





fundamental level, and to enlist others in creating that change. The focus of change is external—not just your organization, but the world. In addition, the scope of change is broad—not adopting a new technology, but a new way of being and doing. Thus, any area of uncertainty—for example, new or changing industries, technologies, architectures, policies, or regulations—has the potential to benefit from a shaping strategy.

What makes shaping strategies particularly attractive is that they can mobilize a range of specialized capabilities in the form of third parties, creating more leverage for the “shaper.” By developing incentives for other participants to get involved, a shaping strategy can unleash a groundswell of distributed innovation. Third parties, working on their own behalf, can accelerate learning, advance the technology, grow the market, and further develop the ecosystem to deliver more value to more customers.

For an example of how third parties can be effective for distributed innovation, consider the size and growth of the Android ecosystem. The open source Android OS enabled an ecosystem of developers, coders, wireless operators, and manufacturers to create innovative products that made the platform more valuable, and to do it faster and at lower cost. In the process, this platform contributed to a significant fragmentation of both the mobile device and mobile application businesses, fundamentally changing the industry’s structure.

A shaping strategy is unique in that the other participants and potential players are not just accounted for but are leveraged; indeed, a defining characteristic of a shaping strategy is that it mobilizes global ecosystems of third-party participants to help create the envisioned market or industry. The shaping strategy creates

a vision of transformation and opportunity that seems inevitable, as well as positive incentives that are compelling enough to entice others to participate despite risks. In fact, a shaping strategy flips the perception of risk and reward, so that the risk seems greater for continuing with the status quo than it does for investing in new capabilities.

alike seem sure that “everything that can be connected will be.”

On the enterprise side, many companies want to improve service, minimize downtime, and reduce operational costs. Others have turned to the IoT for growth, building products and services that exploit the data gathered by IoT sensors. Somewhere in the middle, aided by sensed consumers and

Shaping strategies are intentional, proactive efforts to change the structure of a market or industry at a fundamental level, and to enlist others in creating that change.

A shaping strategy’s success hinges on three things:

- ▶ having a clear sense of the most important unmet—or potential—needs of customers;
- ▶ understanding the economics and motivations of third parties to invest aggressively in ways that would support the shaping strategy; and
- ▶ knowing which influence points have an advantaged position in the newly restructured market and having a clear plan for occupying those points.

### THE IOT: AN INDUSTRY RIPE FOR SHAPING

With the convergence of widespread connectivity, cloud computing, and affordable sensors, the market for IoT-related technologies and solutions has grown rapidly. On the consumer side, smartphones now carried by 77 percent of adults in the US<sup>2</sup> have turned out to be the ultimate sensors, collecting data and providing a platform to display the results. In addition, major brands and Kickstarter entrepreneurs

the development of industrial-grade infrastructure, the public sector is pioneering use cases to make city and government services work better.

Proprietary technology silos are emerging as technology vendors seek to capture data. These silos make it difficult to share data from a variety of sources and apply analytics that can generate valuable insight. Yet, the diversity of data sources—located in time and space—is precisely what makes the IoT’s potential so exciting, because it provides a richer and more holistic view of the context and potential unmet user needs.

Although individual IoT components are already bringing value in specific cases, there’s significant unrealized value to be found in more effectively aggregating data from myriad sources to provide a deeper, richer, and more nuanced context around customers and product or service use. Left unchecked, balkanizing platforms and protocols runs the risk of fragmenting our understanding of the context and stands in the way of using IoT technology to act with higher impact. It also tends to push individual

companies into reactive approaches. When we're uncertain about issues related to technology and interoperability, as well as data ownership and security, the risks of action tend to appear magnified while the potential rewards seem diminished; some companies take a "wait-and-see" approach, doing nothing and hoping to be the quickest to adapt when the fog lifts from the new landscape.

### THREE ELEMENTS OF A SHAPING STRATEGY

A successful shaping strategy requires an innovative organization and strong, aligned leadership—remember that this strategy depends on leaders articulating a vision of the future market or industry that others can't help but buy into. If the organization is risk-averse or if the leadership is divided, trying to change the world might prove disastrous.

Shaping strategies require executing three interrelated elements: a shaping view, a shaping platform, and shaping acts and assets.

