

2022

Women Corporate Tech Executives in America



“Tech is the great equalizer of the 21st century.”

Shelly Kapoor Collins, ShatterFund

“It’s up to us as leaders to find the best way forward”

Kathryn Guarini, IBM

“We must open the talent aperture for women”

Tali Bray, Wells Fargo

“Data is like untapped oil, just ready to be turned into fuel”

Cara Dailey, LPL Financial

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Introduction and Executive Summary

The Women Business Collaborative is pleased to release *Women Corporate Tech Executives in America*, an unprecedented analysis of women C-Suite leaders in major companies.

The report could not be more timely.

Technology and its skyrocketing impact on the American corporate landscape is the perfect example of both opportunity and threat. Tech is the engine driving businesses, public and private, large and small, and is at the heart of all industries improving access to information, customer service and efficiency. Tech also brings with it unprecedented concerns about security, privacy, unethical practices, and solutions that may not address the problems of diverse and underserved populations. Both the advantages and the dangers of tech have price tags in the trillions of dollars, requiring a blend of tried-and-true skills and innovative approaches to drive business growth.

Especially crucial in this environment of burgeoning technology is the need at the C-Suite level for high-powered tech leaders, with special emphasis on increased representation by tech-savvy women. As shown across C-Suite disciplines, diverse perspectives are critical to business performance and cutting-edge strategic planning. This growing need for equity and diversity at the C-Suite level calls for new and improved tech pathways for talented women. Zeroing in on the specifics of these roles, on pathways to reaching them, and on effective solutions is the driving force behind *Women Corporate Tech Executives in America*, a new ground-breaking report from the Women Business Collaborative (WBC).

An Unprecedented Study

To get a clear picture of women in top IT roles, WBC pinpointed the number of women currently holding 12 C-Suite level technology positions in major corporations across 5,008 public and private companies. We analyzed data from the Fortune 500, the S&P 500, the Russell 3000 and indices which provided information on private companies with revenue of at least \$1 billion dollars.

While there are tech leadership positions outside the C-Suite, this first tech report looks exclusively at the C-Suite level where there is more comparable data and more similarity across positions. Future reports will look at tech leadership and representation by women in tech leadership positions throughout organizational levels.

The data is interesting not only in terms of what positions women occupy but also in terms of the roles themselves and how many companies have tech roles in the C-Suite. Tech leadership positions offer opportunities to rise into the C-Suite and yet are not prevalent across all companies. Some of the roles, like Chief Technology Officer or Chief Data Scientist, are few and far between. Only one company in the Fortune 500 has a Chief Data Science Officer. It is important to note because expanding these roles can expand the opportunities for women in the C-Suite.

Finally, this report is the result of a collaborative effort of 13 corporate sponsors and 11 organizations focused on women’s leadership in technology. We pooled data to develop an in-depth analysis and gathered insights to form a framework for recommendations on how to drive diversity in tech leadership positions across industries.

Major Findings at a Glance

TECH TITLE	Fortune 500	S&P 500	Russell 3000	Private Companies	Total Women
CIO	62/229 held by women 27%	59/222 held by women 26.5%	135/777 held by women 17.3%	31/228 held by women 13.5%	287/1456 held by women 19.7%
CSO	3/18 held by women 16.6%	5/19 held by women 26.3%	8/42 held by women 19%	not held by women in Private Cos	16/88 held by women 18.1%
CISO	11/41 held by women 26.8%	9/41 held by women 21.9%	71/480 held by women 29.5%	3/30 held by women 10%	94/592 held by women 15.8%
CTO	24/135 held by women 17.7%	24/172 held by women 13.9%	72/848 held by women 8.4%	10/145 held by women 6.8%	130/1300 held by women 10%
CDS or CDSO	1/1 held by women 100%	no CDS positions in S&P500	not held by women in R3K	not held by women in Private Cos	1/6 held by women 16.6%
CDO or CDAO	3/13 held by women 23%	4/14 held by women 28.5%	19/81 held by women 23.4%	1/9 held by women 11%	27/117 held by women 23%
CAO	not held by women at F500	not held by women at S&P500	3/14 held by women 21.4%	not held by women in Private Cos	3/21 held by women 14.2%
CDO	12/35 held by women 34.2%	14/43 held by women 32.5%	28/109 held by women 25.6%	7/30 held by women 23.3%	61/217 held by women 28.1%
CDIO	3/19 held by women 15.7%	4/18 held by women 22.2%	1/4 held by women 25%	no CDIO positions in Private Cos	8/41 held by women 19.5%
CEOS in Tech	4/46 held by women 8.6%	6/76 held by women 7.8%	17/450 held by women 3.7%	6/78 held by women 7.6%	33/650 held by women 5%

The numbers tell a story, but only part of the story.

The shortage of women in C-Suite tech positions goes well beyond the numbers and is fueled by both organizational and societal barriers that stand in the way of women aspiring to tech leadership roles. These roadblocks include:

- Corporate cultures continue to harbor unconscious (and sometimes conscious) bias towards women looking to high-level careers in tech.
- Failure of corporations to aggressively encourage and retain women in tech at all levels is a stumbling block to the C-Suite.
- Boards are only recently understanding the ever-growing need for tech-savvy C-Suites...and tech-savvy boards.
- Women themselves and corporate leaders have not yet sufficiently embraced creating alternate pathways to top careers in tech.
- There continues to be a sense at home and at school, especially towards racially and ethnically diverse children, that “tech isn’t for girls,” significantly contributing to the low number of racially and ethnically diverse women.
- A high “dropout rate” from tech both at the college level and at early career levels is causing an anemic pipeline of talented women.

Perspectives from the Experts

We believe that the facts and findings offered here are a starting point for discussing the current situation, the specifics of where change needs to happen, and action steps to populate the C-Suite with more tech-savvy women.

Integral to ***Women Corporate Tech Executives in America***, is a focus on the perspectives and viewpoints of high-level experts in the tech field. These experts, from a cross section of industries, share their analysis and solutions on a variety of tech-related issues, often outlining how women can become a more visible and vocal part of tech at its highest levels.

• INSIDER INSIGHTS

Major players in the tech industry provide their perspectives on specific tech-related issues from retention strategies to cybersecurity. This section, comprising 11 insights, is a “boots on the ground” look at challenges, opportunities and solutions.

• CLOSEUPS OF WOMEN TECH LEADERS

Women Corporate Tech Executives in America is punctuated with quotes, insights and suggestions based on responses from some of the nation’s top women tech leaders. They focus on their career trajectory, the challenges of their current C-Suite roles and how they perceive the future of tech, in general and for future women leaders.

WOMEN HOLD...
626
OF 3838
TECH
C-SUITE
POSITIONS

Targets and Strategies

The WBC believes that data is the starting point for action and allows for an organized and act-based approach to change. Based on the data uncovered for this report, the WBC is working with its partners and with leaders nationwide to achieve the following goals:

TARGETS

- Increase the representation of women in C-Suite technology positions (CIO, CTO, CISO, CDO) by 3% by 2025, 4% of which are women of color
- Ensure that women constitute 35% of all leadership positions by 2025, 15% of which are women of color
- By 2030, decrease the resignation rate of women in the tech sector by 50%
- Dramatically improve the numbers of Black and Latina women at the C-Suite, on the board and at all levels. By 2030 ensure that 10% of all women in the C-Suite are women of color

HOW TO MAKE IT HAPPEN

- Ensure CEOs are committed to diversity in top tech positions and that they spearhead that commitment across the organization by providing DEI information and by requiring metrics for tracking and accountability.
- Organizations and companies take needed steps to keep early career women in the field with emphasis on mentoring and sponsoring by high-level tech leaders.
- Create a culture of accountability by calling for transparent data on talent, and metrics for ensuring equal access to information, opportunities, and pathways.
- Encourage high schools, colleges, and universities to provide curricula, guidance and mentorship specifically geared to young women so they espouse, rather than shun, careers in STEM.
- Continue to analyze the number of women in tech at all corporate levels and across a wide spectrum of industries.
- Keep attention focused on the status of women in tech through various initiatives including reports, webinars and blogs.

An Ever-Growing Collaboration in Tech and Beyond

This report is the result of tireless efforts by a collaboration of individuals and corporations in the tech industry, as well as other sectors. It is an example of the benefits of coming together with purpose for positive change. WBC is especially grateful to our Data and Steering Committees and to our corporate sponsors and partners. Together, we are committed to making this report and future initiatives valuable resources for attracting, retaining and promoting talented women in tech.

CLOSEUP



Kathryn Guarini

Chief Information Officer
IBM

Across All Indices...

19.7% of all CIO positions
are held by women

“It’s up to us, as leaders, to find the best way forward, to lead and guide our teams, and to do so thoughtfully and authentically.”

As Chief Information Officer for IBM, Kathryn leads a global team of nearly 12,000 employees whose mission is to deliver the future of IT to propel IBM’s success and growth. Her major priority is to help lead IBM’s digital reinvention - enabling the company to thrive in today’s changing world. Everything her team does is about helping IBM be successful - enabling productive employees, competitive products, and efficient operations.

She is a firm believer that when sophisticated IT teams bring their expertise to the table, “they are better positioned to optimize outcomes as strategic partners to the business.”

The changing role of CIOs and their teams

As IT becomes more critical to virtually every aspect of a business, her organization, like many others, has undergone several foundational shifts including moving from a cost center to a value-added provider and from simply reacting to requests to co-creating solutions with business stakeholders. “I like to use the analogy of moving from short-order cooks to luxury wedding caterers.”

Under Kathryn’s leadership, her team galvanizes technology to be a “great enabler” for employees across IBM by speeding up insights, connecting people and improving experiences. “We’re always looking for ways to create value by simplifying, digitizing, and automating end-to-end experiences.”

In her current role, she also realizes that there isn’t a playbook or guide for how to navigate at her level and in the ever-evolving business and technology environments. “Nobody has the ‘answers’ and it’s up to us, as leaders, to find the best way forward, to lead and guide our teams, and to do so thoughtfully, authentically.”

Facing the typical challenges of a career-minded woman

Kathryn pinpoints the challenges she has faced as typical of women in tech striving towards leadership roles. For her, those challenges included:

- Balancing work and family
- Feeling equally guilty when away from home or away from the office
- Questioning her instincts and capabilities
- Building up credibility as she assumed different roles
- Struggling to make a difference

She views herself as fortunate for having help and support throughout her life and career, including a supportive family, managers who believed in her, and mentors who guided her.

Accelerating the rate of change for women in tech

Kathryn acknowledges that while strides have definitely been made in advancing women to leadership roles, there is a long way to go before parity is achieved. She sees mentorship, flexible work practices and career re-entry programs as important in attracting, retaining and advancing women in business. “But biases and long-standing gender stereotypes still exist and requiring diverse slates and gender-blind hiring processes can help.”

She further emphasizes the need and the importance of leaders serving as role models and stepping up as allies, sponsors, and catalysts for change. On a personal level, Kathryn is actively involved in mentoring, inspiring and recruiting scientists and engineers and advocating for greater diversity in industry.

