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@ FWTF IV 2015

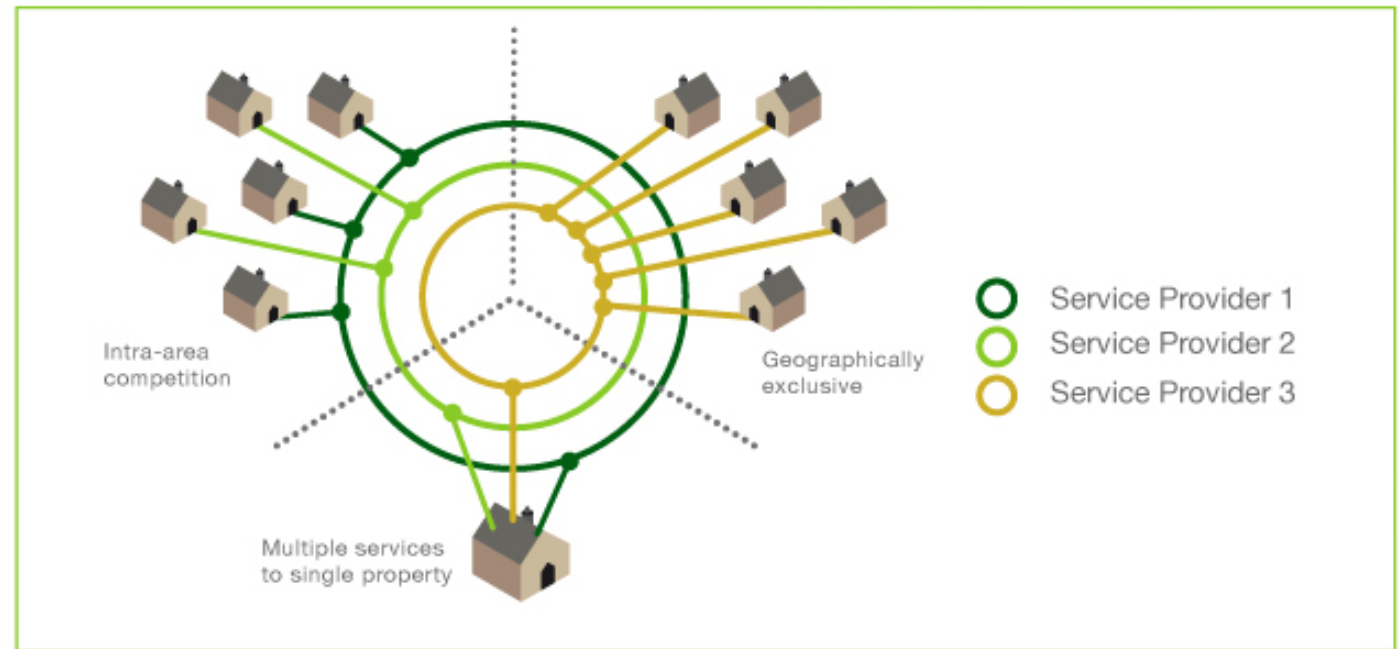


Can Wireless Systems
be Open Access?
Geoff Carey

+ What is Open Access?

