

PORTLAND BUSINESS JOURNAL

Overcoming the blues

Portland's beloved summer festival comes back from the brink **STRATEGIES, 39**



COVER STORY

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HOW CATALYTE IS USING ARTIFICIAL INTELLIGENCE TO

FIND SKILLED WORKERS IN UNEXPECTED PLACES ► PAGES 18-22



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Portland's largest employers **PAGE 32-36**

OPINION

DISPLACED FOOD CARTS COULD BE A BAD OMEN 50



HEALTH CARE



Setting a solid foundation

Laurie Kelley's well-honed philanthropy chops will guide Providence St. Joseph Health's sweeping fundraising work. **ELIZABETH HAYES, 10**

TECHNOLOGY



Good karma means good growth

ProKarma's recent acquisitions have helped the company maintain its decidedly upward momentum. **MALIA SPENCER, 4**



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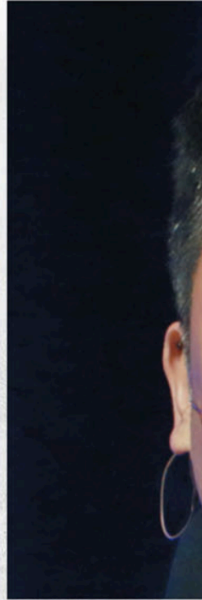
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BY MALIA SPENCER
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COVER STORY

Catalyte CEO
Jacob Hsu
believes that
extraordinary
talent is hidden
in plain sight.

UNLOCKING TALENT

HOW CATALYTE USES ARTIFICIAL INTELLIGENCE
AND DATA SCIENCE TO IDENTIFY
WORLD-CLASS TALENT IN UNEXPECTED PLACES



CATHY CHENEY

Jacob Hsu talks about his company Catalyte with an air of religious fervor. It's particularly acute when he brings up how his company changes the lives of its employees. He says many of his workers had been underestimated by the tech economy before being identified by Catalyte as having the chops to become great software developers. ¶ "The view that everybody seems to have is the talent we need for the future is scarce, and it's hard to find software developers," said Hsu, who was in Portland earlier this year as a keynote speaker at the TechFestNW conference. "We disagree. We think talent is abundant, you just have to find a way to unlock that talent."

Baltimore-based Catalyte is not a traditional coding school or workforce development firm. It is a contract software development shop that solves complex technology and engineering problems for clients including Nike, Cambia Health Solutions, AT&T, Aetna and Geico.

The company employs more than 700 workers in six develop-

ment centers across the U.S. Revenue recently topped \$100 million.

To keep its pipeline full of highly skilled workers, Catalyte uses a talent acquisition model powered by artificial intelligence to identify people – from any background – who display an aptitude for software development.

People like Katlyn Beck, who

was an assistant manager at Starbucks before she took the assessment. Or Dan Reuther, who studied computer science in the 1990s but spent two decades working in his family's construction business. Or Andrew Rajigah, who spent eight years in retail before finding Catalyte. (See their stories on the following pages.)

All three work in Catalyte's growing downtown Portland development center, which employs 200.

Individuals with an aptitude for development are invited to participate in an intense training program. That can lead to an apprenticeship and the chance to join teams of

CONTINUED ON PAGE 20





EMPLOYEE STORY

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DIRECTOR OF CYCLE TRAINING
AND PROGRAMS AT CATALYTE

DAN REUTHER

It was an ad on Craigslist in 2012 that first caught Dan Reuther's wife's eye. The ad was looking for people interested in software development, no experience necessary.

She passed it along to her husband, a 20-year veteran of the construction industry who was still trying to get on his feet in the aftermath of the Great Recession.

"I knew I could do the job, but I didn't have a resume and my training was 20 years old," said Reuther, who had an unused degree in mathematics with an emphasis in computer science.

Since he had graduated from the University of Washington in 1995, Reuther had been working for his father's small roofing business, Roof Management Corp. For years it paid the bills and supported the family of four.

But, the construction career never felt right, and Reuther and his father struggled to keep the business afloat after the recession. Then Reuther's father unexpectedly died and the business was dissolved. He and his wife also lost their house to foreclosure.

"I talked to my wife, and I said, 'I need to do something different,'" he recalled. "She was all for it. She saw me struggling."

Reuther has always been interested in technology and computers. At 10, he received a Commodore 64 and taught himself how to program it using the product manual. High school came easy to the Portland-area native, and by the time he was in college he selected a major with a computer science component.

"One of my problems in college was I wasn't the most motivated student," he said. "I didn't have the best study skills."

