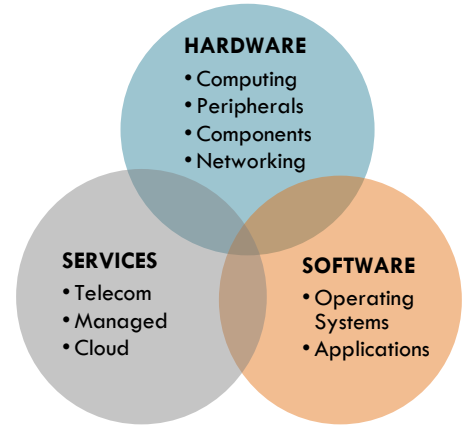


SECTOR PROFILE INFORMATION & COMMUNICATIONS TECHNOLOGIES (ICT)

WHAT IS THE ICT SECTOR?

ICT is an umbrella term, used widely outside the U.S. and by the United Nations, to encompass all rapidly emerging, evolving and converging computer, software, networking, telecommunications, Internet, programming and information systems technologies. The sector represents a mix of three industry clusters:

- **Hardware** – firms that create, manufacture and distribute computer, peripheral, networking and related equipment.
- **Software** – firms that create, manufacture and distribute computer operating systems and applications.
- **Services** – firms that bundle hardware, software and other services to deliver solutions to business and consumer customers.



EMPLOYER SAYS

“In the 21st century, we live in knowledge and information economies where Information and Communications Technologies are essential strategic elements for success. We need to support educator efforts to develop competent technicians to implement and maintain key ICT infrastructure and support systems.”

— Tom Burns, President
Enterprise Solutions Division, Alcatel-Lucent

WHY ICT?

Over the last generation or so, Information and Communication Technologies (ICT) have spawned a paradigm shift in modern economies and societies. These technologies have permeated every industry and most organizations, changing ways companies operate and interact with customers and suppliers, how human beings organize and manage their lives, how people communicate, and how most workers do their work. ICT is transformational, and ICT companies in California include many global leaders in this dynamic and quickly evolving space. ICT is strategically important to individual citizens, to governments, to all industries, to most organizations, to all students, and for economic development, at every level.

quick facts about ICT industries

- ✓ There are about 46,000 ICT Industry related businesses (1 in 28 companies) in California.
- ✓ They produce about \$172 billion in revenue (6% of total California private sector revenues).
- ✓ They employ more than a million California workers (1 in 17 private sector jobs)
- ✓ They pay about \$76 billion in wages (12% of private sector wages, the 2nd highest wage sector) in California.
- ✓ They expect job growth approaching 20% for ICT industries from 2006 to 2016, outpacing the nation.

WHAT IS DRIVING GROWTH?

The growth of the ICT industry sector in California can mainly be attributed to:

- Increasing adoption of Information and Communication Technologies (ICT) hardware, software and services by consumers and businesses globally.
- The ongoing replacement of ICT hardware, software and services with new and improved solutions.

WHAT ARE ICT INDUSTRY JOBS?

ICT industries employ people in all standard business functions, such as accounting, finance, human resources and administration. What is unique to ICT industry jobs are those devoted to developing and distributing ICT goods and services:

- Hardware and software development roles, including electrical and hardware engineers, computer scientists, software engineers and programmers.
- Roles related to the development and delivery of ICT technical services.
- Roles supporting marketing and sales of ICT related products and services.

WHAT ICT INDUSTRIES ARE PROJECTED TO GROW?

ICT industries expected to continue to grow rapidly in California include: ICT equipment manufacturers, software publishers, web search services, Internet companies, technical consulting services, computer programming services, computer system design services, and cellular and other wireless carriers.

ICT Industry firms expect 8.5% employment growth and non-ICT industry companies expect -0.4% employment growth over the next 2 years.

