Institutional innovation

Creating smarter organizations to scale learning
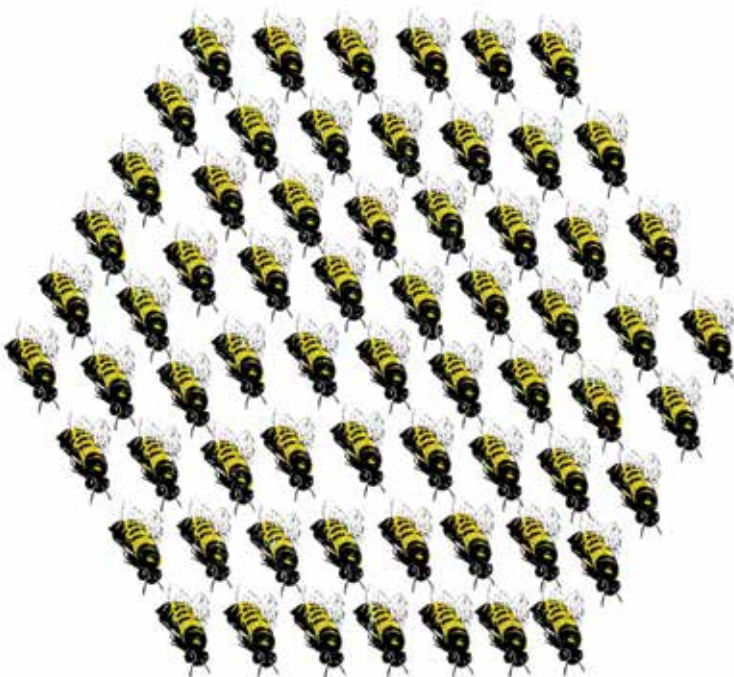
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Executive summary

ECONOMIC history to date is primarily a story of "scalable efficiency." As infrastructures and technology have improved, companies have grown larger to take advantage of the benefits of scale—producing at greater volume to decrease costs and improve margins. To coordinate the efforts of larger groups of people to service larger markets, some companies create command-and-control hierarchies, rigid silos, and inflexible processes to ensure consistency and predictability.

Unfortunately, these institutional architectures have a downside: The consistency and predictability they create to promote efficiency also limit an organization's ability to try new things or change. As such, the scalable efficiency model forces a trade-off between efficiency and the ability to learn. While institutional architectures are effective during times of stability, companies that embrace them will face extreme difficulties during times of disruption and rapid change.

Over the last 40 years, the emergence of new digital infrastructures and a global liberalization of economic policy have increased the pace of change exponentially. Many companies that were extremely successful in earlier times of relative stability are now finding that their relationship architectures are fundamentally misaligned with the needs of their business today. As the pace of change increases, many executives focus on product and service innovations to stay afloat. However, there is a deeper and more fundamental opportunity for institutional innovation: redefining the rationale for institutions and developing new relationship architectures within and across institutions to break existing performance trade-offs and expand the realm of what is possible.

Institutional innovation requires embracing a new rationale of "scalable learning" with the goal of creating smarter institutions that can thrive in a world of exponential change. Through new architectures, organizations can build "creation spaces" that help facilitate (rather than limit) interactions and relationships, allowing organizations to increase the flow of information within and across their organization's walls to increase learning, adaptability, and downstream product and process innovations.

Wikispeed: An example of institutional innovation

IN 2008, an unknown automotive startup called Team Wikispeed entered the Progressive Insurance Automotive X Prize, an open competition for new 100-mpg road-legal cars. Wikispeed started as a one-man team, but as the founder blogged about his progress, he began attracting volunteers, and the team grew to 44 people in 10 countries. In three months, they produced their first functional prototype. It was awarded 10th place, outlasting hundreds of other competitors, many of whom had spent millions of dollars producing their prototypes. In contrast, Team Wikispeed spent less than $300,000.

Wikispeed has drawn attention from executives at several Fortune 50 companies who want to know how a group of volunteers with little capital has been able to innovate so quickly. Part of the answer lies in the team's radically different institutional architecture. The Wikispeed car is an open-source project designed to accelerate learning and performance improvement by harnessing new technologies in a conventional product. The

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volunteers, now numbering over 170, comprise both laymen and experts in a wide variety of fields, including brake systems, fuel efficiency, and carbon fiber. Teams across the globe share their progress and improvements via social media, creating a learning community that has achieved surprising results. Last summer, Wikispeed unveiled a $25,000 street-legal (though bare-bones) version of a car that gets 117 miles to the gallon, has a top speed of 149 miles per hour, and does 0–60 in less than five seconds. The team is just selling its first units but has ambitious goals to scale to rival entrenched auto manufacturers.