When he joined his father's business after graduation he thought it would be a temporary gig. But life happened. He got married, had kids, and the construction job seemed OK.

Once he made the decision to make a change, he fished out that Craigslist ad his wife had sent him. He emailed the company, Catalyte, and then took the assessment in April 2013. He's been with the company ever since.

The 46-year-old has climbed through the company ranks from working on client projects to leading training cycles to his current role Director of Cycle Training and Programs.

The five-month Catalyte training cycle is taught by people who have been through the program. Employees can bounce between client work and training. Within the cycle, associates, as students are called, are encouraged to work together.

"The interesting thing about the training cycle is this unique bond for this intense experience for 20 weeks," he said. "You get a bond where everyone is close and pulls for each other."

He oversees three trainers and three teaching assistants. Those numbers are expected to grow as the company expands to seven training cycles in the next several months.

Since joining Catalyte, Reuther's quality of life has vastly improved, he said.

"My wife was able to quit the job she was doing and dedicate more time to the kids," he said. "And we were able to take a vacation."



CATHY CHENEY

CONTINUED FROM PAGE 18

more experienced developers working on projects for Catalyte clients.

"This isn't desktop support or quality assurance. This is actual hardcore engineering," Hsu said, who became CEO in 2017 after 20 years spent building off-shore engineering teams. "When we go to our clients we go to the heart of the most difficult engagements. We have teams standing up custom tech stacks that are going to be running for decades or longer in an organization."

The company's workforce development model is working, Hsu said, attracting more clients to Catalyte while also providing opportunities in technology to individuals who might not have otherwise found their way into the field.

Last year, Catalyte landed \$27 million in venture capital led by AOL founder Steve Case's Rise of the Rest Fund, Palm Drive Capital, Cross Culture Ventures and Expon Capital.

"One of the fundamental ways our economy is going to both remain competitive on the international level and expand opportunities to more Americans is by changing the way we identify talent," said Case in a written statement. "Catalyte proved to us that not only can it bring new and underrepresented groups into the fold, it can do so while helping its own clients grow."

The company is now gearing up to raise another round, Hsu said, to fuel more growth and start development centers in more cities.

How it works

Catalyte casts a wide net to find potential employees. It starts with ads on Craigslist and job boards like Indeed that state: Become a software developer, no prior experience necessary.

When Rajigah saw a Catalyte ad he was skeptical.

"My first thought was it has to be a scam," he said. But, after some research he gave it a shot. That leap of faith has taken him out of retail and given him a career in tech. He's been with Catalyte for more than three years and now leads a software development team.

To start, Catalyte has applicants take an online assessment. It looks like an aptitude test with math, verbal and problem-solving sections. However, the company isn't interested in an applicant's answers.

Instead, Catalyte's software watches how the person takes the test. It logs keystrokes and measures how many browser tabs are open, Hsu said.

"We can assess a person's think-

ing style and thinking patterns based on how they react to the test," he said. "There are about 500 different models built into this algorithm, but, the secret is we are watching how you solve problems."

That, Hsu says, is what makes a good software developer. Not where she went to school.

Those who do well on the assessment are onboarded in an unpaid five-month training program. Students are trained in full-stack enterprise software development and the agile software development methodology. Though they learn specific frameworks, the cycle also teaches how to learn.

For example, Beck isn't currently using the java script framework she learned in her training cycle. But understanding how to learn a language allowed her to quickly learn Pearl, the language that is used by her client, the King County Library System.

"You find out what works to retain information," Beck said about the training.

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Graduates of the training then move into two-year apprenticeships. As apprentices, they are paid less than market rate while they continue to learn. In Portland that is \$36,000 in the first year and \$39,000 in the second. In year three, they are bumped up to market rate.

Apprentice alumni make on average \$91,000. That's true for those who stay on with Catalyte and those who are hired elsewhere.

"At the end of two years, they convert to permanent staff engineers," Hsu said. And unlike a bootcamp or staffing agency, Catalyte isn't looking to place them in other jobs. "Our model is to keep them as much as we can."

At any time about half the company consists of experienced developers and half are apprentices. Here in Portland, about two-thirds of the office has come up through the ranks.

Engineers typically stick around for about four and a half years, Hsu said.

If someone leaves the apprenticeship early, there is a financial penalty. Based on nine cases Catalyte brought in Oregon state court, the penalty ranges from \$12,500 to \$25,000.





