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LEVERAGING BUSINESS PROCESS MANAGEMENT
AND SERVICE-ORIENTED ARCHITECTURE FOR
AGILE BUSINESS TRANSFORMATION

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EXECUTIVE SUMMARY

Business process management (BPM) has emerged as a discipline that aims to tackle obscure, inefficient, inflexible and error-prone enterprise-wide business processes. It offers methodology, techniques and tools to model, automate, implement and optimize these processes to improve operating efficiency and agility, and bolster business results.

Service-oriented architecture (SOA) is an architectural discipline according to which IT systems are componentized into a set of reusable services, exposed through well-defined interfaces.

This paper will present the market drive behind BPM and SOA, emphasize the applicability of these powerful methodologies to the telecommunications industry, demystify some misconceptions behind them, and point to challenges and common pitfalls associated with them. It will reveal SOA- and BPM-based methodologies as ways to bring agility to the business, flexibly respond to changing market demands and deliver the intentional customer experience™, crucial to service providers in today's competitive marketplace. When applied together, BPM and SOA create a framework that drives the success of business transformation strategies.

THE NEED TO EVOLVE BUSINESS PROCESS MANAGEMENT

Challenges faced by service providers are enormous and ever-changing. The market today is characterized by ubiquitous networks providing anywhere, anytime access; service saturation and commoditization; emergence of new, disruptive business models; intensifying competition; and customers who are a click away from churning.

In this environment, the customer experience has become the differentiating factor for service providers. They must view the customer experience across services, functional departments and interaction channels; it should be a focus of their strategy, not a by-product of it.

Unfortunately, service providers' typical environment presents many obstacles to successfully focusing on the customer experience: disparate, vertically driven, stovepiped applications and business processes; independent and isolated business units; a variety of business models; extended value chains; multiple networks and platforms; and many customer touchpoints. In short, a recipe for complexity. Add to this the imperative to leverage existing IT assets, minimize risk in transformation and the desire for incremental system evolution versus "rip and replace," it is no wonder that business and IT executives are scratching their heads. The goal of their journey is quite clearly envisioned, but the road ahead presents plenty of pitfalls.

WHAT'S NOT WORKING IN BUSINESS PROCESS MANAGEMENT

It becomes apparent that service providers must focus on a methodology that will align their business strategy with technology in a holistic fashion. At the core of running an enterprise's business are the business processes that drive the day-to-day operations. In the new convergent world, most core business processes cross departmental, organizational and application boundaries. Consider the service fulfillment phase of an order-to-activation process. Even if the ordering process executes to the satisfaction of the customer, a sub-optimal service fulfillment process will eventually yield an unhappy customer, who is likely to dispute the bill, repeatedly call customer support, probably not place a repeat order, or in the worst scenario, churn.

At the heart of BPM lies the idea that the more flexible, clear and manageable the enterprise's business process modeling, design, execution and monitoring, the greater the likelihood of success in the journey toward an organization-wide customer-centric strategy. The more consistent and agile the processes that impact the customer experience, the greater the chances customers will stay on board and spend more with their provider. To achieve this, all business strategies and IT resources must be organized around a business process-driven philosophy. Such alignment can be effectively achieved without massive rebuild of the IT infrastructure. With its reusable, well-defined, components, SOA can model and expose existing infrastructure that is often closed and siloed to promote a customer-focused, business process-driven strategy, a natural step in the journey toward integrated customer management (ICM).

As will be shown in this paper, BPM and SOA are complementary disciplines. More and more service providers are implementing strategies that are BPM-SOA driven, and are reporting improved performance in key business metrics. As Richard Mattock points out in "The Value of BPM Software" (see citation below), independent studies are showing that BPM deployments commonly generate more than 50% improvement in process cycle time, and 10-15% reduction in operating costs.

Clearly, service providers are managing business processes today. Why isn't their current BPM-only approach helping them achieve greater success?

