

THE HYBRID JOB ECONOMY

How New Skills Are Rewriting the DNA of the Job Market

Burning Glass Technologies

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Foreward by Josh Bersin



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FOREWARD

The Jobs of the Future, Appearing Before Our Eyes

We all know how automation, AI, and digital tools have changed our jobs. We spend more than a quarter of our time on e-mail¹, we have to juggle dozens of passwords, and we spend more than four hours a day on our phones². But how has all this technology impacted our jobs and careers?

New research by Burning Glass Technologies, a company that analyzes close to a billion job postings and employee resumes from millions of companies, now gives us the picture. Jobs are becoming more “hybrid,” more complex, and demand four important new sets of skills. And if you pay attention to what these are, you can march up the earning curve and make sure you stay competitive in your field.

The first and most profound finding is that high-paying jobs of the future are more complex, multi-disciplinary, and what Burning Glass calls “hybrid.” In other words, they are specialist roles (data scientist, security analyst, product manager, marketing manager, UI designer), but they are also quite complex. They require a wide set of skills from different fields (design, user experience, data analysis and interpretation, business acumen), and as a result are rapidly increasing in value.

These “very high” and “high” complexity jobs are growing at twice the rate of the overall job market, they are 20-40% higher-paying than their more traditional counterparts, and they are now entering every domain of business. Let me cite some examples.

In marketing and public relations, a new set of jobs requiring data analytics skills (marketing manager, digital marketing manager) require a combination of right brain thinking (creative design) with left brain thinking (analytics and data analysis) to succeed. Today’s advertising managers are creative designers and analysts rolled into one.

In the area of computer science and data analytics, the opposite has occurred. Once considered highly technical jobs, now these jobs require writing skills, problem-solving skills, creative and research skills, and skills in teamwork and collaboration. So just like the marketing manager who is now an analyst, the software engineer or data scientist is now a business person, designer, and team worker.

These new “hybrid jobs” (Burning Glass believes about 12% of all job openings fall into this category) are not only growing fast and highly paid, but they also are immune to automation. While many single-role jobs can be automated (analytics is often done by software, but the interpretation and design of the solution is done by people), hybrid work can only be done

¹ <https://www.linkedin.com/pulse/want-happy-work-spend-time-learning-josh-bernsin/>

² <https://www.emarketer.com/content/mobile-time-spent-2018>

by people. In fact, the research shows that 42% of all jobs can be automated, but only 12% of highly hybrid jobs fall into this category.

What are the skills you need to build to adapt? They fall into four broad areas.

First, you must develop skills in digital tools and digital technology. We are all being “augmented” by machines, so your ability to learn new systems, configure and customize these tools, and code them, if necessarily, is critical. So don’t be afraid to learn how to build a macro or customize a system to your needs: that’s your human value-add. Marketing managers who know SQL, for example, make 41% more money than those who do not.

Second, you must become comfortable with analytics and data. Of all the skills we see growing, data analytics, including interpretation, visualization, and communication, is one of the most important. Every one of these high-paying jobs (customer service manager, health care advisor, sales professional) requires facility with analytics and data.

Third, you must understand the fundamentals of business and management. One in three IT jobs now require management and business skills. A total of 57% of engineering positions now require business and leadership skills. In fact, overall, jobs that include business management and process experience have an average salary premium of 19%. And workers who have experience in project management make 21% more than those who do not.

Fourth, you must now think like a designer or creative. More than half (54%) of all IT jobs now require some form of digital design. More than one-quarter (26%) of technology jobs now require design – as well as 815,000 job openings last year outside of IT, in fields that span from business analysis to finance to manufacturing. Meanwhile, jobs as user interface or other types of design are growing at 35% per year. While machines can often automate and recommend decisions or even analyze data, we need people to design the user experiences, systems, and platforms that we use every day.

Even technologists are not immune from these changes. Today, the hottest skills in demand are in machine learning, R, and new coding tools. Software engineers who don’t keep up also see their salaries plateau, so even the most technical professionals have to keep up.

In some ways, this is how jobs and careers have always evolved. Automation changes every job over time, and if we don’t continuously move up the “human value curve” we can fall behind. The typist who worked in the steno pool in the 1970s became an executive assistant in the 1980s and 1990s and is now a customer service agent or sales support specialist today.

What’s different this time, however, is not only the pace of change but also the way that roles are being transformed by skills from unrelated functions workers aren’t likely to have picked up on the job. The marketing manager who now needs to build a customer database will need to be purposeful about learning SQL.

In fact, the theme of “lifelong learning” is perhaps the biggest finding of the study. The research found that only 16% of these high-powered hybrid jobs are entry-level. We have to learn these skills through several years of experience and self-development. If you aren’t spending a few hours a week “sharpening the saw” in your career toolbox, you are likely falling behind.

I just completed a study with LinkedIn³, and we found the No. 1 thing that would make a professional look for a new job is “inability to learn and grow.” We as employers and as employees must make sure continuous learning is part of the work environment. This enables us all to become more “hybrid” in our own special way.

