SIDDHARTH INSTITUTE OF ENGG. & TECH.

REDTACTON-HUMAN AREA NETWORKS

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1.

INTRODUCTION

1.1 WHAT IS REDTACTON?

We may have imagined the feature as a place 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 " RedTacton ", which use the electric fields generated by the human body as medium for transmitting the data. The chips, which will embed 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.

RedTacton is a new Human Area Networking technology that uses the surface of the human body as a safe, high-speed network transmission path

RedTacton 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 RedTacton transceiver. Physically separating ends the contact and thus ends communication.

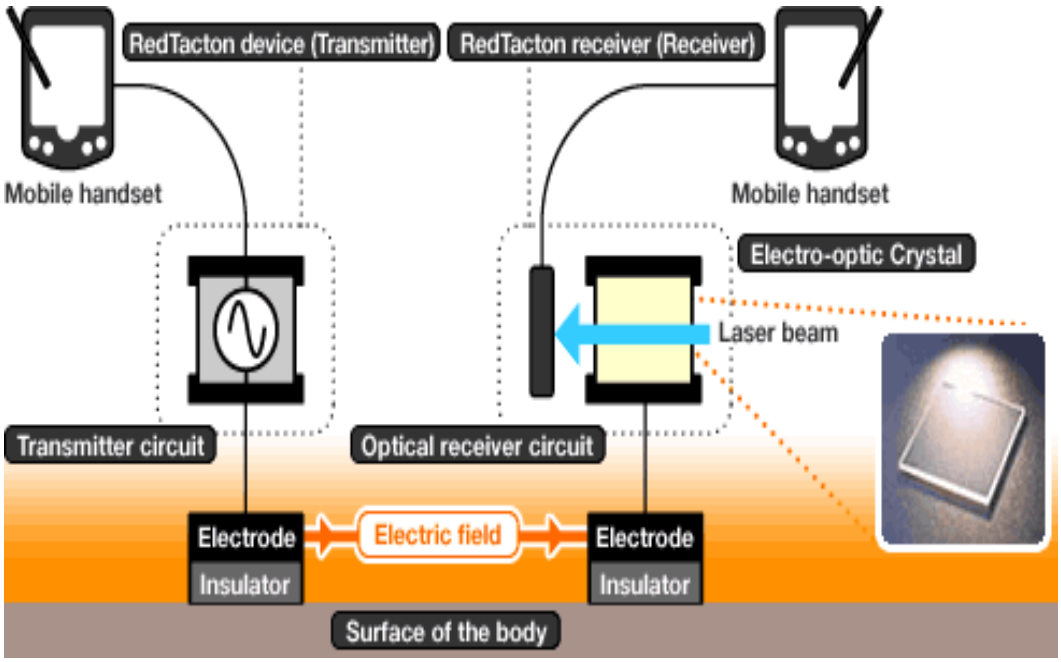
Using RedTacton, communication starts when terminals carried by the user or embedded in devices are linked in various combinations according to the user's natural, physical movements. Communication is possible using any body surfaces, such as the hands, fingers, arms, feet, face, legs or torso. RedTacton works through shoes and clothing as well.

1.2 WHY NAMED REDTACTON?

Because with this technology, communication starts by touching (Touch), leading to various actions (Act on) and the colour red to convey the meaning of warmth in communication. Combining these phrases led to the name, "RedTacton".

2. HOW REDTACTON WORKS

RedTacton can achieve duplex communication over the human body at a maximum speed of 10 Mbps.



1. The RedTacton transmitter induces a weak electric field on the surface of the body.
2. The electric field sensor (transistor or photonic electric field sensor) detects electric field that reaches the RedTacton receiver.
3. Signals are processed in the receiver circuit and the data is downloaded.

A Japanese company has discovered that the best cables may be your arms and legs. According to NTT (NIPPON TELEGRAPH AND TELEPHONE CORPORATION) Laboratories, your whole body is the perfect conductor for electronic data, meaning that information such as music and films could be

downloaded in seconds via your elbow. NTT, and the team of scientists that invented the "RedTacton" system, envisage a future in which the human body acts as a non-stop conduit for information.