The case for institutional innovation

TODAY, exponential improvements in technology are driving deep and fundamental shifts in the business landscape. Many organizations are struggling to keep up with rapid changes in infrastructure and consumer practices. Disruption and performance pressure are at record highs across virtually all industries. Trying to keep ahead of the curve, many executives push their institutions to innovate faster, but their focus is largely on narrowly defined technology and product innovation. The trouble is that ever-shortening product life cycles mean that these innovations only create value for a short period, sometimes a few months. More far-ranging business literature is crowded with discussions of product, service, process, business model, and management innovations.

These discussions and initiatives can miss an underexploited and increasingly relevant opportunity for a more fundamental level of innovation, *institutional innovation*—redefining the rationale for institutions and developing new relationship architectures within and across institutions to break existing performance trade-offs and expand the realm of what is possible. As in the case of Wikispeed, it means bringing together capital, talent, and information in new and more effective ways. In today's environment of exponential technology change and market uncertainty, institutions that can drive accelerated learning will be more likely to create significant economic

value on a sustainable basis. However, institutions as configured today force very significant trade-offs between efficiency and learning: The levels of standardization, tight integration, and predictability that efficiency traditionally require may significantly limit space for the exploration, tinkering, improvisation, and experimentation that drive learning, and in many cases, these efficiency requirements actively discourage such activities. As institutions are rearchitected to take advantage of rapidly evolving technology infrastructures to scale learning, they can become more adept at generating richer innovations at other levels, including products, services, business models, and management systems.

Every year, the price/performance of the key technology components—computing, storage, and bandwidth—of our digital infrastructures continues to improve at exponential rates. What if the same could be said for our governments, schools, and businesses? To thrive in this exponential playing field, we will need to systematically innovate all of our institutions so that they can harness the full potential of the infrastructures evolving around them. In essence, we need smarter institutions that learn more quickly and can drive sustained performance improvement. Fortunately, the technologies that are driving disruption are also enabling the institutional architectures that can support this ambitious goal.

New infrastructures catalyze institutional innovation

INSTITUTIONS are embedded in the cultures, technologies, and infrastructures of their time, and the emergence of new social and technological infrastructures often catalyzes fundamental institutional innovations. For the last several hundred years, infrastructural and technological improvements have helped organizations to grow in size and efficiency. For example, as city size grew in Europe through the Dark Ages, so did opportunities for increased specialization. Guilds emerged in parallel with urban settlements and expanding trade networks. They represented a fundamentally new form of economic organization focused on accelerating and scaling talent development within highly specialized domains of economic activity.

As populations grew, more robust legal and financial infrastructures began to develop across Europe. Those infrastructures, combined with advances in shipping technology, made large-scale trade feasible for the first time. In 1602, the Dutch East India Company was formed. It was a new type of institution: the first multinational company, and the first to issue public stock. These innovations allowed a single company to mobilize financial resources from a large number of investors and create ventures at a scale that had previously only been possible for monarchs. Likewise, the later development of the limited liability corporation (LLC) allowed the concentration of assets with protection under the law, allowing companies to take risks and innovate while limiting risk to shareholders.

In the 1800s, a new wave of infrastructural developments opened the door for the next generation of institutions. Advances such as the railroad, the steamship, electricity, the telegraph, and mechanized production once again reshaped the business world. For the first time, companies had the potential to produce, market, and distribute globally, enabled by new communication and transportation technologies. As a result, new institutional forms

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emerged, driven by a desire to harness the scalable efficiency now feasible in manufacturing, marketing, and distribution. New institutional architectures evolved, focused much more on vertical integration and consolidation of economic activities within a single entity to reduce transaction costs and achieve even higher levels of efficiency.

By concentrating economic transactions within a single enterprise, large companies gained efficiencies that trumped the earlier advantages (local knowledge and presence) of smaller, fragmented institutions. Ronald Coase described this rationale—creating efficiencies by decreasing transaction costs—in his 1937 Nobel Prize–winning paper on the nature of the firm. Most companies—indeed, most

institutions—today are the product of the pursuit of scalable efficiency: self-contained entities that perform all critical economic activities within their own four walls.

Scalable efficiency has been a winning model for the past two centuries. However, it relies on centralized governing systems, rigid hierarchies, and a paradigm of long-term planning and forecasting. While effective in times of stability and predictability, these systems break down during times of rapid change and uncertainty. Centralized leadership is unable to dictate all of the requisite changes quickly and, as a result, can, and probably will, become dysfunctional and massively inefficient during times of uncertainty and change.