To begin with, some organizations are managing a heritage of business processes that are poorly designed, or were designed under business assumptions that have changed over the years. Error-prone, manual, costly, highly constrained, and lengthy processes are, unfortunately, common phenomena for most service providers. Moreover, in light of the accelerated pace of change in the communications marketplace, simply "getting the process right" won't do. Not only do providers have to get it right, they must also have processes that are dynamic enough to adapt to an ever-changing competitive market. Business processes must work well today *and* in the future.

In a typical organization, the knowledge base of its currently implemented business processes is often very shallow. Core business processes are often undocumented. And in many cases, business processes were implemented hastily, often only to automate or streamline activities within a specific organizational unit or line of business, neglecting corporate considerations.

Compounding these factors is the fact that the IT systems that automate legacy processes are complex, hard-wired, and were never designed to be adaptable to business process change. It is often the case that a core business process is buried in the code of some tailor-made or home-grown application, its logic accessible only by technical personnel, and modification constrained to this proprietary logic.

"Automating a single sub-process or deploying a single best-in-class application does not deliver business value. That value is realized when the end-to-end process, spanning multiple people, systems and organizations is flawlessly orchestrated. That is precisely the value that BPM systems deliver, moving far beyond automation.... The handoff from organization to organization and application to application is organized, consistent and produces results that are both predictable and repeatable."

**THE VALUE OF BPM SOFTWARE, RICHARD MATTOCK, IT SOLUTIONS
GUIDE, SPRING 2005**

ACHIEVING BUSINESS PROCESS AGILITY IN A MANAGED AND MODELED FASHION

Enterprise-wide processes, which extend across the value chain, are becoming more and more common. This in itself has created another element of complexity. Service providers are now struggling to break down the existing line-of-business silos and eliminate the redundancies created by multiple deployments of similar (and often identical) processes. The end goal is to simplify their business process management, provide a consistent view of their operations, enhance the customer experience, increase business process reusability and reduce costs. Expanding the value chain to include partners, suppliers, distributors and the like (e.g., managing third-party content providers or inter-operator settlement processes) requires modification of existing systems by extending their capabilities to support them.

Last, but not least, most business processes involve human interaction. Many business process automation systems are designed to support processes that are either largely human-driven (such as approval workflows) or completely automated (such as back-office IT processes). Business processes that include a combination of both are not easily managed by traditional business process automation systems.

To summarize, as it exists in many organizations today, business process management may be a stumbling block to success in today's market. And as with any change, evolving it can be painful, costly and disruptive. But success in today's market requires BPM methodology that will help providers streamline existing business processes and adapt easily to ongoing business change.

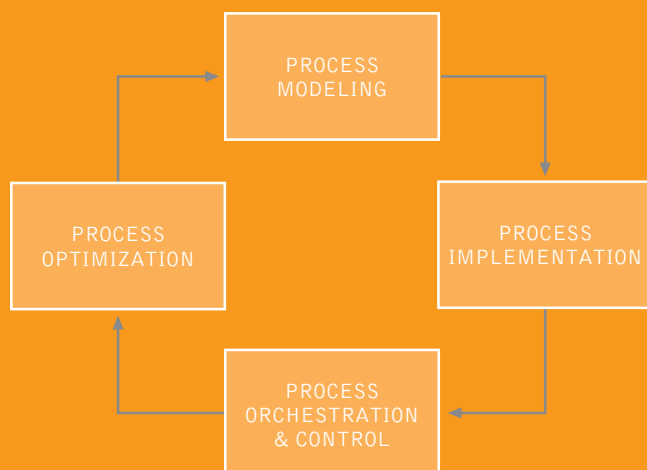
By analyzing the challenges outlined in the previous section, one can quickly pinpoint a number of key BPM requirements:

- > An environment for modeling and designing enterprise-wide business processes;
- > A BPM engine that orchestrates and executes business processes across departments, lines of business and applications;
- > Ability to gain insight from and about implemented business processes—monitor and collect business-level metrics on how processes are performing and what can be improved
- > Flexibility to modify processes to address key issues and new business requirements, and react to the insights gathered through process-based analytics

As an emerging discipline, BPM includes methodologies, techniques and tools to discover, capture, model, design, automate, implement, control, analyze and optimize enterprise-wide business processes that involve both people and systems.

