

Development of Smart Antenna Technology

2004 Spectrum Efficiency Scheme
Ofcom contract no. 410000267

Demonstrator Day
7th December 2005

Definition

Rationale

Project objectives

Activities

Work programme

Project team

Smart antenna definition

- An antenna system that can adapt to its environment to optimize a given metric
 - Broad definition
 - Many approaches and solutions
- Have concentrated on a sub-set of approaches that use adaptive beam forming
 - Flexible implementation
 - Low system impact
- MIMO techniques are not considered explicitly
 - Extensive body of work exists
 - Already entered the marketplace

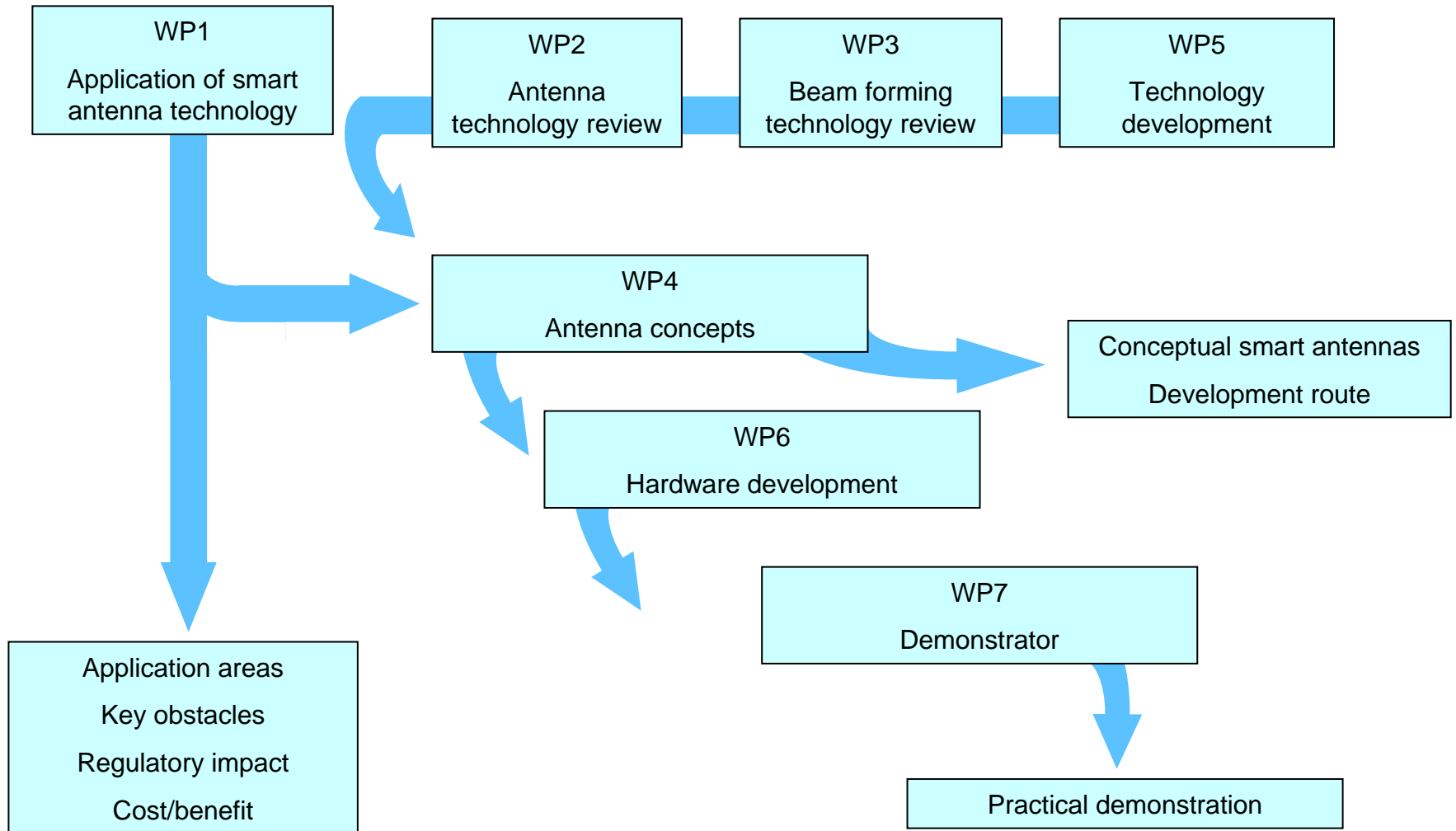
- Smart antennas are identified as a technique that can provide the required capacity increase in developing wireless systems
 - But implementation is far from widespread
- This project sets out to investigate
 - For which applications they would be most suited
 - System/spectrum benefits
 - Cost/benefit

