

Industry Overview

The information technology (IT) cluster supports business activities in all other sectors of the economy with a variety of products and services, ranging from virus protection and other security programs for computers to specialized, custom software and computer integrated systems design. Technology enterprises are high-knowledge, human capital-based businesses that are expanding globally. This industry cluster report is based on a narrow definition of information technology to avoid double-counting workers in other technology clusters such as telecommunications and aerospace. This analysis divides information technology into two clusters: software and hardware.



- Hardware includes companies that manufacture computers and computer storage solutions to manage and protect electronic information.
- Software, which is covered in this report, includes companies involved in off-the-shelf software products to custom computer programming, computer facilities management, computer systems design, and data processing services. Software companies also provide network solutions, web-based applications, and operating systems.

A broader information technology cluster definition includes companies involved in software, hardware, and telecommunications. The definition can be expanded to include individuals employed in information technology occupations across all industries. Using this broader definition, the Colorado Technology Association (CTA) reports there are approximately 146,800 information technology workers in the state representing more than 12,000 software, Internet, hardware, telecommunications, and related technology companies.

IT-software was the nine-county Metro Denver and Northern Colorado region's¹ fastest growing cluster in 2016, posting 9.4 percent employment growth between 2015 and 2016. In fact, this cluster grew at its fastest pace since 2001 as a result of landmark company expansion and venture capital activity. The region is home to more than 54,580 IT-software workers in nearly 5,180 companies, employing 2.4 percent of the region's total employment base. Employment in the region's IT-software industry grew for the sixth-consecutive year in 2016, adding over 13,920 workers between 2010 and 2016.

The region's talent pipeline is a key ingredient for its entrepreneurial and innovative environment and is fueled by a growing IT-software workforce across the state. Colorado attracts young, scientific, and technical talent with millennials being the largest generational group of the total population. According to the U.S. Chamber of Commerce Foundation, one-half to two-thirds of the millennials are interested in entrepreneurship, and 27 percent are already self-employed. Colorado has the third-highest concentration of tech workers, with 9 percent of the state's private sector workforce employed in technology firms, according to the CompTIA's *Cyberstates 2016* report. The state's tech industry payroll was \$19.9 billion, with the ninth-highest average tech wage totaling \$106,350.

The region's innovative ecosystem and growing startup hub support its increasing share of entrepreneurs. Additionally, the region's collaborative culture, high quality of life, numerous coworking and shared workspaces, and strong job growth attract entrepreneurs. Moneyrates.com ranked Denver among the "10 Best Cities for Young Entrepreneurs" in 2016 and Denver and Boulder ranked among the top 10 emerging cities to live for tech professionals in 2016, according to Homes.com. The U.S. Chamber of Commerce Foundation's *Innovation That Matters 2016* ranked Denver third among U.S. cities that foster entrepreneurial growth and Denver ranked as the third-best city to start a tech career, according to ComputerTrainingSchools.com. Further, Metro Denver ranked among the top five cities for young entrepreneurs by NerdWallet in 2016. The Ewing Marion Kauffman Foundation ranked Metro Denver ninth

¹ The nine-county region is comprised of two principal areas, Metro Denver and Northern Colorado. Metro Denver consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, and Jefferson counties. Northern Colorado consists of Larimer and Weld counties.

INFORMATION TECHNOLOGY-SOFTWARE:

Metro Denver and Northern Colorado Industry Cluster Profile

among the 40 largest metropolitan areas in the 2016 *Kauffman Index: Startup Activity*, with 360 people out of 100,000 adults becoming entrepreneurs each month.

The region is home to numerous programs and expansive real estate opportunities to support entrepreneurs and innovators. Denver, Boulder, Fort Collins, and Longmont hosted startup weeks to celebrate companies, innovation, and ideas in 2016. TechStars is a three-month program that provides up to \$18,000 in seed funding for startups and an optional \$100,000 convertible debt note, intensive mentorship, idea development, and the chance to present to angel investors and venture capitalists. Other entrepreneurial resources include TiE-Rockies, Startup Colorado, the Advanced Industries Accelerator Grant Program, and Blackstone Entrepreneurs Network. Further, real estate opportunities provide ample space for growing tech firms. According to CBRE's "Colorado Tech Book 2016," the tech industry was the most active industry to expand in Metro Denver office space in 2015. Further, tech firms in Denver leased 1.1 million square feet or 16.5 percent of the commercial office leases in Metro Denver. The region is also home to numerous coworking spaces that foster creativity and innovation. Metro Denver has more than 522,000 square feet of coworking space including INDUSTRY Denver, STRIDE, Shift Workspaces, and the Commons on Champa, among others. Galvanize is a technology coworking and office space for digital startups, with three campuses in Colorado, one in Boulder and two in Denver.

Software Economic Profile

The software cluster consists of seven, six-digit North American Industry Classification System (NAICS) codes including software reproduction, software publishers, custom computer programming, data processing and hosting, computer facilities management services, and computer systems design services.

The nine-county region ranked eighth out of the 50 largest metro areas in software employment concentration in 2016, up one position from the previous year. With direct employment of about 54,580 software employees, the region ranked 12th.² Nearly 82 percent of Colorado's software cluster employees work in the region.

Software Employment and Company Profile, 2016

	Nine-County Region	United States
Direct employment, 2016	54,580	3,242,690
Number of direct companies, 2016	5,180	220,210
One-year direct employment growth, 2015-2016	9.4%	4.0%
Five-year direct employment growth, 2011-2016	27.5%	27.8%
Avg. annual direct employment growth, 2011-2016	5.0%	5.0%
Direct employment concentration	2.4%	1.9%

Sources: Dun & Bradstreet, Inc. Marketplace database, July-Sept. 2010; Market Analysis Profile, 2011-2016; Development Research Partners.

² Employment concentration is the direct cluster employment in a region expressed as a percent of total employment in all industries in the same region. Employment concentration is calculated and ranked for the 50 largest metropolitan statistical areas (MSAs). Direct employment is the number of employees in the industry cluster in a region. No multiplier effects are included. Direct employment is estimated and ranked for the 50 largest MSAs.