As BPM methodologies gain momentum and are adopted and implemented in enterprises worldwide, an abundance of expertise and best practices are being accumulated and marketed by various vendors. Deploying BPM is best viewed not as a one-time, earth-shattering project, but rather as a journey—a lifecycle of optimization phases, that are continuously monitored, analyzed and fine-tuned as the business environment changes, and as process efficiency metrics are accumulated.

FIGURE ONE:
THE BPM LIFECYCLE: CONTINUOUS AND ITERATIVE
OPTIMIZATION



A typical BPM implementation lifecycle is a continuous, productive loop, consisting of the following phases, as depicted in Figure One:

- > **Process Modeling:** The heart of any BPM methodology: discovering and analyzing enterprise-wide business processes, gathering requirements, redesigning and specifying new processes, modeling and simulating processes in process modeling tools, specifying process key performance indicators (KPIs), etc. This phase is driven by business analysts supporting the function or line of business, in collaboration with system architects.
- > **Process Implementation:** Building system architecture and, as necessary, breaking it into business-level components; evaluating and selecting process execution engines; specifying IT interfaces; and eventually developing, deploying and testing the implementation. This phase is driven by IT architects and engineers, with extensive feedback from business analysts.
- > **Process Orchestration and Control:** Continuous execution of processes, handling process exceptions, and collecting and measuring predefined process metrics (e.g., KPIs) to provide feedback into the Process Optimization phase. Information is collected via business activity monitoring (BAM) systems, and analysis is carried out by business analysts and IT specialists.
- > **Process Optimization:** Feedback and outputs are gathered from the Process Orchestration and Control phase, and used to measure and improve existing processes and to implement new processes, beginning the cycle anew at the Process Modeling phase.

TACKLING THE BUSINESS-IT MISALIGNMENT: SOA CONCEPTS SUPPORTING BPM METHODOLOGIES

As previously discussed, a typical business process spans various organizational units, crosses several application domains, and may extend across multiple lines of business. Mapping a neatly modeled business process into an environment characterized by disparate IT systems can be extremely daunting. Shoe-horning BPM tools and methodologies into an organization will not yield the desired results unless the IT side of the house can respond to business needs.

The key to understanding how to leverage existing IT assets, with as minimal throw-away as possible, is to differentiate and decouple the elements that are likely to remain static from the elements most likely to change. The underlying business-driven assumption is that functional blocks in IT systems that represent self-contained and repeatable tasks (or sub-tasks) are likely to remain fairly static. These in turn are invoked and orchestrated by a dynamic, configurable, enterprise-wide BPM layer that must be adaptable to change.

Consider, for example, adding a customer to a billing system. As part of greater business processes, this task can play out in such disparate contexts as enrolling a customer through a point-of-sale (POS) portal, a self-enrollment web page, or contact center assisted by a customer service representative. Adding customers to the billing system is a static task providers hope to repeat often, and they need the flexibility to do it in the context of business processes as the needs of the business—and customer—change.

“BPMS [Business Process Management Systems] and service-oriented architecture (SOA) implementations frequently occur together, and this is no fluke, as these two technologies complement each other very well, resulting in a more powerful solution than either could provide on its own.”

FORRESTER, MARCH 2006

This flexibility can be gained through some form of modularization or componentization of existing IT resources. This is where the concept of SOA comes into play. The main idea behind SOA is not new: encapsulate the system resources supporting discrete tasks and expose them as services through well-defined contracts or interfaces, thereby promoting their reuse and repeatability. These granular services are used as elements in the larger context of a business process, and can also be assembled into higher level composite services. As can be seen in Figure Two, 80 percent of service providers are in some stage of applying SOA in their businesses.

