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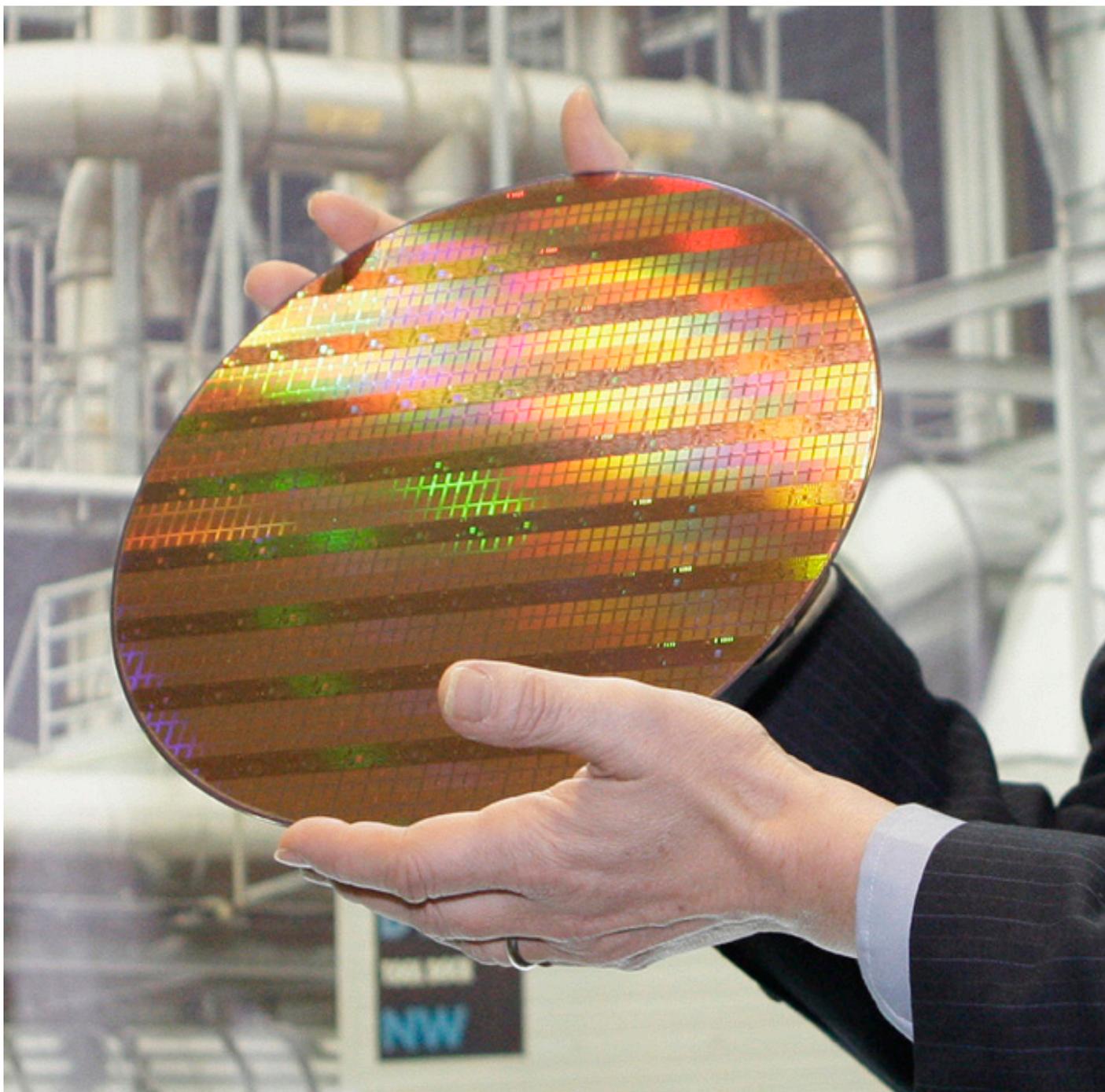
**in on america**

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## Silicon Valley



*A silicon wafer (Photo © AP Images)*

In this issue: The Power of the Chip

Zoom in on America

# The Birth of Silicon Valley

If you look for Silicon Valley on a map, you might not find it. Silicon Valley is the nickname of the region near San Francisco that today is synonymous with innovation and high-tech companies. Silicon Valley traces its roots to 1939, when William Hewlett and David Packard, both Stanford University alumni, opened an electronics shop in a Palo Alto garage.