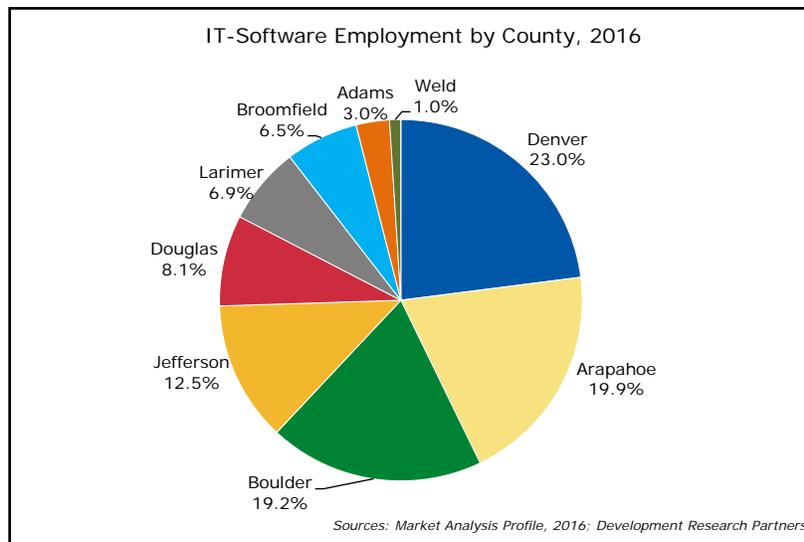
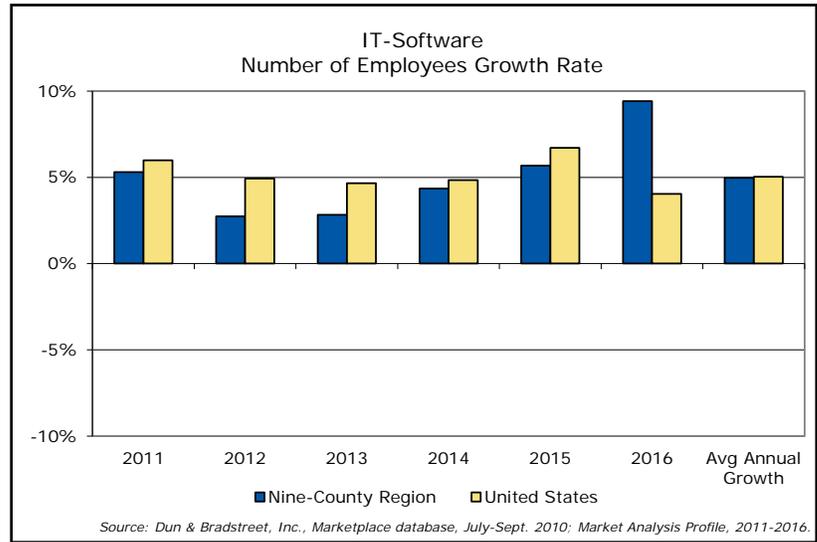
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Metro Denver and Northern Colorado Industry Cluster Profile

Software Employment

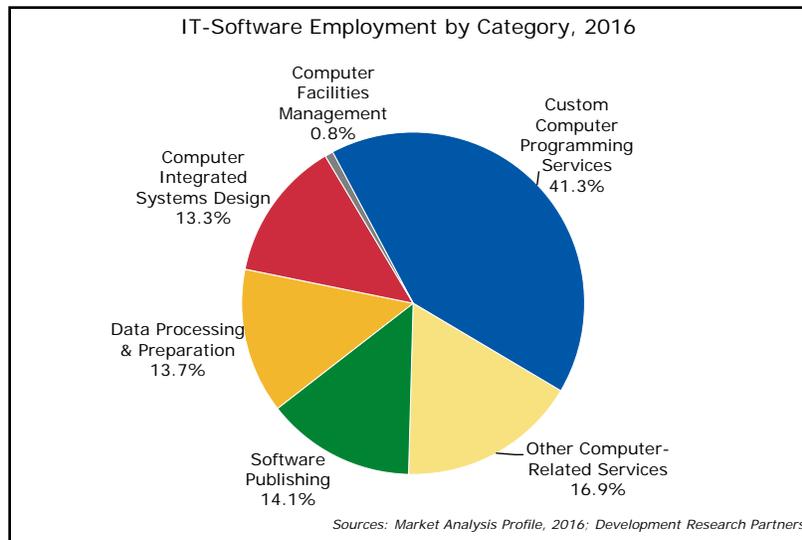
The nine-county region's software employment (54,580 workers) rose 9.4 percent in 2016, compared with the previous year's level, adding nearly 4,700 new jobs during the same period. National employment levels also grew over-the-year, rising 4 percent. About 1.7 percent of the nation's software employment is located in the region. Between 2011 and 2016, the region's software employment rose 27.5 percent, compared with 27.8 percent at the national level. Software companies employed 2.4 percent of the region's total employment base, compared with a 1.9 percent national employment concentration.

About 5,180 software companies operated in the nine-county region in 2016. Nearly 85 percent of the region's software companies employed fewer than 10 people, while 0.4 percent employed 250 or more.



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Metro Denver and Northern Colorado Industry Cluster Profile



Major Software Companies

- Alteryx, Inc.
www.alteryx.com
- AxisPoint Health (formerly McKesson)
www.axispointhealth.com
- CA Technologies
www.ca.com
- CGI Group Inc.
www.cgi.com
- CIBER, Inc.
www.ciber.com
- Cisco Systems, Inc.
www.cisco.com
- Coalfire Systems, Inc.
www.coalfire.com
- Constant Contact, Inc.
www.constantcontact.com
- Datavail Corp.
www.datavail.com
- Dell EMC Corporation
www.emc.com
- Envysion, Inc.
www.envysion.com
- Four Winds Interactive
www.fourwindsinteractive.com
- Gusto
www.gusto.com
- Hosting.com
www.hosting.com
- IBM Corp.
www.ibm.com
- Ibotta, Inc.
www.ibotta.com
- NetApp (formerly SolidFire Inc.)
www.solidfire.com
- Oracle Corporation
www.oracle.com
- Pearson eCollege
www.ecollege.com
- Ping Identity
www.pingidentity.com
- Pivotal Software, Inc.
www.pivotal.com
- Qualfon
www.qualfon.com
- Quark Software Inc.
www.quark.com
- Recondo Technology
www.recondotech.com
- SendGrid
www.sendgrid.com
- SofTec Solutions
www.softecinc.com
- Statêra, Inc.
www.statera.com
- Swiftpage ACT! LLC
www.swiftpage.com
- TalentReef Inc.
www.talentreef.com
- Tendril
www.tendrilinc.com
- TriZetto Corporation
www.trizetto.com
- Trustwave
www.trustwave.com

Major Software Companies Cont'd

- IHS Markit
www.markit.com
- Intermap Technologies, Inc.
www.intermap.com
- Kapost
www.kapost.com
- LogRhythm Inc.
www.logrhythm.com
- Long View Systems
www.longviewsystems.com
- MapQuest, Inc.
www.mapquest.com
- Microsoft Corporation
www.microsoft.com
- TSYS (formerly Transfirst)
www.transfirst.com
- Twitter, Inc.
www.twitter.com
- VMware, Inc.
www.vmware.com
- Webroot Inc.
www.webroot.com
- Welltok
www.welltok.com
- West Corporation (formerly Intrado Inc.)
www.west.com
- Zillow Group Inc.
www.zillow.com

2016 Industry Highlights

Key Company Announcements

The nine-county region's reputation as a tech hub, high quality of life, and solid talent pool are prompting companies to grow and expand. Notable IT-software company expansions and announcements in 2016 included:

