

Touch and Transfer Using Red TACTON

Akash D. Patel ^[1], Muhib A. Lambay ^[2], Muneer R. Ahmed ^[3]

UG Students ^{[1] & [3]}, Assistant Professor ^[2]

Department of Computer Engineering
Theem College of Engineering, Boisar
University of Mumbai
Maharashtra - India

ABSTRACT

We all are well aware of types of network i.e. LAN, MAN and WAN, but if this network is shifted towards human body, means if the network lies within the human body then such type of network is called as Human Area Network (HAN). This paper describes a new era of technology, a technology we call Red Tacton. For transfer of the data, Red Tacton uses human body as a medium. It uses IEEE 802.3 standard to have a data rate of up to 10Mbps. Its transmitter uses the body's minute electrical field to transmit messages in the form of digital signal. The human body sends most of the electricity to the receiver, as it senses, Voltage change in the electric field, the receivers decode them to receive the data.

Keyword:- Red Tacton, Body's Electrical Field, Transmitter, Receivers, Half Duplex.

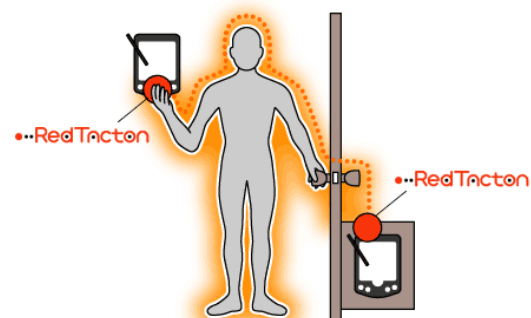
I. INTRODUCTION

Communication, the core of Man's existence began with smoke signal then with internet mails. Later telephone and newspapers came into existence. Means the transmission of data took by both wired and wireless network but now what's next? Imagine a world without wire and wireless. In short, transfer of data occurring through human body (Human Area Network) named Red Tacton.

Intra Body communication is the key concept in Red Tacton. This concept of communication was primarily proposed by IBM in 1996. IBM stated that with the small minute electric fields present in human body, the transfer of data can take place. However the speed with which the data could travel was almost at speed of 40 bits per second. This was the major limitation. Later in the year 2005, a company in Japan named Nippon Telegraph and Telephone Corporation (NTT) located in Tokyo, discarded the limitation using photonic electric field sensor. Electric field communication system described in this paper has a transmitter block which provides emission of an alternation current (AC). This AC current signal is modulated from the electrode. At the receiver end another electrode demodulates the weak input signal and then recovers the data. ^[2]

Just imagine when such type of technology is used and implemented within an organization, then the major benefit which is obtained is security. Relevantly, high through put, authentication of valid candidate in the company and initiation and completion of the data exchange within short period of time is a boost to the

human race to implement this technology. In short to have advantage over other networks Red Tacton is playing a one man show. ^[1] Cost required for network setup is affordable as this technology has various benefits discussed above. Currently, Red Tacton is giving a tough competition to Bluetooth, Zigbee, Infrared. Meaning of Red Tacton: Tacton:- (touch-act-on) i.e. action through touch. Red is the auspicious colour of Japan. Hence named Red Tacton.



II. EXISTING SYSTEM

T.G. Zimmerman was the first person to study the use of electric field as a medium of transmission of data through human body amongst various wearable devices that were attached to the body ^[2]. T.G. Zimmerman worked in IBM Company. He demonstrated the human body as a signal carrier between the computers and proposed electric-field

technology using AC electric field at range oh 0.1 to 1 MHz He created a prototype that could transmit the data of up to 330 KHz speed but he kept the frequency range between 0.1 to 1 MHz Because of this range noise within the environment attenuated the frequency spectrum range and speed for data transmission was decreased. Ultimately, Zimmerman stopped further development in this technology and used wireless techniques like wifi to send the data.

