McKinsey & Company

Aerospace & Defense Practice

Seizing the moment: Talent challenges and opportunities in aerospace and defense

Aerospace and defense companies face tough competition when recruiting talent. How can they reinvigorate the pipeline?

by Georgios Athanasakopoulos, Patrick Forrester, Varun Marya, and Brooke Weddle

April 2021

It has been nearly six decades since NASA's Apollo missions firmly embedded space exploration into the national consciousness and made the aerospace and defense (A&D) industry a favored destination for the United States' top talent. Now missions to reach the stars continue to excite national and international interest, but headlines announce the achievements of industry start-ups rather than government agencies and incumbent organizations. Private companies are rewriting the rules. High-profile organizations are launching commercial space programs that advance exploration and communication, and space tourism is likely to become a reality in the near future. A new space age is dawning.

The new entrants in the A&D industry have a favorable reputation for accelerating progress. But for incumbent A&D companies, these start-ups also create a challenge: an increasingly competitive landscape for employers seeking to attract and retain the best digital and analytics talent. Almost every industry and sector is recruiting for digitally focused roles, yet A&D organizations' talent strategies and HR capabilities often have not kept pace with the needs of the organization and the realities of the talent marketplace.

Even without that competitive pressure, recruiting would be a challenge. An unfavorable, though misplaced, perception of the industry's work and working environment may be deterring promising candidates from entering the industry. And well-intentioned diversity, equity, and inclusion (DE&I) efforts, which could expand the talent pool, have had mixed success as the industry continues to struggle with representation of women and people of color.

In order to better understand the challenges being faced by the industry and identify opportunities to reinvigorate traditional A&D recruitment, we set out to investigate four questions:

1. What are the trends impacting talent needs in A&D?

2. What are the headwinds facing A&D companies in the war for talent?

3. How are A&D companies' talent strategies working to address talent needs?

4. What can be done to attract and retain the right talent in A&D in the future?

The new research presented in this report is the most comprehensive effort to date investigating the state of talent in A&D. It describes three targeted actions the industry can take to address these issues.

— Highlight A&D's distinctive value proposition for top talent through effective branding. The industry has an exciting and compelling story to tell built on a legacy of achievement, while its gaze remains firmly fixed on the future.

— Invest in reskilling and upskilling the existing workforce to fulfill new digital roles, whether through internal initiatives or partnerships with educational institutions to ensure that the talent pipeline has the skills necessary for the future.

— Renew focus on DE&I efforts to make A&D an industry inclusive of women and people of color.

Progress in these areas will not happen overnight. But we believe a sustained commitment to these priorities can dramatically improve the ability of the A&D industry to attract, develop, and retain the best candidates.

About the research

Our team has conducted extensive research and analysis to gain a better understanding of the A&D industry (both its advantages and challenges) in terms of digital talent, DE&I, and the industry's response to disruptive trends—not only the long-term impact of increased digitalization but also the immediate effects of the COVID-19 pandemic.

We interviewed more than 40 senior HR leaders, government-affairs representatives, and other experts for their detailed insights. These findings were augmented by a survey of HR leaders on several topics, including the industry's preparedness to face disruptive trends (including digital trends), the impact of the COVID-19 pandemic on operations and business, the use of data and analytics in talent management, challenges in hiring and retention, and DE&I practices, purpose, and culture. Our analysis also drew on existing McKinsey Global Institute research and data on the future of work, automation, and women in the workplace, as well as Talent Intelligence, an asset of McKinsey's Organization Practice.

 In this report, we define different categories of "traditional" companies in the A&D supply chain as follows:

— platforms that integrate subsystems and assemble airplanes, tanks, satellites, and ships

— mission systems that build the technology that accompanies large crafts, such as a radar or communications systems

— lower-tier suppliers that are deeper in the supply chain and make components—ranging from low-volume and high-complexity production of satellite components to simple, cast-metal parts—that mission systems and other companies assemble to create the end product

— services composed of people who work on government contracts

New space and software companies often overlap in the domains of "traditional" A&D, but both are competitors for talent and characterized by their development outside the A&D supply chain and disruptive effect on the market.

Industry trends changing the face of A&D

We have identified several recent developments that are transforming A&D.

The need for increased tech capability as automation grows

Customer needs in A&D technology are changing as capabilities rapidly grow. Governments and commercial customers now require increasingly technical solutions as trends such as cybersecurity, automation, digitization, the Internet of Things, and artificial intelligence increase in importance. Digital technologies are being injected into more and more aspects of A&D solutions to reflect the problems they currently face or expect to face in the future. This greater demand for technologies will shape A&D's talent strategy, yet only 35 percent of leaders surveyed indicated that they are well prepared for disruptive trends related to digitalization.

This is creating a rapid rise in demand for candidates with technology skills that is proving challenging for A&D companies. The explosive growth in demand for systems integration across the industry has placed a premium on workers with this experience. At many companies, this trend has created substantial skills gaps that make it hard to meet customer requirements. These skills gaps often lead A&D companies to force-fit existing solutions to meet proposal requirements because of expertise shortage in roles such as solutions architects.

The capability requirements of systems engineers are also increasing as components and subsystems become more and more complex, leading to a need for ever more-talented engineers. Experienced systems engineers are in increasingly high demand,

