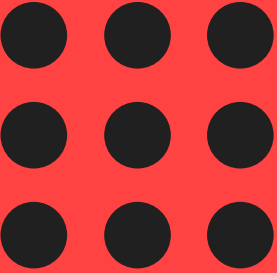


JUNE 2020



# TECH LADDERS

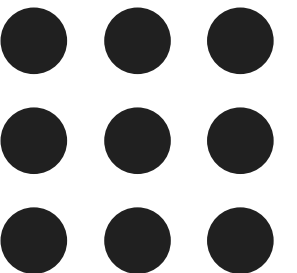
in Santa Cruz County

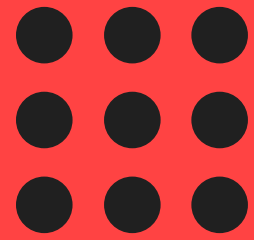
Prepared by the Council for Adult & Experiential Learning (CAEL)



# Table of Contents

- 2** Executive Summary
- 3** Occupational Overview
- 4** Big Picture Pathways
- 5** Pathways in Focus
- 8** Filling the Gaps
- 14** Training Recommendations
- 15** Skills Overview
- 17** Occupational Crosswalks
- 20** Education & Training Programs
- 21** Stakeholder Involvement





# Introduction

In the Spring of 2019, the Santa Cruz County Workforce Development Board (SCWDB) contracted with the Council for Adult and Experiential Learning (CAEL) to build career ladders within Santa Cruz County's burgeoning tech industry. The objective was to develop a system of career pathways that would allow increased access to tech careers for Santa Cruz County residents, while providing a roadmap for employers and educators to use when discussing careers in the industry with employees and students. In developing this document, CAEL utilized a layered approach to data collection, relying on both real-time and traditional labor market information to inform initial stakeholder discussions. Over the course of the project, the CAEL team facilitated three in-person meetings and four virtual meetings with a group of local stakeholders, including employers, educators, workforce professionals, and non-profit agencies. In an effort to better round out the qualitative feedback, CAEL staff also hosted a multitude of one-on-one conversations with stakeholders along the way.

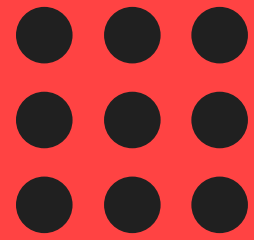
The resulting document focuses on nine occupations that were defined as "high priority" by labor market information that was then validated by on-the-ground stakeholders. Due to the evolving nature of the tech industry, we chose to place increased emphasis on specific skills throughout this document. Position and occupational titles will likely continue to change, however by gaining the skills laid out in these ladders individuals will be able to gain entry to the industry utilizing a variety of on-ramps. Throughout this document, skills have been classified as either baseline or specialized. Baseline skills, also commonly referred to as soft skills or essential skills, include things like communication, problem solving, or teamwork. Specialized skills, which tend to be more industry-specific and are also known as hard skills, include things like Java, help desk support, or Devops. Throughout the document, these skills are called out at each individual transition between careers. We highlight what skills an individual likely already has and the skills they would need to gain proficiency in before making that transition. We then identify some local training providers that can help to facilitate the transition.

Within the Tech industry, there are a multitude of routes an individual can take to progress in their career over time and gain economic mobility. The pathways laid out in this document were decided upon by the stakeholder steering committee throughout the project. This obviously isn't an exhaustive inventory of potential pathways, however it's a great starting point for individuals interested in accessing this high-growth industry. We also know that everyone's path is different and not everyone entering the Tech industry will be doing so straight out of a traditional education program. In the crosswalk section, we highlight what a transition into the tech industry may look like for someone currently working in declining or automation-subjected occupations such as cashiers or bookkeepers. We look at the skills these individuals would have likely gained from their previous position and how those skills map to entry-level occupations in the Tech industry.

In creating access to careers in the Tech industry, it would be unrealistic to assume everyone is able to or interested in obtaining a traditional college degree to do so. For this reason, we have laid out short-term, non-traditional training options for the region to consider implementing to facilitate some of these transitions along a pathway. The "Filling the Gaps" section of the report includes recommendations on training programs the region could develop to ensure greater access to the transitions within the pathways. At the end of this section, each of these training types is further defined.

Moving forward, it will be essential for the tech community to stay heavily engaged with the SCWDB's efforts in this space. Every successful workforce development program hinges on employer engagement and interaction. With continued stakeholder involvement in these projects, the SCWDB will be able to more efficiently meet employer needs and ensure the industry is being served at a high-level. With the recent economic changes due to the COVID-19 pandemic, it's more important than ever for employers to be engaged with their local workforce boards and training providers in an attempt to adapt in a rapidly shifting environment. This document will be most effective when socialized and championed by local stakeholders who recognize its' value and seek to consistently improve it. A full implementation strategy would be a logical next step to this document, to outline exactly how to keep the momentum going and begin building training programs that fit into the pathways identified here.

This version of the tech ladders has undergone four rounds of stakeholder revisions, becoming a stronger and more accurate document each time. This document, however, isn't meant to exist in a static state. Continuous revisions over time will result in long-term utility as the information in this document adapts to ever-changing labor market dynamics.



# Occupational Overview

## Support & Service

Support & Service professionals typically work directly with clients to troubleshoot issues, provide recommendations, and help them to better understand their needs. These jobs are typically a good fit for effective communicators who are able to break down complex ideas to make them easier to understand. People with a customer service background could be a natural fit in one of the positions in this job family.

### HELP DESK TECHNICIAN

Provides technical support to computer users. Handles customer inquiries and works to resolve technical issues with computer hardware, software or networks. Provides customer support by phone, email, live chat or with screen sharing. May refer customers with complex system or application problems for more advanced technical support. Tracks help requests using a ticketing system.

**SALARY RANGE**  
\$38K - \$48K

**IN-DEMAND SKILLS**  
Help Desk Support, Tech Support, Customer Service, Troubleshooting, Communication, Problem Solving

### HELP DESK MANAGER

Manages the work of technical support staff for a company or retail electronics store. Coordinates and supervises technical support operations or technical support services to customers. May train technical staff and help to resolve customer issues.

**SALARY RANGE**  
\$55K - \$96K

**IN-DEMAND SKILLS**  
Information Security, Information Systems, Customer Service, Troubleshooting, Communication, Problem Solving

## Programming & Development

Programming & Development professionals use various software languages to write the scripts that apps and websites follow to make them function as expected by the end user. Individuals in these jobs are typically creative problem-solvers who possess a deep understanding the technology and the user experience. These jobs are the tech jobs with the highest demand in Santa Cruz County and offer high earning and advancement potential.

### WEB DEVELOPER

Designs and builds websites. Works on technical as well as design aspects of sites. Works with a company or client to plan content and format for a site, creates applications, writes code, and integrates design features including graphics, sound and video. Monitors traffic at the site.

**SALARY RANGE**  
\$76K - \$104K

**IN-DEMAND SKILLS**  
JavaScript, Java, SQL, Communication, Teamwork, Problem Solving

### SOFTWARE DEVELOPER

Designs or improves computer software. Oversees the entire software development process. Analyzes customer or user needs, designs programs, writes code or instructs computer programmers, tests design, and documents programs. May assist with upgrades or maintenance. May specialize in the design of computer applications or computer systems.

**SALARY RANGE**  
\$84K - \$117K

**IN-DEMAND SKILLS**  
Java, JavaScript, SQL, Python, Communication, Problem Solving, Teamwork

## Infrastructure

Infrastructure professionals ensure that computers and systems within a network are connected and working properly, and that the information and databases housed in the network can be accessed by internal and external users. Typically, individuals in these types of jobs have great attention to detail and are good at organizing and arranging things in a way that makes sense to others.

### NETWORK ADMIN

Manages the day-to-day operations of an organization's computer networks.

