

The power of networked ecosystems

How platforms can be a force-multiplier in health

Why many health care organizations are turning to digital platforms to acquire capabilities beyond their core

In **our last paper**, we explained how organizations should consider launching ecosystems to acquire capabilities beyond their core and further their strategic ambitions. This paper builds on our thinking by exploring how health care incumbents can embrace platforms as a mechanism to form ecosystems. While ecosystems can be physical or digital, this paper will focus on digital ecosystems.

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Executive summary

Digital transformation is giving rise to new business models.

Technological innovation has accelerated business transformation across nearly every industry and enabled new models that harness the power of platforms and ecosystems to deliver greater value to consumers. Digital-first organizations like Netflix, Airbnb, and Google rewired the value chains of entrenched industries (e.g., media, hospitality, and publishing) to no longer compete on exclusive supplier relationships. As technology strategist Ben Thompson indicated in his seminal piece on Aggregation Theory, these platforms make the supplier of an underutilized asset easily accessible, whether it’s a vacant room for Airbnb, broadcast availability for Netflix, or a published article for Google. Instead of competing on supplier relationships, leading organizations now compete on unlocking underutilized assets to change or enhance the consumer experience, which improves consumer engagement, which aggregates more consumers, which in turn brings more suppliers to the platform. This creates virtuous network effects and enables platforms to become the drivers of new businesses models.¹

Platforms are a means to forge ecosystem plays. We define platforms as digital mechanisms that orchestrate more interactions and trade and facilitate the cocreation of goods, services, and ideas with the broader ecosystem.

To grow their businesses, either through increasing market share, leveraging economies of scale, or diversification, many health care organizations have traditionally relied on mergers and acquisitions for vertical and horizontal integration. However, as data analytics and technological innovation transform health care, these organizations are realizing they may not have the capital, talent, or organizational structure to rely on M&A to change their business models. Instead, many are turning to ecosystem strategies wherein they do not need to own every asset on the platform, but do need to develop or use capabilities, products, and services beyond their core to achieve the same ends.²

Deloitte defines ecosystems as follows:

Ecosystems incorporate a web of mutually beneficial relationships brokered by a digital platform that enhances economic value for all participants using the platform. An ecosystem convener creates and operates platforms and orchestrates interactions on each platform within an agreed-upon commercial model, generating powerful network effects. Ecosystem participants provide goods and services on the platform aggregated by the convener.

Platforms and ecosystems are not solely the dominion of digital natives. We are seeing the beginnings of a revolution in health care to rewire the value chain. Leading health care organizations build ecosystems with numerous participants, including providers, plans, consumer product and tech-enabled startups, data suppliers, and many more actors, with the goal of increasing consumer engagement, improving outcomes, and reducing costs.

Health care is uniquely fit for an ecosystem revolution.

The health care industry has deep expertise in managing the interests of a diverse set of players. For example, a health system is dependent on the actions of affiliated, nonemployed physicians and often relies on the expertise of non-owned, post-acute assets to manage care after discharge. As plans shift to value-based care, they should engage with providers for data analytics and care management services to collectively manage care and reduce costs. Life sciences companies have historically relied on the R&D produced by academic medical centers and other such research institutions for new product innovation and pipeline growth.