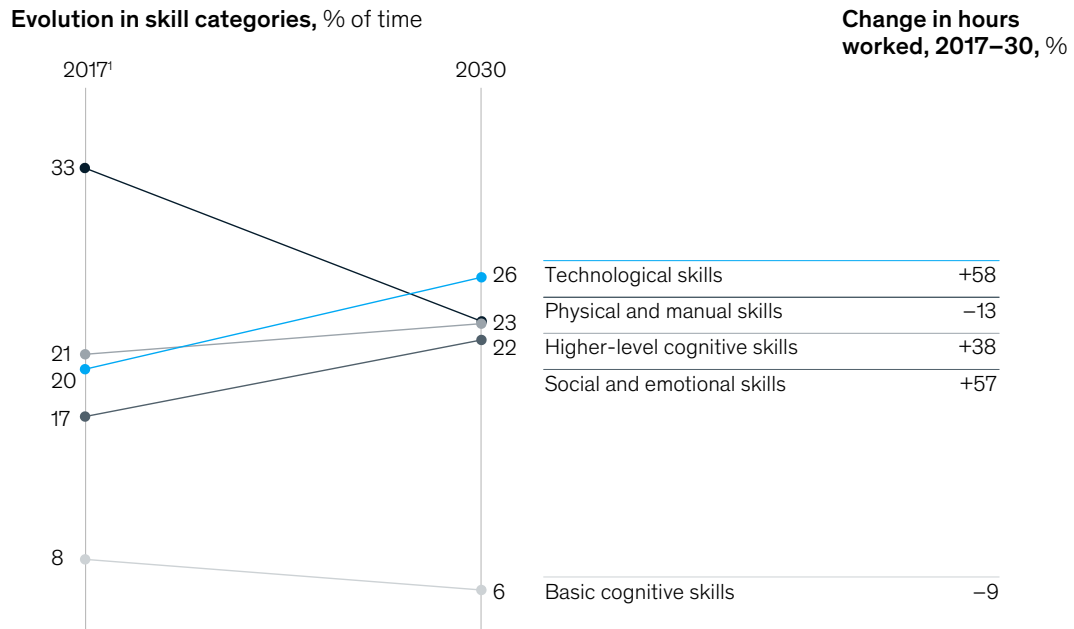so some A&D companies have a relatively junior systems engineering function.

There are also challenges related to the different design and operation skills required by advanced manufacturing technologies. Manufacturing is becoming more digitalized, from production-line engineering changes to digital work instructions, and technological advances such as additive manufacturing require a different design method than that which industry engineers have previously used. Furthermore, even nondigital roles are being affected, because new materials require additional understanding of their properties, presenting new challenges to tradespeople such as welders.

An examination of the growth in demand for certain types of skills in the coming years reinforces the talent challenge for A&D (Exhibit 1). Through 2030, workers will spend a greater share of their time on tasks requiring technological skills,[1] while the requirements for physical and manual skills will decline significantly. There will also be an additional demand for a workforce with higher cognitive skills and increased social and emotional capabilities as work requiring more physical and basic cognitive skills is replaced by automation.

As technology requirements change, A&D companies are building more of the mission-system technologies that go inside an airplane or ship (such as C4ISR,[2] electronic warfare, and radar). There is growth in mission-systems segments

Exhibit 1

Technological skills, as well as social and emotional skills, will be in greater demand by 2030.

Evolution in skill categories, % of time

Change in hours worked, 2017–30, %

Technological skills	+58
Physical and manual skills	−13
Higher-level cognitive skills	+38
Social and emotional skills	+57
Basic cognitive skills	−9

Note: Based on difference between hours worked per skill in 2017 and modeled hours worked per skill in 2030 in midpoint automation scenario.
[1]Figures may not sum to 100%, because of rounding.
Source: MGI Skills Model; McKinsey Global Institute analysis

[1] The technical skills needed will involve basic digital skills; advanced IT skills and programming; advanced data analysis and mathematical skills; technology design, engineering, and maintenance; and scientific research and development.
[2] Command, control, communications, computers, intelligence, surveillance, reconnaissance.

such as C4ISR, EW/EO/IR,[3] NBC defense,[4] and IT, as well as increased cyber spending in the 2020 defense budget compared with 2019. While the industry is still anchored by major platform programs, much of the technological innovation is happening in the mission-systems space. Example areas where this innovation is happening are digital technologies, such as remote communication or flight controls, and emerging technologies for use adjacent to major platforms, such as unmanned systems. This change naturally requires a different set of digital skills than what's held by much of the current A&D workforce.

Increased competition for digital talent

Competition for talent, particularly digital talent, is increasing as more industries build out their digital capabilities. From biotechnology to retail, organizations' use of data is increasingly requiring a more digitally capable workforce with skills such as those of data scientists. The toughest competitors for A&D companies in the race to recruit digital talent are advanced-electronics and technology companies, with rivals including new space and traditional software companies and those building autonomous vehicles. At the same time, newer space start-ups have matured into real competitors in traditional A&D domains, enjoying a recruitment advantage due to their fast-paced work environment and reputation for innovation.

A&D industry leaders agree that the need for digital talent is growing across industries and outstripping the talent pool available. As a result, incumbents are competing for talent not only with themselves, technology companies, and newer space start-ups, but also with every other industry that leverages data and digital talent. When surveyed, A&D leaders indicated that technology firms and advanced-electronics companies were their biggest rivals for talent (Exhibit 2, part 1). And as the demand for digital and analytics skills continues to increase, even major retailers are tapping the pool for software or data engineers and becoming new competitors with A&D in the market for talent.

While increased digitalization (for example, AI and machine learning, cybersecurity, and the Internet of Things) is expected to drive the most positive change in the A&D industry among in-process disruptions, it is also the area where companies feel least prepared to react. Only about one-third of surveyed industry leaders feel very confident they are prepared to face the trend.

This lack of confidence is reflected in the rate of hiring. A&D companies lag behind companies in adjacent industries when it comes to hiring workers with digital and analytics skills. Instead, they are prioritizing traditional engineering roles over newer digital ones (Exhibit 2, part 2). When analyzing employee job postings over the course of the last five years, we find that around 20 percent of A&D company job openings posted are for digital and analytics roles, compared with 35 percent of postings from technology firms.

Impact of COVID-19 on workforce and talent

The COVID-19 pandemic has taken its toll on all industries. Many companies have shuttered their operations, furloughed employees, or frozen hiring in light of uncertain prospects. However, while the A&D industry hasn't been exempt from supply-chain challenges, many companies have benefited from relatively stable finances and operations, in part because of increased federal budgets for defense spending at the start of the fiscal year and increased progress payments.

The pandemic has also required people to work remotely to fulfill stay-at-home and physical-distancing requirements. This requirement has presented challenges, but it has also demonstrated that more roles than previously thought possible can be completed remotely. This can widen the talent pool for digitally focused roles through recruitment outside the geographic areas where A&D companies operate.