**SALARY RANGE**  
\$64K - \$87K

**IN-DEMAND SKILLS**  
Cisco, Routers, WAN, Troubleshooting, Communication, Problem Solving

### JR. SYSTEM ADMIN

Manages the day-to-day operations of an organization's computer networks, including the systems that connect computers and other technology to each other and to outside networks. Installs, organizes, and supports the hardware and software of these systems.

**SALARY RANGE**  
\$67K - \$89K

**IN-DEMAND SKILLS**  
Technical Support, Linux, Microsoft Active Directory, Troubleshooting, Communication, Problem Solving

### SR. SYSTEM ADMIN

Manages the day-to-day operations of an organization's computer networks, including the systems that connect computers and other technology to each other and to outside networks. Installs, organizes, and supports the hardware and software of these systems.

**SALARY RANGE**  
\$79K - \$101K

**IN-DEMAND SKILLS**  
Linux, Vmware, Microsoft Active Directory, Windows Server, Troubleshooting, Communication, Problem Solving

## KEY

On-the-Job Training

Short-Term Training/Associate

Bachelor's

Master's



## Hybrid

Hybrid occupations don't fit squarely into any one of the job cluster and tend to span across multiple families. These positions require infrastructure, support, and programming skills and allow for individuals to work on projects that cut across traditional occupational boundaries. The skills for these positions are typically acquired through a combination of on-the-job experience and traditional higher education training.

### DEVOPS ENGINEER

Works with software engineers and system operators to develop, build and install new technology systems and manage code releases. Participates in strategic project planning; tracks changes in projects and guides project team work as new systems are deployed. Identifies and fixes problems and provides system maintenance.

**SALARY RANGE**  
\$107K - \$133K

**IN-DEMAND SKILLS**  
Devops, Python, Linux, Ansible, Troubleshooting, Communication, Problem Solving

### CLOUD COMPUTING ENGINEER

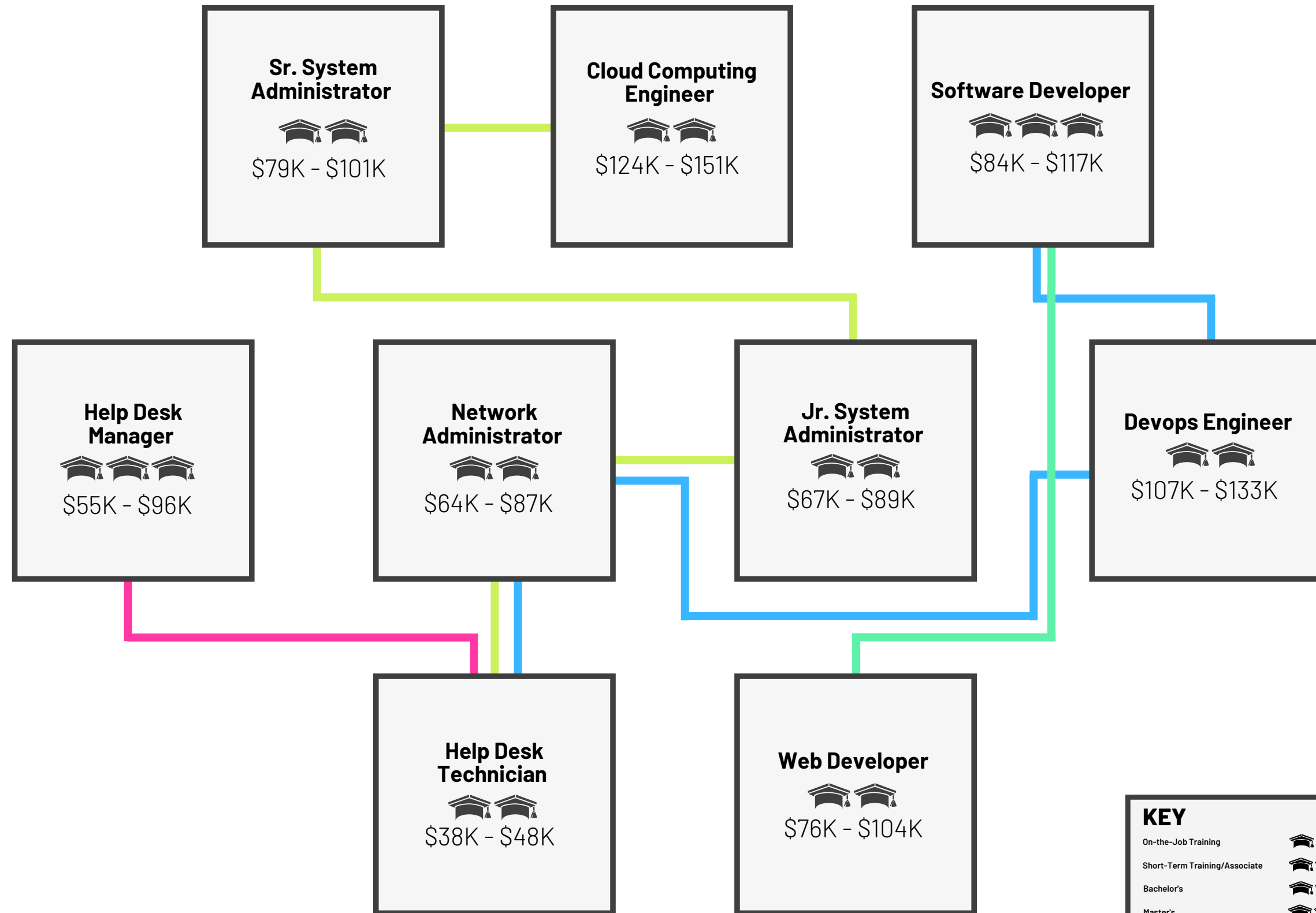
Designs a business' cloud computing strategy. Oversees application architecture and deployment in cloud environments. Integrates cloud applications with other applications. Acts as an advisor to the business on ongoing cloud management strategies.

**SALARY RANGE**  
\$124K - \$151K

**IN-DEMAND SKILLS**  
Cloud Architecture, Devops, Java, Python, Communication, Teamwork, Problem Solving

# PATHWAYS

## BIG PICTURE



**KEY**

- On-the-Job Training (1 cap icon)
- Short-Term Training/Associate (2 cap icons)
- Bachelor's (3 cap icons)
- Master's (4 cap icons)

**Pathways in Focus**

- Page 5 (Yellow line)
- Page 6 (Blue line)
- Page 7 (Green line)
- Page 8 (Pink line)

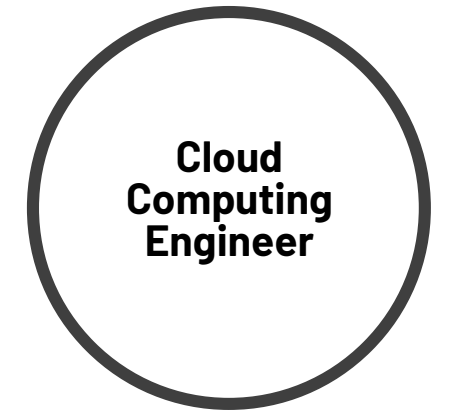
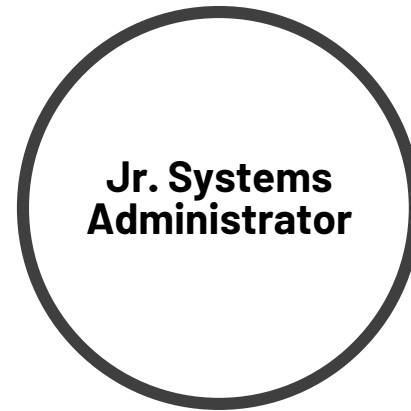
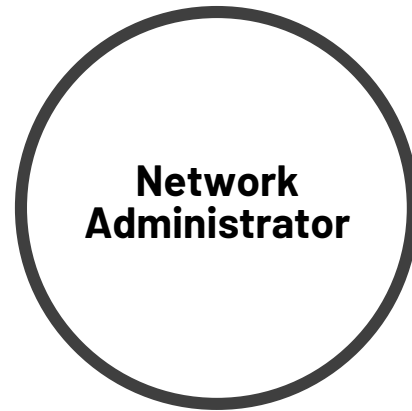
# PATHWAYS