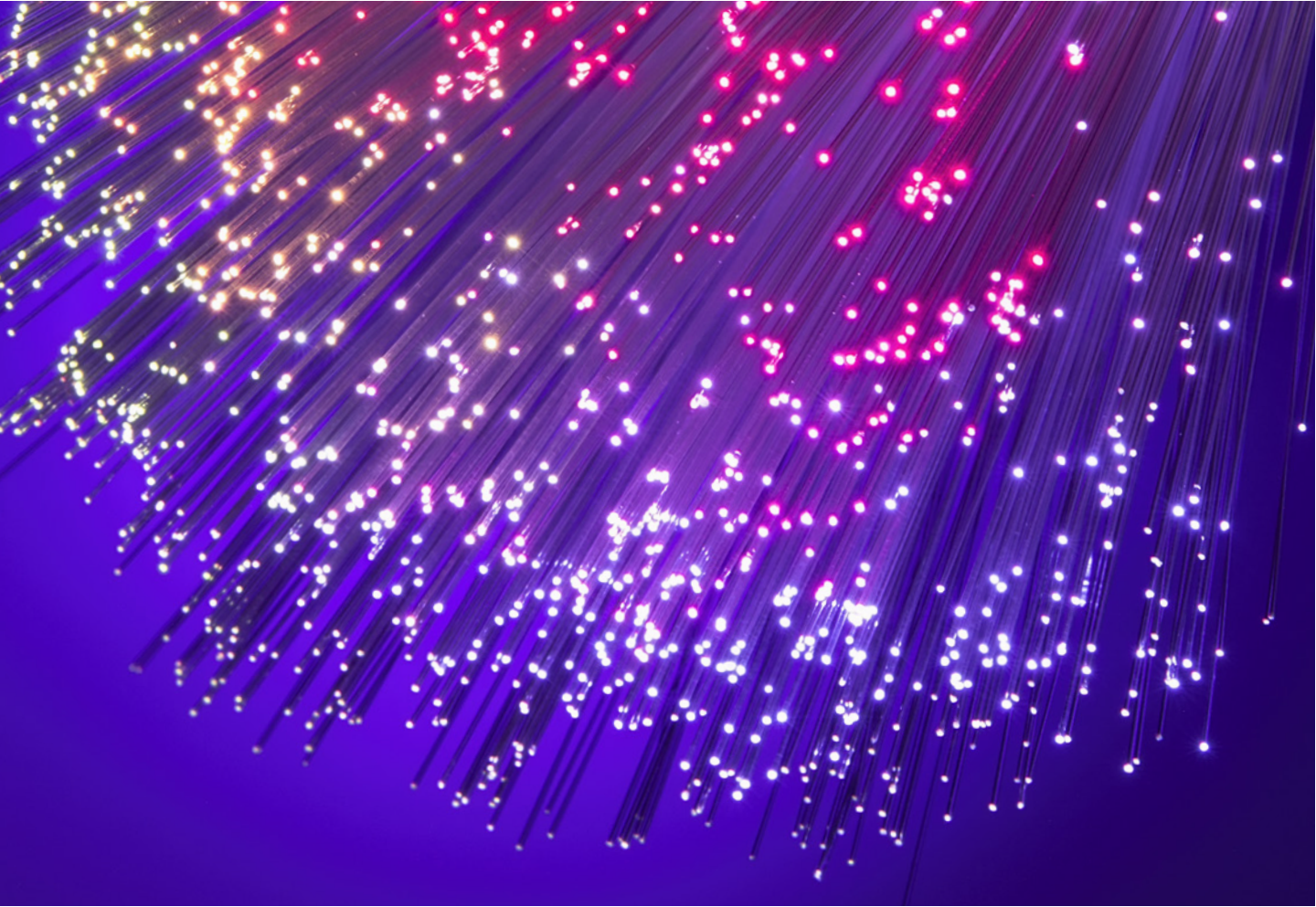
While proficiency in managing these varying sets of relationships has laid the groundwork for effective ecosystems to take shape, the industry has not made sufficient progress in launching platforms to make underutilized assets like access to complex care or preventative measures such as synchronous monitoring and diagnosis more accessible. Incumbents should look to platform operators and startups to aid them in the development of platforms and ecosystems.

This would obviate the need to pursue M&A transactions to control more of the value chain. Instead, an incumbent can partner with the right set of participants to create and control a platform, using disparate but related assets to enhance the value chain.

In 2020, US digital health companies raised \$14.1B in venture funding, which represents a 72% increase from the previous high watermark set in 2018.³ Digital health is maturing as a sector, quickly filling product gaps, addressing complexities in the value chain, and demonstrating a more advanced offering to consumers. A next step for health care incumbents is to focus on launching minimally viable, purpose-built ecosystems that address specific needs to expand access for consumers.

Now is the time to consider new ecosystem strategies.

Health care incumbents should ask a series of questions to define their ecosystem strategy, considering the purpose of the ecosystem; the value the ecosystem creates; the company’s desired role in the ecosystem; and the platforms, partnerships, and monetization strategies necessary to create the network effect. First, the organization should crystallize the assets that will position it favorably in an emerging ecosystem and determine which **Future of Health™** archetype it wishes to become. Second, the organization should decide whether it wants to be a platform operator, convener, or participant in the selected ecosystem. The company’s ability to configure and monetize the ecosystem will vary significantly depending on these two choices, with the convener typically playing the lead role (see figure 4. “Ecosystem choice cascade”).



Test the viability of your choices through a minimal viable ecosystem. After the initial strategy is designed, organizations should design a minimal viable ecosystem (MVE). The goal of the MVE is to test the core viability of the ecosystem and the company's ability to orchestrate interactions through its platform. Thus, one should establish a minimum set of core ecosystem offerings and platform features and invite two to three ecosystem partners to test the company's ability to be a convener. These partners will remain connected by a virtual data backbone and an agreed-upon commercial model. The platform will have several features to incentivize ecosystem participation, including modules to alleviate jobs to be done for ecosystems.

Ecosystems will likely transform the way businesses and industries operate. Health care incumbents are uniquely positioned to lead the transition to ecosystems and capture new value because of their deep expertise in managing the interests of diverse stakeholders. While these models encompass complex relationships and accelerate organically, incumbents that shape their ecosystems early may be better positioned to monetize network effects.

Organizations that successfully transition to ecosystem models should consider several factors. First, they should understand the strength or strategic asset they want to promote within their desired ecosystem. They also should identify which unmet need or inefficacy they aim to solve. Finally, they should consider which existing parts of the system can be modularized to simplify and streamline the user experience and extract new value from participants.

