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# The new tech talent you need to succeed in digital

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In today's rapidly changing digital landscape, companies that understand their talent needs and know how to meet them have a competitive edge. Here's how they do it.

**While few would debate** the importance of technology talent, its importance in successfully executing a digital transformation is often underappreciated. Over the next five years, large companies will invest, on average, hundreds of millions of dollars—and some more than a billion dollars—to transform their business to digital. And given that top engineering talent can, for example, be anywhere from three to ten times more productive than average engineers, acquiring top talent can yield double-digit investment savings by accelerating the transformation process by even 20 to 30 percent.<sup>1</sup> Of course, such talent is hard to find. In the next five years, we expect the demand for talent to deliver on new capabilities to significantly outstrip supply<sup>2</sup>: for agile skills, demand could be four times supply; for big-data talent, it could be 50 to 60 percent greater than projected supply.<sup>3</sup>

## The new capabilities you need

Understanding what talent is necessary starts with understanding what capabilities digital businesses need. While those will vary by market and geography, successful digital businesses share some common traits: they're focused on the customer, operate quickly, are responsive and agile, and can create proprietary insights. And given the rapid pace of change, companies will increasingly need to be able to engage with broader ecosystems encompassing a range of businesses and technologies as well as position themselves to take advantage of emerging artificial intelligence (AI) and the Internet of Things.

That requires IT systems that can process massive amounts of data, continuously deliver new infrastructure environments in minutes, be flexible enough to integrate with outside platforms and technologies, and deliver exceptional customer experiences—all while maintaining core legacy IT systems. This way of working is much more dependent on the collective skills and

<sup>1</sup> Steven McConnell, "The origins of 10X—How valid is the underlying research?" January 9, 2011, Construx.com.

<sup>2</sup> Brad Brown, Michael Chiu, and James Manyika, "Are you ready for the era of 'big data'?", *McKinsey Quarterly*, October 2011, McKinsey.com.

<sup>3</sup> Christopher Goldsbury, "Demand for agile skills outstripping supply," *InfoQ*, December 26, 2012, InfoQ.com.

strengths of a multidisciplinary agile team rather than on the heroics or talents of any one individual. In short, this reality means people not only need to have strong technical skills but also to be able to function well in teams. Poor team dynamics can crush even the most talented individuals.

While there is a broad range of skills needed, this set should be part of any company's tech-talent list:

- **Experience designers and engineers.** As customer experience becomes increasingly important, companies will need to invest in the tech talent to deliver those experiences. These roles often straddle IT and other functions, with experience designers in particular focused on getting at the heart of the customer through ethnographic research, human-centered design, and rapid test-and-learn cycles with customers.

Partnering with experience designers are in-place front-end and mobile engineers who can rapidly translate exceptional designs and digital experiences into working software that can be tested and iterated. This approach to rapid prototyping places a premium on user input and flexible software that can respond quickly to user needs.

Experience designers tend to wear multiple hats, from driving insights through customer research to running rapid test-and-learn programs in the field. They should have considerable experience creating and iterating products or services based on real customer interactions (i.e., not just data) and translating customer research, insights and ideas into solutions using design tools such as personas, empathy maps, and customer journeys (to name just a few).

Front-end and mobile engineers are typically software engineers with three to five years' experience building high-performing, scalable, and elegant web and mobile user interfaces. They bring deep expertise in front-end web and mobile technologies that include browser-based HTML, CSS, and modern JavaScript frameworks (e.g., ReactJS, Angular.js, et cetera) and native mobile platforms on either iOS and/or Android. They should be comfortable creating "imperfect" code for the purpose of testing and have a clear understanding of how something will be used in the real world.

In our experience, what separates a good from a great experience designer is the ability not only to focus on producing a sexy user interface but to be an advocate for the customer in solving customer-experience and design problems. This is someone who is motivated by customer empathy and can collaborate effectively with both product and engineering teams.

- **Scrum masters and agility coaches.** “Agile development”—where software is rapidly developed in iterative cycles—is a core capability that drives the technology engine. Making the agile approach work relies on having “scrum masters” to manage teams during the development process. Scrum masters need great leadership and enabling skills, but also a deep understanding of technology and an ability to rapidly solve problems. As important as the scrum master is at the team level, to scale the agile culture across the broader organization, you need agility coaches. Think of them as Olympic trainers for the organization. They have strong communication and influencing skills, can create and roll out plans to support agile processes across the business, and put in place measurable key performance indicators (KPIs) and metrics to track progress.

