

Google launches Internet-beaming balloons

June 15 2013, by Martha Mendoza



In this June 10, 2013 photo released by Google, solar panels and electronics are prepared for launch in Tekapo, New Zealand. Google is testing balloons which sail in the stratosphere and beam the Internet to Earth. (AP Photo/Google, Andrea Dunlap) EDITORIAL USE ONLY

Wrinkled and skinny at first, the translucent, jellyfish-shaped balloons that Google released this week from a frozen field in the heart of New Zealand's South Island hardened into shiny pumpkins as they rose into the blue winter skies above Lake Tekapo, passing the first big test of a lofty goal to get the entire planet online. It was the culmination of 18

months' work on what Google calls Project Loon, in recognition of how wacky the idea may sound. Developed in the secretive X lab that came up with a driverless car and web-surfing eyeglasses, the flimsy helium-filled inflatables beam the Internet down to earth as they sail past on the wind.

Still in their experimental stage, the balloons were the first of thousands that [Google's](#) leaders eventually hope to launch 20 kilometers (12 miles) into the stratosphere in order to bridge the gaping digital divide between the world's 4.8 billion unwired people and their 2.2 billion plugged-in counterparts.

If successful, the technology might allow countries to leapfrog the expense of laying [fiber cable](#), dramatically increasing [Internet usage](#) in places such as Africa and [Southeast Asia](#).

"It's a huge moonshot. A really big goal to go after," said project leader Mike Cassidy. "The power of the Internet is probably one of the most transformative technologies of our time."

The first person to get Google Balloon Internet access this week was Charles Nimmo, a farmer and entrepreneur in the small town of Leeston. He found the experience a little bemusing after he was one of 50 locals who signed up to be a tester for a project that was so secret, no one would explain to them what was happening. Technicians came to the volunteers' homes and attached to the outside walls bright red receivers the size of basketballs and resembling giant Google map pins.

Nimmo got the Internet for about 15 minutes before the balloon transmitting it sailed on past. His first stop on the Web was to check out the weather because he wanted to find out if it was an optimal time for "crutching" his sheep, a term he explained to the technicians refers to removing the wool around sheep's rear ends.



In this June 10, 2013 photo released by Google, Jordan Miceli prepares electronics to launch balloons in Tekapo, New Zealand. Google is testing the balloons which sail in the stratosphere and beam the Internet to Earth. (AP Photo/Google, Andrea Dunlap) EDITORIAL USE ONLY

Nimmo is among the many rural folk, even in developed countries, that can't get broadband access. After ditching his dial-up four years ago in favor of satellite Internet service, he's found himself stuck with bills that sometimes exceed \$1,000 in a single month.

"It's been weird," Nimmo said of the Google Balloon Internet experience. "But it's been exciting to be part of something new."

While the concept is new, people have used balloons for communication, transportation and entertainment for centuries. In recent years, the military and aeronautical researchers have used tethered balloons to

beam Internet signals back to bases on earth.

Google's balloons fly free and out of eyesight, scavenging power from card table-sized solar panels that dangle below and gather enough charge in four hours to power them for a day as the balloons sail around the globe on the prevailing winds. Far below, ground stations with Internet capabilities about 100 kilometers (60 miles) apart bounce signals up to the balloons.

The signals would hop forward, from one balloon to the next, along a backbone of up to five balloons.

Each balloon would provide Internet service for an area twice the size of New York City, about 1,250 square kilometers (780 square miles), and terrain is not a challenge. They could stream Internet into Afghanistan's steep and winding Khyber Pass or Yaounde, the capital of Cameroon, a country where the World Bank estimates four out of every 100 people are online.



In this June 10, 2013 photo released by Google, a Google team releases a balloon in Tekapo, New Zealand. Google is testing the balloons which sail in the stratosphere and beam the Internet to Earth. (AP Photo/Google, Andrea Dunlap)
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There are plenty of catches, including a requirement that anyone using Google Balloon Internet would need a receiver plugged into their computer in order to receive the signal. Google is not talking costs at this point, although they're striving to make both the balloons and receivers as inexpensive as possible, dramatically less than laying cables.

The signals travel in the unlicensed spectrum, which means Google doesn't have to go through the onerous regulatory processes required for Internet providers using wireless communications networks or satellites. In New Zealand, the company worked with the Civil Aviation Authority on the trial. Google chose the country in part because of its remoteness. Cassidy said in the next phase of the trial they hope to get up to 300 balloons forming a ring on the 40th parallel south from New Zealand through Australia, Chile, Uruguay, Paraguay and Argentina.

Christchurch was a symbolic launch site because some residents were cut off from online information for weeks following a 2011 earthquake that killed 185 people. Google believes balloon access could help places suffering natural disasters get quickly back online. Tania Gilchrist, a resident who signed up for the Google trial, feels lucky she lost her power for only about 10 hours on the day of the quake.

"After the initial upheaval, the Internet really came into play," she said. "It was how people coordinated relief efforts and let people know how to

get in touch with agencies. It was really, really effective and it wasn't necessarily driven by the authorities."



