Gartner

2018 Report No. 10

Gartner Executive Programs

Winning in a World of Digital Dragons

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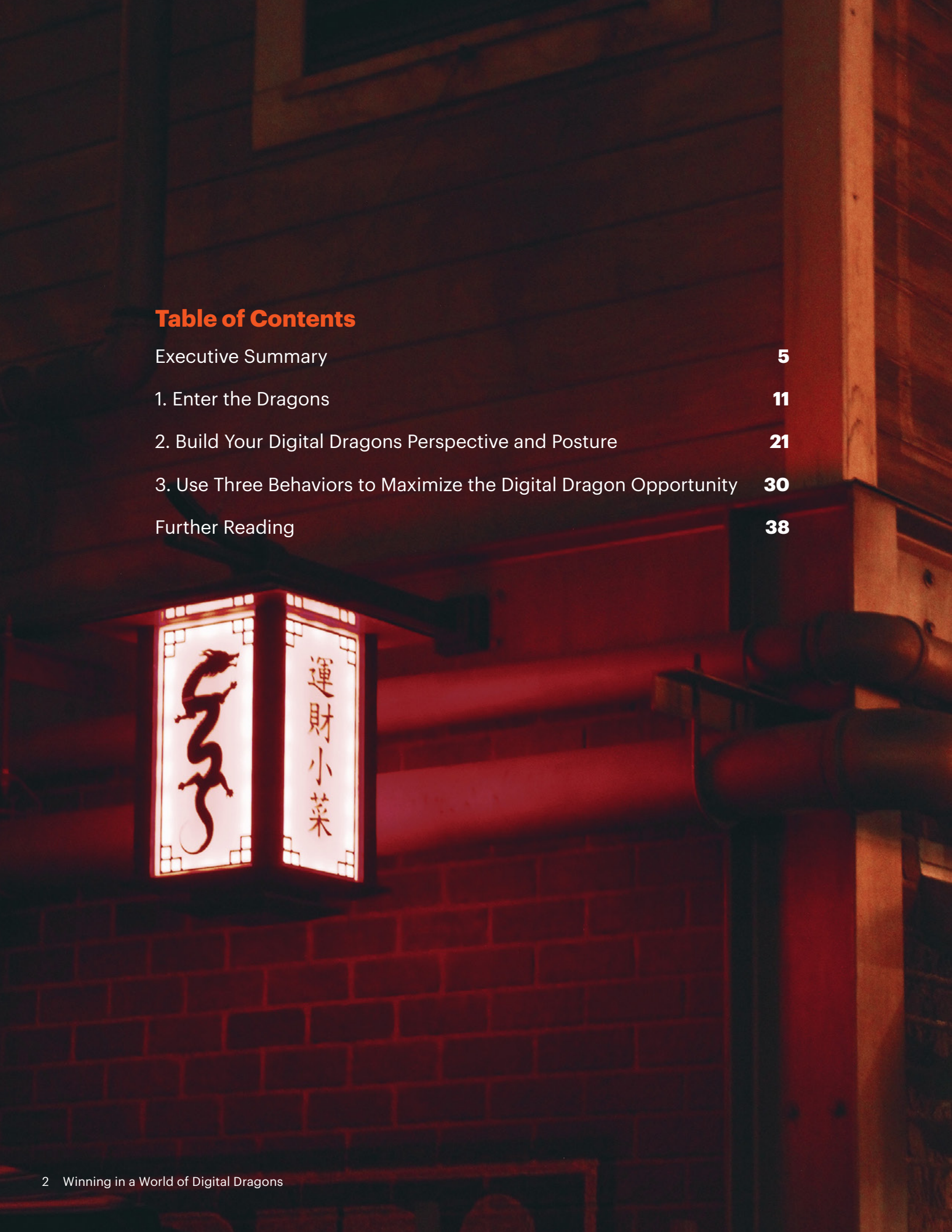

Foreword

Digital disruption is coming to every industry and geography. Digital dragons like Alibaba, Amazon and others are playing evolving roles related not only to technology, but also to customer experience, payment, data and insight. They have deep pockets, great talent and attractive brands.

This report addresses the question: *How should businesses and their leaders think about, plan for and play with the digital dragons to be most successful?*

"Winning in a World of Digital Dragons" was written by members of the CIO research group, led by Dave Aron (distinguished vice president), assisted by Leigh McMullen (vice president).

Like all Gartner Executive Programs reports, "Winning in a World of Digital Dragons" provides insights for CxOs in all industries and geographies. We focused our research interviews on executives in the automotive, transportation and travel sectors, as the digital disruptions occurring there offer powerful lessons for all industries.

Dave Aron

Leigh McMullen

Acknowledgments

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- The contributors to our interview reports and case studies: John Newman, Audi (Germany); Falk Bothe, Volkswagen (Germany); Li Hongwei, Dongfeng Motor (China); Klas Bendrik, formerly of Volvo Cars (Sweden); Chris Saul, Hitachi Consulting (Japan/U.K.); Ondrej Burkacky, McKinsey (Global); Martin Piqueras Caro, SUEZ (France); Roland Keiser, Traveloka (Indonesia); Graeme Hackland, Williams F1 (U.K.)
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Executive Summary

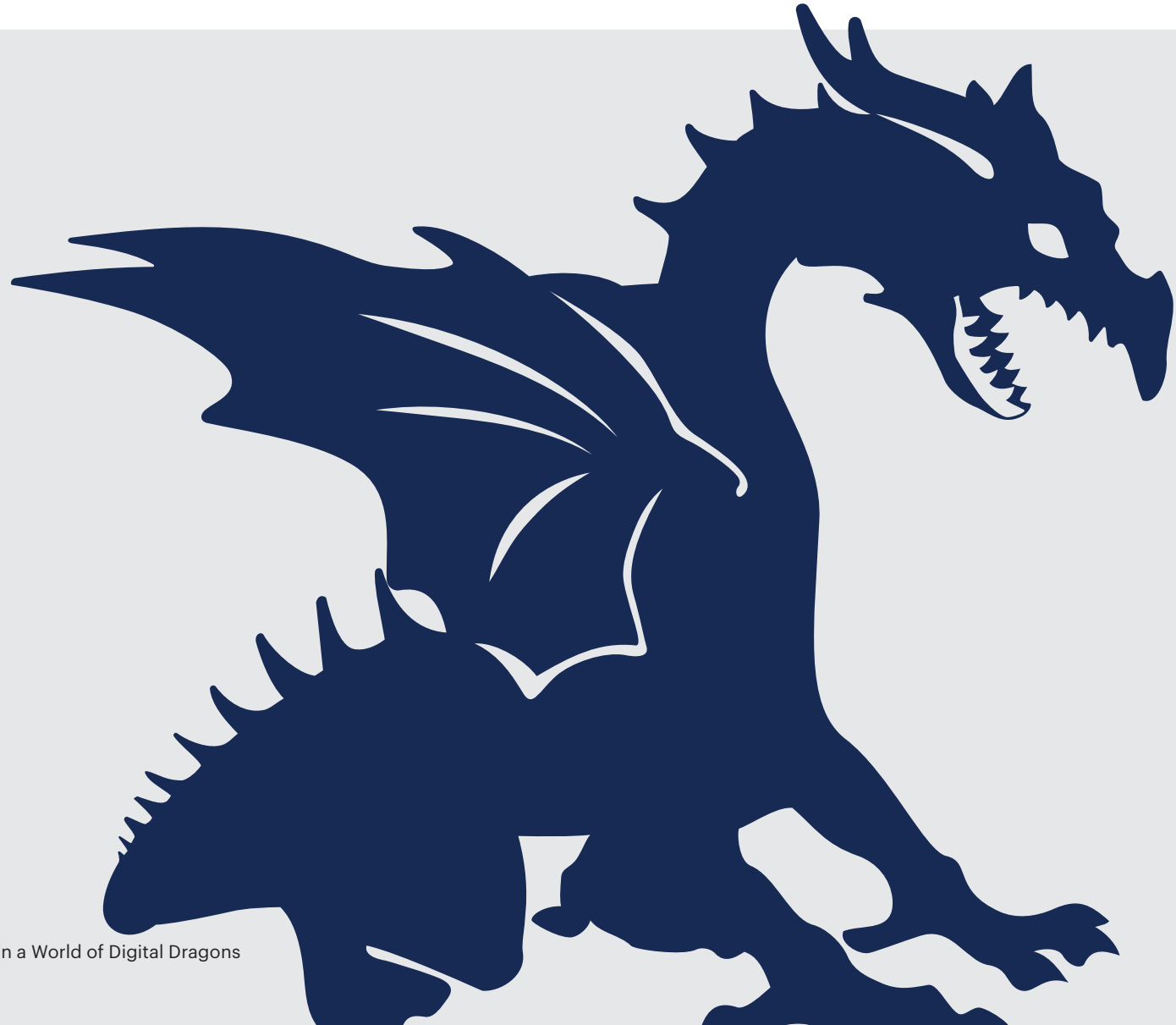
Understanding the large digital competitors that play multiple roles in a growing number of industries is one of the most important considerations related to winning in an increasingly digital world. Few companies are prepared for or sufficiently experienced with these digital players. That must change.

Enter the Dragons

As the importance and effects of digitalization grow, a class of companies that we label “digital dragons” (which overlap with but are different from digital giants) is of critical importance to all organizations, and needs special treatment in both strategic planning and execution.

Digital dragons have seven key characteristics. They:

- Build and orchestrate platforms, ecosystems and de facto standards that are at a much larger scale and more modern than the vast majority of companies, and that attract many corporate and consumer partners.
- Are very active and highly skilled in collecting, analyzing and monetizing big data about customers and others, including by using artificial intelligence (AI).
- Have end-to-end involvement and capability in industry supply chains, from basic components through to digital customer/citizen experience.
- Provide infrastructure and application services (cloud) and tools at a large scale that are useful to most organizations in most industries.
- Have deep pockets and are investing heavily in R&D in areas like AI, the Internet of Things (IoT) and robotics.
- Compete as principals in industries beyond digital services, such as online retail.