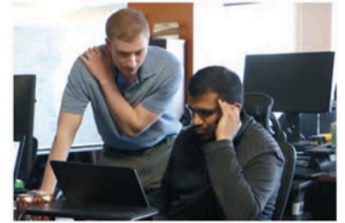
HOW OREGON WORKS: THE OREGON TALENT GAP



CATALYTE ASSOCIATES, AS THE COMPANY REFERS TO STUDENTS IN ITS TRAINING PROGRAM, ATTEND A LECTURE AT THE PORTLAND OFFICE.



CATHY CHENEY



CATALYTE HAS 200 EMPLOYEES IN PORTLAND, WITH MANY WORKING AT THE COMPANY'S DOWNTOWN OFFICE.

Untapped markets

At its heart, Catalyte is a data science company. It applies that background to addressing the skills gap that exists now and in the future. Despite demand for workers, the rising cost of education and barriers thrown up by the industry have excluded entire populations of potential employees.

"(Catalyte's model) has really fascinating implications around who should we be thinking about when we think about the future workforce," Hsu said. "We have proven that talent is evenly distributed even if opportu-

nity isn't."

The company is rooted in founder Michael Rosenbaum's time in the Clinton White House. The Harvard economics and law fellow was a presidential adviser on policies designed to encourage the private sector to invest in lower-income communities that were seeing blue-collar jobs shipped overseas. The policies focused on creating retail and distribution centers in these communities, but Rosenbaum thought there could be more.

Instead of just locations for distribution centers, he saw these commu-

nities as untapped labor markets. The question became how to identify individuals with the aptitude to go from the shrinking manufacturing sector to the growing technology sector.

He started what would be Catalyte in 2000 to work on this idea.

According to the federal Bureau of Labor, employment in software development is expected to grow 24 percent from 2016 to 2026, compared with the 7 percent growth expected for all occupations.

"The core of our business is we are building technology that lets us pin

up workforce engines everywhere we go," Hsu said.

Catalyte opened a Portland development center in 2011, brought to town by contract work with Nike. Its largest local customer is now Cambia.

Catalyte's Portland office works with clients up and down the West Coast. Catalyte teams plug into projects within client companies and in many cases outperform their in-house counterparts, Hsu said.

It's helped Catalyte fuel rapid

CONTINUED ON PAGE 22

EMPLOYEE STORY



SOFTWARE DEVELOPER AT CATALYTE

KATLYN BECK



CATHY CHENEY

Katlyn Beck had a plan for her life coming out of high school. The Newport native would get a four-year English degree. Then she would get into a master's program in library science. She would be a librarian in a university research library.

"That kind of didn't come to plan," she said, seated in a conference room named after the video game BioShock.

Instead of having a librarian title, she is Software Developer I, the entry level at software development shop Catalyte. She is one of about 200 people in the Baltimore-based company's Portland development office.

Her library dreams, though, aren't dead. She does in fact now work for a library but not in the way she thought she would. She's part of a team attached to the King County Library System in Washington maintaining the system's open-source catalogue that moves more than 21 million items among 46 libraries.

"I love it a lot," she said. "I compare it to solving puzzles on a daily basis. Nothing seems terribly frustrating or like it's not possible. It's all solvable one way or another."

Beck's alternative path to library work mirrors that of her path to software development itself. She grew up with technology in her home — her dad was a network engineer for the power utility — and an interest in computers, but, when the time came to think about college degrees she was intimidated by what she heard about computer science.

"I had always heard it was a lot of math, and math is not my strong suit," she said. "I had kind of given up on it."

The cost of a four-year college was out of reach, so she went to community college and received an associate degree with the intent of eventually transferring when she could afford it.

She got to Portland in 2015 and was working at Starbucks, eventually working up to assistant store manager. It was a fine job and she and her boyfriend lived a pretty good Portland life.

Her boyfriend, meanwhile, was working at Catalyte and saw in her an aptitude for technology. He suggested she take the Catalyte assessment test.

Her scores met the company threshold and she started the intensive training program. She quit her job at Starbucks.

Beck, 24, is still in the two-year apprenticeship so she is making less than market rate. However, her boyfriend has completed the apprenticeship and now makes market rate. With their combined income, she said they are able to live comfortably, and her new career path feels right.

"For the sake of my high school self, I don't want to rule out going back to school for a degree. But 10 years from now, I absolutely see myself in the tech industry," she said. "This is the niche where I belong."



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growth over the last two years. The company went from \$10 million in revenue two years ago to \$100 million, Hsu said. It's also seen its workforce swell to 750 across development centers in Baltimore, Portland, Chicago, Sacramento, Salt Lake City and Seattle.

