

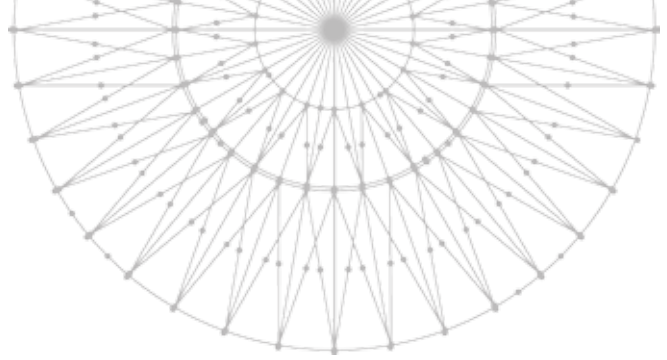
The background is a complex, abstract visualization of a network or ecosystem. It features numerous glowing spheres in shades of blue, purple, and teal, each containing intricate patterns of lines and dots. These spheres are interconnected by a dense web of thin, light-colored lines, creating a sense of dynamic movement and interconnectedness. The overall color palette is dominated by cool blues and purples, with some warmer highlights in green and yellow.

# Business ecosystems come of age



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# Preface

**W**ELCOME to Deloitte’s latest *Business Trends* report.

The purpose of these reports is straightforward: to provide business leaders with fresh and well-informed perspectives on important dynamics that are disrupting “business as usual.” While change is nothing new, the speed, scale, and impact of a variety of fundamental shifts—in globalization, technology, and societal expectations—are undeniably transforming the business landscape today. We conduct and share this research as part of our commitment to serve as **guides and “wayfinders”** to our clients as they navigate their new terrain and shape the future.

In periods of disruption, uncertainty and challenge are inevitable. However, these times often also uncover new opportunities. Addressing both risks and potential rewards takes **confidence**, in decisions and actions alike, and in the solid analysis that should precede them. Uncertainty should not be denied or ignored—instead, it should be mastered, and grounded in both a deep understanding of the changes afoot and their potential consequences.

In this report, we focus on a critically important transition that has considerable implications for society, the economy, and businesses everywhere: **the continued rise of “business ecosystems.”** Driven particularly by digitization, connectivity, and new modes of collaboration, important core structures of the industrial economy are quickly and dramatically reshaping, as many long-standing boundaries blur and dissolve. The “art of the possible” is expanding—enabling new approaches to serious societal challenges, and new, often platform-based, business models.

In *Business ecosystems come of age* we explore in detail what lies behind these changes, where they might take us, the new options—and threats—they present to many incumbents, and the strategic and operational shifts they enable and demand. We sincerely hope that these perspectives are helpful as you undertake your journey into a fast-changing future.

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# Introduction

## Business ecosystems come of age

By Eamonn Kelly

IN September 2014, the Chinese online commerce company Alibaba Group conducted its initial public offering (IPO)—the largest ever in history. This event attracted considerable media attention, some of it naturally commenting on the changing balance of the global economy and the growing impact of digitization.<sup>1</sup> Largely overlooked in the commentary, however, was another important signpost to the future. In the prospectus it compiled to describe its vision, philosophy, and growth strategy, Alibaba used one word no fewer than 160 times: “ecosystem.”<sup>2</sup>

We’re all familiar with ecosystems in the natural world. The word was coined in the 1930s by British botanist Arthur Tansley to refer to a localized community of living organisms interacting with each other and their particular environment of air, water, mineral soil,

Some view the rise of ecosystems as an opportunity for creating powerful new competitive advantage.

and other elements. These organisms influence each other, and their terrain; they compete and collaborate, share and create resources, and co-evolve; and they are inevitably subject to external disruptions, to which they adapt together.<sup>3</sup>

Noticing growing parallels, business strategist James Moore imported the concept to the increasingly dynamic and interconnected

world of commerce. As he wrote in a 1993 *Harvard Business Review* article:

Successful businesses are those that evolve rapidly and effectively. Yet innovative businesses can’t evolve in a vacuum. They must attract resources of all sorts, drawing in capital, partners, suppliers, and customers to create cooperative networks. . . . I suggest that a company be viewed not as a member of a single industry but as part of a business ecosystem that crosses a variety of industries. In a business ecosystem, companies co-evolve capabilities around a new innovation: They work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations.<sup>4</sup>

Moore’s insight was prescient—just on the cusp of the Internet era, and 15 years before the emergence of smartphones and the mobile

access revolution.

Initially his concept of “business ecosystems” was embraced primarily in the community that was itself creating the transformative capabilities of connection

and collaboration that enabled them—the US technology sector. It continues to be critically important in that arena. Apple Inc. explicitly conceived its products and services as an ecosystem that would provide customers with a seamless experience; Facebook recognized the emphasis it had to place on deliberately building its “developer ecosystem”; some analysts no



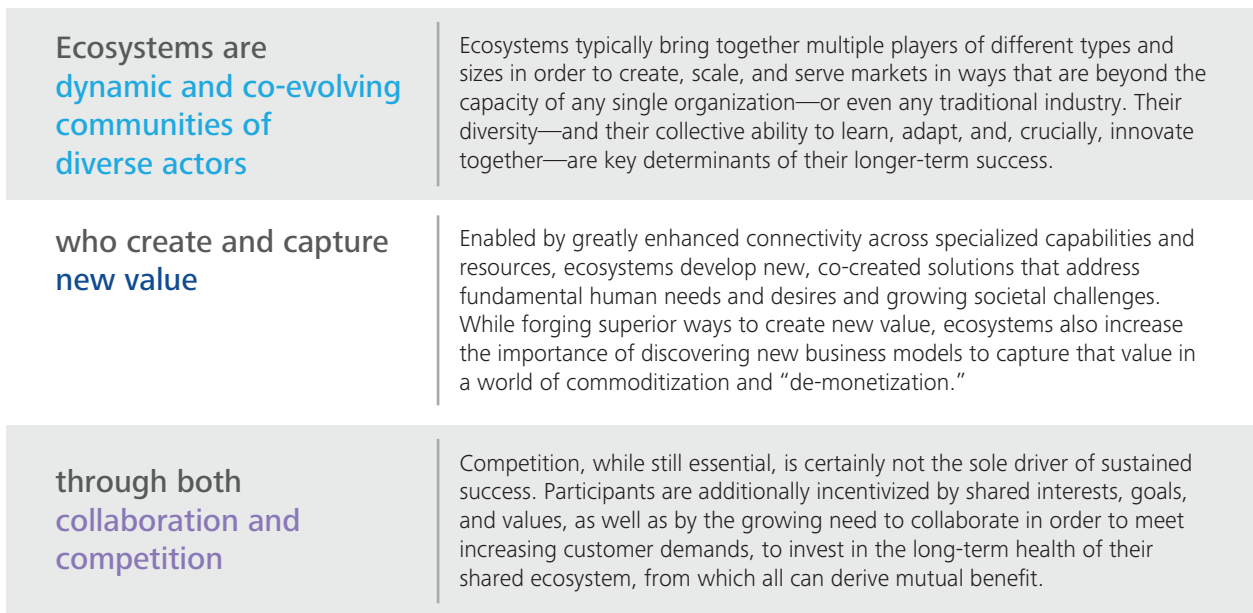
longer see technology and media competition as simply between firms, but among ecosystems of firms operating in loose alliance.<sup>5</sup>

But the idea has now also taken root far beyond the US technology sector. Over the last few decades, driven largely by digital technologies and massively increased connectivity, the economy has been moving beyond narrowly defined industries built around large, vertically integrated, and mainly “self-contained” corporations. New means of creating value have been developing everywhere in the form of ever-denser and richer networks of connection, collaboration, and interdependence.

Businesses around the world are responding. Some view the rise of ecosystems as an opportunity for creating powerful new competitive advantage. For example, in July 2014, the CEO of Japan’s Softbank described its strategic intent as follows: “By providing all manner of services and content on (our) platforms, we are aiming to create a comprehensive ecosystem that other companies will never be able to rival.”<sup>6</sup> A few years earlier, the CEO of Nokia similarly described a landscape of ecosystems that each encompass an array of

players: “The battle of devices has now become a war of ecosystems . . . our competitors aren’t taking our market share with devices; they are taking our market share with an entire ecosystem. This means we’re going to have to decide how we either build, catalyze, or join an ecosystem.”<sup>7</sup> Others take slightly different perspectives. South Africa’s SABMiller has made a priority of “strengthening business ecosystems” in which it participates, to the benefit of local and regional economies where it operates.<sup>8</sup> Some leaders have even welcomed competitors to their ecosystems. Listen to MakerBot’s newly appointed CEO, Jenny Lawton, responding to the news that Autodesk planned a bigger push into 3D printing: “Autodesk’s work and thinking is necessary to the overall industry. . . So much of the success of the 3D ecosystem and future of 3D printing can be accelerated.”<sup>9</sup> And some strong ecosystems emerge without individual powerful players: For example, in China the term “shanzhai” formerly described copycat versions of electronic goods, but is now commonly referred to as the “shanzhai ecosystem”—highly collaborative arrangements across hundreds of enterprises

**Figure 1. Defining business ecosystems**



Source: Deloitte analysis.

Graphic: Deloitte University Press | DUPress.com

that are accelerating entrepreneurial innovation in areas such as smartphones and the next generation of smart watches.<sup>10</sup>

Especially given the diverse usage of the term, it might be tempting to dismiss “ecosystem” as yet another management buzzword in an increasingly jargon-congested business lexicon. Certainly, the term has so far defied a precise and universally agreed definition (despite valiant efforts by many academics and theorists).<sup>11</sup> But the concept’s rapid spread and uptake points to a practical utility that should not be underestimated.

At a bare minimum it has provided many businesses with a powerful metaphor from the natural world. Metaphors matter: They make it easier to explore and understand abstract concepts, and inform the decision-making heuristics and mental models leaders use to make confident choices and take timely action. Our business metaphors have historically been drawn largely from machinery and engineering, warfare and the military, and competitive sports and games. These remain apt in many ways—but in increasingly dynamic, collaborative, interdependent situations, they might mislead just as much as they inform.

Ecosystems thinking provides a new frame and mindset that captures a profound shift in the economy and the business landscape. The importance of relationships, partnerships, networks, alliances, and collaborations is obviously not novel—but it is growing. As it becomes increasingly possible for firms to deploy and activate assets they neither own nor control, to engage and mobilize larger and larger numbers of participants, and to facilitate much more complex coordination of their expertise and activities, the art of the possible is expanding rapidly.

## Five ways to think about ecosystems

Having noted the varied definition and broad application of the term ecosystem, it makes sense to clarify how it is being used in this document: *Ecosystems are dynamic and*

*co-evolving communities of diverse actors who create and capture new value through increasingly sophisticated models of both collaboration and competition.* This definition allows for the fact that ecosystems come in a broad array of shapes, sizes, and varieties—and also captures three core characteristics that are generally present. First, ecosystems enable and encourage the participation of a diverse range of (large and small) organizations, and often individuals, who together can create, scale, and serve markets beyond the capabilities of any single organization. This provides the requisite variety for a healthy system. Second, participating actors interact and co-create in increasingly sophisticated ways that would historically have been hard to formally coordinate in a “top-down” manner, by deploying technologies and tools of connectivity and collaboration that are still proliferating and disseminating. This means that there is dynamism and substantial latent potential for increasingly productive ecosystem development in the years ahead. Third, participants—often including customers—are bonded by some combination of shared interests, purpose, and values which incents them to collectively nurture, sustain, and protect the ecosystem as a shared “commons.” Everyone contributes, everyone benefits. This enhances the longevity and durability of ecosystems.

Our definition here is broadly consistent with the literature, and the thinking to date among business leaders, advisors, and academics, which continues to evolve as ecosystems become an increasingly critical unit of analysis. But there are further patterns and aspects of ecosystems that are now also coming into sharper focus as we consider the emerging opportunities and challenges for enterprises.

## Ecosystems create new ways to address fundamental human needs and desires

An economy—from the most primitive to the most advanced—is essentially a system organized to meet (and often shape) human needs and desires. The major economies

that arose through the course of the last two centuries developed around the best available and most ingenious means of doing so—our long-familiar industries. In the United States, these were first codified in the 1937 Standard Industrial Classification (SIC) system, which captured well the economic and business arrangements that transformed our lives for much of the 20<sup>th</sup> century. But these structures are, inevitably, changing.

A distinctive characteristic of many ecosystems is that they form to achieve something together that lies beyond the effective scope and capabilities of any individual actor (or even group of broadly similar actors).

Humanity did not necessarily want physicians, hospitals, and pharmaceuticals—we wanted wellness. We did not particularly crave classrooms and textbooks and teachers—we wanted to learn and achieve success. We did not demand coal mines and oil and gas extraction—we wanted energy beyond the muscles of humans and harnessed animals. In many parts of the economy today, new cross-cutting ecosystems are starting to forge new means to meet our desired ends.

Looking forward, let's consider, for example, the automobile industry that has richly enhanced so many lives around the world. It is certainly possible to imagine the emergence of a very different ecosystem to satisfy the desire for fast, affordable, safe, and convenient personal mobility, but that might also significantly reduce the appeal of privately owned cars. Confidence could rise for “autonomous vehicles” or self-driving cars (with a technology company, Google,<sup>12</sup> perhaps helping lead the way?). Carsharing might in turn become more attractive (as cars gain the ability to deliver

themselves to your door). Many car- and ride-share businesses are already experimenting, learning, and tapping into the different values of the Millennial generation. For some cities, according to former General Motors R&D chief Lawrence Burns, “about 80 percent fewer shared, coordinated vehicles would be needed than personally owned vehicles to provide the same level of mobility, with less investment.”<sup>13</sup> While such dramatic change is certainly not

inevitable, it is plausible that new “mobility ecosystems” might coalesce around the automobile industry, and include city planners, technology and energy players, public transportation providers,

regulators, infrastructure and construction players, insurance companies, and peer-to-peer networks<sup>14</sup>—collaborating, adapting, and responding to one another's moves, and once again transforming and improving our lives.

### **Ecosystems drive new collaborations to address rising social and environmental challenges**

A distinctive characteristic of many ecosystems is that they form to achieve something together that lies beyond the effective scope and capabilities of any individual actor (or even group of broadly similar actors). In some instances, these relate to large societal problems that no individual organization is able, or incented, to resolve. Examples where ecosystem approaches have been embraced include water resource management, child poverty, inner-city violence and gun crime, and food safety. All are obviously critical and—in some areas at least—are sources of growing pressure or threat.



Take as an example the Global Food Safety Initiative (GFSI), a non-profit organization whose members include many of the world's largest food producers, distributors, and retailers. It helps coordinate a global, co-creative, and collaborative approach to addressing the growing challenge in a global food system of ensuring safety for consumers and protecting the reputation of the industry. Some of its members compete ferociously in their markets, but also collaborate aggressively to ensure the certification, shared standards, superior monitoring, and shared learning and leading practices that together create a safer food industry and boost consumer confidence. Here is new ecosystem-oriented behavior in which every participant benefits from their collective investment in the shared “commons”—and has acknowledged that, in the words of GFSI: “Food safety is not a competitive advantage.”<sup>15</sup>

### **Ecosystems create and serve communities, and harness their creativity and intelligence**

Multiple, and on the surface highly diverse, disciplines that examine the human condition—from anthropological and archeological studies of ancient “wisdom” cultures, through theology and philosophy, to today’s behavioral economics and even neuroscience—converge around a few key fundamentals. People want to belong, to understand and be understood, to achieve acknowledged competence in their chosen arena, and to make a positive difference in their world. Historically, few people could fully realize these desires beyond their own immediate and tightly constrained physical domains. Today, technology has transformed the ways and levels in which such self-actualization can occur—and many ecosystems are now benefiting from this vital shift.

The most obvious illustrations are the many business ecosystems that have been designed specifically to enable us to find and connect with our own “tribes”—those that surround businesses like Facebook, Twitter, and Yelp. Recognizing the importance of its top users (the site’s most prolific reviewer has written

more than 8,000 reviews),<sup>16</sup> Yelp founded its Elite program to recognize and reward its community of regular reviewers with exclusive parties and freebies.

But also consider three other exemplary arenas. Online gaming is today a \$20 billion—and growing—business, and many of the most successful games not only connect people around the globe, but actively engage them in the continuous development of the games themselves.<sup>17</sup> The open source movement, which originally attracted extraordinary—and often unpaid—contributions from hundreds of thousands of highly skilled individuals in the software environment, has been spreading across the economy. Other examples can now be found across diverse industries and sectors. In media, Blender’s free and open source 3D computer graphics program has been used to generate outputs as diverse as 3D models of NASA space crafts and storyboards for *Spider-Man 2*.<sup>18</sup> In education, the Massachusetts Institute of Technology’s OpenCourseWare provides digital access to “virtually all MIT course content.”<sup>19</sup>

And, for solving more specific (and sometimes also time-bound) problems, there has been a substantial rise recently in “crowdsourcing.” Organizations like Kaggle host competitions that invite participants to use data science and algorithms to solve business problems. Others, like XPRIZE, organize grand challenges that encourage players to collaborate to tackle complex social and environmental issues. The results already speak for themselves—examples include a device that skims oil off water three times faster than previously existing technology,<sup>20</sup> and software that is able to show trends in symptoms of Parkinson’s disease in individual patients over time.<sup>21</sup>

Today, almost every business can find ways to benefit from this growing and global opportunity to forge, serve, and grow alongside—and with the help of—new communities, which will often include customers who were traditionally regarded as passive recipients rather than active participants. The LEGO Group, for

instance, has found new ways to connect with customers young and old with its LEGO® Ideas portal, on which fans have enthusiastically submitted and supported ideas including the Minecraft and Ghostbusters 30th Anniversary toy sets. Companies that are able to tap into the resourcefulness of their ecosystems will not only discover new points of resonance with their customers, but are also opening themselves to a universe of opportunity, just as The LEGO Group did when it found inspiration for its blockbuster *The LEGO Movie™* from a collection of stop-motion films produced utilizing LEGO bricks on YouTube.<sup>22</sup>

### **Ecosystems often exist on top of powerful new business platforms**

A “platform” is a powerful type of ecosystem, typically created and owned by a single business or entity, but deliberately designed to attract the active participation of large numbers of other actors. According to scholar Yochai Benkler, it is “a technical and organizational context in which a community can interact to achieve a specific purpose.”<sup>23</sup> Some are designed primarily to create new markets by enabling connections between previously separated potential buyers and sellers; others are more focused on the distributed development of new products, services, and solutions. An early illustrative example combined both. In 1968, Dee Hock worked in a local bank in Washington State and spotted a problem and an opportunity in the early days of consumer credit cards.<sup>24</sup> Many banks were attempting to issue their own proprietary product, each of them encountering the laborious burden of signing up merchants to accept them, persuading customers of their utility and security, reassuring regulators, and designing protocols and features for the new product. By proposing a shared platform to deal with all these arduous tasks—which became VISA in 1976—he enabled them to pool resources and to both collaborate and compete within a much simpler-to-develop, and hence much faster-growing, financial market for credit.

VISA may have been an early example, but it has since been joined by many other platforms, spurred by digitization and connective technologies. eBay created a global auction-based marketplace that now connects millions of buyers and sellers. More recently, a variety of new “sharing economy” platform businesses have established entirely new ecosystems that enable vast numbers of participants to share access to their previously idle or under-utilized assets, creating significant social and economic value in the process. Some, such as Airbnb and Uber, have disrupted incumbent industries—and more will likely do so in future, in additional domains of the economy.

Meanwhile, other platforms have emerged to accelerate and distribute the development of new products and services. An early example was the success of open source models that transformed the software sector by inviting vast numbers of programmers to develop products such as Linux. This established the pathway to the explosive, widely distributed development of new applications on enabling platforms created by Apple, Facebook, Google, Samsung, Salesforce, and others. In recent years literally millions of apps have been created, producing new solutions and possibilities for consumers and enterprises alike.<sup>25</sup>

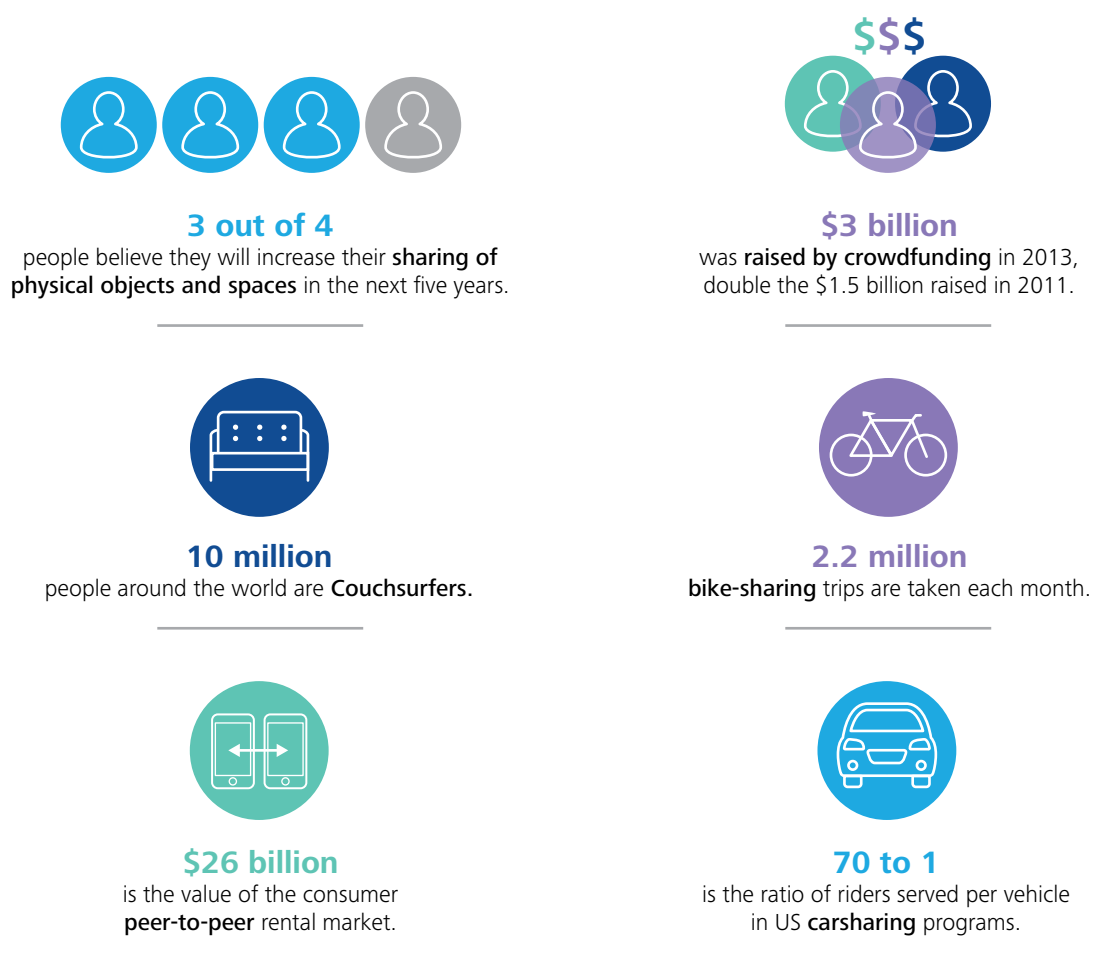
The results have been spectacular for some platform creators. One estimate suggests that four of the top five most valuable global brands are largely based on platform business models.<sup>26</sup> With many of the world’s fastest-growing, highest-profile new companies joining them, there is no sign of the phenomenon slowing.<sup>27</sup>

### **Ecosystems accelerate learning and innovation**

Philosopher Eric Hoffer observed that, “In times of change learners inherit the earth, while the learned find themselves beautifully equipped to deal with a world that no longer exists.”<sup>28</sup> The imperatives for businesses to learn and to translate learning into innovation have never been greater.<sup>29</sup> And, as many corporate leaders have recognized, the smartest

**Figure 2. The platform-driven “sharing economy”**

The “sharing economy” refers to growing markets, generally enabled by platforms, that aggregate underutilized and otherwise unseen resources for others to “borrow,” usually for a fee. The resulting economic and social communities of participants—each of them constituting a new ecosystem—span an increasingly wide variety of products and services.



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Graphic: Deloitte University Press | DUPress.com

people can’t all work for just one organization; this means, importantly, that they don’t all work for yours.

Ecosystems provide businesses access to sharp minds and smart resources, whether they are located with suppliers, customers, research organizations, or independently. For

example, users of InnoCentive connect with an ecosystem of thousands of innovators and problem-solvers around the world. A Telstra executive once said he seeks out partners who will push new thinking: “When we look to partner, we look for . . . innovation . . . what you’re looking for is someone who’s going to

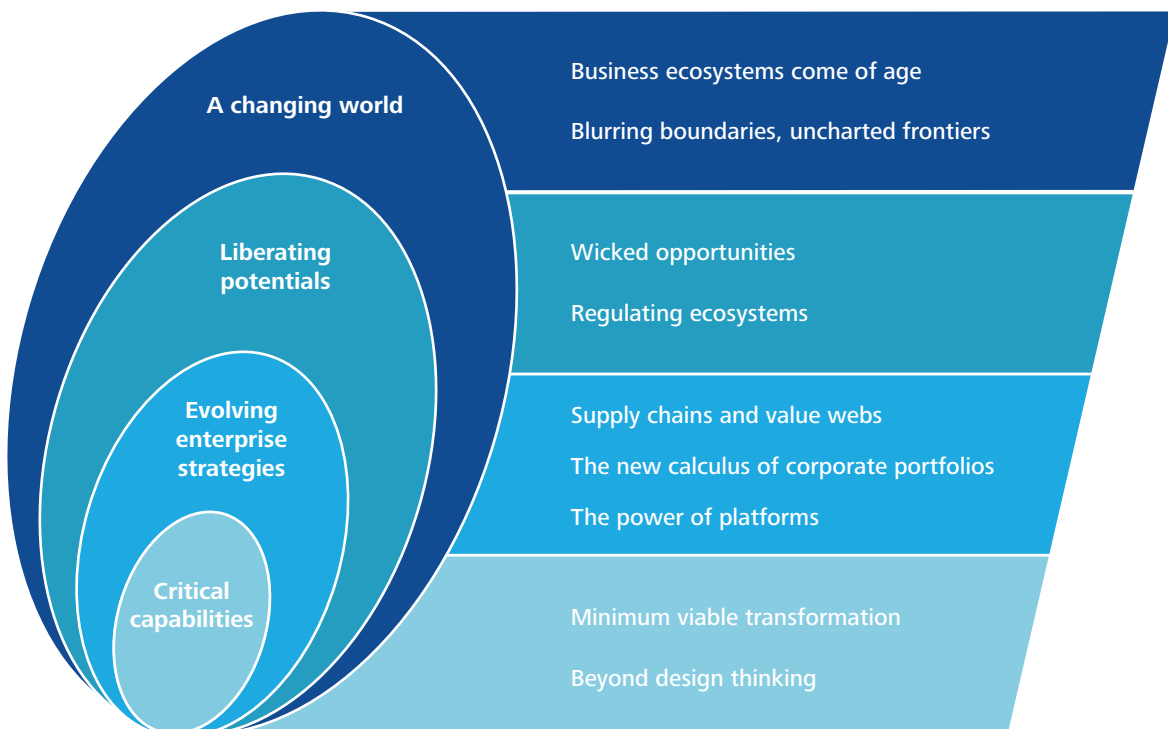
challenge you. I don't want you to tell me I'm good. I want you to tell me what I have to do differently, how I can be different."<sup>30</sup> Learning is a largely social activity; innovation is very often the result of integration and connection across different fields of expertise and domains of knowledge; and both are therefore accelerated in the fluid, exchange-oriented, and co-creative communities that are forged by ecosystems. Some observers, notably John Hagel, have suggested that such ecosystems will prove the most enduring and influential, and provide the most sustained and important benefits to those businesses that create, lead, and participate in them.<sup>31</sup>

For example, the Mahindra Group, one of India's largest corporations with more than 200,000 employees globally and an enormous supplier network, was recently celebrated for linking suppliers and internal businesses alike in jointly owned initiatives to "accept no limits, drive positive change, and promote alternative thinking." The resulting ecosystems of

collaboration have benefited Mahindra itself by energizing and aligning learning and creativity across the diversified group. Just as importantly, however, Mahindra credits efforts like this as promoting widespread transformation across entire geographies where Mahindra's operations are centered,<sup>32</sup> like Maharashtra, India's second most populous state and its largest contributor to GDP by far.<sup>33</sup> The dynamism and productivity of such local hubs have given rise around the world to a growing focus on local and regional "start-up ecosystems" and "innovation ecosystems"—a trend actively encouraged in November 2014 by a number of senior European business leaders in an open letter to the European Union.<sup>34</sup>

The world is entering an era in which ideas and insights come from everywhere, and crowds, clouds, collaborators, competitions, and co-creators can fundamentally help define our shared future. The business environment is being permanently altered as a result.

Figure 3: Business ecosystems trends



Source: Deloitte analysis.

Graphic: Deloitte University Press | DUPress.com

## Managing in a world of business ecosystems

The rise of business ecosystems is fundamentally altering the key success factors for leading organizations, forcing them to think and act very differently regarding their strategies, business models, leadership, core capabilities, value creation and capture systems, and organizational models. More will be learned over time, as ecosystems continue to reveal their secrets. This ongoing process is not surprising. After all, it was only in the late 1930s that we created standardized classifications for the distinct sectors of the industrial economy, and then started to track their collective output with a measure called GDP. It took almost another 30 years to hammer out the detailed, if still evolving, standards for many business professions,<sup>35</sup> and almost 20 years more for the basic tools of “strategy” to be revealed.<sup>36</sup>

*In this trends report, however, we will take a deeper dive into what is already clearly discernible as business ecosystems come of age—and can therefore be applied to business strategy and operations today.* Specifically, we will explore the following trends and the associated ways in which future-shaping leaders are:

- Transcending historical constraints as multiple boundaries blur and dissolve simultaneously, to create new value and redefine the “art of the possible.” (See page 17.)
- Participating in evolving ecosystems that forge alliances to address major pressing societal challenges through new solutions, generating both profits and social value at the same time. (See page 31.)
- Engaging with the domains of regulation and policy to maintain an effective balance between protecting the public’s interest and enabling the new markets and solutions which fast-evolving ecosystems make possible. (See page 43.)
- Reimagining existing supply chains as “value webs” that enjoy greater autonomy and trust, learn and innovate together, and forge the sustainable models for success that benefit all those involved. (See page 55.)
- Reconfiguring assets for a more relationship- and collaboration-based economy in which ownership and control matter less, and activating the assets of others matter more, altering M&A strategies in the process. (See page 67.)
- Creating new enterprise platforms that enable the entrepreneurship, and help liberate and harness the talents, of countless other participants. (See page 79.)
- Learning to transform businesses and organizations without destroying them, by taking a lesson from the entrepreneurs’ use of minimum viable products. (See page 91.)
- Embracing new core competencies—especially the skills embedded in the world of design—and reinventing their management thinking and practices. (See page 103.)