III. DRAWBACKS OF EXISTING SYSTEM

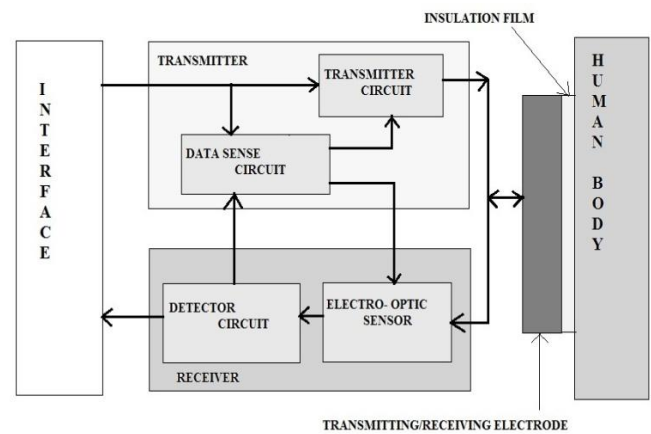
- 1) Range of communication was within few centimetres.
- 2) Data was transmitted at about only 40 bits/s [3].

IV. PROPOSED SYSTEM

The above drawbacks were reduced by Nippon Telegraph and Telephone Corporation (NTT) Company in Tokyo, Japan. They made use of photovoltaic cells. Photovoltaic cells are clean source of energy. NTT company used this cells to increase the voltage of minute electricity of around 0.4 v to 4-6 v [2]. Photonic electric field sensors also played an important role in Red Tacton. It has an OP-Amp Comparator that compares the electric signal from transmitters human body, signal going towards the earth and the signal of receivers human body. Photonic electric field sensors support one point contact that is independent of the ground. After comparing, the data is transmitted at up to the speed of 10 mbps. NTT company used these important feature to fabricate intra body communication receiver operation for its HAN technology. Communication is possible through any part of body i.e. legs, hands, feet, trunk, fingers.

V. WORKING

Red Tacton induces weak electric field on our body. As other transmission technologies, Red Tacton also uses a transmitter and a receiver [4]. Transmitter block has a transmitter circuit and a data sense circuit which keeps different records of transmission and reception by detecting inputs and then outputs the control signal to respective mode to ensure a duplex communication. The receiver block has a detector circuit and an electro optic sensor to sense the input signal from human body and respond accordingly.



Steps of working:-

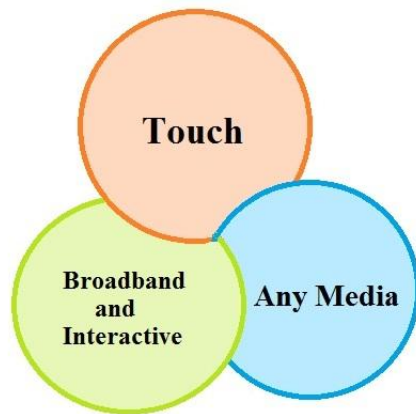
- 1) Transmitter induces weak electric field on the surface of the human body.
- 2) Block of Receiver senses this change in the electric field.
- 3) Red Tacton relies on the principle that properties of electro optic crystal could vary according to the change in the electric field.
- 4) Changes in the properties in the electro optic crystal is detected and so Red Tacton converts the changed result into the electric signal of the receiving circuit.

In this technology number of other computer devices at a particular time can be connected because Red Tacton obeys the principle of CDMA/CD(Code Division Multiple Access/Collision Detection).

VI. FEATURES OF RED TACTON

Touch:-

Touching, Gripping, sitting, stepping, walking and other gestures of the human body helps in revoking the work of equipments or obtaining the data. When the physical contact is done between two people who have respective transmitter and receiver the transfer of data is accomplished. When the physical contact gets separated, communication ends [5].



