

Bluetooth Technology

Matt Romita

&

Mohammed Hasham

What Is Bluetooth?

- Designed to be used to connect both mobile devices and peripherals that currently require a wire
- Simplifying communications between:
 - devices and the internet
 - data synchronization
- “USB without wires”



- Short range wireless radio technology
 - operate range of 10 meters



Advantages (+)

- **Wireless (No Cables)**
- **No Setup Needed**
- **Low Power Consumption (1 Milliwat)**
- **Industry Wide Support**



Disadvantages (-)

- Short range (10 meters)
- Small throughput rates
 - Data Rate 1.0 Mbps
- Mostly for personal use (PANs)
- Fairly Expensive



How Does It Work?

- Bluetooth is a standard for tiny, radio frequency chips that can be plugged into your devices



- These chips were designed to take all of the information that your wires normally send, and transmit it at a special frequency to something called a receiver Bluetooth chip.



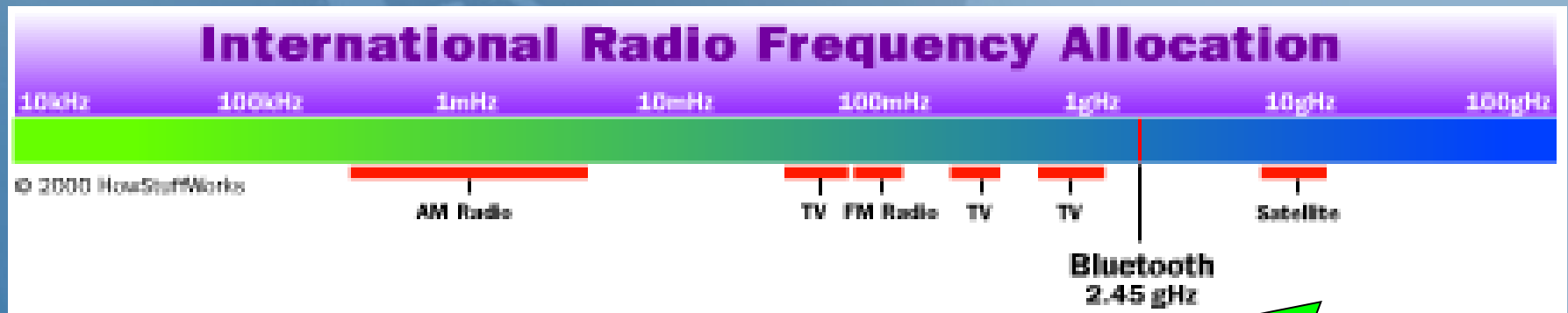
Bluetooth Specifications

- Each channel is divided into time slots 625 microseconds long
 - Packets can be up to five time slots wide
 - Data in a packet can be up to 2,745 bits in length

