

# Career Pathway Development for Colorado's Business Operations and Cybersecurity Industries FY18



Colorado Workforce  
Development Council

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# Career Pathway Development for Colorado's Business Operations and Cyber Security Industries FY18

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## **EXECUTIVE SUMMARY**

Colorado State legislation HB15-1274 established the need for creating industry-driven career pathways. Industry-driven career pathways ensure that education, training, and workforce systems stay deeply attuned and responsive to the needs of the labor market.

In collaboration with the Colorado Department of Higher Education, the Colorado Department of Education, the Department of Labor and Employment, the Colorado Office of Economic Development, the Colorado Community College System and the Colorado Workforce Development Council we utilize a step-by-step approach to building industry-driven career pathway systems that align education and training programs with the needs of the regional economy to ensure the students and job seekers are prepared with the right skills and experience to get jobs in the driving sectors of their local economies.

In 2015-2016, career pathways systems building was focused on information technology (IT). During 2016-2017, pathways were developed in construction and healthcare. The focus for 2017-2018 was business operations and cybersecurity. Each year the new industry career pathways are published on the free online resource [Careers in Colorado](#).

In Colorado, industry sector partnerships are the vehicle for aligning public partners with industries' needs in an effective, results-driven manner. They provide the "home" for career pathway systems building, engaging industry leaders and public partners in a continuous dialogue to ensure that education and training systems respond to industry needs. Other industry-driven public-private partnerships such as statewide industry associations can also support the development of career pathway programs and systems development.

The Workforce Innovation and Opportunity Act (WIOA) promotes a shared understanding of the workforce needs within each state and fosters the development of a more comprehensive and integrated approach, such as career pathways and sector strategies, for addressing the needs of businesses and workers. At the state

level, the [Eligible Training Provider List](#) (ETPL) has been updated pursuant to WIOA. This list ensures that Coloradans are able to make informed decisions on training providers and programs based on accurate data including completion and placement rates, labor market information and wage expectations. The ETPL is the primary source for education and training options built into [Careers in Colorado](#).

This report provides the findings of this year's career pathways development for cybersecurity and business operations. A detailed summary of the various components involved in developing career pathways systems concludes this report. This report will be published as an appendix in this year's [Colorado Talent Pipeline Report](#). For more in-depth information, please visit the [Colorado Workforce Development Council](#) (CWDC) and [Careers in Colorado](#) websites.

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## CYBERSECURITY

### Overview

In Colorado, we define “top jobs” as a career with a median wage at or above a sustainable living wage, an above average projected growth rate, and above 40 annual openings. “Critical occupations” are identified by the industry or sector as the jobs most in demand and for which the industry or sector may be facing shortages or difficulties in hiring.

Recognizing cybersecurity as a crucial sector across all regions of the state, pathway work included state and regional labor market analyses, the identification of critical occupations and competencies, and feedback from cybersecurity industry leaders.

The cybersecurity industry in Colorado is growing rapidly and offers a diversity of opportunities to jobseekers in the types of roles available, the variety of education and training needed, and the professional growth potential within the industry.

The cybersecurity focus for the 2018 Career Pathways Building initiative utilized the [National Initiative for Cybersecurity Education \(NICE\)](#) framework, which promotes nationwide initiatives that increase the number of people with the knowledge, skills, and abilities to perform the tasks required for cybersecurity work. “Cybersecurity workforce” is shorthand for a workforce with work roles that have an impact on an organization’s ability to protect its data, systems, and operations. Included are work roles that have traditionally been a subset of information technology (IT) jobs that include tasks beyond cybersecurity.

### Information Sources Utilized

O\*Net and the Colorado Talent Pipeline Report contain only one job (Information Security Analyst) that captures all of the different full-time jobs within Cybersecurity. Therefore, an additional resource was needed as a starting point for the career pathway work. The [NICE](#) framework was an excellent resource to assist in framing roles and competencies within the cybersecurity pathway building. The [CyberSeek](#) website was utilized as well to help show position availability and visualize pathways. It was also a good starting point to identify IT jobs that are common cybersecurity feeder roles, leading to full-time cybersecurity jobs. Collaboration with [LinkedIn](#) helped to align their work in cybersecurity and the career pathways efforts. The [Competency Model Clearinghouse](#) was utilized in framing core competencies.

## Industry & Public Partner Engagement

Work launched with two public partner forums in November, 2017, one in Colorado Springs with 44 attendees and one in Denver with 23 attendees. The focus of these meetings was to share information on past (IT) and present (cybersecurity) career pathways work, share information on what projects and programs are already in existence so as to minimize duplication of efforts, and to identify gaps and opportunities for collaboration.

Between February 15 and March 15, 2018 four regional meetings were held to collect industry input on critical occupations and core competencies. Meeting locations included Colorado Springs, Grand Junction, Greeley, and Denver. In total, 95 industry representatives and public partners participated in those forums.

To gather additional industry input, a survey was developed and distributed, which added 27 industry-informed responses to the feedback.

## Pathway Mapping

An initial pathway map was drafted to facilitate the validation process with industry. The NICE framework, which identifies 7 different Categories of cybersecurity roles and then Specialty Areas and Work Roles within each of these Categories, was used as the basis for the initial pathway map. In this process, some of the Categories and Work Roles emerged as part-time cybersecurity roles that provide support for cybersecurity activities rather than being full-time cybersecurity jobs. After feedback from Employers, it was determined to include only jobs that could be full-time cybersecurity jobs in Colorado in the pathway.