## IN FOCUS

### SKILLS ANALYSIS KEY

MATCHING SKILL

SKILL MISMATCH



Help Desk Technician >> Network Administrator

**Salary Change**  
\$42k to \$76k = +81%

**Baseline Skills Analysis**  
Troubleshooting, Communication, Teamwork, Problem Solving, **Planning**

**Specialized Skills Analysis**  
System Administration, Cisco, Routers, WAN, Network Engineering, VPN

**Education Transition**  
Associate to Bachelor's

**Local Training Options**  
Cabrillo College  
Certificate in Computer Network System Admin

Network Administrator >> Jr. System Administrator

**Salary Change**  
\$76k to \$81k = +7%

**Baseline Skills Analysis**  
Troubleshooting, Communication, Problem Solving, Planning, Teamwork

**Specialized Skills Analysis**  
System Administration, Technical Support, Linux, Microsoft Active Directory, Windows Server

**Education Transition**  
On-the-Job Training

**Local Training Options**  
Cabrillo College  
A.S. Degree in Computer Networking & System Administration

Jr. System Administrator >> Sr. System Administrator

**Salary Change**  
\$81k to \$90k = +11%

**Baseline Skills Analysis**  
Troubleshooting, Communication, Problem Solving, Planning, Teamwork

**Specialized Skills Analysis**  
System Administration, Linux, Vmware, Microsoft Active Directory, Windows Server

**Education Transition**  
On-the-Job Training

**Local Training Options**  
Cabrillo College  
A.S. Degree in Computer Networking & System Administration

Sr. System Administrator >> Cloud Computing Engineer

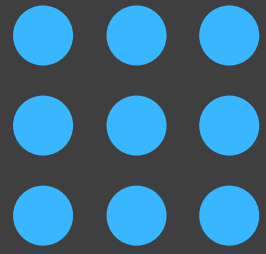
**Salary Change**  
\$90k to \$137k = +52%

**Baseline Skills Analysis**  
Communication, Teamwork, Problem Solving, **Presentation Skills**, Planning

**Specialized Skills Analysis**  
Cloud Architecture, Devops, Java, Python, PaaS

**Education Transition**  
Short-Term Training

**Local Training Options**  
N/A



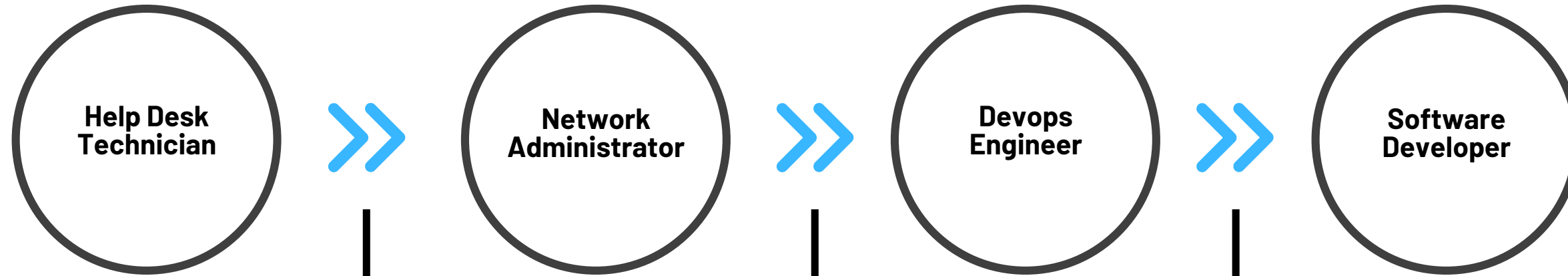
# PATHWAYS IN FOCUS



**SKILLS ANALYSIS KEY**

MATCHING SKILL

SKILL MISMATCH



**Help Desk Technician >> Network Administrator**

**Salary Change**  
\$42k to \$76k = +81%

**Baseline Skills Analysis**  
Troubleshooting, Communication, Teamwork, Problem Solving, Planning

**Specialized Skills Analysis**  
System Administration, Cisco, Routers, WAN, Network Engineering, VPN

**Education Transition**  
Associate to Bachelor's

**Local Training Options**  
Cabrillo College  
Certificate in Computer Network System Admin

**Network Administrator >> Devops Engineer**

**Salary Change**  
\$76k to \$120k = +58%

**Baseline Skills Analysis**  
Troubleshooting, Communication, Problem Solving, Writing, Planning

**Specialized Skills Analysis**  
Devops, Python, Linux, Ansible, Kubernetes

**Education Transition**  
On-the-Job Training

**Local Training Options**  
Cabrillo College  
CS & CIS Classes to address Linux, Python, and Skills

**Devops Engineer >> Software Developer**

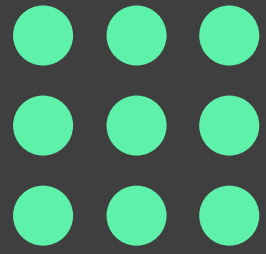
**Salary Change**  
\$120k to \$106k = -12%

**Baseline Skills Analysis**  
Communication, Problem Solving, Writing, Troubleshooting

**Specialized Skills Analysis**  
Software Engineering, Java, Software Development, JavaScript, SQL, Python

**Education Transition**  
On-the-Job Training

**Local Training Options**  
UCSC Extension  
Certification in Software Engineering



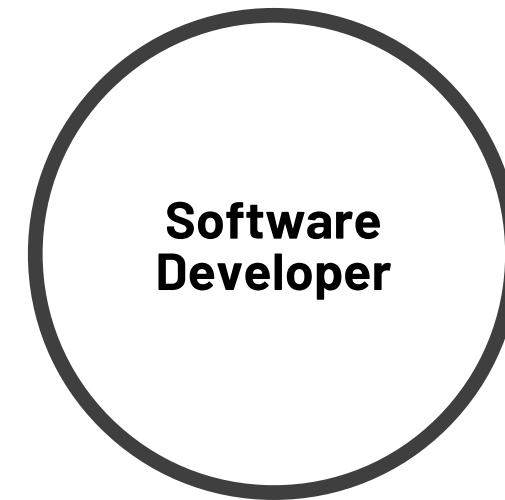
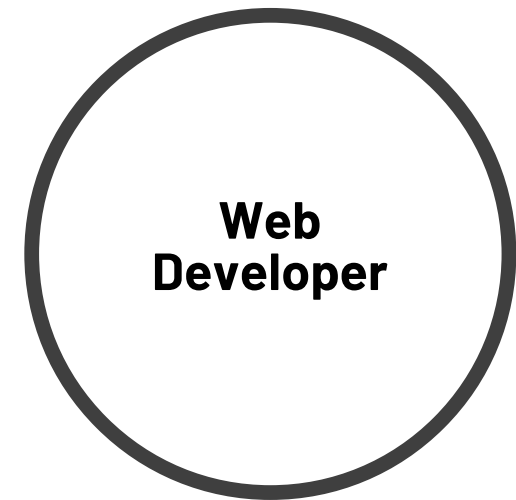
# PATHWAYS

## IN FOCUS

### SKILLS ANALYSIS KEY

MATCHING SKILL

SKILL MISMATCH



**Web Developer** >> **Software Developer**

**Salary Change**  
\$89k to \$103k = +16%

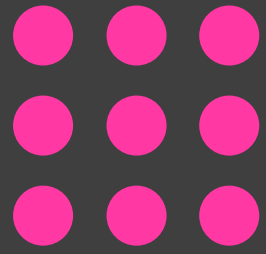
**Baseline Skills Analysis**  
Communication, Problem Solving, Teamwork, Writing, Troubleshooting