# Author

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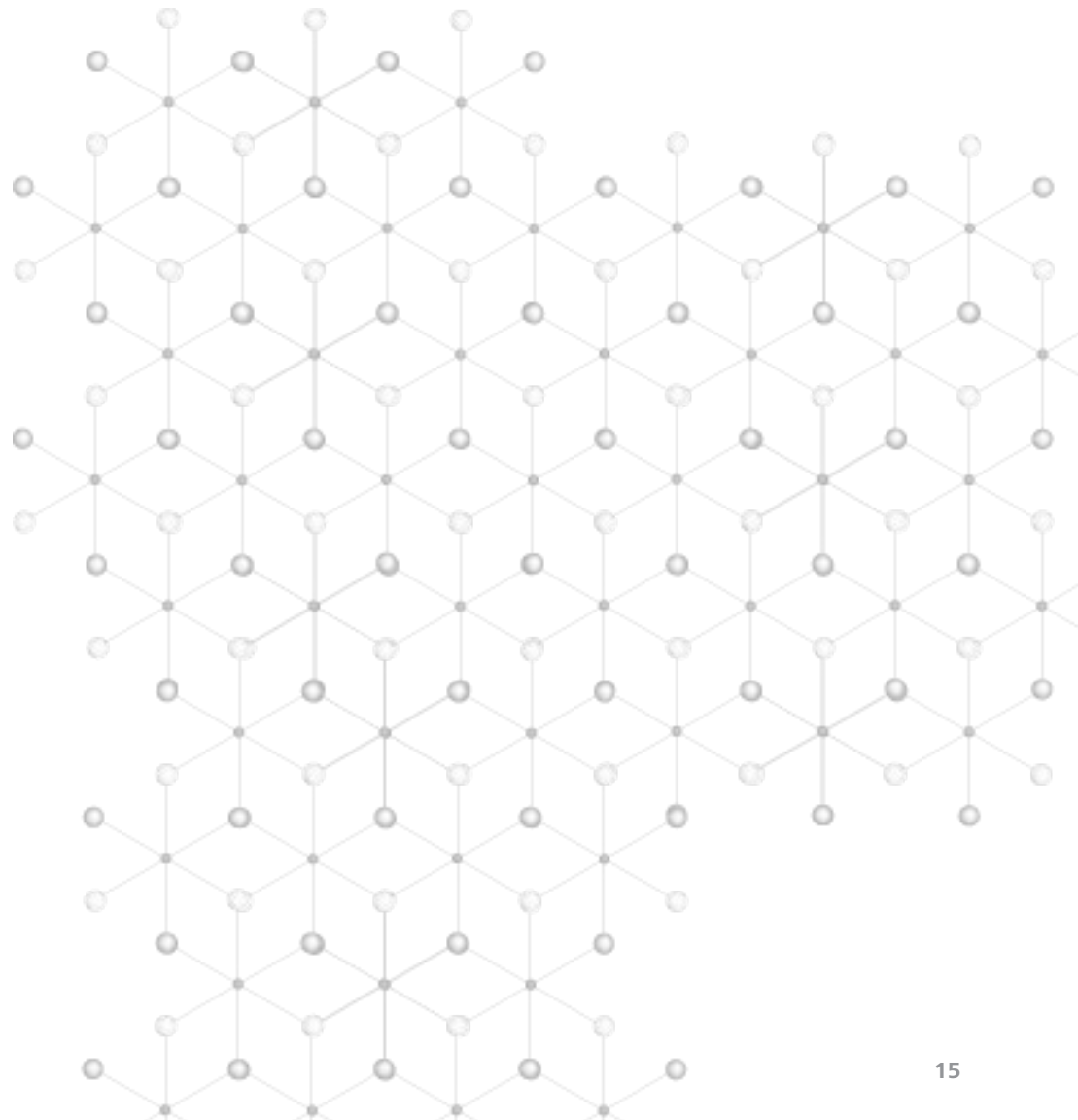
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# Blurring boundaries, uncharted frontiers

By Eamonn Kelly

## Overview

**T**HE business environment has never been static, simple, or certain: Profound change, sometimes abrupt, sometimes gradual, has been reshaping the world for centuries. As recently as 1900, European empires straddled the globe, and the British empire alone contained 400 million people—25 percent of the world’s population.<sup>1</sup> Only a tiny minority had ever stepped foot on foreign lands, or even travelled more than 50 miles from their place of birth. Well over 80 percent still lived on farms or rural communities.<sup>2</sup> In the United States, already the world’s wealthiest country, life expectancy at birth was 47 years; about 7 percent of students completed high school; 1 percent of citizens held investments in public companies or mutual funds;<sup>3</sup> only 19 percent of women worked for pay;<sup>4</sup> just 3 percent of households were lit by electricity, and less than a third had running water.<sup>5</sup> While scientific knowledge and technological capabilities had progressed greatly since the Enlightenment, they remained almost primitive by today’s standards.

But history was in motion. Between 1900 and 1905, Kodak would launch the Brownie—the first mass market camera; Marconi would transmit and receive transatlantic radio signals; the first narrative movie would be watched by



Ecosystems are dynamic and co-evolving communities of diverse actors who create new value through increasingly productive and sophisticated models of both collaboration and competition.

Read more about our view of business ecosystems in the Introduction.

*Long-standing boundaries and constraints that have traditionally determined the evolution of business are dissolving, allowing new ecosystem possibilities to flourish.*

millions around the United States in the first “nickelodeons”; the Wright brothers would take flight at Kitty Hawk; Hubert Booth would invent the first modern vacuum cleaner; a young Japanese playing card company, Nintendo, would start trading internationally; Henry Ford would incorporate his eponymous automobile firm; John A. Fleming would create the first practical vacuum tubes; Rutherford and Soddy would introduce their general theory of radioactivity; and the 26-year-old Albert Einstein would propose his theory of relativity and postulate the existence of photons. All of these—and many more events in that one brief historic window—were either enablers or manifestations of a rapidly expanding universe of new knowledge, capabilities, and potential.

Disruptive change is hardly a new phenomenon: Preceding generations have enjoyed and endured rapid shifts arguably even more transformative to their lives and work than those

we experience today. And yet, it does appear inevitable that change will continue to accelerate. Knowledge begets knowledge; today's technologies fuel and catalyze each other's development; fast-spreading tertiary education opportunities around the globe are creating tens of millions of new actors in multiple fields of expertise; and massively enhanced connectivity combines, melds, and disseminates this increasingly rich mixture to accelerate learning and innovation.


The story of change in our time, however, is not only a story of speed. Even more disruptively, long-standing boundaries and constraints that have powerfully determined the evolution of business, the economy, and society are now blurring and even dissolving. As a result, a new era of extraordinary possibility and potential is unfolding. Unprecedented opportunities are inspiring entrepreneurs and innovators. But these are also challenging incumbent leaders and businesses to adapt and act with confidence in order to thrive in the future.

### What's behind this trend?

Many factors are together driving the transformation of the business environment. The global economy has changed beyond recognition. Newly powerful nations and organizations are growing, consuming, and helping to set new rules. Sustainability challenges, demographic shifts, and the needs of a new global "middle class" are increasingly important sources of innovation. Social and cultural shifts occur everywhere, empowered by an increasingly influential generation of entrepreneurial and impact-oriented "digital natives." New ways of collaborating and interacting are creating new organizational forms, business models, and approaches to talent engagement. Evolving

societal expectations and scrutiny of businesses are reshaping the regulatory environment and challenging the "license to operate" and "license to grow" for multiple industries.

Fueling all of these, however, is rapid technological advancement. Few would dispute the central importance of technology, especially digital technology, as the key source of change



Few would dispute the central importance of technology, especially digital technology, as the key source of change in recent decades.

in recent decades. Nor would they deny that it will continue to play an absolutely critical role. As writer Stewart Brand has observed, computing is not like previous technologies—it is "autocatalytic," or self-accelerating, as each development allows the next one to come about faster.<sup>6</sup> Seymour Cray, when told that Apple Inc. had bought one of his Cray supercomputers to help design the next Macintosh computer, declared: "I just bought a Mac to help me design the next Cray!"<sup>7</sup> Computers have also catalyzed rapid advances in other fields, including engineering, materials science, nanotechnology, and biotechnology.

Moore's Law—which defines the remarkable exponential growth in computing power and decline in cost—has held for 50 years, despite recurring concerns it would hit technological limitations.<sup>8</sup> It appears likely to endure longer; yet even if the pace should slow, the stage is already set for continuing digital disruption. After all, the process is still relatively new. The Internet only started entering the mainstream economy less than 20 years ago. Broadband access only overtook far slower dial-up modems about 10 years ago. Mobile devices designed for a digital economy—notably smartphones and tablets—arrived about

seven years ago, and cloud computing and storage became truly effective shortly afterward. Even more recently we have witnessed the growing reach and power of software “applications,” already altering the worlds of individuals and enterprises alike. Today the “Internet of Things” (connecting objects just as the Internet has connected people) is poised for takeoff. And the ability to analyze and interpret massive amounts of new data will grow, as machine intelligence continues to evolve, generating powerful new insights and predictive capabilities.

Digitization of the economy has already had tremendous impact, but we are only beginning to witness the sheer scale and scope of its transformative power.

## The trend

Increasingly, businesses operate in complex, dynamic, and adaptive ecosystems. A variety of phenomena—including feedback loops, stocks and flows, scaling and network effects, power laws, and so on—must be understood to properly appreciate and anticipate how systems behave and might evolve. But one major change is already underway. *The fundamental boundaries that have specified the relationships, interactions, and possibilities of most businesses are rapidly blurring and dissolving.* Historically, when boundaries have moved—geographic, scientific, technological, institutional, or cultural—the results have been momentous. When multiple boundaries shift simultaneously—as happened during the Enlightenment and the Industrial Revolution—truly extraordinary breakthroughs and great strides in human progress occur, through the creation of new connections, possibilities, and ideas.

Many long-standing boundaries have been blurring in recent decades. Industries and sectors have been converging, reducing the clear lines of demarcation originally defined and codified almost 80 years ago.<sup>9</sup> Boundaries between and within firms have been weakening. Old distinctions between products and services are breaking down as businesses

traditionally specializing in one seek to integrate the other, to create fuller “solutions” and more compelling experiences that serve customers’ growing expectations. The historically profound gaps between the capabilities and influence of large and small organizations are steadily declining. For many individuals, the boundary between paid work and passionate pursuit of interests and hobbies is falling.

Even the respective roles and contributions of the private, civic, and public sectors are blurring. Businesses were historically driven by market values, and the civic sector by moral and social values; governments set the rules and provided public goods. Today, they are merging and becoming increasingly interdependent through new partnerships and collaborations—often in pursuit of shared goals in light of another blurring, as externalities become internalized within market-based solutions. The liberalization of trade policies following the demise of the Soviet Union has served both to soften borders between countries, and also greatly diminish the vast dividing line between the “developed” and “emerging” economies. Cross-fertilization and increasing collaboration across scientific and technological domains are dissolving multiple knowledge boundaries.

These are all crucial changes and are already impacting every sector and almost every business today. But three key types of blurring are poised to have growing and ubiquitous impact.

## The human-machine boundary

From the advent of the most basic tools, technologies have always replaced and expanded upon human endeavor. The Industrial Revolution brought widespread mechanization of *routine manual* labor—a process continued ever since through multiple manufacturing innovations. The advent of office machines, especially computers, expanded automation into the *cognitive* domain—again, mainly in routine areas, as software algorithms captured well-codified and rule-based procedures and expertise, enabling faster, cheaper, and more reliable business

operations. Meanwhile, since General Motors introduced the first industrial robots in the 1960s, machinery has been steadily extending its reach into *nonroutine* manual work.<sup>10</sup> Recently, for example, the US Navy tested a prototype bipedal firefighting robot equipped with multiple sensing and actuation capabilities.<sup>11</sup> General Electric is designing robots that can, for example, climb and maintain wind turbines.<sup>12</sup>

There will be further machine encroachments into manual work and routine cognitive fields, but the new and transformative blurring boundary today is occurring in the *nonroutine cognitive* domain, which has historically largely defied automation. Artificial Intelligence (AI), including machine learning, natural language processing, knowledge representation, machine-to-machine communication, and automated reasoning, is evolving fast.<sup>13</sup> Investment here has exceeded \$17 billion since 2009, with private investment growing around 62 percent a year.<sup>14</sup> The extraordinary consequences are already becoming manifest. Apple's Siri voice recognition software applies natural language recognition to interpret and act upon spoken words. Google Translate has over 500 million active users every month, and now features a "conversation mode" that enables real-time bilingual conversations.<sup>15</sup> Self-driving vehicles have been road tested for millions of miles.<sup>16</sup> Symantec's Clearwell software, designed to address the explosion of "e-discovery" efforts in legal matters, uses language analysis to review and sort hundreds of thousands of documents in just hours.<sup>17</sup> IBM's Watson, having won *Jeopardy!*, is now detecting and diagnosing medical conditions and outlining patient-care plans.<sup>18</sup> Financial services firms such as Betterment and Wealthfront provide automated, customized investment advice. The Associated Press (AP) is implementing a system to automate the writing of corporate earnings reports, allowing reporters to concentrate on tasks that require more ingenuity and add more value—"more journalism and less data processing" in the words of the AP's Lou Ferrera.<sup>19</sup>

Looking ahead, the implications of increasingly autonomous non-human intelligence are profound, though still uncertain. Many, including scientist Stephen Hawking and entrepreneur Elon Musk, have voiced serious, perhaps existential, concerns regarding the potential consequences.<sup>20</sup> More immediately, however, we need only look backward at the transformative impacts of automation on manual and routine cognitive work—growth, productivity, and prosperity, alongside challenging social disruptions—to get a sense of the sheer scale of what likely lies just around the corner.

### The producer-consumer boundary

Another clearly drawn line quickly losing resolution is the distinction between producers and consumers. In the first half of the twentieth century, powerful producers forged and dominated the new industrial era; consumers were the passive recipients of their output, far from active participants. In recent decades, increased choice enhanced consumers' power in the marketplace, but they were engaged rarely and weakly, through mechanisms like focus groups. Persuasion prevailed over participation. Even today, many businesses declare themselves "customer-centric," but still strategize around "value chains" that relegate consumers to the far end of increasingly complex production arrangements.

Such approaches are becoming increasingly inadequate as the old boundaries between producers and consumers blur in a variety of ways. Consider YouTube, where millions of users create and share 300 hours of content *every minute*.<sup>21</sup> Today, we also see people contributing real value to many communities of shared interests and needs—related to, for example, particular medical conditions or hobbies—and to blogs, citizen journalism, and other knowledge- and opinion-sharing portals. Five of the ten most popular web content sites worldwide are primarily user-generated.<sup>22</sup>

But consumers have also become deeply engaged in the production of physical products. In some cases, ecosystems of "makers"

empowered by newly accessible and affordable technologies, are actually leading the evolution of products—for example, drones.<sup>23</sup> More commonly, consumers help design, improve, and prioritize within existing categories, on powerful platforms established by many firms explicitly for “co-creation.” UK-based startup MakieLab, for example, allows customers to create one-of-a-kind 3D-printed dolls using its FabLab app. A similar concept underpins the successful fashion company Threadless, which gets all the graphics for its T-shirts as submitted designs and allows visitors to its site to vote for the ones Threadless should produce. Such approaches are being further spread through the increased deployment of prizes and competitions, and the growing success of crowd-sourcing businesses such as Applause, the world’s largest open community dedicated to professional testers of software.<sup>24</sup>

More recently, peer-to-peer networks have proliferated, enabling individuals to “share” their assets, skills, and time. Businesses like Airbnb, Uber, and SoMoLend, for example, are creating radically different and fast-scaling options in hospitality, mobility, and finance, respectively. In some instances these are making previously “idle” assets productive, thereby benefitting society; but as such networks spread to other parts of the economy, they will threaten the existing business models of many incumbents.<sup>25</sup>

Consumers are also prolific producers of arguably the most valuable commercial resource today—massive volumes of data. Consider the data exhaust captured by Google’s aggregation and prioritization of our searches. Or Amazon’s “collaborative filtering” which captures our preferences to promote suggestions to like-minded people. And, as companies increasingly enable their customers to

customize their own products, services, and experiences, they will accumulate ever more prodigious amounts of individual and collective data. As more of our lives move into the digital arena, almost every action and choice will create and transmit dynamic data with latent value—posing both new opportunities, and new dilemmas.

### The physical-digital boundary

Digitization began influencing the physical economy 50 years ago, with information technology automating many business processes.

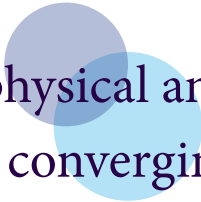
The advent of the Internet increased the pace,

scope, and scale of that process, with some commentators initially distinguishing between an “old” physical and “new” digital economy: “E-commerce” was different from “commerce,”

“bricks and mortar” separate from “online.”<sup>26</sup>

That boundary, however, quickly blurred, with terms such as “clicks and mortar” and “omni-channel” emerging in retail, for example, to describe a much more blended and integrated reality.

Now, the physical and digital worlds are converging rapidly in the form of increasingly “smart” objects. The Internet of Things (IoT) is enabled by many factors, including increasing capabilities and falling costs of sensors, actuating devices, and wireless connectivity, and the massive expansion of the Internet Protocol registration regime, IPv6. By connecting far-flung devices, objects, and infrastructure, the IoT enables not only remote real-time awareness, but autonomous adjustment and control to optimize performance, while creating yet more data. For example, the Nest Learning Thermostat senses your presence or absence at home, tracks your heating preferences over time, and adjusts temperatures accordingly. By aggregating what it learns from your and every



Now, the physical and digital worlds are converging rapidly in the form of increasingly “smart” objects.

**Figure 1. Fundamental boundaries are rapidly blurring in the business environment and economy**



Source: Deloitte analysis.

Graphic: Deloitte University Press | DUPress.com

other household, it continuously improves its algorithms based on large-scale patterns.<sup>27</sup>

The IoT is spreading across the economy. Gartner has estimated about 26 billion connected objects (excluding smartphones and tablets) by 2020;<sup>28</sup> Cisco predicts 50 billion;<sup>29</sup> and Morgan Stanley 75 billion.<sup>30</sup> Every sector, from health care to security, will be altered. But this is not the only technology blurring the boundaries of the physical and digital worlds. 3D printing enables production of an expanding range of physical goods from digital files, from OwnFone's simple yet customizable made-to-order mobile phones to NASA-designed tools that can be printed in space.<sup>31</sup> With significant innovation broadening the array of "printable" materials, this

will only accelerate. For example, Organovo is today printing scaled-down human livers,<sup>32</sup> which it sells to pharmaceutical companies for drug-testing purposes, while researchers in Australia have figured out how to print stem cells,<sup>33</sup> a step toward lab-grown hearts and brains. In another interesting twist, Autodesk has recently offered as a free public beta its Memento software, which enables non-experts to turn digital images (scans or photos) of physical objects back into 3D models that can then be physically printed!<sup>34</sup>

Looking ahead, there is perhaps an even more profound blurring of the physical and digital worlds, as advances in virtual reality technology enable increasingly lifelike "alternate" digital worlds. While virtual reality is



today deployed primarily in the gaming space, Facebook's recent \$2 billion acquisition of Oculus VR perhaps hints at a future of fully immersive connections for maintaining social relationships and sharing information, weaving even more digital threads through the physical fabric of our lives.

## Implications

Boundaries typically produce constraints, limiting choices and actions and reducing efficiency. As they diminish, wonderful new opportunities flourish. So, too, does upheaval. The old boundaries and constraints were limiting, but also clarifying. They provided definition and focus, framed what was possible, pointed clearly to sources of advantage, and informed the key elements of business strategy and operations for many decades. Therefore, blurring boundaries are creating extraordinary new potential for the economy and broader society, and enabling remarkable innovation and entrepreneurship; and at the same time, they are also creating new challenges, especially for incumbents who have been masters of the previous game. Successful leaders will have to address increasingly urgent issues regarding cybersecurity and the "fair usage" of data; figure out optimal ways to organize and to access talent; and adopt more dynamic approaches to strategy with far greater built-in optionality.

## Cybersecurity and data

The blurring boundary between the physical and digital worlds is a fundamental driver of transformation, creating connections, data, and capabilities that are reshaping almost every part of our lives. But it also presents two substantial and unresolved challenges. First, maintaining a secure, global, open Internet; and second, determining the appropriate use of the mushrooming data we are all generating every day in myriad ways.

Of the various threats to the Internet, the greatest is arguably "hacking"—for fun, for illegal profit, for access to confidential

information, for malicious disruption and damage, and for various ideological reasons. The number of detected cyber-attacks increased by nearly 50 percent in 2014 (reaching some 120,000 per day), while identity theft (up 70 percent) and cybersecurity (up 61 percent) were the top two security concerns for American citizens.<sup>35</sup> President Obama's urgent call in his 2015 State of the Union address for more collaboration between government and business on this front raises the prospect of greater collective prioritization—and innovation—for years to come.<sup>36</sup>

Similar collaboration and innovation will also be occurring in the domain of data—their capture, ownership, distribution, and monetization. An order of magnitude more data will be produced in the years ahead, analytics will continue to get far smarter and more predictive, and opportunities to create value will proliferate. Yet critical issues regarding privacy, ethical questions posed by the ability of data to be used in discriminatory ways, and tensions over ownership of and value extraction from data produced through the activities of citizens are all rising.<sup>37</sup> There have been substantial breaches of trust in the past—some occurring because data was not adequately protected from theft or hacking and others because the data was inappropriately exploited by those stewarding it—and there will be more in the future. The resulting erosions in public trust are becoming more costly and are rapidly rising on the corporate agenda as businesses increasingly view the data they are co-creating with customers as one of their more valuable assets.

## Evolving organization designs and talent models

Few organizations today bear much resemblance to their counterparts of 30 years ago. As the changing business environment has heightened the imperatives of innovation, agility, and resilience, organization design has changed dramatically. Multiple layers of "command and control" hierarchies have been reduced. Many isolated internal siloes have been connected

and integrated. Core competences have been prioritized, the rest assigned to sophisticated supply chains or otherwise outsourced or “virtualized.” Key business processes have been automated. Digital technology and connectivity have enabled these developments, which have been transformative. But this journey is far from over. As value creation across ecosystems continues to grow in importance, organizations will continue to be further optimized for effective networking, collaboration, and fluidity.<sup>38</sup>

Recently, talent models in particular have evolved. Long-term employment has been eroding while contracting talent only “as needed” becomes more common. An Intuit report estimates that over 60 million Americans will be “contingent” workers by 2020;<sup>39</sup> 87 percent of executives leading global human resource functions have altered or are considering changes to their talent sourcing strategy;<sup>40</sup> and 70 percent of Millennials expect to spend part of their career working independently.<sup>41</sup> An enabling infrastructure of crowdsourcing and competitions has been growing fast. Specific tasks can increasingly be allocated through TaskRabbit or Amazon Mechanical Turk; entire projects can be planned and responsibilities distributed using, for example, Elance and oDesk; invention ideas can be crowdsourced, designed, and commercialized through Quirky; and marketing needs can be addressed by Tongal’s platforms of tens of thousands of creatives. Talent models will be changed further by increased automation of some types of knowledge work. Companies such as HCL Technologies and Wipro are already talking about the “hourglass” structures that will replace existing “pyramids” as artificial intelligence extends deeper into software testing and IT support functions.<sup>42</sup>

### Dynamic strategy

More than anything, business leaders will have to adopt new approaches to strategy. Successful business strategy will remain anchored on setting clear aspirations, making

well-informed and integrated choices regarding where to play and how to win, and developing the essential capabilities to support these ambitions. However as boundaries blur, the universe of options for creating value is increasing substantially; “winning” increasingly requires collaboration as well as competition with others; essential capabilities need not necessarily be owned or directly controlled; capturing value is becoming more challenging, often requiring the creation of new business models; and the need for enhanced agility means our strategies must be increasingly capable of rapid flex and adaptation.

Approaches to strategy are likely to evolve as a consequence, in a variety of ways that are already becoming evident. More emphasis will be placed on designing and renewing business models that take fuller account of the importance of relationships outside the firm.

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New models for profit capture will proliferate including, for example, subscription-based pricing, “freemium” services, micropayments, and other newly possible tools. Shared, cross-firm approaches to strategy formulation, often built on opening up hitherto closely guarded and proprietary data, is also increasing—notably between large retailers and their suppliers. The use of scenarios that paint alternative futures, first pioneered 45 years ago by Royal Dutch Shell, is likely to become increasingly common. And the smart analysis of increasingly abundant data to detect early signals of directional changes and enable dynamic adjustment of strategies will only rise in importance, with big data and analytics already being the top investment priority among CIOs given additional budget.<sup>43</sup>

## What's next?

The significant erosion of long-standing boundaries will likely result in two very different outcomes: **New possibilities** will be discovered and deployed that will have transformative impact; and some **new boundaries** will surely also arise to present different challenges. Writer William Gibson has suggested that “The future is already here—it’s just not evenly distributed yet.” We have already seen powerful cross-cutting ecosystems transform the once-separate sectors of computing, telecommunications, and media. As digitization spreads everywhere, we must expect similar blending and dynamism across the economy. Just as we have seen the growing phenomenon of temporary “pop-up” restaurants and even retail outlets, might the future hold “pop-up firms”? After all, as writer Clay Shirky has noted, it is becoming increasingly possible to “organize without organizations.”<sup>44</sup> Just as automation has started to make serious inroads into non-routine cognitive work domains, might AI move next into the world of creativity? Software programs are, after all, already producing distinctive gallery exhibited drawings and composing music.<sup>45</sup>

New boundaries are already visible as well. Geopolitical tensions that were relieved

following the collapse of the Soviet Union appear once more to be rising. Fundamentalist belief systems—an obviously divisive force in human affairs—are proving tragically consequential. While the gap between “rich” and “poor” globally is on some measures declining, the divide between the extraordinary wealth of those at the top (the 10 wealthiest individuals own around half a trillion dollars)<sup>46</sup>—and the vast majority of the rest is of growing concern. Our dynamic economy greatly rewards restless entrepreneurship. Might new fault lines evolve between those well equipped for such a world and those more suited to a steadier and less frenetic world of employment? Inevitably, as old boundaries and frictions disappear, new ones will appear.

Yet if we can figure out how to live together on our shared planet, the future prize is extraordinary. The new art of the possible—from far more effective deployment of assets and resources to collaborative integration of expertise and passion—can help smarten and strengthen Adam Smith’s “invisible hand” to create a more sustainable, global, and prosperous civilization. Today, that prize is within our reach, but not yet—not quite—within our grasp. That will perhaps be the greatest challenge ahead, shared by the leaders of today, and tomorrow.

# My take

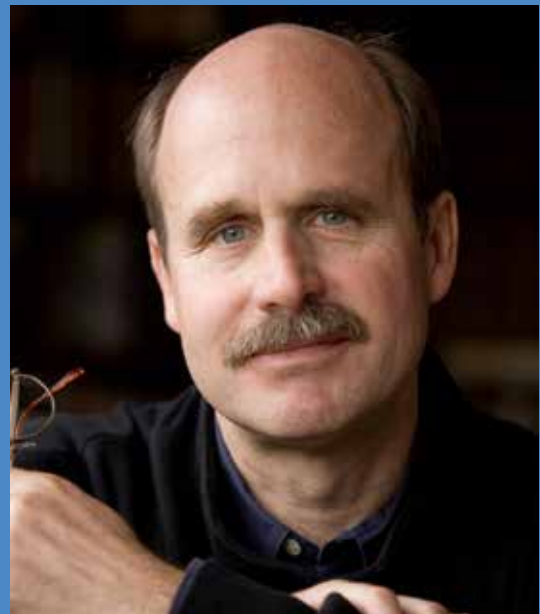
By Paul Saffo

Paul Saffo is a technology forecaster based in Silicon Valley, where he teaches at Stanford University and chairs the Future Studies and Forecasting track at Singularity University. Saffo's essays on the future of technology have been featured in publications such as *Harvard Business Review*, the *New York Times*, *Fortune*, and *Foreign Policy*.

Let's consider the grand sweep of this story. Once upon a time there was just the physical, analog domain. We then started creating and linking digital machines. The resulting bubble of cyberspace was initially small, but it has been growing rapidly since. As it expands, it encroaches on the analog, not in a science fiction kind of way, but in a very real kind of way. Now, even the basic notion of a boundary between digital and the analog is increasingly passé. The world has become more permeable, with much of the most interesting innovation coming from economic "edges" rather than from the historic centers.

"Interfacing" is what once happened through screens, keyboards, and other operating panels that separated humans and machines while still allowing them to connect. Today, we no longer interface with machines—so much as we interact with them. The distinction is subtle, but important because today's more intimate human-machine mingling allows for practically instantaneous and transparent two-way communication enabled by sensors, monitoring, and environmental feedback. Leading firms today are often forced to acknowledge that some of their most important employees are actually machines.

Increasingly, no hard border needs to be crossed in order for insight to exchange "hands" from a person to a thing. Planes, trains, and subways, for example, may still have human operators, but none of them could successfully complete their assigned tasks without guidance, and even fundamental coaching, from machines. The drivers don't need to ask for advice, because the supporting technology is smart enough to simply reach in and offer it. These transactions can be so seamless, and effective, that some organizations are now putting measures in place to guard against human overreliance on technology. For example, next-generation autopilot design now



includes machine-generated prompts reminding pilots to remain engaged.

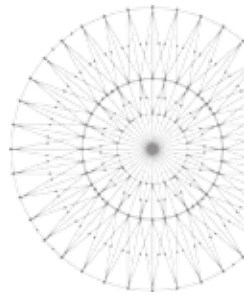
We tend to structure our organizations to reflect our dominant communications systems. In the age of telephony and mainframe computing, organizations were more hierarchical and centralized. As networked communications have evolved, we have increasingly drawn upon organizational designs that are decentralized and even more organic. If I could offer one piece of advice to today's leaders, it would be to read more broadly in ecology and biology. Key ideas like symbiosis and co-evolution are central in that literature and businesses will increasingly need to master them to thrive. Many leaders can also borrow important biological lessons about sharing resources and cross-pollinating ideas in the "intertidal zones" that increasingly link businesses and turn out to be fantastically rich places to innovate.

# Author

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# Wicked opportunities

By William Eggers and Anna Muoio

## Overview

**A**S a killer disease, malaria is the world's third biggest, after only HIV/AIDS and tuberculosis. In 2013, an estimated 584,000 people died of it—90 percent of these deaths in Africa, mostly among children under five years of age.<sup>1</sup> And because 3.2 billion people—almost half the world's population—live in regions where malaria spreads easily, it is very hard to fight.<sup>2</sup> Scores of organizations are embroiled in the complex search for solutions, sometimes pursuing conflicting priorities, always competing for scarce resources.

Despite the daunting challenges, here's how Bill Gates, who has already spent more than \$2 billion of Gates Foundation money on the problem, characterizes the situation: "This is one of the greatest opportunities the global health world has ever had."<sup>3</sup>

*Opportunity?* It's a surprising word even for an optimistic mega-philanthropist to describe a scourge that people have been trying to eliminate, unsuccessfully, for hundreds of years. It's also, however, a fair statement about what is possible in the 21<sup>st</sup> century. We're seeing a trend by which many kinds of "wicked problems"—complex, dynamic, and seemingly intractable social challenges—are being reframed and attacked with renewed vigor through solution ecosystems. Unprecedented networks of non-governmental organizations (NGOs), social entrepreneurs, health professionals, governments, and international

Ecosystems are dynamic and co-evolving communities of diverse actors who create new value through increasingly productive and sophisticated models of both collaboration and competition.

Read more about our view of business ecosystems in the Introduction.

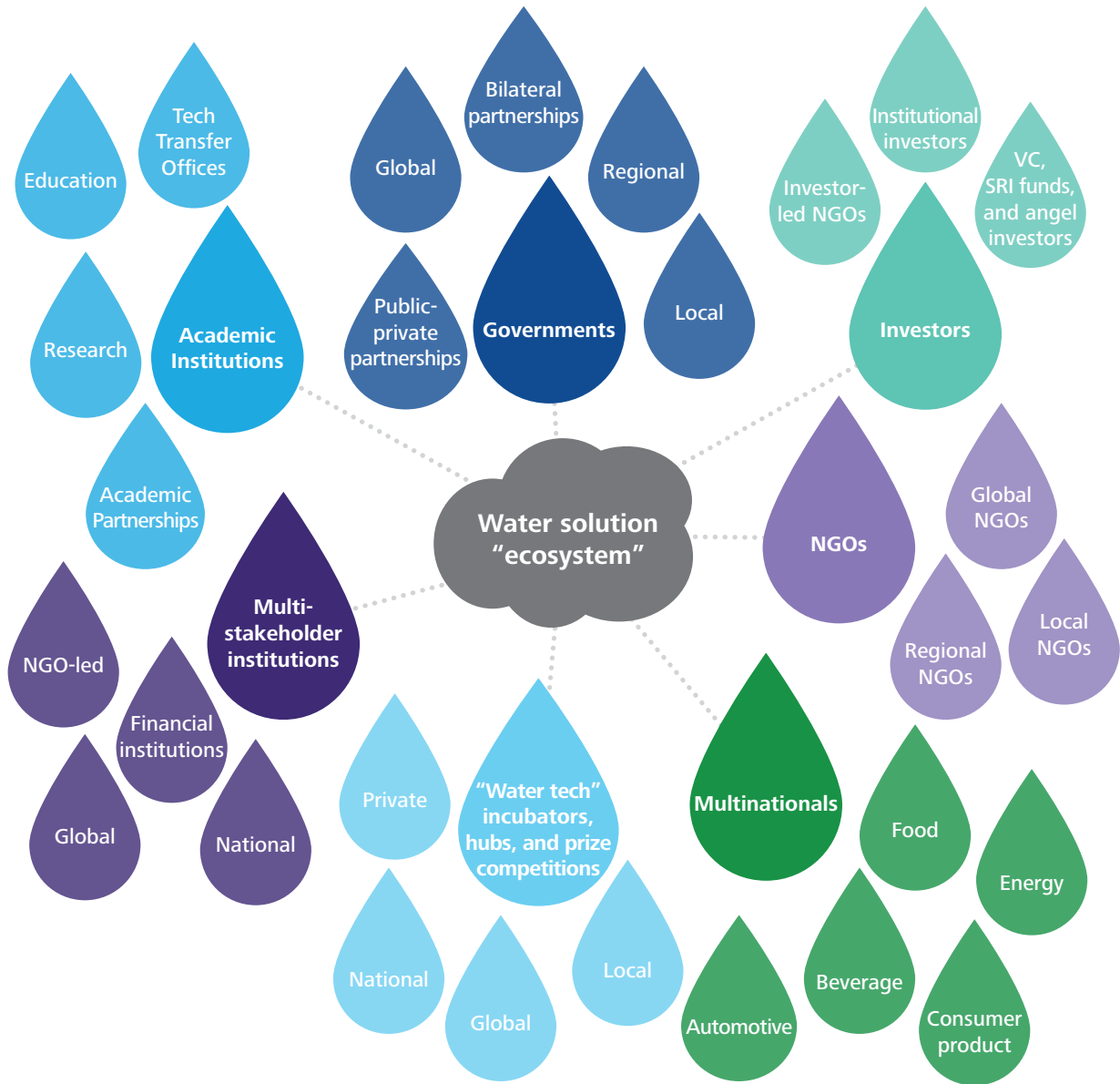
**"Wicked problems"—ranging from malaria to dwindling water supplies—are being reframed as "wicked opportunities" and tackled by networks of non-governmental organizations, social entrepreneurs, governments, and big businesses.**

development institutions—and yes, businesses—are coalescing around them, and recasting them as *wicked opportunities*.

