

# Service-Oriented Transformation

A proven approach for large-scale change





**F**rom conception to implementation, most large-scale business transformations face what seem like an unending array of obstacles, from the different expectations of diverse stakeholders, to integrating different systems into the right information technology architecture, to difficulty in capturing the intended business value. As a result, the enthusiasm for change can easily fade. However, success is attainable. The principles of service-oriented architecture provide a winning approach to overcoming the hurdles of large-scale transformations.

There are many reasons a company might undertake a large business transformation, including changes in market position, a corporate directive to reduce operating costs and risks, new mergers or acquisitions, compliance requirements or aging information technology systems that need updating. For one of our clients, a leading global retailer, a massive transformation of its supply-chain processes and systems—an inefficient and inflexible spaghetti bowl of decades-old technology—was crucial for its future growth.

When confronted with the reality of just how hard it is to transform their businesses, companies are often tempted to opt for piecemeal tactical moves that are easier to implement but fall short of true transformation. After these tactics are

completed, the problems are still there. What can a company do to execute and manage a large transformation in a manner that is both thorough and long-lasting?

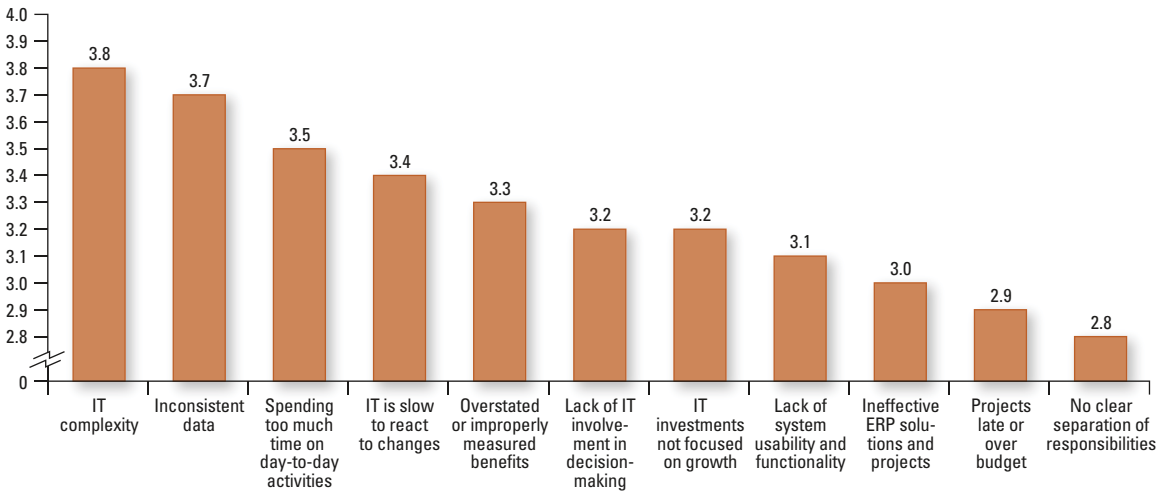
We helped our retail client answer this question by applying the principles of service-oriented architecture (SOA)—a disciplined, comprehensive transformation strategy that builds a common vision across boundaries. When used appropriately, SOA is a prudent tool for use in large enterprise transformations, as it bridges the gaps between business and IT and enables long-term success.

In this paper, we outline the advantages of SOA, highlight the SOA strategies used to help a global retailer secure a successful transformation, and identify some of the risks and pitfalls to avoid.

**Figure 1**

Executives cite complexity and inconsistent data as the most important IT-related barriers to growth

**Which IT growth barriers are most relevant to your business?**



Source: *IT Innovation and Effectiveness Study*, A.T. Kearney, 2009

Note: 5 = most important; 1 = least important

**Why Take an SOA Approach?**

Business and IT leaders consider two things—complexity and inconsistent data—as the biggest IT-related barriers to their companies’ growth, according to a recent A.T. Kearney study (see figure 1).<sup>1</sup> These barriers become particularly evident during large-scale transformations and can hinder the progress of, and even the organizational will for, a planned change. By applying the principles of SOA in the early stages of a transformation, companies not only ensure that their business needs are aligned with their IT needs, but also that they have the flexibility necessary to perform a large-scale transformation.

