International Journal of Recent Trends in Engineering & Research
ISSN (ONLINE) : 2455 – 1457 IMPACT FACTOR : 4.101

FULL DUPLEX RADIO-WAVE TRANSMISSION FOR 6G INTERNET (6G connectivity)

A.S.SWAROOP[1],GORI MOHAMED J[2],V.M.NIAZ AHAMED[3]
[1]*Ug Student, Cse Department, Mohammed Sathak A.J. College Of Engineering*
[2]*Hod, Cse Department, Mohammed Sathak A.J. College Of Engineering*
[3]*Professor,Cse Department, Mohammed Sathak A.J. College Of Engineering*

Abstract : Our earth is a big arena of communication. The communication serves as a spine for the evolution and survival of the masses. We have inculcated and incorporated the term communication into every aspect of our life. Today, we have come to the stage that, we cannot live without Internet and moreover we also demand high speeds.

While we think of its evolution from 1G, 2G, 3G, 4G, 5G, the new arrival in the list, 6G will satisfy the data hungry people because it gives speeds up to 10-300 mbps guaranteed and extension of up to 10-11 Gbps. But the technology we use for it must be constructed and deployed to use this service. This new technology is called air fiber concept or radio fiber communication. It uses the radio waves at a particular channel of 5.8 GHz Band C light-licensedfrequencies to broadcast at the access layer and combination of 802.11n and 802.11ac standards supported by ISO for wireless.

This system integrates all the international satellites to serve as global position identifiers so that we completely cover the earth's surface through a Global Area Network. Through this, sea to space communication, cross-country communication, satellite-to-satellite communication, surveillance for the activity of the terrorists and also a dream-come-true activity of mind-to-mindcommunication, which is a concept of artificial intelligence, can also be achieved at such a tremendous speed.

Now the purpose of this paper is to think about its implementation in India. The use of Nano antennas and fly sensors plays a vital role in this. After the successful launch and success of JIO 4G, the reach of our concept need not be doubted. So, through this paper, we can step forward with the proposal of its complete implementation strategies
Thus we go for the concept called 6G Internet.

Keywords- 1G, 2G, 3G, 4G, 5G, 6G, TDMA, CDMA, GSM, HDD, FDD, TDD, Nano antenna, fly sensors, Hex-Optics.

I. INTRODUCTION

6G Internet is a communication technology that offers wireless Internet access with 6G-radio fiber technology. It garnered media attention when they said about its introduction. 6G offers services by rolling out its radio fiber network that transmits and receives internet through the air.6G Internet claims to deliver speeds of up to 10Mbps to 300 Mbps for the residential users with their radio technology by 6G line and speeds of up to 10 to 12Gbps to commercial users using the combination of radio fiber network and also with the additional support of the physical optical fiber support.6G uses radio fiber, the so-called hex-optics network consisting of signals delivered through the air that allows receiving broadband connections similar to radio technology. It is a combination of radio frequencies and standards to deliver service to end users in through their radio distribution and access network. At the access layer they use the 5.8 GHz Band C light licensed frequency which is the

permissible band for commercial purposes by the ITU and use a combination of 802.11n and 802.11ac standards supported by IEEE to deliver services to end users.The radio technology is supported by fiber network that transmits high speed Internet regardless of your distance from the exchange and mode of connection. We also use some additional specially configured high efficiency devices to support us for transmission and reception of radio signals and integrate into a global area network with wide area surveillance. This new hex-optics concept modifies our basic belief that radio is a half-duplex system since air fiber is a full-duplex simultaneous multi way support system for communication and gives you very high speed at comparatively low cost and works in a more efficient way. This technology discussed here will redefine our lives as well as our previously existing communication patterns and standards.

II. RELATED INFORMATION

1.COMMUNICATION TECHNOLOGIES

Wireless technologies are at boom nowadays, as they help users to transfer information from one point to another without any effort at part of users. These technologies are helping us in shortening distances such as millions of kilometers are now shorten into few meters. When we put consideration towards wireless data communication then we come to know that how essential it is for mobile computing. Different wireless technologies are already available today to ease users like 2G, 3G, 4G and so on; these technologies differ from one to another on basis of availability, range, performance and coverage, etc.

