

Tomorrow's Wireless World

Technical Research Programme 2007-08

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Overview

- Technology research at Ofcom: why and how
- Review of research programme 2007-08
- Current research activities

Technology research at Ofcom

- Why do research?
 - Policy-making requires good information
 - Ofcom is a highly strategic organisation
 - Technology underpins much of our remit
- How do we do research?
 - Open invitations to bid for contracts
 - Projects performed by consultancies, companies and universities
- What are the outputs?
 - Reports
 - Software tools & simulators
 - Hardware

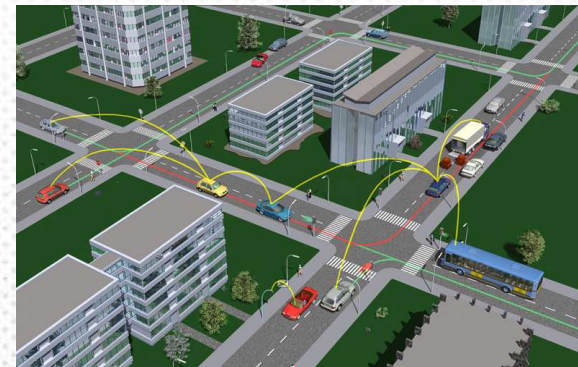
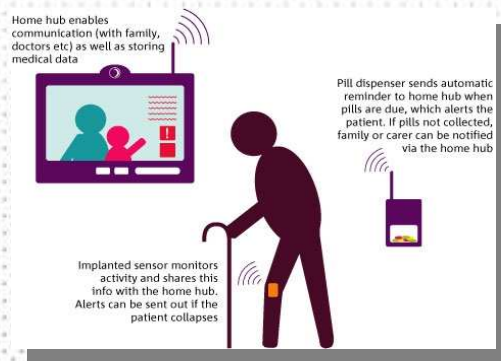


Overview

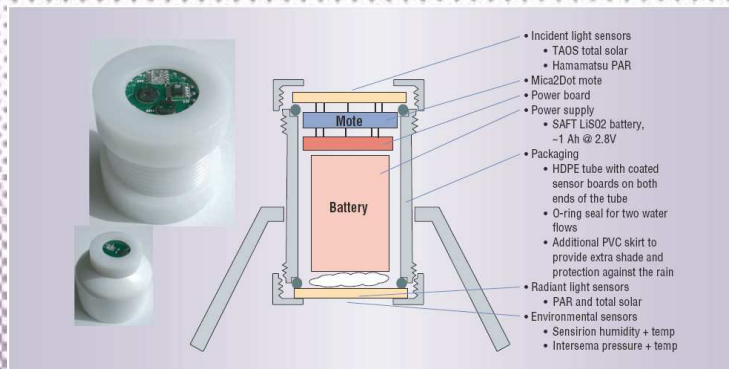
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Research across three key areas

Sectoral studies



Emerging technologies



More efficient use of spectrum

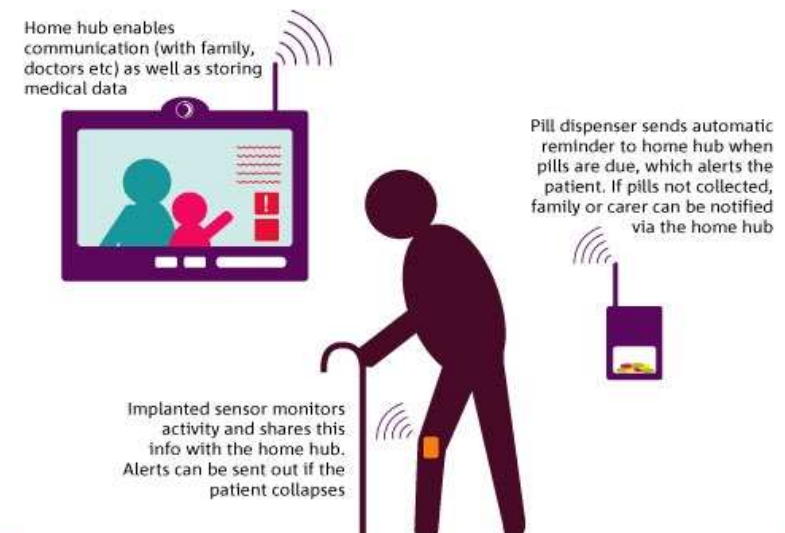


Key findings

- Research looks 10 to 20 years into the future
- Technology continues to develop rapidly, but...
- Breakthroughs are rare
- Society can benefit from targeted application of technologies
- Ongoing fine-tuning of our regulatory and spectrum allocation policies

