



**ECONOMIC &  
WORKFORCE  
DEVELOPMENT**  
*through the*  
CALIFORNIA  
COMMUNITY  
COLLEGES

**BUSINESS AND WORKFORCE  
PERFORMANCE IMPROVEMENT INITIATIVE**



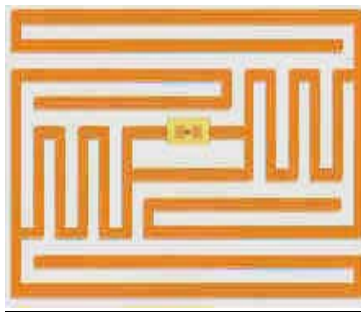
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## **Strategic Possibility Report**

### **Greater Silicon Valley**

# **Radio Frequency Identification (RFID)**

**At-a-Glance**



**Center of Excellence for Greater Silicon Valley**

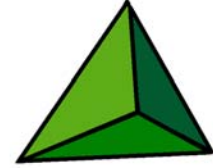
**Hosted at West Valley College**

**March 2006**



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## **Strategic Possibility Report for Greater Silicon Valley Community Colleges**

### **Radio Frequency Identification (RFID)**

**March 2006**

Prepared By

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THE BUSINESS AND WORKFORCE PERFORMANCE IMPROVEMENT INITIATIVE IS A GRANT-FUNDED PROJECT THROUGH THE ECONOMIC & WORKFORCE DEVELOPMENT PROGRAM OF THE CALIFORNIA COMMUNITY COLLEGES. OUR MISSION IS TO STRENGTHEN CALIFORNIA'S WORKFORCE AND ADVANCE ECONOMIC GROWTH THROUGH EDUCATION, TRAINING AND JOB DEVELOPMENT.

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**THE RFID MARKET HAS BEEN PREDICTED TO REACH \$8 BILLION BY 2008, AND THE WORKFORCE TO GROW FROM 125,000 TO MORE THAN 1.3 MILLION GLOBALLY BY 2015<sup>1</sup>.** *Source: RFID Tribe*

## Executive Summary

Radio frequency identification (RFID) is a wireless technology that uses radio waves to track items primarily for inventory within supply chain management. Considered superior to bar codes for their speed, readability distances and uses, RFID tags are placed in boxes, pallets and containers, and hold information about what is inside. From a business perspective RFID technology can increase sales and reduce costs by fast-tracking products into the marketplace-- from suppliers to distribution centers to stores.

RFID has gained much attention over the past few years because large retailers like Wal-Mart, Target, and Albertsons, and government agencies such as the United States Postal Service, the Department of Defense, and the Food and Drug Administration have mandated their suppliers to tag merchandise using RFID technology. Supplier compliance with RFID is a major driver of the emerging RFID market, and is now creating workforce issues over the lack of trained employees available to use the technology worldwide.

Typical of an emerging, early-stage industry, workforce data is limited. There is little data to indicate the current and projected supply and demand for workers using RFID technology by sector and occupation or by regional, national and international locations. Nevertheless, a skilled worker shortage, primarily for integrators and installers, has been reported.<sup>2</sup>

According to Alien Technology, a local leading manufacturer of RFID products and integration solutions, the job growth and size of the training opportunity in the Greater Silicon Valley including the San Francisco Bay area is smaller than in other locations, as few manufacturers or packagers are located in the area. The technology is having a larger impact in the Midwest, south and east where major manufacturers and packagers are located.

Because the size of the opportunity for RFID-skilled workers cannot be determined due to lack of workforce data, there is no demonstrated need for a regional strategic response from community colleges in the Greater Silicon Valley at this time. There is, however, the potential need for vendor - neutral training that might be delivered through contract education, and the development of RFID certification testing centers with industry partners near major packaging and warehousing centers in other parts of the state.

<sup>1</sup> *The RFID Workforce: Working with an Emerging Technology*, RFID Tribe, May, 2005

<sup>2</sup> Computing Technology Institute Association, [www.comptia.org](http://www.comptia.org)

The following report provides documentation of the strategic possibility, but does not represent a full environmental scan. The findings contained in the report were validated by interviews with RFID industry and training providers, and from review of secondary research—reports, surveys and websites.