The idea of a “renaissance man⁴” is more important than ever today. Leonardo da Vinci was highly esteemed for his broad knowledge of many fields. Today, we all have to become more da Vinci-like in our careers – it’s the secret of career success in the digital world ahead.

Josh Bersin
President, Bersin & Associates



³ <https://www.linkedin.com/pulse/want-happy-work-spend-time-learning-josh-bersin/>

⁴ <https://www.dictionary.com/browse/renaissance-man>

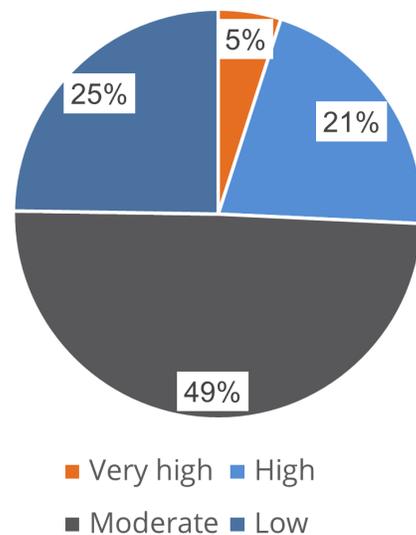
INTRODUCTION

Millions of jobs will be created or destroyed by technological change over the next decade. Yet the most profound — and underappreciated — trend in today's labor market is how technology is mutating jobs into new, unexpected forms.

More and more jobs are “hybrids,” combining skill sets that never used to be found in the same job, such as marketing and statistical analysis, or design and programming. Certain skills are acting as hybridizing forces, spreading across different roles. Fully one-quarter of all occupations in the U.S. economy show strong signs of hybridization, and they are almost universally the fastest-growing and highest-paying – and also the most resistant to automation. Some of these jobs are new, some are new versions of existing jobs, but all of them pose much different challenges for workers, students, employers, and educators.

Since Burning Glass Technologies first identified the hybrid trend in 2015,⁵ the pace of hybridization has only increased, with significant implications for workers, educators, employers, and society as a whole. This trend has the potential to exacerbate a divide in the workforce, with some workers gaining ground in the future economy, and others – those who fail to keep up with changing skill requirements – at risk of being left behind. But, as jobs get reshaped by new skills and new technologies, there are also clear opportunities: for employers to upskill existing workers and develop more effective talent pipelines; for workers to make themselves more competitive by acquiring new skills ahead of the market; and for education institutions to deliver learning to the broader community of workers who will increasingly need to acquire new skills.

Hybrids by occupation, 2018

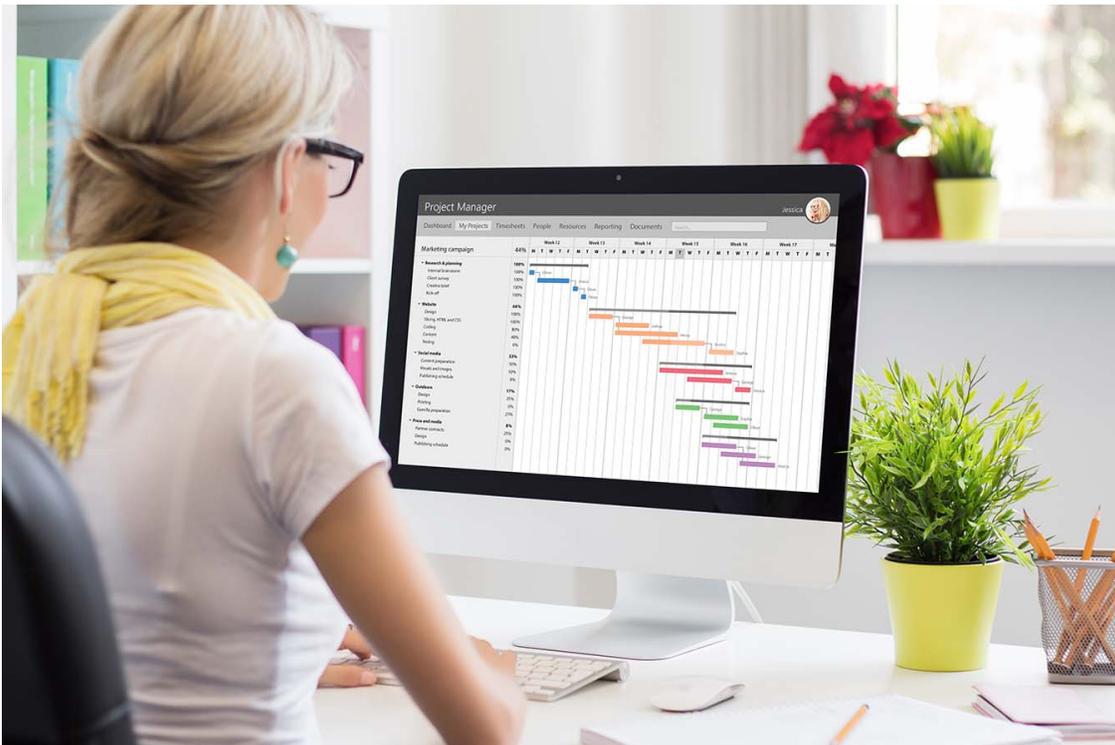


Our new analysis of hybrid jobs, based on the Burning Glass database of nearly a billion current and historical job postings, finds the trend strengthening:

- One in eight job postings is now highly hybridized, encompassing more than 250 different occupations.
- Hybrid roles are projected to grow twice as fast as jobs overall (21% vs 10% over the next decade).

