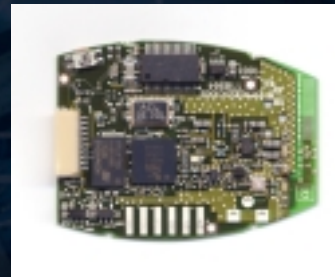
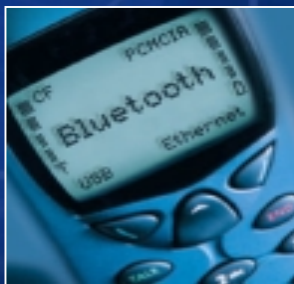


## 'Simple Cable Replacement In Practice'

Eamonn Walsh  
Managing Director  
Brainboxes Ltd  
Liverpool, UK  
Stand 416 Exhibition Hall



- Brainboxes - Who We Are.
- Bluetooth In Industrial, Scientific & Medical Markets.
- Bluetooth As A Simple Cable Replacement: -  
The Issues To Overcome.
- Bluetooth In Real Roll Outs, Right Now.
- Conclusion.

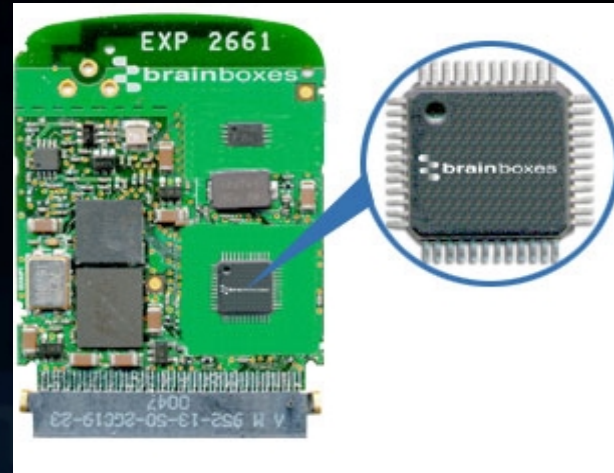


- British Company  
Liverpool, England
- ISO 9001 registered  
since 1994
- Design & Manufacture
- 40% staff in R & D
- Always been I/O card  
company providing full  
software support.
- PC Serial cards, POS cards  
and Bluetooth products





- Brainboxes own BB16CF950+ chip partnering the CSR Bluecore chip for two chip solution for CF cards.
- Glueless Compact Flash/PCMCIA interface to Bluetooth
- Lowest parts count, highest integration, highest performance and greatest reliability.
- Chips available for sale worldwide. Ideal for integrating Bluetooth in PDA & laptops



- PCMCIA cards  
BL-500 7dBm
- RS232 Adaptor  
BL-510 13dBm
- Compact Flash cards  
BL-565 14dBm
- USB Adaptor  
BL-554 3.5dBm or 14dBm
- RS232 Converter  
BL-521 18.2dBm
- Bluetooth Module  
BL-730 18.2dBm
- Power output from 3 to over 18dBm



- Data access for mobile computing device user.





- One of the few companies who have developed their own Bluetooth Software Stack
- One of only a couple who have developed both software AND hardware.



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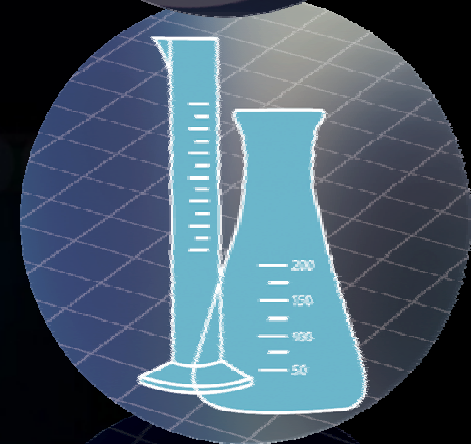
- At conferences like this, we have seen Bluetooth portrayed as giving us always on high speed internet connectivity as we walk, ride or fly.
- The reality of today is that the basic Bluetooth technology works but it takes effort & knowledge to make it work well.
- Bluetooth is not yet ready for the low cost consumer market, where technical support is on an individual case basis and is expensive.