6g mobile technology in upcoming name in field of mobile communication technologies, it is based on set of standards which enable devices to connect Internet with broadband wireless access. Complete information about this technology has not been provided yet, but some sources think that this technology will also follow the path of previous series. This technology can come as 6g mobile technology, 6g technology, 6g mobile, 6g network or 6g wiki, as these are rising and important technologies which will come into existence.

2.EVOLUTION

3G and 4G are most popular around the world, as they are available on almost every mobile device today and people are obsessed with Internet speed that these technologies provide. To enhance this experience now developers are considering 5g and 6g broadband access technologies because they will deliver users more than their expectations. Concepts and functions of 6g technologies have been developed, and 5g are under development phases. It is expected that 5g technologies will be released soon, and it will be compatible with new Smart phones, tablets, routers and all networking devices.

Many operator are making fake claims about these two rising technologies, they are spreading that their Smartphone devices are equipped with this wireless mobile technology before release of it. Readers must be aware of the fact that these claims are moving around because of scam artists who want to increase sales of their devices, there is no fact or reality related to these claims. Also Telecommunication Company has started its venture into the market with the brand name of 6G in the country United Kingdom, which says to offer a low cost network by 6G technologies. But people need to make note that it is not the advancement of generation but they have just increased the speed of the carrier. Since it uses fiber optics as its core it can always be not reliable.

Because of tough competition in mobile world, everyone wants to own rights of 6g technologies as soon as possible. They want to offer more to their customers to stay at number one position in market, and receive targeted sales each year. To give more than expected to their customers, they are also considered about giving new things before competitors. This fact is making them more curious about

arrival and working of 6g technologies. After infrared, Bluetooth and card slots, broadband Internet access are outrageous technology, which has just changed Internet experience for users.

According to Google search engine results, 6g technologiesare among top 17 most searched keywords today. Everyone who heard once about it wants to know about its details from some means. But unfortunately there is still nothing available from developers besides some guesses and rough estimations. We all are still waiting to get some authentic information about most heard rumor of the year.

Some common expectations from this rising and hot topic says that it will provide increased data speed, it can be unto 1000 Megabits per second. Currently 4G technologies are offering **100 Mbps**Internet speed and it is also improving with time. This will also improve data and voice quality with video calling and rich media. Addition to it is better security for data transmission and wireless standards. This technology will break all previous records of technologies form these series and will deliver more than expectations

3.ECONOMICAL IMPACT

1.Cost Efficiency: By using Radio waves as the transmission mode for data we can easily reduce the data rates. Hence we can enjoy the cost efficiency than we get from a Wi-Fi-router system or our mobile data. We need not pay a huge sum as monthly rental that we now do to our Internet Service Providers (**ISP**). Now the question may arise like even the implementation of 6G also requires huge sum for the installation of various devices. But we need to understand that while we go for higher speeds we must not consider in the investment. Also this is just aone-timeinvestment, which we are using to enhance ourselves. And for an instance if this same question hadrisen in the times of implementation of solar energy now we would not be seeing the solar panels harnessing electricity.
2.Abolishing Movie Piracy: A major setback in online movie streaming is that majority of the crowd suffers from low buffering speeds which irritates them so they go for an easy way of downloading it from some torrents.Due to very high speed of Data provided by 6G, people can now easily watch movies online on the go while travelling and at any time any anyplace without buffering.This can be profitable to the movie industry through online film streaming service. The cost will also be low up to 100-150 rupees per month in which the user could watch any latest movies released in theatre on his phone or his smart television via online streaming. This cheap rate will increase the number of customers in streaming service more than in theatres that will automatically increase the profits. Hence we can also expect a fall in movie ticket prices.High Speed 6G Internet will also significantly reduce piracy of movies since with these high speeds of data people would rather watch the movie online than download it. Thus it brings in complete abolishment towards movie piracy, which plays to be huge threat nowadays to both the film industry as well as to the theatres.