- Amazon Web Services, a local division of the Seattle-based online retailer, opened a tech office in Broomfield. The company plans to hire software engineers at the location.
- Software development company Apto relocated its headquarters from Galvanize to lower downtown Denver and plans to add a couple dozen employees. The move is a result of aggressive company expansion over the past 12 months, accelerating revenue growth, and new industry partnerships.
- Billtrust, a New Jersey-based company that provides payment cycle management for businesses, expanded its Denver footprint. The company relocated its Denver office to a 26,570-square-foot space in the Gateway Business Park, which will accommodate up to 150 workers.
- Denver app maker Blinker relocated from Cherry Creek to Speer Boulevard to double the company's office space. The company's app is intended for private used-car transactions and the company plans to double its workforce to 42 employees in the next two years.
- Data recovery and security software company Code42 opened its third U.S. office in Broomfield. The expansion allows the company to be close to current and prospective customers and enable the company to recruit top talent in the area.
- Cuttlesoft, a Florida-based tech startup company specializing in information technology and software services, opened a second location in lower downtown Denver. The company cited Denver's robust tech presence as motivation for its new office.
- Denver-based Dizzion Inc. relocated from the River North neighborhood to downtown Denver. The company plans to add additional workers as it expands.
- Idaciti relocated from New York City to the WeWork coworking space in Denver. The startup transforms electronic data into visual presentations including interactive graphics, charts, and other visuals to tell stories about businesses or groups.
- Newton Software doubled its Fort Collins workforce, hiring 25 additional employees in the next eight to 10 months. The company leased about 5,000 square feet of space and plans to grow from 15 to 40 employees.
- Denver-based NextHealth Technologies plans to at least double its workforce from the 15 current employees. The company secured additional venture capital funding that will help expand its workforce.
- nPloyed, a tech employee recruiting firm, relocated its business operations from Scottsdale, Ariz. to Denver. The company plans to grow from 30 to 40 employees in 2017. The company builds a software platform to help glean hiring insights as clients recruit job candidates.

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Metro Denver and Northern Colorado Industry Cluster Profile

- Poetic Systems, a Houston-based website development and design company, opened an office in Denver. The expansion will help to boost its portfolio, as the company creates mobile applications and websites for startups and established companies.
- Qualfon will hire 150 customer-service and inbound sales positions at its Fort Collins call center. The workers will serve its consumer brands across multiple industries.
- Remote-Learner, an online educational company, relocated its headquarters from Waynesboro, Va. to Denver. The company has about 75 employees, eight of whom work in Colorado.
- SendGrid relocated its corporate headquarters from Boulder to downtown Denver. The 52,000-square-foot space can accommodate more than 2.5 times the current Colorado employees and the company plans to grow to at least 630 workers by 2020.
- Simpro Software, an Australian-based company, opened a U.S. headquarters in Boulder that could employ up to 100 people within two to three years. The company makes an operational software suite for contractors such as electricians and plumbers that help them manage a variety of tasks. The company raised \$30.5 million to expand its operations.
- SyncHR relocated its headquarters from Oakland, Calif. to Denver. The human relations-based software company increased hiring about 40 percent, with about half of these positions from Colorado. The move to Denver helped increase opportunities for collaboration with other technology leaders and offered a more central location to its business operations.
- TapInfluence moved its headquarters from Boulder to downtown Denver. The new space will allow the company to grow to as many as 75 employees. TapInfluence manages a network of bloggers with established audiences who consumer-brand businesses can hire to make blogs videos, podcasts, and other digital content highlighting their products and household goods.
- TestPlant, a London-based software company, established a new U.S. headquarters in Boulder. The company moved into a 7,800-square-foot space that will host a range of functions including sales, human resources, presales, support, development, and marketing. The company has 35 employees and could grow to as many as 50 people next year.
- Trustpilot, a Danish company that provides online reviews of companies, opened a Denver office at coworking space WeWork. The company plans to add up to 40 employees.
- Twitter Inc. moved to a new location in Boulder and plans to increase its local employment base by 100 employees. The company leased a new 60,000-square-foot building with Class A office and retail space.
- World Wide Technology Inc. and its subsidiary Asynchrony Labs opened a downtown Denver office. The locations will provide regional sales, engineering, and development hubs for the company. The company plans to add over 60 workers, with plans to expand to as many as 250.
- Zillow Group Inc. plans to add 150 positions to its operations in Centennial. The company will hire business consultants and customer care consultants to its rentals and new home listings lines of business.
- ZingFit, a software company that provides online scheduling and studio management for group fitness studios, relocated its headquarters from New York to Boulder. The company employs 14 people and 12 will relocate with the company. ZingFit plans to add up to 156 employees by the end of 2018, but ultimately plans to have 500 employees within eight years.

Colorado is a national hub for cybersecurity. In 2016, the National Cybersecurity Center opened in Colorado Springs, a first-of-its-kind partnership between industry, nonprofits, government entities, and academia. Several companies and training programs provide support to this growing industry.

- Cybersecurity firm LogRhythm Inc. expanded its Boulder headquarters with 50 employees and 21,000 square feet of new office space. The company has grown to more than 500 employees worldwide, with close to 375 in Boulder.
- Denver-based ProtectWise Inc. raised \$25 million in venture capital to expand its footprint, doubling its size for the second-consecutive year. The company provides intrusion and infestation analysis, and has pioneered a new network history recorder in the cloud.
- Westminster-based Coalfire Systems Inc. acquired Virginia-based Veris Group. The combined company will become a major cybersecurity and threat assessment consultancy to federal agencies, businesses, and cloud-computing companies. With the merger, Coalfire now has one of the most-advanced technical penetration testing and red team organizations in the industry.
- CyberGRX, a Denver cybersecurity firm, raised \$9 million in funding. The company will use the funding to deliver the CyberGRX platform to market. The company helps enterprises not only automate and standardize the collection of information, but also prioritize, evaluate, and remediate risk.

INFORMATION TECHNOLOGY-SOFTWARE:

Metro Denver and Northern Colorado Industry Cluster Profile

- Red Canary, a Denver-based cybersecurity software startup, raised \$6.1 million and plans to double its staff to about 30 employees. The company plans to hire engineers, sales, and marketing staff.
- Broomfield-based Webroot provides threat monitoring, detection, and protection on desktop and mobile devices for both end-users and businesses. The company has grown from a privacy upstart to a cybersecurity industry leader.
- Cybersecurity firm Swimlane raised \$6 million in a Series A round of funding. The Louisville-based company will use the funding to accelerate growth through expanded sales and marketing, and additional software development.
- SecureSet Accelerator is a new Denver startup that is an offshoot of the SecureSet Academy, a cybersecurity training program. The accelerator aims to bring up to eight teams of cybersecurity startup founders and help them over four months by providing \$40,000 in funding, office space, and mentorship.
- The University of Denver (DU) began a new fast-track program that could help close the gap between open cybersecurity positions and workers qualified for the positions. The program is one of five schools in the state whose cyber education programs have earned a Centers of Academic Excellence designation from the National Security Agency and the U.S. Department of Homeland Security. DU's masters level cybersecurity program differs from most as students do not need an undergraduate degree in computer science. The program will provide an additional three months of instruction to those who come in without a computer background.

Venture Capital and Investment Activity

Companies in the nine-county region's IT-software cluster received significant venture capital and investments to accelerate growth and expand product offerings.