Geographically, Silicon Valley lies in the area of the Santa Clara Valley south of San Francisco. Previously the area was famous for its orchards and agriculture. In fact it used to be nicknamed the Valley of Heart's Delight. The region covers some 100 km<sup>2</sup>, and its main city is San Jose, which now has a population of close to 1 million people. While people trace the birth of Silicon Valley back to 1939, the term "Silicon Valley" was not used until 1971. Economic commentator Don Hoefler popularized the name in a se-

ries of articles entitled "Silicon Valley in the USA" that he wrote for the weekly *Electronic News*. Hoefler did not invent the term himself; he took it from his friend, businessman Ralph Vaerst. "Silicon" refers to the production of computer semiconductors, in which silicon chips are used.

In 1849, gold miners seeking riches flocked to California from all over the world in one of the world's greatest gold rushes. Almost 100 years later, high-tech industry started



The house where Hewlett-Packard was founded in Palo Alto. (Photo © AP Images)



William Hewlett, left, and David Packard in an undated photo from the 1940s. (Photo © AP Images)



A state historical marker outside of the garage in Palo Alto, California that spawned Hewlett-Packard Co. (Photo © AP Images)

to attract a new wave of fortune seekers: entrepreneurs, academics, computer scientists, and other experts have increased the population of Silicon Valley to almost 4 million people. Stanford University, with its 2,000 academic staff and 16,000 students, has been a centerpiece of Silicon Valley from the beginning.

Frederick Terman, a Stanford professor, is often called the father of Silicon Valley. It was Terman who recommended that Hewlett and Packard start their electronics company near the Stanford Campus. After World War II, Terman started to lease some of Stanford University's property to technology companies. Eventually, this led to creation of the Stanford Industrial Park and later, Stanford Research Park.

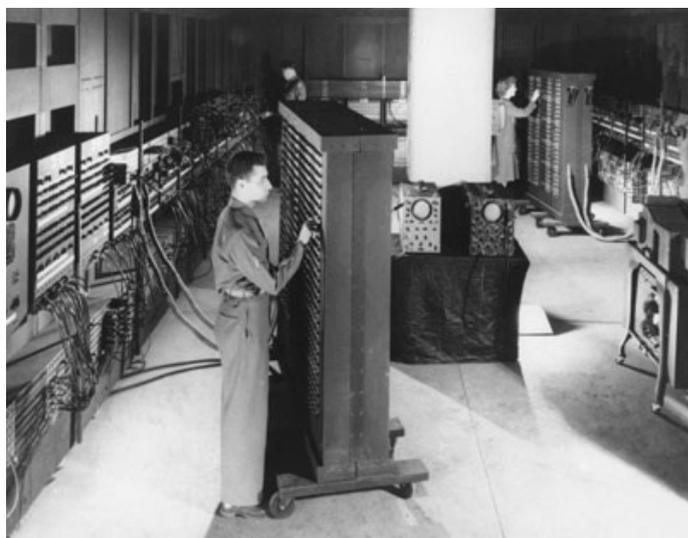
Hewlett and Packard moved their company to Stanford Research Park in the 1950s. Now a multi-billion dollar firm specializing in developing and manufacturing computers,

storage devices, servers, printers, and other hardware and software devices, Hewlett Packard started with an initial investment of only \$538. The company name and famous "HP" abbreviation was the result of a coin toss. Packard won the coin toss and decided that the company name should start with the initial of his friend's surname. HP's first product was a precision audio oscillator. One of their first customers was Walt Disney Productions. In 1967, Hewlett met a 12-year-old boy by the name of Steve Jobs. Impressed by the young man's technical skills and enthusiasm, Hewlett offered him a summer job.

Other companies who started operating in Silicon Valley in its early years were Varian Associates, General Electric, Fairchild Semiconductor and Intel. Today thousands of technology firms are based there.