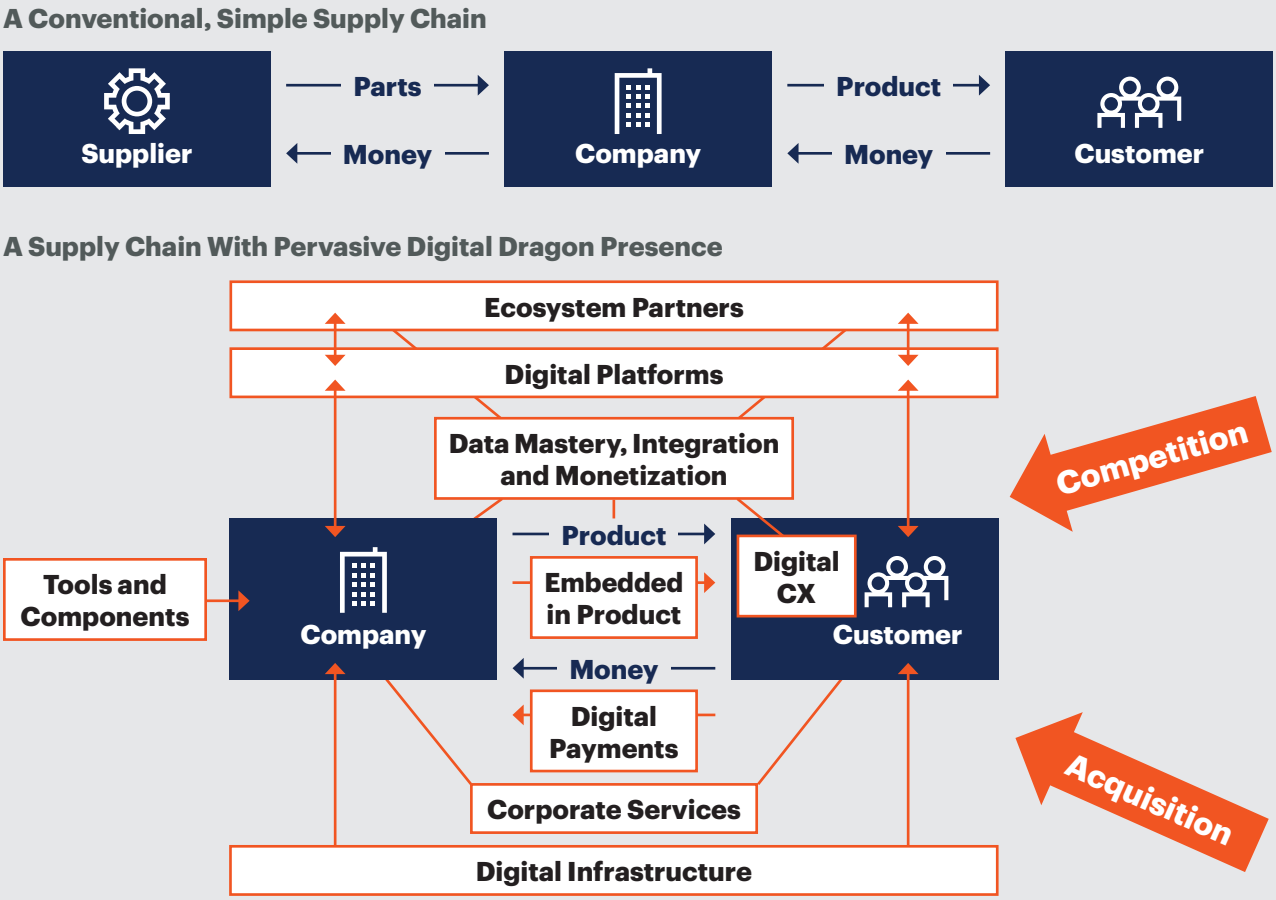
- Attract and retain very talented people in digital domains with scarce resources like data science, AI, digital anthropology and cloud architecture.

Companies that satisfy these criteria certainly aren't the only important players in digital disruption, nor are they all doing everything perfectly. But they are different and powerful because they play so many varied and important roles in an increasingly digital world. They cannot and should not be thought of or treated simply as a vendor, or even a traditional partner, in a conventional linear supply chain. They are multiheaded entities with the power to accelerate, challenge or transform many aspects of most conventional companies, and government agencies' business models (see Figure 1). They are arguably the most complex type of partner that has ever existed in the economic world.

Build Your Digital Dragon Perspective and Posture

Digital dragons represent not only a key piece of the economic landscape, but also a major opportunity and threat to organizations in all industries. Hence, all businesses should devote time to developing their understanding, perspective and posture toward their digital dragons.

Figure 1. The Digital Dragons Are a More Complex Partner Than Has Ever Existed Before



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Source: Gartner (November 2018)

Step 1: Build your knowledge and understanding of your digital dragons. Compile a "deck" of digital dragon cards (see Figure 2). Each card ought to feature information on a company that you see as best fitting the seven characteristics in Figure 3.

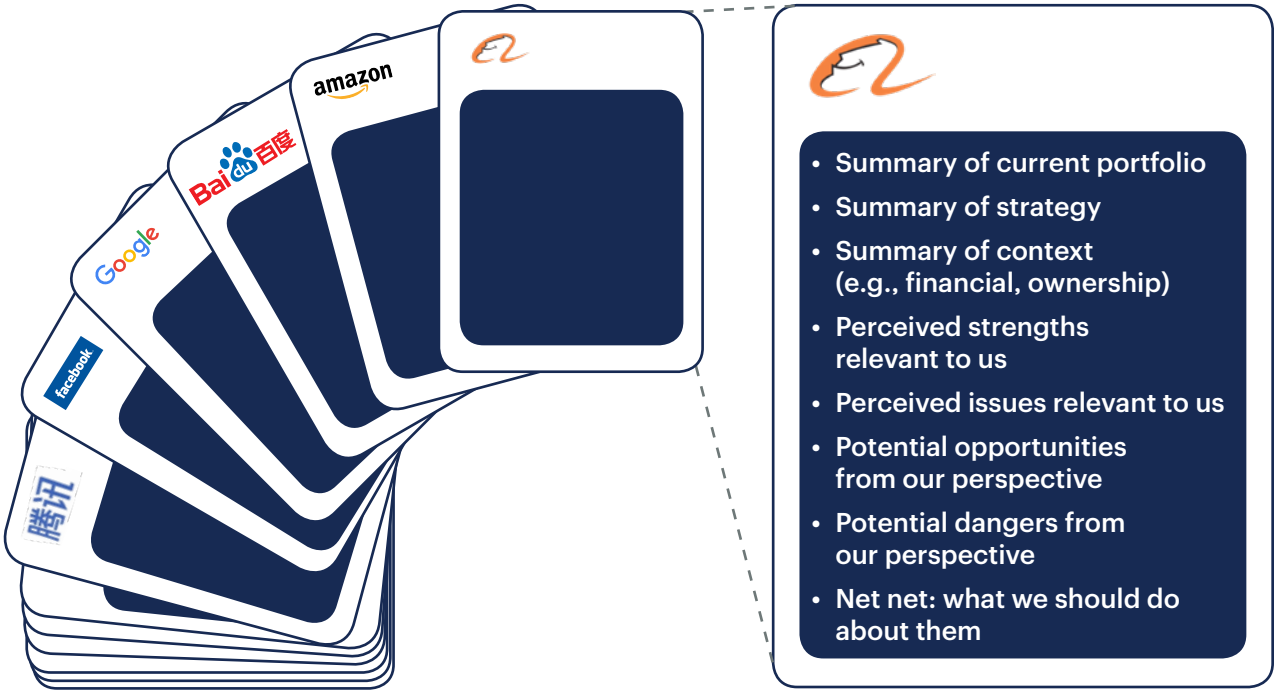
Step 2: Model how your most important digital dragons think about you and your industry. Do they:

- View themselves as one or more of these roles:
  - A provider of standard services?
  - An industry-specific platform owner or orchestrator?
  - A product or component producer for your industry?
  - A sensor, sucking out the industry's data and monetizing it?
- See the best way to achieve those goals is by:
  - Partnering with you or your competitors?
  - Becoming a next-gen player themselves?
  - Acquiring one or more players in your industry?

Step 3: Think through your strategic posture, beyond simply using each dragon's standard products and services. You have five options (see Figure 4). Will you:

- Make a "dragon best friend" — that is, a deep commitment to one dragon?
- Play the field, partnering with multiple dragons?
- Do it with point players, small and midsize businesses (SMBs) and startups?
- Avoid partnership with the dragons and do it yourself?
- Take on the grand challenge of becoming a digital dragon yourself, with the aim of providing extensive digital services across industries?

Figure 2. Build Your Digital Dragon Deck



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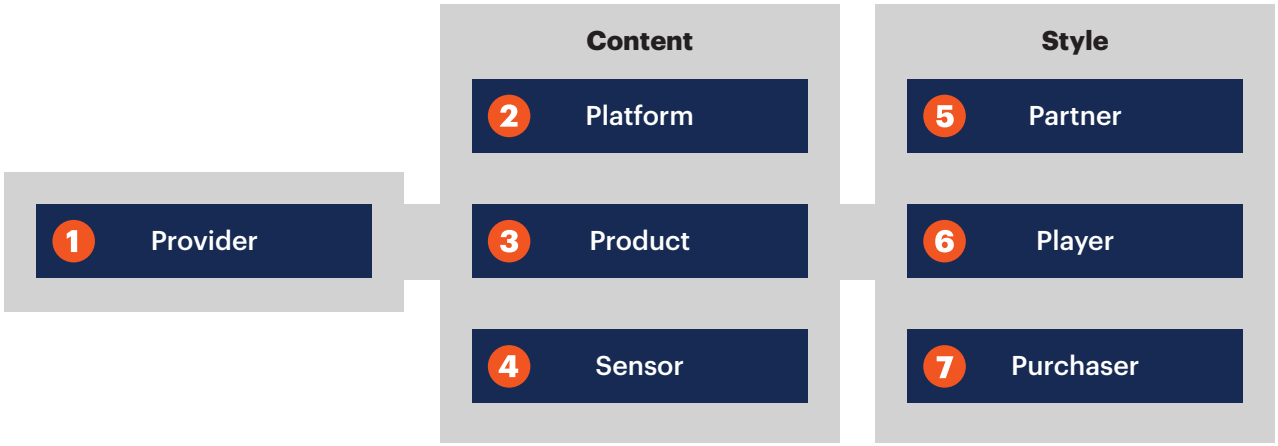
Source: Gartner (November 2018)