- ISM band -Industrial, Scientific and Medical users are different to mass market consumers.
- ISM users are technically savvy people who are used to working complicated equipment.
- They need Bluetooth's wireless capability.
- One time technical support results in many sales
- ISM users can & will pay a price that reflects perceived value



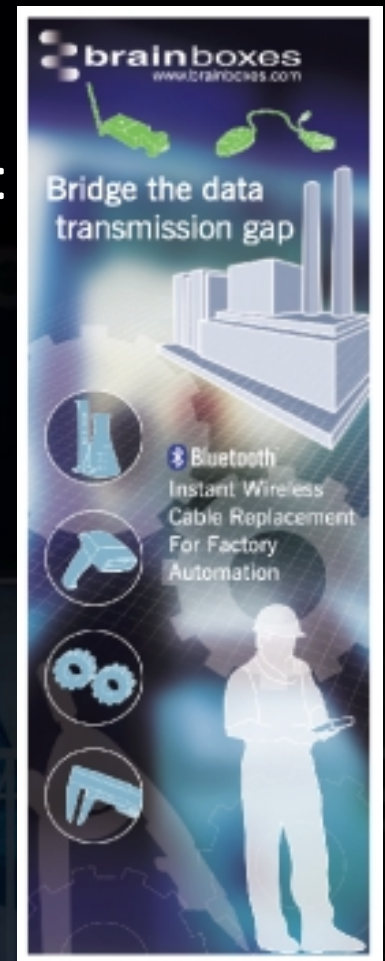
# Industrial applications.

- Many quantities in the ISM field are already measured using devices that provide an RS232 serial output.
- The connection and the data rate are an ideal match for Bluetooth making Bluetooth an instant cable replacement solution.

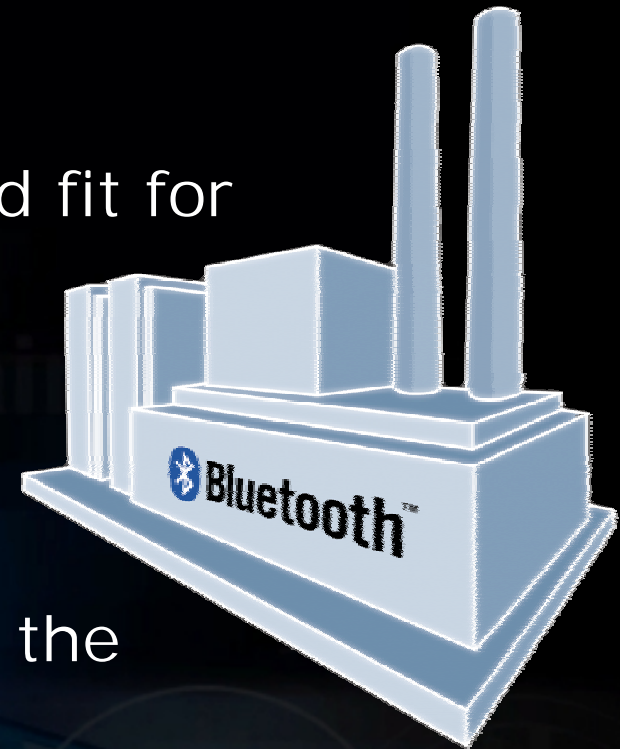




- The Simple Cable we are replacing is usually the RS232 Serial Cable- some times RS422/485 cables.
- ISM users usually need a simple instant serial cable replacement.
- RS232 cables are everywhere in industry:
  - Point of Sale Applications
  - Credit Card reading
  - Till Receipt Printing
  - Bar code reading
  - Medical Monitoring
  - Data Collection
  - Process Monitoring
  - Process Control



- Bluetooth is a ideal for ISM users because: -
- They have technical know how.
- The things they measure are a good fit for Bluetooth data rate, etc.
- They usually buy in volume.
- They have problems where radio is the solution.
- They will spend money to solve their problems