MECHANISM OF COMMUNICATION WITH REDTACTON

The transmitter sends data based on fluctuations in the weak electric field induced in the body. The electric field is received using super-sensitive electric field sensing technology.

- 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 super-sensitive electric field sensing technology measures the weak electric fields induced by the super-efficient alternating electric field induction technology developed by NTT.

2.2 ABOUT HUMAN AREA NETWORKS

In addition to the WANs (Internet) and LANs, there are applications best served by Human Area Networks (HANs) that connect the last meter.

Human society is entering an era of ubiquitous computing, where everything is networked.

By making Human Area Networks feasible, RedTacton will enable ubiquitous services based on human-centered interactions and therefore

more intimate and easier for people to use.

3. THREE FEATURES

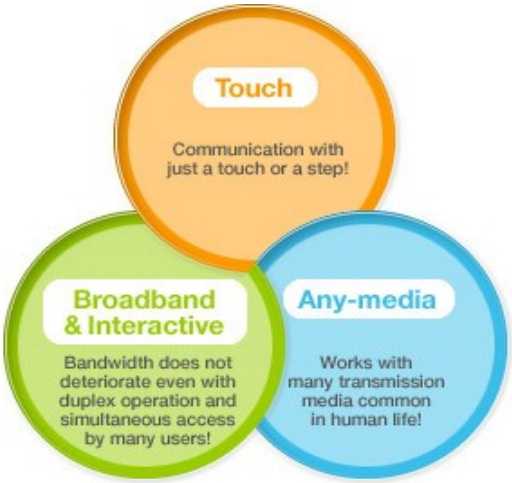
RedTacton has three main functional features.

3.1 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.

3.2 BOARDBAND&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.

3.3 ANY-MEDIA

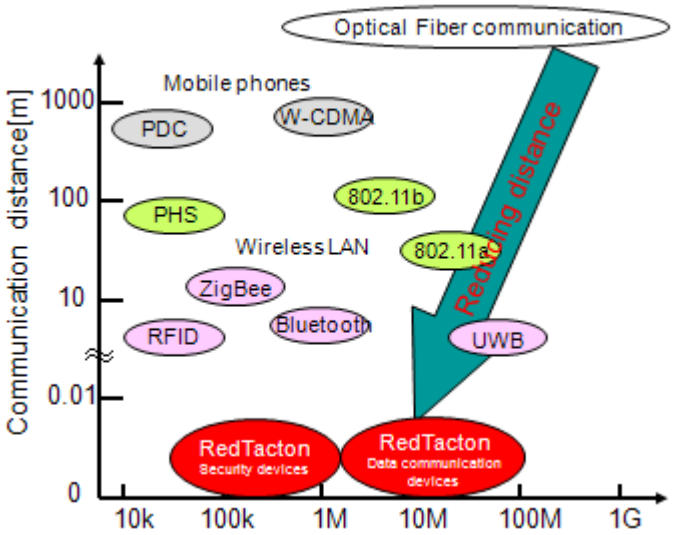
In addition to the human body, various conductors and dielectrics can be used as transmission media.

Conductors and dielectrics may also be used in combination touching, gripping, sitting, walking, stepping and other human movements can be the triggers for unlocking or locking, starting or stopping equipment, or obtaining data.

4. TECHNOLOGY NOTE

4.1 COMPARISION WITH ANOTHER NETWORK

The chart below shows the positioning of RedTacton with respect to existing communication technologies. Wireless communication creates connections when signals arrive, allowing for easy connections because connectors are unnecessary. However, seen from another aspect, the arriving signals can be intercepted, so security becomes an issue. Wired communication transmits data between two connection points, so interception is difficult and security can be



considered to be high. However, connectors and cables are a nuisance. Taking the above points in account, RedTacton is situated directly between wireless and wired communication. In other words, RedTacton allows for easy connection without connectors, while at the same time allowing transmission of data only between two contact points. It thus has the feature of being difficult to intercept.

