



White Space Rural Broadband Testbed

Isle of Bute

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Project Manager, Isle of Bute White Space Trial

- Collaborative R&D project supported by the **Technology Strategy Board**
- Has successfully demonstrated the viability of using **White Space** for rural broadband connectivity
- Eight premises connected – trialists and their families speak very highly of their experiences
 - Video streaming (iPlayer, YouTube)
 - Facebook, Twitter, Videoconferencing
 - DEFRA, Internet Banking, VAT returns, ...
- Six collaborating partners:

steepest ascent



BBC
Research & Development

berg design

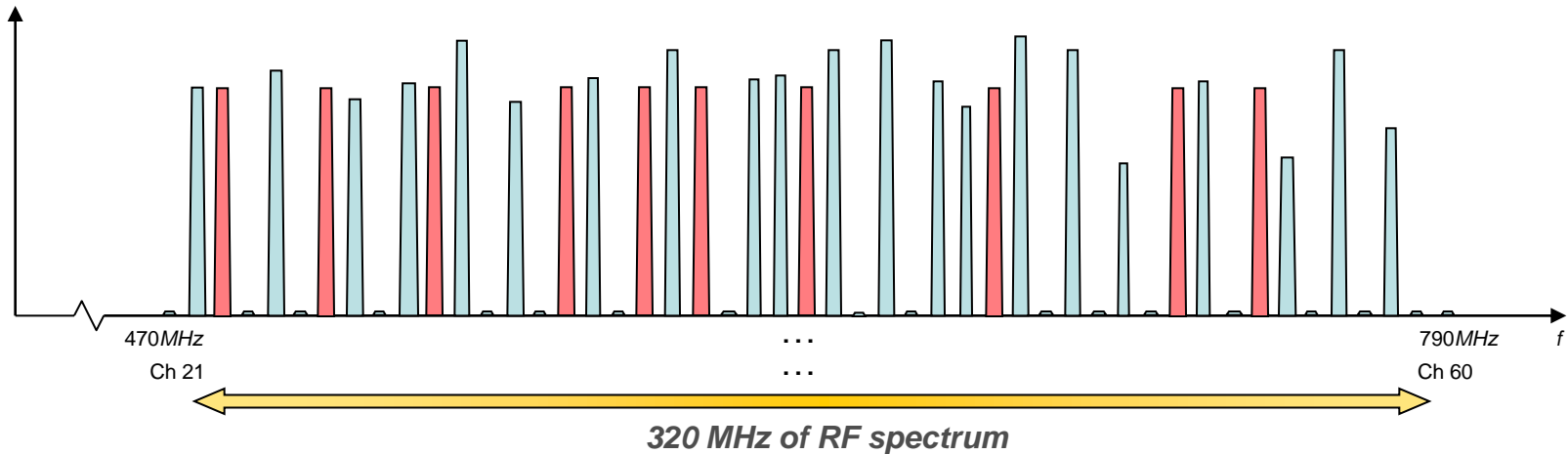
NetPropagate
Corporation

University of Strathclyde



What is 'White Space'?

TV spectrum (illustrative example):



- TV spectrum contains 'white' space
- Benefits of using this spectrum include:
 - More effective network coverage (particularly important in rural areas)
 - Good propagation characteristics (e.g. fewer 'not-spots')
- Questions:
 - How much of this can be used for other, 'secondary' purposes (e.g. Rural broadband, M2M, ...)?
 - How to ensure integrity of licensed services (e.g. TV, PMSE) whilst leaving the maximum scope for innovation?

- FCC (US) regulations now in place
 - First commercial deployments starting to emerge
- Ofcom (UK) leading the way in Europe
 - Consultations and Working Groups
 - Stakeholders' Meeting 26th April 2013
 - Regulations expected to be in place in **Q3 2014**
- Work within Europe is at an early stage
 - EC communication (3rd Sep 2012) promotes the shared use of radio spectrum
 - http://ec.europa.eu/information_society/policy/ecomm/radio_spectrum/document_storage/com/com-ssa.pdf
- Increasing worldwide interest
 - Trials in several locations around the world...





