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Information Technology

SOA: Tailwind for IT investments

By Richard M. Melnicoff, Deepak K. Goyal and Gary A. Curtis

Service-oriented architecture is about to overturn what most business leaders think they know about IT. CEOs who ask the right questions—and act quickly on the answers—will be surprised by how much more they can get out of their existing IT investments. Several early examples show why.

It's not an atypical scenario for many CEOs: the eyebrow-raising budget request for new IT systems to replace most of the creaky legacy systems that support the company's finance activities, with another multimillion-dollar proposal tacked on to fix the antique software that handles customer interactions.

These days, most CEOs are acutely aware of the trade-offs inherent in such requests. They know the technology problems must be tackled before vulnerable systems come under more strain and the continuity of business operations is put at even higher risk. But they also know that the proposals have to compete for funds with many equally compelling business initiatives.

The usual compromise? Negotiate for a better deal from the vendors or postpone the investment—fingers crossed—until the next budget cycle or after a major system meltdown.

Now, however, with the emergence of service-oriented architecture, there is a strong case to be made for less compromise and more collaboration with IT. Service-oriented architecture is a design approach for building flexible IT solutions. These SOA-based solutions enable business process components to be

assembled and orchestrated more efficiently and to deliver distinctive business services and capabilities. By focusing on business processes and using standard software interfaces, an SOA environment supports rapid change without the need to rebuild software systems. SOA also provides the flexibility to access the best and most appropriate applications in the market, rather than creating new applications in-house when business needs change.

Generating business value

With the advent of SOA, top management's conversation with the IT leadership can (and should) be quite different. The CEO now has reason to ask why large, complex systems need to be replaced or rebuilt from scratch at all. As awareness of SOA's advantages ripples out to business leaders, they can resurrect their questions about IT project proposals that previously had been too costly or too risky to run with. They can start asking how *incremental* funding of IT projects can generate real business value. And they can push hard to learn how quickly it can happen.

By posing such questions, senior managers can start mapping out a new economic domain—one in which current technology investments can be extended for surprisingly little money, and where specific solutions can be deployed quickly and effectively.

In fact, farsighted business leaders are already asking these questions. Armed with new insights into SOA's potential, executives in industries as diverse as airlines, health care, telecommunications and financial services are beginning to revisit solutions to business challenges they really hadn't expected to solve anytime soon.

Further, a number of leading companies are discovering that SOA can be a gateway to business differentiation. It enables IT to support faster changes to existing business processes as well as the speedier creation of new processes, paving the way for new business capabilities and the resultant new sources of revenue. At the same time, SOA enables easier collaboration among business units and external partners.

Equally important, SOA does not compromise existing IT systems. In fact, it acts as a tailwind for these systems, extending their usefulness at a cost that is manageable compared to what is needed for the usual replace or rebuild alternatives.

A new alliance

A key goal of service-oriented architecture is to enable the different business functions of standalone or poorly integrated systems to interoperate so that they can execute a business process. Thanks to SOA, support for the business process can be "orchestrated" by a separate mechanism rather than being hardwired into the applications. (It is critical to understand that SOA does not replace the business functions and the processes that are embodied by the applications.)

As such, SOA presents a compelling value proposition for delivering processes geared to business needs, rather than parts of processes supported by existing custom or packaged applications.

SOA requires business and IT to work as allies, with closer and more frequent interaction between them. For its part, IT must develop a better understanding of business processes and needs. Similarly, the business side must learn what SOA can do. In fact, senior management already bears responsibility for ensuring that their business managers are equipped to design and redesign business processes—with the right knowledge, skills and strategic perspectives.

Of course, CEOs could be forgiven for filing SOA in the "heard it all before" folder. It is true that the promise of easily implemented enterprise-spanning technology has surfaced regularly in the past few decades. But only in the most stable business environments—in, for example, heavy industrial manufacturing, where customer needs and business processes change relatively slowly—have those IT systems ever come close to matching the claims made about them.

Unlike conventional application integration technologies, SOA does not require IT departments to develop today's many point-to-point interfaces between applications—the glue that, in effect, makes it difficult to change business processes, because doing so usually means modifying many applications and interfaces. With SOA, common business-level services are exposed and reused across the enterprise, and process orchestration is used to assemble specific business services into a single integrated process. These benefits can be harnessed with modest incremental spending (see sidebar, page 4).