How it works: SOA restructures software functions into discrete, reusable building blocks called business services. This simplifies the software application base, allowing for easier communication throughout all layers of the IT

architecture, more flexibility in delivering business capabilities, and better execution of future changes (see figure 2). Although SOA is primarily considered a software systems framework, its principles also encourage companies to be more open to innovation and better positioned for success (see sidebar: *Demystifying SOA on page 4*).

The following are the major advantages of a service-oriented approach to transformation:

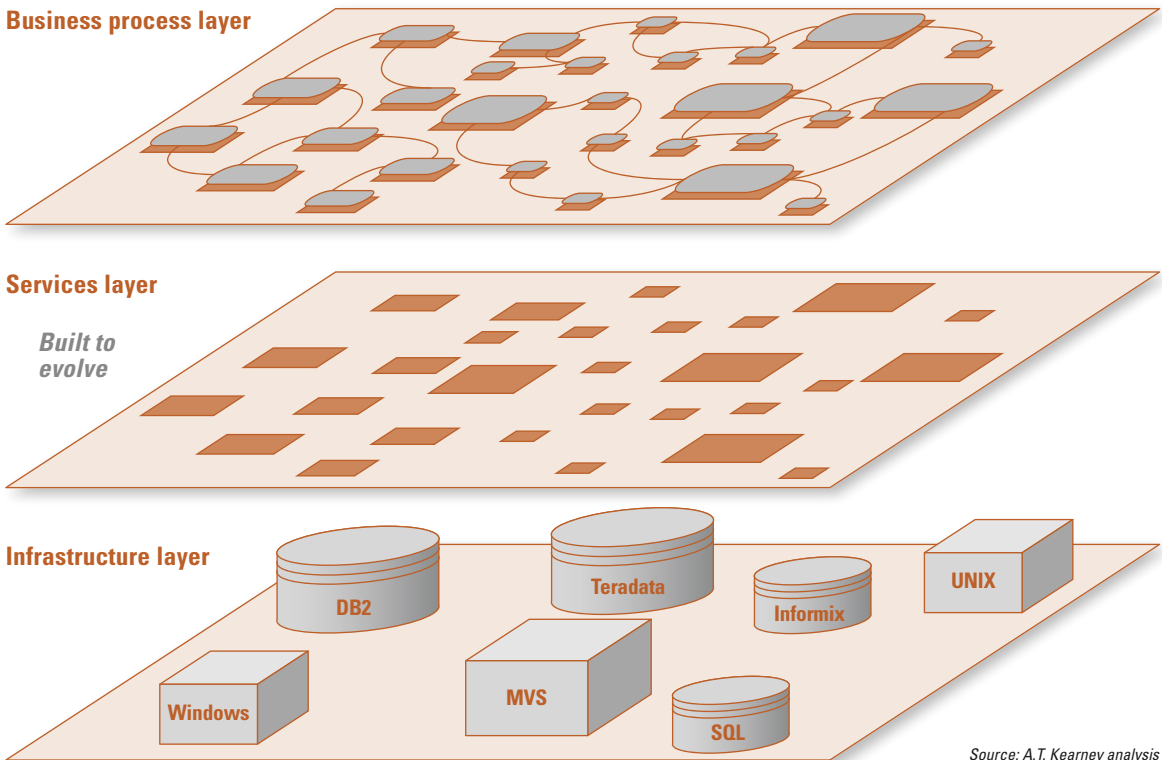
**Focuses on the what, not the how.** A service-oriented approach to an organizational transformation allows executives to focus on the ultimate vision they have for the company rather than the technical steps and details necessary to capture the vision. This way, the complexity of the details does not undermine early efforts to set the transformation in motion.

