The new age of ecosystems

Redefining partnering in an ecosystem environment: Healthcare ecosystem edition

IBM Institute for Business Value

Executive Report

Healthcare and Life Sciences

Partnering across ecosystems

IBM Healthcare and Life Sciences is creating a smarter, more connected healthcare system that delivers better care and empowers people to make better choices. In addition to the company's investment in health technology research and innovation, IBM's healthcare solutions and consulting enable organizations to achieve greater efficiency within their operations, collaborate to improve outcomes, and integrate with new partners for a more sustainable, personalized and patient-centric system focused on value.

Creating smarter, connected healthcare

Ecosystem has entered the vernacular of everyday business. Terms such as "business ecosystem," "collaboration ecosystem" and "economic ecosystem" are now being used universally as people seek to articulate the future of business and customer interactions. But an ecosystem reflects much more than a network, and it differs fundamentally from a market. While ecosystems will transform much of the way the healthcare and life sciences industry operates today, it is important to understand why ecosystems are beginning to emerge now, how they differ from traditional markets, what new incentives will emerge and how individual organizations can respond. This report addresses each of these crucial aspects and provides a roadmap for organizations to pursue new types of partnering arrangements to navigate and thrive in a new age of ecosystems.

Executive summary

New technologies are making business more intelligent, fast and scalable. As the world becomes more connected, organizations will encounter increasing difficulty competing as solo entities. In today's era of exponentially increasing data and information, and ubiquitous digitization, the new economic equation favors transparency and collaboration.

In search of innovation, more than half of CxOs expect to open up their enterprises—bringing down barriers to extend collaboration both inside and outside their organizations.[1] As a result, the focus of innovative organizations is likely to shift in the near future from organization-centricity to one that is ecosystem-centric. An ecosystem can be thought of as a complex web of interdependent enterprises and relationships that creates and allocates business value.

Ecosystems are broad by nature, potentially spanning multiple geographies and industries, including public and private institutions, as well as consumers. For healthcare, the ecosystem is the convergence of otherwise separate entities, such as life sciences organizations, providers and payers, as well as social and government agencies (see Figure 1).

Executives will be challenged to find new avenues of partnership to capitalize on the opportunities presented by the emergence of new ecosystems. The most radical shift for organizations may be, according to the 2013 IBM C-Suite Study, a new view on what it means to collaborate with customers or consumers.[2] In the future, organizations will begin experiencing a duality in their strategies. They will continue to focus on their core businesses in and around their primary industries. But they will also likely seek additional growth opportunities outside traditional sources, capitalizing on particular functions or activities that constitute their true competitive advantage. As a consequence, continuing specialization will drive healthcare industry convergence.[3]

73% of healthcare consumers demand improved response time

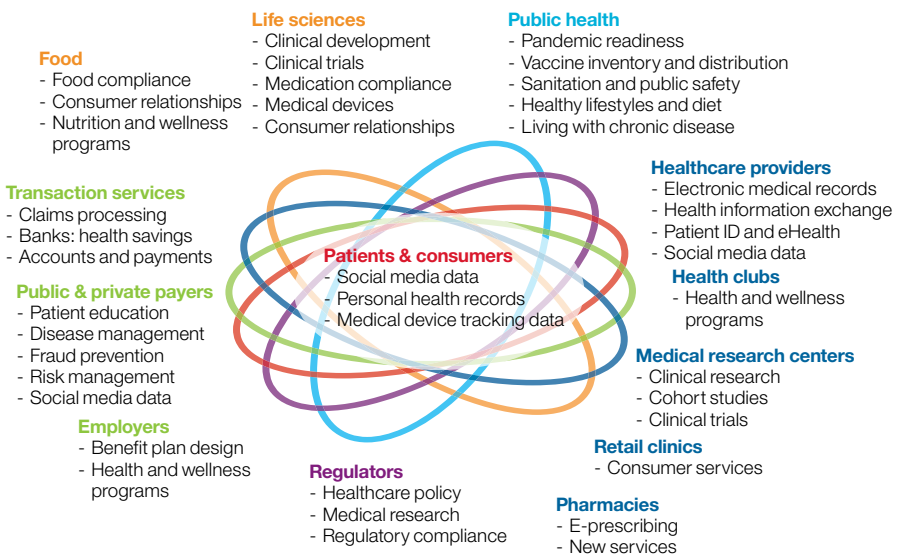
62% of healthcare organizations are looking to focus on the individual needs of their consumers