The CEO's first priority is to discuss SOA's potential with the company's IT leadership.

The proof of SOA's impact is in the stories that companies tell (albeit with increasing reluctance when they see benefits they would rather their competitors did not have). Here are three glimpses of SOA at work, on a significant scale and in different industries.

Health care: Accelerating customer service and time to market

A leading US health care payer had been finding it hard to meet customer demands for new-product introductions because such initiatives required big changes to a range of mainframe-based custom legacy systems. Yet new products were imperative in this highly competitive corner of the health care sector as new consumer-directed programs and other health care payment options emerged.

The health care company was burdened with cumbersome legacy applications—many with millions of lines of code—that were becoming even messier, patchier and therefore harder and much more expensive to maintain. As for the development of new capabilities—well, they were becoming increasingly expensive and taking too long to deliver. The problems added up to big constraints on the payer's prospects for long-term growth.

The decision to make a substantial investment in an SOA-based end-to-end legacy modernization system was justified as a survival issue. Given the magnitude of the investment, it was a decision made not only by the CIO but also approved by the CEO and his other direct reports and with formal sign-off by the board of directors.

On the IT side, the initiative began with a cleanup drive to sweep out obsolete and duplicate code. Meanwhile, the business users of IT had already started drafting their vision of the future of the health care claims business before the SOA road map was drawn up. With those elements in place, the IT group began defining the SOA components that would allow new business process applications to be built, adding a crucial governance component to the new approach to application development.

The first phase of the project is still under way, but expectations are high that the delivery of new capabilities to customers will be far more efficient. Regardless of whether customers have HMO plans or indemnity-based health care, the payer's more flexible system will enable

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Making the right SOA choices

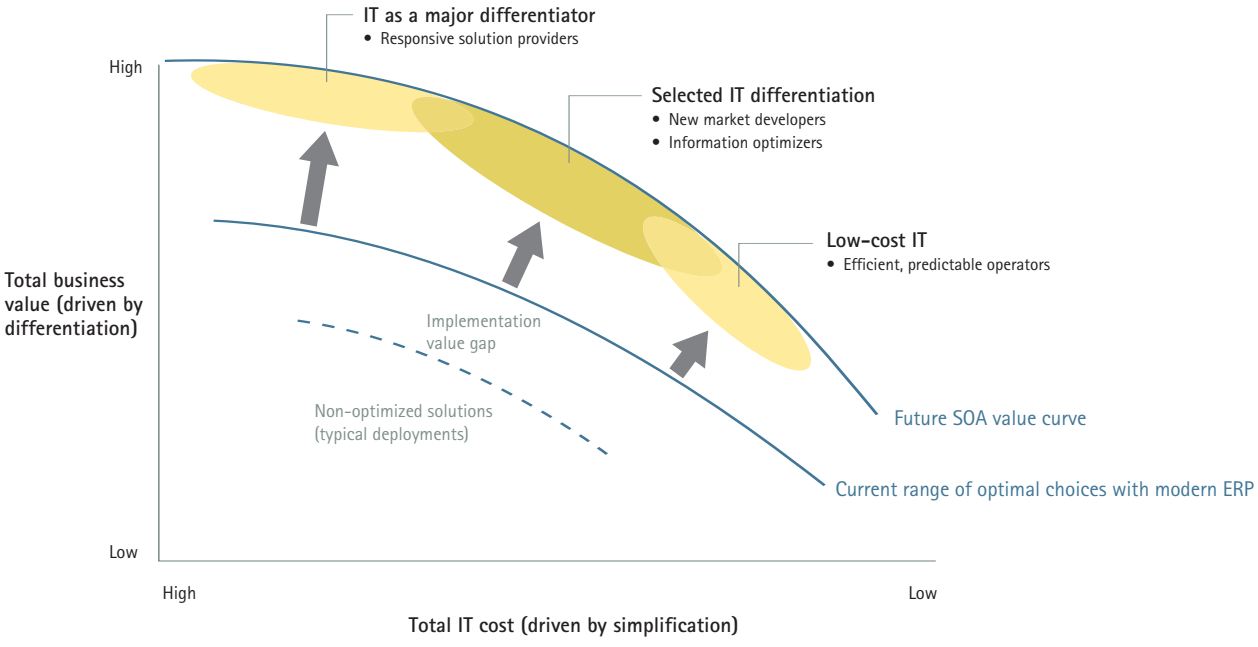
Accenture has developed a simple illustrative construct that can demonstrate, at a glance, where service-oriented architecture can provide the most business value.