**Improves understanding.** All stakeholders (IT leaders and business leaders) can view the prob-

<sup>1</sup> See “IT Innovation at a Crossroads,” A.T. Kearney, June 2009 at [www.atkearney.com](http://www.atkearney.com).

**Figure 2**

Layers in a service-oriented architecture



Source: A.T. Kearney analysis

lems from their unique perspectives while also addressing issues and requirements that concern others. In essence, SOA serves as a Rosetta Stone that translates the needs of the business into components that IT can act upon, and frames IT requirements into language that business leaders can easily understand.

**Aligns business operations with IT.** Almost all companies understand the challenges of aligning business operations with IT. SOA helps bridge the gaps by providing a blueprint for delivering IT services and functionality based on the uniqueness of a company’s global operations (*see figure 3 on page 4*).

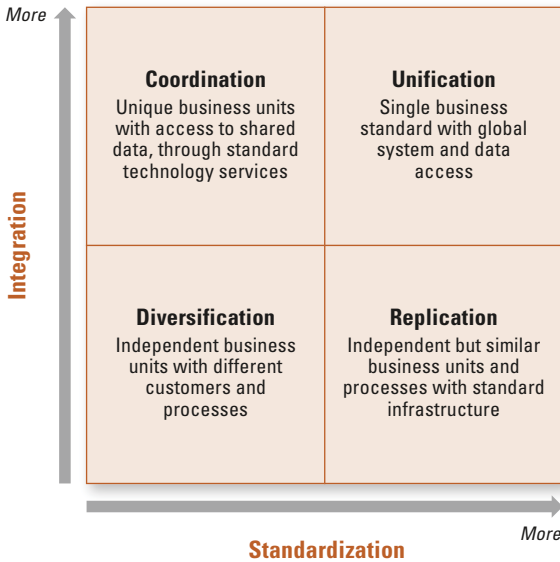
**Serves as a framework for the future.** SOA

provides a unified reference for business and IT operations as they prepare for the future. Identifying the points at which processes and IT systems interact serves as a guide for managing multiple aspects of a large-scale transformation across multiple regions.

**Builds a “designed-to-evolve” solution.** Because businesses, and the processes within them, do not remain static, the IT organization uses SOA to design a methodology that is flexible enough to enable application services and evolve with the needs of the business. With each layer of service-oriented architecture having clear roles, future flexibility is delivered to the business at a much more effective cost point for IT.

**Figure 3**

Service-oriented architecture supports multiple scenarios for business processes



Sources: Massachusetts Institute of Technology; A.T. Kearney analysis

## The Layers of SOA

Let's look at a typical architecture that connects the user interface to the hardware and infrastructure (see figure 4).

- **Presentation services and user interface.** Layer that defines the user interface requirements and options.
- **Business process management and workflow.** Connects processes and services to accomplish business goals.
- **Business and application services.** Business services define the core functionality of the application. The application services translate the business services into a technical context.
- **Applications.** IT systems, applications and modules required to execute the business and application services.
- **Integration.** Technical infrastructure for communication with external systems and within the system.

## Demystifying SOA

There are numerous useful concepts for performing a business transformation. In an SOA approach, the following basic principles are established in the very beginning.

**Develop a service-oriented mindset.** Early in a transformation, processes are defined and there is a general understanding of how they interact with each other and the rest of the organization. These interrelationships will become more defined as the transformation moves forward—including understanding that external processes will not remain static—and set the boundaries for designing future technologies.

**Build a process hierarchy.** In an SOA-inspired transformation, we run several successive cycles to develop more details and move toward a desired outcome. These cycles allow for more effective program management and provide technical designers with a process hierarchy to determine the level of detail needed to design a service. The hierarchy ultimately provides the framework for organizing, executing and monitoring all transformation efforts across all levels of the management team.

