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for the
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Subcommittee on Cybersecurity and Infrastructure Protection

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“Growing the National Cybersecurity Talent Pipeline”

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Chairman Garbarino, Ranking Member Swalwell, and members of the subcommittee on Cybersecurity and Infrastructure Protection, thank you for the opportunity to appear before you today to discuss the importance of growing our nation's cybersecurity talent pipeline. My name is Anjelica Dortch, and I am the Senior Director of U.S. Government Affairs and Head of Global Cybersecurity Policy for SAP – the world's largest enterprise software application provider.

On behalf of SAP, I commend this subcommittee for working together to highlight innovative approaches that address the longstanding challenges we face as a nation in developing, attracting, and retaining cybersecurity professionals. My testimony will address the role SAP plays in creating opportunities for current and future cybersecurity professionals and our commitment to help close the cybersecurity skills gap.

I would first like to provide the subcommittee with a brief overview of my professional background. Prior to joining SAP, I led scale up of tech policy positions at IBM within the Government and Regulatory Affairs team with a focus on artificial intelligence, hybrid cloud, and intellectual property. I spent 10 years working for a variety of U.S. federal agencies including the Executive Office of the President as a Senior Technology Advisor where I led coordination of several cybersecurity workforce initiatives to include leading the first-ever government-wide tech and cyber hiring event and the federal cybersecurity reskilling academy. Additionally, I contributed to the development of U.S. policies and strategies including the 2018 National Cybersecurity Strategy, the Presidential Executive Order on America's Cybersecurity Workforce, the U.S. Federal Cloud Computing Strategy (or Cloud Smart), and the Administration's Report on Artificial Intelligence. Lastly, I'm passionate about getting individuals who look like me into the cybersecurity field.

About SAP

SAP is a globally recognized technology leader helping organizations of all sizes and in all sectors run at their best. Our customers generate 87% of total global commerce (\$46 trillion). Additionally, 99 out of the 100 largest companies in the world are SAP customers. We operate in over 150 countries and have over 100,000 team members worldwide. From manufacturing and distribution of vaccines to modernizing the U.S. Department of Defense travel management system, SAP's core purpose is to help the world run better and improve people's lives. I believe SAP is uniquely suited to provide the subcommittee with insights today into the opportunities and challenges we face in addressing critical shortages in America's cybersecurity talent pipeline.

Our Achievements

For over 50 years, SAP has worked to foster trust through responsible actions in the context of security, privacy, compliance, and transparency. To achieve this, we rely on talented cyber and national security professionals from around the world. I'd like to highlight two organizations at SAP that play a critical role in (1) strengthening the security of SAP and our customers and (2) ensuring we fulfill national security requirements and comply with critical infrastructure regulations.

Our SAP Global Security team (or SGS) is responsible for product and application security, cyber defense and design, security risk and compliance, physical security, and most of all trust. Through the leadership of our SAP Chief Security Officer, Mr. Timothy McKnight, we have made significant inroads in attracting, retaining, and growing a diverse and high performing global security team. As of 2023, the SAP Global Security team has surpassed the national average of women working in cybersecurity, and it has more than doubled the number of women in cybersecurity management roles. The Office of the Chief Trust Officer within our security organization has reached 50/50 gender parity. Furthermore, the generational diversity of the SAP Global Security team is drastically different than that of the U.S. federal government. Over 60 percent of the organization is comprised of Millennial and Gen Z cybersecurity professionals. Meanwhile, only 4 percent of technology

professionals in the U.S. federal government are under the age of 30. As you can see, the SAP Global Security Team is committed to providing equal opportunities and ensuring that everyone has a chance to develop and grow in the cybersecurity space.

For SAP to serve government customers worldwide, we must also work collaboratively with the national security community. Our Government Security and Secrecy team (or GS2) led by Mr. Martin Merz, ensures the fulfillment of national security requirements, and manages cooperation and coordination with all relevant government security authorities. Most of this team is comprised of former national security professionals who spent upwards of 30 years working for the government. In the past 12 months alone, the Government Security and Secrecy team has grown 34 percent by attracting cleared national security professionals to SAP. Close to 40 percent of this team is made up of women, and they are only 7 percent away from reaching 50/50 gender parity for women in management roles.