Borrowing from the investment theory of the "efficient frontier"—which points to the maximum possible expected returns for given levels of risk—we have drafted a visual model that helps show that for any given technology, there is a range of optimal choices in balancing the trade-offs between business value and IT costs. SOA is shifting the range of optimal choices and allowing for a new set of trade-offs and optimal decisions. The key point is that relative to pre-SOA approaches, SOA moves the "efficient frontier" of IT investment out further.

For a variety of reasons, many IT solutions fall short of enabling organizations to operate at the efficient frontier—that is, delivering the desired business value at the optimal cost point. There are three target zones for optimizing business value and IT cost. The role of C-level executives is to help their business and IT organizations evaluate options and choose the right target. Using our client examples above:

- The health care payer and telecom corporation cited in the main article chose the first path, making enterprisewide investments in SOA to develop differentiated capabilities so they could rapidly respond to changing market opportunities.
- The airline opted for the second target zone, developing a phased SOA investment program to capture benefits in a range of functional areas.
- Numerous companies have made modest investments in SOA—the third area—to address key pain points related to customer-facing capabilities or the challenges of back-end information integration.

Finding the best balance between business value and IT cost



Source: Accenture analysis

(Continued from page 3)

easier online self-service as well as smoother transactions with customer service staff who can access more data more easily. The health care payer is also on track to get new products to market far faster than before—and with lower costs to maintain the applications that support the products.

Telecommunications: A successful strategic shift

In 2005, global competitors began to penetrate the home market of one of Eastern Europe's leading mobile-phone service operators. The provider had built up a commanding lead, in part because of its reputation for innovation. For example, it had been the first in its market sector to introduce convergent billing, integrating all service charges onto a single customer invoice.

But the executives on the company's management team knew they could not rest on their laurels. Well aware that the country's push toward privatization and deregulation would only spark more competition, they realized they had to differentiate themselves with infrastructures and processes that would support the faster rollout of innovative, value-added software-based services to customers.

Almost all phone service operators are under similar pressure, especially as the proliferation of value-added services adds strain to existing IT systems. But for the European provider—which offered a wide range of services to more than 30 million subscribers across several different service categories—the scale of the combined challenges was immense.

Initial analysis of the situation showed that the company urgently needed to offer its customers services—services whose value did not depend on any one delivery channel—in accessible self-service formats. What's more, instead of taking up to a year to bring the service to market, they would have to be deployed in months. It was also essential that the new IT infrastructure should be scalable and "future-proof," with a life expectancy of between five and 10 years.

The company's engineering teams came up with a new service delivery platform architecture that would help reduce complexity, enabling the provider to simplify relationships with third-party service developers. The architecture would also reduce time to market for new service delivery, while orchestrating these new services across multiple platforms to make sure there were no interruptions for users.

Developing the new platform was a daunting enough exercise. But the new platform also had to be deployed so that the company's hundreds of services could migrate without interruption.

Working with integration partners, the provider committed to using service-oriented architecture as the common framework that would support the development of the core service delivery platform architecture, the services that would roll out on the new architecture, and the "building blocks" that connect the services and the architecture. Equally important: Taking the SOA approach meant the company could leverage its existing IT investments without significant additional spending.

The new platform initiative ran smoothly—with no loss of service at all—and positive results were quickly apparent. The most dramatic benefit? A 75 percent reduction in time to market for new services, which led to operational cost savings of more than 50 percent.

Another benefit of the SOA approach is evident in the company's ability to scale operations. The previous architecture involved more than 600 interfaces for 19 service platforms. Now there are only one-third as many interfaces—a simpler environment that allows the provider to scale horizontally, offering new services without compromising its agility. For example, in the three months after the launch of the new platform, the company was easily able to handle more than 125 million new text messages.