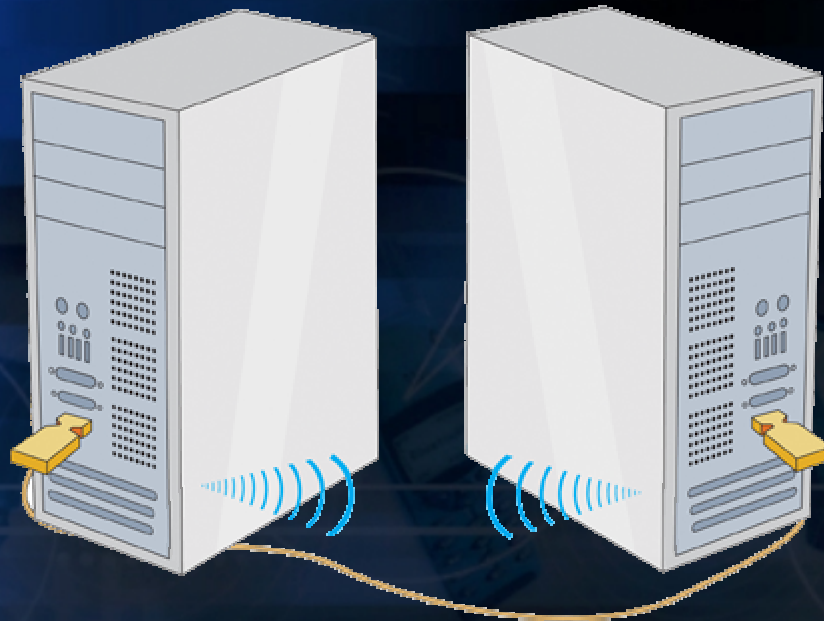


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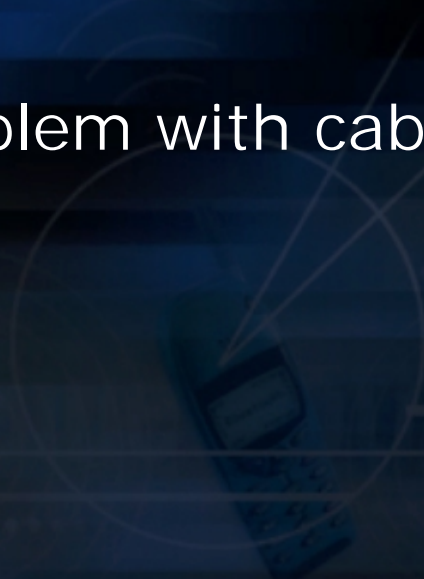




- Instant Serial Cable Replacement.
- Ideally a pair of two preconfigured Bluetooth devices running the Serial Port Profile can just be used to replace a length of cable.
- However things are not as easy as they seem.



- Communications parameters become an issue
- Unless the Bluetooth device can auto baud, that is automatically detect and match baud rate, parity and stop bits then not only do you need some configuration utility but if the communications parameters change whilst application is running then disaster strikes.
- This is not a problem with cables.



- Power Issues: -
- Bluetooth devices need power.
- Either be mains power or battery power.
- Is there a power outlet convenient for each Bluetooth device?
- If not then battery power may be the only option.
- Typically cables do not need power to work.



- Battery Issues: -
- Battery life- power down when not connected to save battery power.
- Battery life- quick auto connect on power up.
- Battery life- a slow trickle charge is preferable having to manually replace dead battery.
- Battery: When the battery is dead what happens to Bluetooth settings?
- Typically a cable does not require battery power

- If the devices are not preconfigured to “just work” with each other then other issues arise that do not occur with cables: -
- Need: -
  - to be able to make device discoverable
  - to be able to search for other devices
  - a pairing mechanism
  - to be able to set security features
- All these issues mean we need a USER INTERFACE to configure devices.
- Typically a cable does not need a user interface

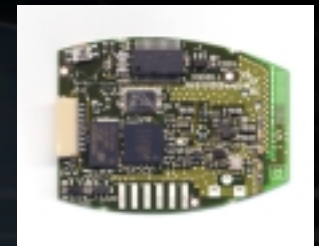
- If there are several Bluetooth bar code scanners how do you know which one you have found and have paired with?
- Need visual or audio indication on devices when connection made.
- Led to indicate when device is "Paired"
- Led indicates when device is "Connected"
- Or paired device beeps when connection made.
- Need a User interface to show device status
- Typically a cable does not need this



- These are just some of the issues of replacing a cable.
- Plus there are all the technical issues of designing in a Bluetooth radio.  
Far too difficult unless you are an RF expert.
- The resources to develop the Bluetooth software
- High accreditation fees of Bluetooth approvals.  
Far too expensive unless your volumes are huge.
- The issues seem formidably high.

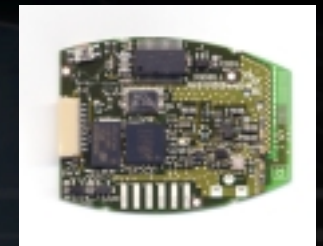
- Fortunately help is at hand
- Brainboxes have tackled and resolved all these issues.
- Allowing the wider community, who are not, and who never will be, Bluetooth experts, a turn key entrance to instant cable replacement.
- All of a sudden the considerable benefits of a Bluetooth solution, mobility, safety, convenience, ruggedness, simplicity are available in a \$200 "it just works" pack.