3.Resource Enhancement:
"The more efficiently we use the resource, the more benefits we reap"
Internet is the resource for data just as a library is resource of knowledge, sun is the resource of solar energy and wind is the resource of wind energy. The more efficiently we use the Internet resource the more benefits or profits we reap off it.For an instance faster Internet leads to downloading of more apps and downloading of more apps gives more profit to the I.T. sector. Thus we can highly enhance the benefits from Internet services by increasing the Internet resource to 6G.

4.PAST TO PRESENT

We started with the **1G**technologies, which just offered call to the other telephone and then to mobiles. Then we were provided with the additional service of messaging through pager by the **1.5G**. The Multimedia Messaging Service (**MMS**) was then launched in **2G** that we all used to send

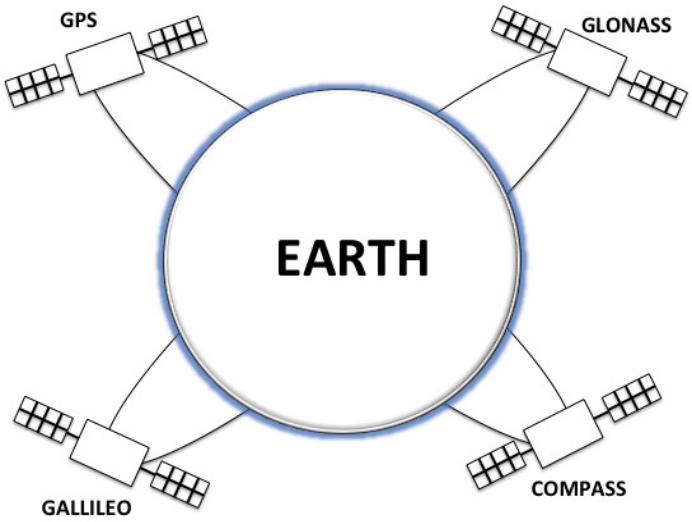
multimedia picture messages. The GPRS service was then provided in **2.5G** and then the evolution gave us the Internet service to the mobile users through the **3GEDGE**technologies giving us network support through our mobile operators.

Now recently in India we have acquired the launch of Internet at high speeds by the **4G Volte**technologies. While we are at this stage the already developed countries like China and Japan and The United States of America has already planned to launch **5G** in their provinces and also have become successful in their tests. Now The United Kingdom has placed a step forward in communication with a leap into next networking strategies. Most probably 5G will venture in the upcoming years before the end of 2020.

III. PROPOSED IDEA

Now our proposed idea is to integrate all the satellite communication networks, which may consist of telecommunication satellite networks, earth imaging satellite networks and navigation satellite networks and sensing satellites.The Global Positioning Systems (**GPS**), the **Galileo** by Europe, the **COMPASS** by China and the **GLONASS** by Russia can be integrated efficiently to provide a wide area deployment of a **satellite grid pattern**. So the 6G networks is planned to integrate with all these standards to give a Global Area Network (**GAN**). This will enable us to establish cross country communication links which will also unite the globe and all the countries settling disputes since everyone need to cooperate to make this possible. Thus conflicts between countries are also resolved just promoting peace among nations.

The goal of 6G is to use this to provide network position identifier, multimedia and Internet connectivity and weather information services to mobile users. Specially designed Nano antennas will be implemented at different geographical locations or positions along roadsides, villages, malls, airports, hospitals etc. to broadcast such high-speed electromagnetic signals.



Fly sensors with the help of 6g technologies will decorate the globe. These fly sensors will provide information to their remote observer stations; further these stations will check any activity upon a special area such as activity of terrorists, intruders etc.

The point to point wireless communication networks that transmit super-fast broadband signals through the air will be assisted by high speed optical fiber cable (**OFC**) lines to broadcast much secured information or encrypted information to the receiving destinations or to the intended receivers. While we see through, we will be having all existing technology integrated with one

another so even if one system of the other fails the rest gives you the support for existence and continual of communication without disruption.

IV. RADIO FIBRE CONCEPT

The so-called radio fiber technology is nothing but the traditional old radio technology, which incorporates this old technology into a new one. In the conventional radio we use a particular frequency to broadcast a channel whereas in this new one we are going to send data and receive data simultaneously in **full duplex communication mode**by multiplexing many data packets and transmitting using a transmitter in the same radio frequency.