Given the exponential rise of platforms, it is likely that numerous ecosystems will emerge. An organization may be involved in multiple ecosystems. It should strive to be a convener in at least one ecosystem where it has unique permissions and advantages. It should be a participant in other ecosystems where its positioning is less favorable.

The power of platforms and ecosystems

The emergence of COVID-19 in the early months of 2020 accelerated the digital transformation of many industries and raised consumer expectations for digital solutions to meet everyday needs. Social distancing and a heightened concern for health outcomes created urgency around digitally enabled health solutions and required care delivery to be reimagined. As industry lines continue to blur between consumer, retail, and health care, both new entrants and incumbent health care organizations reacted to disruption by investing in long-term plays, including digitally enabled, designed ecosystems that span industries to build new, adjacent, and transformative businesses.

Health care organizations have traditionally relied on pipeline models, competing on cost, quality, and breadth of market. In a pipeline business, companies depend on economies of scale, intellectual property, scarce resources, and brand power. To grow, they pursue M&A via horizontal or vertical integration. While health care organizations have traditionally used M&A to expand into new services via vertical and horizontal integration, increasingly, these organizations are turning to platform-enabled ecosystems to acquire capabilities beyond their core and achieve similar ends. Platform businesses differ from pipeline businesses in that they compete on network effects. To remain competitive, platform businesses must attract users (both producers and consumers) to the platform and compete on consumer experience. To grow, platforms incent ecosystem partners to join and fill capability gaps.

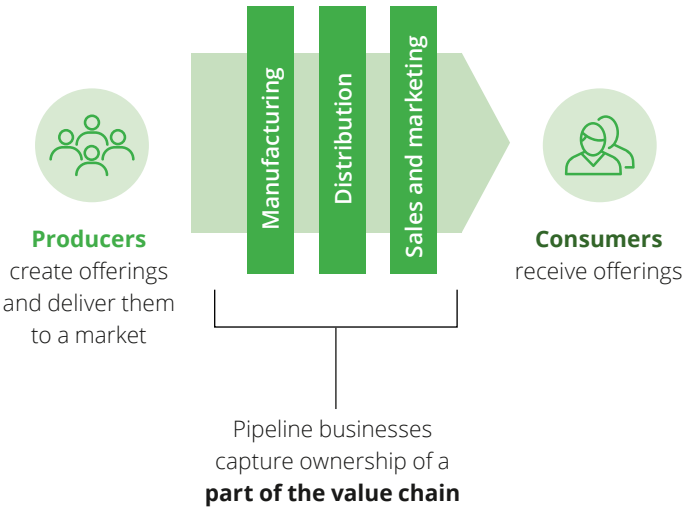


To operate effectively, platform-enabled ecosystems rely on three different types of players:

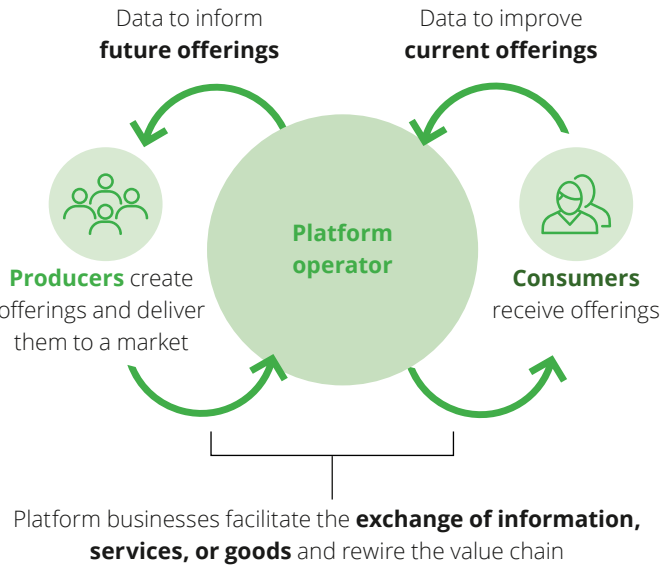
- Conveners define, create, organize, and operate the ecosystem. This includes orchestrating interactions on the platform within an agreed-upon commercial model, generating powerful network effects.
- Participants provide services and products to the ecosystem. For participants, value gained by the ecosystem and its platform significantly outweigh the costs of “going it alone.”
- Operators create the platform on which the infrastructure, underlying technology, and analytics function.

Figure 1. Pipeline businesses versus platform businesses

PIPELINE BUSINESSES



PLATFORM BUSINESSES



Source: Geoffrey G. Parker, Marshall W. Van Alstyne, and Sangeet Paul Choudary, Platform Revolution: How Networked Markets are Transforming the Economy and How to Make Them Work for You (New York, Norton, 2016).