## What's behind the trend?

Any attempt to reframe a problem as an opportunity has to begin with an understanding of the nature of the problem itself. Since the 1960s, we've had a term to describe public health crises like malaria—and also rising crime, climate change, joblessness, and other persistent ills. They are "wicked problems." Wickedness isn't a degree of sheer difficulty. As originally used by urban planner Horst Rittel, it means the problem springs from many diverse sources, is emergent and shifting, and will never have one right answer.<sup>4</sup> (Contrast this with a "tame" problem, which might be very hard but can be absolutely solved with

Figure 1. The ecosystem surrounding water as a wicked problem



Source: Will Sarni, Deloitte Consulting LLP

Graphic: Deloitte University Press | DUPress.com

straightforward techniques given enough time.) Consider the very wicked problem of access to safe water, sanitation, and hygiene (WASH). Huge parts of the world either lack access to safe water altogether (much of rural Africa and India) or are facing water scarcity (large parts of the West). Awareness of the problem of water has risen to the point that, in 2015, the World Economic Forum named looming water crises the No. 1 risk facing the globe in terms of its potential for negative impact.<sup>5</sup>

With problems as sprawling and complex as these, progress depends on having some capabilities that are themselves challenging to put in place. Problem-solvers need to be able to comprehend the dynamics of the system, coordinate their responses, and commit the necessary resources. Fortunately the story of the past decade has been positive on all these fronts.

Technology has surged ahead, supporting greater dissemination of information about causes and how they compound one another's effects. *Greater comprehension* of wicked

problems is the result. Mobile phones, social media, cloud computing, and data analytics—and, increasingly, the Internet of Things—are making it possible to capture, monitor, and make sense of phenomena from food waste to human trafficking. Powerful new collaboration tools allow ordinary individuals, in communication with peer networks, to conduct “citizen science.”

Many of the same technologies also assist in *coordinating responses*. Jay Bradner, a medical doctor at a Harvard-sponsored cancer lab, used cloud computing to disseminate a breakthrough in cancer treatment. After his lab created a molecule to target a specific cancer, the researchers consulted a cloud-based network to share the molecule with at least 70 laboratories, swiftly achieving a decade’s worth of research in many directions, and enabling the labs to use the molecule to identify promising treatments in mice for several types of cancer.<sup>6</sup>

Meanwhile, the *commitment of resources* to fight wicked problems has had a major boost in recent decades, thanks to the business sector’s embrace of social, environmental, and economic responsibilities. As late as the 1970s and 1980s, private enterprise leaders for the most part were content to leave societal issues to government and the growing ranks of NGOs. They subscribed to Milton Friedman’s philosophy that corporate profits should go purely to shareholders who, as citizens, could support the causes they chose—rather than go to pet charities personally chosen by hired managers. (Hence: “The social responsibility of business is to increase its profits.”) It’s a philosophy with many fewer adherents today. Survey results from Net Impact, the nonprofit that aims to help businesses promote sustainability, show that 83 percent of MBA candidates are willing to take a 15 percent salary cut for a job that makes a social or environmental difference in the world.<sup>8</sup>

In the battle to eradicate malaria, for example, we find many corporations pitching in. This is not pure philanthropy; it goes toward sustaining the ecosystem in which

commerce can thrive. Take Newmont Mining, which received the “Best in the Workplace” award from the Global Business Coalition on HIV/AIDS, Tuberculosis and Malaria in 2011 for its continued partnership with Ghana’s Health Service to reduce the incidence of malaria among its employees, contractors, and local residents. Operating in a region where the prevalence of malaria is high, Newmont has an undeniable business interest in finding solutions.<sup>9</sup>

Business is even more involved in the quest to solve WASH—because it is essential to their employees, customers, and communities in which they operate along with other stakeholders. We see this happening across the globe: from Nestlé capturing rainwater from warehouse roofs, reducing sanitize flushes in cleaning circuits, and reducing the blowdown rate on cooling towers in its manufacturing facilities in the Murray-Darling river basin in Australia, to The Coca-Cola Company (TCCC) investing in a wide range of water projects (its global “Replenish” water stewardship strategy), to Unilever providing water purifiers to villages in India through its Waterworks program.<sup>10</sup> Many multinationals now believe that they must be visibly part of the solutions to wicked social and environmental problems to maintain their social license to operate and earn their “license to grow.”<sup>11</sup>

We like to call these social-minded companies “multirational multinationals.” They are thinking about the returns they generate along social and environmental, not only financial, lines. As a result, they are finding virtually unprecedented ways to apply their particular capabilities and expertise to challenges that governments and nonprofit organizations have struggled with for decades.

We don’t mean to imply that corporations are the only reason that resources now exist to tackle wicked problems. Private philanthropy to international NGOs now surpasses the monetary contributions of all governments combined.<sup>12</sup> But the “transformation” (as leaders at Danone have described it) of many businesses

into entities that integrate social objectives into their profit-seeking operations has been transformative for wicked problems, as well.<sup>13</sup>

## The trend

The same kind of ecosystem thinking that informs modern business strategies, as managers look beyond the walls of their own organizations and traditional supply chains, is also being brought to bear on society's wicked opportunities. In fact, because complex phenomena like malaria and water scarcity are so broadly challenging and the need for solutions so universally acknowledged, the ecosystems responding to them are even more collaborative, more energetic, and more open.

All this makes wicked opportunity ecosystems fascinating to study for anyone seeking patterns of success. We've observed and been engaged in dozens of multisector solution ecosystems tackling complex, entrenched societal problems. As a result we've been able to identify five common elements in the ecosystems making the most progress.

### A broad range of "wavemakers"

Pursuing wicked opportunities demands the talents and resources of all kinds of players—investors, conveners, multinational companies, innovators, governments, and citizen change-makers. For the businesses involved, where executives are accustomed to making decisions and driving outcomes within spheres they formally control, the level of consensus-building required can seem extreme. But when all these "wavemakers" converge on a shared objective, the effects can be truly transformative.

Take The Coca-Cola Company's involvement in water stewardship through its Africa Foundation's Replenish Africa Initiative (RAIN). Its goal—to improve access to safe drinking water for 2 million African people by 2015<sup>14</sup>—demands cross-sector collaboration. The more than 100 partners in the fight include NGOs such as World Vision and major

international aid organizations such as USAID. "It's challenging for one business—even one industry—to make a material difference on its own," explains Muhtar Kent, Coca-Cola's chairman and CEO. "Instead, we must rely on partnerships that connect across what I call the 'Golden Triangle' of business, government, and civil society."<sup>15</sup> The program replenishes more than 2 billion liters of water to nature and communities annually.<sup>16</sup> The hope is that these kinds of innovative collaborations coupled with technology innovation can close the 40 percent shortfall in water supply projected by 2030.<sup>17</sup>

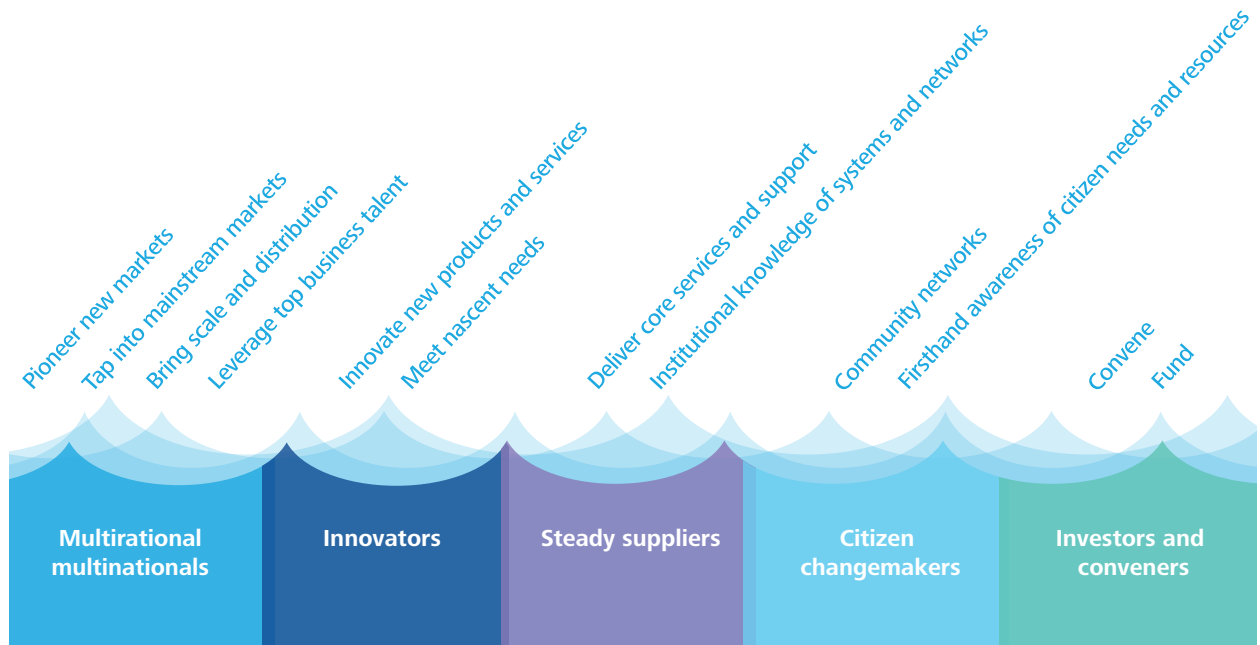
### An ecosystem integrator

So how do you get disparate organizations to work together toward a common goal? It's vital to have central organizers capable of "holding the whole" and creating the space for aligned action by others. In the fight against malaria, MDG Health Alliance and The Roll Back Malaria Partnership are two such organizations.

Another entrepreneurial-spirited organization at the heart of a problem-solving ecosystem is The Robert Wood Johnson Foundation. As the largest health philanthropy in the United States, with more than \$9.5 billion in assets, the foundation is working to create a "culture of health" in the United States, with especially large investments in reducing childhood obesity. In the words of its vice president of policy, David Colby, "We know partnering with providers, payers, clinicians, consumers, the public health community, policy makers, and others is the only way to effect change at both the macro and micro levels."<sup>18</sup>

Or consider what the Global Alliance for Vaccines and Immunizations (GAVI) has done to increase immunizations in the world's poorest countries. In 2000, there were plenty of new technologies and medicines coming out or already available for children in the West, but in a textbook example of market failure, they weren't finding their way to these areas of desperate need. That year, the World Health

**Figure 2. A broad range of “wavemakers” is required to capture wicked opportunities.**



Source: William D. Eggers and Paul Macmillan, *The Solution Revolution: How Business, Government, and Social Enterprises Are Solving Society's Toughest Problems* (Harvard Business Review Press: Boston, 2013).

Graphic: Deloitte University Press | DUPress.com

Organization (WHO), UNICEF, academics, pharmaceutical companies, and various funders, all converged at the World Economic Forum in Davos and agreed it would be useful to have one “roof” under which everyone interested in reshaping the vaccine market could confer. GAVI is that single solution space, and its achievements are the sum of its partners. “Our market-shaping goal is to maintain supply security and strive to achieve the lowest price for currently available products,” explains Dr. Seth Berkley, the CEO of the GAVI Alliance.<sup>19</sup> By pooling demand from developing countries for vaccines and matching it with reliable, long-term financing, GAVI has enabled 500 million additional children to be immunized, preventing an estimated 7 million future deaths.<sup>20</sup>

### A portfolio of interventions

Working in concert on wicked opportunities doesn't have to mean converging on one best solution. More than “moon shots,” this is about buckshot. A full portfolio of strategic

interventions has the best chance of hitting the goal.

RE-AMP is just that: a “buckshot” approach to one of the most pressing problems we face today—climate change. Under its banner, 160 nonprofits and foundations across eight Midwestern states have signed on to one goal—reducing greenhouse gas emissions economy-wide by 80 percent by 2050.<sup>21</sup> But that's a target with many bulls-eyes. So RE-AMP created a portfolio of interventions: prevent the building of new coal-fired power plants, shut down existing plants, make renewable power a viable alternative, and reduce energy consumption through significant efficiency measures. The group knew that “unless they coordinated to work on those four levers simultaneously, they wouldn't make progress,” states Ruth Rominger, an expert on social networks and complexity theory.<sup>22</sup>

Likewise, in the fight to eradicate malaria, a bevy of strategies and interventions are being deployed simultaneously. Vouchers are giving even the poorest of the poor in Africa access

to life-saving mosquito nets and medicine. Partnerships with the informal retail sector help get the malaria medicines to villages in rural areas. And social marketing campaigns are mounted to boost the uptake of these life-saving products.

### **An innovation engine**

Here's another part of the wicked opportunity to end malaria: a new low-cost health tool called the RDT (rapid diagnostic test). It allows health workers to detect the disease in a patient within minutes at 99 percent accuracy and for just 50 cents a test.<sup>23</sup> It points to another hallmark of the best solution ecosystems: their strengths as innovation engines.

Innovation, almost by definition, requires an eagerness to upend the status quo—and

build compressed-earth bricks and special roof tiles, two microenterprise projects that could employ villagers while it created housing for them. Prizes and challenges are just one way to generate breakthroughs for societal problems. In recent years, close to a hundred pay-for-success arrangements have connected “buyers” of social outcomes—including governments, foundations, and philanthropists—with solvers of problems around the world.

### **Market development**

Perhaps more common than any other element in the pursuit of wicked opportunities is the belief in well-functioning markets as the key to solution sustainability. Again with reference to malaria, breakthroughs came as viable markets were established for mosquito nets, medical treatments, and diagnostic devices.

Market development is, of course, a strength of great firms—as well demonstrated over the decades in the sales of hygiene products. So it is perhaps no surprise that Unilever would spot the missing

market responsible for the deaths of some 1.5 million children a year by severe and chronic diarrhea.<sup>25</sup> The prevention, of course—known for centuries now—is hand-washing. HUL, Unilever's subsidiary in India, knew it had a product capable of saving lives. The problem was that even simple bars of soap were unaffordable to families earning less than a dollar a day.<sup>26</sup>

The solution was to engage an entire ecosystem. Once the NGOs, banks, and schools concerned with keeping India's poor healthy agreed on the health benefits of cleansing products, they collectively created the market for them—while also lifting women from poverty with microloans and jobs, improving public health and sanitation, enhancing public health awareness through educational campaigns, and more. For Unilever, making more soap-buying possible is “a marketing program

## **Working together, the wicked problems of the world are now within our power to solve.**

an ability to rapidly market-test products or services with the potential to do that. Often, it requires thinking out of the box—and sometimes quite literally. Consider the problem of providing extremely low-cost housing for the more than a billion poor people worldwide living at the base of the pyramid. When two professors at Dartmouth's Tuck School of Business, Vijay Govindarajan and Christian Sarkar, announced a contest to design a \$300 house, one entrant (ultimately a winner) didn't stop at designing that box. “We realized that by analyzing just one house, we were never going to achieve the goal of \$300,” says Eric Ho from the Architecture Commons team. “Because of the cost of labor, it's just not possible. So to circumvent it, we had to create a community.”<sup>24</sup> In their model, a hundred families together would apply for \$30,000 of microfinance loans. Thus a village would invest in machines to

with social benefits,” says executive Harpreet-Singh Tibb. The company now has over 50,000 women selling its products in more than 635,000 villages, making rural India a \$100 million-plus market for Unilever.<sup>27</sup>

## Implications

In a 2013 interview, Unilever CEO Paul Polman responded to a question about food security in a way that reframed wicked problem into wicked opportunity:

The problem is, you talk food security and you hear many different solutions. Some say: How can you have food security if girls cannot go to school? While others say: if I don't have energy, I can't have food security. Or, we need to have water because otherwise we don't have food.

Then a CEO goes, oh my gosh, how do I participate in this? So what you need is leaders who are able to take this complexity and distill it in simplicity, and are actually able to drive that to action. That's a skill that you have to learn. I'm not good at it either, to be honest, but now we have created some ecosystems, the global Consumer Goods Forum, the World Business Council for Sustainable Development, and WEF, which are able to turn that into a positive flywheel that creates momentum.<sup>28</sup>

Working together, the wicked problems of the world are now within our power to solve. But it will take business leaders who are committed to social goals and able to work effectively with external partners. It will take foundation donors and impact investors who are open to taking the broadest view of challenges, and willing to convene the whole of the community seeking to overcome them. And it will take government leaders who see the potential of prizes and challenges, social-impact bonds, and pay-for-success approaches to spur innovation, and the power of using large-scale procurement budgets to create markets for them.

## What's next?

Today, attitudes about how to attack social problems have changed dramatically. Citizens, businesses, entrepreneurs, and foundations often turn to each other rather than relying solely on the public sector to coordinate solutions. Tomorrow, we may see more blurring of the sectors as the coordination of their efforts continues. Decades-old divisions of public and private sector responsibilities are likely to become less useful and less justified.

As part of this blurring, expect to see leaders and talent more frequently cross sector lines. And expect the leaders who rise in business to have more encompassing visions and more passionate points of view on the biggest social problems of their era. Whereas in the past, the top business school talent jumped on the express train to high-paying fields such as finance or consulting, in the future more hard-charging achievers are expected to seek ways to marry their business acumen with social impact. Indeed, this is already happening—and leading universities are responding with more courses in social entrepreneurship, social impact investment, social enterprise management, and social innovation.<sup>27</sup> These programs are helping to create a new hybrid talent pool that can operate in both the business and social-sector realms.

Leaders in the coming decades will be “tri-sector athletes,” capable of engaging, collaborating, and driving outcomes across all realms, and (to use management guru Peter Senge's term) “system leaders” who can catalyze change across networks where they lack formal control.<sup>28</sup>

And for all of us, seeing wicked problems as wicked opportunities will require seeing beyond how we currently do things. How many of the old ways of doing business—operating in isolation, ignoring entire classes and groups of people, shrugging off ruinous externalities of the market—will we willingly let go?

If we are smart, quite a lot.

# My take

By Risa Lavizzo-Mourey

Risa Lavizzo-Mourey is president and CEO of the Robert Wood Johnson Foundation and one of the 100 most powerful women in the world, according to *Forbes* magazine.\* Under her leadership, the foundation has directed a \$10 billion endowment to build a culture of health and the ecosystem to support it.

The way we think about health—both how healthy we presently are as individuals and also how healthy we might become if we adopted a national vision supporting a culture of health—has evolved dramatically over the last few decades. Many folks now realize that the interconnected web driving well-being has important threads in education, employment, the homes we inhabit, and the cities we design. Whether an elderly person thrives depends on having caretakers both at home and in the hospital. Their ability to recover depends on other factors in the community. Are they able to get out? Is there space to be active? Can they get involved in communities?

we start to align across those linkages we can kick off virtuous cycles of investment and beneficial results. People reduce stress. Blood pressure falls. Heart function improves. Chronic disease rates drop. Communities change. Fresh resources are drawn toward the bright spots.

For instance, in Spokane, Washington, we work closely with local leaders on improving high school graduation rates. Why? Because both they and we know that secondary school education is an essential driver of other healthy choices and opportunities. So as graduation rates moved from 60 percent in 2006 to well above 90 percent we watched the rippling benefits cascade into better choices about diet, physical activity, and even when to start families.

Over the years, the Robert Wood Johnson Foundation has tended to lead from the back. We focus our resources and expertise on spotting the best innovations, piquing the interest of nimble thinkers, and bringing collaborators together in aligned action. We believe in setting a goal that excites people, a true north, and then providing assistance as stakeholders do their own path finding. The customized approaches that evolve—because what works in New York City will not likely work in Oklahoma—are essential to success.

Earlier this year, at the World Economic Forum in Davos, I was tremendously impressed by the shared appreciation emerging for ecosystem approaches to wicked opportunity; approaches that engage communities and reimagine government, while tapping market forces for scaling up. Building something as big as a culture of health requires it. When we succeed, and we will succeed, it will have become obvious that we now live in a world, and probably always have, where health has as much to do with work, family, community, and the connected world at large, as it does with hospitals and clinics.



The key to making a difference in such a diverse and complex ecosystem is to reframe the task at hand, not as an unsolvable set of wicked problems, but as interconnected opportunities. When

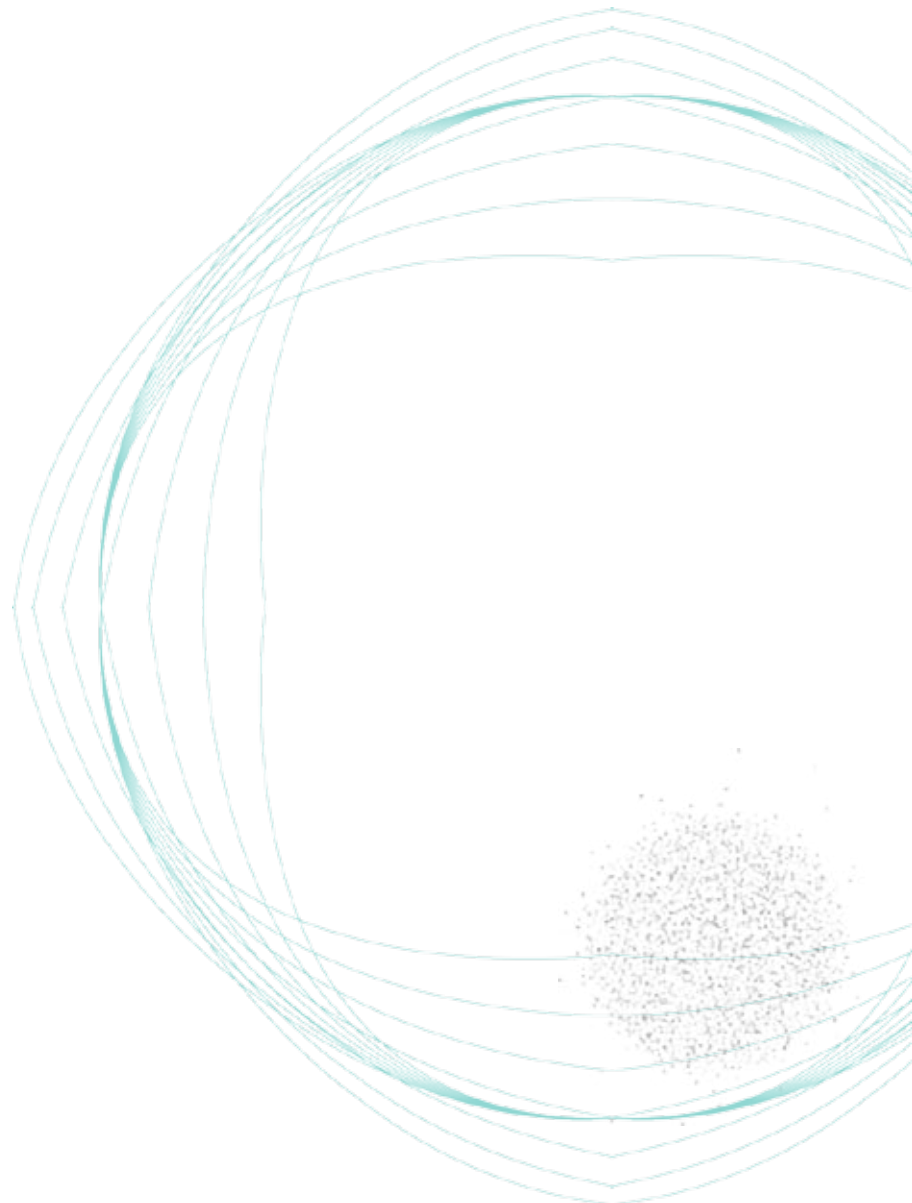
\**Forbes*, "The world's 100 most powerful women, 2014 rankings," <http://www.forbes.com/power-women/>.



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# Regulating ecosystems


By Bruce Chew, Don Derosby, Eamonn Kelly, and Bill Miracky

## Overview

**I**N 2008, Travis Kalanick and Garrett Camp, the founders of Red Swoosh and StumbleUpon, respectively, were attending a European tech conference when inspiration for their next venture struck. Standing outside the venue, they couldn't hail a cab. Why, they wondered, wasn't it possible to serve the demand (of two millionaires) on a cold night with the excess supply they saw all around them—in the form of numerous, mostly empty cars going their way? The duo envisioned a solution, and soon after found themselves designing an algorithm to match ride-seekers with drivers willing to offer a lift. Uber, the ride-sharing service now available in over 200 cities across 50 countries, was born.<sup>1</sup>

The rise of the business was meteoric—a recent \$1.2 billion round of financing valued Uber at over \$40 billion,<sup>2</sup> more than Avis and Hertz combined.<sup>3</sup> And the pain was felt immediately by the medallion taxi companies and rental car services that were subject to the disruption. But Uber caused headaches for another group, as well: the regulators tasked with setting and enforcing the rules of business to protect the public's interest. The new transportation solution wasn't exactly a common carrier like a taxi service. Should it be treated as one under the law?

Similar confusion is spreading across the business landscape today, as once-clear industries dissolve into complex ecosystems full of unfamiliar entities and innovative offerings. Regulators, whose job has always been to protect the public from danger, exploitation, or insufficient competition in reasonably stable



Ecosystems are dynamic and co-evolving communities of diverse actors who create new value through increasingly productive and sophisticated models of both collaboration and competition.

Read more about our view of business ecosystems in the Introduction.

***As ecosystems enable more rapid, cross-cutting innovation, regulators are challenged to create policies and solutions that protect the public's interests and are also dynamic enough to keep pace with innovation.***

markets, now face another danger: that their own application of old rules to new realities might suppress innovations of tremendous potential value to the public. In a gathering trend, some are adopting new philosophies and tactics, and finding effective ways to strike the right balance.

## What's behind this trend?

Regulation of markets is always contentious to some degree, but in relatively slow-moving industries, the historical intent and enforcement of the rules can be understood well enough by all involved. Matters become less clear when the boundaries of traditional industries start to blur, when products blend

with services to create customer-delighting solutions, and when knowledge assets take on as much importance as physical assets in the creation of value. Today, we are fast becoming an economy characterized by ecosystems—dynamic and co-evolving communities of diverse actors who create and capture new value through both collaboration and competition.

Take, for example, the health care industry. For many decades it connected familiar kinds of institutions, professionals, and patients. Today, it is being complicated by any number of innovations and newly connected nodes. Monitoring devices, for example, which were once present only in hospitals are now being made for consumer use. (A 15-year-old in New York just won a prestigious Scientific American Award for one designed to monitor Alzheimer's patients.)<sup>4</sup> People who used to rely wholly on their physicians for information and guidance now rampantly access information online (like the 50 percent of all patients who google their symptoms before going to the doctor).<sup>5</sup> A broad-based movement toward integrated "wellness" attracts resources and approaches associated with diet, exercise, and mental health into efforts to prevent and treat disease.

Constant, high-impact innovation is a prominent new feature in businesses that used to advance only incrementally—and it takes place at all levels. Some of today's most popular products, like the smartphone and tablet, didn't exist even eight years ago. Apple Inc. estimated in 2011 that over 60 percent of its revenue came from products that were *less than three years old*.<sup>6</sup> Business models are being reinvented to take advantage of technological change, for example enabling peer-to-peer transactions, asset sharing, and social collaboration. And the nature of work itself is in flux. Sites like TaskRabbit allow anyone to outsource small jobs to people with extra time, and the "creative economy" continues to expand.<sup>7</sup> By one reckoning, half of today's jobs are in occupations that didn't exist 25 years ago.<sup>8</sup> Researchers at Oxford University estimate

that up to 45 percent of American jobs are at a high risk of disappearing within the next two decades.<sup>9</sup>

In fast-changing environments like this, as the US Office of Management and Budget has observed, regulations "have enormous potential for both good and harm." The challenge is to exercise due caution on behalf of the public while minimizing any "adverse effects on flexibility and innovation."<sup>10</sup> The case of Uber shows how tricky this balance is to achieve. As of January 2015, the company was engaged in no fewer than 40 concurrent regulatory conflicts around the world.<sup>11</sup> Ordinary citizens may love having an alternative to taxis, but their governments aren't giving the service a free ride.

## The trend

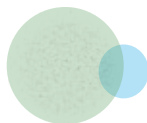
We've been describing one major trend here—regulatory frameworks being challenged by a new world of ecosystems and constant innovation—but it's useful to break that down into distinct components. There are at least four, beginning with the increasing pace of innovation.

### Change comes faster

Effective regulation depends upon the regulators' understanding of the solutions being offered by businesses, their efficacy, and their possible unintended consequences. But constant innovation makes that very hard. We often hear about the drag this lagging knowledge creates for innovators eager to bring new things to market. Take, for example, the Okanagan Specialty Fruits' apples, which are genetically modified not to brown after being sliced. Regulatory approval by the USDA took nearly five years. The threat of such delays can scare off investors, even if inventors are willing to endure them. Morgan Reed, who heads a professional association for application developers, believes this problem is worst in the health care space. "It's not as though there are no good ideas out there," he says, "but health care is often where good ideas go to die."<sup>12</sup>

Today, policymakers are also confronted with “big data,” the exponential expansion of digital information assets. The flood of data combined with ever-sharper analytics allow the discovery of previously unseen patterns and behaviors: Police agencies can predict when and where crime will happen, medical researchers can sift through health records to identify useful correlations, and businesses can personalize marketing to better engage consumers.<sup>13</sup> But these advancements increasingly raise privacy concerns. When does personalization become too personal? When does routine data collection become surveillance?

While innovation has always challenged regulatory authorities, its influence on society has historically spread more gradually, giving regulators more time to learn and adapt.



Traditional means of protecting privacy were not designed for an automated, digital world where much is seen and monitored without explicit consent. In the United States, there is no comprehensive set of laws regulating personal data.<sup>14</sup> And at the same time, big data only gets bigger, and the observable patterns more detailed. The amount of data produced has grown such that 90 percent of the data that exists in the world today did not exist two years ago.<sup>15</sup> Regulators are challenged to find the right balance between protecting individuals’ privacy while also releasing the transformative rewards big data offers.

While innovation has always challenged regulatory authorities, its influence on society has historically spread more gradually, giving regulators more time to learn and adapt. Today, startups are more quickly reaching significant scale and impact, in some cases serving millions of customers and employing thousands

of people. *Fortune’s* February 2015 cover story “The age of unicorns” celebrates 83 startups whose pre-IPO valuations have reached \$1 billion—formerly a rare if not “mythical” occurrence.<sup>16</sup> The dilemma for regulators is clear: Find a way to strike a balance. Create policies and solutions that protect the public’s interests and are dynamic enough to keep pace with innovation.

### Innovators find “back doors”

The word “hacking” once summoned up a vivid image of advancing through some dense jungle armed only with a machete. These days

it usually refers to a computer programmer trying to break into a well-protected system. To Chris Dixon, a general partner at venture capital firm Andreessen Horowitz, it also applies to those entrepreneurs whose innova-

tive ideas run smack into a thicket of dense regulations—and who then have to find especially clever ways to break through to their intended markets.<sup>17</sup>

As new players are not always well positioned to lobby policymakers, they sometimes instead look for legal “back doors” by which to let themselves in—at least long enough to prove the value of their innovation. For Dixon, Nextel in the late 1980s and early 1990s found smart, legal ways to succeed despite regulation that had forced a duopoly in every city. He also notes some more recent—and high-profile examples—including Uber. Positioning itself primarily as a technology business as opposed to a transportation provider, Uber has attempted to find legitimate ways around regulatory hurdles which have governed taxis and liveries for ages, including stringent controls over taxi medallions and the licensing fees dictating their ownership and transfer.<sup>18</sup> Uber is a

system that helps people access transportation, affordably, fast, and reliably. It is about making life easier for potentially millions of people, and regulation has to be rethought to ensure that it is consumer-safe and socially beneficial, rather than to preserve the status quo.

Once a successful backdoor innovation has been launched, pushback often begins when incumbents, sometimes powerful and entrenched, feel growing pressure on transaction volume, revenues, or both. Tax coffers have also sometimes felt the pinch; taxi licensing, for example, nets over \$1 million *per medallion* in New York City alone.<sup>19</sup>

Similar dynamics are at play, for example, in the regulatory battles being waged over Airbnb—a highly-publicized, influential test case. New York State Attorney General Eric Schneiderman said of Airbnb: “We must ensure that, as online marketplaces revolutionize the way we live, laws designed to promote safety and quality of life are not forsaken under the pretext of innovation.”<sup>20</sup>

### **Ecosystems are full of unlike players**

As ecosystems evolve and new and clever business models proliferate, the sheer diversity of competitors and competitive modes is yet another complicating factor for regulators. In a market-based economy, a major objective of regulation is preserving an even playing field for competitive businesses, and thus landmark pieces of regulation have included the Sherman Act of 1890, decisions like *Standard Oil versus United States*, and modern moves to limit the power of various tech giants.