Broadband and Interactive:-

Sending and receiving of data from both sides at same time along with interactive communication is possible almost up to the speed of 10 mbps because the surface of the human body itself helps in data transfer. Main thing is that attenuation of communication signal does not appear even though many people are communicating at a same time in same place. This gives more benefit to set up device drivers instantly and execute the programs faster.

Any Media:-

Different conductors, semiconductors and dielectric material has possibility to transmit the data through human body. Conductor and dielectric material can be used in as a combination. Desk, walls, water, and metallic objects can be used to pass through the data.

VII. APPLICATIONS

One-to-one service:

1) An alarm

When a customer in medical stores touches a wrong bottle of medicine which is not prescribed to him then an alarm starts triggering from the bottle. This triggering is possible because of the Red Tacton device present inside the bottle. The alarm triggers only when the user touches the bottle reducing the false alarm which can be triggered from the proximity.

2) Advertising Panel

When the validate user within company premises just stands in front of the advertising panel, his or her full information is displayed. This provides a security from

other common unauthorized party who enter the company premises.

Intuitive Operations:-

1) Touching a printer to print:

Just only by touching a printer with one hand and having a camera or mobile phone on other hand particular image or the document can be printed. In this case printer can remain private to assigned user i.e. no other user can use that printer to print.

2) Direct exchange of data:

Direct shake of the hands between two people with inbuilt Red Tacton devices creates a medium of transfer the data between two person. When the physical contact is separated communication ends.

Military Applications:-

1) In Gun:

During the war, a soldier having a Red Tacton authenticated gun is supposed to fire with that respective gun. No other soldier can use that gun for firing if that authenticated soldier is dead or not able to participate in the war. It gives advantage that enemy soldier cannot attack the other party with their own ammunitions. Black marketing of guns can also be reduced with a Red Tacton device built in [6].



2) Automatic access log:

Log files kept securely in the computer or at other data storage is also sometimes prone to vulnerable attacks. Use of these technology will provide security and authentication of their log files and hence data will remain confidential.

VI. CONCLUSIONS

As Red Tacton uses a property of photonic electro optic crystal, it has advantage over other technologies in terms of communication distance, transfer rate and interaction. Most importantly the data transferred through this technology cannot be hacked. A very big achievement is obtained in the field of medical application, security applications with the help of invention of Red Tacton technology. If Red Tacton is introduced in the world of cyber market, it will bring tremendous revolution as much of the cyber crime will be eliminated. There no danger to the human body from electric signals and other radiations created by these technology because human electric field is the medium to transfer the data.

As discussed above, no other technology can replace Red Tacton we can clearly say that future belongs to the Red Tacton.

REFERENCES

- [1] International Journal of Infinite Innovations in Technology|ISSN:2278-9057|JIIT|Volume- II|Issue-IV|2013-2014 April|Paper-19
- [2] NTT Technical Review paper <https://www.ntt-review.jp/archive/ntttechnical.php?contents=ntr201003sf1.html>
- [3] ijct vol. 2, issue 3, september 2011 i s s n : 2 2 2 9 - 4 3 3 3 (p r i n t) i s s n : 0 9 7 6 - 8 4 9 lred tacton 1gurpreet singh, 2jaswinder singhmichael j. point, embedded c, edition 2002, addison wesley, page: 57-87,217.
- [4] IOSR Journal of Computer Engineering (IOSR-JCE) e-ISSN: 2278-0661, p- ISSN: 2278-8727Volume 14, Issue 5 (Sep. - Oct. 2013), PP 52-56 www.iosrjournals.org <http://www.iosrjournals.org/iosr-jce/papers/Vol14-issue5/E01455256.pdf?id=7478>
- [5] International Journal on Recent and Innovation Trends in Computing and Communication ISSN: 2321-8169 Volume: 2 Issue: 1 160 – 164 <http://www.ijritcc.org/download/Red%20Tacton.pdf>
- [6] Adoption of Red Tacton <http://www.public.iastate.edu/~dkbroth/Adoption%20of%20RedTacton.htm>