

Companies adopt an operating model at the enterprise level and may adopt different operating models at the division, business unit, region, or other level. To decide which quadrant your company (or business unit) belongs in, ask yourself two questions:

1. To what extent is the successful completion of one business unit's transactions dependent on the availability, accuracy, and timeliness of other business units' data?
2. To what extent does the company benefit by having business units run their operations in the same way?

The first question determines your integration requirements; the second, your standardization requirements. What operating model you choose will drive important design decisions around the autonomy of business unit managers and the role of IT. Compare your answers to the characteristics of each operating model in figure 2-1 to see where your company fits.

### *Diversification: Independence with Shared Services*

Diversification applies to companies whose business units have few common customers, suppliers, or ways of doing business. Business units in diversified companies offer different products and services to different customers, so central management exercises limited control over those business units (see the Diversification quadrant in figure 2-1).

JM Family Enterprises (JMFE) has a Diversification operating model. Headquartered in Deerfield Beach, Florida, JMFE had revenues of \$8.2 billion in 2004, making it the United States' fifteenth-largest privately held company.<sup>4</sup> JMFE comprises four closely related businesses:

1. Southeast Toyota Distributors (SET) serves more than 160 dealers in Florida, Georgia, Alabama, and North and South Carolina with vehicles, parts, and accessories. SET dealers sell approximately 20 percent of all Toyotas sold in the United States.

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2. World Omni Financial Corp. (WOFC) is a diversified financial services company that provides a broad range of financial products and services to consumers, dealers, and lenders. Its offerings include automotive financial products and services, third-party servicing solutions, wholesale floor-plan accounting and risk management systems, full-service inspection, automated risk decision software, and automotive remarketing services.
3. JM&A Group offers a variety of automotive finance and insurance (F&I) products and services, such as new- and used-vehicle protection plans, used-vehicle certification programs, prepaid maintenance plans, credit life and disability insurance, and F&I training and consulting services.
4. JM Lexus is the largest-volume retail dealership of Lexus cars and sport-utility vehicles in the world.

The lower left quadrant of figure 2-2 describes JMFE's Diversification operating model. Because the business units are synergistic, they can generate business for one another. For example, JM Lexus is a customer of JM&A; SET sells automobiles to dealers whose customers often finance those vehicles through WOFC; and WOFC offers loans to dealers to finance the vehicles in stock, helping increase orders to SET.

JMFE provides some centralized services to its business units through the JM Service Center. The largest of the shared services is IT; the others are procurement services, financial services, salon, fitness center, benefits administration, food services, corporate staffing, distributive and document services, facilities, relocation, and dealer services. Motivation for forming shared services in 2001 included cutting costs on these services and realizing quick economies following expected acquisitions.

Historically, JMFE has grown primarily through the growth of individual business units. SET has become the world's largest franchised Toyota distributor, and WOFC is one of the world's largest automotive finance companies. As JMFE's current markets become

FIGURE 2-2

Four operating model examples

Business process integration	High	<p><b>Coordination</b>  <b>Merrill Lynch Global Private Client</b></p> <ul style="list-style-type: none"> <li>• Single face to customer through multiple channels</li> <li>• Customer transactions are independent, but product data is shared</li> <li>• Individual financial advisers own their customer relationships</li> <li>• Financial advisers customize their interactions with customers</li> <li>• Financial advisers in 630 offices exercise local autonomy within bounds of their responsibilities</li> <li>• Total Merrill platform provides shared access to technology and data</li> <li>• IT organization provides centralized technology standards</li> </ul>	<p><b>Unification</b>  <b>Dow Chemical</b></p> <ul style="list-style-type: none"> <li>• Local and global customers; global suppliers</li> <li>• Global manufacturing, financial, HR, order management, purchasing, customer service, and other processes</li> <li>• Business units all support global chemical research, development, and sales</li> <li>• Centralized management with matrixed business unit/process/geographical management</li> <li>• Centralized process design implemented through ERP and corporate process owners</li> <li>• Centrally mandated, single instance of key databases</li> <li>• IT decisions made through central shared IT services organization</li> </ul>
	Low	<p><b>Diversification</b>  <b>JM Family Enterprises</b></p> <ul style="list-style-type: none"> <li>• Few shared customers or suppliers</li> <li>• Mostly independent transactions with intercompany transactions at arm's length</li> <li>• Unique operations across business units</li> <li>• Autonomous business unit heads reporting directly to CEO; arm's-length transactions between business units</li> <li>• Business unit control over business process design except for shared procurement, HR, financial, dealer, and corporate services</li> <li>• Few data standards across units</li> <li>• Shared IT services to realize economies of scale</li> </ul>	<p><b>Replication</b>  <b>TD Banknorth</b></p> <ul style="list-style-type: none"> <li>• Few, if any, shared customers</li> <li>• Banks record independent customer transactions aggregated centrally</li> <li>• Banks decide locally how to serve their customers while implementing company practices</li> <li>• Growing companywide standard processes to increase efficiencies and limit risk</li> <li>• New business processes designed centrally</li> <li>• Data locally owned; standard data definitions accompanying process standard implementations</li> <li>• Assimilating existing IT systems of individual banks into central systems</li> </ul>
		Low	High
		<b>Business process standardization</b>	