Regulation has also traditionally attempted to prevent the “little guy” from being trampled by players of larger scale. But as industries consolidated over time, much of the competition they worked to preserve was the evenly matched tussle of titans, operating in essentially the same way at the same scale. In today’s business ecosystems, the players are not always so evenly matched—indeed, they are not always clearly competitors—and in some cases the traditional advantages of scale have been

diminishing. Google executive Eric Schmidt has pointed out that the threat to technology giants is not just other giants—it is the next generation of innovators who will solve problems in fundamentally different ways, just as today’s giants did in their small beginnings. In a recent speech, he said that “. . . someone, somewhere in a garage is gunning for us. I know, because not long ago we were in that garage. Change comes from where you least expect it . . . The next Google won’t do what Google does.”<sup>21</sup>

As in natural ecosystems, species of very different types and sizes compete for resources, and the question of who thrives comes down to complex interactions, not simple battles. Yet regulators must set the terms of engagement that will keep these non-comparable entities working in ways that benefit society.

### **Innovations cross lines of jurisdiction**

In business ecosystems, the edges of things—including product definitions, market boundaries, the distinction between digital and physical goods—tend to blur. These blurring lines complicate one of the biggest questions that comes up in regulatory situations: Which agency or authority has jurisdiction? For example, who “owns” oversight of the new ecosystem created by an Uber or an Airbnb? Which federal agency owns the things of the Internet of Things? Are drones the domain of the FAA, local law enforcement, or neither? How should regulators address new mobility solutions like driverless cars or carsharing programs, and new currency paradigms like peer-to-peer lending or Bitcoin?

Broadly speaking, federal regulators were called into existence early on to protect the public from anti-competitive practices and poor working conditions within well-defined industries and markets; later agencies were created to ensure that resources were protected and products were safe. This led to discrete domains for each regulatory body. A factory’s worker safety was the domain of OSHA, its



effluent the responsibility of the EPA, its trade practices overseen by the FTC, and so on.

As today's innovators construct novel solutions, they often cross the boundaries of regulatory frameworks built for traditional domains, raising questions as to which framework has the capability or mandate to respond. Sometimes, in fact, the confusion arises because the lines of jurisdiction have been defined too tightly. The financial sector provides a vivid example. The 1930s saw a wave of new federal regulation of financial services. Separate rules and institutions were developed to deal with banks, saving and loan associations, and investment houses. At the time, that seemed to cover the sector admirably. But over the years, consumer financial products offered by entities outside these groups proliferated. The market for mobile payments, for example, is expected to be \$142 billion by 2019, but is beyond the reach of any one federal regulator. According to the FDIC, "to date, no federal laws or regulations specifically govern mobile payments."<sup>22</sup>

## Implications

The chairman of the Federal Communications Commission, Tom Wheeler, had this to say in a 2014 speech to the American Enterprise Institute:

We cannot hope to keep up if we adopt a prescriptive regulatory approach. We must harness the dynamism and innovation of competitive markets to fulfill our policy and develop solutions. This new paradigm ... needs to be more dynamic than rules, and—this is a key point—it needs to be more demonstrably effective than blindly trusting the market.<sup>23</sup>

Those few phrases capture a number of ways in which regulatory bodies might adjust their approaches to fit the new realities of business ecosystems. Those who serve their citizens best will take full advantage of an ecosystem's self-regulating dynamics, increase their own agility, focus on ends rather than

means, and emphasize regulatory interplay over primary jurisdiction.

## Activate self-regulation

Federal Trade Commissioner Maureen Ohlhausen has defined self-regulation simply as "any attempt by an industry to moderate its conduct with the intent of improving marketplace behavior for the ultimate benefit of consumers."<sup>24</sup> Examples include the Public Company Accounting Oversight Board, a private-sector, non-profit corporation created by the Sarbanes-Oxley Act of 2002 to oversee the auditors of public companies; the American Medical Association, a national organization of doctors which publishes the Code of Medical Ethics dictating professional conduct for practicing physicians; and the National Association of Realtors, one of the world's largest trade associations, which sets the rules for multiple listing services and how brokers use them.

As business leaders think and act more with an ecosystems perspective, such self-policing may become more common—and more readily encouraged. There is a greater sense within ecosystems of the interdependence of entities and of the fact that any weak link threatens the success of them all. New levels of transparency and new tools for establishing and checking reputations are also helping to keep behavior in line. For example, the mutual buyer-seller rating system that many consumers have come to know through eBay transactions has its analogs at all levels of the economy. In a world where social media spreads the news of any corporate misbehavior in minutes, businesses and their ecosystem partners are less likely to do anything that could be construed as bad for the public. In Deloitte's *2014 survey on reputational risk*, 87 percent of responding executives rated reputation risk as more important or much more important than other strategic risks they face.<sup>25</sup> Regulators might consider how to activate and support these self-regulating tendencies instead of or as well as applying more coercive external rules.

### Increase agility

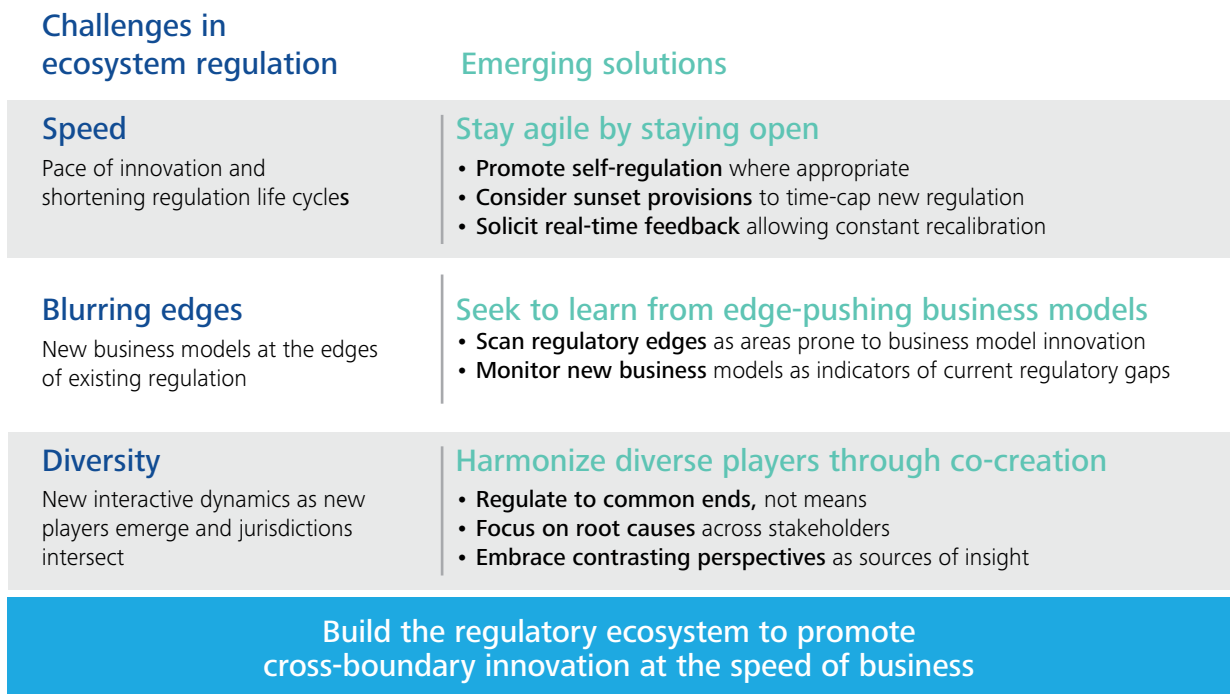
To respond to innovation—and also to enable it—regulatory bodies must find ways to act with greater agility, historically a difficult feat for bureaucracies. Finding the answer has never been more important because the world isn't *getting* faster, it *is* faster. But regulation and regulators can indeed move decisively and in careful consultation with a wide range of interested parties, as the FCC has recently shown in adjudicating net neutrality. After opening their preliminary opinion on the issue to the public on February 19, 2014, the FCC received almost 4 million comments in a matter of months.<sup>26</sup> This exchange across interested parties illustrates perhaps the leading principle of agility: Stay agile by staying open. By February 2015, the FCC had picked its way through that enormous array of opinions, testimonials, and evidence to announce a broad and historic decision, even as the cross-stakeholder discussion and ongoing interpretation of net neutrality principles are sure to continue in perpetuity.

Another recent illustration of success through agility and openness can be seen in the just-completed auction of broadband spectrum which the FCC closed in January of this year. In a boon to taxpayers, the sale of increasingly scarce mid-range bandwidth licenses attracted a record \$44.9 billion in expected fees, far exceeding even the most optimistic analyst's estimates. Multiple bidders—over 70 were pre-qualified by the FCC to participate—competed aggressively for the coveted licenses in markets as large as New York and as small as American Samoa.<sup>27</sup> The breadth of bidder participation and the structure of the auctions have been praised for inclusiveness, with the applause coming in almost equal parts from regulators, the public, and industry leadership alike.

### Focus on ends versus means

Innovation is best preserved when regulators focus on outcomes (Has this novel solution resulted in any harm, or any greater benefit?) rather than on process (Did this

Figure 1. Regulatory challenges and solutions for evolving ecosystems



Source: Deloitte analysis.

Graphic: Deloitte University Press | DUPress.com

business strictly comply with the steps specified for operating in this business area?). This has been well established since at least the 1990s.<sup>28</sup> The EPA's "cap and trade" regulations, for example, were designed to "deliver results with a mandatory cap on emissions while providing sources flexibility in how they comply."<sup>29</sup> In a new era of businesses collaborating in changing ecosystems, the advantage of this approach, perhaps even the necessity of this approach, becomes clear. Regulations that stipulate both ends and means are simply not capable of accounting for the mushrooming variety of "means" that ecosystems enable and that diverse ecosystem participants generate.

### Perform as a regulatory ecosystem

The rise of business ecosystems also suggests that regulators must move past their traditional fixation on the question of primary jurisdiction. By seeing regulatory bodies as residing within an ecosystem of their own, with all the dynamism and dependency characterizing market ecosystems, they can acknowledge the inevitability of overlaps and find ways to achieve their goals more surely. Steven Liew of the Asia Internet Coalition (see his accompanying "My take" commentary) refers to this as "regulatory harmonization through co-creation." Shared and co-owned, multistakeholder jurisdiction is increasingly the norm.

If you have any doubt of the need for such cross-regulator collaboration, consider the regulatory matrix surrounding something as mundane as a checking account. Consumer Financial Protection Bureau director Richard Cordray recently pointed to the specialty consumer reporting agencies, individual financial institutions practices, heavily regulated protocols around data sharing and account management, individual bank policies related to risk tolerance, and the types of accounts and account features that banking institutions offer, as all being subject to different levels and kinds of regulatory scrutiny.<sup>30</sup> FCC chairman Tom

Wheeler calls for this new regulatory ecosystem when he proclaims, "We cannot address these threats in one-sector or one-agency silos. Particularly among regulatory agencies, we must coordinate our activities and our engagement with our sector stakeholders."<sup>31</sup>

### What's next?

Statesman Edmund Burke wrote at the end of the 18<sup>th</sup> century: "The public interest requires doing today those things that men of intelligent goodwill would wish, five or ten years hence, had been done."<sup>32</sup> As regulators go about their work today, they recognize that future citizens will wish for a past decade of important innovation as well as scrupulous policing.

As industries blur into ecosystems, regulators are seeking new ways to strike this balance. The regulatory challenges described here will continue and new challenges will follow. For example, how should a regulatory regime handle intellectual property rights in a world driven as much by passion as paid work, and where innovation often occurs in open, distributed forums? As ecosystems promote collaboration and co-creation, when does collaboration become collusion? As ecosystems build broad bridges across national and regional boundaries, how do we account for and honor the local preferences which are themselves a major contributor to ecosystem diversity and health?

Surely the regulatory mindset—the basic rules of thumb followed by policy makers—will need to evolve as innovation, dynamism, and flexibility come to matter to our society just as much as, if not more than, its desires for stability, control, and compliance. What new skills and capabilities will become more common on regulatory teams? How will cross-border regulation evolve as productive regulatory pollination flows across economic ecosystems that have no natural awareness of the state and national borders they traverse? Finally: What will it take to reshape the regulatory environment into a smart, dynamic, and highly integrated ecosystem of its own?

# My take

By *Steven Liew*

Steven Liew has helped shape regulation in China, Japan, Korea, India, Singapore, and in the United States at eBay, where he was associate general counsel and head of government relations for Asia-Pacific. He is also a co-founder and past chairman of the Asia Internet Coalition, which improves Internet regulation by finding common ground between members including eBay, LinkedIn, Facebook, Google, Salesforce.com, Apple, and Yahoo!.

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It's almost too obvious to suggest that the business world is fundamentally different than it was even 20 years ago—which poses the question: Has the world of regulation kept up with these seismic shifts? Or, in other words, are regulations and the regulated well paired and in harmony with the business ecosystems evolving below their feet?

While my answer to the question is definitely mixed—in some instances they are and in others less so—it's easy to cite noteworthy cases where regulators were caught out by insufficient or outdated laws. In 2007, for example, the truck-sized holes in the rubric of global financial standards remained largely unknown or, at least, rarely acknowledged. By 2009, the global financial crisis had revealed in stark detail how big some of those gaps were.

Other regulatory mismatches have been revealed not by system shocks, but by individual entrepreneurs promoting “irreverent” innovations. Most of these folks—including eBay, Uber, Bitcoin, and mobile payments companies—don't set out to prove that regulation is flawed. They set out to solve a problem or to build a market or to serve unmet customer needs. But those services can inadvertently ignite extensive regulator review as incumbents cry foul and push for scrutiny of the regulatory seams which have proven such fertile ground for new businesses.

Amidst the challenges, I also see terrific examples of progress and collaboration. One that stands out is the growing adoption of “co-creative regulatory processes,” approaches that convene stakeholders from across jurisdictions, perspectives, and interests to find common ground. I've been especially surprised to see these collaborative models taking off in China, Taiwan, and Singapore, places that traditionally prefer more top-down controls.

In my time at eBay, I also saw how close collaboration with regulators just had a way of productively tuning the regulatory web overall. In our meetings with government officials across Asia-Pacific, we were often hardly out the door with one regulatory body when they would pick up the phone to share insights with other members of their regulatory network, perhaps down the hall, across town, or halfway around the world.

In the end, regulations will change because they must. The biggest question may be whether those changes are proactive or reactive. If proactive, regulators could find themselves in unusually good times where many political and economic guidelines can be fruitfully recast. If reactive, regulators may be stuck playing catch up, and acting more like referees than co-creative enablers.



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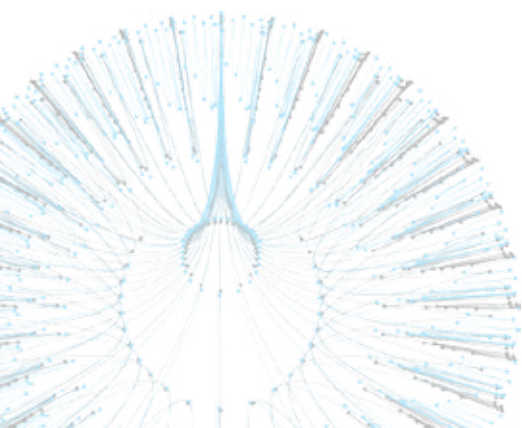
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# Supply chains and value webs

By Eamonn Kelly and Kelly Marchese

## Overview

**O**VER the last few decades, supply chain professionals have helped transform the business environment. They have contributed to accelerated globalization by directly connecting actors in emergent and developed economies. They have enabled many major corporations to become nimbler and leaner by focusing on what they themselves do best, while carefully constructing external arrangements for the rest. Supply chain professionals have helped reduce costs, improve efficiency, and substantially enhance operational performance. And they have altered the basis of competition—as one scholar has suggested, increasingly today, “Companies don’t compete—supply chains do.”<sup>1</sup>

By mastering the management of assets that exist outside the traditional boundaries of the firm, the supply chain profession has also helped forge the dynamic, collaborative, industry-transcending world of ecosystems described throughout this report. As the era of the vertically integrated corporation has waned, new and more fluid alternatives have proliferated. But to date these arrangements have typically replaced ownership with “control.”<sup>2</sup> In ecosystems, *influence* will need to be achieved across increasingly complex networks—through relationships, collaboration, and co-creation. Many traditional supply chains are becoming increasingly agile, adaptive, and resilient, and are supporting faster and more flexible responses to the changing

Ecosystems are dynamic and co-evolving communities of diverse actors who create new value through increasingly productive and sophisticated models of both collaboration and competition.

Read more about our view of business ecosystems in the Introduction.

**Supply chains are increasingly becoming value webs that span and connect whole ecosystems of suppliers and collaborators; properly activated, they can play a critical role in reshaping business strategy and delivering superior results.**

needs of customers. Today’s supply chains contain growing varieties of players interacting in interdependent and often indirect ways.<sup>3</sup>

In fact, many “supply chains” appear to be evolving into “value webs,” which span and connect whole ecosystems of suppliers and collaborators. Properly activated, these value webs can be more effective on multiple dimensions—reducing costs, improving service levels, mitigating risks of disruption, and delivering feedback-fueled learning and innovation. This is likely to accelerate as new technologies generate more data, provide greater transparency, and enable enhanced connectivity with even tiny suppliers and partners. The shift can create new challenges for the supply chain profession—but also extraordinary opportunities to play an even more central strategic role in shaping the future of enterprise.

## What's behind this trend?

A set of powerful developments have worked together to help transform the business environment, changing how supply chains are configured, further heightening their strategic significance for many firms, and creating new leadership imperatives for the years ahead.

First, advancing information and communications technologies drastically reduced the transaction costs of dealing with outside entities, so that in short order, many assets that had made sense to own and activities traditionally performed in-house were now often better sourced from external suppliers. The general loosening of corporate dependence on ownership of key assets contributed to the activation of many new external resources and capabilities—and an explosion of new actors ready and able to contribute.

This technological enablement of inter-firm coordination has coincided with a long-term political movement: trade liberalization by many nations around the world. Together, the two forces enabled the offshoring, global outsourcing, and foreign market entries that helped create the new global economy. The leading firms of mature economies moved rapidly to globalize their operations, many of them with an eye to a future when all the growth of the world's population—the next billion people—would be in emerging economies.<sup>4</sup> Meanwhile, many businesses in less mature economies gained the opportunity to grow and join the global economic mainstream.

Leading firms everywhere soon realized there was a “sweet spot” to be found by effectively marrying globalization to “localization.” Nestlé, for example, declares that “food is a local matter,” and operates its networks according to a basic principle: “Centralize what you must, but decentralize what you can.”<sup>5</sup> The Coca-Cola Company works to strike a similar balance. One commentator describes its strategy as “mingling global and local... utilizing local suppliers and local bottlers, employing local people, and addressing local culture and

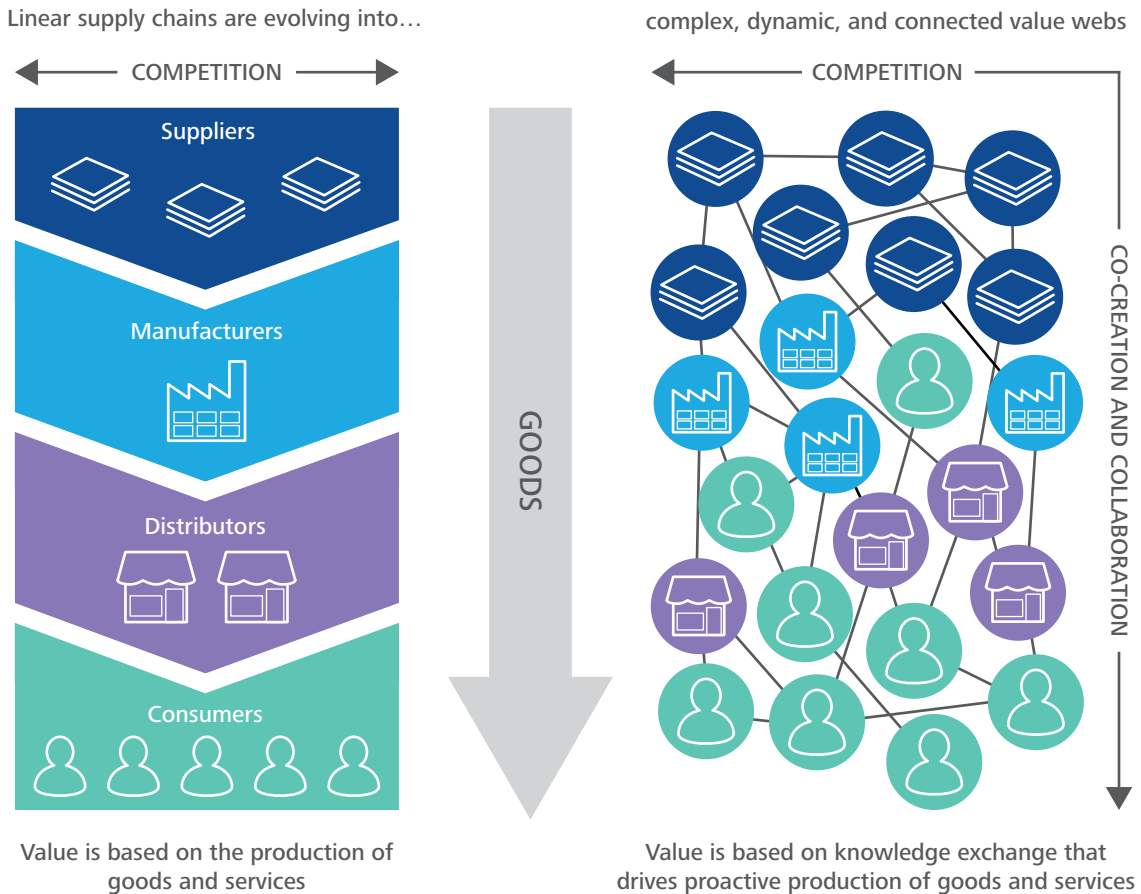
taste.”<sup>6</sup> For many operations managers, such goals call for complex, multifaceted enhancements of activities taking place at multiple locational levels.

Today, new waves of technology are accelerating these already established shifts. Continuous innovation and global dissemination of new technologies and tools are directly enabling new connectivity, collaboration, and co-creation across multiple businesses. The rise of the Internet of Things—which connects increasingly smart products—is greatly enhancing the creation of and access to data, and producing ever-increasing transparency. Substantial technological changes unfolding today in manufacturing, including 3D printing and new robotics, are set to transform many production processes and may significantly disrupt today's distribution models.

The speed and scale of these changes are creating new opportunities for many supply chain professionals—and also putting increased pressure on them to adapt. Their role is expanding far beyond enhancing performance by getting essentially the same things done, but differently and elsewhere. Their focus is extending beyond continuous improvement of existing operations. Instead, these professionals are being positioned as increasingly strategic leaders discovering fundamentally different ways of creating new value, driving continuous innovation and learning, and sustaining enterprise growth.

## The trend

Having helped transform the operating and performance models of most major enterprises over the last few decades, many supply chains are now playing an even more central strategic role. They are helping lead their businesses into the dynamic, hyper-connected, and collaborative world of ecosystems. In doing so, many are now creating and leading more complex systems perhaps better characterized as *value webs*. The word “chain” has a powerful metaphoric logic that captures well

**Figure 1: Supply chains evolve into value webs**

Source: Deloitte analysis.

Graphic: Deloitte University Press | DUPress.com

a series of discrete links by which goods are bought, have value added to them, and are sold to the next value-adder—up until an end buyer consumes them. This remains of critical importance. However, increasingly, value is being created not only within firms, but in the rich interactions between them. Linear sequences of procurement are increasingly supplemented by more iterative and innovation-oriented collaborations.

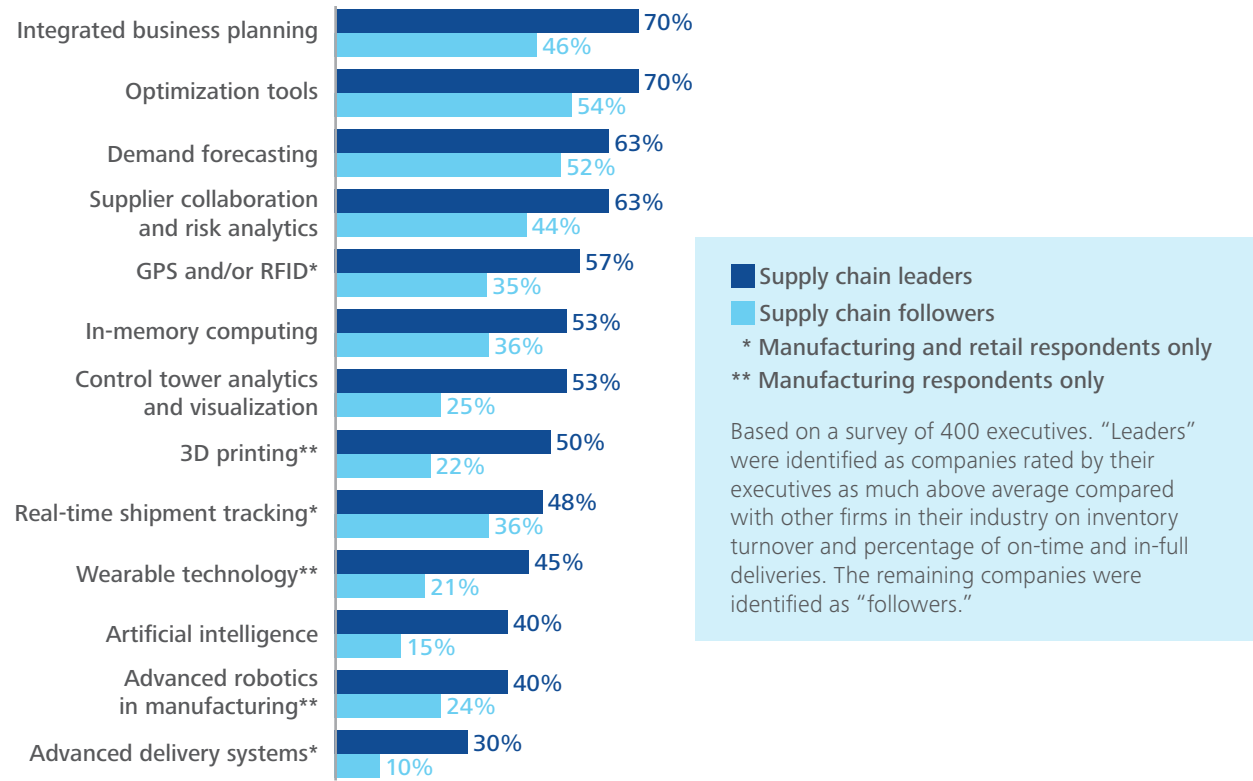
To be sure, in a world of value webs, the essential goals of traditional supply chain management do not go away. But they are often augmented by new imperatives—like learning, agility, and renewal. Collaboration is an addition to, not a replacement of, traditionally more closed, contractual arrangements. Clear commitments to meet rigorously monitored standards and service-level agreements will remain critical. But to claim the benefits of an

increasingly fluid and interdependent value web, leaders should surround their contracts with trust; build on transactions and one-time deals to cultivate long-term relationships and mutual learning; combine the power of control with the potential of co-creation; make sure that defined, fixed standards do not create barriers to valuable innovation and co-evolution; and not only leverage leading practices, but also aim to create “next practices.”

Some leading companies have explicitly adopted hybrid approaches to embrace such dualities. In one frequently quoted example, Chinese motorcycle manufacturer Dachangjiang deliberately pursued both value web and supply chain arrangements by breaking its design into multiple modules, awarding several suppliers responsibility and substantial latitude for each, and actively encouraging collaboration between them to promote

**Figure 2. Supply chain leaders vs. followers: Use of technical capabilities and new technologies**

Question:  
For each of the supply chain capabilities below, please indicate whether it is currently in use at your company.



Source: 2015 Deloitte Supply Chain Leadership Survey.

Graphic: Deloitte University Press | DUPress.com

innovation, while also imposing aggressive performance targets regarding pricing, quality, and timing of production.<sup>7</sup>

Just as most businesses have already learned how to activate and deploy assets they don't own, they are now becoming increasingly adept at doing so with assets they don't control, either. The 2015 Deloitte Supply Chain Leadership Survey confirms the value of gaining skills that promote *influence*. It finds that "leaders" distinguish themselves from "followers" in several areas. They are much more aggressive at using technical capabilities and powerful new technologies, like supplier collaboration and risk analytics, which can be critical in complex, dispersed networks (see figure 2). Leaders also tend to support diversity and inclusion and manage global and virtual teams significantly better than their peers (see figure 3). They are usually more adept at working with others: 80 percent of surveyed

leaders rate their ability to negotiate and collaborate with partners highly, compared to less than half of followers.<sup>8</sup> These greater abilities and attitudes reflect in the bottom line: 73 percent of surveyed leaders reported financial performance significantly above their industry average, in contrast to less than 15 percent of followers.<sup>9</sup>

## Implications

Value webs are characterized by complex, connected, and interdependent relationships, where knowledge flows, learning, and collaboration are almost as important as more familiar product flows, controls, and coordination. To lead and secure advantage in this increasingly organic and networked environment, leaders will likely have to focus on three core developmental priorities.

## Engagement with more, often smaller, players

The emergence of value webs is enabling the conditions for small, highly focused suppliers to proliferate in global supply chains. Important and complex capabilities increasingly involve deep specialization that often flourishes in smaller, tightly niched firms. Barriers to entry are generally declining. Young, nimble, and entrepreneurial firms frequently have innovation advantages. Many of the best and brightest of the Millennial generation are showing themselves to value autonomy and independence, gravitating toward smaller businesses and more flexible employment arrangements. No surprise, then, that according to startup tracker Crunchbase, the average startup in a supply chain today is smaller by almost a third than those that participated in the decade 2000–2010.<sup>10</sup> Indeed, some suppliers are so tiny that their connections with large firms can appear more like talent sourcing than procurement.

For many corporations, these connections can bring many advantages, but also invite greater complexity. For the most part, supply chain functions of large businesses weren't set up to deal with a world of thousands of partners. Now they must adjust. So, for example, we see firms establishing or relying on new "platforms" to facilitate greater levels of connectivity, collaboration, and co-creation with other businesses. (As a familiar example of a platform, picture Amazon Services, which provides its customers with an e-commerce infrastructure for order-taking and fulfillment, allowing them to focus on their offerings.)

In China, Alibaba allows small businesses to build their own supply chains, acting as a

facilitator of relationships between firms that otherwise would not or could not cooperate. In the United States, IBM launched Supplier Connection, a platform-based network that helps large firms manage their connections with smaller businesses.<sup>11</sup> Across many industries we see the rise of "value networks" that use cloud computing and social network platforms to enable many-to-many supplier connections. For example, Real Time Value Network has over 30,000 trading partners, allowing supply chain managers to more easily find the small players that can bring ideas and flexibility to their arrangements.<sup>12</sup>

For the most part, supply chain functions of large businesses weren't set up to deal with a world of thousands of partners. Now they must adjust.



home," observes executive director of supply chain Patricia Turney. "More and more, we're finding that we are sourcing materials from really remote locations." So Turney has put tools in place to map the whole ecosystem, and a process to create a "war room" when disruptions threaten supply lines. A few months into implementation, she reports, "We already have some new insights into our tier 2 suppliers and where they're located that we didn't have before."<sup>13</sup>

## Reducing risk, raising resilience, deploying data

Patricia Turney's comments also serve to highlight the ways in which risk can be reduced in increasingly complex value webs. It seems to be working well for Amgen: As

New software tools can also provide broader perspective and deeper insight into expanding value webs. Amgen, for example, which offers treatment for serious illnesses such as cancer and kidney disease, has seen its network expand substantially. "Originally most of our suppliers were closer to

Turney also observed, “We have a phrase . . . ‘every patient, every time.’ We’ve never shorted the market, never had a patient go without life-saving medicine. . . . [We have] 24/7 oversight.”<sup>14</sup>

Since their inception, supply chains have generally been tightly associated with risk management and business continuity planning. Globally extended production and distribution arrangements are often subject to risk factors beyond anyone’s control—from geo-political events to natural disasters. Dependency on the capabilities and integrity of others outside your organization, even if tightly contractually controlled, can create certain vulnerabilities. And, if it was ever possible to lay the blame for product deficiencies on suppliers, that is not likely to remain a credible excuse. For example, in 2013, millions of food products advertised as containing beef were withdrawn from shelves in Europe after they were found to contain horsemeat. The scandal highlighted deficiencies in the traceability of the food supply network, and dealt a blow to the finances and reputations of affected brands, retailers, and restaurants.<sup>15</sup> It is simply expected today that firms have clear visibility into the activities—and the integrity—of their vendors.

