Cybersecurity Workforce Grows in Numbers, Knowledge

Panelists Brought Together by CCOE and SDBJ See Abundant Opportunities

■ By BRAD GRAVES

Technical as it sounds, the cybersecurity sector includes a wide range of talent. There are those whose strength in is engineering, of course. But there are also those whose strength is in economics or business or marketing.

And the sector is looking for more employees.

The cybersecurity workforce and talent pipeline were the twin topics of the second panel discussion in the Cyber Trends 2022 series, a joint project of San Diego's **Cyber Center of Excellence** (CCOE) and the **San Diego Business Journal**. CCOE is a San Diego-based nonprofit that mobilizes businesses, academia and government to grow the regional cyber economy and create a more secure digital community for all.

The discussion brought together four panelists with hands-on experience and insight into the cybersecurity landscape. It featured **Eric Basu**, CEO of **Haiku**; **Rich Portelance**, vice president of marketing for **Journeys Map**; **Miguel Sampo**, senior director for **RiskRecon**, a **Mastercard** company; and **David Vande Pol**, senior vice president, academic partnerships for **SkillStorm**.

Lisa Easterly, the CEO of CCOE, moderated the panel.

A video of the panel discussion is available on the **San Diego Business Journal** website at www.sdbj.com. It is also posted on YouTube at https://youtu.be/pPEr-gzkKBA

The recent panel discussion is part of a larger, four-part series of discussions and articles which will culminate with a cybersecurity stewardship awards program in the fall.

MODERATOR

LISA EASTERLY
CCOE

Lisa Easterly became President and CEO of the Cyber Center of Excellence in 2021 after serving as chief operating officer and strategic adviser since 2014. CCOE is a San Diego-based nonprofit that mobilizes businesses, academia, and government to grow the regional cyber economy and create a more secure digital community for all. Previously Easterly was vice president of marketing and senior adviser with the San Diego Regional Economic Development Corp. and a founding member of Cleantech San Diego. Prior to that, she held business development jobs with San Diego area law firms. Easterly received her MBA from the University of Florida.

'Everyone's Business'

Easterly opened the program by observing that cybersecurity is now everyone's business.

The **FBI** reports a 300% increase in cyber crimes across all industries during the pandemic with the average cost of a data breach climbing to over $4 million. More than half of these costly attacks are aimed at small businesses and medium-sized businesses, "our region's economic engine," Easterly said.

"Now pair that with the global shortage of cyber professionals to thwart these attacks to the tune of about 3.5 million globally and more than 60,000 openings here in California, and it becomes mission critical to address this workforce gap," she said.

"The good news is San Diego is leading the way with more than 870 cyber firms and the **U.S. Navy**'s **Naval Information Warfare Systems Command**. This cluster now accounts for more than 24,000 jobs and has a total economic impact of $3.5 billion annually. That's equal to hosting nine super bowls or 23 Comic-Cons. This collaborative ecosystem is developing new technology, defenses and the cyber warriors to combat this ever evolving threat landscape."

Following a round of introductions, Easterly kicked off the discussion.

Though the coronavirus pandemic is creating daily headlines of economic strife and workforce reductions, "the cybersecurity industry continues to grow by leaps and bounds to protect our data, our technology, our critical infrastructure and our national security," she said.

A Critical Shortage

She then asked **Miguel Sampo** to discuss the increasingly critical role and evolution of the cybersecurity professional across industries.

"So let's talk about the pandemic for just a minute and then we'll jump into it," Sampo said. "The days of working in the office and having to be in the office, I would say, are not gone. But I think we recognize through the pandemic that working remote is definitely just as productive. And we can do a lot of these things remote.

"And so what we find is from a remote perspective, the needs of cybersecurity and robust cyber programs are ever more present now than they've ever been before, from connecting and protecting that remote connection."

Sampo alluded to more than a dozen big ransomware attacks, "with big names that are being affected." Big as the targets are, smaller businesses should not be complacent, he said.

"These threat actors are not just targeting one particular vertical or one particular company. They're going after everybody. It doesn't matter: large, small … you're a target. And so the need to have individuals that understand the different vectors, the threat vectors is becoming increasingly [important]. What we're finding is that truly there's a shortage of cyber professionals right now in the industry."

By one estimate, the ratio of cybersecurity job openings versus the number of professionals that are available is 5 to 1.

"That's incredible," Sampo said. "I think back to when I went to school, the days of having antivirus and just the firewall, those days don't exist anymore. Those are long gone. It's more sophisticated: understanding cloud protection, SaaS protection, perimeter security, outsourcing that.

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THE PANELISTS

ERIC BASU
HAIKU

Eric Basu is is the founder and CEO of Haiku Inc., a maker of video games and gamified training simulations for those wanting to learn cybersecurity skills. Previously Basu founded, built and sold Sentek Global, which grew to be the largest small defense contractor in San Diego. Basu has an MBA from the EMBA program at UCLA, a B.S. in Molecular Biology from San Jose State University, and is a former U.S. Navy SEAL officer.

