

# BHEF Market Intelligence Highlights

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The New Foundational Skills  
of the Digital Economy





The exponential growth of data and powerful computing and analytics tools have spawned the digital economy, and non-technology companies are adopting digital business models to compete with tech companies for scarce talent. Companies that transform their digital talent acquisition, retention, and development strategies will enjoy a significant advantage. But for this transformation to occur, the gap between demand and supply of these skills must be overcome by increasing the pool of new college graduates and incumbent employees with these digital skills.

Over the past five years, the Business-Higher Education Forum (BHEF) has commissioned research to uncover job market trends and provide its business and higher education members insights and strategies to respond to the exponential growth in demand for digital talent.

In 2017, IBM and BHEF released *The Quant Crunch*, which documented the propagation of data science and analytics skills from a relatively small number of data scientists to large numbers of analytics-enabled, data-driven decision makers and functional analysts. Subsequently, BHEF and PwC released a thought leadership report, *Investing in America's Data Science and Analytics Talent*, that proposed an action agenda for bringing the supply of digital skills into balance with demand for those skills in the job market. Job market analyses in other digital fields, including cybersecurity and artificial intelligence, uncovered similar patterns of skills propagating from the expert to the enabled professional across a range of functions.

With the generous support of BHEF member Anita Zucker, BHEF has continued its market intelligence research by commissioning Burning Glass Technologies to examine the new foundational skills in the job market of the digital economy. This report, *The New Foundational Skills of the Digital Economy*, is the first analysis to identify the **most valuable combinations of skills**, connecting foundational digital building blocks, to 21st century workplace competencies (also called “soft skills”), to business process skills.

This analysis is also an opportunity to have a more granular understanding of these skills sets by function within organizations and map these skills into academic and training programs to more effectively prepare new graduates and re-skill incumbent employees. Exhibit 1 presents a profile of a blended digital professional and the interplay of disciplinary or domain knowledge, foundational digital skill clusters, business process knowledge, and 21st century workplace competencies.

After analyzing millions of resumes and job postings, here is what emerged.



**The New Foundational Skills of the Digital Economy**

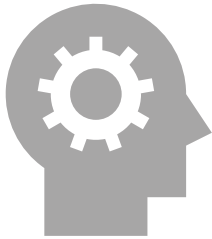
Developing the Professionals of the Future

Download the full report at [bhef.com/foundational-skills](https://bhef.com/foundational-skills)

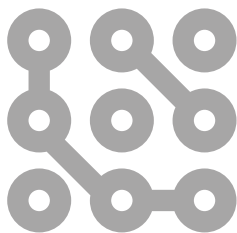
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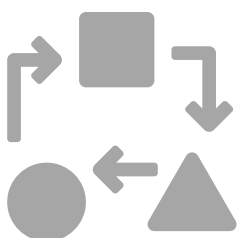
## The foundational skills of the digital economy emerged in three groups:



**Human skills** apply social, creative, and critical intelligence. These skills—critical thinking, creativity, communication, analytical skills, collaboration, and relationship building—appear on many lists of sought-after soft skills and are still in high demand across the digitally intensive economy.



**Digital building block skills** are critical to many positions and increasingly useful outside traditional digitally intense job families. These skills are especially useful to current or aspiring functional analysts and data-driven decision makers. These skills include analyzing and managing data, software development, computer programming, and digital security and privacy.



**Business enabler skills** play a synthesizing, integrative role in the workplace. These skills allow the other skills to be put to work in practical situations and include project management, business process, communicating data, and digital design.

**The foundational skills that make up these three skill groups are in high demand in both digitally intensive sectors and in the wider economy.** In 2017, one or more of the foundational skill areas were requested in 53 percent of the 22.4 million total openings that year. In addition, two skill areas already have over one million annual openings and nine others have more than two million annual openings. All skills have seen a steady increase in demand, averaging 32 percent over the past five years.

