A pilot of the UK framework for access to TV white spaces

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Outline

• Section 1 – Introduction
• Section 2 – Scope of pilot
• Section 3 – Participation
• Section 4 – Questions
• Section 5 – Next steps
Introduction

• This afternoon we present more details of our proposals for a pilot of the UK framework for access to TV white spaces

• We are seeking feedback from stakeholders regarding our proposals for a pilot today and subsequently by email
What are we proposing?

• A pilot for access to TV white spaces, target start date in Q4 2013

• The pilot will test devices, databases and Ofcom’s overall processes in a number of different scenarios and locations

• We invite stakeholders to let us know if there are things that they would like the pilot to cover so we can consider if these can be incorporated
Aims and objectives

• Demonstration of a proof of concept of the proposed framework

• We plan to test:
  – Device operations;
  – Database contract qualification;
  – Database operation and calculations;
  – Ofcom provision of qualifying database listing;
  – Ofcom’s DTT calculation results and provision of PMSE data; and
  – Interference management

• Also test our proposals for co-existence to gather further evidence to inform our decisions

• Question: What are your views on the proposed aims and objectives of the pilot?
Background – Timeline

Planning of the pilot, working closely with industry, to ensure the pilot meets its aims and objectives

Running of the pilot, testing systems and processes

Review of results and lessons learned from the pilot

Preparation for Pilot (Q2 and Q3 2013)  Pilot (Q4 2013)  Pilot Review (Q1 2014)
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The pilot framework

- **List of qualifying WSDBs**
- **TVWS availability maps for protection of DTT**
- **Details of PMSE assignments**

**Slave device** (licensed)

**Master device** (licensed)

TV band

**White space database**

Subject to Ofcom contractual arrangements
Devices – Use cases

• Previous consultations have mentioned the following use cases:
  • Hot-spot coverage
  • In-home broadband
  • In-home multi-media distribution
  • Machine-to-machine communication
  • Rural broadband

• Question: We would like to test as full a range of device types and use cases as possible. What are the device types or use cases which you would like to test in the pilot?
Devices – Operational requirements

• Stable draft ETSI European harmonised standard expected to be available in June

• We will establish the device technical requirements based on this draft of the ETSI standard, which will include:
  • RF characteristics;
  • Data exchange with databases; and
  • Database discovery

• We expect to share these requirements in June

• Note: Devices will be licensed for the pilot. They will be licence exempt when we transition into the full solution
Devices – Operational requirements

- **List of qualifying WSDBs**
- **0) Database discovery**
- **1) Device parameters**
- **2) Operational parameters**
- **3) Channel usage parameters**
- **White space database**
- **Internet**
- **Master WSD**
- **Slave WSD**
- **TV band**
Databases – Overview

• One or more databases can operate in the pilot

• Arrangements between Ofcom and database providers will be set out in a pilot contract

• We intend to publish a heads of terms document and discuss this within a working group

• Qualifying databases will be listed by Ofcom on a web-page for discovery by devices
Databases – Calculations

• Ofcom will calculate TV white space availability for the protection of DTT and will make this information available to the databases. These will only be updated when necessary.

• Ofcom will make PMSE usage data available to databases. These will be updated via email every three hours.

• Databases will then:
  a) calculate TVWS availability for the protection of PMSE; and
  b) combine with information from Ofcom to calculate TVWS availability for the protection of both DTT and PMSE.

all as specified by Ofcom.
Databases – Calculations

- Master WSD
- Location-specific WSD powers per DTT channel

UK-wide TVWS availability accounting for DTT protection (WSD powers per DTT channel per location)

Data on UK-wide PMSE assignments (venue locations, frequencies, etc.)

Calculate TVWS availability accounting for PMSE protection

White space database

Combine
Databases – Interactions with devices

• Databases will receive parameters (e.g. location) from devices, and will in return provide location-specific information on maximum permitted device powers in each DTT channel.