–2010 COE California Employer Survey

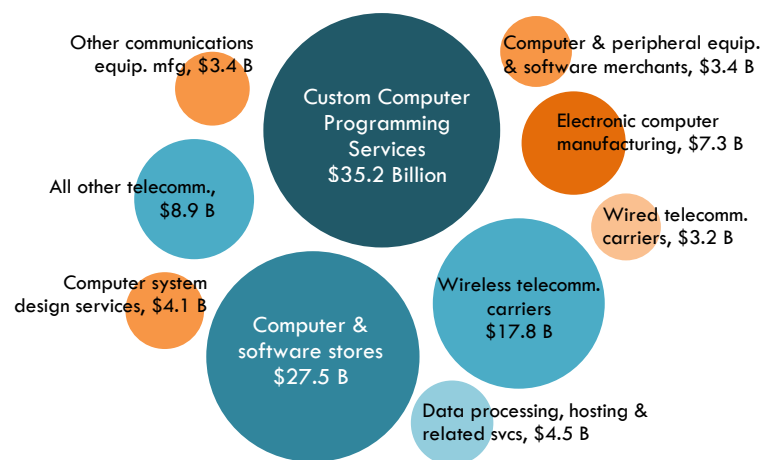
PROJECTED GROWTH IN ICT INDUSTRIES, 2011-2014

ICT Industry	2010 Jobs	2014 Jobs	Growth/ New Jobs	% Growth
Web search portals	26,044	36,297	10,253	39%
Electronic auctions	6,848	8,636	1,788	26%
Digital printing	4,119	5,145	1,026	25%
Custom computer programming services	173,156	203,724	30,559	18%
Computer systems design services	110,324	130,133	19,809	18%
Cellular and other wireless carriers	26,449	30,503	4,054	15%
Internet publishing and broadcasting	12,915	14,834	1,919	15%
Data processing and related services	25,090	28,669	3,579	14%
Software publishers	53,326	60,227	6,901	13%
Electronic shopping	22,850	25,868	3,018	13%
Broadcast and wireless communications equipment	16,970	18,520	1,550	9%
TOTAL	478,091	562,556	84,456	19%

WHAT INDUSTRIES ARE DRIVING ECONOMIC ACTIVITY?

ICT industries are strategically important to California for the revenue and wealth they produce, for their high levels of employment and compensation, and for the exports and tax revenue they generate for the state. The two leading industries by sales revenue are Custom Computer Programming Services (\$35.2 billion) and Computer and Software Stores (\$27.5 billion). However, ICT industries are even more important than that strategically, because information and communication technologies are driving efficiencies, increases in productivity, commerce and competitive advantages for organizations in every industry. ICT is a major engine driving 21st century information, knowledge and innovation economies in all industry sectors across the state.

2010 REVENUE BY ICT SUBSECTOR



WHERE ARE THE “HOT SPOTS”?

