

Strong Workforce Program Information & Communications Technologies Regional Advisory Committee Proceedings

November 1, 2018

SCOE- Sacramento County Office of Education

10474 Mather Blvd, Mather, CA 95655

Introduction

California is investing in the [Strong Workforce Program](#) to help fill the growing demand for “middle-skill” positions that require more than a high school diploma, but not necessarily a 4-year college degree. One million more associate degrees, certificates, or industry-valued credentials will be needed by 2025 to meet the projected industry demand.

The objective of the Strong Workforce Program is to offer more [Career Education](#) (CE) opportunities and to improve the outcomes of CE programs for both students and employers. The ability to connect the needs of students, educators and employers remains critical to building a strong regional workforce and a competitive economy while providing an opportunity for workers to gain skills and income mobility.

With these objectives in mind, the Los Rios Community College District, in partnership with Valley Vision, and in collaboration with Sierra College and the Yuba Community College District, is investing a portion of its Strong Workforce allocation to form Regional Advisory Committees. The objectives of Regional Advisory Committees are to build a strong partnership between educators and employers that:

- Provides timely information on skills gaps and workforce needs;
- Improves the efficiency of the advisory process for educators and employers;
- Reflects a regional view of workforce needs and assets;
- Provides opportunities for more systemic engagement.

Regional Advisory Committees will help inform decisions on needed investments and enhancements for CE programs.

In partnership with the **Los Rios Community College District**—and in collaboration with Sierra College and the Yuba Community College District—Valley Vision is convening Regional Advisory Committee meetings for Career Education (CE) across multiple industry sectors. This project is a [Strong Workforce Program](#) investment. Regional Advisory Committees are envisioned to help provide timely information from employers on workforce needs; to improve efficiency of the CE advisory process for educators and employers; and to broaden opportunities for more systemic engagement.

The Strong Workforce regional advisory efforts are linked to Valley Vision’s partnership with the region’s four workforce innovation boards on a **Regional Planning** process to help streamline and strengthen employer participation in guiding education and workforce training investments. The regional planning initiative includes a focus on the [Future of Work](#) and how the digitalization of jobs and skills will impact the region’s workforce.

These projects support the [Capital Region Workforce Action Plan](#). Funded by JPMorgan Chase & Co., regional industry cluster research and analysis was conducted by Valley Vision in partnership with the Los Rios Center of Excellence. Workforce assessments identify critical **skills gaps**, **high-demand occupations**, and **investments** needed to build a skilled and competitive workforce.

Overview

The fall regional advisory committee meeting for the Information & Communications Technology (ICT) sector was held on November 1st at the Sacramento County Office of Education. The focus of the advisory meeting was on building an ICT workforce for the future.

Additionally, faculty was invited to submit proposals for new or updated curricula for Advisory Committee review. Review of the proposals was conducted during breakout sessions covering the following program areas:

- Cyber Security/Networking
- Data Science
- Business Information Worker
- Computer Science Programming

Meeting Proceedings

Introduction and Welcome

The meeting began at 1:30 PM with welcome and introductions. Dr. Markus Geissler, Deputy Sector Navigator for ICT-Digital Media for the greater Sacramento region recapped the spring advisory meeting, held April 6, 2018. Dr. Geissler shared his objectives in his role as DSN, which are to work with the region's colleges and employers to create alignment around skills in demand by industry and providing training and career pathways to meet workforce needs. As the DSN for ICT in the region, Dr. Geissler emphasized the current state of ICT education in the region, the trajectory of ICT industry in Greater Sacramento, and the need for a continued connection between education and industry. The need for ICT skills is not limited to jobs in the high-tech industry; the need for ICT skills is pervasive across all industries including healthcare, manufacturing, agriculture and the public sector.

Information and Communication Technology Cluster Definition

Information and Communications Technology (ICT) is the convergence of computer networking and telecommunications. The ICT umbrella organizes technologies related to telecommunications, computing, networks and other high-tech fields. ICT job functions impact all businesses, regardless of industry type or size of employment. However, there are a core set of industries primarily engaged in ICT activities that can be used to define the industry cluster. Subsectors include:

- *ICT Component Manufacturing*
- *System Programming, Design, Management and Training Services*
- *System Repair and Maintenance Services*
- *Telecommunication/Data Processing Center*

Source: Center of Excellence

Regional ICT Jobs and Wages

Dr. Geissler provided an overview of the labor market data generated by the Center of Excellence at Los Rios Community College District. There is a projected five-percent growth in the number of ICT jobs in the Greater Sacramento region in the five-year period from 2017 to 2022. As shown in Figure 1, there were 46,891 ICT jobs in the region as of 2017, providing median hourly earnings of \$39.80 per hour.



Figure 1

In the greater Sacramento region, the majority of the ICT jobs projected for the year 2022 are expected to be located in Sacramento County with 32,000 jobs, as shown in Figure 2. Placer County is projected to hold second place for the number of regional ICT jobs, with 7,519 jobs projected for the same time period.