**Specialized Skills Analysis**  
Software Engineering, Java, Software Development, JavaScript, SQL, Python

**Education Transition**  
Associate to Bachelor's

**Local Training Options**  
UCSC Extension  
Certification in Software Engineering





# PATHWAYS

## IN FOCUS

### SKILLS ANALYSIS KEY

MATCHING SKILL

SKILL MISMATCH



**Help Desk Technician** >> **Help Desk Manager**

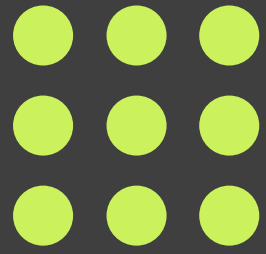
**Salary Change**  
\$42k to \$70k = +67%

**Baseline Skills Analysis**  
Troubleshooting, Communication, Problem Solving, Teamwork, Planning

**Specialized Skills Analysis**  
Technical Support, Customer Service, Project Management, Help Desk Support, Repair

**Education Transition**  
Associate to Bachelor's

**Local Training Options**  
Cabrillo College  
A.S. Degree in Computer Support



# FILLING THE GAPS

**Jr. System Administrator** >> **Sr. System Administrator**

**Baseline Skill Gap**  
Skill Match

**Specialized Skill Gap**  
Vmware

**Training Recommendations**  
Bootcamp

**Sr. System Administrator** >> **Cloud Computing Engineer**

**Baseline Skill Gap**  
Presentation Skills

**Specialized Skill Gap**  
Cloud Architecture, Devops, Java, Python, PaaS

**Training Recommendations**  
Incumbent Worker Training  
Short-Term Training  
Bootcamp

**Network Administrator** >> **Jr. System Administrator**

**Baseline Skill Gap**  
Skill Match

**Specialized Skill Gap**  
Technical Support, Linux, Microsoft Active Directory, Windows Server

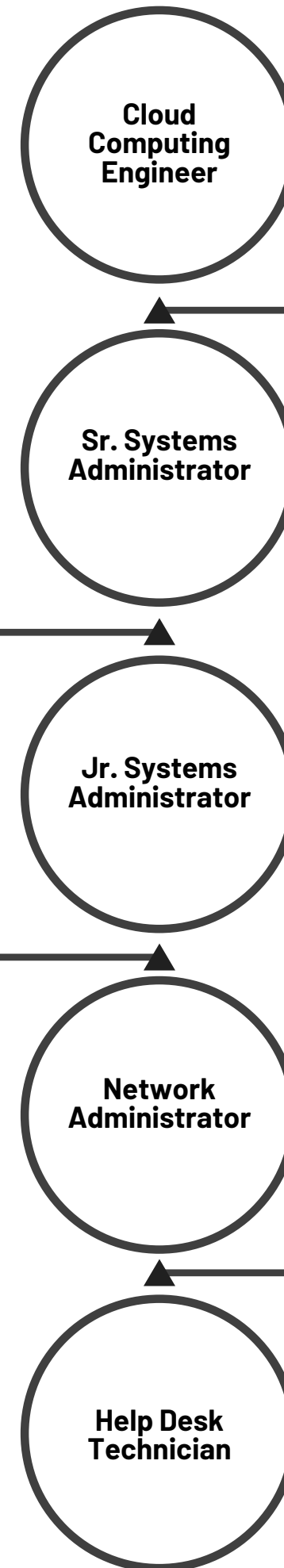
**Training Recommendations**  
Incumbent Worker Training  
Apprenticeship

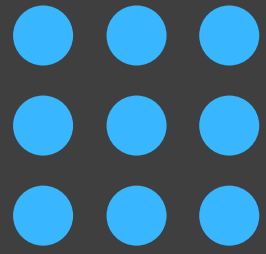
**Help Desk Technician** >> **Network Administrator**

**Baseline Skill Gap**  
Planning

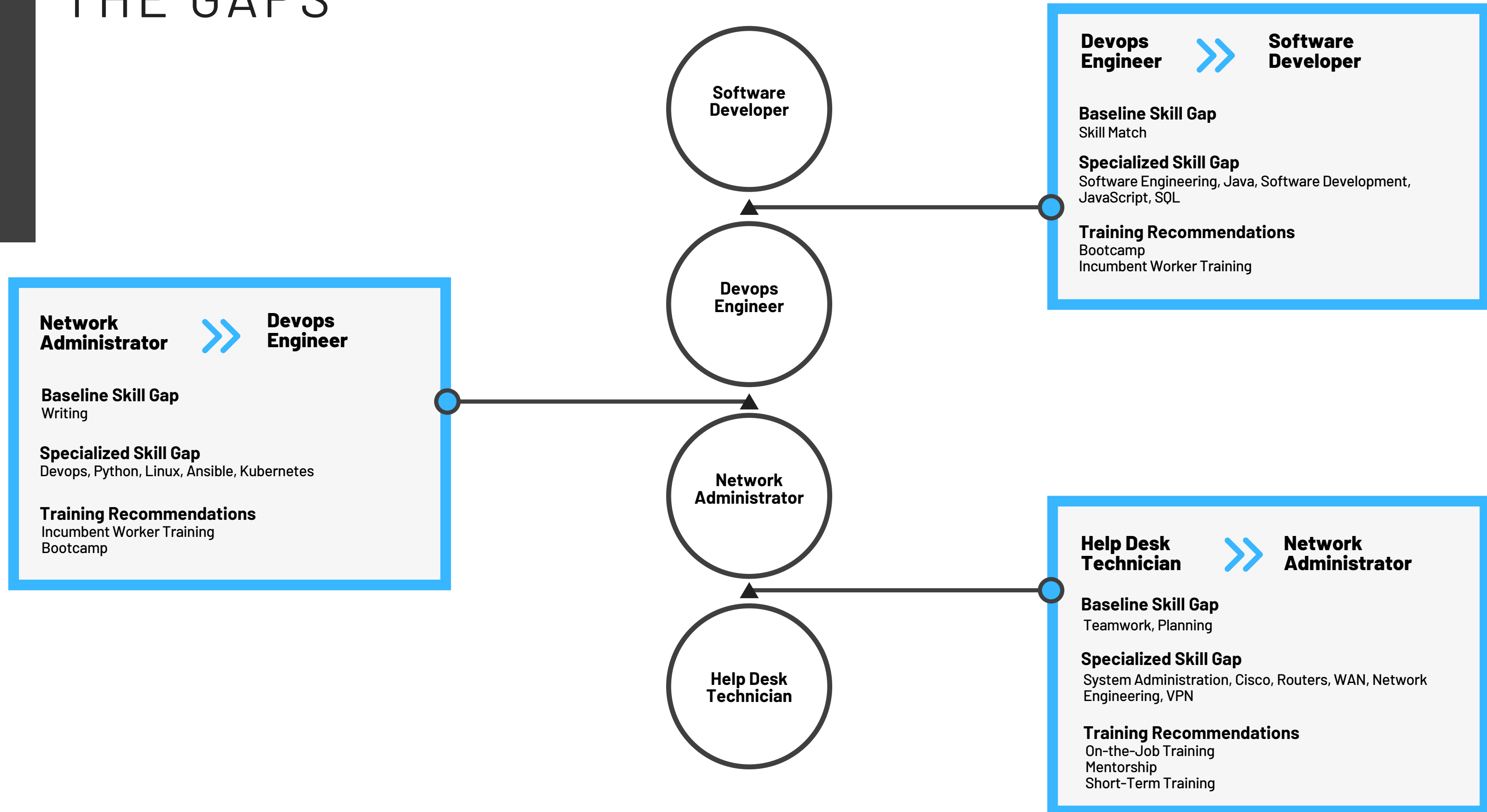
**Specialized Skill Gap**  
System Administration, Cisco, Routers, WAN, Network Engineering, VPN