- Denver-based PaySimple received \$115 million in private equity. The company will use the funding to expand its product offerings, manage invoicing and payments, billing, and recurring bill-pay setup for customers.
- SendGrid Inc. closed on a \$33 million Series D funding round to expand its email marketing product and customer service offerings, develop new products, and accelerate global expansion plans. The company is a transactional email delivery and management service.
- FullContact, a Denver-based software developer, raised \$25 million in venture capital funding. The company plans to increase its workforce and possibly acquire other startups with the funding. After the funding round, the company also purchased Boulder-based Conspire.
- GoSpotCheck, a web and mobile app developer, secured \$16.5 million in venture capital funding. The company plans to use the money to improve its designs, expand office space, and hire 30 additional employees.
- Greenwood Village-based Recondo Technology secured \$16 million to support product development designed to improve financial outcomes for patients and customers. Recondo's products and services enable patients and providers to monitor benefits and payments for high-deductible insurance and health savings plans.
- Boulder-based VictorOps Inc. raised \$15 million in a round of Series B funding for customer acquisition, sales and marketing, and product development. The company expects to hire another 15 to 25 employees in 2017. The latest round brings the company's total funding to about \$33 million.
- TapInfluence Inc. secured \$14 million in financing to build its sales and support teams and will continue opening additional offices. The company provides marketing software.
- Boulder-based 10-4 Systems Inc. raised \$13.9 million in a round of Series A financing. The company also completed a spinoff from Arizona-based GlobalTranz that will allow the company to focus on product development and customer acquisition. The company reported that the investment would continue to fuel their growth, expansion, and innovation for years to come.
- Cloud Elements Inc. raised \$13 million in venture capital financing and plans to increase its staff by a third to expand the market for the Denver-based startup's technology. Cloud Elements helps software developers publish, integrate, aggregate, and manage their application program interface through a unified platform. Since launching in 2013, the company has raised \$21.2 million.
- Avoka Technologies received \$12 million from private investors to expand its business. The company plans to increase its workforce by 50 percent across Broomfield and London over the next year and increase its customer base.
- Denver-based Convercent raised \$11 million in funding and plans to increase its workforce by one-third. Convercent creates software that organizes employee disclosures and other compliance

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Metro Denver and Northern Colorado Industry Cluster Profile

data in one place, striving to help customers' compliance officers manage investigations and spot trends.

- Parkifi, a Denver tech startup, raised \$8 million in funding. The company makes a system of sensors and software that provides real-time data to show available parking spaces in garages, surface lots, and on-street parking. The funding will help the company add jobs amid a national expansion.
- TrackVia raised \$7.5 million from five investors. The company develops software to help businesses manage inventory and production processes. TrackVia plans to hire between 12 and 20 employees for its marketing, sales, and engineering departments.
- Dizzion secured \$6.4 million in funding to help expand its Denver presence. The company plans to more than double its workforce in 2017.
- Boulder-based JumpCloud Inc. raised \$4.3 million in a Series B round of funding to expand its product offerings. The company is a central source of authentication, authorization, and management of employees and their devices, and the IT applications they access.
- Zvelo Inc., a Greenwood Village-based online security and data company, closed \$2.75 million in royalty-debt financing from Cypress Growth Capital. The company plans to hire engineers and sales employees to help the company combat online advertising malware and fraud.
- Denver-based Kwippo Inc. raised \$2.5 million in seed funding. The company will use the funding to further develop its messaging app called Kwippit that provides a custom smartphone keyboard and replaces the standard emoji figures with more elaborate and varied pictures.
- Denver-based Greystone Technology raised \$2 million in private capital to expand into the enterprise market. The company provides IT support and integrated web services.
- Field Squared secured \$1.9 million in equity. The company will expand its workforce with the new funding, with plans to increase staff from 15 to 20 employees.

Industry Infrastructure Support

The region's organizations and professional associations are dedicated to advancing the vibrant IT-software industry.

- Several cities in the nine-county region hosted startup weeks including Denver, Boulder, Fort Collins, and Longmont. Denver hosted the fifth-annual Denver Startup Week in September 2016, which showcased the entrepreneurs, employees, and startup companies fueling innovation in the region. Hosted by the Downtown Denver Partnership, the 2016 event attracted a record 13,330 registrants and more than 5,000 companies were represented. Boulder Startup Week and Fort Collins Startup Week occurred in early 2016, with numerous events, startup job fairs, and entrepreneurship mentoring. The second-annual Startup Longmont celebrated the city's booming entrepreneurial zone with over 70 events.
- The Colorado Technology Association is a not-for-profit organization dedicated to advancing the state's technology industry. In 2016, it hosted the second-annual Colorado Tech Tour showcasing powerful tech stories happening in five different regions across the state and the annual Colorado Tech Summit pulling together Colorado's technology leaders to explore the latest tech trends. The 2016 Summit also included a youth innovation showcase.
- KPMG Ignition in Denver is an incubator dedicated to project-focused workspaces designed for information sharing, collaboration, and increasing efficiencies. The Denver facility created 125 jobs in the areas of data science, enterprise architecture, application programming, solution development, and IT integration.
- A new Denver tech accelerator, The Hop Up Program, aims to give underrepresented college students in Colorado the opportunity to test business ideas in the creative-technology space through a four-week program. Participants develop their own business ideas and get insight into concept development, marketing, sales planning, financial planning, and budgeting. At the end of the program, participants pitch their business plan to mentors, corporate partners, and the creative community. The program is a partnership with workspace developer INDUSTRY and StickyDocs.
- Boulder startup accelerator TechStars is a three-month program that provides up to \$18,000 in seed funding for startups and an optional \$100,000 convertible debt note, intensive mentorship and idea development, and the chance to present to angel investors and venture capitalists for those companies selected to participate. TechStars Ventures is the venture capital arm of TechStars and has \$265 million under management. TechStars hosted its 10th class of startups in 2016, a group of 11 companies that raised \$4.73 million. After graduating from TechStars, companies average more than \$2 million in outside venture capital.

INFORMATION TECHNOLOGY-SOFTWARE:

Metro Denver and Northern Colorado Industry Cluster Profile

- TiE-Rockies was founded in 2001 to inspire, foster, and support entrepreneurship in the Rocky Mountain region. TiE-Rockies provides more than 100 events per year, an ongoing mentoring program, the TRIP Funding Program, and other various programs, initiatives, workshops, seminars, and networking opportunities to local entrepreneurs.
- The Longmont Economic Development Partnership and the City of Longmont are helping leverage the Longmont Ignite! Fund by allocating \$15,000 in grant money to a new Advance Longmont Ignite! Matching Grant. Longmont Ignite! is a group of community-minded individuals who have established a fund to make grants available to entrepreneurs developing products or business concepts that will add to the economic vitality of the area.
- Fort Collins-based Innosphere is an incubator formed to accelerate the success of high-impact scientific and technology companies, and to promote the development of a regional, entrepreneurial ecosystem in Colorado. Innosphere also has satellite locations in Denver, Fort Collins, and Boulder to better serve entrepreneurs. Since 2009, Innosphere graduated over 50 companies, raised \$220 million in capital, and created more than 1,400 jobs in Colorado. In 2016, 13 software-related companies graduated from Innosphere.
- Denver is home to a chapter of the Founder Institute, the world's largest entrepreneur training and startup launch program. Based in Silicon Valley, the Founder Institute assists aspiring founders across the globe build enduring technology companies and has helped create more than 20,000 jobs in over 2,500 companies.
- Founded in 2014, the Blackstone Entrepreneurs Network is designed to help entrepreneurs find resources and thrive in Colorado. The network has a variety of business advisors in fields for entrepreneurship, technology, biotechnology, and health technology industries.
- The Denver Office of Economic Development released the fifth edition of its *Denver Capital Matrix*, a resource directory of funding sources for Denver's small businesses and entrepreneurs. The matrix identifies more than 400 funding sources including traditional bank lending, venture capital firms, private equity firms, angel investors, mezzanine sources, investment banking institutions, and others that have funded Colorado businesses.