MIGUEL SAMPO
RISKRECON

Miguel Sampo is Senior Director with RiskRecon, a MasterCard Company. He has more than 20 years of professional cybersecurity experience working with Fortune 100-1000 organizations. He is a strategic thinker with strong technical skills mirrored with the capability for problem solving and building solutions. He has proven experience on every side of "the business" from sales, sales engineering, product management, to business development, which has provided him with broad business and technology industry acumen. He is a member of the Cyber Center of Excellence (CCOE) board.

RICHARD M. PORTELANCE
JOURNEYS MAP

Richard M. Portelance is the Vice President, Marketing for Journeys Map.

With a deep desire to help people succeed, Portelance has led teams and projects in digital marketing, edtech, and cybersecurity during his 29 year career spanning three continents. Having worked with many passionate professionals, he is committed to helping every learner fulfill their potential and find success.

DAVID VANDE POL
SKILLSTORM

David Vande Pol is a senior level executive change agent with experience in startups, strategic partnerships, systems thinking/integration and culture integration for both private and public sectors. He has demonstated success creating public/private educational partnerships that are technology driven and enable lifelong learners to achieve their educational and career goals. He holds a bachelor's degree in English from Central College, an M.Div. in Religious Studies from Texas Christian University, and an M.A. in Health, Exercise and Sport Science from University of the Pacific.

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"Something more near to me right now is third party risk: I do everything I can to protect my environment, but then I'm outsourcing some of these jobs or this data out to another contractor or another vendor. Are they taking the same scrutiny with my data that I would?"

A Multifaceted Role

Sampo then went into a discussion of cybersecurity jobs.

"What we're seeing is that you can diversify and specialize, whether it's crypto, whether it's a security program, whether it is incident response. But at the end of the day, you're going to touch all these realms today as a cyber professional.

"And as you look at some of these cybersecurity programs that are out there today, the cyber professional today is a lot more multifaceted than they were 10 years ago, 15 years ago, 20 years ago. Their scope of knowledge and tools and what they're doing has evolved.

"And so this has created jobs that are higher paying, more in-demand and really involved. You're not just setting up antivirus anymore. … It's a lot more robust than that.

"So then as far as the industries: A cyber professional today can lend themselves really well. There's different specialties in fintech versus pharma or healthcare, but at the end of the day, you're still protecting data. Very similarly, there may be different compliance regulations and things that you'll pick up for the most part. A professional in our industry can lend themselves really well across the full spectrum or the verticals that we see in the industry."

Finding Needs, Filling Needs

Lisa Easterly then cited data from **Cyberseek**, noting there are currently 600,000 cybersecurity job openings in the United States. She then turned to **David Vande Pol** of **SkillStorm**, a business that works with employers across this nation and multiple industries.

"We basically go and talk to corporations, organizations, government agencies," Vande Pol said, "first [to] find out what their needs are, and then we hire and train specifically to meet those needs."

What, Easterly asked, are you seeing as the most in-demand roles and skill sets?

"So I did have a conversation with our lead trainer who's on the front lines and real-time gathering this type of information. He said most in demand right now are SOC analysts and IAM specialists, blue teamers with some red team skill," Vande Pol said.

"I think speaking to what Miguel said just a minute ago, about how people need to kind of have a more well-rounded background today: they're looking for technical experience … and then we're seeing just a tremendous amount of need in cloud security. So people with skills in AWS, Azure and Oracle."

Lisa Easterly added that the CCOE staff hears employers also asking for more soft skills: the ability to problem solve and the ability to multitask. "And the ability to be on the receiving end of something new every day," she said.

Evaluating Skills

She then turned to panelist **Eric Basu**.

"Eric, as the prior CEO of a defense contractor and now **Haiku**, a cool new tech startup, you know firsthand how difficult it can be to find qualified cybersecurity workers. How can employers evolve their job reqs to cast a wider net? And what criteria should they be focused on?"

"I actually developed Haiku because of the difficulty I had hiring cybersecurity people when I ran Sentek," Basu said, referring to his former cybersecurity business.

"One lady, for example, she had a master's degree in IT and CISSP [also known as a Certified Information Systems Security Professional certification]. But we needed her to do actual hands-on skills. And when we put her in front of a computer for a practical test, she really didn't know how to do it — through no fault of her own, she was doing the things she thought she needed to do in order to get a job. But from the employer demand cycle, I just needed somebody that could do the work. A master's degree was great, but I didn't need that.

"Another thing I found out on a lot of government contracts, because the government does tend to be a little bit behind the commercial sector, they would still require a CISSP for jobs that had nothing to do with the CISSP. But this is somebody who wrote up the contract: the only degree certification they had heard about was CISSP, so they made a requirement to be a CISSP. So we ended up trying to find a lot of people with other qualifications that had nothing to do with the actual job.

"From an employer's perspective … you need to get beyond that," Basu said. "I mean, in the government, they're limited by the government: you have requirements and you have to do them. But if you're an employer or you're in a position to make hiring demands, you really need to look for people — it sounds trite and obvious — who can just do the job. Be less focused … on the actual degrees. I think degrees for some things are very important. If you're building algorithms then maybe you do need a degree in mathematics for that, although I know people who can do it without that. If you're looking for somebody for a management role, then certainly you want some of the skills that would come with a bachelor's degree and even potentially an MBA. But a lot of the cybersecurity work that we hire for … these are hands-on skills. These are apprentice, journeymen type of skills.