The emergence of digitally enabled services in health care changed how organizations compete. In theory, digital reduces distribution costs and makes supply less of a competitive edge. For many players, this means forward integrating to focus on consumers and users. Thompson writes in “Aggregation Theory” that forward integration with consumers has “created a shift in the market as more companies prioritize user experience as a competitive lever ... the best distributors/aggregators/market-makers win by providing the best experience, which earns them the most consumers/ users, which attracts the most suppliers, which enhances the user experience in a virtuous cycle.”⁴

With these new models, previous incumbents who focused on integrating backward into suppliers may lose value in favor of participants who aggregate modularized suppliers (which they often don’t pay for) for consumers and users with whom they have an exclusive relationship. According to Clayton Christensen, “modularity standardizes the way by which components fit together — physically, mechanically, chemically and so on. The parts fit and work together in well-understood, crisply codified ways.”⁵ The more suppliers that can be modularized, the greater the value to the consumer. This provides the theoretical groundwork on how platforms in any industry can build modularity and compete on user experience.

We define platforms as digital mechanisms that orchestrate more interactions and trade and facilitate the cocreation of goods, services, and ideas with the broader ecosystem. The table shown in figure 2 illustrates how modularization and the network effects it enables have affected each industry where platforms have taken hold. Many well-known consumer technology companies generate strong network effects: The more consumers and users they serve, the more value they deliver. This, above all else, is why consumer technology companies are so highly valued both in public and private markets.⁶

Platforms are a means to forge ecosystem plays. The platform delegates activities in the value chain to third parties and incentivizes those third parties to join the platform. As more interactions take place on the platform, more data is collected, and products become increasingly personalized to the consumers they serve. Health care organizations can partner with others in the ecosystem through interactions made on the platform.



Why are platforms important?



Key to understanding ecosystems of the future is the existence of underlying platforms that power interactions between ecosystem participants.

While it seems like every startup pitch has reference to a platform, true platforms are quite rare.

Ultimately, we define digital ecosystems as a web of mutually beneficial relationships brokered by a digital platform that enhances the economic value for all participants using the platform. An ecosystem convener creates, operates, and invites participants onto the platform and orchestrates the interactions on the platform within an agreed-upon commercial model, generating powerful network effects.

The opportunities presented by ecosystems and platforms are not limited to digitally native companies. Industrial incumbents like GE are among the players undertaking new digital health products connecting their machines to the Internet of Things.⁷ These networked machines constantly stream data into a central platform that enables them to interact with and learn from one another. Access to data from this network of devices helps each machine optimize resource use and provide more reliable services. Incumbents can begin building tomorrow’s platforms in a way that not only leverages their existing assets, but also strengthens and reinforces them.

Figure 2. Modularization and network effects

Industry	Pre-platform model	What was modularized	Platform-enabled model
 Publishing	Publishers integrated publications and articles.	Google modularized individual pages and articles, making them directly accessible via search.	Google integrated search results with search and profile data about users, enabling it to sell highly effective advertising.
 Television	Networks integrated broadcast availability and content purchases.	Netflix modularized broadcast availability by making its entire library available at any time in any order.	Netflix integrated content purchases and customer management, enabling a virtuous cycle of increased subscription demand and increased content purchase capability.

Source: Ben Thompson, “Aggregation Theory,” Stratechery, July 21, 2015.








Health care is ripe for a platform and ecosystem revolution

In health care, most incumbents are accustomed to operating a web of complex relationships. Health systems deliver care by coordinating various contributions from nonemployed physicians to affiliated post-acute care facilities. Relative to other industries, health care has far more expertise in managing the interests of diverse players; however, while the groundwork for health care ecosystems exists, many health care players lack the digital platform to facilitate more interactions at scale and grow their business exponentially. These platforms are emerging to help streamline many existing pain points and coordinate interactions across stakeholders at scale.

The following are characteristics of industries that typically precede ecosystem disruption, all of which health care exhibits:

Figure 3. Characteristics of ecosystem disruption⁸

Trend	Pain points	Disruption potential
 Information-intensive industries	Data is central to improving access, cost, quality, and experience.	While risk-stratification algorithms are reasonably mature, the next plane of competition will involve aggregating clinical, social-determinant, and (importantly) consumer-mediated data.
 Nonscalable gatekeepers	Primary care physicians (PCPs) and insurance networks have served as coordinators for patient care.	The emergence of telemedicine has resulted in the recontouring of networks and the emergence of virtual-first plans.
 Highly fragmented industries	Health systems have historically managed a complex set of hyperlocal, specialized actors.	Digital therapeutics for managing chronic conditions, virtual-enabled remote care, and success around centers of excellence challenge the current paradigm.
 Extreme information asymmetries	A lack of transparency continues to plague health care. Patients struggle to understand available treatment options and prices.	There is a growing effort to empower customers and create price transparency.
 Dissatisfied consumers (on demand; meet them where they are):	Consumers now have expectations from retail (e.g., Amazon) or finance (e.g., SoFi), and health care still fails to meet these expectations.	On-demand, low-acuity care models have emerged to meet members where fintech solutions enable streamlined payments.

