

# Orchestrating Loosely Coupled Business Processes: The Secret to Successful Collaboration

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**Collaboration can only generate economic value when it is firmly anchored in specific business processes that span across enterprises. Unlocking this economic value will require a very different approach to managing business processes. New generations of information technology can be significant enablers, but much progress can be made with technology already available. In fact, companies should start the transition now because lengthy lead-times are required to build the necessary skills.**

Judging by today's business press, collaboration within and among enterprises has become the Holy Grail for countless companies and technology vendors. Search Google using the keyword "collaboration" and it returns 4,480,000 references on the Internet. Countless technology start-ups and service firms offer "collaboration solutions". The hot topic these days at conferences is "C-Commerce". Not coincidentally, this is also the latest theme of several management gurus. There is no doubt that the promise of collaboration's potential impact on productivity, growth, and quality is enormous. Unfortunately, that promise is seldom delivered upon. Given its obvious benefits, one should ask why the "Collaborative Enterprise" lives in theory but is seldom seen in practice.

Part of the problem is that "collaboration" is either discussed too broadly or too narrowly to be actionable. Often, collaboration refers to any situation where companies interact with each other to support broad business objectives. By this definition, nearly every company is a collaborative enterprise since there aren't many completely vertically integrated companies still in business today. Other times, technologists use collaboration very narrowly to describe connections across technology platforms. While technology is certainly a powerful tool to enhance business collaboration, it is only an enabler. The real question is: where

can improving coordination of business activities create the most economic value?

For managers to realize real economic value from collaboration, they must focus on business processes, especially business processes that span multiple enterprises and drive the economic performance of the participants. Three core business processes meet this requirement: supply chain management, customer relationship management, and product innovation and commercialization. By systematically enhancing the coordination of activities across these business processes, managers can deliver significant performance improvement. If done properly, this performance improvement is not just a one-time event. Instead, it grows over time.

Many companies are experimenting tentatively on the edge, but a few companies already are beginning to realize the potential of collaborative business processes. Li & Fung and Nike are reshaping supply chain management relationships in the apparel industry. Cisco has received a lot of publicity, but its initiatives in the customer relationship side of its business have gone relatively unnoticed.

Are these companies just looking for more cost reduction or asset savings? In the early stages, these efficiency benefits are often significant. Particularly in the current economic environment, they can be the primary driver for companies to begin to migrate to a very different approach to business process management. Efficiency benefits are only a small part of the story, however.

The real pay-off comes from the ability to deliver greater value much more flexibly. Collaborative business processes provide a platform for much greater specialization, allowing each of their participants to focus on their areas of greatest capability, supported by other participants focusing on areas of complementary capability. These participants can also be flexibly mobilized to tailor the collaborative business process to the needs of specific products and/or customers. So, not only do we get more value, but also value more tailored to the occasion at hand.

## **CONTRASTING APPROACHES TO BUSINESS PROCESSES**

In their early stages, emergent collaborative business processes still resemble much more traditional business relationships. The resemblance soon diminishes as these collaborative business processes become more sophisticated. For example, early stage initiatives tend to involve a relatively few close business partners, whether suppliers or channel partners. They look somewhat like conventional supplier or distribution channel relationships, but even at this stage there is a difference. Rather than focusing on the transaction as the primary event, management begins to take a broader process view of the relationship.

What are the activities on either side of the transaction and how can these activities be better coordinated to improve performance?

Collaborative business processes in their early stages of development can also resemble more traditional outsourcing relationships, but again with a key difference. Outsourcing relationships are typically structured in a very tightly coupled manner, requiring lengthy negotiations and detailed contracts. Collaborative business processes create very different kinds of relationships, much more flexible in nature.

Collaborative business processes employ a very different design and management approach relative to more traditional business processes. Rather than relying on hard-wired design, collaborative business processes use a much more loosely coupled design. In a hard-wired design, activities throughout the process are defined with great precision (think of a detailed process manual) and tightly integrated. As a result, a change in any activity in the process creates the risk of ripple effects throughout the process.

More loosely coupled designs employ a modular approach where the focus is on defining standardized interfaces across modules of activity. In this way, modules of activity can be inserted or removed to tailor the process and activities within a particular model can be easily modified to accommodate changing business needs.

This approach has many benefits, but it becomes a necessity when managers face the challenge of coordinating business processes that extend across multiple enterprises. In such environments, the ability to dictate top-down standardized activities becomes much more limited, except in those rare cases where one company has such massive market power that it can enforce uniformity on all participants. Modular approaches accept diversity at the activity level and focus instead on ensuring that modules can flexibly connect with each other.

This loosely coupled design for collaborative business processes calls for a very different management approach. The primary differences can be summarized across three dimensions: Roles, Rules and Renewal (See Exhibit 1).