In the process of validating the Top Jobs in the Talent Pipeline Report with industry, three Critical Occupations emerged and were utilized to note changes between Top Jobs and Critical Occupations. The final career pathways can be found on [Careers in Colorado](#).

## Cybersecurity Career Pathway

Employers have recommended that to enter a cybersecurity entry-level job, a prospective employee should show interest and motivation by obtaining the required training and certifications. These requirements can be found within the cybersecurity career pathways on [Careers in Colorado](#).

Employers stressed the importance of using the knowledge and skills obtained beyond the classroom: complete a work based learning experience; participate in local capture

the flag events, hackathons, cybersecurity competitions, or meet up events; set up and secure your own network, and help others to do so.

To become a cybersecurity expert, most people are first successful in one of several entry-level jobs that have important cybersecurity responsibilities. This became an important aspect of the creation of the career pathway. Instead of hiring people directly out of training and into a cybersecurity job, most Colorado employers fill cybersecurity jobs with people that have previous experience in Information Technology jobs that have significant cybersecurity responsibilities within that job. The jobs most frequently identified by Colorado employers for preparing for a full time cybersecurity position are:

- Computer/Network Systems Administrator
- Computer Network Engineer/Architect
- Computer User Support Specialist
- Software Developer (Applications or Systems)
- Computer Systems Analyst
- Software Quality Assurance Tester

While in one of these jobs, an employee increases their cybersecurity knowledge, obtains higher-level certifications, and prepares for a move into a full-time cybersecurity position. One of the most direct routes to gain this experience is in the military. Jobs such as the 25 series of jobs in the Army, as an Intelligence Analyst, or the Cybersecurity or Surety series of jobs in the Air Force, provide experience that is highly valued by employers.

### **Critical Occupations in Cybersecurity**

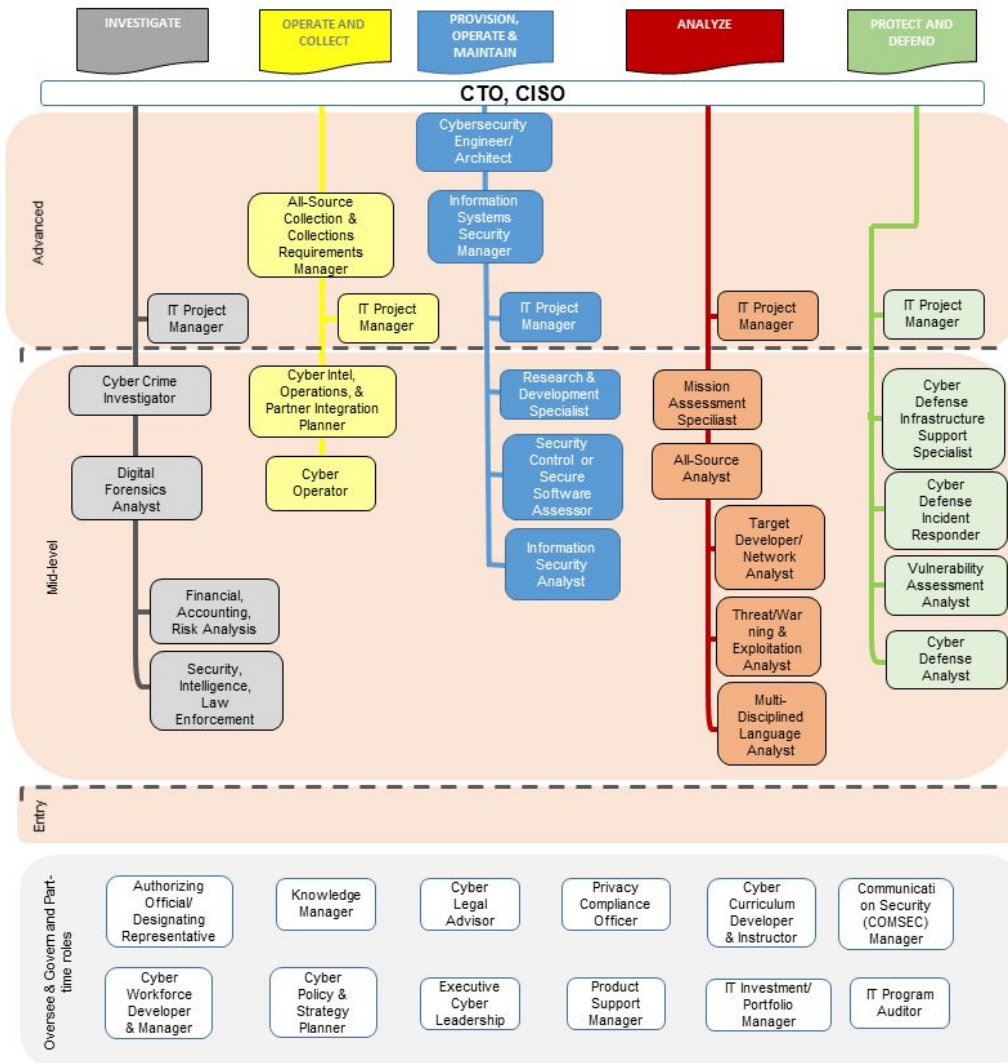
The six jobs identified above as the best at preparing someone for a cybersecurity position were labeled as Critical Occupations. In addition, the following cybersecurity occupations have been identified in the Denver Metro area as the most Critical of Cybersecurity Occupations.