County	2022 Jobs
Sacramento County, CA	32,902
Placer County, CA	7,519
Yolo County, CA	4,654
El Dorado County, CA	2,402
Nevada County, CA	808

Figure 2

As shown in Figure 3, the largest number of ICT workers in the greater Sacramento region are employed in the public sector, specifically State government, followed closely by the custom computer programming services industry which employs 4,400 ICT workers.

Industry	Occupation Group Jobs in Industry (2017)	% of Occupation Group in Industry (2017)	% of Total Jobs in Industry (2017)
State Government, Excluding Education and Hospitals	5,289	11.3%	5.9%
Custom Computer Programming Services	4,400	9.4%	64.5%
Computer Systems Design Services	2,952	6.3%	63.3%
Corporate, Subsidiary, and Regional Managing Offices	2,020	4.3%	16.0%
Wired Telecommunications Carriers	1,893	4.0%	54.7%

Figure 3

Dr. Geissler provided an overview of the numerous ICT educational opportunities available in the region which include several public and private universities that offer multiple ICT degrees, six community colleges that offer multiple ICT degrees and certification programs, and several high school pathways. In addition, the State of California has an IT apprenticeship program supported by the Governor’s Office,

Government Operations Agency, Labor and Workforce Development Agency, Department of Technology, CalHR and SEIU Local 1000. Despite the numerous educational opportunities, the region is not producing enough qualified ICT workers to meet the number of openings for ICT jobs, as shown in Figure 4.

38 Programs (2017)	2,104 Completions (2017)	4,036 Openings (2017)
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CIP Code	Program	Completions (2017)
11.0701	Computer Science	600
14.1001	Electrical and Electronics Engineering	236
50.0401	Design and Visual Communications, General	164
11.1006	Computer Support Specialist	157
14.0901	Computer Engineering, General	137

Figure 4

Opportunities to help reduce the shortage of qualified ICT workers include growing existing ICT pathways at community colleges; making community college ICT degrees and certificates easier to complete; establishing ICT pathways at more high schools, including information support and services, networking (Cisco, Microsoft, and Linux), software and systems development (computer science), games and simulation; and training more qualified ICT instructors, ideally with recent industry experience. Moreover, communicating more broadly about the range of ICT careers is important to building a pipeline of qualified workers. Typically, students think of ICT jobs as limited to computer science, which excludes students who don't have strong skills in math. Many ICT careers don't require a high level of math skills, including design and visual communications, computer support specialist, business information worker and many more. It's important to think beyond the 4-year college degree programs as the best source for producing qualified ICT workers.

Given the rapid pace of technology change and the increasing digitalization of work, a pressing issue for ICT educators will be to address the need for upskilling incumbent workers in need of refreshing ICT skills on an ongoing basis. In addition, educators and students need to be informed about the possible professions in the public and private sector including in ICT careers in health, agriculture, education, manufacturing, and construction.

Panel Discussion

Following the discussion of labor market data and trends, industry representatives participated in a panel discussion exploring perspectives on current and future workforce needs, and how to prepare students for the ICT careers of today and the future. The panel speakers were:

- **Andrew Maroun**, Cybersecurity and Networking Senior Manager, Golden 1 Credit Union
- **Sadie St. Lawrence**, Data Scientist, VSP Global; Founder and CEO, Women in Data
- **Kevin Cordoza**, Corporate Vice President of Engineering, Nor-Cal Beverage Company

Highlights from Panel

Dr. Geissler moderated the panel discussion. In response to the question about the primary technical skill sets and academic qualifications required of their organizations' IT workers today, Mr. Cordoza noted that in operating a highly automated manufacturing facility, Nor-Cal Beverage is seeking employees with multiple and versatile skill sets. Successful employees need to understand how things work together, for example electrical/mechanical engineering, programming, and automation. From an academic perspective, skills are needed across multiple disciplines such as computer programming and mechatronics. Ms. St. Lawrence commented that as an employer with a focus on data science, creative problem solving skills are important. From her perspective, learning needs to be less about rote memorization. Important skills include the ability to recognize the big picture, connect dots, communicate the story the data tells. These are skills needed today and in the future. Additional skills noted by the panelists that will be required of ICT workers in the next 5-10 years include the ability to work with diverse teams, and having an enterprise mentality - meaning the ability to understand the business from a strategic point of view.