- Brainboxes have prepared an instant cable replacement solving all these issues.
- A pre qualified, fully functional, configurable, off the shelf solution, with visual indication of Bluetooth status.
- Totally self contained requiring no external software drivers
- We have been shipping these for last 9 months





- Brainboxes instant cable replacements are in several form factors.
- An external add on
- With a cable when antenna placement is an issue.
- A small module designed for embedding Bluetooth inside devices.
- All are self contained requiring no external software drivers



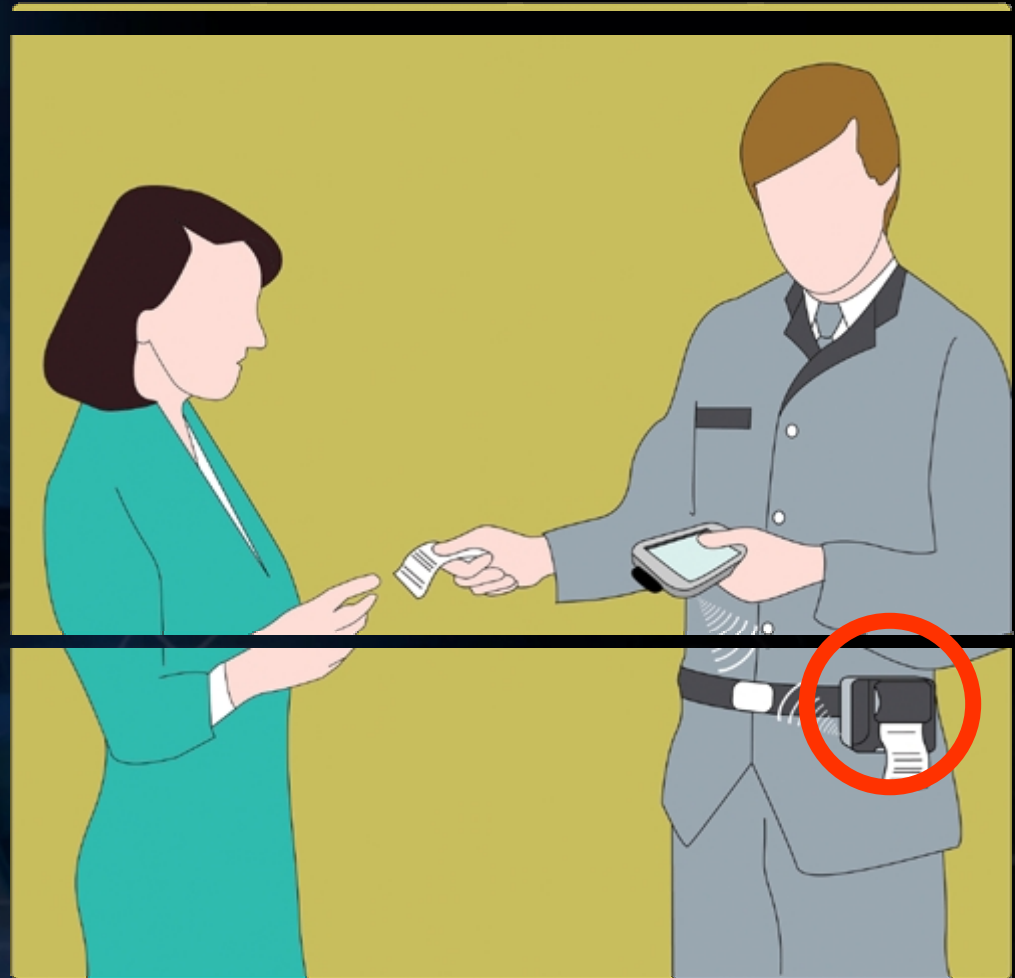
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- Cable Replacement between PDA and belt worn receipt or ticket printer.
- This printer is on demonstration on our Stand #416 elsewhere in this hall.