Within the A&D industry, companies have responded to the pandemic by rethinking their workforce and
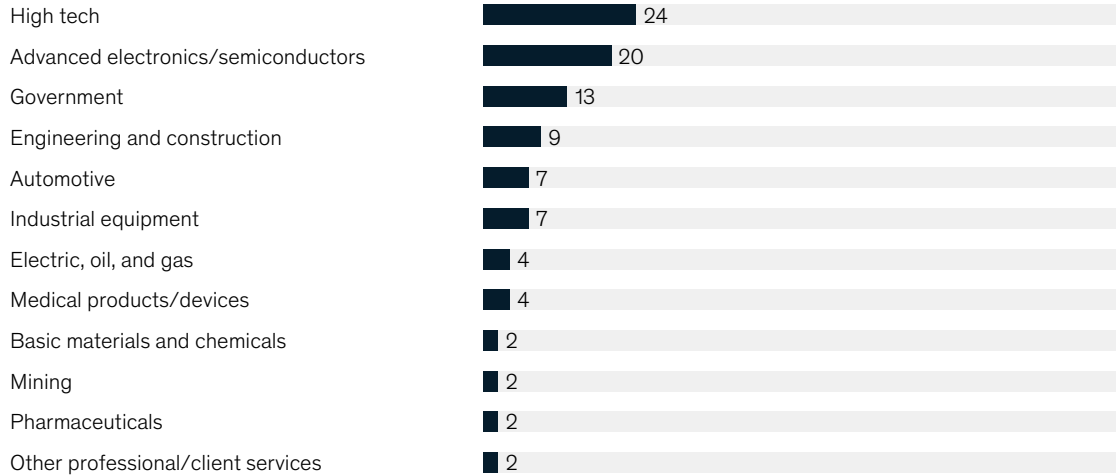
---

[3] Electronic warfare, electro-optical, infrared.
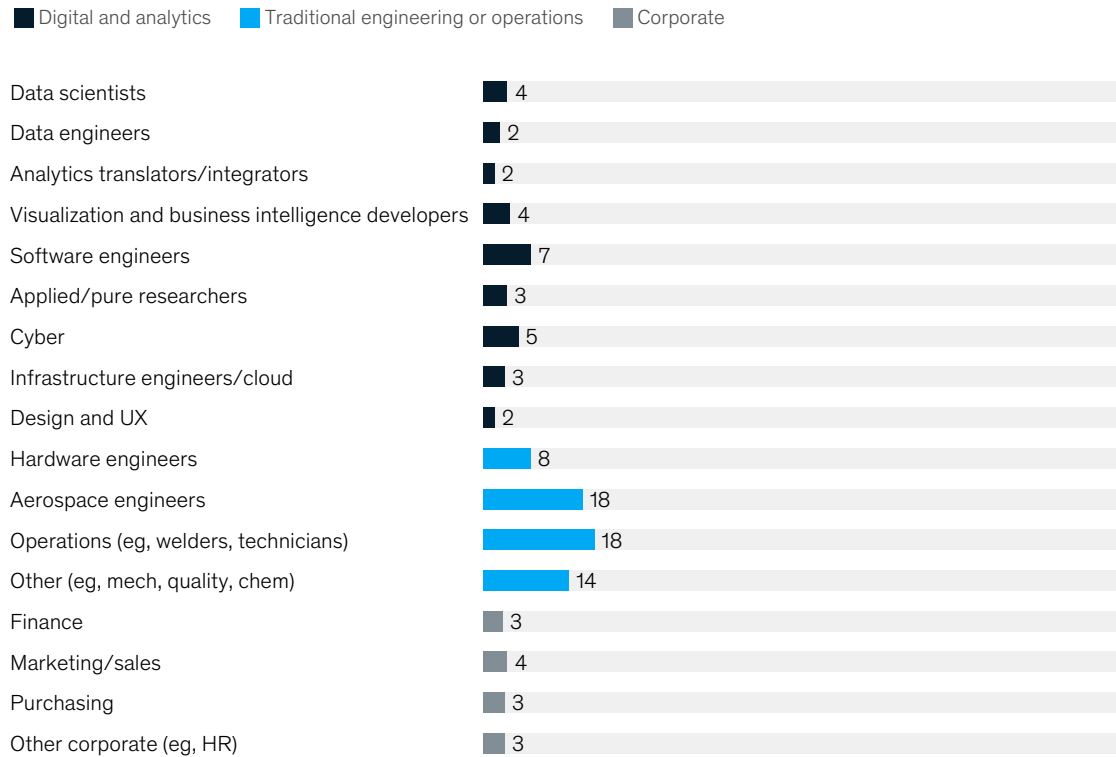[4] Nuclear, biological, chemical.

Exhibit 2

A&D companies prioritize traditional engineering skills when attempting to attract talent.

What top 3 industries (outside of A&D) do you most heavily compete with for talent?, %

High tech	24
Advanced electronics/semiconductors	20
Government	13
Engineering and construction	9
Automotive	7
Industrial equipment	7
Electric, oil, and gas	4
Medical products/devices	4
Basic materials and chemicals	2
Mining	2
Pharmaceuticals	2
Other professional/client services	2

What capabilities are you currently prioritizing in attracting talent?, %

■ Digital and analytics　■ Traditional engineering or operations　■ Corporate

Data scientists	4
Data engineers	2
Analytics translators/integrators	2
Visualization and business intelligence developers	4
Software engineers	7
Applied/pure researchers	3
Cyber	5
Infrastructure engineers/cloud	3
Design and UX	2
Hardware engineers	8
Aerospace engineers	18
Operations (eg, welders, technicians)	18
Other (eg, mech, quality, chem)	14
Finance	3
Marketing/sales	4
Purchasing	3
Other corporate (eg, HR)	3

Source: State of Talent in A&D survey of 26 members of the AIA Workforce Policy Council

The pandemic has required people to work remotely to fulfill stay-at-home and physical-distancing requirements. This requirement has presented challenges, but it has also demonstrated that more roles than previously thought possible can be completed remotely.

talent strategy, primarily through innovating the way they work (Exhibit 3). The industry is shifting to new arrangements, including remote working, to support employees' health and safety. Additionally, companies are actively reskilling the existing workforce to support higher-demand areas, such as hands-on production for commercial airplanes, and reprioritizing the types of roles for which they are hiring. All companies surveyed have had to rely on new ways of working, and the majority have avoided significant workforce reductions to date.

Because the pandemic's impact has varied across industries, A&D companies recognize the opportunity to use their relative stability to address talent shortfalls. For instance, many companies have publicly indicated that their recruitment programs are expanding and have posted hundreds to thousands of open roles during the pandemic. The greater impact on other industries is also giving A&D companies access to a wider pool of talent for roles that can be done remotely while physical-distancing and work-from-home restrictions remain in place. These positions include many digital, accounting, recruiting, and even tech development roles. The industry now has an opportunity to lock in these positive changes to working practices as a way to attract talent in the future.