## **Roles**

Conventional business processes tend to operate within a single enterprise with perhaps a few limited links to other enterprises for specialized capabilities. In such an environment, a senior executive serves as business process manager, specifying and controlling the activities of all employees supporting the business process.

Loosely coupled business processes tend to emerge first across enterprises. These enterprises come together into process networks where they play one of

**Exhibit 1**  
**Contrasting Approaches to Business Process Management**

	Hard wired business processes	Loosely coupled business processes
	From	To
<b>Roles</b>	Controller Limited, all-purpose service providers	Orchestrator Increasingly specialized service providers
<b>Rules</b>	Management of micro-activities Instructions (push) Full information transparency	Management of macro-entities Incentives (pull) Selective information visibility
<b>Renewal</b>	Infrequent benchmarking Infrequent reengineering (every 5-10 years)	Continuous benchmarking Dynamic reconfiguration
<b>Rewards</b>	Experience effects Diminishing returns	Growing and continuous specialization Increasing returns

two roles: orchestrators or service providers. Orchestrators have been around for quite some time in certain industries. Think of a General Contractor orchestrating a broad array of highly specialized service providers on a construction project for a large commercial building. From construction to movies, think of the role that an executive producer plays in orchestrating the complex processes required to make a movie. Now, shift from movies to the very traditional apparel business. Li & Fung provides a powerful example of a new kind of sophisticated orchestrator coordinating a very broad process network.

Li & Fung began in 1906 as a family run trading company based in Hong Kong selling to overseas merchants. In the mid-1970's, two brothers, Victor and William Fung, returned from the United States and took over a company that was trading "trash and trinkets." The company was a broker, charging a fee for putting buyers and sellers together but getting increasingly squeezed between the growing power of buyers and the factories.

Today, Li& Fung is a cutting edge supply chain orchestrator. To produce a garment, for example, the company might purchase yarn from Korea that will be woven and dyed in Taiwan, cut in Bangladesh, then shipped to Thailand for final assembly, where it will be matched with zippers from a Japanese company and, finally, delivered to geographically dispersed retailers in quantities and timeframes specified well in advance. As a supply chain orchestrator across many producers and countries, Li & Fung provides the convenience of a one-stop shop for customers through a Total Value-Added Package: from product development, through raw material sourcing, production planning and management, quality assurance and export documentation to shipping consolidation.

Victor Fung describes it as "close to creating a customized value chain for every customer order." He elaborates in a Harvard Business School case study, saying "We're orchestrating a whole production process that starts from raw materials all the way through to the finished product."

Li & Fung is now in the process of broadening its role as a supply chain orchestrator to embrace a broader range of high-volume, time-sensitive consumer goods. They believe that the same capabilities that made them so successful in apparel will help them to build similar positions in fashion accessories, toys and games, sporting goods, home furnishings, handicrafts, shoes, travel goods and tableware.

Victor and William began by focusing on the unmet needs of their customers and then developed a process network that spans 6000 factories in 100 countries. They organized around small customer-focused divisions with \$50 million or less in sales, rather than geographies. They take 30% to 70% of each factory's production, so they have substantial leverage. Consequently, they get better costs, quality, speed and reliability from reaping global economies of scope. Since they can take months out of the product delivery cycle, the risk of obsolete inventory resulting from poor demand or fashion projections is much less.

According to John Suh, CEO of StudioDirect (their US-based e-business subsidiary focused on serving small and medium size retailers), the key factors for success are "1. Quality of factory relationships. For example, 9/11 required Li & Fung to move hundreds of millions of dollars in merchandise in seven days despite air travel shutdown and they met their delivery commitments. 2. Cost is critical because this is a 6% gross margin business. 3. Deep product, country and customer expertise. Li & Fung can negotiate with suppliers to get a fair price because they know their economics and capabilities intimately. 4. Excellent communications and infrastructure. StudioDirect can start producing an order somewhere in the world 6 hours after it is entered online which is made possible because Li & Fung maintains databases on every supplier's prices and performance over time. Customers change products so often that it is not worth it for them to try and recreate this knowledge. 5. Thoughtful risk management. Li & Fung learned they can manage raw materials risks, but they will never take finished goods risks."

Li & Fung's performance has been spectacular for the low growth, low margin trading business. Li and Fung has, over the last three years, "doubled revenue and tripled profits in an industry growing only 2% a year." The company now generates over \$3 billion in revenue – this is real revenue, representing money received by Li & Fung in return for services rendered. The retail value of the products assembled in their process network is far larger. Li & Fung's return on equity over each of the last five years has exceeded 30%. Each Li & Fung employee on average generated \$420,000 in revenues in 2000.

Li & Fung is an example of a pure orchestrator in the sense that they do not produce any products of their own or directly participate in any of the stages of production within the supply chain. Few companies will ever evolve to this extreme form of orchestration. Many companies may be able to play more

modest orchestration roles focused on enhancing the economic performance of their own products.