At the same time, subscribers find it easier to use the provider's services. There has been a huge boost in service usage, with average wireless application protocol pages

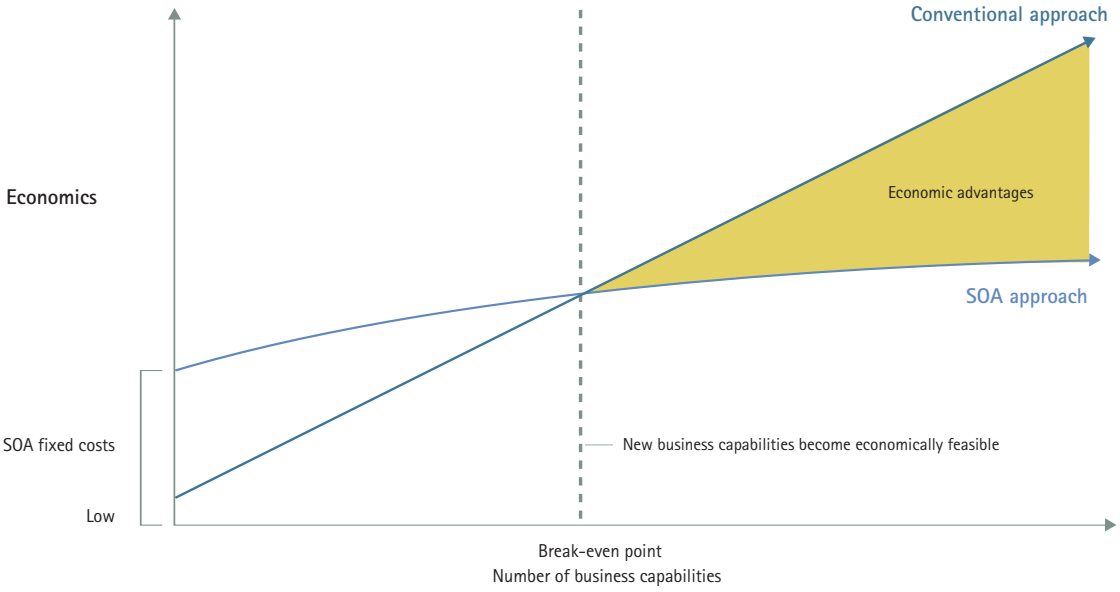
The economics of SOA

The initial fixed costs of service-oriented architecture can be higher than the fixed costs of conventional development. But with SOA, the downstream costs of developing additional business capabilities are likely to drop as more services are developed. In contrast, as shown in the chart below, the cost of traditional development increases linearly (or worse) as a function of the number of connections.

Ideally, SOA investments should be absorbed in each project unless an enterprisewide approach is mandated. The cost to develop the business services will need to be absorbed by the projects; if a top-down directive does not force this to happen, individual business cases are likely to be required to demonstrate value. But it is a different matter with the enabling capability—that is, the architecture, infrastructure, methodology, etc.

When the decision is made to do an enterprisewide SOA implementation, the best approach is to allocate a percentage of the total IT budget to SOA. But if the decision is to pursue a more incremental approach to SOA, then the full architecture can be developed in phases, with the lower fixed costs for developing the SOA for each phase absorbed in individual project budgets.

Economic value of SOA



Source: Accenture analysis

per view per visit jumping almost sixfold since July 2006. Sales of content services—news or sports information, for example—have risen by more than 370 percent and continue to rise without advertising support. Meanwhile, participation by third-party developers is up dramatically.

Airlines: Keeping costs in line

At the end of the 1990s, one of Europe's most prestigious flag carriers was flying into an industry storm. The airline was suffering from a decade of decentralized development of software applications for everything from reservation systems to aircraft departure control systems.

For example, something as basic as the term *flight*—which, obviously, cuts across many functions at an airline—had more than two dozen specialized meanings depending on, for instance, whether it was being used by crew handling staff, by ground services or by revenue management teams.

Meanwhile, the entire business was in flux; terrorism incidents had put a major dent in air travel, and the big airlines were feeling more and more pressure from budget carriers such as easyJet and Ryanair. The problems this caused were far-reaching. Employees could not easily find the shared information they needed to do their jobs; to access data, they needed authentication, for obvious security reasons, but it was not clear which database they should use. Crew sign-ups were another hassle: Were pilots supposed to use the HR department's eight-hours-a-day, five-days-a-week system for their round-the-clock operations?