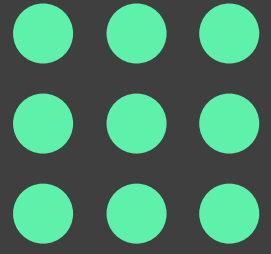
**Training Recommendations**  
On-the-Job Training  
Mentorship  
Short-Term Training



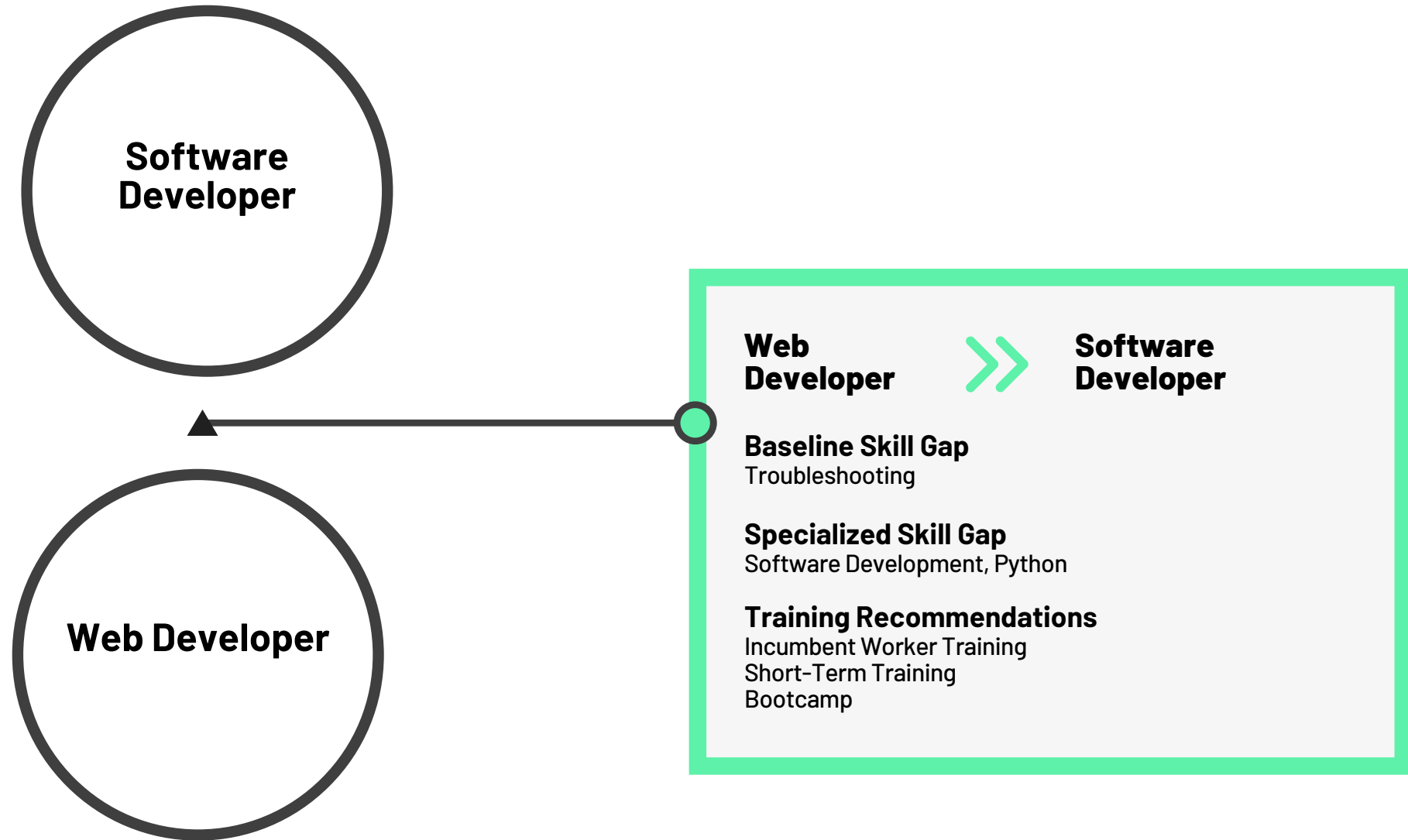


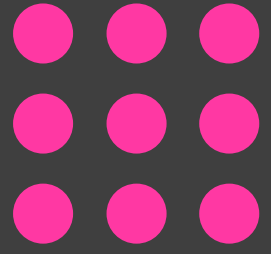
# FILLING THE GAPS



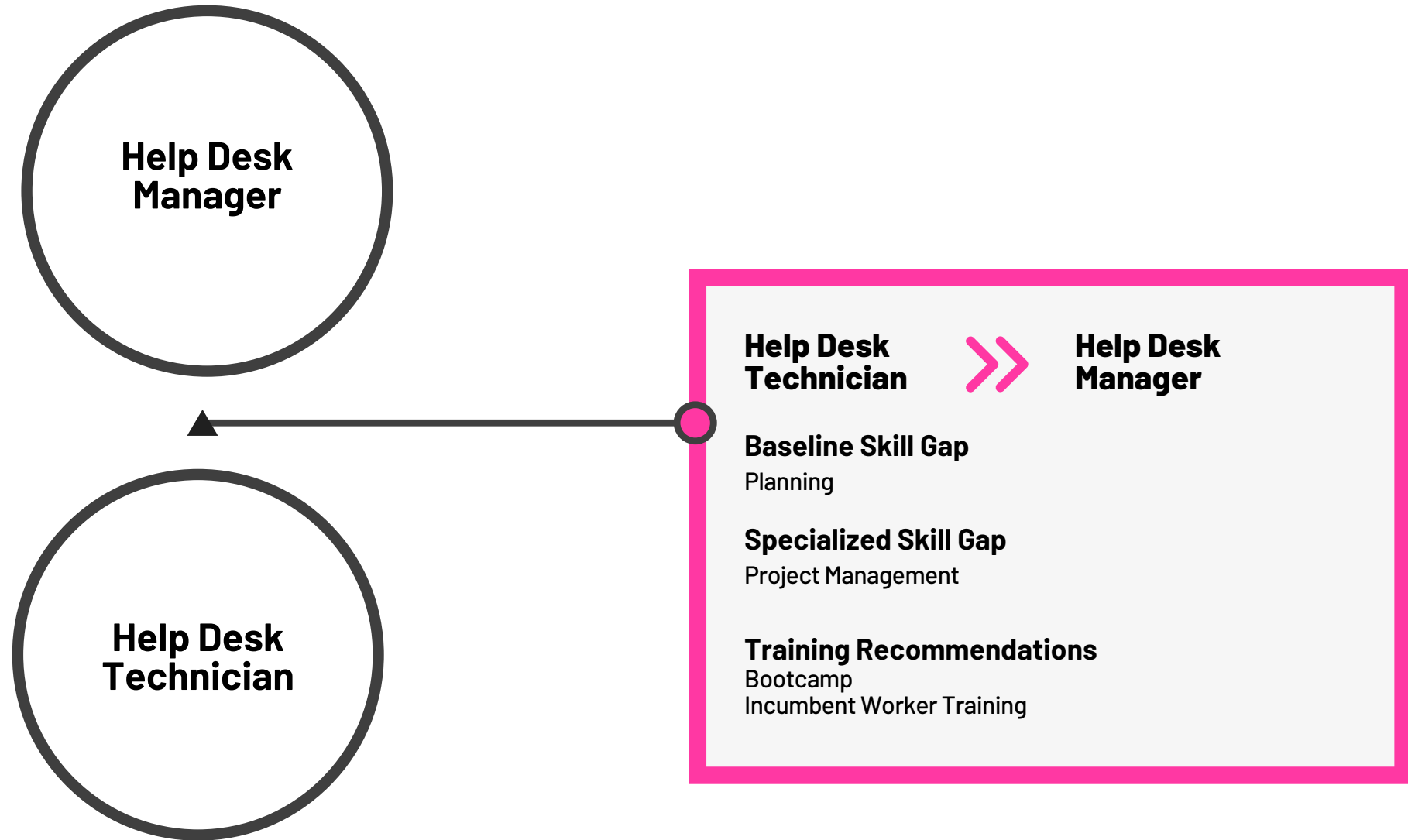


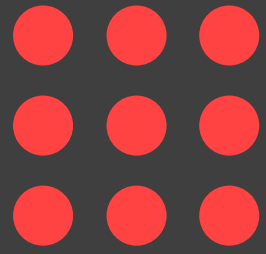
# FILLING THE GAPS





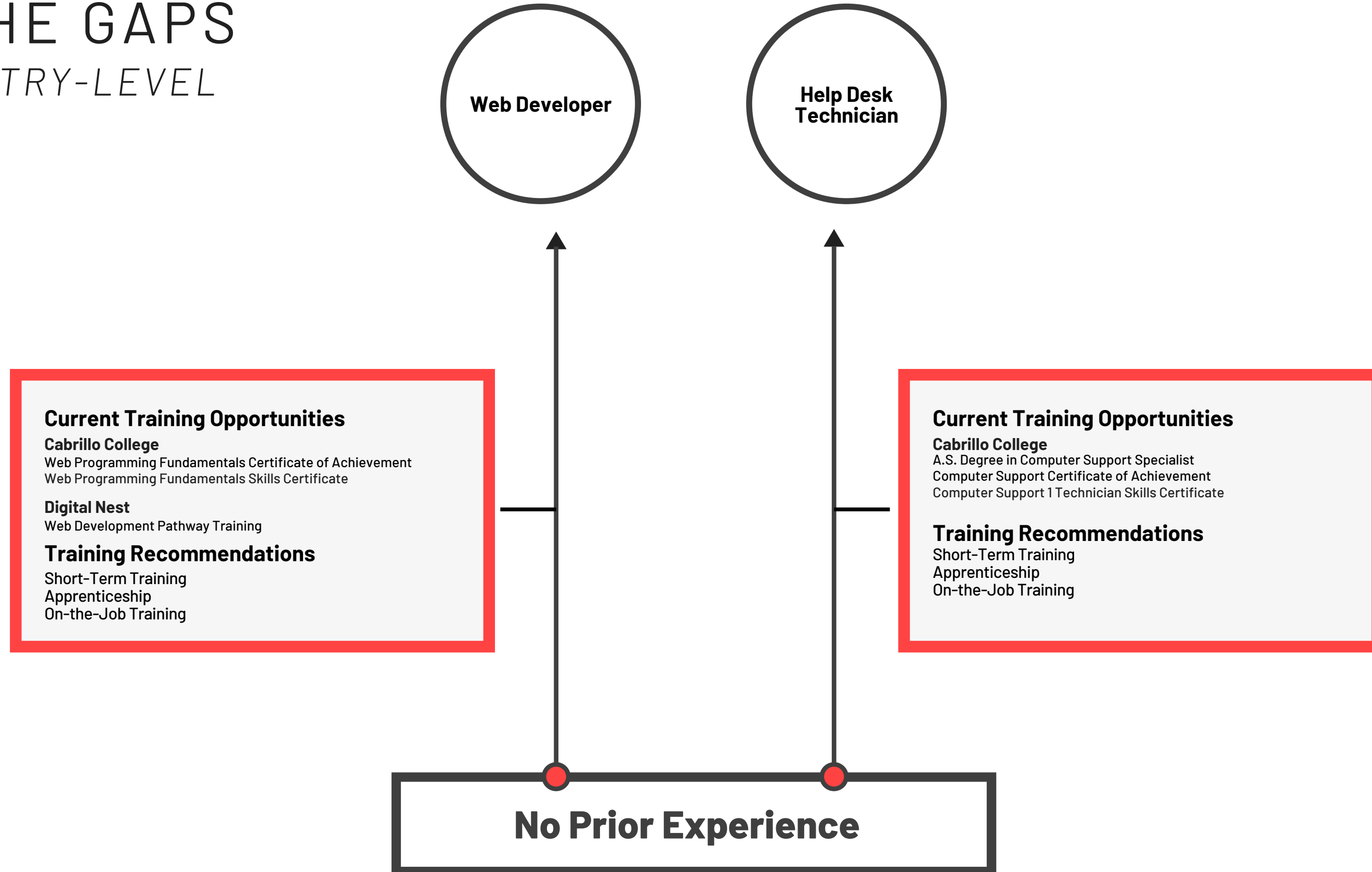
# FILLING THE GAPS

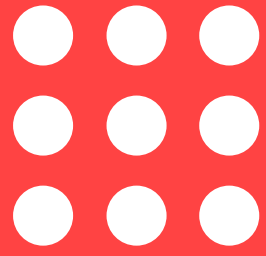




# FILLING THE GAPS

ENTRY-LEVEL





# TRAINING RECOMMENDATION REFERENCE

On the "Filling the Gaps" pages for each of the highlighted pathways, there are recommendations regarding steps the Region can take to better facilitate transitions along pathways in the Tech industry. Traditionally, employers would default to a Bachelor's Degree for many of these positions, however with a tight labor market and a local shortage of Tech talent, it's important to think about non-traditional training opportunities and how access can be increased along a pathway. Throughout this document, we highlight six different types of short-term training alternatives to a traditional 4-year degree, These training types are described in more detail in the boxes below.

## On-the-Job Training

### WHAT IT IS

On-the-Job Training (also known as OJT) is training that takes place while an individual is working and earning a regular paycheck. Typically, there's a training plan for these arrangements to ensure the individual is meeting pre-determined benchmarks throughout their time training. Sometimes local workforce development boards have funding to pay a portion of an individual's wages while they are engaged in an OJT.

### WHEN IT MAKES SENSE

This type of training makes sense when there's a lot of company-specific knowledge an individual can only learn by training on-the-job. The company must also have the capacity to ensure the individual is able to be trained and monitored effectively.

## Bootcamp

### WHAT IT IS

Bootcamps are typically short-term training courses that emphasize a few key skills such as coding, web development, Javascript, for example. Bootcamps are often a part-time commitment allowing an individual to continue working while taking classes.