The region is home to numerous coworking spaces that foster creativity and innovation.

- Galvanize, a technology coworking and office space for digital startups, is helping to attract new businesses and foster entrepreneurship. The concept combines venture capital, flexible workspace, and an experimental engineering and business school called gSchool. In 2016, Galvanize raised \$45 million in Series B funding to provide more students access to Galvanize's modern web development, data science programs, and expand employer's needs to re-skill existing employees.
- INDUSTRY Denver is the nexus of creativity and technology in downtown Denver and includes shared office space and amenities. The coworking space includes several IT-software companies such as Uber, Roximity, Zenman, and Spotzer Media Group, which have leased more than 50,000 square feet of creative and coworking office space.
- WeWork opened two Denver locations at 1550 Wewatta St. and 17th and Platte in the lower Highlands neighborhood. The coworking space has attracted about 120 companies ranging from one-person operations to divisions of large tech firms.
- Modworks Coworking doubled its space in Denver's Petroleum Building, undergoing \$800,000 of construction and renovation. The space caters to freelancers, remote workers, and small businesses.
- STRIDE is a 150,000-square-foot coworking space that serves as the second incarnation of INDUSTRY Denver. The space provides incubators, innovation laboratories, outdoor spaces, and large meeting and conference facilities.
- Shift Workspaces opened its second shared office and coworking campus in the Golden Triangle. Shift unveiled the 22,000-square-foot building with 87 private offices. A third location is planned at the old Cathedral High School in Uptown.
- Enterprise Coworking opened a new shared workspace in Denver's Curtis Park. The 66,000-square-foot space hopes to attract diverse clientele and will offer flexibility as companies scale. Enterprise includes office and conference space, a café and bar, a video game room, a full-service kitchen, and a rooftop patio.
- Alchemy, a newly designed creative coworking space in Denver, welcomed entrepreneurs in late 2016. The facility includes dedicated desks, coworking memberships, and private office suites for startups and small businesses. The two-story building has lounge seating areas, high top tables, bar, kitchen, and a main conference room.
- The Commons on Champa is a public-private partnership between the City and County of Denver, the Downtown Denver Partnership, and the CTA. The 20,000-square-foot facility serves as a gathering

INFORMATION TECHNOLOGY-SOFTWARE:

Metro Denver and Northern Colorado Industry Cluster Profile

place for startups and entrepreneurs and is the headquarters for the CTA. The campus includes a 200-person event venue, conference rooms with cutting-edge technology, and offers a speaker series, classes, mentoring for entrepreneurs, and industry meetups.

Academic and Education Announcements

The region's robust educational system and research centers help prepare the future IT-software workforce with vital skills through leadership, mentorship, and professional experience.

- Colorado State University-Global Campus will offer a computer programming certificate and undergraduate degree specialization program. The online classes are geared toward novices and by the end of the program, students will be able to design a simple web and mobile app and master basic software development. Bridging the gap between non-accredited accelerators and traditional semester-long programs, the courses are designed on the school's eight-week course schedule, allowing students to gain an accelerator experience.
- H5 Data Centers opened a science, technology, engineering, and mathematics (STEM) Innovation Center at its flagship Denver data center campus in Greenwood Village. H5 opened the center in conjunction with the CTA, Handy Networks, and Eaton Corp.
- CareerWise Colorado is an initiative created by leading industry associations to equip high school students with the skills necessary to enter today's workforce. Using the Swiss Apprenticeship System as a model for inspiration, CareerWise aims to unite businesses and educators to provide a business-led, student-centered program that addresses real-world needs.
- The Colorado STEMworks Database is the premier source for high-quality STEM education programs in Colorado. Each program in STEMworks has been independently vetted and cleared a high bar of quality.
- Totara Learning welcomed Remote-Learner to the global Totara Partner network. As a long-standing leader in the world of open source e-learning platforms, Remote-Learner consistently provides innovation in learning and training solutions. With this partnership, the Denver-based company can offer the award-winning Totara platform to business, government, and education markets.
- Metro Denver is home to a growing number of coding schools, coding bootcamps, and programs to train software developers.
 - General Assembly, an international software coding and design school, opened a campus in lower downtown Denver. The New York City-based company offers part-time and full-time classes in the WeWork coworking space.
 - The DaVinci Institute in Westminster is one of the nation's top-rated programmer training centers for the coding profession. The coding school and think tank hosts a collaborative work space and offices for startups.
 - Galvanize offers 12- and 24-week coding bootcamps in web development and data science. The web development bootcamp covers full-stack JavaScript including AngularJS, Node.js, and Express.js. The data science bootcamp covers Python, SQL, and Hadoop.
 - SecureSet Academy is a 20-week, full-time cybersecurity bootcamp in Denver. The program includes hands-on instruction in state-of-the-art labs, guided product training, and essential certifications (CISSP and Security+).
 - RefactorU is a 10-week web application development boot camp in Boulder. The program was one of the first schools to offer a full-stack JavaScript bootcamp.
 - Denver's Turing School of Software & Design is a seven-month, full-time program for people who want to become professional developers.
 - Greenwood Village's Skill Distillery is a 19-week coding school and software bootcamp aimed at training web developers and software programmers.
 - Boulder's Tectonic Academy was founded in 2002 to provide software and mobile application development to a diverse customer base. Tectonic Academy is a unique training program that equips disconnected youth and military veterans with software development skills and new career paths through training, mentoring, and hands-on project work.

Cross-Cluster Convergence

Collaboration across the region's industries including digital health, aerospace, bioscience, and IT-software has fueled innovation, discoveries, and advancements.

- Metro Denver is an emerging digital health community. Founded in July 2012 by the Denver South Economic Development Partnership and Innovation Pavilion, Prime Health is a growing statewide community of 1,600+ health care executives, physicians, technologists, academics, entrepreneurs,

Metro Denver and Northern Colorado Industry Cluster Profile

and investors dedicated to improving health and lowering healthcare costs through the commercialization of digital health technologies. Prime Health is a resource ecosystem for Digital Health—the convergence of the digital and genetics revolutions with bioscience, healthcare and wellness, and information technology-software. Colorado is home to more than 130 digital health companies.

- Plans were announced for Catalyst HTI, a health-tech industry integration project slated to open in 2018 in Denver's River North neighborhood. The project will integrate building space for startups, Fortune 500 companies, and healthcare providers in one location, enabling startups with resources to grow and exposing providers and larger companies to emerging technologies and human capital. The concept will be the first of its kind and has already received support from Terumo BCT, the University of Colorado Anschutz Medical Campus, and the American Diabetes Association.
- Denver-based RxREVVU is a cloud-based platform company that enables healthcare systems and payers to enrich existing electronic health records workflows and alerts with patient cost, personalized efficacy and adherence, and aligns with clinical protocols to drive prescription decisions. RxREVVU partnered with UHealth to validate the technology in 2016.
- Lockheed Martin Space Systems released new software to help speed relief to victims of natural disasters across the globe. The software, called HelpNowMap.com, helps provide clear data to residents, first-responders, and aid agencies on the ground after floods, earthquakes, hurricanes, and other natural disasters. The program uses satellite imagery from DigitalGlobe as the base layer for a heat map of human need and infrastructure damage.
- DigitalGlobe partnered with Amazon Web Services, CosmiQ Works, and NVIDIA to launch an open-data initiative to improve image analysis tools. SpaceNet will be an online, publically available repository of over 60 million satellite imagery and labeled training data to advance the development of machine learning and deep learning algorithms.