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saturated, the company is preparing to grow through acquisitions—a common characteristic of Diversification companies. Because JMFE's business units are run autonomously, each of them has an operating model capturing its individual integration and standardization requirements. By building a foundation for execution to support their individual operating models, these business units contribute profitable growth to JMFE.

The organizing logic for Diversification companies is based on synergies from related, but not integrated, business units. Business units might create demand for one another or increase the company's brand recognition, which generates enterprisewide value despite autonomous management. Companies with a Diversification model may pursue economies of scale through shared services, but they typically grow through the success of the individual business units and acquisitions of other related businesses.

#### ***Coordination: Seamless Access to Shared Data***

Coordination calls for high levels of integration but little standardization of processes. Business units in a Coordination company share one or more of the following: customers, products, suppliers, and partners. The benefits of integration can include integrated customer service, cross-selling, and transparency across supply chain processes. While key business processes are integrated, however, business units have unique operations, often demanding unique capabilities.

For companies with a Coordination model, low cost is usually not the primary driver in companywide decisions. Autonomous business heads execute their processes in the most efficient manner possible, but corporate directives and negotiations focus on providing the best service to the customer. Strong central management defines the need for cooperation. Successful companies rely on incentive systems and management training to encourage companywide thinking at the business unit level. (See the Coordination quadrant of figure 2-1.)

Merrill Lynch, one of the world's largest financial services companies, is composed of three major business units: the Global Markets & Investment Banking Group, Merrill Lynch Investment Managers, and Global Private Client. Its Global Private Client (GPC) business provides an example of a Coordination operating model (figure 2-2). GPC delivers wealth management products and services to individuals and small businesses through more than 14,000 financial advisers in approximately 630 offices around the world. While financial advisers each serve their individual customers, their services are integrated through what's called the Total Merrill platform, which gives all advisers access to the full range of Merrill products: commission- and fee-based investment accounts, credit products, banking services, cash management and credit cards, trust and generational planning, consumer and small-business lending, retirement services, and insurance products.<sup>5</sup>

GPC focuses on delivering comprehensive, innovative solutions to meet the financial needs of its target customers. These customers want to do business with Merrill Lynch through a variety of channels, such as the telephone call center, the Internet, and advice-based interactions with financial advisers. In addition, customers want access to non-Merrill products. GPC's operating model, therefore, coordinates services to its customers by providing integrated access to products across customers and integrated access to customer data across products and channels. Such service requires highly standardized product and customer data, but it allows financial advisers to customize their individual interactions to the needs of their customers. Merrill Lynch calls its model providing "all things to some people," and customized service is important to retaining high-value customers.<sup>6</sup>

Merrill Lynch's GPC grows by increasing the number of financial advisers who, with their access to product data, can identify and then serve more customers. GPC also regularly innovates to expand its product line, recently adding products such as new credit cards and loan management services. These new services help GPC provide a strong portfolio of products as it seeks to retain its ability to provide a full range of services to clients.

GPC's standardized business data enable the number of financial advisers have the industry and assets per adviser.

Like GPC, most grow by extending new markets. The related, customer data product lines or full expertise while enabling new customers and enabling profitability.

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GPC's standard technology platform and access to shared business data enable the company to productively employ the largest number of financial advisers in the industry. These financial advisers have the industry's best revenue per adviser, earnings per adviser, and assets per adviser.<sup>7</sup>

Like GPC, most companies in the Coordination quadrant can grow by extending their reach to defined customer segments in new markets. They can also increase services to meet new, but related, customer demands. By integrating, but not standardizing, product lines or functions, the Coordination model fosters process expertise while enhancing customer service. This expertise attracts new customers and sells more products to existing customers, thus enabling profitable growth.