It is important to note that successful SOA implementations are best envisioned as an abstraction layer on top of an existing IT fabric. In other words, SOA interfaces and services may not necessarily correspond to existing application programming interfaces (APIs).

In essence, SOA may be viewed as a next-generation reincarnation of object-oriented design principles, with a few notable differences:

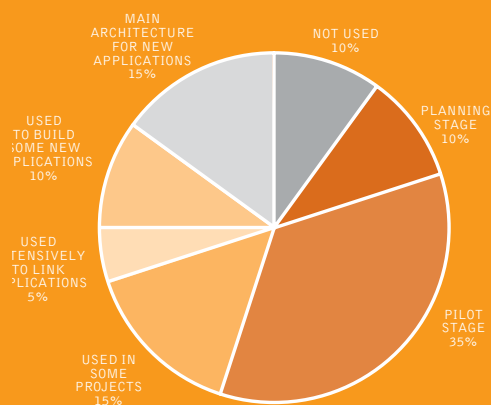
- > First, SOA promotes reusability at the macro level (business service) rather than the micro level (objects and methods);
- > Second, the design process carried out by business analysts is simplified because macro-level services represent meaningful units of work at the business level;
- > Lastly, object-oriented systems are typically tied to a specific technology, limiting their use in heterogeneous environments. In contrast, SOA is technology-agnostic: it can be implemented using a variety of protocols and technologies.

Beyond the abstraction of business services, SOA advocates an additional abstraction: data hubs, which define a common representation of core business-level entities that are shared across the different business processes. The idea of business-driven design is threaded into the data hub concept as well. Organizations that tackled the data-sharing problem merely as an application integration or interoperability issue have found themselves with “spaghetti” data models that impede business agility. In contrast, data hub designs that are driven by business processes form a coherent and consistent model that corresponds intimately to business-level requirements rather than to the technical integration needs. Needless to say, well-designed data hubs facilitate component reuse, enhance interoperability, and are language-, application- and technology-independent. And they make product and customer data readily available at critical customer touchpoints.

Externalizing the business process logic embedded within systems through a SOA-based framework helps to:

- > **Leverage Existing Investments:** Existing IT resources are wrapped and reused as functional building blocks, without “reinventing the wheel” or creating unnecessary disruption;
- > **Reduce Total Cost of Ownership:** Modeling can be carried out solely by business analysts, who can apply changes to the process or business rules governing the process engine with minimal IT intervention; improves process efficiency and effectiveness, generating maximum results at lower costs;
- > **Provide Business-Centric Process Control:** Business process logic, previously tightly bound to IT resources, is decoupled and abstracted at the business level. Highly configurable and modifiable BPM methodologies allow the enterprise to shake off technical restrictions and system shortcomings and gain business focus.

FIGURE TWO:
MOST CARRIERS HAVE IN PLACE, OR ARE STARTING TO
IMPLEMENT, A SERVICE-ORIENTED ARCHITECTURE



SOURCE: GARTNER DATAQUEST, MAY 2006

To summarize, most service providers' misalignment between business and IT reveals the opportunity for a combined BPM-SOA strategy. SOA creates a business-level layer on top of existing IT fabric while BPM tools, products and methodologies exploit this to fuel business process agility enterprise-wide. These two disciplines and their underlying technologies can work in concert to enable service providers to fully optimize their business performance.

SOA PITFALLS: BEWARE OF THE "HUMPTY DUMPTY SYNDROME" AND MIDDLEWARE LOCK-IN

SOA is a powerful architectural concept, but one should be very cautious when applying it to an existing IT environment. As with every successful concept, when taken to the extreme, it can become the cause for yet another cycle of redundant investments and expenditures that aren't beneficial in the long haul.