Two highly recommended tech blogs

Kathryn suggests the following two blogs for insights into technology and technology-related areas:

- [Mother of Invention](#) – A blog about technology, innovation, & motherhood
- [Making IT Real](#) – A blog sharing insights into IT innovation and enterprise digital transformation

After earning a Ph.D. from Stanford University in applied physics, Kathryn joined IBM Research in a technical role. She subsequently assumed management roles in research and development, eventually leading large global teams driving semiconductor, microprocessor, and systems development. As a product management leader for IBM Z and LinuxONE, she drove strategy, delivery, and go-to-market for platform growth initiatives. Returning to IBM Research, she launched a new Impact Science program applying deep technical expertise to the most pressing global challenges. She also served as Chief Operating Officer of IBM Research leading the transformation to increase impact, extend technical eminence, and improve operational efficiency.

Findings & Takeaways

The WBC research analyzed how to increase the number of women in technology roles by specifically:

- pinpointing the number of women executives currently holding technology roles in C-Suites of leading companies
- assessing how the numbers fared vis-à-vis male C-Suite technology leaders and
- identifying the skills and actions needed to increase representation

C-Suite Tech Positions Analyzed

C-Suite technology roles, not just in name but in responsibility, often vary from organization to organization. To provide a clear, accurate picture of these roles, WBC first defined exactly what is meant by “tech leader.”

For the purposes of this report, a C-Suite technology leader is defined as: *a top-level decision maker who focuses on data and information, security, systems and digital. The tech leader can oversee day-to-day technology matters and/or future technology plans and vision. This C-Suite executive can have an internal technology infrastructure and systems focus and/or a new product/service development focus.*

WBC then pinpointed and defined 12 titles which meet these criteria:

- **Chief Information Officer (CIO)** This leader is the most senior technology executive in an organization and manages the people, processes, and technology to support the organization’s strategic and operational goals. This leader presides over all elements of the organization’s technology from systems, infrastructure, data, security/governance, architecture, enterprise applications, service delivery, and execution. The CIO must typically have strong management and financial skills and will occasionally present to the board.
- **Chief Security Officer (CSO)** Data security, systems security, and physical security come under the domain of the CSO. Larger organizations will usually employ a Chief Information Security Officer (CISO) to oversee data and information security specifically.
- **Chief Information Security Officer (CISO)** A senior-level executive who oversees an organization’s information, cyber, and technology security, the CISO’s responsibilities include developing, implementing, and enforcing security policies to protect critical data.
- **Chief Technology Officer (CTO)** The CTO will usually lead technology decisions from an architectural and deployment/execution standpoint. Typically reports to the Chief Information Officer, but in technology-driven organizations, CTOs can lead engineering/development groups and report to the CEO. Other responsibilities can include technology thought leadership, research and development, technology policy, and technology architectural/planning.

- **Chief Data Officer (CDO) and/or Chief Data Analytics Officer (CDAO)** These leaders are responsible for the enterprise-wide governance and utilization of data as an asset. They manage the organization's data and information strategy, security/governance, quality control, policy, development, reporting/interpretation, and monetization.
- **Chief Analytics Officer (CAO)** The CAO oversees an organization's collection of data and its use to create analytics and business intelligence models. The CAO works closely with the CIO to establish the infrastructure required for analytics. The CAO may also be responsible for the creation of data warehouses, formula data governance and management frameworks, and reporting and visualization tools.
- **Chief Data Scientist and/or Chief Data Science Officer (CDS or CDSO)** This tech leader is responsible for supporting IT processes utilizing data science, machine learning, and AI throughout the organization in order to effectively develop technology strategies, techniques and approaches which deliver business capabilities while navigating ethical concerns around use of these technologies. The CDSO is usually responsible for establishing a governance framework for responsible use of AI & models including considerations for data quality & integrity, bias, monitoring & controls and safety engineering.
- **Chief Digital Officer (CDO)** The role of the CDO is to navigate and lead an organization through the continually evolving technology/digital landscape including mobile/online/data/social media. Oversees converting an organization to digital, or modern/online technologies/data/processes. Often works within rapidly changing or disrupted sectors with a focus on customer engagement. The chief digital officer is a customer-facing role that signals a commitment to a digital future. At others, the chief digital officer's main responsibility is to strategically transform the company's business.
- **Chief Digital Information Officer (CDIO)** A leader who combines business acumen with digital expertise to help organizations drive digital transformation via an enterprise-wide digital vision and strategy. Oversees the adoption of digital technologies across an organization, transforming business strategy using technology and data.
- **Chief Executive Officer in Technology Sector (CEO)** The CEO is one of several corporate executives charged with the management of an organization. Based on the nature of the work in this sector, the CEO is usually heavily involved in key decisions and strategies related to technology.

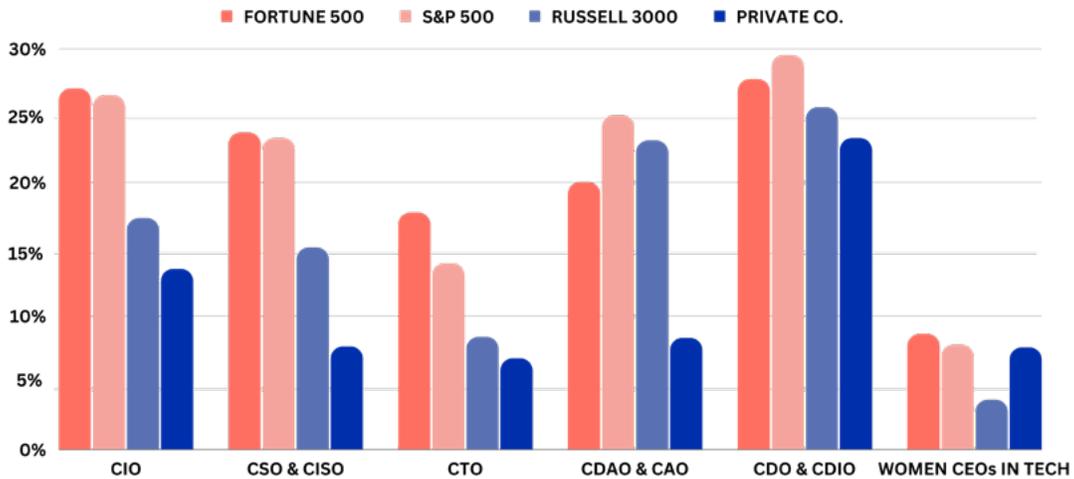
Women Corporate Tech Executives in America: Where They Are. The Roles They Play.

Methodology

To get a sense of where women stood in leading C-Suite technology roles, WBC gathered data from both public and private companies. For public companies, data was garnered from the Fortune 500, the S&P 500 and the Russell 3000. Additional data was collected from Equilar, Deloitte, and other corporate directories and databases.

Also pinpointed for the study were private companies with at least \$1 billion in revenue. For these organizations, WBC sourced data from PrivCo, the US Government Census Bureau, Bureau of Labor Statistics, AnitaB.org, Women Impact Tech, NCWIT, and the Women Tech Network.

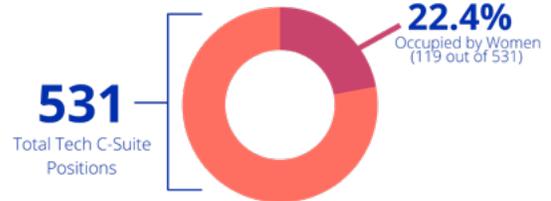
Consolidated Analysis of Key C-Suite Tech Positions



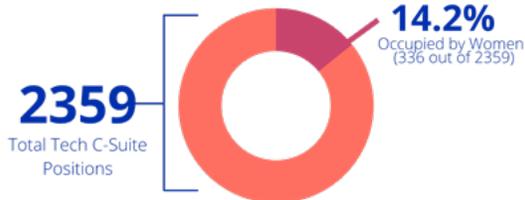
Fortune 500



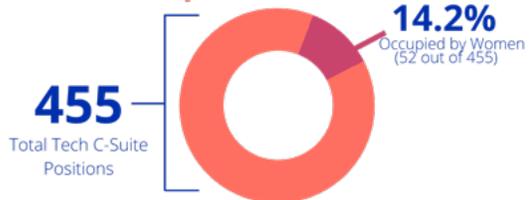
S&P 500



Russell 3000



Private Companies



CLOSEUP



Janet Foutty

Executive Chair of the Board
Deloitte US

“ I’m in a unique position as a female chair of the board with deep tech experience”

Janet began her career at a time when “inclusion wasn’t spoken of. “I sat at the intersection of Wall Street and technology, and I was among very few women.” Her ability to listen, communicate and translate what was happening in the business to technology people and “vice versa” gained her recognition; and became the steppingstone to her being named to head the Deloitte’s Technology practice.

Early in her leadership roles, Janet addressed the barriers that women in tech face. She established women in technology groups to provide “women and allies a space to network and mentor.” She is proud to point out that “this community has been active and growing for over a decade.”

In her current role, she is in the unique position of being a “female chair of the board with deep tech experience.” This vantage point has provided her with the opportunity to advance the “intersection of DEI and technology in our boardroom.”

A Look at the Modern, Effective Boardroom

Janet sees many changes afoot in the boardroom because of the ever-increasing complexities and challenges businesses are facing, with the pandemic putting into especially clear focus “the enormous pressure and responsibility for both CEOs and boards.”

She points out that progressive board chairs respond to these challenges in a variety of ways including creating new areas of focus, citing talent, technology and ESG as a few examples. Boards are looking at different skill sets, mindsets, “and sustainability and socially responsible investing.”

Advancing Women to Leadership Roles

Janet believes that “for far too long women’s leadership has been about survival. We need to get more women thriving in leadership roles.” For that to happen, she believes it takes both systemic organizational practices and individual practices by the women themselves. She sees two factors in play that will help women not only ascend to leadership roles, but flourish in them. First, she asserts “the hyper focus on DEI, not as a nice to have, but as a business imperative with real action taking place to advance equity.” The second factor is “the flexibility provided by the new hybrid work environment to create new norms that work for women.”

However, to take advantage of this positive backdrop, Janet emphasizes the need to invest in both “robust and early pipeline programs” as well as the career advancement of women and other racially and ethnically diverse populations. Additionally, organizations should strive to “break down persistent biases.” For example, bias in tech assignments can stand in the way of advancement when women are placed in project management roles rather than core tech ones.

Disaggregating Data: A Path to Accountability

Not surprisingly, as a tech leader, Janet pinpoints data as “underscoring all of this.” She sees disaggregation of data as the key to accountability and fundamental to driving change. Digging into the numbers allows leaders to ask “meaningful questions to find the root causes of lack of diversity and equity.” Questions like: “What’s the demography of people in positions of influence?” “Where and why are companies falling short in the retention and career advancement of specific demographic groups?”

She sums up the benefits this way: “Disaggregating data helps to create a better understanding of what you are doing well, as well as to identify where improvement is needed for meaningful progress.”

Advice for Women Seeking Leadership Roles

Janet encourages women to ease up on themselves and realize, for example, that they do not “need to have every single qualification to pursue a new role.” Additionally, she advises women to have a real sense of who their sponsors are and to surround themselves with “people who will give you the confidence that you belong.”

