

Study on Red Tacton Technology

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Abstract— we have seen LAN, MAN, WAN, INTERNET & many more but here is new concept of “ RED TACTON ” which makes the human body as a communication network by name HAN (Human Area Network).NTT lab from Japan is currently testing & developing this revolutionary technology .RedTacton is a new Human Area networking technology that uses the surface of the human body as a safe, high speed network transmission path. Red Tacton uses the minute electric field generated by human body as medium for transmitting the data. The chips which will be embedded in various devices contain transmitter and receiver built to send and accept data in digital format.In this paper we will discuss about red tacton, and its working States, and Applications of red tacton various fields. And we will compare our red tacton with the Other technology for data transmission. And know about human area network.

combinations according to the user's Communication is possible using any body surfaces, such as the hands, fingers, arms, feet, face, legs.

Index Terms— Red tacton, Touch, Sensor, Communication

I. INTRODUCTION

crawling with antennas and emitters, due to the huge growth of wireless communications. And it is seems that the current means of transferring data might already have a very serious competitor none other than the human body.

Thus NTT labs from Japan has announced that is currently testing a revolutionary technology called “ red tacton ”,which use the electric fields generated by the human body as medium for transmitting the data. The chips which will embedded in various devices contain a transmitter and receiver built to send and accept data in digital format. The chips can take any type of file such as mp3 music file or mail and convert it in to the format that takes the form of digitals pulse that can be passed and read through a human being electric field .the chip in receiver devices reads these tiny changes and convert the file back into its original form.

II. REDTACTON

Red Tacton is a new Human Area Networking technology that uses the surface of the human body as a safe, high speed network transmission path. Red Tacton uses the minute electric field emitted on the surface of the human body. Technically, it is completely distinct from wireless and infrared.A transmission path is formed at the moment a part of the human body comes in contact with a Red Tacton transceiver. Physically separating ends the contact and thus ends communication Using Red Tacton, communication starts when terminals carried by the user or embedded in devices are linked in various

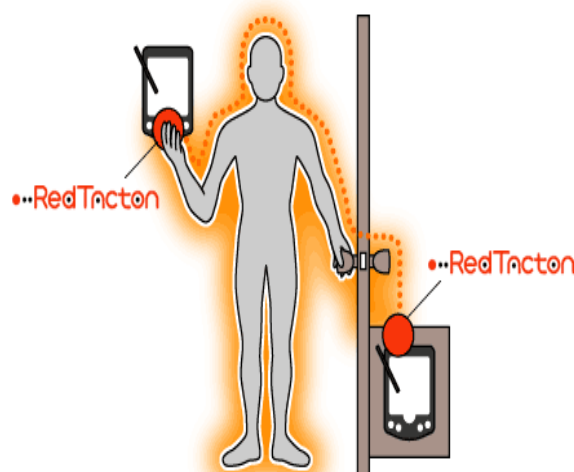


FIG 1: REDTACTON

III. WORKING PRINCIPLE

Using a new super-sensitive photonic electric field sensor,RedTacton can achieve duplex communication over the human body at a maximum speed of 10 mbps.The Red Tacton transmitter induces a weak electric field on the surface of the body. The Red Tacton receiver senses changes in the weak electric field on the surface of the body caused by the transmitter .Red tacton relies upon the principle that the optical properties of an electro-optic crystal can vary according to the changes of a weak electric field. Red Tacton detects changes in the optical properties of an electro-optic crystal using a laser and converts the result to an electrical signal in a optical receiver circuit. The transmitter sends data by inducing fluctuations in the minute electric field on the surface of the human body. Data is received using a photonic electric field sensor that combines an electro-optic crystal and a laser light to detect fluctuations in the minute electric field. The naturally occurring electric field induced on the surface of the human body dissipates into the earth. Therefore, this electric field is exceptionally faint and unstable. The photonic electric field sensor developed by NTT enables weak electric fields to be measured by detecting changes in the optical properties of an electro-optic crystal with a laser beam.