### WHEN IT MAKES SENSE

Bootcamps make the most sense when an individual is attempting to fill a skills gap that may not be wide enough to justify traditional training options. The bootcamp route will allow an individual to get some of the fundamental skills needed to get into an entry-level position with opportunity for advancement.

## Short-Term Training or Certificate Program

### WHAT IT IS

Short-term training and certificate programs can be ideal alternatives to traditional 4-year degrees, allowing students to finish with an industry-recognized credential in less time. Typically, these types of training are geared toward industry need and are administered by a local community college or university. These types of training are usually non-credit, but can also be for credit in certain cases.

### WHEN IT MAKES SENSE

These types of training are ideal when a local industry determines that a Bachelor's degree may not be required to acquire the necessary skillset of a certain occupation. The group of industry leaders can then work directly with the college to create a curriculum that fills their needs and gives an individual the skills needed to begin a career in the industry.

## Apprenticeship

### WHAT IT IS

Apprenticeships are similar to OJTs, with the primary difference being a more formalized classroom component for Apprenticeships. Apprentices often split their time between on-the-job training and more traditional classroom education that is pre-determined by a training plan. Apprenticeships are paid positions and can be registered with the Department of Labor or unregistered and more specifically tailored to a specific employer or local industry.

### WHEN IT MAKES SENSE

Traditionally, apprenticeships were reserved for construction and manufacturing trades, however recently employers in a variety of industries (including Tech) are seeing their value as an alternative to a 4-year degree. Apprenticeships make sense when the skills needed for a particular occupation can be gained by a combination of on-the-job training and classroom education.