The first notable pitfall is "over-SOA-ization." Disassembly for its own sake has no business value and can in fact become a trap. SOA-enthusiastic IT managers sometimes embark on ambitious projects to expose existing IT interfaces as-is through enterprise application integration (EAI) technology or an enterprise service bus (ESB) foundation. This may lead to the "Humpty Dumpty Syndrome"—a costly vicious cycle of breaking systems into fine-grained bits only to later reassemble them, repeating the componentization drill when the business need arises, and on and on.

It would be much more sensible to apply a pragmatic approach, where APIs are specified and externalized only after having gone through the mandatory step of cross-enterprise process discovery, capture, modeling and design. Only then is it likely that SOA-based interfaces will survive and become reusable in as many business processes as possible.

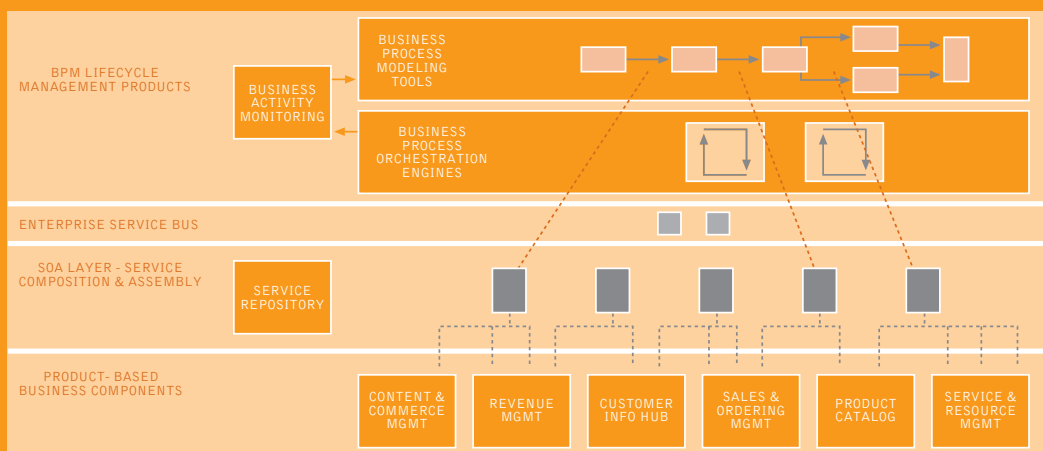
The second pitfall is middleware lock-in. Some vendors offer middleware stacks, often using BPM-SOA lingo to position their products as the panacea for all business and IT challenges. After having invested heavily in complex transformations and having adopted middleware foundations, IT departments are bewildered to find that their new middleware, which was supposed to promote the plug-and-play concept, interoperates most effectively only with products offered by the same middleware vendor, resulting in vendor lock-in. Moreover, replacing middleware can distract organizations from their need to ultimately transform their whole business, and achieve the alignment, agility and customer focus of an ICM strategy.

A BPM-SOA SOLUTION BLUEPRINT

A well-orchestrated BPM-SOA solution promises to deliver sound business results. As illustrated in Figure Three, a BPM-SOA solution blueprint would include the following components:

- > **Business Process Modeling Tools:** Leverage accumulated project knowledge and best practices to model and optimize business processes;
- > **Business Process Orchestration Engines:** Execute processes, handle exceptions, and externalize performance data to monitoring tools (see below). Depending on the service provider's preference, existing infrastructure and additional factors, pre-deployed process orchestration engines can be leveraged, or new engines can be adopted;
- > **Business Activity Monitoring Tools:** Provide informative, flexible and complete dashboards that allow providers to act on key performance metrics quickly and cost-effectively;
- > **SOA Composition and Assembly Layer:** Provides a framework for composition and assembly of SOA-based business services, as externalized by the Business Components layer;

FIGURE THREE:
A BPM-SOA SOLUTION BLUEPRINT



> **Product-Based Business Components:** Identifies and externalizes well-defined building blocks via SOA contracts to process management engines and modeling tools.