• Databases will be able to rapidly reduce the powers of individual devices, or groups of devices.

• The above will be as specified by the ETSI harmonised standard (on the device side) as well as Ofcom database specifications for the pilot.
Databases – Interactions with devices

- Database
- Master WSD
- Slave WSD

- Master DPs
- Master SOPs
- Master CUPs
- Slave GOPs
- Slave DPs
- Slave SOPs
- Slave CUPs

DP: device parameter
SOP: specific operational parameter
GOP: generic operational parameter
CUP: channel usage parameter
Databases – Contract

Pilot contract will cover:

• The qualification process for becoming a database provider
• What the database provider receives from Ofcom:
  – Website listing as a qualifying database; and
  – Data for (and specifications of) calculations
• Managing operation of databases during the pilot:
  – Technical requirements, test scenarios, reporting
• Requirements for managing interference during the pilot
• Term and exit
Pilot – Locations

• The pilot can support device deployments nationwide

• However, the pilot will operate in a limited number of locations

• Our preference is for more than one pilot location

• Based on previous trials, Cambridge is one candidate location

• Question: What locations do you think the pilot should operate in?
Pilot – Interference management

• Pilot will enable testing of various processes, including:
  • Switch off of individual devices (or groups of devices in certain locations);
  • Adjustment of device power levels up or down;
  • Temporary suspension and de-listing of databases; and
  • Investigation of interference by BBC, Ofcom and others
Pilot – Monitoring

- An important aspect of the pilot is for Ofcom to monitor the operation of devices and databases.
- Reports from databases to Ofcom are essential.
- Pilot participants need to be transparent about the pilot results and be willing to share information with Ofcom and other participants.
- The pilot results will be reviewed by Ofcom during and following the pilot.
Co-existence

• We will consult on the co-existence issues in the summer, and prior to the commencement of the pilot

• The consultation will present our proposed criteria for appropriate protection of existing users of spectrum

• The pilot will allow us to test some of our assumptions and will inform our decisions on co-existence
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Pilot – Participation

• For those participating in the pilot, Ofcom would seek:
  • Commitment to the entirety of the pilot;
  • Involvement in some or all of our scenario testing; and
  • Sharing of information with Ofcom and other participants

• Participants in the pilot will be able to experience a deployment closer to the full framework than in previous trials
Pilot – Participating as a device supplier

- Opportunities of participating as a device supplier:
  - Ability to test quality of service for different use cases;
  - Ability to deploy devices / services in a number of locations in the UK;
  - Ability to test database discovery functionality; and
  - Ability to test interoperability with databases
Pilot – Participating as a database provider

• Opportunities of participating as a database provider:
  • Entering into arrangements with Ofcom via a pilot contract which will be similar to a full solution contract;
  • Ability to work under operational conditions which will be similar to those in the full solution;
  • Learning about and participating in Ofcom’s interference management processes; and
  • Ability to test interoperability with devices
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Questions for Ofcom
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Next steps – Expressions of interest

• Ofcom will be seeking expressions of interest for pilot participation by Monday 13 May

• Form available at: http://stakeholders.ofcom.org.uk/spectrum/tv-white-spaces/

• Ofcom will provide further information on terms of engagement, database contract and device requirements for the pilot in the run up to the first workshops
Next steps – Working groups

• Proposal to establish a number of working groups to facilitate implementation of the pilot, covering:
  • Devices and services
  • Database contract

• Working groups will meet regularly, beginning around start of June and running through to early Autumn

• Question: What do you think is the best way to organise the working groups?
Next steps – Feedback

- If you have comments in response to our presentation, in particular the questions we have asked, we would like to hear from you by Monday 13 May

- Send comments by email to tv.whitespaces@ofcom.org.uk

- Questions
  - What are your views on the proposed aims and objectives of the pilot?
  - What are the device types or use cases which you would like to test in the pilot?
  - What locations do you think the pilot should operate in?
  - What do you think is the best way to organise the working groups?