

# GOOGLE LOON TECHNOLOGY

Balloon powered internet for everyone

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**Abstract:** **Project Loon** is a research and development project being developed by Google X with the mission of providing internet access to rural and remote areas. The project uses high-altitude balloons placed in the stratosphere to create an aerial wireless network with up to 4G-LTE speeds..It is the idea that could create a network of high altitude balloons that float about 18 kilometers up and through this network we can give the internet to the entire world.

These balloons are round things about 15 meters in diameter. From the surface of the earth, right up to about 20 kilometers that is stratosphere. Here we tend to have layers of wind that go in very particular directions and by moving up and down through these different layers we can steer and so by catching the right wind we can keep these balloons together to give the good coverage on the ground. We can sail with the winds, shape the waves and patterns of these balloons so that when one balloon leaves, another one can be set to its place.

The balloons communicate with specialized internet antennas in the ground .Antenna here points up at the sky and talks to one balloon and each one of these balloons talks to their neighboring balloons and then back to the ground station which is connected to the local internet provider. This creates a network in the sky.

There are radios and antennas designed specifically to receive signals from project loon only, in order to achieve the high bandwidth over long distances involved. If we didn't filter out the other signals the technology just wouldn't work.

The balloons are completely solar powered and can be controlled through loon mission control. We can direct the balloons to land in various collection points around the world in order to reuse and recycle their parts. If the balloons are circling around the bottom half of the world, eventually the balloon balloon over south passes over north. We are using sunlight and wind to build this network in the sky.

These are super pressure balloons filled with helium and are composed of polyethylene plastic. The technology designed in the project could allow countries to avoid using expensive fiber cable that would have to be installed underground to allow users to connect to the internet. It was initially communicated using unlicensed 2.4 and 5.8 GHz ISM bands. Later they switched to cellular spectrum. Envelopes are made by raven aerostar and air pressure is about 1% of sea level.