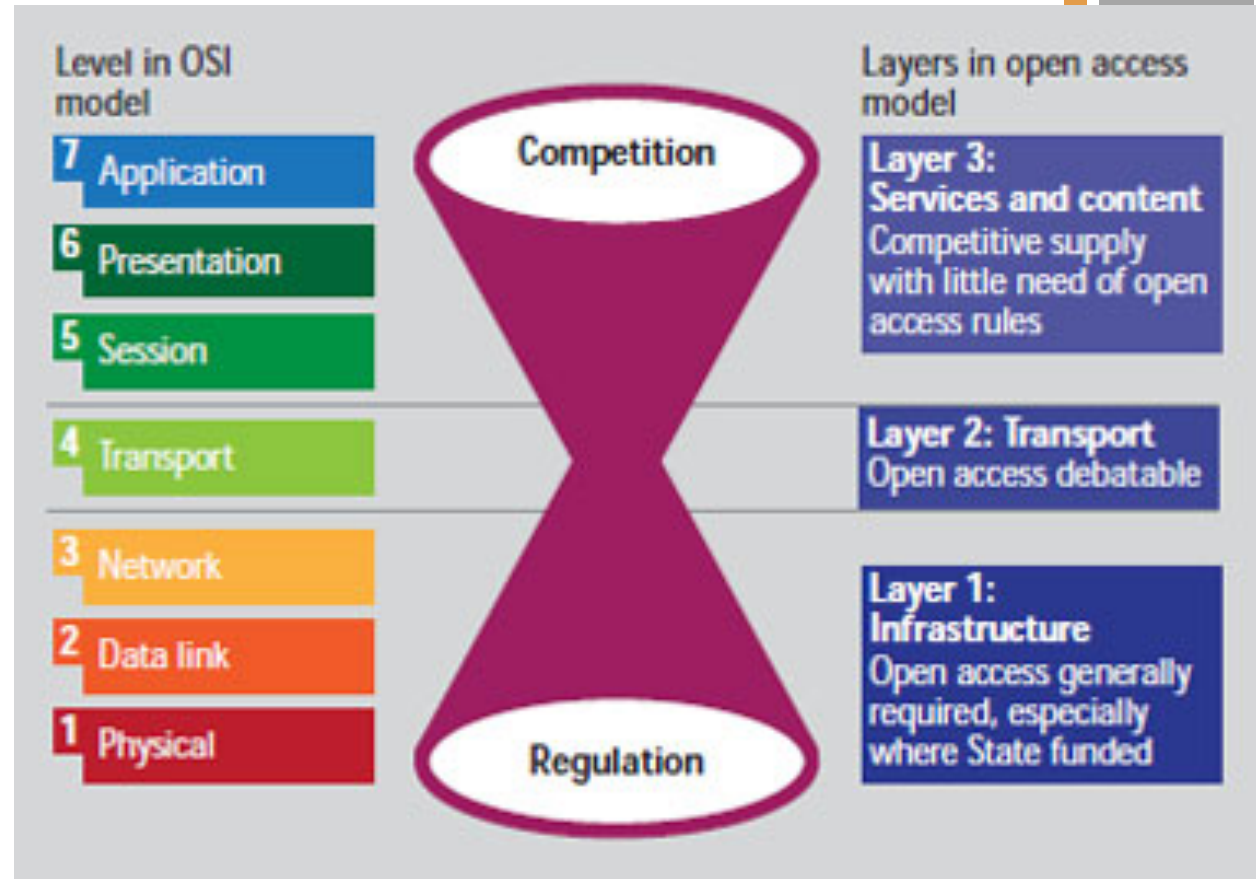
Open access is “the possibility for third parties to use an existing network infrastructure”, according to the Best Practice Guidelines for Enabling Open Access, adopted by the 2010 Global Symposium for Regulators.

- Fibre example (City Fibre (UK) & Dark Fibre Africa)



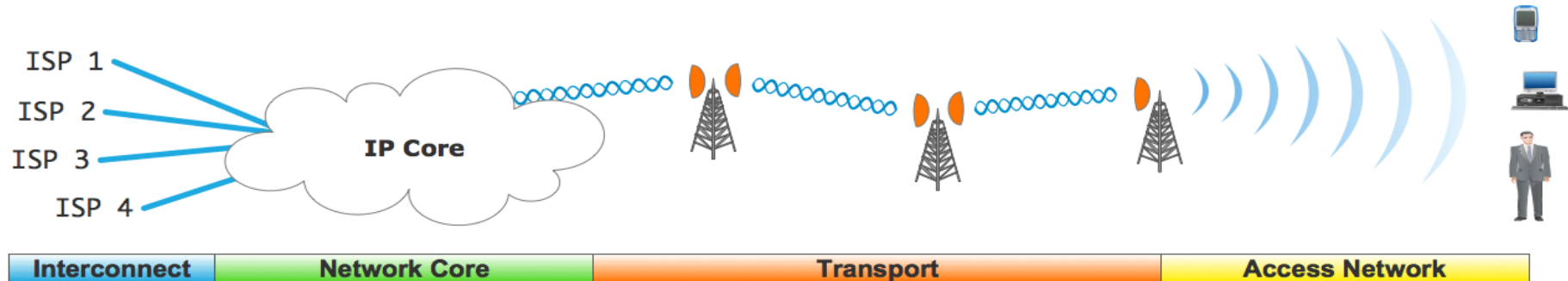
+ Wireless & Open Access

- Transport Layer (4)
 - Network Layer (3)
 - Link Layer (2)
 - Air Interface / MAC
- Physical Layer (1)
 - Frequency
 - Phase
 - Time
 - Polarization