Headwinds affecting talent in A&D
While A&D is benefiting from many positive trends, several headwinds could make it difficult to attract the right talent.

Rigid career paths
The nature of the work in the A&D industry requires a strong focus on innovation. However, there is an external perception that companies in the industry are overly bureaucratic in their organization, which can stifle innovation. Unfortunately, this is also reflected internally, with an analysis of employee reviews finding that almost one in three mentions "bureaucracy" at A&D companies, while less than 10 percent of employee reviews in newer space start-ups mention bureaucracy.
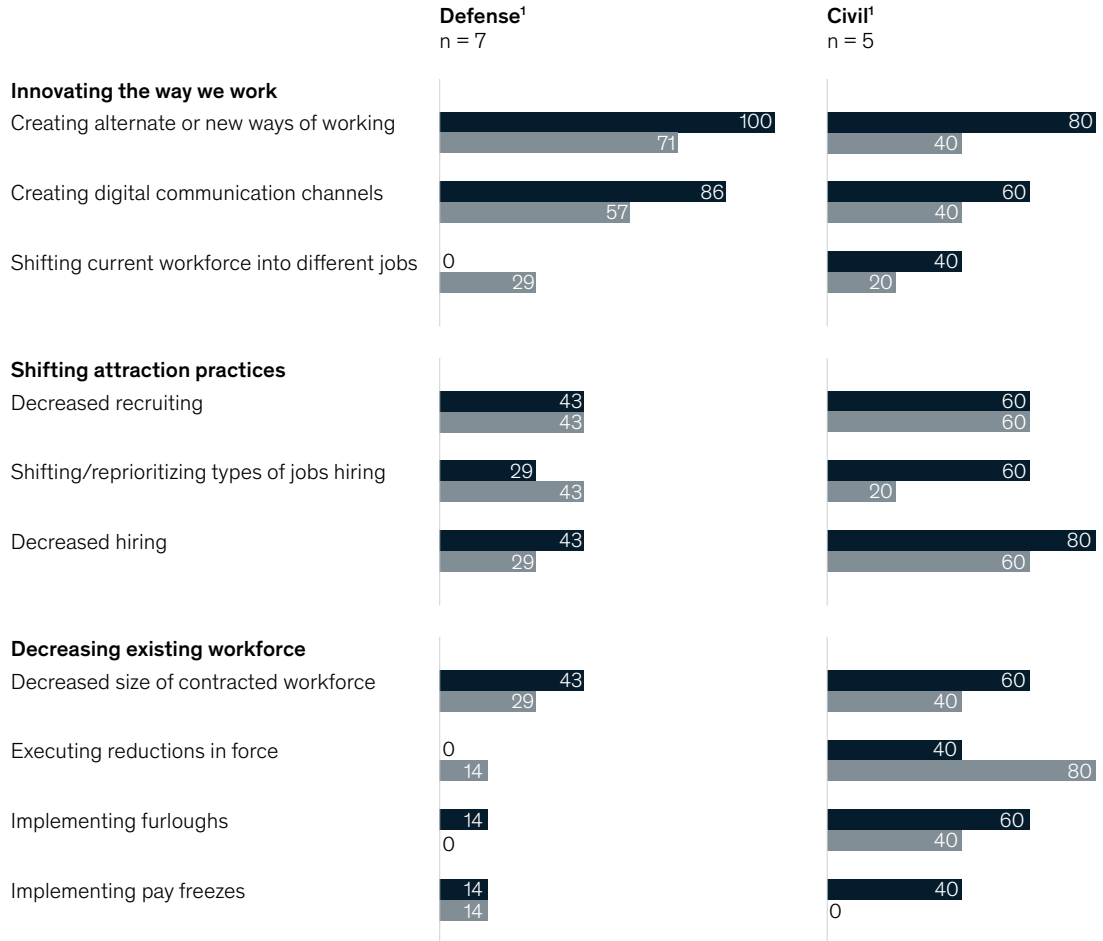
Today's engineers typically want to own a program from start to finish so they can see the outcome and impact of their design. However, work at traditional A&D companies can fail to meet this desire, instead requiring employees to focus on a single workstream of a larger program. One executive described the issue by saying, "You can work at an A&D company and design the wing of a bomber for the next 30 years." This results in challenges in creating job rotation and development opportunities for these engineers. There is a better picture at

Exhibit 3

A&D companies have relied on new ways of working or realigned their workforces to respond to COVID-19 disruptions.

Talent strategies in the context of COVID-19, % of unique responses

■ Strategy is currently employed
■ Planning to employ strategy

	Defense[1] n = 7	Civil[1] n = 5
Innovating the way we work		
Creating alternate or new ways of working	100 / 71	80 / 40
Creating digital communication channels	86 / 57	60 / 40
Shifting current workforce into different jobs	0 / 29	40 / 20
Shifting attraction practices		
Decreased recruiting	43 / 43	60 / 60
Shifting/reprioritizing types of jobs hiring	29 / 43	60 / 20
Decreased hiring	43 / 29	80 / 60
Decreasing existing workforce		
Decreased size of contracted workforce	43 / 29	60 / 40
Executing reductions in force	0 / 14	40 / 80
Implementing furloughs	14 / 0	60 / 40
Implementing pay freezes	14 / 14	40 / 0

[1]Defined as having more than 50% of revenues in this segment.
Source: State of Talent in A&D survey of 26 members of the AIA Workforce Policy Council; interviews with A&D executives

tech-oriented A&D companies, where employees serve as major contributors who see a project or program from start to finish in a shorter time frame—a marked contrast from the perceived A&D industry norm.

Leaders are looking for opportunities to address the perception of the A&D industry as being bureaucratic and slow. They want to emulate tech-focused firms that are able to move quickly and create cultures of innovation that are more attractive to the tech talent needed in the A&D industry. The longer development cycles in traditional A&D companies can act as an obstacle for engineers seeking to learn a wider range of skills that can facilitate career advancement. Until this same

Adding to job postings a clear purpose or company mission that resonates with target talent is an easy yet effective way to promote an organization's contribution to society.

exposure to a range of programs can be achieved in traditional A&D companies, tech employees in this sector could experience slower career advancement than they would like.