84% of healthcare organizations are working to create consistent consumer experiences

In this report, we will explore how ecosystems will change the nature of business activities, expand capabilities and enable experiences in healthcare and life sciences beyond anything possible today. We will demonstrate how orchestration enables mutuality and cooperation, and how value creation and capture will fundamentally differ in ecosystem environments. We will see how different strategies are required for differing business environments. And we will explore how leading healthcare and life sciences organizations are already embracing ecosystems today.

Figure 1

An ecosystem reflects interaction and collaboration between participants



Source: IBM Institute for Business Value.

Business is changing

Global forces impacting businesses, in particular demographic and lifestyle changes, increased competition and regulations, and shortages in resources, is changing the healthcare and life sciences industries.

In addition, the maturation of technologies, such as social, mobile, analytics, cloud, 3D printing and nanotechnology, are rapidly shifting the competitive landscape in healthcare and life sciences. Emerging technologies create an environment that is connected and open, simple and intelligent, fast and scalable:

- Connected and open, as indicated by the proliferation of mobile devices and Internet access, necessitating new levels of trust and accountability with partners and consumers
- Simple and intelligent, as advances in technology continue to reduce and mask complexity and organizations leverage analytics and insights to drive decision-making
- Fast and scalable, as transactions increase in number and frequency and the cost of collaboration inside and outside the organization continues to decline.

The rapid development of new technologies, greater openness and escalating customer expectations are converging into what is becoming a perfect storm of fundamental business change. People have begun to experience compelling, individualized and integrated experiences in some areas, such as telephony, and are now expecting similar experiences across all their interactions, including healthcare. Most organizations are not set up to deliver these types of experiences and, as a result, are often faced with consumer frustration and, at times, anger. At the same time, customers know that technology is already available to make such experiences possible—cloud, analytics, mobile and social. The stage is set for a show-down, and those organizations that can rise to the challenge are the ones that will be left standing at the end.

"The industry is witnessing increased competition and accelerating change due to on-going technology revolution."

Research Leader, US Medical device manufacturer

"I believe that in this era each patient requires adapted treatments, drugs and therapies tailored to his or her unique disease and medical traits. So we must work toward bringing in advancements."

Research Leader, UK Pharmaceutical Company

Customers expect simple, sophisticated experiences

Experience with new platform technologies and business models is dramatically increasing both the expectations and empowerment of consumers. They are developing an insatiable desire for compelling experiences across all areas of life. Increasing technological sophistication is leading to more information to consumers, allowing more choices and enabling greater opportunity to influence organizations, as well as higher expectations of integrated and sophisticated—yet simple—experiences.

In response, organizations are increasingly pressured to play catch-up and meet the next generation of consumer demands by providing integrated, customized experiences. Today, 73 percent of healthcare consumers demand improved response time, while 62 percent of healthcare organizations are looking to focus on the needs of the individual. And 84 percent of healthcare organizations are working to create consistent consumer experiences (see Figure 2).[4]

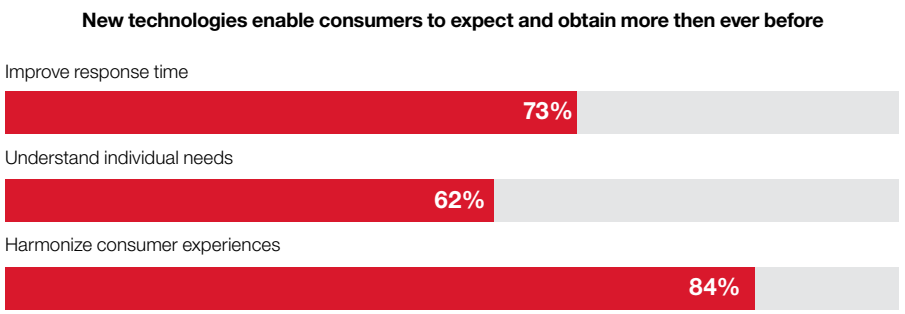
StayWell Heath Management, for example, delivers employer-provided wellness programs to engage employees across multiple facets of their personal wellness. It leverages analytics, social, and mobile technology to generate progress-based incentives to improve individuals' wellness. The offering integrates with various quantified-self offerings and provides coaching to help employees meet their goals. They report that 79 percent of clients (the employers) report improved overall health of their population.[5]