⁵ “Blurring Lines: How Business and Technology Skills Are Merging to Create High Opportunity Hybrid Jobs,” Burning Glass Technologies, 2015, burning-glass.com/research-project/hybrid-jobs/.

- Technology is an important part of this trend, but not the only driving force. Often it is the need to apply soft skills, analysis, or management to technical disciplines that creates a hybrid role.
- Because they usually require judgment and analysis, hybrid jobs are less likely to be automated than other roles. Overall, 42% of jobs could potentially be replaced by technology, compared to only 12% of hybrids.
- Only 16% of highly hybridized jobs are entry-level roles, compared to 58% of all jobs in 2018.
- The skills that drive hybridization fall into five key skill areas, some new skills and other traditional skills being applied in new ways:
 - Big Data and Analytics
 - Intersection of Design and Development
 - Sales and Customer Service
 - Emerging Digital Technologies
 - Evolving Compliance and Regulatory Landscape
- Because hybrid roles tend to be more sophisticated and more specialized, there aren't many obvious entry-level opportunities in these occupations. That's a potential problem for education and training institutions that must teach these skills, and for mid-career workers who must know what skills to add to their portfolio — and when.



REWRITING THE DNA OF JOBS

We tend to think of a job as the basic unit of the labor market: that is, after all, what employers are posting and workers are seeking. But jobs themselves are simply a way of organizing tasks and the skills needed to complete them. And just like you can understand an organism by examining its genome, you can best understand jobs by looking at their underlying DNA of skills.

In most cases, the genome of a job is straightforward. The skills profile for an accountant, for example, includes:

- Baseline skills that are useful in any job, such as communication and collaboration;
- Core skills required to do the job (such as bookkeeping); and
- Differentiating skills that make this particular role different from others: the difference between a cost accountant, a comptroller, and an auditor.

In the case of Accountants, however, all the skills involved are variations on the theme of accounting. You can see this at work in both middle- and high-skill jobs. A Welder adds more skills to her arsenal as her career advances, but they are usually more advanced or specialized versions of welding. The majority of jobs still follow this pattern.

WHY HYBRID JOBS ARE DIFFERENT

Hybrid jobs, by contrast, draw upon skill sets from widely different fields. These can be new jobs driven by technological advances, or they can be existing jobs that are being redefined.

Consider Mobile App Developers, a job that didn't even exist before the first smartphones came out a decade ago. On the surface, one might assume these jobs are largely akin to other software development roles – primarily focused on coding. But an analysis of employer requirements reveals that to design an app, a developer needs to understand not only programming but also user interface design, content, and marketing. These are four skill sets that formerly didn't occur in the same role, and they stump traditional educational programs. What computer science programs teach marketing? How many marketing programs teach students how to code?

And App Developers are not a niche role: there were 34,719 U.S. postings for them in 2018.

To some extent, there have always been hybrid jobs, as skills and ideas from different fields combine. Industrial-Organizational Psychologists, for example, first appeared in the 1920s, merging the domains of psychology, labor relations, and business, among others. But industrial psychology is a small field, with only 2,026 job openings in 2018.

The difference in today's hybrid jobs is that they have become a mass phenomenon. Smartphones, of course, are one of the most significant consumer products of modern times, and it's only logical that a new product would create new jobs. Yet the trend goes far beyond what can be explained by new products.

DISRUPTIVE SKILLS DRIVE HYBRID JOBS

The real drivers of hybridization are certain “disruptive” skills that themselves can apply across multiple fields. Data science and analytics is one example. In 2010, there were a mere 150 job postings for data scientists, most of them for Ph.D. statisticians. The classic example was the Wall Street “quant” trying to come up with better ways of understanding the financial markets. With the explosion of “big data” in business, however, demand for Data Scientists has jumped a remarkable 15,032%, with 22,698 postings in 2018.

Impressive as that increase is, the real impact of big data skills has been in jobs that once had little to do with statistics. The demand for metrics — and the growing ease of measuring and visualizing them — is reshaping business practices across industries. For example:

- Marketing is now a highly data-driven field, with data skills widely in demand for Marketing Managers and Analysts as they try to more tightly target customers and identify the best tactics.
- Business analysis has also become data-dependent as more organizations seek to find greater efficiencies in supply chains and operations.
- Data science and analytics skills are now widely in demand in decision-making roles, including managers across a range of industries.

In fact, our data shows that more than 1.7 million job postings asked for data science skills in 2018.