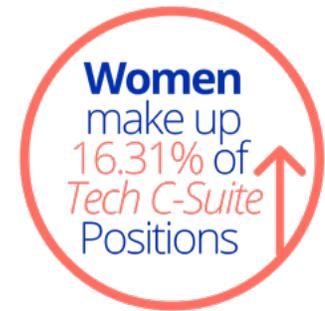
In addition to serving as Executive Chair of the Board of Deloitte US, Janet is a member of Deloitte’s Global Board of Directors. She previously served as chair and CEO of Deloitte Consulting where she led the digital transformation and growth of the \$10B business through significant investments in digital, artificial intelligence and cloud.

Observations & Takeaways: Beyond the Raw Numbers

The data across public and private companies, clearly indicates that women are under-represented in C-Suite technology roles, never reaching higher than 27% representation.

Additionally, it is apparent that many of the positions at the C-Suite level are significantly underfilled or not filled at all. For example, only two companies in the Fortune 500, two companies in the S&P 500, 13 companies in the Russell 3000 and three companies in the 1008 private organizations, have the role of Chief Analytics Officer (CAO) filled. Yet, this role is becoming significantly more critical to corporate security and strategic planning as the amount of data continues to grow at breathtaking speed.

As the volume of data continues to skyrocket, as AI becomes more commonplace, and as security issues grow more threatening, the needs for C-Suite talent across all tech disciplines grows continually more crucial. Women have an important role to play in filling that gap but can only do so if significant changes are made across both the corporate and societal landscapes.



Strategies for Growing the Number of Women Tech Leaders

- Encouraging women who view themselves as good at math and science to acknowledge their talents and grow their competencies.
- Cultivating mentoring and sponsoring opportunities. Tech leaders should take an active role in encouraging and elevating women to more senior tech roles. They should help young women see the value to themselves and their organizations as tech professionals.
- Encouraging girls at home and throughout their academic years to stay focused on STEM (Science, Technology, Math and Engineering) if they are so inclined.
- Showcasing women tech leaders as role models. Allowing entry-level and early career tech women to see tech leaders thriving at the highest levels can be a vital impetus for women to join or stay in the field.
- Focusing on retention. While more and more effort is being placed on attracting women tech talent, efforts are still lagging in retaining and promoting them. Organizations need to increase their initiatives to maintain, nurture and promote women so they see there is a clear career path for them in tech.
- Re-assessing the criteria for tech careers. Organizations need to take a front and center role in broadening the pathways for women to forge a career in tech. Women returning to the workplace, those with degrees in other sciences, women with associate degrees and those who show an interest in tech, but do not have the formal training, should all be encouraged and supported by corporations to pursue tech careers.

Tech Leaders Speak Their Minds

The Time is Now for Tech-Savvy Leadership in the C-Suite and Beyond

Kristi Lamar, Managing Director, Deloitte Consulting LLP and US Women in Technology Leader, Deloitte, and **Anjali Shaikh**, US CIO Program Leader, Deloitte Consulting LLP

Technology is one of the defining strategic issues of our time. It influences every decision an organization makes. And yet, organizations still struggle to advance digital transformation as many leaders are tempted to chase “shiny objects” in the form of new technologies. It is imperative for organizations to resist such distractions and lead efforts with an integrated strategy rooted in business goals and enabled by technology capabilities.

Many C-Suite leaders still have a knowledge gap in understanding how and what technology can achieve. On the flip side, within the technology function, there are tech leaders with proven technical expertise, but little understanding of how technology creates business value. Therein lies both the mandate and the opportunity for organizations to increase the overall tech leadership and tech savviness of the C-Suite.

Parameters for Tech-Fluent Leadership in the C-Suite

Tech leadership in the C-Suite cultivates an environment where executives know how to advise their stakeholders, teams, and peers on the “so what?” and “now what?” of new technologies, regardless of where these executives sit within the organization. Tech-savvy leaders across an organization are better able to address critical questions such as “What is our business strategy and what technologies will support our business goals? Why should we invest? Are we ready? What would we have to do to get ready?”

A tech-fluent leader ultimately can converse strategically on the use and impact of key technologies to create better business outcomes and lead their teams to think along the same lines. The baseline goal of tech fluency and tech upskilling programs is to develop a depth of understanding of today and tomorrow’s technologies and how they can be applied across the organization.

The Benefits of Having BOTH Tech-Savvy Boards and Tech-Savvy C-Suites

Early findings from Deloitte's 2023 Global Technology Leadership survey shows that roughly three-quarters of CxOs indicated their organization's board of directors encourages C-Suite leaders to aggressively pursue technology enabled opportunities for competitive advantage. Additionally, 64% indicated that technology is a key agenda item at most or all board meetings.

Having a tech-savvy board, in addition to a tech-savvy C-Suite, helps to facilitate a common language between the board and management, helping drive more productive engagement and improved company performance. Specifically, such companies experienced, on average, 5% greater revenue growth over a three-year period, and 8% better stock performance year over year, over three-, five-, and 10-year periods, than companies with non-tech-savvy boards.

Specific to C-Suite tech leadership, a recent CMO survey found that 62% of CMOs recognize that marketers could improve impact by effectively leveraging technology to pursue growth opportunities and using data insights across channels. CFOs also recognize that technology investments are critical. According to Deloitte's 2022 Q1 CFO Signals Report, 40% of CFOs indicated that the most important enterprise transformation their company was undertaking or planning to undertake was technology related or included IT systems upgrades. Many CFOs noted challenges related to legacy systems, a lack of business acumen among IT professionals, and a lack of tech savviness within the finance organization.

Resolving the Organization-Wide Tech Savvy Gap

Beyond the C-Suite, many organizations are looking to develop a workforce who can address business challenges and opportunities through tech solutions. However, most businesses are facing a highly competitive environment for tech talent as growing demand—particularly in AI and cybersecurity—increasingly outpaces the number of qualified candidates to fill such roles.

To address this challenge, tech fluency programs can help fill such critical high-demand tech and business roles. For example, Deloitte's Cloud Institute, reskills and upskills professionals from other functional areas and across varying levels to build a diverse pipeline of non-traditional IT candidates with in-house skills to fill tech roles. The Institute has created one of the most skilled cloud technology workforces in the professional services industry.

As the pace of technology innovation and the demand for technology services accelerate, organizations are trying to realize as much value as possible from their technology functions. C-Suite leaders have an important role in enabling such a future cultivating a tech fluent organization. The tech-savvy business can drive forward their stalled digital transformation efforts and achieve more successful outcomes through a unified technology strategy that aligns transformation needs and investments to business goals.

Every Company Is a Tech Company Now

Adam Bleibtreu, Chief Marketing Officer,
James Bradley, Senior Consultant, Strategic Communications, and
Michael C. Payne, Senior Vice President and Chief Information Officer
ASGN

In several foreign countries there are office buildings filled with intelligent, highly trained people whose jobs it is to infiltrate, disrupt, and extort western businesses. Cybercrime is an organized global threat that operates across the dark web, with sophisticated tools and even franchise opportunities. With a more political bent, hostile government cyber agencies have become highly sophisticated, focusing on disinformation, propaganda, espionage, and destructive attacks.



60%
of all Cyber
attacks have
been on North
America based
organizations



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Whatever you do, you're using tech in so many ways. This brings cybersecurity challenges and responsibilities that most organizations are simply not equipped to address adequately.

Technical hacking is only part of the challenge. According to "Cybersecurity for Dummies," 80% of all attacks involve compromising an employee's credentials. Sometimes contact is simply over the phone. Almost always these intrusions involve an employee who thinks they're doing the right thing or being helpful. It takes just a single response to a phishing email for an attack to be successful. No amount of technical security will keep your business safe if you don't train your people to recognize all the ways an actor might trick them into sharing their login credentials.

Whatever your size or type of business, if your security isn't good enough, you risk compromising your customers and vendors. If you don't know how to verify the practices of your partner firms, you risk letting them compromise you.

Recommendations

> Be prepared and increase organizational vigilance

- o Create, maintain, and exercise cyber incident response, resilience, and business continuity planning.
- o Create disaster recovery plans and rehearse them.
- o Engage experts to hold a tabletop simulation with your leaders about individual responsibilities and actions in the event of a ransomware attack.
- o Don't think it can't happen to you; expect that it will, and don't plan to figure it out on the fly when it does.

> Talk about it

- o Start and maintain an open dialog with your customers and vendors about their systems, products, standards, and training.
- o Think through the supply chains you are part of. Discuss. Learn from each partner's evolving needs, requirements, and cyber efforts.

> Enhance your cyber posture and implement cyber best practices

- o Identity and access management.
- o Protective controls and zero trust architecture.
- o Vulnerability and configuration management.
- o Utilize strong passwords, MFA, and password managers.
- o Install software updates regularly; prioritize known vulnerabilities.
- o Stay current on Russian, Chinese, and Eastern European threat updates.

> Increase cybersecurity awareness for employees and standardize

- o Integrate cybersecurity training and awareness internally until it's part of your everyday culture, not something that's reserved for occasional meetings.
- o At board meetings, the first thing discussed should be Cyber Risk & Readiness, especially in public companies.
- o Apply the same security standards, training, product choices, and behaviors everywhere across your business. A weakness anywhere is a weakness for the whole company.

> Pace your effort, plan your pace and track your performance

- o Think of a marathon, not a sprint, only more so: you're never going to be done working on this.
- o Think through what to measure that will drive improvements.

> Suspect you have already been compromised

- o Invaders usually don't act right away; they wait for a more destructive moment.
- o An example is when you, or your customer who has been compromised through you, announces an acquisition or intent to be acquired. A ransomware attack at that moment on any party usually kills the deal altogether.

- > **Maintain backup systems that are not available online**
 - o Literally anything connected to the internet can be hacked.
 - o Since an intrusion can go undetected for months or years, there's also a risk of backing up the intrusion, then restoring it in a crisis and immediately letting the hackers back in.
 - o Make sure your online backups have versions going back in time.
- > **Avoid thinking any solution element is the final answer**
 - o Next month may be different, and next year surely will. Keep learning and keep thinking.
- > **Schedule regular external reviews and engage the right security partner or master service provider**
 - o Even smart people can create an internal echo chamber and miss important things.
 - o Enlarging existing job descriptions to fully cover this complex and constantly changing topic is a non-starter. Even a large company can't cost effectively maintain in-house all the kinds of expertise that are needed. The right service partner would operate a (SOC) Security Operations Center 7x24 to manage, detect, and respond to threats.

Summing up

Think of cybersecurity awareness and readiness as an ongoing investment to PROTECT. You're protecting your people, your operations, your data, and your reputation. It's hard to price the value of that.

Women's Impact on Technology

Evelyn Anderson, Distinguished Engineer, Master Inventor
IBM

Women have made an extraordinary impact on technology. Unfortunately, many of their contributions and inventions were not attributed to them during their lifetimes. Although a few women in the mid-nineteenth century were allowed to submit their ideas for a patent, the United States didn't grant women full rights until 1920. Prior to that, women were viewed as chattel, rather than individuals, with no freedom to own anything or make decisions. This limitation led to the common practice of women submitting inventions under their father, husband, or a male partner's name.

Credit Not Given Where Credit Was Due

[Ada Lovelace](#) and [Hedy Lamarr](#) were two women notably not given credit for their truly advanced technology. Although Ada Lovelace is now known as the first computer programmer, she was not originally credited for her contribution to the [Analytical Engine](#). She served as the key interpreter for Charles Babbage, and published notes in 1843 on how the machine could be used to follow a program to calculate Bernoulli numbers. For many years, historians debated who was the real author of the program, believing a woman was incapable of such logic.