In this regard, Nike provides an interesting contrast to Li & Fung. The athletic shoe business is subject to enormous uncertainty given rapid shifts in fashion and shifts in tariffs and trade regulations that can significantly affect the economics of shoe production. As a result, Nike has developed a significant process network of production partners and related logistics providers that extend across multiple stages of shoe production, ranging from the sourcing of materials to the assembly of finished shoes and delivery to retailer distribution centers.

Both Li & Fung and Nike are focused on orchestrating supply chain processes in the apparel industry. Whereas Li & Fung has created an open process network, providing it orchestration services to apparel designers and retailers, Nike plays this role in a captive process network focused on its own line of athletic shoes and apparel. They both, however, have developed a very similar approach to managing loosely coupled supply chain business processes.

**Exhibit 2**  
**Seven Roles Of The Orchestrator**

1. Recruit participants into the process network
2. Structure appropriate incentives for participations and increasing specialization over time
3. Define standards for communication and coordination
4. Dynamically compose tailored business processes, involving multiple service providers to meet customer needs
5. Assume ultimate responsibility for the end product
6. Develop and manage performance feedback loops to facilitate learning
7. Cultivate a deep understanding of processes and practices to continually improve the quality,

What are the common elements of the role that both Li & Fung and Nike are playing as orchestrators? As Exhibit 2 illustrates, orchestrators of process networks must perform a broad range of activities, ranging from recruiting and evaluating potential network participants to coordinating their activities for particular projects and creating appropriate incentive structures to rapidly improve performance. To perform this role, companies must master a number of new skills and capabilities (see Exhibit 3).

Aspiring orchestrators must develop close relationships with customers, both to understand their needs in depth and to generate growing demand for their partners in the process network. Li & Fung really took off as an orchestrator when it chose to re-organize into customer-focused business units. Nike is a

**Exhibit 3**  
**Can You Be The Orchestrator?**

- ✓ Do you have close relationships with customers such that they honestly tell you their needs how well you're meeting them, and how they are likely to charge?
- ✓ Does your organization have detailed knowledge of the broad set of practices and core processes being coordinated?
- ✓ Do you have close, trust-based relationships with partners possessing the required specialized skills to deliver a competitively advantaged product or service?
- ✓ Do you understand the economics and profit/loss hurdles for all partners and the customer?
- ✓ Do you have the capability to create incentives to dynamically move the expanding process network to more specialization and continuous improvement over time?

master at marketing and maintains close relationships with major retailers to minimize risk of unexpected demand shortfalls.

Orchestrators must also build detailed operational knowledge of the broad range of practices and activities being coordinated. Nike runs an “expatriate program” in which it sends its own employees to live and work with its key production partners for three or more years at a time. These employees are not directing the activities of the production partners. They are focused on understanding how they operate so that Nike can better understand the capabilities of each production partner and make more intelligent choices about which production partner to deploy for particular process tasks.

According to John Suh, Li & Fung believes the orchestrator “must be the guy with inside knowledge of all the problems, chafes at them, and has the ability to fix them. This requires mastering many details, and being a savvy operator. The smart novice can’t hope to succeed. We moved from being smart generalists with finance skills to being highly specialized operators with deep domain expertise.”

As John Suh indicated earlier in the article, orchestrators also need to understand the economics of the diverse participants in the process network. As we will see below, incentive structures are critical to the success of loosely coupled business processes. Understanding the key economic drivers of profitability for each participant becomes essential to attract the right participants and to motivate them to give appropriate priority to the needs of the collaborative business process.

Orchestrators clearly play a vital role in the formation and operation of process networks. Early stage process networks can consist of an orchestrator and a few well-established business partners. More fully developed process networks typically represent an expanding group of companies organized by an orchestrator to execute tailored business processes extending across multiple stages of activity. For every orchestrator, then, there will be a growing number of companies known as service providers.

These service providers are responsible for performing specific modules of activity within the process network. Thus, these companies may actually produce physical products, as in the case of the apparel assembly operations working for Li & Fung, but they are not selling these products – they are producing them as a service.

Service providers can be highly profitable, but their profitability depends on a clear understanding of their role in the process network. They have an opportunity within a process network to focus tightly on their areas of distinctive capability and to rely on other service providers for complementary capabilities. Within their areas of distinctive capabilities, service providers must learn to use the performance feedback they receive as part of a process network to rapidly enhance their performance. The service provider benefits both by having a continuing source of demand generated by the orchestrator and by being able to leverage the assets and capabilities of others.

