

Bluetooth

Robin Heydon

Fellow, CSR

Bluetooth

History of Bluetooth

Where are we now?

Internet of Things

Competitive Landscape

Conclusions

History of Bluetooth

Danish King - Harold Blåtand

Creation of huge kingdom unifying:

Northern Germany

Southern Sweden

Denmark

Coastal Norway

History of Bluetooth

Started at Ericsson (late 1990's)

Bluetooth SIG created 1999:

Nokia / Microsoft / Intel / Motorola / Toshiba / Ericsson

First (working) specification: 22nd February 2001

Good / Bad / Ugly

Good - Audio - phone to speakers / phone to car



Good / Bad / Ugly

Good - Audio - phone to speakers / phone to car



Good / Bad / Ugly

Bad - Security - initial security was terribly (now fixed)

Good / Bad / Ugly

Bad - Security - initial security was terribly (now fixed)



Good / Bad / Ugly

Ugly - OS Support - most were late & poor feature set

- Automotive usability issues

Good / Bad / Ugly

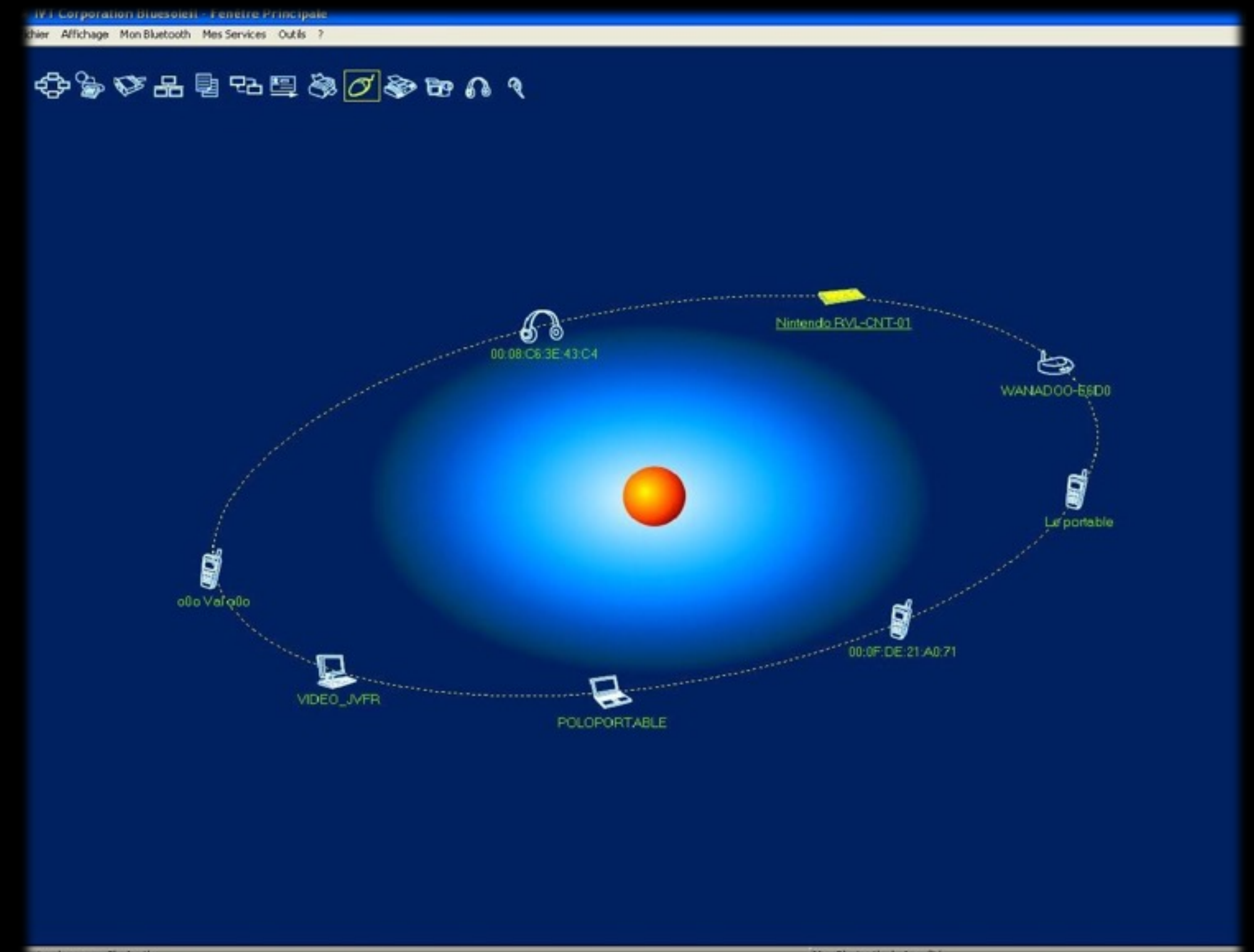
Ugly - OS Support - most were late & poor feature set
- Automotive usability issues