White Space gaining momentum

Coverage Area on Bute...



BT Exchange



Equipment Set-Up...

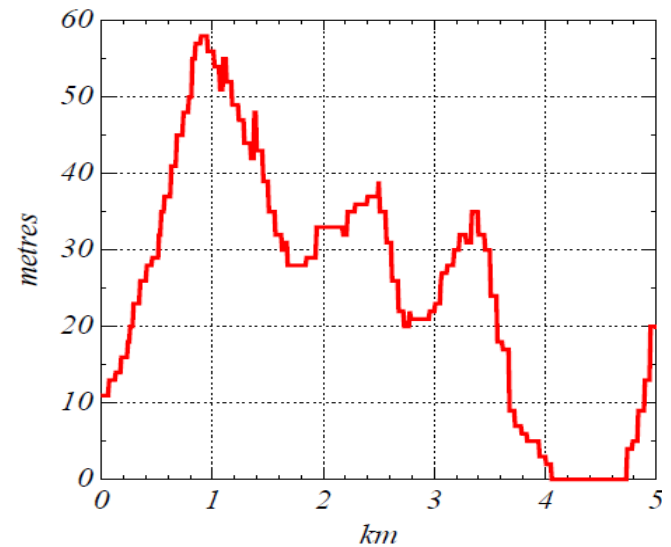
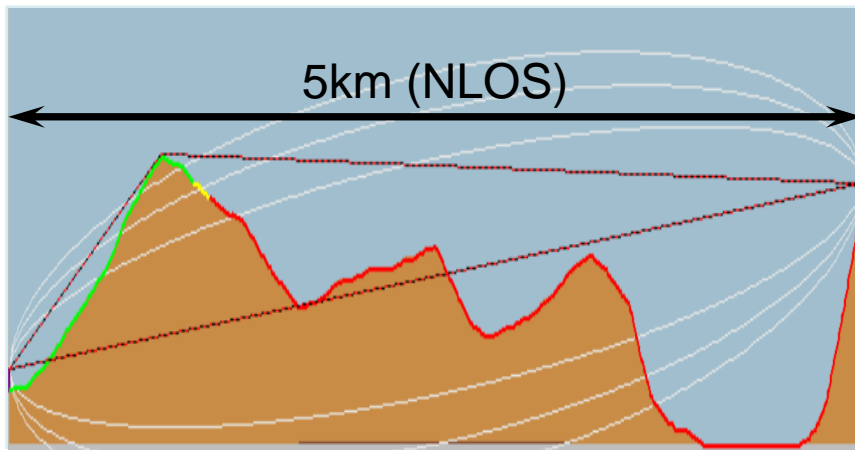
Telephone Exchange