- Cybersecurity Engineer/Architect (identified as the most critical)
- Information Security Analyst
- Cyber Defense Incident Responder



# Colorado's Cybersecurity "Top Jobs" Career Pathway

## Colorado's Cybersecurity "Top Jobs" Career Pathway



2/15/2018

*This graphic depicts an initial "stem and leaf" pathway map with related cybersecurity occupations at the entry, mid, and advanced levels. These initial maps allowed us to iterate and validate the career pathway development process with industry. The 5 Categories depicted are the ones identified as containing full-time cybersecurity jobs for some companies, with the part-time roles placed at the bottom as "Oversee & Govern and part-time roles".*

## Core Competency Identification

Employers have prioritized the following foundational competencies for success in cybersecurity jobs:

- **Critical & Analytical Thinking and Problem Solving & Decision Making:** Used to complete tasks such as monitoring logs while identifying potential issues and identifying how to change an issue on a dashboard from red to green.
- **Communication:** Present complex Cybersecurity concepts in terms that Executive Leadership or computer users (non-experts) can understand.
- **Teamwork:** Work as a team is critical because no one person can understand the depth and breadth of Cybersecurity.
- **Creativity:** Stopping a hacker requires curiosity, inquisitiveness, and outside of the box thinking – the hackers are out of the box and anticipating their approach is important to stop them.
- **Lifelong Learning:** Cybersecurity is constantly evolving so a thirst to obtain knowledge and stay up with industry changes and ahead of hackers is critical.
- **Working with Tools and Technology:** Tools used to complete tasks such as automating the review of logs and identifying possible issues for review are constantly evolving.

## How Employers Utilize Cybersecurity Expertise

Cybersecurity jobs support organizations in all industries in Colorado and often vary based on the type and size of the organization. Most small and mid-sized organizations don't have full-time cybersecurity positions. They instead assign cybersecurity responsibilities to various team members while supplementing their staff with expertise from contracting companies specializing in cybersecurity. Most large companies have a dedicated cybersecurity team and some have teams dedicated to each of the cybersecurity functions listed in the pathways.

In addition, there are many Department of Defense jobs in Colorado for cybersecurity experts including ones that defend our country against cybersecurity attacks. These jobs can be held by active military personnel or civilian personnel. These positions often require a security clearance.

## Summary Findings and Next Steps in Cybersecurity

Subsequent work on the building and supporting of cybersecurity career pathways will be dependent on fostering existing relationships, supporting and expanding sector partnerships, continual alignment of various career pathway funding sources, effective

communication about how to obtain cybersecurity careers, and expanding and supporting work-based learning opportunities at all education levels (Pre-kindergarten through Doctoral degree (P-20)). In addition, expanding the knowledge of cybersecurity risks to businesses and the general public, such as the work being done by the National Cybersecurity Center, can be coupled with developing an understanding of cybersecurity careers, and opportunities to complete activities that spark an interest in a cybersecurity career.

Continued expansion of CTE Computer Science programs, CareerWise Colorado's IT apprenticeship, and school-based competitions such as CyberPatriot will help to increase student access and awareness to cybersecurity career pathways. Each of these provide an opportunity for industry and educators to work together to expand interest in and preparation for a career in cybersecurity.

A number of specific ideas and recommendations emerged from career pathway development over the previous year, including the following:

- Efforts should be strengthened to expand the cybersecurity expertise of people already in IT roles that prepare people for full-time cybersecurity positions. This would include focused training and opportunities that prepare them to move on to full-time cybersecurity roles. This would also open up those entry-level roles to be filled by people interested in becoming a cybersecurity expert, expanding the overall number of people with cybersecurity skills.
- A significant percentage of cybersecurity professionals got their start in the industry through their military service. Continued support should be provided, and overall efforts expanded, to recruit those transitioning out of the military with cybersecurity experience into Colorado's cybersecurity jobs or into the training programs created to prepare them for those jobs. If structured correctly, this could also help to overcome a lack of security clearances available in the workforce today.
- Employers, educators, and workforce organizations should work together to provide increased opportunities for students and job seekers to use their initial cybersecurity knowledge and skills in activities such as capture the flag events, hackathons, cybersecurity competitions, meet up events, and volunteer activities. Career exploration activities should be an integral part of these events.
- Cybersecurity approaches, tools, and work change rapidly. It will be important to establish relationships with organizations that keep up with these changes in order to keep [Careers in Colorado](#) up to date.

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## **BUSINESS OPERATIONS**

### **Overview**

The business operations focus for the 2018 Career Pathways Building initiative was centered on occupations and roles involved with overseeing and supervision of business operations; administration of business practices; and managing the process of the creation of goods and services. These occupations involve planning, organizing, coordinating, and controlling the resources needed to produce goods and services. In an effort to delimit the wide range of occupations that could be included in this industry, Banking/Financial Services, Personal Financial Advising, and Insurance were excluded in this year's pathway development.

One of the advantages of business operations jobs is that they exist across all industries, creating the opportunity to leverage skills in a career path involving a wide-variety of organizations. These roles are also needed to support all sizes of organizations. Smaller organizations often hire business operations employees that cover multiple roles, providing a job with day-to-day variety, and then supplement their staff with organizations that offer specialized business operations expertise. Larger organizations have dedicated business operations teams or may have specialized teams that cover each aspect of business operations.