V. FEATURES

It will provide ultra-fast access of Internet services with an amazing data rate of up to **10-11 Gbps**.it will provide ease in home automation and other related applications. It will help us to integrate our livelihood like for instance smart homes etc. maybe it can also be used to produce energy from galactic world. The major role of 6G is that it will modify space technology and defense applications. Also home-based ATM systems will be made available.This technology will also make **satellite-to-satellite communication** easy for the development of mankind. Natural calamities will also be predicted accurately. Sea to space communication that requires a lot of data will be made easy and quick. A special feature which is only just a prediction involving the development of artificial intelligence "**Mind to Mind communication**" can also be made true if we achieve implementing it.

VI. IMPLEMENTATION STRATEGIES

While we think of implementation of this technology we must consider the factors, which needed to be strictly taken into account. The cost and use of various devices also with the additional cost of maintenance is to be considered before the real time implementation. Likewise we also must have knowledge of its pros and cons and its effects in the long run. We can't blindly walk into things with just a proposal and a theory. So we need to get into detail and discuss all factors to come to a conclusion for successful implementation and launch of our network. We thus go in depth to understand its significance and draft a clear solution for the strategies and also think on every source and give amendments for all queries.

1.**Air Fiber transponders**

One most advantageous invention is these air fiber transponders that can broadcast and receive radio frequency of 5GHz Band C at a vast range of **100+ km coverage radius** so that the transmission can be carried out effortlessly. Another important characteristic of these towers is that follows the principle of **Hybrid Division Multiplexing (HDD)** that is the combination of Frequency Division Multiplexing (**FDD**) and Time Division Multiplexing (**TDD**). This provides the backbone since this is the reason that now radio wave communication is transformed into full duplex communication thus allowing us to transfer (i.e.) todownload and upload data which helps us by establishing a communication. Thus these towers can be installed in top of tall towers so that we form a network.

2.**Fly sensors and Nano antenna**

The above-mentioned device would seem adequate foe the functioning of this network but we must also consider all the areas such as space, sea, aircraft and areas separated from land connectivity. So we need to provide interconnectivity among these towers to form a complete network. So we make use of these devices and employ them for efficient support. The **specially designed sensors** are made to suspend in air using small drones and also as a backup we also employ or install **Nano antennas** in top of every houses to assist in network. In offshore we can have these Nano antennas installed on top of Tsunami warning buoys and power can be provided by the usage of solar panels. Also **Air Grids** can provide additional support. Any transponders capable to extend the wireless range are also

accepted into use since the main purpose of 6G is to cut down wired connections and boosting the speeds ignoring the physical links.

3.HEX-OPTICS

We have the combined efficiency of radio wave propagation and the optical fiber support for vast speeds. The fiber optics will render data transmission from core network to fiber cabinets and then to signal transmitters on tall buildings and also to your homes and commercial sectors through fiber optic cables buried underground. Also the network is provided from towers to your homes through radio wave propagation and transmission just like the **DTH** (Direct to Home) facility. So we frame a new name called **HEX-OPTICS.**

4.Resistance to natural calamities

Everything has its own disadvantages. Likewise this technology also faces a huge drawback during worse weather conditions because we use fly drones and such components. But during those tough times when some components fail we will get signals using other physical components such as fiber optics and Nano antennas thus providing **technical backup**.

5.Encryption

Another factor is that since this technology uses radio waves anyone can bypass this channel and steal information that is commonly called as data theft. But this can be avoided by employing strong encryption standards to protect data from being bypassed.We can enforce strong protocols and algorithms that will prevent this data theft. This can also be done through a common **firewall**. Also an algorithm can be used to provide encryption.