The increasing pace of uncertainty and change

THE last several decades have been marked by an increasing pace of change, disruption, and uncertainty that has been driven primarily by two long-term trends. The first is the rapid proliferation of new digital infrastructures that have compounding effects, so that every new wave of digital infrastructure is adopted faster than the last. The second trend is the global shift toward liberal economic policy, which has increased the ease of moving talent, products, and money across international borders.

The effects of these two trends are both reinforcing and amplifying: They have not only increased global competition but also changed the basis of competition itself. As the pace of change accelerates, the value of any stock of knowledge depreciates faster and faster. Today, competitive advantage is not based on stocks of knowledge, but having access to flows of knowledge to enable up-to-date information that enables adaptability.

As such, there is a growing mismatch between the original drive for scalable efficiency and the business needs of companies today. The scalable efficiency models that worked so well in times of stability become dysfunctional when the forecasts and predictions that drive the very specified, tightly integrated, and highly standardized processes of large firms become more and more challenging. The need to redeploy people and assets at the last minute to address unanticipated events makes a previously efficient system highly inefficient. On the other side, the limitations on the ability to learn, once tolerable because of the stability of the environment, now become increasing sources of vulnerability.

The consequence of this growing mismatch between institutional forms and broader social and economic needs can be seen in the financial performance data of US public companies. Deloitte's Center for the Edge tracks several of these performance metrics in the publication *The Shift Index*. Over the last 40 years, return on assets for all public companies in the United States has declined by 75 percent. Even companies that achieve high levels of profitability have been toppling out of their leadership positions at twice the rate they did back in the 1960s. Companies that make it onto the S&P 500 list in the United States used to remain in those august ranks for an average of 75 years back in the 1930s; today the average life on the S&P 500 is less than 15 years—an 80 percent reduction in life expectancy.[1] Survival—the most basic measure of performance—has become more and more challenging.

In addition to increasing competition and the rate of change, the digital revolution is also undermining the barriers to entry that previously protected large companies from competition. Consider the range of digital tools available to even the smallest firms: communication tools, search tools, social networks, online markets (eBay, Amazon), labor markets (LinkedIn, Mechanical Turk), capital markets (Kickstarter, AngelList), payment systems, web analytics, web design, cloud services, to name just a few.

Digital technology infrastructures also make it far easier and cost-effective to

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coordinate economic activity on a global basis across institutions, as suggested by the rapid growth of outsourcing services for everything from manufacturing and logistics operations to call center operations. As a result of these developments, companies are now able to organize and grow more rapidly with much lower funding levels than before. Even the largest company may be vulnerable to the rapidly scaling new venture that only yesterday was operating out of a garage.

As an increasing proportion of the economy is virtualized, many products that once required physical production and distribution can now be produced and distributed electronically, significantly reducing traditional benefits of scale—think of the recent disruptions of media retailers of books, movies, and CDs. Virtualization is also affecting services industries. For example, the advantages of scale in the personal tax preparation industry (which required thousands of agents) have been partially negated by software that can do the same work. Even in the world of hardware, we are beginning to see the democratization of industrial tools: The price of computer-aided design (CAD), 3D printers, and computer numerical control (CNC) routers has fallen

so low that they can be purchased by casual enthusiasts. As the Wikispeed case has demonstrated, even markets traditionally thought of as capital intensive, such as the automotive industry, are being challenged by start-ups.

There is another impact of digital technology infrastructures: Large companies are losing many of the advantages of information asymmetry as they find themselves increasingly squeezed between informed customers and employees. Traditionally, large companies have had more information than consumers, giving them power in pricing. Now, a quick search on Google or Amazon lets consumers compare prices for virtually anything, driving profits down to razor-thin margins. Similarly, sites like Glassdoor.com are reducing information asymmetry in the labor market. Employees can quickly find the going rate for their skills and charge a premium, or quickly find new jobs on a growing range of career sites.

We have reached an important turning point where success is not defined by scale, but by the ability to learn (and unlearn) more rapidly. The traditional model of "punctuated equilibrium" in which companies move from one stable state to another is dead, and companies need to adopt a state of "continually becoming" to keep up with rapid changes in the environment. The institutions that emerged to harness scalable efficiency required a trade-off to be made between efficiency and the ability to learn, one that managers were willing to make in more stable times. Fundamentally different types of institutions may be necessary that break those constraints and harness new tools and practices to simultaneously drive both accelerated learning and high levels of efficiency in rapidly evolving environments. To do so, we need to rethink the rationale for firms.

Shifting to a new institutional rationale

IF we are serious about redefining the rationale for institutions from scalable efficiency to scalable learning, we will begin to see the far-reaching implications of this shift. It is not something that can be done on the margins of our institutions; it will drive us to reassess the entire architecture of relationships both within and across institutions.