4.2 SYSTEM SAFETY

(Wireless station that does not require license)

RedTacton meets the standard for weak wireless station as set by Japanese telecommunication regulations

5. APPLICATION FIELD

Five major application fields using RedTacton are introduced.

5.1 ONE-TO-ONE SERVICES

Enable one-to-one services tailored to the user's situation and tastes.

- Attribute information recorded in the RedTacton device is sent to the touched objects.
- The appropriate service is provided based on the attribute

information received by the RedTacton receiver.

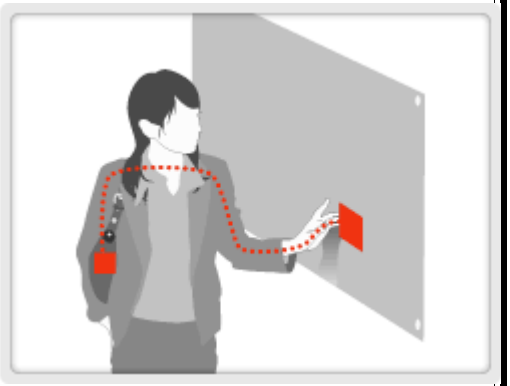
ELIMINATION OF HUMAN ERROR

MARKETING APPLICATION

An alarm sounds automatically to avoid accidental medicine ingestion

There's no "operation" any more. Just intuitive human interaction.

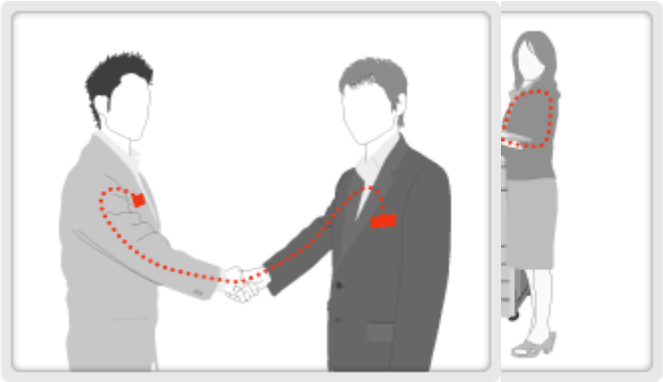
- RedTacton transceivers embedded in two terminals can communicate not only data but also the control or configuration instructions needed to operate devices.
- Cable connections are eliminated. The body itself is used as transmission medium



Touch advertising and receive information

5.2 INTUITIVE OPERATION

Natural movements and actions are the trigger.

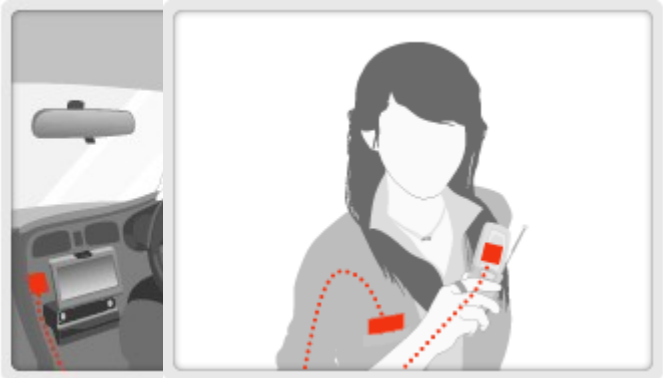


- When another device with RedTacton capabilities is touched, personalization data and configuration scripts can be downloaded automatically.

Personalization of automobiles

Personalization of mobile phones

Instanteous private network via personal handshake



5.3

PERSONALIZATION

Digital lifestyle can be instantly personalized with just a touch.

- A pre-recorded configuration script can be embedded in a mobile terminal with built-in RedTacton transceiver.

Just sitti to load a like.