How are we growing a diverse cybersecurity talent pipeline at SAP?

Early Talent Program

To attract and recruit young or early career cybersecurity professionals, SAP established the Global Security Early Talent Program¹. This two-year program is designed for high-performing early career professionals, with little to no professional experience, and have a basic understanding of information technology and security topics. All participants start the program with their first rotation at our SAP America headquarters in Newtown Square, Pennsylvania, and spend at least one rotation abroad at our SAP global headquarters in Waldorf, Germany. The six months abroad is fully covered by the Global Security Early Talent Program. After completing the Security Rotational Program, participants move into a new full-time role within the SAP Global Security team that best matches their skills and interests. This model has expanded and diversified our pool of cybersecurity candidates, along with higher retention rates once program participants shift to full-time roles. Additionally, these types of rotational programs provide greater exposure and flexibility for early career cybersecurity professionals to explore different roles or specialties within this field rather than immediately locking them into a distinct role or occupational series.

Autism at Work Program

At SAP, we view neurodiversity as a competitive advantage. That's why in 2013 we launched a groundbreaking Autism at Work program which leverages the unique abilities and perspectives of colleagues on the spectrum to foster inclusion at SAP.² We have the longest running Autism at Work program among major companies. The SAP Autism at Work program provides a pathway and support for neurodiverse cybersecurity professionals. We support neurodiverse candidates during the hiring process and offer a variety of resources to facilitate the success of the employee once they are onboarded. Neurodiverse individuals frequently need workplace accommodations, such as headphones to prevent auditory overstimulation in order to activate or maximally leverage their abilities. In many cases the accommodations are manageable, and the returns are great for both the employee and employer. But to realize the benefits, most organizations must adjust their recruitment, selection, and career development policies to reflect a broader definition of talent.

¹ Global Security Early Talen Program at SAP - <https://www.sap.com/documents/2022/01/de2934fb-127e-0010-bca6-c68f7e60039b.html>

² SAP Autism at Work Program - <https://www.sap.com/about/careers/your-career/autism-at-work-program>

SAP NS2 Serves

The U.S. Department of Veteran Affairs estimates there are over 19 million living veterans in America. To address the growing need to support veterans and their transition into critically needed national security roles, SAP National Security Services (or NS2) – an independent U.S. subsidiary of SAP – established NS2 Serves³. The program was founded to empower veterans and ease their integration into civilian life by providing free, skills-based training for today's high-demand, high-tech careers. NS2 Serves provides free training and employment assistance to veterans. The program is available to impending or honorably discharged post-9/11 U.S. military service veterans, who have left service in the last ten years and reservists (including disabled veterans), service members with orders to leave active duty, and Gold Star spouses who meet eligibility requirements. The 8-to-12-week intensive program provides students at all technical levels with world-class software solutions training and certifications for a variety of well-paying careers within U.S. national security and commercial enterprises. NS2 Serves is committed to train and place 600 veterans in new national security careers by 2025. To date, we have trained over 400 veterans and achieved more than a 90% graduation rate. As a result, all graduates of NS2 Serves have gained job offers. This program gives veterans valuable skill sets and a high degree of employability. They can achieve a strong sense of purpose that often averts some of the impacts of Post-Traumatic Stress Disorder (PTSD), homelessness, and other mental health challenges. Many of our veterans want to continue to contribute to their country, and they can do so across our government where SAP technologies are widely used. SAP NS2 is making the investment to provide veterans with that pathway. The next cohort will launch Fall 2023.