Figure 3. The Seven Roles a Digital Dragon Can Play in Each Industry



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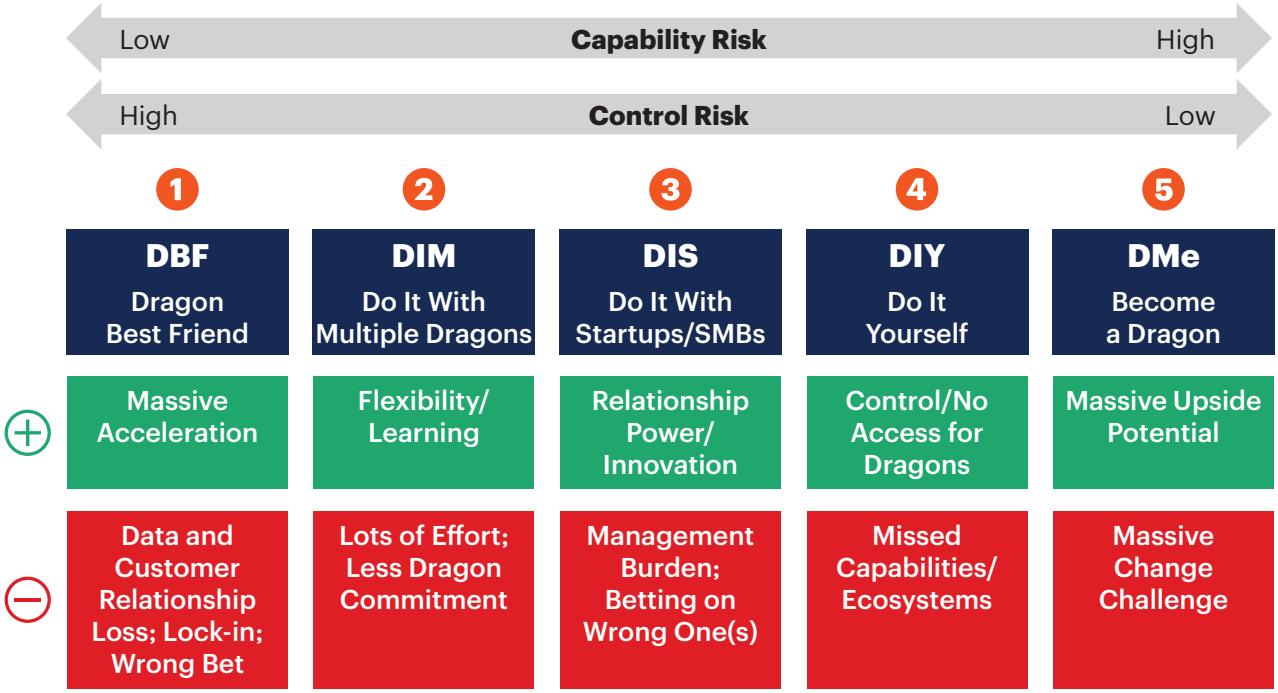
Source: Gartner (November 2018)

Figure 4. Five Approaches to Working With the Digital Dragons



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Source: Gartner (November 2018)

Each approach has benefits but engenders risk. Companies should decide which approach best suits their context, and view this as a multistep game over time. Enterprises composed of a group of relatively independent companies can consider following multiple approaches at the same time.

Use Three Behaviors to Maximize the Digital Dragon Opportunity

Whatever high-level approach you choose strategically, your organization must execute the strategy well. Companies that have been at the bleeding edge of working with digital dragons exhibit three differentiating behaviors.

First, the digital dragons will show up in many parts of your business and, if you are not careful, may have a better, more integrated view of their relationship with your business than you do. Without necessarily getting heavy on governance, you must create an integrated view of your relationship with each dragon.

Second, you will experience friction if you get close to a digital dragon, in terms of culture, style, ways of working, tools and rhythms. The key is to make this friction productive by:

- Managing expectations
- Budgeting time and resource to allow for it
- Structuring the relationship to maximize your exposure to them
- Creating a project thread for learning from differences

Third, hunt down and eliminate your biases in terms of which dragons you study and seek to work with, especially biases toward those you already know, and those that are darlings of the media. Most importantly, if you are based outside China, avoid biases against Chinese dragons. Dragons like Baidu, Alibaba and Tencent (collectively known as BAT), and other large, ambitious players in related spaces such as Huawei, Xiaomi and JD.com warrant considerable attention. The Chinese government itself has a number of very large, bold national plans that drive the country's digital innovation and adoption, including the social credit initiative, the next-generation AI development plan and Made in China 2025. As you craft your digital strategy, ignore China at your peril.

Enter the Dragons

As digital disruption spreads to more and more industries, it is becoming clear that there is a class of companies — digital dragons — of critical importance to all organizations. Digital dragons need special treatment in both strategic planning and execution.

Digitalization Is Disrupting Every Industry

It is no surprise that most information-intensive, physical-asset-light industries, such as media, have been deeply digitally disrupted. But disruption is now coming to all industries faster and more deeply than they are ready for. The automotive industry is a standout example of this.

"I was a loyal <car brand> customer for a decade, buying nine of their cars in the last 10 years. But their car navigation options didn't work well in my country. So, finally, I switched this year, and bought a <car brand 2>, so I could have a better navigation system."

Nordic CIO, 17 September 2018

"Seventy-five percent of customers said they bought the [Roewe] RX5 because of [Alibaba] AliOS and the large screen inside, according to an owner satisfaction survey."

Financial Times, 30 October 2017

> "All the stuff we have expected for a decade is finally coming true: Electric vehicles, the commute as an extension of your home/office and smart cities with tech in streetlamps. Some of the tech is already coming from Formula 1. Our advanced engineering group is working with one company on autonomous vehicle cybersecurity, and with two major car companies on high-performance electric vehicles. We're doing simulations for the City of Bath; investing in startups. We're even talking to someone who wants to use our data — we'd have never considered that before."
>
> Graeme Hackland, CIO, Williams F1

"We have a clear vision: we will continue to build vastly superior vehicles. But going forward, our Volkswagens will increasingly become digital devices on wheels."

Jürgen Stackmann, Volkswagen board member for sales, August 2018

Customers are starting to decide which car to buy based on the digital services they can access. Digital disruption is heavily influencing a traditional, heavy-physical-asset and process-centric industry. Cars have up to 150 million lines of code, 70 onboard computers and a data exhaust of 1 GB per hour. And this is all well before big changes like autonomous cars (which will generate 4 TB every 90 minutes, depending on camera quality), or cars deeply connected to smart city ecosystems.

In a 2016 study, McKinsey estimated that the automotive revenue pool of $3.5 trillion would grow at a compound annual rate of 4.4% to reach $6.7 trillion by 2030 (see Further Reading section). But whereas one-time vehicle sales represented nearly 80% of revenue in 2016, it would reduce to less than 60% in 2030, with recurring revenue, including car sharing, "e-hailing," navigation and entertainment services, rising from less than 1% to more than 20% of the overall revenue pool — $1.5 trillion — by 2030.

Throughout this report, we use the automotive, travel and transportation ecosystem to draw out examples for CIOs, other leaders and businesses in all industries, since it is a traditional physical industry that is being heavily disrupted by digital considerations. For example, we were struck by the breadth of digital activity that a leading modern airline must engage in. The head of digital transformation at one large airline company that flies tens of millions of passengers per year tells us: "We're using digital to become more like a retailer. Airlines have traditionally been order-centric. We are moving to becoming truly customer-centric." To that end, this airline

company is engaged in a wide variety of digital initiatives, including:

- Digitalizing specific areas of their existing operations to improve performance
- Working across large airline ecosystems to become more customer-centric
- Experimenting alone, and across ecosystems, with technologies such as AI and blockchain
- Spinning off separate digital lines of business

This digital leader notes that many of its digital investments involve diffusing innovation across the air transport ecosystem, because of the industry's structure and nature. "We have to approach ecosystems like an onion — one layer at a time — for example, deploying in part of our business, then our whole group of businesses, then across alliances we have with other airlines, then ultimately the whole industry." He also notes that his digital transformation work has brought him into contact with many startups and, "Not one of the digital startups I have come across has a CIO." Digital is increasingly diffused throughout businesses, not a separate component.

The term "enterprise IT" tends to refer to the ERP, CRM, HR, finance and other systems that make a business's processes more efficient, effective, agile and safe. "Digital" typically refers to the use of information and technology (I&T) to change business strategy, platform and ecosystem strategy, business model, product and service strategy, and customer experience. IT is a $3 trillion industry, but digital shouldn't be thought of as an extension or evolution of that. Digital is about transforming the $100 trillion gross world product (GWP).

Digital challenges most traditional "brownfield" organizations, often requiring deep change. The term brownfield refers to organizations that have a history, legacy technology, processes, structure, culture and ways of working that must all be factored into their digital transformation. (Startup organizations, or projects wholly unconnected to current company context, may be labeled "greenfield.") For example, the top 100 automakers' revenue totaled $2.8 trillion in 2017. Global giants like Volkswagen ($277 billion), Toyota ($260 billion), Daimler ($197 billion) and Ford ($157 billion) are used to having their own

> "Car companies have historically struggled to get to know about their customers or how they use their cars. The limited touchpoints are traditionally the point of purchase and when cars are serviced, and those touchpoints are often indirect. Today, phone companies may know more about how their customers drive their cars."
>
> Ondrej Burkacky, partner, McKinsey

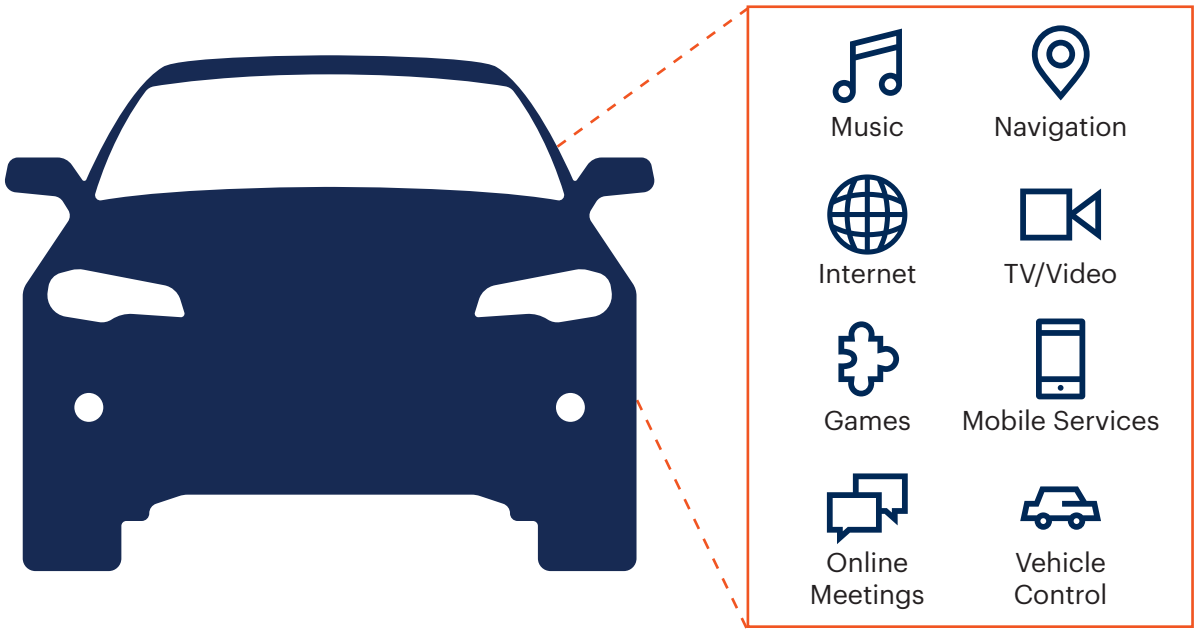
way, able to apply decades of deep experience, manufacturing capabilities and powerful brands to win (see Figure 5). Suddenly, they face some new realities:

- Moving from cars as products to cars as platforms and channels
- Moving from periodic and sometimes indirect customer interactions (sales, services) to continuous value and information exchange
- Moving from a new product every four to five years to customers expecting frequent updates
- Moving from customers deciding based on traditional car attributes (speed, comfort and so on) to also deciding based on availability of digital services
- Partners like phone companies and digital service providers having much more frequent contact with, and broader and deeper knowledge of, their drivers and passengers
- Those same partners sinking billions of dollars into developing digital capabilities like natural language processing (NLP) and virtual assistants (VAs) that may be hard to catch up with

This paints quite a challenging picture in what one would not traditionally think of as an IT-centric business. This report is written for the benefit of, and from the perspective of, all CIOs in all industries, particularly brownfield businesses. Most (if not all) of the above considerations affect every industry.