Coding is another example of a disruptive skill. Graphic Designers are increasingly required to write HTML. Marketers and business people need basic SQL skills to operate databases. Entire new categories of jobs are being created, such as UI/UX designers, who work on creating technological interfaces that people can effectively use. And fully half of all job openings in the top income quartile (jobs paying more than \$75,000 per year) are in occupations that now show significant demand for coding skills.

Disruptive skills are not necessarily new skills. While technical skills are blending into formerly non-technical jobs, there’s also a strong trend of business skills spilling over into jobs that were once purely technical. Management skills in particular are becoming crucial in information technology work. In 2013, one in four IT jobs requested business leadership skills; by 2018, that rose to one in three.

HYBRID JOBS: FAST-GROWING, HIGH-PAYING, HARD TO FILL

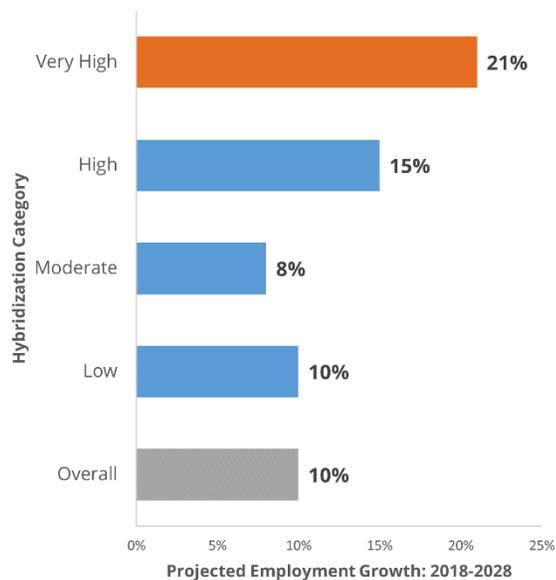
Burning Glass scores jobs as more hybrid if:

- They required skills typically requested outside their occupation group.
- They required skill clusters that often combine multiple functional domains (e.g. marketing automation software).
- They required a larger set of distinct core skills and competencies.

Jobs were broken into four categories of hybridization: Very High, High, Moderate, and Low.

Category	Total 2018 Openings	Total Occupations	Sample Occupations
Very High	617,300	45	Bioinformatician Financial Quantitative Analyst Data Scientist
High	2,747,169	203	Cybersecurity Analyst CNC Programmer Health Information Manager
Moderate	11,036,839	490	Business Process Analyst Oil and Gas Field Service Technician Medical Biller
Low	12,989,658	248	Truck Driver Psychiatrist Manufacturing Machine Operator

More than one-quarter of all occupations (26%) and 12% of job postings are either “very high” or “high” on the Burning Glass hybridization scale. That means, of course, that the majority of jobs are not yet particularly hybridized. But hybrid jobs represent the highest-paying and fastest-growing sections of the job market. Burning Glass projections find that postings for “very high” hybridization jobs will grow 21% over the next 10 years, double the pace (10%) for jobs overall.



Another way of looking at the trend is not by the number of hybrid jobs, but at the growing number of occupations affected.

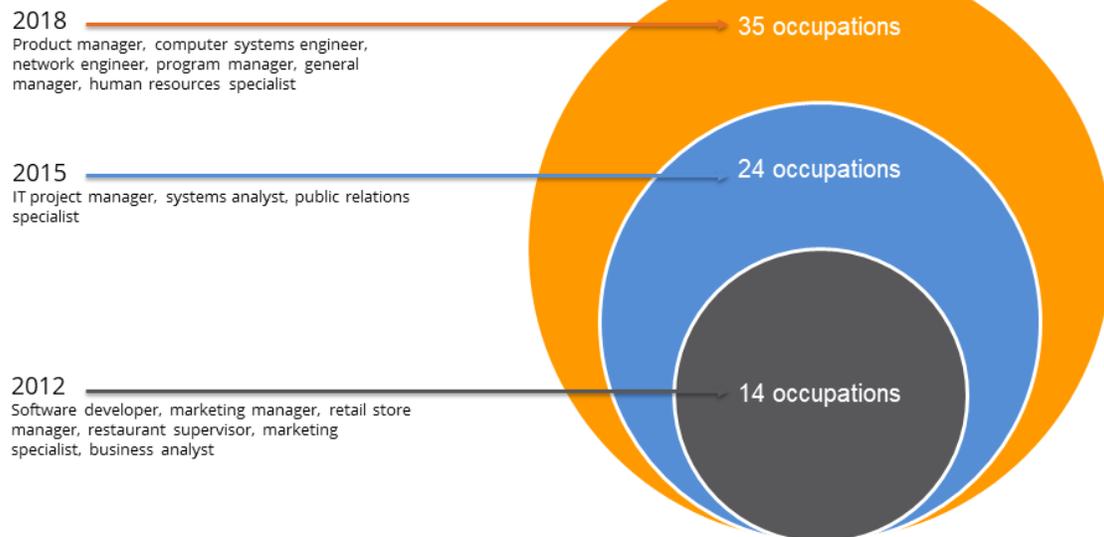
In 2012, only 16 occupations required “analysis” as a skill in 10,000 or more job postings – and, not surprisingly, these were largely analytical roles, such as Systems Analysts, Business Analysts, Database Administrators, and Software Developers. By 2018, that grew to 35 occupations, with large numbers of postings for occupations like HR Specialists, Product Managers, and even Retail Store Managers now requiring analytical skills.