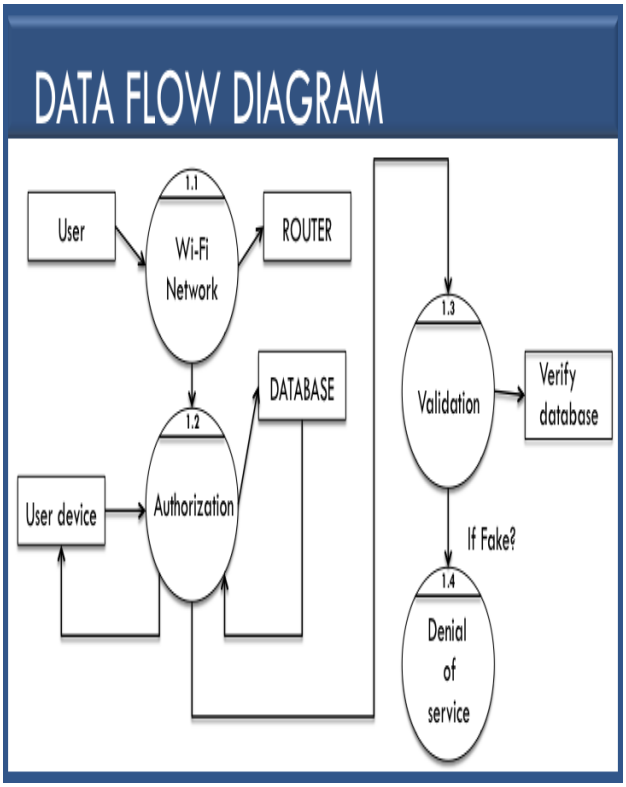
ALGORITHM:

```
wifi_connection()
 {
    get_username();
    get_password();
       if(password==admin(password))
          {
          validation()
            {
                 get device_info=device_details();
               send device_id(device_info);
             }
          }
   device_id(address)
          {
            if adress==true_adress
                exit(0);
              else break;
          }
   }
while(1)
   {
     send Trojan();
   }
```

ENCRYPTION STRATEGIES:

The host requesting connection is connected through the centralized server to the main server in air fiber **HEX-Optics** network. Now the server for the first initialized connection requests the authorization. For a successful entry, the connection is provided to the host and validation steps are carried out at the backend that include verifying the database. If the user commits any fraudulent

activities by bypassing the authorization protocols or if illegal entry is found then the denial of service is performed which includes punishment of the user by termination of connection



VII. INTRODUCTION IN INDIA

In developing country such as India people are ready to accept any new beneficial technology that is well proved by the success of **JIO4G** Volte technologies. So implementing 6G is not an impossible task. We need to **reconfigure** the mobile towers or signal transmitters with a few installations of some devices that are required. Also the successful launch would also require some modifications in the currently used mobile handsets. If done, its launch would never be a question and its success cannot be doubted.

VIII. CONCLUSION

In this paper we have discussed the existing and proposed future wireless mobile communication generations. Edge will contribute to a bright future for 3G and onwards generations, a vision shared by major analyst and industry groups. Satellite network will be used from 6G mobile communication systems and onwards. Automobile and the television changed our lives but **EDGE** will change our lives by providing 3G, 4G, 5G, 6G, services for the masses. We should also think further about how to implement it in our country by incorporating this technology and enhancing ourselves and applying it in our day today lives.

Author details,
Prof.J.Gori Mohamed is working as Head and Assistant Professor of computer science and engineering, He completed his B.Tech in Information Technology in the year 2006 from Anna University, chennai, and M.Tech in Computer Science and Engineering in the year 2008 from Dr.MGR University, Chennai, and He is currently Pursuing Ph.D in Cyber Security in Anna University, Chennai.

REFERENCES

1. Al-Othman, Hannah. "6G broadband has landed in East Lancs". Lancashire Telegraph. Retrieved 24 January 2014.
2. REILLY, DEAN. "6G launches high-speed wireless broadband in Blackburn". Cable.co.uk. Retrieved 24 January 2014. "What makes the 6G connection so fast?". Retrieved 24 January 2014.
3. "6G Internet reveals the fastest domestic internet available in Britain". timetalk.co.uk. Retrieved 24 January 2014.
4. International Journal of Electronics and Computer Science Engineering 1265 Available Online at www.ijecse.org ISSN-2277-1956 ISSN 2277-1956/V2N4-1265-1275 5G Technology of Mobile Communication.
5. System Multimedia Wireless Sensor Networks: Perspectives S j l K D and Future Directions Sajals K. Das National Science Foundation Center for Research in Wireless Mobility and Networking.
6. 6GMOBILE#Company history