Aligning business and IT to create an enduring impact on industry
Thought leadership paper
June 2007

The future of business.

Steve Mills, senior vice president and group executive,
IBM Software Group

Contents

Introduction

The future of business: it's a dynamic, global, frictionless and innovative place. It's also extremely competitive, Darwinian and sneaking up on you faster than you might think. The future of business is not the stuff of science fiction; it's the extrapolation of shifts that are beginning to take place right now before your eyes. And while there's nothing you can do to prevent it, there are things you can do to prepare to thrive in it that will deliver real business value today, and give you a competitive advantage as changes take place.

Where are we today?

As critical as it may be to prepare for the future, you must still face the challenges of today on today's terms with today's available resources. As you cast your gaze to the horizon, you cannot forget that you still compete in the here and now.

Organizations that have been around for a while tend to build up a certain amount of baggage. Organizational baggage isolates lines of business from one another and separates the planners from the doers. Technology baggage prevents one application from communicating effectively and deeply with another, and it traps valuable business logic in isolated corners of the business. Psychological baggage keeps us from realizing that these examples are actually two sides of the same coin.

Today, you are still very much at the point of being able to capture huge amounts of value and productivity through fairly basic action. But you must address business fundamentals such as examining your business models and reflecting upon your willingness to loosen your grip on declining marketplaces in favor of today's

Addressing business, technology, systems reliability and cultural fundamentals can help organizations better capitalize on today's opportunities.

opportunities. You must address technology fundamentals such as unlocking the wealth of function buried in siloed mainframe-based systems so that you can reuse that information across the organization. You must address reliability fundamentals such as ensuring that an always-on connectivity infrastructure is in place to support the mission-critical systems that would paralyze the business if they failed. And you must address cultural fundamentals such as recognizing the recurring gap between charting the right course for the business and actually bringing the business to that desired destination.

The established, proven resources to lay this fundamental groundwork are here today and have shown their value innumerable times. For example, when manufacturers assemble a car, they do not plug each individual electrical system into all the other electrical systems; rather, they connect each system to an electrical "bus" that enables any-to-any connectivity among the systems. The same concept holds for connectivity among IT systems. Using an Enterprise Service Bus (ESB) is the most flexible, cost-effective and—most importantly—reliable way to design IT connectivity.

While these observations may seem basic, the truth is that many organizations today are watching their aspirations of innovation wither as a result of failures in these seemingly rudimentary areas. Laying this solid groundwork is no longer optional or just nice to have. As the complexity of the world builds, companies without these basics will find themselves without so much as a stake in the ground in the world to come.

By focusing on what it does best, an organization can differentiate itself in a highly competitive marketplace.

Discovery and integration costs present significant barriers to creating an effective service provider ecosystem.

Today's frictional forces

We live in a world of business specialization. Companies are focusing on their core competencies and outsourcing the commodity overhead elements of their business operations. The rise of companies like ADP in payroll, Flextronics in manufacturing and UPS in logistics attests to this trend. Indeed, higher-level and more valuable services such as income tax return processing are also being handled by offshore service providers. Even IBM has built a lucrative practice in helping companies outsource the nondifferentiating aspects of their computing. You can break your entire operation into business processes, and then break those business processes into individual tasks. You can decide which processes and tasks differentiate you, and which are better left to others.

Now mentally project this distribution of tasks forward and expand it by several orders of magnitude. That's a glimpse of the future. Total focus on what makes you uniquely valuable, and reliance on business partners and service providers for everything else, is not a new concept. In theory, it lets you nurture your differentiated offerings while giving you the flexibility and agility to constantly reinvent yourself as opportunities and conditions change. It means having the ability to string together new combinations of your own unique marketplace contributions along with other external offerings to create a package that's attractive to the end consumer and unlike anything else available to them. But putting this idea into practice is another matter. What does it take to overcome these frictional forces?

You've already seen dramatic acceleration in the rate of change in business forces. It's only going to get faster, and decision-making horizons are only going to become more compressed. Spreading the tasks of your business among an ecosystem of business partners is a great way to become more specialized and flexible, but when it comes to finding the right partners and integrating them into your operations, discovery and integration costs are significant barriers. When needs change and it's time to rearrange these partnerships, switching costs becomes the major barrier. These frictional forces produce a drag on your flexibility and agility.

Changes in traditional value chains are giving rise to interconnected, dynamic value nets.