Merger and Acquisition Activity

IT-software companies in the nine-county region announced several mergers and acquisitions in 2016.

- IHS Inc., a global business-intelligence provider, completed a merger with United Kingdom-based Markit Ltd. The company, renamed IHS Markit Ltd., will have a London headquarters. The combined company creates a \$13 billion international market and financial data company.
- New York-based Verve acquired Denver-based Roximity. The deal will help expand Roximity's Denver presence as it grows its wireless beacon software and hardware that provide location-based analytics and advertising.
- Denver-based FullContact acquired two companies—Brewster and Conspire—to broaden its product offerings and solidify its position as a unified contact management leader. The company also received \$25 million in venture capital to fund growth and acquisitions.
- Ping Identity Corp. purchased Austin-based UnboundID Corp., a maker of identity-protection software. The purchase will broaden Ping's technologies offered to corporate clients. Ping Identity makes software that helps companies authenticate the identities of employees logging in to their work computer networks and software applications.
- Centennial-based IQNavigator and VMSBeeline will merge to form one of the largest independent VMS software providers in early 2017. The combined company will be co-headquartered in Centennial and Jacksonville, Fla., which is Beeline's domestic operations hub, and will deliver the next generation of technology innovation, end-to-end customer engagement services, and value-add capabilities for managing the contingent workforce.
- Denver-based RO Innovation acquired Boulder Logic after raising \$1 million in capital funding. With the acquisition, RO Innovation now has 30 employees and about 120 customers.
- PayScale acquired Denver-based MarketPay. Both companies specialize in different types of technology and data platforms that help businesses determine their salaries. PayScale intends to retain all of MarketPay's employees and add about 20 people to the existing staff.
- Denver-based Granicus Inc. and St. Paul, Minn.-based GovDelivery merged to create the largest hosted subscription government software company in North America and the United Kingdom. The combined business employs 375 people and serves more than 3,000 government clients. Granicus employs 90 people in Denver and the merger will improve the company's position to grow locally.
- Broomfield-based Webroot acquired the assets of San Diego, Calif.-based CyberFlow Analytics. Webroot's purchase will enhance its ability to access Internet-connected devices and improve the increasingly complex threat landscape.

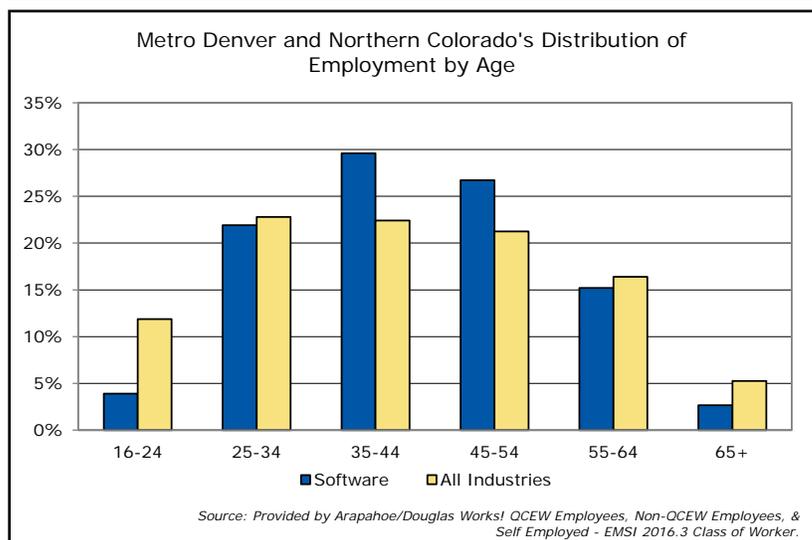
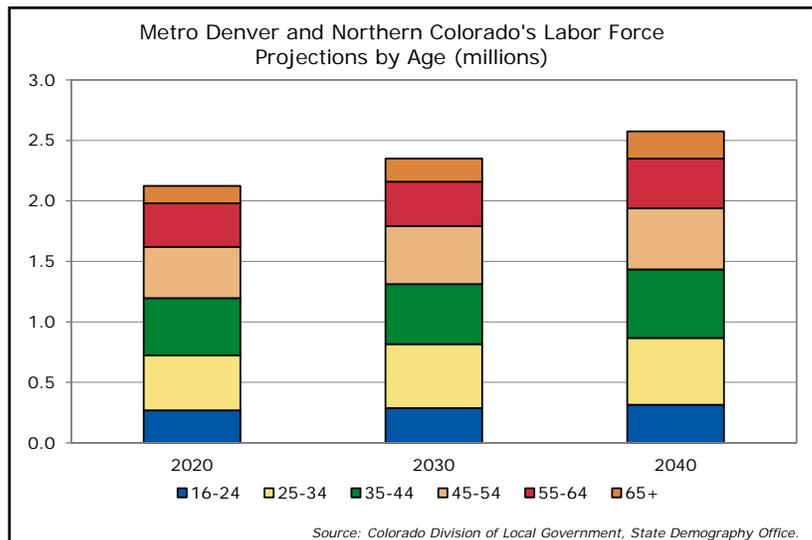
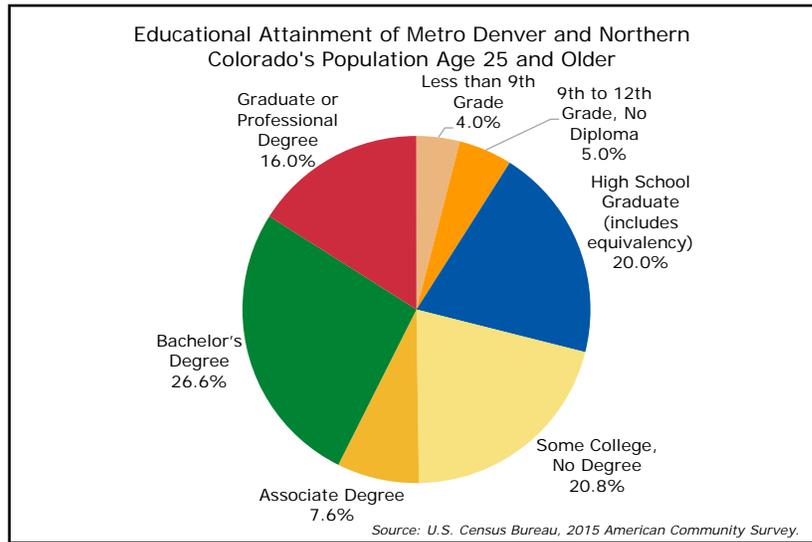
Software Workforce Profile

Many companies choose locations because of the available workforce. With nearly half of the nine-county region's 3.8 million residents under the age of 35, employers can draw from a large, young, highly educated, and productive workforce. Of the region's adult population, 42.6 percent are college graduates and 91 percent have graduated from high school. The state has the nation's second-most highly educated workforce as measured by the percentage of residents with a bachelor's degree or higher.

