

# Future

A young man and woman are smiling and embracing each other. The woman is wearing glasses and a blue patterned scarf. The man is wearing a blue denim shirt. They are both looking towards the camera with happy expressions.

*We're taking the future into our own hands!*

## *New Ideas for Industry*

Economic development, added social value

## *Five Nations, One Future?*

The Silicon Valley model for success — what Bangalore, Chile, London and Rwanda want to learn from California

## *Science and Fiction*

From fantasy to new technology



4G

Rwanda

Silicon Valley

महाविद्यालय

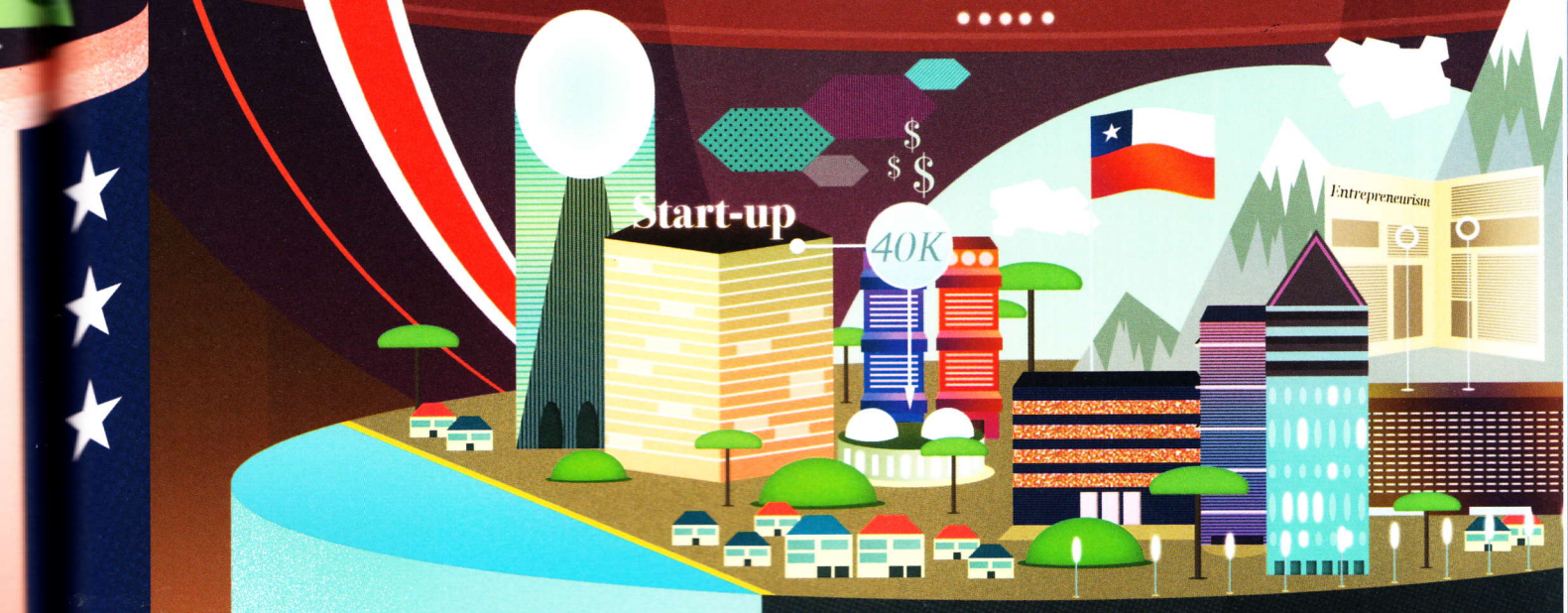
Bangalore

300 million

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# Five Nations, One Future?