You must find ways to overcome this friction so that you can reduce your dependence on the structured, regimented, company-wide way you respond to change today, and increase your dependence on more dynamic, ad hoc action at all levels of the business.

Rise of the dynamic value net

The value chains of today are the result of linked individual business tasks that come together to form a valuable end product. We can call these individual business tasks "services," and they can be contributed by any number of internal or external service providers. Just like a physical assembly line, each participant in the value chain contributes something to increase the value of the end product for the end user. Although these value chains have become increasingly distributed, they still tend to be predictable, structured and linear.

But something is shifting in this traditional arrangement: The combination of participating service providers is changing dynamically based on who is in the best position to perform a given task at a given time. These service providers themselves are becoming interconnected with one another to the point that mapping their relationships yields more of a net than the traditional linear chain. Familiar value chains are morphing into dynamic value nets. The various service providers within a dynamic value net might not even know about anyone else's existence. The workings of the value net are orchestrated by the organization that delivers the end product to market under its own brand name. This orchestration itself may very well be the lead brand organization's unique value add.

A functionally service-oriented organization can quickly and economically rearrange components to enable business process innovation.

Service orientation

How do dynamic value nets like this come about? What kind of mind-set does it take to put something like this together? We use the term "service orientation" to describe the concept of assembling services into meaningful combinations to create a desired outcome. Service orientation does not begin with technology; it begins with the mind-set of thinking about your business and the world around you in terms of functional components. Becoming more functionally service oriented allows organizations to quickly and economically rearrange the components that make up a business process as the need arises.

Business processes were once completely contained within individual lines of business and could be easily supported by a single application. But today, business processes such as customer relationship management are becoming more horizontal and spanning the boundaries of multiple lines of business. Service orientation enables business process innovation by separating the business task from how that task is executed. In doing so, service orientation reduces time between business intent and IT execution. In response, dynamic value nets are drawing upon more and more sources of services to support these horizontal processes. But where do these services come from?

The service marketplace: everyone is a provider; everyone is a consumer

How does your organization fit into the equation? How does this concept help reduce the frictional forces of today?

Imagine the emergence of a perfectly transparent marketplace of services available for your use. Each service is cross listed in several ways to make for a drastic reduction in discovery costs. Each is scored with descriptive information such as quality and reliability ratings, fees for usage, quality of service guarantees,

A key element in the future of business is the ability to repurpose proven, valuable, existing assets as flexible, componentized services.

terms of usage and detailed descriptions of functions. Each service offers transparent and frictionless billing with several billing options such as fee per use or unlimited usage over a defined period of time—all with no overhead setup fees. Each service can be effortlessly linked with other services, strung together into meaningful combinations and immediately integrated into your own internal procedures.

You'll also see a sizable number of services offered from within your own company listed in the marketplace. They might be internal services that are restricted to use only within your own company. Using them may involve internal transfer charges to defray costs of creation and improvement of the service. Repurposing your proven, valuable, existing assets as flexible, componentized services is an important part of today's environment as well as the future of business. Each user's view of the marketplace is personalized according to what services he or she has rights to access and use, or according to which service meets the needs of particular use cases.

You might also see your company's own primary business product offered to the world in the marketplace. Maybe you're a business-to-business (B2B)-focused company that offers your service to be incorporated into other companies' dynamic value nets, and this marketplace is your primary distribution channel. This would make you a service provider. But you're probably both a provider and a consumer, since the service you offer is likely composed of your own unique contributions, plus services that you consume, which are provided by others. This provider/consumer duality role—sometimes termed "prosumer"—reflects the position that most companies will play in the future of business.

Highlights

Creating a composite service involves rebranding—rather than re-creating—a business process.