## **Rules**

Loosely coupled business processes also utilize a different approach to shape the actions of participants. In conventional business processes, the process manager defines and actively manages the micro-activities of employees involved along the entire business process. Process managers control micro-activities through detailed instructions and continuous monitoring of activities. Such an approach requires full data transparency – the process manager needs to be able to access all data about all activities across the entire process in real-time in order to effectively monitor the process.

Loosely coupled business processes focus on managing macro-entities – the enterprises participating in the process. Orchestrators focus on managing the interfaces – defining the inputs and end products required for each enterprise – rather than the activities that occur within each enterprise. To get the desired performance from service providers, orchestrators rely less on detailed instructions and much more on economic incentives driven by explicit operational milestones. Such an approach eliminates the need for full data transparency and instead can operate successfully with much more selective information visibility.

By now, everyone has heard about Cisco. What more could possibly be said about the company? When you read about Cisco's business process management, chances are the articles focus on either its aggressive use of the Internet to cut operating cost or the management of its supply chain based upon a broad-based outsourcing of manufacturing operations. Another aspect of Cisco's operations receives relatively little attention – its development of an innovative process network to enhance the performance of its customer relationship management process. There is some irony in the fact that Cisco

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employs a much more tightly coupled business process management approach in its well-covered supply chain operations, while the much more innovative loosely coupled approach in its customer relationship management process has largely escaped public attention.

It would be a mistake to assume that Cisco had a clear vision of a new approach to business process management when it began to assemble its process network to support customers. Much more likely, it responded to near-term needs in an environment where more tightly coupled approaches simply could not work and, over time, began to realize the implications of a very different approach to process management. The inherent flexibility of loosely coupled business processes allowed Cisco to rapidly evolve its approach as it began to identify new opportunities.

On the demand side of its business, Cisco had become increasingly dependent on a set of third party channels to reach small and medium size enterprises. These third party channels jealously guarded their customer relationships and were very wary about any attempt Cisco might make to marginalize them in the customer relationship. It simply was not feasible for Cisco to adopt the highly directive approach towards its third party channels that tightly coupled business processes would have required. A different approach would be needed.

Cisco's solution to this dilemma was to deploy an innovative Internet based platform known as Cisco Connection Online (CCO). It launched an aggressive marketing program designed to attract potential and existing customers to this Internet site. Once at CCO, customers could find detailed information about Cisco's expanding and rapidly changing product line. More importantly, customers could work with decision tools like automated configurators to determine what specific Cisco products would best meet their needs.

These tools also help the customer to identify complementary products or services available from third parties that would increase the value of Cisco's products. For example, the customer might require specialized integration services to help connect Cisco's products to its existing communication networks.

CCO doesn't just provide support to customers. It helps to manage relationships with a very diverse array of thousands of third party channel partners. The Partners and Resellers section of the site includes Partner Business Central and Partner Relationship Central. Here, partners can get all the information they need about Cisco's partner programs, products, marketing promotions, training, and support services. Everything they need to order products and services can also be done through the site. Partner Relationship Central allows prospective partners to apply to Cisco to become a certified partner, interface with a channel account manager, and complete a profile so other partners and customers can locate the right partner. Certification can be done online as well. The Cisco

Consultant site provides configuration tools, tools for interfacing with Windows or the Internet, White Papers, and even RFP templates.

In this way, Cisco began to play the role of an orchestrator, managing potentially very complex sequences of customer support activities involving multiple specialized third parties and extending across the full life cycle of a customer, from initial contact to product upgrades. Let's look at the different rules that govern the interactions within Cisco's process networks.

As already mentioned, Cisco cannot dictate to its channel partners in terms of how they do their job. Cisco's approach to ensuring appropriate action is more indirect – through certification, training and selection of the appropriate partners to involve for each customer's needs. As Sue Bostrom, Senior Vice-President of the Internet Business Services Group, put it, "Cisco is constantly looking for new ways in which to use the Internet to create value for our customers, and we are on happy to outsource an activity to a partner rather than do it ourselves if it is more economic to do so. We have learned how to use technology to control the result for the customer without our having to own every asset or execute every activity."

Service providers cannot join Cisco's process network on their own initiative. They must be certified by Cisco and meet specific criteria depending on the category of service provider involved to ensure they have the requisite capabilities to help customers.

Once qualified, Cisco invests in training and information dissemination programs to help service providers keep up with Cisco's rapidly changing strategic initiatives and complex product lines. For example, Cisco launched "E-Learning" initiative four years ago as an Internet-enabled solution to cope with their hyper growth from 1998 to 2000. Salesmen were in classes six weeks a year to keep up with product changes and this was time away from customers. E-Learning provides online content in 10-12 minute modules that are developed by the Cisco businesses using tools created by the E-Learning team.