Increasingly complex, highly distributed networks can generate some new risks, but there is a paradox here. Many also have high levels of resilience and can be, in writer Nassim Taleb’s phrase, “anti-fragile”—displaying self-organizing, flexible qualities surprisingly capable of reconfiguring to overcome shocks and disruptions.<sup>16</sup> These qualities are usually stronger when underpinned by strong, enduring relationships. Consider the experience of Renesas, a Japanese producer of microcontrollers, when the 2011 earthquake severely damaged its main production facility. After a swarm of workers from its suppliers and customers voluntarily showed up in sub-zero temperatures and got the plant up and running again, their value web was in many respects stronger for the experience.<sup>17</sup>

Designing resilience into supply chains and value webs will likely rise in importance, and be supported by new capabilities. For example, 3D printing technologies already enable some supply chains to reduce dependency on far-flung production arrangements. When British fighter jets flew for the first time with components made using 3D printing technology in early 2014, Mike Murray, head of airframe integration at BAE Systems, described a new-found freedom afforded by the technology. “You are suddenly not fixed in terms of where you have to manufacture these things,” said Murray. “You can manufacture the products at whatever base you want, providing you can get a machine there.”<sup>18</sup> Data is also likely to play an increasingly critical role, especially as the Internet of Things enables vast amounts to be collected and analyzed to create greater transparency and discover opportunities, efficiencies, and problems. However, in Deloitte’s 2015 supply chain survey, only 46 percent of respondents rated their analytics competencies as currently very good, while 67 percent expected them to become more important in the next five years.

### **Attracting and developing next-generation talent**

Talent considerations are also on the rise. Value webs can be an increasingly important source of hard-to-access talent, especially as new and more open models proliferate. Development of the talent of partners is also rising in importance for many firms such as Nike, which are placing increased emphasis on providing shared training programs for suppliers’ employees.<sup>19</sup>

The supply chain profession itself is also clearly evolving, and will require important new skills and capabilities: design of resilient networks; management of reciprocity-based relationships; adoption of technologies such as 3D printing; and analytics. No wonder the US Bureau of Labor Statistics has calculated that the number of logistics-related

### Figure 3. Skills requiring future investment as supply chains evolve

Based on Deloitte's 2015 Supply Chain Leadership Survey of supply chain executives



<sup>i</sup> Respondents were asked if these competencies will become more or less important to their company's supply chain organization over the next five years.

<sup>ii</sup> Respondents were asked to rate their companies on these competencies; "high" includes ratings of "very good" or "excellent."

Source: 2015 Deloitte Supply Chain Leadership Survey.

Graphic: Deloitte University Press | DUPress.com

jobs will increase by 22 percent between 2012 and 2022.<sup>20</sup>

Recruiting for these positions may need to be creative. In Deloitte's 2015 supply chain survey, 70 percent of top-performing supply chain functions expect to use non-traditional recruitment methods in the coming years. In their training efforts, too, they will benefit from preparing veteran managers for deeper collaboration with other business functions and leadership and more central participation in the evolution of strategy.

The most effective supply chain leadership is already at a premium. In the Deloitte 2015 supply chain survey, 71 percent of executives claimed that it was difficult to recruit senior supply chain leaders,<sup>21</sup> and only 43 percent felt that their supply chain strategic thinking

and problem solving was very good. With 74 percent surveyed also saying that such strategic thinking and problem solving will increase in importance, it seems there is no time to lose (see figure 3).

### What's next?

As the business landscape increasingly configures around dynamic, highly interactive ecosystems, supply chains will likely evolve substantially. Many larger firms will invest in their own supplier ecosystems, recognizing that feeding and nurturing them will help generate demand, innovation, and support in a variety of ways that cannot always be predicted. New mindsets are likely to take hold as the profession embraces more networked

and “web-like” arrangements. New leadership capabilities will be increasingly valued, as relationships based on reciprocity, mutual trust, and shared interests become increasingly vital and effective. Listen, for example to Kurt James, a supply chain leader at McDonald’s supply chain:

When hiring, we look for people with character traits uniquely suited to our supply chain—namely, an innate sense of fairness and an ability to consistently empathize with the challenges suppliers face in meeting our often aggressive deadlines, standards, and evolving needs.<sup>22</sup>

## New mindsets are likely to take hold as the profession embraces more networked and “web-like” arrangements.

Substantial experimentation will likely occur, driven particularly by the increasing prevalence and predictive qualities of data. In the realm of social data, for example, “Nowcasting” is a growing field of social listening-enabled forecasting. A recent study analyzed Twitter posts to estimate influenza

infection in New York City and proved far more accurate than traditional seasonal flu trend estimates.<sup>23</sup> When real-time data sources from across massive webs are brought together, new insights can emerge that enable, for example, far more accurate and localized demand forecasting. New value webs will form as 3D printing transforms multiple aspects of today’s global supply chains, enabling operations to atomize in ways few can even imagine today. Amazon, for example, filed for patents in February 2015 for installing printers in delivery trucks—taking the concept of “real-time” to a new level.<sup>24</sup>

Many supply chain professionals will become more closely connected to colleagues who are creating “on-demand” talent models, or designing new, more open innovation systems. Consider major corporations such as Ford, AutoDesk, Intel, and Fujitsu that have forged partnerships with TechShop, a growing chain of “makerspaces,” enabling them to connect with the fast-growing Maker Movement.<sup>25</sup>

All this will compel the supply chain profession that helped shape today’s economy to adapt in turn to its new demands. As ecosystems become increasingly central to business strategy, the core value of the profession will lie less and less in getting the same things done ever more efficiently, and more and more in the strategic pursuit of creating new value, achieving breakthrough performance, sustaining growth, and—once again—changing the world.





# My take

By Frank Crespo

Frank Crespo is vice president and chief procurement officer for Caterpillar Inc., where he leads the company's procurement and logistics functions for products, parts, and services delivered across the \$55 billion business.

As supply networks have gone global, complex organizations like Caterpillar find themselves coordinating the activities of thousands of suppliers, globally scattered, each with its own operating subtleties. By volume and variety, we have one of the largest, most complex supply networks in the world, with two-thirds of our suppliers tapped into complex chains of their own. That's why we made the conscious effort to stop referring to our supply network as a supply "chain." More than a name change, for us it was about getting our teams and suppliers to realize that everything has interdependencies. To be world class, especially with the ever-increasing clock speed of business, there must be synchronization.

The complexity and lack of linearity in a global supply network makes it essential to understand the signals and flows between network nodes. The flow of information is just as important and potentially disruptive as the physical flow of materials. But seeing the data is just the first step.



We must also understand what the facts mean and be able to quickly make the right business decisions based on those facts. Failure to do so can lead to actions based on assumptions, which then creates a firefighting mentality versus a proactive, preventive environment.

What Caterpillar is really driving toward is a lean, responsive, and resilient global supply network. While the work of getting there is never fully finished, our suppliers are not alone on that journey. Caterpillar places a great emphasis on collaboration across the network and we can point to the 2011 earthquake and tsunami in Japan for evidence of our shared progress. Many organizations took more than four months to recover from the disruptions. Caterpillar's supply network took fewer than 45 days.

To make it all work seamlessly, you must have complete buy-in. We spend a great deal of time internally reinforcing our vision at Caterpillar. We also spent a good portion of last year meeting with hundreds of suppliers around the world communicating that vision. One of the first things I told my team the day I arrived at Caterpillar is that it's all about visibility. No matter how good your talent is, without all stakeholders seeing and hearing the same things, you're not going to make the best decisions—whether about resources, prioritizations, or trade-offs.

The globalization of business brings a level of complexity that leaders today have likely never experienced. The way we tackle it, though, is simple. Start with the facts. Know what's going on in your facilities and what's flowing between them. Organize the supply network well, clarify the definitions of success, facilitate the movement of information, and a healthy supply network will follow. We have to know how to lead and coordinate a vast and decentralized web of interconnected suppliers, or risk being hostage to it.

# Authors

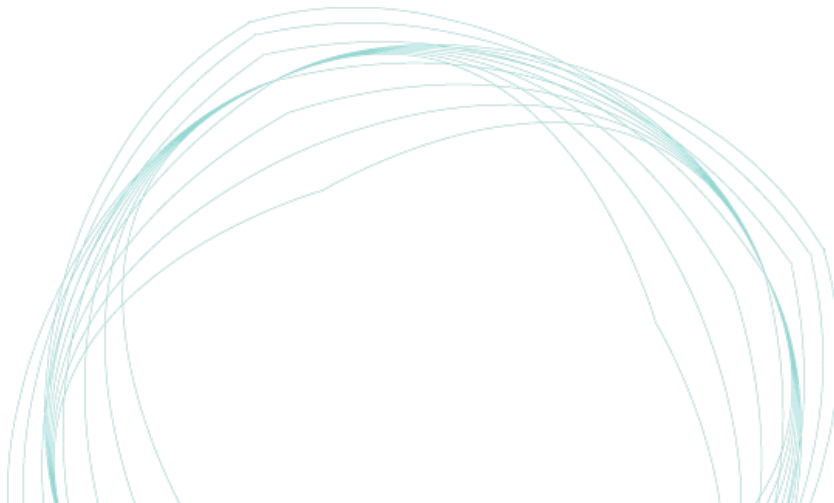
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# The new calculus of corporate portfolios

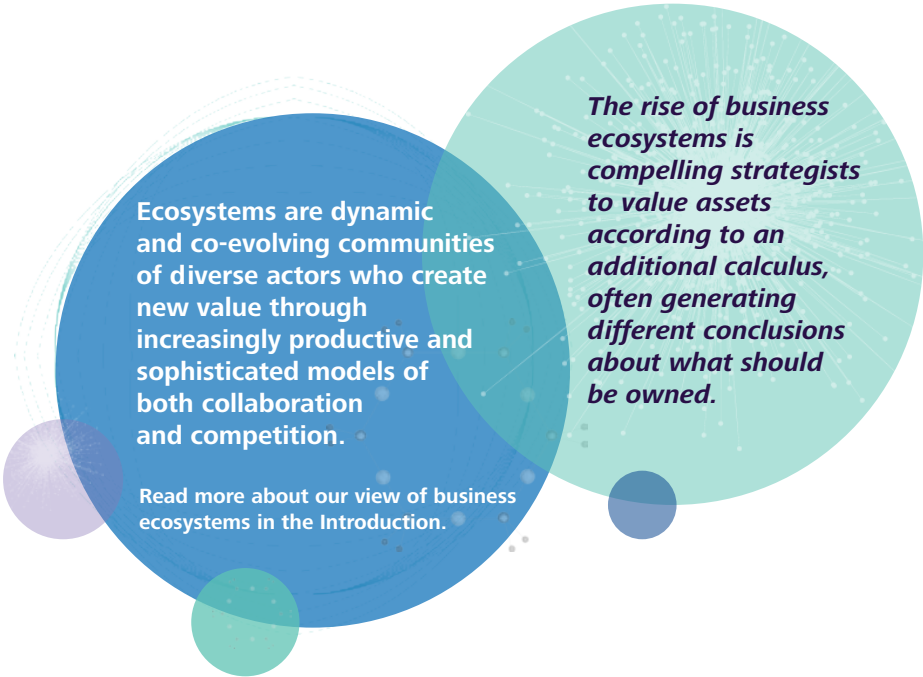
By Mike Armstrong, Will Engelbrecht, and Eamonn Kelly

## Overview

**I**N 2014, a *Forbes* report on the pending merger of AT&T and DirecTV started with an observation: “A few years ago, the idea of a satellite TV provider merging with a phone company might have seemed weird.” It went on to quote Charlie Ergen, the Dish Network chairman who wanted to buy Sprint just a year earlier:<sup>1</sup>

We saw the world changing six years ago into several different technologies, right? We had the home covered on a nationwide basis, but there were things such as broadband. There was something called OTT (over-the-top, or TV via Internet Protocol) that was starting to be used around the world, and then there was mobile. And all those things have to come together, and they come together in the ecosystem of communications.

In Ergen’s rationale, there is a key word—one that simultaneously underscores and dispels the weirdness. It’s the word “ecosystem.” That is a term we’re seeing more and more to explain the logic of mergers, acquisitions, and divestitures. From Xerox’s Ursula Burns to Facebook’s Mark Zuckerberg, many enterprise leaders are strategically reconfiguring their asset portfolios with an eye to the fast-evolving business ecosystems in which their firms are situated. This isn’t just a language change as a trendy metaphor enters the management lexicon. Ecosystem thinking is making strategists



Ecosystems are dynamic and co-evolving communities of diverse actors who create new value through increasingly productive and sophisticated models of both collaboration and competition.

Read more about our view of business ecosystems in the Introduction.

*The rise of business ecosystems is compelling strategists to value assets according to an additional calculus, often generating different conclusions about what should be owned.*

value assets differently, and think differently about whether those assets need to be owned.

## What’s behind this trend?

Firms have always used mergers and acquisitions to accelerate their entry into new businesses and markets and to build their competitive strengths. Smart management teams approach the question of what to buy and sell as a portfolio exercise in building positions, hedging risks, and looking to maximize capital efficiency. Their rationale for strategic transactions has generally focused on some key goals—quests for synergy, market share, cross-selling, economies of scale, tax advantages, geographical expansion, diversification, and vertical integration.

Firms have also always sold assets. Traditionally, the rationale for selling has

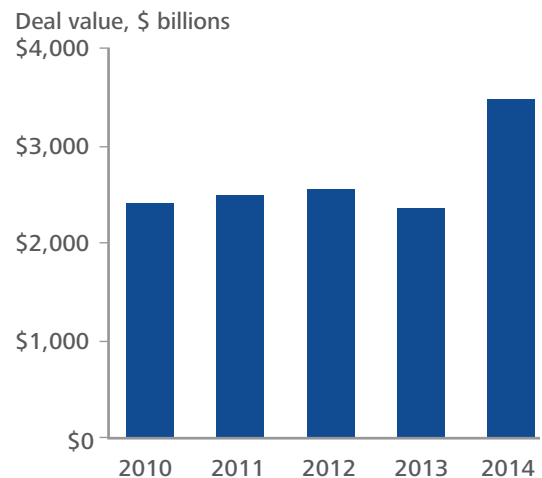
often been as simple as the need to raise cash or remove the earnings-dilutive effects of a chronically underperforming business.

In the modern era, however, deliberations about both M&A and divestiture have become much more complex. Largely due to fast-evolving technologies enabling information flow and communications, the options have proliferated for firms to make productive use of assets with or without owning them. Those options are further energized by enablers like standardization, market transparency, and IP protection which allow ecosystems to take shape, often reconfiguring entire industries as they do. The “transaction costs” that once made it uneconomical to buy many components of one’s offering from outside suppliers have also dropped dramatically. The effect, to use John Hagel’s memorable phrase, has been a long-term trend toward “unbundling the corporation.”<sup>2</sup>

Today, a management team can decide to produce a specific solution for a specific kind of customer, and then cobble it together with elements procured from specialist firms, with very little capital investment required on their own firm’s part. But by the same token, some management teams find themselves in a newly defensive posture—having to defend why, in that case, they have invested their capital in the assets they have. How do those assets fit with their purported areas of strategic focus? Of all possible owners of a particular part of the business, are they really the owner in whose hands it produces most value?

To the extent that management teams do not naturally engage with such questions, they now have a rising chorus of activist investors compelling them to do so. Such investors, who first came on the scene in the 1980s (see the sidebar “Optimizers at the gate”) have a dispassionate view of business units and their owners, and have no reservations about pressuring CEOs to think harder about the cards they hold in their hands, and how to play them. Activists are good at spotting what does not fit—those assets that would likely be more productive in others’ hands. By applying pressure

**Figure 1: Building momentum in global M&A volume**



- The value of M&A totaled \$3.5 trillion in 2014, the strongest year since 2007, and 47% higher than 2013.
- 95 deals with value greater than \$5 billion were announced, more than double the number of large-cap deals announced in 2013.

Thomson Reuters, Mergers & acquisitions review, financial advisors: Full year 2014, 2014, [http://dmi.thomsonreuters.com/Content/Files/4Q2014\\_Global\\_MandA\\_Financial\\_Advisory\\_Review.pdf](http://dmi.thomsonreuters.com/Content/Files/4Q2014_Global_MandA_Financial_Advisory_Review.pdf).  
Graphic: Deloitte University Press | DUPress.com

to the disaggregation process, they help keep ecosystems reforming fluidly.

And now, into these high-stakes considerations of what core businesses, complementary businesses, and other assets firms should hold, a new way of thinking about the commercial environment has been introduced. Many managers have begun to see their competitive environs—and the strategic options available to them—as dynamic and diversely populated ecosystems.

Talk of ecosystems—and deals that only made sense in those terms—showed up first in the high-tech clusters of Silicon Valley and Route 128 outside Boston. But this new basis for planning mergers, acquisitions, and divestitures is now seeping into other sectors from health care to industrial manufacturing.

## The trend

In the years of weak economic recovery after the 2008–09 financial crisis, corporations

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## OPTIMIZERS AT THE GATE

As the logic of ecosystems begins to guide more strategic transactions, the rising prominence of activist investors is an accelerant.

Certainly we are seeing pressure from activist investors. Recent data suggests that the success of activism campaigns has more than doubled over the last decade, to the point that more than 70 percent of such campaigns now prompt change.<sup>3</sup> Moreover, nearly every senior corporate executive and activist hedge fund manager surveyed in 2014 by the law firm Schulte Roth & Zabel and the data provider Mergermarket stated a belief that activism would rise over the next 12 months. More than half said the increase would be “substantial.”<sup>4</sup>

Activist investors came on the scene in the 1980s, portrayed mostly as “Barbarians at the Gate”—corporate raiders with an interest in a quick financial return, and little interest in the creation of long-lasting value. This often meant breaking up corporations and selling off the constituent parts. This remains the characterization of activist investors by much of the mainstream media. However, today, there are many more activists claiming a willingness to consider value-creation stories that take time to play out. Jeffrey Ubben of the hedge fund ValueAct Capital Management claims that he and his partners are “patient investors,” and would like to see activism mature into an asset class, like private equity, providing long-term value to companies rather than just giving a quick jolt to activists’ returns.<sup>5</sup>

A recent survey found that only 16 percent of activist investments were held for less than six months, while 36 percent were held for more than a year.<sup>6</sup> In recent months, we see that activist investors have worked in concert with pension funds, which clearly have long-term value as their primary consideration. The California Public Employees Retirement System (Calpers) has “dabbled” in being an active partner with funds,<sup>7</sup> while California State Teachers Retirement System urged PepsiCo to put activist investor Nelson Peltz on the board.<sup>8</sup>

In this sense, it is revealing to think of activist investors as a critical—and natural—element of an ecosystem-focused deal environment. They are interested parties who are willing to think broadly—and sometimes radically and painfully—about the position and assets held by a corporation. They approach opportunities in bigger and more fluid terms than corporate executives because they have a single role: to spot opportunities where shifting an asset from one place to another will deliver greater value. They are facilitators of movement within and between ecosystems.

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were reluctant to invest in major strategic transactions.<sup>9</sup> The result was that corporations came to hold substantial piles of cash on balance sheets. By 2014, capital was abundant and inexpensive; and a buoyant US equity market supported the growing sense of confidence among consumers, investors, and executives. Meanwhile, some market worries of previous years—spikes in the euro crisis, concerns over the US debt ceiling—became less prominent. All this set the stage for a return to heated merger activity. The 2014 worldwide deal count, led by activity in technology, media, health care, and energy, was up by 6 percent, and the value of those deals had increased by 47 percent.<sup>10</sup>

But something else was happening at the same time, at a deeper level. Now that deal activity has picked up, it’s possible to see new

and different patterns in the transactions.

Many are no longer only about financial engineering, cost-cutting, or straightforward growth, where corporations would stitch new parts on to their organizations to reap the benefits of scale.

More deals appear to be done with the dispassionate perspective of the “activist inside.” Again, activist investors are the enforcers in the current M&A landscape and, as much as anything, they use the quantitative logic of capital efficiency to motivate portfolio moves. Their attention, or even just the threat of it, focuses many executives’ minds on how their firms create value as the business landscape changes around them. Indeed, a CEO today who isn’t hyper-focused on where the firm’s value is created (and where it may be destroyed) may quickly find activist investors

making the argument for them about what ought to be owned and what ought to be disposed of. So, many leaders tend to cast a keen and constant eye on this equation and make the argument themselves—essentially bringing the activist in-house. Take, for example, Time Inc. chairman Joe Ripp describing his team's deliberations:

We are in the process of looking at everything that we have today and trying to figure out, are there ways to make them more valuable than they are today? And if not, does selling them or enhancing them or investing in them or partnering them with other people make them more valuable to our shareholders. While we're not commenting on any one particular asset, we're willing to sell those things that make no sense for the portfolio and invest in those that do.<sup>11</sup>

### **New options for growth**

As this newly disciplined thinking spreads, we see firms migrating toward a new calculus for sizing up the available options. Increasingly they are thinking in terms of ecosystem plays. When a leadership team has a different philosophy guiding its portfolio of assets, it makes different choices than it might otherwise have made. Much of the M&A activity today is being guided by business leaders' points of view on how ecosystems are evolving.

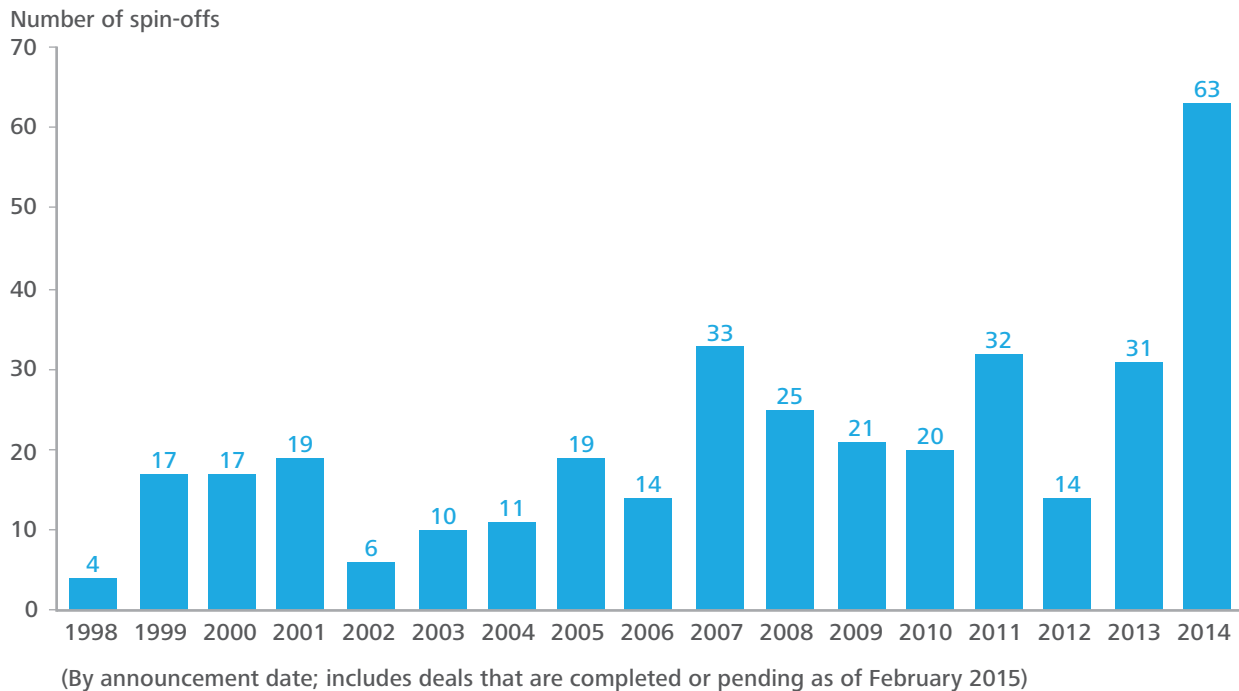
Importantly, a management team attuned to the dynamics of ecosystems also sees that some deals don't have to be done at all. The assets they need are often present in the ecosystem, able to be readily leveraged. Thus, the world of ecosystems is creating a "third pathway" to growth: using strategic alliances in place of transactions or organic growth initiatives. This third pathway allows firms to pursue "leveraged growth"—that is, to secure the use of others' owned assets to support their own expansion. Pharmaceutical companies, for example, have many years of experience in constructing "global strategic alliances"<sup>12</sup>—collaborations to help ensure that they get the benefits of growth without the burdens of ownership.

### **More strategic divestitures**

One result of increased activist pressure and ecosystems perspective-taking is a more deliberate and strategic focus on divestitures. Certainly we are seeing strategic separations show up more in the mix of corporate transactions. In 2014, 63 US companies completed or initiated pending spin-offs,<sup>13</sup> up from just 31 in 2013.<sup>14</sup> That makes 2014 the busiest year for corporate spin-offs since 1998, the first year for which full data is available. The higher numbers reflect higher-level thinking. Divestitures are becoming more strategic, as executives take a common question of activist investors seriously: "Are we really the best owner of this asset?" If a part of the business would be more valuable in someone else's hands, it may make sense to participate in that higher value by selling it—especially if, thanks to easy transactions within the ecosystem, it can be sold without any real risk to the company's ability to deliver its offerings.

One might well ask, in a business ecosystem where it is possible to own or not own nearly any asset required to produce a customer offering, what should be the rationale for owning some things and not others? What, to use the economist's terminology, is the theory of the firm? In response to this fundamental strategic question, we see managers increasingly citing a new or shifting "focus" as the key driver of their strategic transactions. Take Hewlett-Packard, which recently took the bold step of announcing its intention to separate into two companies, HP Inc. and Hewlett Packard Enterprise. In its statement to the business press about the move, HP's management used the word "focus" and its variants no fewer than a dozen times.<sup>15</sup> Media giant Gannett did the same when it announced that it would spin off the business that was its genesis—publishing regional daily newspapers—to allow it to focus on the broadcast and digital media businesses it sees as its future.<sup>16</sup> In a recent Deloitte survey, top executives were asked to name the most important reasons behind their recent divestitures. The importance of pruning their business of "non-core assets" landed in the top



**Figure 2: Corporate spin-offs have spiked**

Source: FactSet Mergers, [https://www.factsetmergers.com/marequest;jsession-id=B1ED1AA49474CAAB92F7EC3DB6FF7661?an=dt.pr&pg=sh&sub\\_app=MergerStat&rnd=70](https://www.factsetmergers.com/marequest;jsession-id=B1ED1AA49474CAAB92F7EC3DB6FF7661?an=dt.pr&pg=sh&sub_app=MergerStat&rnd=70).

Graphic: Deloitte University Press | DUPress.com

two reasons for 81 percent of executives, up from 68 percent when the same question was posed in 2010.<sup>17</sup>

In recent years, GE has broadly moved away from owning assets in clearly defined industries. By divesting NBC, GE Capital, and GE Appliances, it has reset its focus to succeed in one of the largest of all ecosystem plays. As CEO Jeff Immelt states it, “We will lead as the industrial and analytical worlds collide. We believe that every industrial company will become a software company.... We call this the Industrial Internet.”<sup>18</sup> Similarly, in life sciences, Bayer divested its plastics business in order to better apply its skills in human, animal, and plant health. It is now focused on working in solution ecosystem spaces, like food security, population, and access to health care.<sup>19</sup>

### Bungee divestitures

In an ecosystem world, a divestiture is also sometimes seen as the way to free a business unit to pursue different opportunities within

new ecosystems, or to enhance its positioning within ecosystems that are evolving. This is a recognized trend in the technology space, where firms now prepare more actively for divestitures, with more deliberate operational, financial, and structural planning. And more of these are what we might call “bungee divestitures.” These occur when firms must resolve competing pressures—on the one hand to divest themselves of any assets of which they are not the best owner, and on the other hand to provide more integrated total solutions to customers. Many managers are discovering that one resolution is to do divestitures with “strings attached.” The separation also includes an agreement that ensures an ongoing privileged relationship between the formerly joined companies.

Seen in this light, eBay’s decision to spin off PayPal as a free-standing business is more than simply an effort to capitalize on PayPal’s stand-alone market valuation. PayPal’s high valuation reflects a faith in the position it will come to

occupy as a full and unencumbered player in the newly dynamic payments and payments processing ecosystem. As PayPal CEO John Donahoe puts it: “PayPal is in a position to really be the link between the technology ecosystem and the payment industry.”<sup>20</sup> But while PayPal pursues “independent” growth in the payments ecosystem, it will also continue to serve as a critical part of the eBay-centered auction ecosystem.<sup>21</sup>

Similarly, AMD divested GlobalFoundries to allow the manufacturer to focus on providing high-quality semiconductor fabrication services to any customer. Subsequently, AMD has become one of GF’s largest customers.<sup>22</sup> In



## Going forward, corporations will increasingly use strategic transactions to stake out and adjust their positions in dynamic business ecosystems.

a world characterized by interconnected ecosystems, expect to see more strategic separations attended by continued ties of this sort.

### Implications

Ecosystems are far less stable than industries. They are resilient and enduring, but internally they are characterized by constant flux. There are simultaneous pressures for fragmentation and consolidation.<sup>23</sup> Some businesses (especially in media, software, and retail) break up and get smaller, driven by demand for customization and lower barriers to entry. Other industries (think technology infrastructure) move toward fewer, more dominant players, as these large firms provide resources, information, and platforms for fragmented players.

One clear implication is that doing M&A and divestitures based on an ecosystem strategy will mean revisiting the portfolio on a more continuous basis. For corporations participating in fast-moving ecosystems, this means that all parts of the business are subject to constant reappraisal. Are they still suitable parts of the portfolio? Ecosystem dynamics can be complex. The roles of different players in an ecosystem can change, sometimes quickly. If this happens, then the logic of holding on to an asset can shift. Besides, coordinating across an ecosystem of several firms is a complex endeavor. For this reason, corporations will sometimes take a minority share in a collaborating business, as this becomes a way to align incentives and interests around an ecosystem. Minority shares also have the value of providing options—which may be vital in a world where ecosystem dynamics can be complex and unpredictable. A minority stake can be sold, and the position readily reversed, if the logic of collaboration weakens.

One thing that likely won’t change is the desire to buy into high-growth businesses born of innovation. But veteran dealmakers used to monitoring the lifecycles of industries might find that ecosystems evolve in different ways. When Mark Zuckerberg oversaw Facebook’s 2014 purchase of virtual reality company Oculus, he cast it as “a long-term bet on the future of computing.”<sup>24</sup> It is one of Facebook’s efforts to explore the next big platform after mobile. The acquisition might be a ten-year play, but Zuckerberg is already clear about the critical steps: “It’s building the first set of devices and building the audience and the ecosystem around that, until it eventually becomes a business.”<sup>25</sup>

Similarly, in the fast-evolving space of additive manufacturing (or 3D printing), we see deals being done in line with a vision of how the ecosystem will take shape. When Stratasys (a leader in 3D printing) recently acquired GrabCad (a leading cloud-based CAD collaboration platform and community site),<sup>26</sup> David Reis, CEO of Stratasys, explained the strategic

logic of the deal: “Future success with our industry will go beyond simply providing the market with best hardware and material solutions. We believe we must develop a leading 3D printing ecosystem.”<sup>27</sup>

Thus, we should also expect due-diligence reviews of proposed acquisitions to take on new kinds of questions and risks. Now, transactions need to be assessed in terms of more complex ecosystem consequences. Traditionally, a straightforward acquisition has involved a detailed review of the performance of the target business, coupled with an assessment of the future cash flow benefits. But any corporation pursuing an ecosystem strategy may need to conduct more sophisticated assessments, exploring how a new acquisition (or divestment) might affect the health and productivity of an ecosystem and the firm’s position in it.

For all these reasons, deliberations about strategic transactions are becoming a more prominent and constant item on top management teams’ strategy agendas. Rather than experience them as occasional, highly distracting, and disruptive events, they must build a competence in managing their asset portfolios fluidly on an ongoing basis. Deal-making itself will perhaps be held just as close to the vest of the CEO. But the strategic scanning of the ecosystem and discussion of where things are going will be a conversation best informed by many perspectives.

## What’s next?

Going forward, corporations will increasingly use strategic transactions to stake out and adjust their positions in dynamic business ecosystems. Sometimes they will explore acquisitions to build the platforms that create foundational capabilities for other participants in the ecosystem. Sometimes they will divest assets and focus more tightly on the

capabilities they need to succeed in highly focused roles, engaging with other firms via someone else’s platform. To make these decisions effectively, dealmakers will more explicitly study the evolution of ecosystems, especially looking for new ecosystems taking shape.

As firm behavior changes around M&A and strategic separations, there will be implications for those outsiders whose business it is to assess or assist with the transactions. The analytic tools to assess ecosystems will likely proliferate and improve. We might well see “ecosystem analysts” arrive on the scene to provide more sophisticated commentary than traditional industry analysts can. Investment experts will value assets differently in light of emerging concepts of ecosystem value.

Given the flux inherent in today’s business ecosystems, the frequency of strategic transactions might increase, too. Ecosystem thinking might drive not only a more constant review but also a more frequent reconfiguration of assets and relationships. Many firms will find this stepped-up pace and volume tough to manage. Mergers, acquisitions, and divestitures are expensive and complicated propositions—not least because they generally require some melding together of different corporate cultures and infrastructures.