Looking at the dynamic value net under a magnifying glass, you'll see that individual services within the overall system are actually orchestrated dynamic value nets themselves. The more sophisticated examples among them might be true business processes. One company could syndicate a business process from another and rebrand it rather than re-create it itself. Think of these as "composite services." This tiered service level is analogous to the automotive industry in which major automakers work with tier one suppliers for things like suspension systems. The tier one supplier works with tier two suppliers for things like springs that make up suspension systems. Tier two suppliers deal with their own suppliers, such as steel plants, for materials to make the springs.
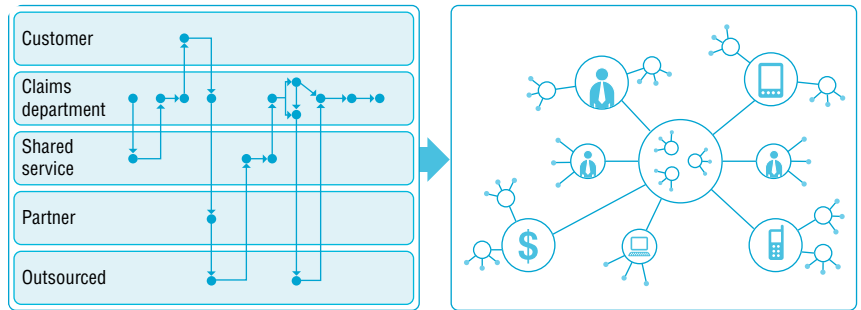
Figure 1: Dynamic value nets are orchestrated by companies that bring a finished offering to market under their own brand name. They are made up of individual services provided by internal and external service providers. Individual services may, in turn, be value chains in and of themselves, made up of finer-grained linked services.

A company that incorporates services into its offerings can more dynamically enable decisive and effective impromptu responses to rapidly changing marketplace conditions.

Is this a radically new vision? No. Companies today are using services registries and repositories like a library card catalog to provide a menu of available services that originate both internally and externally to their company. Library card catalog listings contain descriptive information such as a book's title, publisher, location and description. Likewise, service registries contain comparable entries such as those described above (quality of service, fees, descriptions, locations, etc.) rather than the services themselves. The only difference between today's registries and the marketplace of the future is the much higher level of participation and comprehensiveness of the menu of services. But these differences will lead to profound changes in usage as companies incorporate services into their overall offerings much more dynamically to enable ad hoc responses to rapidly shifting marketplace forces.

Darwin in action

The good news is that this perfectly visible and frictionless environment enables you to consume services and string them together without barriers. You can build your business process with best-of-breed services, and when marketplace forces shift, you can simply rearrange the services in your process to match marketplace needs. If you become dissatisfied with one service, you can simply swap it out for a comparable service.

The bad news is that you are both a consumer and a supplier, and therefore, your customers are equally able to deselect your services in favor of your competitors'. You have very few barriers to hide behind and must rely on whatever differentiates you to make you more attractive in the marketplace than brand X. Keep refining and enhancing your unique qualities that separate you from others!

Part of being successful is having a unique contribution to offer. As research institutions and companies such as systems integrators accumulate experience and intellectual capital in a specific domain (such as a focused, industry-specific process), there will be great incentive to package this expertise into a repeatable service or composite service and offer it for use across the marketplace for a fee— probably a substantial fee. These bodies may establish global service assembly lines that funnel this knowledge and experience and use it to build new composite services. The more targeted a service is on a focused, repeatable activity, the more valuable it will be to future consumers, and the more willing those consumers will be to pay for its use.

If a marketplace falls and nobody is monitoring it, does it make a sound?
As discussed, service orientation helps organizations respond with flexibility and agility to shifting marketplace forces. So how do you know when marketplace forces have shifted? The future of business will bring us more perfect availability and fluidity of information. You will be able to take the pulse of marketplace needs instantaneously to guide investment decisions accordingly. Furthermore, you will be able to immediately evaluate the health and performance of each step in your value chain—your own contributions and those of each of your service providers. You will be able to run simulations to evaluate how well each task is being performed versus how well another supplier performs the same task.

On a broader level, you will be able to analyze the advisability of entering and exiting marketplaces. You will be able to receive real-time alerts of changing marketplace forces. You can run simulations to test recommended adjustments to your own processes and determine the consequences of potential courses of action.

Successful business process management involves software and expertise from a variety of resources.

You already have robust sources of intelligence and information as services today. Business process modeling enables you to run simulations and predict outcomes. Business activity monitoring (BAM) helps you create tailored dashboards to keep tabs on key performance indicators. IT systems management enables you to monitor and manage the health of the technology that delivers your services. What is changing in the future of business is the availability, ease of use, automation and intelligence of the tools available to bring you this information. Better information leads to better decision making.

Orchestration: business artistry

Been to business school? Read recent business publications? Have a vivid imagination? If so, you're probably not surprised by most of the things you're reading in this paper. In fact, these may be familiar concepts. But putting these ideas into practice is easier said than done. That's why today's companies are only just taking the first fledgling steps into this bold new world and are still held back by frictional forces.