Mr. Maroun remarked future skills that will be required by industry include an understanding of Cloud Computing systems and the evolving Internet of Things. Moreover, businesses will need to anticipate how customers will want information in "real-time"; ICT employees will play a key role in making information available in accordance with customer requirements. In addition, future ICT workers will need the skills to help businesses and organizations adopt and benefit from emerging technologies including IT automation and self-healing, artificial intelligence (AI) and machine learning. These are trends expected to continue to mature and see further adoption in the next 5-years and beyond. In terms of automation and AI, panelists noted that some lower skill jobs may be replaced. However, in order for organizations to successfully adopt AI technologies, employees will need the skills and know how to program and operate these technologies. These jobs will be better paying positions than the low-skill jobs being replaced. In terms of future skills, Mr. Cordoza noted that skills for harnessing data will be critical in the next 5-years. Converting data to information is power for any organization. Nor-Cal Beverage is installing data acquisition software to measure yields, improve productivity, etc. Ms. St. Lawrence remarked that future ICT employees will need to have a blend of "right and left" brain skills, both technical and creative. From a data science standpoint, programming skills need to be combined with key soft skills like communications in order to explain data findings to business leaders. Courses in basic communications skills could be helpful in preparing students for future ICT jobs. Over next 5-10 years, Ms. St. Lawrence noted that, as a society, we need to understand what machines do well and what humans do well. A successful deployment of AI will focus on what each does well, blending the skill sets of human and machine automation.

When asked about ICT positions their organizations had difficulty filling, Mr. Cordoza noted that Nor-Cal Beverage has experienced difficulty in filling all position, especially technical. He had three engineering positions open for nearly 2 years before filling the positions. To address the problem, his organization is looking to develop an internship program modeled after an outstanding German internship program where interns spend time with leaders of the organization and apply learning. This type of program benefits both employer and employee and reinforces learning. From his perspective, community colleges and trade schools can partner with industry to create these programs. Mr. Maroun remarked that Golden 1 Credit Union found it hard to find qualified IT professional externally. Therefore, they do a lot of in-house training and development. Skills and experience cybersecurity are always and increasingly in high demand.

The types of work-based learning experiences Golden 1 Credit Union provides include job shadowing opportunities within their IT department in helpdesk and desktop support. Ms. St. Lawrence noted that VSP's IT department has an internship the organization really cares about. The internship program provides a way to recruit new hires, but also is a way for VSP to give back to community. The non-profit organization Ms. St. Lawrence founded has a "women in data" residency program, which creates opportunities for hands-on experience by partnering with companies that have data problems. A data science lead is assigned to mentor the resident in training and help ensure a completion of a successful project. At Nor-Cal Beverage, Mr. Cordova noted they have a pay for performance program, wherein pay increases are provided upon completion of on-line skill development coursework. Nor-Cal Beverage would really like to grow a program for internships and apprenticeships. In addition, the organization currently works with high schools and trade schools to give students exposure to manufacturing careers.

Dr. Geissler asked the panelist how they maintain currency in their field given the rapid pace of technology change. Networking with other professionals, online learning resources, including webinars and podcasts, and developing cross-industry relationships and collaboration are highly valued opportunities for keeping up with industry trends.

The final question Dr. Geissler posed to the panelists referred to the most important action educators and employers could take to prepare the future ICT workforce. Mr. Maroun noted that educators should have a mentor mentality. Not expecting perfection up-front, supporting people in career paths and helping them uncover their passions are important roles for educators to play. Adapting to the speed of change in technology and industry is key. Adoption of industry trends (e.g., dev ops, agile, scrum methodologies) could be helpful for educators in developing a "fail fast" mentality that helps to keeps pace with the speed of industry change.

Ms. St. Lawrence stated that having conversations and partnerships between employers and educators is critical. Educators need to be okay with not knowing everything and must have ability to move more quickly. Educators and students will need the ability to quickly dive into new technology; there's not time to get a PhD in new technology given the rapid pace of technology and industry change. Community colleges should be able to play a pivotal role in meeting needs for ICT training. However, concern was expressed about the ability of community colleges to keep pace with needs of industry. Some community college courses are viewed as dated, and the way community college courses are scheduled can make it challenging for full-time workers to attend. Online learning was one example noted that would be preferred for professional upskilling over taking night courses at a community college. For Mr. Cordoza, building relationships with educators is key. It's Important for industry and educators to meet and collaborate. Even competitors have the opportunity to collaborate and solve challenges, share ideas, etc. Industry needs to build bridges with trade school, colleges and other educators to close the gap in worker shortages. Partnering to offer real-time apprenticeships and internships will be huge.

General Updates

Following the panel discussion, Jared Amalong, ICT coordinator for the Sacramento County Office of Education shared and overview of a new initiative SCOE is working on, aiming at developing 24 new ICT pathways in 24 months. Richard Grotegut, DSN for ICT in the Bay Area region, provided an update on the State of California ICT apprenticeship program.

Curricula Review

After the panel discussion concluded, participants split breakout groups to review proposals submitted by faculty. The purpose of the breakout session was to review the proposals for new or enhanced curricula, validate the need for new or enhanced curricula, and for faculty to receive input on their proposals from industry representatives.