## Internship or Company Project Work

### WHAT IT IS

The primary focus for internships and company project work is allowing an individual to gain real-life work experience. Sometimes these positions are paid, but they're often unpaid and are ideal for students or other individuals looking to get their foot in the door with a company. This type of work is great for resume-building and can lead to connections and skills that result in full-time employment.

### WHEN IT MAKES SENSE

Internships make sense primarily for students who are attending school, but may not have enough time to commit to a full-on Apprenticeship. It also makes sense for someone trying to gain some baseline skills and connections in an industry they wish to pursue full-time employment in. It may also serve as a trial period for an individual to see if a particular industry or occupation is right for them.

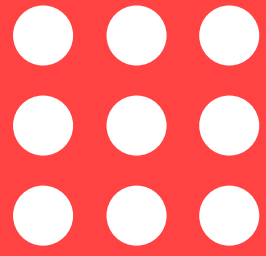
## Incumbent Worker Training

### WHAT IT IS

Incumbent worker training is reserved for individuals who are already employed with a company and are in need of upskilling. Typically, this type of training includes an agreement between employer and employee that the successful completion of training will result in a pay increase or a promotion to a new position. Sometimes incumbent worker training is provided in-house by company management, while other times it's contracted out to a third-party, such as a local training institution.

### WHEN IT MAKES SENSE

Incumbent worker training is ideal when a company is interested in upskilling current employees and opening up more entry-level opportunities for incoming employees. Companies with internal career pathways in place are ideal candidates for this type of training.



# SKILLS OVERVIEW

With the constantly changing tech landscape, it has become evident that skills, not credentials or occupational titles, are the future of the industry and are the most important factor when hiring a new employee, especially when we are experiencing such a tight labor market. Employers are caring less about education levels and experience and more about whether or not an individual has the skills required to do the job. On this page, we outline the key skills for the various occupational tracks.

## Support & Service

Baseline	Specialized	Software
Troubleshooting	TechSupport	Microsoft OS
Communication	Customer Service	Microsoft Office
Problem Solving	Active Directory	VPN
Teamwork	Printers	Mac OS
Research	Repair	Vmware
Detail-Oriented	Installation	VoIP
Organization	Microsoft OS	Windows Server
Multi-Tasking	VPN	ServiceNow
Writing	DNS	Citrix
Creativity	TCP/IP	Adobe Acrobat

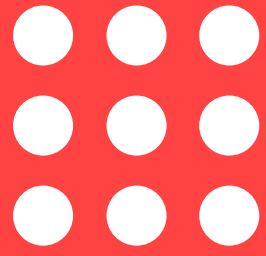
## Programming & Development

Baseline	Specialized	Software
Communication	Software Engineering	Java
Problem Solving	Java	JavaScript
Teamwork	JavaScript	SQL
Writing	SQL	Python
Troubleshooting	Python	C++
Creativity	C++	Linux
Research	Linux	Microsoft C#
Planning	Microsoft C#	Git
Detail-Oriented	Git	OOAD
Organization	OOAD	Oracle

## Infrastructure

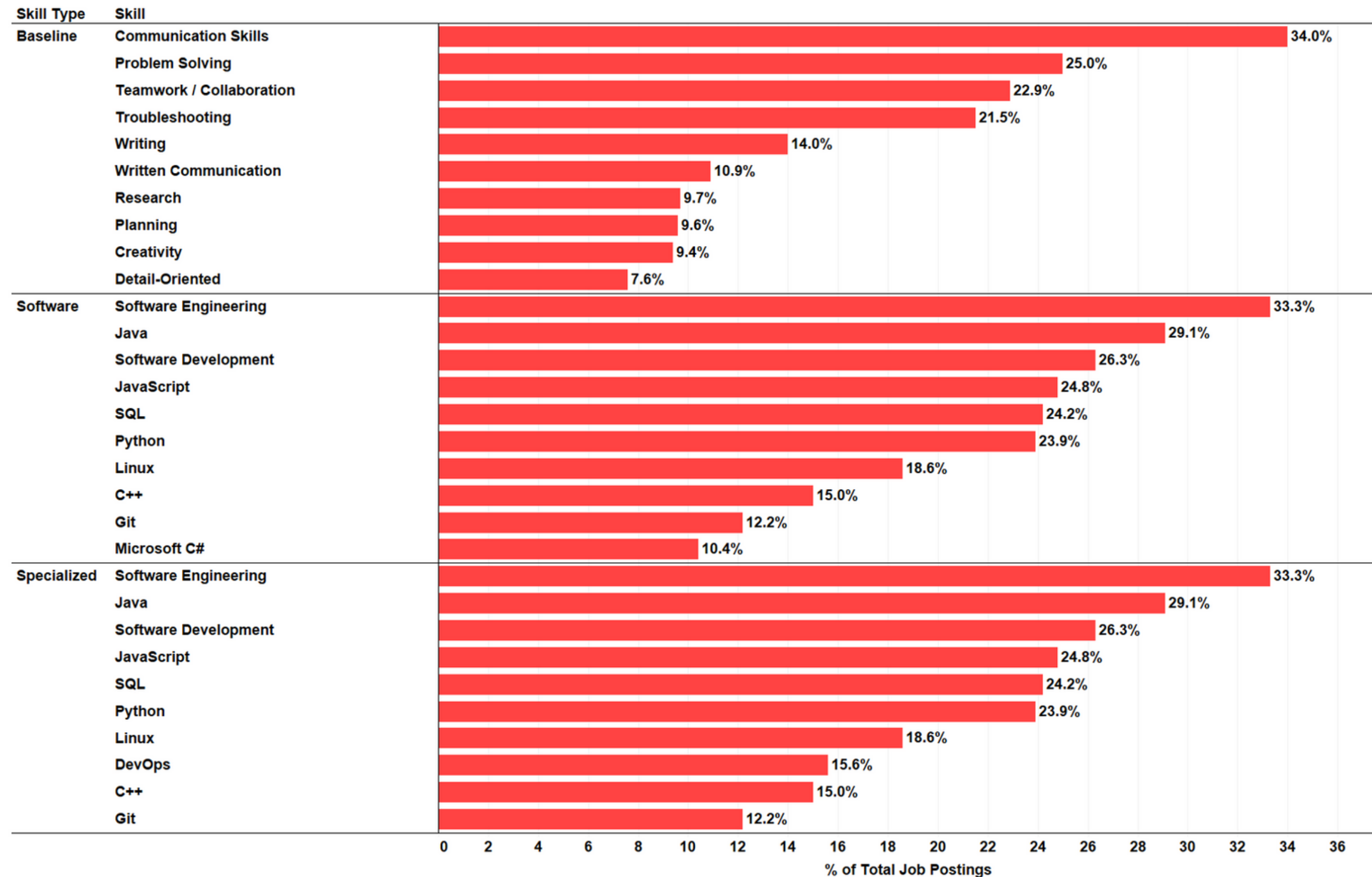
Baseline	Specialized	Software
Troubleshooting	System Administration	Vmware
Communication	Vmware	Linux
Problem Solving	Active Directory	Windows Server
Teamwork	Linux	Microsoft Office
Planning	Network Administration	SQL
Research	Windows Server	PowerShell
Writing	Cisco	VPN
Detail-Oriented	Technical Support	Python
Organization	DNS	UNIX
Multi-Tasking	Hardware Configuration	VoIP

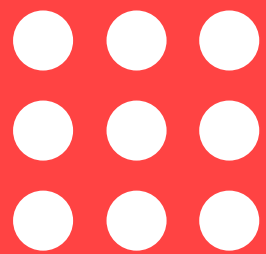




# SKILLS OVERVIEW

HIGHEST DEMANDED SKILLS (ACROSS ALL OCCUPATIONS)