The StayWell example demonstrates that, to create an opportunity to provide a personalized experience in line with consumer expectations, organizations must embrace data and analytics to underpin experience and pursue social media to promote collaboration. They will also need to reduce barriers to engagement and partnering.

Pfizer and EMD Serono partnered to provide a multiple sclerosis coordinated services offering for patients taking Rebif. The platform provides education, support, and peer-advice to engage patients and assist them in managing their MS. These wrap around services provide a structured support system and vetted resource for patients dealing with a challenging diagnosis. This program allows patients to have a fully coordinated care experience and a true partner in their treatment.[6]

Figure 2

The next generation of consumers demand similar experiences across all aspects of their lives



Source: Digital Reinvention Executive Survey - Healthcare n=107 and IBM C-Suite Survey - Healthcare n=93

New ecosystems are emerging

Leading executives already recognize that speed and agility will be key determining factors of success in the digital, consumer-driven economy. As change will only accelerate, experimentation, rapid decision-making and robust execution will be central to the business strategy of the future. New capabilities and business models will be engineered daily, constantly reinventing the rules of competition. Accordingly, 59 percent of healthcare payer and provider executives and 73 percent of life sciences and pharmaceutical executives believe new business models will profoundly impact their respective industries.[7]

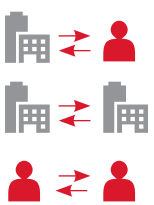
As economic value rapidly moves beyond traditional markets, organizations in healthcare will need to rethink how their business environment operates, how they partner and how they interact with patients. Combined, this is necessitating the emergence of new economic ecosystems, as organizations recognize they cannot navigate this future alone. They must embrace the concept of mutuality, a level of formal or informal collaboration among organizations around shared ideals, standards, or goals (see Figure 3).

Figure 3

The defining characteristics of an ecosystem are mutuality and orchestration

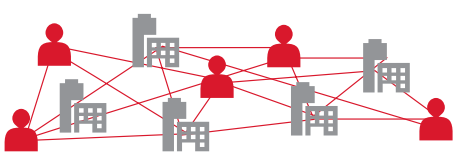
Markets comprise entities that operate out of individual self-interest

A set of individuals or organizations who exchange products or services within an environment governed by the laws of supply and demand



Ecosystems comprise entities that operate out of orchestrated, mutual shared-interest

A set of individuals or organizations who formally or informally operate together to produce something of greater value for the mutual benefit of the ecosystem as a whole



Ecosystem defined

Traditionally, we have thought of an ecosystem as a community of organisms operating together within some form of physical environment. Ecosystem dynamics could be viewed as a system of interacting and interdependent relationships—a complex network or interconnected system.

In a business context, an ecosystem is a complex web of interdependent enterprises and relationships aimed at creating and allocating business value. There is something mutual and multiplicative about business ecosystems—the whole is greater than the sum of the individual parts. If this was not the case, there would be no incentive to be part of the system. Business ecosystems are broad by nature, potentially spanning multiple geographies and industries, including public and private institutions, and consumers.

Ecosystems share many of the characteristics of traditional markets

Ecosystems and markets are not unlike. They are both composed of participants—the individual players or organizations within the environment—and interactions—the products or services exchanged among participants. Each element is defined by three components. For participants, these are: role within the environment, reach through the environment and capability or key value proposition. For interactions, the components are: rules governing the environment, connections of elements and course of interactions (See Figure 4).