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IV. HUMAN AREA NETWORK

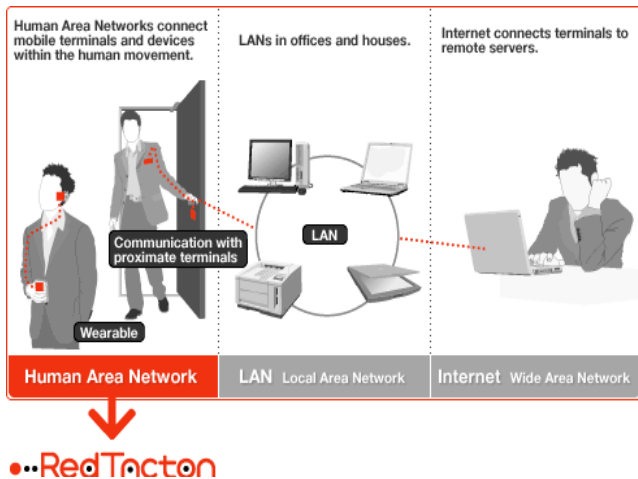


FIG2.: DESCRIPTION OF REDTACTON

V. HOW REDTACTON WORKS?

- Similar to any other technology, RedTacton Technology, will also have a transmitter and a receiver.
- As soon as the human body comes in contact with the RedTacton transceiver, the signals will start to be transmitted. When the contact is taken off, the transmission will also stop.
- The terminals are either embedded in the devices or are carried by the user itself. According to the natural and physical movements of the user, the communication will happen in various combinations.
- The communication through the user can occur only through his body surface parts like hands, fingers, arms, feet, face, legs or torso. The technology also works in shoes and other clothing's as well.

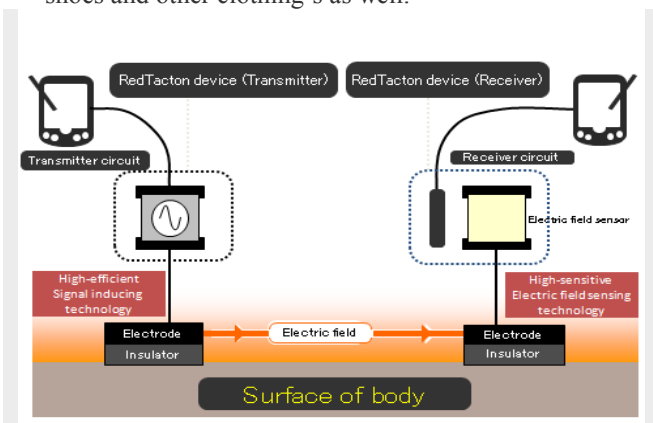


FIG 3. : BLOCK DIAGRAM

VI. FEATURES

- 1.TOUCH:** Communication with just a touch or a step.
- 2.BROAD-BAND&INTERACTIVE:** Bandwidth does not deteriorate even with duplex operation and simultaneous operation and simultaneous process by many users.
- 3.ANY MEDIA :** Works with many transmission media common in human field.

(a).TOUCH

Touching, gripping, sitting, walking, stepping and other human movements can be the triggers for unlocking or locking, starting or stopping equipment, or obtaining data. using Red Tacton, communication starts when terminals carried by the user or embedded in devices are linked in various combinations through physical contact according to the human's natural movements.

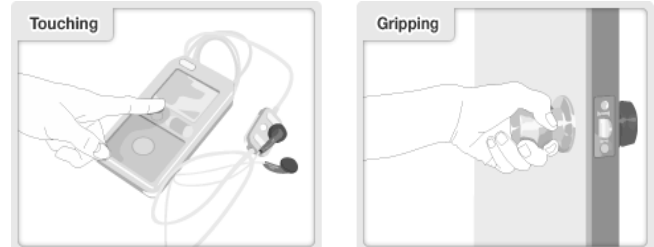


FIG 4. : TOUCH & GRIP

(b).BROAD-BAND & INTERACTIVE: Duplex, interactive communication is possible at a maximum speed of 10Mbps. Because the transmission path is on the surface of the body, transmission speed does not deteriorate in congested areas where many people are communicating at the same time .Taking advantage of this speed, device drivers can be downloaded instantly and execute programs can be sent.