If we look within the institution and take the imperative to drive accelerated learning and performance improvement seriously, how would we redesign the work environment to accomplish that task? All the elements of the work environment—physical, virtual, and management systems—would need to be rethought and traditional institutional boundaries would need to be configured to support a more rapidly evolving architecture of relationships.

But if we really want to achieve scalable learning, we can't stop at the four walls of the firm. As Bill Joy famously observed, "No matter how many smart people there are within your firm, remember that there are far more smart people outside your firm." We will never learn fast enough if we limit ourselves to the people within any single institution, no matter how large it is and how smart they are. Creating architectures of relationships reaching beyond the walls of our institution is one of the most powerful ways to tap into richer and more diverse flows of knowledge and accelerate learning.

Of course, even in the age of scalable efficiency, every company has an ecosystem of third parties that it relies on to create and deliver value to the marketplace, ranging from suppliers and specialized business partners to distribution channels and even end customers themselves. But here's a problem: Rather than growing business ecosystems, large companies have been heading in the opposite direction. They have been systematically shrinking their business ecosystems in the name of business efficiency. After all, with conventional institutional architectures, there is a significant complexity overhead that comes when a company tries to mobilize too many third parties. By shrinking the ecosystem, companies can achieve cost savings and enhance their bargaining power to squeeze even more out of their remaining business partners.

Of course, there is a price to be paid. By shrinking the number of participants in business ecosystems, companies can compromise their ability to tap into a broader and more diversified range of deep specialization. It is hard to be serious about scalable learning if a company is scaling back, rather than scaling up, the opportunity to interact with expertise outside the firm.

There are other issues as well. Most companies interact with their ecosystem partners by applying a short-term transactional perspective, seeking to access existing resources at the best possible price and always ready to switch to other participants if a better deal surfaces. These kinds of "relationships" are not conducive to sustained collaboration in finding creative ways to respond to mounting performance pressure or emerging market opportunities. They also make it very challenging to

access tacit knowledge—the knowledge about work that resides in every employee's head. We generally find this knowledge difficult to express, even to ourselves, and much less to others. We are likely to stumble and fumble in trying to articulate it, and, as a result, we are not likely to make the effort unless we have trust-based relationships with others. The problem is this knowledge is often the most valuable, especially in times of rapid change, because it is often the newest knowledge, gained through recent experiences that we have not yet had time to process or integrate with other knowledge. Accessing it quickly and effectively, and creating environments where we can rapidly build on this tacit knowledge, may make the difference between success and failure.

If companies are serious about pursuing scalable learning, they should work to reassess the architecture of relationships that span beyond their institutional boundaries. Three important aspects to consider are:

- **Scaling transactions**—We are witnessing dramatic scaling in terms of the ability to reach out to diverse participants and create platforms for short-term transactions (largely in the form of posing questions and getting answers) that help to accelerate learning; many of the prominent examples of open innovation fall into this category. There are many ways to take advantage of scaling transactions; one particularly interesting application is to use competitions or hackathons to draw knowledge and insights from a large group of participants. For example, Goldcorp, a gold mining company, created a competition offering over half a million dollars in prize money to any third party that could use Goldcorp's geological data to find the most promising locations to mine for gold. One thousand participants with a wide range of backgrounds from

over 50 countries entered the competition, bringing novel approaches and techniques to locate gold. Since the competition was initiated, over 8 million ounces of gold have been found[2]—not a bad return for a half-million-dollar investment. Through this competition, Goldcorp was able to scale transactions to generate enormous amounts of value by sourcing insights and expertise from a wide range of participants. However, while scaling transactions is an effective way to transfer explicit knowledge, it has limited value in accessing tacit knowledge.

- **Scaling relationships**—In addition to facilitating short-term transactions, some companies have created institutional platforms that focus on building longer-term relationships. Sustaining long-term collaboration allows participants to develop subject knowledge over time and focus more directly on business objectives. For example, SAP has evolved its SAP Community Network to provide a shared virtual workspace for distributed teams in order to encourage and facilitate ongoing participation from talented third parties. The result is that these teams are able to pursue sustained initiatives and develop talent and expertise that help them and SAP. Scaling relationships allows organizations to build trust and access valuable tacit knowledge.

- **Scaling learning**—As companies begin to leverage scalable transactions and relationships, they realize that the longer-term opportunity is to evolve institutional designs that explicitly seek to accelerate and amplify learning among a growing number of participants—we call these "creation spaces."

