

Review Paper on Facebook Drones Technique

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Abstract: Today, human being can't think of surviving without internet as it becomes the inevitable part of their life where each and everything in this world is connected together with the help of internet. Connectivity is one of the fundamental challenges to achieve this, and for the same continuous efforts have been made and nowadays efforts have been made in the direction of sky or (towards the sky). As number of the users accessing internet keeps on increasing day by day, and for the same facebook makes an initiative in form of DRONES.

This paper focuses on the mechanism which is a level ahead of the previous ones for providing internet services and the initiative taken by project handled by facebook and Internet.org in the form of "FACEBOOK DRONES". Aiming to provide internet service to the areas of the world where humans have no or little internet access. It is a technique of providing internet services through huge drones which has a wingspan of a Boeing 737 weighing less than a car will operate at the height of 60,000 to 90,000 feet, in the air, and can stay airborne for three months while offering the internet speeds of 10 gigabits per second.

Keywords: Drones, Boeing 737.

I. INTRODUCTION

"Drones" with the technical name is "Unmanned Aerial Vehicles" (UAVs) are apparently the most leading equipment in the field of aeronautics, robotics and electronics. These are the aerial vehicles having vast varieties of sizes, shapes and functions, and are controlled by the control systems from the ground. An ideal drone is made up of light composite materials to reduce weight so that it can cruise at extremely high altitudes and to increase manoeuvrability[1]. A UAV system consists of two parts, the drone and the control system, including infra-red cameras, Global Positioning Systems (GPS), laser or GPS guided missiles, etc. [2] the drone is controlled with direct data link from the control station until it leaves the line of sight. The control station switches to a satellite link to control the drone after it leaves the line of sight. After this drone rely on GPS for its position. In case communication link is lost, the drone will automatically start flying in circles, or return to base, as it is programmed to do so, until the link reconnect[3].

II. LITERATURE REVIEW

Today, around 2.7 billion people can access the internet, which is only a one third of the total global population. Expanding the internet and its access to the areas where there is no internet facility can drastically change the scenario of the world. For example it could raise another 140 million new jobs, lift around 160 million people out of poverty and decrease the rate of child mortality. For this reason Facebook with internet.org has launched the technique of DRONES which was named as FACEBOOK DRONES.[4]

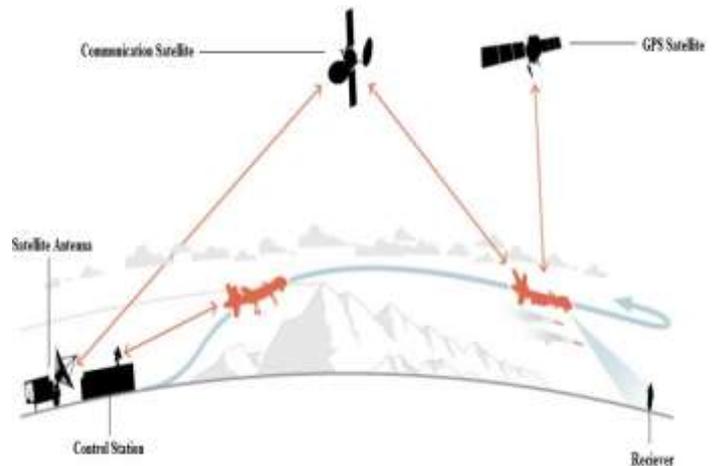


Figure1. How Drone works.

III. PROPOSED WORK

FACEBOOK DRONES is a technique with a mission of providing high speed Internet to people living in areas with no internet connectivity. As the core object used in this project are drones placed at high altitude of around 90,000 feet above the earth. These drones are powered by solar energy and can beam down the internet connectivity from the sky at a speed of 10 Giga bits per second by Free space optical communication technique using laser. This speed is 10 times faster than any previous system [5].

The first boomerang-shaped drone by facebook named Aquila will be able to fly at a height of 60,000 ft (18 km) and 90,000 ft (27km) where winds are at their lowest and is above from the altitude of the commercial planes and weather. The weight of the Aquila is 880 lbs (400 kg), having wings made up of carbon fibre with the wingspan of Boeing 737, and can fly in air for three months without landing[6].

A. How it works:

The Drones will be launched with the help of helium balloons, this will help the drone to raise it up to its maximum height which is 90,000 feet, it will fly in the circle throughout the day at this altitude and in night it will come down to the altitude of 60,000 feet to conserve the battery power as it is powered by solar energy. Each and every drone will fly in a circle with a radius of about 3 km and will be able to provide internet service to an area with the radius of 50km. Each drone is connected with other drone to expand the range of the services. [7]

Drones will communicate with the ground control station using radio signals, the station transmit the laser that will accurately hit the dome shaped optical head, located at the bottom of the drone which is 10 miles away[4]. This laser signal is sent to the central drone, in turn it will connect the other drones in the constellation using laser technology. The central drone hone in on the general location of the laser on the ground before proceeding it to the other drone in the constellation after this it will start beaming down the internet to the users on the ground by using radio internet signals[8].

These radio internet signals can be used to achieve the speed of 10Gbps by using the services provided by ISP, for this small cellular towers and dishes are installed on the ground, to receive these signals from the drones. Further these signals are converted into a Wi-Fi or LTE network. After this conversion user can access the internet from drone[9].

As drone requires laser connection from the ground, so it might experience a slower connectivity when its raining or cloudy.[10]

The large drones are capable of broadcasting the powerful signal that would cover a city-sized area with a medium population density. The drones are tougher and will be able to fly for longer periods of time than that of balloons, while also being able to have their location precisely controlled [9].



Figure2. Drone in air.

IV. APPLICATION

1. There is no interference as drones will fly in the air above the commercial airliners at the range of 60,000 to 90,000 feet.
2. FACEBOOK DRONE is an attempt to provide reliable and high speed connectivity to those areas without any existing internet infrastructure or is prohibitively expensive.
3. Drones are using free space optical communication technique so is immune to radio frequency interference or saturation.
4. This technique is using the renewable source of energy provided by the sun. [10][11]

V. ADVANTAGES

Everyone specially peoples from the villages and remote areas without internet connectivity get the benefit of this high speed internet services, that would enhance the connectivity between peoples and they also get familiar with so many facilities which were previously limited to the developed areas only. These remote areas would get the opportunity to the development of their own. [12]

VI. CONCLUSION

With an aim of affordable internet access to each and everyone in the world irrespective of their location Facebook make it happen by using the advanced technology through which the entire world can be connected together with the help of drones, satellites, mesh networks, radio and free space optics, and can bring the revolutionary change making internet easily accessible to everyone specially in rural areas.

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VII. BIOGRAPHY



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