The defining characteristics of an ecosystem—those things that fundamentally make an ecosystem what it is—are mutuality and orchestration. Markets are comprised of individuals or organizations who exchange products or services within an environment governed by the laws of supply and demand. Ecosystems comprise entities that operate out of mutual self-interest. They are made of sets of individuals who formally or informally operate together to

Figure 4

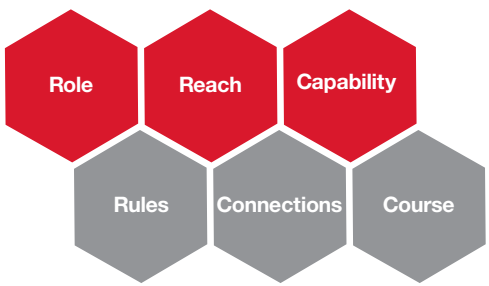
Ecosystems share many of the characteristics of markets

Participants—Individual players or organizations

Role within the environment: Participants function or part played in a given environment

Reach through the environment: Participants ability to extend activity or interactions through the environment

Capability or key value proposition: Range of activities that participants are able to pursue or undertake within the environment



Interactions—Products or services interacted

Rules governing the environment: Set of explicit or implicit principles governing conduct within the environment

Connections of elements: Linkages across the environment connecting elements such as data, knowledge, or products

Course of interactions: Speed and direction at which content or value is exchanged among participants

"I think we all should work to create a vibrant innovation ecosystem that can help companies around the world to address their needs for maintaining the health of individuals and populations in their markets."

Director, German Pharmaceutical company

produce something of greater value for the mutual benefit of the organization and the ecosystem as a whole. Ecosystems exist because participants can deliver more value within the ecosystem acting together. Mutuality reflects an enhanced level of coordination with formally or informally shared ideals, standards, or goals.

For example, Eli Lilly and Boehringer Ingelheim began an alliance in 2011 to join forces in developing treatments for diabetes. This coordinated collaboration leveraged talents from both companies to accelerate drug development within a shared target therapeutic area. The partnership has recently realized the rewards of mutuality when their work together in driving drug development for the treatment of Type 2 Diabetes yielded the approval of Jardiance by the FDA in August of 2014.[8]

Orchestration refers to the coordination, arrangement and management of complex environments. In the context of an ecosystem, orchestration refers to the formal or informal coordination of interactions or collaborations among participants within the ecosystem. Orchestration may be informal, through cultural mores and imperatives, or it may be formal through explicit rules or the presence of an actual orchestrator—an explicit entity that facilitates orchestration processes.

Kaiser Permanente provides an excellent example of explicit orchestration. Kaiser Permanente is a U.S.-based integrated managed care consortium that orchestrates insurance, hospitals, and physicians to provide integrated healthcare services. The company coordinates and orchestrates a membership base of 9 million members, along with physicians, doctors and medical centers. Kaiser Permanente's "My Health Manager" program facilitates the delivery of preventative care by connecting care providers, pharmacies and physicians.[9]

Value is created and captured differently in ecosystems

The way organizations create and capture value in an ecosystem differs from traditional markets. Two specific questions become imperative:

What can organizations do to create value in ecosystems?
How do organizations capture the value they help to create within an ecosystem?

Value creation and value capture are related. But they are distinct elements of ecosystem activity and exchange. Value creation refers to the act of bringing something of value into existence. Participants can create value by innovating products, services or experiences. Ecosystem partners must collaborate to create and deliver something of mutually beneficial value.

Value capture is the act or process of appropriating or allocating value. Participants can capture value directly through transactions or indirectly from an orchestrator. Ecosystem complexity and the extent or intensity of orchestration impact the potential and govern the nature of value capture.

By their nature and sustained existence, ecosystems can produce more value as a whole than the sum of the individual participants acting independently.

Value capture can be direct or indirect

Ecosystem participants can capture value directly through transactions or indirectly from the orchestrator. Organizations can capture value directly through transactions that occur within the ecosystem, in which participants facilitate an exchange of value for goods or services rendered. In these instances, value capture is instantaneous and commensurate with transactions. People experience direct transactions within ecosystems everyday—for example, when they purchase a medication at the pharmacy.

The alternative scenario is for organizations to capture value indirectly by transfer from an orchestrator (which captures value directly from consumers) for goods or services. In these instances, consumers pay-to-play for access to and engagement with the ecosystem. They pay an orchestrator for a bundled array of goods and services, and the orchestrator allocates payment to participants within the ecosystem to incent them to continue participating in the ecosystem. People also experience indirect ecosystems transactions in their daily life—if they sign up for a health provider and gain access to health clubs or healthy lifestyle training.