### ***Replication: Standardized Independence***

Replication models grant autonomy to business units but run operations in a highly standardized fashion. In a Replication model the company's success is dependent on efficient, repeatable business processes rather than on shared customer relationships. The business units are not dependent on one another's transactions or data; the success of the company as a whole is dependent on global innovation and the efficiency of all business units implementing a set of standardized business processes. Accordingly, business unit managers have limited discretion over business process design, even though they operate independently of other business units. McDonald's, like other franchise operations, provides a clear reference point for a Replication model. (See the Replication quadrant of figure 2-1.)

TD Banknorth, one of the thirty-five largest commercial banking companies in the United States, also provides an example of a Replication model (figure 2-2). Over the past decade, the company has grown by a factor of ten from a small community bank to the largest bank headquartered in New England. TD Banknorth's core strategy is to grow through acquisitions of community banks with customer-focused corporate cultures. The company adds value by

introducing economies of scale and providing its banks' customers with new and improved products.<sup>8</sup>

Founded in Vermont in 1824, TD Banknorth grew with the objective of understanding its customers better than anyone else. As a result, each local bank developed its own processes and infrastructures to meet the perceived needs of its specific customers. But when John Petrey became the company's CIO in September 2001, he set out to integrate and standardize its information technology. Petrey created standardized processes for bringing new banks onto TD Banknorth's foundation.

These new standardized processes are converting TD Banknorth from a Diversification model, with independent operations in each of the company's banks, to a Replication model, in which banks are run independently but with the same IT infrastructure and a set of standardized core processes. To facilitate this transition, a new Enterprise Projects Committee, headed by COO Peter Verrill, reviews projects for their strategic impact in light of the company's focus on developing synergies across its banks. While Banknorth looks for the efficiencies and predictability of standardized processes, however, it also aims to preserve the image of a community bank by retaining local decision making wherever feasible.

Many Replication companies grow through acquisition like TD Banknorth, but most Replication companies can also build new businesses from scratch. Whether companies are growing organically or through acquisition, the Replication model helps them increase profits when management quickly installs its standardized practices and technology foundation into a new unit and then allows a local manager to build the business.

### *Unification: Standardized, Integrated Processes*

When organizational units are tightly integrated around a standardized set of processes, companies benefit from a Unification model. Companies applying this model find little benefit in business unit autonomy. They maximize efficiencies and customer

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Unification companies typically have integrated supply chains, creating interdependence between distributed business units. These business units share transaction data, often including global customer and supplier data. Standardized processes support global integration and increase efficiency. The Unification operating model often benefits from implementation of large packaged systems to support company standardization and integration requirements. (See the Unification quadrant in figure 2-1.)

The Dow Chemical Company has adopted a Unification model for its core chemicals-manufacturing business.<sup>9</sup> Founded in 1897, Dow Chemical develops and sells innovative chemical, plastic, and agricultural products and services to customers in more than 175 countries around the world. From 1994 to 2004, despite a downturn in the market, Dow nearly doubled its revenues while growing its employee base less than 10 percent—a productivity improvement of 8 percent per year. Management attributes much of the company's success to its well-tuned globally integrated processes (figure 2-2).

Managers at Dow estimate that approximately 60 percent of the company's work processes are standardized. For example, financial work processes are common around the globe. Manufacturing has common processes for building plants, driven in part by the need for those facilities to be highly cost effective and environmentally secure. Standardized human resource processes allow Dow to do performance management and to plan salaries and incentives around the globe in three weeks, equitably and transparently, even taking into account multiple currencies and differing rates of inflation. Finally, some supply chain work processes (e.g., order to cash) are globally standardized; others (e.g., planning and scheduling) are specific to particular products or regions.

Dow constantly reengineers processes to introduce greater standardization and automation, as appropriate. These efforts are intended, first and foremost, to cut costs, but they also increase



quality, safety, and security—other important organizational objectives. Dow invests substantial resources in understanding the costs of its processes and the impacts of its improvement efforts.

Dow sustains its integration and standardization through global systems, such as SAP's enterprise resource planning system, and through a management structure that assigns owners to the various global processes. Five of Dow's eight global processes are housed in a shared services organization that includes IT, purchasing, supply chain services, and customer service (including e-business), along with expertise on six-sigma and work processes. Dow's matrixed management structure, in which managers often report to product and process heads or to product and geographic heads, further encourages global integration.