Data science showed a similar increase: only 12 occupations with 10,000 postings or more required data skills in 2012, versus 31 in 2018.

Importantly, disruptive skills are not always new skills, or even so-called “hard” skills. Creativity skills are now in demand across a range of technical and business occupations where these capabilities were previously seldom valued. The number of occupations with 10,000 or more job postings requesting creativity rose from 14 to 35 between 2012 and 2018. That includes roles like Computer Systems Engineers, IT Project Managers, and Program Managers.

Skills spread over time

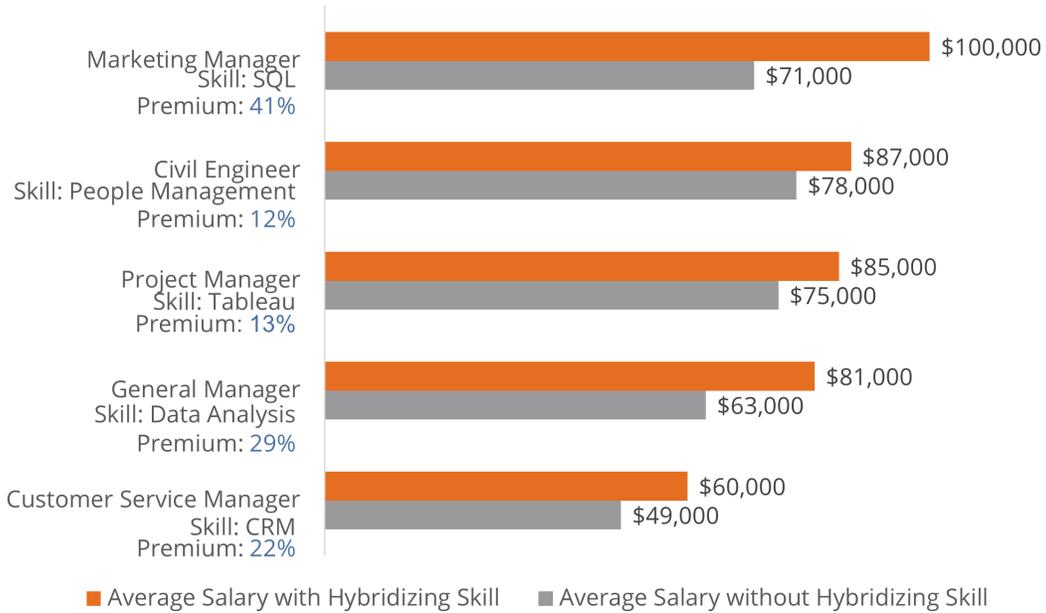
Occupations with at least 10,000 postings requesting creativity skills



Both because of the expanding demand and, perhaps more importantly, because the mixing of previously incongruous skills means that few workers have yet acquired the full set that is required, hybrid jobs carry a major salary premium.

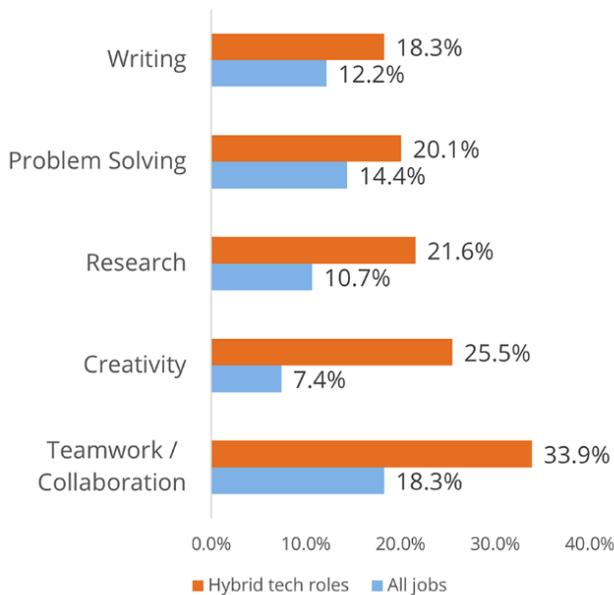
While these new roles often pay considerably more than their more traditional “parents” from which they were born, the hybrid salary premium also bears out in traditional roles that now require new skills. In fact, often the introduction of a single skill can increase salaries up to 40%.