Digitalization is also blurring industry boundaries. Traditional focus on internal assets and capabilities has led to fairly hard boundaries — you either have a car factory or you don't.

Figure 5. The Car Is Becoming a Digital Platform



ID: 367758
Source: Gartner (November 2018)

A focus on data, digital and the customer experience makes things much more fluid. At a recent conference in Germany, Hui Zhang, CEO of NIO, a Chinese electric car company, threw up two figures:

- People waste 130 billion minutes of productive time every day in commuting.
- 1.3 million die on roads every year.

Zhang told the audience that his company focuses on reducing those two statistics. To do so, it also focuses on nontraditional-automotive areas, like building NIO houses — shared spaces that NIO customers can use to work and relax — to extend the NIO driver's experience.

Similarly, in August 2018, Singapore Airlines (SIA) extended its alliance with Alibaba. SIA gets access to Alibaba's 600 million mobile users; SIA joins Alibaba's Cainiao logistics alliance that delivers in 24 hours across China and 72 hours globally; and Alipay will be usable for all inflight purchases. It is a not a huge stretch to imagine a near future where air travelers can buy anything sold by companies like Alibaba and Amazon, and have their purchases delivered to their destination airport.

In short, digital considerations have to influence:

- Business strategy
- Competitive intelligence
- Product strategy
- Marketing strategy
- Partnership strategy
- Almost every other aspect of every business, from now on, for the foreseeable future, in all industries, including the public sector, B2B and B2C, small businesses and industry giants, highly informational industries, physical-asset-intensive industries and everything in between.

The Digital Dragons Are a Critical Part of This Digital Story

One challenging question that digital disruption raises is how traditional brownfield companies and government agencies should think about, and plan for and with, the digital dragons.

We have chosen to use the term digital dragon, as opposed to other commonly used terms such as digital giant, since we see that companies that fulfill all seven of these criteria must be considered differently to very large IT industry players which play a less complex set of roles.

Obvious candidates for digital dragons are the Chinese trio Baidu, Alibaba and Tencent (known as BAT), Amazon and Google. They would probably all qualify for all seven characteristics. But there is not a single, definitive set of companies that should be considered the digital dragons for all companies for all time. Companies move on and off of the list. Chipmakers ARM and Nvidia, and companies coming from the IoT world such as Siemens and PTC, may be seen as transforming from specific niche roles to broader digital players. Each business should create and maintain its perspective on who the digital dragons are (see How Audi Deals With "Digital Champions").

Most of the companies that would qualify as digital dragons by the seven characteristics have grown rapidly over the past few years: For example, Alibaba's revenue grew from $3.2 billion to $23 billion from 2012 through 2017, a compound annual growth rate (CAGR) of 49%. Google's CAGR from 2007 through 2017 is 21%. And most digital dragons have eye-watering R&D budgets. In 2017, Amazon's combined capex and R&D totaled well over $30 billion. Google/Alphabet's came close.

Definition of Digital Dragon

The term digital dragon refers to a large organization (multibillion-dollar revenue) that plays multiple roles in the digital aspects of the world. Digital dragons exhibit seven key characteristics. They:

- Build and orchestrate large-scale, modern platforms, ecosystems and de facto standards that attract many corporate and consumer partners.
- Are very active and highly skilled in collecting, analyzing and monetizing big data about customers and others, including using AI.
- Have end-to-end involvement and capability in industry supply chains, from basic components through to digital customer/citizen experience.
- Provide infrastructure and application services (cloud) and tools at a large scale that are useful to most organizations in most industries.
- Have "deep pockets," and invest heavily in R&D in areas like AI, IoT and robotics.
- Compete as principals in industries beyond digital services, such as online retail.
- Are digital talent magnets, attracting and retaining very talented people in digital domains with scarce resources like data science, AI, digital anthropology and cloud architecture.

All of the above illustrates how powerful and important these dragons are. However, we must not worship them, or blindly follow or copy everything they do. Despite their importance and success, we mustn't assume that every behavior each dragon exhibits causes its success or creates value. And even if those behaviors *do* create value, that doesn't mean they will work in other industries and contexts.

Although digital dragons that satisfy the seven characteristics warrant special attention, they are not the only players in the digital world that require careful strategic consideration. Other types of key players include:

- Traditional IT powerhouse vendors like Microsoft and IBM that may fit most of the above, but, for example, may not participate as principals in industries beyond the digital world
- Digital giants like Facebook, Apple and Netflix, which have modern, scalable architectures, ecosystems and consumer relationships, but may not (yet) serve companies in as diverse a set of ways
- Companies that provide a more narrow set of components (such as chips or specific software applications)
- Startups and midsize technology companies that are not yet at unicorn (billion-dollar) scale
- Companies that have their roots outside the IT world, like GE, Philips and Haier

How Audi Deals With "Digital Champions"

John Newman is responsible for Audi's digitalization strategy. As part of the Volkswagen Group, Audi tries to share with others in the group where possible, using a groupwide digital services committee to provide coordination. For example, Audi leverages Volkswagen Connect. Audi have also spun off an autonomous intelligent driving company, AID.

Audi's digital strategy aims to achieve a $1 billion profit by 2025. "I keep that goal in front of everyone," Newman says. Other high-level goals include creating an effortless customer experience (getting rid of pain points and friction) and reducing general complexity. Digitalization at Audi has four components:

- Big-ticket items — e.g., bringing existing products into the digital age
- Must-dos — e.g., support for new smartphones
- Wow factors — things that customers didn't expect
- Enablers — heavy lifting, like connectivity inside the car

Regarding the digital dragons, Newman shares two important insights. First, the world has to understand that digital is a "two-speed industry." There is the top digital tier of companies that are wholly focused on digital, and have an army of smart digital talent, patient investors and big visions. And then there is everyone else. Even if they are giants in their industries, most companies probably shouldn't try to go toe to toe with the digital giants on their own turf. Newman believes companies have to be realistic and understand the trade-offs of working with the digital giants versus going it alone.

Second, there is an opportunity — maybe even an imperative — to learn from how these digital giants are working. "We made a list of 60 digital champions," Newman says. "We studied them and distilled out a set of 12 principles for digital success. We then boiled them down to four to five rules."

Finally, Newman highlighted the criticality of skills in digital disruption: "Digital talent is a big challenge for everybody. Developers who can write code that can anticipate how things will need to flex in future are incredibly valuable. We are addressing this by a qualification campaign for AI and big data and by building up local development capability in multiple locations, including China."

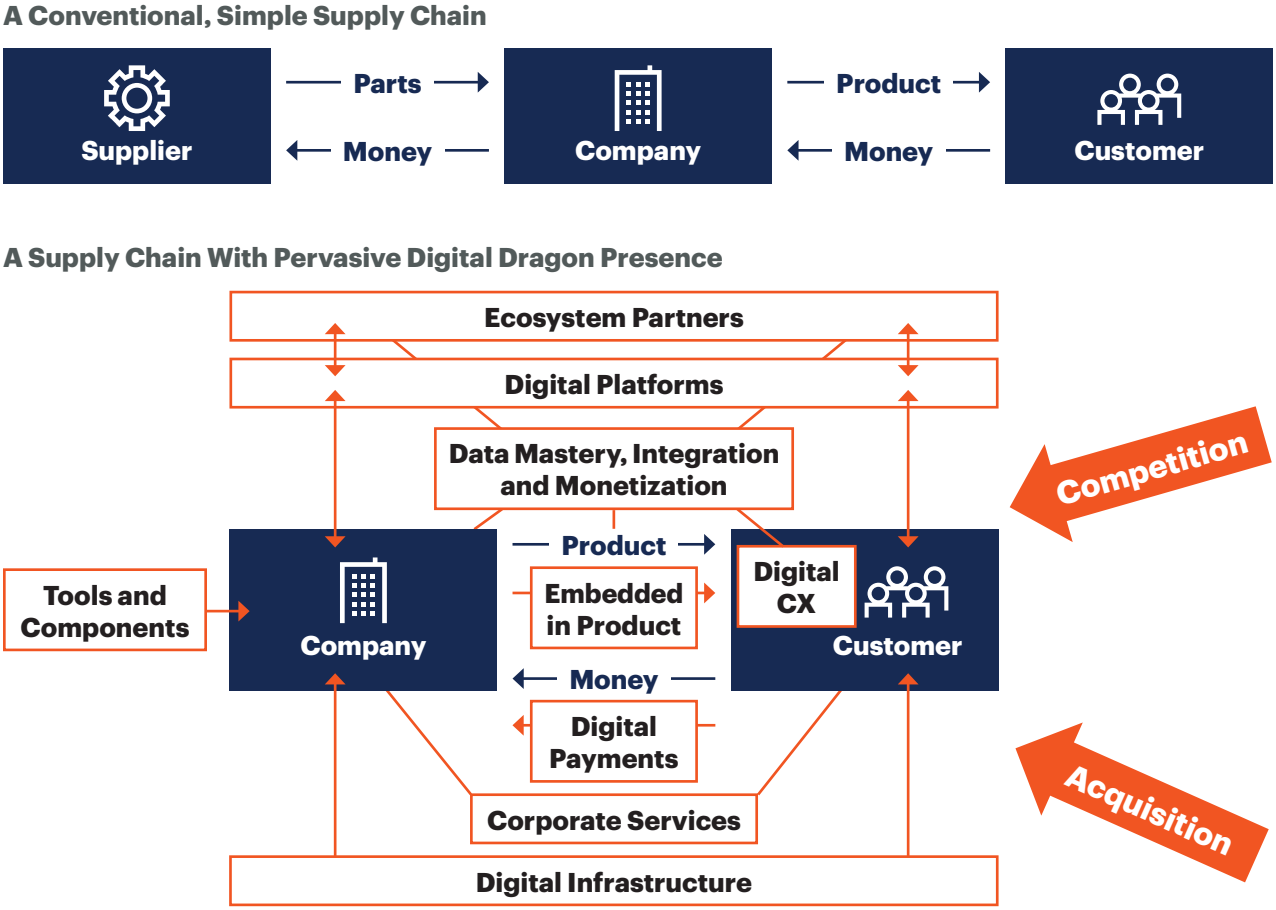
The Digital Dragons Are a More Complex Partner Than Has Ever Existed Before

To repeat, the digital dragons aren't the only important companies in the digital world. But the reason that Gartner has defined this category of digital dragon in this way, with these seven criteria, is because that set of characteristics makes them an incredibly complex, pervasively present partner in the increasingly digital world.