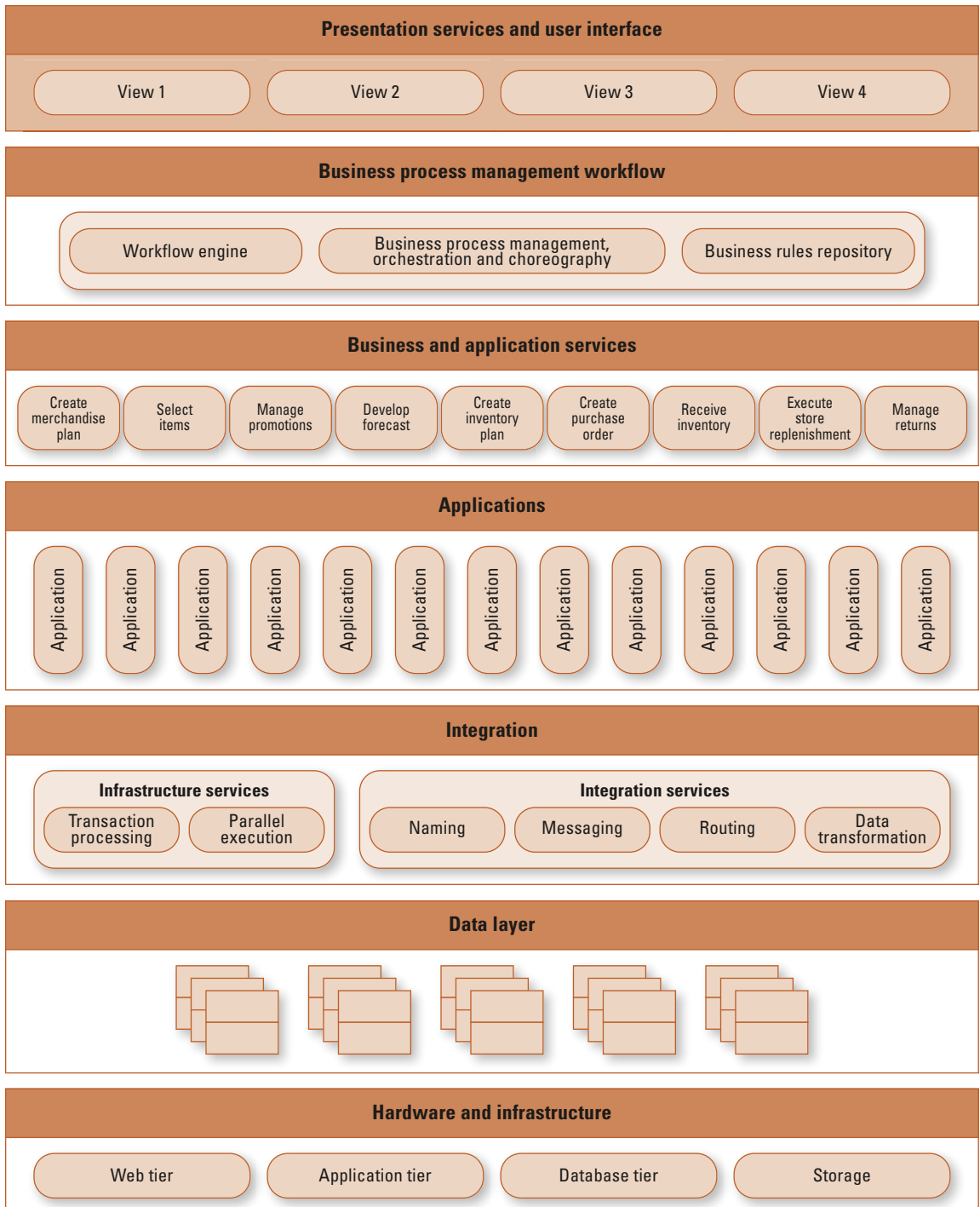
**Understand roles and tasks for each architecture layer.** Defining roles and responsibilities early in the

transformation identifies the most important activities and helps process designers understand how each activity works within the technical design across all layers of an SOA-enabled architecture.