**The foundational skills are not confined to the digital economy or technical professions.** They are already required in the majority of jobs across all sectors, regardless of their relation to the digital economy. Although all of these skills show up frequently in postings from the digitally intensive areas of the economy, most actually fall outside of the digital economy. For nine of the skill areas, the majority of job openings are outside of the digital IT and analysis job families, confirming that the demand for digital skills extends well beyond the tech economy.

**Job seekers and incumbent employees need skills from each of the three skill groups in order to thrive.** No one individual is likely to need all skills, but workers can mix and match skills to become the blended professionals required in an economy that

is becoming increasingly digitized. While all three groups of skills are valuable, combining skills drawn from different groups increases their value. For instance, a person or a business team with high skill levels in software development, a digital building block, can increase their earning power and productivity by developing skills in project management, a business enabler.

**Those who develop foundational skills earn significantly more.** The average advertised salary of jobs requesting at least one of the new foundational skills was \$61,000—\$80,000 more than the average for all other jobs. In addition, each of the skills in the digital building block and business enabler skill groups boasts a salary premium, ranging from 7 percent to 38 percent. Software development and computer programming offer the largest salary bumps of 34 percent and 38 percent, respectively.

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**Foundational skills increase in value as careers advance.** Skills in all three of the skills groups appear to be of enduring value, often becoming more important as people advance. Overall, these new foundational skills are 49 percent more likely to be requested in senior or managerial level roles than in other jobs.

Each of these foundational skills spans a spectrum of ability levels, from baseline to expert. The multiple levels rise from minimum or baseline competencies, through core competencies refined in specific work contexts, to distinguishing competencies at high levels of expertise.

**Many of the foundational skills contain opportunity for continued learning.**

The progression of ability levels within each skill can, if facilitated and supported

by employers and educators, help job seekers and incumbent employees keep pace as technology and other workplace transformations increasingly render work more complex.

**Job seekers and incumbent employees possessing a diversity of the new foundational skills experience increased job mobility.** While each of these skills is valuable, those who build and draw on skills in each of the three groups are most likely to advance into senior roles. Individuals who develop and apply skills from all three groups can acquire a range of capacities and skills that are highly valued. Such multi-skilled job seekers and incumbent employees can be considered blended digital professionals.

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## Implications

Job seekers and incumbent employees who possess these foundational skills have the potential to thrive in a digital economy—becoming more adaptable to future disruption, increasing their earning power, and improving their long-term career prospects. But for this transformation to occur, the large gap between demand and supply of these skills must be overcome. In order to acquire and signal these skills, current and future workers need to know just how valued and needed these skills are, and they need the leadership of business, higher education, and intermediary organizations to take new and focused action.

Employers with strong representation of these skills in their workforces can position themselves at a significant advantage. Educators who incorporate learning opportunities that effectively impart these skills will not only equip their graduates for career success but may also prove themselves effective partners to industry. Intermediary organizations in the education, business, policy, and workforce sectors have much to gain from applying these insights to their ongoing efforts.

## Recommendations

**Intermediary organizations**, including business and higher education associations, should treat the new foundational skills as essential to their members' competitiveness and take on critical digital skills supply-and-demand challenges.

- Continuously publish market intelligence signaling business' skill and talent needs.
- Spotlight education, training and career strategies for job seekers, new hires, and incumbent employees.
- Promote investments in work and learning partnerships that build digital skills.

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**Employers** should aggressively signal their foundational skill demands and restructure their hiring to better attract digital talent and use training to develop these skills in incumbent employees.

- Ensure that all job postings feature new foundational skills.
- Develop individualized learning plans for incumbent employees and engage education and training partners in their use.
- Work with higher education partners to coordinate learning outcomes and work-based experiential learning, internships, and job skills development.



**Higher education** must increase the value of its credentials by embedding these foundational skills in all disciplines and fields.

- Engage faculty and administrators in building the teaching and learning of these skills into coursework and overarching curricular goals.
- Provide capstone learning opportunities to build and document these skills.
- Coordinate with businesses and employers on expectations for learning outcomes and work-based learning, internships, and job skills development.