During World War II, Hedy Lamarr and George Antheil developed "frequency hopping" to set radio-guided torpedoes off course during the war and prevent military radios from being bugged. Their idea received a patent in 1942. Unfortunately, the patent expired in 1959 and the US Navy didn't adopt the technology until 1960. Not until the late 1990s, when a researcher found the original patent, did Lamarr receive credit. The secret communications technology Lamarr and Antheil created was used to inspire the development of Wi-Fi and subsequently Bluetooth and GPS.

Women have been responsible, without attribution, for many inventions that improved our quality of life. For example:

- [Maria E. Beasley](#) designed an improved life raft with guard rails, patented in 1880. She went on to invent a foot warmer, a steam generator and a barrel-hooping machine. She received 15 U.S. patents.
- To protect her fine china and prevent washing dishes by hand, [Josephine Cochrane](#) invented the dishwasher in 1850.
- In 1893, [Margaret A. Wilcox](#) invented the first car heater using heat from the car's engine.
- [Marie Van Brittan Brown](#) and her husband invented the first video home security system in 1966.
- [Dr. Patricia Bath](#) was the first African American female doctor to receive a medical patent for her invention of the Laserphaco Probe to remove cataracts.

Unsung Heroines in Space and Technology

[Grace Hopper](#) began her computer career in 1944. She became known as “The Mother of Computing.” She brought speed and accuracy to military initiatives with the Mark 1 computer, developed the first business-oriented machine and was the inventor of the COBOL programming language.

The appropriately named movie, *Hidden Figures*, introduced remarkable, unacclaimed African American women and their impact on NASA in the race to space.

- [Katherine Johnson](#) was instrumental in plotting the flight paths of some of America’s earliest space expeditions and was most famous for providing the calculations that helped synchronize Project Apollo’s Lunar Module with the lunar-orbiting Command and Service Module.
- In 1949, [Dorothy Vaughan](#) became NASA’s first black supervisor. She was proactive in learning Fortran and other concepts to prepare for the transformation to IBM digital computers while teaching her co-workers, a group of African American women. Vaughan is credited with successfully starting the IBM 7090. She was promoted to supervisor of the Programming Department on the condition that her colleagues join her in the new Analysis and Computation Division (ACD).
- [Mary Jackson](#) was a mathematician and an aerospace engineer. She performed complex computations and analyzed data for aerospace engineers. In 1958, she became NASA’s first black female engineer. She also invented a miniature wind tunnel for testing airplanes.

Acknowledging Past Contributions to Spark Future Innovation

There are many more legendary women waiting for us to discover. Let us allow their contributions to be our inspiration for tomorrow. Begin by examining women’s impact within your company. For example, IBM has been supporting women’s advancement in technology since 1899 when the first two women, Lillie Philip and Nettie Moore, were hired. In 1943, Ruth Leach became the first female executive. In 1953, Lois Haibt was one of the programmers that invented Fortran. Jeannette Kiltredge Watson was the first woman appointed to the board of directors in 1956. Dagmar Arnold was the first woman at IBM to receive a patent for the external design of the 1301 Disk Storage Unit in 1963.

CLOSEUP



Fumbi Chima

Chief Technology and Transformation Officer
BECU

“Although technology is going to be the enabler, transformation is going to involve changing the way we work.”

As BECU's Chief Technology and Transformation Officer, Fumbi sees her top priority as “helping her organization become a digitally-powered banking cooperative,” with simplification and digitalization at the core of the transformation. “I was recruited specifically for digital transformation, which involves not just transforming BECU's technology but also the enterprise as a whole.” She views this transformation as a competitive imperative for better serving members “since it is much easier and cheaper for consumers to switch financial institutions than ever before.”

With \$30.4 billion of assets, 60 branches and 1.34 million members, BECU is the fourth-largest U.S. credit union. Growth figures point to the success of BECU's digital strategy. In 2021, the number of new members joining BECU online grew 21.25% to 17,600, and the value of digital loans rose by 60% to over \$1 billion. BECU saw its overall assets grow by 12.7% in 2021 from \$26.8 billion in 2020, while total deposits rose by 16% to \$26.1 billion.

Transformation is About More Than Technology

Fumbi points out that “People think that if you transform the technology, then everything else gets fixed. But you also need to transform the enterprise's way of working and its operating models. Our initiative encompasses both front- and back-office transformation.” She believes that “although technology is going to be the enabler, transformation is going to involve changing the way we work” which she sees as both difficult and exciting.

For example, technologies such as robotic process automation uses automation to perform mundane tasks previously done by employees, generating efficiencies and cost savings for financial institutions. As importantly, staff previously weighed down by these responsibilities, are now freed up to be customer focused, providing advice on investments and loans.

Advice from the C-Suite on Advancement and Leadership

Fumbi has been a career-long advocate for diversity, inclusion and equity for women, and especially women in tech. She has created mentoring opportunities for women in science, technology, engineering and math.

As a woman in tech who has advanced to the highest corporate levels, she offers these insights for women looking to high-level tech careers:

- From the earliest career stages, understand the importance of building relationships. “Find people you admire and seek out their mentorship”
- Be willing to take on roles across different tech areas including architecture, engineering, infrastructure and security
- Gain an understanding of the overall technology landscape
- Have a firm grasp of what your role will demand in the present, medium and long terms
- Have a career trajectory, but be willing to be flexible along the way

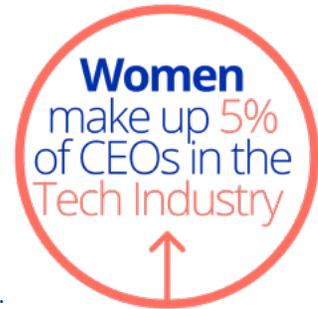
Additionally, Fumbi advises women at all corporate levels to “be resilient and understand that you own your own journey.”

Prior to BECU, Fumbi served as chief information officer at adidas in Germany, where she led a customer-centric digital transformation, creating and operating an agile digital foundation. Before joining adidas, she served as CIO for several other global organizations, including Fox Network Group, Burberry, Walmart Asia’s business operations and American Express’ global corporate technologies with heavy-duty experience in leading digital and organizational transformations, and in driving business outcomes through the use of technology and digital solutions. In addition to technology, Fumbi’s background showcases a dedication to diversity, women’s empowerment, and inclusion. She is experienced in building high-performing and diverse cultures in Fortune 500 companies and in signature brands.

Cybersecurity, Cybergovernance and Cybercrime

Dr. Jo Webber, Chief Executive Officer
STEMConnector

In late 2015, I was appointed CEO of a cybersecurity technology company working with large corporations and universities to help with their cyber-hygiene. This was hot off the heels of the Sony cyberbreach. Even with the best defenses, virtually all companies have been breached.



The damage of a cyberattack doesn't have to be disastrous. That's where cybersecurity governance comes in. I serve as the CEO of STEMconnector and the chair of the board of Myota, a cybersecurity company specializing in cyberstorage. I am also a Fellow of the Ponemon Foundation – a cybersecurity research group and think tank. This has afforded me an inside view of the world of cybersecurity.

There are five fundamental parts of good cybersecurity governance and almost all companies are struggling with them. The problem is particularly acute with small and medium sized businesses.

- Cybersecurity Strategy and Goals
- Standardized Processes around cybersecurity
- Enforcement and Accountability
- Senior Leadership Oversight including Board-level
- Resources

When it comes to cybergovernance, the lack of knowledge and experience of their executives and board members is a concern faced by most public and private corporations. Educational programs and cybersecurity consultants exist to help executives and board members understand the threat of cybercrime and inform them of how to provide governance to their companies. However, in 2022 we are faced with the situation that most board members are uneducated in cybersecurity, unaware of the dangers, and lack the ability to determine appropriate governance for their companies.

Cybercrime: An Ever-Growing Threat

Cybercrime has emerged as a real and immediate threat to most US and global businesses and should be addressed continuously at the executive and board levels within all companies, universities, NGO's etc. There are a number of compounding factors for the rise in cybercrime:

- Growth in the amount of data we now store
- Storage is cheap and people no longer clean up their files which often contain sensitive data

- Rapid increase of cybercrime since the start of the COVID pandemic. It is estimated that a cyberattack occurs every 11 seconds in the United States. (Up from 40 minutes in 2015).
- In a recent study, Verizon found that most companies are moving most or all data into the cloud and Verizon predicts that by 2025 half of all data will be stored in the cloud, increasing the attack surface for cybercriminals.

There are two things I would like to highlight. First: cybersecurity is a male dominated sector, with women occupying only 24% of jobs and very few at the senior levels. Second: there is almost zero unemployment in cybersecurity because we are not teaching it sufficiently or effectively at the post-secondary level in the United States. These factors pose a risk to the future of all companies and to national security.

We need to address this urgently, and a large part of it is a focus on career pathways. In addition to educating this generation of board members and executives, we need to address the future. Cybersecurity engineers in addition to being primarily male are also over 72% white. We need to focus on providing education-career pathways to all individuals in cybersecurity. By taking a diverse and equitable approach to cybersecurity education we can ensure that generation Z are equipped to handle the cybersecurity threats that companies face on an hourly basis.

Getting Serious About Promoting Women In Tech

Tali Bray, Head of Technology Diverse Segments, Representation and Inclusion
Wells Fargo

If we are serious about promoting more women into executive positions in technology, there are several things the tech industry and the larger corporate community must address.

Look Beyond the Usual

First, we must open the talent aperture for women in the workforce and recognize that non-traditional candidates are an untapped source of abundant potential. This means working with programs that promote career re-entry for women who are ready to return to the workforce and need skill support. It also means looking to women in non-traditional academic and professional backgrounds, with experience outside of computer science-oriented degrees (e.g. economics, math, business, sociology, biology, philosophy) and women without access to four-year programs.

The Women in Data Science (WiDS) initiative encourages this participation from a wide range of educational backgrounds and experiences. Based on WiDS' research and data collected by the U.S. Department of Education, there is greater opportunity to engage women by reaching out to undergraduates beyond engineering, computing, applied math and physics...where there are seven times as many women in business, physical sciences, economics, math (not applied), and social and earth sciences. The talent is plentiful. It is on us to see and sponsor it.

Start Early. Engage the "Ecosystem of Influencers"

Second, there is an important need to connect with the parents, families, and educators of children, particularly from under-represented communities. This ecosystem of influencers can help girls and young women access rich opportunities in technology. Dr. Diana Pacheco of UC Berkeley discusses the importance of "early literacy practices in the household" and the urgency of including parents and caregivers as key players in efforts aimed at improving Latino representation in technology.

This framing of "household practices" can extend to include focus on career literacy in technology for many underrepresented communities. Unfortunately, girls and young women often self-select out of math, sciences, and other quantitative studies. A lack of active mentorship, support and role modeling enables this self-selection and further cultivates the gap in technology careers.

A report by American Association of University Women (AAUW), *Why So Few?: Women in Science, Technology, Engineering, and Mathematics*, addresses how girls' achievements and interest in math and science is shaped by the environment around them. This report shows that negative stereotypes can measurably lower girls' test performance and their aspirations for careers in STEM. In many cases, the expectation of educators and families of girls and young women is biased and underestimated due to lack of belief in the girls' ability to succeed.