**Reduce semantic differences.** Seemingly small differences in terminology across different stakeholder groups can lead to confusion and negative consequences. All too often, a technical design team wastes valuable time trying to figure out what language is common or truly unique. The success of a transformation depends on dealing with this issue from the start.

**Figure 4**  
Layers of an IT architecture

*Illustrative*



Source: A.T. Kearney analysis

- **Data layer.** Central source for all data entities, and it provides storage for all internal data.
- **Hardware and infrastructure.** Hardware required for the separate tiers of the solution—Web, application, database and storage.

### Service-Oriented Transformation: A Case Study

Our global retail client sought to transform its replenishment functions to create a supply chain that was more flexible, more productive and better equipped for future growth. The replenishment function, which at one point offered the retailer a clear competitive advantage, was supported by out-dated technologies and home-grown IT solutions. Company leaders had little understanding of how these processes worked, and only a handful of people in IT understood the legacy technologies. With only piecemeal changes throughout the years, the retailer had lost some of its competitive edge, could not fully improve its capabilities, and

was struggling to produce any major new ideas.

We knew this transformation would be massive and admittedly high-risk. Working with our client, the team decided to take an SOA approach, primarily because it would allow the IT organization and the business to collaborate on the redesign while delivering enhanced flexibility to the business and IT. The following briefly describes the major steps in our client’s transformation.

**Define the major business capabilities or services.** Once the case for change was approved, the first step was to define the level-one (core) and level-two (sub-core) business services (see figure 5). We identified what was needed in terms of change management, training and support, talent management, and technology, and highlighted possible areas where we should apply more innovative thinking. Although most ideas may already be defined, the first phase can turn up some surprising insights as managers analyze and question every assumption. Our client, for example, had

**Figure 5**  
Identify core business services

*Illustrative*

<p><b>Merchandising</b></p> <ul style="list-style-type: none"> <li>• Create plans (financial, category, merchandise, assortment, space)</li> <li>• Conduct buy-trips, select items</li> <li>• Manage private labels, pricing and promotion strategies</li> </ul>	<p><b>Replenishment</b></p> <ul style="list-style-type: none"> <li>• Develop forecasts, adjust demand</li> <li>• Select suppliers</li> <li>• Create inventory plans and purchase orders</li> <li>• Optimize order fulfillment</li> <li>• Manage allocations and monitor supplier performance</li> </ul>	<p><b>Logistics</b></p> <ul style="list-style-type: none"> <li>• Manage transportation, distribution centers and fleet</li> <li>• Optimize route and truck loads</li> <li>• Monitor and reconcile inventory</li> <li>• Manage returns and ship to stores</li> </ul>	<p><b>Store operations</b></p> <ul style="list-style-type: none"> <li>• Execute floor replenishment</li> <li>• Monitor sales and inventory levels</li> <li>• Manage purchases, returns, labor, customer service policies and loss prevention</li> </ul>
<p><b>Technology</b></p> <ul style="list-style-type: none"> <li>• Define user-interface standards, non-functional requirements, governance, compliance and security policies</li> <li>• Manage system portfolios, security and systems integrations</li> <li>• Monitor total-cost-of-ownership</li> </ul>		<p><b>People</b></p> <ul style="list-style-type: none"> <li>• Manage profiles and training</li> <li>• Track performance</li> <li>• Collaborate among divisions</li> <li>• Design organizational model</li> <li>• Define roles and responsibilities</li> </ul>	

