# THE NEW ECOSYSTEM WORLD

**How to Navigate a World of Digital Ecosystems**

**Strategically Agile, Greatly Aligned, and Digitally Deep at the Top**

**Tackling Cyber Security in a World of Digital Ecosystems**

**Bringing Life to 'Things': A Framework for IoT**

# How to Navigate a World of Digital Ecosystems


## Authors

**Frank Diana**
Managing Partner, Futurist, Tata Consultancy Services

**Bill Quinn**
Senior Director, Future of Business, Tata Consultancy Services

**Kevin Mulcahy**
Senior Director, Future of Business, Tata Consultancy Services

**Rose Castellon-Rodriguez**
Senior Director, Future of Business, Tata Consultancy Services


It has always been a best practice for industry leaders to keep a close eye on their direct competitors, and, more recently, a sharper eye on emerging digital upstarts. Recent business history is full of tales of incumbents losing market share (and, sometimes, their whole business) to more digitally savvy and agile competitors. Online subscription music services like Spotify (which launched just over 10 years ago) now account for 75% of U.S. music industry revenue, turning the recording industry on its head.[1] And there are now more subscribers to video streaming services worldwide (613 million) than subscribers to cable and satellite TV (with cord-cutting costing the cable companies 1.2 million subscribers in the third quarter of 2018 alone),[2] according to the Motion Picture Association of America.[3]

[1] RIAA 2018 Year-End Music Industry Revenue Report, https://www.riaa.com/wp-content/uploads/2019/02/RIAA-2018-Year-End-Music-Industry-Revenue-Report.pdf. Accessed July 29, 2019.

[2] Fortune, "Cable and Satellite TV Lost 1 Million Subscribers Because of Cord Cutting," November 14, 2018. https://fortune.com/2018/11/14/cord-cutting-cable-satellite-subscribers/. Accessed July 29, 2019.

[3] Venture Beat, "Global video streaming market is largely controlled by the usual suspects," March 30, 2019. https://venturebeat.com/2019/03/30/global-video-streaming-market-is-largely-controlled-by-the-usual-suspects/. Accessed July 29, 2019.

It used to make good business sense for industry captains to stay alert to risks and work hard to secure their industry positions.

## Your competition often does not emerge from within your sector.

Today, however, your competition often does not emerge from within your sector. Google, Facebook, and Amazon, for example, were not thought of as advertising companies when they started. However, as the traditional ad spend shifted inexorably from print to digital, Google and Facebook today dominate advertising, killing off many media incumbents in the process. Amazon now has nearly 7% of the U.S. digital ad market (and it's rapidly growing that share), while Google and Facebook control 60%.[4]

Google, Facebook, and Amazon did not emerge from inside the media and advertising tent; they observed from the outside and saw opportunity as marginal costs for digital advertising rapidly approached zero. And, they leveraged their sophisticated digital platforms to connect with customers—anywhere, anytime—to disrupt the advertising industry's fundamentals. Where these new digital players saw abundance, incumbents, even with their enormous capital resources and competitive advantages, could not see beyond their constrained business models.

Today's Business 4.0™ world requires a mindset shift: from focusing on scarcity and constraints to harnessing the abundance provided through digital ecosystems, while realizing that the idea of guarding one's place within an industry or sector without crossing industry boundaries, interacting with suppliers, customers, and, yes, even competitors, can't be done. Today, businesses need to be driven by purpose. They must focus on exponential growth opportunities, not incremental growth. This means being aspirational, and not allowing the old walls separating business from business, and customer from business, get in the way (Figure 1).

[4] GeekWire, "Report: Amazon takes more digital advertising market share from Facebook-Google duopoly," February 20, 2019. https://www.geekwire.com/2019/report-shows-amazon-taking-digital-advertising-market-share-google-facebook-duopoly/. Accessed July 29, 2019.

| Scarcity Mindset | Abundance Mindset |
|---|---|
| Profit oriented | Purpose and value oriented |
| Firm-centric with alliances and partners | Ecosystem-focused and entrepreneurial |
| More efficient operating models | New digitally-enabled business models |
| Stable with linear growth | Agile with exponential growth |
| Risk averse | Risk empowered |
| Conventional value chains | Ecosystem co-creation and value design |
| Insular and protective of ideas and information | Open and transparent flow of information |
| Manage customer expectations | Authentic, frictionless stakeholder experiences |
| Traditional vertical structures and management approach | Horizontal, collaborative structures and management |
| Limited resources and capabilities | Abundant and diverse talent pool |
| Reduced marginal cost | Near zero marginal cost |
| Focus on digital automation/transformation | Focus on digital disruption and innovation |
| Incremental Growth | Exponential Growth |

**Figure 1:** The Scarcity vs. the Abundance Mindset

## Some Established Companies Have Figured It Out

The leaders of established companies that have thrived in today's digital landscape think very differently about their industries and their competitors. They are aspirational. They think about their business's purpose, and about improving their customers' lives.