Good / Bad / Ugly

Ugly - OS Support - most were late & poor feature set

- Automotive usability issues



Security Issues

AES = Advanced Encryption System (2001)

Bluetooth didn't use AES

it used a custom encryption engine and SAFER+ authentication

this caused much concern

Today Bluetooth uses AES and DHM Public Key Cryptography

Possible to be FIPS compliant

What is Bluetooth Today?

Two main specifications:

Bluetooth BR/EDR - cars, headphones, phones, computers

Bluetooth LE - sports & fitness, things, watches, phones

Some devices can do both BR/EDR and LE

these are called Dual Mode devices



What can Bluetooth do?

Conversational Audio

Music Streaming

Internet Connections (via phones)

Phone Books / Play Lists / Album Artwork

Beacons / Context Awareness

Body Sensors

What can Bluetooth do?

Conversational Audio

Music Streaming

Internet Connections (via phones)

Phone Books / Play Lists / Album Artwork

Beacons / Context Awareness

Body Sensors



What can Bluetooth do?

Conversational Audio

Music Streaming

Internet Connections (via phones)

Phone Books / Play Lists / Album Artwork

Beacons / Context Awareness

Body Sensors



What can Bluetooth do?

Conversational Audio

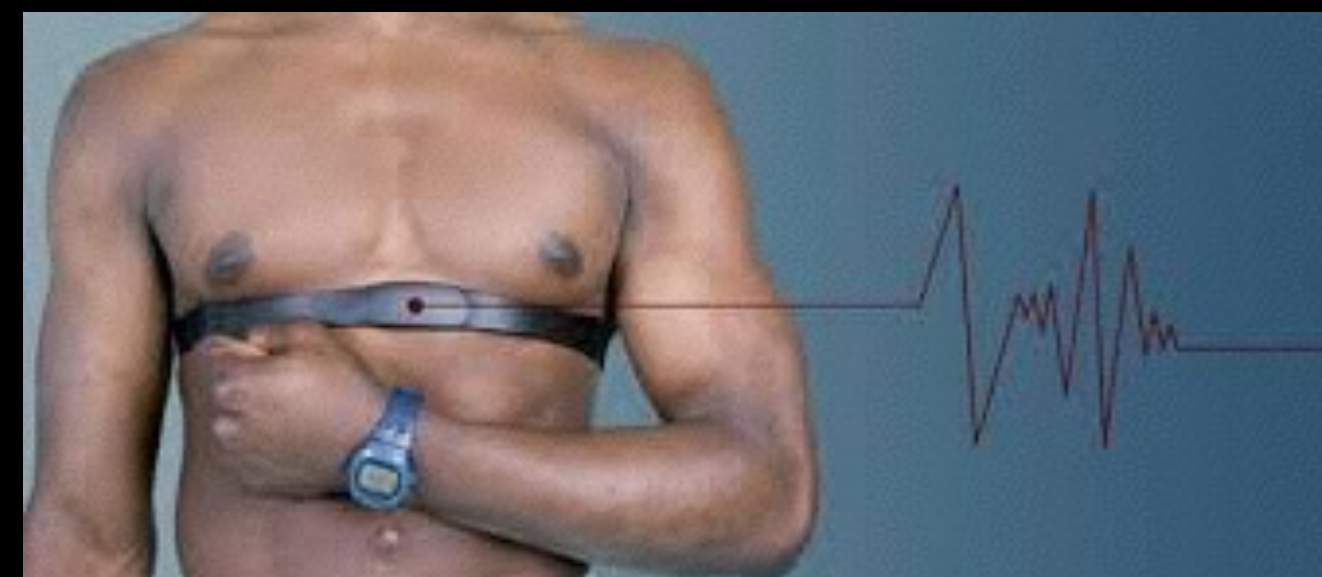
Music Streaming

Internet Connections (via phones)