Source: A.T. Kearney analysis

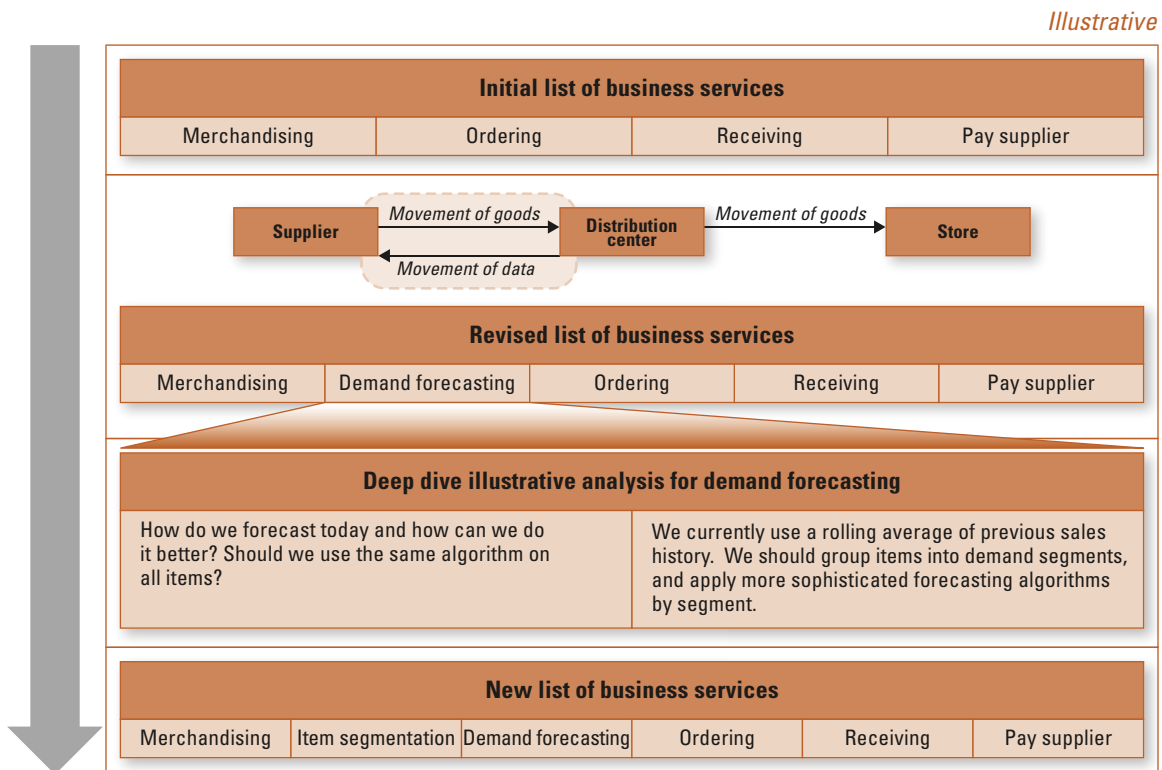
accepted the limitations of its legacy systems as the truth—without seeing the ways in which the systems could be improved and eventually replaced. By starting from scratch, all assumptions were thrown out the window. The answers that they arrived at were based on a clear vision for tomorrow.

Figure 6 illustrates some of this work. We began by identifying the key services needed to run the business—merchandising, ordering, receiving and paying suppliers. Next, we addressed the movement of physical goods and data from the supplier to the distribution center to the store, to arrive at a revised list of services—merchandising, forecasting demand, sending purchase orders

and paying suppliers. We then analyzed how the process was currently performed to ascertain better ways to do it in the future. For example, in forecasting demand, we decided that grouping items with similar demand patterns into demand segments, and using different algorithms per segment resulted in more accurate forecasts. Thus, we added “item segmentation” to the list of business services.

**Document the current applications and processes, and identify transformation targets.** Our client next performed an assessment of current business processes and the supporting IT systems, in search of areas for improvement in functionality and where realignment or rebuilding could

**Figure 6**  
Defining business services



Source: A.T. Kearney analysis

lead to better flexibility. We helped the company analyze the various trade-offs between buying new systems from outside the company or building new systems.

