

# Development of Smart Antenna Technology

## Summary

2004 Spectrum Efficiency Scheme  
Ofcom contract no. 410000267

Demonstrator Day  
7<sup>th</sup> December 2005

# Project Objectives

- Assess and demonstrate the potential of Smart Antenna technology for enhancing spectrum efficiency
  - Determine applications where early adoption is most likely
  - Identify key issues
  - Perform cost/benefit analysis for smart antennas in candidate application
  - Demonstrate an antenna adapting to maximise S/N

- Performance improvements are available from the use of adaptive antennas
  - Simulation within a BFWA network indicates that an adaptive antenna provides significant benefit
    - 50% reduction in number of sites or spectrum required
    - 33% reduction in network cost
    - 25% reduction in business cost
  - A simple, demonstration implementation of a WLAN smart antenna has been shown to provide performance advantage in near line-of-sight environments, with multipath, and in the presence of interference
    - 10dB improvement in  $S/(N+I)$  typically indicated

- Present day technology can provide the required capability; novel technologies can enhance further
- Impediments to adoption are more commercial than technological
  - Need to convince service providers and manufacturers
  - Take up the challenge of packaging at an acceptable cost