Bridge the Economic Gap Across Life Cycles

We also need to address the economic inequities that create a barrier to access for many young people. In a recent [US Cellular survey](#), nearly half of students surveyed felt pursuing a degree or career in STEM was inaccessible for financial reasons. Forty percent of students felt STEM careers are not welcoming to women and almost half thought there is not enough racial diversity. Engaging with parents, family and educators will help to bridge these gaps and build a strong pipeline of young women.

Wells Fargo understands this dynamic and has already invested in supporting programs that provide "returnship", mid-career training, cohort-based learning, etc. For example, Wells Fargo's Glide program supports returnship through an eight-week program for professional women with at least seven years of experience. Since the program's inception in 2020, 115 individuals have completed the program, 94% are from historically under-represented groups with an 88% conversion rate to full-time Wells Fargo employment.

We also invest in programs such as Girls Who Code, Grace Hopper, Society of STEM Women of Color and Lesbians Who Tech to support all aspects of hiring, upskilling and effective employment for women.

Seize the Moment and the Benefits of Diversity in Tech

Finally, there are many opportunities for organizations to adopt and embrace the notion that a diverse employee base – particularly at the executive level – will result in outperforming the less diverse peers. According to McKinsey's 2020 "Diversity Wins," companies in the top quartile for gender diversity on executive teams were 25 percent more likely to have above-average profitability than companies in the fourth quartile—up from 21 percent in 2017 and 15 percent in 2014.

As the pandemic recedes, this moment is an opportunity to invest in our commitment to advancing gender diversity in technology at the executive level and beyond. This must run parallel to active efforts to reduce that gap for Black and Latina women. Not only can our workplaces leverage the increased innovation and creativity that comes with a diverse workforce, the economic health and wellbeing of our society depends on it.

The Importance of Women in Data Science and Analytics

Michelle Boston, Managing Director, Data Management Technology Executive
Bank of America

The need for diversity in technology is well understood and is now a foundational component of recruitment, retention, and talent management for all organizations at all levels. Technology teams with strong gender and racial diversity, while advancing equality and economic opportunity, also ensure businesses develop products and services that reflect the needs of the customers and communities they serve.

The case for advancing women in technology, in particular, is clear:

- According to the U.S. Bureau of Labor Statistics, technology jobs are among the fastest growing in the U.S. economy.
- These technology jobs often pay more than double the average U.S. salary and are key drivers of economic growth and socioeconomic mobility.
- By increasing the number of women in technology, we will increase women's cumulative earnings and their influence on the global economy and, ultimately, on society.

The Much-Needed Involvement of Women In Telling the Data Story

Leaders in technology must evaluate not only how gender diverse our technology organizations are overall, but how diverse we are in specializations, from application development to information security. Nowhere is inclusivity more important than in data science and data analytics.

Women play a critical role in data science and analytics. Hillary Mason, a data scientist and founder of Fast Forward Labs, was quoted as saying, "Data is a tool for enhancing intuition." Individuals and businesses now create and collect more data than ever before, and advances in artificial intelligence and machine learning have accelerated our ability to process vast amounts of data. But the data and tools alone cannot provide true business insights without the human aspect of data analytics.

It is the people leading data analytics who have an intuition for the stories the data might be telling us. They develop the data sets and questions that bring data insights to life. Women bring unique perspectives and benefits to this data "storytelling" against the rapidly increasing volume and variety of data that organizations are now managing in big data environments:

- A 2020 NCWIT Scorecard found that women graduating with computer and information science (CIS) degrees are more racially and ethnically diverse than men graduating with CIS degrees.

- To the extent that women pursue careers in data science or predictive analytics, their diversity plays a role in reducing data bias and improving the quality of work. According to a 2020 Boston Consulting Group study, “Interpreting causal relationships and correlations in large data sets requires subtlety, and both humans and machine learning algorithms can occasionally ‘see’ patterns that lead to spurious, biased, or even downright dangerous conclusions.”
- Data teams with diverse resources in gender and ethnicity ensure that data projects benefit from a variety of opinions and experiences that mitigate data bias, reduce data prediction errors and provide more balanced results.

Growing the Pipeline of Women Data Scientists

For women in data, there is some good news. A 2020 Burtch Works Executive Recruiting study found that the number of women in data science and predictive analytics jobs was slowly increasing. The most notable increases are coming at the individual contributor level 1 category, followed by the managerial level 1 category. While these numbers signal an increase in women in data science and analytics, much more needs to be done to encourage women in the early talent pipeline, middle management and the senior leadership level in a space still largely dominated by men. BCG found that women pursuing STEM careers are disproportionately deterred from choosing careers in data by the negative image of data science as being overly abstract and competitive.

To attract more women to careers in data science and analytics, organizations must clearly communicate the purpose, the importance and the tangible benefits that these roles bring to critical business decision making. Then, organizations must actively develop and promote those women to senior data leadership roles. That change will foster a more inclusive and collaborative data community that produces data-driven business insights and innovations, leading to business process improvements, risk reduction and, ultimately, revenue growth.

Female Tech Experience Enters the Boardroom

Kira Ciccarelli, Lead Research Specialist
Diligent Institute

In the last two years at Diligent Institute, directors have been indicating on surveys and in interviews something that we had long suspected: many boards are growing overwhelmed. As the issues boards are tasked with evolve and expand, boards more and more are asking: “Are the right skill sets present in the boardroom?”

Director Appointments Bring New Skill-Set Backgrounds

Diligent Institute set out to find out more about how skill sets in the boardroom were changing in our [Beyond the C-Suite](#) report issued in July, 2021. Looking at director appointments dating back to 2019 in Australia, the United Kingdom and the United States, we found that the percentage of newly appointed directors bringing a more traditional CEO/CFO/COO background has been declining, dropping from 59.4% to 56.0%.

At the same time, the number of newly appointed directors who do not have that traditional experience; but bring instead backgrounds in areas like sales, marketing, legal, HR, ESG and technology, increased from 13.0% to 18.9%.

We also found that the group of newly appointed directors with domain expertise backgrounds in the US, UK, and Australia was split almost evenly along gender lines. However, newly appointed directors from CEO/CFO/COO backgrounds were twice as likely to be men. Additionally, women represented the majority of new appointments in HR, ESG, marketing, as well as in technology, a traditionally male-dominated field.

Our most recent report, a comprehensive look at boardroom composition and diversity titled [Board Diversity Gaps](#) conducted in partnership with the Women Business Collaborative and 21 other organizations analyzed director appointments from over 6000 public companies. In that report, we found that from January through May 2022 the percentage of newly appointed directors, bringing these domain expertise areas, to be 35%.

A Closer Look: Female Directors with Technology Backgrounds

According to data in our [Board Diversity Gaps](#) report, only about 5% of all director appointments through May 2022 had technology backgrounds. Of all director appointments, 3.2% were men with technology backgrounds and 1.8% were women with technology backgrounds.

Overall, through May 2022, only 36% of director appointees with technology experience were women. For the full years 2019-2021, this number had increased from 40% to 43%. The U.S. has made particular strides in this regard so far in 2022, where half (50%) of all director appointees with technology backgrounds have been women, well above the global average. This number had been increasing in recent years, from 44% in 2019 to 49% in 2020. Other countries of note are the UK, where female directors made up 63% of appointments with technology experience in 2021, and Canada, where this proportion was 57% in 2021.

As Dottie Schindlinger, Executive Director of Diligent Institute and Co-Author of [Governance in the Digital Age](#) pointed out:

“Despite technology having been a traditionally male-dominated field in the past, we are approaching gender parity in some countries when looking at the proportion of female director appointees with technology experience. As more women are added to boardrooms around the world, these women are very likely bringing domain expertise in areas like technology, which is an incredible value-add in our increasingly digital and tech-driven world.”

Female Directors: Bringing Diversity Beyond Gender to the Boardroom

Our research also indicates that when women join a board, they diversify that board along more than just gender lines. Female directors tend to be younger than their male counterparts, bringing new age group diversity to the boardroom: Through May 2022, the average age of female directors is about 60 years, and the average age of male directors is nearly four years older, at 63.5 years.

As stated above, female directors are also likely to bring domain expertise in new areas that are growing increasingly more important to the board's responsibilities, like HR and ESG/sustainability. Taken together, these findings indicate that though the current level of female directors with technology experience may be relatively low, these leaders will be elevated to the boardroom at higher rates as boards continue to diversify along gender, skill-set, and other aspects of board composition.

Security in the Cloud: The Future is AI

Mignona Cote, Chief Security Officer
NetApp

Never has there been more data generated than there is today. And it's an increasingly complex endeavor to secure all that data everywhere it lives, from every threat that can be visited upon it. Consider this: The amount of data in the world was estimated to be 44 zettabytes at the dawn of 2020. By 2025, the amount of data generated each day is expected to reach 463 exabytes globally. It is impossible for humans alone to manage all that data effectively; or to ensure it's used optimally to reduce threats. That's where artificial intelligence (AI) comes in.

How does AI help reduce security complexity in the cloud?

The issue we're facing right now is multiple cloud environments (e.g., AWS, Microsoft Azure, and Google). We also have our legacy, on-premises environment in our data centers, creating what is known as the hybrid cloud. Additionally, each cloud has its own infrastructure with multiple applications being delivered in different ways, depending on what they do. Given all this complexity, there is not a single person who knows how to ensure everything is secure all the time.

Recently at NetApp, a company that delivers data management and cloud storage solutions to its customers and has its own applications on each one of those public clouds, we have been thinking about this more holistically. We need a roadmap for this increasingly complex hybrid future whose foundation is AI. Artificial Intelligence can tell the full technological security "story" by analyzing all traffic. Where are the threats? What needs to be done to mitigate them?

We've heard from our customers that there is a gap when it comes to monitoring their data for threats across their entire hybrid multi-cloud environment. For instance, if they're using Amazon Web Services, their data lakes already tell them how to operate their security environment. They see something and it automatically prevents something bad from happening because of their own automated systems. A security team isn't required to manually review data to identify threats because it's already being done in real time.

It's a great model but most companies don't have the scale and scope of AWS and find themselves still trying to figure out how to identify all those threats, in all those places, while also eliminating them before they're a problem.

AI: the all-important glue

What if organizations could use AI to “glue” all the data together and predict what’s coming next? The intelligence world is constantly telling us about what is coming next in the way of security threats, so what if AI helped us adapt and change as threats adapted and changed?

The “glue” we’re talking about here would allow data to be used repeatedly, and securely, across multiple platforms, applications, and workloads in one format to recognize it as part of a whole and reduce redundancy and tell that critical data security “story.”

From a predictive standpoint, well managed threat data will be more effective at tying together multiple data points that are seemingly disparate but are actually very much connected. Perhaps you’re monitoring nation states or hacker groups. By watching their traffic patterns, you’ll get a comprehensive view of the threats. You don’t need to look for each one individually. Right now, we’ve seen a slight decline in ransomware. But hackers aren’t just sitting around waiting for their opportunity. They’re looking for vulnerabilities and what they can access. Are they grabbing passwords right now? Are they trying to steal healthcare records? Has someone clicked on an email that let a virus loose? NetApp uses all this threat data to create this roadmap. While it’s not yet fully defined, the big question it would help us determine: “Can something bad happen? And how can we keep from being harmed or compromised?”