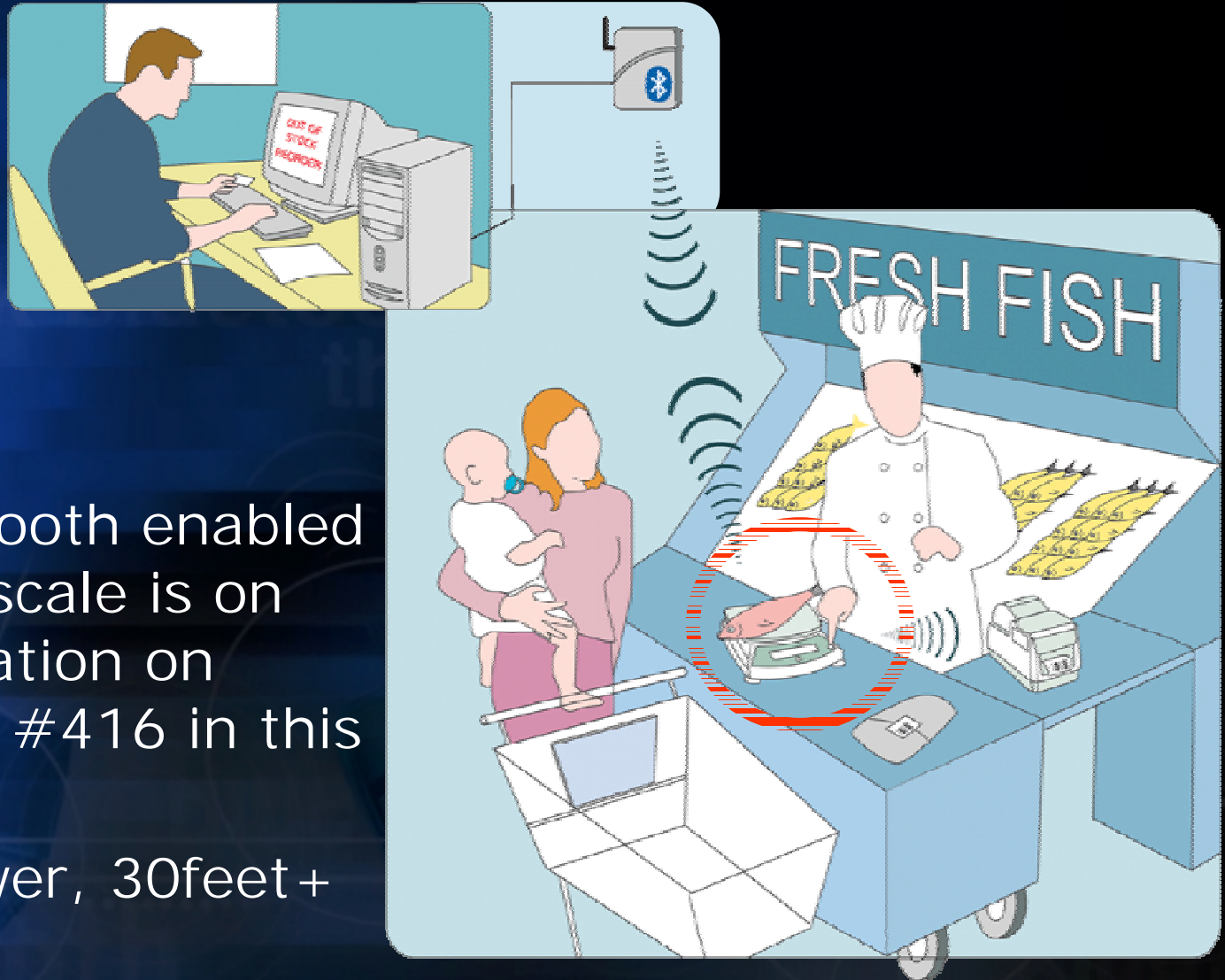


- Battery powered  
5 feet range





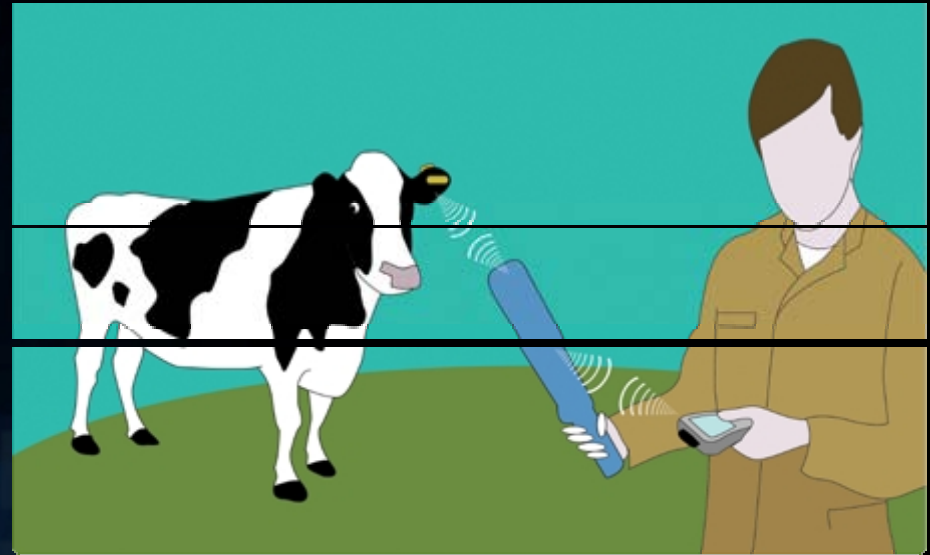
- Cable replacement between weighing scale, label printer and back office stock control.