## **What is a Strategic Possibility?**

The California Community Colleges System has charged the Economic & Workforce Development (EWD) Network to strategically identify growing industries and occupations that have partnering potential for the college's programs. The EWD network aims to best serve our local communities by identifying industry sectors with empirically validated projected growth. Additional criteria to establish the value of a Strategic Possibility includes: relevance (to the community colleges), economic impact, the adaptability of colleges to respond, and the ability to build partnerships with workforce and industry leaders to create career paths and upward mobility.

A Strategic Possibility report identifies industries and occupations that meet some, but not all, of the aforementioned criteria. While a response may be appropriate for a specific college, a strategic response from multiple districts is not warranted. A Strategic Possibility that meets all of the stated criteria, thus warranting an organized response from regional community colleges, is then defined as a Strategic Opportunity. A full environmental scan may then be conducted to evaluate and suggest possible actions to ensure market responsiveness.

## **Strategic Possibility Description – Industry Overview**

Radio frequency identification (RFID) is a wireless technology that uses radio waves and micro-chips to track items, primarily for inventory within supply chain management. RFID uses a three-part technology: a reader, a computer-printer and a tag. The tags, which have an antenna and memory chip, contain data that is picked up by the reader and sent to the computer to be stored in a database for use in tracking products as they are transported from suppliers to distribution centers to stores.<sup>3</sup> RFID technology was created more than 60 years ago, but it was only brought to the attention of business in the 1990's when the U.S. military used it to track supplies.<sup>4</sup>

RFID tags are placed in boxes and on pallets and containers and hold information about what's inside. Depending on the radio frequency ranges, a tag can be read as far away as 100 feet. The higher the frequency, the longer the read rates and cost of the tag. RFID tags have many benefits over bar codes—they are much faster to read, don't require contact or line-of-sight to be read, and can be used in dirty and wet environments.

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<sup>3</sup> *Radio Frequency Identification...Coming of Age*, an Information Technology Association of America (ITAA) white paper, June, 2004

<sup>4</sup> *RFID: Sunnyvale Radio ID Tagging Company Positions Itself for Next Generation Military Contract*, The Business Journal, August 12, 2005

RFID applications are being used in almost every vertical industry and across industries—retail supply chain, healthcare, pharmaceuticals, postal and courier services, maritime, transportation, defense, and automotive manufacturing. In addition, RFID impacts all business processes—information technology, supply chain, warehouse management and operations.

In addition to pallet and container tracking, other uses of RFID technology include implanted chips for pet identification, airline baggage tracking, long-range access control for vehicles, library book and bookstore tracking, electronic toll booth collections, and identification badges, to name just a few.

RFID has gained much attention the past few years because large retailers like Wal-Mart, Target, Albertsons, Best Buy, and Tesco, and government agencies such as the United States Postal Service, the Department of Defense (DoD), and the Food and Drug Administration have required their suppliers to tag merchandise using RFID technology. These requirements have been a driver in the entry of more than 60,000 companies<sup>5</sup> and 43,000 suppliers<sup>6</sup> into the RFID marketplace.

A threat to some California business is that small and medium-sized companies have experienced compliance difficulties due to the high cost of the equipment and tags, and their employees' lack of skills to use the technology.<sup>7</sup> If the tags can be placed properly to produce a high read rate, and if the price of tags comes down, RFID technology can increase sales and reduce costs by speeding up the process to make products available in the marketplace--from suppliers to distribution centers to stores.

A review of secondary data sources indicates that there is a need for workers skilled in RFID technologies, primarily integrators and installers. However, there is little workforce data to quantify this need; and the location of companies suggests that the industry's primary training needs may be concentrated outside of California.

Those colleges which already offer programs, courses and certifications in radio frequency, wireless networking and integration (Appendix D) may benefit from holding knowledge-building and career information events, for example RFID Boot Camps and other introductory forums, in partnership with local vendors or end-user companies.

