UPHEAVAL OF LOON POWERED INTERNET

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Abstract- *Google concocted a creative answer for utilize balloons to give web association in remote districts. Balloons are utilized for various purposes however here it is utilized to give web association in remote areas. The balloons are set in the stratosphere at a height of around 32 km to make an aeronautical remote system with fast which coordinates to 3G speeds. Project Loon is a system of balloons going on the edge of space. Loon reason for existing is to give remote system to remote regions through of an arrangement of high height balloon outfitted with cutting edge modern remote handsets to interface individuals all inclusive. This innovation could permit creating nations to keep away from the utilizing of costly underground framework. On the down side of the project loon there are some cons which should be taken into consideration. In the recent history many crash incidents are seen and also there is problem with stratosphere regulation, proposed approach of using drone with project loon can be used to overcome these problems.*

1. INTRODUCTION

- Project Loon is a research project with a mission of providing Internet to people living over rural and remote areas by google. As the core object used in this project is balloons placed at high altitude of around 20 km above the earth so it is called Project Loon. The floating balloons shall connect each other to transfer the data from ISP to layman's house and vice versa.

- Key people involved in the project include Rich DeVaul, chief technical architect, who is also an expert on wearable technology; Cyrus Behroozi, who is networking and telecommunication lead; and Mike Cassidy, a project leader.

- The primary individual to interface to the "Google Balloon Internet" after the initial test balloons were launched into the stratosphere was an agriculturalist in the town of Leeston, New Zealand. He was one of 50 people in the New Zealand area around Christchurch who agreed to be a pilot tester for Project Loon.

- The locals knew nothing about the secret project, but permitted Google to attach a basketball-sized receiver to an outside wall of their property in order to connect to the Internet. The receiver resembles a giant, bright-red Google map pin. The New Zealand farmer lived in a rural location that couldn't get broadband access to communicate with other balloons and with Internet antennae on the ground, and batteries to store solar power so the balloons can operate during the night.

Mission of project loon: No internet to the high speed internet for everyone.

2. CURRENT SYSTEM

2.1 NAVIGATION OF LOON:

- To connect to the Google Balloon network, the main necessity is to have a special internet antenna at ground. A Google Balloon can cover a region of 100s of square kilo-meters making more number of people to connect at a time as well as service is access to the huge distance.
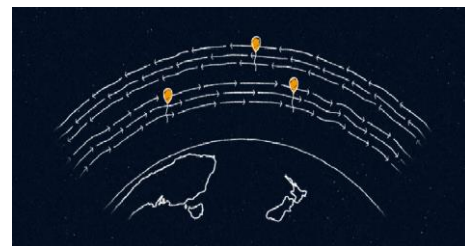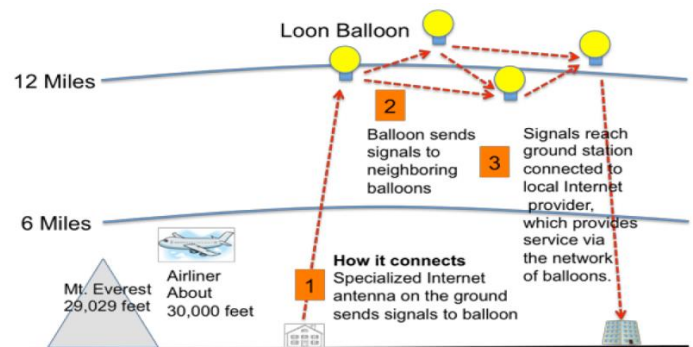

- The balloons move by directing the wind in the stratosphere. At stratosphere (twice the range of airplanes travel height), 20km overhead the surface of earth, winds prefer to move in specific direction. This spherical layer is great for solar panels because there are no clouds to obstruct the sun. There are different wind layers in stratosphere. Each layer varies in its direction and magnitude. We can determine the direction of wind from the wind data provided by NOAA and direct the balloons movement. The balloons are made to raise or fall to the desired altitude and move in desired direction at the specified speed by inflating or deflating the envelope using an air pump fixed in the setup. The extreme altitude presents many challenges to the loon like air pressure, extreme low temperature, less protection from UV rays and the temperature swings. However it can beat every one of these obstacles and withstand these conditions just by the ideal planning of balloon envelope. Hence, balloons are able to form a large communication network in the stratosphere.