The approach is also being used to train partners and customers, with much of this activity being driven by 180 training partners carefully selected by Cisco. Today, Cisco has over 10,000 modules of content and uses E-Learning for 90% of its sales training, 60% of its partner training, and 20% of its customer training. Tom Kelly, Cisco's Vice-President of E-Learning, describes it as "more than training, it provides information, while enabling communication and collaboration. We use this tool as a powerful, cost-effective way educate partners and customers while simultaneously sharing best practices." Total training costs are radically reduced, and training can be integrated into daily work routines.

Given these certification and training programs, Cisco has a solid understanding of the capabilities of its many service providers. In terms of deploying the right

service provider for a specific customer's needs, the focus shifts to understanding customer needs in depth. CCO's tools help to generate detailed information about customer needs. Based on this information, Cisco can then be helpful in referring the customer to the most appropriate third parties in the right sequence to get the help and related products they might need.

In terms of incentives to motivate the right behavior, Cisco's approach to the process network for customer relationship management differs somewhat from the approach taken by both Li & Fung and Nike in supply chain management. In the supply chain cases, Li & Fung and Nike serve as the "paymasters" for the participants in the process network. They negotiate with each of the service providers and pay them directly for services rendered. In contrast, the customers, not Cisco, generally pay the service providers in Cisco's process network.

Nevertheless, Cisco indirectly generates revenue for its service providers by investing in the marketing programs to draw customers to CCO. This revenue has a double benefit for the service providers. First, through the leads generated by Cisco, service providers find new sources of revenue that they might not otherwise have been able to generate on their own. Second, service providers can reduce their own marketing expense and redeploy these funds to deepen their capabilities in areas that directly offer value to the customer.

Service providers save money not only in marketing expense. Typically, the activities required to qualify a lead and convert it into a paying customer represent a major expense for these kinds of businesses. Since CCO goes a long way towards qualifying the prospect before the lead is sent on, the service providers have benefited from much quicker conversion cycles and lower lead qualification expense. The ability to save money in these areas can often make the difference between a profitable and an unprofitable business.

Cisco tracks customer satisfaction with services rendered. Those service providers who perform well are rewarded with more business. Those who don't perform well find their stream of leads from CCO thinning out. Service providers have a significant economic incentive to join Cisco's process network and to perform well for the customers sent their way by CCO.

Since Cisco is not involved in managing the detailed activities of its service providers, it does not need full data transparency regarding the operations within its process network. It can manage the process network with much more selective data focused on completion of key operational milestones and satisfaction of customers.

Since Cisco configured the customer relationship management processes in a modular fashion, it can be much more selective as well about the customer information it shares with these service providers. Cisco understands what

information is required for each service provider to execute successfully and it does a good job in delivering that information. However, Cisco does not provide full data transparency because it would be extremely expensive, create conflicts between some of its service providers who compete with each other, and undermine its advantage as the sole owner of the integrated customer profile across all aspects of the relationship.

## **Renewal**

In today's rapidly changing business world, business processes must be able to change more rapidly. Two key obstacles hamper conventional business processes in this regard. First, information regarding key operational performance gaps is usually difficult to obtain. We are all familiar with traditional performance benchmarking efforts – they are major undertakings requiring for extended periods of time many people who are deeply skilled in the processes being benchmarked. It is no wonder that corporations sponsor these initiatives relatively infrequently.

Second, even if the operational performance information were readily available, the effort to reengineer enterprise-wide conventional business processes is massive. The effort is so massive precisely because the processes are hard-wired. Activities must be specified in great detail, comprehensive information systems must be re-architected and implementation is often delayed because unforeseen adverse consequences are uncovered from relatively minor changes made in distant parts of the business process. For most enterprises, a five-year cycle for business process reengineering initiatives would be considered aggressive.

There has got to be a better way. This is in fact where loosely coupled business processes really excel. By implementing a modular approach, operational performance information can be made more readily available and changes to the process can be made much more quickly.

Take the example of Li & Fung. Based on its experience with the service providers across its network, it has a detailed and current view of the performance of each service provider in a wide variety of contexts. Some apparel cutters may do well with coarser forms of wool, but lack the work force skills or machinery required to maintain high quality and high throughputs for more delicate forms of wool like angora or cashmere. Talk to Li & Fung employees and they can talk in great detail about the operational performance of their service providers. This information helps them to allocate work across the process network but it also provides the basis for detailed performance feedback to service providers. Service providers know where they stand at any point time along multiple performance dimensions.

This performance information provides the basis for at least two levels of performance improvement initiatives that can be undertaken on a much more frequent basis than possible in hard-wired business processes. First, the orchestrator can use this performance information to dynamically reconfigure the business process, swapping out service providers that do not perform well in addressing the specific product and/or customer needs in question and swapping in other service providers that do perform well. This can lead to substantial near-term performance improvement. As Sue Bostrom puts it, “We try things first, and then do what works. We are happy to have a reliable partner take over a function we provide if they can better meet customer needs. We won’t study something for months and then implement it because by the time the study is done, we could have tried it for real.”

