

# Spectrum Policy - The Waist of the Hourglass - UK Work

Jon Crowcroft

University of Cambridge  
<http://www.cl.cam.ac.uk/~jac22>



# Future is wireless

- Last 2 years, UK work on spectrum
  - Unregulated: mesh, ad-hoc and dtn
  - Licensed: performance of IP over GPRS and UMTS
  - Several workshops w/ lots of players (including UK and EU regulators)
- Conclude
  - Performance not great in either
  - Utilisation poor
  - Need more flexibility
- Meta-Conclude
  - Need co-exist and inter-work more



# Vision for global networks of future

- Massive simplification of architecture:
  - Core of clusters connected by fiber mesh
  - All access wireless, but need multi-hop/mesh etc
- How to get there?
  - Need simple spectrum allocation
  - Need simple Inter-working protocol
- Latter is similar to Internet today
- Former (c.f. Clark's plenary talk) is harder
  - It's a complex policy rich control plane



# Meta-protocols for Spectrum sharing?

- Any lessons at all from the internet control
  - Code-point management: IANA, OK
  - Address allocation - registry hierarchy: inflexible/bad
  - Name management (DNS/ICANN): a mess
  - policy routing (BGP): opaque
- All tussle spaces, all badly mangled
- Do we have any exemplars out there?
  - Possibly in money markets
  - Possibly in roaming in GSM
- This is our key Goal:
  - find a 95% model that is **simple** and **compelling**



# Questions?

- Any?