What might one of these digital dragons mean to your company? There are at least 10 roles they may play in your world (see Figure 6):

- A supplier (or sponsor) of tools and components that help you create and run your business (e.g., AI software libraries like TensorFlow and Paddle Paddle)
- A provider of scalable digital cloud infrastructure that underpins your and many other companies' digital capabilities
- A provider of commodity corporate services (e.g., HR, finance, email and office automation)
- A digital payment platform that you use to pay and get paid (e.g., PayPal, Alipay and WeChat Pay)
- Components embedded in your products and services that add value to them (e.g., voice recognition and navigation in cars)
- A master of consumer and other data, data science and AI, which they may use and monetize or provide to you to use

Figure 6. Digital Dragons Are the Most Complex Partners Ever



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Source: Gartner (November 2018)

> "We focus in sectors where we have industrial expertise and R&D to achieve digital at scale. Instead of chasing just enticing innovations, we focus on value realization and a path to scaling, where additional innovations can be added. We've seen this in rail, where initial innovation in advanced analytics based on IoT unlock huge potential as part of a bigger digital railway strategy."
>
> Chris Saul, vice president of global strategy, Hitachi Consulting

- The owner and orchestrator of digital business platforms and ecosystems, and related de facto standards, that allow partners to work together (e.g., Baidu's Apollo Automotive Ecosystem, and app stores)
- Competitors in your industry (e.g., Alibaba and Amazon in retail)
- Potential acquirers (of you or others in your industry)
- The creator of world-class digital services and customer experiences that yours are being compared to, even if you are not in the same industry

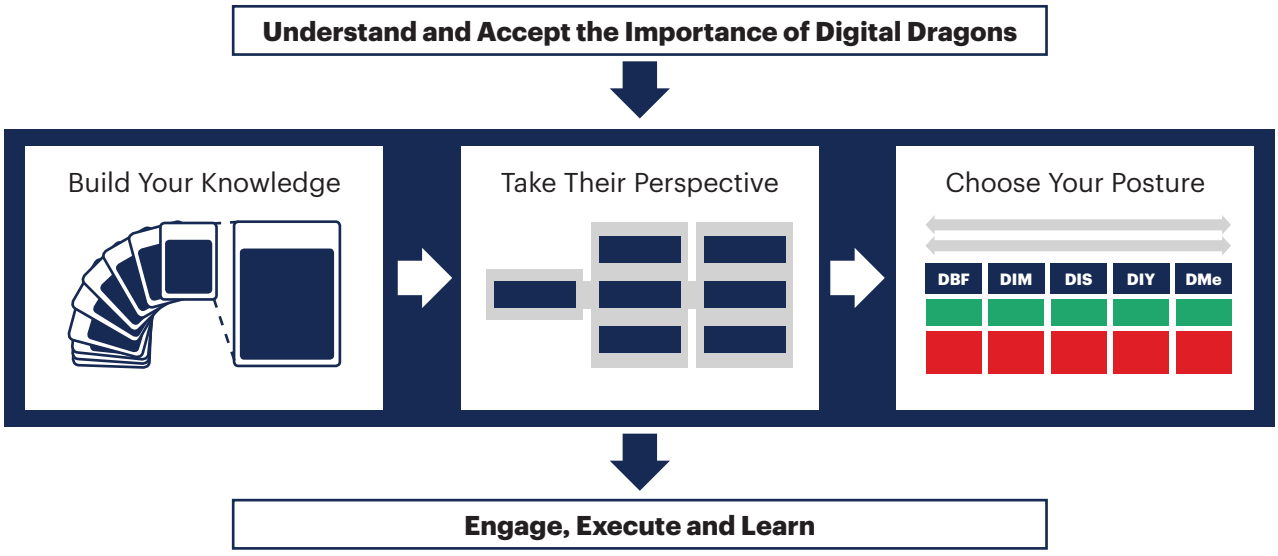
Digital dragons are particularly important as a way for companies to quickly achieve scale with digital innovation, because of their scalable infrastructure and extensive customer and partner ecosystems. Gartner's customers consistently tell us that scaling digital innovation is their biggest challenge.

Each business must understand, internalize and deeply accept the importance of digital dragons going forward (see Figure 7). With that understanding must come a commitment to:

- Know them, in all their evolving forms.
- Understand how they are looking at the world, and your industry in particular.
- Develop your posture toward them.

Then each business must take action, engage, execute and learn. This must become a part of the fabric of each organization's planning and execution for the foreseeable future.

Figure 7. Each Organization Must Build the Digital Dragons Into Their Planning and Execution



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Source: Gartner (November 2018)

Build Your Digital Dragon Perspective and Posture

Digital dragons represent a key piece of the economic landscape, and a major opportunity and threat to organizations in all industries. Hence, all businesses should devote time to developing their understanding, perspective and planned posture toward the digital dragons.

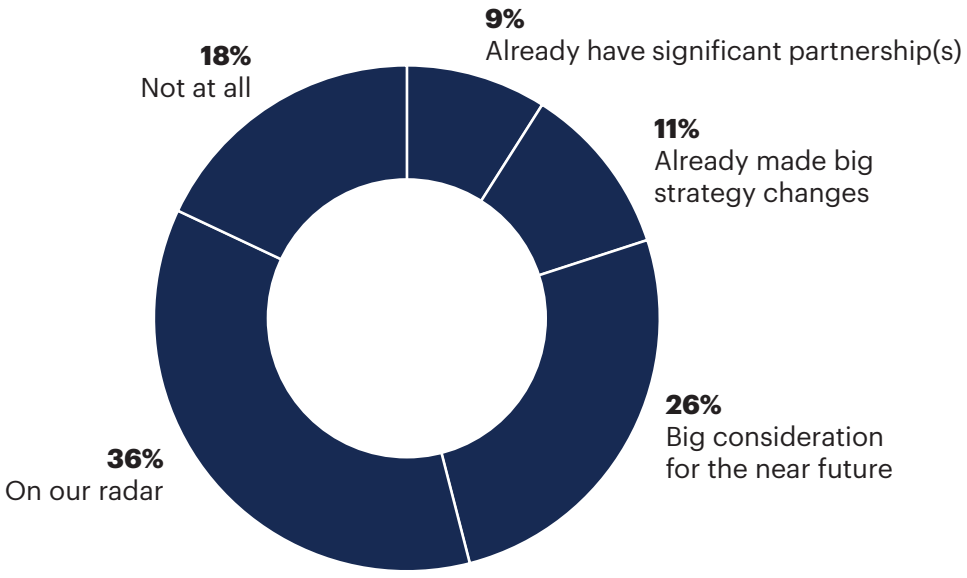
Create a Digital Dragon Learning Function

Understanding the digital dragons relevant to your business is a mandatory, no-regrets move, just like understanding the regulatory environment, suppliers, competitors and customers. Every business and its leaders should have a well-informed, well-thought-through perspective on each of the key digital dragons that will change the shape of their industry. A significant number of Gartner clients already agree, but less than half are taking action (see Figure 8).

You should build a knowledge base about the digital dragons by allocating some people and other resources to the effort. A company with $1 billion in revenue or a public-sector agency with a $1 billion budget would reasonably use two to three full-time equivalents (FTEs) and $50,000 to $100,000 of additional expenses. The team performing this activity should focus on business strategy, not procurement or IT delivery. This multidisciplinary team should mix front-office business, back-office business, IT, talent and other people and perspectives.

These resources could be combined with other strategic research and development activities, including understanding the startup space and the global macroeconomic environment. In fact, doing so is better than having a stand-alone "dragon team."

Figure 8. Business Strategy Increasingly Take Account of Digital Dragons



Q. How do the digital giants (Google, Amazon, Baidu, etc.) factor in to your company's (business) strategic thinking?

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Gartner Peer Connect, 135 responses from clients in a wide variety of industries, geographies and roles, July through August 2018.

Source: Gartner (November 2018)

> "The tech giant space is evolving. Who do we consider a tech giant? We have to watch those serving a niche who are evolving, like Nvidia. And the second tier, who may become next-generation tech giants."
>
> Klas Bendrik, former CIO, Volvo Cars, and former Gartner Executive Partner

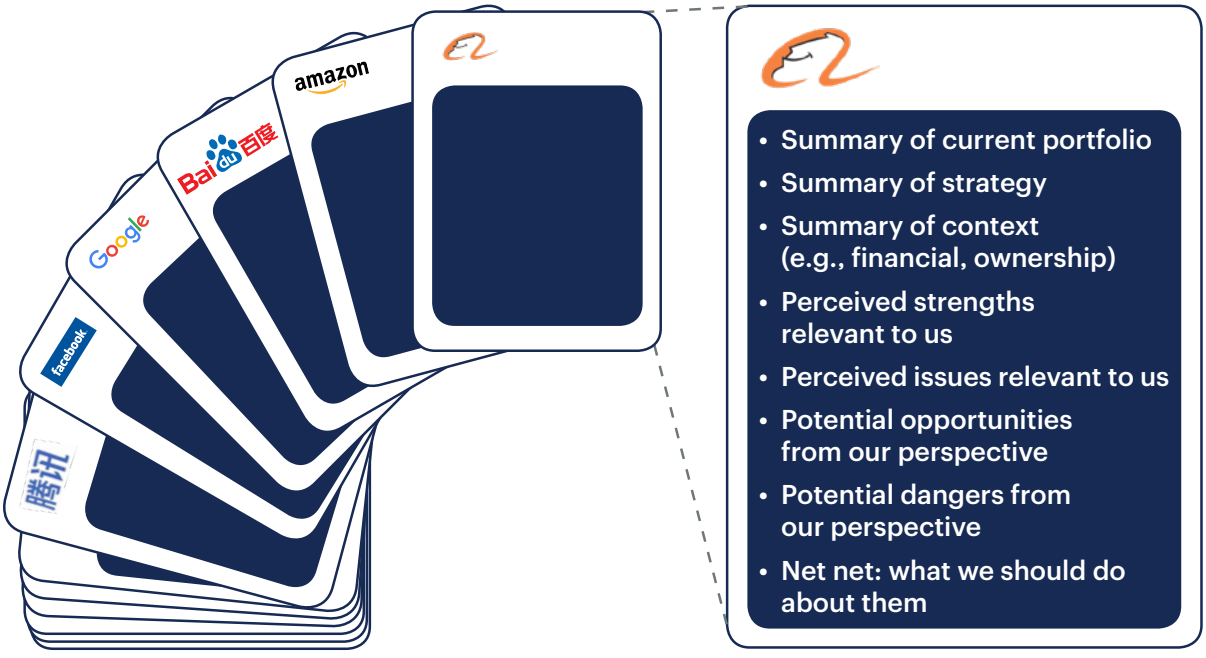
The team should:

- Build a knowledge base.
- Disseminate that knowledge internally.
- Organize internal strategic discussions about the organization's perspective on digital dragons.