Second, the service providers can use this information to quickly identify performance gaps and mount appropriate performance improvement initiatives to upgrade their capabilities. Since each service provider represents an independent module in the loosely coupled business process, changes can be more rapidly designed and implemented without worrying about unforeseen adverse consequences in other parts of the process.

### **EXPANDING REWARDS – THE REAL POWER OF LOOSELY COUPLED BUSINESS PROCESSES**

The differences between tightly coupled and loosely coupled business processes explain fundamental differences in the economic value creation potential of each type of business process. Tightly coupled business processes tend to improve based on experience with particular tasks; the more often a task is performed the greater the opportunity to learn how to do it better. These business processes also incur significant coordination overhead as the number of participants increases. As a result, enterprises soon encounter diminishing returns as they seek to recruit other enterprises to help support the process. The truism “too many cooks spoil the broth” does not just apply to soup.

Loosely coupled business processes are quite different. Of course, they too enjoy the benefits of experience effects. But they offer something else to participants. Within process networks, service providers have an opportunity to specialize more and more on the activities where they have truly distinctive capabilities, while shedding activities which can be better performed by other service providers. This allows service providers to develop more focused experience and to learn more rapidly in the areas where they are really distinctive without the distraction of activities that are less valuable to customers. As each participant becomes more skilled in distinctive areas, the customers benefit by being able to access world-class capabilities across the full range of their needs.

Given this opportunity, something interesting happens. Rather than encountering diminishing returns, loosely coupled business processes create an increasing returns dynamic, where the value to customers and participants increases as the number of participants grows. In smaller process networks, a service provider may be called upon to participate in activities where they do not have a lot of depth simply because there are no other service providers available with the requisite capabilities. The more service providers in the process network, the more opportunity to specialize. Since loosely coupled business processes do not incur high coordination overheads as the number of participants increases, the benefits to both customers and participants far outweigh any additional coordination costs.

Of course, there is one catch. The broader process network must continue to grow so that service providers can continue to grow their own businesses as the number of participants expands. This will be easier for open process networks like the one orchestrated by Li & Fung since they can potentially serve all customers in a particular industry. Captive process networks like the ones orchestrated by Nike or Cisco face a real challenge: they will only grow as fast as the core business of their orchestrator. For this reason, it is likely that open process networks will tend to prevail against captive process networks over time. Even Li & Fung will need to find new sources of growth. Already the leading orchestrator of apparel supply chains, Li & Fung is expanding its horizons to include all high volume consumer goods produced with labor-intensive manufacturing.

## **INFORMATION TECHNOLOGY AS AN ENABLER**

The early examples of loosely coupled business processes have all emerged within existing generations of information technology. Some, like Li & Fung, have used very rudimentary technology like telephone and fax to communicate with small enterprises in remote areas like rural China. Others, like Cisco and Li & Fung's affiliate StudioDirect, have used sophisticated Internet technology. A few, like Nike, have been burnt as they tried to upgrade their technology platforms. The key point is that information technology is not a prerequisite for the emergence of loosely coupled business processes.

Having said that, information technology can be a significant enabler in accelerating the development of process networks and increasing the economic value that can be generated from them. In particular, a new generation of information technology is beginning to be deployed which will be particularly helpful in supporting loosely coupled business processes.

Web services are the technology analog to loosely coupled business processes. Web services enable much more flexible and low cost connections across

applications and databases by using emerging open standards to ensure compatible interfaces (e.g., XML, SOAP, UDDI and WSDL). Collaborating companies can maintain their existing systems and standards, but quickly and cost effectively connect with one another using Web services technology.

In this way, they create a much more loosely coupled technology architecture than had been possible with previous generations of technology. In fact, while most of the press attention has been on specific Web services technology like XML, the important development from a business perspective has been the shift to distributed services architectures. Web services technology is a key building block in these architectures, but the important shift in design focus is to build architectures that enable businesses to access technology resources as services wherever they reside.

Earlier attempts have been made to deploy distributed service architectures, but they these architectures had modest adoption because the standards were relatively difficult to implement and, as result, were not widely used. Web services standards begin with relatively simple specifications that are easier to work with and also have the potential to evolve rapidly to handle more challenging tasks. Most companies already have application servers, so creating Web services represents a small incremental investment.

Today, major vendors such as Microsoft, BEA, IBM, and Sun are investing heavily in Web services as a core technology offering. In addition, promising start-ups such as Grand Central Networks, Cape Clear and Kenamea are focused on providing necessary infrastructure and managed services to complement the offerings of major vendors.