Open Access versus the OSI Model (courtesy of ITU and Incyte Consulting)

+ Wireless Network Architecture



- “Open Access” concept for wireless can be applied in different ways depending on the perspective and network portion
- Wireless constraints to be considered:
 - Physical layer – spectrum, power, protocol, modulation, etc.
Note: Wireless PMP/Mobile systems inherently “open access” under the right conditions e.g. 802.11x, GSM, 3G, etc.
 - Regulatory – licensed vs. unlicensed spectrum
 - ‘Space Constraints’ – antennas, site, equipment

+ Open Access – Transport Network

Challenges

- Transport generally PtP so spectrum not easily shared, whether Licensed or Unlicensed Spectrum.
- Wireless Development in this area focused on spectral efficiency to improve throughput per MHz (e.g. MIMOtech's AirDuplex™ backhaul radios double throughput)

Opportunities

- Site Sharing – Towers, Facilities:
 - Third-party (e.g. American Tower Corp, Teraco); or
 - Willing ISP/Operators open to site sharing and / or cooperation in the market.
- “Carrier of Carriers” third-party operators specializing in Open Access backhaul. Operators lease bandwidth on high capacity links between points. (e.g. Fibretower in US)



+ Open Access at the Access Layer

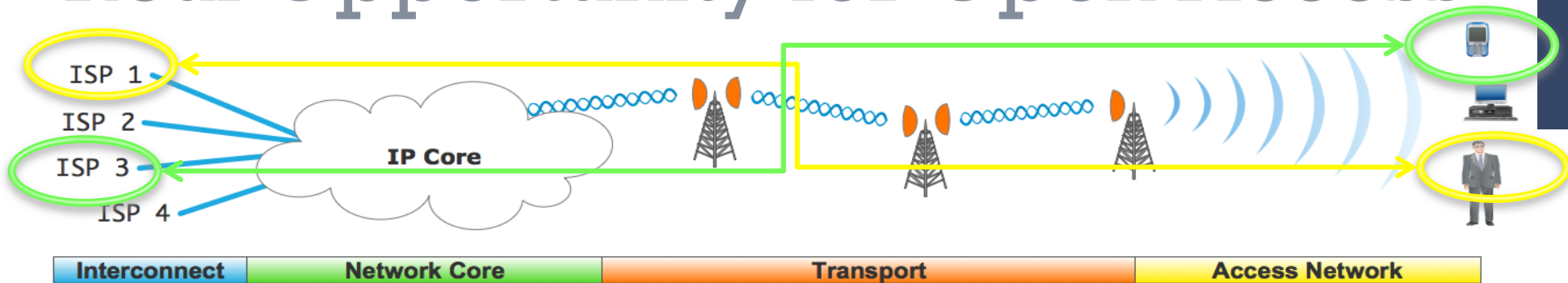
Challenges

- Licensed Spectrum sharing = “No way!” Regulatory regime where operators leverage spectrum for profit provides device ubiquity through standards. (e.g. GSM, 3G, LTE, etc.).

Opportunities

- Unlicensed Spectrum Sharing = possible provided there is some way to make usage equitable for the users since the spectrum is finite at each geographical location.
- User management becomes a higher layer function, not in the wireless physical layers

+ Real Opportunity for Open Access



- End to end High Capacity IP Network leads itself to re-selling of **Services** in the content and application layers = multiple ISPs and multiple access connections sharing a common end-to-end network
- Examples:
 - MVNOs – Mobile Virtual Network Operators have benefitted from roaming to fill in network services (Cell C, Virgin Mobile, Telkom Mobile, etc.)
 - VISPs – been around since 1996; worth investigating for smaller ISPs
 - Hybrid ISP/VISP = Coopetition (Cooperative Competition)