Finally, we expect to see today’s talk of “focus” in the communications around strategic transactions to become more sophisticated as well. In a world where ownership of many assets is less critical, management will be very aware of the signaling power of any acquisitions and sales they make. What does the transaction say about the firm’s point of view on the evolution of the ecosystem? Where does it indicate they will carve out their place? Over time, we may see managers change their attitude toward transactions to believe they are as much about signaling as synergy or scale.

# My take

By Peter Shea

Peter Shea has been analyzing asset portfolios for over 30 years as operating partner at Snow Phipps, past president of Icahn Enterprises, and former managing director in Europe for H. J. Heinz Company.

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I haven't heard people in private equity use the term ecosystem a whole lot, but that doesn't mean they don't act on the concepts behind the term. As industry lines blur and as economic sectors evolve, the value of assets are constantly shifting. You don't have to call the emerging opportunity spaces ecosystems to know that they trigger the need to rethink what you own and whether you really should own it.

Accepting and acting on the consequences of an evolving business environment—or ecosystem as you may say—can be truly difficult for individual executives. No one wants to be the leader who admits that something once considered 'a winner' has evolved to become a real financial burden. It's also hard to be caught in the driver's seat when an integration effort is labeled a lost cause. These facts can be hard to swallow and sometimes go ignored or denied for long periods, even when the evidence is overwhelming that something no longer fits or perhaps never really did.

Leaders have to constantly be asking the hard questions. Do the businesses I presently operate still make sense in relation to the competitive environment now taking shape? What really is our core business and do the various pieces we have strung together, perhaps over years of building the company, still complement one another in light of today's market circumstances?

I'd like to hope that we are seeing executives show a growing willingness to engage with those

tough questions. Maybe the uptick in corporate spin-offs going on right now is evidence of that. But I still think you see far too many cases of assets being owned and operated by firms which possibly aren't the best homes for them. Activist investors have been pushing for higher levels of portfolio scrutiny for a long while. They will certainly continue that push as new sectors take shape, industry boundaries blur, and the need to move assets into and out of portfolios shifts with surprising speed.

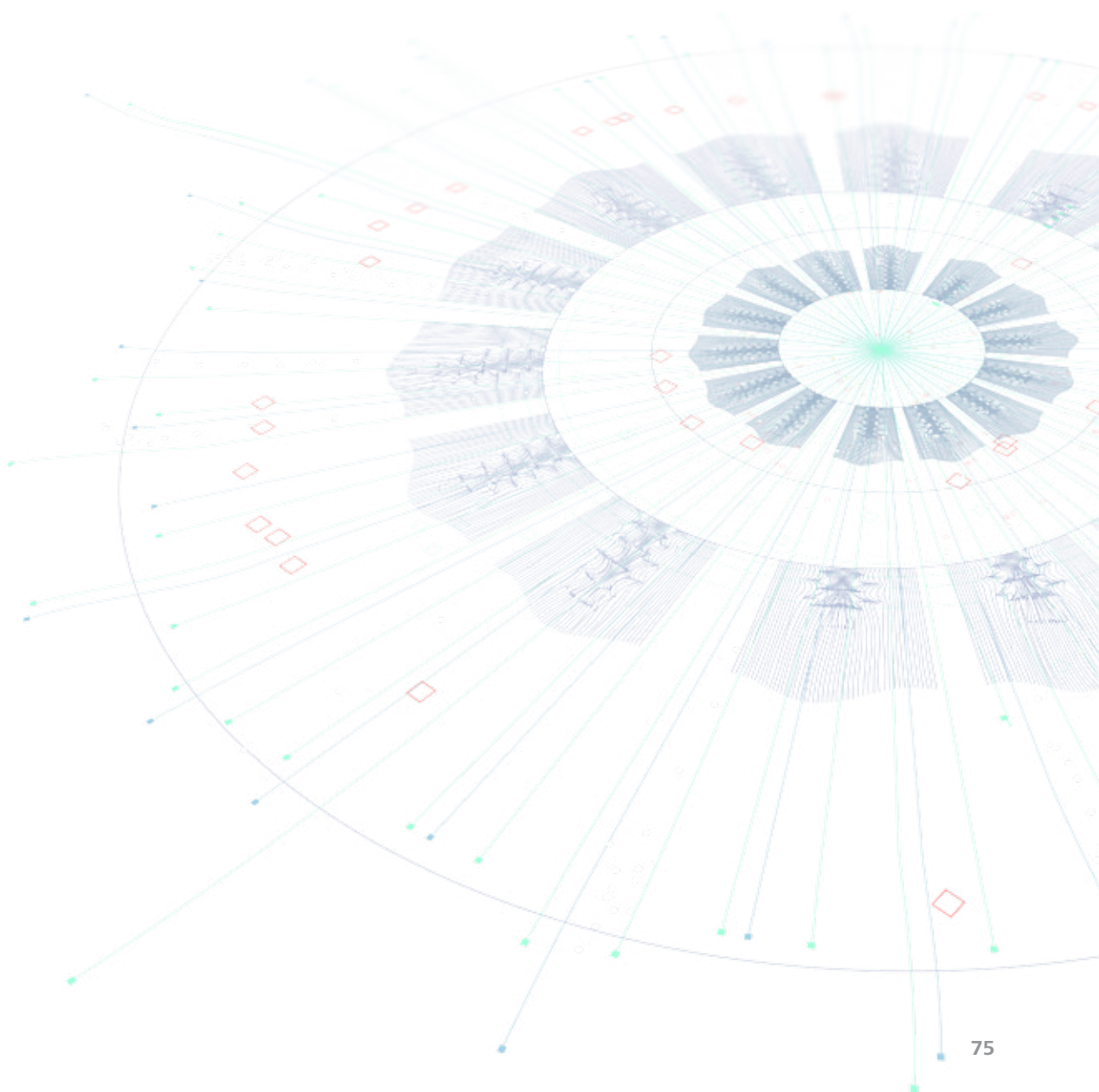


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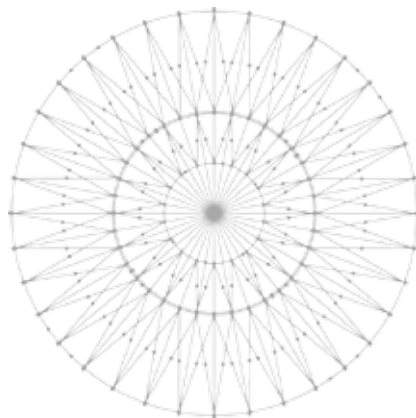
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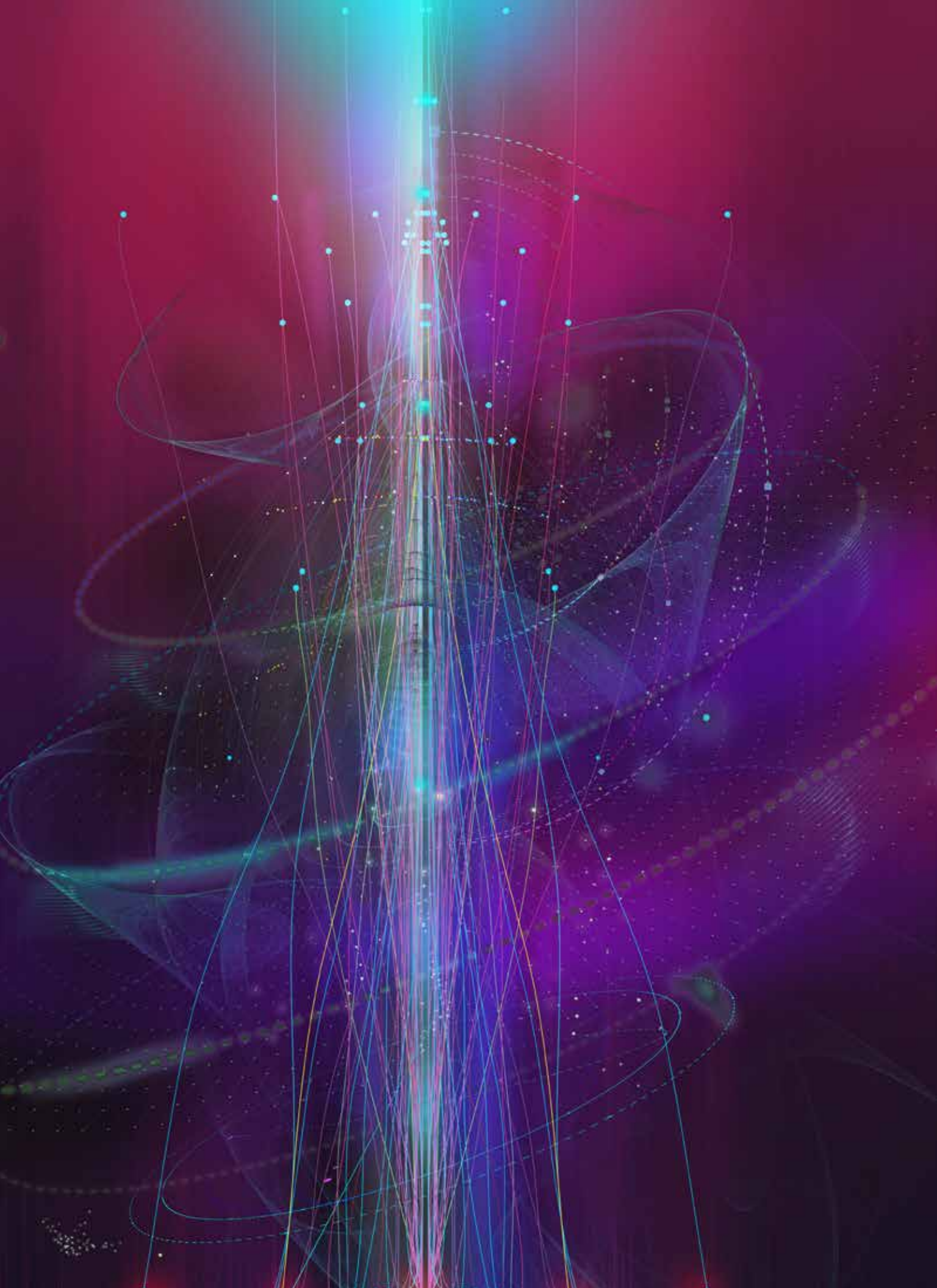


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# The power of platforms

By John Hagel

## Overview

**W**HEN Marc Merrill and his partner designed the online game *League of Legends* and founded a company, Riot Games, in 2009 to bring it to market, they didn't only have in mind to create a new product for the gaming world. Their strategy was to build a *platform*. Already, that platform has become a very valuable one. Start with the game itself: 67 million people play it each month,<sup>1</sup> generating some \$1 billion dollars in annual revenue for the company.<sup>2</sup> These gamers, who may be sitting alone in their dorm rooms but who, online, join up as teams to do battle, all play for free; Riot Games makes its money when, having drawn everyone into its designed environment, it finds other ways to capitalize on their presence. More recently, the company extended its platform to the offline world, creating live events in which League of Legend teams compete in tournaments in front of live spectators. It doing so, it launched what is now the fastest-growing part of the sports industry: e-sports.

Riot Games' still evolving strategy is just one example of a trend we see all around us today, and not only among companies that were "born digital." Everyone, it seems, is thinking in terms of platforms. That is, they are recognizing that, no matter the market, there is money to be made in providing layers of capabilities and standards that other players in that market can tap into and use to interact more efficiently. Popular platforms—a classic example being the iTunes application program—allow the participants on them to create and capture value for themselves, while also (thanks to network effects) yielding strong



**Ecosystems are dynamic and co-evolving communities of diverse actors who create new value through increasingly productive and sophisticated models of both collaboration and competition.**

Read more about our view of business ecosystems in the Introduction.

***Properly designed business platforms can help create and capture new economic value and scale the potential for learning across entire ecosystems.***

returns for the platform builder.<sup>3</sup> Every participant must abide by the rules of the platform but is otherwise not answerable to any other player in it, including the platform originator.

The trend we'll describe below, however, is likely more nuanced than the simple observation that many more firms are devising platform strategies. Managers' familiarity and experience with platforms have reached the stage that they are increasingly designing them, or taking advantage of their existence, for particular kinds of gains. As we'll discuss in more detail, many firms are employing noticeably different tactics depending on whether they see

a platform as a way to improve performance (by focusing on what they do best), grow their footprint (by leveraging capabilities that in the past they would have had to own), innovate (drawing on that vast majority of smart people who aren't strictly in their employ), or capture more value. Looking ahead, we anticipate that smart managers will refocus their platform strategies again—on the deliberate pursuit of the learning advantages that platform participation uniquely affords.

### What's behind this trend?

In one sense, platforms are nothing new. If we define them as layers of infrastructure that impose standards on a system in which many separate entities can operate for their own gains, then clearly any nation's railway system, once it standardizes on track gauge, counts as a platform. Likewise, its phone system, and its shipping system, having converged on global standards for pallets and shipping containers.

But platforms have grabbed unprecedented attention in the digital era.<sup>4</sup> This is thanks partly to a gold rush mentality, since the advent of that ultimate platform of our age, the Internet, spawned opportunities for new, electronic platforms to be built in every realm of commerce.

The deeper reason that platforms have lately captured so many business leaders' imaginations is that they enable the "pull-based" approaches which have long been seen as the future of serving customers profitably.<sup>5</sup> In the past, sellers have been limited by the economics of production and distribution to "push-based approaches," meaning that they simply made an efficient batch size of what they sold and foisted it onto the marketplace. This of course meant investing effort into anticipating what the customer demand might be, using that to create a sales forecast, and then procuring the right resources and people to produce the appropriate quantity of goods. A push-based approach is very efficient if the forecast is accurate—and can at least be profitable if, failing that, the marketer is able to alter demand with its pricing and advertising. But in today's world, those have become much bigger "ifs."

Two fundamental, long-term trends, which have been transforming the business landscape for the past few decades and still have far to go, are essentially eliminating the conditions in which push-based approaches can work. These two forces are the deployment of digital technology infrastructures, and the long-term public policy trend globally toward economic liberalization. The cost of three core digital

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## WHAT'S A PLATFORM?

Platforms help to make resources and participants more accessible to each other on an as-needed basis. Properly designed, they can become powerful catalysts for rich ecosystems of resources and participants. A couple of key elements come together to support a well-functioning platform:

- A governance structure, including a set of protocols that determines who can participate, what roles they might play, how they might interact, and how disputes get resolved.
- An additional set of protocols or standards is typically designed to facilitate connection, coordination, and collaboration.

Platforms are increasingly supported by global digital technology infrastructures that help to scale participation and collaboration, but this is an enabler, rather than a prerequisite, for a platform. In the early development of Li & Fung's platform for the apparel industry, for example, it relied on very limited technology, largely the telephone and fax machine, and instead focused on defining the protocols and standards that made it possible to deploy a loosely coupled, modular approach to business process design.<sup>11</sup>

technology capabilities—computing power, data storage, and bandwidth—relative to their performance has been decreasing exponentially and at a faster rate than that of previous technological advances such as electricity and telephones.<sup>6</sup> At the same time, global trade has increased at about 7 percent per annum on average—or twice the growth rate of global GDP—for almost three decades.<sup>7</sup> Together, digitization, for shorthand, and globalization produce what researchers at Deloitte’s Center for the Edge call “The Big Shift.”<sup>8</sup> It’s a period of time in which the foundations that everything is built upon are reshaped, and thus everything changes.

As the Big Shift plays out, it is becoming newly possible—and therefore newly imperative—for sellers to move to pull-based approaches. These reorient operations such that nothing happens until actual demand signals are received from real buyers. Students of lean manufacturing and pull-based inventory systems know the theory and have seen

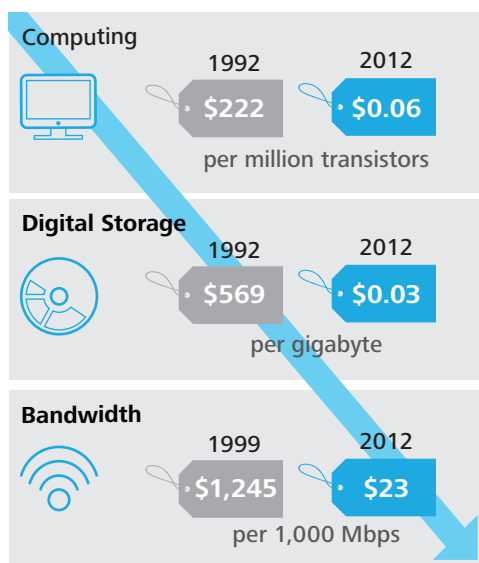
the advantages that can be gained from this reorientation.<sup>9</sup> But most of the potential of pull-based systems has yet to be realized, because these early efforts have been applied only to small numbers of companies within well-defined supply chains. Market-spanning platforms offer ways to take these pull-based approaches to scale.

## The trend

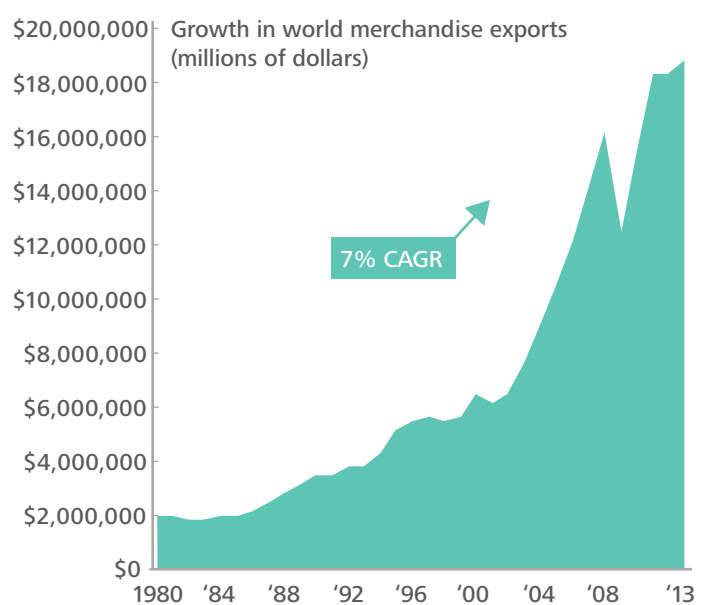
We have now reached the point where most well-read business leaders know the language of platforms. They can recognize them where they exist and understand the value they create, both for the platform creator and the participants. They have also seen the tremendous power of the platforms that have proved most scalable. Some platforms already encompass thousands and, in many cases, millions of independent participants, who benefit as a result from enhanced leverage, specialization, and flexibility.

**Figure 1. Platforms expand when the means of creating them become more affordable and the need for them becomes more global.**

### Falling cost of digital



### Growing reach of globalization



Source: John Hagel III, John Seely Brown, Tamara Samoylova, and Michael Lui, "From exponential technologies to exponential innovation," Deloitte University Press, October 4, 2013, <http://dupress.com/articles/from-exponential-technologies-to-exponential-innovation/>; The World Trade Organization, "B. Trends in international trade," *World Trade Report 2013*, [https://www.wto.org/english/res\\_e/booksp\\_e/wtr13-2b\\_e.pdf](https://www.wto.org/english/res_e/booksp_e/wtr13-2b_e.pdf), accessed April 8, 2015.

Examples of platforms are all around us. Take InnoCentive, the open innovation company that allows seekers of specific engineering, science, and other kinds of solutions to connect with expert solvers. It's a pull platform that allows companies to get answers to their most pressing research problems, often from unexpected sources. Li & Fung provides yet another example of a pull platform in business.

Enough platforms have been deliberately designed at this point that it is useful to categorize them into types. The three common types in existence today help their participants do three different things well.

The company orchestrates complex supply networks for apparel designers, relying on a global pull platform to draw out over 15,000 business partners when needed and where needed to ensure rapid and effective response to the rapid and unexpected shifts in demand for items of apparel.<sup>10</sup> All these platforms are wonderfully scalable; rather than becoming unwieldy with greater numbers of participants, they become only more capable and valuable.

Enough platforms have been deliberately designed at this point that it is useful to categorize them into types. The three common types in existence today help their participants do three different things well.

*Aggregation platforms* bring together a broad array of relevant resources and help users of the platform to connect with the most appropriate resources. These platforms tend to be very transaction- or task-focused—the key is to express a need, get a response, do the deal, and move on. They also tend to operate on a hub-and-spoke model. That is, all

the transactions are brokered by the platform owner and organizer. Within this category there are three sub-categories. First, there are data or information aggregation platforms like stock performance databases for investors or scientific databases. Second, there are marketplace and broker platforms like eBay, Etsy, and the App Store online store,<sup>12</sup> which has facilitated 85 billion app downloads as of October

2014.<sup>13</sup> These provide an environment for vendors to connect more effectively with relevant customers wherever they might reside. In a growing number of cases, these platforms draw out resources that were previously not available to others. For example Airbnb has created a platform that has grown more than tenfold, from 50,000 to 550,000 listings, in less than four years,<sup>14</sup> by encouraging people to make spare rooms or parts of their home available to travelers and thus creating a market for

these resources. And third, there are contest platforms like InnoCentive or Kaggle where someone can post a problem or challenge and offer a reward or payment to the participant who comes up with the best solution.

*Social platforms* are similar to aggregation platforms in the sense of aggregating a lot of people—think of all the broad-based social platforms we've come to know and love: Facebook and Twitter are leading examples. They differ from aggregation platforms on some key dimensions. First, they end up building and reinforcing long-term relationships across participants on the platform—it's not just about doing a transaction or a task but getting to know people around areas of common interest. The pull of these platforms is irresistible to many—witness the fact that US adult users spend an average of 42.1 minutes per day on Facebook and 17.1 minutes on Twitter.<sup>15</sup> Second, they tend to foster mesh networks of relationships rather than hub-and-spoke interactions—people connect with

each other over time in more diverse ways that usually do not involve the platform organizer or owner.

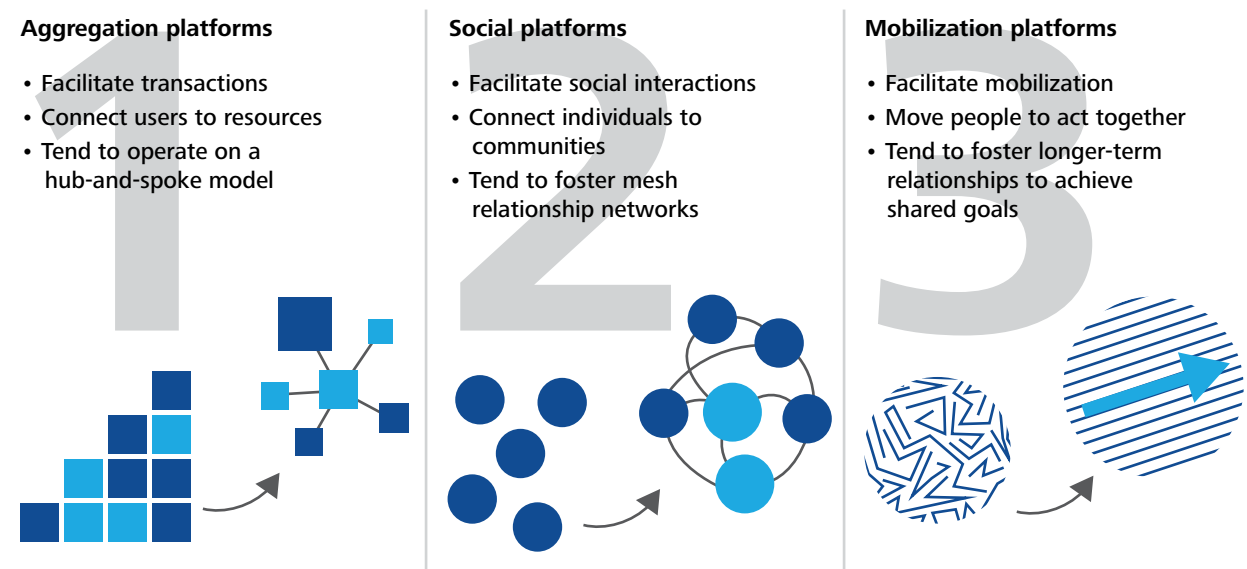
*Mobilization platforms* take common interests to the level of action. These platforms are not just about conversations and interests; they focus on moving people to act together to accomplish something beyond the capabilities of any individual participant. Because of the need for collaborative action over time, these platforms tend to foster longer-term relationships rather than focusing on isolated and short-term transactions or tasks. But a key focus here is to connect with, and mobilize, a given set of people and resources to achieve a shared goal. The participants are often viewed as “static resources”—they have a given set of individual capabilities and the challenge is to mobilize these fixed capabilities to achieve the longer-term goal. There are many different forms of mobilization platforms. In a business context, the most common form of these platforms are “process network” platforms

that bring together participants in extended business processes like supply networks or distribution operations that help to select and orchestrate participants who need to collaborate in flexible ways over time. Li & Fung, the global sourcing company mentioned earlier, offers a prime example of this kind of platform although there are many other examples spanning a broad range of industries, including motorcycles, financial services, diesel motors, and consumer electronics. A little further afield (because they are not profit-making enterprises) would be open source software platforms like Linux or Apache. Even further afield would be mobilization platforms that support social movements, such as in the Arab Spring movement.

## Implications

An implication for management teams of the rise of platforms is that, in their work to devise strategies for future success, they should

**Figure 2. Three common platform types that facilitate transactions, interactions, and mobilization**



Source: Deloitte analysis.

Graphic: Deloitte University Press | DUPress.com

explicitly consider what their “platform plays” will be. Some will identify useful platforms that have yet to be established, and choose whether to create those unilaterally or by forming consortia. All should survey the platforms arising in their markets and consider the degree to which they will be active participants in them.

As we see management teams addressing such questions today, the strategic choices they make are based on the four major kinds of benefits they expect to gain from platforms. Depending on the relative emphasis they place on performance improvement, leveraged growth, distributed innovation, and shaping strategies, they gravitate toward some platform opportunities more than others.

### **Performance improvement**

For some, the most attractive platform is one that allows its participants to focus on the activities that they do exceptionally well and to shed other activities to others to whom they connect through the platform. As an example, many small, focused product vendors and merchants now rely on Amazon’s selling platform to handle a variety of complex and scale-intensive tasks, including website management and fulfillment operations. The beauty of such platforms is that the partners who pick up others’ non-core work are entities who themselves have chosen to specialize in those activities, and are likely to perform them better. The net result of every activity being handled by a player focused tightly on it is overall performance improvement for all participants.

### **Leveraged growth**

Firms hoping to expand the footprint of their businesses have traditionally opted for either organic growth or growth by acquisition. Some platforms open up a third path. They allow participants to connect with the capabilities of others and make them available to their customers in ways that create significant value for the platform participants and the customers. Li & Fung has grown into a \$20 billion global company in the supply network business

even though its sourcing business does none of the actual production itself.<sup>16</sup>

### **Distributed innovation**

Some companies are focusing on the use of platforms to tap into creative new ideas and problem-solving from a broad and diverse range of third parties through the use of contests that provide rewards for coming up with the best approaches to major challenges or opportunities. XPrize has helped spur innovation in a broad range of arenas, including space travel, automobiles, and oil spill removal. With a belief that “no one nation, gender, age group, or profession has a monopoly on creativity or intelligence,” XPrize’s ongoing Google Lunar XPrize challenge drew talented teams from more than 15 different countries as diverse as Israel and Japan.<sup>17</sup>

### **Shaping strategies**

For the most strategically ambitious of firms, an exciting potential associated with some platforms is the ability to change how an entire marketplace operates—and capture more value by doing so. Think back, for example, to the dawn of the credit card business, when Dee Hock founded Visa. By persuading banks to rely on a shared utility for the back-office processing of credit card transactions—a platform—he managed to restructure an entire industry. For the banks, the platform helped turn a money-losing new product into a profitable business. Today, there are a growing number of opportunities to restructure entire markets and industries by designing new platforms and offering powerful incentives to motivate third parties to participate on them. These are very effective because they mobilize investment by a broad range of other participants rather than requiring the shaper to put all its own money on the table.

All of these are excellent reasons to participate in platforms, and most firms will be able to pursue more than one of these goals simultaneously. However, a clear sense of which are the priority goals—perhaps gained in a focused

discussion during a strategic offsite meeting—can point to the best platform plays for any specific firm.

## What's next?

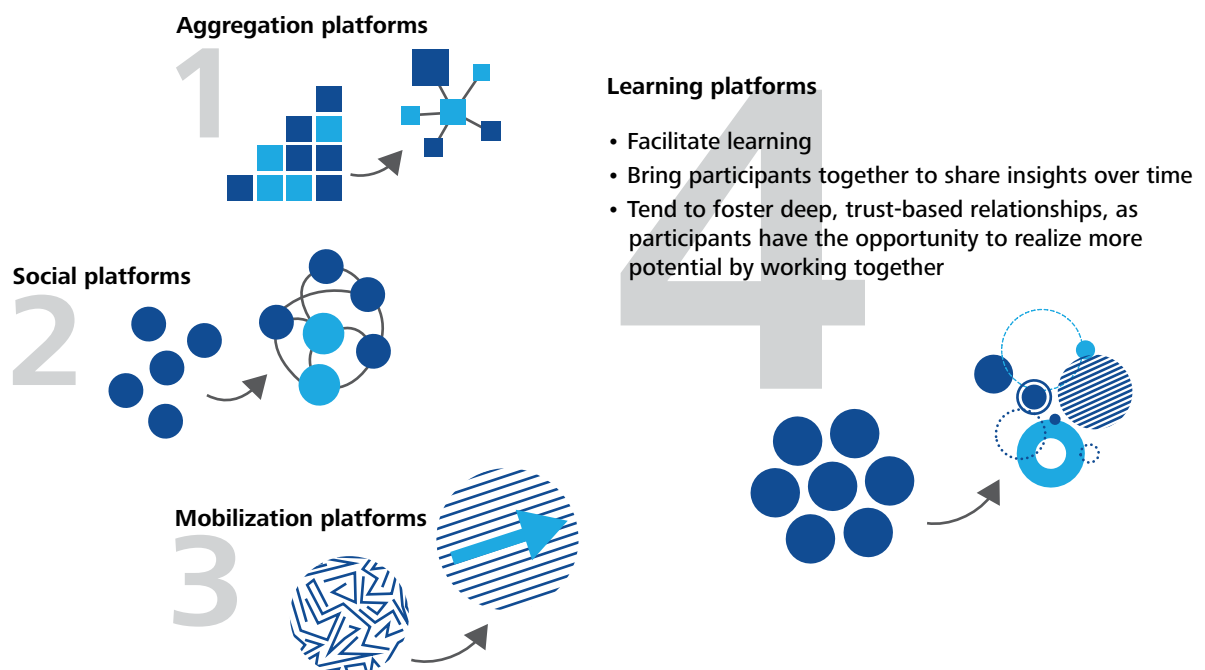
We discussed above three common kinds of platforms already in existence, based on what the participants in them are trying to do. Some want only to *transact* business, and use aggregation platforms to do that; others want to *socialize*, or to *mobilize*, and there are platforms well designed for them, as well.

But in a world of mounting performance pressure, we should also expect a fourth form of platform to become prominent. Dynamic and demanding environments favor those who are able to *learn* best and fastest. Business leaders who understand this will likely increasingly seek out platforms that not only make work lighter for their participants, but also grow their knowledge, accelerate performance improvement, and hone their capabilities in the process.

Very few examples of learning platforms exist in business yet, but we can find very large-scale learning platforms in arenas as diverse as online war games (for example, World of Warcraft) and online platforms to help musicians develop and refine their remixing skills (for example, ccMixer). They have also emerged in a broad array of extreme sports arenas, including big-wave surfing and extreme skiing.<sup>18</sup>

Enough examples exist to see that these platforms have a distinctive configuration known as “creation spaces.” Their primary unit of organization is a small team or work group that takes on particular performance challenges. The participants in these groups work closely together over time to come up with creative new ways to address evolving performance challenges. The emphasis on small teams or work groups is essential because the focus is on a powerful form of learning that involves accessing tacit knowledge. This in turn requires the formation of deep, trust-based relationships. These relationships

Figure 3. Dynamic environments favor learning platforms that accelerate improvement for all participants.



evolve quickly in small teams or workgroups but are very challenging to scale. The second key element of these platforms is that they provide participants with ways to connect with each other beyond the individual team or workgroup to ask questions, share experiences, and get advice. In other words, they scale the potential for learning far beyond the individual group.

As with social platforms and mobilization platforms, learning platforms critically depend on the ability to build long-term relationships rather than simply focusing on short-term transactions or tasks. Unlike the other platforms, though, learning platforms do not view

participants as “static resources.” On the contrary, they start with the presumption that all participants have the opportunity to draw out more and more of their potential by working together in the right environment.

The good news is that any of the three current forms of platforms—aggregation, social, and mobilization—have the potential to evolve into learning platforms. The companies that find ways to design and deploy learning platforms will likely be in the best position to create and capture economic value in an increasingly challenging and rapidly evolving business environment.

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## YOUR BEST PLATFORM STRATEGY: OCCUPY AN INFLUENCE POINT

Platforms can be effective vehicles to create new value. The risk is that they might also undermine the ability of individual companies to *capture* their fair share of the value being created, especially if they do not own the platform. By creating far more visibility into options and facilitating the ability of participants to switch from one resource or provider to another, platforms can commoditize business and squeeze the margins of participants.