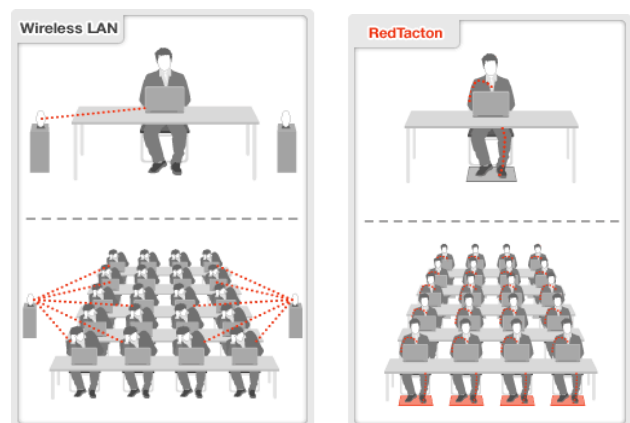


FIG 5. : WIRELESS LAN vs REDTACTON

(c). ANY MEDIA

In addition to the human body, various conductors and dielectrics can be used as transmission media. Conductors and dielectrics may also be used in combination. A communication environment can be created easily and at low-cost by using items close at hand, such as desks, walls, and metal objects. But there is one limitation on the length of the conductor to be propagated, on installation locations, and on the thickness of the dielectric to be passed through.

VII. APPLICATION FIELDS

Many application using Red Tacton are introduced. Some are:

- An alarm sounds automatically to avoid accidental medicine ingestion** Red tacton devices embedded medicine bottles transmit information on the medicines' attributes. If the user touches the wrong medicine, an alarm will trigger on the terminal he is carrying. The alarm sounds only if the user actually touches the medicine bottle, reducing false alarms common with

passive wireless ID tags, which can trigger simply by proximity.

○ Touch advertising and receive information

When a consumer stands in front of an advertising panel, advertising and information matching his or her attributes is automatically displayed. By touching or standing in front of items they are interested in, consumers can get more in-depth information.

○ Instantaneous private network via personal handshake

By shaking hands, personal profile data can be exchanged between mobile terminals on the users. (Electronic exchange of business cards) Communication can be kept private using authentication and encryption technologies.

○ Just touching a phone makes it your own

Your own phone number is allocated and billing commences. Automatic importing of personal address book and call history.

○ Just sitting in the seat triggers the car to load all its presets, just the way you like.

The seat position and steering wheel height adjust to match the driver just by sitting in the car. The driver's home is set as the destination in the car navigation system. The stereo plays the driver's favorite song.

○ Connect to the network just by putting a lap-top on the table

An electrically conductive sheet is embedded in the table. A network connection is initiated simply by placing a lap-top on the table. Using different sheet patterns enables segmentation of the table into subnets.

○ User verification and unlocking with just a touch

Carrying a mobile RedTacton-capable device in one's pocket, ID is verified and the door unlocked when the user holds the doorknob normally. Secure lock administration is possible by combining personal verification tools such as fingerprint ID or other biometric in the mobile terminal.

VIII. SYSTEM SAFETY

1.No current flowing into the human body from Redtacton devices:

RedTacton uses the electric field that occurs naturally on the surface of the human body for communication. Transmitter and receiver electrodes are covered with an insulating films. No current flows into the body from the RedTacton transceiver.

2.Displacement current occurring in the body is small enough: There is no current flowing from the RedTacton transceiver; however, the body indirectly receives a minute electric field. This causes electrons already present inside the body to move, creating a minute displacement current. This displacement current is similar to those occurring in everyday life.

IX. PROTOTYPE

NTT has made three types of prototypes:

1.PC card type:

Communication speed:10Mbps

Protocols : TCP/IP

Communication method :Half-duplex

Interface: PCMCIA

2.Hub type:

Communication speed:10Mbps

Protocols :TCP/IP

Communication method : Half-duplex

Interface: RJ45

X. COMPARISON

evolution criteria	LAN	wireless Infrared	Red Tacton
Transfer speed	E	P	E
(can dvd quality image be sent?)			
Performance deterioration during periods of congestion	P	E	E
Duplex data transfer (interactive processing)	E	E	E

E= Excellent ; P= Poor

XI. ADVANTAGE

1. Red Tacton does not require the electrode be in direct contact with the skin.
2. High-speed communication is possible between two arbitrary points on the body.

XII. DISADVANTAGE

1. It has no compelling applications that are not already available.
2. Too Costly
3. It can be used within few centimeters only

XIII. CONCLUSION

(A).We conclude that, when we compare Red Tacton with other technology present today it can give a better performance over others and we can say that to connect the network with in short distances Red Tacton is best.

(B). In this technology there is no problem of hackers as our body is itself a media.

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