Unification companies invariably have highly centralized management environments. Management drives out inefficiencies and then grows the company by leveraging economies of scale. Since minimizing variation is key to driving efficiencies, Unification is best suited to companies whose products and services are largely commodities. Companies more focused on innovation may find that the costs of standardization outweigh its benefits.

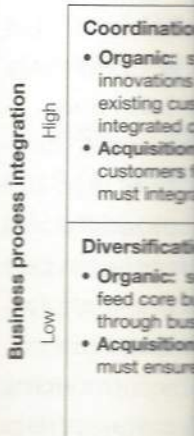
### Applying the Operating Model

An operating model represents a general vision of how a company will enable and execute strategies. Each operating model presents different opportunities and challenges for growth. For example, the need to integrate business processes, as in Coordination and Unification operating models, makes acquisition more challenging because the new company must reconcile disparate data definitions. On the other hand, the process integration of the Coordination and Unification models facilitates organic growth through expansion into new markets or extensions of current product lines.

Process standardization, as in Unification and Replication models, enables growth through a rip-and-replace approach to acquisitions. When the acquisition is intended to create a mirror image, a company can replace the systems and processes of the acquired

FIGURE 2-3

#### Different operating types of growth



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We label this pattern the “four stages of architecture maturity.”<sup>3</sup>

The four stages are:

1. *Business Silos architecture*: where companies look to maximize individual business unit needs or functional needs
2. *Standardized Technology architecture*: providing IT efficiencies through technology standardization and, in most cases, increased centralization of technology management
3. *Optimized Core architecture*: which provides companywide data and process standardization as appropriate for the operating model
4. *Business Modularity architecture*: where companies manage and reuse loosely coupled IT-enabled business process components to preserve global standards while enabling local differences

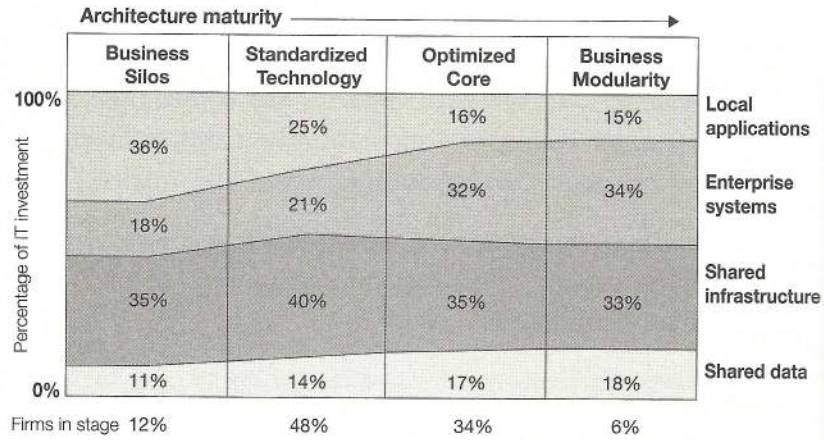
Companies move through these stages by first building and then leveraging a foundation for execution. Each stage involves organizational learning about how to apply IT and business process discipline as strategic capabilities. Advancing through the stages requires lots of persistence, but as companies advance from the first stage to later stages, they realize benefits ranging from reduced IT operating costs to greater strategic agility. In this chapter we discuss how to navigate the enterprise architecture journey where companies learn to build and leverage their foundations for execution.

### The Four Stages of Architecture Maturity

As companies build out their enterprise architecture, they gradually shift their investments in IT and business process redesign. In particular, they identify where global synergies offer greater value than local autonomy. Figure 4-1 shows the relative IT investments in data, shared infrastructure, enterprise systems, and local applications in each of the four architecture stages.

FIGURE 4-1

## Architecture maturity stages

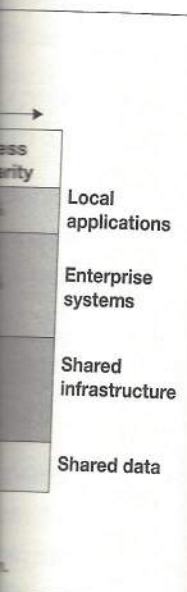


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### Stage 1: Business Silos

In the Business Silos stage, companies focus their IT investments on delivering solutions for local business problems and opportunities. These companies may take advantage of opportunities for shared infrastructure services like a data center, but such shared services accommodate the unique needs of the local business units. Companies in this stage do not rely on an established set of technology standards.