Apprenticeships

As a multi-national organization operating in more than 150 countries, SAP views apprenticeships as an integral part of the development, recruitment, and retention of our workforce. At the SAP global headquarters in Waldorf, Germany approximately 25% of our team members joined through an apprenticeship. Last year, the Administration announced the 120-day Cybersecurity Apprenticeship Sprint to increase awareness of current cybersecurity-related registered apprenticeship programs while recruiting employers and industry associates to expand and promote apprenticeships. However, the pathway to establish a U.S. based apprentice program comes with obstacles and challenges that this committee should explore.

An Ambitious Diversity, Equity, and Inclusion (DEI) Strategy

The data is clear, a diverse and inclusive workplace leads to more innovation and allows us to better serve and represent our customers around the globe. At SAP, DEI is part of our DNA. We are intentional about addressing representation gaps within the technology sector to include cybersecurity roles. In 2017, we set a goal of 35% women in our workforce by 2030, and in December 2022, we achieved that goal. Our next goal is to reach 50/50 gender parity globally. We hold ourselves accountable by publishing our progress and specific goals, including increasing the number of women in technical roles to 40% and doubling the number of women and underrepresented minorities in senior roles by 2030. We intentionally work to attract, hire, retain, and develop talented people of diverse backgrounds, points of view and experiences. Our strong commitment to allyship drives a more open, accepting, and inclusive culture, so people can bring their whole selves to work and perform at their best.

³ NS2 Serves Training & Employing Veteran Program - <https://ns2serves.org/>

SAP University Alliances

For more than 25 years, SAP has worked to establish relationships with academic institutions across the world through our University Alliances Program. In the U.S., we engage between 125,000 to 150,000 students per year through roughly 400 established partnerships with universities and community colleges. The program includes Minority Serving Institutions (MSIs) to include Morehouse, Spellman, and Fayetteville University. We continue to expand these alliances across the world to create new awareness and enthusiasm for SAP and career opportunities in the cybersecurity field.

An Education Focused Corporate Social Responsibility Strategy

SAP believes that investing in education is investing in the skills and talents of the next generation — the foundation for the future growth and prosperity of our nation. We invest in innovative education models and foster our engagement with multistakeholder partnerships to enable pathways to employment and entrepreneurship in the digital, social, and green economy for youth in need (Under-represented, under-served, and under-privileged youth between the age of 16 to 24). Last year, SAP began supporting the Last Mile Education Fund⁴ – a program focused on increasing diversity in tech by addressing critical gaps in financial support for low-income underrepresented students. For example, Sadie, a first-generation college student and a member of the Tohono O’odham tribe, triumphed over the challenges of growing up on a rural reservation where she faced unique challenges due to the limited resources and opportunities. Despite the scarcity of Native Americans in tech, Sadie became one of the first in her village (Pisinmo’o) to earn a cybersecurity degree. Now, she is on her way to becoming a product manager at a leading cybersecurity company, blazing a trail for others in her community. Sadie’s journey embodies resilience, determination, and the power to redefine what is possible in the cybersecurity space. More partnerships and investments into innovative programs like the Last Mile Education Fund are needed to help individuals overcome socioeconomic barriers to starting a career in cybersecurity.

International Observations and Trends

Immigration Reforms Outside the United States

With a global footprint spanning over 150 countries, SAP can share international observations and growing trends in workforce development. The global cybersecurity talent shortage has forced some of our allies to explore reforms to their immigration policies for the purposes of removing migration hurdles for high-skilled workers in technology and cybersecurity roles. Canada, Australia, and Germany are currently instituting reforms that amend education, employment, language, and compensation requirements. In some instances, the path to achieving dual citizenship has been lowered to ensure retention of migrants who make significant contributions to the economic prosperity of the country. Some of these reforms include launching a streamlined process powered by user-friendly web-based applications that provide immigration decisions within 30 to 60 days. Overall, the competition for American cybersecurity professionals will continue to increase as allied nations enact “cyber visas” to attract top talent to their regions.