Job Salaries with and without Hybridizing Skills



MORE HUMAN, LESS AUTOMATED—BUT ALSO LESS ENTRY-LEVEL OPPORTUNITY

Soft skills required in hybrid jobs vs all jobs



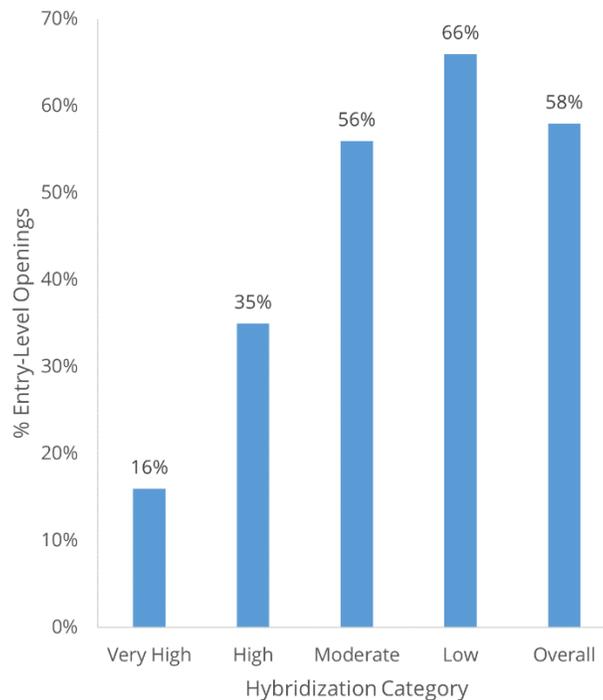
Hybrid roles have several qualities that set them apart from other jobs. One is that, ironically, despite being some of the most technology-driven and data-enabled jobs, they are also, in a way, more human — that is, more dependent on judgment and creativity. Hybrid jobs rarely involve rote, repetitive tasks. They are much more likely to represent more sophisticated work.

One way to measure this is by looking at the demand for “soft skills,” which by their nature cover challenges outside technology. Hybrid jobs are significantly more likely to demand skills like writing, creativity, and collaboration than jobs in general.

To look at it another way, hybrid jobs are less likely than the average to be automated or otherwise replaced by technology. Using the most common assessment of automation risk, 42% of all jobs could theoretically be automated.⁶ But, by the same methodology, only 12% of hybrid jobs are at risk — again, because they are less likely to rely on routine, repetitive tasks and are more likely to demand judgment, collaboration, and creative problem solving.

A great challenge the hybrid job economy poses for employers, workers, and educators alike is that few of these roles are entry-level positions. In the job market overall, 58% of job postings in 2018 were for entry-level positions. But only 16% of highly hybridized roles were entry-level. By their nature, these jobs tend to be more sophisticated, and more likely to demand higher-order skills. A good example is product management. Because the field has such varied requirements, few people are likely to have accrued requisite capabilities in school. But if product management jobs require product management experience, where does a worker start? How do they acquire these skills along the way?

Entry-Level Openings by Hybridization Category



That is reflected in the length many hybrid jobs stay open. As you can see in the chart, many hybrid roles remain unfilled significantly longer than the market average.

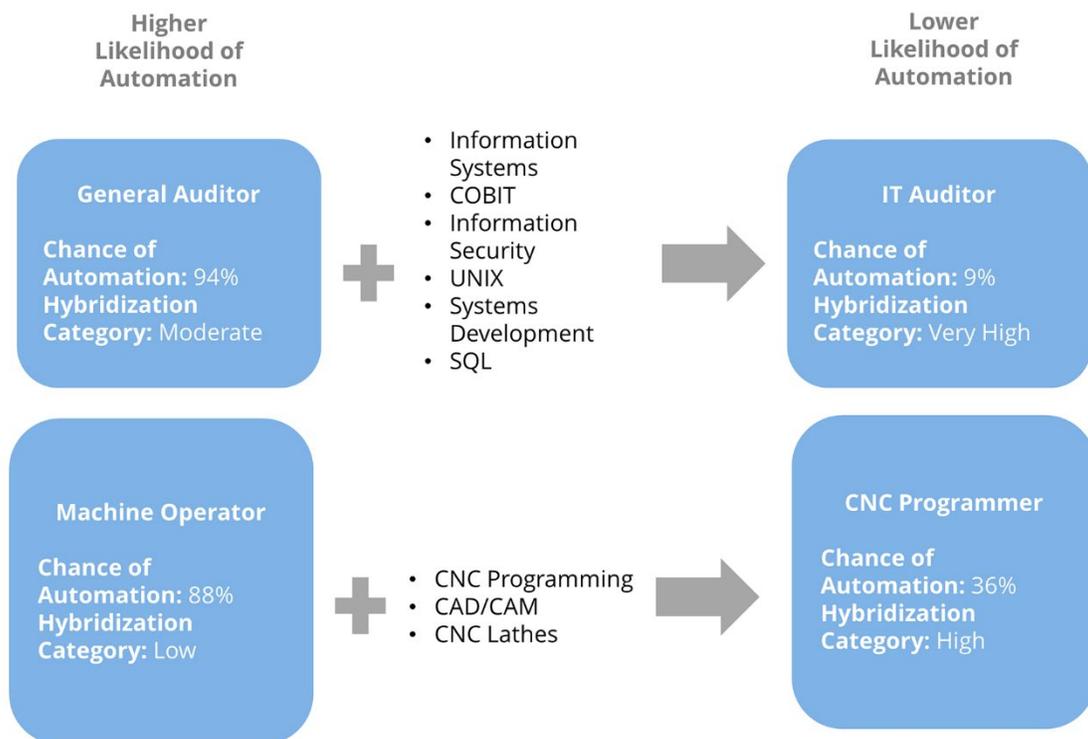
On the positive side, the difference between a hybrid and non-hybrid job may be just a few skills. Machine Operators, for example, are at high risk of being automated, but CNC Programmers are not. By training up in a few key areas, Machine Operators could move into roles with better long-term prospects.