In Colorado, we define "top jobs" as a career with a median wage at or above a sustainable living wage, an above average projected growth rate, and above 40 annual openings. "Critical occupations" are identified by the industry or sector as the jobs most in demand and for which the industry or sector may be facing shortages or difficulties in hiring.

Recognizing business operations as important across all industries and regions of the state, work included state and regional labor market analyses, the identification of top jobs and competencies, on-going regional organization feedback conversations, and a preliminary inventory of talent pipeline resources.

### **Information Sources Utilized**

The Occupational Information Network (O\*Net) was the primary resource to identify job descriptions, knowledge, skills, and abilities and to identify initial career pathways. The Competency Model Clearinghouse was utilized in framing core competencies. The Colorado Talent Pipeline Report was utilized for occupational data for business operations occupations.

## Industry & Public Partner Engagement

Between February 15 and March 15, 2018, four regional meetings were held to collect industry input on top jobs and core competencies. Meeting locations included Colorado Springs, Grand Junction, Greeley, and Denver. In total, 54 industry representatives and public partners participated in those forums. To gather additional industry input, a survey was developed and distributed, which added 21 industry-informed responses to the feedback. We would like to acknowledge, and thank all of our collaborators from industry, education, government, and community based organizations for their contributions.

In parallel, the CTE Business, Marketing and Public Administration team engaged in a year-long process with educators and industry to explore updates and innovations to high school business core curriculum to ensure that course offerings are in alignment with industry trends and workforce needs.

## Pathway Mapping

An initial pathway map was drafted to facilitate the validation process with industry. [O\\*Net](#) and its identification of related occupations as well as a variety of existing career pathway documents served as the foundation for the initial map. Feedback from employers provided input into how the pathways worked in Colorado. These changes were incorporated and the final career pathways can be found on [Careers In Colorado](#).

## Business Operations Career Pathway

Business Operations jobs provide support in every industry. It was deemed to be important to identify the industry-specific jobs, such as a Construction Cost Estimator, and to create career pathways that tied directly to each industry already covered in [Careers in Colorado](#). Therefore, separate pathways were created for the Business Operations jobs within Construction, Information Technology, and Health Science.

Discussions with employers identified several jobs that serve as entry-level jobs that could lead to a variety of Mid-level or Advanced Business Operations jobs. Therefore, the pathways were designed to highlight those good entry-level jobs and show the pathways to higher-level jobs. Success in some of those entry-level jobs is valued to demonstrate skills needed to obtain a higher-level job, such as Customer Service Representative experience being valued in jobs that require a high degree of Customer Service. They also identified that in some cases, jobs such as Billing and Accounts Payable Clerk could lead directly to a Supervisor role in companies that have a large number of those jobs.

Two Mid-level jobs, Accountant & Auditor and Management Analyst, and one Advanced job, Project Manager, were also identified as jobs that exist in a wide variety of business environments and could either stand alone or lead to higher-level Advanced Business Operations jobs. The pathways were designed to highlight these jobs as well.

### **Top Jobs/Critical Occupations in Business Operations**

There are many good entry-level Colorado top jobs that provide access to the start of a business operations career without significant experience or education required.

These include:

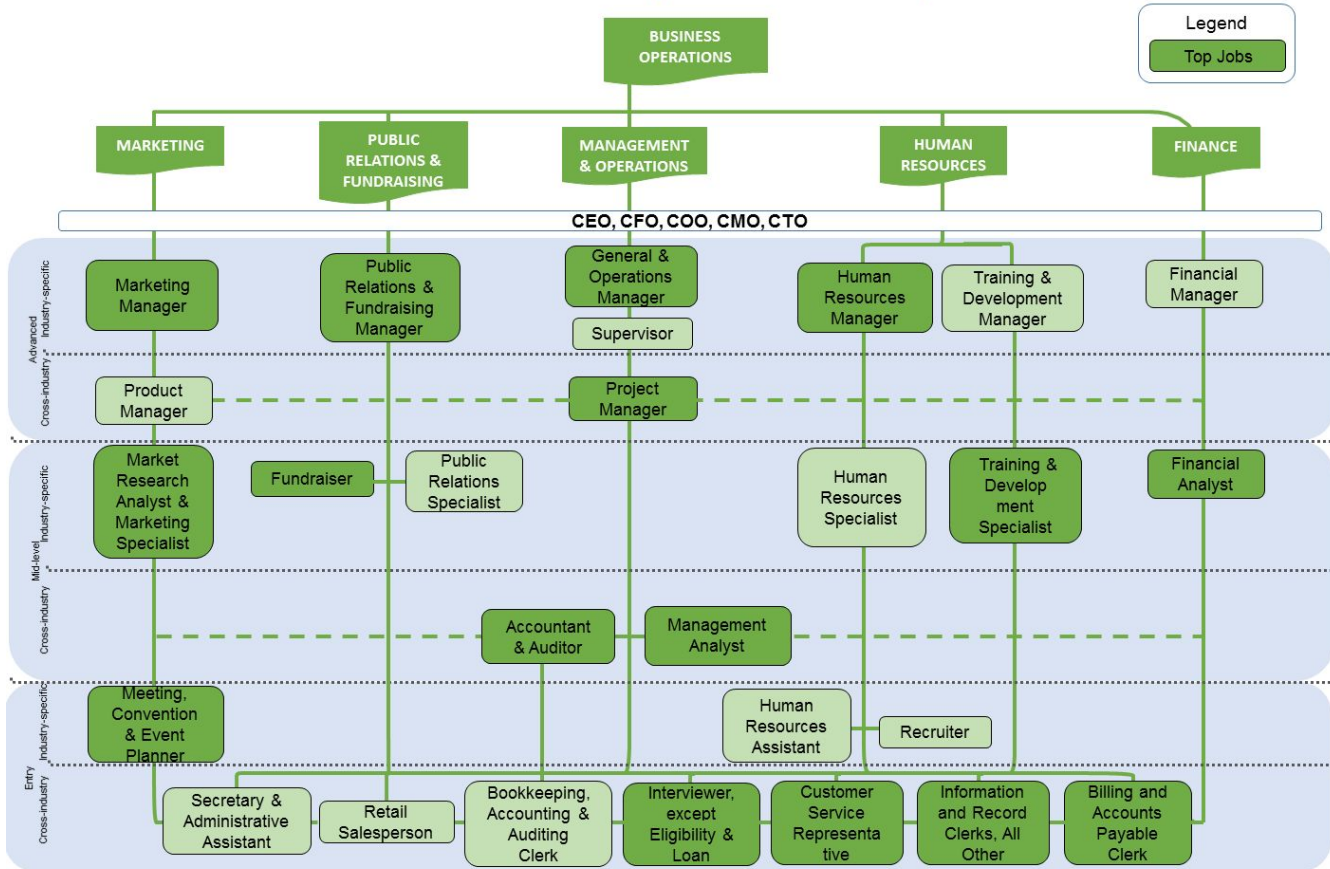
- Interviewers
- Customer Service Reps
- Billing and Accounts Payable Clerks
- Meeting Planners