## **Pre-Validation of Strategic Possibility**

The Business and Workforce Performance Improvement initiative has identified six criteria that determine if an industry qualifies for a strategic response from local community colleges. They are: Size, Relevance, Adaptive, Economic Impact, High Growth, and Leveraging. These criteria are discussed below.

The initial idea for RFID as an opportunity for community colleges came from a board member of the West Valley - Mission Community College District's Advancement

<sup>5</sup> Computing Technology Institute Association, [www.comptia.org](http://www.comptia.org)

<sup>6</sup> *The RFID Workforce: Working with an Emerging Technology*, RFID Tribe, May, 2005

<sup>7</sup> RFID Gazette, [www.rfidgazette.org](http://www.rfidgazette.org)

Foundation who conducted a preliminary review of the technology as an opportunity for the district to pursue that could address new job growth for the Silicon Valley.

Pre-validation included site visits and interviews with two major firms engaged in RFID technology, systems integration, and end-user training, and interviews with the Federal Assistance Center regarding DoD supplier training needs. Information was also pre-validated through a review of the secondary research and other data sources (See References – Appendix B).

## Size

The size of the potential strategic opportunity is key to determine whether or not there is sufficient scale to warrant an organized community college response. Because RFID technology and its implementation are considered “emerging”, there is insufficient employment data available to determine job growth in the Greater Silicon Valley at this time. There is little workforce information that can accurately assess the number of employees engaged in using the technology, or data to forecast the need for future workers.

The size of the opportunity could be determined by the number of companies which have become involved in the technology and its implementation. Typical of emerging industries, the estimated number of end-user companies— those that adopt the technology— varies widely according to different sources. CompTIA estimates 60,000 potential suppliers under retail RFID compliance mandates. RFID Tribe estimates there are 43,000 suppliers to the Department of Defense mandates. In December, 2005, the Procurement Technical Assistance Centers Central Registration Database held 403,787 potential suppliers to the Department of Defense mandates.<sup>8</sup> Therefore, there are thousands of companies who need to adopt RFID technology quickly and effectively.

To explore the technology further and how it might pervade industries, it’s important to understand that RFID technology has applications to a wide range of occupations within the logistics and supply chain management of all retail and governmental agencies, among others.

For those colleges wanting to further examine the workforce needs, ONET Online<sup>9</sup> cites under Logistics and Distribution occupations, that RFID devices— readers and scanner—as tools needed on-the-job, for example: 11-3071 Storage and Distribution Managers, and 43-5071 Shipping, Receiving and Traffic Clerks. While there are many other related occupations contained on the ONET site potentially related to RFID, it’s difficult to assess current job demand or projected job growth from this site without considerable cross-walking to specific industries and occupations within these industries. The chart below indicates employment projections for some of these occupations:

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<sup>8</sup> [www.dla.mil/db/procurem.htm](http://www.dla.mil/db/procurem.htm)

<sup>9</sup> ONET online, [hppt://online.onetcenter.org](http://online.onetcenter.org)

## California Occupational Employment Projections for 2004-2014

SOC Code	Occupational Title	Annual Average Employment		Employment Change		Average Annual Job Openings			Median Hourly Wage
		2004	2014	Numeric	Percent	New Jobs	Net Replacements	Totals	
11-3071	Transportation, Storage, and Distribution Manager	10,400	12,300	1,900	18.3	190	200	390	\$35.32
43-5071	Shipping, Receiving and Traffic Clerks	107,500	117,900	10,400	9.7	1,040	2,210	3,250	\$12.33
49-2093	Electrical and Electronics Installers and Repairers Transportation Equipment	1,600	1,700	100	6.3	10	40	50	\$23.05
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	6,800	8,000	1,200	17.6	120	150	270	\$23.94

Source: California Employment Development Department

NAICS codes could potentially be cross-walked to Department of Labor Statistics to determine employment estimates and projections. NAICS codes determined to be related to RFID occupations could be used to project job growth within a defined geographical area. For example, NAICS codes under Logistics appear most applicable to the RFID industry, at a minimum, under the following: Transportation Services – 481112 to 492210; Logistical Support – 488111 to 488999; Warehousing and Storage – 493110 to 493190; and Supply Chain Management – 541614.