Promoting scalable learning: The role of creation spaces

CREATION spaces represent one of the most promising emerging institutional architectures for promoting scalable learning. As we studied spikes of human performance (places where people achieve sustained extreme performance improvement), we found that these creation spaces form wherever individuals seek to move rapidly beyond the boundaries of existing performance. Early models of creation spaces can be found in diverse arenas such as extreme sports and online gaming environments like World of Warcraft, as well as platforms for joint creation of products, such as open source software.

These creation spaces focus on integrating learning benefits at two key levels. The first revolves around team effectiveness, and involves facilitating deep and sustained interactions within teams or local work groups. The second level seeks to foster a broader set of platforms to help spread learning across teams by granting them access to rich knowledge repositories and discussion forums. These two elements reconcile a key tension that has prevented scaling of learning in the past: First, deep trust-based relationships are required to access tacit knowledge (hence the importance of teams in creation spaces), yet these relationships are challenging to scale. Second, large and diverse resource platforms are required to access explicit knowledge to support learning; however, in the absence of deep trust-based relationships, these platforms have limited value.

The development of an effective creation space with deep interactions and broader platforms is both an art and a science. Bringing together a large group of people to improve performance and learning requires a delicate balance of deliberate structure as well as organic, participant-driven growth. There are three essential elements that should be considered in order to effectively organize a creation space:

- **Participants**—The first challenge is to achieve a critical mass of relevant participants. Organizers should keep barriers to entry low to allow a wide range of participants to join the creation space. Additionally, organizers should provide compelling reasons to encourage participation, such as meaningful real-time feedback and performance measures.

- **Interactions**—In order to increase learning for participants, organizers should consider two critical forms of interaction: team interactions and looser interactions across a broader range of participants. Creation spaces can become rich sources of serendipity, increasing the probability of chance encounters that lead to important new insights. Over time, teams become insular, and one of the challenges is creating a second layer of interactions to expose them to new ideas and accelerate performance improvement.

- **Environments**—At a foundational level, a creation space organizer should provide the platforms and infrastructure to support the interactions of participants. This

environment should support various layers of interaction, including those within teams, among teams, and among peers on different teams. In addition to providing these channels of communication, the organizer should also provide the right blend of governance protocols and incentive structures (both intrinsic and extrinsic) to encourage interactions.

Though the exact forms these new institutional architectures will take cannot yet be determined, we can see the early elements emerging as we look at promising initiatives in companies and on the edges of our global economy. We have selected case studies to illustrate the potential of innovating institutional architectures to access and build on knowledge residing outside the firm. They are suggestive of the elements of new institutional forms. In each of these examples, the organization or company effectively leverages its ecosystem to harness network effects that help accelerate learning and performance improvement. Many of the most obvious candidates for these case studies come from Internet tech companies, but in an effort to illustrate how these principles can be applied to a wider range, we have avoided these usual suspects.

Li & Fung: Amplifying learning across a network

To illustrate the power that comes from creating a platform to access talent and knowledge, few companies are more impressive than Hong Kong–based Li & Fung. Li & Fung provides supply network management services for apparel and other consumer product designers. It now operates in several industries, but has its roots in apparel. Though its clients range from boutique designers to private-label brands of big-box retailers, all have extremely strict time, cost, and quality requirements on their orders. Additionally, customer demand can change radically in a matter of days, so flexibility is also crucial. In order to fulfill its clients' needs,

Li & Fung orchestrates a platform of over 15,000 suppliers in more than 40 countries.

Li & Fung matches its detailed understanding of its clients' needs to its knowledge of its suppliers' capabilities. After identifying the appropriate partners, it defines and sequences suppliers' roles in the supply-network process. Li & Fung has designed standards, protocols, and quality controls for coordinating complex activities across multiple levels of production operations, ranging from sourcing raw materials to intermediate steps in the production process to delivering finished products to the appropriate retail distribution centers. In essence, it has defined a modular, loosely coupled approach to process management that allows it to break the traditional constraint of rapidly expanding complexity overhead as the number of diverse participants expands in a conventional supply chain. The result of Li & Fung's innovative institutional architecture is that, through its global network of suppliers, it is able to provide both predictability and flexibility to clients.

Because of the well-defined standards and protocols, Li & Fung can very easily add members to its growing number of suppliers. In sharp contrast to traditional supply-network managers who focus on limiting the number of supply-network partners and creating tightly integrated operations, Li & Fung is rapidly expanding the range of participants to provide an even broader range of specialized capabilities that can be flexibly "pulled" by individual customers to serve their specific needs. Participants in the network are able to pursue deep specializations in various elements of the apparel production process, secure in the knowledge that they will find customers for their specialized capabilities through the process network.

