

Matching talent to the Internet-of-Things era

Go beyond technical proficiency and include a more people-focused approach.



The impressive potential of IoT.

The turbine has myriad uses, from powering aircraft to generating electricity. But add sensors to monitor such things as fan blade speed, spin control, and heat ratio, and suddenly this industrial workhorse becomes an intelligent communication device.

This is only one example from the internet of things (IoT), a network of physical objects that contain embedded technology to monitor their internal states and interactions with the external environment, and to disseminate that data.

IoT is found everywhere, including factories and households. It promises tremendous potential across the business landscape, from financial services to health care, consumer to industrial. Our focus here is on industrial and infrastructure applications such as its use in manufacturing and logistics to gain efficiencies and establish continuous improvement loops. Device-enabled communication is not limited to within an organization; it spans multiple, independent parties, such as across a supply chain. For that reason, IoT is best thought of as an ecosystem—a convergence of hardware, software, services, and communication.

Given the massive number of devices and uncountable bytes of data involved, it's easy to get caught up in the wonder of technology that enables machines and electronics to “talk” to each other to predict when they will need to be repaired or replaced. But IoT

offers much more. As this paper discusses, *IoT is a strategy for achieving business outcomes*, among them continuous internal business improvements, revenue growth, and cost reductions. When organizations know what outcomes they want to achieve through IoT, they can more easily assess their talent needs, including identifying and developing internal talent and recruiting external talent. The approach is holistic, encompassing core areas such as organizational design, top team effectiveness, change management, and culture transition.

An IoT strategy must be based on the business outcomes to be achieved—such as internal business improvements, revenue generation, achieving cost advantages, and more.

The number of connected, intelligent devices has risen meteorically, and more are on the way in a variety of areas, including health care (remote patient monitoring), manufacturing (more efficient production processes), infrastructure (traffic management systems that can predict traffic patterns), and supply chain management (more precise tracking of inventories and shipments). A recent AT&T survey (2016) found that 85% of organizations are considering, exploring, or implementing an IoT strategy. One-third of those surveyed have more than 5,000 connected devices.

Across the business landscape, IoT is expected to generate an estimated \$4 trillion to \$11 trillion per year in economic value by 2025. A McKinsey analysis found factories (operations management and predictive maintenance) will benefit most from IoT, with the potential to reap \$1.2 trillion to \$3.7 trillion a year in potential economic benefits within a decade (Manyika et al. 2016). Far more than mere business intelligence, IoT yields predictive analytics and actionable data, such as examining supply and demand in real time to better manage inventory levels, and receiving alerts as soon as a part or component is operating at less than optimal efficiency. Such intelligent data can power a continuous improvement loop.

A trend report by Cisco and DHL, predicts \$8 trillion in potential gains from IoT over the next decade. It states that new economic models will be developed to enhance competitiveness among organizations that can embrace a faster pace of global change. Importantly, benefits will come from growth opportunities as well as improvements in long-term efficiencies. For example, in the logistics industry, IoT could mean higher levels of operational efficiency across millions of shipments; in warehousing, connected pallets and items could enhance smarter inventory management. In freight transportation, tracking and tracing goods will likely be faster, more accurate, predictive, and secure; connected fleets will support predictive analytics for maintenance (Cisco, DHL 2015).

Investment in the industrial IoT could top \$60 trillion over the next 15 years, with more than \$50 billion in assets connected by 2020 (General Electric 2016). To illustrate the scope of this transformation, consider the tale of two industrial giants: U.S.-based General Electric (GE) and Germany's Siemens AG. Both are undergoing what *The Economist* (2016) called "the most profound change in their corporate histories, attempting

to switch from being makers of machines into fully digital businesses." GE is also among the industrial IoT leaders, and will become one of the world's top software firms, with sales of programs and services projected to be \$15 billion as early as 2020 (Rosoff 2015). As part of this strategy, GE has launched a data platform known as Predix, which it describes as "an operating system for the industrial Internet" to connect industrial equipment, analyze data, and deliver insights in real time (GE 2016). In addition, several leaders in the industrial IoT have joined in the Industrial Internet Consortium (IIC), a global, member-supported organization, to set standards, best practices, and processes (IIC 2016).

In accessing the power of industrial IoT, connectivity is only part of the equation. It requires sophisticated data analytics to track efficiencies and detect potential problems. The result is a body of predictive analytics that can generate large-scale improvements from factories to fleets. For some manufacturers, data collection and analytics empower improvements in both manufacturing processes and the products delivered to consumers and end users. Autonomous or self-driving vehicles, for example, are intelligent devices that use technology to sense and respond to their surroundings. At the same time, the data collected can help improve both the product and the process of manufacturing them. The result is an intelligence-embedded, data-driven continuous improvement loop. Feedback loops also gather experiences from enterprise customers and end users of industrial products and other services.

Within infrastructure, IoT empowers greater efficiencies such as predicting traffic patterns on major highways and managing energy usage in office buildings. Temperature-sensitive data centers, for example, can become more precise in their heating, ventilation, and air conditioning (HVAC) to improve both computer operation and energy usage, which is typically the biggest cost in operating data centers. Companies may retrofit existing data centers with sensors to gather intelligence for HVAC efficiency or build new centers with such technology. To be clear, this is far more sophisticated than having "smart" thermostats. Sensors must collect and generate operational data, including from legacy equipment, which often results in a jumble of data interfaces and a cacophony of programming languages. IoT tools deployed must translate such differences and bridge technology gaps.

Organization design to support IoT strategies.

Having the right go-to-market framework to roll out an industrial IoT strategy means having the optimal organizational design.