In sum, there is insufficient information and data to assess current job demand and projected job growth for workers using RFID technology within the Silicon Valley without primary research.

## Relevance

Relevance is another criteria for which the community colleges should base a strategic opportunity. Naturally, programs must fit with the projected niche and core competencies of the community college as local training and education providers.

While a strategic response for RFID technology is not warranted from the size of this industry, there may be relevance to respond locally, especially for colleges who already offer programs, courses and certifications in radio frequency, wireless networking and integration, and those colleges located near major packaging and manufacturing plants.

There is evidence to support the fact that learning about the RFID technology, in general, will be necessary for some workers with specific domain knowledge in fields such as healthcare, pharmaceuticals, supply chain, port security, or military

applications, and those that hold A.A. and B.A. degrees in engineering, network and wireless design and integration, software development, and supply chain management.

According to Sun Microsystems, there is a need for experienced, hands-on installers, but these workers are valued more for their practical and domain knowledge rather than having a degree. These knowledge workers would only need to learn the RFID concepts and how the technology works from a practical application perspective. Of course this information does not translate into specific job growth for the Greater Silicon Valley.

Colleges wanting to further identify worker training needs should contact local RFID User Groups through associations mentioned in this report. Training and education could be offered through Contract Education to incumbent and displaced workers, or those individuals who have in specific domain knowledge helpful to RFID integration and implementation.

## Economic Impact

Recent economic predictions of the RFID industry globally vary broadly and beg for more data that translates into the workforce potential.

Table I: RFID technology market increase predictions

Source	Market Increase
Gartner <sup>10</sup>	\$504 million in 2005 to \$3 billion in 2010
Symbol Technologies <sup>11</sup>	\$100 million in 2005 to \$1.5 billion annually as technology is adopted
RFID Tribe <sup>12</sup>	Reaching \$7 billion by 2008
CompTIA <sup>13</sup>	Exceed \$4 billion by 2008

With the exception of the Port of Oakland, Alien Technology reports that growth in the Silicon Valley including the San Francisco Bay area is not developing a need for large numbers of new employees, and job growth and retraining is low as few manufacturers or packagers are located in the area.

On the other hand, Sun Microsystems predicts that any company with assets and/or inventory will need RFID technology and training. This means that sooner or later all companies under will need to focus on RFID technology. Sun asserts that “test centers” provide an ideal training center for customer-specific physics and product specifications. Sun suggests colleges could partners with EPC Global, Department of Defense, National Federation of Retailers, Food and Drug Administration, American Presidential Lines, among others to develop these centers.

<sup>10</sup> [www.rfidupdate.com](http://www.rfidupdate.com)

<sup>11</sup> *RFID: Sunnyvale Radio ID Tagging Company Positions Itself for Next Generation Military Contract*, The Business Journal, August 12, 2005

<sup>12</sup> *The RFID Workforce: Working with an Emerging Technology*, RFID Tribe, May, 2005

<sup>13</sup> Computing Technology Institute Association, [www.comptia.org](http://www.comptia.org)

## High Growth

To understand the growth of the RFID industry, an important question to pose is how many new jobs are being developed within vendor and end-user firms. Unfortunately, there is a lack of information to answer this question.

Two studies were recently conducted to assess the current job demand and job growth for the RFID workforce. RFID Tribe estimates the current RFID workforce is at 125,000 people who are “dedicated to RFID technology”—they spend more than 50% of their time directly involved with the technology. They forecast an increase in the workforce from its current level to more than 1.3 million globally by 2015.<sup>14</sup> Approximately 86% of the workforce are comprised of end user firms—companies that adopt the technology

In a workforce study commissioned by Comptia, key findings indicate 80% of survey respondents said there are not adequate numbers of workers skilled in RFID to hire, and 50% of organizations said training and educating their employees in the technology is one of the biggest challenges they will face to succeed in the RFID market.<sup>15</sup>

## Leveraging

Both Alien Technology and Sun Microsystems have established “test centers” in other states and around the world that provide training for customer-specific physics and product specifications. This training is vendor-specific to the products the end-user companies manufacture and supply. Sun suggests colleges could partners with EPC Global, Department of Defense, National Federation of Retailers, Food and Drug Administration, American Presidential Lines, among others to develop these centers.