Mid-level top jobs often require associate's/bachelor's degrees, industry certificates or work experience such as:

- Management Analysts
- Accountants
- Market Researchers
- Fundraisers
- Training & Development Specialists
- Financial Analysts

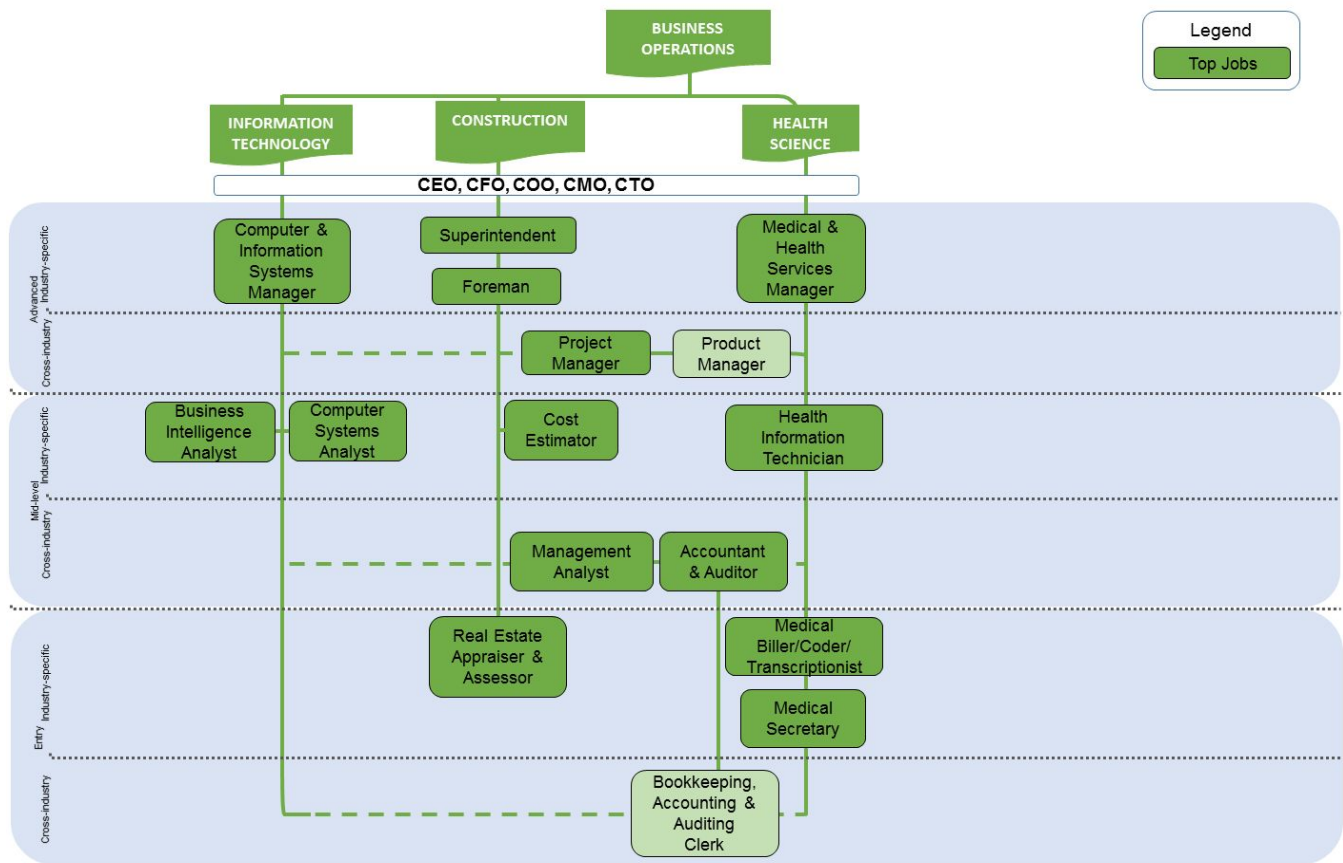
## Colorado's Business Operations Top Jobs Maps

### Colorado's Business Operations Top Jobs Map



This graphic depicts an initial “stem and leaf” pathway map with related business operations occupations at the entry, mid, and advanced levels. These initial maps allowed us to iterate and validate the career pathway development process with industry. The jobs identified as Cross-industry jobs within these pathways are included in the stem and leaf model with dashed lines to indicate that they can exist as part of multiple pathways.