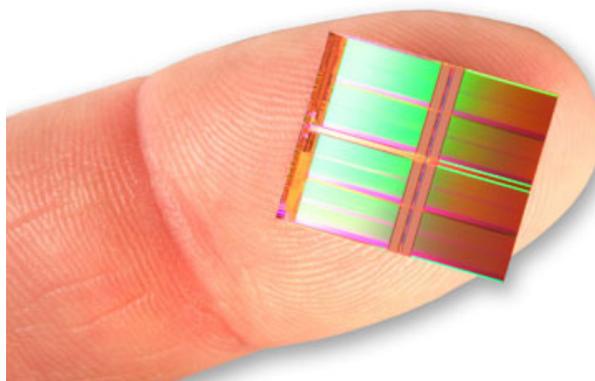
## Size & Speed Matter

The photo on the right shows ENIAC (Electronic Numerical Integrator and Computer), the first general purpose electronic computer. The US Army ordered its construction in 1946. Its job was to calculate bomb trajectories for artillery firing tables. ENIAC was 1,000 times faster than other computers that existed at that time. It was able to make about 5,000 calculations a second. But ENIAC was also big. Gregory Farrington of the University of Pennsylvania, where ENIAC was created, writes that ENIAC "weighed 30 tons and occupied 1,800 square feet of space. It had more than 19,000 vacuum tubes, 70,000 resistors, 10,000 capacitors and 6,000 toggle switches. It consumed 175 kilowatts of electricity, spurring rumors that every time it was turned on, lights dimmed in Philadelphia. (ENIAC actually had its own generator.)"



*ENIAC, a 30-ton electronic machine in a photo from 1946. (photo © AP Images)*

The picture at right, taken almost 70 years after ENIAC was built, shows how much technology has changed in that time. This picture shows the world's highest capacity flash memory die, the 20 nm NAND from Intel and Micron. This device can store 1 terabit of data in a fingertip-size package. The greater capacity and smaller size of computer equipment has led to the creation of small and affordable electronic devices like MP3 players, digital cameras, smart phones, and tablets.



*World's highest capacity NAND flash memory die--New 20nm NAND from Intel and Micron that meets the ongoing demand for slim, sleek products. (photo © GLOBE NEWSWIRE)*

# Growth of Silicon Valley

Since the birth of Silicon Valley, thousands of companies have come into and gone out of business. The close proximity of so many high-tech companies, investors, and research universities like Stanford and the University of California-Berkeley has created an innovation ecosystem that continues to produce new and creative firms. Let's take a look at some of Silicon Valley's best known businesses.