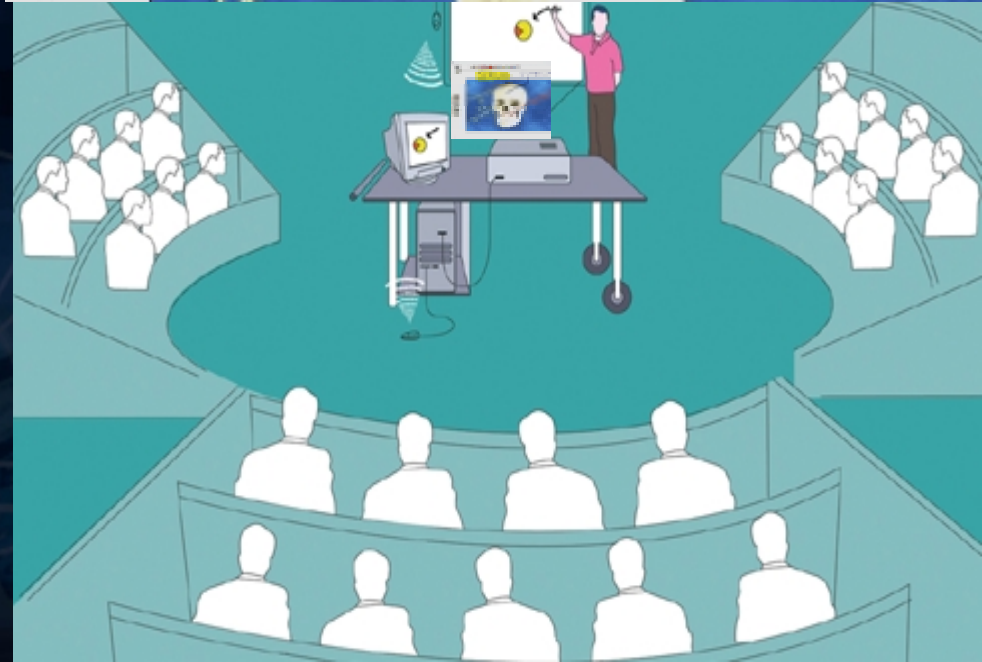
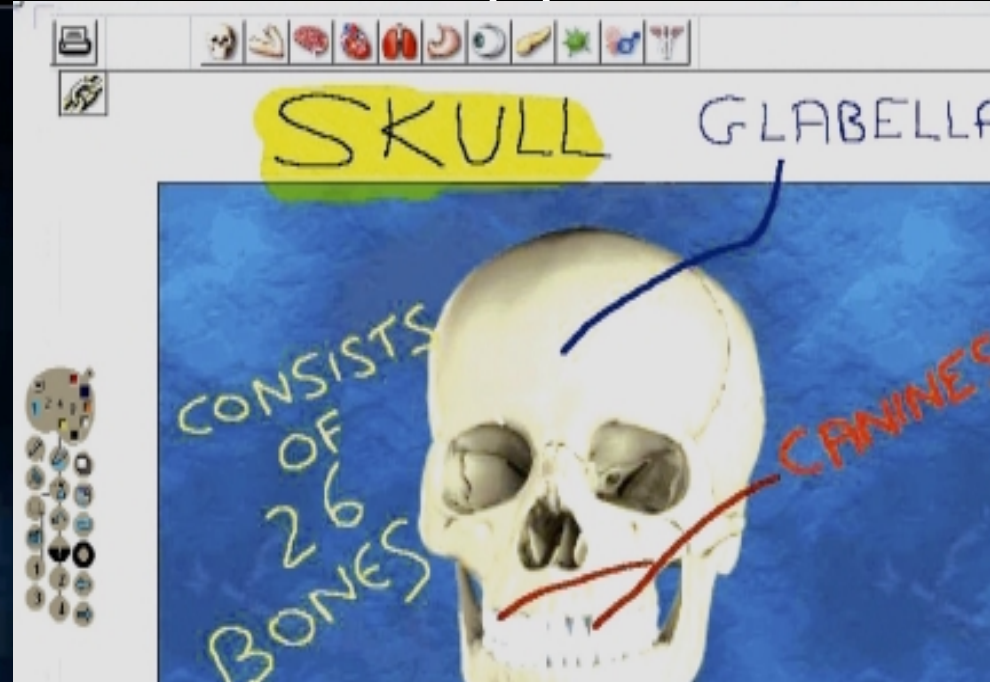
- This Bluetooth enabled weighing scale is on demonstration on our Stand #416 in this hall.
- Mains power, 30feet+

# Farming applications.

- Bluetooth enabled cattle tracking system.
- The cows ear tag- read via RFID to the hand held wand.
- Bluetooth Module in the wand transfer data to PDA.
- GPRS or WiFi back to the central database for real time update.
- Uses standard Makita battery pack, range 150 feet

