A New Approach to Application Portfolio Assessment for New-Age Business-Technology Requirements

SMAC technologies are propelling new business models, requiring an application portfolio assessment that considers the necessary capabilities and processes to enable effective digital business transformation.
Executive Summary

With the rise of social, mobile, analytics and cloud technologies (what we call the SMAC Stack™), big business changes are afoot. Organizations cannot be complacent about how they operate; they must think differently to avoid extinction. Meanwhile, in today’s dynamic business climate, the growing demand for mobile apps is impeding the smart development of traditional software applications. Market leaders are looking for small and modern situational applications that can be quickly deployed to address specific business needs. As the significance of apps rises, conventional application portfolio management – or rationalization – is losing its relevance, as it typically focuses on the long-term goals of consolidation, standardization and optimization. This loss of focus can accentuate alignment gaps between business and IT.

This white paper proposes a new-age framework of application portfolio assessment that helps to identify business priorities and inform the right investment plan. The foundation of this framework is based on the business change trajectory theory postulated by Anita M. McGahan and Gartner’s PACE layered application strategy. Importantly, the framework reinforces alignment among applications that simultaneously address the dual mandate faced by most companies: maintaining tight cost controls while infusing the business with innovative ways of working internally and externally with customers and business partners to outperform the competition.
Changing Landscape and Assessment Drivers

With the advent of the SMAC Stack, a new breed of applications has emerged and is now proliferating. Organizations began modernizing their aging applications to more effectively and efficiently support the business. Prosperity born of the Internet gave a new boost to globalization, and businesses sought both organic and inorganic growth. Following the global economic meltdown of the last decade, IT budgets shrunk, and IT began focusing more on eradicating duplicate applications, while improving and consolidating IT operations and resources. Meanwhile, global sourcing received a boost to accelerate IT cost optimization initiatives.

However, businesses today cannot afford to focus exclusively on cost optimization to enable business-as-usual. SMAC Stack technologies can help organizations build more fluid and adaptive ways of working that can flex with ever-changing regulatory requirements, market dynamics, consumer behaviors and competitors, worldwide. More importantly, companies that reject the SMAC Stack do so at their own peril. Recent history has shown that holistically embracing the SMAC Stack enables businesses to outperform the competition.4

Companies can ensure a successful transition to the SMAC Stack by embracing a new approach to application portfolio assessment that not only addresses ways to contain costs but also prepares them for the future by aligning applications with the changing business trajectory (see Figure 1).
Foundation Theory of the Framework

Our proposed application portfolio assessment framework is built upon two foundational pillars:

Foundational Pillar I

In a *Harvard Business Review* article, “How Industries Change,” McGahan argues that industries follow distinctive change trajectories. Investments in innovation are more likely to pay off if those pathways are taken into account. According to her research, businesses undergo four types of changes: radical, creative, intermediating and progressive. These changes are defined by two types of obsolescence threats.

The first, she says, is a threat to the industry’s core activities – the activities that have historically generated profits for the industry. “These are threatened,” she says, “when they become less relevant to suppliers and customers because of some new, outside alternative. In the auto industry, for example, many dealerships are finding that their traditional sales activities are valued less by consumers, who are going online for data on the characteristics, performance and prices of the cars they want.”

The second, McGahan continues, is a threat to the industry’s core assets – the resources, knowledge and brand capital that have historically made the organization unique. “These are threatened if they fail to generate value as they once did,” she says. “In the pharmaceutical(s) industry, for instance, blockbuster drugs are constantly under threat as patents expire and new drugs are developed.”

Only when organizations understand how the whole industry is changing can they make intelligent investments (see Figure 2). If the industry is in the middle of radical or disruptive change, organizations need to invest in new ideas, whereas if the industry is experiencing incremental change, investment should most likely focus on improving the core.

Trajectories of Industry Change

![Figure 2](image-url)
Foundational Pillar II

Gartner’s PACE layered application strategy is based on the concept of “pace layers,” as developed by Stewart Brand in his book, *How Buildings Learn*. To align with this concept, organizations need applications with a long and useful life to serve as their IT foundation, similar to the concept of a building’s structure. Applications with a moderate life span serve the needs of numerous business stakeholders, just as the building’s exterior surface, heating and ventilation systems accommodate the needs of various occupants and differentiate one building from another. Meanwhile, to harvest new innovations, organizations need small and adaptive enterprise applications, similar to a building’s chairs, lamps and pictures.

New-Age Application Assessment Framework

Our new-age application assessment framework comprises the following components:

Enterprise Application Portfolio Segmentation

Because applications are inherently different, based on the role they play in an organization’s operation and growth, they cannot be judged on their technical value. Based on their intent, different categories of applications are subject to different types of treatment. Some applications are purely business applications, while others provide technical support.

As the business change trajectory suggests, refinements can occur at the process or capability level. Processes refer to activities with external entities such as customers, vendors, suppliers and partners, while capabilities include IT resources, infrastructures and knowledge. To build an adequate focus for each application, it is important to identify the capabilities and processes that the application addresses with respect to the organization’s growth and effectiveness.