# Colorado's Business Operations Top Jobs Map



This graphic depicts another “stem and leaf” pathway map with cross-industry business operations occupations at the entry, mid, and advanced levels. These initial maps allowed us to iterate and validate the career pathway development process with cross-industry business operations occupations. The jobs identified as Cross-industry jobs within these pathways are included in the stem and leaf model with dashed lines, to indicate that they can exist as part of multiple pathways.

## Core Competency Identification

To get off to a good start in an entry-level job, employers recommend that a candidate has the following foundational competencies:

- **Communication & Customer Service:** Listen to and understand internal or external customers’ needs and communicate ideas and solutions in an effective manner.
- **Teamwork:** Effectively work with and support team members within your team and on other teams. Business Operations works as a combined team to support a company and its customers.



- **Lifelong Learning:** Demonstrate the ability and willingness to learn and apply new skills consistently.
- **Initiative, Dependability, & Reliability:** Be motivated, present and engaged at work, have a strong work ethic and do a good job consistently.
- **Adaptability & Flexibility:** Demonstrate the ability to adapt and be successful in a variety of tasks and with a variety of customers, team members, and bosses.
- **Business Fundamentals:** Understand and apply marketing, accounting, finance, human resources, management and operations fundamentals.
- **Math, English, Reading, & Writing skills:** You can't be good at entry-level Business Operations jobs without having a solid level of these skills and you will need increasingly higher-levels of some of these skills for career advancement.

Being successful in one of these entry-level jobs and demonstrating these foundational competencies can open up opportunities to show a candidate is prepared for promotion to a supervisory level.

### **Competencies for Supervisors**

The following additional competencies have been identified as being critical to support a successful move to supervisor:

- **Communication:** Continue to elevate communication skills for use with a team, client, and boss.
- **Teamwork:** Consistently demonstrates the ability to work with, influence, and lead others.
- **Planning & Organizing:** Plan and organize the successful completion of tasks and projects for multiple teams; set expectations for team members and hold them accountable.
- **Instructing & Coaching:** Move beyond being good at the job to being able to help other team members understand and develop the knowledge and skills needed to be successful at their jobs.
- **Business fundamentals;** Understand the big picture of the business and how teams fit into it.
- **Working with tools and technology:** Effectively utilize the tools and technology specific to the team.

### **Competencies for Managers**

There are a large number of Business Operations Manager roles that are Colorado Top Jobs, opening up a variety of options to advance in areas such as Human Resources, Operations, Public Relations, and Marketing. The following additional competencies

have been identified as being critical to support a successful move to the manager level:

- Planning & Organizing: Plan and organize the successful completion of tasks and projects for multiple teams; set expectations for team members and hold them accountable.
- Personnel, Human Resources & Interpersonal Skills: Understand behaviors (Psychology) of team members; motivate and empower to get a diverse team to work well together; lead and manage staff; deal with others with fairness and integrity; and hire and fill skills gaps effectively.
- Critical Thinking, Problem Solving, & Decision Making: Continue to elevate these skills for use in activities that cross teams, including strategic thinking and vision setting across an organization.

### **Summary Findings and Next Steps in Business Operations**

Business Operations represents multiple pathways that draw from multiple key industries. Similarly, there are roles that are industry-specific and cross-functional at all levels, including entry-level positions that frequently cross from one industry to another. These factors represent a tremendous opportunity for a student or job seeker for career growth and transferability.

The above also poses a number of challenges:

- The term Business Operations, while accurate, did not quickly resonate with industry.
- Industry engagement was complex. The pathways included spanned at least ten industries directly, and all industries indirectly.
- Similarly, industry engagement without established sector partnerships proved challenging.
- Drawing pathway maps, representing career pathways, and the diversity of both opportunities and on/off ramps within [Careers In Colorado](#) was complex.

Unlike cybersecurity as an emerging industry without much occupational categorization and available labor data, there was strong labor market data and competency information available for business operations. This made the occupation and competency mapping much more straightforward.

Areas of future opportunity in business operations include the following:

- Further explore entrepreneurship and small business management/ownership in recognition of these as key roles/components of the Colorado economy, particularly among the emerging workforce and rural communities.
- Examine how the on-demand economy interfaces with the business operations pathways.
- Explore opportunities to engage and convene industries represented in these pathways, either through sector partnerships or the industry intermediary consortium.