It's also not new news that today's business processes are inextricably linked to the information technology (IT) systems that support them—and vice versa. It is often difficult to draw the line between where the business process stops and the supporting IT systems start. Business analysts use their domain knowledge to create business process models made up of individual business tasks. Services can be considered contracts to perform certain tasks. Architects assemble these services and use workflow to automate the execution of the resultant business process. All participants have a common vocabulary to describe and collaborate on the creation of these tasks and processes. Likewise, they have a shared interest in monitoring various aspects of the health of their co-creation once it is in deployment so that they can continually improve it. All of these steps in the business process lifecycle take both software and expertise. Together this lifecycle describes the concept of business process management (BPM).

SOA is a business-driven IT architectural approach that supports integrating the business as linked, repeatable business tasks, or services.

When composing a business process, companies need a portfolio of services and a platform on which to assemble, deploy and monitor them. And just as business processes have become indistinguishable from the IT systems that perform them, so too must the leaders and decision makers for the business process acquire a balanced combination of business and IT skills. The business-driven IT architectural approach that supports integrating the business as linked, repeatable business tasks, or services, is called service-oriented architecture (SOA), and it's a primary driving force behind the alignment of business and IT. Combining the flexibility of SOA with the expertise and business orchestration concepts of BPM creates a potent business tool. Organizations can use BPM enabled by SOA to reach the powerful levels of business flexibility and agility necessary to thrive in the future of business. Using the SOA approach, companies create a BPM platform on which services can be assembled and deployed.

It cannot be overemphasized that this orchestration of flexible business services running on a BPM platform is not something companies just dabble in, like a hobby or a way to support hidden peripheral processes. This will *be* the business itself. This will be the basis for your company's central, core, mission-critical processes and will be fundamental to the success of your company.

Alignment of business and IT

Successful companies of the future will have truly aligned business and IT functions.

Today, we hear about forces driving collaboration between business and IT. But the future of business demands more than just links between separate entities. The successful companies of the future will have truly aligned business and IT functions. Today's successful chief information officer (CIO) is the embodiment of this duality. CIOs must be single-mindedly driven to use technology to make the business more successful. Thus, CIOs must have a leg in what today is frequently two separate (but increasingly aligned) worlds—the business world and the IT world—and they must be equally comfortable in both. In the future, CIOs will be at the nexus of the alignment of these two worlds. SOA is one of the power tools that CIOs are using with greater frequency to help drive this business and IT alignment.

*Aligning business and IT can
enable competitive differentiation,
business flexibility, agility and
innovation—and ultimately,
business value.*

IT is rapidly being viewed by forward-looking companies not as a cost center but as a means of competitive differentiation, business flexibility, agility and innovation – creating business value. In fact, it would be a more accurate term to call it "business technology" than "information technology." It is through this alignment that the companies of today can prepare for the future of business.

A thousand points of innovation

Merely swapping out today's IT systems for the resources of the future and using them in the same way you use resources today would be missing the point. The dynamic nature and intense rate of change demand a greater democratization of innovation. And the alignment of business and IT makes it possible. Companies will rely less on bulky enterprise-wide initiatives, partnerships and campaigns, and focus more on the flexibility and agility of a multitude of smaller, more focused workgroup-based projects. Consequently, a new kind of supporting IT application will become necessary.

Workgroups will use their access to the composition platform and marketplace of services to support their own business-driven projects by creating situational applications – short-lived, tactical mini-applications meant to be built quickly and easily from existing services by the people who will actually use them.

For example, a workgroup doing a supply chain project might snap together a service that generates severe weather alerts with a service that generates location information for outgoing shipments with a service that lists orders by high-value clients. The workgroup would then come up with a situational application to support making backup plans if severe weather were to jeopardize a critical order. Such a self-service application might take 10 minutes to initially compose and would be continuously enhanced by the workgroup using it.

These situational applications are sometimes called "enterprise mashups" because they are built by mashing together bits and pieces of functionality to make quick and easy, yet extremely focused and valuable, products. This capability will not be right for everyone; enterprise-wide systems will always have their place. But when a team of knowledge workers with the right skills is involved in a fast-moving project, the team needs the extremely responsive support that only can be delivered on a self-service basis. Such workgroups of the future will not sit back and wait for corporate IT departments to build traditional applications to support their projects. They will reach in and add innovation to their part of the company with their own bare hands. This is a way of taking the concepts of SOA and making them more accessible to end users outside the IT world.