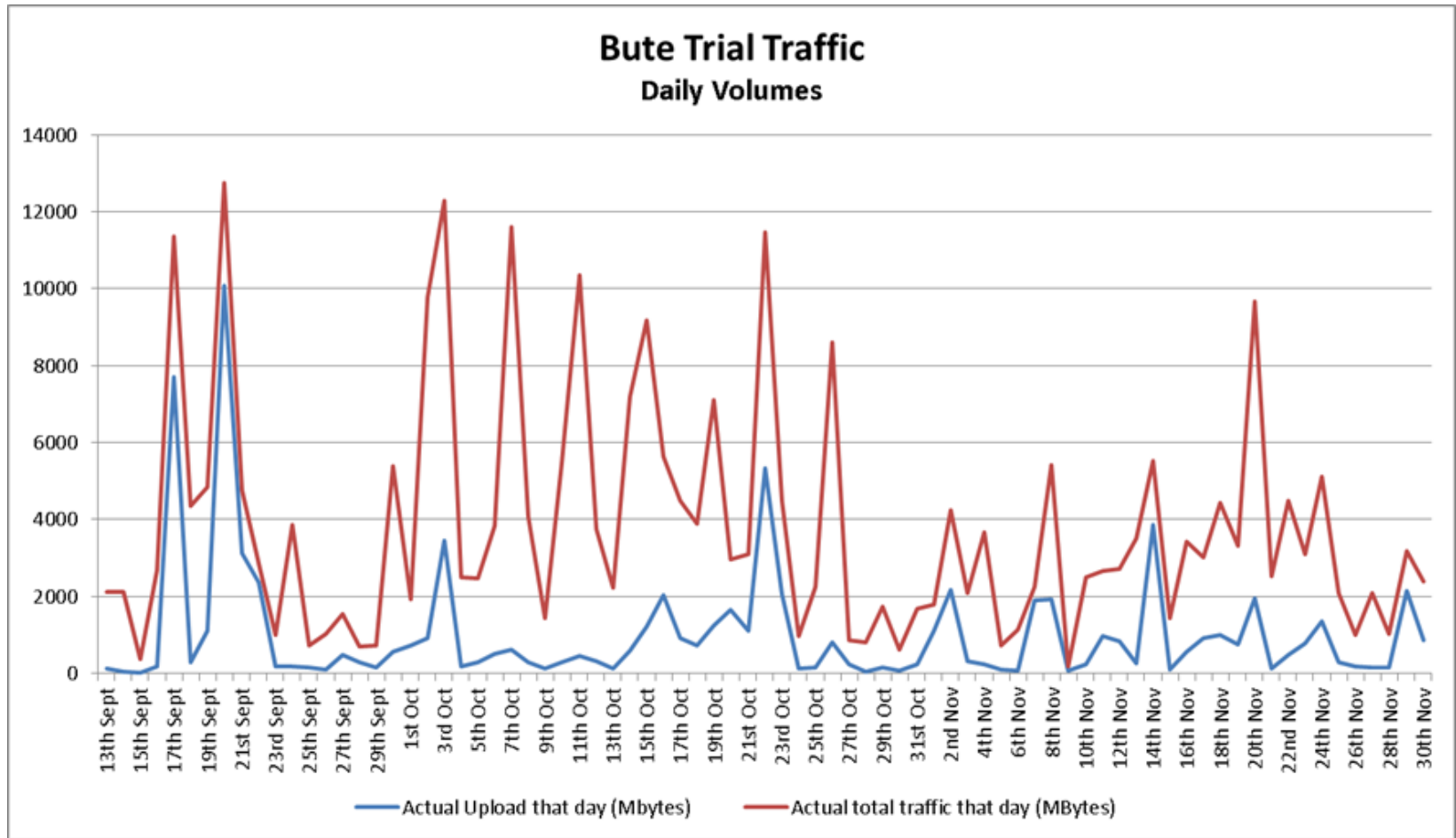
Trialists' premises



Challenging Terrain...



Usage Statistics...