As the industry recognizes the need for standardization, an important TMF-driven initiative is also worth mentioning in this context: Prosspero. An attempt to standardize cross-system interfaces as architected by TAM (the telecommunications applications map), Prosspero is highly relevant to SOA-based componentization projects as it is an important step toward standardizing the business-level interaction between the functions and systems that constitute a service provider’s IT infrastructure.

BUSINESS PROCESS MANAGEMENT: NOTABLE FRAMEWORKS IN THE COMMUNICATIONS INDUSTRY

Standards in the BPM space are evolving rapidly. Today we are seeing competing industry interests produce a variety of standards, with various levels of maturity and alignment with business objectives fit.

Two frameworks specific to the communications industry are worth noting. Both are developed under the next-generation operational support systems (NGOSS) parent framework and steered by the TeleManagement Forum (TMF). They are eTOM® (enhanced Telecom Operations Map) and SID (Shared Information/Data model).

eTOM is the predominant, widely known business process framework in the communication space. It equips service providers with coverage of the entire scope of their core operational business processes. It is not a standard per se, to which an implementation can conform, however it is an industry reference, providing a common taxonomy of business processes and associated terminology. It can serve to jumpstart BPM implementations.

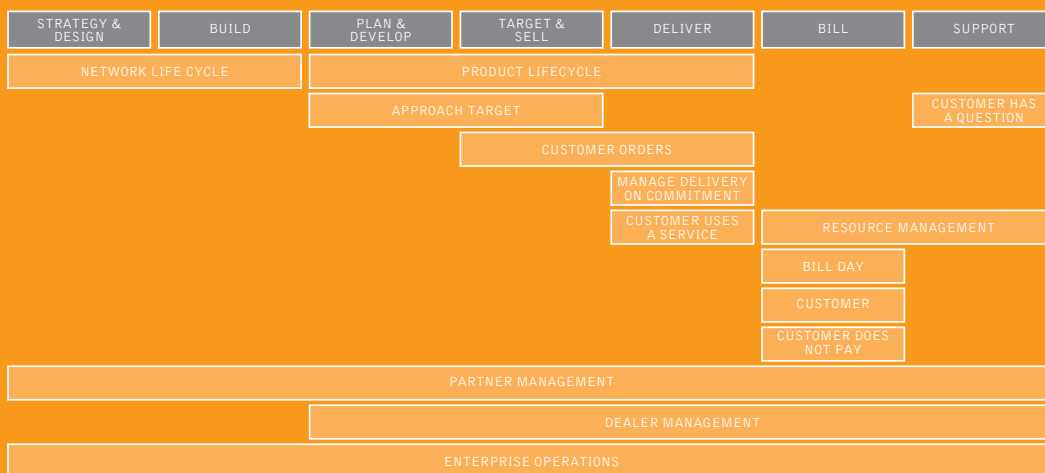
While eTOM addresses the business process mapping aspects, SID focuses on the data models that support those business processes. Developed hand-in-hand with eTOM, SID defines a relationship model and reference vocabulary of business entities, complete with a corresponding set of information/data definitions. The significance of SID is two-fold. First, it defines a common language for business analysts and system architects, which is invaluable in bridging the gap between business process driven methodologies and IT modeling. Second, it simplifies the task of identifying and cross-mapping the plethora of data models and integration points across different IT systems.

THE ROLE OF BPM AND SOA IN THE JOURNEY TOWARD INTEGRATED CUSTOMER MANAGEMENT

Amdocs realizes the importance of BPM and SOA in service providers’ larger journey toward achieving the alignment, agility and customer-focus that are hallmarks of an ICM strategy. BPM and SOA methodologies are being incorporated into all Amdocs offerings—strategic consulting and implementation services, software applications and solutions that combine the two. Pivotal to this approach is the Amdocs Scenario Optimization Modeling (ASOM) framework.