Breakout Group: Web Development

Proposal	Comments	Status
Web development	Suggest use of new programming technology (Angular) for building applications and reusing code	Approved

Breakout Group: Cybersecurity/Networking

Proposal	Comments	Status
CISS 370: Information Systems Governance and Auditing		Approved
CISS 316 – CCNA Cybersecurity Operations		Approved
A.S. Information Systems Security	Consider adding IoT to course title or description	Approved
Cybersecurity (online collaborative)		Approved

Breakout Group: Business Information Worker

Proposal	Comments	Status
Business Information Worker II		Approved

Breakout Group: Data Science

Proposal	Comments	Status
Data Science	<ul style="list-style-type: none">-Would like for author to present with course descriptions-Industry feedback and support needed-Consider name change to entry level certificate (i.e., data analytics)-Add math and/or statistics	Not Approved

Scanned copies of the curriculum review minutes can be found on starting on page 13 of this document.

Next steps and adjourn

The meeting adjourned followed the breakout session. The next ICT regional advisory meeting is scheduled for April 5, 2019. Meeting Agenda

Agenda

BUILDING AN ICT WORKFORCE FOR THE FUTURE Information and Communication Technologies Regional Industry Advisory Committee Meeting Thursday, November 1st, 2018

- 1:30–1:40 pm **Welcome & Overview**
- ❖ **Tammy Cronin**, Project Leader and Portfolio Manager, Valley Vision
- 1:40–2:00 pm **Presentation: A look at the Greater Sacramento Region’s ICT Labor Market**
- ❖ **Markus Geissler, PhD**, Deputy Sector Navigator, ICT/Digital Media, Greater Sacramento Region, Doing What MATTERS for Jobs and the Economy
- 2:00–3:00 pm **Panel Discussion: Preparing for future ICT Industry Needs**
- ❖ **Andrew Maroun**, Cybersecurity and Networking Senior Manager, Golden 1 Credit Union
 - ❖ **Sadie St. Lawrence**, Data Scientist, VSP Global; Founder and CEO, Women in Data
 - ❖ **Kevin Cordoza**, Corporate Vice President of Engineering, Nor-Cal Beverage Company
- 3:00–3:15 pm **Networking Break**
- 3:15–3:25 pm **New Initiative: 24 in 24**
- ❖ **Jared Amalong**, Information and Communication Technologies Coordinator, Sacramento County Office of Education
- 3:25–3:40 pm **WBL Update: State of California ICT Apprenticeship Program**
- ❖ **Richard Grotegut**, Deputy Sector Navigator, Information & Communication Technologies/Digital Media, Bay Area Region and Director, Western Academy Support and Training Center
- 3:40–3:50 pm **New Initiative: ACR Career Engage**
- ❖ **Morehead**, Align Capital Region
- 3:40–5:00 pm **Breakout Sessions: ICT Curriculum Review**

List of Participants

First Name	Last Name	Job Title	Company
Scott	Adrian	IT Program Manager	City of Roseville
George	Akiyama	CIO	California Department of Transportation
Paul	Akuna	IT Student Coordinator	California Department of Transportation
Jared	Amalong	CTE Coordinator	Sacramento County Office of Education
Neda	Anasseri	Coordinator	SCOE/OTAN
Kevin	Anderson	Professor/Teacher	Sacramento City College/Davis HS/Charle A Jones Center
Angela	Anderson	Director of School Engagement	Project Lead The Way
Tina	Angell	CTE Teacher	Placer
Sadaf	Ashtari	Assistant Professor of Information Systems	California State University, Sacramento
Jorge	Avila	Project Director	California Department of Technology
Saeed	Bakhshi	Division Chief	California Department of Transportation
Michael	Bell	DSN, Advanced Manufacturing	California Community Colleges Chancellors Office
Cameron	Bennett	ICT and Computer Science Teacher	Ponderosa High School
Principal	Bettencourt	Principal	Placer School for Adults
Patrick	Bohman	Assistant Principal	School of Engineering and Sciences
Brian	Broumas	Development	Sierra Nevada Journeys
Steven	Casperite	Assistant Principal	Placer School for Adults/PUHSD
Saori	Choulos	Director	Align Capital Region
David	Collier	Technology & Finance Teacher	Pioneer High School
Kirsten	Corbin	Dean, Business & Computer Science	American River College
Kevin	Cordoza	Cybersecurity and Networking Senior Manager	Nor Cal Beverage Company
Brad	Crockett	Teacher	Roseville High School

Tammy	Cronin	Project Leader	Valley Vision
Judith	DAmico	Vice President of Partnerships	Project Lead The Way
Henry	Davis	Pathway Curriculum Specialist	SiaTech
Walter	Di Mantova	FOUNDER	Generative Futures Lab
Marjorie	Duffy	Professor, CIS	Cosumnes River College
Larry	Dumais	Full Time Professor	American River College
John	Dunn	Assistant Secretary	Labor & Workforce Development Agency
Sonia	Edwards	Information Technology Manager	California Department of Corrections & Rehabilitation
Sean	Frame	President	El Dorado Progressives
Gary	Garot	Teacher	Laguna Creek High School
Markus	Geissler	Deputy Sector Navigator, ICT/DM, Greater Sacramento Region	Cosumnes River College/CCCCO Doing What MATTERS
Wendy	Ghyselinck	CS Teacher	Woodcreek High School
Daniel	Gilbert-Valencia	Professor	American River College
Pam	Goldman	Teacher	Folsom Cordova Union School District
Terri	Griffi	Career specialist	Placer County Office of Education
Crystal	Grooms	CTE Coordinator	Woodland Joint Unified School District
Angela	Hatter	Site Administrator	Charles A. Jones Career and Education Center
Rebecca	Hayes	Professor	American River College
Don	Isbell	Instructor	Placer Union High School District
Erica	Johnson	Business Engagement Services	Yolo County
Darla	Jones	PT Faculty CIS	Sierra College
Abdelaziz	Kaina	assistant professor	Sacramento City College
Sajid	Khan	IT Training Coordinator	California Department of Transportation
Roy	Kim	Deputy Director	SETA
Emma	Koefoed	Project Associate	Valley Vision
Kerry	Koerwitz	CTE Program Specialist	Washington Unified
Cameron	Law	Executive Director	Social Venture Partners of Sacramento