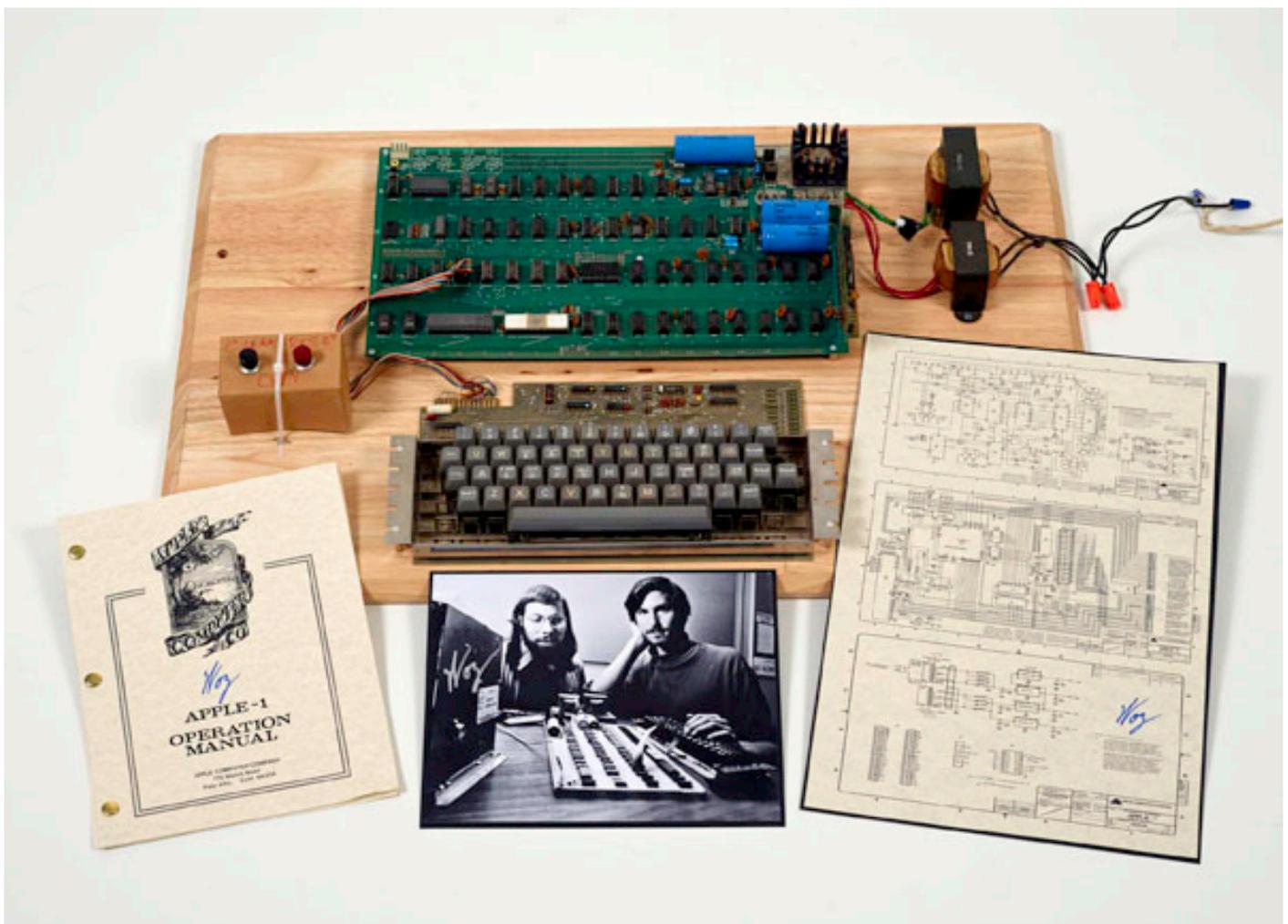
**Varian Associates** - One of the first firms in Silicon Valley, Varian was founded by three brothers and operated from 1948-1999, when it split into three companies. Varian produced the tube that could generate electromagnetic waves at microwave frequencies. Steve Jobs' mother, Clara Jobs, worked at Varian as a bookkeeper.

**Adobe Systems** - Adobe is a software company which was founded in December 1982 by John Warnock and Charles Geschke, who had previously worked for Xerox. Adobe's products helped to revolutionize desktop publishing. Photoshop and PDF (Portable Document Format) are perhaps the most recognized software products from Adobe.

**Apple** - Steve Jobs, who so impressed William Hewlett as a young man, went on to co-found Apple Computer, Inc in 1976 with partners Steve Wozniak and Ronald Wayne. Today Apple is best known for its MAC computers, the

iPhone, iPad and iPod. Apple introduced the Mackintosh computer in January 1984 with one of TV's most famous commercials: "1984" alluded to George Orwell's famous book of the same name. You can watch the video here: <http://youtu.be/VtvjbmoDx-I>. The ad, which cost 1.5 million USD to make, first aired during the Super Bowl. Jobs removed the word "Computer" from the company's name in 2007, when Apple introduced the iPhone. The iPad, launched in 2010, turned out to be a huge success. Half a million iPads were sold the first week it went on sale. Apart from hardware and personal electronic devices, Apple produces software, including the OS X and iOS operating systems. With its iTunes Store, Apple is also the world's largest music retailer. Apple has more than 400 stores all over the world.