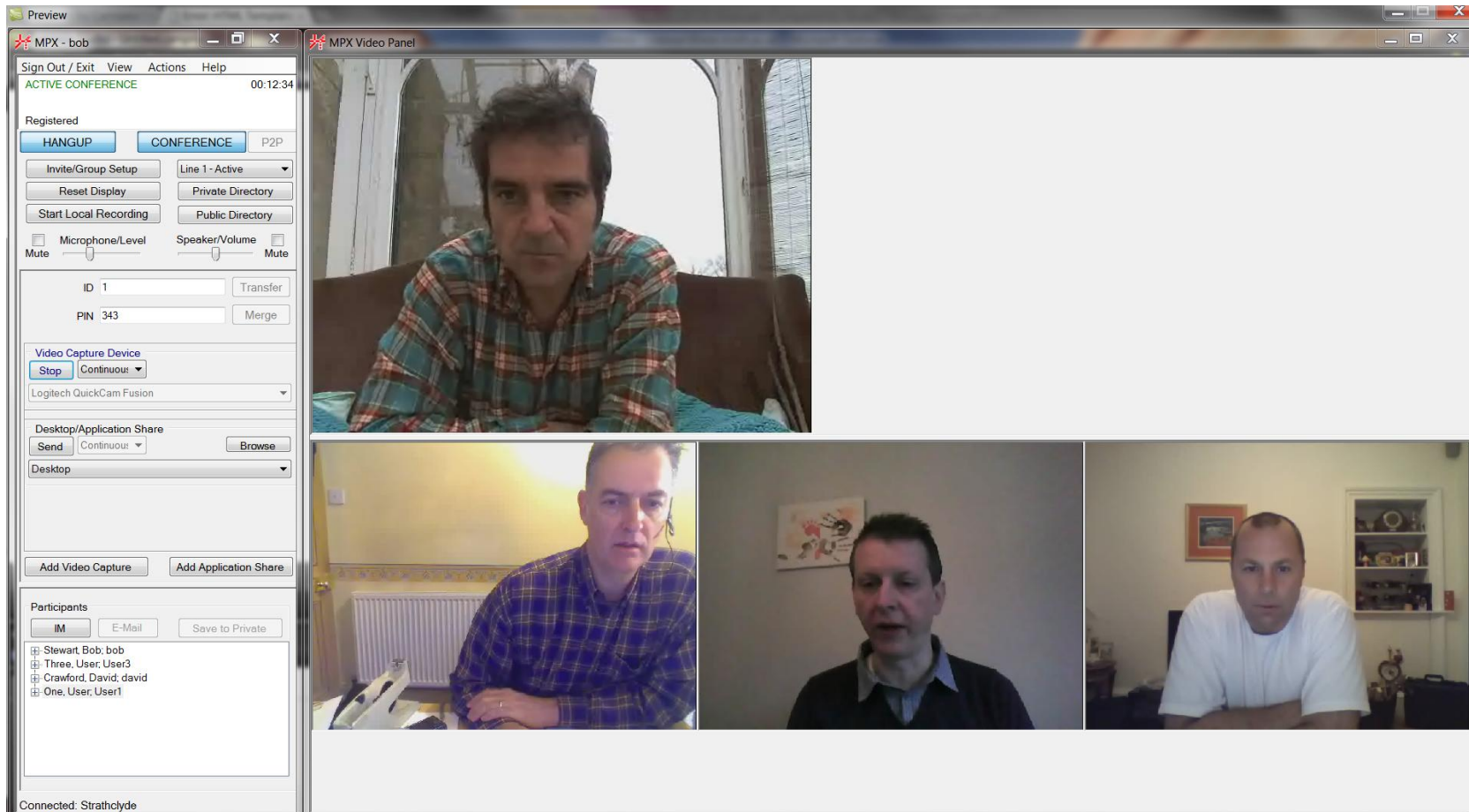
Field Measurements...

- Measure coverage and compare with simulations
- Measure White Space quality
- Measure DTT interference



Data currently being collated – results & conclusions to follow

- Interviews with trialists
- iPlayer tests
- NetPropagate on/off island high definition teleconferencing



Where Next?



Next Steps...

- Testbeds & potential pilot projects to support Ofcom's efforts
 - Diverse applications
 - Education, Healthcare, Emergency Services, M2M, ...
 - Urban settings
 - Rural settings
- R&D...
 - Co-existence (DTT-WSD, WSD-WSD, PMSE)
 - Reference geometries and models
 - Database support



A multi-disciplinary international centre engaging with industry, government and academic partners to undertake R&D on Dynamic Spectrum Access and related areas

- Led by the University of Strathclyde
- Builds on over 30 years of experience in mobile communications and signal processing
- Investigating technological and socio-economic aspects of Dynamic Spectrum Access using White Spaces





For further information, please visit:

www.wirelesswhitespace.org