T-shaped people: skills for the future of business

Business leaders need more than the portfolio of services and a platform on which to compose them; they need skills to assimilate information about changing marketplace conditions. And they need to respond by using this information to configure and improve business processes rapidly and smoothly.

While business moves at an evolutionary pace, sometimes the skills needed to compete effectively shift more abruptly. Such is the case with the alignment of business and IT. In the past—and, to a great degree, the present—the work-force is dominated by two kinds of people: 1) business generalists with broad horizontal understanding of the business issues affecting their area, and 2) hands-on implementation specialists, or people with narrow but deep expertise in a specific, often technical, area. The future of business demands a new breed of knowledge worker: the T-shaped person who combines broad understanding of business processes (the top, horizontal part of the T) with deep practical execu-tion in a specific functional area (the bottom, vertical part of the T). People who share the same understanding of the business process (top of the T) can team with colleagues with different I-shaped specialties (bottom of the T) to cover the waterfront of a business need without losing that common vocabulary and understanding of their shared business objective.

Recognizing the changing demands of the business world, universities are shifting their curricula.

To find out if your organization is truly ready for the future of business, ask yourself a series of important questions.

T-shaped skills can be built in a number of ways. Take existing narrow but deep specialists and teach them broader business language. Take generalists and teach them deeper specialized skills. Or build T-shaped skills organically through educational institutions. While the first two examples are largely a company-by-company reeducation initiative, the third involves a more comprehensive approach. Today, our universities are shifting their curricula in recognition of the changing demands of our business world. New disciplines such as service science are springing up to fill these needs. Service science is about applying scientific, management and engineering principles to the delivery of services. The service sector lends itself well to virtual value chains and the concepts discussed above. As the service sector grows at the expense of the manufacturing and industrial sectors, T-shaped skills built by disciplines like service science will be in growing demand.

Caution: objects on this time line are closer than they appear
So what business are you in? Think carefully. If you strip away all the generic overhead, how different are you from your competitors? Think your niche is safe? Think you've already differentiated enough? What makes you special? Are you ready for the future of business? Think hard!

The future is closer than you might think. You can see traces of it all around you. What are you doing to prepare yourself for these new realities? Is your contribution to the business world *really* special? What's distracting you from making it even better? Are there suppliers that can perform some of your business tasks better or less expensively than you can? Are you able to seamlessly incorporate these services into your own value chain to make it more like a dynamic value net? Could you substitute another supplier the next day just as easily? Could you rearrange your business to tap into a new marketplace opportunity before your competitor? How service oriented is your business?

The answers to these questions will define the winners and losers in the future of business. Prepare yourself today. IBM has made its position clear in its own business model: We differentiate ourselves on the basis of our ability to continuously innovate and add more value than our competitors in the marketplaces we choose to address. It is a brave new world, and IBM intends to continue its leadership role. So what concrete steps can you take to compete more effectively today and tomorrow?

Start by critically examining the basis of your business model to determine whether it is based on business flexibility and agility. Strengthen the ties and communication between business and IT leaders to create a common vocabulary for addressing how the organization moves forward and handles its most pressing challenges. If you have not already started moving toward greater service orientation, by all means, make a commitment to yourself to put together a pilot project to gain experience and get some proof of SOA's business value. IBM has created five SOA entry points to help you successfully take that all-important first step. Ensure that you have the basic capabilities of reusing your existing business logic and IT systems as services and connecting them throughout your organization with mission-critical reliability. Create your own service marketplace by managing these services and the (hopefully growing) portfolio of externally sourced services by using a registry or repository. Build your capacity to model, optimize and dynamically assemble and rearrange these services on the fly. Monitor a small number of key performance indicators in a dashboard to see how healthy your business is. Grow stronger cross-disciplinary skills within a select group of your organization and then expand on this base. Give this select group access to resources to build its own self-service miniature applications.

For more information

Need help building a plan and a roadmap toward making your business stronger today and prepared for tomorrow? IBM can help. Contact your IBM representative or send a note to:

SOAHelp@us.ibm.com

Or visit:

ibm.com/soa

RAW11032-USEN-00