Most IT organizations keep multiple inventories detailing their various systems and how they are used. Commonly, as was the case for our client, these inventories are developed bit by bit and often are not aligned with the needs or processes of users. To deal with this, our client developed a user-focused definition of processes and systems to provide an unbiased view of the asset inventory and to identify gaps. This provided a more accurate understanding of what was required for future IT transformations.

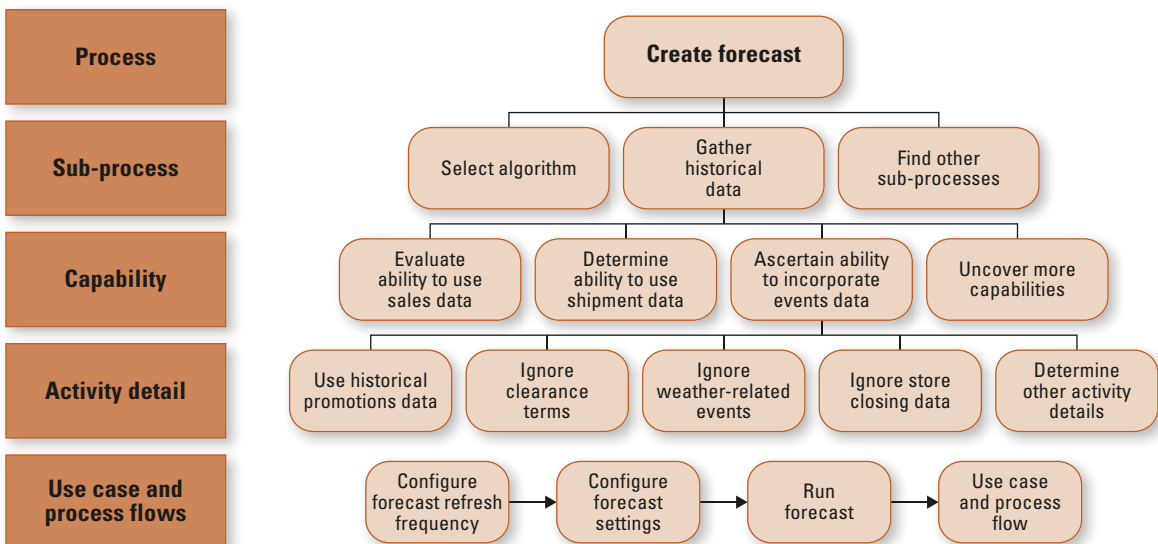
Our client had many global businesses whose leaders believed they were fundamentally different. This phase of the transformation showed the company that these businesses had more in common than they had previously thought.

**Develop detailed business requirements.** A service-oriented approach to transformation identified our client’s business requirements at varying levels of detail. For example, as mentioned earlier, we broke down the retailer’s forecasting process from a single business process to its various elements. One element of the process, “gather historical data,” comprised of four functions, and each one could be further dissected (see figure 7). By going into this level of detail, requirements are better understood so that better decisions can be made. For instance, the company can decide it makes more sense to purchase commercial applications or to develop its own detailed business and application services.

**Determine necessary applications.** Application services are the bridge between business and technical requirements. Our client used them to make a list of high-level technical services needed to meet the business requirements. For example, if

**Figure 7**  
A business requirements hierarchy

*Illustrative*



Source: A.T. Kearney analysis

an application needs to perform different activities depending on the user, an application service that stores information on system behavior rules would be needed.

Our client identified application services, and was able to highlight early on several necessary infrastructure- and integration-level services, such as data transformation and messaging. Laying out the standards and constraints for implementing these services can occur even as the business team continues to define its requirements to increasing levels of detail.

**Crystallize integration areas.** Understanding the details of business requirements ensures that the necessary inputs and outputs of each service are being met. A list of all internal and external integration points, including the upstream and downstream dependencies, will help measure the impact of the transformation and prioritize the systems. For example, because our client had identified key integration points at the beginning of the transformation, project leaders were able to start negotiating resources and developing road maps with the external teams, thus laying the groundwork for a successful integration.