By these metrics, the technology industry can seem more compelling, with less hierarchy, more opportunities for innovation, and the chance to contribute to a larger number of projects and programs. This results in employees experiencing a quicker path to developing and delivering impactful technologies that can also provide more career growth than their A&D industry counterparts.

An incomplete picture of the industry

A&D's brand perception as an innovative leader forging a path of new discovery is not as strong as it used to be. Exacerbating this, digital technology has become a core component of many industries, rather than distinguishing A&D. Simultaneously, the A&D industry has leaned too heavily on its legacy to attract talent without demonstrating its continuing contribution to innovation. In an age when candidates are constantly engaging with a wide range of potential employers, A&D executives should take the opportunity to communicate their value proposition, as well as the excitement and importance of their company's current work.

Without impactful positive representation among candidates about what it means to work in A&D, outside voices have contributed to a more negative definition of the industry. One leader maintained,

"Somehow, the negative messaging around the industry is more powerful, and the narrative is lost. If you're a young software engineer who sees greedy defense contractors, you want to work somewhere that you're benefiting society as a whole. So this narrative impacts our ability to recruit the best and brightest."

This dynamic has created several misperceptions. First, candidates typically don't view A&D companies as being on the cutting edge. Although the industry has been developing innovations, such as GaN radar and stealth technology, it hasn't been able to build an image in the minds of the next generation of talent that A&D is a place to do some of the most high-tech work anywhere in the world.

We also see that millennial and Generation Z candidates consistently express an interest in working for purpose-driven organizations. They discount A&D companies as career targets, because the industry has struggled to promote its compelling mission and contribution to the greater good. For example, three times as many new space start-ups feature a mission statement in their job postings as A&D platform companies, even when A&D recruiters have a clear communication strategy after the application stage. One leader said, "Bringing innovation that matters is our purpose." That person added, "But we also train our recruiters how to talk about serving defense clients, because we have to respect our customers. But it's how we frame it that matters."

Adding to job postings a clear purpose or company mission that resonates with target talent is an easy yet effective way to promote an organization's contribution to society. It can attract the attention of those who may have previously dismissed the industry as not matching their own aspirations.

Indeed, the industry's relationship to the US Department of Defense has led some potential employees to pursue other careers because of an ideological opposition to building weapons or supporting certain elements of US foreign policy. Even so, leaders know that the pool of people who "recognize the cool stuff defense is doing," as one executive said it, is still significant.

Lastly, A&D companies have not fully leveraged targeted recruiting campaigns. The result is generic messaging that doesn't provide the details qualified talent requires to explore industry opportunities further.

Perception of inadequate compensation
New space and software companies in Silicon Valley have become the touchstone for salary expectations. This has resulted in a perception that the A&D industry cannot offer competitive compensation. This is borne out by mid- and senior-level workers at leading new space and software companies earning more at entry level and experiencing faster acceleration in wage growth than those in the A&D industry, in part because equity is a significant aspect of overall compensation in the tech industry.

However, there is good news for the A&D industry. A&D employees are more positive about their total compensation, benefits, and work-life balance than workers in new space and software companies. The next stage must be for the industry to promote its total value proposition more effectively and reinforce these more positive elements in its talent attraction efforts.

Industries such as traditional manufacturing have previously faced similar challenges in attracting talent against a reputation of roles being dirty, dull, and dangerous. Digital transformations in some lighthouse organizations, coupled with effective brand positioning and a focus on sustainability and workforce empowerment, have been effective in shifting the needle and making these companies an attractive workplace for the best digital talent.

Digital transformations in some lighthouse organizations, coupled with effective brand positioning and a focus on sustainability and workforce empowerment, have been effective in shifting the needle and making these companies an attractive workplace for the best digital talent.

Insufficient talent strategies

A&D companies have a sustained high demand for different skills, but the traditional talent pipeline on which they have relied is no longer delivering enough qualified candidates. Moreover, the current composition of the workforce is not aligned with organizational needs, and HR functions have struggled to update their talent strategies.

Inadequate talent pipeline

Technology companies are a new source of competition in recruitment for the A&D industry, particularly when it comes to recruiting top university talent. Traditional A&D companies typically have not implemented recruiting strategies on a broad scale that effectively target talent-rich geographies or prioritized creating a new pipeline to the industry. They have relied upon existing pipelines through traditional engineering programs at local universities and trade schools that do not generate technology and digital talent in the required numbers. In contrast, technology companies have solid recruitment pipelines from leading technical research universities, which often do not feed into the A&D industry in great numbers.

While recruitment strategies for traditional A&D companies continue to focus on engineering and trade schools, these establishments themselves are at risk of not producing talent in sufficient numbers. A decline in enrollment is partially to blame. Despite increasingly technical and high-skill work performed by people trained in the trades, shifting societal perceptions about the trades—for example, that attending four-year colleges will ultimately be more valuable or stable than pursuing blue-collar careers—have stymied active interest in attending trade schools.

Companies are also underperforming at retention of talent. While the industry-wide retention rate is 93 percent, the five-year retention rate at the firm level is only 50 percent, indicating that talent often moves between companies in the industry. Moreover, talent is more likely to leave A&D than to enter it from other industries, so rather than creating a larger and stronger workforce for the industry,

this movement creates unnecessary friction. A&D companies are competing with one another for a static talent pool rather than expanding it. Because the industry tendency is to hire and promote from within, companies have not invested enough in drawing top talent from adjacent industries.

A complicating factor is that A&D companies are uncertain about the exact skills they will need in the future. The industry is moving into new technology areas, such as hypersonic flight, next-generation electronic warfare, and protected communications. These areas require employees with the ability to adapt and evolve their skill sets. At the same time, companies must identify emerging needs and create paths for properly skilling employees. These trends have increased the demand for employees with more niche skill sets—yet some companies aren't confident in making hiring investments unless they have existing or upcoming programs with direct applicability.