The volume and sophistication of its network allows Li & Fung to match network participants not only for each client, but for each of its client's individual item of apparel. Regardless of disruptions, it is able to consistently fill orders of virtually any size to precise specifications, offering both scale and

Creation spaces form wherever individuals seek to move rapidly beyond the boundaries of existing performance.

customization. And because it is not competing with its network participants, any innovation in the network simply allows it to better fulfill client needs.

Given their role in the ecosystem, executives at Li & Fung have constant access to designers and manufacturers from around the world, and have deep insights into their concerns, investments, and strategies, not to mention early visibility into new technologies and practices. The Li & Fung executives have their finger on the pulse of the global apparel industry. In high-uncertainty environments, privileged access to rich flows of knowledge can become a significant advantage. By tapping into the expertise of its supplier network, Li & Fung is able to provide better rates than the competition.

In the process, Li & Fung has become a fundamentally new type of institution with a new role—specializing in understanding the needs of its clients and the abilities of its suppliers, and not only orchestrating the interactions among them but driving much more rapid learning. And as Li & Fung's clients outsource their supply chain management, their institutions must also become increasingly open and connected. But as they do, they are able to shed parts of their business that once seemed integral and focus on their true core competency.

This ability to focus is a prerequisite for accelerated learning among participants in the ecosystem, eliminating distractions and the need to spread resources across activities where the firm is not world class. The modular approach to process management gives

> ## "We learn faster as part of this network than we ever could on our own. "

participants significant latitude within their activity modules to experiment, tinker, and improvise in ways that drive learning about how to deliver higher levels of performance. Li & Fung also provides rapid performance feedback for participants, comparing their performance relative to analogous participants within the ecosystem. The company also helps organize performance-improvement problem-solving sessions, bringing together relevant participants to work together on specific performance challenges.

Li & Fung has been highly successful. Generating $15 billion in revenue, Li & Fung has been growing at a double-digit rate annually over the past 25 years, a considerable feat in the low-growth global apparel industry. It is also highly profitable, typically enjoying double-digit return on equity—again, an impressive accomplishment in an industry known for razor-thin margins.

To an outsider, Li & Fung's modular approach may seem to be only scaling transactions. However, the company has focused heavily on creating trust-based relationships. To show its commitment, Li & Fung operates on what it calls the 30/70 rule, where no matter how weak its year, the company guarantees that it will purchase at least 30 percent of each partner's capacity. But Li & Fung would never take more than 70 percent of a partner's capacity either, fearing that complete dependence makes it difficult to nurture trust.

Li & Fung also makes it a point to hire employees who have experience running apparel plants and send these people out to recruit new participants and work with existing participants. Not only can these individuals

accurately assess their partner's capabilities, building trust because they have been on the other side of the table, but the suppliers quickly came to realize that Li & Fung can help them improve their operations. When we sent teams to interview partners and asked them why they participated in Li & Fung's network, they invariably responded, "because we learn faster as part of this network than we ever could on our own."

Visa: Scaling relationships to leverage specialized talent

One of the central benefits of scaling relationships is the ability to leverage specialized expertise and catalyze distributed innovation, helping participants to solve problems larger than those individual members could solve on their own. In the late 1950s, many large banks were struggling to drive adoption of consumer credit cards. No single organization seemed to be able to solve the problem. Many smaller banks wanted to be able to offer credit cards, but the overhead to set up a credit card operation, as well as back-office processing costs, were prohibitively large.

In 1958, Bank of America launched the first general credit card, the BankAmericard. It ran a shared processing utility, allowing smaller banks to offer the card without the financial burdens of running their own independent operation. The result was a network of smaller, independent banks backing the card. In 1970, Dee Hock, an executive in one of the BankAmericard licensee banks, convinced Bank of America to give up its ownership of the BankAmericard program and instead

adopt a shared-ownership model, giving all banks participating in the program an ownership stake. The resulting company, National BankAmericard (the name would be changed to Visa in 1976), acted as a jointly owned utility, enabling traditional competitors to work together to gain the advantages of a centralized payment-processing system.

Within a year of its development in 1970, the program had recruited 3,000 banks to participate in this new venture, forming a nationwide network of banks that backed the system. Within seven years, the company was generating $20 billion in sales, reshaping the emerging credit card business in the process. Part of Visa's strategy involved defining the governance structure for the newly connected banks, allowing the banks to jointly own the new business entity while preserving Visa's ability to move rapidly and flexibly. The banks were autonomous, but also participated in Visa's rapidly expanding global network, allowing them to access the functionality of the new system at a low cost.

