



Sacramento Capital Region Next Economy Cluster Update Workforce Action Plan, Information and Communication Technologies (ICT) Cluster Forum Proceedings

March 3rd, 2016
Folsom Lake College
Series 3 of 6

Introduction

In fall 2016 Valley Vision, supported by JPMorgan Chase and in partnership with Los Rios Center for Excellence (COE) and the Burris Service Group, initiated a project to identify the current workforce needs of the six Next Economy high-growth economic clusters in the six-county Sacramento Capital region. Next Economy is the region’s Comprehensive Economic Development Strategy (CEDS) as designed by the U.S. Economic Development Administration (EDA). This assessment was accomplished through quantitative research reports and qualitative validation of the data and emerging trends through employer and partner forums. These activities set the stage for action plans that identified priorities for each of the clusters.

Purpose

In 2011, Valley Vision along with leaders across the region undertook a major initiative called Next Economy. The goal was to transform a \$97 billion annual economy that suffered widespread hardship and a lagging recovery into one that is diversified, robust and sustainable. In 2012, as part of that effort, a region-wide economic analysis turned attention to six promising business clusters that could be catalyzed for job creation. They were identified as business clusters where the region has innate advantages and the strongest potential for growth based on economic performance indicators. Fast forward to today: our economy has reversed all the jobs that we lost, but the character of our economy is different.

Next Economy Cluster Research & Forums Overview

Valley Vision, the Los Rios Center of Excellence, and Burris Service Group, supported by JPMorgan Chase & Co., conducted economic research and six employer and stakeholder forums to:

- Identify emerging workforce opportunities
- Generate workforce action plans
- Advance strategies to address critical workforce skills gaps
- Better align education and workforce development resources to meet employer and workforce needs a
- Improve the regional economy

This is a report of the employer and stakeholder forum. The research report can be found at:

<http://valleyvision.org/resources/information-and-communication-technologies-workforce-needs-assessment>

Six High-Growth Next Economy Clusters

- Advanced Manufacturing
- Clean Energy Technology
- Education and Knowledge Creation
- Information & Communications Technology
- Life Sciences and Health Services
- Food and Agriculture

The goal of Next Economy Cluster Workforce Action Planning is to update the region's 2012 cluster economic analysis, identify critical workforce skills gaps that exist within the six clusters today; mobilize and align cluster stakeholders around job creation strategies, and create targeted workforce action plans for each cluster that identifies critical skill gaps, education and training resources, and implementation priorities.

Process

Los Rios Center for Excellence (COE), in partnership with Burris Service Group and Valley Vision, prepared six research reports, one for each cluster that describes the workforce and economic characteristics of each cluster and education and workforce development resources for middle-skilled jobs, defined as jobs requiring more than a high school degree. Valley Vision convened six Workforce Cluster Forums in the winter and spring of 2016 in collaboration with a wide range of partners. The third forum that was convened was Information and Communication Technology (ICT).

Forum Overview and Purpose

The purpose of the ICT forum was to present the initial economic research findings to employers, industry experts, and community partners and collect feedback on the data findings. Feedback was gathered through a facilitated discussion where participants identified pressing workforce needs, current and future occupational demands, education and training resources, and potential priorities for a cluster action plan. The action plan is intended to tackle current and emerging workforce needs and gaps within the cluster. See Appendix A for Forum agenda.

Los Rios Community College Dean of Instruction and Technology, Gary Hartley welcomed participants and provided an overview of Los Rios programs supporting ICT cluster. See Appendix B for a list of participants. Following Gary Hartley, Brent Haapanen, Executive Director of Commercial Banking, JPMorgan Chase & Co., discussed JPMorgan's involvement and sponsorship with the project. He also touched on the company's launch of a \$250 million, five-year nationwide workforce readiness initiative— *New Skills at Work* – to help close the skill gaps in sectors where employers struggle to fill vacancies, and to assist job seekers to access the education and training required for those positions.