⁶ Carl Benedikt Frey and Michael A. Osborne, “The future of employment: How susceptible are jobs to computerisation?” 2015. Oxford Martin School, University of Oxford.

Hard-to-Fill Hybrid Roles with Few Entry-level Opportunities

Occupation	Hybridization Category	Increased Time to Fill (market average: 37 days)	Percentage Entry-Level Openings
Big Data Architect	Very High	78%	3%
Cloud Architect	High	32%	7%
Data Engineer	Very High	24%	14%
BI Architect	Very High	19%	12%

Adding Hybrid Skills Can Reduce the Risk of Automation



FIVE SKILL SETS DRIVING A HYBRID WORLD

In Burning Glass analysis of job postings, five skill sets stand out for their impact on the DNA of jobs. As noted above, not all of them are new, exactly, but all of them are both redefining existing jobs in new ways and driving the emergence of entirely new roles.

Big Data and Analytics

The rise of “big data” is changing businesses ranging from baseball to warehousing. One in 12 marketing jobs demanded data skills in 2013; now it’s one in eight. In design, the number has shifted from one in 20 to one in 13.

That may be a result of the increasing demand for data visualization, or portraying data in ways that are easy to understand and apply. A good yardstick is the data visualization tool Tableau. In planning and analysis jobs, demand for this software has increased 733%, or from one in 125 postings to one in 15. In marketing and public relations, Tableau demand has shifted from one in 500 jobs to one in 59.

Skill	2013-2018 Growth
Machine Learning	809%
R	298%
Data Analysis	86%
Data Management	78%
SQL	45%

Role	2013-2018 Growth
Data Scientist	663%
Marketing Data Analyst	194%
Bioinformatician	75%
Financial Quantitative Analyst	57%

Intersection of Design and Development

So much of the modern world is driven by how humans interact with the screens around us; smartphones, computers, kiosks, and so on. Designing how those screens operate is a new and critical task, and it requires a distinct combination of technical and design skills.

Skill	2013-2018 Growth
JavaScript	78%
Adobe InDesign	76%
UI / UX	25%

Role	2013-2018 Growth
UI / UX Designer	35%

Sales and Customer Service

It's hard to think of a more traditional skill set than sales. But as more companies sell new products in more sophisticated ways, that basic ability to sell and manage sales efforts—and do it using new technological tools—has changed a wide range of jobs.

Skill	2013-2018 Growth
CRM (e.g. Salesforce)	138%
Prospecting	70%
Customer Accounts	52%
Sales Goals	40%
Product Sales	32%

Role	2013-2018 Growth
Financial Relationship Manager	73%
Medical Sales Representative	44%
Solar Sales Representative	14%

Emerging Digital Technologies

New technologies and skills are a well-established force when it comes to redefining jobs. The technology itself can be a complex programming language or an off-the-shelf product — just so long as it expands what a worker is expected to know.

Skill	2013-2018 Growth
Tableau	1103%
Chef (config. management tool)	553%
Apache Hadoop	306%
CNC Programming	9%

Role	2013-2018 Growth
DevOps Engineer	785%
Hadoop Developer	424%
BI Architect	47%

Evolving Compliance and Regulatory Landscape

Dealing with government regulation is another skill that is far from new. Despite the emphasis in Washington on reducing regulation, however, it is a major fact of life in the economy and something a wide range of workers must understand. Demand for compliance skills has spread considerably over the past five years across a growing span of occupations.

Skills	2013-2018 Growth
Medical Coding and Health Information	83%
Legal Compliance	81%
Auditing	54%
Environmental Regulations and Compliance	46%

Role	2013-2018 Growth
Clinical Research Coordinator	69%
IT Auditor	21%
Food / Beverage Quality Manager	6%
Medical Coder	4%

IMPLICATIONS

Hybrid roles are high-potential jobs. But capitalizing on them will require different strategies for both educators and business.

Implications for Educators

The strength of higher education in meeting this challenge is that almost all of the skills in demand are already taught in colleges or training institutions. The raw materials are there. A job market that is continually being redefined by skills that have value in multiple, new fields should give higher education an edge. In addition, the potential opportunity is enormous, with tens of millions of workers seeking new skills.

The problem is that many of these skills are in curricula or programs that are siloed off from each other. In addition, the rapid and dynamic change in the job market makes it hard for traditional higher education to adjust to different needs.

Higher education has long experimented with interdisciplinary programs, and the demands of a hybrid job market makes crossover learning between departments and disciplines urgent, as well as important. For colleges and universities to prepare students for these opportunities, they will need to develop more systematic ways of cataloging and then synthesizing content assets across programs.