"We just hired a fantastic cybersecurity guy — didn't have a degree. I specifically did not look for a degree because I wanted to filter for the skills that I needed. So my advice to employers is certainly look for the hands-on skills, the examples of the experience of people doing those skills. The certifications are good, but they're not the end-all, be-all either. At least for me personally, degrees are secondary compared to the first things that I mentioned."

Career Pathways

At this point, **Lisa Easterly** turned the conversation toward career pathways, and to **Rich Portelance** of **Journeys Map**.

"We've talked as a group about the rise in remote working, increased talent mobility and [how] cyber salaries can be challenging for the small to medium-size businesses that drive our regional economy. Rich, how can employers retain and upscale their current workforce into cybersecurity career pathways?"

"In order to answer that, I want to go back a little bit to something that Miguel said about professionals lending themselves to a broader array of niche jobs …," he said. "And Eric kind of touched on that as well, where cybersecurity is about learning skills and you can adapt to many different jobs.

"Imagine if you can learn about that person and where they are today and what skills they have and underlie data that will help correlate them to specific jobs. And so what we've been working on in Journeys Map is taking the skills of an individual, understanding what they are and mapping them against industry standards.

"So in this case, we have the **NIST** [U.S. National Institute of Standards and Technology] NICE framework, which is kind of our standard, what we go by and talk about. We've taken those standards and said, OK, let let's extrapolate that information. And then let's apply it to individuals so we can see if you're a 40% match for certain skills and for [a] certain job type. So if you're trying to go from a cybersecurity analyst to a cybersecurity architect position, how do you get there?

"And so what we're talking to employers about is mapping, helping to map those people, giving them the tools in order to do that themselves so that they can see where I am today. And if I want to achieve that next level, some of it is going to be through personal understanding of what that individual is capable of, per Miguel's point. But then you also want to understand if there is a clear pathway and if they can achieve that next level, like an architect position. Well, that comes with a pay raise, and maybe that's going to incentivize that worker. We want to help them get there. And so what we can do is we can also bring about local training resources or online training resources and map those into the person's journey.

"And so all of a sudden you have, here I am today, here's where I want to get to, and here's what I need to do. And then I can put that into a definable set of goals for myself. That's what we're trying to help people understand and do, because it's a minefield when you talk about cybersecurity. It's ever-changing, the threats are coming. And so you need to have something that has some sure footing and give those people some goals so that they will remain with you and not get recruited away. So I think we have a lot of different challenges, but that's one way you can help to retain those employees."

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CCOE, Cities Aid North County Businesses

■ By BRAD GRAVES

The cities of Carlsbad and Vista invite small businesses in North County to participate in the North County Cybersecurity Awareness Program.

The cities are partnering with San Diego's **Cyber Center of Excellence** (CCOE) to help small businesses increase their cybersecurity awareness and preparedness to bolster the region's economic resiliency.

The program is free to participating small North County businesses, made possible by grants from the cities of Carlsbad and Vista.

To be eligible, companies must have fewer than 100 employees and be located in the state Route 78 corridor, or be a supplier to North County businesses.

Cybersecurity Awareness Program Offerings include:

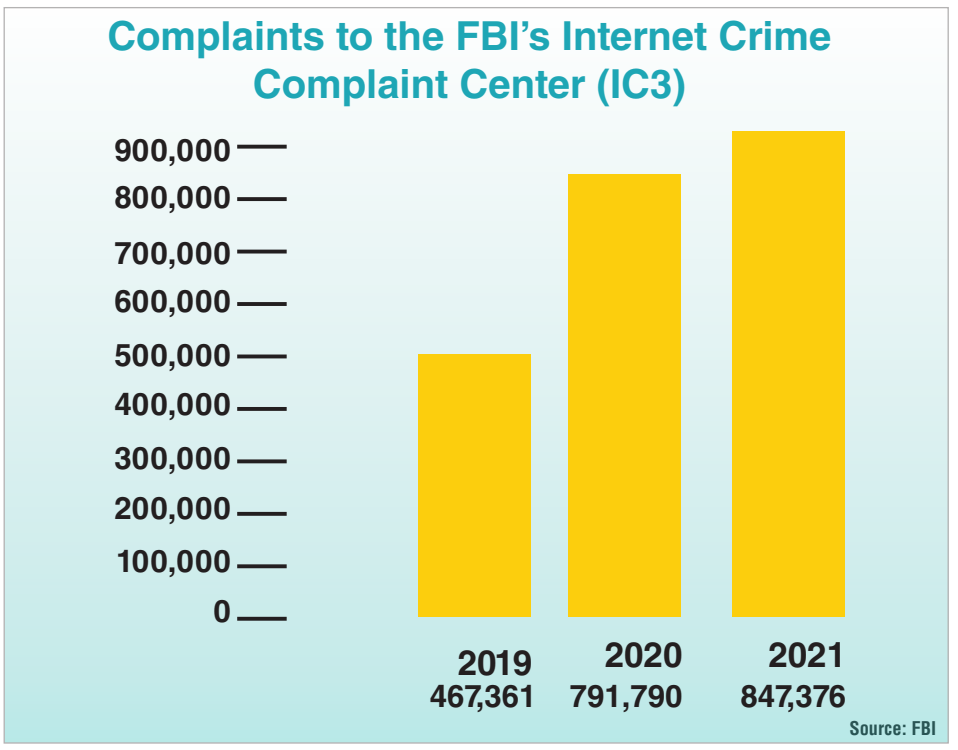
- Detailed cybersecurity risk assessment from **MasterCard**'s **RiskRecon**.
- Cybersecurity awareness training for up to 100 employees from **ESET**.
- Tools to develop and exercise a company's cyber incident response plan with **CyberCatch**'s simulator.
- A threat landscape briefing from the **FBI**.
- Connectivity to the region's cybersecurity industry including additional customizable resources.