The consumer-focused health care shift


Health care is witnessing the beginnings of a platform and ecosystem revolution. There is greater focus on the consumer, driven by improved data analytics driving early diagnosis and prevention, the demonstrated efficacy of virtual-first providers, and a new awareness of the limitations of the current system—all accelerated by the pandemic. Furthermore, payers have accrued valuable experience in working with and understanding the benefits of virtual-first providers and have developed the appropriate payment models for them. Digital health companies today are more mature, with demonstrated results showing improved outcomes and lower costs. Consequently, health care incumbents should understand how to partner with many of these new solutions and have them compete to be part of their ecosystem to provide the best consumer experience.

As Propeller Health cofounder Chris Hogg writes:
“Today I can acquire a user on Facebook, give them access to physicians via partnership with Wheel, have medicines seamlessly shipped to their homes via Truepill, deliver a home-lab experience via Everlywell, integrate a wireless blood pressure cuff from Omron, create a seamless referral flow with data from Ribbon, and even get paid for much of this via traditional fee-for-service reimbursement, processed via Eligible.”¹³

Digital health products and services are now at a pivotal moment. In the first phase of digital health, companies focused on evidence generation and user adoption. In the second phase, the focus shifted to increasing adoption among employers and payers. Today, payer adoption of virtual-first providers has largely differentiated the winners as virtual-first providers become ubiquitous. For example, Livongo works with major plans and Fortune 500 employers.

Digital health has entered a new phase, with companies shifting their focus from contracting with payers and employers to vying for consumer adoption.

Joe Connolly, CEO and founder of Visana, writes:
“Forward-thinking employers and payers are already forcing digital health providers to compete for consumer preference. Just like plans contract with multiple endocrinologists in a geography, they’re contracting with multiple virtual diabetes companies and allowing consumers to choose the program that best suits their needs. Instead of picking winners and losers, plans have created platforms to match solutions to beneficiary needs.”¹⁴



Recent digital health adoption data:

- **76%** of US consumers went online to learn about health and care⁹
- **64%** searched for provider reviews online; nearly half digitally tracked a health metric like their weight or blood sugar levels¹⁰
- **60%** brought information they found online into conversations with providers¹¹
- **3,060%** increase in telehealth nationally during COVID-19¹²

Many digital health companies focus on common chronic conditions. Those focused on the less prevalent specialties tend to still resemble digital health companies in the earlier phases of development. Given the evolving dynamics of the health care industry, radically interoperable data sets on open and secure platforms are designed to educate an empowered consumer, resulting in the creation of new ecosystem archetypes.

Broadly speaking, the Future of Health will likely be made of three broad segments centering around the empowered consumer:

- 1. **Data and platform:** Generates the insights needed for personalized, always-on decision-making in the new health ecosystem.¹⁵
- 2. **Well-being and care delivery:** Represents new virtual and physical communities that can provide consumer-centric delivery of products, care, wellness, and well-being.¹⁶
- 3. **Care enablement:** Includes the connectors and facilitators that can make the new health engine run.¹⁷

Incumbents should ask what assets they have that can position themselves to lead in these segments. Due to cost, capital investment, talent, and organizational impediments, legacy health care organizations should appreciate that they cannot build and own all the required capabilities themselves. **Hence, partnerships and ecosystems can complement M&A.**