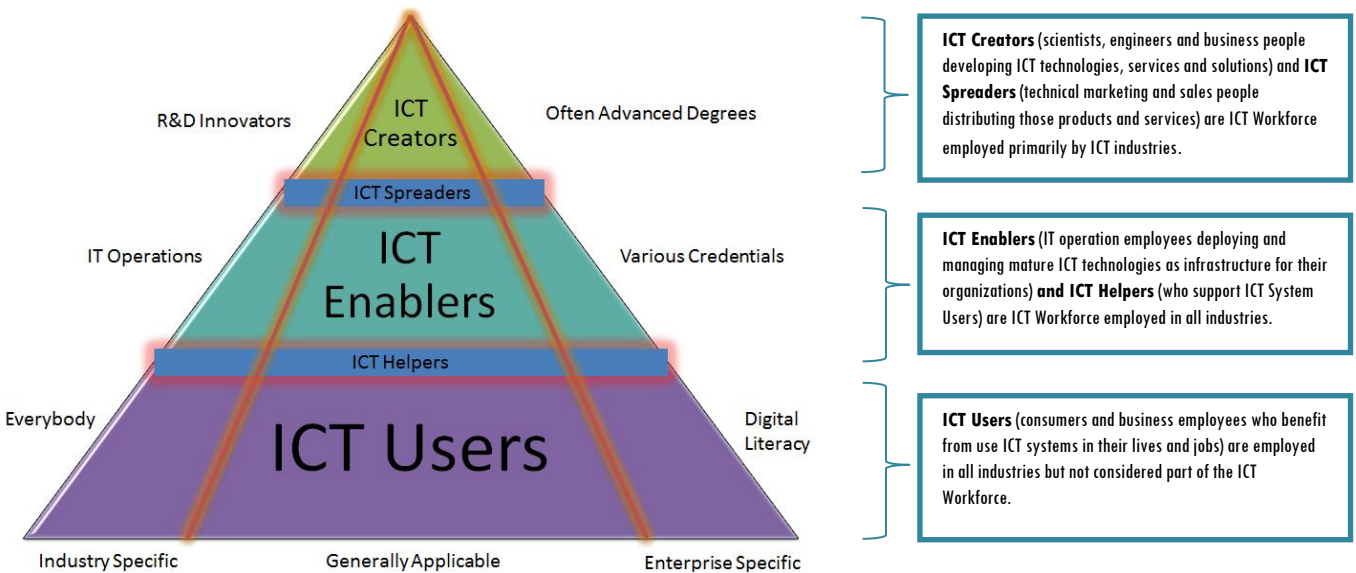
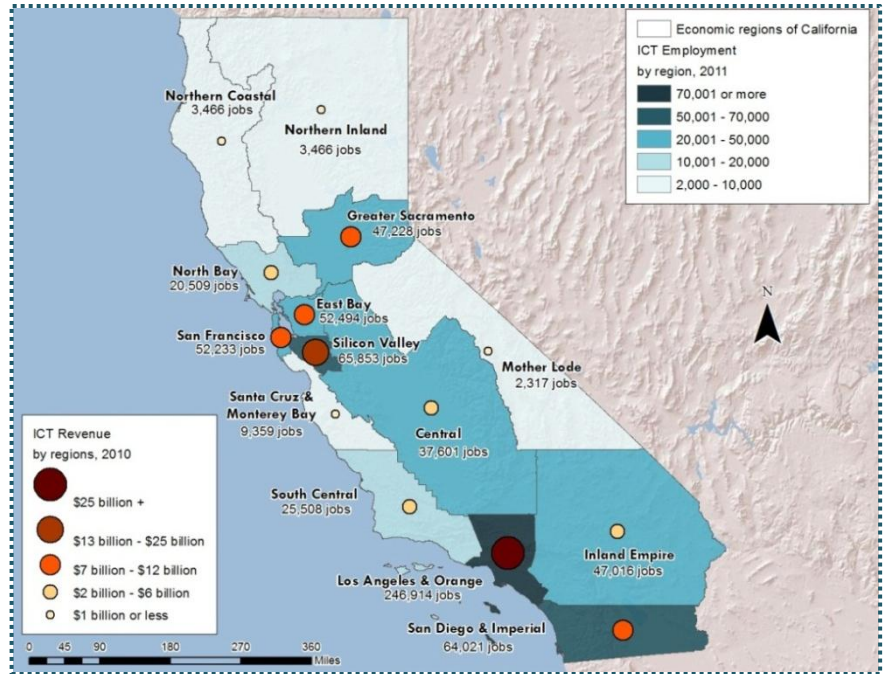
ICT employment is most concentrated in the Los Angeles/Orange region and the Silicon Valley. The Los Angeles/Orange region has the highest sales revenue for ICT firms (over \$73 billion), followed by the greater San Francisco Bay Area (\$46.7 billion) – with a large concentration in the Silicon Valley (\$22 billion).

WHAT IS THE ICT EMPLOYMENT SECTOR?

Importantly, ICT Workforce employment is not limited to ICT Industries. Information and Communication Technologies are adopted and applied by most organizations, in every industry. Most organizations, in every industry, employ people in ICT Workforce roles to implement, manage and maintain internal ICT systems.

This is an important distinction. The ICT Workforce is pervasive, across all industries, and in many industries the largest areas of employment growth are within their ICT Workforce. ICT Workforce deploys, manages and maintains strategic ICT infrastructure used for competitive advantages, commerce, growth, productivity, and efficiency by most workers in most workforce roles in all industries in California. Additionally, today and increasingly in the future, some level of ICT knowledge and skills is required by most workers, in most workforce roles, even outside the ICT workforce.