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## DEVELOPING CAREER PATHWAYS SYSTEMS IN COLORADO

The goal of developing career pathways systems is to understand regional demand and then develop the supply of talent to meet that demand. Intended results are:

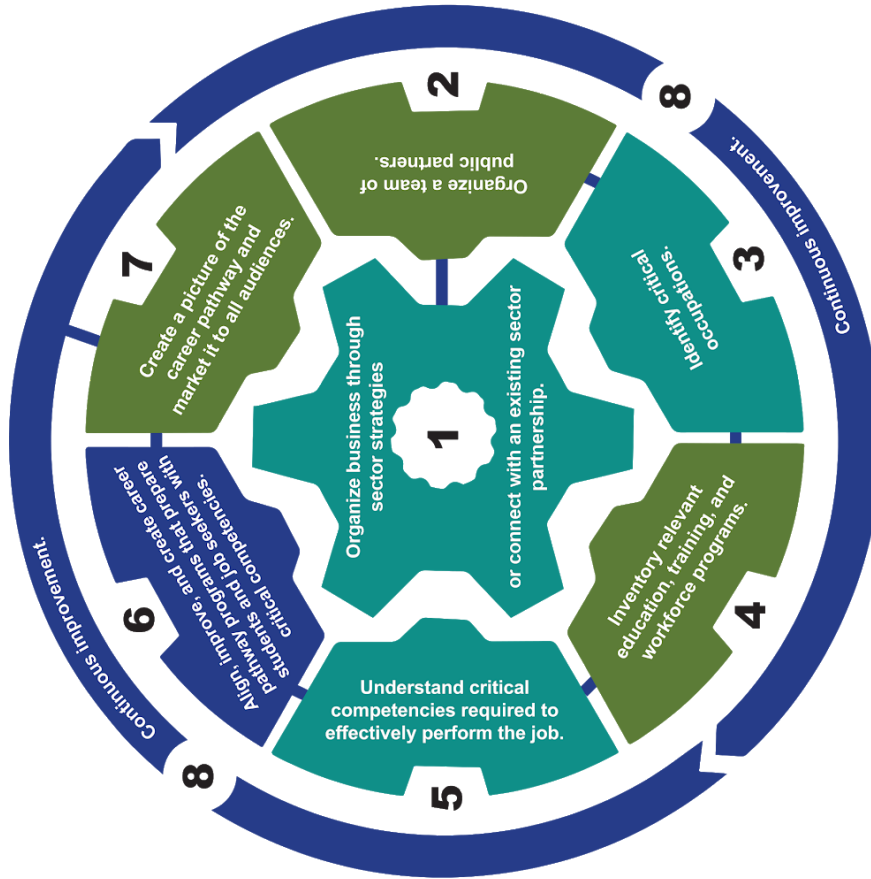
- Pathways that didn't exist are created
- Pathways already in existence are improved
- Business has access to an appropriately skilled talent pipeline
- Individuals have access to the education, training, and work experience needed to enter careers

Cross-agency collaboration for information gathering activities, employer engagement, and establishing a framework for implementation of expanded public and private partnerships is critical to this work. Through collaborative efforts we are able to expand and enhance career awareness, career readiness and training, work-based learning opportunities, career placement, and access to regional support services by students and job seekers.

Identifying regional industry-driven career pathways in Colorado utilizes the 8-step framework the CWDC developed with partners. Information on this framework can be explored in detail in the [2016 Building Industry-Driven Career Pathway Systems in Colorado Step-by-Step Guide](#), as well as pathway development knowledge gained from the building of manufacturing career pathways under HB13-1165.

# Industry-Led Career Pathways System Building

## Meeting Regional Talent Demand Through Regional, Industry-led Career Pathways Systems Building



**Key:**

- Industry Leads
- Public Partners Lead
- Industry & Public Partners

**Goal:** To establish regional demand and then create supply to meet that demand.

**Keep in mind:** Important to do all steps in order. It can take time to move from one step to the next.

**Results or outputs:**

Pathways that didn't exist are created. Pathways already in existence are improved. Business has access to appropriately skilled talent pipeline. Individuals have access to the education, training, and work experience needed to enter careers.

*This graphic depicts the 8 steps in meeting regional talent demand through regional, industry-led career pathways systems building.*

## Definitions

### Top Jobs and Critical Occupations

In Colorado, we define “top jobs” as a career with a median wage at or above a sustainable living wage, an above average projected growth rate, and above 40 annual openings. “Critical occupations” are identified by the industry or sector as the jobs most in demand and for which the industry or sector may be facing shortages or difficulties in hiring.

### What is a Career Pathway System?

A career pathway system aligns public partners and engage them in a continuous conversation that is led by industry to ensure that job-seekers and students move seamlessly through and among support programs, educational institutions, training opportunities, and work-based experiences to build skills and credentials that meet industry demands and prepare them for jobs and careers. In Colorado, the statewide career pathway system aligns career pathway programs and systems developed throughout high demand industries in each economic development region of the state.

### What is a Career Pathway Program?

A career pathway program offers a clear sequence of stackable credits and credentials combined with support services, enabling students and job-seekers to secure industry-relevant skills, certifications, and credentials to advance to higher levels of education and employment in high demand occupations.

### What is a Talent Pipeline?

A talent pipeline is an identified group of currently employed and potential workers to fill positions requiring various skills, knowledge, and abilities.

## Process

In each key industry, the following process is utilized to build career pathways:

1. Organize business through sector strategies or connect with an existing sector partnership.
2. Organize a team of public partners.
3. Identify Critical Occupations based on labor market data and qualitative input from employers.
4. Inventory relevant education, training, and workforce programs.
5. Understand critical competencies required to effectively perform on the job.