This innovative institutional architecture enabled the participants to scale learning on two distinct dimensions. First, by shedding the back-office processing operations to Visa, banks were able to focus their attention and resources on product innovation and creative approaches to marketing to accelerate adoption of this new financial product. Distributed innovation by many banks experimenting in parallel, including a growing number of smaller banks who previously could not participate in the credit card business, helped everyone to learn faster about how to offer the greatest value to consumers and merchants.

Second, the creation of a shared utility helped Visa to learn faster about the many different processing needs for the emerging credit card business because it was not just serving one bank but a growing number of diverse banks. There were not only economies of scale in Visa's processing operations but economies of skill, given its enhanced ability to attract leading talent in back-office processing and

provide this talent with a very rich environment of rapidly evolving processing challenges that they would be unlikely to encounter in any individual bank.

PortalPlayer: Creating a global creation space to increase velocity of innovation

PortalPlayer was a fabless semiconductor company founded in 1999. Though not well known, it is notable for two reasons. First, it was the company with which Apple contracted for the development of the original iPod. And second, PortalPlayer innovated in its institutional design to form a creation space to take advantage of a global network of leading talent spread out over dozens of firms.

PortalPlayer faced very demanding performance specifications: Create a smaller form factor, lower power consumption, and increase audio quality, all while decreasing manufacturing costs. It realized that there was no way it could accomplish the goal on its own, and so set out to create an institutional platform to bring together a wide group of participants to enhance the ability for product innovation. PortalPlayer designed its organization to be able to tap into the best talent around the globe. The company was organized as a micro-multinational with operations based in both San Jose, California, and Hyderabad, India. PortalPlayer focused on designing the core MP3 decoder, controller chip, and related software with modular and standardized interfaces so that it would be as easy as possible to incorporate technology from a broad range of other companies.

PortalPlayer invested significantly in building a global network of leading technology companies (many of whom were traditionally competitors) with complementary capabilities to support MP3 development. These participants included UK technology providers such as the microprocessor company ARM and Wolfson Microelectronics, a specialized

provider of digital-to-analog conversion technology. From the United States, participants in the PortalPlayer network included Texas Instruments and Linear Technologies, a smaller, more specialized company with expertise in power-management integrated circuits. From Japan, PortalPlayer recruited Sharp to provide flash memory, Sony for battery technology, and Toshiba for hard-disk-drive technology. In Taiwan, PortalPlayer developed close relationships with both United Microelectronics Corporation (UMC) and Taiwan Semiconductor Manufacturing Company (TSMC) to access silicon foundry capabilities. In effect, PortalPlayer deployed a global pull platform to drive rapid iterations of innovative MP3 designs by accessing and connecting with leading capabilities from specialized companies around the globe.

Each company had focused teams participating in the PortalPlayer network, and PortalPlayer facilitated the interactions among these groups. PortalPlayer adopted a rhythm of six-month releases of the digital music player platform. For each release, PortalPlayer would select the best solution for each component from among the participants within the global

network and incorporate those solutions within a platform that was taken to market by a number of consumer electronics companies who had licensed their technology. The six-month cycle did two things. First, it struck an effective balance between competition and collaborative learning, since competing technology companies within their global network knew that if they did not make it into a release, they would have another shot six months later. Second, the six-month cycle ensured that PortalPlayer would get rapid market feedback on each release so that it could then provide participants in the network with focused performance challenges to work on in terms of driving the development and innovation efforts. As a result of this innovative ecosystem design, PortalPlayer pulled significantly ahead of technology companies pursuing more traditional product innovation efforts in its emerging product category.

When Apple came up with the idea for a new MP3 product line coupled with an online music store, it approached PortalPlayer to help. By mobilizing its global design network, PortalPlayer enabled Apple to launch the new product, the iPod, just nine months after

initial product approval. Apple focused on the external design of the iPod and the user interface design, leaving the rest of the design to PortalPlayer and its design network. For many years, PortalPlayer was the key source for the innovative MP3 functionality embedded in the iPod product. This illustrates the potential that global creation spaces can achieve, driving rapid innovation and learning in ways that individual companies cannot duplicate.

Wikispeed: Orchestrating a creation space to drive learning and innovation

Many of the most exciting institutional innovations are still in their nascent stages. Wikispeed, though now numbering over 170 people, is an example of this, and it remains to be seen if it will be able to scale into a viable business. Regardless, it provides another interesting example of an institution pioneering a creation space to scale learning.