While it’s desirable for scrum masters to be certified, it’s more important that they understand the values and principles of agile (e.g., value-focused delivery, adapting to change, continuous improvement, et cetera) and have at least two to three years’ experience training, coaching and working to build high-performing agile teams. They are people leaders with the ability to deal with conflict, influence ideas, and have empathy. It is helpful for them to have baseline knowledge of software engineering best practices to appreciate what goes into building high-quality software.

Strong agility coaches have deep experience working as change agents to transform how an organization thinks and works. To be successful, they need to be comfortable coaching people across different functions and levels of the organization, including senior executives. They are focused on impact and build organizational muscle around measuring progress.

In our experience, what separates a good from a great scrum master is the ability to be a great people leader. A good scrum master protects the team from distractions, but a great one finds the root cause of distractions and eliminates them. For an agility coach, it’s building capabilities to help an organization create sustainable change.

- **Product owners.** This role is often referred to as the mini-CEO of a digital product. Product owners clearly define the vision of a product or service, are fully empowered to make decisions that deliver high business value, and are laser focused on KPIs to track progress. The product owners work directly with developers, engineers, experience designers, and other stakeholders in the business on a daily basis. They need to understand technology and user-experience issues in order to make the right tradeoffs in deciding on the product or service features to develop.

Product owners are not just proxies for the business-unit leader to manage the project. They need to be empowered to make product decisions. Product owner can often be the

hardest job on an agile team, and those who do it typically require four key skills to be successful:

- *Vision*: they can establish strategic vision for a product and align the organization around a clear view of what's required to achieve business success.
- *Value focus*: they possess a mini-CEO mind-set with a focus on delivering measurable business value, delighting the customer, and optimizing ROI.
- *Decisiveness*: they are natural problem solvers who make decisions and prioritize initiatives using data and facts rather than intuition and feeling.
- *Product management*: they typically have three to five years of strong product-management experience and a good sense for the intersection of business, user-experience design, and technology.

In our experience, what separates a good from a great product owner is someone who has a strong sense of the complete product or service vision (and doesn't get lost in the details of its parts), the ability to inspire and influence people to deliver on the overall vision (not just his/her piece of the project), and is focused on enabling the team by, for example, helping it make the hard product decisions.

- **Full-stack architects.** These roles are particularly important in a more complex and rapidly changing technology landscape. The full-stack architect needs to be fluent across all technology components that include the web/mobile user interface, middleware microservices, and back-end databases, and have a "spike" (i.e., bring deep expertise) in one or more areas. As businesses increasingly engage with external ecosystems of technologies, full-stack architects can provide expertise in third-party packaged software, fluency in multiple best-of-breed technologies, and experience with multiple-technology integration strategies.

Full-stack architects are generally hands-on developers with at least eight to ten years of software engineering experience and deep expertise with one to two core programming languages (e.g., Java, .NET, Node.js, et cetera). They also need to be knowledgeable and fluent across the different "stacks" of a large-scale software system (e.g., front-end user interface, middleware integration services, databases, et cetera). They are effective at linking the architectural vision with the business vision and building solutions that focus on business value, not just technical excellence. They have a deep understanding of how an architecture will need to evolve to meet changing business goals and like to produce working software as one of the best ways to illustrate a concept. In our experience, what separates a good from a great full-stack architect is not just the ability

to provide technical excellence but also to embrace flexibility over building “bulletproof” systems. They are passionate learners who keep up with evolving technologies and techniques and are willing to experiment with them to test what would work for the business.

- **Next-gen machine-learning engineers.** As companies move toward machine learning, they need a new breed of software engineer who knows how to use data, can program in scalable computing environments (e.g., Cloud, Hadoop, et cetera), and understands how to refine the algorithms in their software code. They are fluent in distributed computing techniques, have experience using different machine-learning algorithms and applying them effectively (e.g., choosing the right model, deciding on learning procedures to fit the data, understanding different parameters that affect the learning, et cetera) and understanding the trade-offs with different approaches.

They work closely with customer-data managers in particular, who use machine learning to collect and rationalize the massive amounts of data—from social media to purchase activities—to create comprehensive 3-D pictures of customers. They have a strong computer-science foundation to understand how to structure data and make efficient use of computing resources (e.g., memory, CPU, et cetera) when designing and implementing machine-learning algorithms. They also have a baseline knowledge of probability and statistics (e.g., regression, probability theory, et cetera) techniques as well as experience in data modeling and evaluating data sets for patterns, trends, and predictability. This capability is important since machine-learning algorithms rely on these data sets to learn and iterate.