Doug	Lewin	Division Leader	Vista Del Lago
Myra	Little	Faculty	Sacramento City College, Computer Information Science Department
Aisha	Littlejohn	Employment Services Specialist	Yolo County Health and Human Services Agency
Heidi	Lyss	Consultant	Sierra College, & Nevada City Tech Connection
Branka	Marceta	Director	Capital Adult Education Regional Consortium
Andrew	Maroun	Corporate Vice President of Engineering	Golden 1 Credit Union
Gabriel	Meehan	AVP of Instruction	Sacramento City College
Theresa	Milan	Dean	Los Rios Community College District
Joshua	Modlin	Manager, Education to Work Partnerships	Foundation For California Community Colleges
Dariu	Mois	Computer Science teacher	Bella Vista High School
Lilibeth	Mora	Sector Coach	Elk Grove Unified School District
Coleen	Morehead	Director of Education and Workforce Alignment	Align Capital Region
Arij	Mousa	Computer Program Director	Placer School for Adults
Pam	Murawski	Education Programs Developer	Office of Water Programs, California State University, Sacramento
Randy	Nordell	BCS Professor	American River College
Annette	Nylander	Professor	Sierra College
Carol Anne	Ogdin	Founder	Deep Woods Technology
Larry	Ozeran	President	Clinical Informatics, Inc.
Lance	Parks	Professor	Cosumnes River College
Aaron	Pecho	Science Coordinator	Sacramento City Unified School District
Azizi	Penn	ITSII	Department of Justice
Lynn	Plocher	CTE Coordinator	Sacramento City Unified School District
Keenya	Powell	Program Developer - CTE	Twin Rivers Unified School District
Carl	Reed	CTE	Grant High School

Michele	Robinson	Manager	Department of Technology- Office of Information Security
Merima	Sarotic- Ronneburg	ICT Instructor	Roseville Joint Unified High School District
Amy	Schulz	Dean of Career, Continuing, & Technical Education	Sierra College
Blaine	Smith	Director	Director, North Far North Region Consortium at Los Rios Community College District
Rachelle	Smith	Career Education Liaison	Sierra College
Buddy	Spisak	Adjunct Professor	Cosumnes River College
Sadie	St. Lawrence	Data Scientist / Founder and CEO	VSP Global/Women in Data
Joshua	Stinson	CSP teacher	Mira Loma High School
Clarence	Stokes	Professor	American River College
Elizabeth	Swithenbank	Professor	Folsom Lake College
Jonathan	Taylor	Manager, IS Disaster Recovery	Sutter Health
Jenny	Teeters	Director	Fortinet
James	Town	Assistant Professor/Lab Coordinator	Sacramento City College
Maria	Trappe	Teacher	San Juan Unified School District
Harsh	Verma	Vice-President (Global Innovation)	R Systems
Asha	Warrior	Computer Science Teacher	River City High School - Washington Unified School District
Brett	Wolfe	Director	San Juan Unified School District
Christopher	Wu	Founder/Principal	Metacyber/College of Alameda
Meili	Xu	Assistant Professor	Sacramento City College
Miela	Zitelli	CTE Transitions Coordinator	Sacramento City College

Breakout Session – Curriculum Review Minutes



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FOR JOBS AND THE ECONOMY

Building an ICT Workforce For the Future

Information and Communication Technologies

Regional Industry Advisory Committee Meeting for Greater Sacramento

Thursday, November 1st, 2018

1:30 PM – 4:30 PM

Sacramento County Office of Education

Welcome!



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- Tammy Cronin
 - Project Leader and Portfolio Manager, Valley Vision
- Emma Koefoed
 - Project Associate, Valley Vision
- Markus Geissler, PhD
 - Professor and Deputy Sector Navigator, ICT/DM, Greater Sacramento Region
- Thanks to ICT Council Members for their support!
- Thanks to Jared Amalong for hosting us at SCOE!