Innovative market leaders are today implementing Web services to connect multiple partners or customers operating on heterogeneous technology platforms. In banking, these companies include Thompson Financial, Merrill Lynch, Charles Schwab, Fidelity Investments, Thomas Weisel Partners, Robertson Stephens, ABN Amro, and Wachovia. For example, both Robertson Stephens and Wachovia are using Web services to consume Thompson Financial Data. They then add value to it through their own research analysts, and use Web services to distribute the specific research reports wanted by each customer.

Companies using Web services in insurance include Blue Cross/Blue Shield, Mega Life & Health, Storebrand, and several smaller companies with strong positions in local markets. For example, a leading national life insurance company is using Web services to connect with customers so the Human Resources department can directly update any changes in employees. This increases value to customers while reducing the costs of investigating claims that were based on obsolete data. Storebrand, Norway's largest insurance company, uses Web services to replace the manual process by which they calculated the potential benefits for 390,000 employees at 6500 customers under a variety of

insurance offerings. They now have an automated process that extracts information directly from the customer's payroll systems and transmits it via Web services to Storebrand's mainframe where the scenarios are run for each customer.

In travel, early adopters of Web services include Dollar and Galileo. For example, Dollar wants to expose their reservations process on as many travel websites as possible. Using Web services, they are able to distribute the code required to link in with their proprietary systems through an architecture that avoids taking people away from their partners' sites. Galileo is experimenting with Web services to offer travel services and to integrate with their travel suppliers. Galileo connects 42,000 travel agency locations to 511 airlines, 37 car rental companies, 350 tour operators, and 47,000 hotels. Another large travel hub has a hotel reservation application that they want to embed on as many individual travel sites as possible to enable customers to make their hotel reservations through a Web service that integrates directly with hotels in their network.

Manufacturing companies using Web services include Dell, Ford, GM, Osram Sylvania, VendQuest, and Eastman Chemical. For example, Eastman Chemical is using Web services to publish a catalog tailored to the needs of each customer, with pricing reflecting their corporate rate, and the ability to execute transactions.

Most of these companies have not yet started to design loosely coupled business processes using Web services technology. They are instead going after low hanging fruit in the form of expense savings resulting from the automation of information flows. As they gain more experience with this technology, many of these companies will begin to realize the opportunity to shift to a very different approach to business process management. These will be the companies that will harness the real economic potential of loosely coupled business processes.

Many executives have heard about Web services technology and are intrigued about its potential to support much more flexible business processes. Certainly this technology has great potential to help process networks to create even more value. As we indicated above, one of the most valuable features of process networks is their ability to generate significant information about service provider performance. Today, much of that performance information is gathered manually and requires significant resource commitments by the orchestrator to collect and disseminate this information.

Imagine how much more effective process networks could be if this information collection and dissemination were automated. Even more dimensions of performance could be measured and stored. Orchestrators could redeploy their employees from routine information management tasks to work more closely with service providers, coaching and counseling them regarding the meaning of the data. In many respects, the technology can be a key enabler of richer and



more timely information flows to support more effective knowledge transfer within the process network.

In focusing so much on the potential benefits of Web services technology, many executives have fallen into a common trap. They have decided to wait until the technology is more mature before launching any initiatives to shift to different approaches for managing business processes.

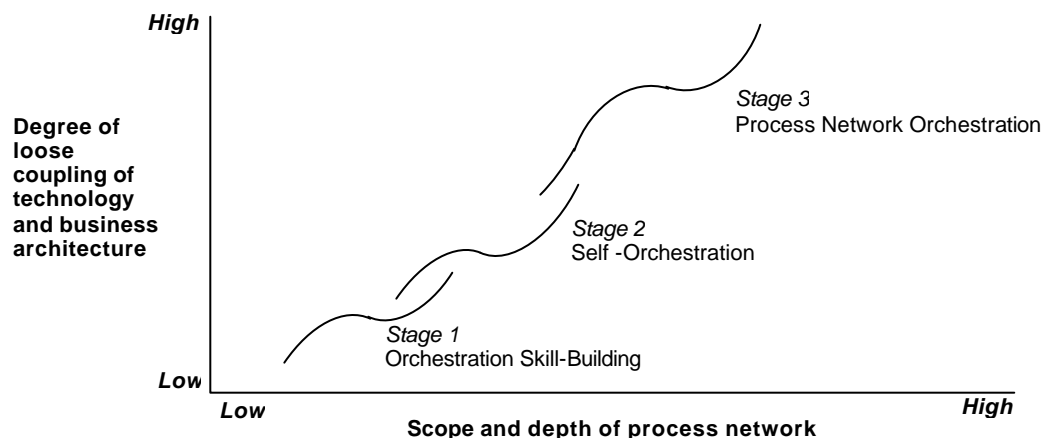
The examples cited earlier show that this response is flawed on two counts. First, Web services technology is being deployed now and yielding real business benefit. Second, significant progress can be made in the design and implementation of loosely coupled business processes even in the absence of fully developed Web services technology.