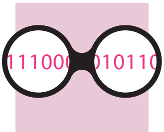
For example, CVS Health CEO, Larry Melo, described his goal as making health care "more affordable and less expensive."[5] To do that, CVS Health bought giant insurer Aetna in 2018 to help it provide more medical services to customers, in a more convenient manner. As Aetna President, Karen Lynch, said, the era of "episodic care… is being replaced by service where you live and shop. We're the new front door for health care."[6]

Companies like CVS Health are not modestly tweaking their business models, nor building walls, to defend their turf. They are looking holistically at their customers' journey, their pain points, their needs and desires, and seeing how they improve the customer experience by leveraging the burgeoning digital ecosystems in which we increasingly all live.

[5] The New York Times, "CVS Is Said to Agree to Buy Aetna Reshaping Health Care Industry," December 3, 2017. https://www.nytimes.com/2017/12/03/business/dealbook/cvs-is-said-to-agree-to-buy-aetna-reshaping-health-care-industry.html.

[6] Fortune, "CVS Wants to Make Your Drugstore Your Doctor," May 17, 2019. https://fortune.com/longform/cvs-aetna-health-care/. Accessed July 29, 2019.

## Looking Through the Digital Ecosystem Lens



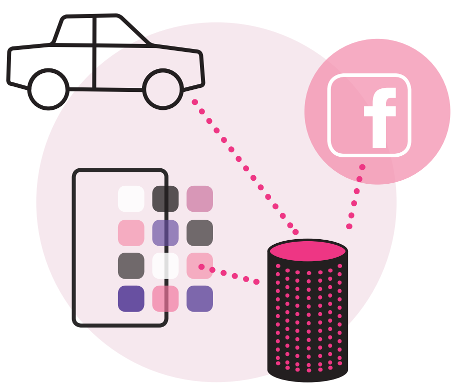
A digital ecosystem is a complex network of stakeholders that extends across industry verticals. These stakeholders—producers, suppliers, customers, and platform orchestrators—connect through digital platforms and interact in ways that create value.

In a digital ecosystem, participants act collectively to create new markets, deliver new forms of value, and build new and more engaging customer experiences.

The fact that ecosystems cross industry borders is key. They are horizontal, not vertical, forming connections among participants without regard to industry or sector. This allows ecosystem players to capture more opportunities, and improve their collaboration skills, which makes them more resilient and agile in the face of competitive market threats and fluctuations.

In a digital ecosystem, participants act collectively to create new markets, deliver new forms of value, and build new and more engaging customer experiences.

Uber, which leverages its platform business model to drive a mobility ecosystem, exemplifies the potential of the digital platform. Uber supports a network of on-demand transport and delivery services by connecting drivers, riders, and other stakeholders, while at the same time becoming a last-mile package delivery provider for ecosystem partners. To do this, Uber uses a number of technologies: smart phones, social media channels, mobile app stores,



personal digital assistants (such as Amazon's Alexa), payment service providers, geospatial services, and route optimization algorithms. And financial services partners enable transactions.

One need not be a digital native like Uber to leverage digital ecosystems. All one needs to do is change one's mindset. For example, John Deere has been manufacturing farming equipment for over 170 years. Today, however, it has become a platform provider. How did it pivot?

In the late 1990s, Deere recognized the dawning of precision agriculture, which used technology to lower farmers' costs, reduce water and pesticide use, and increase yield. The key technology in this revolution was GPS. Accordingly, Deere acquired a GPS company in 1999, embedding GPS capabilities into its equipment.

Leveraging its deep roots with farmers, Deere in 2012 launched MyJohnDeere, which is free to consumers who purchase John Deere equipment. Then, following the path blazed by Apple, Deere opened its platform to third-party developers, sharing APIs, and thereby increasing the variety and value of services offered to customers on the Deere platform. Now, Deere farmers can access Internet of Things (IoT) data for predictive maintenance of their equipment, and receive weather, seed, pesticide usage, and other data through the platform.