The greatest opportunities for value capture on platforms require an understanding of influence points that can create and sustain sources of advantage and make it feasible to capture a disproportionate share of the value created on the platform.<sup>19</sup> Influence points tend to emerge whenever and wherever relationships begin to concentrate on platforms. By having privileged access to a larger and more diverse array of knowledge flows, the company occupying an influence point has an opportunity to anticipate what’s going to happen by seeing signals before anyone else does. That company is also better positioned to shape these flows in ways that can strengthen its position and provide greater leverage. When you’re in the center of flows, small moves, smartly made, can indeed set very big things into motion.

Where would these influence points tend to emerge on platforms? These points often provide significant and sustainable functionality to the broader platform or ecosystem—for example, the broker position in a market platform. It’s even better if the functionality of these influence points evolves rapidly over time because it creates incentives for other participants to stay in close contact with the occupier of the influence point.

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# My take

By Peter Schwartz

Peter Schwartz is senior vice president for strategic planning at Salesforce.com, author of *The Art of the Long View*, and a frequently sought commentator on forces shaping the future of business.

Platforms today power learning and innovation at the speed of business by providing collaborative and sometimes exponentially productive spaces for value creation. At Salesforce, we take this model seriously, not just by building our own platform and apps but by opening our platform to millions of partners, developers, and customers, allowing them to customize and layer on top of our core.

In fact, one way to think about the latest release of Salesforce 1, our flagship product, is as a set of apps that provides our customers with a way to write their own apps. All of that must be enabled by some pretty sophisticated code as the underlying glue. But most of our users are never going to touch that inner wiring. What they will touch—and what we want them to own and build on as their own—is a set of extensions upon the centerpiece we provide. When customers are given the tools, we are often amazed at the breakthroughs.

For example, I like to tell the story of a major food logistics company building a Salesforce extension that transforms the jobs of truck drivers, who are now a critical point of connection, stringing delivery, sales, and relationship management functions from the final customer all the way back to the source. When we enable that kind of transparency, we are changing the nature of jobs. We now have a customer that not only loves Salesforce, but also owns and operates a deeply personalized version of Salesforce 1 that allows it to see things previously hidden in the most distant pockets of its value web.

And when a client writes a super-interesting extension of the core Salesforce platform, we might look for new ways to complement it by adding, say, robustness, or lightness, or ease-of-use. In other instances we might seek to license

the customer's functionality. Or, increasingly, we look to invest in some of the more exciting prospects, thus building an R&D investment portfolio without the failure rates so common when you incubate from scratch.



In a world of business ecosystems, loyalty may be the final and most important of the currencies exchanged. For Salesforce, a vibrant platform ecosystem of customer developers, apps, and support services, one that has loyalty and mutual commitment as its life blood, is our engine of growth. A lot of the value that is created on the Salesforce platform is directly owned by our partners and customers, and that's exactly as it should be. We think of the shared value that is collectively created as the adhesive that binds the Salesforce platform to the broader ecosystem in which the client, now co-evolving with Salesforce, competes and generates economic returns.

# Author

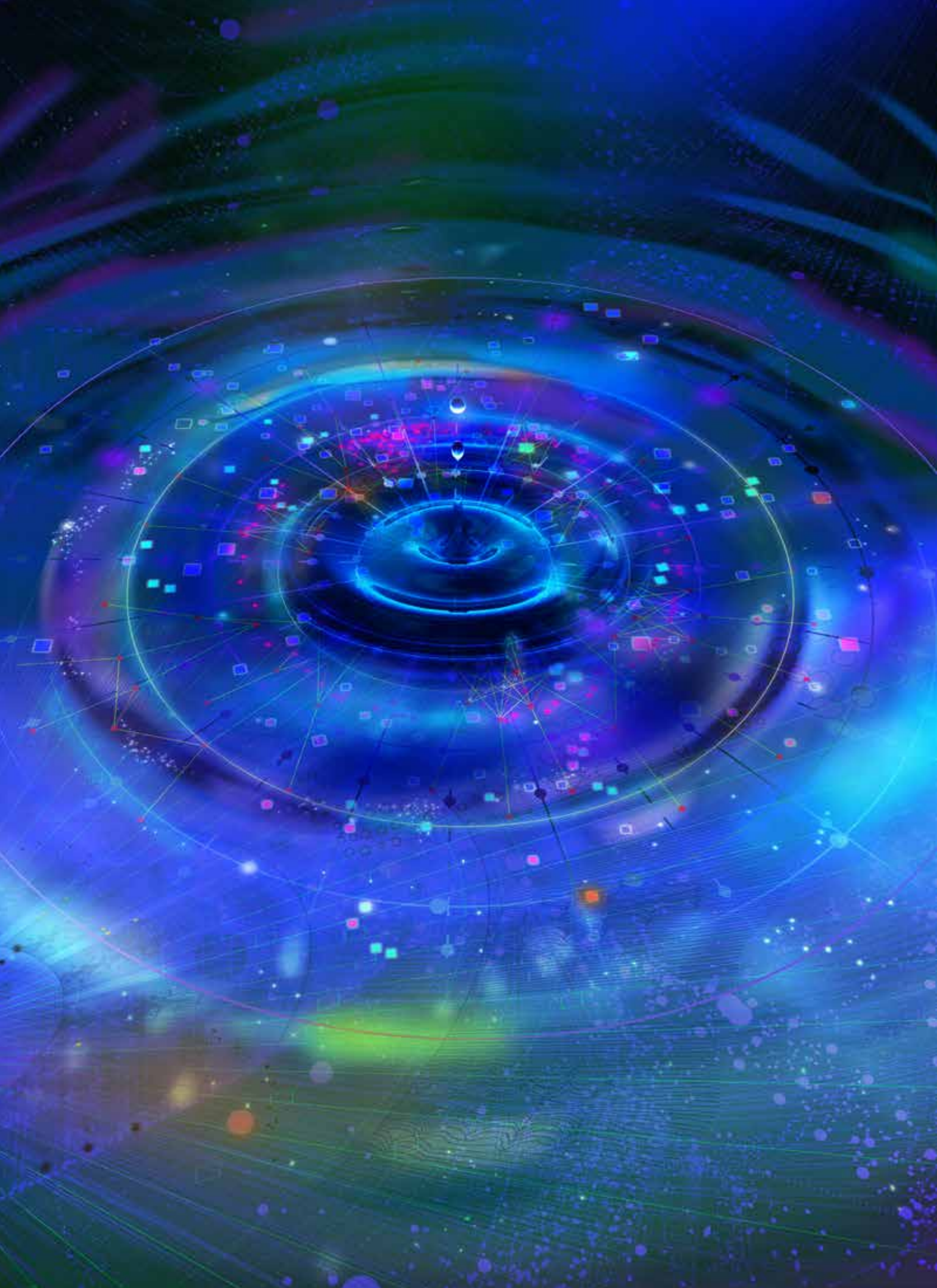
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# Minimum viable transformation

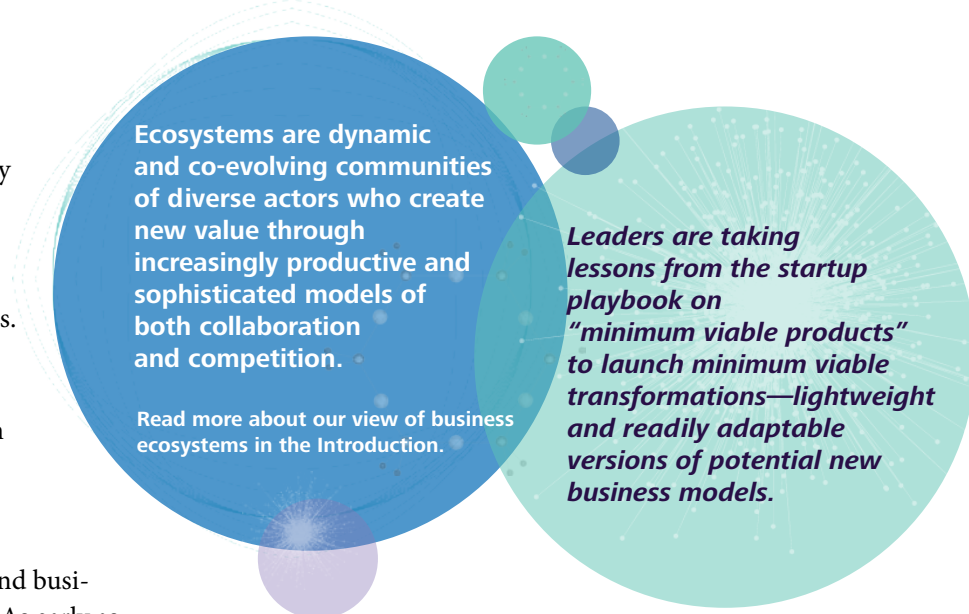
By Jacob Bruun-Jensen and John Hagel

## Overview

**B**Y now, top management teams have almost universally embraced the notion that their firms must innovate not only at the level of products and services but at the level of business models. Rethinking the fundamentals of how a business creates and captures value wasn't a priority in an era of slow change and stable industries, but during a time of rapid convergence of enabling technologies, customer desires, and business ecosystems, it now must be. As early as a decade ago, an Economist Intelligence Unit survey found a clear majority of executives saying that business model innovation would be more important to their companies' success than product or service innovation.<sup>1</sup> Today, it seems the exception to find a strategy session that does not include challenges to—and ideas for reinventing—existing business models.

Yet the dramatic shift toward understanding that business model transformation must be done hasn't been matched by an understanding of how to get it done. Excellent scholarship has defined what business models are and created a rich case file of innovative ones. But especially for established companies, the path to a new and different business model is far from clear.

This is why a trend we now see emerging is important to track. An analog to a proven approach in launching successful offerings—the use of “minimum viable products”—it has companies pulling together the essential elements of new business models into barely working prototype models, specifically



Ecosystems are dynamic and co-evolving communities of diverse actors who create new value through increasingly productive and sophisticated models of both collaboration and competition.

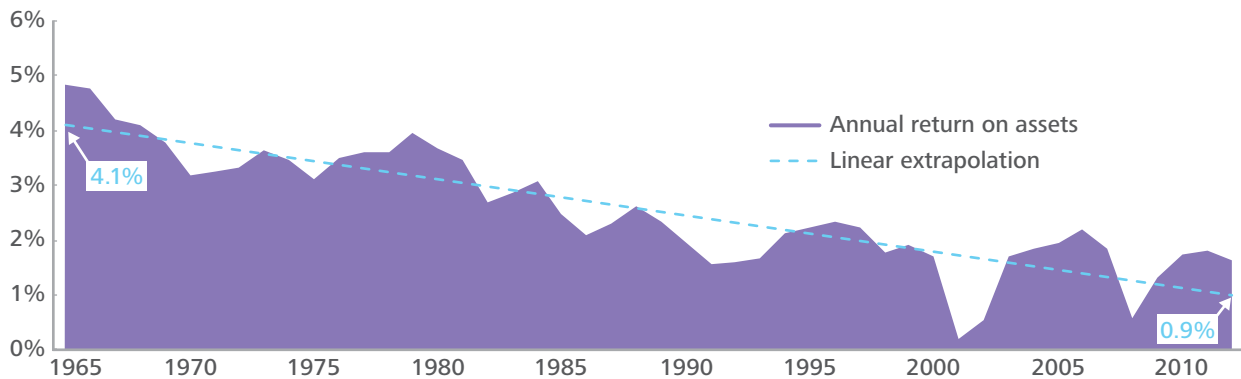
Read more about our view of business ecosystems in the Introduction.

Leaders are taking lessons from the startup playbook on “minimum viable products” to launch minimum viable transformations—lightweight and readily adaptable versions of potential new business models.

designed to test key risks. Tomorrow's most impactful business model changes are starting their lives now as *minimum viable transformations*.

## What's behind this trend?

Businesses now need to change more frequently and in more fundamental ways. As documented in the Deloitte Center for the Edge's *Shift Index*, they are experiencing intensifying competition, an accelerating pace of change, and growing uncertainty stemming from the increasing frequency of unanticipated extreme events.<sup>2</sup> All this adds up to mounting performance pressures. For evidence, look at economy-wide firm topple rates, growing stock price volatility, and serious erosion in the return on assets generated by US public companies—a 75 percent decline since 1965.<sup>3</sup> Across the past 50 years, a half-century of enormous technological advances, firm

**Figure 1: Declining return on assets for the US economy (1965-2012)**

Source: John Hagel III, John Seely Brown, Tamara Samoylova, and Matt Frost, *The burdens of the past*, Deloitte University Press, November 11, 2013, <http://dupress.com/articles/the-burdens-of-the-past/>; Compustat; Deloitte analysis.

Graphic: Deloitte University Press | DUPress.com

performance has been deteriorating, and the economy has become less predictable.<sup>4</sup>

But fast, large-scale change is enormously risky. Looking around for reassuring precedents of business model transformation at scale, we find precious few examples. On the contrary, we often hear the opposite—stories of audacious initiatives which flew too close to the sun and fell flat, at enormous expense. One often-referenced study concludes that over 70 percent of all major transformation initiatives fail.<sup>5</sup>

Some rays of hope, however, come from the growing understanding of what works in entrepreneurial settings. For example, serial entrepreneur (and now educator) Steve Blank has gathered important lessons and principles over the years into books like *The Startup Owner's Manual*. His advice contains such valuable truths as “No business plan survives first contact with the customer.”<sup>6</sup> Likewise, Eric Ries made important contributions with the work behind *The Lean Startup*. The praise accorded it by tech entrepreneur and investor Marc Andreessen—that it creates “a science where previously there was only art”<sup>7</sup>—applies broadly to the many thinkers now working to clarify the mysteries of new business creation.

One concept explored by both these authors has been embraced with particular enthusiasm: the idea of cobbling together a “minimum viable product.” What does that phrase mean?

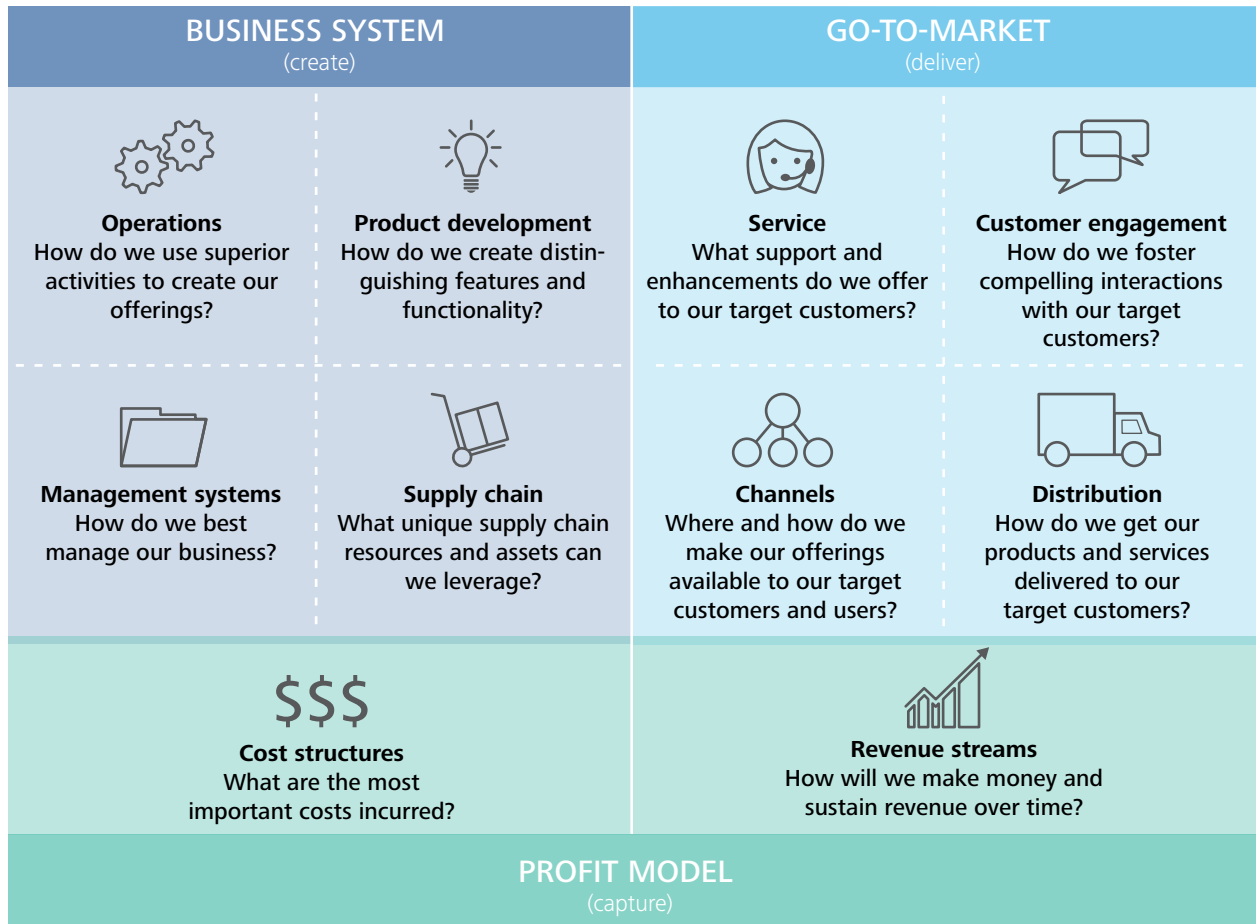
Telling the story of a successful venture he was part of, Ries paints a vivid picture. He recalls a time when he and his partners were out to launch a game-changing new product, and they broke all the rules:

Instead of spending years perfecting our technology, we build a minimum viable product, an early product that is terrible, full of bugs, and crash-your-computer-yes-really stability problems. Then we ship it to customers way before it's ready. And we charge money for it. After securing initial customers, we change the product constantly—much too fast by traditional standards—shipping a new version of our product dozens of times every single day.<sup>8</sup>

Minimal viable products, he makes clear, are like prototypes except that they are not simply passed around and tinkered with internally. They are immediately thrown at the market and subjected to trial by fire. The real revelation comes with his explanation of why a company would do such a thing. The minimum viable product, he explains, is all about identifying flaws and working to improve them as rapidly as possible. It must be specifically designed, not as a proof of concept, but to test hypotheses and gain knowledge about the biggest unknowns that could sink the new offering. The light bulb for management teams seeking to reinvent not only their products but their business models was that

**Figure 2. Business model elements and questions for validated learning**

Minimum viable transformation is, at its core, a strategy for gathering validated learning about individual business model elements, and how they interact and combine to form one cohesive strategy.



Source: Deloitte analysis.

Graphic: Deloitte University Press | DUPress.com

similar unknowns in business model construction—from minute changes to the operations elements to global restructuring of the go-to-market delivery strategy (see figure 2)—could be better understood by a similar process of iterative discovery. This discovery process must also be done with full disclosure to customers, who often prove surprisingly willing to join the journey of learning.

## The trend

When Intuit began its transformation from a traditional, desktop software business to a new, software-as-a-service business model, it was certainly looking at some risks. As a market leader in the financial software space, Intuit

didn't have the advantages that a smaller player might—it was less nimble and arguably less amenable to changing market conditions. But it is succeeding: As of this writing, more than half of its customers are now using its software online, and Intuit is posting all-time-high revenue numbers (\$4.5 billion, up 8 percent from 2013).<sup>9</sup> Intuit's management believes the company can continue its momentum to hit \$6 billion with \$5 EPS by FY 2017.<sup>10</sup> What was the secret to the successful transformation? According to co-founder and chairman Scott Cook, the answer is simple: By "acting small," and applying the principles of minimum viable product thinking to big business.<sup>11</sup>

True, Intuit's fundamental strategy didn't change. Its revenues come from the same

customer segments paying for the same essential solutions, leaving much of its value proposition intact. But Intuit's journey from shrink-wrapped desktop products to software-as-a-service required change and reconfiguration of many business model elements, from how it created value through a new hosting platform and new application technologies, to how it delivered value through new distribution channels and marketing messaging, and how it captured value through a subscription pricing model. Just as with the product itself, the innovation team had to understand where the transformation might go off the rails due to unforeseen problems, and find ways to reduce those uncertainties with early, minimally constructed versions of the change.

Business model transformations are not unprecedented in the history of commerce—they have always happened. Few people who read *National Geographic* today know that it was originally the journal of an explorers' club whose operations were funded by member dues.<sup>12</sup> Today, the enterprise (still a nonprofit) has revenue streams from advertising, books, video production, merchandise licensing, exotic tours, and cable-TV deals—which collectively dwarf the contributions of members who receive its iconic print magazine.<sup>13</sup> State Street Bank, founded in 1792, began operations as a full-service financial institution. Today, it has long since abandoned those once-core banking operations, and earns its money providing back-office transaction processing for other institutions.<sup>14</sup>

It is not even new that business model transformations must consider the evolution of a company's broader ecosystem. Consider the case of Charles Schwab about 20 years ago, when it transformed itself from a phone-based discount brokerage to a full-service financial institution by leveraging its ecosystem. This entailed integrating a broad array of third-party analytic tools and investment databases into its online platform and building a network of third-party advisors, allowing the firm to provide "anytime, anywhere" services while also benefiting others in its ecosystem.

What is new today is that such transformations must be considered and accomplished routinely—not as storm-of-the-century events. As management teams look for past practices to make part of their regular toolkit, they are reaching most for the ones that increase the speed and reduce the risk of large-scale change. The concept of the minimum viable transformation is bound to be refined further, and to spread.

## Implications

Clearly, there is an implication here. As management teams increasingly pursue business model innovation, they should instruct and empower their strategy teams to launch, and learn from, minimum viable transformations. To put a slightly finer point on things, they should consider the five principles outlined below.

1. **Learn how to learn.** The central idea behind a minimum viable transformation is to learn from a true field experiment what has to be fixed or put in place before the envisioned business model can succeed at scale. Remember Intuit's transformation to software-as-a-service. The Intuit transformation team reasoned that by "failing small," and in a controlled way, it might gain tremendously useful information from the market before choosing which capabilities to scale. The in-flight learning continues through subsequent iterations and trials, allowing the business to keep adapting as the broader ecosystem in which it is situated responds and reacts to its new business model. As Chuck Schwab said in 2013, "If you are an innovator, you have to make mistakes. But if your clients don't like it, you withdraw it quickly."<sup>15</sup>

In other contexts, this data gathering and analytic approach has been called "double-loop learning," a term coined by business theorist Chris Argyris.<sup>16</sup> Rather than just "detecting error" against a pre-defined plan, double-loop learning allows the underlying



plan (or the transformative strategy behind capability building) itself to be called into question.

2. **Pick up speed.** There's a reason things have to be kept "minimal." It's because the learning has to happen fast. All the more so because, as soon as a company has created any instantiation of the idea it is pursuing, it has shown its hand to competitors—who are then in a position to learn from the market's reception to it, too. Business literature is full of examples of companies who observed changing dynamics, understood pretty well how their ecosystems were evolving, and committed to major transformations—but simply allowed too much time to pass in planning all the details before actually making concrete moves.


Conversely, Capital One Labs has found success experimenting with different service and product prototypes. Today, the company performs over 80,000 experiments a year with a focus on gathering big data from such diverse sources as advertising, product, market, and, indeed, business model differentiation.<sup>17</sup> In their own words, Capital One Labs is looking to "push the envelope to explore The Art of the Possible." Capital One understands the speed of modern business, and has been recognized for their insistence on pushing the pace of their own transformation.<sup>18</sup>

3. **Embrace constraints.** There is a rich literature concerning the counterintuitive effect of constraints on creativity. Much evidence suggests they don't foil it; they fuel it. Perhaps most recent has been the celebrated concept of "jugaad" in emerging markets.<sup>19</sup> A Hindi word, it essentially means "overcoming harsh constraints by improvising an effective solution using limited resources." While no one would advocate putting an innovation team on a starvation diet, it's

worth noting that the very constraints we've been talking about here—minimal bells and whistles, and scarce time—can be the key to forcing extreme creativity. At the very least, they compel a focus on the goal—the need to learn and reduce risk around some key point—and force designers to weed out nonessential elements.

Many multinational organizations are finding success in resource constraints as they expand to emerging economies. Such constraints force companies to rethink their business models to not provide "less for less" but to retain the benefits while reduc-

Business model transformations are not unprecedented in the history of commerce—they have always happened.

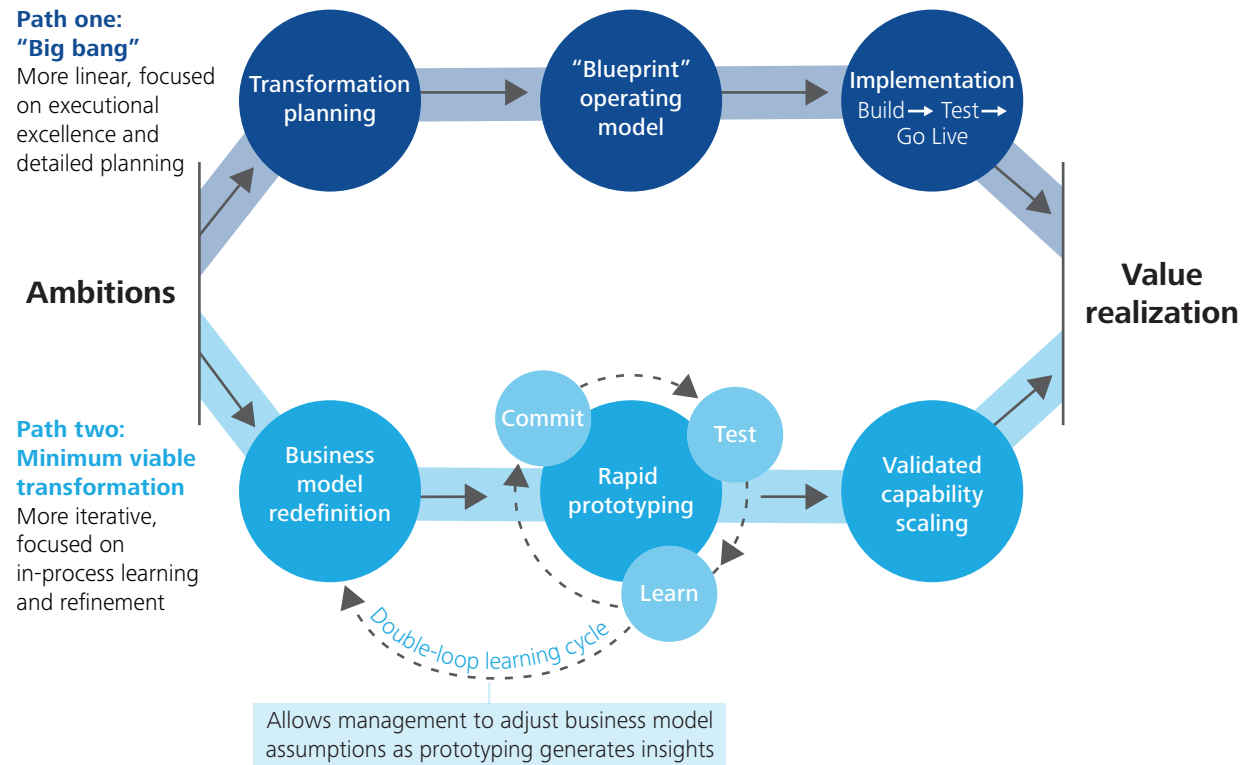


ing resource intensity. Such corporations have certainly struggled, but as the *Harvard Business Review* reports:

. . . the opportunities of the future on a street corner in Bangalore, in a small city in central India, in a village in Kenya... don't require companies to forgo profits. On the surface, nothing could be more prosaic: a laundry, a compact fridge, a money-transfer service. But look closely at the businesses behind these offerings and you will find the frontiers of business model innovation. These novel ventures reveal a way to help companies escape stagnant demand at home, create new and profitable revenue streams, and find competitive advantage.<sup>20</sup>

In the realm of business model transformation, there is an even greater benefit of harsh constraints. They give the design team a reason, right up front, to seek collaboration and cooperation from others who will be part of a new business model's

**Figure 3: Alternative business transformation pathways**



Source: Deloitte analysis.

Graphic: Deloitte University Press | DUPress.com

ecosystem. Ideally, these constraints can also give incentive for leaders to harness additional support from ecosystems of third-party participants who can provide complementary capabilities. It limits the number of in-house capabilities necessary for transformation and helps the company to mobilize innovation and experimentation from third parties seeking to participate in an emerging and evolving business model. Promoting ecosystem development from the earliest stages of business model transformation can help build collaborative, future-oriented logic into the very center of the new business; we expect that the most successful business models of the future will likely be those that have a significant ecosystem component.

4. **Have a hypothesis.** All transformation initiatives need a clear and simple articulation of both the need for change and the broad direction of change. This statement

of direction helps leaders to identify key assumptions driving the change effort (assumptions that need to be tested and refined each step of the way) and to develop metrics that will help the participants in the initiative to measure progress in the short term and to learn in real time.

To accomplish such learning, minimum viable transformation efforts must have feedback loops in place for the collection and analysis of market-validated learnings. Such analysis is only possible, however, with an initial hypothesis already in mind. In other words, fully defined assumptions, strategies, and tactics are necessary to know what is being tested in the first place. Transformation leaders should be particularly invested in the initial stages of transformation where those conjectures are laid out, before the data begins to flow in and confirming (or disconfirming) analysis begins to mount.

5. **Start at the edge.** Earlier we related the story of State Street. One thing it teaches is that beginning transformation at the “edges” of a business is a more reliable strategy for change than attempting to directly transform the core.<sup>21</sup> Any attempt to impose a fundamentally new business model in the existing core of the company is likely to invite resistance from existing power structures in the firm—often resembling antibodies rushing to oust an intruding virus—to come out in force. The core is where the bulk of the current revenue and profits are generated—who would want to take the risk of messing with the business model that supports the existing business?

Far better to find an “edge” of the current business—a promising new business arena that could provide a platform for showcasing the potential of a fundamentally different business model and that has the potential to scale rapidly. Crucially, the best edges will have the potential to become a new core, as the back-office capabilities eventually became for State Street Bank. Edges give the transformation team far more degrees of freedom to test and experiment with new approaches to evolving a fundamentally different business model.

Using these five key principles of minimum viable transformation thinking, companies may be able to bypass traditional barriers to transformation, ultimately allowing them to more effectively respond to mounting performance pressures.

## What’s next?

“Success is a powerful thing,” said Intuit’s Scott Cook. “It tends to make companies stupid, and they become less and less innovative.”<sup>22</sup> The big problem is that it’s a form of stupidity that, in the moment, can feel very smart. High-flying companies with so much to lose become cautious, their every move carefully considered. Indeed, a multiyear study of 526 public companies eligible for the *Forbes* “Most Innovative Companies List” determined that fewer than 50 companies had made significant jumps in their innovation premium scores between 2006 and 2013.<sup>23</sup>

The cure for too much risk aversion can’t be reckless abandon. The search for better knowledge of what works—of how to de-risk opportunities to the extent possible while increasing speed—will continue, because the imperative to transform will continue. Performance pressures will only continue to mount, and with them the need for more frequent and fundamental change by enterprises.

Translating the practice of using minimum viable products to the higher level of testing transformation ideas is part of this, but we don’t expect it will be the only part. Expect more “scaling up” of the approaches proving valuable to innovators in entrepreneurial settings and at the level of product and service innovation. The core principles of the minimum viable product—validated learning, rapid prototyping, frugal creativity—can help organizations limit the shortcomings of traditional transformation programs. Minimum viable transformations can reduce risk and increase speed, better enabling business model transformation at scale.

# My take

By Rosalie van Ruler Thaker

Rosalie van Ruler Thaker is one of six global specialists responsible for business transformation challenges “from the outside in” for Philips Lighting, the world’s largest manufacturer of industrial, commercial, and consumer lighting. Based in Malaysia, Rosalie coordinates multi-disciplinary teams driving end-to-end transformation initiatives in Asia, Africa, and the Middle East.

In the end, business transformation is about unlocking trapped value. In a place like Philips Lighting, which operates in a fast-changing industry, **we need to be pinpoint focused** to do that well. Where can we direct energy to start the kind of snow-balling change that naturally gathers momentum once kick-started?



The required diagnostic work happens **up and down the organization**. I’m doing it deep inside of Philips Lighting pretty much constantly, and it is simultaneously happening at higher levels as well. This top-to-bottom dynamic allows us to identify the right priorities for business transformation at Philips as part of a company-wide effort, initiated by our CEO Frans van Houten, called “Accelerate!”

We always start a change effort from an **outside-in perspective**, conducting detailed customer interviews, and then working our way back into the propositions and capabilities that will meet our customers’ needs. The best opportunities can be anywhere in our value chain and can involve partners from throughout the dynamic ecosystem of digital lighting. My job is to find the handful of critical levers that will drive a solution **end to end**, from the source of the blockage all the way back down to customer satisfaction.