Community colleges wishing to establish a test center in collaboration with a vendor or group of vendors, or even a university, using the model best practices of Kalamazoo Community College and Collin County Community College District described in Appendix D, could possibly find a willing partner, especially in areas where there is high concentration of packaging and warehousing facilities. These two community colleges have developed RFID “test centers” in collaboration with local firms in response to a need for entry-level technicians, and training for existing workers.

## Industry Training Needs, Challenges, Limitations

Information technology association leader CompTIA reports that employers are having difficulty finding qualified integrators and installers. The majority of end-users are saying that they have a low-level of knowledge about RFID, and training and educating their employees in the technology is one of the biggest challenges they will face to successfully meet mandates. For a list of skill sets for RFID workers see Appendix E.

<sup>14</sup> *The RFID Workforce: Working with an Emerging Technology*, RFID Tribe, May, 2005

<sup>15</sup> Computing Technology Institute Association, [www.comptia.org](http://www.comptia.org)

The Procurement and Technical Assistance Programs (PTACs), some of which are located at California Community Colleges, say they are meeting the current training needs of DoD suppliers who are under mandates to adopt RFID technology. According to the PTACs, many of the DoD suppliers in California will outsource the RFID technology work since they don't have packaging facilities, but they will be responsible for the readability of the tags.

CompTIA and RFID Tribe have found that the majority of RFID training is conducted by vendors resulting in a vendor bias towards their particular product. Both associations recommend that end-users would benefit more from independent third-party training and certification. These recommendations warrant further examination of whether community colleges can play a role in developing the type of training needed as the industry grows and matures.

Certification for RFID workers is now available through CompTIA, and RFID technical standards and practices have been created<sup>16</sup> to help firms to integrate the technology for their products. However, learning and using the new standards adds to the new skill training needed for RFID employees.

## **Limitations and Data Gaps**

Because RFID is considered typical of an emerging, early-stage industry, accurate information about the RFID workforce is not available. There is a lack of data to indicate the current demand for jobs in RFID, projected job growth by sector or occupation, location of available jobs, or salaries associated with these jobs, regionally, nationally, or internationally.

NAICS codes are available for industries most probable to become RFID end-user firms. Occupational Codes are available for jobs most probably to need RFID knowledge and skills. But predicting the proportion of these firms and jobs that may be involved in direct contact with RFID technology is difficult without primary research conducted to survey companies for this information.

## **Summary**

Typical of an emerging, early-stage industry, information about the RFID workforce is lacking. There is little data to indicate the current demand for jobs in RFID, projected growth for new jobs developed within vendor and end-user firms by sector or occupation, and location of available jobs either regionally, nationally or internationally. Because the size of the opportunity cannot be determined, and interviews with industry suggest job growth is located within the U.S. in the Midwest, south and east, there is no demonstrated need for a regional strategic response from community colleges in the Greater Silicon Valley at this time.

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<sup>16</sup> [www.epcglobal.com](http://www.epcglobal.com)

However, there may be opportunities to develop test centers with industry partners for colleges located near major packaging and warehousing centers, and provide training to RFID workers through Contract Education that is vendor-neutral. Those colleges which already offer programs, courses and certifications in radio frequency, wireless networking and integration may benefit from holding knowledge-building and career information events – for example, RFID Boot Camps and other introductory forums, in partnership with local vendors or end-user companies.

## **Appendix A: How to Use this Report**

### ***About Us - Description of BWPI***

The Business and Workforce Performance Improvement (BWPI) initiative is focused on building the capacity of the colleges in the area of economic and workforce development to enhance their ability to deliver education and training services to businesses and workers in high growth industries, new technologies, and other clusters of opportunities.

The Centers of Excellence (COE) within BWPI provide information regarding workforce trends, increasing awareness and visibility about the colleges economic and workforce development programs and services, and building partnerships with business and industry.

The difference this will make to the colleges is that it will position them as THE workforce partners of choice to business and industry and ensure that college programs are current and responsive. This will contribute to the overall economic vitality of the communities in which they serve.