Deere is thinking big, aspirationally. In 2017, it acquired Blue River Technology, a company that provides artificial intelligence (AI) for precision agriculture, further enhancing the value of the Deere platform.[7]

John Deere's platform, like all platforms, benefits from the network effect, becoming more valuable as it grows by adding participants and partners. The value created expands over time. Deere now offers asset insurance, with the platform helping it assess and mitigate its risk, while allowing all participants across the ecosystem to mitigate their own. That is an example of the resiliency advantage provided by digital platforms and ecosystems.

[7] Wired, "Why John Deere Just Spent $305 Million on a Lettuce Farming Robot," September 6, 2017. https://www.wired.com/story/why-john-deere-just-spent-dollar305-million-on-a-lettuce-farming-robot/. Accessed July 30, 2019.

**How to Seize Opportunities in Digital Ecosystems:**

# Seven Mindset Changes

To thrive in a digital ecosystem, top management must change its mindset and practices in seven fundamental ways.

## From profit-focused to purpose-focused.


Digital ecosystems provide great opportunities to deliver more value to customers than ever before, but only if business leaders can look beyond how they've historically conducted business. As JPMorgan Chase & Co.'s Chairman and CEO Jamie Dimon said, "We believe that in a hyper-competitive world (with competitors known and unknown), the best strategy… is to offer the customer more: something better, faster, or more efficiently."[8]

Focusing on the customer doesn't mean a traditional approach involving guesswork about customers and perhaps analysis of past purchases. Today, customer focus means deeply understanding customer behaviors and expectations, and rapidly adapting to those expectations as they change—which they always do. This requires more than historical data; it demands advanced technologies to retrieve insights from that data, and the ability to navigate across silos and sectors because customers have become utterly agnostic about brands, and verticals, and only look for seamless purchasing journeys, whether that requires two, three, or more businesses. That makes an ecosystem of producers, distributors, marketers, and connected customers the best response.

[8] JPMorgan Chase & Co., Annual Report 2018. https://reports.jpmorganchase.com/investor-relations/2018/ar-ceo-letters.htm?a=1. Accessed July 30, 2019.

## From risk-averse to risk-embracing.

Once upon a time, companies thought the way to mitigate the risk of competitors seizing market share was to optimize their offerings for their most profitable customers, thereby erecting sturdy competitive barriers. But in the digital age, huddling behind your corporate walls increases the risk that an upstart will disrupt your business. When Craigslist appeared, the newspaper industry's previous stronghold on classified advertising revenue was no longer unchallenged. In short order, newspapers, deprived of their classified advertising revenue and buffeted by emerging digital advertising venues, began shuttering in a death spiral that continues today.

"The riskiest thing Disney can do is maintain the status quo."

Leaders in other industries have gotten the message. In CB Insights' 2019 State of Innovation Survey, 41% of strategy executives in multiple industries said their companies were either 'extremely' or 'very' at risk of disruption by emerging technologies.[9] The survey found that high-performing firms were twice as likely to say they seek risk rather than avoid it, and they were three times more likely to be first-movers compared to low performers.

Or, as Disney CEO Bob Iger has said, "The riskiest thing Disney can do is maintain the status quo."[10]

[9] CB Insights, Research Briefs, July 17, 2019. https://www.cbinsights.com/research/ceo-disruption/?utm_source=CB+Insights+Newsletter&utm_campaign=038dabee07-newsletter_general_Wed_20190717&utm_medium=email&utm_term=0_9dc0513989-038dabee07-87749473. Accessed July 30, 2019.

[10] Fortune, "The Leadership Quality That Truly Separates Disney's Bob Iger From His Peers," April 4, 2016. https://fortune.com/2016/04/04/the-leadership-quality-that-truly-separates-disneys-bob-iger-from-his-peers/. Accessed July 30, 2019.

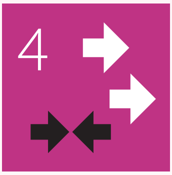
## From value chain master to ecosystem orchestrator.


When your product is delivered digitally, dominating a supply chain is no longer a guarantee of market success. Today, mastery of the digital ecosystem is where the greatest business value lies.

Ecosystem orchestrators connect stakeholders, creating value for all ecosystem participants. For example, Hong Kong-based Ping An began as an insurance firm. Now its business includes banking, auto sales, health care, and more. Ping An's digital platform—a cloud-based infrastructure with AI, automation, analytics, and deep learning capabilities—is used by companies such as Lufax, a financial services firm with 37 million customers. Now, Ping An's credit services are used by 300 Chinese banks, all part of the ecosystem Ping An orchestrates.[11] Its Good Doctor service connects patients looking for physicians with physicians looking for patients—230 million of whom are on Ping An's platform. It shouldn't be surprising that Ping An's revenue increased from $29 billion in 2010 to $145 billion in 2017.[12]

But platform mastery doesn't mean the benefits all go to the platform orchestrator; all participants profit by capitalizing on the platform's capabilities, and the customers and businesses it attracts.