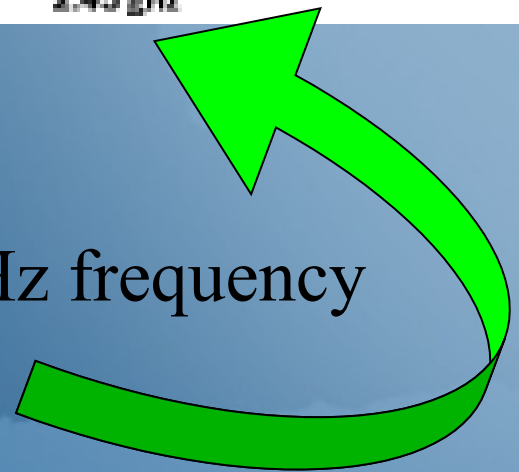


Bluetooth Frequency

- Has been set aside by the ISM for exclusive use of Bluetooth wireless products

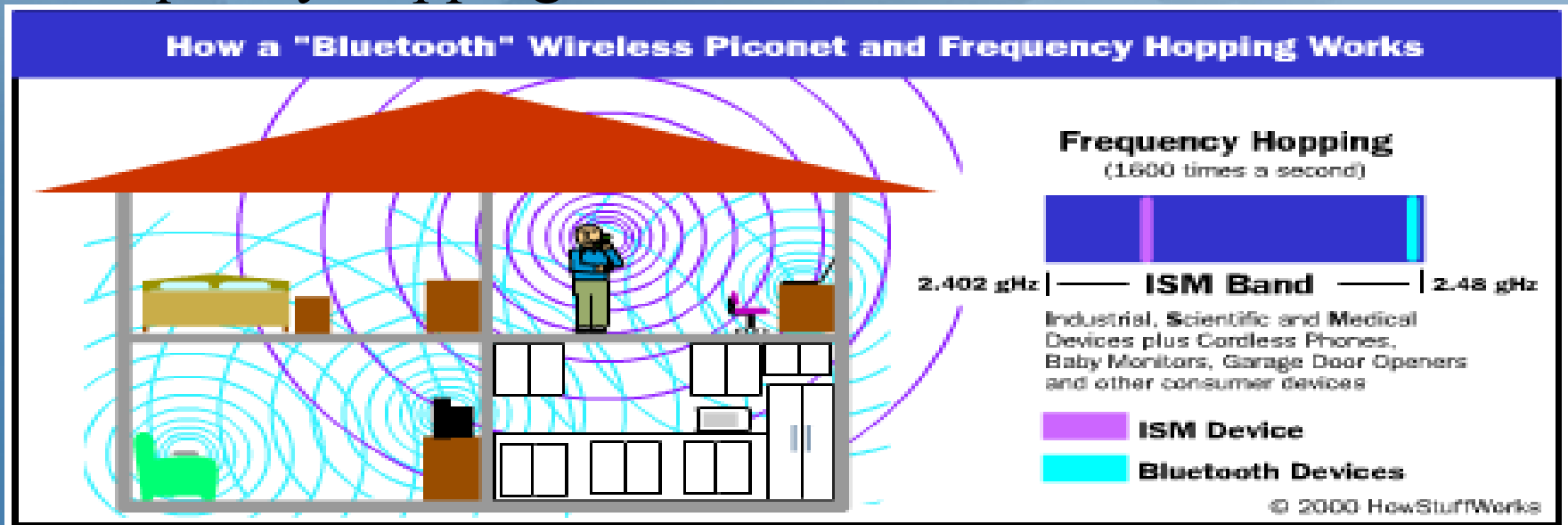


- Communicates on the 2.45 GHz frequency



Avoiding Interference : Hopping

- Bluetooth uses a technique called spread-spectrum frequency hopping.



- In this technique, a device will use 79 individual, randomly chosen frequencies within a designated range

Created by Matt Romita and Mohammed Hasham for BCS 312 and used in BCS 555

- Transmitters change frequency 1600 times a second

What's With the Name?

- **King Harald Bluetooth** (A.D. 940 to 985)



- 10th century Viking king in Denmark
- Credited for uniting the country and established Christianity
- Viking states included Norway & Sweden, which is the connection to Ericsson (creator of bluetooth)



Who Started Bluetooth?

Ericsson Mobile Communication



- **Bluetooth Special Interest Group (SIG)**
 - 5 founding members
 - Ericsson, Nokia, IBM, Intel & Toshiba
- **Promoter's Group**
 - 3COM, Lucent, Microsoft, Motorola
- **Now over 1900 members**



Bluetooth Devices

Bluetooth will soon be enabled in everything from:

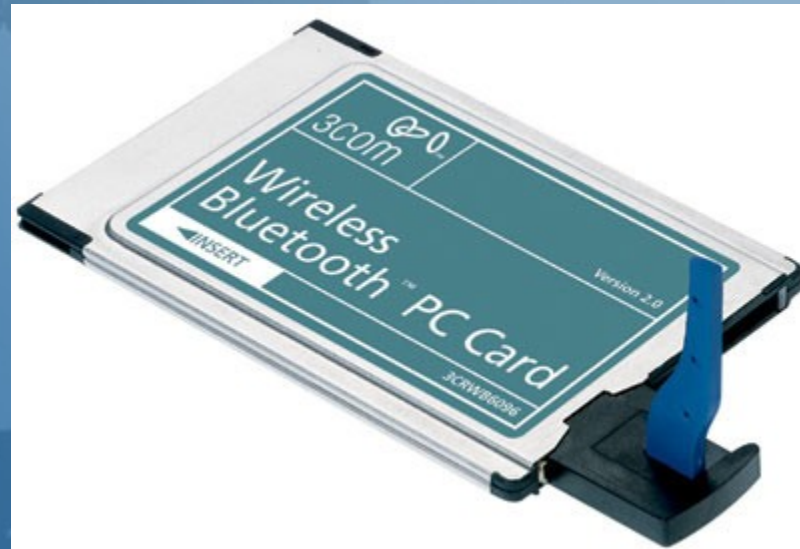
- **Telephones**
- **Headsets**
- **Computers**
- **Cameras**
- **PDAs**
- **Cars**
- **Etc ...**