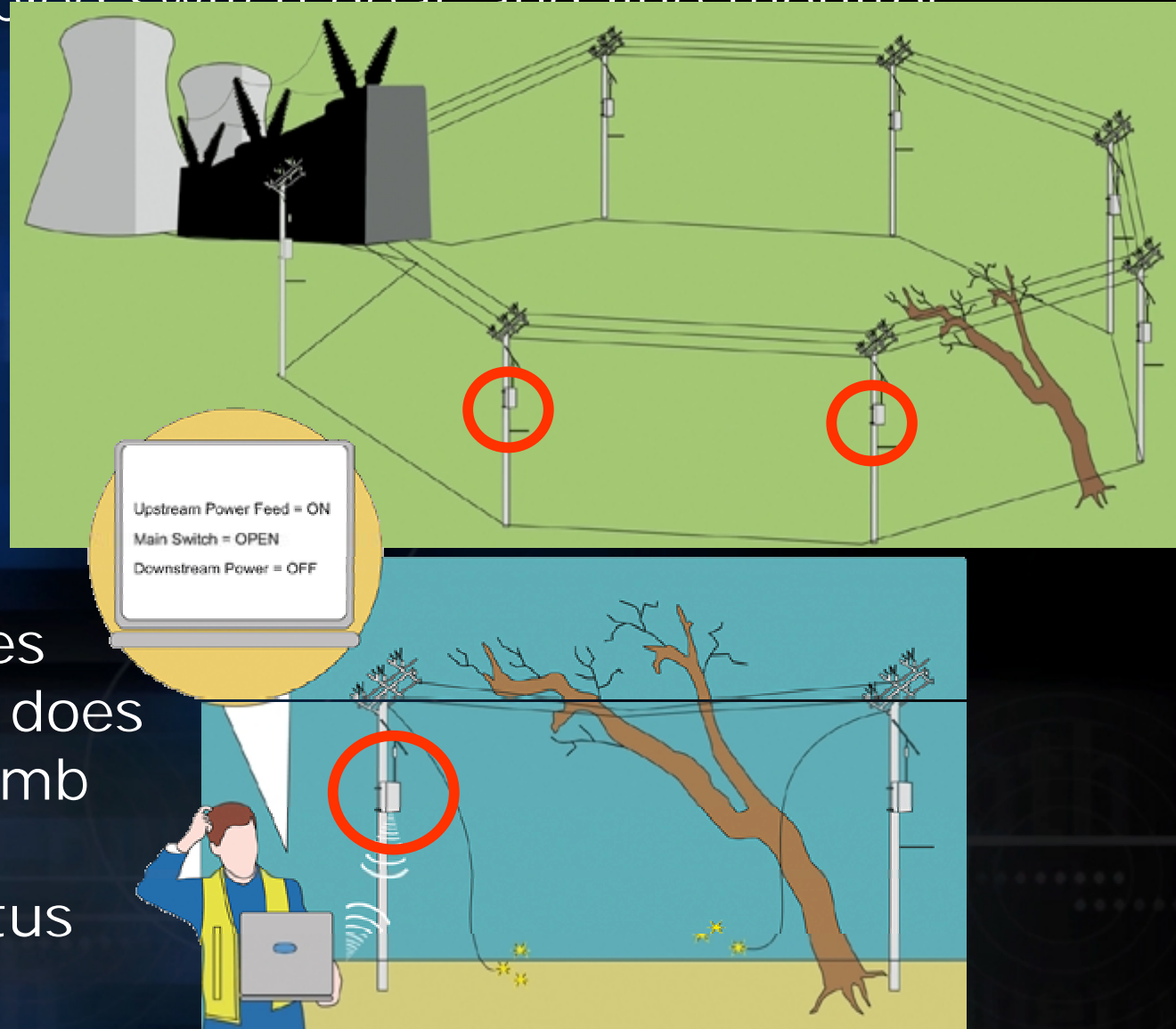


- The interactive white board. A slide projector and white board all in one.
- Speaker annotates slides. Shared in real time with delegates.
- Now using the Bluetooth enabled white board in schools across the UK.
- Mains power, 150feet+