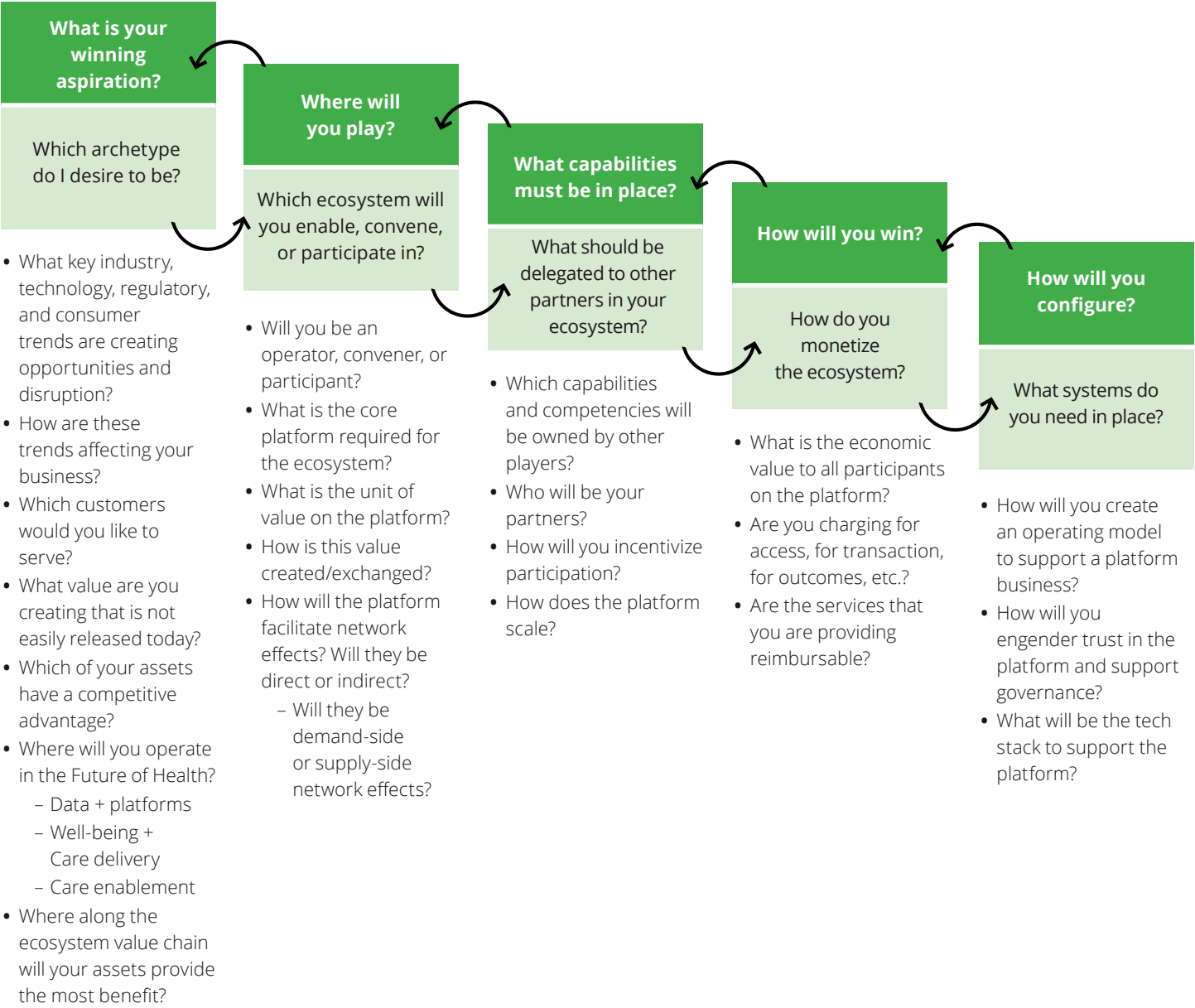
With consumer-focused strategies increasingly driving health care, remaining competitive across the value chain will require even the most innovative companies to leverage capabilities beyond their core. **An ecosystem strategy allows health care players to manage the health of patients longitudinally through efficient data exchange and collaborate with diverse partners without incurring the vertical and horizontal integration costs historically associated with M&A.**

Different types of ecosystems will take shape. Some will emerge to integrate the value chain for a complex chronic disease like diabetes. Others will emerge to integrate the value chain for a complex service like diagnostics, from data collection to analysis. Each will cater to a serve a unique group of participants working toward a common, consumer-focused goal.

How health care incumbents can craft ecosystem plays




The following questions can serve as a guide to help organizations as they launch an ecosystems strategy:

Figure 4. Ecosystem choice cascade



The following examples detail how some health care incumbents have begun to convene ecosystems.

Figure 5. Health care incumbents crafting ecosystem plays

Organization type	Which archetype do you aspire to be?	Which ecosystem will you enable, convene, or participate in?	What should be delegated to other partners in your ecosystem?	What systems do you need in place?
 National health plans	A national plan seeks to strengthen its advantages in care management by convening leading virtual-first providers for its beneficiaries (e.g., diabetes, behavioral).	Convene a platform to match beneficiaries with virtual-first disease management solutions (behavioral, diabetes, hypertension, physical therapy, etc.), powered by a longitudinal health record. The care team will have full visibility into the beneficiary's progress and match them to tailored care programs.	Delegate disease management to virtual-first providers that participate in the ecosystem	The following must be built to incentivize partners to join the platform: <ul style="list-style-type: none">• Eligibility• Enrollment• Workflow to manage comorbidities• APIs to integrate with longitudinal health record and care management systems
 Leading cancer centers	A leading cancer center seeks to advance research and monetize its data from treating complex cancer patients.	Convene a platform to match purchasers (e.g., pharmaceutical companies) of data with sellers (e.g., academic medical centers).	Delegate use of the data to pharmaceutical companies, which serve as ecosystem participants	The following must be built to incentivize partners to join the platform: <ul style="list-style-type: none">• Cleansed data• Linking longitudinal records• Deidentification of data• Transparent pricing• Contracting• Application programming interfaces (APIs) to upload data sets
 Destination medical centers	A destination medical center with a high brand value seeks to deliver artificial intelligence (AI) remote diagnostic insights to reduce high-cost labor needed for oncology dosing.	Convene a platform to aggregate data from a fragmented device market and generate personalized care insights for dosing. These automated insights are sold to radiation oncologists.	Delegate the role of high-cost labor needed for dosiology to insights generated from remote diagnostic data	The following must be built to incentivize partners to join the platform: <ul style="list-style-type: none">• APIs to aggregate data• AI algorithms to clean data and generate insights• Transparent pricing• APIs to upload data sets

Organizations that successfully transition to ecosystem models should consider several factors. First, they should understand the strength or strategic asset they want to promote within their desired ecosystem. They also should identify which unmet need or inefficacy they aim to solve. Finally, they should consider which existing parts of the system can be modularized to simplify and streamline the user experience and extract new value from participants.