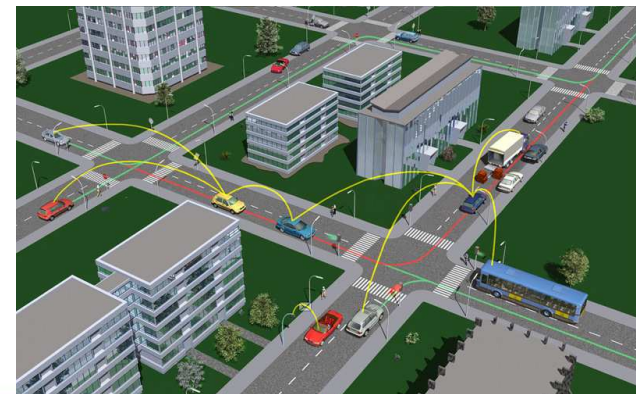
Health sector study

- Use of Body Area Networks to interconnect implanted medical devices
 - Safety critical
 - Existing spectrum allocation
 - Band may require monitoring or review
- Use of Local Area Networks to interconnect medical equipment
 - Mixture of safety critical and non-safety critical
 - Currently no non-safety critical allocations
- Social and emergency alarms
 - Already use dedicated spectrum
 - Potential for future congestion?



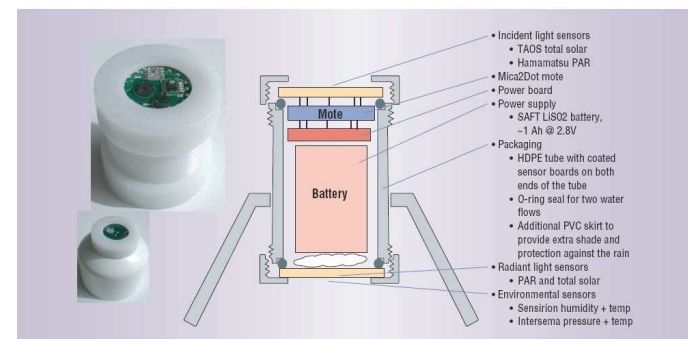
Transport sector study

- RFID for asset tracking and ticketing
 - Spectrum is currently allocated
 - Monitor future utilisation
- Use of licence exempt spectrum
 - Increase in services using WiFi or Real-Time Location Services
 - Monitor future utilisation
- Intelligent road transportation systems
 - Mixture of safety critical and non-safety critical systems
 - Existing allocation across EU
 - Requirement for harmonisation and future monitoring



Wireless sensor networks study

- Considerable amount of research ongoing
- Fundamental technology to underpin health and transport sectors
- Technology is maturing
- Increasing interest in applications, rather than just on technology...
- ...which should lead to identification of clear citizen/consumer benefits
- Existing spectrum allocation, unlikely to require more in medium term



Wireless TV camera study

- Wireless cameras used for news gathering and outside broadcast
- Currently use spectrum around 2.3GHz...
- ...valuable spectrum, which could be used for mobile services
- Operation around 7.5GHz band is
 - Technically feasible
 - Offers similar performance, and
 - Equipment is becoming available



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The 08/09 programme (1)

- **Entertainment sectorial study**
 - Develop sector-wide scenarios for the coming 10 and 20 years
 - Highlight key technology developments, issues and implications
 - Identify and quantify impacts on communications systems
- **Vehicular measurement of spectrum occupancy**
 - Develop the hardware to perform measurements
 - Develop the software to collate and analyse measurement data
 - Deploy a number of nodes and take measurements
 - Develop business case
- **Assessing environmental impact**
 - Understand the footprint of a range of wired and wireless systems
 - Estimate savings in travel

The 08/09 programme (2)

- **Estimating the value of spectrum**
 - Understand variables that contribute to value of spectrum
 - Develop a model to estimate cost for as wide a range of spectrum possible
 - Demonstrate how the model can cope over time
- **Utilisation of licence-exempt bands**
 - Develop measurement methodology
 - Build required measurement devices
 - Perform programme of measurements
- **Achievement of high QoS over the Internet**
 - Determine the technical and economic conditions and timescale required for high quality video delivered over the Internet
 - Investigate economic arrangements for peering traffic over multiple backbones

The 08/09 programme (3)

- **Predicting areas of spectrum shortage**
 - Develop scenarios covering growth in spectrum demand and supply
 - Include economic analysis of drivers for network investment
 - Develop a model to predict “spectrum crunches”
- **Propagation**
 - Continue efforts towards a “unified” propagation model accepted by international standards bodies

Summary

- Technology R&D is a vital part of Ofcom's activities
- Programme of both technical and sector-based research
- Outcomes are freely available