2.2 ESTABLISHING THE NETWORK

- Each balloon unit has three transceivers for various purposes. Initial one is for the balloon to balloon correspondence and the second one is for balloon to ground correspondence and the other is the backup utility. The reflector plate placed in the middle of the antenna on top and radio in bottom is equipped together in the control box. It is used to establish the network connection. The head is made out of two sections which are called as "patch antenna" together. Consumers are able to achieve connection to the network (balloon) with the help of antenna attached to their building. It resembles a big bright red party balloon and can be conveniently placed anywhere on their building. The signals are send and received with the help of this antenna.

2.3 CONNECTING PEOPLE

- Each balloon has a radio receiving wire that gives consistent network to the ground and connects each balloon to other balloon. There is a special ground antenna that is fixed on the house or office to access the internet from balloon. Google™ claims that each balloon can give flag availability to a ground range around 40 km in width and ready to convey 3G practically identical velocities (up to 10 Mbps). These radio wires utilize ISM groups of range 2.4 GHz and 5.8 GHz. ISM radio groups (parts of the radio range) held globally for industrial, scientific, and medical purposes other than telecommunications.

- Subscriber-to-ISP: First, the specialized internet antenna on the ground sends signals to a balloon. Then signal hops forward from the balloon to neighbouring balloons. Finally, signals from the balloon reach a ground station which is connected to a local internet provider, or pre-existing internet infrastructure which provides service via the network of balloons.
- ISP-to-Subscriber: The Internet Service Provider or pre-existing web infrastructure sends reaction back to the Balloon network; then information goes through the balloon network. Finally, the closest balloon to the subscriber receives data and sends it back to the subscriber.

2.4 MAINTENANCE

- If a balloon fails or needs maintenance, Google™ staff brings the balloon down. A trigger system on the top of the balloon would collapse it by discharging from the envelope, and it releases a parachute that conveys the balloon down to the Earth in a controlled drop. GPS equipment tracks where the balloon is landing.

3. PROBLEMS IN CURRENT SYSTEM

- The main problem with launching any hardware project is the certainty of eventual hardware failure. In most cases, the hardware is usually accessible and can be fixed. However, for Loon balloons, hardware failure is a huge problem as they cannot be reached. If a Loon

balloon fails, it can either remain up in the air floating, making it difficult to bring down or it might go down in unwanted areas. Both of these situations are a huge worry to the stability as well as the security of people whose lives might be affected by undesirable balloon landings.

- Secondly there are issues for regulating balloon in stratosphere.
  Another concern over this project is internet privacy since it gives Google more control over more extensive scope of customer conduct. This information can become a security issue if it is shared with Government agencies like the NSA.

4. PROPOSED ENHANCEMENT IN THE SYSTEM

- As mentioned above there are many drawbacks of using balloon, we can use drone as an alternate option. The drones can be used for the forces of good such as broadcasting Internet signals to remote areas even less incidents of crashing are there so we can prevent many hazardous situations easily.

- As previously said a life time of the balloon is not more than 2 years as such we can use drone for the long period of time.

- Also Drones does not need maintenance for about 5 years so maintenance is very less comparatively. We can do easy regulation of the drone in stratosphere as compared to balloon because balloons can be moved with the help of wind and drones can be controlled through computerized system.

- Additionally drones can also be equipped with solar panels by which we can efficiently save energy making it more feasible and energy can be saved and in long term due to solar panel we can even generate the energy.

5. CONCLUSION

- Web availability and correspondence end up noticeably one of the fundamental needs in present day human day by day life. While one a player on the planet is getting enhanced in a colossal speed with the assistance of web association, around 2/3 of populace is not by any means ready to get to it. Google attempted to fill this void by the 'Project Loon' and settle the expansive band issue.

- This progressive project can bring web to everybody on this planet independent of their area. We seek

balloons could turn into a choice after interfacing country, remote, and underserved zones. It would also deliver backbone communications during and after natural calamities when ground infrastructure is scarce or destroyed.

- It'll eliminate the need to lay down cables in those areas. In conclusion we can state project loon is better when contrasted with Wi-Fi. It is very much useful in disaster for communication. In future, it will be helpful in educational fields with less cost. A creative and adaptable thought like the Google™ Project Loon would help and advantage remote ranges of the world and in addition populace to receive the rewards of current correspondences. We can use drone in place of balloon to work efficiently and easily.

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