## From competition to coopetition.




Coopetition balances cooperation with competition, transforming the business landscape from a "winner-takes-all" model to one of opportunity for all. In digital ecosystems, players grow more dependent upon one another, and on the platform orchestrator/provider.

For example, it's almost impossible to imagine ecommerce today without PayPal. The online payment system plays a critical role in multiple digital ecosystems, and provides its financial services to buyers, sellers, and consumers alike. It wouldn't

[11] Ping An Annual Report 2017 (http://www.pingan.com/app_upload/images/info/upload/fefe8a8e-fd10-4814-b7b2-aaecf814ff6d.pdf). Accessed July 30, 2019.

[12] Ibid.

make sense for every business in the digital ecosystem to develop its own payment services to compete with PayPal, because the value PayPal provides is shared equally by all ecosystem players; there's no competitive advantage to be gained. This allows ecosystem players to compete in other, more value-added areas.

## From linear to exponential growth.

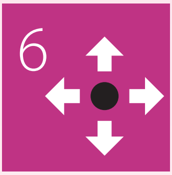

In the technology industry, it took Google 19 years to cross the $100 billion revenue threshold. Founded in 1998, that happened in 2017.[13] (Today, it's a $137 billion company.) In contrast, it took IBM 100 years to pass $100 billion revenue.

To accommodate this kind of accelerated growth—enabled by the rapid pace of technological advancements and the interconnectedness of today's value chains—executives must prioritize managing for speed, responsiveness, and flexibility. Decisions have to be made faster; creativity and innovation must be the order of the day. This is a mindset shift from incremental improvement, the traditional, risk-averse approach to growth based on Industrial Age thinking where products came off assembly lines and management devised plans to maximize efficiency. But as the futurist Gerd Leonard argues, "Any company… that doesn't shift from planning to imagination" will have a hard time surviving.[14] Leonard adds that, "those [companies] that can see at least one, or two or three steps beyond the obvious will succeed, and that requires a creative approach."

[13] CNN Business, "Google posts its first $100 billion year," February 1, 2018. https://money.cnn.com/2018/02/01/technology/google-earnings/index.html. Accessed July 31, 2019.

[14] Reimagining the Future, "An Interview with Futurist Gerd Leonhard," January 14, 2015. https://frankdiana.net/2015/01/14/an-interview-with-futurist-gerd-leonhard/. Accessed July 31, 2019.

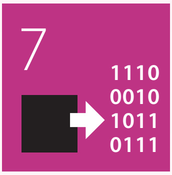
## From owning to sharing resources.




Vertical integration used to be a corporate goal because it granted control over costs and ensured compliance with company policies. However, it was also limiting. Today, in the ecosystem environment, horizontal integration grants almost unlimited access to resources and capabilities, as well as customers. Ecosystem participants can leverage technologies and gain capabilities that were previously cost-prohibitive. Un- or under-monetized assets can gain value by linking to a digital ecosystem.

For example, Siemens Healthineers, a part of the Munich-based industrial giant, has used the cloud to build a vast data lake of clinical studies from imaging equipment, such as MRI machines, and has invited ecosystem partners to contribute and share resources. A new partner, Amra Medical, has developed technology to turn images from a whole-body MRI scan into precise, 3D-volumetric measurements to assess a patient's health status in only six minutes.[15] Without the ecosystem orchestrated by Siemens Healthineers, health care providers, and patients would not be able to leverage a new and promising tool.

## From physical assets to data assets.




Marriott International owns about 5,700 properties in more than 110 countries. Its hotels boast 1.1 million rooms for business travelers, vacationers, and others.[16] With all these assets, one would think it would be difficult, if not impossible, for a new competitor to catch up with a company that has been building and acquiring these assets since 1927. One would be wrong.

Airbnb was launched a little over 10 years ago, in 2008. Today, without owning any rooms, the company lists more than six million places to stay in more than 100,000 cities. It claims that over 2 million people worldwide stay in an Airbnb room every night.[17]

[15] Siemens Healthineers, "Digitalizing healthcare," March 6, 2018. https://www.siemens-healthineers.com/press-room/press-releases/pr-20180306009hc.html. Accessed July 31, 2019.

[16] Marriott International, News Center, September 23, 2016. https://news.marriott.com/2016/09/marriott-international-expanded-loyalty-benefits/. Accessed July 31, 2019.