The attractiveness of the region draws new residents through in-migration. The region's population is expected to grow 31 percent from 2020 to 2040, driving a 21.2 percent increase in the region's labor force over the same period. It is important to note the changing composition of the workforce supply as the baby boomers begin to retire, which will pose implications for businesses whose employee pool includes significant numbers of these workers.

The nine-county region's software industry cluster employs 54,580 people and includes a large pool of talented, well-educated, and highly skilled workers. The age distribution of workers in the region's software cluster is concentrated in the younger age brackets, especially the 35-44 and 45-54 age groups.

The software workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest software occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.



INFORMATION TECHNOLOGY-SOFTWARE:

Metro Denver and Northern Colorado Industry Cluster Profile

Wages

Total payroll for the software industry cluster in the nine-county region reached nearly \$5.3 billion in 2015. The 2015 average annual salary for software cluster employees in the region was \$106,110, compared with \$111,580 nationwide.

Metro Denver and Northern Colorado Software Occupation & Salary Profile, 2016

10 Largest Software Occupations in Metro Denver and Northern Colorado	Total Working Across All Industries (2016)	Number of Available Applicants (2016)	Number of Graduates (2015)	Median Salary	10th Percentile Salary	25th Percentile Salary	75th Percentile Salary	90th Percentile Salary
1. Software developers, applications	19,949	339	921	\$103,454	\$65,735	\$81,356	\$122,826	\$148,422
2. Software developers, systems software	10,829	184	1,038	\$108,739	\$68,046	\$86,965	\$128,679	\$154,997
3. Computer user support specialists	11,439	194	928	\$57,610	\$34,918	\$43,203	\$69,054	\$87,818
4. Computer systems analysts	7,787	132	1,580	\$93,447	\$57,265	\$70,042	\$112,190	\$143,089
5. Network & computer systems administrators	9,014	153	852	\$83,869	\$51,933	\$65,942	\$102,033	\$119,858
6. Sales representatives, services, all other	19,331	1,856	55	\$67,160	\$25,477	\$37,558	\$83,399	\$121,144
7. Computer & information systems managers	5,788	480	1,483	\$157,749	\$98,837	\$119,730	\$181,893	\$300,447
8. Computer occupations, all other	7,623	130	1,353	\$92,053	\$52,876	\$71,741	\$112,972	\$129,193
9. Business operations specialists, all other	33,547	1,510	50	\$79,615	\$41,759	\$54,434	\$97,749	\$126,953
10. Computer programmers	3,013	51	584	\$86,279	\$51,966	\$65,738	\$103,726	\$121,714

Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado's workforce development system's statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, & Self Employed - EMSI 2016.3 Class of Worker.

Education & Training

Colorado's higher education system provides an excellent support system for businesses in the region. There are 28 public higher education institutions in Colorado, of which seven four-year and six two-year public institutions offering comprehensive curricula are located in the nine-county region. In addition, there are more than 100 private and religious accredited institutions and more than 350 private occupational and technical schools offering courses in dozens of program areas throughout the state. Although not exhaustive, a list of the major, accredited educational institutions with the greatest number of graduates for each of the 10 largest software occupations in the nine-county region are included below. A directory of all higher education institutions with corresponding websites may be accessed via <http://higher.ed.colorado.gov>.

- Colorado State University www.colostate.edu
- Colorado State University Global Campus www.colostate.edu
- Front Range Community College www.frontrange.edu
- Metropolitan State University of Denver www.msudenver.edu
- Red Rocks Community College www.rrcc.edu
- Regis University www.regis.edu
- University of Colorado: Boulder, Denver www.cu.edu
- University of Denver www.du.edu
- University of Phoenix-Colorado www.phoenix.edu

Key Reasons for Information Technology Companies to Locate in the Nine-County Region

The region is a top information technology location offering:

1. The ability to attract and retain high-quality IT professionals and technical talent

- Colorado has one of the nation's most educated workforces, ranking second among the 50 states for percentage of residents (39.2 percent) with a bachelor's degree or higher. (U.S. Census Bureau, 2015 American Community Survey)
- Boulder and Fort Collins ranked among the top five most-educated metro areas in the nation in 2016. (ValuePenguin.com, 2016)
- IT services and software publishing were among Colorado's top-five leading tech industry sectors by employment in 2015. The state's average high-tech wage (\$106,350) was double that of the average private-sector worker. (CompTIA, *Cyberstates 2016: The Definitive State-by-State Analysis of the U.S. High-Tech Industry*, 2016)
- Metro Denver ranked as the fourth-best metro area for young entrepreneurs in 2016. The metro area received accolades for its highly educated population and high rate of small business loans. (NerdWallet, 2016)
- Denver ranked third among the top 25 U.S. cities for fostering innovation and entrepreneurial growth. The city ranked among the top five for a healthy quality of life, a well-connected ecosystem, a vibrant cultural foundation, and a highly educated young population. (U.S. Chamber of Commerce Foundation, 2016)
- Denver ranked as the third-best city to start a tech career in 2016. Denver scored highly in nearly every category related to the technology industry and investors gave more than \$500 million to high-tech businesses in 2015. (ComputerTrainingSchools.com, 2016)
- Boulder ranked as the third-best place for science, technology, engineering, and mathematics (STEM) graduates in 2016. STEM jobs in Boulder represented more than 14 percent of all jobs, earning an annual mean wage of \$91,800. (NerdWallet, 2016)
- Denver ranked among the top 10 "Best American Cities for Women in Tech Jobs" in 2016. (Fortune, 2016)
- Metro Denver ranked fifth among the top 15 major metros for college graduates in 2016. Fort Collins ranked fourth among small metro areas. (American Institute for Economic Research, 2016)
- Boulder ranked sixth among the "Best Cities for New College Grads" in 2016. The city's growing tech hub, student and young professional population, and amenities contributed to its notable rank. (Zumper, 2016)

2. Direct access to a large and growing customer base

- Colorado ranked third in the nation for Small Business Innovation Research (SBIR) grants per worker. The state received more than 200 grants totaling nearly \$82.1 million, or \$32.90 in grants per worker compared with the U.S. average of \$11.80. (U.S. Small Business Administration, 2016; U.S. Bureau of Labor Statistics, 2016)
- Colorado ranked fifth for startup activity out of the 25 largest states by population in the 2016 *Kauffman Index: Startup Activity*, with 330 people out of 100,000 adults becoming entrepreneurs each month. (Ewing Marion Kauffman Foundation, 2016)
- Colorado had the sixth-highest venture capital investments per \$1,000 of gross domestic product in 2015. The state has consistently ranked among the top 10 since 1997. (PricewaterhouseCoopers, *MoneyTree Report*, 2016; Bureau of Economic Analysis, 2015)
- Colorado's largest export—computers and electronic products—accounted for 25 percent of all exports (totaling \$2 billion) in 2015, compared with 14 percent of U.S. exports. (U.S. Department of Commerce, International Trade Administration, 2016)