**Cisco Systems** - In the same year that Apple introduced the Mackintosh computer, Leonard Bosack and Sandy Lerner established Cisco. Both were working at Stanford



"Apple 1" prototype computer, built in 1976, accompanied by an operation manual and schematic as well as a photo of its inventors, Steve Wozniak, left, and Steve Jobs. (photo © AP Images)

University at the time. The company first produced a router and software to run it, which was identical to the software at Stanford Medical School. While Stanford initially considered filing a criminal suit against Cisco, in the end the university licensed the software to Cisco. Over the years, Cisco acquired a number of smaller high technology firms, which is a common practice in the sector. With the soaring growth of the Internet at the end of the 1990s, Cisco's routers were in high demand among Internet service providers. In 2000, Cisco was the most valuable company in the world.

**eBay** - eBay was founded in 1995 at the peak of the so-called dot-com bubble, when the stock value of Internet-based companies rose sharply. The company's primary activity has been the online auction service, eBay.com. Pierre Morad Omidyar, an Iranian-American who was born in France, founded eBay. The first product he sold online, through a service he created called Auction Web, was a broken laser pointer. A huge range of products are now sold on eBay. But even eBay has restrictions. Among the list of items not allowed to be sold on eBay are "souls, ghosts" and other "items whose existence cannot be verified."

**Yahoo! Inc.** - Jerry Yang and David Filo, graduates of Stanford's electrical engineering department, founded Yahoo in 1994. The name "YAHOO" is an acronym for "Yet Another Hierarchical Official Oracle," as well as the name of a legendary being in Jonathan Swift's Gulliver's Travels. It is estimated that Yahoo sites get 700 million visits each month. Yahoo offers a Web portal, search engine,

email, and many other services. Its news site has extensive readership. Yahoo's present CEO is Marissa Mayer, former executive at Google. Yahoo's most profitable years came during the dot-com bubble. In 2008, Microsoft Corporation made a bid to acquire Yahoo, but it was rejected. Yahoo was forced to cut 2,000 jobs in 2013. In May 2013, the company bought the popular blogging site, Tumblr, in order to increase its social-networking offers.

**Google Inc.**- Yahoo's main rival, Google was established in 1998 by Stanford doctoral students Larry Page and Sergey Brin with the goal "to organize the world's information and make it universally accessible and useful." Today google.com is the most visited website in the world. The company processes a stunning one billion search requests per day. Google's profits mostly come from online advertising. In addition to its search engine, Google, Inc. offers several services such as Gmail and Google+, and also owns the video-sharing platform, YouTube. The company also produces Android, an operating system for smart phones. As of February 2013, Google employed over 44,000 people around the world. The novelty and success of Google's search engine consisted in estimating the rank of a page on the basis of the number of pages and the importance of the pages which linked back to the original site. Like Hewlett and Packard the company's first office was set up in a garage. Like other technology companies, Google seeks to produce innovative new products in order to maintain its competitiveness. Among Google's current projects is development of Google Glass (see the photo below): a wearable computer with an optical head-mounted display (OHMD).



*In this file photo made May 28, 2010, customers are silhouetted at the launch of the new iPad tablet computer at an Apple store in central in Rome, Italy. (photo © AP Images)*

**Intel Corporation** - Gordon Moore and Robert Noyce founded Intel in 1968. Intel was a pioneer in the development of semiconductors, and has maintained its position as the world's largest and most valuable producer of semiconductor chips for more than four decades. Intel pro-

duces motherboard chipsets, network interface controllers and integrated circuits, flash memory, and other electronic devices. Intel recently introduced a 3-D transistor that improves performance and energy efficiency.



*Aaron Kemmer, CEO and co-founder of Made in Space, looks through some items made with the company's 3D printer which were used in space in September, 2013, in Mountain View, California. NASA is working with a Silicon Valley company to make specialized 3D printers that would allow astronauts to produce the things they need on-demand when they are in space, allowing them to travel farther from the Earth. (photo © AP Images)*



*Vincent Nguyen, Editor in Chief of SlashGear, wears Google Glass while covering the introduction of the Microsoft Surface 2, September 2013, New York. (photo © AP Images)*

# ACTIVITY PAGE

**Win a Prize!**

**October 2013 CONTEST**

**What is considered to be the birthplace of Silicon Valley?**

**Send the answer (with your home address) to:**

**zoom@usinfo.pl**

**Deadline: November 5**

**Win a Prize!  
The answer to the September contest was:  
Daytona Beach**

**The winners are:  
Agnieszka from Czestochowa, Wanda from Bialystok and Klaudia from Czestochowa**

**CONGRATULATIONS  
The prizes will be sent to you by mail**

**ZOOM**  
in on america

Zoom is online at  
[www.usinfo.pl/zoom/](http://www.usinfo.pl/zoom/)