#### Shaping view

Shapers should have a distinct long-term perspective on how their world will change, as well as the status, resources, and management capability needed to influence potential partners and lead an ecosystem. Shapers have to envision a future for the industry that's not only good for them, but also has an ample upside for an array of other participants. They have to paint a picture of a desirable future in such a way that others want to be a part of it and can quickly grasp how they might play a role in creating it. As such, the shaping view is externally focused. It hinges on a deep understanding of the economics and aspirations of potential participants and frames the opportunity in a compelling way to a diverse set of third parties. The vision has to make sense within the context of current trends and deeper forces being felt by the industry and beyond, such that others can recognize the logic and even

inevitability of it. Others should also be able to quickly see their own role and the potential rewards that come with it. Because it has to be big enough to accommodate many participants and allow for refinement as the ecosystem develops, a shaping view shouldn't be very detailed. It should provide enough direction, however, to focus participants and help them make choices and decisions in the near term.

For the IoT, a shaping view would likely revolve around interoperability and data aggregation that would enable users to get far more value from the technology as they begin to make the invisible visible at scale and in real time. As users get more value from the technology, they'll likely be willing to pay more for it. Focusing on interoperability and data aggregation can also create an opportunity for more specialized data-analytics providers to extract even more value from the data. This can also enable IoT technology providers to become more focused on the elements of the technology that have world-class capabilities and to leverage the expertise of others in a growing technology ecosystem.

#### Shaping platform

A shaping platform is a set of clearly defined standards and practices that support and help organize the efforts of participants, and, in so doing, changes the economics of participation for key players. The purpose of a shaping platform is to lower the barriers—such as investment, resources, and time—and minimize the risks that might prevent other key players from participating in the shaping strategy, while accelerating the opportunity to generate revenue and profits. While the shaping view focuses on changing the perceptions of potential participants, the shaping platform focuses on changing the actual economics of participation.

Although the term might suggest otherwise, a shaping platform isn't necessarily digital. Consider again the example of the global shipping industry. McLean's shaping platform was an

innovative design that enabled shipping containers to be easily and securely moved across various transport modes. By making this design available to truck and rail shippers, ports, crane companies, and others across the industry, the design became the standard, and other industry participants started investing more heavily in containerized shipping.

Shaping platforms provide leverage for other participants, enabling them to do more with less. This might take the form of making it easier and less costly to build and deliver products or services based on a new technology. Examples include platforms that help developers create consumer applications, enterprise application services, and other widgets for Android OS, Salesforce, and Facebook.

Another way that shaping platforms significantly reduce the costs and effort associated with participating in an ecosystem is through establishing a set of standardized protocols and practices to facilitate interactions among the many participants. For example, by standardizing practices for how advertisements are submitted, priced, and paid for, Google's AdSense platform makes it easy for advertisers and content providers of all sizes to create value for each other with limited effort and minimal oversight from Google.

Just as the shaping view leaves room for refinement over time, the shaping platform will be more powerful when it can support and facilitate this type of learning among all participants. For a more detailed discussion of platforms, including the benefits and characteristics of learning platforms, see our article "The Power of Platforms."<sup>3</sup> As participants invest and begin interacting with one another, they might uncover new opportunities or obstacles that should be reflected in the platform. Indeed, one characteristic of a good shaping platform is that its functionality will continue to evolve to better fit and support the evolving industry, so that participants will want to continue using it.

For the IoT, a promising shaping platform would likely be some form of cloud-based data-aggregation platform with open interfaces, which would make it easy to contribute data from a growing array of devices; a set of standards and protocols that would help make the data comparable; and open interfaces that would make it easy for a growing range of third parties to extract insight from the data. Of course, creating such a platform isn't trivial given the need to make it easy for many people to interact through the cloud while protecting security, identity, safety, and data ownership.

### Shaping acts and assets

The shapers' own actions and investment in assets are the most compelling ways to convince others, including potential competitors, to trust in a common future and commit to building it. Shapers must take a series of actions, sometimes dramatic, that signal their commitment to the new direction, their ability to execute and lead the strategy, and their intent. There will likely be significant skepticism from potential participants regarding the ability and commitment of the shaper to stay the course when the going gets tough. For example, when Novell divested the hardware business that constituted 80 percent of its revenue so that it could focus on its network OS, the company sent a message to others in the emerging network industry stating that Novell was committed to making that system work. Divesting its hardware business also alleviated the network hardware manufacturers' concerns that Novell would try to compete with them.