Project Objectives

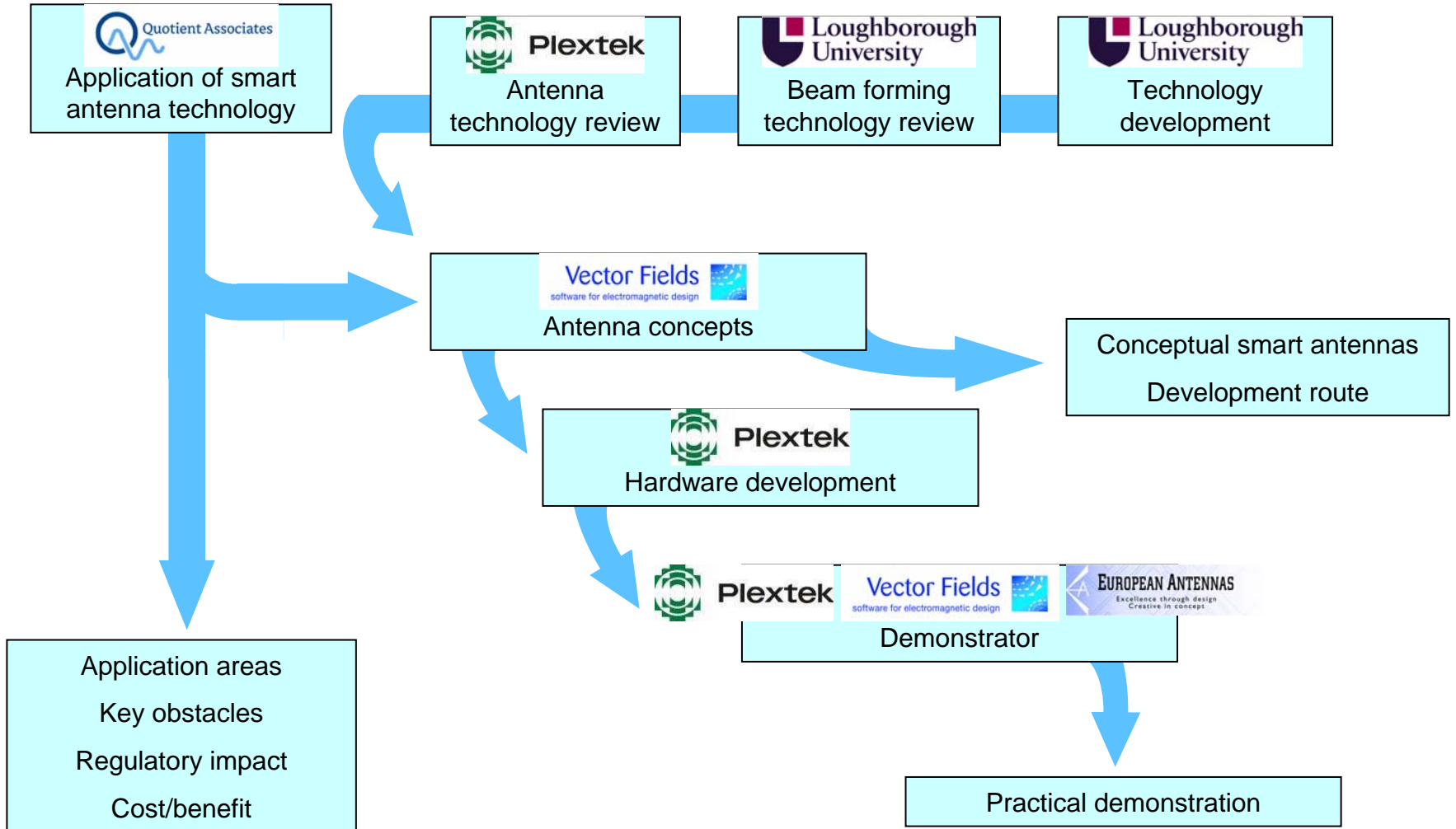
- Assess and demonstrate the potential of Smart Antenna technology for enhancing spectrum efficiency
 - Determine applications where early adoption is most likely
 - Identify key issues
 - Perform cost/benefit analysis for smart antennas in candidate application
 - Demonstrate an antenna adapting to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

- Applications review and candidate selection
- Technology review
 - Antennas
 - Beamforming
- Technology development
- Performance benefits analysis
 - By simulation
 - By hardware demonstration

Work programme



Work programme



Participant

- Plextek Limited
- Quotient Associates
- Loughborough University
- European Antennas
- Vector Fields Ltd

Main involvement

Demonstrator

Applications and simulation

Technology development

Antenna hardware

Antenna concepts/project management

Programme

10:30	Introduction	Ofcom
10:40	Programme overview	Vector Fields
10:55	Application of smart antennas to wireless systems	Quotient
11:25	Smart antenna options	Vector Fields
11:45	Technology development	Loughborough
12:15	Demonstrator system	Plextek
13:15	Lunch	
14:00	Lab tour	Plextek
14:30	Programme conclusions	Vector Fields