The role of IT in the Business Silos stage is to automate specific business processes. Thus, IT investments are usually justified on the basis of cost reductions. In a well-managed Business Silos environment, business managers design business processes and specify required IT functionality. IT then develops or buys an application to fully meet the requirements. Ideally, systems delivery in this stage generates a 100 percent solution to the specified business need.



Organizationally, applications in the Business Silos stage align naturally with a company's business unit, functional, or geographic structures. The architecture imposes no constraints on business units' activities, thereby encouraging innovation. Strategic initiatives can be executed with few, if any, constraints from other parts of the business. Consequently, functional, plant, and geographic managers often respond positively to applications developed in silos. Business silos can compete for capital funding using locally focused cost-benefit analysis. System benefits are predictable (albeit frequently overstated), and outcomes are measurable.

Solutions developed in a Business Silos architecture can enhance company competitiveness within the context of local specialization. For example, in an investment bank, IT is the product. New investment products are most profitable when they are first introduced (i.e., until competitors introduce a similar product). Thus, time to market is critically important in investment banking—each day a new product is on the market without a competing product can mean millions of dollars to the innovating company. Investment banks generate huge profits from these IT-based investment products.

These one-off solutions, however, create a legacy of systems that cannot talk to each other. Many IT professionals are quite adept at making disparate systems look integrated, but the code required to link applications becomes increasingly complex. Over time, key systems have so many links to other systems that even small changes are time consuming, expensive, and risky. More important, a Business Silos environment obstructs integration and standardization of business processes.

Only 12 percent of the companies in our research were in the Business Silos stage; most companies had already moved past this first architecture stage. It is not the frustration of isolated systems that usually drives management from this stage. It's the cost. More lucrative industries, such as investment banking and pharmaceuticals, have thus been among the last to abandon the Business

investments and opportunities for such shared business units. A set of technologies specific to the silos environment specify application to this stage in this business need.

Silos architecture. New, fast-growing businesses can easily fall into the trap of addressing immediate business needs without regard for future capabilities. Eventually, the need for efficiency in IT operations and the desire to build a solid data and process platform to support the business forces companies to move to the Standardized Technology stage.

### *Stage 2: Standardized Technology*

In the Standardized Technology stage, companies shift some of their IT investments from local applications to shared infrastructure (figure 4-1). In this stage, companies establish technology standards intended to decrease the number of platforms they manage. Fewer platforms mean lower cost. In our study, Standardized Technology companies had IT budgets that were 15 percent lower than Business Silos companies.<sup>4</sup> But fewer platforms also mean fewer choices for IT solutions. Companies are increasingly willing to accept this trade-off. Forty-eight percent of companies in our study were in the Standardized Technology stage.

As in the Business Silos stage, the role of IT in the Standardized Technology stage is to automate local business processes. The emphasis in IT management, however, shifts from concerns about the functionality of the applications to the cost-effectiveness and reliability of the company's systems. Thus, the management of technology standards is key to this stage.

Early in this stage, most business unit managers and developers cling to the belief that business needs should drive technology. The initial encounter with technology standards is the first time management allows IT to shape business solutions. Soon business managers see that standardization reduces risk, and the costs of shared services (such as support, maintenance, and purchasing) and reliability, security, and development time improves. When these benefits become apparent—usually through benchmarking of IT unit costs and system quality—business unit managers quickly become believers. As one CIO noted: "We've had successes where

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Most companies move into the Standardized Technology stage by creating a corporate CIO role or by endowing the incumbent CIO with authority to mandate IT-related behaviors. The CIO then introduces efficiencies by standardizing and consolidating technology platforms and providing shared infrastructure services. The migration to a Standardized Technology architecture fundamentally changes a company's approach to solutions delivery. Instead of defining the solution and looking for technology that best delivers that solution, companies in this stage negotiate the best possible solution given the acceptable technology platforms. The commitment to technical standards means that the IT application representing the best fit in terms of functionality may be rejected because it doesn't work with the company's technology architecture.

In addition to consolidating and standardizing hardware, companies in the standardized technology stage start to reduce the number of software products performing similar functions. For example, one manufacturer reduced the number of order management systems from twenty-eight to four—a common outcome of Standardized Technology initiatives. Technology standardization, however, does not readily overcome the Business Silos problem of data embedded in applications. Companies in this second stage usually increase access to shared data by introducing data warehouses, but transaction data is still embedded in individual applications.

