

THE VALUE OF PERFORMANCE.
NORTHROP GRUMMAN

Apprenticeships That Work

Workforce Needs for Aerospace & Defense Industry

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Five major global trends impacting A&D and the way organizations should think about talent management

5 Global Megatrends



Demographic shifts



Accelerating urbanisation



Technological breakthroughs



Shift in global economic power



Climate change and resource scarcity

A&D Impacts

- Intensifying **competition to recruit and retain talent**
- **Growth in unmanned and modified commercial platforms** for military use
- New civil security **challenges to protect increasingly concentrated populations and critical infrastructure** (new tools needed – UAVs, biometrics, cyber, etc.)
- Increased **need to protect resources** and possibly greater conflict over resources
- **Accelerating pace of technology** across all industries

Rethinking Talent

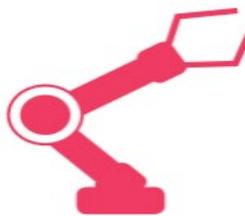
- Align **talent operations with strategic priorities**
- **Rethink rewards**, aligning compensation and benefits plans to changing environments
- Address **risk of increased regulation on talent** with a greater focus on internal sustainability
- **Changing Nature of Work:** Team structures, virtual collaboration, networks, project-based relationships – putting pressure on traditional talent processes
- Leverage **technology enablement & data analytics**

A&D Workforce of the Future

38% of US jobs are at risk of automation¹

52% of CEOs are planning to increase headcount in the coming 12 months²

75% of US workers are ready to learn new skills or retrain to remain employable in the future³



52% of CEOs say they're already exploring the benefits of humans and machines working together²

39% of CEOs are considering the impact of AI on their future skills needs²

74% of US workers believe it's their own responsibility to update their skills³

Focus on on your people

- **Understand the skills** you have in your workforce now and the gaps to the skills you will need in the future
- **Strengthen innovation, creativity, empathy and leadership capabilities** in your business alongside critical technology skills
- Make talent and capabilities management a **matter of urgency**
- **Build and nurture adaptability** in your workforce by harnessing a flexible talent mix, new ways of working and learning, and radically different career paths

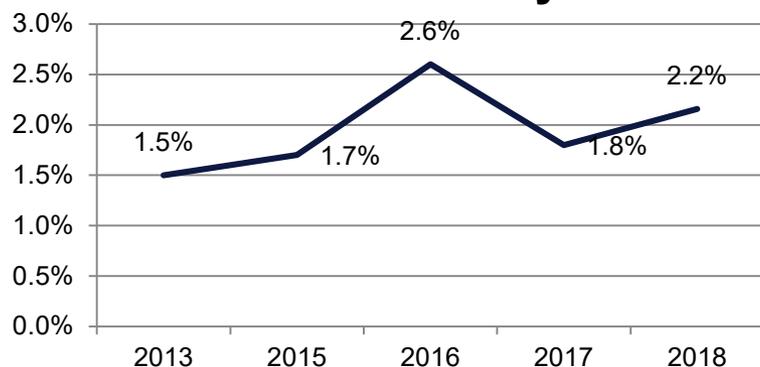
¹ <http://www.pwc.co.uk/economic-services/ukey/pwc-uk-economic-outlook-full-report-march-2017-v2.pdf>

² PwC 20th Annual Global CEO Survey <http://www.pwc.com/talentchallenge>

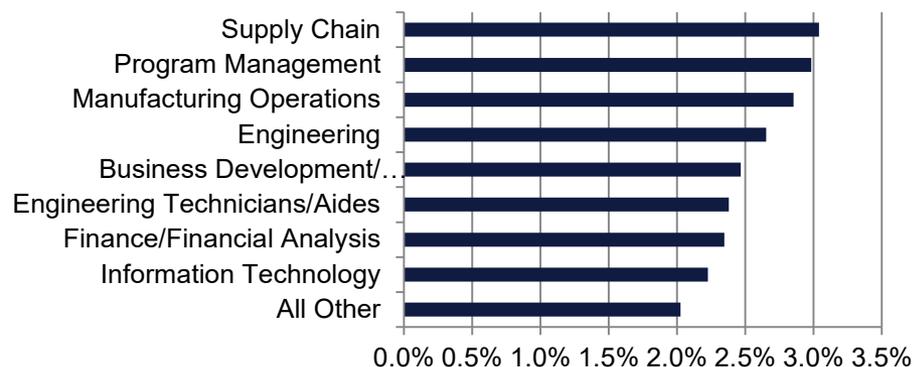
³ Workforce of the future - The competing forces shaping 2030 <https://www.pwc.com/us/en/hr-management/pwc-workforce-of-the-future-the-competing-forces-shaping-2030.pdf>