For true protection in a complex cloud environment, we need to understand every single point of entry for hackers. This is one of the biggest challenges facing the security industry today; and AI offers a promising and viable solution.

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Lakshmi Eleswarpu

Global Chief Information Officer
Sanofi

“Cutting-edge science and manufacturing, fueled by data and digital technologies, have the potential to turn the impossible into possible for millions of people around the world.”

As Global Chief Information Officer for Sanofi, a \$50 billion global healthcare leader, Lakshmi leads global digital operations, infrastructure, architecture, cybersecurity, and corporate applications. She drives results and business transformation by partnering with diverse business units, manufacturing plants, supply chain, finance, and corporate functions.

She brings to her position a passion for science and technology that stems from childhood and has been fueled by a diversity of positions across a variety of industries. “I am very fortunate to have been given so many various opportunities. I led digital transformation, technology innovation, and business continuity on a global scale at Fortune 50 companies.”

Technology and Health Sciences: A Game Changer

Lakshmi sees the intersection of technology and health sciences as vital to positive social and economic change worldwide. “From virtual reality in manufacturing to big data analysis for drug discovery, technology enables unprecedented levels of innovation for our patients and for improving peoples’ lives.”

Additionally, Lakshmi points out that science, technology and medicine are critical for improving lives in rural areas, inner cities and remote places around the world, especially for women and children. “I sincerely believe that cutting-edge science and manufacturing, fueled by data and digital technologies, have the potential to transform the practice of medicine, turning the impossible into possible for millions of people around the world.”

The Unique Responsibilities of Tech Leadership in the Health Industry

Lakshmi is critically aware that her position requires both a corporate and public responsibility perspective. Her commitment comes from her upbringing, where her parents taught her about integrity and that kindness should be “inherent in everything I do,” and from Sanofi’s corporate mission to making a difference across all populations including the world’s most under-served.

“One of my top priorities is partnering with the business to ensure that medicines are manufactured with quality and reach our health care providers and patients. This includes preserving the safety and security of our people, patients, information and medicines.”

4 Critical Leadership Qualities

Lakshmi sees leadership at all levels including these qualities

- 1. Be authentic:** Lakshmi learned from experience that trying to emulate the style of someone else gets in the way of getting ahead and enjoying your work.
- 2. Be as much a student as a teacher:** There is much to be learned from others. Good leaders are good learners and good listeners
- 3. Encourage talent in others:** Lakshmi points out that her career was helped by managers seeing her potential sooner than she did
- 4. Be caring and compassionate:** “Touch others in ways that help them grow and evolve as they achieve their dreams and change.”

Helping to Make a Better Future for Women in Tech

Lakshmi emphasizes the importance of both individuals and organizations in helping pave the way for more women to rise to high-level tech positions. “Women are essential to driving innovation for outstanding business results and excellent value to our customers. Companies need to reflect in their workforce and leadership their own consumers and customers”

She is also a strong advocate for the power of mentorship, with its benefits to both mentors and mentees. “I truly believe we all rise together by lifting others.” For mentees, the knowledge and advice of mentors helps them pinpoint opportunities, overcome challenges and “head down paths that may be less traveled.”

Her advice to women starting out, as well as to seasoned executives: “Never stop being inspired and never stop inspiring others. Always have kindness in your heart, a smile for others, and love for people and the world.”

Lakshmi’s career spans 25 years in various operational and leadership roles at the most iconic companies in the world including Procter & Gamble, HP, Coca-Cola, Boeing and Sanofi. As an electrical engineer, she is passionate about STEM, diversity and inclusion, and global health causes. Lakshmi volunteers her time across several leading organizations including the Orbis Flying Eye Hospital which delivers groundbreaking surgical treatment and medical training to remote regions of the world. She is also a guest lecturer at McMaster University and speaks at national conferences including the Society of Women Engineers and Society of Asian Scientists and Engineers.

Righting the Ratio for Women in Tech

Sue Harnett, Founder & President
Rewriting the Code

A Problem

For decades, many college women majoring in computer science, engineering, data science and other tech-related fields have experienced an unsettled feeling of “not belonging.” That could be related to women being only two out of every 10 college tech degree graduates. Or, that the representation of professional women in tech continues to be out of balance. (Black and Latina women combined will encounter a tech colleague of similar background just one in 20 times in the current workplace.)

When you are not like everyone else, your peers often call you into question and, unfortunately, you do the same to yourself. It’s an uncomfortable feeling and one that most of us would avoid.

A Challenge

The prize when you graduate with a tech-related degree is often to start your career at a tech company. Many companies were founded or run by men with names such as Steve, Bill, Jeff and Mark (SBJM). This fact has not changed dramatically. In 2020 alone, 93,605 US college students graduated with a degree in computer science. Just about one in five (20,194) of them identified as women. That number is not going to provide enough supply, so we need to increase it.

A Strategy

Rewriting the Code (RTC) launched in 2016 with a mission to support, empower and retain more college women in tech. The representation of women in computing courses across colleges and universities was typically the same: women took ~40% - 45% of introductory computer science classes. However, roughly half of those female students did not return for more advanced classes.

The reasons for women’s exiting computer science ranged from the lack of female professors and role models to feeling their male peers had more experience – giving them a sense of impossibility of catching up or causing them to suffer from imposter syndrome. Leaving computer science was preferable to revealing the belief that women did not belong.

RTC established a college-agnostic model of inviting undergraduate women in tech to join a national organization for students across the U.S. This virtual organization offered a highly vetted, safe space for women in their 1st through 4th year of college to pose questions, share experiences and opportunities, and connect with highly relevant women who shared a similar passion. Members of the RTC community were one of many, instead of being one of the only.

An Expanding Approach

The RTC community wanted to evolve to support members who wished to connect with identities beyond gender in tech. Subcommunities developed based on ethnicity and culture, technical interests and geography. The deeper the connections, the greater the level of confidence and belonging.

In 2019, five Black RTC women came together to create Black Wings – a community of Black and African American women within RTC. The community launched with the 250 Black RTC members enrolled and has grown to 1,600+ participants today. Latinas de RTC developed a year later and now has over 1,000 members.

The focus now is to provide ‘tech interest groups’ based upon areas the members want to explore, including AI/ML, blockchain, cybersecurity, gaming, entrepreneurship and hardware.

A Women-in-Tech Directed Future Focus

Students and professional members of RTC have shared many insights regarding the support they need to thrive as women in tech and as future leaders.

- 1. Build trusted relationships.** Companies must develop multi-year engagement strategies to demonstrate authentic interest with under-represented groups. This intentional time investment is needed to overcome years of disinterest in engaging with these communities.
- 2. Meet women where they are.** A career journey requires customized approaches. For example, 1st and 2nd year college women in tech need to be inspired by early career women who share their stories to support retention for tech majors.
- 3. Year-round support.** The tech journey encompasses skills and knowledge that are not taught in the classroom. Students need a community with whom to share and learn the multiple expectations of future engineers, as well as company investment to prepare and support their journeys.
- 4. Relatable mentors.** Women want to engage with mentors who can relate to them and understand their holistic needs without explanation.
- 5. Community.** Women need strong, dependable peer networks throughout their career. A network is the source of truth, understanding and inspiration to drive change.

An Achievable Solution

More than 190,000 new IT jobs will be created in 2022, according to IT employment consultancy Janco Associates. The IT job market now has more than 3.85 million positions in the US, with about 130,000 of those positions unfilled. We can effectively address the open position gap by increasing the attraction and retention of female undergraduate and graduate students in tech-related degree programs. RTC, in cooperation with universities and employers, is moving the needle on this opportunity.

The Importance of Human Capital in Addressing Increased Cybersecurity Risks

Joyce Brocaglia, Global Cybersecurity Practice Leader,
Diversified Search Group

Cybersecurity has become one of the most essential components of a successful business and a safe country.

There are many reasons for this heightened focus on cybersecurity. Over the past few years, the pandemic accelerated the pace of digital transformation and forced businesses to embrace remote workforces and online solutions. This shift expanded opportunities for cybercriminals to attack individuals and businesses.

In addition, the war in Ukraine resulted in the Biden administration issuing an urgent warning to American business leaders to strengthen their cybersecurity capabilities in preparation for potential, retaliatory cyberattacks from Russia and from independent parties. Also, the FBI Director expressed concern over potential cyber-attacks against U.S. critical infrastructures.

Additionally, the Securities and Exchange Commission (SEC) released proposed amendments to rules on mandatory cybersecurity disclosures. They aim to inform investors about risk management, strategy, governance, and also to provide notification to investors of cyber incidents in a timely manner.

These actions by the U.S. Government reflect the heightened concerns of organizations across the country, as incidents of cyber intrusions have dramatically increased both nationally and globally. Across industries and critical infrastructure, C-Suite leaders and corporate boards heeding these warnings must not only consider the technological aspects of mitigating cyber risk, but the people behind their fortifications. Human capital must be top of mind for all organizations, of all sizes when it comes to cybersecurity.

We offer the following considerations for business leaders as they prepare for potential new and increased cyber risks.

Companies Must Stay Proactive in Addressing the Cybersecurity Talent Gap

Despite an increase in dangerous cybersecurity activity, the *State of Cybersecurity 2022 Workforce Report* cited over 60% of respondent enterprises had unfilled cybersecurity positions and experienced difficulties in retaining qualified cybersecurity professionals.

Even with an influx of 700,000 cyber professionals joining the workforce globally in the last year, the demand for talent continues to outpace supply. This is partially due to



16.18%
OF CSO/CISO
POSITIONS
ARE HELD
BY WOMEN

more and more companies realizing their vulnerabilities and adding leadership positions and headcount that didn't previously exist. According to (ISC)2, the U.S. alone still has approximately 377,000 unfilled cyber positions.

Additionally, there is a lack of diversity and inclusion on all fronts. From an ethnic and cultural standpoint, Black, Latinx, women and other under-represented groups are significantly inadequately represented. Hiring a diverse workforce with different backgrounds, abilities, genders, and ethnicities has a dual benefit of introducing diversity of thought to complex and demanding roles as well as increasing chances of a successful hire, in a market where demand outstrips supply.

Ensuring diversity, equity and an inclusive work environment should be envisioned as a business imperative. This holistic approach and mindset should begin at the top and be reflected throughout the entire organization leading to greater cross-functionality, innovation, and overall collaborative thinking. Furthermore, diversity of thought is essential in combating the myriad of risks posed by geopolitical events, nation states, cyber criminals, and insider threats.

Organizations Need a Business Savvy Cybersecurity Leader

As cybersecurity threats have evolved so too has the role of the Chief Information Security Officer (CISO). Gone are the days that cybersecurity is a back-office or IT function.

Today, successful cybersecurity executives are not only required to have the technical skills to build and enable risk solutions that protect their company's assets, reputation, and customers, they also must possess the business acumen to communicate technology, operational and enterprise risks in language their boards, stakeholders and regulators understand.

Forward thinking companies are replacing cyber technicians with leaders who have a holistic approach to risk and understand how to use security as an enabler and business differentiator for their organizations. Companies are also adding cyber-astute directors to their boards.

Leaders Must Empower "Cyber-Citizens" at All Levels of Their Company

When it comes to protecting against a cyber threat, organizations are only as strong as their weakest link. Cyberattacks don't always come in the form of big, elaborate breaches across networks. Sometimes, all it takes is one employee falling for a phishing email or accessing work files while connected to an unsecure Wi-Fi network to disrupt an organization's environment, impact its stock prices and permanently damage its reputation.