ASOM represents a holistic consulting, implementation and product approach that enables better accountability for projects, greater business intimacy, and the use of repeatable, global best practices. ASOM’s intellectual core is a repository of hundreds of generic end-to-end business processes accumulated from engagements with customers driving business transformation, applied here to concisely and intuitively map the service provider enterprise. The ASOM business process repository is classified into several scenarios relating to and crossing various domains in the eTOM classification (see Figure Four). Beyond this, scenarios are broken into five levels from A to E: A is the highest-level of business scoping, and E represents detailed system and application level activities and workflow specifications that support business processes.

FIGURE FOUR:
A SAMPLE OF ASOM SCENARIOS AND THEIR MAPPING TO THE VALUE CHAIN



An invaluable asset guiding Amdocs consulting and implementation engagements, the ASOM methodology is also being threaded into the Amdocs product development lifecycle:

- > Knowledge and requirement capture accumulated by ASOM is used as strategic input into product planning and roadmap prioritization;
- > Product and application design, including SOA-based componentization, is applied against requirements gathered from ASOM-driven implementations;
- > Portfolio integration testing is carried out against ASOM scenarios.

Amdocs' pragmatic approach to SOA-based BPM is reflected in:

- > **BPM-SOA Consulting and Implementation Services:** Leveraging market-leading business process knowledge and repeatable best-practices gained over 25 years of experience serving communication service providers, Amdocs consultants can help providers determine and justify their optimal BPM and SOA strategy, and assist them in plotting their journey toward ICM. Amdocs' comprehensive consulting services can help define the right strategy, assess existing and desired environments, evaluate return on investment as well as plan, in detail, for success. Once the strategy is defined, Amdocs' proven integration services and unparalleled project execution capabilities ensure the transition from project deployment to implementation.
- > **BPM-SOA Lifecycle Management Products:** Whether developed by our own product development organization or offered through partnership with market-leading vendors, Amdocs has an effective BPM-SOA solution, corresponding to the description in "A BPM-SOA Solution Blueprint" on pages 6-7.

- > **Product-Based Business Components:** Amdocs understands the importance of SOA to a successful BPM strategy. Our product roadmap supports BPM-centric SOA principles: service contracts are driven by the experience accumulated via numerous business process use cases, rather than brute force exposure of system-level APIs.

Amdocs recognizes clear, consistently orchestrated business processes as a cornerstone of an ICM strategy and the intentional customer experience. Without an end-to-end view of common, often customer-facing business processes, service providers risk giving their customers a haphazard experience. In addition to lowering costs and improving efficiencies, first-class BPM, backed by SOA principles, minimizes errors and business disconnects, and can make doing business with a service provider an experience customers will want to repeat.

CONCLUSION

In today's market, service providers cannot afford to give their customers anything less than a superior experience. Focusing on creating and delivering an intentional customer experience (as opposed to one that's random and haphazard) requires that providers rethink their business—and their business processes. The emerging discipline of BPM fits with the tenets of ICM, and when augmented by a SOA approach, puts providers firmly on the path toward achieving the greater agility, alignment and customer focus required in today's market.

As with any business transformation, there are pitfalls, certainly. Before investing even a single penny in implementing BPM and SOA methodologies, providers must ensure IT and business needs are aligned. On their own, the exercise of componentizing IT resources and exposing interfaces won't help achieve the desired business results. A truly transformational BPM-SOA solution includes in-depth modeling and optimization practices that continuously promote productive change and ultimately, a superior customer experience.

ABOUT AMDOCS

Amdocs is the market leader in customer experience systems innovation, enabling world-leading service providers to deliver an integrated, innovative and *intentional customer experience*[™] – at every point of service. Amdocs provides solutions that deliver customer experience excellence, combining the software, service and expertise to help our customers execute their strategies and achieve service, operational and financial excellence. A global company with revenue of \$2.48 billion in fiscal 2006, Amdocs has over 16,000 employees and serves customers in more than 50 countries around the world.

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