Attrition

Retirement Rate by Year



Retirement Rate by Job Category



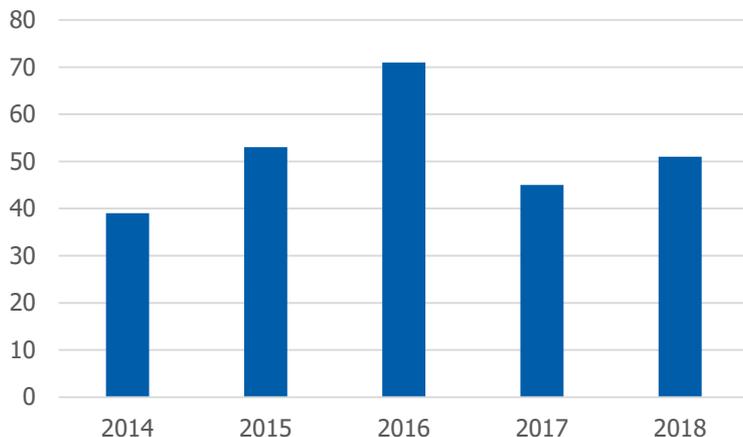
- Retirements in 2016 fueled by increase among employees ages 55-60
- Retirement of Program Managers and Manufacturing Operations requires accelerated development of people
- Retirements and attrition drove hiring of 51,000 new employees in 2017

Attrition: What it Means

- Retirements trail overall industry levels
 - Slower this year among those over age 60
 - Increase in retirements for those under age 60 as defined pensions “age out”
- Attrition trails other industries but is increasing
 - 6% for A&D vs double-digits
 - Highest among those 31-35 years of age
 - Most voluntary attrition represents “churn” within industry
 - We are seeing increase in leaving industry for non-legacy companies
 - Key reasons for leaving are new tech challenge and improved salary

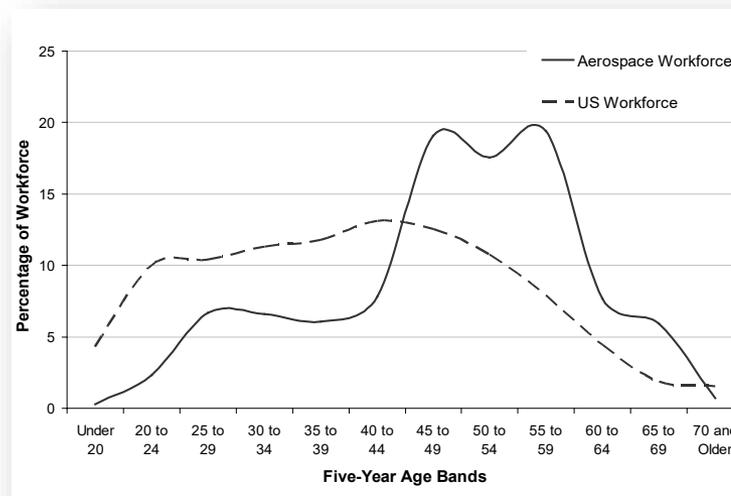
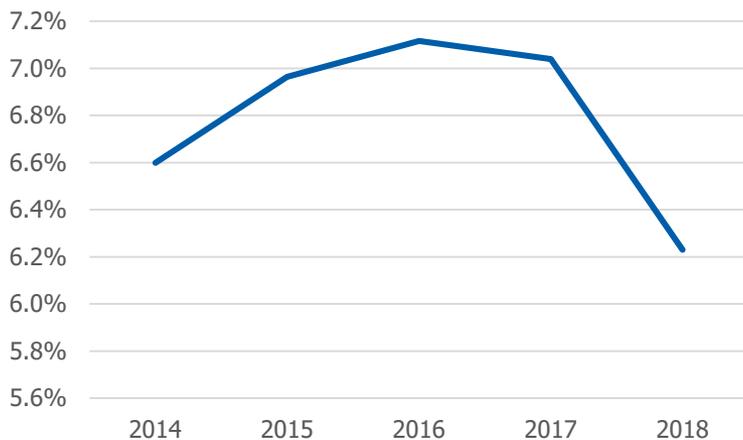
Local Workforce Demographics and Attrition Rate at NGIS MPD