Educating employees on the importance of cyber-hygiene is essential. It starts at the top. Leaders, managers, and teams across all functional disciplines must collaborate to raise awareness and respond. Technology, Security, and HR teams need to join forces to provide consistent and engaging training for employees; training that is reviewed and practiced often.

Understanding the Pathways and Pipelines to Leadership

Velma Deleveaux, Ph.D., Veaux Solutions and
Margaret Resce Milkint, Diversified Search Group

With looming cybersecurity and data privacy concerns, the growth of Artificial Intelligence and Machine Learning, and the ongoing and sizable need for cloud computing and big data, the demand for tech expertise and strong technology leadership is at an all-time high.

This unprecedented need for tech expertise provides numerous opportunities to accelerate DEI in technology. The pathways to leadership are expansive - and with intentionality and collaboration we can mobilize with action and purpose.

In order to achieve our goals of equity, we must understand the pathway to leadership, the barriers along the way, and the tangible actions we can take to balance the scales.

The Pipeline

The pipeline begins in early education, and whether or not someone finds their way to the C-Suite depends heavily on their experience at each of these stages:

- Pre K-12
- Higher Education - College and Advanced Degrees
- Informal Education (coding seminars, virtual and self-taught computer science programs)
- Early Career
- Mid Career /Career Changers
- Entrepreneurship
- Managers of Managers
- Executive Leadership

Barriers at each stage

There is drop off at each stage created from the smallest lack of resources - like a lack of arts or sciences programs offered at school or in after school programs, or if someone hasn't had the coaching to format a resume or build/create a LinkedIn Profile. Implicit bias shows itself in hiring processes when employers look for "culture fits."

When we get past early career professionals, we see an even bigger drop off. According to McKinsey's Women in the Workplace 2021 report, "only 86 women are promoted to manager for every 100 men at the same level. But the gender gap for women in technical roles is even more pronounced, with only 52 women being promoted to manager for every 100 men."

Breaking down barriers is how we will keep the pipeline moving to advance women leaders to top executive leadership positions.

PRE K - 12

- **Internet Access** - Just 46% of households making under \$30K per year have access to the internet at home.
- **Negative Stereotypes** about math, science, and computing are shaped by media and popular culture be reinforced by peers, parents and teachers, and are particularly prevalent for women of color in STEM fields.
- **Environmental cues**, such as feedback or direction from mentors, role models, authority figures and messages sent about whether or not an individual COULD do something – reinforcing the stereotypes.
- **Access to programming** - school funding and resources, experienced teachers.
- **Lack of role models and mentors.**

Higher Education

- **Academic preparation:** Under-represented students are more likely to enter college with less STEM preparation.
- **Family wealth and income** affect college choice, ability to attend school full-time, and the amount of student debt accrued.
- **The lack of women and students of color** in computing contributes to limited peer networks, mentors, and role models.
- **Stereotypes about STEM/CS Ability** - Both conscious and unconscious biases held by faculty and other gatekeepers affect behavior and attitudes towards students and impact student persistence and retention.
- **Internships and Workforce Pathways** - Underrepresented students lack access to programs and social networks that prepare and connect them with internship and workforce opportunities.

Tech Workforce

- **Bias in hiring**
- **Social capital** - Social networks are valuable resources of knowledge and influence but are highly segregated by race and gender.
- **Bias in Advancement Opportunities** - Biases can affect the assessment of performance and promotion opportunities for professionals from underrepresented backgrounds.
- **Workplace Culture and Turnover** - Underrepresented tech professionals experience negative workplace culture at rates much higher than their peers, leading to increased turnover.
- **Pay Inequality** - Despite identical education, experience, and job titles, women and people of color receive substantially lower salaries.
- **External stressors and work-life balance** - Women and people of color are more likely to face stressors outside the workplace, which can impact engagement and retention.

Entrepreneurship and VC barriers

- **Generational Wealth** - Underrepresented professionals have less access to financial capital and are less likely to have personal and social networks with access to the capital needed to finance new ventures.
- **Social Networks and Social Capital** - Regardless of the quality of the venture, VCs are more likely to invest in companies when they share the same racial/ethnic background as the company's executive.
- **Bias in Investment Decisions** - Investors are overwhelmingly White and male and the tech founders they invest in are overwhelmingly White and male
- **Stereotype Threat** - Stereotypes about the technical and entrepreneurial potential of individuals from diverse backgrounds can affect interest in pursuing entrepreneurship.
- **Culture and Climate** - Bias, harassment, and negative workplace cultures within startups and venture capital firms negatively affect entrepreneurs, investors, and professionals from diverse backgrounds.

More data, information about barriers, research, and resources can be found at <https://leakytechpipeline.com/>

So how do we close the gap?

We must all take a three-pronged approach to closing the STEM gap.

1. Create opportunities for getting exposure, building alliances and demonstrating excellence at all levels of the pipeline.
2. Close the gaps with resources, programs and tools to better identity, position, and prepare talent.
3. Be intentional about targeting, hiring, sponsoring and developing diverse STEM talent as employers.

But we also have individual responsibilities based on our roles.

Action and Intention for Women Tech Leaders

Women in tech need to maintain their foothold on each rung throughout the pipeline. How?

- Jump in - don't wait until you have 100% of all qualifications - be bold and step up
- Seek mentorship and expand your network
- Create career milestones and build out project plans to advance and meet goals
- Take advantage of professional development programs to build your skillset
 - Hard Skills – certifications and courses
 - Soft Skills/Human Skills – Deloitte's 2018 global CIO survey pinpointed the most critical soft skills in tech:
 - Creativity. IT talent will be needed to design products, services, and solutions that address business issues, develop engaging user experiences, solve thorny business problems, and brainstorm innovative business ideas.
 - Cognitive flexibility. Learning agility—including the ability to see different perspectives, learn new skills, and adapt to change—will be increasingly critical.

- Emotional intelligence. To effectively collaborate and influence people across multiple business functions, IT staff will need to manage interpersonal communication and relationships.
- Prepare for the difficult moments
- Take advantage of and cultivate informal support systems
- Stay aware and open to growth opportunities
- Don't be an island - we are in this together.

As an Employer

- Understand the growing need for digital and cyber security expertise across the entire business enterprise.
- Make a public and long-term investments in promoting gender diversity and inclusion in STEM (e.g., require anti-bias training, leverage men as champions for Women STEM affinity groups)
- Have high expectations for leaders, and then meet them
- Examine and eliminate conscious and unconscious bias in procedures and systems (e.g., job descriptions, interview questions and interviewer opinions in the hiring process)
- Upon hiring, challenge and require leaders to optimize all talent
- Provide training and development opportunities
- Recognize the importance of enhancing the whole employee experience. Provide benefits and resources including childcare, family leave and family planning. This is crucial for building talent and retaining it.
- Activate leaders as sponsors

We all have a role to play, individually and collectively, in advancing a reservoir of untapped STEM talent. This is a journey and each step matters. If we take the needed actions to open wide the pathways to tech for underrepresented populations, it is a double win for corporations and for society. What are we waiting for?

CLOSEUP



Cara Dailey

Executive Vice President and Chief Data Officer
LPL Financial

“Data is like untapped oil, just ready to be turned into fuel.”

As a life-long tech professional, Cara has had ample opportunity to prepare for her current C-Suite position as Chief Data Officer for LPL Financial, the largest independent broker-dealer in the United States. “All my roles have had an underlying theme of problem solving, technology and data.” She views data as a valuable strategic asset to the internal LPL team, to customers and to stakeholders, and is passionate about ensuring the organization and its individuals make full use of its potential:

“Data is like untapped oil, just ready to be turned into fuel. If you have all the information about your customers at your fingertips, you are able to make faster/better decisions and increase productivity and reduce risk.”

An Evolving Role With Challenges and Misconceptions

Cara points out that the role of Chief Data Officer has evolved significantly in the last few years. “My role is to demonstrate that using data and insights can improve business processes. My team helps the organization access these capabilities and in turn helps drive better business results.”

When she held the Chief Data Officer role with a previous organization, it was largely defined by dealing with regulatory issues and managing data in “a very controlled environment.” Now her position has become “more outcome-driven, working towards solving business problems.” She and her team deliver data internally and externally to fuel growth objectives and bring advanced analytics capabilities to both clients and employees.

Additionally, data management has been dramatically impacted by changes in the technology landscape. Currently, “there are so many innovative tools, applications and capabilities that can solve a myriad of data problems.”

One of the biggest challenges in her role as CDO is getting buy in organization-wide for needed culture shifts so the benefits of data can be fully unleashed. She emphasizes that both leadership and financial advisers in her firm need to see data management as a “strategic asset vs. an afterthought.” Without a clear understanding of the value of data, it is difficult to get acknowledgement that “everyone has a role to play in data hygiene.”

Lessons Learned

Throughout her career, Cara has learned from her numerous experiences and offers some important observations:

- She sees herself as the leader she is because in earlier roles she “felt the pain of clients firsthand when systems and data didn’t work as expected.”
- As the mother, who has had to move cross-country twice to take on added responsibilities, she views the transition to new schools and new communities as a challenge, not a barrier
- Cara has used mentors to help in making major career decisions. She’s found surrounding herself with “diverse perspectives incredibly valuable.”
- She has pivoted her leadership style as needed and believes a major part of her role as a C-Suite tech leader is to “empower team members and remove roadblocks.”

Career-Advancing Advice for Women in Tech

In thinking about what she might tell her younger self, Cara offers valuable advice to women starting out in their tech careers: “Keep your sights on the bigger picture. Think strategically and act tactically.” Additionally, she encourages aspiring women tech leaders to gain experience in organizations of all sizes. The variety of experience will help both “hone general leadership skills” and allow for “going deep into subject matter expertise,” a balance which is critical in a C-Suite tech role.

She encourages career-minded tech women at all levels to join networks that “create a community focused on promoting more women in leadership roles.”

Previous to LPL, Cara served as Chief Data Officer at Silicon Valley Bank, where she was responsible for their enterprise data strategy and played a critical role in the firm’s transformation efforts. Prior to that, she was head of Nike’s enterprise data management organization and held high-level positions at Bank of the West, GE Capital, and Oracle, giving her a broad range of experience in strategy, transformation, data capabilities and the business outcomes they can drive on modern toolsets.

Conclusion and Action Steps

WBC, our partners and our collaborators view the facts, figures, findings and insights presented in *Women Corporate Tech Executives in America* as a call to action. The report pinpoints how organizations can increase the number of diverse tech savvy executives in the C-Suite across all industries.

At a time when the volume of data is burgeoning, when security problems with potentially devastating consequences are becoming more commonplace and when new technologies are signaling unprecedented promise, the opportunity is now to ensure that all companies have diverse talent across the C-Suite.

Certainly, companies in both the public and private sector and their boards are becoming more aware of the need for a diversity of tech leaders in the C-Suite, diversity not just in race and gender, but also in the titles represented at the highest corporate levels. Creating a pipeline of talented tech-savvy women across tech disciplines can help ensure that companies are protecting themselves against security breaches, while also unleashing the full power of technology for growth and profitability.