Strategies depend on environment

Organizations will need to pursue different actions to capture value, depending on the underlying nature of the ecosystems in which they operate. Strategies pursued in one environment may differ drastically from strategies pursued in other environments. Chief among the drivers of this difference is the level of complexity in the activities undertaken, and second, the extent and formality of the orchestration in and around the ecosystem (see Figure 5).

Complexity is a function of the number and diversity of participants, the sophistication of activities within the ecosystem and the range and nature of relationships.

High complexity reflects an environment in which barriers to entry are high and threat of new entrants is low. It suggests that a participant's role in the ecosystem is relatively secure, as what they do—their particular capabilities—are typically difficult to replicate. Think generating electricity through nuclear power, or deep-sea drilling for oil.

Low complexity reflects on a situation of low barriers to entry and an associated high threat of new entrants. In this environment, a participant's position in the ecosystem is relatively vulnerable, as their capabilities are typically easy to replicate. Production of consumables such as baked goods provides an example, as do many types of retail.

Orchestration reflects the extent of an organization's influence over others within an ecosystem, the formality of ecosystem interactions and the degree of enforceability and compliance. Orchestration can be either tight or loose. Tight orchestration reflects an environment in which orchestrators typically have an ability to influence behavior or actions across the entire ecosystem. Consider, for example, regulated industries, such as financial services, in which transactions are facilitated through multiple organizations, governed by stringent rules around privacy, security and compliance. Interactions tend to be rules-based, with orchestrators able to enforce their will over others.

Figure 5

Ecosystems are not all alike—they differ in specific fundamental ways

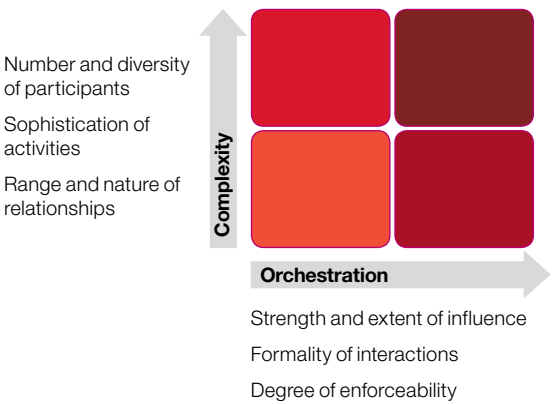
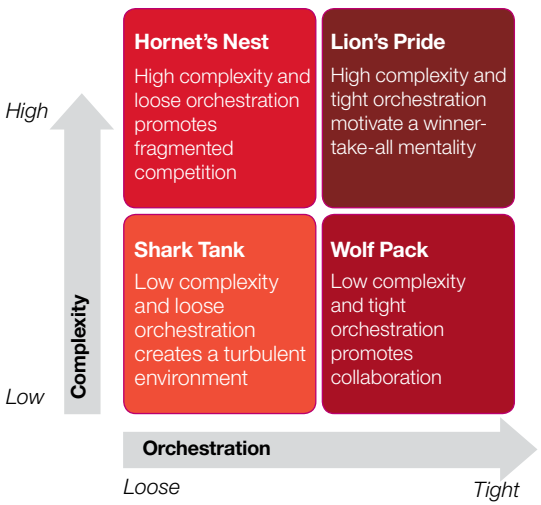


Figure 6

Complexity and orchestration characterize a spectrum of ecosystem archetypes



Loose orchestration refers to an environment in which no individual participant has significant influence across the ecosystem. There is often an absence of a strong central coordinator. Interactions tend to be values-based, with limited ability for any particular participant to enforce its will over others. An example is the Internet in places that have robust freedom of speech laws. While some content and behavior is specifically outlawed on criminal grounds mirroring similar laws around offline content—in the most part, individuals and organizations are free to express themselves and behave any way they want.

Complexity and orchestration characterize a spectrum of ecosystem archetypes. We call these types the Lion's Pride, the Shark Tank, the Hornet's Nest and the Wolf Pack (see Figure 6).