### ***How to Use This Strategic Possibility Report***

The Centers of Excellence within the Business and Workforce Performance Improvement Initiative of the California Community College Economic and Workforce Development Program have undertaken Industry Scanning to provide targeted and valuable information to community colleges on high growth industries and occupations.

This report, while not a full industry scan, is intended to assist the decision-making process of California community college administrators and planners in addressing local and regional workforce needs and emerging job opportunities in the workplace as they relate to college programs. The information contained in this report can be used to guide program offerings, strengthen grant applications, and support other economic and workforce development efforts.

This report is designed to provide current industry data that will:

- Define potential strategic opportunities relative to an industry's emerging trends and workforce needs;
- Influence and inform local college program planning and resource development; and
- Promote a future-oriented and market responsive way of thinking among stakeholders.

This Strategic Possibility Report included a review of the California Regional Economies Project reports and Employment Development Department (EDD) Labor Market Information (LMID) projections that cover the communities in this region, as well as many other sources as listed.

### ***Important Disclaimer:***

All representations included in this Strategic Possibility product/study have been produced from a secondary review of publicly and/or privately available data and/or research reports. Efforts have been made to qualify and validate the accuracy of the data and the reported findings. The purpose of the Strategic Possibility Report is to assist the California Community Colleges to respond to emerging market needs for workforce performance improvement. However, neither the Business and Workforce Performance Improvement Centers of Excellence, COE host college or California Community Colleges Chancellor's Office are responsible for applications or decisions made by recipient community colleges or their representatives based upon this study including components or recommendations.

## Appendix B: References

- California Employment Development Department, Labor Market Information, [www.labormarketinfo.edd.ca.gov](http://www.labormarketinfo.edd.ca.gov)
- Computing Technology Institute Association (CompTIA), [www.comptia.org](http://www.comptia.org)
- EPC Global, [www.epcglobal.com](http://www.epcglobal.com)
- Kalamazoo Valley Community College, [www.kvcc.edu](http://www.kvcc.edu)
- ONETs Online, <http://online.onetcenter.org>
- Procurement and Technical Assistance Centers, [www.dla.mil/db/procurem.htm](http://www.dla.mil/db/procurem.htm)
- *Radio Frequency Identification...Coming of Age*, an Information Technology Association of America white paper, June, 2004
- RFID Gazette, [www.rfidgazette.org](http://www.rfidgazette.org)
- *RFID: Sunnyvale Radio Tagging Company Positions Itself for Next Generation Military Contract*, San Jose Business Journal, August 12, 2005
- RFIDupdate.com
- *The RFID Workforce: Working with an Emerging Technology*, RFID Tribe, 2005, [www.rfidtribe.com](http://www.rfidtribe.com)
- Wireless Jobs, [www.wirelessjobs.com](http://www.wirelessjobs.com)

## Appendix C: Industry Associations and Related Websites

AIM Global Association, <a href="http://aimglobal.org">aimglobal.org</a>	<a href="http://rfidnews.com">rfidnews.com</a>
Computing Technology Industry Association, <a href="http://comtia.org">comtia.org</a>	<a href="http://rfidrecruiters.com">rfidrecruiters.com</a>
Council for Supply Chain Management Professionals, <a href="http://cscmp.org">cscmp.org</a>	RFID Tribe, <a href="http://rfidtribe.com">rfidtribe.com</a>
EPC Global, <a href="http://epcglobalinc.org">epcglobalinc.org</a>	<a href="http://rfidupdate.com">rfidupdate.com</a>
International Standards Organization, <a href="http://iso.org">iso.org</a>	Savi, <a href="http://savi.com">savi.com</a>
National Retail Federation, <a href="http://nrf.com">nrf.com</a>	Silicon Valley RFID Users Group
Procurement and Technical Assistance Centers, <a href="http://dla.mil/db/.procurem.htm">dla.mil/db/.procurem.htm</a>	<a href="http://vnunet.com">vnunet.com</a>
<a href="http://rfidgazette.org">rfidgazette.org</a>	<a href="http://wirelessJobs.com">wirelessJobs.com</a>
<a href="http://rfidjournal.com">rfidjournal.com</a>	<a href="http://wirelessweek.com">wirelessweek.com</a>

## APPENDIX D: Community College and Other Training Providers

### Community Colleges

Community colleges and universities now offer degree and certificate programs in RFID, or offer individual courses in radio frequency, wireless fundamentals and home technology integration. Generally, these programs exist in Engineering and/or Computer Networking Departments.