It intends to add another 300 apprentices this year.

For all the growth Catalyte has seen recently, it hasn't been without challenges. Some of those are evident in posts on the job review website Glassdoor. Complaints are mostly related to low pay during the apprenticeship and past layoffs. The company acknowledges in posts on the site that it did have a phased layoff in 2016. However, it was able to hire people back and has surpassed its pre-layoff headcount.

Catalyte has also received three warning letters from state labor regulators, the most recent in 2015, related to complaints about compensation and compliance with Portland's sick leave requirement. In all three cases there were no further investigations, just the warning letters, according to a spokesman for the Bureau of Labor and Industry.

A diversity solution?

Portland's technology community has long expressed a desire to diversify the workforce, which remains overwhelmingly white, young and male.

To address this there are a number of initiatives within companies and the community. There is even a pledge signed by more than two dozen companies committing to diversity and inclusion within their operations.

However, the demographic numbers of Portland tech companies remain stubbornly the same. According to a 2018 survey of Diversity Pledge companies, the workforce is 56 percent male (70 percent in technical roles) and 81 percent white.

That is not the case at Catalyte's development center, in Portland or elsewhere. Instead, the company's blind aptitude assessment has produced workforces that reflect local communities. It's an achievement that Hsu is particularly proud of.

In Portland, Catalyte's workforce is 73 percent white, which matches Portland's census data, the company said. Drilling deeper, the company's overall workforce is 22 percent women in technical roles and 28 percent minorities.

Applying the apprenticeship model to software development brings an element to the new tech economy that feels more familiar to the old economy. And it might be gaining traction. The Kapor Center, a Bay Area nonprofit working on diversity and inclusion within technology and entrepreneurship, commissioned a yearlong study to evaluate Catalyte and three other apprenticeship programs.

"Catalyte is an interesting example. They have been able to recruit and apprentice and then employ a far greater number of women and minorities than we see overall in tech that are earning an AA or a BA," said Lois Joy, associate research director at the nonprofit Jobs for the Future, which is conducting the Kapor study.

However, Joy cautioned that in order for such programs to be truly successful there must be a commitment to diversity and inclusion within a company. She noted apprenticeships have long been the workforce development platform for the construction industry but that industry still lacks diversity.

If tech culture truly changes, then an apprenticeship model could be a pathway to diversification and a way to ensure that the future of work is open to all. Work experience is as important as training, and the first step to both is identifying the individuals with the aptitude to succeed, no matter their background.

"What we are trying to do, and this is an important point, this isn't a charity. This isn't a jobs program," Hsu said. "We are trying to find those diamonds in the rough, those needles in the haystack, those extraordinary people that frankly just didn't have the opportunity or didn't know they had this superpower inside them." ❧



"We are trying to find those extraordinary people that frankly didn't know they had this superpower inside them."

JACOB HSU,
CEO of Catalyte

EMPLOYEE STORY

Andrew Rajigah's first thought when he saw an online ad for Catalyte was that it had to be scam. No one was going to train someone in software development for free AND give them a job when they finished.

"I was convinced it wasn't real," he recalls.

But it was. And after extensive research he answered the ad.

At the time, Rajigah was eight years into working at Home Depot. It was a fine company, he says, but a career in retail wasn't the future he saw for himself.

He had landed there while working his way through college at Washington State University, first at the Pullman campus and then in Vancouver. He holds a degree in digital technology and culture, a combination of digital art and web design.

When he decided to leave retail he knew he wanted to do something in the programming world and was searching around to see how to make that happen.

His dad worked in the telecommunications industry for a long time, and growing up, technology was always in the house. As a youngster, he wasn't interested in programming but digital art was something that spoke to him.

It was the idea of training and then a guaranteed job that would offer valuable experience that edged Catalyte over the number of coding bootcamp programs in the region.

He's been at Catalyte for more than three years and is the leader of a seven person team developing an internal project for the company.

His team is a mix of new developers and more seasoned people. Since everyone has been through the same training, it offers insight into what to expect from the newest team members.

"We don't expect them to know everything but expect them to reach out for help when they need it," he said.

Like others in the company, Rajigah has bounced between teaching training cycles and client work. He is settling into his new leadership position.

Being a team leader is not something he thought he would achieve back when he started training. But it is these opportunities that have kept him at the company.

"I really like what we do here," he said. "I have seen people come in and have no programming background and succeed. I think that is awesome that we are transforming people's lives. This place has changed my life."

TEAM LEADER AT
CATALYTE



ANDREW
RAJIGAH



CATHY CHENEY