A key consideration is whether to execute and manage an industrial IoT strategy within the existing company, or to adopt a “newco” approach with a separate entity. Many large organizations opt for a newco approach to become more flexible and adaptable, with the support of the CEO, chief financial officer (CFO), and other C-suite leaders. Senior leaders’ buy-in speaks to the need to address top team effectiveness, with C-level executives who view IoT as a technology that enables business outcomes.

Top leaders must also address the change management and culture transitions required to engage in IoT-enabled transformations. Without these measures, it will be difficult to focus on any number of key performance indicators (KPIs), from process improvements to providing better market intelligence to customers.

Furthermore, IoT strategies cannot be built in isolation. Organizations must rely on an ecosystem of partners, such as strategic alliances with software and hardware companies. For example, the program manager who orchestrates the IoT implementation often works with external software providers. The program manager not only manages that interface, but also helps software providers to navigate the waters inside the company.

Figure 1
IoT’s implications on human capital.
The companies that produce IoT-era products and services may need to undergo significant changes in order to maximize revenues and profits.

Business Model Shifts	Cultural Shifts	Excellence in Existing Skills	Rapid Adoption of Skills
New paths to products and services, through partnerships and alliances, to solve client problems	New, agile ways of approaching problems Ability to embrace what is “not invented here”	General management, product innovation, product management	Fail fast, iterate quickly, rapid cycles of innovation Cloud-based deployment, development, sprints Rapid market experimentation, shorter line of sight to market

Implications on human capital.

IoT is also sparking a human capital transformation, particularly among industrial firms that suddenly find themselves in need of a broad base of talent across a variety of roles and responsibilities.

One key role, for example, is the chief architect who oversees the technical IoT strategy. In addition, there are scrum masters, program managers, developers, and coders. Companies also need a chief technology officer (CTO) or a chief information security officer (CISO) who can interface with product development (design and engineering) and address new and emerging security concerns. These security roles require a blend of technology and security expertise, knowledge of risk management, and business acumen to understand the potential of IoT to advance outcomes through the convergence of technology solutions (Alexander and Cummings 2015).

By understanding the desired business outcomes, companies can more effectively identify the talent solutions that will support business success. The path won't be without challenges but organizations that take a whole systems approach typically fare better than others in achieving results. Organizations facing disruptive technological change must innovate swiftly and reinvent themselves; this evolution requires leaders who can both drive innovation and change, and build a collaborative, performance-oriented culture (Crandell 2015). Understanding the positive impact of making organizational changes to embrace an IoT strategy can help foster a shared approach to innovation. This will influence the overall culture, the organization's design and structure, and its leaders.

Korn Ferry has pinpointed six components for driving superior performance, encompassing both organizational enablers and people drivers:

Figure 2

Six components driving superior performance for organizations.

ORGANIZATIONAL ENABLERS	Purpose and Vision	An organization's aspirations or core enduring aim, the reason it exists, and what it stands for.
	Choice and Focus	The strategy to achieve the vision, including how resources are allocated, efforts marshaled, and activities directed.
	Accountability and Fairness	Practices that establish a performance-driven work environment in which people own their responsibilities and are rewarded equitably for their contributions.
PEOPLE DRIVERS	Clarity	Employees' understanding of what is expected of them in their jobs and the connection between their personal performance and the organization's objectives.
	Capability	The supply and stock of talent who have the knowledge, competencies, and other attributes to meet the organization's current and future success.
	Commitment	The extent to which individuals are motivated to—and given the opportunity to—contribute fully to the organization's current and future success.

Among these six components, three of the most crucial for building and implementing an IoT strategy are:

- Purpose and Vision—the desired business outcomes to be achieved through IoT.
- Choice and Focus—a comprehensive strategy to pursue the desired outcomes.
- Capability—the right mix of internal and external talent to take on the challenge and the transformative capabilities of IoT.

Superior Performance Framework

When the right organizational design and comprehensive talent strategies are in place, companies can establish the conditions to maximize performance, optimize results, and achieve success. This involves what Korn Ferry calls a “Superior Performance Framework” to address several key areas:

- How clearly and explicitly do your purpose and vision fit with the evolving business situation?
- How effectively does your organizational structure optimize execution of your strategy?
- To what degree is your reward strategy aligned with the organizational strategy?
- To what degree will your employees go the extra mile to ensure customers are satisfied and organizational goals are achieved?
- How effectively do the metrics you have in place drive high levels of achievement and competitive advantage?
- To what extent are your employees clear on their role objectives and how they contribute to wide organizational goals?
- How specifically do you define the people capabilities required to achieve the business strategy?
- How thoroughly do you consider different types of talent in building employees’ career paths?

Whether within the existing organization or a “newco” entity, an IoT strategy can encompass some or all of the following parts: organizational design, change management and culture transition, talent assessment, recruitment, retention, and top team effectiveness. The process will likely also involve assessing existing talent who can be part of the IoT strategy. Simply stated, companies need to know the extent of the talent they have. Once internal talent capabilities are identified, external talent can be recruited to fill specific roles or gaps. For most firms, this will involve a mix of internal candidates who welcome the opportunity to be part of an IoT launch and external talent to be recruited. Not to be missed are the nuances of newly formed teams, as existing leaders address the potential impact on team dynamics given the redistribution of work as a result of a new IoT strategy.

Implications for IoT strategies and solutions.

As more industrial companies and infrastructure operations harness the potential of IoT, the benefits are likely to be significant: improved business outcomes, greater productivity, reduced costs, increased operational efficiencies, new revenue streams, continuous delivery of software services, new product/service innovation, greater focus on client/customer needs, and more. To realize this potential, organizations must have a comprehensive IoT strategy in place. Having the right people in the right roles, and within the right organizational design, is a multifaceted approach geared toward advancing business outcomes—the ultimate objective of IoT.

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