The team should put together a digital dragon "deck" with information on maybe a dozen cards, one for each digital dragon (see Figure 9). The card should have a concise perspective on that company, with information like:

- Description of the dragon:
  - The basic context of the dragon (financials, ownership, regulatory regime)
  - A summary of the dragon's current product and service portfolio
  - A description of what the dragon's strategy seems to be
- A dragon SWOT analysis:
  - The *strengths* the dragon has that are relevant to you (e.g., it may have some powerful, narrow AI capabilities)
  - The *weaknesses* the dragon has, relevant to you (e.g., its approaches may not fit your regulatory context)
  - The *opportunities* for working with the dragon (maybe shared products, or platform participation)
  - The *threats* the dragon poses to you (maybe it partners with a competitor or created a startup that will compete with you)
- What to do about the dragon — A stand-alone perspective of what that dragon might mean to you (to be used as input to your strategic planning)

Figure 9. Build Your Digital Dragon Deck



ID: 367758

Source: Gartner (November 2018)

> "We want BAT to be a part of our supply chain, but they see us as a participant in their platform."
>
> Li Hongwei, head of IT and IS planning and management, Dongfeng Motor

In addition to developing a business strategy, this work will help leaders understand how these mostly "born digital" companies work. John Newman, head of digitalization at Audi, says that in order to learn about digital success behaviors, his team developed a list of champions, researched them, then distilled out a set of principles of how they worked differently.

Build a Picture of How the Digital Dragons See You and Your Industry

Unavoidably, businesses and executives within that business tend to see things from their own industry's perspective. A hospital executive's mindset will always center on healthcare. A car industry executive will be tied to building and selling great vehicles. Even if they intellectually get the idea that the future may be more about cars as the driver's second home or office, autonomous vehicles and car-sharing or ride-sharing replacing car ownership, the natural tendency would be to underestimate the speed and effect of those trends (see Figure 10).

Ondrej Burkacky, a partner in McKinsey, based in Munich, is a leader in McKinsey's global semiconductors and digital practice, and has worked extensively in the automotive sector. He painted a challenging picture: "Many automakers have historically been focused on design and production of cars. But a modern car is more and more becoming a computer on wheels, defined by digital features it offers to customers. The doomsday scenario for car companies might be when the smartphone becomes the user interface in the car, design companies design the cars and Tier 1s supply the technology. Does in such a scenario a carmaker become solely an assembly player? To avoid this, several automakers started to heavily invest in their capabilities."

One extreme of thinking about digitalization in the car industry might be "having a better car radio." The other extreme might see cars becoming just a specialized location of the driver's digital life, with:

- Designers designing great mobile spaces
- Digital dragons providing great mobile digital experience
- Car companies becoming commoditized providers of a metal box with four wheels and an engine

Figure 10. Estimating the Speed of Digital Trends

ID: 367758

Source: Gartner (November 2018)

The truth lies in between, but industry executives must fight their natural inclination to assume the future will look more like the former extreme than the latter. To counteract this bias, start with building a view of a dragon's perspective of your industry, before thinking about your perspective of them.

Seven Roles That Digital Dragons Can Take in Each Industry

Digital dragons should be, and often are, thinking about their role in each industry by considering seven possibilities (see Figure 11).

Possibility No. 1: Provider. Each dragon wants to be the digital infrastructure for as many individuals, companies, industries, governments and societies as possible. So the bare minimum that a digital dragon would do for each major industry is make sure its core offerings (for example, cloud infrastructure, applications and tools) are usable and valuable in each industry. (ERP providers did something similar a decade or so ago when they built out their suites to work across all industries.) Each dragon will plan which industries and subindustries to go after in which order. At a minimum, the dragon's generic products and services (like cloud infrastructure) will be used even if it doesn't pay specific attention to that industry.

Three further possibilities relate to the content of relationships with digital dragons.

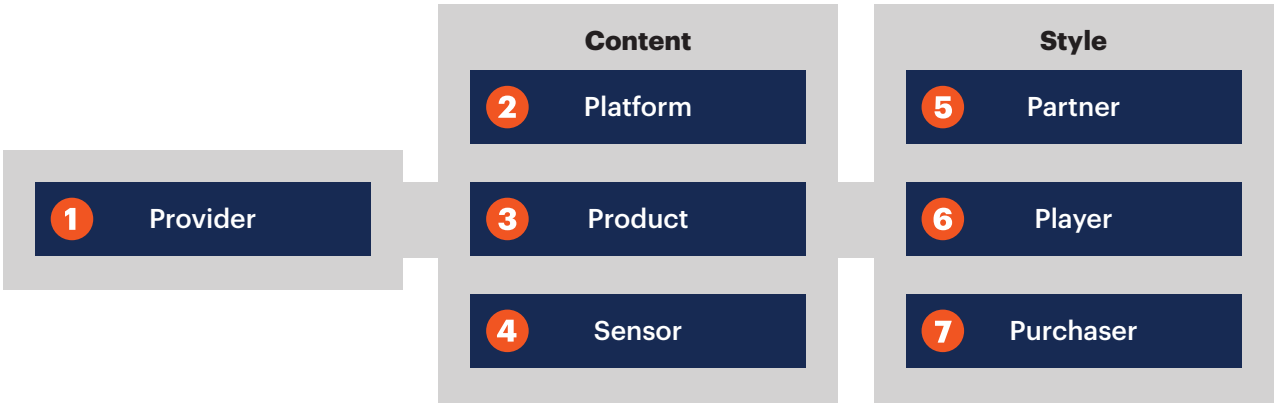
Possibility No. 2: Platform. Where they see an opportunity, the dragons will provide industry-specific platforms that add value to an industry, for example:

- Baidu's Apollo autonomous driving ecosystem
- IoT platforms with specific sensing capabilities
- An online store and wallet mechanism that all players can use as a de facto standard

This is an industry-specific supply-side, infrastructure or back-office opportunity.

Possibility No. 3: Product. Dragons will also look for opportunities to provide products, components of products, services or customer experiences that complement or augment existing products, such as agents and chatbots. This is an industry-specific demand-side offering or front-office opportunity.

Figure 11. The Seven Roles a Digital Dragon Can Play in Each Industry



ID: 367758
Source: Gartner (November 2018)

Possibility No. 4: Sensor. If B2B or B2C customers, citizens or others generate interesting data through their behavior and use of products in an industry, the dragon may look for ways to acquire the data to build a fuller picture of the customers for use in other forms of value creation.

Digital dragons may pursue platform, product and/or sensing opportunities separately or in combination. They can use many classic stratagems, including barter ("we will give you a voice assistant if you let us have access to the data") and a Trojan horse strategy (providing capabilities for free or at a low price to get the data).

Digital dragons will make a further strategic decision about the style of their relationships.

Possibility No. 5: Partner. Digital dragons may decide they want to partner, tightly or loosely, with one or more players in an industry, including:

- Partnering with a small player just to get in the game (for example, for basic industry capabilities or a regulatory license)
- Forming a tight, exclusive relationship with one of the big incumbents
- Building a looser coalition with a set of participants

The most attractive partnership strategy depends on things like industry concentration ratios, power of brands, quality of data available, differentiation and difficulty to replicate nondigital capabilities.

Possibility No. 6: Player. If an industry looks very attractive to a digital dragon, either in terms of its intrinsic value or the value of monetizing its data and other digital assets and capabilities beyond the industry, it may decide to become a competitor. Choosing this strategy means that the dragon believes it can relatively easily create or gain access to nondigital capabilities that are needed to compete, such as physical plant, licenses and brand.

Possibility No. 7: Purchaser. If a dragon wants to play in an industry but doesn't want to build all the assets and capabilities needed, it may acquire one or more incumbents. Choosing this route implies that the dragon believes that any legacy business, technology, reputation

or other issues of the acquired company can be overcome and that they are outweighed by the brand, assets and access it will get. A dragon may sometimes choose not to purchase an existing market leader but instead to buy a smaller player, with fewer legacy challenges.

A dragon may pursue all three of these style options, either at the same time or in sequence. A dragon might initially partner with industry incumbents in the short term, to learn enough about the industry to become a next-generation player or as a prelude to buying the partner in future.

Create and Maintain Your Digital Dragon Posture

Digital components, capabilities, products and services are already important and will be increasingly important for your industry. The digital dragons will play important roles in digitalization, provide powerful capabilities and, in some cases, provide competition, substitution or at least set expectations for the digital customer experience. Thus, every company must develop its strategic posture toward the digital dragons. Broadly speaking, there are five approaches (see Figure 12).

Approach No. 1: Dragon best friend (DBF). You enter an exclusive partnership with one of the digital dragons. For example, in 2016, SAIC and Alibaba formed a joint venture called Banma and launched an "internet car," the RX5, under SAIC's Roewe marque. The car uses an Alibaba OS (AliOS, formerly called YunOS).

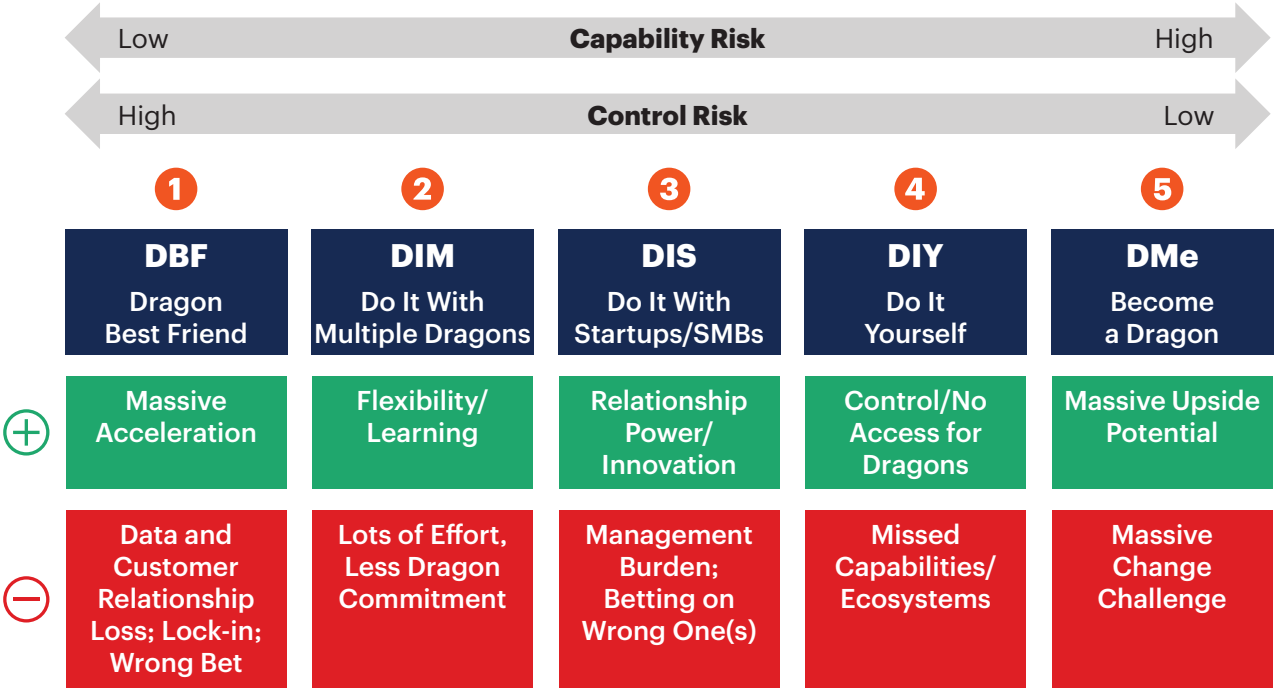
Upsides:

- Such a partnership is likely to get significant attention, effort and innovation from the digital dragon.