What really makes a great machine-learning engineer is the ability to understand how an idea goes from concept to delivered insight. Throughout this process, a great machine-learning engineer not only focuses on the technical solution but is also effectively a thought partner to the business on shaping the problem to be solved, the insights generated, and the continuous learning required to improve the solution.

- **“DevOps” engineers.** With the advancement of cloud computing and infrastructure as programmable software, infrastructure resources (e.g., networks, servers, storage, applications, and services) can now be rapidly provisioned, managed, and operated with minimal effort. To build and take advantage of these technology advancements, organizations need DevOps (the integration of development and operations) engineers who have the experience to navigate a rapidly changing development and cloud-infrastructure computing ecosystem. They can build out tools and automations that provide development teams with self-service and on-demand access and infrastructure resources at the click of a button (compared with today’s traditional multiweek and months-long process to provision similar resources).

DevOps engineers are generally software engineers with a passion to apply the same craftsmanship to IT infrastructure and operations. They typically have five to eight years of software-engineering experience and have now ventured into infrastructure-automation technologies (e.g., Chef, Puppet, et cetera), cloud platforms (e.g., AWS, Azure, et cetera), and more advanced containerization technologies (e.g., Docker). Besides technical excellence, DevOps engineers understand how technology serves business goals and are flexible in adapting approaches to changing business needs. What separates a good from a great DevOps engineer is the ability to role model the collaborative DevOps culture, think about infrastructure, and partner with the business to link solutions to real business problems.

### Finding and hiring the talent

So now that you know what talent to look for, how do you find it? Any good talent strategy should focus on retaining and training existing talent, as well as on uncovering latent talent already in the business. But for the purposes of this article, we want to focus on how companies can acquire talent.

In most companies, IT recruiting typically is a slow process: the HR department creates and posts a job description for a candidate role. If they're lucky, they find a midlevel employee in six months (and it'll take another four weeks until s/he is productive). For an organization undergoing an aggressive digital transformation, that's too slow.

We believe companies need to rethink their IT talent-acquisition strategy in six ways:

#### 1. Build a compelling vision

Money is important, of course, in attracting talent. But we've found that as long as the pay is competitive, an inspiring mission and value proposition is what motivates the best talent.

This issue is particularly stark for large incumbents, which typically don't have quite the "sex appeal" of a start-up. We're seeing many inspiring examples of large traditional companies actively advertising and communicating their commitment to reinventing their brand for the digital age, such as General Electric's aspirations to be a top-ten software company by 2020. We've even seen candidates and new hires take significant pay cuts to join organizations that communicate a cohesive story about their digital transformation and vision.

Companies need to make sure they can deliver on their promises. Large defections of people who find that the mission doesn't meet the reality will scuttle the best-intentioned

hiring strategies. Effective strategies include creating ministart-ups within the business, with their own vision, reporting structures, career paths, and even cultures.

## 2. Make targeted 'anchor hires'

Like attracts like, and that's true of top talent too. Therefore, many organizations have invested in anchor hires who are leaders in a particular discipline or industry. These anchor hires help attract other exceptional talent to the organization either through their personal networks and industry reputation or by signaling to the market how important that talent is. Companies should evaluate the networks of top talent, invest extra time, and involve senior business leadership in pursuing them. Attracting anchor hires often requires offering them significant influence in shaping the unit the business is building.

One leading North American technology company looking to create a new innovation lab prioritized finding two to three key anchor hires for the design team. It focused on people from Google, Facebook, and noted design agencies to build up their design team from nearly zero to over 30 top people in less than 12 months. The anchor hires were leaders in these design organizations and quickly signaled to the market the company's commitment to design thinking and customer experience. It was able to triple the pace of hiring.

## 3. Reimagine recruiting

What makes hiring new kinds of IT talent more complex is that those with the right profiles may not have a traditional résumé or be searching for employment or posting to traditional careers sites. To engage with these technologists requires targeting international community discussions such as Hacker News, Github, Stackoverflow and Reddit. Recruiters can locate top software programmers by looking through the source-code repositories that programmers proudly open up for anyone to review and use.

To effectively engage with candidates in these new environments, companies often need to either retrain or acquire new recruiting capabilities to speak to candidates about relevant—and often very technical—topics in their industry, excite them about the opportunities in the organization, and assess whether the candidate would be a good fit. Top talent is often flooded with recruiter hits, and we have found it more effective and genuine to draft the best “athletes” (i.e., relevant tech stars) from within the organization to engage and recruit their peers or other technologists.