Presentation of the Research

Theresa Milan, Director for Northern California Region for Los Rios Center of Excellence, gave a presentation on workforce trends and training gaps within the ICT cluster. A definition of ICT

Information and Communications 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 that engage primarily in ICT activities that can be used to define the cluster. Subsectors include:

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

Source: COE, ICT Report, page 4

components was given along with examples. As of 2015, the cluster consists of 39,200 jobs, equating to 4% of the total regional employment, and has an average earning of \$63,400, which is lower than the statewide average for this cluster. The discrepancy of annual earnings results in high-quality ICT workers migrating out of the region, which in turn affects the supply of qualified workers for the region. The cluster is projected to grow by 14% over the next five years. The cluster directly and indirectly employs 63,189 people in the Sacramento Capital region and contributes \$12.8 billion in output. All five ICT subsectors (referenced in ICT Definition text box) are projected to have high five-year growth rate, with System Programming, Design, Management and Training Services having the largest concentration of employees in the region and the second highest growth rate, by subsector. The region's competitive advantage lies in System Repair and Maintenance Services, with an above average concentration of employment in the region compared to other parts of the state, yet it is the smallest subsector in the cluster. The full research report is available through the link provided on page one of this report.

Employer Panel

The goal of the panel is to understand the regional workforce challenges that employers in the cluster are facing. Trish Kelly, Valley Vision, facilitated a discussion with a panel of four employers and the Sacramento Capital region's Deputy Sector Navigator for the ICT sector, listed below:

- Shana Groen, Consulting Services Division Director, Robert Half Technology
- Shauna Harrington, Senior Director Outreach and Executive Talent, Eyefinity and VSP Global
- Steve Linthicum, Deputy Sector Navigators for Information and Communication Technologies/Digital Media
- Sandy Malaney, CEO, Big Hairy Dog Design
- Jonathan Williams, Director of Regional Public Affairs and State & Local Government Affairs, Intel

Each panelist provided a brief introduction of his/her company or industry with an overview of company products and services, location, employment characteristics and target customers. The panelists were asked a series of questions:

- What surprised you about the research? Is it on target?
- What kind of positions do you have most difficulty filling?
- What skill sets are currently in greatest demand?
- What educational and training gaps do you see that we should address?
- What kind of workforce challenges do you see your company/industry facing?
- What is the most critical priority that an action plan should address?

Panel Discussion Highlights

Panelist stated that ICT is critical and relevant across all clusters because every company, regardless of the industry or sector, has a technology aspect. Our lives and work are increasingly technologically centered. Panelists stated that Cyber Security and Robotics careers are emerging occupations that have a rising demand but the region is lacking in Cyber Security and Machine Training opportunities.

With Silicon Valley and the Bay Area next door, the Sacramento Capital region has had difficulty attracting, training, and retaining qualified ICT workers, despite the high employer demand for these positions. As an ICT job center, Silicon Valley attracts young professionals with high salaries and appeal

for high visibility tech companies. Further, educational institutions in the Bay area are specialized towards ICT in a way that the Capital Region education institutions are not. UC Berkeley has a Big Data degree program that is desirable to high level ICT employers, which attract top talent. These elements of an ICT ecosystem nearby are difficult to compete within the region. Additionally, employers noted that new graduates need real-world work experience with lower first job expectations. Graduates see visible companies, usually located in Silicon Valley, with “cool” jobs and lots of perks, and expect that all tech jobs are like that. These “cool” companies often have a high turnover rate and have created a culture where Millennials have a “check list” and “bounce” from job to job. These expectations and cultural norms do not resonate with Sacramento region employers and create misalignment between employee and employer expectations. Sacramento region may even be used as a launching pad for entry level workers to acquire training and work experience. After the employee have acquired the appropriate skills and training, they move to Silicon Valley.

The need to diversify the ICT cluster by attracting more women and minorities was a theme shared across all employers. This is a particular problem in the ICT cluster and tech companies and educational pathways are often dominated by white and Asian men. This environment perpetuates its own cycle, because it is harder to attract women and minorities, especially when the work and education environment is not welcoming, as some said was often the case.

Other workforce challenges that were identified:

- Occupational need for Data Scientist, DevOps, or individuals who have capabilities in both Development and IT Operations. In February 2016, there were 15 local openings for DevOps Hybrid roles and are becoming the expectations of many employers; employees need to know how to do multiple task such as coding, administration, scribing, application development and more
- There is an existing and growing need for workers in Government Cyber Security
- The public sector has difficulty retaining works because they leave to pursue work in the private sector for high salary positions. This results in increased demand on and overworking of existing public workers, which in turn leave because of the high work load and low salary.
- It is difficult to fill technology teaching positions because industry positions pay more than teaching positions
- New workforce lacks professional skills
- High need to diversify the workforce; only 14% of Computer Science degrees are from women
- Number of minorities and women in Los Rios classes has decreased
- UC Davis and Sacramento State need to have more majors that relate to ICT and Big Data
- Community Colleges are the secondary school even though they have unique infrastructure and skilled teachers
- Retention: Millennials are hired, trained and receive daily recruiter calls from other organizations and offer higher salaries and benefits
- Technology changes occur quickly and often, this makes it difficult to have the proper curriculum and equipment. This makes it difficult for Universities and Community Colleges to teach specialized careers
- Need additional ICT-focused maker-space capacity
- Career awareness messaging should start at the elementary level and continue to be built on at the middle and high school level in order to educate kids and their parents about the diverse ICT careers