With these resources, businesses will have tools to take positive action to protect their data, employees, vendors and customers.

A virtual information session and FBI briefing is set for June 7, 2022 from 9 a.m. to 10:30 a.m. Participants will learn more about the program and current threat landscape as well as how to register their company for the complimentary cybersecurity offerings.

Register at https://tinyurl.com/ye2u5nyu

Registration is also available at https://www.eventbrite.com/e/cybersecurity-awareness-program-tickets-294167030507



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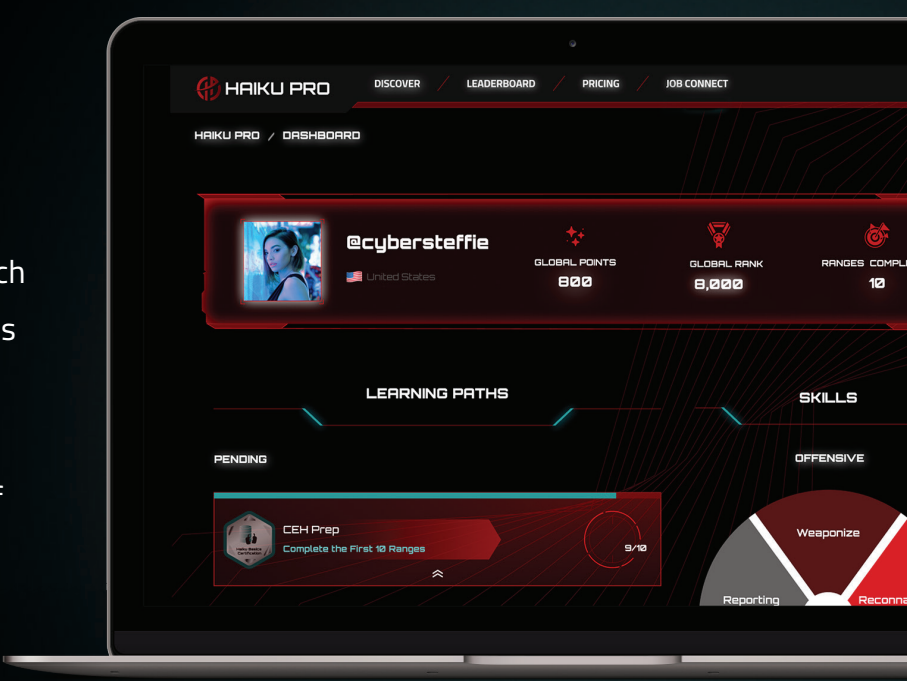
Announcing The Haiku Skillz Resume™

For the first time ever, the Haiku Skillz Resume™ empowers businesses with the knowledge of a job candidate's cybersecurity skill level.

The Haiku Training Suite contains the Haiku Skillz Resume which awards skillz badges to trainees based upon industry standards including the Certified Ethical Hacker (CEH) certification. In addition to evaluating job candidates, employers can manage their internal training programs with real-time assessments of their cybersecurity employees' skill levels.



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Lisa Easterly added, "And we hear very regularly at this point, someone with nine months' experience is being recruited to the level that someone with five to six years was previously. And so, investing in employees and having them really become part of the corporate culture and knowing that they have the ability to then upskill into these roles that are quite lucrative while also opening up some of these more entry level roles for those that are in the pipeline that we're seeing start to really become a bit more robust, is something that we're looking at from a regional perspective."

Meeting People Where They Are

She then turned her focus to **David Vande Pol**. "We've been talking a lot about how cybersecurity is now everyone's business," she said. "How can companies without internal cybersecurity professionals go about building their teams or outsourcing their needs?"

"There are an awful lot of learning opportunities out there," Vande Pol said. "Everything from absolutely free training that's totally asynchronous, to synchronous training or hybrid training.

"What we're trying to accomplish at **SkillStorm** is meeting the learner where they are. And I think that's really important. So we've developed kind of a three-tier approach. We recognize that there are folks in each organization who probably might have 20 years of experience, but things are accelerating so fast that everybody needs to upskill. So we have one branch of our business that's all about upskilling and trying to meet the demands of those experienced folks who just need to get up to speed with a certain part of their business.

"Then there's always the mid-tier folks who might have a bachelor's degree in an area of tech, CIS. Eric eloquently stated what we're hearing as well. Folks with degrees, we do assessments for both soft skills as well as technical skills upon hiring folks. Oftentimes the bachelor's degree does enhance the soft skills certainly, and the overall ability for someone to step in and perform. But it's not necessary in every case, either.