To that end, we offer the following targets and strategies and call upon companies of all sizes, across all industries to use these steps as a guideline to forge their own individualized initiatives.

TARGETS

- Increase the representation of women in C-Suite technology positions (CIO, CTO, CISO, CDO) by 3% by 2025, 4% of which are women of color
- Ensure that women constitute 35% of all leadership positions by 2025, 15% of which are women of color
- By 2030 decrease the quit rate of women in the tech sector by 50%
- Dramatically improve the numbers of Black and Latina women at the C-Suite, on the board and at all levels. By 2030 ensure that 10% of all women in the C-Suite are women of color

HOW TO MAKE IT HAPPEN

- Ensure CEOs are committed to diversity in top tech positions and that they spearhead that commitment across the organization through providing information and by requiring metrics for tracking and accountability.
- Organizations and companies take needed steps to keep early career women in the field with emphasis on mentoring and sponsoring by high-level tech leaders.
- Create a culture of accountability by calling for transparent data on talent, and metrics for ensuring equal access to information, opportunities and pathways.

- Encourage high schools, colleges and universities to provide curricula, guidance and mentorship specifically geared to young women so they espouse, rather than shun, careers in STEM.
- Continue to analyze the number of women in tech at all corporate levels and across a wide spectrum of industries.
- Keep attention focused on the status of women in tech through various initiatives including reports, webinars and blogs.

Let's move forward together
to couple the power of
technology with the power
of talented women!

Corporate Profiles

The following organizations have contributed significantly to this report. WBC is deeply grateful for their generosity and looks forward to working with them on future reports.



ASGN develops, implements, and deploys critical IT, digital, and creative services for commercial and federal government clients. The company provides a highly diverse, equitable, and inclusive workplace dedicated to continual employee improvement, professional development and career advancement. ASGN views their workforce as “the heart and soul” of their business and equips their leaders with the tools to mentor, advocate, and nominate diverse candidates for leadership development programs. They continually add diverse leaders to management councils and support the development of Employee Resource Groups (ERGs) and Diversity, Equity and Inclusion (DEI) committees across all brands.



Bank of America has a longstanding commitment to diversity and inclusion. Currently, its global workforce is comprised of 50% women, with seven visionary women on its senior management team. Bank of America continually invests in opportunities for women through its Diverse Leaders Sponsorship and Women’s Executive Development programs. Corporate leaders often bring their passion and expertise to external partnerships to inspire the next generation of female technologists. Partnerships include: AnitaB.org, Girls Who Code and National Center for Women in Technology. Supporting the advancement of female talent is “core to our culture, how we support teammates, and deliver for clients and communities.”



Technology is central to the business strategy at Capital One. Company teams are dedicated to working on unique and challenging technology problems that will ultimately benefit millions of customers. The company’s culture works to foster an open, diverse and inclusive culture where teams are empowered for speed and innovation, and every individual is respected, heard, and comfortable in bringing their whole selves to the workplace. Capital One has established Women in Tech, Blacks in Tech and Hispanics in Tech initiatives to attract talent and to help elevate Women, Blacks and Hispanics in technology through mentoring, speaker training, skill building, and community partnerships.



Cielo is a leading Talent Acquisition firm, who views “talent as the currency of now.” They provide Recruitment Process Outsourcing, Executive Search, Contingent Workforce Solutions and Consulting services. They design and build comprehensive, proven solutions inspired by technology to help their client organizations find and keep high-powered talent. Cielo provides services to clients across a variety of industries including financial services, health care, manufacturing and consumer products and services. They are committed to diversity, equity and inclusion and believe that people and businesses thrive when a workplace is fair, collaborative and reflective of the community as a whole.



Cigna Corporation is a global health service company dedicated to improving the health, well-being, and peace of mind of its customers. Cigna is committed to delivering “choice, predictability, affordability and access to quality care through connected, personalized solutions that advance whole person health, both in body and mind.” Additionally, 96% of Cigna’s requisitions for manager level and above positions had a diverse slate, helping increase the number of women and ethnic minorities in the company. Cigna’s global workforce of more than 74,000 employees is dedicated to “living our mission and being champions of our customers and communities each and every day.”

Deloitte.

With over 415,000 professionals, Deloitte provides audit and assurance, tax, consulting, and risk and financial advisory services to a broad cross-section of the largest corporations and governmental agencies. Deloitte’s CIO Program delivers trusted, personal experiences and relevant insights to technology leaders. Deloitte helps empower CIOs and technology leaders to deliver business value and keep pace with the latest research and emerging technologies across their career lifecycle. Through virtual and live events, Deloitte explores the impact of diversity, equity, and inclusion in technology, identifies steps to foster productive cultures, and supports career progression for women leaders. Please see www.deloitte.com/about to learn more about our global network of member firms.



Diligent is a leader in modern governance, providing SaaS solutions across governance, risk, compliance, audit and ESG. The company works to empower its customers to make better decisions, drive greater impact and lead with purpose. Diligent believes diverse leadership is an essential part of modern governance. Through Diligent’s Modern Leadership Initiative the company launched the Director Network – the largest and most diverse global network of corporate directors. The Network helps fill open board and top executive roles with qualified candidates across the spectrum of gender, race, ethnicity, nationality, LGBTQ+ status, age and expertise. From the company’s Employee Resource Group for Women in Tech to diversity-focused thought leadership to programs supporting women and other underrepresented demographics, Diligent is committed to supporting female leadership in tech worldwide.



Diversified Search Group, a member of AltoPartners, is the largest woman-founded, women-led executive search firm in the world. The company believes Strong Cybersecurity, Risk & Technology leadership is integral to the success of client digital transformation and innovation. “ We are driven by our purpose to cultivate new leadership for your changing world.” Diversified Search Group’s acquisition of Alta Associates, the premier executive search firm specializing in Cybersecurity, IT Risk Management, and Data Privacy, expands the organization’s capabilities to bring inclusive leadership to these industries. Diversified Search Group has an industry-leading track record in placing the most women and/or people of color in executive leadership roles.



IBM is a leading global hybrid cloud, AI, and consulting services provider. IBM “thinks about diversity and inclusion the same way we think about innovation –essential to the success of our business.” Since hiring its first professional woman in 1935, women have played an integral role in driving IBM’s transformation. IBM’s longstanding track record of diversity and inclusion is backed by a firm commitment to trust, transparency, responsibility, advocacy, and service. The company remains fully committed to initiatives that improve equity in the technology sector, looking beyond representation to widening the pathways of opportunity for women in business.



NetApp

NetApp is committed to driving diversity, inclusion, and belonging. Finding, hiring, and developing talent make up the foundation of that commitment. In the past 18 months, NetApp has made a number of strategic hires of women executives including Chief Security Officer, VP of Workplace Innovation and Chief Human Resources Officer. Additionally, NetApp partners with a wide mix of external organizations that promote interest in science, technology, engineering, and math (STEM) among women including Women in Technology International. Our employee affinity groups enable diverse perspectives to help refine our business strategies while building a more inclusive global workforce. This includes Women in Technology.

sanofi

Diversity Equity & Inclusion are critical enablers for Sanofi. Diversity means taking competitive advantage of collective differences. Equity is about creating balance in systems or institutions that were built to favor one section of society over others. Inclusion means feeling that you belong, are respected and always valued. Sanofi's DEI strategy has been co-created by a cross section of employees around the world. It is co-owned by every leader and employee and fully integrated throughout the organization. Sanofi sees it as a cornerstone for creating impact "through who we are, what we do, and the way we do it."

verizon

Verizon creates the connections that shape the future and is transforming how people, businesses and technologies interact. Verizon is the world's largest wireless, fiber-optic and global information networks and services company. Throughout the organization, diversity and inclusion are woven into Verizon's DNA. "I have long been committed to building diverse teams, so that I have the very best to learn from and work with," says CEO Hans Vestberg. "We have a huge responsibility to recruit for diversity and to staff with equity, to give opportunities to the most skilled and driven people."



Wells Fargo is committed to removing and reducing barriers in place for women – of all affinities and identities – so we can innovate and transform how we tech, how we lead, and how we serve communities. We invest in programs such as Girls Who Code, Grace Hopper, Society of STEM Women of Color and Lesbians Who Tech to support the advancement of women in Technology. All aspects of the employment lifecycle matter – hiring, upskilling and effective employment for women require equal focus. We do this by centering diverse segment hiring, mid-career return to work internships, and formal sponsorship. Impact occurs at every step.

Acknowledgments

This report is truly a collaborative effort, and an example of the power of coming together to pinpoint areas of concern and foster change. WBC would like to thank all who helped make this report a reality.

Special thanks to our tech leaders for their stories and their perspectives.

In a business landscape, where they are a “double minority,” as C-Suite women and as tech-savvy leaders, the perspectives of the women interviewed for this report are especially significant. As women who have made it to the top of their field, they serve as inspiration and role models for more junior women tech professionals. As members of corporate top teams, their stories provide guidance to corporations, as they strive to attract, retain and promote talented tech women.

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- Meronne Teklu, Manager, Deloitte Consulting LLP
- Joyce Brocaglia, CEO, Alta Associates, Founder, Executive Women’s Forum, Global Cybersecurity Practice Leader, Diversified Search Group
- Adam Bleibtreu, Chief Marketing Officer, ASGN
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- Lisa Iannarino, Senior Manager, Diversity Community Partnerships, Capital One
- Alicia Thompson, Director, Tech HR – Diversity, Inclusion, and Belonging Consultant, Capital One
- John Redmond, Senior Communications Manager, Technology, Capital One
- Kira Ciccarelli, Lead Research Specialist, Diligent
- Dottie Schindlinger, Executive Director, Diligent Institute
- Margaret Resce Milkint, Managing Director and Practice Leader, Global Insurance, Diversified Search Group
- Evelyn Anderson, Distinguished Engineer, Master Inventor, IBM
- Mignona Cote, CSO, NetApp
- Shubhi Anand, Vice President, Senior Communications Advisor, Wells Fargo
- Tali Bray, Head of Technology Diverse Segments, Representation and Inclusion, Wells Fargo
- Tiffany Tavarez, SVP, Technology Diverse Segments, Representation & Inclusion, Wells Fargo

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- Angelle Petersen, Senior Manager, Deloitte Consulting LLP (lead)
- Christine Bongard, President, The WIT Network
- Michelle Boston, Managing Director, Data Management Technology Executive, Bank of America
- Velma Deleveaux Ph.D., Managing Partner, Veaux Solutions LLC
- Karen Matthys, Executive Director - Biomedical Informatics, Stanford University Department of Biomedical Data Science; Co-Founder - Women in Data Science Global Initiative
- Gina Papush, Chief Analytics Officer, Bristol Myers Squibb

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“There are many legendary women waiting for us to discover.”

Evelyn Anderson, IBM

“When protecting against a cyber threat, organizations are only as strong as their weakest link.”

Joyce Brocaglia, Diversified Search Group

“Data is a tool for enhancing intuition.”

Hillary Mason, Fast Forward Labs

Women Corporate Tech Executives in America

Women Business Collaborative (WBC) is an unprecedented alliance of 75+ women's business organizations and hundreds of business leaders building a movement to achieve equal position, pay, and power for all women in business. Through collaboration, advocacy, action, and accountability, we mobilize thousands of diverse professional women and men, business organizations, public and private companies to accelerate change.