An international bank, looking to build digital talent in a new market for its digital factory, used nontraditional platforms such as Github, Aevy, and LinkedIn to build a heat map

of the talent concentration, tech-community events, start-up spaces, and skill mix in the market. The bank also developed a recruiting team that contained traditional recruiters as well as digital talent that candidates would want to work with, such as agile coaches, full-stack engineers, and experience designers. In addition to combing through the online platforms, communities, and postings, the new recruiting team attended and contributed to communities through meet-ups, presented at conferences, and hosted hackathon events. The multifaceted approach paid off: The bank hired 50 top professionals in six months, a 50 percent improvement over an already aggressive aspiration.

#### 4. Create a network of digital-labor platforms

Top talents know their value and have ready access to information about companies through online platforms such as Glassdoor, Hacker News, and StackOverflow, where employees share job satisfaction, company culture, and lifestyle information.

To connect with these people, leading companies are creating their own sourcing platforms. Some are hosting online competitions that allow users and prospective candidates to showcase their technical skills through digital platforms such as TopCoder, Kaggle, Codility and HireIQ. Digital-talent platforms such as Good&Co and HackerRank are also helping companies more effectively assess a potential employee's match with the skill requirements and culture of the company.

Recent McKinsey Global Institute research estimates that businesses deploying digital-talent platforms to their full potential could increase output by up to 9 percent, reduce employee-related costs by up to 7 percent, and add an average of 275 basis points to profit margins.<sup>4</sup>

#### 5. Build an ecosystem of vendor partners

To effectively take advantage of the technology ecosystem, IT is shifting from having one or two primary vendors, as has traditionally been the case, to a broad array of external options that include traditional vendors, new partners, alliances, and crowd-sourcing. Engaging with a network of vendors also requires changes in skills certification and vendor-performance management. At the same time, the most productive relationships occur when these vendors are treated more like partnerships (exhibit).

A leading international travel company, disrupted by start-ups in the market, decided it needed to build up and acquire new digital talent to drive its transformation. An important component of its strategy was to use specialized vendors to support different

<sup>4</sup> For more, see exhibit in Susan Lund, James Manyika, and Kelsey Robinson, "Managing talent in a digital age," *McKinsey Quarterly*, March 2016, McKinsey.com.

## Exhibit

### A new paradigm for vendor relationships

	<u>Traditional vendor relationships</u>	<u>Vendor partnership model</u>
<b>Relationship model</b>	Traditional, more “transactional” outsourcing relationships	Partnership relationships with aligned objectives, incentives, and culture
<b>Pricing</b>	Fixed-pricing outsourcing with fixed scope and budget	Outcome-driven outsourcing with vendors paid according to business outcomes achieved
<b>Skill assesment</b>	Paper-based reviews of vendor skills and capabilities	Certification-based assessment of skills, using proven criteria and performance of real project work
<b>Performance review</b>	Infrequent annual reviews of vendor service and performance	Regular, continuous improvement reviews with partners to track, monitor, and improve performance
<b>Talent and capabilities</b>	Single vendor with generalized, least-common-denominator skills	Network of more specialized skills that create ecosystem of best-of-breed talent

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components of its ecosystem (for example, mobile, search engine, CRM, payments). The company updated its internal processes around procurement, legal, and billing, so that it could move more quickly and be more flexible in managing the variety of vendors.

The impact of this approach was significant. By tapping into the right talent at the right time, the company was able to experience 20 to 25 percent improvements in time to market without increasing its vendor cost base.

#### 6. Acqui-hiring talent

To build up a talent set, it can make sense to acquire a start-up that has specific needed capabilities. Many companies have used this “acqui-hire” approach, but many end up having trouble meshing cultures. Isolating the start-up to preserve its culture can be a useful approach in the short term, but it only delays the inevitable.

To address this issue, many companies are embracing a “reverse takeover” mind-set: A rotating team from the acquiring company begins to integrate and work with the start-up in a “ring fenced” environment that’s separated from the standard business processes. This allows the organization to begin taking advantage of the newly acquired talent while also “infecting” the broader organization with the start-up one small group of teams at a time.

One leading North American bank embraced the reverse-takeover approach for one of its start-up acquisitions. There was commitment from bank leadership to immediately begin cross-pollinating the start-up talent with those who were part of a

new digital initiative already under way at the bank. The approach created an effective “digital lighthouse” for the bank and helped accelerate the first phase of the start-up’s integration by three to six months.



While technology isn’t the only element of a successful digital transformation, it’s one of the most important and complex. Getting it right means recognizing what sorts of new IT talent are necessary and changing the way the company goes about hiring it. □

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