"We do have a division called NextGen where we only hire college graduates for that division. And we basically do an assessment of where they are. We don't want them to come in and fail. And then we hire them, we pay them while we're training them, and then deploy. So it's really the hire-train-deploy model. A lot of corporations and government agencies are looking to us for that type of employee. So obviously we're an outsource for agencies and corporations. So there's kind of that mid-tier.

"And then there's the folks who want to dip their toe in the pool and say, you know, is tech something that I could do? Could I be good at it? And they come in basically with no background. And so one of the things we've done is we have partnered with universities and we offer a dozen what we call pathway courses that are absolutely free. And Intro to Coding is, as you can imagine, the most popular one. But it gives people a chance to [explore the field] without any financial and/or time commitment, or not much. These are two week long courses, roughly five hours a week online. They can see if it's for them, and if it is, then there are certification courses. And, and we're proud to say that that just a couple weeks ago, **Salesforce** recognized us as, as an authorized training partner, as well as **Pega** and **AWS**.

"So we do have that as well for folks who really want to specialize in those areas.

By The Numbers

Cybersecurity Job Openings in San Diego-Carlsbad

7,500

Total Employed in Cybersecurity Workforce in San Diego-Carlsbad

12,890

Cybersecurity Job Openings Nationwide

597,767

Total Employed in Cybersecurity Workforce Nationwide

1,053,468

Source: Cyberseek

"But getting back to your overall question, Lisa. If corporations and agencies can upskill themselves, great. Not many have the ability to pencil it out and go, this makes sense for us. So there's an awful lot of outsourcing that is going on. And companies like **SkillStorm** are trying to meet that need as best we can by trying to figure out how we can meet people where they are, and help advance them with these types of skills to have more economic mobility."

Outsource or Direct Hire … or Both?

Miguel Sampo then had a point to make.

"I certainly on a daily basis see organizations outsourcing and retaining or hiring other firms for their security needs, but I have yet to come across an organization — unless they're a very small organization, 10 employees or less — that doesn't have someone that's dedicated to their security program or their security team. And so some of the best programs I've seen are a combination of both. They'll have an in-house person, and they'll bring in a couple different skill sets at different levels. Some more senior than others, do a lot of cross-training internally and do a lot of that cross-pollination and then outsource some of the other more sophisticated systems like a SOC. Maybe not every organization can build their own SOC. So it makes sense to hire somebody with a security operations center that can monitor that SOC 24 by seven, for them and look at events.

"So I think the best programs to look at are some that have a combination of both. And for new cybersecurity professionals getting into the industry, that's something they may want to think about. As I'm looking at an organization, do I want to work for an outsourcer? Or do I want to work for the individual organization and see what kind of training and cross-pollination I'm going to get within the organization?

"So a couple different routes to market there, but at the end of the day, we always go back to a couple things: Without a security program, what's the cost, the potential cost? From a risk mitigation [standpoint], you mentioned earlier in the conversation, the average cost of a breach right now is $4 million. We have got to do some math and see at what point, what makes sense. Sometimes cutting a corner here will bite you over here. We see it all the time.

"Some of the best programs that we're seeing are a combination of both an outsourcing and somebody wanted to build something internally as well."

Value in Diversity

"Homogeneity is the bad actor's best friend also," **Lisa Easterly** said, "and only about a quarter of the current cybersecurity workforce includes women, minorities and neurodiversity. So kind of building on that thought, how can diversifying the cyber workforce help employers bridge that talent gap and also help against the fight against bad actors?"

"Absolutely," Sampo said. "Women in technology. There's several groups around that today.

Women own security firms, IT firms. So we're seeing more and more of that. But I'll take that diversity topic one step further. So when I think of diversity, it's not just gender based. It's about vertical based. It's about geo-based. And what I mean by that is I'm seeing organizations that will cross-pollinate just like I mentioned earlier. They may be a pharmaceutical company, but they'll hire somebody out of fintech to bring fintech ideas into this pharma world. And they don't have to be based in San Diego because with the remote workforce. You can have somebody that's seeing different types of cyber threats in Europe, Eastern Europe, in London. I see a lot of organizations hiring out of London today as well.

"And so when I think of diversity, I don't just think about it from a gender perspective. I think about it from a verticalization perspective. I also look at the diversity from a geographic and geo-based kind of centric kind of mindset with the advent of being able to work remote and doing a lot of what we do from a remote perspective, unless you're actually in the physical data center and have to be there. This gives us a lot of flexibility.

"Diversity is one of the things we absolutely look at. We absolutely think about it and not just from a gender perspective, but across the board: culture, everything. Bringing a mix of different talents together, that's the way that we get best of breed across the board. And that's going to bring us different skill sets, different geography skill sets and experience in what they're seeing.

"From a gender perspective, this has been traditionally a male-dominated industry, and it's changing, it's evolving and that's a great thing. It's not the world of men in IT anymore. It's people and, and women as well, women in technology. So I'm always excited. I see more and more programs and organizations. You see a lot of the upper academia that have women in technology programs. We have clubs around that. There's a lot of different types of grants and money that's offered for women in technology. I've got an 18 year old that's going to ASU in the fall. And he was looking at some of the IT programs. And there was a box in there of free money if you're a female and want to go into this cybersecurity information technology field. Just for being female. And so there's a lot of programs out there and I think a lot of it's just building awareness and letting people do that. I know that the **CCOE** does a great job of doing a lot of talent fairs and career fairs and talking about the monies that are out there and, and how to take advantage of those.