CALIFORNIA COMMUNITY COLLEGES
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FOR JOBS AND THE ECONOMY

ICT Sector Opportunities in the Greater Sacramento Region

Markus Geissler, PhD

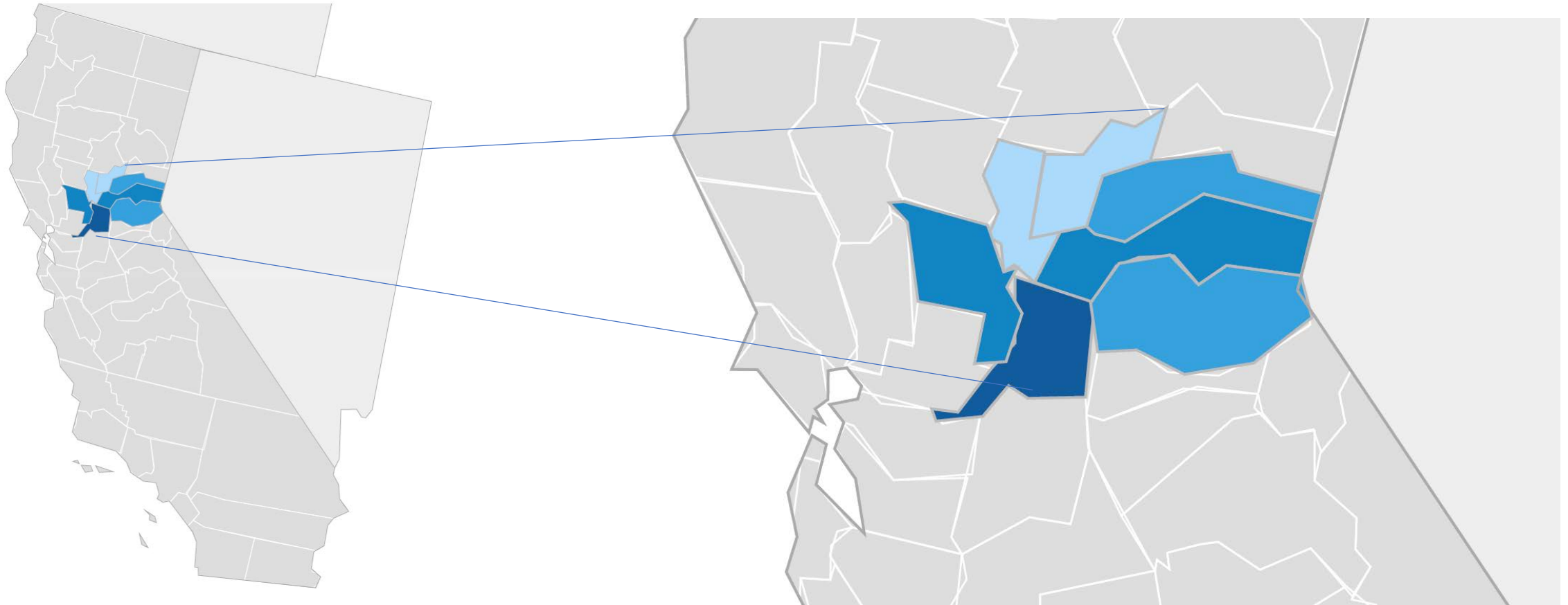
Professor and Deputy Sector Navigator, ICT/DM

Greater Sacramento Region



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Greater Sacramento= 7 counties



Regional ICT Jobs & Wages



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46,891

Jobs (2017)

5% **above** National average

+5.0%

% Change (2017-2022)

Nation: +8.0%

\$39.80/hr

Median Hourly Earnings

Nation: \$37.65/hr

Where are the ICT Jobs?



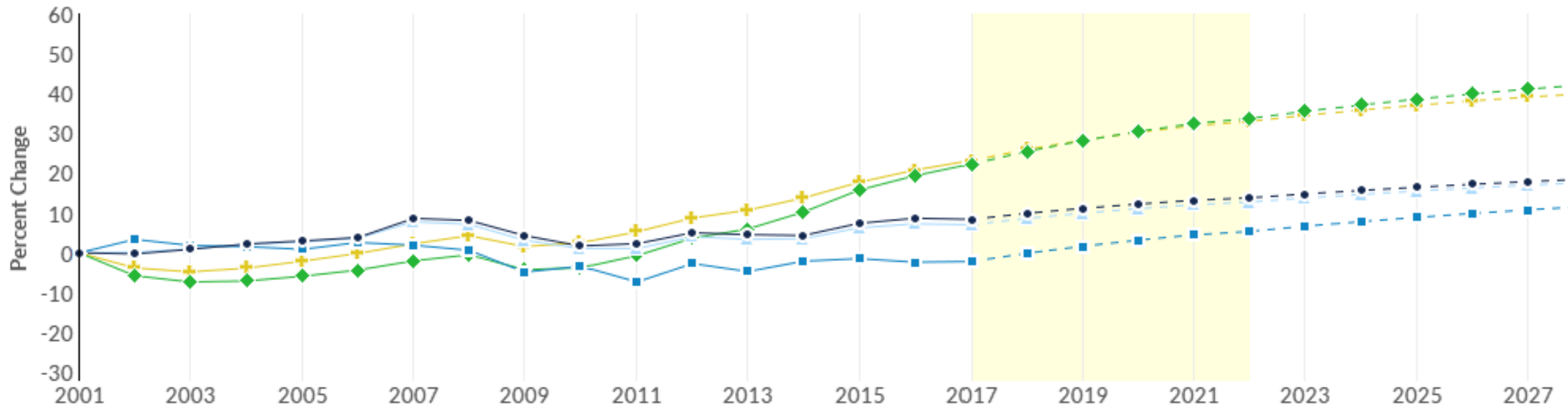
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ICT Jobs in Our Region