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*When it comes to IT, Silicon Valley is viewed worldwide as the model for success. What can we learn from the drivers of innovation in California? We investigate in Bangalore, Chile, London and Rwanda.*

View of the Santa Clara Valley, located in the middle of Silicon Valley

Time and again, we read headlines like "Bangalore: India's Silicon Valley" or "The Allure of Chilecon Valley." When it comes to new locations for information technology (IT) companies, the whole world looks to the valley south of San Francisco. And with good reason, since the industry in California has repeatedly demonstrated how millions and even billions of dollars can be earned with IT.

That's reason enough to take a closer look at the Silicon Valley phenomenon. Our author Ellen Lee first examined the original Silicon Valley for the factors that produce a breeding ground for new ideas and successful startups. We also sent an additional four reporters out into the world to find out if this success can be replicated in other places and whether the factors identified by Lee play a role.

## *California demonstrates how billions can be earned*

We started our IT journey in Bangalore, one of the best-known of the "new" Silicon Valleys. Our reporter Jaideep Sen discovered that its success was more of an accident of geography. Today, great effort is being put toward emerging from the shadow of the original.

And then it was on to Chile. Not long ago, it was considered a disgrace in that country for a business to fail. But a startup culture like that of the United States is slowly developing. Journalist Gwendolyn Ledger reports that failure is increasingly being viewed as an opportunity for starting over. While the government in Chile is trying to boost the IT sector, the East End of London has developed into a location for IT without any govern-

ment help at all. David Nicholson has taken a look at the Silicon Roundabout.

And our reporter Jesko Johannsen finds big visions for the future in tiny Rwanda. Efforts are underway there to use information technologies to skip a stage of industrialization and go directly from an agrarian society to a service economy.

# Silicon Valley

## *—Virtuous circle*

Silicon Valley, the birthplace of tech giants such as Google and Yahoo, is known for its culture of innovation, which other regions all over the world have been trying to replicate. Even so, Silicon Valley has yet to cede its place as the destination for entrepreneurs with big dreams.

One such entrepreneur is Michele Colucci, who was living in Southern California when she came up with her idea for a startup. An attorney whose friends often turned to her for legal advice, she dreamed of creating a platform that helped people find a lawyer. But as she started building her business, Colucci realized she needed to move to succeed. Being situated in Silicon Valley has helped her connect with partners, investors and advisers, such as Steve Bennett, former CEO of Intuit and Symantec, and it has made a difference in the launch of her business, Justiquity.

"There's an energy and excitement around ideas," she said. "Entrepreneurship is a collaborative process. What's nice about the Valley is that there are people with expertise in all the necessary elements. You have to have people who are experts on running a startup, marketing or raising money

— all the different types of expertise you need to be successful."

Considered the world capital of tech entrepreneurship, Silicon Valley is the place where new technology companies are born and bred. When Facebook founder Mark Zuckerberg wanted to expand his social networking site beyond his Harvard dorm, he moved there, but most Silicon Valley success stories begin elsewhere. Twitter co-founder Evan Williams was raised on a farm in Nebraska, and PayPal co-founder Max Levchin was born in Ukraine and went to school in Illinois.

In 1939, Stanford graduates Bill Hewlett and Dave Packard started tinkering in a garage in Palo Alto. Decades later, in 1998, Larry Page and Sergey Brin began developing Google in the garage of a friend's house. Chances are, the next big tech company is currently being built in someone's home somewhere in the San Francisco Bay Area.

How has this been possible? The simple answer is the people that can be found there. Both Stanford and the University of California, Berkeley groom and graduate hundreds of talented engineering students each year. Silicon Valley's major tech companies are also breeding grounds for future entrepreneurs. LinkedIn founder Reid Hoffman, for instance, got his start at Apple, and Salesforce.com founder Marc Benioff was a protégé of Oracle's Larry Ellison.

Successful entrepreneurs also pay it forward, mentoring and investing in new startups as well as going on to start new companies. One of the best-known networks is the "PayPal Mafia," made up of the founders and early employees of PayPal. They include Peter Thiel, who went on to invest in Facebook; Elon Musk, who runs Tesla; and Chad Hurley and Steve Chen, who started YouTube. Perhaps most important of all, the immigrants and transplants who migrate

to Silicon Valley bring with them new ideas and energy.

