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As the world economy rides over the economic shock from 2008 and 2009, the global business community is faced with renewed economic, environmental and regulatory challenges. The changed business context requires businesses to be robust, in terms of product and service coverage, and agile, in terms of faster and effective response to external stimuli. And while business demands a faster turn-around time for their services and offerings to their customers, IT is mandated to deliver the corresponding IT enablement within the stipulated time and budget, with the desired value to business.

Aligning the overall IT services capability with business priorities is a complex task that requires a strategy and guiding principles for the required IT capabilities and the corresponding IT initiatives. When it comes to improving IT capabilities, the first step is to assess the present state, risk and technical viability of the application portfolio, including how well it meets business needs, and determine the options for remediation. Application portfolio rationalization is the discipline that helps organizations analyze the current state of their application landscape and identify opportunities for improvements to create a simplified, modernized, risk-averse and agile system which is aligned with business strategies and principles.
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Introduction

The business operations and IT budgets of most large organizations are still managed in silos. As a result, organizations are procuring and maintaining multiple systems with similar functionalities on diverse technology platforms. Over time, as the IT landscape evolves with the addition of new business processes, deployment of best-fit IT solutions or incremental enhancement to overcome the legacy limitations, the result is a highly integrated, non-standardized, complex and inflexible IT landscape. This landscape cannot be aligned to contemporary business needs in today's challenging environment.

While IT teams are working hard to deliver business results with their legacy platforms, business demands change at a very fast rate. Peer pressure along with constant market demands through multi-channel operations, customer self-service portals and mobility services have resulted in significant changes in business operations, as compared to a decade ago. Technology advancement has added further challenges to the mix as newer IT solution areas like cloud, big data, analytics, mobility and social media are driving businesses to transform themselves in order to increase revenue and retain customers.

In this challenging environment, IT has to operate in a more agile, robust and cost effective manner to address the multi-directional business growth demands.

Years of operating in silos, however, is not the only reason for IT complexity today. Many organizations have used the economic down-time as a business growth opportunity and have grown steadily, both organically and inorganically, in the last few years. In the process, they have inherited a complex application and infrastructure landscape resulting in high IT Total Cost of Ownership (TCO) and unmanageable IT services. The need for an informed portfolio simplification and standardization is imminent in such cases even to realize the envisaged business value from their strategic initiatives.

With this backdrop, we evaluate how a simplified, standardized and optimized application portfolio can deliver the desired level of agility and robustness to an organization.

Application Portfolio Rationalization

Application Portfolio Rationalization (APR) is a systematic and informed approach to assess and optimize the application landscape in order to address certain transformational business demands or meet certain strategic IT objectives like lowering TCO, standardizing technology, reducing complexity, and improving risk control and information system compliance.

Portfolio rationalization is accomplished through shuffling and revamping of the existing application service portfolio, which can include retirement of non-valued applications, elimination of functional redundancy, re-platforming or migration of applications to more standardized contemporary computing platforms and replacement of legacy systems. The key steps of an APR exercise would include:
Deciding on the assessment themes: An APR exercise needs to start with identifying the goals of the APR exercise, the business and IT benefits envisaged and the corresponding metrics that will need to be measured and monitored to ensure realization of the same. It is these themes that would drive the ‘what’ and ‘how’ factor of the APR exercise. The result of this step would be decisions on the key assessment dimensions and corresponding attributes, the priorities and the roadmap guidelines. These concepts are further explained in the following sections.

Quantitative and qualitative baselining of the portfolio state: Based on the transformation objectives, the requisite data fields are finalized for assessment. Data collection is one of the most important activities of the whole application rationalization exercise. It is essential to identify the appropriate data sources and assemble both fact-based data and subjective information (like user perception) to accurately measure the health of the overall application portfolio and identify the target application dispositions. Portfolio data is captured using tools and templates. Key stakeholders like business liaisons, application owners, the application IT service management team and enterprise architects get involved through interviews and workshops to share their perspectives. Challenges in data collection include multi-geo operations, lack of application ownership, lack of application information readiness and availability, and stakeholder acceptance of the overall transformation story. Overcoming these challenges is critical for the success of an APR initiative; we discuss them more in detail later in this paper.