Total Workforce Attrition by Year



Workforce Age Demographics		
29 or less	84	13%
30-39	119	19%
40-49	130	21%
50-59	202	32%
60-69	87	14%
70-75	4	1%

Total Workforce Attrition by Year



What A&D Needs

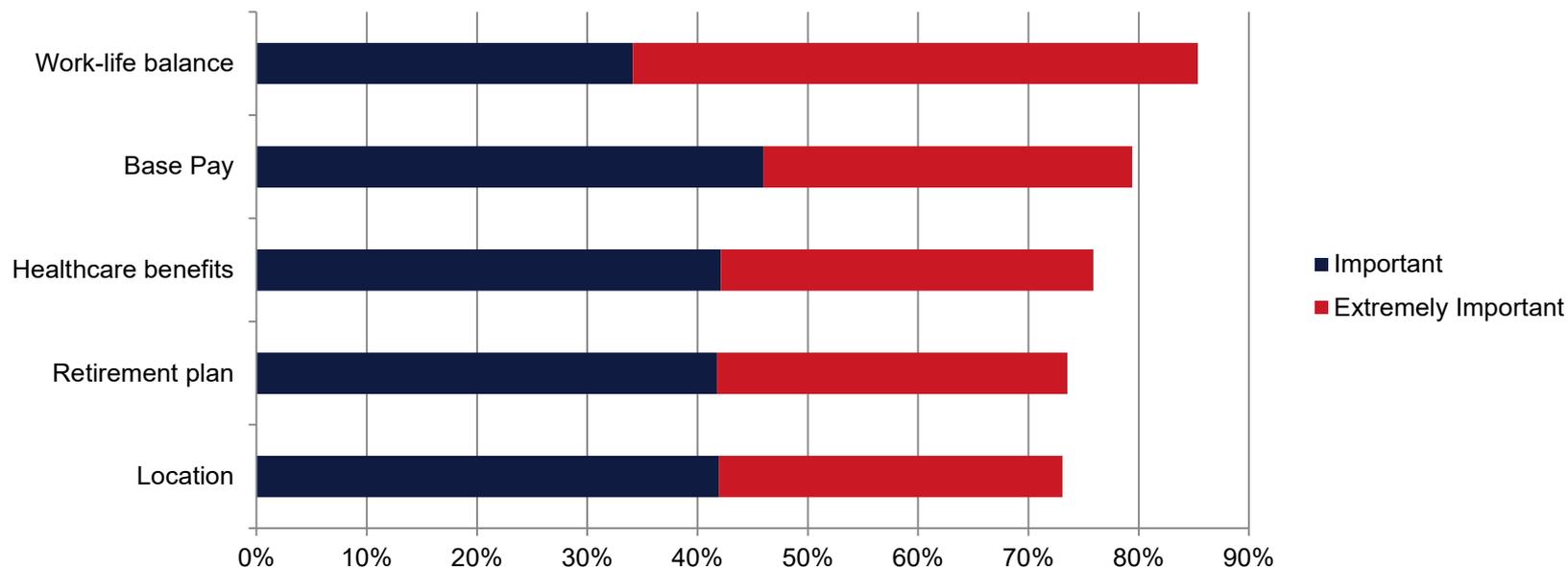
Most Demand #	Strategically Critical
Software	Aerospace
Electrical	AI/Computer Learning
Manufacturing/Industrial	Data Science
Mechanical	Cyber

- Engineering Disciplines with Highest Female Participation
 - Biomedical Engineering
 - Environmental Engineering
 - Biological/Agricultural Engineering
- Engineering Disciplines with Lowest Female Participation
 - Computer Science
 - Electrical Engineering
 - Aerospace Engineering

What's Important to Students in Job Search

The percentage of students considering a career in A&D rose to 65% this year, up from 59% last year