- Need to increase transferability between community colleges and four-year universities in the region
- ICT internships should be an educational requirement to graduate from a four year university program
- Need curriculum that teaches professional skills and encourages adaptability to adjust to careers in emerging technologies sector

Summary of Group Discussion

The employer panel was followed by a facilitated discussion, in which all participants were encouraged to participate and provide feedback on high needs workforce gaps, key resources and recommended priorities. The group was asked two questions:

- What are the most critical workforce needs in the Information & Communication Technologies Cluster?
- How can employers, workforce, economic development and education address these needs and which should be prioritized into a cluster action plan?

Figure 1 summarizes key issues that were discussed regarding the region's most critical workforce needs.

Figure 1: What Are Our Workforce Needs/Challenges?

Retention & Attraction

- Difficult to retain talent-- unicorn recruiters pull talent out of region
- Difficult to educate specialties and difficult to retain programs
- Expectation of young workforce geared to big perks; unicorn companies
- Industry responsive to millennial pace

Cyber Security

- Large need in Cyber Security will create a serious issue that will need to be addressed
- Cyber Security is inappropriately classified as upper division class
- Current local Cyber Security classes offered do not adequately address current employer demand or future needs

Women & Under Reresented Minorities

- Women in technology are under represented
- Start messaging to women early in educaiton system
- Poorly behaved Men repel women from education programs and companies

Professional Skills

- Professional communication skills and work ethic
- Need adaptive skills to keep up with new technology
- More real work experience for students and hands-on internships

Advanced Degrees

- Machine learning is a growing market
- Large demand for talent in Data Scientist/ Big Data
- Talent in Virtualization (UC Berkeley program)
- Challenge with finding advanced degree talent in the region (such as physicists)
- Need more educational program like UC Berkeley
- Community Colleges are in secondary role but play a critical role

Education (K-12)+

- Engage students in STEM at an early age to encourage/build the pipeline
- Build the connections between Industry, secondary schools, and school districts
- Increase transfer degrees between regional community colleges and four-year universities
- Address the 60-to-60 unit requirements that limits transferability
- Industry needs to encourage "impacted" 4-year programs to expand & develop articulate with k-12 students
- Address the CSU/UC reluctance to accept transfer requirements from community college and other colleges
- Align community college courses/programs with regional needs and the changing demands of technology

Misc.

- Unit/time limitation in education systems
- Emerging high-demand occupation, such as DevOps
- Need Certified Information Systems Security Professional (CISSP)
- Governmnt salary doesn't compare with private industry
- Constrained educational system
- Few transitions from public to private sector

Participants were asked to suggest actions by employers, workforce, economic development and education to respond to these needs. Figure 2 summarizes the input.



Participants were given three votes to indicate the highest priority issues. The top priorities are shown in Figure 3.

Figure 3: Top Action Items/ Priorities

1. Develop a public awareness campaign to educate students about ICT careers, especially K-12, female and minority students.
2. Develop robust internship/workplace experiences to combine with college courses.
3. Create a maker space for ICT students to widen the pipeline for skills at the intersection of ICT and STEM; integrate maker space activities into career/recruitment fairs, i.e., hack-a-thons.
4. Increase resources for and add needed courses to address high demand areas of cyber security, data scientists/big data programming and management, (software) Development and Operations Engineers (DevOps), mobile application developers.
5. Sac State and UC Davis should create more majors that relate to specialized ICT and data.
6. Convene education partners (K-12 through higher education) to collaborate on developing needed programs and on transferability of credits between community colleges and universities.
7. Create a boot camp to teach kids what employers are looking for, with a sub-team of partners.
8. Create a think tank space where people can connect across the industry and create action, with an infographic map of education/workforce stakeholders.
9. Engage industry stakeholders with university advisory committees; revise and align coursework; promote diversity; and connect with students.
10. Address education and workplace diversity and culture issues (male-dominated).