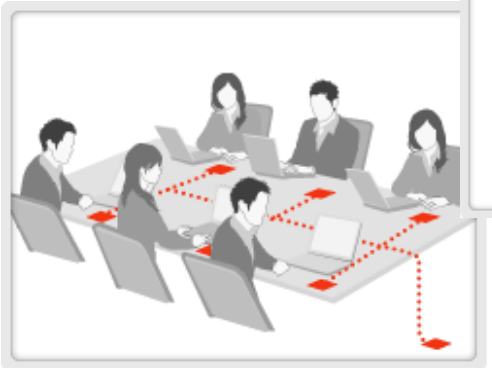
Just touching a phone makes it your own

5.4 NEW BEHAVIOR PATTERNS

Various conductors and dielectrics can be used as RedTacton communication media, and this has the potential to create new behavior patterns.

Conferencing system

Wearable



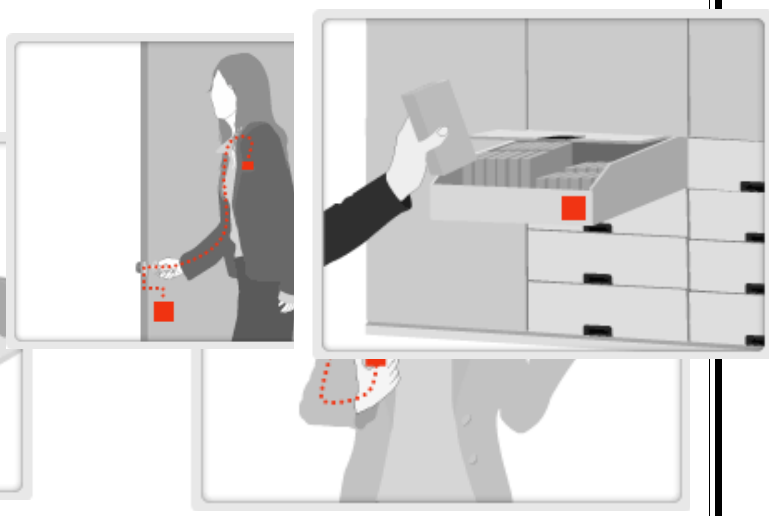
Connect to the network just by putting a lap-top on the table

5.5 SECURITY APPLICATIONS

Automatic user authentication and log-in with just a touch.

- ID and privileges are recorded in a mobile RedTacton device.
- Corresponding RedTacton receivers are installed at security check points.
- The system can provide authentication and record who touched the device, and when.

User verification and lock management at entrances



Wireless headset

User verification and unlocking with just a touch

Automatic access log for confidential document storage.

6.PROTOTYPES

6.1 SECURITY DEVICES (DEVELOPMENT COMPLETED)

Portable Card-Size Transmitter

Transmission rate: 230Kbps

Protocol: Proprietary protocol

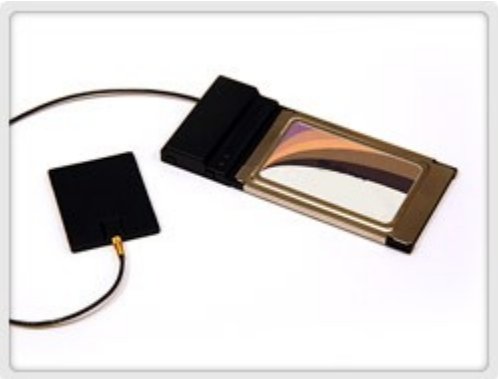
Transmission method: Unidirectional

Embedded Receiver

Transmission directional

External device interface: 10/100BASE-T, RS232C

6.2 DATA TRANSMISSION DEVICES (IN DEVELOPMENT)



transceiver

Transmission rate: 10Mbp

Protocol: TCP/IP

Transmission method: Half-duplex

Terminal interface: PCMCI

USB Transceiver

not yet determined

(In testing stage)

Embedded Receiver

Transmission rate: 10Mbp

Protocol: TCP/IP

Transmission method: Half-duplex

External device interface: 10BASE-T

7. CONCLUSION

So we can clearly say that, this technology will spawn revolutionary changes in the modern communications and

become a pivot technology. When we compare RedTacton with other technologies, RedTacton will give a better performance over other. RedTacton after it's coming into market will make a great change & will be adopted by many people.

"*FUTURE BELONGS TO RED TACTON*"

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