Companies that have achieved significant cost savings and reliability through Standardized Technology include Guardian Life Insurance, Johnson & Johnson, Carlson Companies, Brady Corp., and Pfizer. These organizations' managers found that early resistance to standards fades because after a while, early battles are forgotten and people stop questioning the value of standards or shared infrastructure. This evolution positions companies for the

optimized core stage, where standardization practices expand to incorporate data and business processes.

### *Stage 3: Optimized Core*

In the Optimized Core stage, companies move from a local view of data and applications to an enterprise view. IT staff eliminate data redundancy by extracting transaction data from individual applications and making it accessible to all appropriate processes. In this stage companies are also developing interfaces to critical corporate data and, if appropriate, standardizing business processes and IT applications. Thus, IT investments shift from local applications and shared infrastructure to enterprise systems and shared data (figure 4-1).

Thirty-four percent of companies in our study were in the optimized core stage. These companies are working to digitize their core data and/or business processes to capture the essence of their business. Companies choose to optimize their data, business process, or both depending on whether they're using a Diversification, Coordination, Replication, or Unification operating model. Once optimized and digitized, making fundamental changes to the business process or data becomes more difficult, but building new products and services onto the core becomes easier and faster.

The role of IT in the Optimized Core stage is to facilitate achievement of company objectives by building reusable data and business process platforms. Senior managers who lead the adoption of Optimized Core architectures embrace the principle that standardization enables innovation. In providing predictable business outcomes, standardized data and processes allow for process innovation closer to the customer.

Companies' reusable data and business process platforms are composed of a set of totally predictable core processes. Both at Air Products and Chemicals and at Nestlé, management is digitizing supply chains using ERP systems. UPS built its business around a single package database supporting its package delivery business.

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Delta Air Lines created its Delta Nervous System to capture the interrelated requirements of the customer experience and airline operations. Citibank Asia Pacific established a core set of standardized banking processes that could be centrally served out of Singapore to both existing and new markets. In all of those cases, digitizing the company's core data and processes provided a foundation for existing and future operations and customer interactions. Each company's unique strategic advantage resulted from building on that foundation.

Optimizing the core processes and data in a company is a formidable technical challenge, but the corresponding management challenges are even more demanding. Standardizing shared data and core business processes involves taking control over business process design from local business unit leaders. Thus, the optimized core stage is a much harder sell to business managers than technology standardization. One CIO we interviewed described data and process standardization as "the most top-down effort we've ever made in this organization."

In the Optimized Core stage, senior IT and business managers learn together how to articulate the company's operating model and how to identify the IT capabilities required to implement the operating model. The architecture matures, enabling the company to optimize the core while identifying opportunities to leverage it. A more modular architecture is the next stage of maturity and business value.

#### *Stage 4: Business Modularity*

The Business Modularity architecture enables strategic agility through customized or reusable modules. These modules extend the essence of the business built into the infrastructure in the Optimized Core stage. Few companies have reached the Business Modularity stage—6 percent in our study—so it is difficult to assess how IT investment patterns change as companies move from the third to the fourth stage (figure 4-1).



In the fourth stage management refines, and increasingly modularizes, the processes that were digitized in the third stage. Management can take two approaches to this task. One is to create reusable modules and allow business units to select customer-oriented processes from a menu of options. For example, through a technology known as "Web services," companies can create reusable business services with standard interfaces for accessing those modules and the related data.<sup>5</sup> Web services can select modules from both internal and external sources. A second approach is to grant business unit managers greater discretion in the design of front-end processes, which they can individually build or buy as modules connecting to core data and back-end processes. In effect, managers get the freedom to bolt functionality onto the Optimized Core.

In either case, the role of IT in a Business Modularity architecture is to provide seamless linkages between business process modules. Modularity does not reduce the need for standardization. Individual process modules build on the standard core and link to other internal and external processes through standardized interfaces. To continue to provide all the benefits of the Optimized Core stage—efficiency, single face to the customer, process integration—modular architectures extend, rather than replace, Optimized Core architectures.

By ensuring the predictability of core processes, modular architectures provide a platform for innovation. The modular architecture enables local experiments, and the best ones can be spread throughout the company. To enable this, the Business Modularity stage requires negotiations between senior management and IT executives to clarify which processes are standardized, which are required, and which may be developed locally.

To benefit from modular architectures, companies must learn how to quickly identify the strategic opportunities that best leverage their core and then how to develop or reuse modules that extend the core. Reusable modules will build a thicker, denser core, providing greater efficiencies while allowing local customization. Quickly developed and very focused add-on modules allow strate-

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