Given the exponential rise of platforms, it is likely that numerous ecosystems will emerge. An organization may be involved in multiple ecosystems. It should strive to be a convener in at least one ecosystem where it has unique permissions and advantages. It should be a participant in other ecosystems where its positioning is less favorable.

Making money

Platform-enabled ecosystems have several value sources that can vary across participants in the ecosystem network. Incumbents considering ecosystem plays should understand the different ways value is created when determining how they can monetize a platform.

- **For consumers**, access to value is created on the platform. For example, video viewers on streaming sites find the streaming videos valuable.
- **For producers or third-party providers**, value is created through expanded market access. For example, Grand Rounds Health connects providers to a large pool of patients for second opinions.¹⁸
- **For both consumers and producers**, access to solutions that enable interactions is a source of value. For example, online marketplaces integrate with online payment providers to enable anyone to launch an online or mobile commerce store.
- **For both consumers and producers**, access to curation mechanisms that enable higher-quality interactions is a source of value. Consumers value access to high-quality goods and services, while producers value consumers who want their offerings.¹⁹

How do you monetize the ecosystem?

Monetization includes different combinations of charging a transaction fee, charging users for enhanced access, charging third-party producers for access to a community, and charging a subscription fee for enhanced curation.²⁰ One of the most crucial monetization choices is deciding whom to charge, since the difference in roles played by various platform users means that charging them can have widely differing network effects.

Given the complexity of the monetization challenges, conveners should consider potential monetization strategies in every decision they make regarding ecosystem design.²¹

Attracting consumers to prove the ecosystem

The proverbial chicken-and-egg problem in relation to ecosystems is straightforward: An ecosystem needs both sides of the supply and demand equation to thrive, with sellers or producers on one hand and buyers and participants on the other. However, one is required to attract the other into the ecosystem. For example, app stores are only valuable if they have enough apps to offer users, but developers will develop apps only if there are enough users to download their apps.

The quality and quantity of supply and demand generated by an ecosystem should be thoughtfully considered by incumbents. Firms should focus on quality over quantity of initial ecosystem participants, as these participants will play a large part in shaping the identity of the ecosystem. Additionally, organizations need to determine early on whether the ecosystem design is attractive to consumers and if the supply is something others desire. This means that, in solving the chicken-and-egg problem for ecosystems, consumer demand usually comes first. However, firms should not only measure an ecosystem's success based on participant demand, but also measure the quality and quantity of transactions it enables, as these transactions drive consumer value.

Minimal viable ecosystem

A minimum viable ecosystem (MVE), as coined by Ron Adner, moves a pilot with a limited feature set to commercial scale deployment first before adding partners that can further develop the feature set.²² While a comprehensive ecosystem cannot be built overnight, an MVE is an attainable first step in executing an ecosystem strategy.

Tactically, this could involve identifying one function for the ecosystem, along with a minimum feature set for its platform, bringing in the partners necessary to deploy it, and piloting this initial offering before adding more to the ecosystem. In this way, conveners can carefully control how the ecosystem is established and how the end user experiences it.

Capabilities to support minimal viable ecosystems

Achieving an MVE will require health organizations to rethink their capabilities. Organizations should consider a few key dimensions with respect to capabilities:

Talent: Most organizations employ only certain types of talent. In creating their ecosystems, health care incumbents should collaborate with organizations that are able to leverage different talent models at scale. For example, they could consider partnering with a platform operator to increase their access to data scientists, as these roles are often challenging to hire.

Infrastructure: A platform will require organizations to operate in the cloud; new infrastructure investments and increased interoperability will be needed to enable information exchange. To maximize cost savings and technical expertise, health care

incumbents could partner with digital natives to accelerate cloud migration and build robust infrastructure for their platforms.

Operating model: Organizations should embrace a more nuanced understanding of a platform-enabled ecosystem and view the platform as more than technology. A platform requires the adaptation of business and operating model and, in a sense, a shift in attitude. Health care incumbents should consider a collaborative spirit and a modularized approach to business functions on the platform.

Capital: Dedicated long-term capital is often a requirement to sustain the ecosystem platform through the first stages of its existence. The chicken-and-egg problem is likely to be present during the initial stages, making dedicated capital a significant source of support to subsidize initial value and interactions.

