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## Maximizing the Value of Custom Development

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*Most enterprises engage in a hybrid of technology acquisition and development approaches in order to fully meet their business needs and objectives. Understanding where and how to best take advantage of varied resources, and how each direction taken may impact other activities downstream, remains a crucial endeavor. Custom development activities are a critical part of the mix to manage and leverage effectively.*

The following questions were posed by SAP to Sandra Rogers, Program Director for SOA, Web services, and Integration research at IDC, on behalf of SAP's enterprise customers.

**Q.    What are some key trends today in the custom development of enterprise software?**

A.    Organizations continue to pursue a mix of application acquisition approaches to address their business needs. Whether custom-built or packaged, provisioned onsite and offsite, most enterprises have a variety of systems typically traversing multiple generations of computing - mainframe, midrange, client-server, and Web-based systems. Most enterprises have accumulated varied applications and functions over the course of time, with decisions often made to accommodate particular situations and creating silos of fragmented technology. To maintain and extend these, often custom development ensues. This has contributed to the build out of some very complex IT environments that are extremely difficult to manage and maintain, let alone effectively adapt to new business demands or support corporate-wide governance or regulatory concerns. Enterprises are also under growing pressure to expand out their business networks, and thus their supporting technology base, to address a greater volume and diversity of constituents including partners, suppliers, and customers. Many of these business activities require more integrated processes and collaborative interaction capabilities, as well as provide more market-differentiating experiences.

Over the past decade, we've seen the pendulum swing toward acquiring more vendor-supplied packaged solutions, yet many organizations still require a certain amount of customization to these systems with specialized integration and development efforts. While many organizations still desire to seek packaged options, many companies find it difficult to find exactly what they are looking for — especially those seeking to update older custom-built legacy environments. Thus, there is a growing emphasis on implementing basic sets of applications at more fundamental and modular levels, and then optimizing and differentiating these capabilities with one's own unique business rules and processes in a much more agile way versus applying these custom needs deep inside the applications' core code. With approaches such as service-oriented architecture (SOA) and business process automation,

enterprises are more able to extend existing solutions and weave together whatever systems and information resources they need.

To point, IDC research indicates SOA adoption is continuing to advance. In a recent study, over half of respondents from large organizations indicated having some level of SOA-based solutions in production. This jumps to over 70% when including those that responded having pilots underway. Those enterprises that typically custom build solutions, whether utilizing internal or external resources, were often found amongst the first wave of adopters. However, as SOA capabilities increasingly become incorporated in packaged and on-demand solutions offered by many vendors, activity continues to unfold and enter more mainstream audiences. The keen desire of business to take advantage of more modern, Web-based, and interactive technologies is helping spawn additional progress on this front.

**Q. What has changed recently about approaches to the custom development of enterprise applications?**

- A. The movement to put into place a primary foundation of application and information services that can be combined and leveraged in various ways, and more rapidly, is driving the marketplace's strong interest in adopting more rigor in enterprise architecture, platforms and standards, and best practices around development, life-cycle management, and IT governance.

As business requirements are changing more rapidly than ever before, it is doubtful that any organization will achieve a "completed" IT application nor systems landscape. So to embrace a new level of dynamic solutions, what most organizations are striving for is to create a solid foundation and infrastructure with capabilities to integrate and readily compose and configure new functionality with minimal effort and disruption. They also are looking to incorporate facilities that allow individuals of various roles and skills to become more involved in these efforts. In a way, it's somewhat like creating an environment of self-service at more fundamental levels than ever before, with richer mechanisms to address and personalize information views and business workflows. This trends towards more configuration versus coding and involves more underlying model-based development techniques. It also demands much more holistic systems planning and oversight.

For some time now, many enterprises have been aspiring towards more agile-based programming methods, leveraging collaborative tools to help coordinate teams and resources. This type of rapid and iterative development and deployment model is a technique that some newer consumer-based Internet firms have been utilizing. This approach however presumes more interaction and feedback activities with the real users of the system, and to date has mostly been applied to more change-tolerant environments. The combination of stable set of core code and infrastructure with more easily modified and extended parameters, rules, and process flows through configured means, allows for change and personalization to occur more readily and perhaps accommodate more of these techniques.

Given the dynamic state of today's business environments, this type of dexterity is becoming less of a luxury and more of a requirement. The ability to leverage technologies and services provisioned and created by a variety of parties is also of keen interest to organizations seeking to take advantage of new advancements and efficiencies.

**Q. What are some strategies for lowering the cost of custom development?**

- A. By adopting common standards and development practices for the enterprise as a whole, greater levels of consistency and compatibility between systems can be achieved, potentially saving on extraneous efforts and investment in technologies to accommodate various

exceptions. Creating and/or leveraging an overall integrated platform or framework to build upon can help avoid efforts, and thus cost, of having individuals code lower levels of application and infrastructure functionality. Utilizing shared metadata and a more uniform development environment can help drive greater levels of integration and oversight, as well as promote the reuse of core assets. By automating much of these efforts with the appropriate checks and balances, greater quality systems can be built from inception versus having to deal with multiple iterations and costly fixes. A repository and model-based structure may add more work upfront but can lead to significant cost savings over time as less code is needed to be developed and maintained, accommodating change and maintenance in a streamlined fashion and leading to a lower total cost of ownership (TCO).

Many organizations have found that while development efforts do take some investment, ensuring what is built is standards-based and provides a secure infrastructure is critical. Using industry-accepted standards typically means more available resources and greater abilities to extend and integrate with other systems and technical support capabilities.