"It's a virtuous cycle," said Vivek Wadwha, a fellow at the Stanford Law School. "You get more creativity and productivity, and that attracts more people to it, and it just builds on itself."

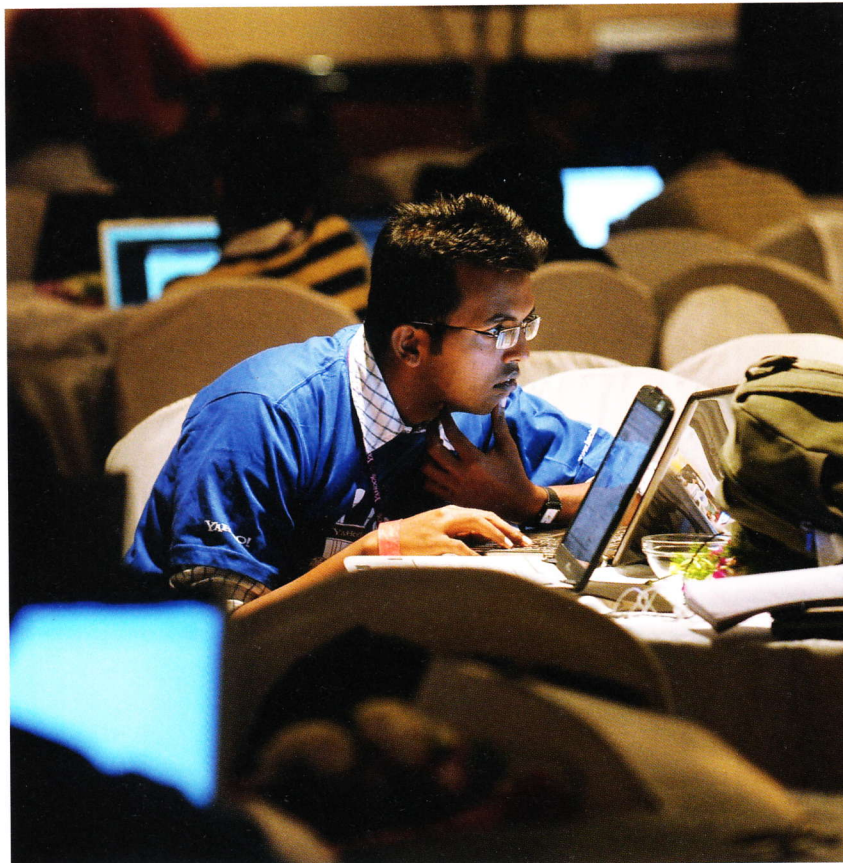
It also helps that Silicon Valley has the infrastructure to support its entrepreneurs. Tech incubators and accelerators nurture and guide young startups. By one count, about 40 percent of U.S. venture capital dollars were invested in the San Francisco Bay Area in a year.

It isn't unusual for those dollars to be trusted to entrepreneurs who are young and untested, or even who failed at their last endeavor. Silicon Valley's culture sees failure as merely a path to innovation.

"Here if you are a dissenter, you are applauded," Wadwha said. "You are allowed to be different. You are allowed to express strong opinion. You are allowed to fail. You are allowed to experiment. This is the magic of Silicon Valley."

However, Silicon Valley has reached a key juncture. Immigration laws are making it more difficult for new entrepreneurs from outside the US to come and stay. Affordable housing is scarce. There is a widening gap between the rich and the poor. And although Silicon Valley prides itself as a meritocracy, with the best ideas bubbling to the top, it recently conceded that it has done a lackluster job of welcoming women and minorities into its fold.

But those may prove to be mere road bumps. Not surprisingly, several initiatives have been launched to tackle the region's housing crisis and poverty, as well as its immigration and diversity issues. In Silicon Valley, after all, failure just means that it's time to regroup and try again.