College	Location	Program	Contact
Colin County Community College	Plano, TX	<ul style="list-style-type: none"> <li>RFID Courses</li> <li>A.A. Degree and certificate Convergence Technology</li> <li>Jobs: Home Technology Integrators and Convergence Technicians</li> </ul>	ccccd.edu
Foothill College	Los Altos, CA	Computer Networking Course: Wireless Networking	fhda.edu
Kalamazoo Valley Community College	Kalamazoo, MI	RFID Technology Center – in conjunction with Western University and Blue Granite	kvcc.edu
Mission College	Santa Clara, CA	Computer Networking/Electronics Technician Courses: Introduction to Radio Frequency; Microwave and Wireless; Advanced Radio Frequency, Microwave and Wireless	missioncollege.org
Ohlone College	Fremont, CA	Computers Networks, and Emerging Technology (CNET)  Wireless LANS Training	ohlone.edu
Skyline College	San Bruno, CA	Telecommunications, Wireless and Network Information Technology	skylinecollege.edu

		Course: Signal Transmission and Radio Frequency Fundamentals	
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### Procurement Technical Assistance Centers (PTAC)

PTACs are the approved training provided for RDIF technology for Department of Defense suppliers in California. Several PTACs are located at community colleges,

Location	Program	Contact
Imperial County PTAC, El Centro	Free, half-day training topics:	<a href="http://www.dla.mil/db.procurem.htm">www.dla.mil/db.procurem.htm</a>
Riverside Community College District	<ul style="list-style-type: none"> <li>• Basics of RFID</li> <li>• Tag Construction</li> <li>• Data Flow and Wide Area Work Flow</li> <li>• DoD Contractual Requirements</li> <li>• RFID Solutions</li> <li>• Conclusions</li> </ul>	Carol Bower Senior Counselor/Instructor The Federal Technology Center <a href="http://theFTC.org">theFTC.org</a> (916)334-9388
San Diego Contracting Opportunities Center		
San Joaquin Delta College Small Business Development Center, Stockton		
The Federal Technology Center, (Sacramento area)		

### Private Technical Schools

School	Program	Contact
Devry University, Fremont, CA (In partnership with RFID Technical Institute)	RFID courses and executive workshops; on-site customized training	<a href="http://devry.edu">devry.edu</a> <a href="http://rfidtech.com">rfidtech.com</a>
RFID4U, Sunnyvale, CA	Provider of RFID instructor-led training and online/E-learning; CompTIA RFID + certification	<a href="http://rfid4u.com">rfid4u.com</a>

### CompTIA RFID+ Certification

The Computing Technology Industry Association has created a certification that validates the knowledge and skills of workers with RFID technology. The credential certifies an employee's ability to install, maintain, and repair both hardware and software of RFID products. Study materials include a manual and test prep CD to prepare students to take the exam. Current price for CompTIA RFID+ Certification is \$244.00. [www.comptia.or/rfid](http://www.comptia.or/rfid)

### Vendor-Specific Training

Alien Technology in Morgan Hill, CA and Savi in Sunnyvale, CA provide training courses to operate their equipment. Sun Microsystems, which has test centers in Dallas and Singapore, are a system integrator who provides training but focuses more on a business model that assists with customer-specific physics and product specifications via long term contracts.

## **Appendix E: Skill sets required for RFID workers**

<b>Core Skills</b>	<b>General Skills</b>
Electrical engineering	Innovation
Wireless systems design	Problem solving
Software development	Math
Network design	Cross-discipline collaboration
Supply chain management	Communication
Information systems and data management	
Customer service and support	

Source: [www.wirelessjobs.com](http://www.wirelessjobs.com)