From Role Player to Career

"It's interesting," **Eric Basu** said at that point. "We actually built the **World of Haiku** portion of our product. It's actually a downloadable role playing game. One of the reasons we went with the role playing game is not only the way in which it teaches you, but 60% of role players are women. It sounds kind of funny, but if you have wives and daughters that like to play these role playing games on their iPad or their phone or whatever, women really enjoy that. So we wanted to get a medium that was applicable to women to get them comfortable with the idea of working at a Linux command prompt, and looking at these other things. So once they're kind of in there, they're like, oh, this isn't so bad. This isn't so intimidating. Maybe I'll go look at getting some of this money for this ASU degree and maybe I'll look at going into cybersecurity."

"I think we've busted some of these myths that cybersecurity is just for techies," Easterly said, "because it's really about problem solving and thinking about things from a different perspective. And then we also talked about [the fact] that you don't need an advanced degree and 10 years-plus experience to work in this field. So Eric, what advice do you have for these non-cybersecurity workers that want to transition into a cybersecurity position?"

"What's really interesting is we just hired a cybersecurity position and 95% of the people that applied on LinkedIn were transitioning from another job," Basu said. "And you could look at that in a number

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Top Cybersecurity Job Titles in San Diego-Carlsbad

- Systems Engineer
- Cybersecurity Analyst
- Software Developer
- Cybersecurity Manager
- Network Engineer
- Cybersecurity Consultant
- Systems Administrator
- Senior Software Developer
- Penetration & Vulnerability Tester

Source: Cyberseek

CAUGHT IN THE CYBERSECURITY TALENT SHORTFALL?

There are over 600,000 open cyber jobs, and the FBI reported a 300% increase in cyber-crimes during the pandemic. Is your business keeping up?

San Diego businesses and non-profits are turning to **Journeys Map** to create robust, automated cybersecurity talent pipelines. A bridge between learners, workers and businesses, **Journeys Map** leverages patented technology in the creation of accurate and trackable career maps that take participants from where they are today, to where they want to go.

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of ways. You could say that the cybersecurity people were already comfortable in those jobs, or however you want to look at it, but 95% is an overwhelming amount of people. There's a huge number of people who want to get in the industry for great reasons. They see job security in it, which is true. You're always going to have attacks. And it's growth field. It's probably [how] software development was back in the '80s where everybody wanted to be a coder because that was the thing to do.

"… My person I just hired is a senior engineer. It's really hard to bring somebody in. You have to bring somebody in at an entry level position. We just don't have one of those available right now. But I talked to a lot of folks that were doing that and I've given a lot of advice to people. I get it all the time on LinkedIn, through a contact where somebody says, Hey, my son wants to go into cybersecurity. How do they get into this? My daughter, in a lot of cases. And the number one thing that I tell them all the time is you have to be able to demonstrate in the interviews to the employer that you have hands-on experience.

"So I go back to the lady that I interviewed and it was probably 10 years ago. She wasn't able to demonstrate in the interview that she had the hands-on experience that I needed. And it depends on the job. If you're hiring a penetration tester, you better be ready for the employee to stick you in front of a Kali Linux box, attached to a range on the back end, and be able to actually demonstrate all the tools. If you're going to go in for a DITSCAP position in DOD [Department of Defense] compliance, you better actually know what the standards are, be able to read them and be able to recite them and be able to talk about them — and talk about how you would apply this in the real world.

Insights for Employers

Employers, Basu went on to say, want a new hire to add value from day one. So being able to do hands-on training and certification is important.

"That was exactly why I built Haiku," he said. "It is because people can play a videogame and at the end of it, they're going to know how to navigate around a Linux box. So hopefully they go to an employer, and if an employer puts them in front of a Kali Linux box, they're going to go, oh, I've done this before. I played this game for hours and I really enjoy it. So I know how to do this.

"And then the other thing that it's really hard for people to do right now is how do you demonstrate to an employer if you don't have a practical, hands-on exam, which most employers don't do: it's expensive and hard, and it takes a lot of time. And a lot of the time your HR department doesn't have the skills to be able to administer those. …

"And so that's another thing that we found as a demand signal is we offer the players in the game, in our products, the ability to demonstrate a skills resume that they can actually hand to an employer. The badges are great, the certifications are great. But it will tell you how many hours did this person spend on Metasploit? How many hours did this person spend on Nmap? And more importantly, here's an independent assessment. Are they an apprentice, a journeyman? Are they a master, or are they a ninja at this particular skill?

"And I did that from the employer's perspective.

"And man, that would have made my hiring so much easier if I could have done that!

"That's my advice to candidates. It is find a way to be able to demonstrate that hands-on experience and even practice with your friends and mentors and coworkers. Say, hey, can you give me a tough technical challenge that I would do, because I want to be able to do this in a job interview. And if you do that, then as a candidate, you're going to be 10 legs up on your competition."