**College students** should recognize the importance of these skills to career growth and develop a personal plan to acquire, demonstrate, and signal these skills.

- Value the importance of these skills for landing jobs and advancing careers.

- Build a mindset to become a continuous learner.
- Seek out hands-on opportunities to acquire new foundational skills, or develop skills by pursuing volunteer, internship, or work-based opportunities.

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### **Current job seekers and incumbent**

**employees** should recognize the importance of the new foundational skills and pursue strategies to acquire and signal them.

- Identify gaps in current knowledge around new foundational skill areas.
- Use internal training, MOOCs, boot camps, or education benefits to build skills.
- Gain experience with adjacent tasks and functions to develop the new skills.

“The skills of today’s digitally intensive workers—which this research reveals are neither rarified nor static—will become the new foundational skills of millions of workers, in thousands of workplaces, across the U.S. **These blended digital professionals will develop proficiencies within each of the three core groups—digital building blocks, business enablers, and human skills.** Indeed, their ability to draw on and weave together, these diverse skill sets will set them apart from workers of the past and lay the foundation for the economy of the future.”

—BRIAN K. FITZGERALD, CEO OF BHEF

## THE BLENDED DIGITAL PROFESSIONAL

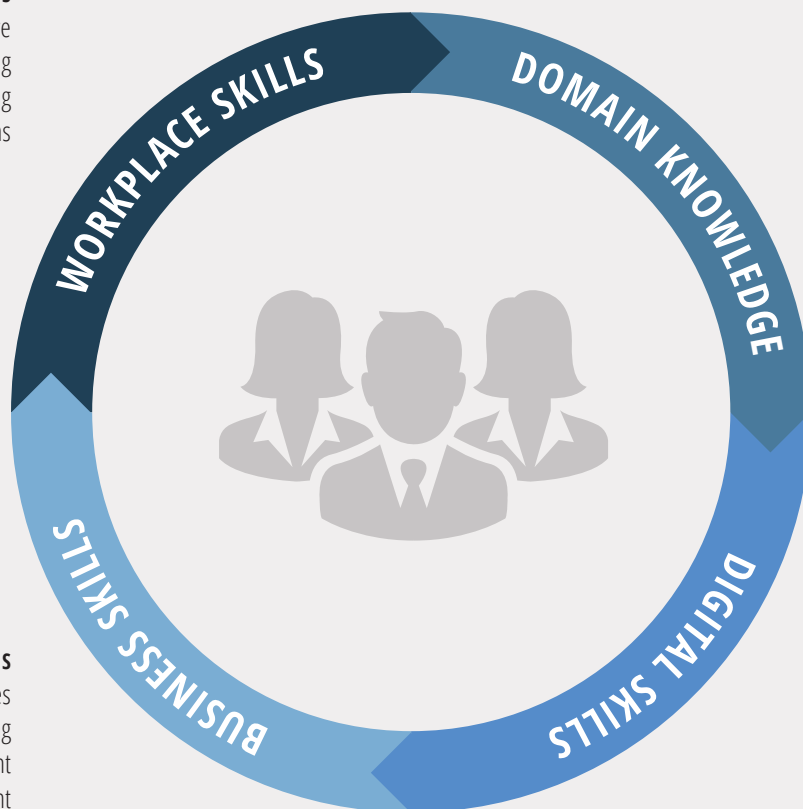
All professionals will need a foundational skill set that mixes digital skills, business skills, 21st-century workplace skills, and domain knowledge.

**EXAMPLES**

- Cross-cultural Perspective
  - Analytical Reasoning
  - Critical Thinking
  - Communications

**EXAMPLES**

- Biology
- Cognitive Science
- Economics
- Physics
- Sociology



**EXAMPLES**

- Business Processes
  - Decision-making
- Operations Management
  - Project Management
  - Visualization

**EXAMPLES**

- AI/Data Science and Analytics
- Information Security
- Big Data / Data Management
- Software Development
- Programming



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