The future healthcare ecosystem is likely to closely resemble the final archetype, the Lion's Pride ecosystem. In the Lion's Pride, threats of new entrants are low due to the relative complexity of the activities in which participants are engaged. Orchestration in the Lion's Pride tends to be formal, facilitated by an orchestrator. The orchestrator will enable and monitor activities within the ecosystem and remunerate individuals or organizations for participating in the ecosystem—if their contribution to the ecosystem is important. Specific operations of the ecosystem will be guided by the orchestrator, who also tends to maintain robust enforcement capabilities. In the Lion's Pride, the role of the orchestrator is powerful and fundamental. But such power also creates an opportunity for a powerful participant, in what might be equivalent to a palace coup, to overwhelm and assume the orchestrator role. Lion's Pride ecosystems tend to deliver compelling, sophisticated experiences in a pay-to-pay context, with the orchestrator defining the type of experience to be delivered, and securing whatever participants are needed.

The Shark Tank is characterized by low orchestration and low complexity, where organizations are compelled to find ways to create value through new, innovative means. There is no strong orchestrator present to protect participants in the ecosystem. Each participant must fend for themselves, identifying opportunities, aligning capabilities and making connections.

In the Hornet's Nest, complexity is high, but orchestration is low. Barriers to entry are significant, but organizations and individuals will also be tied together by informal or cultural imperatives within the ecosystem.

The Wolf Pack is characterized by relatively low complexity and high levels of orchestration. Barriers to entry are low, indicating that entry into the ecosystem is relatively easy. And yet orchestration is high, suggesting that while individual activities within the ecosystem are simple, the overall environment created is potentially highly sophisticated.

In summary, each of the four major orchestrator archetypes possess different characteristics across the dual dimensions of complexity and orchestration. Depending on which environment organizations find themselves, optimal business strategies, along with particular strategies for value creation and capture, will differ.

In the healthcare ecosystem, specialized organizations will be positioned to orchestrate activities to deliver sophisticated health solutions. An orchestrator will likely facilitate and manage the intersection among patients, providers and physicians into what will likely to evolve into a fully integrated health, wellness, and, where necessary, medical experience.

For more information on the four ecosystem archetypes, please refer to IBM Institute for Business Value executive report, "The new age of ecosystems: Redefining partnering in an ecosystem environment."[10]

"This way we will push the boundaries of science and deliver the life changing medicines that patients need."

Executive Vice President, Belgian biotech firm

"In order to be successful we must push our boundaries of innovation and try to tap the areas that haven't been explored yet"

Vice President, UK Pharmaceutical Company

Recommendations—Connect to new ecosystems in new ways

As the world becomes more connected, organizations will create and capture less and less value in traditional ways. Partnering in the new age of ecosystems will be critical for those who aspire to be the outperformers of the next decade and beyond. The new economic equation will favor those who embrace collaboration and partnering.

The following recommendations will assist in making necessary transformations:

1) Change organizational mindsets to create value in entirely different ways
Successful organizations will understand how value is created in the ecosystem in which they operate. With ever increasing pressure on resources (funding and skilled professionals), healthcare executives will identify and exploit pockets of potential value creation—leveraging capabilities and synergies across the ecosystem. Leading organizations can stay ahead by continuously testing the possibilities for value creation.

2) Build the right connections
Explicitly form organizational connections as you promote cultural change, becoming more open and building necessary and relevant connectivity. No single organization can hope to do everything required in a healthcare ecosystem that stretches across payers, providers, life sciences companies, academia, regulators, public health, social care and, ultimately, to the patient and consumer. Successful organizations will understand their capabilities and how to identify and realize synergies with ecosystem partners from both the public and private sector. Find partners who can further your objectives and decide what types of relationships you want to build with your partners.