Charting a Course

Lisa Easterly turned the conversation in a slightly different direction. "For our audience that is ready to join this fight," she said, "from transitioning service members to students to seasoned professionals with sights on the next level, how would they go about getting started?"

"One great way to get started is right on the CCOE website, utilizing the career map assessment program, that's located at sdccoe.org/careermap," said **Rich Portelance**. "There a user can complete the interest survey, skill assessment and begin a career exploration.

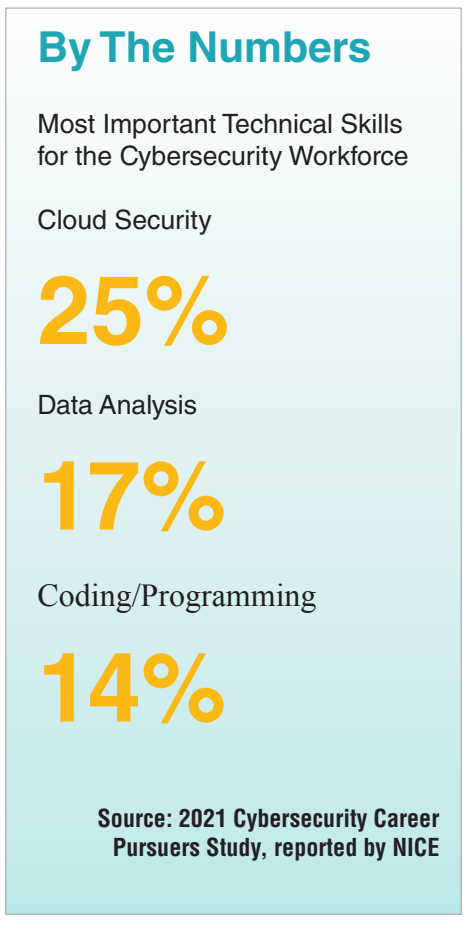
"I do want to go back, David, you mentioned in your intro about public-private partnerships, and I want to echo that sentiment and provide an example of how that can work, because I think it's super important, for not only young students but also dislocated workers or those looking for jobs.

"For **Journeys Map**, partnering with companies like **SkillStorm** in our public-private partnerships is really critical to building an architecture for a robust career pathway. And what we did in Connecticut — and that happens to be where I'm from; I'm not a West Coast guy — we created a program called Cyberpath and that is working with the local workforce board, local high schools, regional community colleges and the local employers. And what we're trying to do is bring all those parties together so that we have a program that articulates what needs to get done from a student or dislocated worker perspective from the point they are today to where they want to go in the future. And that could take a year or two or could take three years. And keeping track of those goals during that time is very, very difficult. And so what we want to do is provide the steps, the underlying architecture. So, if we have the employers and they're articulating what the skills are. …

"If the student knows what skills they have and then which ones they're missing, they can start to build towards those goals over time. And those public-private partnerships are so critical. So **CCOE** here is putting this together on the West Coast. And I know you have partnerships, Lisa, and you're bringing different parties together in order to foster those relationships. And I am going to just express how critical that is for these students and these dislocated workers. You've got a huge cyber community in San Diego. It's an amazing industry and letting the students know what opportunities are there and then giving them those pathways is I think going to be the key to the future.

And so we want to help to foster that, bring all those parties together and make those pathways happen because we want to signpost those skills and traits, make sure that they know what's available and how they can get there."

"Here in San Diego, we have a program called Cyberhire," said **Lisa Easterly**. "That's in partnership with the **San Diego Workforce Partnership**, **San Diego Regional EDC** and **CCOE** that does exactly that: brings those dislocated, underrepresented workers into the field with resources, with funding that also helps the employers offset some of the internship costs and allows students to be able to work as Eric says and go to school at the same time so that they're integrated into the corporate culture while they're going through their career pathways."



Final Thoughts

At this point, Easterly asked the panelists for final thoughts about what San Diego businesses and workers need to know about the cybersecurity workforce and talent pipeline.

"There's plenty of opportunity in cyber," said **Rich Portelance**. "It's not a career that's going to go away anytime soon. It's like [software] development was 20 years ago. We have over a half million jobs in the U.S. and 3 million internationally. It's a wonderful career opportunity. There's lots of expansion out there that you can utilize a broad array of skills. And there's no stopping career promotion for those who are incentivized and energized by opportunity. This is a great field. So I would highly encourage anybody out there who's looking for a career change or to get into a career, to look at cyber."

"If I could just jump in and add to that, back with the DEI question," said **David Vande Pol**. "Over half of the people we employ actually are from underrepresented populations. Really the biggest reason is because we hire an awful lot of military. And so if you're looking to fulfill some of those mandates or goals, please, please look to your veterans."

Miguel Sampo noted there are 600,000 jobs in the U.S. right now in the cyber field. He also encouraged job seekers to be vigorous in their search.

"One thing that I tell young people is if you don't look, you're not going to get it," Sampo said. "You've got to put some work into it. And if you put the work into it, it will be rewarding. But I think one of the challenges we have, and I'm going to say something about our young generation, is that [some have] a little bit of a sense of entitlement. They want to give it to them and it's not that easy. You've got to go out and look for it. You've got to go out and want it. You've got to want to get it. It's not just going to come tap you on the shoulder [and say] here, here you go.