Assessment of baseline information: Once the application portfolio data is collected and validated, the same needs to be analyzed using a comprehensive framework. The framework should be nimble and robust enough to be able to be customized according to enterprise level priorities and objectives of APR. During this phase, each application will be scored for core value and fitment from business and IT perspectives, IT risks in its continued operation and cost effectiveness in present state. This activity gives us a profiled and categorized portfolio based on the application scoring.

Decision analysis: This is the decision making process which makes deterministic recommendations, amongst alternatives, on portfolio dispositions. The assessment outcome is further assessed to ensure alignment with enterprise goals, enterprise strategies and IT principles, and final recommendations are made. At the end of the step, applications are categorized under the relevant recommendation buckets like retirement, consolidation, enhancement, migration, re-platforming, and so on.
A typical APR exercise is depicted in Figure 1.

As part of the portfolio rationalization assessment exercise, the future, or desired, disposition for each of applications is identified and recommendations are made to achieve the future portfolio state. Subsequent to the assessment, detailed planning needs to be done to realize the recommendations and monitor subsequent benefits based on the pre-defined metrics and Key Performance Indicators (KPIs).

Application portfolio rationalization enables a multitude of benefits to be realized across different levels within the organizations:

- **Business level:** With system homogeneity comes process level standardization, leading to reduced complexity, improved quality of services and greater agility. This helps businesses maintain focus on growth and control and receive accurate, meaningful, consistent and timely information for improved and educated decision making.

- **Resources:** Simplified and standardized IT operations need reduced or optimized skills and resources. This allows redeployment of skills, reduced head counts and overall improvement in resource utilization.

- **IT landscape:** Standardized infrastructure enables faster upgrades and scalable platforms while bringing in easier support and maintenance capability.
Application portfolio rationalization however, should not be a one-time event, as it provides maximum value when it occurs as an allied activity as part of application portfolio management. Application Portfolio Management (APM) is the practice that establishes a disciplined and investment-optimized approach of continuous evaluation of the application (and corresponding technology) portfolio to maximize portfolio performance and effectiveness. APM is an iterative process with the following key steps:

- Baselining of the application portfolio data
- Management of APM and APR themes, guidelines and performance indicators
- Portfolio analysis based on the assessment themes and guidelines
- Portfolio alignment planning
- Portfolio transformation
- APM governance and operations management

The Application Portfolio Rationalization Journey

Changing business dynamics in the last few years have also changed the way we look at APR today. Along with the traditional drivers of IT simplification, technology standardization and cost optimization, an APR assessment is also expected to validate the portfolio’s suitability and fitment for contemporary solutions like cloud services (SaaS, PaaS and IaaS), service orientation or mobility support. APR is now being viewed as an enabler to not only reduce enterprise IT heterogeneity but also to modernize the application and corresponding technology landscape by adopting and integrating with contemporary technology solutions.

Along with traditional assessment perspectives, APR looks at portfolio suitability for different solution areas like:

- Cloud solution fitment (for example, IaaS, packaged replacement)
- Fitment for global deployment and internationalization
- Service orientation
- Ease of mergers and acquisition integration
- Differential service fitment (for example, outsourcing, near-shoring/offshoring)
- Mobility integration

APR sponsors and executors are thus using the exercise to achieve a robust framework that is:

- Fully customizable to address diverse APR end objectives and enterprise level priorities
- Supported by a comprehensive APR process with proper enablers
Supported by technology solution and platform for faster and effective data capture (from both global and local stakeholders)

- Secure enough to work with multi-geo and multi-BU data with required access security
- Enabled with the required level of automation to produce results and reports in the minimal time
- Able to analyze all the requisite areas of the portfolio, sufficient enough to provide recommendations for both traditional and newer concepts of cloud services, mobility, social media interactions, service orientation and alternative solution options
- Capable of providing analysis abstraction adequate enough for stakeholders to understand the rationalization perspective while simultaneously enabling them to adopt the imminent path towards Application Portfolio Management.