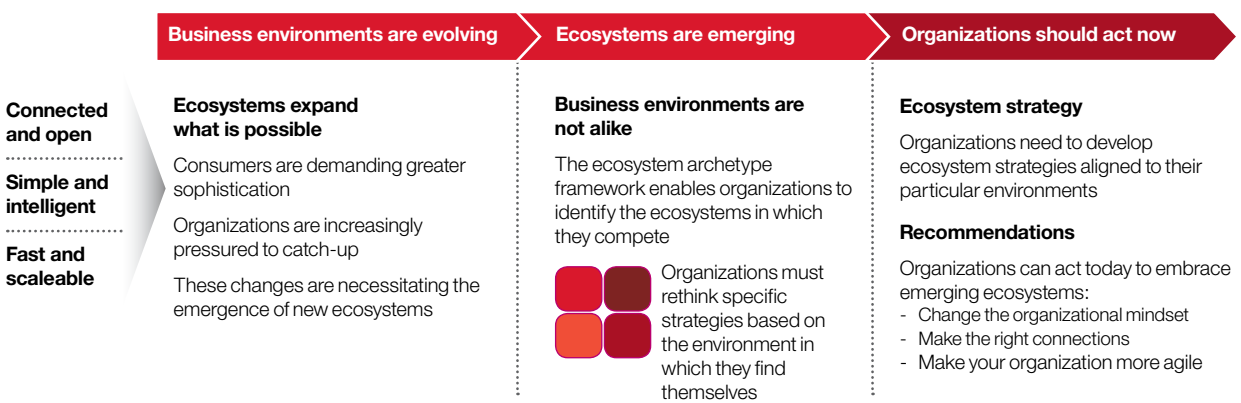
3) Make your organization more agile
Ecosystems will continue to evolve as ecosystem participants interact with each other, and as ecosystems begin to intersect and intertwine with each other. The most successful healthcare organizations are likely to be those that evolve with their ecosystems and evolve

their roles as imperatives and opportunities within and between ecosystems evolve. Application programming interfaces (APIs) and cloud can empower dynamic new business models, consumer interactions and organizational flexibility. The most successful companies will combine technology strategy with business strategy, prototype and test what is possible with new technologies (such as cognitive analytics) and anticipate the unexpected by maintaining robust technical and operational flexibility.

To optimize their success, healthcare organizations should work to align their strategic objectives with those of the orchestrator. To the extent that a participant can be instrumental to the orchestrator in delivering on the promise of the ecosystem, it will capture value in the ecosystem either directly or indirectly. The more that a healthcare ecosystem participant can differentiate itself from potential competitors, the less likely it will be disintermediated in the ecosystem. But beyond this, the more powerful an organization can become in this environment, the more likely it will position itself to challenge the dominance of the orchestrator itself.

Figure 7

Organizations will need to reinvent their businesses in the context of the ecosystems in which they participate



Summary

In the healthcare ecosystem, specialized organizations will be positioned to orchestrate activities to deliver sophisticated and innovative health solutions to benefit the patient. An orchestrator will likely facilitate and manage the intersection among patients, providers and physicians into what will likely to evolve into a fully integrated health, wellness, and, where necessary, medical experience. To enable this change, organizations in healthcare and life sciences will need to understand the impact of ecosystems and reinvent their businesses (see Figure 7.)

In today's digital world, emerging technologies have already made a significant impact, creating an economic environment that is far more connected and open, simple and intelligent, fast and scalable. Consumers are forming an ever-more insatiable desire for sophisticated and compelling experiences in all aspects of their lives. Organizations are beginning to come under intense pressure to catch-up and deliver on a very different set of customer expectations. These changes are coinciding with the emergence of new ecosystems. To capitalize on what is now being demanded—and not be left behind in a rapidly transforming environment, organizations must act now to develop ecosystem strategies aligned to their particular environments. They must challenge and change their traditional organizational mindset, make the right connections and drive forward to become the standout success story in this new age of ecosystems.

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The authors would like to thank the following for their major contributions to this paper:
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Acknowledgements

We wish to acknowledge Steven Davidson, Martin Harmer and Anthony Marshall who authored the earlier paper, "The new age of ecosystems: Redefining partnering in an ecosystem environment."

For more information

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Related Publications

Davidson, Steven, Martin Harmer, Anthony Marshall. "The new age of ecosystems: Redefining partnering in an ecosystem environment." IBM Institute for Business Value. July 2014. http://www-935.ibm.com/services/us/gbs/thoughtleadership/ecosystempartnering

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