New trend in Bangalore: makerspaces

## Bangalore

— City of opportunity

At the start of 2015 the city of Bangalore – or Bengaluru, as it is officially known – is a picture of extremes typical of a growing metropolis. The capital of India's Karnataka state is praised as "India's most livable city," while an ongoing garbage crisis has prompted a newer epithet: "Garbage City."

Bangalore is nonetheless considered worldwide to be one of the biggest employers in the IT industry and is attracting university graduates from India as well as highly qualified talent from all over the world. The city's

available infrastructure, although seemingly in a perpetual state of flux, is among the best in India.

Other "softer" reasons that enabled the IT phenomenon include the city's cosmopolitan cultural climate, a research background, with the Indian Institute of Science established here in 1909, and a long tradition of spoken English. A significant contributing factor was the blossoming of engineering colleges in the city in the 1980s and '90s, attracting students from other Indian states prior to the rise of software as a preferred course.

But hard factors also played a part, including a tax holiday, streamlining of land acquisition for building tech parks, and a dismantling of labor regulations, as Sunil Abraham, who heads the Centre for Internet and Society research group, explained.



Chilecon Valley: view of Santiago

"These tweaks were tailor-made for MNCs," he noted. "Such policy prescription isn't easily found in other countries."

The emergence of Bangalore as an IT hub, in Abraham's words, was "an accident of geography, being the graveyard shift for companies in the US." When everyone in New York is going to bed, the workday is just starting in India. Above all, the city's "cyber coolies," a term used to describe

neers here might innovate, but the ownership of that work is compromised." Abraham therefore doesn't think the "Silicon Valley" label entirely fits Bangalore, and says it is more a function of political campaigns and media hype.

But the world of IT in Bangalore also has another side – an independent one that is not reliant on the West. The number of startups is growing. Reports of investment jackpots like Flipkart in the e-commerce segment, a number of app-based startups, and a growing animation industry go a long way toward countering negative impressions of the city as an inexpensive back office.

In more recent times, access to open-source resources has been pivotal in enabling developers and coders of original products, said Abraham, who is also an outspoken free-software advocate. New maker/hacker spaces are also gradually engaging in community-based technical training. The next big idea, in effect, could emerge from previously unheard-of companies or self-employed individuals who are not restricted to an IT park.

The dream might well be to attract foreign investment and "sell out to

the Facebooks of the world." But therein lies the hope for the future: to establish Bangalore as a center for fostering indigenous talent and thereby validating its claim as a genuine hotbed for IT ingenuity and groundbreaking ideas. That is the only way to bridge the divide between San Francisco Bay and the areas of Bellandur Lake and Iblur Village.

## Chile

### — Startup frenzy

After three attempts in the food business, Ecuadorian Miguel Torres got the idea for a technology startup while studying in Georgetown. This was the birth of ESCAPESwithYOU, a B2B logistics solution supported in 2010 by Start-up Chile, a government incubator that has been fundamental in positioning Chile as an entrepreneurial hub in the region.

"They gave us a visa, USD 40,000, mentoring, and access to a flourishing environment where public policies are designed to help and improve entrepreneurship," says Torres.

His startup is just one of almost 1,000 projects supported since 2010, when the government aimed to attract international talent and investors by giving them something the US was cutting back on: broad work permits. This March the program began its twelfth generation of startups, bringing high impact entrepreneurs to Chile from all over the world, including the US, India, Brazil, Argentina, the UK and many others.

With witty names such as Chilecon Valley or Mapocho Valley, there has been praise from Europe, Asia and the US, and this has permeated into local public opinion too. There is a startup frenzy in the air, making entrepreneurship and innovation a regular section in newspapers and

## The city attracts talent from all over the world

the city's unskilled IT workers, are an indicator of the business model based on wage cost advantages that many IT companies continue to rely on. Abraham believes the term provides a great deal of insight into the industry's inception, especially about the policies that determined its success. The crucial aspect, he explained, is to do with intellectual property rights held by clients in the West. "Engi-