ICT EMPLOYMENT AND REVENUE BY REGION

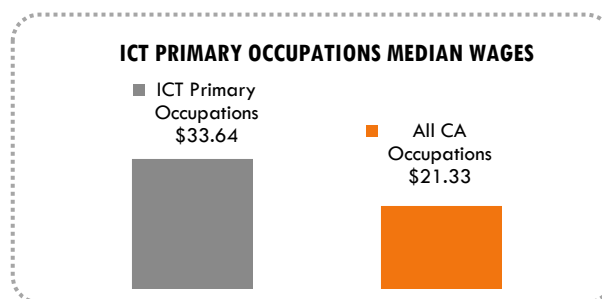


Non-ICT industry companies that forecast - 0.4% overall employment growth expect 3.7% growth in ICT workforce employment over the next two years.
–2010 COE California Employer Survey

About 1.2 million people are currently employed in the California ICT Workforce, across all industries. That is roughly 1 in 20 California private sector jobs. California will create 30,000 new ICT Workforce jobs and more than 80,000 ICT Workforce job openings due to replacements, for a total of more than 110,000 new and replacement jobs between 2011 and 2013, according to EMSI data.

HOW MUCH DOES IT PAY?

In California, the median ICT Workforce hourly wage is about 60% higher than the median wage for all jobs. Information is the second highest paying industry sector in California, after utilities. With annual earnings per worker of about \$110,000, the information industry sector pays 90% higher wages than the average across all other industries in the state.



WHAT ICT JOBS ARE IN DEMAND?

In practice, employers do not generally use consistent ICT Workforce job titles and descriptions. A recent real-time Labor Market Information study of one California market showed that of more than 2,300 de-duplicate job postings, there were more than 1,900 unique job titles, and even when job titles were the same, job descriptions and requirements were typically substantially different. However, following are some standard ICT Workforce occupations with strong job opportunities.

TOP JOB OPPORTUNITIES IN ICT

Description	2011 Jobs	2014 Jobs	New Jobs	% Growth	Replacement Jobs	Openings (new & repl.)	2011 Median Wages	Minimum Education Level
Network Systems and Data Communications Analysts	52,055	57,900	5,845	11%	2,808	8,653	\$32.39	Bachelor's degree
Computer Systems Analysts	69,975	73,200	3,225	5%	4,547	7,772	\$38.41	Bachelor's degree
Network & Computer Systems Administrators	38,887	40,996	2,109	5%	1,950	4,059	\$37.66	Bachelor's degree
Computer Specialists, All Other	34,068	35,144	1,076	3%	2,208	3,284	\$38.45	Associate's degree
Computer Hardware Engineers	17,884	17,582	(302)	(2%)	1,966	1,664	\$52.50	Bachelor's degree
Database Administrators	14,195	14,978	783	6%	715	1,498	\$38.81	Bachelor's degree
Telecomm. Line Installers & Repairers	19,056	19,615	559	3%	1,020	1,579	\$24.32	Long-term on-the-job training
Telecommunications Equipment Installers & Repairers	23,398	22,782	(616)	-3%	2,222	1,606	\$28.20	Postsecondary vocational award
Switchboard Operators, Including Answering Service	17,794	16,939	(855)	-5%	1,965	1,110	\$12.93	Short-term on-the-job training

There were 68,000 online job postings in California for ICT occupations in the last four months. Job postings reflected the need for workers in a wide range of skill and education levels. Although many jobs advertised require baccalaureate degrees or higher, occupations that require community college credentials were also in the mix. Select occupations with vacancies posted include the following:

- Computer Systems Analysts (29,731 job postings)
- Network and Computer Systems Administrators (18,541)
- Database Administrators (8,023)
- Computer Hardware Engineers (5,194 postings)
- Network Systems & Data Comm. Analysts (3,566)
- Telecomm. Equipment Installers & Repairers (1,700)

EMPLOYERS WITH THE MOST JOB POSTINGS, FEB-MAY 2012

KFORCE	2,552
CYBERCODERS	2,421
TEK SYSTEMS	1,150
IBM	1,051
DELOITTE	890
RANDSTAD TECH.	758
APPLE	620

DATA NOTES AND SOURCES

Data and information included in the Sector Profile were compiled from the following public and proprietary sources: U.S. Bureau of Labor Statistics; CA Employment Development Department; Economic Modeling Specialists, Inc.; InfoGroup, Inc.; The Conference Board - Help Wanted Online; Center of Excellence/MPICT ICT Workforce Studies Phase 2 & Phase 3, www.coecc.net/ict; Mid-Pacific Information and Communications Technologies (MPICT) Center, www.mpict.org