Conclusion

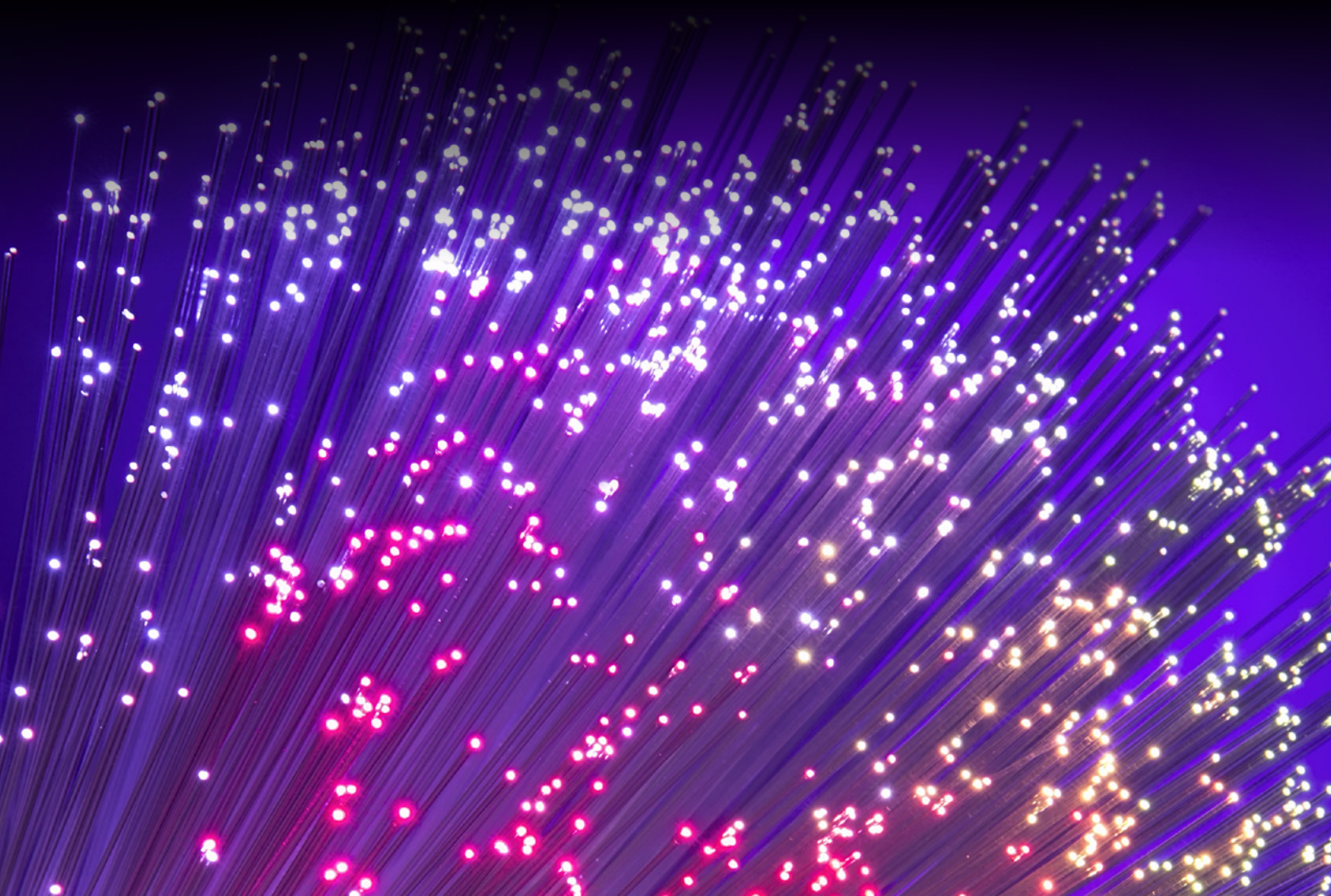
As organizations respond to the technological innovations that are transforming health care, they need to look to leverage capabilities beyond their core; consequently, a new generation of ecosystems powered by digital platforms is rapidly emerging.

The characteristics of today's health care industry demonstrate readiness for accelerated and uninterrupted growth driven by digitally enabled platforms. The emphasis on the patient as a consumer is contributing to these unprecedented trends. Ecosystem strategies enable health care players to improve patient care through efficient data exchange and partnerships.

Organizations across the industry (plans, providers, and medical device and biopharma companies) should seek to answer the questions that will define their role in a network of ecosystems. These companies need to decide which assets they possess that are valued by others and/or potentially underutilized and which archetypes they aspire to become. In most instances, organizations will likely partake in many ecosystems, but may only convene one ecosystem. Monetization must be a carefully calibrated exercise that considers incentives and how to nourish network effects.

Finally, the approach outlined in this paper encourages organizations to build iteratively and start by constructing an MVE. The MVE encourages a curated set of partners to quickly test ecosystem offerings and platform functionalities and generate data-rich feedback to inform subsequent strategic choices.

Health care is at the precipice of ecosystem-driven transformation. The emergence of the empowered consumer, along with the development of radically interoperable data sets on open and secure platforms, will redefine the Future of Health. Health care organizations now recognize the power and force of purpose-built ecosystems and how platforms can catalyze the curation of these new business models.



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