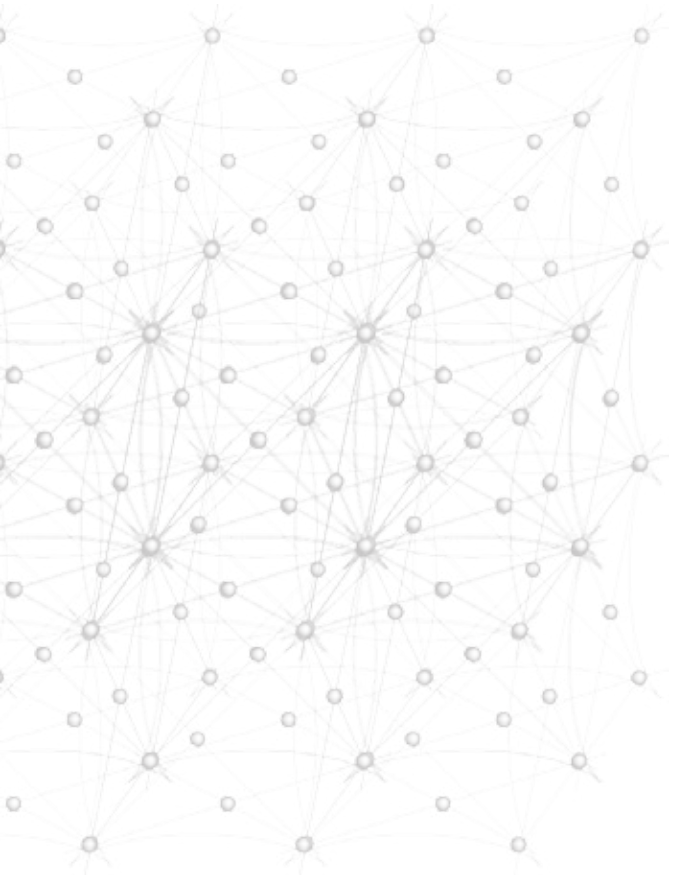
We launch transformation efforts with an intervention design, a hypothesis about the few lead dominoes most in need of a push. If our diagnostic work has been done well, getting those to tip in the right direction can often set off chain reactions of positive results. We seek to be opportunistic and view ourselves as catalysts. We also emphasize learning, to make sure that the organization can carry through the transformation after we leave and can initiate a new one whenever new challenges or opportunities arise. In effect, we send a pulse through the system and carefully monitor what happens. **If I can’t see the cascade beginning, I stop and rethink initial assumptions.** Hypothesize. Test. Learn. Adjust. And transform.

Ultimately, transformation isn’t something you do once, **it’s a continuous journey**. It means identifying impactful opportunities, and having the foresight to know when small initiatives can become big. It’s about providing that “something extra” to help Philips enhance shorter-term hit-the-numbers thinking with a vision of fast-evolving business environments. I’m always thinking about the “butterfly effects” of something that may look small today, but tomorrow, turns out to represent the future.

# Authors

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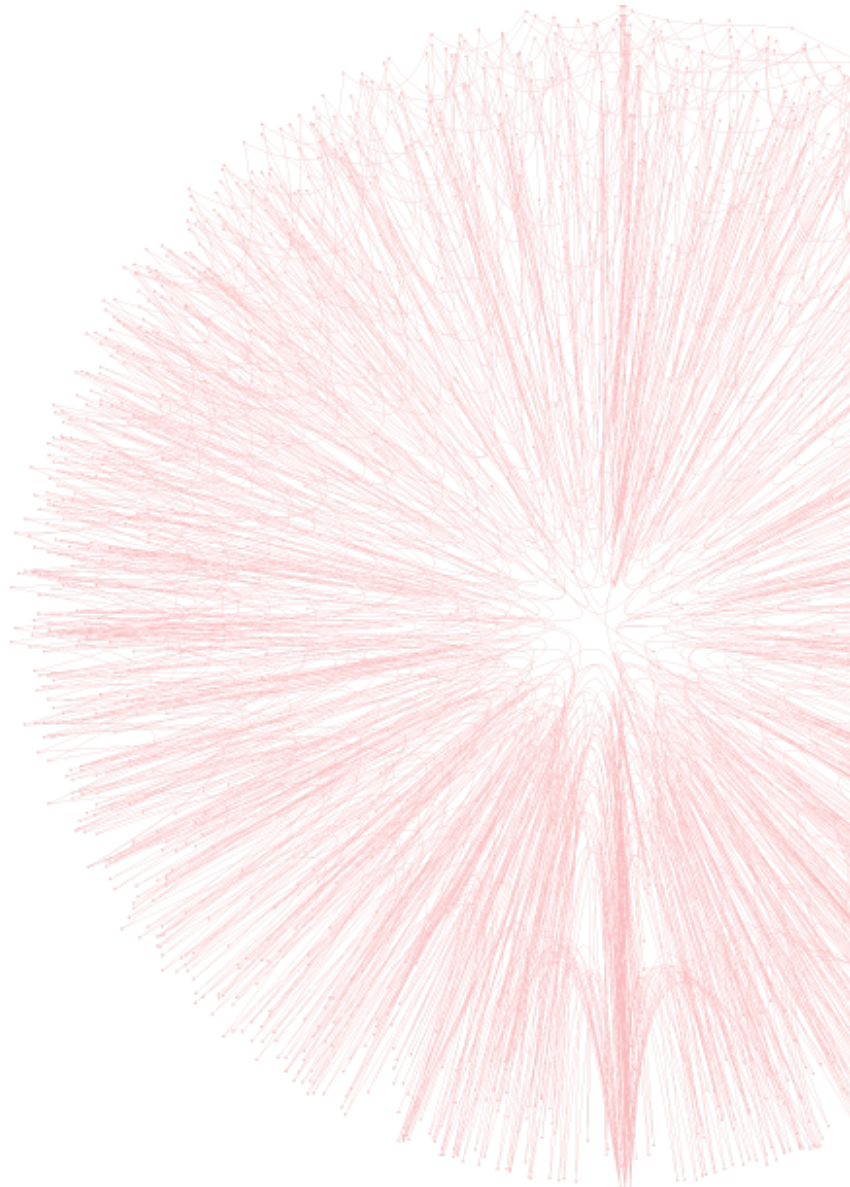
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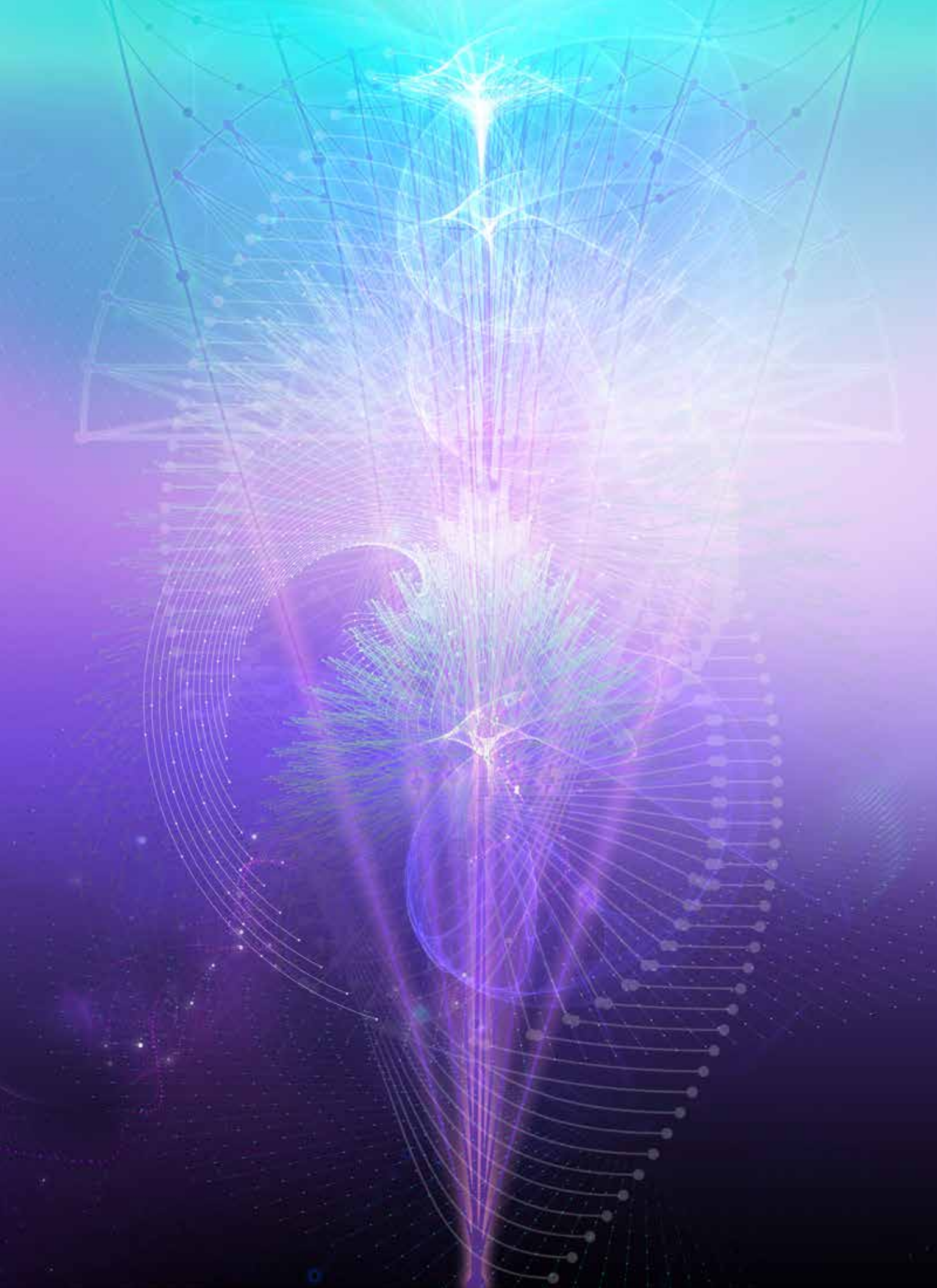


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# Beyond design thinking

By Larry Keeley

## Overview

**N**OW that many business schools and large corporations have grown enamored of “design thinking” perhaps it’s an important moment to examine this trend critically.<sup>1</sup> In this brief trend report the goal is to describe why design is in ascendance, with an emphasis on how to make it as powerful, effective, and transformational as it deserves to be.

In popular constructs, design thinking approaches a problem to be solved from the opposite direction typically taken by analysts. It begins by imagining a solution that does not yet exist, and outlines a pathway to realize it—instead of beginning with an assessment of today’s problems and seeking corrections to them. At its heart, design thinking seems self-evidently useful. Generate ideas. Build prototypes. Try many things. Build narratives about them. Test everything. Do more of what works. Show a bias for action. Shoot for the moon. Or maybe even Mars. At that level, who could possibly disagree?

But often proponents of design thinking take it further. They make it a panacea. They think it “fixes” the dry, overly rational planning approaches that firms use to optimize their offerings around predetermined and deeply analyzed market segments. In this assertion, the fans of design thinking are half right: Conventional approaches to planning are overdue for reinvention. It’s the other half where their enthusiasm can be overdone. In the way “design thinking” is popularly described and delivered, it is too superficial to truly deliver on such grandiose expectations.

***Design thinking without deep analysis and synthesis can be reckless. Leading companies are seeking to do both recursively and in integrated new ways to manage complexity, derive insights, and catalyze innovation in fast-changing ecosystems.***

**Ecosystems are dynamic and co-evolving communities of diverse actors who create new value through increasingly productive and sophisticated models of both collaboration and competition.**

Read more about our view of business ecosystems in the Introduction.

## What’s behind this trend

Last year the Design Management Institute rigorously selected 15 design-centric publicly traded companies. Those that made the cut include Apple Inc., Coca-Cola, Ford, IBM, Intuit, Procter & Gamble, Starbucks, Nike, and others. These companies, which use design strategically and integrate it through their business processes, tend to grow faster and have higher margins than their competitors—the identified companies’ returns were 2.28 times larger than the S&P’s returns over the previous decade.<sup>2</sup>

## THE TREND IN A NUTSHELL

“Design thinking” has been increasingly embraced by the world of business and business education over the last decade. During a time of intense change, this is a positive development. It helps firms develop the courage and use tradecraft that moves beyond analysis to embrace synthesis as well. This is part of what it takes to help firms commit to building something bold and newsworthy, instead of only seeking the tactics needed to better sell what is already known.

### What many people are missing

Too often advocates of “design” overreach, regarding it as an elixir that can somehow transform conservative companies into creative ones. In the most egregious cases, advocates suggest design thinking can somehow replace nearly all other forms of analysis, planning, and strategy.

### What great leaders should know and do now

The power of design is real and increasingly important. It can help firms build breakthroughs and change industries, but it has to be balanced and integrated with other skills and capabilities. This is especially true now because there is a parallel revolution in how to get new insights from analytic techniques—and no one should ever jump right into innovating without first producing some set of profound insights first that can be the basis for an innovation team to do the hard work of building a breakthrough.

Put simply, analysis without synthesis is predictable and commonplace. Design thinking without deep analysis is reckless. The savvy leader now seeks to do both, recursively, in integrated, even dazzling new ways.

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Of course, any good academic would note that these companies are likely to be good at many things besides design, so this correlation is not causation. A deeper piece of research was led by my colleague Brian Quinn as a part of our work to author *Ten Types of Innovation*, where he was able to definitively establish that among 138 publicly traded companies generally agreed by analysts to get a stock premium for innovation, there is a very strong correlation between the number of types of innovation they use in their most valuable platforms and their stock performance above the S&P.<sup>3</sup> We conclude that more sophisticated design goals, when executed effectively, yield bigger payoffs.

Used effectively, design and designers truly do have the power to transform nearly everything: concepts, brands, categories, markets, technologies, materials, logistics systems, experiences, industries, even governments. There are structural reasons why design is now enjoying a new and deserved renaissance. Stripped to the bedrock, here are the specific skills shared by great designers and good design teams.

### Designers:

- Conceive and **make stuff**
- Make things, places, and messages **distinctive**
- **Empathize** with people in situations
- **Stand in the future** and prototype a better world
- Imagine ideal usage **experiences**
- Sense and **value what is new**
- **Grapple with ambiguity** more comfortably than most
- **Systematically test and iterate concepts** until they get them right
- **Simplify and clarify** information
- Dramatically **affect preference and value**

Scan this list carefully. You may discover that each of these qualities is rare, valuable, and particularly relevant when change is in the works or in the wind. Next, add the possibility that we humans now live in the greatest time of change in the history of our species and you immediately can sense why the value of design and designers is ascendant.

Notice that none of the rationale so far resorts to *market* arguments. The argument is not that you simply must design your smart-phone, insurance plan, office chair, coffee machine, or hotel well for it to have a chance to be appealing to customers who have many choices in modern, heavily contested markets. That should be obvious. The point here is actually more important and subtler: In the world right now we are *changing the rate of change*. So it's incredibly valuable to have the skill to imagine a better world, make it tangible, build narratives about it, and then work through the dozens of obstacles that anything new faces throughout its development. And all the more so in a world where connectivity, collaboration, interdependence, and user engagement all converge to build modern integrated ecosystems where we formerly thought of industries.

So with all the change in the wind it would be great to simply pile on the popular trend and say that all companies would be better off if they used more design thinking. Sadly though, in the simple ways these ideas are now routinely described and taught, design thinking tends to both over-promise and under-deliver.

Great designers have the skill to build *gossamer cathedrals*: beautiful visions made of nothing but art techniques, but with the power to help those of us with little or no imagination to vividly experience a world that doesn't exist yet. When this is done to reimagine something valuable, often a single simple story and a prototype can take the place of hundreds of PowerPoint charts and slides, filled with complex arguments. Like a great poker hand, this can be a lay down: Share it with a senior executive team and it immediately gets people to respond to a concrete idea. They may love it,

hate it, or want more information, but since it is clear and tangible, they do not have to waste any time trying to imagine it.

But is this "*design thinking*"? Well let's take it apart:

- First, this specific part, the prototype development where much of the magic lies, is less about thinking than great tradecraft and hand-skills. Well-trained designers and innovators may now have to master as many as 60 such methods.

Used effectively, design and designers truly do have the power to transform nearly everything: concepts, brands, categories, markets, technologies, materials, logistics systems, experiences, industries, even governments.

- Second, it should be done inside a team that integrates many forms of thought and action—explicitly using advanced forms of both analysis and synthesis.
- Third, it may take weeks of climbing a confusion curve before the team has even a small chance of coming down the other side to craft something simple and compelling.
- Fourth, the individuals on a team with the power to do this kind of work are almost never all designers, but instead have many diverse backgrounds and specialized skills.

So it's painful when this incredibly valuable skill is represented as if designers do all this stuff routinely and reliably. That's unfair to both designers and to the other professionals who have learned to love and leverage the unique skills of design and designers. The real story is far more important than this superficial label.

## The trend

### Standing in the future: Seeing the world that is coming

To get a glimpse of at least one way this future world will play out, let's leave the abstract and go to the specific. Late in 2014 a firm located in Los Angeles made waves by declaring that they have built an entirely new way to improve how fans watch, or how professionals coach and play sports. Second Spectrum has only been around for a little over a year at this writing, but their young team of 30 people collectively has decades of experience in sports, sports analytics, big data, design, computer science, and management.<sup>4</sup> They also really get the world of data visualization. Their leaders have won multiple awards at the MIT Sloan Sports Analytics Conference and they have conceived of some of the newest advances in “sabermetrics,” the abstruse world first popularized in Michael Lewis’s book *Moneyball*, later made into a popular movie.<sup>5</sup>

To understand how they do this, look at this photo of one of their products, taken from the Second Spectrum website:

Figure 1. A Second Spectrum game



Source: Second Spectrum. Reprinted with permission.

What you are seeing here is their realtime ability to illustrate how a coach might improve the playing skills of Chris Paul, the player shown with the ball, highlighted by their software in bright red. The software shows that Chris could shoot the ball from his current position, and using big data, they calculate that

his odds of getting the resulting two points are about 45 percent. Alternatively, he could pass the ball across the court (and over *three* defenders!) to his colleague Matt Barnes for a three-point shot, but this would have a lower chance of success, only 35 percent. Or, he could pass it to Blake Griffin on his left, with the worst odds of successfully making the bucket. Highlighted in green is his best option: tossing the ball to the right, where J. J. Redick has a 43 percent chance of making a three-point shot, which is equivalent in terms of point value to a 65 percent chance two-pointer. Notice that the software immediately highlights that best option in green, the other three are yellow. In subsequent frames, the software also shows how these options, and their corresponding expected values, change as the play progresses.

In general, the Second Spectrum capability distills six distinct capabilities, including an amazing ability to dynamically model “large-scale spatiotemporal data” into software tools that transform how we can better understand a complex, fast-moving game.<sup>6</sup> As represented by the icons in figure 2, what they have learned to integrate is:

- **Massive data sets**, so that they can find patterns from past actions
- **Analytic models**, so they know what to pay attention to and what to track
- **Real-time visualization**, so that they are able to pick the moments that matter
- **Close examination of details**, so stuff that matters is in color and stuff that doesn't is grey
- **Graphics overlays** that highlight in color and layer data that is critical in the moment
- **Storytelling** methods that help coaches coach, players play, and fans be smarter viewers

The team at Second Spectrum developed these capabilities in large part because they loved the ideas and saw them as intellectually compelling. Their plan was to develop them fully over the next five to ten years. Of course

Figure 2. Second Spectrum's six distinct capabilities



Source: Second Spectrum.

they could not have anticipated the fascinating series of events that transpired when Steve Ballmer bought the LA Clippers for a reported \$2 billion in cash—nearly four times the prior highest price paid to buy an NBA team.<sup>7</sup> Then Ballmer dropped by to visit their LA lab. The Second Spectrum team showed their wares and described their five-year plan. Steve, seeing the value in the capabilities, immediately urged them to apply all their capabilities to the Clippers and accelerated their developmental timetable.<sup>8</sup>

This is what happens when you get innovation right: It transforms entire fields, often much faster than anyone anticipated. Think of the speed with which smartphones changed telephony, Uber changed the urban taxi market, Airbnb changed the hospitality market, and Twitter changed the ability of repressive regimes to control how their populations communicated with one another.

To fully appreciate what Second Spectrum has shown us we have to imagine it as the lead edge of a large plow. Imagine a world where we don't just use such elegant computational firepower for sports. After all, none of us should be surprised when some of the most advanced process innovations are first applied by billionaires, spending their own money, on their hobbies—typically they can do so very easily and with no approval committee!

But the rest of us should imagine something similar will be used to help medical teams treat complex patient conditions with integrated care strategies. Or imagine seeing your personal or family finances this way—including simplified visual suggestions for the simplest

changes that would make the biggest impact in helping achieve family goals. Or perhaps we use a similar capability to fully understand changing climate conditions with less ambiguity, more clarity, and absolutely no political spin. Capabilities like this should, by all rights, transform nearly every field, from agriculture to education, transportation and logistics, investments and financial operations, weather prediction, travel and hospitality, political campaigns, or even warfare, whether real or cyber—even those “wars” declared against poverty, drugs, extremism, or terror.

## Implications

### Integrated analysis and synthesis: The new frontier

So is this *design thinking*? Not really, though you sure couldn't have 10 percent of this impact without effectively using design, especially data visualization methods. An effective way to understand what Second Spectrum has pulled off is that they are harnessing many specialized skills, all with elegant integration, so that their genius ideas fall into the background and they help us regular folks *make it easy to do hard things*. At a larger level, this illustrates a critical principle of 21<sup>st</sup> century innovation: Effective innovations today are far more about *elegant integration of the known* than about the primary invention of the new.

Take a look around and you'll see evidence of this new integration everywhere. Consider the game phenomenon from King called Candy Crush. Perhaps some of you

have invested more hours in this particular game than you care to admit. Have you ever asked why?

It's because the design team has used the behavioral finance discoveries typical of the best Vegas casinos, plus beguiling design qualities, clever animations, and great ways to tease and engage players and get them to obsess about rising through ever more demanding skill levels—all delivered in the smartphones we now have in our pockets. All that seems innocent enough: just another time wasting game, no?

Sorry, you may be missing the point. This is the first game to be rated No. 1 globally and simultaneously on Android, Facebook, and iOS platforms.<sup>10</sup> It was played over 151 *billion times* in the first year since it was launched on smartphones!<sup>11</sup> There are well over 97 million daily users,<sup>12</sup> fully 30 percent of whom say they are “addicted.”<sup>13</sup> The game makes money through in-game sales: You're stuck on a level, you're about to die, at which point the game will prevent you from playing for a couple hours... or, for about 80 cents, you can get five more moves, crush those candies and advance to the next level.

A shockingly large number of people go ahead and spend the 80 cents. So Candy Crush takes in \$1,005,806 per day according to analysts,<sup>14</sup> while another popular smartphone game, Angry Birds, the most downloaded game of all time, takes in only an estimated \$10,661 daily.<sup>15</sup> *Gee, no wonder those birds are mad...*

And don't assume that this integrated approach to industry transformation is only occurring in the United States. Chinese retail firm Alibaba—best imagined as a mashup of eBay, Amazon, United Parcel Service, and Facebook—aims to cater to the evolving needs of China's massive and growing middle class. In 2009 they created a holiday, Single's Day, kind of a Valentine's Day culturally adapted for China on November 11 (11-11 = lots of “singles,” get it?). On that day people who were single gave each other gifts through Alibaba,

which used advanced technology to help people give their nice gift to their single friend at either 11:11 a.m. or 11:11 p.m. on the dot. In 2013, Alibaba became the first firm in history to sell and deliver \$6 billion in goods and services on a single day.<sup>16</sup> This included over 70,000 room vacuum cleaners, though why that is somehow a romantic gift remains a mystery.<sup>17</sup> Less mysterious, though, is that Alibaba is taking many well-known global advances in e-commerce ecosystems, and using both analysis and synthesis to cater explicitly for life in modern China.

All of these examples share one property: They fuse together insights that come from sophisticated analytics, with experiences that are brilliantly designed to be easy, smart, convenient, and entirely understandable.

## What's next

### The road ahead: What's next for firms that want to lead their fields

So what do today's leaders need to take away from the steady, welcome, and important ascendance of the design field? Remember that the dumbest way to simplify anything is to throw out all the hard parts. Three explicit principles are news you can use and ideas you can adapt:

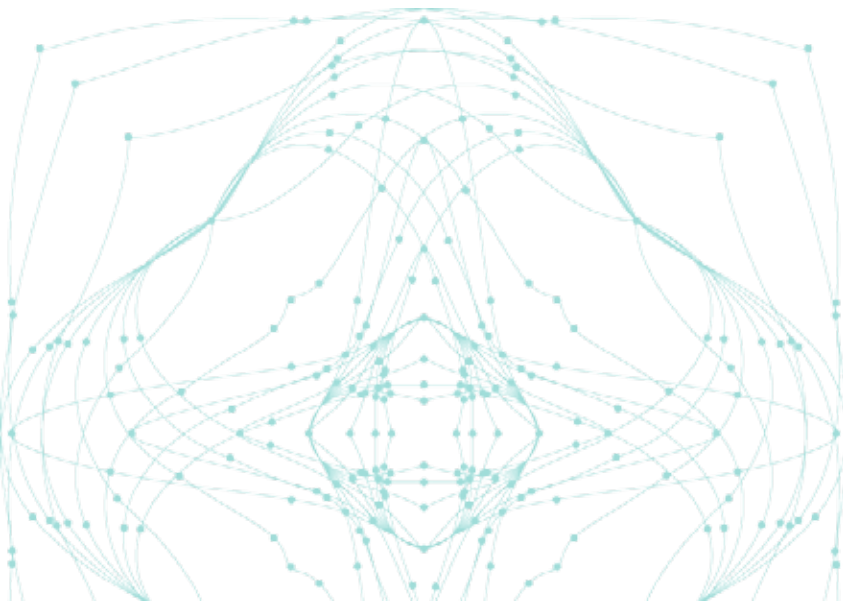
1. **A key today is to use information deftly to manage complexity**, and you inherently do that with many specialized skills working effectively together.
2. **Great design is a critical catalyst and accelerant to the overall advance you seek**, and this stems largely from designers doing a good job of integrating complexity into an elegant and even delightful experience.
3. **But you should avoid labeling this design thinking**, because such a label will obscure the deeper truth: What works today is deep, informed analysis seamlessly synthesized into coherent, beautiful solutions.

You will likely get to breakthroughs sooner if you do not assume that “design thinking” is, somehow, the *one* mystery ingredient you are missing. We make progress when we break things down into amazing insights and then build them up in unanticipated and insightful ways. This means that if your teams are too driven by analysis, you almost certainly need to get past that set of tools alone so that you also cherish and leverage synthesis. Still, in all probability your issue is not only that you need more and better synthesis, you almost certainly need more and better analysis too!

One surprising fact may help snap this into focus. Take all the data that exists in the world right now, and arbitrarily label that 100

percent. Shockingly, 90 percent of that vast data archive *did not exist only two years ago*.<sup>18</sup> This helps explain why nearly all the innovations we love, from Google, to Wikipedia, to GPS systems, smartphones, Amazon, or Uber are derived, in part, from or are utterly dependent on new forms of analytic tools. Add liberal amounts of design on top of these skills and you will get your products to be platforms, your offerings to become deep solutions, and your industry to evolve into an ecosystem. That’s when you’ve done enough innovation to change the world.

When you get all the parts right, it will be the hardest work you ever loved.



# My take

By *Nicholas LaRusso*

Nicholas LaRusso, MD, physician scientist and practicing liver specialist, is the founding medical director of the Mayo Clinic Center for Innovation—the first academic medical center to hire designers as full-time integrated members of the practice.

When I became chair of the Department of Medicine at the Mayo Clinic in 1999, innovation was a board-level buzzword, and not much more. In the 16 years since, we have elevated innovation to become a central tenet of Mayo's broader vision, right alongside excellence, respect, and teamwork.

The drive to innovate is nothing new for Mayo. In the late 1800s, the Mayo brothers were the first to see the value of coordinating teams of specialists to deliver integrated patient care. Inspired by this vision of synergy, I assembled a similarly diverse set of doctors, designers, and project managers to drive our innovation efforts in the Department of Medicine. We called it SPARC (see-plan-act-refine-communicate), and adopted the goal of **transforming the experience and delivery of health care** by combining the insights of this interdisciplinary group. This was our first true "lab" where we could test hypotheses, observe interactions of patients and providers, and develop insights to find new ways to provide care.

Why designers? Because they saw old problems in new ways, often forcing us to place the immediate needs of our patients—the humans whose lives we were attempting to improve—at the heart of the innovation challenge. This human-centered perspective on organizational transformation remains crucial to our day-to-day operations.

Importantly, however, our model never relied on designers as a cure-all: We prioritized **co-creation and integration** across the many areas, and many experts, of Mayo. Two particular steps proved especially central to establishing the Center for Innovation (CFI) at Mayo as the hub of our ongoing innovation efforts.

First, we designed a state-of-the-art, downright cool home base at the heart of Mayo's outpatient facility to serve as a **physical magnet for innovative energy**. We have always kept our doors wide open, proving to the rest of Mayo that we were the Center *for* Innovation, not the Center *of* Innovation. Innovation was happening everywhere;



it was our job to help provide structure and direct energy.

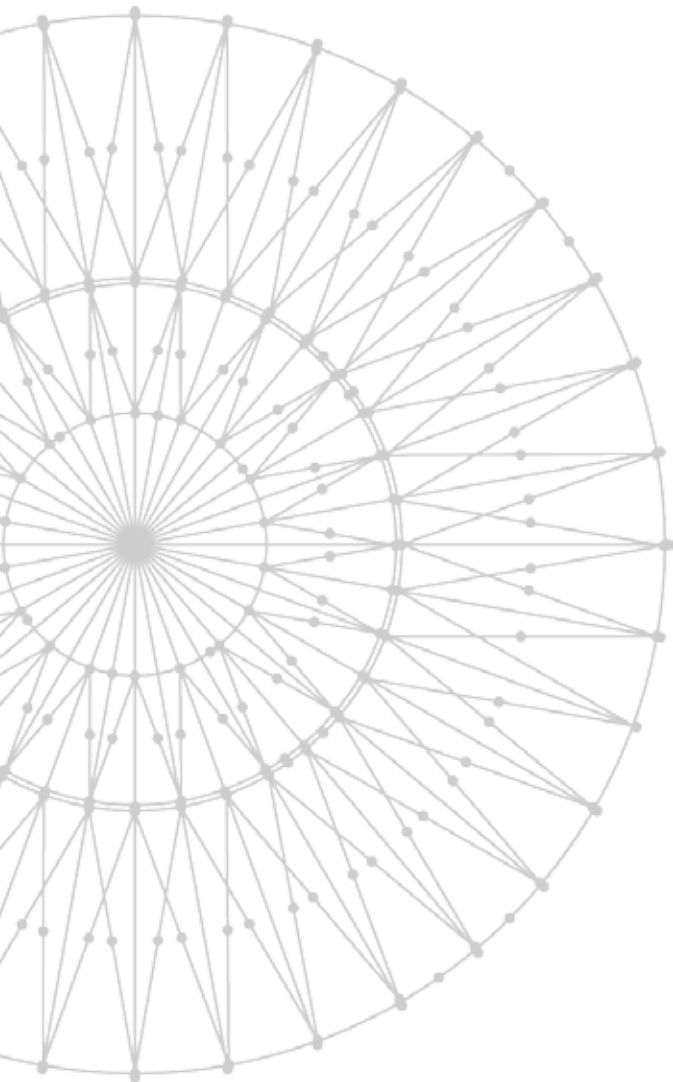
We also launched the Connect-Design-Enable (CoDE) program, an internal grant competition open to all employees with ideas for improving Mayo. **The program provides grant winners with both dollars and CFI personnel to implement ideas using human-centered design.** This program has integrated the CFI with the rest of the practice, while driving advances in patient experience, situational awareness, and even medical technology.

Innovation at Mayo takes people who aren't comfortable with the status quo, who can live with ambiguity, and who enjoy defining problems and coming up with solutions. We integrate them with other internal and external partners and give them the tools required to co-create the future. We know that these people can be designers, doctors, or even experts outside of the clinic's walls. With the right mindset and support, these diverse and carefully curated groups of innovators are transforming all aspects of the design and delivery of health care, right down to its human core.



# Author

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Meanwhile, to meet demand for design thinkers, business and design schools have established integrated business and design programs. Many have been inspired by the success of the Stanford Hasso Plattner Institute of Design, also known as the "d.school," which enrolled 100 students in 2005, its inaugural year, and now enrolls 700 students a year. See: Venessa Wong, "World's best design schools," *Bloomberg*, September 2009, [http://www.bloomberg.com/ss/09/09/0930\\_worlds\\_best\\_design\\_schools/1.htm](http://www.bloomberg.com/ss/09/09/0930_worlds_best_design_schools/1.htm), accessed March 2, 2015, and Melissa Silverman and Rachel Emma, "Forget B-school, D-school is hot," *The Wall Street Journal*, June 7, 2012, <http://www.wsj.com/articles/SB10001424052702303506404577446832178537716>, accessed March 2, 2015.

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