Bluetooth Products

1

- **Bluetooth-enabled PC Card**



Bluetooth Products

2

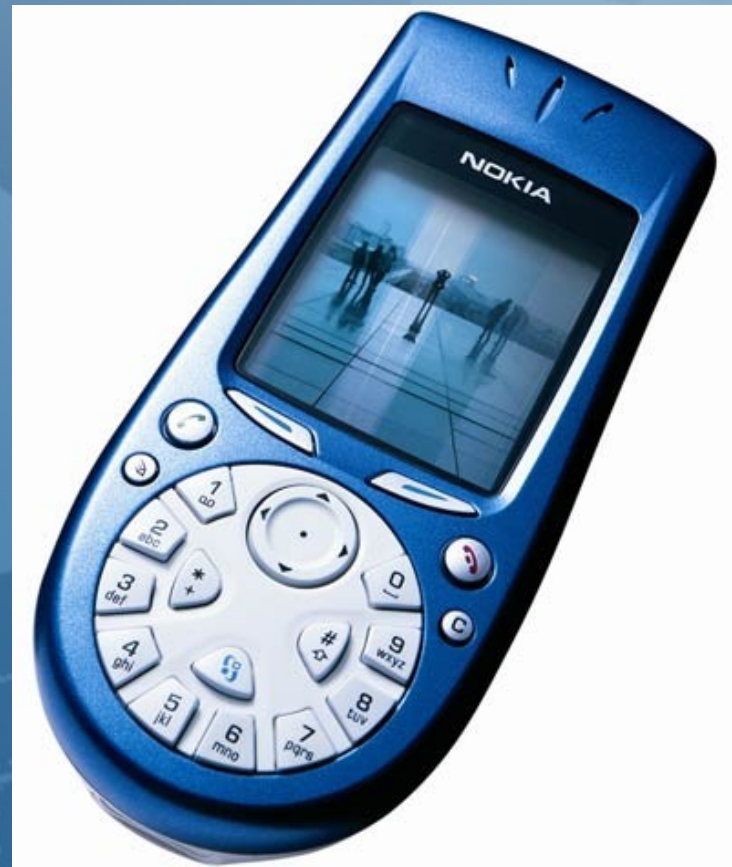
- **Bluetooth-enabled PDA**



Bluetooth Products

3

- **Bluetooth-enabled Cell Phone**



- **Bluetooth-enabled Head Set**



Target Markets

- **Telecommunications**

- **Networking**

- **Computing**

- **Industrial**

- **Medical**

- **Automotive**

- **Vertical Markets (Hotels, Airports, Healthcare)**



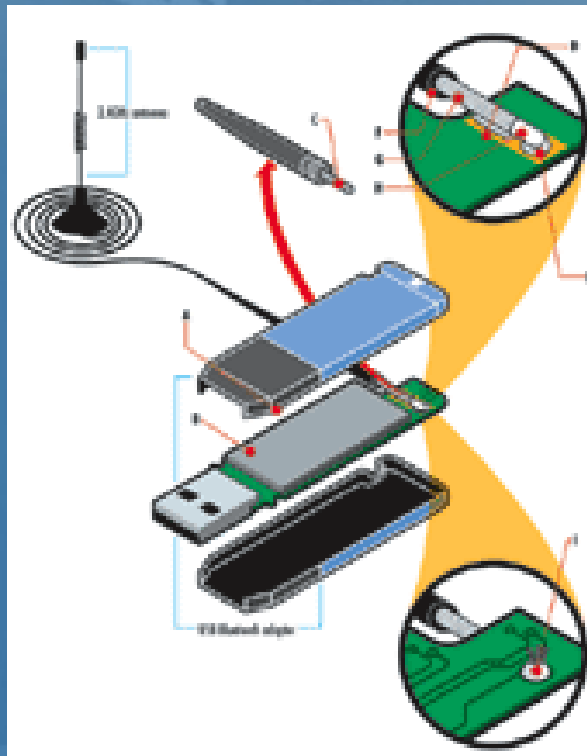
Modding Bluetooth

Dept.: Void Your Warranty

Tech: Bluetooth antenna

Base Cost: \$85

Time: 30 minutes



Detach the stock antenna from a Linksys USB BT100 Class 1 USB Bluetooth adapter (\$70; linksys.com) and replace it with a larger HyperGain RE05U 2.4GHz antenna (\$15; hyperlinktech.com) With that simple mod, you can make a Bluetooth connection up to a about 5,000 feet farther than most. Bandwidth isn't increased, but now you can connect your Bluetooth devices from anywhere in the house or yard. [See bluedriving.com for more Bluetooth projects.]



Bluetooth's Future

- The future of this technology becoming a standard is likely
- With a strong industry pushing behind it, success is inevitable.



- Bluetooth will soon be known as Bluetooth 1.2. as they are trying to develop the product to better fulfill the needs of consumers



- Often, with new technology, early changes mean reconstruction. Not With Bluetooth, instead, there will be an improvement to the existing standard.

Sources

- <http://www.howstuffworks.com/index.htm>
- <http://www.palowireless.com/bluetooth/>
- <http://www.ensc.sfu.ca/~ljilja/cnl/presentations/jeffrey/btpresentation/tsld005.htm>
- http://www.futureshop.ca/learnmore/BuyersGuide/en/electronics_bluetooth.asp?logon=&langid=EN&dept=0&WLBS=fsweb23&test%5Fcookie=1
- <http://www.bluetooth.com>



The End

- Thank You, for attending our presentation.
- For any additional information, visit our websites:

www.learn.senecac.on.ca/~mhasham

www.learn.senecac.on.ca/~mromita