A tenured workforce with fewer digital employees

Compared with new space and software companies, traditional A&D companies have fewer employees in digital roles. Less than 15 percent of their workforce is digital, compared with 25 percent in new space and software companies.
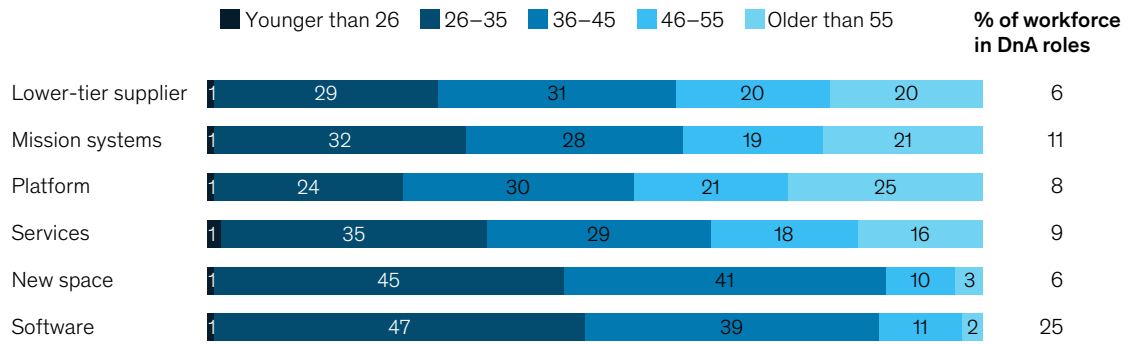
A&D has a relatively even age distribution of employees in these digital roles, whereas the new space and software companies have much higher percentages of younger workers in digital roles (Exhibit 4). Approximately one-quarter of employees in each age group are in a digital role at A&D companies, while nearly half of those roles at new space and software companies are filled by people 35 years old or younger.

Overall, the A&D workforce is significantly more tenured and older than in adjacent industries: about 40 percent of its employees have been in the workforce for more than two decades, compared with just 13 percent in new space and tech. This means that about one-fifth of A&D employees will

Exhibit 4

A lower percentage of A&D employees are in exclusively digital and analytics (DnA) roles.

Employees working in DnA roles,[1] %

	Younger than 26	26–35	36–45	46–55	Older than 55	% of workforce in DnA roles
Lower-tier supplier	1	29	31	20	20	6
Mission systems	1	32	28	19	21	11
Platform	1	24	30	21	25	8
Services	1	35	29	18	16	9
New space	1	45	41	10	3	6
Software	1	47	39	11	2	25

Note: Figures may not sum to 100%, because of rounding.
[1]Data analytics, UI/UX developers, IT infrastructure, information security, and software engineering. Age distribution graph does not include profiles where age data were missing.
Source: Percent in digital roles breakdown from McKinsey Talent Intelligence solution (outside-in analysis on employee skills profiles as of 2020 across 70 organizations from business-focused social networking websites, >1.1 million profiles)

approach retirement age in the next five to ten years. The potential retirement of this segment of the workforce and reshaping of A&D talent strategies to attract younger candidates with digital and technology skills could remake the workforce to match emerging requirements.

Recruitment focus not appropriately allocated between traditional and technological skills

The roles that A&D companies currently prioritize in their hiring are traditional technical skills, such as those held by aerospace engineers, hardware engineers, and welders, rather than the newer technical skills of data scientists and analytics translators. Company leaders indicated in survey responses that 56 percent of company hiring still focuses on traditional engineering roles, compared with 6 percent for roles like data scientists and data engineers. Further, HR leaders indicated they are most comfortable attracting the traditional engineering disciplines and feel less confident recruiting the newer technical talent that will in large part shape their prospects in the coming years (Exhibit 5).

Underdeveloped diversity, equity, and inclusion initiatives

Much of the overall DE&I efforts in A&D companies are very "traditional" and lack the ownership and prioritization to make them effective. In addition, the lack of women and people of color in leadership make candidates in these groups question whether they can thrive in the industry.
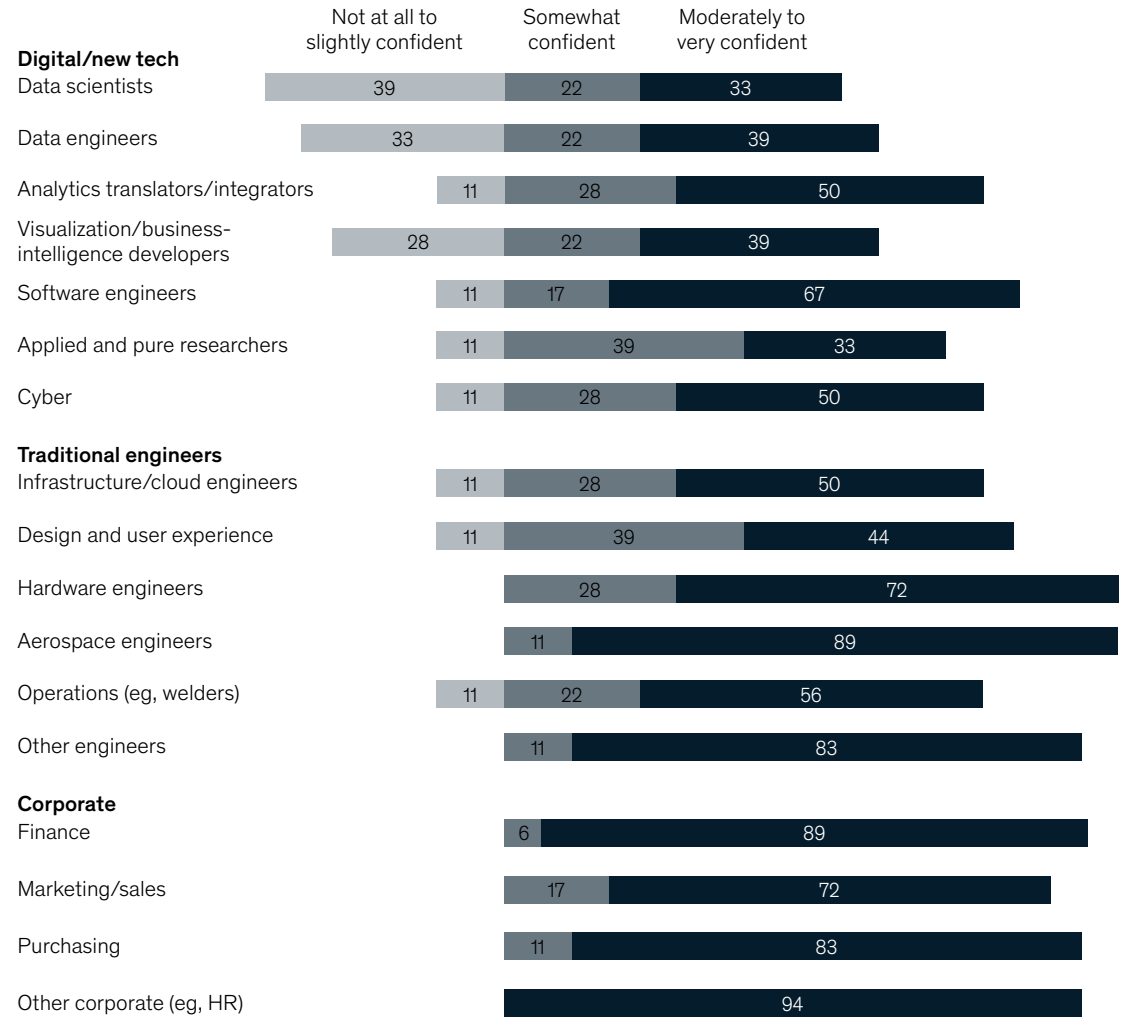
Programs such as employee-resource groups, while necessary, are not enough to promote the culture of inclusion that industry leaders are striving for and that companies need. When employees feel that a company's aspirations, words, and actions are detached from employees' experiences, it tends to undermine the entire program and create mistrust. Companies whose leaders personally own the outcome for DE&I programs experience better results.