**Create a future-state application map.** Mapping each service to the appropriate IT application will help frame the decision between building or buying a new IT solution, or modifying an existing one. A map helps determine exactly how to enable business services and capabilities through each application.

Our retail client had several different ways to support the necessary business services—including

a commercial enterprise resource planning solution, customization, in-house development and the retention of legacy systems. But, the goal was to limit IT complexity and have an effective transformation. A service-oriented application map helped manage the dynamics of this landscape and defined the explicit interfaces between systems.

**Design a service delivery plan.** After identifying necessary business services, the next step is designing a delivery plan aligned with the business

**A service-oriented approach allows executives to focus on the ultimate vision they have for the company rather than the technical steps and details necessary to capture the vision.**

case. For our client, each new business service was released (or delivered) using an easily defined, top-down road map. We grouped services by potential release dates to give stakeholders an initial view of the schedule.

**Develop the technical design.** The technical design lays out how each application will deliver the business service—for instance, using products that are built or bought, or a combination of both—and eventually drives the IT implementation. Our client addressed all areas covered by purchased software and applications developed

in-house. For purchased software, the delivery plan included all integration points, allowing the company to build naturally on existing outputs and begin detailing the integration. The SOA methodology also provided the technical design for a near-seamless transition.

For our client, the transformation aligned both business and IT through strong communication—common definitions and language for

Successful large-scale transformations must be done inside-out, bottom-up, rather than the other way around.

business services that allowed for logical structure and a consistent theme for transformation. The principles of SOA positioned the overall transformation for success, not only technically, but also from a business perspective. The new business services bound the whole effort together, from development to execution, and, furthermore, provided the structure upon which responsibilities and benefits were allocated.

### Steer Clear of the Pitfalls

A successful transformation requires defined goals and a well-thought-out structure. Otherwise, the company is simply making small-scale, incremental changes that fall short of the original vision. In addition to following the SOA principles, the following are risks and pitfalls to watch out for:

**Avoid the temptation to choose technology first.** Many organizations, through internal or external analysis, know where they want to go throughout the transformation. For those without this upfront clarity, a common first step is to purchase new software from a third party and build around it. This might work for small- and medium-scale transformations, or for common business functions. However, for transformations with strategic implications, this piece-by-piece approach will not succeed. Successful large-scale transformations must be done inside-out, bottom-up, rather than the other way around.

**Manage requirements.** The obvious temptation in identifying business requirements is to assemble all the stakeholders in a room with a blank white board and ask, “What do you want the future system to do?” The result will probably be an unwieldy, disorganized wish list at varying levels of detail. An SOA approach to transformation relies on a thorough yet succinct framework for success. Those in charge need a road map that clearly defines the steps to move the transformation forward.

**Assess all possible opportunities for change.** Many transformations consist of only one or two big ideas, championed by leaders within certain silos. This may be of some help, yet it may also squander other opportunities. SOA operates within the context of the entire organization—identifying how business services interact with external functions and gathering all aspects of the vision.

**Focus on the present *and* the future.** Any approach to transformation involves an examination of the current state of business processes, pointing out the strengths and weaknesses. Spending

as much, or more, time examining transformed business processes will help the company succeed in the future. A forward-thinking attitude offers the opportunity for true transformation rather than marginal, incremental improvements.

**Establish a common understanding among all stakeholders.** This is a huge challenge when the change must occur across many different functions and divisions. Sticking to a structured approach helps explain the process and provides

a common language and framework for everyone in the company.

### A Transformative Idea

A service-oriented approach may require more effort and discipline up front, but it will lead to better value, longer-lasting changes and more flexibility in the future. For businesses undergoing a large-scale transformation, the principles of SOA offer the road map for success.

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