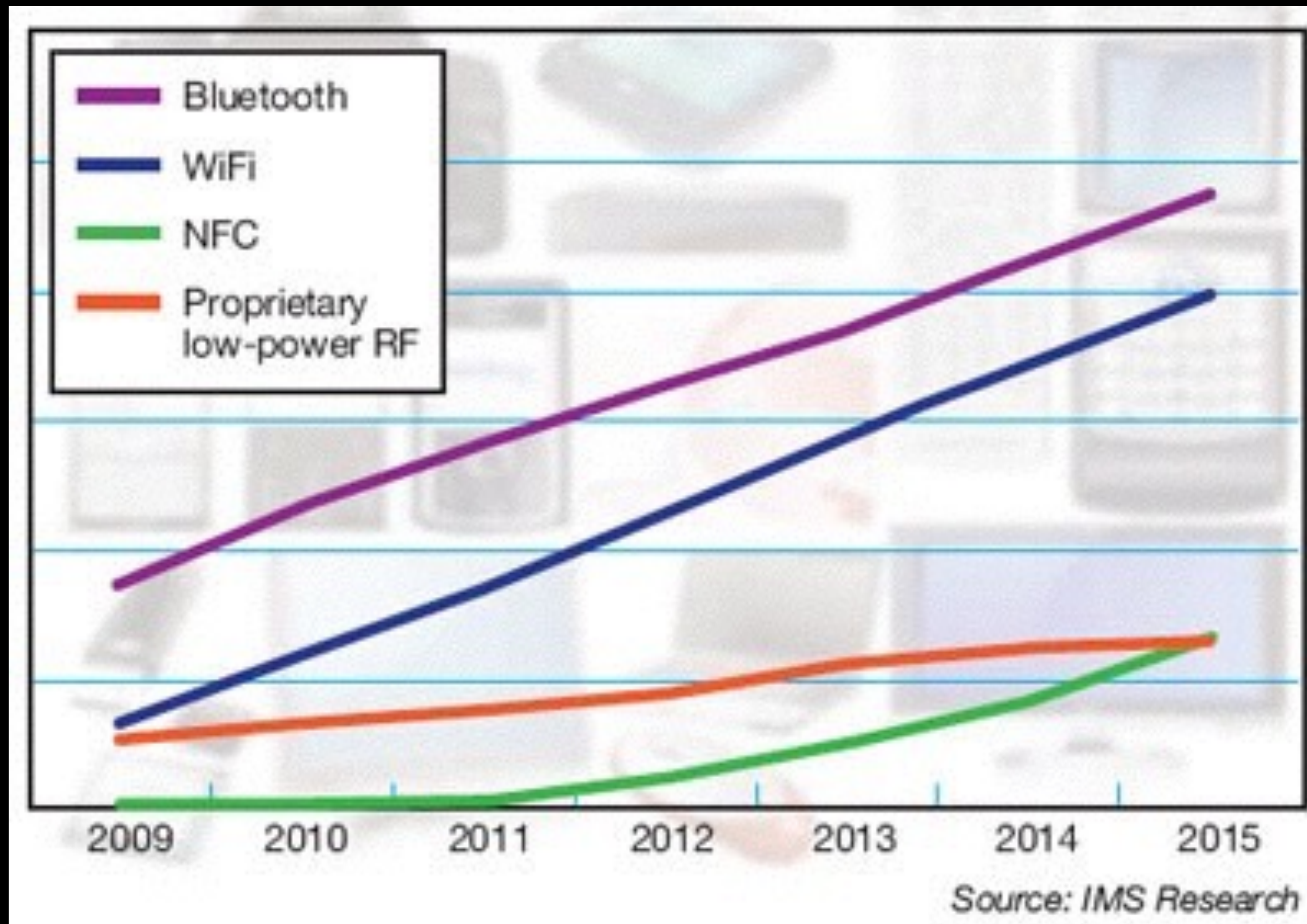
Phone Books / Play Lists / Album Artwork