What Differentiates Employers



What's Important to YPs in Career Decisions

Avoid stagnation

Salaries are a sign of progress
 Continuous learning provided
 Cross-training, multiple projects

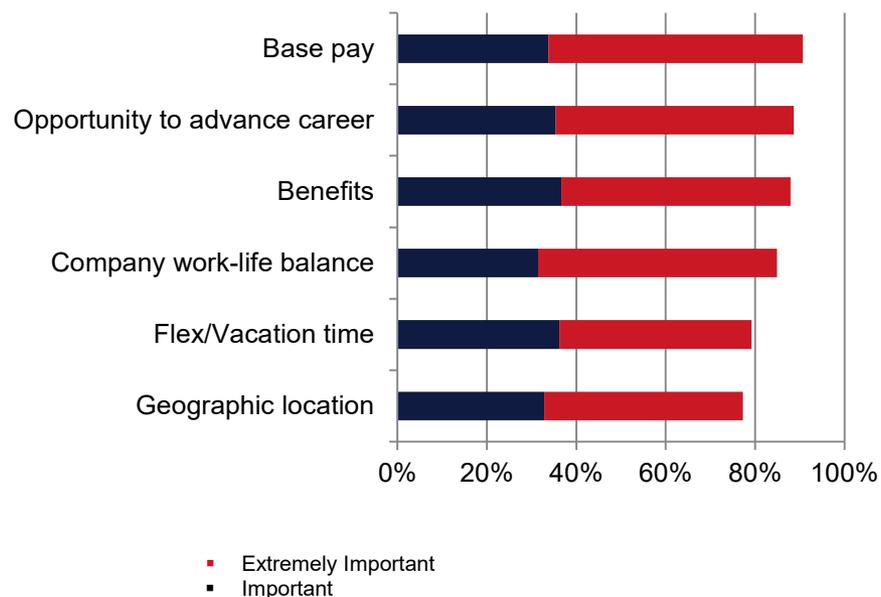
Early Leadership Exposure

Exposure to multiple disciplines
 Guided by mentor, given authority to exhibit competence
 Creates “ownership” among YPs who tend to be more interested in personal growth than company growth

Quality of life – at work and at home

Flexible time/PTO
 Untethered workspace
 Benefits – not gimmicks
 Company and employees engage, give back to communities

Job Search Top Factors



Obstacles to Hiring the Best People

- Industry involvement with non-traditional communities
- Meaningful apprenticeships, internships as government contractor
- Hiring young engineers within government contractor construct
- Need for clearances
 - Takes longer than in the past 15 years
 - 50% of respondents say takes more than 27 weeks; 21% say longer than 40 weeks

Accelerating People Development

- Education as preparation for “adaptability” and continuous learning
 - Vocational ed, certification programs, community colleges, universities
- Standardization to facilitate “traveling” credits/certifications/clearances
- Apprenticeships/internships as pathway to “work ready”
- Recognition that student loans are an issue in people development
 - 37% of students are using loans; 36% of YPs paying on loans of > \$40,000
 - People of color twice as likely to have student loans and least likely to participate in 529 plans
 - Relocation tied to career development opportunities – loans restrict cash flow to enable this

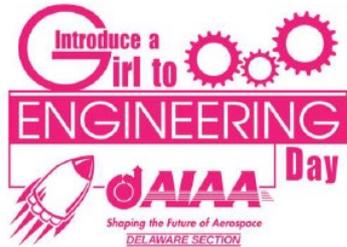
- Currently requisition load is ~30 openings
- Can increase from 1 - 50 from one or more program(s) awarded
- Ever challenging to higher qualified Machinists
- On pace to hire ~150+ employees in 2018

Example of STEM Outreach Supporting Future Workforce Needs

Encourage

Support

Employ



STEM
ACADEMY



- Student attended IGED as an 8th grader in 2014
- Student attended STEM Academy, spending a day at NGIS as a 10th grader in 2016
- Student wins the NGIS STEM Scholarship for her school, attends a banquet onsite at NGIS in 2018
- Scholarship essay references IGED as what “hooked” her on engineering
- Student is attending University of Maryland pursuing engineering degree
- NGIS has plans to offer a job shadowing opportunity in summer 2019
- Hope to be able to offer employment as an intern in the future

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