"The whole cyber landscape, it's not getting safer. It's getting bad. And so we're in a good spot. We're only at 50% saturation in cybersecurity around the cyber market. So there's a lot of growth opportunities still that are coming."

A cybersecurity job, **Eric Basu** said, does not have to be a technical job.

"If you want to go into cybersecurity sales, the skill set there is completely different. You need to know a little bit of cybersecurity. You need to know what you're selling. You need to understand what your company does, but for people that say I'd love to get into cybersecurity, but I'm not very good with technology. You don't have to be. There's a lot of other things. It could be a product manager. It can be a project manager. It could be a salesperson, a dozen other jobs in cybersecurity that just require you to understand what your company does. You don't have to be the engineer."

"I tell everyone I am a cybersecurity professional, I am not a cybersecurity technician," said **Lisa Easterly**. "My background is actually finance, economics and marketing. And so there is a tremendous opportunity for anyone out there that is interested in a field that is on the absolute cutting edge, that is high energy, that is with intelligent and fun people. You have growth potential.

"Many thanks to Eric, Rich, Miguel and David for this insightful discussion today," Easterly said.

She went on to invite employers and job seekers to visit the **CCOE** website at sdccoe.org for more free resources, including a lot of those mentioned in the panel discussion.

More Cyber Trends panel discussions are scheduled for later in the year.■

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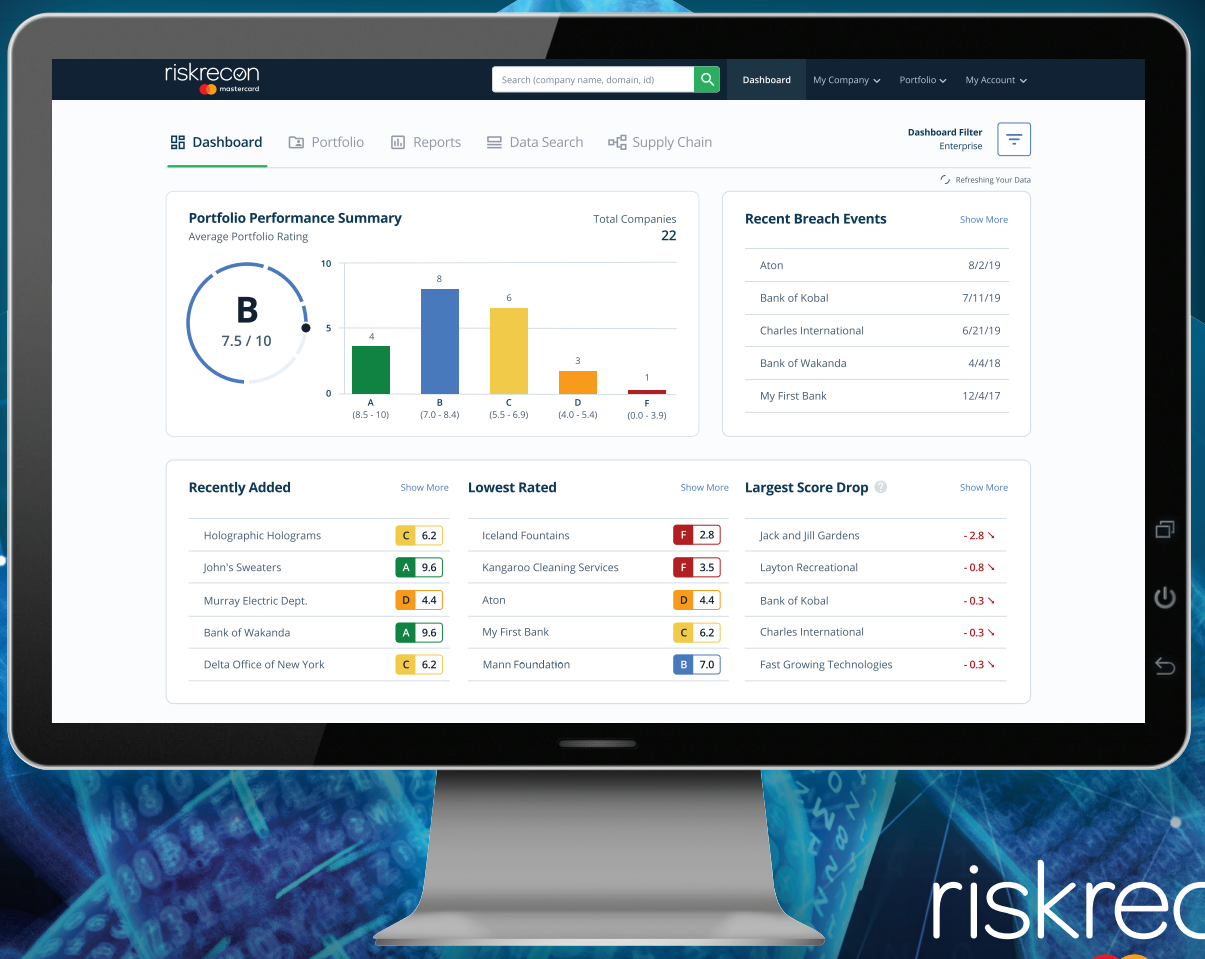

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