In this June 10, 2013 photo released by Jon Shenk, a Google balloon sails through the air with the Southern Alps mountains in the background, in Tekapo, New Zealand. Google is testing the balloons which sail in the stratosphere and beam the Internet to Earth. (AP Photo/Jon Shenk) EDITORIAL USE ONLY

At Google's mission control in Christchurch this week, a team of jet lagged engineers working at eight large laptops used wind data from the National Oceanic and Atmospheric Administration to maneuver the balloons over snowy peaks, identifying the wind layer with the desired speed and direction and then adjusting balloons' altitudes so they floated in that layer.

"It's a very fundamentally democratic thing that what links everyone

together is the sky and the winds," said Richard DeVaul, an MIT-trained scientist who founded Project Loon and helped develop Google Glass, hidden camera-equipped eyeglasses with a tiny computer display that responds to voice commands.

DeVaul initially thought their biggest challenge would be establishing the radio links from earth to sky, but in the end, one of the most complex parts was hand building strong, light, durable balloons that could handle temperature and pressure swings in the [stratosphere](#).

Google engineers studied balloon science from NASA, the Defense Department and the Jet Propulsion Lab to design their own airships made of plastic films similar to grocery bags. Hundreds have been built so far.



In this June 12, 2013 photo released by Google, Google's team at mission control monitors a balloon launch in Christchurch, New Zealand. Google is testing the balloons which sail in the stratosphere and beam the Internet to Earth. (AP

Photo/Google, Andrea Dunlap) EDITORIAL USE ONLY

He said they wouldn't interfere with aircraft because they fly well below satellites and twice as high as airplanes, and they downplayed concerns about surveillance, emphasizing that they would not carry cameras or any other extraneous equipment.

The balloons would be guided to collection points and replaced periodically. In cases when they failed, a parachute would deploy.

While there had been rumors, until now Google had refused to confirm the project. But there have been hints: In April, Google's executive chairman tweeted "For every person online, there are two who are not. By the end of the decade, everyone on Earth will be connected," prompting a flurry of speculative reports.

And international aid groups have been pushing for more connectivity for more than a decade.

In pilot projects, African farmers solved disease outbreaks after searching the Web, while in Bangladesh "online schools" bring teachers from Dhaka to children in remote classrooms through large screens and video conferencing.



In this March 1, 2013 photo released by Google, a fully inflated test balloon sits in a hangar at Moffett Field airfield, Calif. Google is testing the balloons which sail in the stratosphere and beam the Internet to Earth. (AP Photo/Google, Andrea Dunlap) EDITORIAL USE ONLY

Many experts said the project has the potential to fast-forward developing nations into the digital age, possibly impacting far more people than the Google X lab's first two projects: The glasses and a fleet of self-driving cars that have already logged hundreds of thousands of accident-free miles.

"Whole segments of the population would reap enormous benefits, from social inclusion to educational and economic opportunities," said DePauw University media studies professor Kevin Howley.

Temple University communications professor Patrick Murphy warned of mixed consequences, pointing to China and Brazil where Internet service increased democratic principles, prompting social movements and uprisings, but also a surge in consumerism that has resulted in

environmental and health problems.

"The nutritional and medical information, farming techniques, democratic principles those are the wonderful parts of it," he said. "But you also have everyone wanting to drive a car, eat a steak, drink a Coke."

As the world's largest advertising network, Google itself stands to expand its own empire by bringing Internet to the masses: More users means more potential Google searchers, which in turn give the company more chances to display their lucrative ads.

Richard Bennett, a fellow with the nonprofit Information Technology and Innovation Foundation, was skeptical, noting that cell phones are being used far more in developing countries.



Tania Gilchrist stands outside her home below a red Google Internet receiver after agreeing to participate in Google's balloon testing program in Christchurch, New Zealand, Friday, June 14, 2013. Google is testing balloons which sail in the stratosphere and beam the Internet to Earth. (AP Photo/Nick Perry)

"I'm really glad that Google is doing this kind of speculative research," he said. "But it remains to be seen how practical any of these things are."

Ken Murdoch, a chief information officer for the nonprofit Save the Children, said the service would be "a tremendous key enabler" during natural disasters and humanitarian crises, when infrastructure can be nonexistent or paralyzed.

"The potential of a system that can restore connectivity within hours of a crisis hitting is tremendously exciting," agreed Imogen Wall at the United Nations Office for the Coordination of Humanitarian Affairs, although she warned that the service must be robust. "If the service fails in a crisis, then lives are lost."

In Christchurch this week, the balloons were invisible in the sky except for an occasional glint, but people could see them if they happened to be in the remote countryside where they were launched or through binoculars, if they knew where to look.

Before heading to New Zealand, Google spent a few months secretly launching between two and five flights a week in California's central valley, prompting what Google's scientists said were a handful of unusual reports on local media.

"We were chasing balloons around from trucks on the ground," said DeVaul, "and people were calling in reports about UFOs."

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