⁴ SAP Partners with Last Mile Education Fund - <https://news.sap.com/2022/06/last-mile-close-technology-gender-gap/>

European Union Cybersecurity Skills Academy

In April, the European Union launched the Cyber Skills Academy⁵ which is a European initiative aimed at bringing together existing cybersecurity education programs and improving their coordination, to close the cybersecurity talent gap and boost EU's competitiveness, growth and resilience. The Cyber Skills Academy is built on four pillars. The first pillar addresses education and training to foster EU cybersecurity knowledge. The second pillar will provide information on certification capacity and visibility into funding opportunities. The third pillar includes stakeholder involvement, and the fourth pillar will monitor progress of the initiative. EU member states and industry have been urged to support the development and recognition of micro-credentials, and the EU Commission is tasked with creating a centralized repository for all EU cybersecurity programs, trainings, and certifications via the "Digital Skills and Jobs Platform" by the end of 2023. The success of the EU's efforts to bolster its cybersecurity pipeline will depend on a strong collaboration with industry and EU member states. We encourage the subcommittee to continue monitoring the progress of this national initiative.

Recommendations

With growing demands for cybersecurity talent, Congress has an opportunity to drive impactful reforms that can give Americans multiple pathways into cybersecurity careers. The United States has a tremendous opportunity to engage, employ, and develop a more inclusive and diverse workforce into high-demand, high-paying cybersecurity jobs that can strengthen our national security and economic prosperity. SAP submits the following recommendations and actions for consideration by Congress:

1. Pass the Jumpstart Our Businesses by Supporting Students Act of 2023 (or the JOBS Act), cosponsored by Representatives Bill Johnson, Lisa Blunt Rochester, Michael Turner, and Miki Sherrill. The bill would extend Pell grant eligibility to short-term job training programs for high demand occupations like cybersecurity.
2. Scale and centralize successful job training and employment programs that transition veterans more easily into cyber and national security roles.
3. Identify and highlight best practices for providing neurodiverse Americans a pathway to join the cybersecurity workforce.
4. Shift the U.S. federal government away from "home grown" human capital management solutions and towards trusted and robust commercial solutions that can reduce the time-to-hire and improve the user experience for cybersecurity professionals seeking to join the civil service.

In closing, it has been an honor to appear before this subcommittee today on behalf of SAP. It is my hope that these recommendations, observations, and best practices support the advancement of positive change that leads to a more secure nation. Thank you, Chairman Garbarino, Ranking Member Swalwell, and members of the subcommittee for your dedication to growing our nations cybersecurity talent pipeline. I'll be happy to answer any of your questions.

⁵ European Union Cybersecurity Skills Academy - <https://digital-skills-jobs.europa.eu/en/cybersecurity-skills-academy>



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Anjelica Dortch is Senior Director of U.S. Government Affairs and Head of Global Cybersecurity Policy at SAP America where she manages the company's cybersecurity, artificial intelligence, and workforce policy portfolio. Prior to joining SAP, Ms. Dortch led scale up of tech policy positions at IBM within the Government and Regulatory Affairs team with a focus on artificial intelligence, hybrid cloud, and intellectual property. Ms. Dortch spent 10 years working for a variety of U.S. federal agencies including the Executive Office of the President as a Senior Technology Advisor where she led coordination of several cybersecurity workforce initiatives to include leading the first-ever government-wide tech/cyber hiring event and the federal cybersecurity reskilling academy. She has contributed to the development of U.S. policies and strategies including the 2018 National Cyber Strategy, the Presidential Executive Order on America's Cybersecurity Workforce (EO 13870), the U.S. Federal Cloud Computing Strategy (or Cloud Smart), and the Administration's Report on Artificial Intelligence. Ms. Dortch is the recipient of the Office of Management and Budget Special Achievement award, Women Leading for Impact award, the University of Maryland Outstanding Alumnus award, and Federal Computer Week's Rising Star award. Ms. Dortch is a Bloomington, Indiana native and holds a Bachelor of Arts degree in Philosophy and a Master of Science in Financial Management and Information Systems from the University of Maryland.