Processes and capabilities are generally linked to business growth, profit and effectiveness. For example, customer on-boarding is a process, while predictive analysis is a capability. Mobile money transfer is a process, whereas an enterprise mobile platform is a capability. Broadly, business applications will be linked more to processes. On the other hand, supporting applications, such as those related to business intelligence, content management and infrastructure applications like runtime and development tools, will be associated more with capabilities.

Process and capability are categorized into three types:

- **Common**: These processes and capabilities are fairly common and change very slowly. Examples include human resource management and database management; organizations would prefer to optimize these processes and capabilities rather than find a different way to conduct business.

- **Differentiated**: These processes and capabilities are meant for competitive differentiation and change at a moderate pace. For example, an m-wallet offering (money transfer using mobile) can be differentiating and involves change at both the process (bypassing formal agents) and capability (mobile apps, etc.) levels.

- **New**: These capabilities and processes allow business to quickly try out early-stage concepts, potentially through several iterations. These become mainstream capabilities or processes if the new concept is worth pursuing. An example is experimenting with money transfers to a consumer through an ATM, which could become a differentiating business activity if it caught on. These processes and capabilities can also be associated with situational applications, such as apps that are built to promote and manage holiday or occasional sales.
In our framework, applications are mapped to the capabilities and processes that they support. An application may be associated with all capabilities and processes or just one, two or three types of capabilities or processes. If an application addresses more than one type, it is logically divided into modules (see Figure 3). Based on the nature of the processes and capabilities, the applications or their logical modules are bucketed into three segments:

- System of innovation.
- System of differentiation.
- System of record.

For instance, CRM can be considered a single application that belongs to a system of record. However, a component of CRM might have strong integration with social platforms to drive campaigns and generate leads. In that case, the organization would prefer to classify the social CRM module as a system of differentiation.

### Evaluating the Business and Technical Value of Applications

Business processes and capabilities are rated based on their maturity, in accordance with business expectations. For each segment, an application’s maturity is evaluated by summing up the maturity of the capabilities and processes to which it is linked (see Figure 4, next page). The X axis corresponds to process maturity, and the Y axis corresponds to capability maturity within the segments.

\[
A_x = \sum_{k=0}^{n} M_{p_k} \quad A_y = \sum_{k=0}^{n} M_{c_k}
\]

Here, \(A_x\) and \(A_y\) are the process and capability maturity score, respectively, of the \(i^{th}\) application. \(M_{p_k}\) and \(M_{c_k}\) are the maturity score of a particular process and capability, respectively. Maturity can be high, medium and low on a scale of 1 to 3.
The above formula assumes that each process or capability has equal weight. If we assign weight to process and capability based on their business criticality, the formula becomes the following:

\[ A_i = \sum_{k=0}^{n} M_p \times w_p_k \quad A_y = \sum_{k=0}^{m} M_c \times w_c_k \]

The framework also determines the size of each application, based on the number of capabilities and processes the application supports. If \( A_s_i \) is the size of the \( i^{th} \) application, and \( w_p_k, w_c_k \) are the normalized weightages, then \( A_s_i \) is determined as the following:

\[ A_s_i = \sum_{k=0}^{n} w_p_k + \sum_{k=0}^{m} w_c_k \]

If process or capability carry equal weightage, the value of \( w_p_k \) are \( w_c_k \) considered as 1.

The technical health of the application signifies the technical maturity of the application. The higher the value, the more mature the application is. Technical health is also derived by using the sum of the weighted rating of the different technology-related attributes, such as platform, architecture and programming language.

**Additional Assessment and Recommendation**

Application segmentation and value profiling reflect the current state and maturity of the organization. To set future direction, the first and foremost action is to identify the kind of change that the business is undergoing for that particular sector. Organizations, therefore, need to determine the direction and end goal of their path or trajectory. In most cases, organizations prefer to follow the business change trajectory. However, forerunners or trendsetters may think differently. Based on the intent of the business, they need to first look for the vehicles of

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**Application Segmentation and Value Profiling Framework**

![Application Segmentation and Value Profiling Framework](Image)
Change – process, capability (or both) or just optimization. Then, they must identify future processes and capabilities or levels of maturity that are required to meet the business needs.

After determining their required future maturity levels, organization must assess the key application implications and then lay out appropriate move-forward recommendations (see Figure 5).

For instance, a bank may want to pursue a radical change by introducing digital currency. If simplified, this means it will accept digital currencies for transactions in exchange for other currencies, products and services. To achieve this goal, the bank needs to establish new processes, such as a new governing body and integration with partners, suppliers and customers, as well as new capabilities in the form of wallet software and a peer-to-peer digital currency payment system.