3. Low to moderate costs of doing business and a competitive tax structure

- Colorado has one of the nation's most favorable corporate income tax structures. The state's corporate income tax rate of 4.63 percent is one of the lowest in the nation and is based on single-factor apportionment, which allows companies to pay taxes based solely on their sales in the state. (State of Colorado; The Tax Foundation)
- Installed or downloaded standardized software products are exempted from state sales and use tax. The City and County of Denver also exempts custom software products from sales tax. (Colorado Department of Revenue)

INFORMATION TECHNOLOGY-SOFTWARE:

Metro Denver and Northern Colorado Industry Cluster Profile

- Colorado has the nation's ninth-best tax climate for entrepreneurship and small business. (Small Business & Entrepreneurship Council, 2016)
- *Forbes* ranked Metro Denver first among the "Best Places for Business and Careers" in 2016 for the second-straight year. Four other Colorado metropolitan areas were included on the list. The Colorado Springs metro area ranked 12th, Fort Collins ranked 18th, Boulder ranked 26th, and Greeley ranked 51st. (*Forbes*, 2016)

4. An overall better quality of life

- Denver ranked No. 1 among *U.S. News & World Report's* 2016 "Best Places to Live." Denver's healthy job market and access to the outdoors contributed to its notable rank. (*U.S. News & World Report*, 2016)
- Highlands Ranch ranked sixth in *MONEY Magazine's* 2016 "Best Places to Live" list. Centennial (13th) and Broomfield (25th) were also named to the list's top-25. (*MONEY Magazine*, 2016)
- Seven Metro Denver cities ranked among the 2016 list of the "100 Best Places to Live." Boulder ranked fifth, followed by Fort Collins (13th), Longmont (23rd), Littleton (24th), Lakewood (26th), Loveland (41st), and Lafayette (44th). (*Livability.com*, 2016)
- Metro Denver ranked as the third-fittest metropolitan area in the U.S. in 2016. Increased physical activity, low obesity and diabetes rates, and access to recreational opportunities contributed to its high rank. (American College of Sports Medicine, 2016)
- Outdoor recreation is a fundamental component to Colorado's healthy, active lifestyle and generates a \$34.5 billion economic impact annually. The state has the fourth-highest percentage of state land area devoted to national forests and public lands, more than 70 state parks and wilderness areas, and is home to the highest concentration of 13,000 and 14,000-foot peaks in the nation. (Colorado Tourism Office, 2016)
- FasTracks is a multibillion dollar comprehensive transit expansion plan to build 122 miles of new commuter rail and light rail, 18 miles of bus rapid transit, 21,000 new parking spaces at light rail and bus stations, and enhance bus service for easy, convenient bus/rail connections across the eight-county district.
- Metro Denver's moderate temperatures, low humidity, and sunshine on almost 70 percent of the days each year provide an ideal climate for residents. (U. S. National Oceanic and Atmospheric Administration, National Climatic Data Center, 2016)

Information Technology-Software Industry Cluster Definition

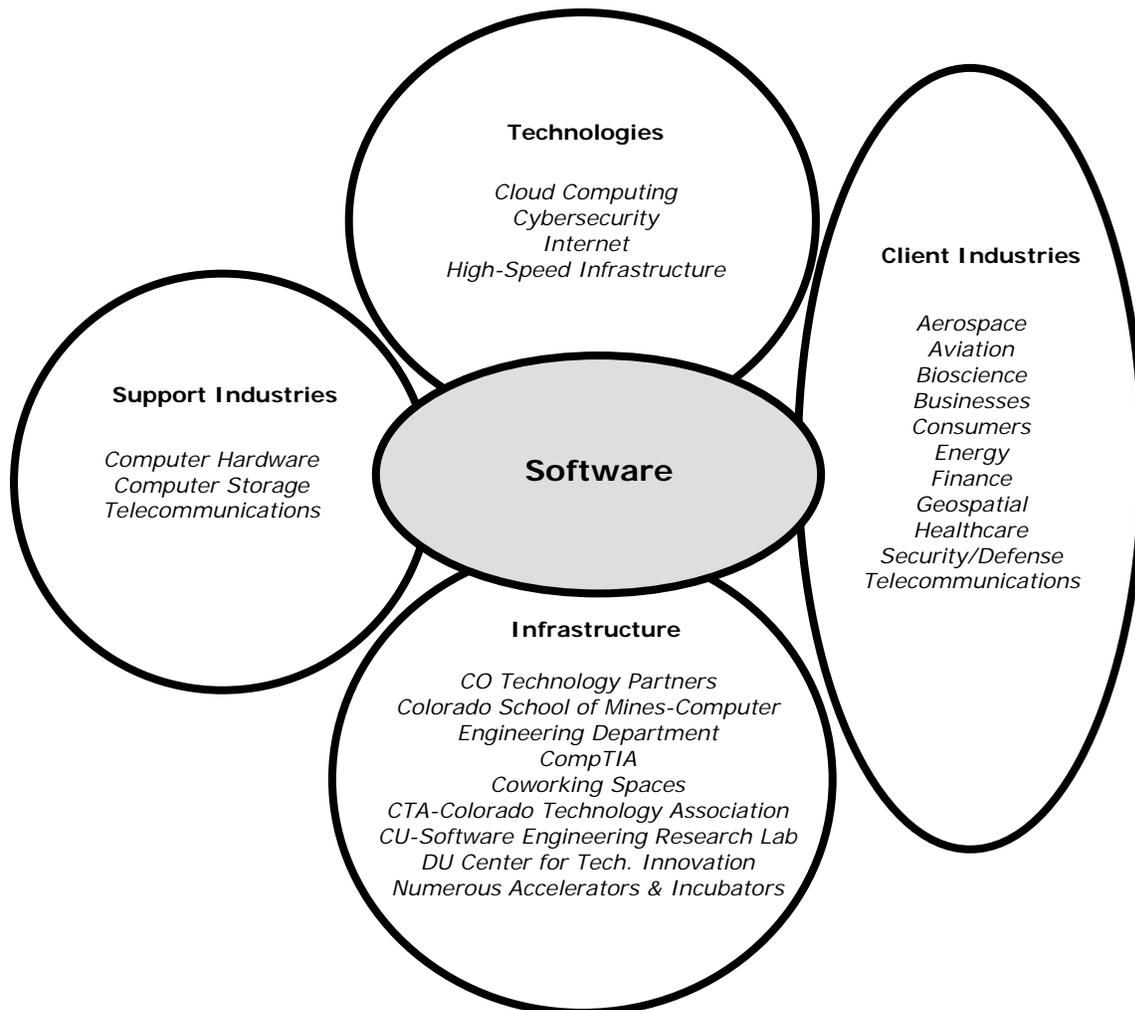
NAICS Code	NAICS Description	SIC Code	SIC Description
334614	Software reproducing	7372	Prepackaged software
511210	Software publishers	7372	Prepackaged software
518210	Data processing, hosting & related services	7374	Data processing
541511	Custom computer programming services	7371	Custom computer programming services
541512	Computer systems design services	7373	Computer integrated systems design
541513	Computer facilities management services	7376	Computer facilities management
541519	Other computer related services	7379	Computer related services NEC

Note: NEC indicates "not elsewhere classified."

INFORMATION TECHNOLOGY-SOFTWARE:

Metro Denver and Northern Colorado Industry Cluster Profile

Information Technology-Software Industry Cluster Relationships



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