Primary building blocks and principles of a typical APR framework are discussed further in the following sections.

Base Framework for Portfolio Assessment

The portfolio assessment framework takes into account the exhaustive application service capabilities for a 360 degree view analysis with respect to business, technology, operational characteristics and cost. The analytics framework builds upon these aspects, statistically factoring in business priorities and enterprise constraints to deliver recommendations on application dispositions.

A basic portfolio assessment framework should have the following building blocks:

- A data capture model with processes that are robust enough to be accessed from multiple locations, with provision for parallel updates
- A mathematical scoring model using a standard proven methodology for portfolio health-check
- An analytical model that creates logical deterministic clusters based on application profiles
- Reporting capability to provide informed profiles of a single application or a cluster of applications

An APR mathematical model should include the following key components:

- Attributes: These are the lowest level of information captured and comprise the parameters that characterize an application. Typical examples include application name, age, usage details, criticality, and so on. The Dimensions and Sub-dimensions are built using these attributes.

- Dimensions and Sub-dimensions: Decision dimensions like Business Value of Portfolio or Portfolio Risks are the key logical components that guide the analysis criteria of the framework. The analysis dimensions and corresponding sub-dimensions are built keeping in mind the final objective to be achieved from an APR or APM initiative.
Analytics: This is the decision making process that makes a deterministic recommendation, amongst alternatives, on portfolio disposition. It establishes a multi-criteria decision-making methodology within the framework and is the backbone of the framework.

Figure 2 illustrates the dimensions and sub-dimensions that are used in a typical APR assessment exercise.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Corresponding Sub-Dimensions</th>
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| Business Value of Application     | • Business Impact  
                                | • Alignment to Global Standards  
                                | • Operational Performance  
                                | • Usage Pattern                                                                 |
| Technology Maturity               | • Platform Maturity  
                                | • Operational Capacity  
                                | • Alignment to Global IT Standards  
                                | • Alignment with Enterprise Architecture Tenets                                    |
| Application Portfolio Risk        | • Operational Risk  
                                | • Risk of Failure  
                                | • System Complexity  
                                | • Compliance Risk  
                                | • Application Support Risk                                                                |
| Cost Effectiveness                | • Total Cost of Ownership  
                                | • Resource Intensiveness  
                                | • Business Value in terms of Quantitative and Qualitative Benefits                  |

**Figure 2: Assessment Dimensions and Sub-Dimensions**

The framework analytics assess an application portfolio based on the following key assessment areas or dimensions:

- **Business Value of Application** tracks the importance of an application to business as it measures its strategic fitment in the enterprise. The decision criteria also factors the strategic fitment of an application to address key business drivers like improved business agility, improved customer centricity or scalability, mobility support, multi-channel support, etc.

- **Technology Maturity** assessment looks into the technology architecture aspect of application deployment and assesses the fitment from the perspectives of desired capacity, technology risks, technology utilization, operational behavior and compatibility with next generation initiatives like cloud services adoption and service orientation.

- **Application Portfolio Risk** assesses the level of risk to business in terms of the probability of failure or degradation of functionality as well as the extent of impact on business operations due to application, vendor and/or platform obsolescence.
Cost Effectiveness assesses the TCO effectiveness of applications compared to their performance and value to business. A low cost-effectiveness index would indicate a value-eater, requiring immediate re-alignment of IT budgets or replacement.

Figure 3 depicts how the portfolio information that has been captured should be nurtured and rated (using certain repeatable and defined frameworks of assessment) to reach the final disposition, resulting in overall portfolio simplification.
Critical Success Factor – Realizing the Planned IT and Business Value

All IT initiatives are undertaken with the best interests of the enterprise in mind. However, for an application portfolio rationalization initiative to succeed and show measurable benefits, it needs top management mandate for improved processes, as well as an accurate, data-driven understanding of the application and data landscape.

Application portfolio rationalization takes the bottom-up approach to improve IT effectiveness and achieve the desired operational efficiency by streamlining the application capability to meet the present gaps and future business and IT strategies.