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Greater Sacramento (7 counties) Far North (15 counties) North/Far North (22 counties) California United States

ICT Regional Trends



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Region	2017 Jobs	2022 Jobs	Change	% Change
● Region	46,891	49,222	2,331	5.0%

But since many IT jobs can be done remotely...

◆ State	886,758	970,010	83,252	9.4%
+ Nation	6,098,247	6,585,385	487,138	8.0%

Industries Employing ICT Workers in our Region



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Industry	Occupation Group Jobs in Industry (2017)	% of Occupation Group in Industry (2017)	% of Total Jobs in Industry (2017)
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ICT Education Opportunities



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- Several public and private Universities that offer multiple ICT degrees
- Six Community Colleges that offer multiple ICT degrees and certificates
 - State of California IT Apprenticeship Program that is supported by the Governor's Office, Government Operations Agency, Labor and Workforce Development Agency, Department of Technology, CalHR and SEIU Local 1000
- Some High Schools offer ICT pathways and academies
- Coursera, Lynda, CompTIA, etc.

... but our Region is NOT producing enough qualified ICT workers!



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11.1006	Computer Support Specialist	157
14.0901	Computer Engineering, General	137

ACM Computing Disciplines



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- Computer Science (Software Development, Calculus, Science)
- Software Engineering (Software Systems)
- Computer Engineering (Computer Hardware and Firmware)
- Information Technology (Networks, Servers, and Cloud)
- Information Systems (MIS) (Business Systems Analysis)
- Cybersecurity (Defenses, Forensics, IDS)
- Computing in other disciplines (Bioinformatics, etc.)
- Data Science (Data Analysis, Statistics)



Opportunities to Do More!



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- Grow existing ICT Pathways at Community Colleges
 - Make ICT degrees and certificates at CCs easier to complete
- Establish more ICT Pathways at more High Schools
 - Information Support and Services
 - Networking (Cisco, Microsoft, and Linux)
 - Software and Systems Development (Computer Science)
 - Games and Simulations
- Train and hire more qualified ICT instructors
 - Ideally, but not necessarily, with recent industry experience

Tomorrow's ICT Jobs



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- What will a typical ICT job look like in 2022? In 2028?
- Current high school freshmen
 - Will graduate high school in 2022
 - Will graduate college as early as 2026
 - Though most will need to, or choose to, take longer than four years
- What knowledge, skills, and abilities should ICT college graduates have in 2026?
 - Technical skills
 - Professional skills
 - “Up-skills” for existing ICT workers and for those changing careers to ICT fields

Giving credit where it's due



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- Thanks to Aaron Wilcher, Director, NFNRC Centers of Excellence

Centers of Excellence



1410 Ethan Way
Sacramento, California 95825

Building an ICT Workforce for the Future!



CALIFORNIA COMMUNITY COLLEGES
Doing What MATTERS™
FOR JOBS AND THE ECONOMY

- 2:00 PM: Industry Panel: Preparing for Future ICT Industry Needs
- 3:00 PM: Networking Break
- 3:15 PM: New Initiative: 24 in 24 - ICT Pathways
- 3:25 PM: Update: State of California ICT Apprenticeship Program
- 3:40 PM: WBL Opportunity: CareerEngage by Align Capital Region
- 3:50 PM: Breakout Sessions: ICT Curriculum Review/Approval

Industry Panel: Preparing for Future ICT Industry Needs



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- Andrew Maroun
 - Cybersecurity and Networking Senior Manager, Golden 1 Credit Union
- Sadie St. Lawrence
 - Data Scientist, VSP Global
 - Founder and CEO, Women in Data
- Kevin Cordoza
 - Corporate Vice President of Engineering, Nor-Cal Beverage Company

Networking Break



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- Our next presentation starts at 3:15 PM.