As with adjacent industries, A&D starts with significantly fewer women than men in entry-level positions, and it loses one-third of female talent at the first point of promotion

Exhibit 5

A&D companies are less confident that they have the right skills in newer digital roles than in traditional engineering roles.

How confident are you that you have the right skills and capabilities to react to future trends in the following occupation areas?,[1] %

	Not at all to slightly confident	Somewhat confident	Moderately to very confident
Digital/new tech			
Data scientists	39	22	33
Data engineers	33	22	39
Analytics translators/integrators	11	28	50
Visualization/business-intelligence developers	28	22	39
Software engineers	11	17	67
Applied and pure researchers	11	39	33
Cyber	11	28	50
Traditional engineers			
Infrastructure/cloud engineers	11	28	50
Design and user experience	11	39	44
Hardware engineers		28	72
Aerospace engineers		11	89
Operations (eg, welders)	11	22	56
Other engineers		11	83
Corporate			
Finance		6	89
Marketing/sales		17	72
Purchasing		11	83
Other corporate (eg, HR)			94

[1]Respondents who answered "don't know" are not shown.
Source: State of Talent in A&D survey of 26 members of the AIA Workforce Policy Council; interviews with A&D executives
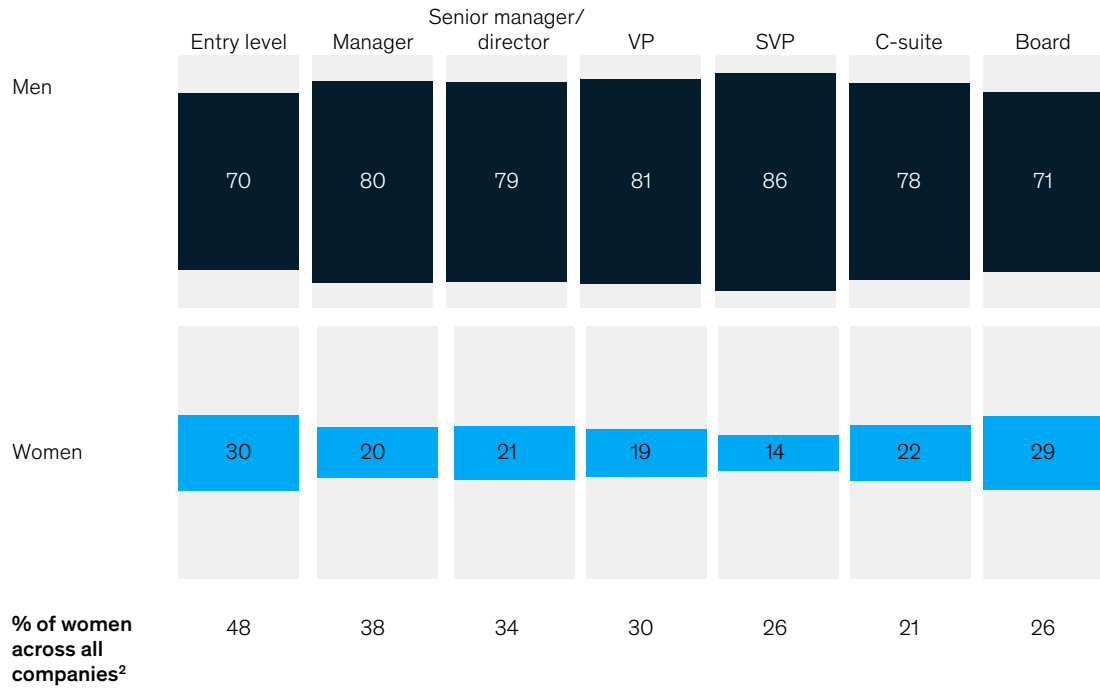
(Exhibit 6). This broken rung on the career ladder creates a gender gap at all subsequent levels of leadership that is hard to overcome even with a combination of promotion, external hiring, and retention. The problem, while not unique to A&D, seems worse when compared with adjacent engineering and technology companies, which have relatively better representation and retention of women.

Exhibit 6

The percent of female employees in aerospace and defense is below the North American average for all companies except at the highest levels.

Women employees within each level as a static value at the end of 2019,[1] %

	Entry level	Manager	Senior manager/ director	VP	SVP	C-suite	Board
Men	70	80	79	81	86	78	71
Women	30	20	21	19	14	22	29
% of women across all companies[2]	48	38	34	30	26	21	26

[1]Aggregate results from participating companies in aerospace and defense benchmark (7 companies submitted pipeline data).
[2]Aggregate results from 320 companies that reported their pipeline data, weighted by industry to the F500.
Source: 2019 Women in the Workplace pipeline data for US/Canada

DE&I initiatives are potentially at risk in the current environment, because they tend to be deprioritized when leaders' attention gets pulled elsewhere, especially during challenging economic conditions. A&D executives are understandably focused on addressing issues arising from the COVID-19 pandemic, so safeguarding their workforce, understanding the business landscape, and managing crisis response and communication are top of mind.

Yet this moment could be a catalyst for diversity initiatives. As a whole, A&D has publicly committed to promoting greater diversity. Recently, the CEOs of major defense companies have made forceful

calls for unity while denouncing and instituting programs to combat racism.