# OCCUPATIONAL

## CROSSWALK OPPORTUNITIES

### RETAIL INDUSTRY



## SALESPERSONS & CASHIERS

**JOB GROWTH (2016-2019)**  
-4%

**AVERAGE WAGE**  
\$31,412

**AUTOMATION RISK**  
HIGH

**EDUCATION**  
HS Diploma/Equivalent



## HELPDESK TECHNICIANS

**AVERAGE WAGE**  
\$38k - \$46k

### LOCAL TRAINING OPTIONS

**Cabrillo College**  
A.S. Degree in Computer Support Specialist  
Computer Support Certificate of Achievement  
Computer Support 1 Technician Skills Certificate

SKILLS ANALYSIS

Troubleshooting	Communication	Research	Teamwork	Organization
Problem Solving	Multi-Tasking	Written Communication	Creativity	Detail-Oriented



## WEB DEVELOPERS

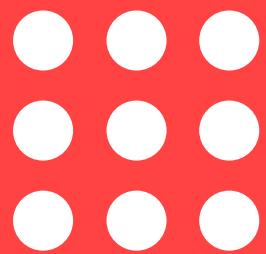
**AVERAGE WAGE**  
\$76k - \$104k

### LOCAL TRAINING OPTIONS

**Cabrillo College**  
Web Programming Fundamentals Certificate of Achievement  
Web Programming Fundamentals Skills Certificate

SKILLS ANALYSIS

Troubleshooting	Communication	Research	Teamwork	Organization
Problem Solving	Planning	Written Communication	Creativity	Detail-Oriented



# OCCUPATIONAL

## CROSSWALK OPPORTUNITIES

### MULTI-INDUSTRY



### CUSTOMER SERVICE REPRESENTATIVES

**JOB GROWTH (2016-2019)**  
-1%

**AVERAGE WAGE**  
\$33,527

**AUTOMATION RISK**  
MEDIUM

**EDUCATION**  
HS Diploma/Equivalent



### HELPDESK TECHNICIANS

**AVERAGE WAGE**  
\$38k - \$46k

#### LOCAL TRAINING OPTIONS

**Cabrillo College**  
A.S. Degree in Computer Support Specialist  
Computer Support Certificate of Achievement  
Computer Support 1 Technician Skills Certificate

SKILLS ANALYSIS

Troubleshooting	Communication	Research	Teamwork	Organization
Problem Solving	Multi-Tasking	Written Communication	Creativity	Detail-Oriented

### WEB DEVELOPERS

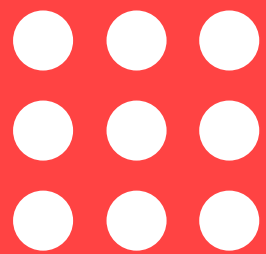
**AVERAGE WAGE**  
\$76k - \$104k

#### LOCAL TRAINING OPTIONS

**Cabrillo College**  
Web Programming Fundamentals Certificate of Achievement  
Web Programming Fundamentals Skills Certificate

SKILLS ANALYSIS

Troubleshooting	Communication	Research	Teamwork	Organization
Problem Solving	Planning	Written Communication	Creativity	Detail-Oriented



# OCCUPATIONAL CROSSWALK OPPORTUNITIES MULTI-INDUSTRY



SKILL MATCH  
SKILL MISMATCH

## BOOKKEEPING, ACCOUNTING, AND AUDITING CLERKS

**JOB GROWTH (2016-2019)**  
-13%

**AVERAGE WAGE**  
\$36,668

**AUTOMATION RISK**  
HIGH

**EDUCATION**  
HS Diploma/Equivalent



## HELPDESK TECHNICIANS

**AVERAGE WAGE**  
\$38k - \$46k

### LOCAL TRAINING OPTIONS

**Cabrillo College**  
A.S. Degree in Computer Support  
Specialist  
  
Computer Support Certificate of  
Achievement  
  
Computer Support 1 Technician Skills  
Certificate

SKILLS ANALYSIS

Troubleshooting	Communication	Research	Teamwork	Organization
Problem Solving	Multi-Tasking	Written Communication	Creativity	Detail-Oriented

## WEB DEVELOPERS

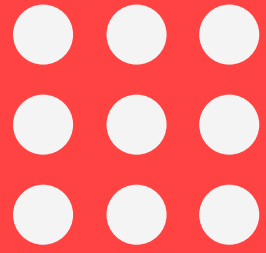
**AVERAGE WAGE**  
\$76k - \$104k

### LOCAL TRAINING OPTIONS

**Cabrillo College**  
Web Programming Fundamentals  
Certificate of Achievement  
  
Web Programming Fundamentals Skills  
Certificate

SKILLS ANALYSIS

Troubleshooting	Communication	Research	Teamwork	Organization
Problem Solving	Planning	Written Communication	Creativity	Detail-Oriented



# Local Education & Training Options

## Cabrillo College

A.S. Degree in Computer Applications/Business Technology  
Computer Proficiency Skills Certificate  
Office Software Skills Certificate  
Social Media Skills Certificate  
Digital Literacy Certificate of Competency  
Business Information Worker Certificate  
A.S. Degree in Computer Networking & System Administration  
Computer Networking & System Administration Certificate of Achievement  
Cisco Certified Network Associate (CCNA) Skills Certificate  
Cisco Certified Network Professional (CCNP) Certificate of Achievement  
Microsoft System Administration Skills Certificate  
UNIX/Linux System Administration Skills Certificate  
Cybersecurity Fundamentals Skills Certificate (coming soon)  
A.S. Degree in Computer Science  
C++ Programming Certificate of Achievement  
Programming Certificate of Achievement  
Java Programming Certificate of Achievement  
Web Programming Fundamentals Certificate of Achievement  
Mobile Applications Skills Certificate  
Game Programming Skills Certificate  
Web Programming Fundamentals Skills Certificate  
A.S. Degree in Computer Support Specialist  
Computer Support Certificate of Achievement  
A+ Preparation Skills Certificate  
Computer Support 1 Technician Skills Certificate  
A.S. Degree in Engineering Technology  
Engineering Technology Certificate of Achievement  
Computer Aided Drafting and Design Skills Certificate  
Computer Animation Skills Certificate  
Technology and Trades Skills Certificate

## Cal State - Monterey Bay

B.S. in Computer Science  
B.S. in Communication Design

## UCSC - Silicon Valley Extension

Computer Programming Certificate  
Database and Data Analytics Certificate  
Embedded Systems Certificate  
Information Technology Certificate  
Internet Programming & Development Certificate  
Linux Programming & Administration Certificate  
Mobile Application Development Professional Award  
Software Engineering and Quality Certificate  
VLSI Engineering Certificate

## UC - Santa Cruz

B.A. in Network and Digital Technology  
B.S. in Computer Engineering  
M.S. in Computer Engineering  
Ph.D. in Computer Engineering  
B.A. in Computer Science  
B.S. in Computer Science  
M.S. in Computer Science  
Ph.D. in Computer Science  
B.S. in Computer Science: Computer Game Design  
M.S. in Computer Science: Computer Game Design  
Ph.D. in Computer Science: Computer Game Design  
B.S. in Technology and Information Management  
M.S. in Technology and Information Management  
Ph.D. in Technology and Information Management





# Stakeholder

## Involvement

A special thanks to the following individuals and organizations who contributed to the development of this document:

Amanda Searles, Google

Helder Carvalheira, Poly

Chris Miller, Launch Brigade

Gerlinde Brady, Cabrillo College

Hayley Mears, Monterey Bay Economic Partnership

Yazmin Herrera, Digital Nest

Jacob Martinez, Digital Nest

Julie Edwards, Pajaro Valley Unified School District

Steve Bean, Digital Nest

Dough Erickson, Santa Cruz Works

Matthew Swinnerton, Santa Cruz Works

Terri Oropeza, Cabrillo College

Jason Borgen, Santa Cruz County Office of Education

Andy Stone, SCWDB

Belinda Barr, SCWDB





SANTA CRUZ COUNTY  
**WORKFORCE**  
DEVELOPMENT



**CAEL**  
[www.cael.org](http://www.cael.org)