Overarching Themes and Information and Communication Technologies Cluster Specific Recommendations

On May 3rd, Valley Vision hosted the 2016 Capital Region Workforce Summit at UC Davis. The Summit presented new research findings on high priority skill gaps facing the Next Economy clusters, and cluster specific action plan priorities from all six cluster forums held with regional employers, education institutions, workforce development agencies and industry partners. Valley Vision presented both overarching themes that emerged from the cluster forums and research, and cluster-specific recommendations to support each Business cluster.

The overarching themes related to workforce needs across all clusters were:

- **Career Awareness:** Implement a major region-wide Marketing and Communication campaign to elevate awareness of high demand career opportunities across all business clusters. Targets include: elementary and middle school, millennials, workers in need of re-skilling and parents
- **College/Career Readiness:** Accelerate the number and type of internships, apprenticeships, and on-the-job training opportunities for students and current workers. Expand non-traditional apprenticeships; increase the number of maker spaces and access to state of the art equipment; address barriers to employer partnerships
- **Diversity of the Workforce:** Adopt and invest in successful employer models to increase workforce and employer diversity, including women, low income and minority students and workers. Provide access to STEM programs for all; bring career awareness earlier through schools (K-12)
- **Additional Research on high demand occupations and skills:** Conduct in-depth research with employers on projected and emerging in-demand occupations, skills requirements and training resources not captured in the research data. Areas include: Clean Economy, Food and AG, Education, and cross-cluster opportunities such as ICT & Health

- **Alignment of education and training resources:** Increase engagement and alignment of resources and institutions across employers, educational systems, economic and workforce development and community partners. Align community colleges with 4-year institutions and strengthen pathway programs.

The issues that were of the highest priority in ICT were:

- Create a **maker space** for ICT students and younger individuals to interest them in ICT career and widen the pipeline for skills at the intersection of ICT and STEM; integrate maker space activities into career/recruitment fairs, i.e., hack-a-thons.
- **Increase resources** for and add needed courses to address high demand areas of Cyber Security, Data Scientists/Big Data Programming and Management, (software) Development and Operations Engineers (DevOps), Mobile Application Developers.
- Higher education institutions should create **more majors** that relate to specialized ICT and data.
- **Convene education partners** (K-12 through higher education) to collaborate on developing needed programs and on transferability of credits between community colleges and universities.
- **Increase awareness and enrollment of minorities and women in local ICT education and training programs**

Recommendations and Conclusions

The input from these forums provided specialized knowledge about workforce needs from local companies and educational and training institutions. Through this process, our region optimized the benefits of the economic recovery by mobilizing cluster stakeholders, creating an understanding of the current state of our clusters, and strategically planning for continued prosperity, job creation and growth. The economic cluster research, forums and Workforce Summit were key steps in better understanding current economic, educational and workforce issues that are at play in the current regional environment. These set the stage for action strategies to address the needs that were identified. Valley Vision will move into Phase II of cluster action plan implementation in fall of 2016 and throughout spring 2017.

Appendix A: Forum Agenda



Capital Region Information & Communication Technologies Workforce Cluster Forum

March 3, 2016, 8:30 AM– 12:00 PM

Folsom Lake College, Community Room: 10 College Pkwy, Folsom, CA 95630

Project Partners:



AGENDA

8:30- 9:00 AM Registration

9:00- 9:15 AM Welcome and Introductions

- Gary Hartley, Dean of Instruction and Technology, Folsom Lake College
- Trish Kelly, Senior Vice President, Valley Vision
- Brent Haapanen, Executive Director of Commercial Banking, JPMorgan Chase & Co.
- Dan Ross, Chair of Information and Communication Technologies, Folsom Lake College

9:15- 9:45 AM Presentation of Cluster Analysis

- Trish Kelly, Senior Vice President Valley Vision
- Theresa Milan, Center of Excellence Director for Northern California Region, Los Rios Center of Excellence

9:45- 10:45 AM Employer & Partner Panel—Facilitated by Trish Kelly

- Jonathan Williams, Director of Regional Public Affairs and State & Local Government Affairs, Intel
- Steve Linthicum, Deputy Sector Navigator, Information and Communication Technologies/Digital Media, Greater Sacramento
- Sandy Malaney, CEO, Big Hairy Dog Design
- Shana Groen, Consulting Services Division Director, Robert Half Technology
- Shauna Harrington, Senior Director Outreach and Executive Talent, Eyefinity and VSP Global