Downsides:

- You have to think carefully about who owns the customer relationship and rights to the data generated.
- There is a risk of being locked in with the wrong digital dragon.

Figure 12. Five Approaches to Working With Digital Dragons



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Source: Gartner (November 2018)

Use this approach when: One digital dragon offers all the capabilities and platform you need, and you see minimal risk that the dragon will exploit its power to the detriment of your business, or that this relationship will mean you miss out on significant innovations from other dragons.

Approach No. 2: Do it with multiple dragons (DIM). You can have relationships with multiple dragons.

Upsides:
- You benefit from, and learn about, each dragon.
- You are less beholden to any one dragon.

Downsides:
- It will take more effort to manage all these relationships.
- You may be less important to each of the dragons.

Use this approach when: No single digital dragon has all the capabilities you need, and their current offerings are still immature or there is no clear winner.

Approach No. 3: Do it with startups/SMBs (DIS). You could look to sew together digital point players' capabilities yourself. For example, iFlytek is a Chinese voice recognition company that is being used in a number of industries and is not part of a digital dragon.

Upsides:
- Many small companies offer leading-edge technology.
- They don't have as much power over you as digital dragons.

Downsides:
- Unless you acquire these smaller companies, there is always a chance that a competitor or a digital dragon will.
- There is a chance of betting on the wrong horse as newer technologies emerge.
- There may be significant integration challenges with all the different players' offerings.
- Startups are often hard for larger, more traditional companies to work with.

Use this approach when: It is hard to create the needed digital capabilities, but you don't need to be part of a bigger, broader ecosystem play.

Approach No. 4: Do it yourself (DIY). You can build most of the digital capabilities yourself based on standard IT tools and components. You may use products and services from the dragons, but you have no special relationship with them. You may keep these digital capabilities in your main company or create a separate subsidiary.

Upsides:
- You have full control of decisions and design.
- You don't incur the risk of digital dragons owning your customer's experience or your data.

Downsides:
- You don't get the acceleration that comes from the tools, skills and capabilities that a dragon could provide.
- You don't get access to a dragon's digital ecosystem of partners.

Use this approach when: The digital capabilities for your business are easy to build, or you felt like the relevant dragons were both motivated and able to own a large amount of the customer experience or data.

Approach No. 5: Dragon myself (DMe). Large organizations can try to become digital dragons. For example, GE committed to becoming a digital dragon a few years ago, made plenty of bold decisions, refocused the business portfolio, built digital foundries and its IoT-centric Predix platform and initiated multiple digital transformation programs. (At the time

of writing, there are signals in the market that GE may be revisiting several aspects of this commitment.) This is not a choice to be undertaken lightly. It would also be feasible for a consortium of companies to do this, in the same spirit that pharmaceutical companies have been considering a shared "precompetitive information commons" for many years.

Upsides:

- You can gain the growth and market power of the most successful digital companies.

Downsides:

- This approach requires deep pockets, patient investors, access to talent and other capabilities.
- It's the riskiest approach. GE today seems less bullish about digital, possibly looking to sell off some digital assets.

Use this approach when: You have a powerful vision, along with the leadership and resources to execute it.

Companies can evolve their approaches over time. DIM might become DBF. DIY could lead to DMe. In some large conglomerates (like the Volkswagen group of companies and marques), different member companies take different approaches, sometimes by design, sometimes by accident. In this case, there can be tremendous learning opportunities through comparing notes across business units.

Working With Digital Dragons

Li Hongwei, head of IT and IS planning and management at Dongfeng Motor Corporation, a large car company headquartered in China, shared its experiences with multiple partnership models: "Dongfeng Motor recognizes the power of the digital giants, and wants to partner with them. We have tried three models to work with them: (1) project-based, (2) joint-venture-based and (3) jointly investing in a third party. We are working with Alibaba on mapping and logistics. We are working with Baidu, also, and with Xaomi in the connected car, iFlytek for audio recognition, the Xiaoice product and lots of other Chinese companies.

We are also thinking of developing our own software, even our own chips. We can find computer scientists. We can find car people. However, it is hard to find the combination (for example, algorithm engineers who can understand the complexity of self-parking). Developing this talent in-house is expensive and slow.

Regarding the digital giants, we want to bring the strength of both our side and theirs. For now, data, AI and innovation are where they can help us. We think chips will be a big topic later, also. On the other hand, we can bring deep experience of making cars and selling them.

We try to seek a balance in working with them. But we often see misalignment, and we don't quite get the results we want. We want BAT to be a part of our supply chain, but they see us as a participant in their platform. They want to own the data. They may feel that they can replace car companies just because of their data. In my opinion, that is a little naïve. It is not as easy as they think."

Use Three Behaviors to Maximize the Digital Dragon Opportunity

Whatever high-level strategy you choose, it's important to execute it well. You need to have an integrated perspective on each dragon to harness productive friction and to avoid dragon bias, particularly against Chinese dragons.

Create an Integrated Perspective on Each Digital Dragon Partner

Former CIO of Volvo Cars and former Gartner Executive Partner Klas Bendrik talked to us about his experiences of being a CIO in the automotive industry. Bendrik led a number of digital initiatives, including roam delivery, an innovative consortium project that allowed your online shopping to be automatically delivered to the trunk of your car, wherever it was.

In Bendrik's time at Volvo Cars, the digital dragons began to be important in the auto ecosystem. Some large digital companies began to take on many roles in his company, including provision of services to many business units and services embedded in the products (cars). There were suddenly lots of touchpoints between these companies and his.

Bendrik also felt that while traditional companies are often quite siloed, the large digital companies are less so, so they are better at coordinating their relationship with the traditional companies than the other way around. "Your CEO and CFO may listen to the presales argument of a digital giant rather than their CIO talking about the capabilities they need to keep that digital innovation running," says Bendrik. "Our CEOs and CFOs are not necessarily accustomed to deconstructing the powerful sales pitches of tech CEOs, who are typically quite skilled at that."

Companies and their CIOs have to get ahead of this issue. It often represents a great opportunity for the CIOs. CIOs don't have to insert themselves into every interaction and decision, but someone (probably the CIO) should have an integrated view of everything their company is doing with each digital giant, for both strategic and tactical or commercial reasons.

> "Our business strategy is based on evolving a partner ecosystem; we won't succeed alone. We are currently co-developing solutions with one of the digital giants, and discussing with another. The collaboration is enlightening. We learn new methodologies and other things, and mixing people is making for better results. It seems to us a nonzero sum game, where both really get value."
>
> Martin Piqueras Caro, CIO, SUEZ

CIOs should follow this practical advice:

- **Step 1:** Research and create a list of each large digital player that has multiple significant touchpoints with your company.
- **Step 2:** For each partner identified, build an integrated picture of everything you are doing with them, including the value flows and the information flows.
- **Step 3:** Determine whether you see any major opportunities or threats, for example:
  - An opportunity to take a tougher commercial line with them
  - An opportunity to barter with them or apply new capabilities they have to your advantage
  - Specific issues with them having too much power, owning too much data or owning too much of the relationship with your customer
- **Step 4:** Update the above picture every three months.

Harness Productive Friction

In their fascinating book "The Only Sustainable Edge," John Hagel and John Seely Brown postulate that the only truly sustainable advantage is being able to learn and adapt faster than others. They coin the term "productive friction," meaning the acceleration of learning that occurs from trying to work with others who are different from you.

In general, when two companies or individuals work together, if their styles, values, cultures, rhythms and working practices are different, there is often conflict and a parting of ways. For example, when many big traditional companies enter into partnerships with small startups, they often kill the startup or at least kill what is good about the startup (with excessive contractual conditions, requests for documentation, meetings and so on). But the more different the partners are, the more opportunities there are for learning.

Most traditional companies are different from digital dragons in many ways, especially in rhythms and attitudes to risk. In general, many companies we talked to told us that the digital dragons they work with are agile at their core, willing to pivot frequently, and expect to deliver to customers almost continuously, accepting the risk of doing so.

There is no magic bullet to working with a partner who is different from yourself, but four behaviors help:

- **Awareness:** Make sure everyone on all sides is aware that there will be friction and is committed to working it out.
- **Extra resources:** Budget extra time and resources, over and above what you believe it will take to get the work done, to accommodate productive friction, and the learning that ensues. Fifty percent extra is probably a good rule of thumb.
- **Organization:** Look for ways to organize the work so there is as much mixing of people and teams as possible, even more than optimal work design would suggest.
- **Outcomes:** Add a workstream to the partnership for learning from differences between partners. Make someone in the team responsible for the activities and outcomes of the productive friction learning.

