architecture and take better advantage of cloud services.

Application rationalization is integral to portfolio management and IT modernization.

For some organizations, migrating on-premise applications to the cloud is prohibitively expensive and does not enhance service delivery. While for some the benefits of hosting applications in cloud environments, such as increased productivity, scalability, agility and operational resilience, justifies the upfront costs.

Here are some of the sample **business and technical fit questionnaire** to identify where does their applications fit into **Review, Reward, Refresh or Remove** category.

Business Value Questionnaire

- What problem was this application designed to address?
- List the business processes this application supports?
- When was this application originally developed?
- Who is paying for this application and how is it being funded?
- Which department/business lines are using this application and where are they located?
- Is this application used by customers outside of the department?
- What is the application's average annual utilization?
- Does the information within this application need to be kept and stored? If so, for how long?
- Does the functionality exists within another application? If yes, Provide the name of the application(s).
- What is the strategic direction of this application? Is there documentation for this plan?
- What is the importance of the application to the user's duties?
- How satisfied are you with the features and usability of the application?
- What effect would a 24-hour, unplanned outage of this application have on your organization?
- How well does this application meet its intended business requirements?
- Is this application an source of origin for the data it stores?
- Does this application have security controls in place?
- Does this application have redundancies in place to ensure continuity of operations?
- Does this application interface with or depend upon other applications?
- Is the application stack assigned with supported versions, or do parts of the application depend on obsolete technology?
- Does the application have maintenance issues that affect business operations?
- Is the application flexible and able to meet changing business requirements?
- Does this application require specialized expertise to maintain?
- Can this application quickly scale to handle greater transaction volumes and support additional users (internal/external to your organization)?
- What impact does upgrading the application software version have on other components of the application?
- What is the timeline for this application to be sunsetted or retired?
- How do we prioritize the technical debt for the application with business owners?

Sample Business Value Questionnaire

Technical Fit Questionnaire

- Can the application be moved to and run in a cloud efficiently?
- How much data does this application store?
- Does the application developer use the following modern development practices (For ex:- Continuous integration/Continuous development, configuration as code, version control, automated testing, agile etc.)
- What office or component is responsible for the application's IT support/administration?
- List all external consultants/contract companies that support this application.
- Who is hosting this application? Is this application in the cloud?
- How many change requests do you receive per year?
- Does this application receive information from other applications?
- Does this application send information to other applications?
- What licenses are associated with the use of this application (if applicable)?
- Is the application web based interface? If yes, Provide the URL.
- Is this application mobile enabled?
- How do users access/login to this application?
- What databases does the application use?
- What reporting and analysis (BI) technology does the application use?
- What application and/or web server does the application use?
- What programming languages does the application use?
- What operating systems does the application use?
- How much technical debt exists for application?

Sample Technical Fit Questionnaire

The six step application rationalization process provides a structured approach that organizations are encouraged to use for future portfolio management and cloud migration strategies.

Organizations that develop an authoritative application inventory will empower their leaders to make more informed IT strategies, allow procurement offices to buy services more efficiently, and enable users to deliver mission services to customers.

This playbook encourages to take a holistic view of the costs and benefits of migrating applications from on-premise to different environments including the business value, technical fit, and TCO.

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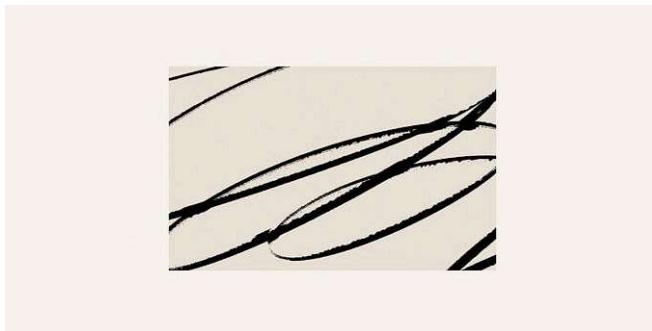
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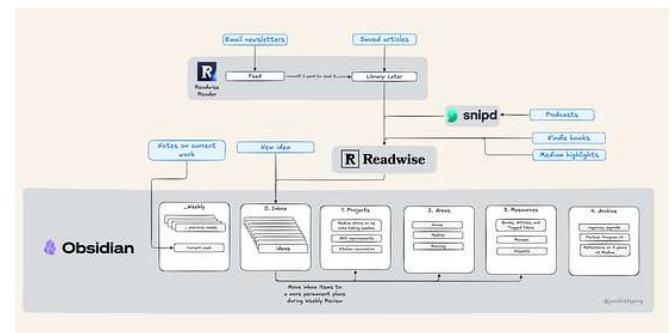
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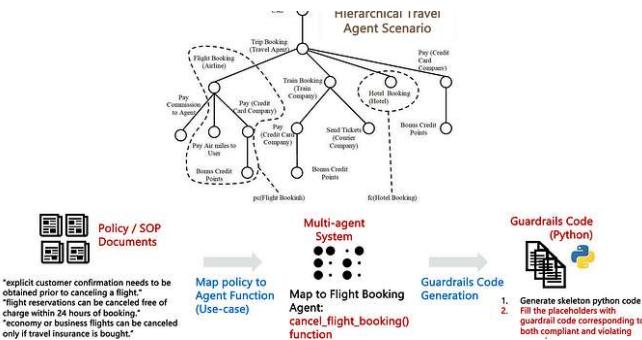
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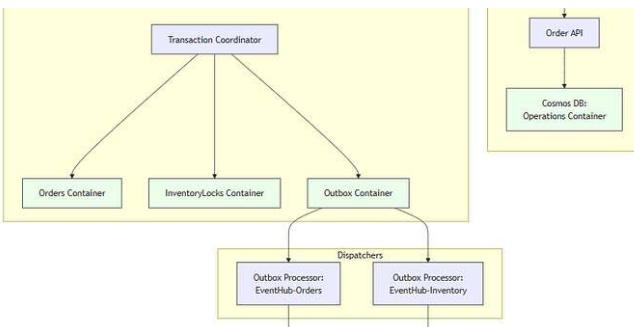
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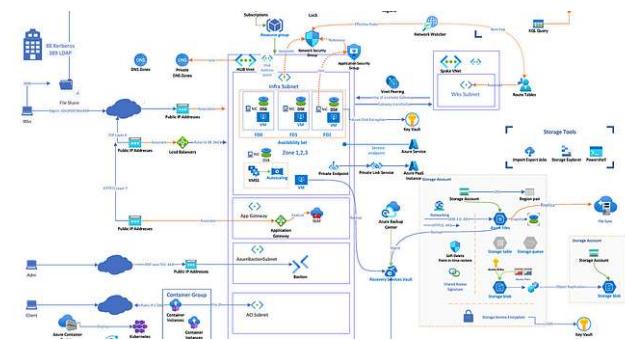
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