10:45 AM- 12 PM Facilitated Discussion—High Need Workforce Gaps, Key Resources, and Recommended Priorities

- Evan Schmidt, Project Manager, Valley Vision
- Trish Kelly, Senior Vice President, Valley Vision

Appendix B: List of Participants

Last Name	First Name	Organization
Kelly	Trish	Valley Vision
Burriss	Bob	Burriss Service Group
DeLeon	Tatiana	SETA
Dixon	Michael	Los Rios
Duffy	Marjorie	Los Rios
Dugan	Robert	Sacramento State
Groen	Shana	Robert Half Technology
Harley	Gary	Los Rios
Harrell	Kim	Folsom Lake College
Holms	Ellen	Folsom Lake College
Lance	Parks	Los Rios
Linthicum	Steve	Deputy Sector Navigator
Litelli	Miela	Sacramento City
Little	Sheley	Placer School District
Malaney	Sandy	Big Hairy Dog
Meehan	Gabriel	Los Rios Community College District
Milan	Theresa	Center of Excellence
Minor	Samantha	Valley Vision
Ross	Dan	Folsom Lake College
Schmidt	Evan	Valley Vision
Wells	Shannon	Capital Region Pathway Specialist
Williams	Gregory	SETA
Williams	Jonathan	Intel

Appendix D: Employer Panel Biographies

Shana Groen, Consulting Services Division Director, Robert Half Technology

Shana Groen has been with Robert Half for 15 years in a variety of roles and find the recruiting industry both challenging and rewarding on a daily basis. In her current role she has the opportunity to recruit for IT professionals with a variety of goals that range from contract work to direct placement. Her goal is to give them all they need to reach the highest level of success attainable.

Shauna Harrington, Senior Director Outreach and Executive Talent, Eyefinity and VSP Global

Shauna Harrington has been with VSP since 1994 and has more than 25 years in Workforce Development. She is a certified Senior Professional in Human Resources (SPHR) along with several other HR-related certifications and is a member and past president of SAHRA (Sacramento Area Human Resource Management Association).

Steve Linthicum, Deputy Sector Navigator, Information and Communication Technologies/Digital Media, Greater Sacramento

Steve Linthicum is a full-time professor at Sierra College, and serves in the role of Deputy Sector Navigator, Information and Communication Technology / Digital Media for the Greater Sacramento Region. Steve's focused area of instruction is cybersecurity, and he holds a variety of industry recognized certifications that relate to cybersecurity, information assurance, and cloud computing. He serves as the Academic Advocate for ISACA, and is a member of Infragard, a partnership between the FBI and the private sector, including individuals who represent businesses, academic institutions, state and local law enforcement agencies.

Sandy Malaney, CEO, Big Hairy Dog Design

Sandy Malaney is CEO of Big Hairy Dog Information Systems. For over two decades Big Hairy Dog has provided precision Point-of-Sale and Inventory Control solutions for thousands of stores in the specialty retail industry. Retail automation requires thoughtful examination and an understanding of the needs of each customer. BHD is known worldwide for exhaustive planning, implementation, training and ongoing support.

Jonathan Williams, Director of Regional Public Affairs and State & Local Government Affairs, Intel

Jonathan Williams is the Regional Director of Public Affairs and Director of State and Local Government Affairs for Intel Corporation. Based in Folsom, California, Williams is responsible for Intel's Public Affairs portfolio in California, Texas and Massachusetts. This includes state and local government affairs, site-based media relations, and community and education philanthropy and employee volunteer programs. Williams is also responsible for developing, implementing and managing public policy strategies for local, regional and state government officials and develops Intel's legislative priorities and positions on key public policy issues. Williams joined Intel's Washington DC office in 1997, where he managed Intel's Political Action Committee (IPAC) and lobbied trade policy before Congress. Subsequent to that role,

Williams moved to Oregon in 1999 to join Intel Online Services, where he worked in a variety of roles, including international and domestic business development and marketing until 2002. Williams later served on the corporate marketing team responsible for the launch of the Centrino® mobile technology processor prior to becoming Intel's Government Affairs Manager in Oregon, a position he held from December, 2002 until August 2009