6. Align, improve, and create career pathway programs that prepare students and job seekers with critical competencies.
7. Create a picture of the career pathway and market it to all audiences.
8. Continuous improvement.

### **Critical Competency Identification & Validation**

Critical competencies are defined as the specific knowledge, skills, and abilities that industry leaders have collectively identified as being critical to performing a specific occupation or group of occupations effectively. These competencies are both foundational and task specific.

The Competency Model Clearinghouse from the U.S. Department of Labor Employment and Training Administration and the Occupational Information Network (O\*Net) were utilized as the starting point for identifying core knowledge, skills, and abilities. Employers then provided feedback which led to the final list of critical competencies.

### **Careers in Colorado Website Development**

A primary deliverable of career pathways development under HB15-1274 is to “create a microsite concerning the career pathway on a state-provided, free online resource” (HB15-1274, 2015) that includes the following elements: industry/sector awareness, salary and wage information, employment forecasts, education, training, and support services.

[Careers in Colorado](#) is a free online resource to help students and job seekers learn more about careers in growing industries in Colorado. As of June, 2018, interactive, regional career pathways modules exist for healthcare, construction, information technology, advanced manufacturing, cybersecurity, and business operations. Key features of the site include: introductory overviews and facts about key Colorado industries and regional top jobs; career pathway maps highlighting individual occupations and career progression options; details about education and training program requirements and opportunities in Colorado; competency information on the knowledge, skills, and abilities required for each occupation; Colorado and regionally specific occupational demand and salary data; and preparation information and links to community resources.

### **Careers In Colorado Usage**

Google Analytics was utilized to measure site usage comparing monthly usage between the 2016-2017 academic year and the 2017-2018 academic year. In the 2016-2017 academic year, there were 4391 users of the site. In the 2017-2018 academic year, there were 9534 users of the site, a 117% increase. The percentage of

returning visitors compared to total visitors to the site remained at about 14% each year. There was a 78% increase in the number of sessions and a 404% increase in page views. The bounce rate (single page sessions in which there was no interaction) decreased by 92%.

In summary, the number of users of [Careers in Colorado](#) has more than doubled from FY17 to FY18. Users are engaging in more sessions, reviewing more pages and are more likely to interact with the site before leaving.

### How Are Experience Levels Defined?

**Entry-level** indicates zero to two years experience in an apprenticeship, on-the-job training or previous work-related skills, knowledge or experience may be required AND/OR a high school diploma, some postsecondary credential or training, up to an Associate's degree, or vocational school training.

**Mid-level** indicates two to four years previous related work experience AND/OR a Bachelor's degree or completion of an apprenticeship may be required.

**Advanced-level** indicates four-plus years experience with considerable or extensive skills, knowledge, and experience, AND/OR a graduate degree may be required.

### Mapping the Education & Training Landscape

Education and training partners were identified and engaged during the public partner and industry engagement meetings. These meetings allowed public partners providing training and education to hear directly from industry partners what their critical occupations and related competency needs are. Education and training partners were then able to align their programs and curriculum to industry needs.

The Workforce Innovation and Opportunity Act (WIOA) promotes a shared understanding of the workforce needs within each State and fosters the development of a more comprehensive and integrated approach, such as career pathways and sector strategies, for addressing the needs of businesses and workers. At the state level, the [Eligible Training Provider List](#) (ETPL) ensures that Coloradans are able to make informed decisions on training providers and programs based on accurate data including completion and placement rates, labor market information and wage expectations. The ETPL is the primary source for education and training options built into [Careers in Colorado](#).

### Documenting Support Services

Support services for students, incumbent workers, and special populations have been included in [Careers in Colorado](#) with direct website referrals to workforce, education,



and public partner agencies. Moving forward, we anticipate utilizing the [TalentFOUND](#) gateway and to further enhance the depth and efficiency of support service access.

### **Next Steps in Career Pathways Work**

Business Operations and Cybersecurity career pathways went live on [Careers in Colorado](#) on June 30, 2018, as well as significant improvements to the website design, navigation, and user experience. For the rest of the summer and into fall 2018, the focus of career pathways work is on outreach and training efforts for existing pathways among workforce, educators, and public partners. As a baseline, in 2017-2018, more than 51 presentations were given to market and train professionals on using [Careers in Colorado](#). Marketing and training through radio, pod-casts, social media, and the CWDC websites is ongoing.

The Colorado Workforce Development Council voted that education would be the industry of focus for career pathways for development in fiscal year 2019. The education industry is actively working towards building sector partnerships that will guide the career pathway building process. The project team is currently working with leaders and stakeholders from the education industry to determine what the education pathways will include. Early conversations with education industry leaders, indicate that there are at least two overarching pathways, early childhood education occupations and K-20 education occupations. As conversations and research continue further delineations are plausible.

In many ways, career pathway development efforts will follow a similar timeline with similar deliverables. In fall 2018, pathways work will focus on four areas:

1. Clarifying the scope of roles and opportunities included in the pathways work.
2. Identifying stakeholders and industry engagement opportunities.
3. Documenting the talent development landscape for education career pathways, including identifying the top jobs, industry forecasts, salary and wage forecasts, and occupation specific competencies.
4. Documenting education and training programs, career pathways programs, and work-based learning opportunities.

Through winter 2019, the project team will utilize information collected and engage the education industry to validate top jobs, competencies, education and training options, and career pathway maps. Once validated with industry, the education career pathways will be published on [Careers in Colorado](#).

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