An e-commerce retailer may take a creative path by leveraging augmented or virtual reality technologies. The underlying value gain will remain the same, but this goal also requires the deployment of new capabilities. Or, with access to unlimited online data from end users, an online retailer might transition to direct-to-con-

### Assessment Recommendation Framework with Respect to Business Change Trajectory

<table>
<thead>
<tr>
<th>Radical Change</th>
<th>Creative Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process</strong></td>
<td><strong>Process</strong></td>
</tr>
<tr>
<td>New</td>
<td>New</td>
</tr>
<tr>
<td>Differentiated</td>
<td>Differentiated</td>
</tr>
<tr>
<td>Common</td>
<td>Common</td>
</tr>
</tbody>
</table>

- **Add new processes and capabilities or improve their maturity.**

<table>
<thead>
<tr>
<th>Intermediating Change</th>
<th>Progressive Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process</strong></td>
<td><strong>Process</strong></td>
</tr>
<tr>
<td>New</td>
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<td>Differentiated</td>
<td>Differentiated</td>
</tr>
<tr>
<td>Common</td>
<td>Common</td>
</tr>
</tbody>
</table>

- **Add new processes or improve their maturity.**

- **Optimize**

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**Figure 5**
sumer sales from its previous model of selling to dealers. Establishing a new sales process requires intermediating change; therefore, the assessment would identify the applications that can enable the change and further evaluate their current state and readiness, such as the maturity of underlying business process management features, modularity and extensibility.

Progressive change is the most common type of change that organizations undergo. In this case, because the organization is working to optimize its current processes and capabilities, a traditional application portfolio assessment play an important role because it identifies opportunities for redundancy reduction, consolidation and modernization. A new-age assessment framework should be used for focused analyses of the trending optimization levers, such as cloud adoption and software industrialization, based on the specific objective of the organization.

**Solution Accelerator**

For effective data capture and faster analysis, especially in the case of large application portfolios with geographically separated stakeholders, we use a Web-based enterprise application assessment tool that supports four phases of assessment: discover, analyze, visualize and recommend. The tool is built on our homegrown consulting platform, ACE (i.e., analyze, consult, execute), which supports model-driven data capture, scoring, visualization and reporting. Figure 6 highlights the key features of the tool for each phase.

**Moving Forward**

An application portfolio assessment yields directional recommendations and is the launching pad for change, with the objective of propelling the organization along the best transformational path. However, the journey to the goal can be a long one. To reap the benefits identified during the assessment phase, the transformation program must be driven and governed. And to ensure that the organization does

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**Key Features of a Web-Based Assessment Tool**

<table>
<thead>
<tr>
<th><strong>Discover</strong></th>
<th><strong>Analyze</strong></th>
<th><strong>Visualize</strong></th>
<th><strong>Recommend</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Default application model covering 70 reference attributes addressing general, cost, quality, technical, strategic and functional assets.</td>
<td>Out-of-the-box support for multi-variant/multi-dimensional analysis.</td>
<td>Rich set of visual analysis tools to assist the user in interpreting the data in an effective manner.</td>
<td>In-built report customization framework.</td>
</tr>
<tr>
<td>Customizable model to address the specific needs of an engagement.</td>
<td>Dimensions to be rated can be configured along with their associated attributes.</td>
<td>Supports visual analytics by slicing and dicing the data for deriving valuable insights.</td>
<td>Library of standard reports, including:</td>
</tr>
<tr>
<td>Web-based rich UI for viewing/capturing application data.</td>
<td>Knowledge base of base rating models for different themes.</td>
<td>Support of the following types of Web-based visualization:</td>
<td>• Data entry status report.</td>
</tr>
<tr>
<td>In-built support for collaborative data capture.</td>
<td>Support three different rating mechanisms.</td>
<td>• Tree map for impact analysis.</td>
<td>• Dimension-to-attribute mapping report.</td>
</tr>
<tr>
<td>Support for data import/export.</td>
<td>• Multi-user manual rating.</td>
<td>• Parallel axis supporting n-dimensional analysis.</td>
<td>• Current-state technology.</td>
</tr>
<tr>
<td>In-built knowledge base of lookup data and standards.</td>
<td>• Automatic lookup-based rating.</td>
<td>• Pivot table for grouping and charting.</td>
<td>• Functionality analysis report.</td>
</tr>
</tbody>
</table>

**Figure 6**
not get derailed from the direction set by the assessment, it is also crucial to get buy-in from top management. As a next step, we recommend a detailed blueprint to chart the journey that can flex as scenarios change across the business, technology, economic, social and political landscapes.

To drive change in evolving business scenarios, the creation of an enterprise architecture can play the pivotal role of managing the application portfolio created during the assessment, tracking the organization’s transition and ensuring relevance with the changing world. An enterprise architecture institutionalizes a governance model to enable change along the proper pathway by enforcing compliance with the plan and capturing core organizational values.

Footnotes


7 “Systems of record” and “systems of engagement” were first defined by Geoffrey Moore, an author, speaker and advisor. For more on this topic, see http://www.geoffreyamoore.com/bio/geoffrey-moore/.

About the Authors

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