To help keep its costs in line, the airline's management team knew it was essential to move aggressively toward online self-service—for employees as well as customers. They also realized that to try to keep pace with the easyJets, they had to strip overcomplicated software applications down to their core functions. For instance, a flight information system that over the years had been customized and customized further to suit discrete needs in the field had to excel at just one thing: providing flight information.

It was a formidable challenge. At the large networked airlines, the average enterprise software application is at least a decade old, containing many thousands of man-years of coding. It cannot be redone overnight; even if it could, few businesses have either the funds or the human resources to do it.

That's where SOA came in. The airline's IT group already had a good experience with enterprisewide messaging systems—a proprietary precursor to web-based SOA. This technology had allowed the airline to streamline the flight information system using a monthlong dry run in parallel to do a very clean cutover, switching scores of interfaces to specific applications. Next, the airline quickly took up SOA.

Then work began on the booking engine for the self-service reservation system—one of the most critical elements and therefore a litmus test for SOA. It was a complex undertaking, since data on flight availability came from one source while pricing information, input from other airlines, and credit-card processing data all came from other sources.

The implementation of the new reservation system took 12 months from earliest analysis to the first site "go-live." To date, it has lowered the overall costs of system integration by using Internet standards to trim delivery times. It provides a standard integration technique that can be external to the airline as well as internal.

SOA represents the art of the possible. It means that companies do not need mega-IT projects to build new business value quickly.

By deploying interfaces where it was previously too complicated or too costly to do so, the SOA framework has helped extend the reach of the system from a few to everyone. The new system also makes efficient use of scarce IT resources. Perhaps most important, though, SOA permits the airline's business processes to be packaged in such a way that they can be connected easily—and reconfigured just as easily. And it supports new requirements from the business side.

Overall, the SOA initiatives have made a big difference to the airline's operating costs by enabling customer self-service for functions that formerly required the help of a staffer. The business side was quick to note that it became easier and easier to implement changes.

Some of the changes have enabled important new services. For instance, passengers can now pay for tickets partly with credit cards and partly with banked air miles. They will soon be able to manage their own flight transfers online without having to queue up at a customer service desk upon disembarkation. On the ground, service crews can now manage their cleaning and provisioning tasks with less direct supervision while maintaining service levels and adhering to all security protocols.

CEO's to-do list

How should CEOs respond to the opportunities that SOA presents? And how should they be equipped to respond? Let's dispel one notion right away: Although business leaders do need to be ready for deeper involvement in discussions of technology's changing role, they absolutely do not have to immerse themselves in technology arcana. The focus must be on business processes.

While it is not the goal of this article to offer an exhaustive prescription for CEOs, it is appropriate to touch on some key action items.

- **Get curious about your company's plans for SOA.** The CEO's first priority is to discuss SOA's potential with the company's IT leadership. The primary objective is not to have the IT leaders educate the CEO in the whats and hows of SOA; it is to ensure that SOA is firmly on the agenda of the technology team, that the team is gathering knowledge and experience, and that pilot programs (at least) are in the works to give the company some hands-on experience with what SOA can do. These discussions should produce a shared understanding—ideally, an 18-month view—of how SOA can help break through immediate business bottlenecks and how it can be harnessed to support the company's business strategy. If it is apparent that the IT group has little or no SOA engagement to date, the CEO should require it.

- **Revisit problem areas.** Focusing on recognized business challenges, the CEO should discuss four or five project areas that IT has previously decided were too risky or too complex to tackle with current or foreseeable resources. The question then becomes: How can those projects be tackled with an SOA approach?

- **Make sure SOA efforts are practical.** The discussion will certainly include plenty of "yes, but" responses from both IT and business leaders. So it is crucial for the CEO to be able to address the practicalities of implementing service-oriented architecture. It will be important to understand what is involved on the business side. At the same time, the CEO must take advantage of what SOA can do to encourage new levels of business–IT interaction.

SOA represents the art of the possible. It has enormous potential to unlock new business benefits from current IT systems with only incremental costs—and with minimal disruption to those existing systems. In short, it means that companies do not need mega-IT projects to build new business value quickly. Perhaps most important, for the first time, SOA is redrawing the boundaries between IT departments and business users in very positive ways.

SOA is a reason for CEOs to reengage their IT leadership in conversations about improving information technology's value to the business. Companies that do this will improve performance, gain on their competition and improve the yield on IT assets.

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