In fact, the differences in the approaches to business process management are so great that enterprises are likely to experience significant lead-times in mastering the techniques required to design and manage loosely coupled business processes. Enterprises that begin now to develop the necessary skills are likely to have significant advantage relative to those who delay. As the next section makes clear, the journey can begin with relatively small steps to facilitate learning and build appropriate organizational capabilities.

## **THE MIGRATION PATH TO LOOSELY COUPLED BUSINESS PROCESSES**

Loosely coupled business architectures do not spring forth fully formed. They tend to emerge gradually, beginning with modest initiatives designed to reap near-term economic benefits. Executives can begin to move along a three-stage development process as outlined in Exhibit 4. Most companies are capable of achieving and benefiting from the first stage; a smaller set of companies will be capable of mastering the second stage; and relatively few companies could or should aspire to the third stage.

**Exhibit 4**  
**Three Stages of Migration Path To Becoming The Orchestrator**



Stage 1 companies are developing the basic skills required to orchestrate a limited set of loosely coupled business processes with a handful of their first tier partners. There are many points of entry at this stage. In some cases, the skill-building initiatives focus on aggregating and disseminating selected information flows across multiple enterprises to support business processes. Many of the early adopters of Web services technology like Thompson Financial, Storebrand and Galileo are focusing on this area.

Other companies may be focused on identifying and bringing together small communities of business partners with complementary skills and products. Many technology companies focus on this in terms of evangelizing to create developer and value added partner communities. Certainly this was an early focus for Cisco. In financial services, companies like Schwab and Intuit appear to be honing their skills bringing communities of specialized information providers and other investment services together to support investor needs.

A third set of skills that must be mastered in this early stage involves defining and gaining adoption of specific business standards to support coordination of activities across multiple enterprises. Some enterprises are beginning to tailor the broader XML (Extensible Markup Language) standard to more specifically address their business coordination needs. The challenge here is to determine the minimum standards necessary to begin to work together productively. Many enterprises get bogged down in trying to define very elaborate standards to cover every conceivable need at the outset. A much more productive approach is to begin simply and refine standards over time to handle more complex tasks.

These companies are not yet coordinating business processes in the sense of selecting service providers to operate in a specific sequence across multiple stages of activity on behalf of an individual customer. Instead, they are building the skills required to understand the needs, capabilities and economics of different types of businesses and what it takes to attract and build loose relationships with these businesses.

As companies move into the second stage, they are learning to apply these skills to specific business processes required to more effectively support their own products and/or customers. At the outset, they continue to work with a relatively limited number of business partners where they have already developed some common experience and trust. Both Cisco and Nike are examples of Stage 2 companies. Thus far, they have only focused on implementing a loosely coupled approach for one business process – they did not try to migrate all business process at once. Cisco began with customer relationship management while it continued to rely on much more conventional hard-wired approaches in its supply chain processes.

Both companies are focused on mobilizing complementary products and services to add value to their core business offering. As discussed earlier, they have

evolved closed process networks. These efforts have created very flexible relationships that can be quickly tailored to meet the needs of specific customers and/or products. Emerging orchestrators need to develop explicit certification processes to enhance the ability to add new service providers to the process network, as well as more formalized training programs to ensure that the service providers are deeply knowledgeable about the orchestrator's products and services. Another key challenge in this stage is to build the appropriate information feedback loops to accelerate the ability of service providers to improve their performance in supporting the process networks.

Few companies will evolve to the third stage where they shed their traditional core business and become pure process network orchestrators. Like Li & Fung, their own employees may never actually touch the product. They are learning organizations with privileged relationships and have fully navigated the transitions described above. They have created attractive leveraged growth platforms, mobilizing the assets and capabilities of other companies to deliver more value to customers. These companies will be in the best position to harness the full economic value of distributed service technology architectures. Their primary business focus will be on identifying new arenas to target with their growing process networks. Li & Fung illustrates this pattern as they move beyond the apparel industry to target related consumer product categories.

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Collaboration is itself a journey, not a result. What is the roadmap required to make this a profitable journey? Focus rigorously on the economics of specific business processes and target near-term opportunities to enhance these economics by more effectively coordinating activities across multiple enterprises.

This is not a simple transition and it is not a static re-engineering process. Success requires migrating towards a much more flexible business architecture supported ultimately by a more flexible technology architecture. Building the skills required to operate successfully with a flexible business architecture will take longer than the development and deployment of the new flexible technology architectures. Those who begin the journey now will be in the best position to reap the economic rewards available from both of these architectures.

The near-term rewards will be operating expense savings. While significant, these will pale in comparison to the opportunities to grow profitably by mobilizing the assets and capabilities of other enterprises.

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