As in the case of any strategic transformational initiative, it is extremely important to understand and adopt the critical factors that would ensure the ultimate success of an APR exercise. Some of the important factors are highlighted in Figure 4.

<table>
<thead>
<tr>
<th>Capability Assurance</th>
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<tbody>
<tr>
<td>Portfolio rationalization is an ongoing initiative and should be executed at intervals to align the IT outliers with organizational priorities</td>
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<tr>
<td>Availability of skills, budgets and resources to implement the rationalization recommendations</td>
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<tr>
<th>Enterprise-wide Acceptance and Adoption</th>
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<tbody>
<tr>
<td>Strong commitment from key sponsor stakeholders and top business and IT management</td>
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<tr>
<td>Active participation of operational stakeholders to elucidate the correct profile of the application landscape</td>
</tr>
<tr>
<td>Strategic and managerial level leadership to be incentivized to drive capability adoption in their organization following the rationalization recommendations</td>
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<table>
<thead>
<tr>
<th>Communication</th>
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<tbody>
<tr>
<td>Clear and timely communication of the portfolio rationalization exercise to the concerned organizational stakeholders</td>
</tr>
<tr>
<td>Clear communication on how new capabilities will support and impact existing Lines of Business (LOB) priorities and in-flight initiatives</td>
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<tr>
<th>Transformation Management - Accountability and Governance</th>
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<tr>
<td>Application portfolio management framework and model need to be established and practised to ensure maximum benefits from any rationalization</td>
</tr>
<tr>
<td>Clear metrics and guidelines to help management and leadership measure, track and leverage rationalization benefits</td>
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Figure 4: Critical success factors for Application Portfolio Rationalization
Case Studies

- One of the leading Energy and Utilities companies in the USA, our client's business had grown exponentially in the last five years. As a result, the client had developed a federated IT management style, while maintaining a centralized business model. This created discrepancies in business services across the globe, impacting growth. The company was forced to look into its global application portfolio to identify opportunities for improvements, especially cloud solutions, as part of their IT transformation plan. The APR framework not only provided recommendations on retiring or migrating applications but also delved into the options of SaaS solutions for CRM and Business Intelligence. Further, a cost benefit analysis showed quantified savings in adopting SaaS solutions for applications such as CRM.

- One of the world's largest tobacco brands was faced with the daunting task of transforming itself from being a globally spread federated enterprise to one adopting a globally centralized operating model. However, in its 100 years of existence the client had never undertaken a portfolio rationalization exercise which had resulted in a portfolio of more than 5000 applications. The engagement analyzed the global, regional as well as local level application portfolios spread across 180 locations across the globe. The engagement aided the client in consolidating 63 different ERP systems spread across the globe to one global SAP instance. The cost savings from this centralization ran into millions.

- In the telecom domain where innovations are the key to market leadership, our client was facing serious issues in freeing cash from large CAPEX investments in order to incubate innovation. A systematic APR recommended that they move from a CAPEX investment model to one focusing on OPEX through the adoption of shared services as well as SaaS and PaaS solutions. The result was a cost saving of $ 6.57 million over a period of two years, spread across seven lines of business.

Conclusion

It is always a CIO's top priority to operate with standardized and simplified application architecture, with the optimized agility, robustness and flexibility to support not only present business operations and demands but also future growth plans. In order to reach that optimized state, however, one needs to take a systematic and informed path through application portfolio rationalization. This process is required to simplify the existing application landscape, and create a modernized state of IT that can be used as the benchmark to support future business and IT demands.

About TCS' Global Consulting Practice

TCS' Global Consulting Practice (GCP) is a key component in how TCS delivers additional value to clients. Using our collective industry insight, technology expertise, and consulting know-how, we partner with enterprises worldwide to deliver integrated end-to-end IT enabled business transformation services.

By tapping our worldwide pool of resources - onsite, offshore and near-shore, our high caliber consultants leverage solution accelerators and practice capabilities, balanced with our knowledge of local market demands, to enable enterprises to effectively meet their business goals.

GCP spearheads TCS' consulting capacity with consultants located in North America, UK, Europe, Asia Pacific, India, Ibero-America and Australia.

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