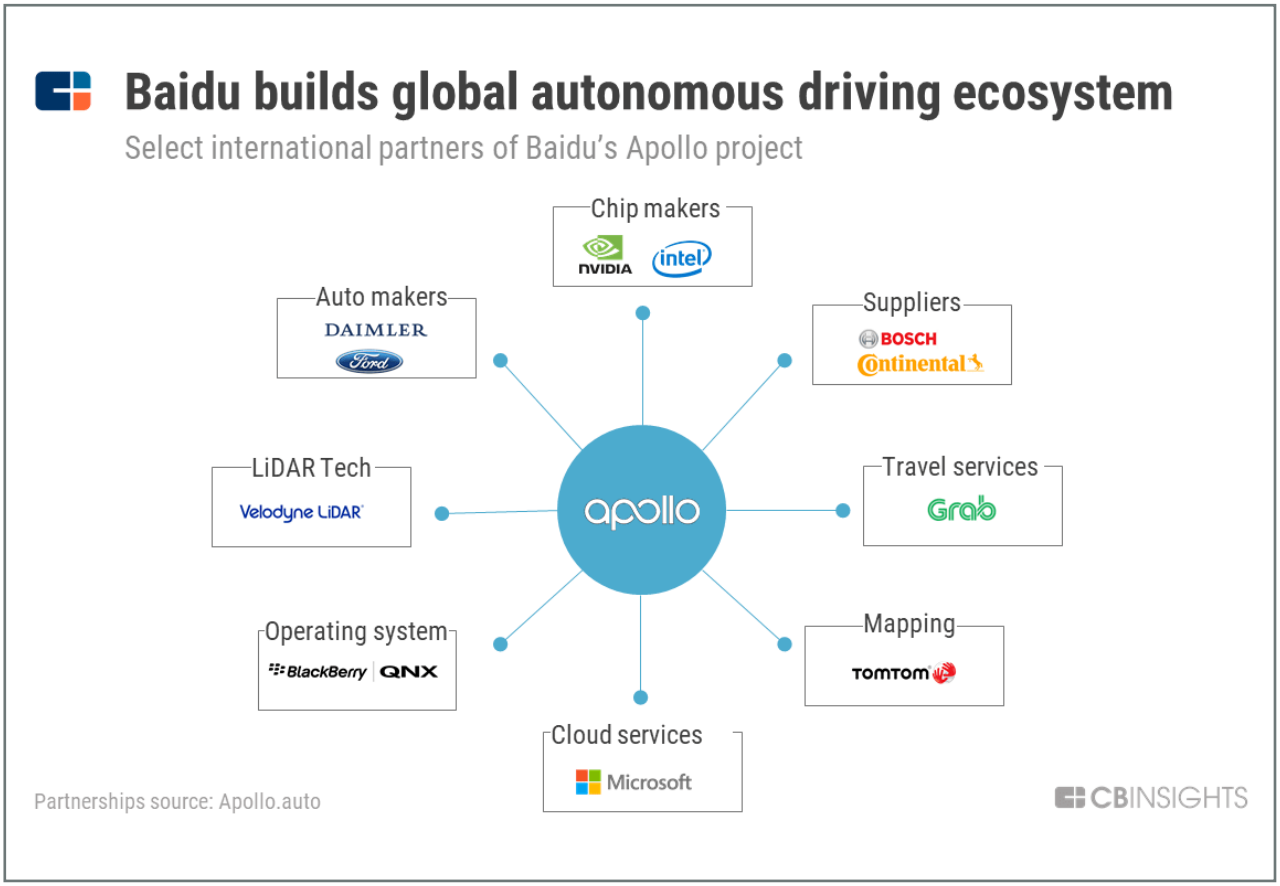
Give the Chinese Digital Dragons Due Attention

The digital dragons are often pretty new and unfamiliar to many companies in traditional industries. Thus, it is easy to have a biased view of who they are and which ones are most important to your business. Usually, a company's view is biased by:

- Prior experience with purchases or partnership
- Staff familiarity with products, geography, industry, language or even media coverage

It is important to continually unearth and fight these biases, to ensure you are making the best choices. One particular issue is to ensure that your thinking spans the West and the East. It is especially important that companies rooted in the West ensure that they are considering the Chinese digital dragons, who having increasing capability and global ambition. For example, in the automotive sector, Baidu's Apollo digital platform has attracted more than 90 ecosystem partners (see Figure 13).

Figure 13. Baidu's Apollo Digital Automotive Platform



ID: 367758
Source: Baidu

> "China has the opportunity to leapfrog. There is a lot of AI research to drive that development. Moreover, Chinese culture makes people eager to try new things. The penetration of smartphone apps, mobile payment and e-commerce are amazing. China is starting to play a much bigger role beyond being 'just' a large target or assembly market."
>
> Ondrej Burkacky, partner, McKinsey

Perhaps more than others, the Chinese government is actively involved in making China a digital champion as part of overall national success. The monitoring of Chinese digital dragons should include monitoring Chinese national initiatives like the next-generation AI development plan (see Figure 14).

The Chinese digital dragons (中国数字巨龙 — Zhōngguó shùzì jù lóng) are increasingly powerful and fast-moving, have very deep pockets, and often exploit opportunities to test and learn quickly (see Figure 15).

Besides BAT, Chinese digital companies like Huawei and Xiaomi, companies on the edge of digital like Haier, and digital startups must not be ignored.

Figure 14. Major Chinese Development Initiatives Related to Digital

Initiative	Details
Made in China (中国制造) 2025	Issued May 2015 by Premier Li Keqiang to upgrade Chinese industry. Inspired by Germany's Industrie 4.0. Three timelines — 2025, 2035, 2049 — for China to become leader. Priority sectors include advanced IT, automated machine tools and robotics.
Social Credit System (社会信用体系)	Extensive plans to collect data about people and companies, score their behavior and provide incentives based on social credit score. Data initially being collected from government agencies and stored on the National Credit Information Sharing Platform (全国信用信息共享平台).
Next-Generation AI Development Plan (新一代人工智能发展规划的通知)	Issued by State Council 20 July 2017 to catch up to global AI leaders by 2020. By 2025, major breakthroughs in AI research. Use AI to drive industry reform. By 2030, become world leader in AI research and application. Use AI to build intelligent economy and society to make China world leader. AI value to surpass 1 trillion yuan ($147.80 bn) by 2030.
13th Five-Year Plan (2016-2020) (十三五年规划)	Adopted March 2016. A broad and ambitious set of objectives, including 6.5% annual GDP growth and Increasing R&D spend from 2.1% to 2.5% of GDP.
Belt and Road Initiative (BRI) (丝绸之路经济带和21世纪海上丝绸之路)	Also known as Silk Road Economic Belt and the 21st-century Maritime Silk Road. Issued by Xi Jingping in 2013. Goal is to connect two-thirds of the world's population across 70 countries through land links (the belt), and sea routes (the road). Also includes alliances with banks for funding and with universities for engineering, and clean energy programs.
19 Super Regions/ City Clusters	As outlined in China's 11th five-year plan, Chinese has been developing regional city clusters to drive shared economic prosperity and growth. Three are designated as super-clusters (Yangtze river delta, including Shanghai; Pearl river delta, including Guangzhou; and Jingjinji, including Beijing). Eight are described as emerging clusters, and a further eight are frontier clusters.

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Source: Gartner (November 2018)

Figure 15. Almost Half of the 20 Worldwide Digital Leaders Are Chinese

Rank			Market Value ($B)	
2018	Company	Region	5/29/13	5/29/18
1	Apple	U.S.	$418	$924
2	Amazon	U.S.	121	783
3	Microsoft	U.S.	291	753
4	Google/Alphabet	U.S.	288	739
5	Facebook	U.S.	56	538
6	Alibaba	China	—	509
7	Tencent	China	71	483
8	Netflix	U.S.	13	152
9	Ant Financial	China	—	150
10	eBay and PayPal	U.S.	71	133
11	Booking Holdings	U.S.	41	100
12	Salesforce	U.S.	25	94
13	Baidu	China	34	84
14	Xiaomi	China	—	75
15	Uber	U.S.	—	72
16	Didi Chuxing	China	—	56
17	JD.com	China	—	52
18	Airbnb	U.S.	—	31
19	Meituan-Dianping	China	—	30
20	Toutiao	China	—	30
		Total	**$1,429**	**$5,788**

ID: 367758

Source: Kleiner Perkins

These Chinese dragons are innovating at speed and sometimes in different ways. For example, they have been aggressive in developing and implementing facial recognition.

Partnerships pop up frequently. In August 2018, Alibaba and SIA announced an extension of their partnership that:

- Embeds Alibaba's payment and commerce capabilities more in the SIA shopping experience
- Brings SIA an audience of 600 million Chinese mobile users
- Connects SIA's cargo capability into Alibaba's Cainao global logistics alliance

Thus, Alibaba is extending its reach into the aviation industry.

Chinese digital dragons often suit the Chinese business and consumer context. These qualities may be helpfully innovative for Western companies (for example, hyperconvenient payments), inappropriate (for example, privacy-related differences) or unimportant. As well as factoring Chinese digital dragons into planning, given China's increasing global importance, building knowledge about China is clearly a valuable direction for all public- and private-sector organizations globally.

Volkswagen Group Partners With Chinese Digital Dragons

Volkswagen's 2017 revenue totaled $269 billion, selling 10 million vehicles. The group boasts a diverse portfolio of 12 major car marques, including: Audi, Bentley, Bugatti, Ducati, Lamborghini, MAN, Porsche, Scania, Seat and Skoda. And it has joint ventures with three major Chinese car manufacturers: SAIC, FAW and JAC.

Falk Bothe is a digital leader at the group level in Volkswagen. Bothe says that Volkswagen has a monthly board meeting around digital, and also meetings of the companies' digital leaders nine times per year. "We don't need 12 apps that serve the same purpose. We need one, customized for each brand." However, this is balanced with the need to give each company sufficient autonomy. "We want a fleet of speedboats, not one big, slow ship," says Bothe.

Volkswagen has an extensive range of digital initiatives across the group, such as the Volkswagen We digital ecosystem, Audi's Autonomous Intelligent Driving, Porsche Digital and the My Skoda app. "We made some important steps on the journey," says Bothe, "but there are still some miles to go. We can see them [the digital dragons] as both an opportunity and a threat, and we don't want to become a Tier 1 supplier to the digital companies."

Volkswagen has extensive exposure to the Chinese market through its three large joint ventures. Jochem Heizmann, head of Volkswagen's China business, announced earlier this year that Volkswagen will invest $18 billion in the next five years on tech investments in China. Bothe told us that, in his opinion, China is at least three to four years ahead of the Western world. "We [Germany] had parking lots in the city, now parking apps. China skipped multiple steps, and went straight to parking apps. And they don't really use cash now. Chinese automotive ecosystems, from Alibaba and others, are powerful, turning the car into a mobile device. We are working hard by learning from China and working with China. Of course, every market is different. For example, car sharing is not (yet) a mass phenomenon in Germany, whereas it is in Moscow, Russia. We have to make sure we innovate in ways that are relevant for each market."

Conclusion

Every industry is digitalizing, and the digital dragons are a critical piece of that story. Digital dragons are a different type of partner, pervading many aspects of your enterprise and ecosystem.

CIOs must:

- Ensure that you have joined up management of your interactions with each dragon.
- Maintain a digital dragon knowledge base, and develop your strategic posture toward them.
- Learn from other industries that have been disrupted earlier or more heavily, like automotive.

Working with digital dragons is powerful, but there are real choices to be made, each with pluses and minuses. And they evolve over time. Spend as much time considering how they think about you and your industry as you spend thinking about them.

Further Reading

Gartner Executive Programs Reports

"CIOs, Here's How to Act Like a Digital Business Leader," G00363635

"An Artificial Intelligence Reality Check for CIOs," G00361599

"The CIO's Guide to Strategic Engagement," G00359456

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"2018 CIO Agenda: Automotive Industry Insights," G00338620

"Avoid Being Crushed by the Avalanche of Connected Car Data," G00334185

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