Joe Justice, the founder of Wikispeed, is an unlikely candidate for the CEO of a car company—his background is in software development. When he entered the Automotive X Prize, he began a blog chronicling his successes and failures. He found that because he was radically transparent about his challenges, people came out of the woodwork to help him. Experts with deep technical knowledge responded to questions on topics like brake efficiency by writing several-page documents. Novices, inspired by the challenge to create a fuel-efficient car, would volunteer their labor. Justice tracked the progress of the project publicly and in real time, allowing all participants to see the contributions they were making.

Justice's background in software development has been extremely helpful to Wikispeed, as he has applied the agile techniques from his software days to the project. He has been extremely conscientious in designing the workshop environment to maximize learning for the participants. In his shop, self-organized teams form on a daily basis to tackle different elements of the build process. Within teams, volunteers work in pairs to complete tasks from the team backlog. This apprenticeship model ensures that all participants are helping each other build tacit knowledge. At the end of each day, teams report on the progress they've made and discuss next steps.

Wikispeed teams are designed to be cross-functional, which is a major component of their strength. When Justice went to a carbon fiber specialist, Wikispeed learned that a car body would cost $36,000 and take three months to create. The expense and time came partially from having to produce a mold for the car body. In search of a better solution, Justice started taking classes at a composite school and brought the knowledge back to the team. The team began to experiment, looking for cheaper and faster solutions. It started using a homemade CNC router to make a foam mold, which significantly decreased the cost. However, one of the challenging steps was getting the carbon fiber out of its mold after it had dried. The process called for an expensive and difficult-to-handle release agent to coat the inside of the mold. After trial and error, a simple alternative solution (using plastic wrap and petroleum jelly) was found—not by a material engineer but by a stay-at-home mother. Through the new process, the team was able to reduce the cost to only $800.

Wikispeed has created a virtual environment and an accompanying set of protocols to scale learning across its 10 locations spread out across the world. It provides basic standards for the layout and basic organizational tools each shop uses so that participants can work in any location. On a weekly basis, each group produces a short YouTube clip detailing its successes and challenges from the week. Using free collaborative tools and social networks, the team tracks the progress of each group.

One of the defining characteristics of Wikispeed and all other creation spaces we've found is that they share a common element of enthusiasm and excitement. The participants are there to improve their skills and to make a difference in the world, reflecting a shared

passion that welcomes new challenges and that naturally seeks to connect with others who can help in addressing those challenges. The result of that passion is that participants are able to learn much more quickly and work more effectively than in traditional work environments. Justice describes enthusiasm as a multiplier for team velocity, and sees it as critical element of Wikispeed's success.

Wikispeed's growth plan differs from companies with a scalable efficiency framework. Rather than produce a single, high-volume factory, Wikispeed has designed "mini factories," shipping containers with all of the tooling required to produce a car. Its build process is labor intensive compared to the highly automated auto manufacturing industry, but it allows for a great deal of flexibility. As parts change, the build process can change instantly to accommodate the change. This approach allows Wikispeed to keep its decentralized model and continue to scale learning across a wide network of decentralized participants innovating independently.

The value of institutional innovation: Moving to a world of exponential returns

THE value of institutional innovation in a world of mounting performance pressure is compelling—it ultimately provides an opportunity to break traditional performance trade-offs and shift from a business environment of diminishing returns to one that fosters increasing returns. Business performance improvement in the 20th century was accurately described by BCG's experience curve—a diminishing-returns performance curve.

But as creation space design advances, it offers the potential to drive increasing returns at two levels. First, creation spaces can deliver the benefits of the traditional network effect, as illustrated by the classic example of fax machines: Each participant can add more value simply by connecting with, and mobilizing, a broader range of resources. Second, creation spaces can harness the benefits of learning effects: New institutional architectures have the potential to scale learning so that everyone learns faster by working together. We no longer deal with static resources in a network, but create environments where participants learn faster as a result of participation in the network. The result of engaging in institutional innovation is that we can begin to unlock the unlimited potential of ourselves and our organizations.

Endnotes

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Acknowledgements

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Below the surface of current events, buried amid the latest headlines and competitive moves, executives are beginning to see the outlines of a new business landscape. Performance pressures are mounting. The old ways of doing things are generating diminishing returns.

Companies are having a harder time making money—and increasingly, their very survival is challenged. Executives must learn ways not only to do their jobs differently, but also to do them better. This, in part, requires understanding the broader changes to the operating environment:

• What's really driving intensifying competitive pressures?

• What long-term opportunities are available?

• What needs to be done today to change course?

Decoding the deep structure of this economic shift will allow executives to thrive in the face of intensifying competition and growing economic pressure. The good news is that the actions needed to address near-term economic conditions are also the best long-term measures to take advantage of the opportunities these challenges create. For more information about the Center's unique perspective on these challenges, visit www.deloitte.com/centerforedge.

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