[17] Airbnb Newsroom, "Fast Facts." https://press.airbnb.com/fast-facts/. Accessed July 31, 2019.

By leveraging the shared economy made possible by digital interconnectedness, Airbnb in a fleetingly short time has become a disruptive, dominant force in the hospitality industry by leveraging data. It has deployed advanced technologies—analytics to make recommendations and match travelers with renters; ranking algorithms to test and improve those recommendations in an agile, iterative fashion, and natural language processing to analyze user sentiment, among others—while taking advantage of social media and recommendation sites.

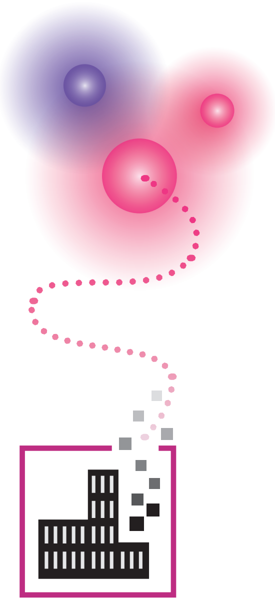
The truth is that leading companies are able to create purposeful, forward-looking visions that support actions that will empower them to pursue a future engaged in digital ecosystems.

The days are over when a business's assets created a barrier to entry. Today, a firm's assets may, in fact, be a competitive burden as, like Marriott, they confront asset-light rivals operating at near-zero marginal costs.

Changing an established organization's mindset to embrace ecosystems is a steep challenge. The 2020 TCS CIO Study found that companies with large investments in physical assets, or nascent efforts to launch digital business initiatives, see more hurdles than benefits facing them. For example, 56% of industrial manufacturers in the study said they see only limited opportunities to further digitize their businesses.

It's understandable that these firms would envision little upside to digital business. But they overlook the opportunities that others clearly see. The future view changes dramatically for companies that have seen strong revenue gains this decade from their new digital business models. In the study, these companies are described as digital leaders—and 94% of them say they see a lot more to do, or believe they have only begun, in finding new digital opportunities.

Said another way, these responses match what we have seen. The truth is that leading companies are able to create purposeful, forward-looking visions that support actions that will empower them to pursue a future engaged in digital ecosystems.



## Next Steps

Start-ups, as Uber, Airbnb, and Amazon once were, have had the luxury of building businesses that incorporate digital ecosystems. That path is more difficult for established organizations. But that doesn't mean they necessarily will be shut out of Business 4.0.

Ford, for example, is attempting to reinvent itself as a platform orchestrator in the emerging mobility ecosystem, adjusting to a world in which cars are not owned but paid for on a usage basis, like SaaS.

In 2016, Ford acquired Chariot, a ride-share company.[18] This enabled Ford to begin learning about the mobility ecosystem and to test new business models. In 2018, Ford purchased Autonomic, a cloud computing platform for transportation systems, and TransLoc, another start-up, that helps manage urban transit systems.[19] These acquisitions are helping Ford become less a manufacturer of vehicles and more a software and platform company, readying itself to become a participant and an orchestrator in the new mobility ecosystem.

Ford is rethinking the fundamentals not only of its own business, but of business in general. And that's the challenge that faces all traditional businesses today.

[18] Business Insider, "Ford paid more than $65 million for shuttle-van start-up Chariot," September 12, 2016. https://www.businessinsider.com/ford-buys-chariot-65-million2016-9. Accessed July 31, 2019.

[19] Fortune, "Ford Snaps Up Two More Start-Ups in Mobility Push," January 25, 2018. https://fortune.com/2018/01/25/ford-snaps-up-two-more-startups-in-mobility-push/. Accessed July 31, 2019.

Business leaders can begin this journey by asking themselves what about their businesses will either contribute to, or detract from, success in an ecosystem-driven world.

- Is the business insular, operated to manage in a risky environment of scarcity, or is it collaborative, embracing risk, and a mindset of abundance and opportunity?
- Does the business create and capture value though traditional vertically integrated supply chains, or does it co-create value with partners and customers?
- Is the organization focused on short-term profits and shareholder value, or is it purpose-driven, looking to enhance stakeholder experiences?
- Is the company hierarchical, with decisions made top-down, or is it flat and collaborative?

No business is all one thing or another. The key is to assess where your company is on a spectrum, from firm-centric to ecosystem-focused. Once you know where you are, you can begin the journey that will permit your company to join, profit from, and contribute value to the digital ecosystem future.

Today, a firm's assets may, in fact, be a competitive burden.