The emergence of heretofore unfamiliar hybrid roles represents an opportunity to create new programs aimed at developing talent for these fast-emerging opportunities. Importantly, an even bigger opportunity for higher education will be to realize the long unmet promise of lifelong learning – going beyond traditional degree structures in order to offer more targeted non-degreed certificates that enable tens of millions of workers the ability to acquire on the fly the skills that are hybridizing their jobs.

To do that effectively, however, will require better data and more nimble planning. Providing learning opportunities around hybrid skills means approaching program development in a much more granular manner. Higher education will have to identify new jobs, but even more importantly, it will have to dissect those jobs into their component skill combinations. That means engaging faculty much more closely in identifying how skills are changing within their fields and how coursework can adapt.

Implications for Employers

Hybridization exacerbates skill gaps. By its very nature, the process makes existing talent supply pipelines obsolete, or even irrelevant. Training up existing workers may prove a far easier solution for employers than fighting over the small pool of workers actually in the market for these emerging jobs. At many companies, that means creating a more focused, effective corporate learning and development system.

This is an area where there is room for partnership between employers and educators. The two institutions represent supply and demand in the labor market: if there is no talent supply line for a new role or skill set, both have an interest in creating one.

But this presumes that employers themselves have an awareness of how their talent needs are likely to change, which may or may not be true. Not a few companies have been caught off guard by changes in the market. Business, like higher education, needs a more effective, data-driven system for both spotting and interpreting changes in skill demand. For firms to upskill workers efficiently and make more effective use of their talent, they need to be able to identify both the skills workers already have as well as those they will need so they can better align learning and development investments with future jobs and with the future composition of the jobs they already have.

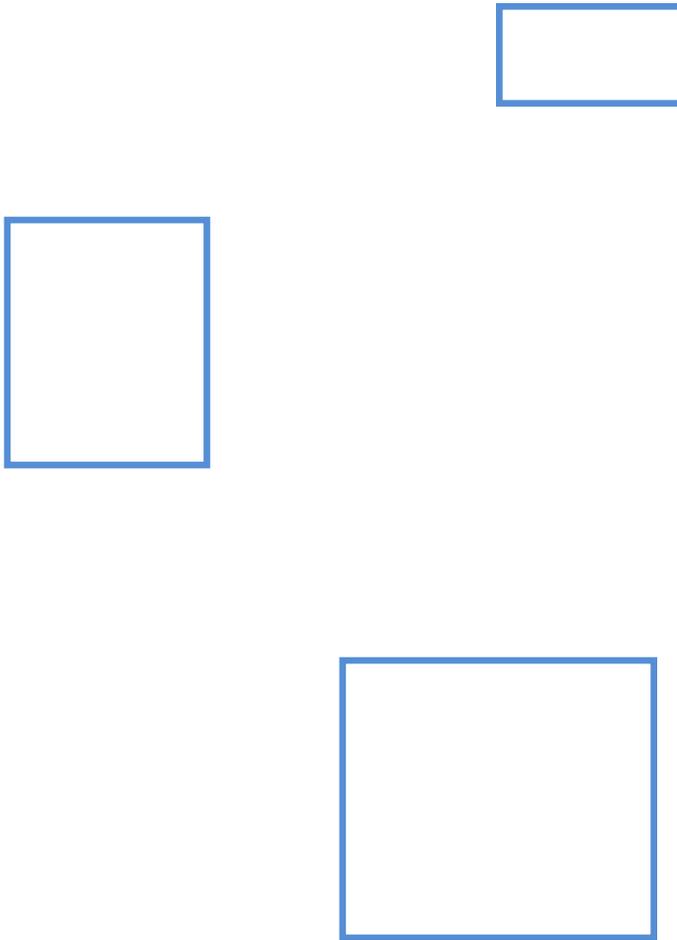
Implications for Workers

As Josh Bersin noted in his forward, focusing on the key skill sets needed to succeed in a hybrid job market can pay off well for workers. The fact that few hybrid jobs are entry-level roles means that lifelong learning is an essential route into these jobs: In fact, it may be the only route. Yet while workers are often encouraged to get additional training, they are usually left to their own devices to decide what that training should be. This is a particular issue with hybrid roles that merge skill sets workers may see as far afield from their expertise. Workers need a clear sense of where their field is headed and the pathways they can follow to advance.

In this sense, workers need the same thing as employers and higher education: insight into how jobs are changing. In a tumultuous global job market, tens of millions of workers will be seeking ways to improve their skills and advance in their careers. That is a generation of employees for business, and a vast potential community of learners for higher education. With effective insight into the changing nature of jobs, all of these stakeholders can prosper in a hybrid job market.

ABOUT BURNING GLASS

Burning Glass Technologies delivers job market analytics that empower employers, workers, and educators to make data-driven decisions. The company's artificial intelligence technology analyzes hundreds of millions of job postings and real-life career transitions to provide insight into labor market patterns. This real-time strategic intelligence offers crucial insights, such as which jobs are most in demand, the specific skills employers need, and the career directions that offer the highest potential for workers. Find out more at burning-glass.com.



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