Free subscription  
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Krakow  
Konsulat Generalny USA  
ul. Stolarska 9,  
31-043 Krakow  
[KrakowAIRC@state.gov](mailto:KrakowAIRC@state.gov)

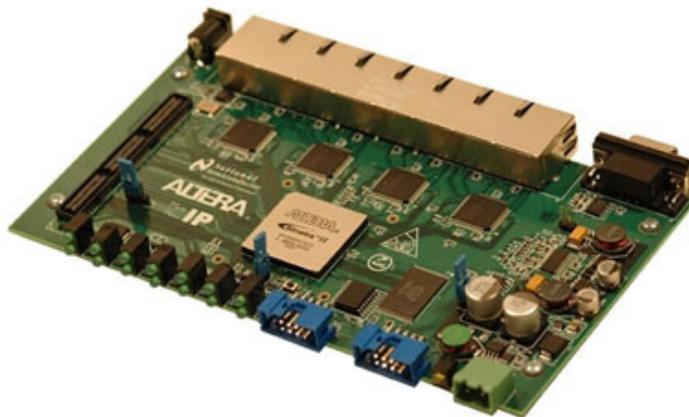
## EXERCISE 1: SPEAKING

Work with a partner. Divide the two pictures below between you.

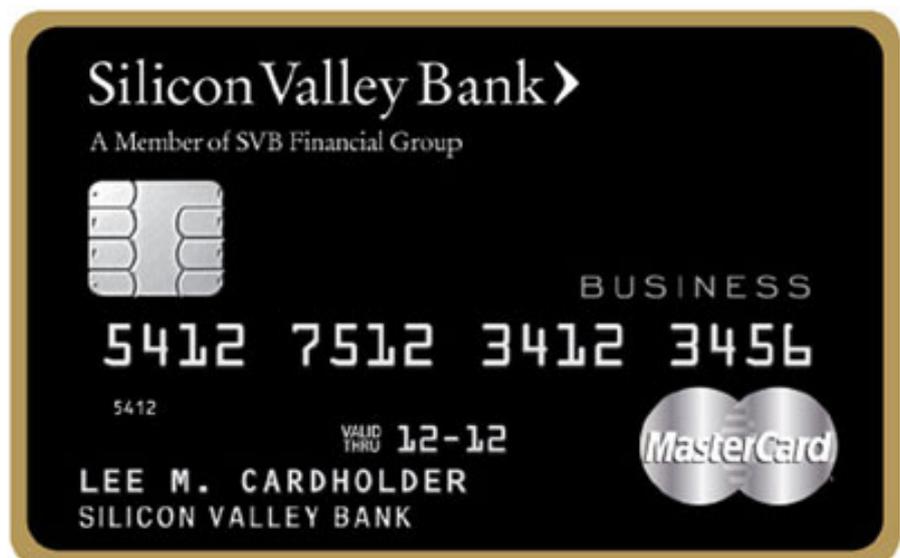
1. Look at your picture and read the captions. Then describe your picture to your partner.
2. In a conversation speak of the use of semiconductors and chips.
3. Discuss the changes that technology has been making to our life.
4. Are you a fan of new technologies or are you afraid of them? Are new digital gadgets a challenge for you?

**Student A:** Discuss the invention and use of semiconductors. What is most important in developing them? What challenges do businesses face today?

**Student B:** Discuss the importance of technology for banks and those businesses that are not directly connected with technology. What is good and bad about introducing high technology into the banking system?



*Jointly created development board from Altera Corporation, National Semiconductor and MorethanIP accelerates design of industrial applications for control and automation market. (photo © PRNewsFoto/Altera Corporation)*



*A chip-enabled credit card of Silicon Valley Bank (photo © PR NEWSWIRE)*

# SILICON VALLEY



Silicon Maps USA Series - Silicon Valley. (photo © PRNewsFoto)