Addressing workforce challenges

Top talent will continue to be in high demand for the foreseeable future, and the need for a diverse, inclusive workforce will remain critical. Because business strategy and innovation in A&D will depend on securing a sufficient pool of workers with the requisite skills, the industry should consider the following three recommendations.

Tell the story of life in A&D to attract talent
Competitors in other industries are developing an employee value proposition focused on digital

talent, with end-to-end attraction and recruiting augmented by data-enabled sourcing strategies. As the demand for digital talent continues to increase, hiring and retention strategies also need to evolve. To compete in this talent marketplace, the A&D industry is uniquely positioned to communicate positively in two areas: the legacy built by many decades of world-changing work and the innovation, energy, and high-profile projects that make up its current work.

This effort will require the industry to create a brand identity that celebrates purpose and innovation and creates proof points in workplace culture. Key elements could include A&D's exciting, service-oriented mission and its vital role in serving the nation's defense needs and supporting service members. The industry's impact is both iconic and ubiquitous: A&D products are what took us to the moon, and the industry has always been on the cutting edge of technology, creating capabilities such as AI-driven flight controls, sensors, and communications. The industry's work not only transports people from city to city but also enables commerce, leisure, and critical infrastructure.

A further positive aspect of A&D is its culture of teamwork and shared success, and the industry should look for ways to bring these stories to life. For example, testimonials from employees in the industry and detailed profiles could highlight their passion and lifestyle. Such efforts will enable candidates to connect with the industry, see themselves pursuing careers in A&D, and capture their imagination with the challenges they can be part of solving.

In addition, to ensure the industry gets the greatest return on investment for talent attraction, it should use data and analytics to select schools and other sources for a durable, sustainable pipeline.

Reinvigorate the pipeline through reskilling and strategic partnerships
To build a workforce full of top technical talent, the A&D industry must make sustained investments in hiring. To date, some companies have had success by specifying certain high-

demand skills and developing public–private partnerships with universities whose curriculums produce qualified candidates.

The industry can also coordinate with companies and industry groups to reskill its existing workforce and get more from the skills employees already have. For example, companies in the tech industry have focused on reskilling and have achieved initial success: employee-focused programs have filled 80 percent of their identified skills gaps. In addition, research indicates that reskilling (such as cross-training and programs with academic institutions) has also addressed issues related to employee engagement. This approach helps retain the existing workforce and its institutional knowledge, and the company's investment in talent sends a powerful signal to entry-level talent and workers from other industries.

Another strategy is to build industry partnerships and implement incentives to cross-train employees at customer or peer companies (when competitive advantage is not at stake). Similarly, the establishment of a talent exchange for hard-to-find skills can increase the pool of qualified workers, especially for smaller-tier suppliers that cannot hire as rapidly.

The A&D industry could also augment its talent pipeline by expanding partnerships with institutions conducting research in areas of interest. While it may be necessary to create incentives for schools to participate in skill building, the industry as a whole should identify research universities as partners to upskill employees from the industry, build A&D's brand, and increase talent attraction. These partnerships provide companies with the opportunity to highlight the innovative aspects of their work, such as technology development. Companies that have already established these connections have been more successful in attracting candidates with digital, analytics, and higher-level systems-engineering capabilities.

Make diversity, equity, and inclusion efforts an imperative

To attract and retain premier talent and remain competitive into the future, the A&D industry must make inclusion and diversity an imperative for its existing workforce and recruitment campaigns. The impact of diversity is well established and positive: top-quartile organizations with ethnically diverse executive teams are 33 percent more likely to outperform peers on earnings before interest and taxes (Exhibit 7). Moreover, companies with gender-diverse executive teams are 27 percent more likely to outperform peers in long-term value creation and 21 percent more likely to have above-average profitability.

Rather than viewing recruiting as a zero-sum game, the industry stands to gain from creating an inclusive environment and communicating these principles to a diverse talent pool. This can be done by convening industry-wide events for women and people of color to support networking and share best practices on attracting, retaining, and elevating a diverse talent base. In addition, the industry as a whole should support the development of DE&I initiatives that start with

targets and objectives and use senior team ownership and accountability to retain diverse talent and establish inclusive cultures, building on successful efforts to diversify executive leadership teams in recent years.

By leveraging insights from data and analytics, companies can also target geographies and schools with diverse student bodies that have the skills in demand. Remote working and recruiting make such programs easier to implement.

Some examples of effective diversity initiatives include:

— Linking performance reviews of leaders to diversity outcomes to ensure that they are motivated and held accountable; scorecards should be used to track hiring, attrition, and promotion data

— Increasing representation of diverse employees by developing partnerships with historically Black colleges and universities and other "underleveraged" sources of talent, such as community colleges; companies could also

Exhibit 7

Inclusion and diversity are proven to lead to better outcomes.

33% more likely to outperform peers on EBIT[1] margins

Companies in the top quartile for ethnic diversity on executive teams outperform peers.

27% more likely to outperform peers on longer-term value creation

There is a positive correlation between gender diversity and performance on executive teams, as measured using an economic-profit (EP) margin.

21% more likely to experience above-average profitability

Companies in the top quartile for gender diversity on executive teams are more likely to experience above-average profitability.

[1]Earnings before interest and taxes.
Source: Delivering through Diversity, McKinsey & Company, 2018

leverage remote work to broaden the recruiting pool to more diverse geographies

— Implementing blind hiring practices, such as removing information like name, gender, and academic backgrounds, and evaluating existing resume-screening algorithms for bias

— Increasing the proportion of women and minorities in critical roles by tracking promotions and attrition in these positions, establishing sponsorship programs, and implementing more policies that enable flexible work arrangements

— Identifying the top 5 percent of diverse talent in a company and creating meaningful, senior leader-led sponsorship to enable opportunity creation and mentorship that provides support and guidance.

The challenge of attracting top talent will be formidable, given that nearly every organization across several industries has prioritized talent management for key digital roles. However, A&D is in an enviable position: it has a storied legacy and a compelling value proposition to share. Now its leaders must undertake sustained, coordinated outreach and rebuild their talent pipeline.

Thankfully, many of the prescriptions and specific actions outlined in this report are mutually reinforcing. Organizations that establish some initial momentum will be able to build on their successes and ensure A&D is competitive for the best talent today and into the future.