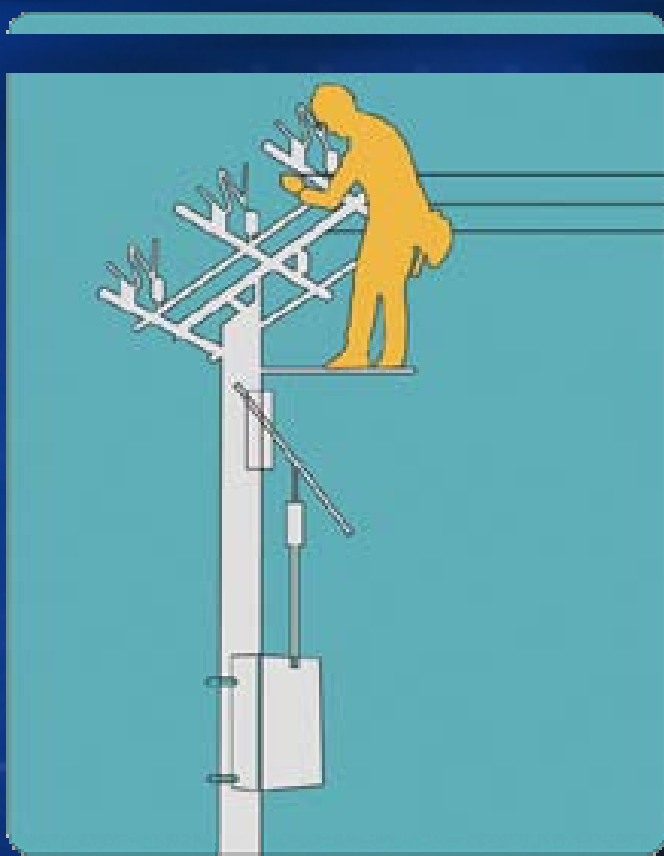


- Power distribution network
- Bluetooth enabled switch gear and line monitor
- Local control and repair of downed lines no matter what the weather condition.
- Helps save lives the technician does not have to climb the pole to determine status



# Industrial applications.

- Power Isolators are rolling this solution out in Ireland
- Mains Powered, Range 50 Metres+ Class 1



- Much fitness equipment only generates power when the user is exercising
- Treat every implementation as an exploration
- Do a proof of concept
- Do a pilot Stage
- Give the pilot system time
  - to learn all the lessons-
  - build your own expertise
  - Build customers confidence in the solution steadily, surely.

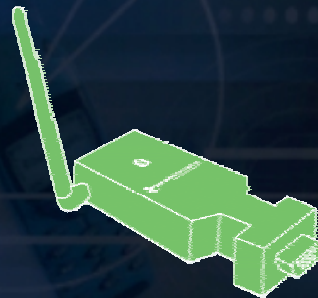




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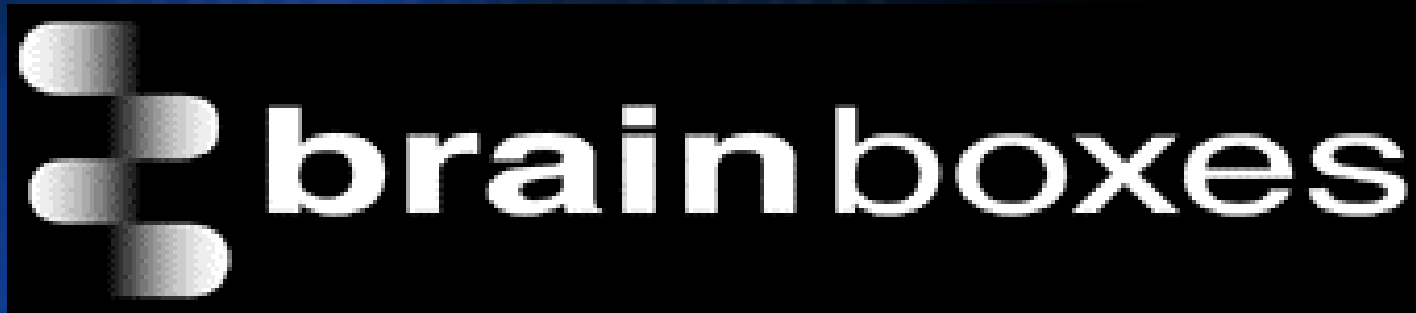
- Huge interest for Bluetooth in Industrial, Scientific and Medical Markets.
- Starting to see the first applications move from trials to roll out.
- Most of this business is using Bluetooth as an instant cable replacement.



- For a compelling solution lots of issues must be solved. Issues of User interface, visual prompts, power consumption, data integrity not to mention expensive and time consuming Bluetooth qualification.
- Brainboxes have solved all these issues with a range of pre qualified, low cost, simple to use, software free Bluetooth products.
- We have solutions and advice for virtually every type of cable replacement application.







## Start in the Future

- Contact: [eamonn.walsh@brainboxes.com](mailto:eamonn.walsh@brainboxes.com)