Beacons / Context Awareness

Body Sensors



Competitive Landscape



Future Use Cases



Future Use Cases



Future Use Cases



Future Use Cases

Future Use Cases



Future Use Cases



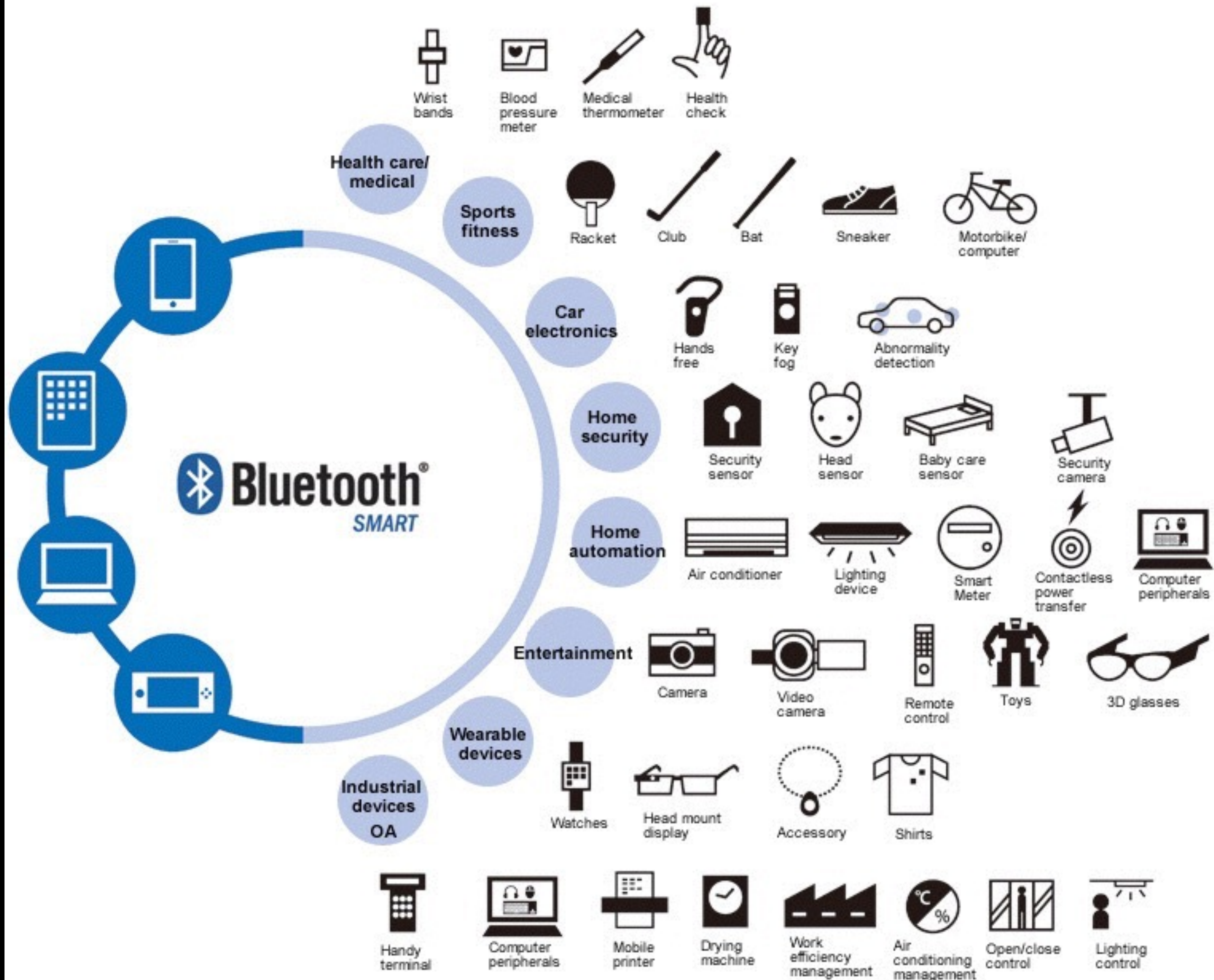
Future Use Cases

Future Use Cases



PowerUp 3.0

 **Bluetooth**
SMART



Conclusions

Bluetooth will move into more and more things
commoditisation is inevitable, and good
and it will move into more and more things

Buildings can become resilient using sensor mesh networking

Questions?