SAP Global Communications (May 16, 2023)

SAP: The World's Largest Provider of Enterprise Application Software

Customers

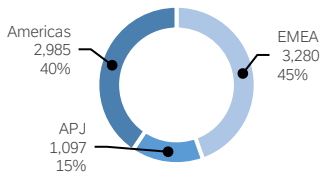
- SAP customers generate 87% of total global commerce (\$46 trillion)
- 99 of the 100 largest companies in the world are SAP customers
- 97 of the 100 greenest companies in the world run SAP
- 85 of the 100 largest companies in the world are SAP S/4HANA customers
- Approximately 80% of SAP's customers are SMEs

Financials

Revenue – FY2022, continuing operations, excluding Qualtrics (non-IFRS, growth rates @cc)	
Cloud revenue	€11.43b (+ 23%)
Cloud and software revenue	€25.39b (+ 3%)
Total revenue	€29.52b (+ 4%)
Share of more predictable revenue (total of cloud subs. and support rev. and software support rev.)	79%
Revenue – Q1/2023 continuing operations, excluding Qualtrics (non-IFRS, growth rates @cc)	
Cloud revenue	€3.18b (+22%)
Cloud and software revenue	€6.36b (+ 8%)
Total revenue	€7.44b (+9%)

Revenue by region Q1/2023

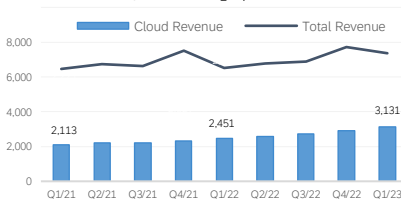
(€ m, continuing operations, non-IFRS at constant currencies / share of total rev. in %)



Outlook 2023 contin. ops., excl. Qualtrics (non-IFRS@cc)	
Cloud revenue	€14.0b to €14.4b, up 23%-26%@cc
Cloud and software rev.	€26.9b to €27.4b, up 6%-8%@cc
Operating profit	€8.6b to 8.9b, up 8%-11%@cc
Share of more predictable revenue	approx. 82%
Free cash flow	approx. €4.9b
Ambition 2025 excl. Qualtrics (non-IFRS), updated 5/16/2023	
Cloud revenue	>€21.5b
Total revenue	>€37.5b
Cloud gross profit	~16.3b
Operating profit	~€11.5b
Share of more predictable revenue	approx. 86%
Free cash flow	~€7.5b

SAP's Cloud Growth

in € million @cc, continuing operations, excl. Qualtrics



- Growth drivers and new growth areas: SAP S/4HANA, SAP Business Technology Platform, SAP Signavio, SAP Taulia, SAP Business Network, SAP sustainability portfolio

Strategy

- SAP is committed to enabling every organization & every industry to become a network of intelligent, sustainable enterprises – bringing together the solutions, technology and best practices needed to run integrated, end-to-end business processes in the cloud

Market Position

Enterprise Application Software

- SAP is a market share leader in enterprise applications software, enterprise resource management applications, supply chain mgmt. applications, procurement applications software, travel and expense mgmt. software, and enterprise resource planning software acc. to IDC
- Broadest portfolio of modular and suite solutions available on premise, in the cloud and hybrid

Top Cloud Vendor

- Cloud user base: >280m users
- Cloud infrastructure: Choice across hyperscale cloud vendors (Alibaba, Amazon, Google, Microsoft) and SAP
- Largest cloud portfolio: >100 solutions for all lines of business (LoB) as well as software suites
- 248m people use SAP SuccessFactors solutions
- 55 data centers in 31 locations in 15 countries
- SAP Digital Commerce for SAP and partner online offerings >275,000 orders from >180 countries

Innovation

- R&D expense ratio: 18.9% (Non-IFRS; R&D expense as % of total revenue) for Q1/2023
- R&D headcount (FTEs): 36,150 at 3/31/2023, equaling 34.2% of total headcount
- >100 development locations worldwide
- 20 development centers worldwide (SAP Labs)
- 17 SAP Co-Innovation Labs locations worldwide
- 10 SAP Innovation Center Network locations
- >24,700 SAP partner companies in >140 countries
- Sapphire Ventures: Invested in >170 IT startups, >75 public debuts and M&As exits since 2011
 - Manages ~\$10 billion in assets under mgmt.
 - Operates independently from SAP
 - Provides SAP with early access to innovations
- Support for >520 external startups
- openSAP: >1.5m unique learners, 6.6m enrollments
- Artificial intelligence: >50 live AI use cases in SAP solutions