The nature of the acts and assets vary depending on the shapers, their position in the industry or in other industries, their history with other key participants, and so on. The personalities and history of the company's leadership also come into play. In addition to divestitures, other types of bold acts include releasing patents or other intellectual property to the industry

(as SeaLand did with their design), or making a large and visible investment or acquisition that aligns with the shaping view. The purpose of shaping acts and assets is to build momentum and credibility for the shaping view and platform, and to reassure potential participants that the rewards and new value for them is real and won't be undercut by the shapers.

For the IoT, shaping acts and assets would likely support data standardization and sharing in a way that builds trust in the short and long term. Existing technology players in the IoT industry might face skepticism from other potential participants about their commitment to building shared value for all. This challenge might

prove unsurmountable, based on past competition, for some of the major players in the industry today. This means there's a real opportunity for a shaper to come from the IoT periphery, especially players from adjacent fields that have developed significant expertise in large-scale data aggregation, data management, and data analytics at scale as a service.

## KEY QUESTIONS FOR SHAPING THE INTERNET OF THINGS

The industry around the Internet of Things (IoT) is ripe for shaping, but shaping is a strategy that requires skill and commitment. The following questions can help guide IoT players with regard to how—or if—they should participate.

- » What does a feasible and attractive industry structure for the IoT in the future look like? How could this structure accelerate adoption of IoT technology and devices, offer significant opportunities for many types of participants, and provide an opportunity for a shaper to capture value?
- » What other players would be needed to shape this structure? What would motivate a few key participants—those who could have a significant impact on the state of the technology as well as build momentum and recruit others—to get involved early and accelerate their own capabilities in this direction?
- » What are the key influence points that would offer a sustainable advantage to the shaper? What unique assets or capabilities would help the shaper own that position? Who else is likely to try to influence this arena and what approach are they likely to take? How can the shaper craft a view that is compelling to potential participants?
- » What type of shaping platform could increase the near-term incentives for other key participants to get involved? What are the most significant costs of development and other barriers that a platform could help mitigate?
- » What aspects of the shaping platform need to remain proprietary to allow the shaper to create and capture value on a sustainable basis?
- » In what ways might key participants be skeptical and what actions can the shaper take to help alleviate concerns?

fragmented silos creates an opportunity for a shaper to come in and restructure this market to offer far more value to users.

Companies that would play in the IoT space therefore have two choices: shape the market or industry themselves, or risk being shaped by others who are more proactive. Companies that might consider shaping the IoT landscape will have to consider the industry itself as well as their own capabilities and goals (see the “Key Questions” sidebar). Acting quickly matters. But few companies, even those with strong leadership and a compelling view of the IoT’s future, currently have the capability to occupy the desired influence point and deliver the value represented in that view. Even if they do, the other parts of the ecosystem aren’t there yet.

This is why staging—identifying a few intermediate opportunities to target on the way to achieving the shaping view—is so important. Staging can help the shaper achieve critical mass on the shaping platform—faster with less investment—to build credibility and then expand the shaping focus to broader arenas. Consider whether there’s a way to stage the evolution of a new IoT industry structure to accelerate the development of capabilities and rewards, in order to attract and motivate all participants.

One possible path would start in the consumer space. The complexity and consequences of these types of problems tend to be lower. For example, Amazon’s Alexa isn’t yet in charge of anything mission critical. In this sensor-rich but forgiving environment, companies can better understand how nuanced a machine’s context reading must be to respond appropriately. A household might run out of crackers due to a failed order, or the right lights might not turn on, or you might have to stand up to change the music. Because of the low costs and consequences, this is fertile, data-rich ground in which to experiment with aspects of data aggregation and protocols for enabling third-party analytics while preserving data and system security.

Public-sector opportunities are equally interesting; again, this is fairly low-hanging fruit for collecting data and creating value. Companies can play with a broader range of datastreams, with the goal of creating system value rather than individual value. The industrial IoT arena is likely to be the most complex and challenging, but if an aspiring shaper gains a critical mass of participants in the consumer or public-sector space, it might make it easier to shape the industrial IoT arena at a later stage.

Aspiring shapers might also start with segments of the IoT ecosystem that cut across these broader arenas—for example, focusing on the mobility ecosystem that brings together data from mobile devices, automobiles, and transportation infrastructure to help vehicles get from point A to point B more quickly, conveniently, and cost-effectively.

**S**taging can give the shaper an opportunity to reduce the initial investment required to gain traction, build credibility more quickly, and learn where the real value is for customers and participants in the broader IoT ecosystem.

Small moves, smartly made, can set big things in motion. **■**

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