New Initiative: 24 in 24



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- Jared Amalong
 - Information and Communication Technologies Coordinator, Sacramento County Office of Education

WBL Update: State of California ICT Apprenticeship Program



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- Richard Grotegut
 - Deputy Sector Navigator, Information & Communication Technologies/Digital Media, Bay Area Region
 - Director, Western Academy Support and Training Center (WASTC)

New Initiative: ACR CareerEngage



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- Cornelius Brown
 - Align Capital Region

Breakout Sessions: ICT Curriculum Review/Approval



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- Computer Applications/Business Information Worker (*Mather*)
- Computer Programming/Computer Science (*Conference Room B*)
- Cybersecurity/Networks (*Mather*)
- Data Science/Databases (*Mather*)
- Web Technologies (*Mather*)



ALIGN

Capital Region

CareerEngage powered by Nepris

Enhancing Relevance and Career Exposure for K12 Students





*Align Capital Region
spearheads the development
of a **dynamic, inclusive**
regional talent pool through
industry engagement, and
student **exposure to diverse
careers***

We're Better Together





**EDUCATING A
DYNAMIC WORKFORCE
OF THE FUTURE**

THE PROBLEM

*There is a lack of **a universal platform** that enables **industry involvement** in the classroom and **collaboration** between business and learning communities*

We have listened...and we are responding

Contributing Factors To The Problem

- ➔ • Lack of relevance and career exposure
- Challenges to Industry Engagement
- Challenges with exposure to diverse careers
- Challenge with exposure to diverse students

Lack of Relevance and Exposure



47%

Kids who drop out do so because they don't see the relevance of school.





- Gates Foundation Study, 2013

Contributing Factors To The Problem



- Lack of relevance and career exposure
- Challenges to Industry Engagement
- Challenges with exposure to diverse careers
- Challenge with exposure to diverse students

Challenges to Industry Engagement

-  Geographic barriers
-  Time consuming
-  Matching professionals skills to career needs
-  Access to diversity of career pathways

Accessibility

Efficiency

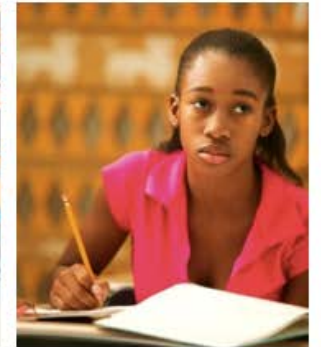
Productivity

Scalability

Contributing Factors To The Problem

- Lack of relevance and career exposure
- ➔ • Challenges to Industry Engagement
- Challenges with exposure to diverse careers
- Challenge with exposure to diverse students

Lack of Exposure to Diverse Careers



“The single biggest factor in enhancing career development of young people is engaging business and industry in the classroom.”

Bill Symonds – Global Pathways, Arizona State University

We have a Solution!

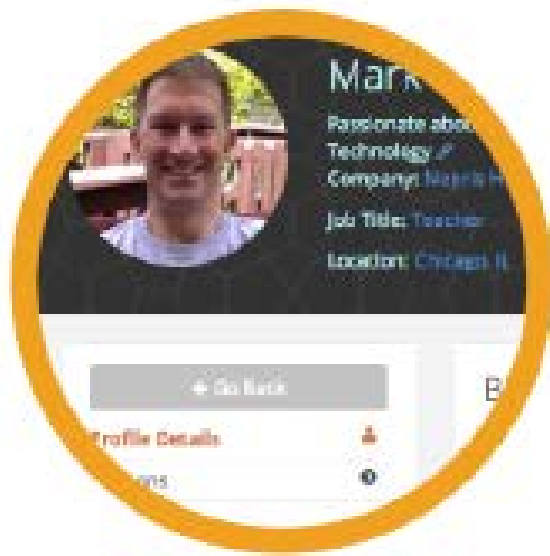
CareerEngage by Align Capital Region



TEACHERS
DIVERSE LEARNERS
FUTURE WORKFORCE

FIND
MATCH
CONNECT
ENGAGE

DIVERSE INDUSTRY
PROFESSIONALS



Create

Instructors request for industry experts to support classroom activities aligned to curriculum needs



Curate

Platform finds industry professionals that match expertise in the topic requested (local or national)




Connect

Industry professionals virtually connect with classrooms to bring relevance and career exposure (mentor projects, evaluate)

CareerEngage - How it works

Sample Solution Pilots in Greater Sacramento

DIGITAL DEPLOYMENT



Mac Clemmens
CEO, Tech Expert

Connected with 12 high school classrooms live for presentation on high-tech

Students engaged and able to interact with live presenter to receive real-time feedback

Additional classrooms able to watch recorded version and learn about Net Neutrality

CRANE
CAPITAL REGION ACADEMIES FOR THE NEXT ECONOMY

**PSYCH-TECH
CHALLENGE**

Mentors from 3 App Development firms conducted recurring sessions helping students build a functional app ready for iTunes and Google Play



PRICING – SCHOOL SITE LICENSE

LICENSE TYPE	DESCRIPTION	SITE LICENSE FEE
Tier 1 School	A Tier 1 School has fewer than 1500 students	Early Adopter Fee: \$3,250 Regular Fee: \$3,750
Tier 2 School	A Tier 2 school has more than 1500 students	Early Adopter Fee: \$3,750 Regular Fee: \$4,250

*Note – All fees are annual, site-level licenses with unlimited users per site



ALIGN

Capital Region

*For inquiries please email us at
info@aligncap.org or call us at 91698*