General Facts

- Headquarters: Walldorf, Germany
- Founded: April 1, 1972
- Listing: Frankfurt, New York
- 105,132 employees worldwide (Mar. 31, 2023)
 - 157 nationalities worldwide
 - Employee retention: 93.8% (Q1/2023, rolling 12 months)
 - Employee Engagement Index at 80% (FY 2022)
 - 29.4% women in management
 - 35% women in the workplace
 - ~75% of SAP employees are SAP shareholders
- SAP has been the #1 software company in Dow Jones Sustainability Index for 16 years

Useful Links

[SAP Profile](#) – [Executives](#) – [Supervisory Board](#) – [Financials](#) – [Events](#) – [SAP News Center](#) – [Photos+Films](#) – [Acquisitions](#) – [Products](#) – [Industries+Solutions](#) – [Intelligent Enterprise](#) – [Sustainability Portfolio](#) – [SAP Business Network](#) – [RISE with SAP](#) – [SAP Business Technology Platform](#)

Portfolio

Solutions

- Packaged solutions for 26 industries and 12 lines of business: on premise, cloud, hybrid
- S/4HANA Cloud is a complete modular cloud ERP, powered by AI and analytics. It helps customers run mission-critical operations in real-time from anywhere, introduce new business models and expand globally.
- RISE with SAP: Business transformation to the cloud. Key products and services help customers drive their journey to the cloud end to end, from business process transformation to continuous innovation
- GROW with SAP: an offering optimized for mid-market customers' transformation to the cloud. It encompasses solutions, best practices, learning and adoption acceleration services
- SAP Digital Supply Chain solutions help customers achieve a resilient and sustainable supply chain, increasing productivity, improving connectivity with network collaboration, running sustainable business practices
- Spend Management:
 - SAP Ariba: connecting procurement from source to pay
 - SAP Fieldglass: >1.28 million new workers added in Q1
 - SAP Concur: >85 million end users
- SAP SuccessFactors solutions: Comprehensive and global HR software, helping organizations manage, optimize and skill their workforce. Used by >9,700 customers
- SAP Customer Experience solutions: intelligent industry solutions that help companies understand customers deeply, engage personally at scale and evolve quickly to capture new opportunities, supporting profitable growth
- >350 SAP and partner Industry Cloud solutions drive digital transformation by extending SAP S/4HANA Cloud & SAP Business Network with industry next practices
- SAP Signavio Process Transformation: process modeling, analysis and mining; governance; automated execution
- Taulia: leading working capital management solutions
- SAP Cloud for sustainable enterprises: cloud-based solutions help companies manage their carbon footprint, reduce material waste, increase social responsibility
- Services and Support portfolio provides foundational guidance, content, and learning with every cloud solution. Personalized plans and services accelerate success. Premium engagements drive large-scale change
- Localization: >660 local versions across SAP solutions

SAP Business Technology Platform (SAP BTP)

- Comprehensive and interoperable platform optimized for SAP applications, enabling application development, data management, planning and analytics, integration, automation, and artificial intelligence (AI) capabilities.
 - Intuitive, modern development environment for both IT and citizen developers (SAP Build)
 - Database, data management, analysis, and planning capabilities that maximize the value of data including SAP HANA & SAP HANA Cloud with >71,700 direct + indirect customers
 - Enterprise iPaaS and API Management to connect and automate business processes
 - AI embedded in applications to power automation, optimization, and planning and analysis
- >18,800 cloud customers are live on SAP BTP
- >1,600 partners use BTP for app development + more

SAP Business Network

- Millions of companies in 190 countries
- >\$4.5tn in annual commerce
- >729m B2B transactions