Assigning activities to appropriate resources and skills, whether internal or external, is important, but organizations are also discovering they must avoid hard barriers in the division of work especially where more coordination is needed. Managing distributed, virtual development teams has become paramount, especially as enterprises tap resources scattered across the globe.

For example, one organization IDC interviewed had first tasked a third party to create functional services while their internal team developed workflows and later determined that some of these efforts needed greater oversight and collaboration. Companies are beginning to utilize more collaborative networking and communications technologies, shared repositories, and more advanced application lifecycle management software to help in these efforts. This is especially true as these have become more affordable and user friendly to a variety of skill sets. Such technology is still but an aide to a well-executed and managed environment, advancing beyond traditional project planning and linear life cycles to more dynamically-coordinated environments that accommodate frequent change.

**Q. How can enterprises ensure an upgrade path for their custom-developed applications?**

A. It's interesting to note the use of the term "upgrade" in this fashion. Most organizations are moving to create an environment for continuous innovation and change, and the concept of a big-bang "upgrade" really starts to fade away to more incremental steps taken. A huge benefit behind creating a more flexible and modular platform is that if one element of the environment changes, theoretically others should not — thus upgrades of individual capabilities can be done autonomously. When designing solutions in this manner, creating extensions and new configurations in a manner that will have as little impact to core source code is helpful.

While this is the ideal world to which many aspire, the realities of today's typical IT environment requires much more upfront planning and dependency mapping. Analyzing and preparing how any new or upgraded technologies will impact system and user interfaces, and all the necessary integrations and extensions, is critical. Therefore, a more cohesive strategy on how to treat all system lifecycle changes, whether custom or packaged, should be considered. Obviously, strong quality, regression testing, and data conversion processes are always part of the overall picture.

For those organizations seeking to engage a third-party in developing any solutions, they should have sound governance processes and methodologies and be amenable to

interacting with and supporting whatever enterprise systems and procedures necessary to accommodate a more integrated approach.

**Q. What are some strategies for ensuring that enterprises have the right resources needed to manage and deliver custom-developed solutions?**

- A. It boils down to effective project management and core technical skills combined with a good sense of business requirements. Therefore, whether shoring up internal resources or selecting partners to facilitate development efforts, having individuals with a variety of skills to address mixed environments is advantageous. If any packaged applications are critical to the enterprise, having knowledge as to how to navigate and address integrations and optimize use of such assets should be considered. The ability to collaborate across parties and integrate business analysis all throughout the development process is also very critical. An added benefit is that this sets the stage to cross-pollinate skills and knowledge. Some organizations that outsource development efforts may also look to these resources to manage other external resources.

There should be a mechanism in place to assess that what is being developed maps to the overall business and enterprise architecture, versus only addressing the specific project(s) and application(s) at hand. Therefore enterprises should model out all their core assets and services. This is imperative for addressing an SOA-based environment and is an important dimension to understanding the entire portfolio. As for managing around goals and expectations, being very clear on requirements and SLAs, and having these captured and metrics automated can help tremendously.

Some organizations need to carefully pay heed to how they scope projects, and appropriately categorize what should be considered maintenance versus what really is a new project. This can help ensure that tasks and skills are properly mapped out. As well, setting realistic time schedules, especially to allow for upfront analyses and accommodate strong governance procedures to be addressed throughout a project, is important to setting the stage for more successful initiatives.

**Q. How can organizations determine where and how to best fit custom development into their IT strategy?**

- A. Obvious areas targeted for custom development include where solutions are not readily available, or where one has complex requirements and a heightened need for differentiation. Cross-system and application processes are also common targets where new and extended custom development often take place. Many organizations use custom efforts to create specialized web sites, supplier and customer portals, decision and analytics dashboards, and focused industry specific solutions. Systems that require specialized equipment, such as mobile or point-of-sale devices, are another area where custom needs and services may reside.

Many organizations seek to provide innovative technology and capabilities where it helps them compete and impact the business, while accepting more standardized packaged solutions in areas that do not necessarily require differentiating capabilities. And if embarking on custom development, they have the necessary resources and support dedicated to ensuring success, from requirements discovery through system retirement. The ability to scale and extend solutions is paramount, therefore all these aspects should be considered. While development of specialized business logic may be needed, reinventing facets of underlying infrastructure often does not make sense for most companies unless there is a need for specific optimization and capabilities at those levels.

A large percentage of business activity typically goes un-automated or requires a significant amount of manual effort to piece together disparate elements that comprise a business process or function. Enterprises should develop an approach to regularly assess how their application and technology portfolios map to business process and informational needs. While often companies seek to fill in gaps, what they must consider is how one system impacts another and how to best leverage and optimize what already exists in new ways. The key is to build upon core system elements that can be supported in a standardized fashion, making upgrades and extensions to systems much more cost-effective and less risky.

#### ABOUT THIS ANALYST

*Sandra Rogers is Program Director for SOA, Web services, and Integration research at IDC. With an intensive focus on demand-side primary research and multi-disciplinary IT industry coverage, Ms. Rogers brings a unique perspective of marketplace trends and technology adoption to the software and IT research arenas. She is responsible for research within the Services and Software Leading Indicators program, Composite Applications coverage, and Application Development and Deployment markets. Ms. Rogers is also a key analyst on IDC's Dynamic IT research team and is often requested to speak at industry and vendor events.*

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