BENCHMARK CAPITAL

The Power of Teamwork

# FCC National Broadband Workshop
## *Current Experiences and Trends*

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# 1) VC Capitulation in Telecom Equipment

- In terms of investing in telecom equipment (wireless/wireline), VCs are ready to "throw in the towel"
- Why? ROI
  - *The structure of the industry (strong oligopoly) is such that leading startups are at a loss for creating equity value*
- Historically competitive carriers that pushed the leading edge by deploying new technologies are gone
- This may or may not matter to you – Asia is very likely to pick up the slack…

- ***Point 1: consider the impact of telecom industry structure on product innovation***

# 2) Open Spectrum Leads to Investment, Rapid Iteration, and Innovation

- **Unlicensed (open) spectrum offers the ability to innovate without constraints**
- **Broad-based interoperability across devices without limits to innovation**
  - From B to A to G to N (over 100x)
  - From enterprise to campus to municipality
  - From PCs to handhelds to industrial devices

- ***Point 2: encourage the continued use of open spectrum to help spur innovation***

# Incumbent Carrier View of Open-Spectrum Metro Wireless Networks

- 1. They are technologically inferior and claim that they do not work
- 2. They suggest that they are so competitive to their established position that they will hurt profits and, therefore, need to be outlawed through legislation

- The arguments are inconsistent with one another.

# Municipal Benefits of Independent Mesh Network

- Control
- No single point of failure
- Leverage multiple frequencies
- One network, multiple applications:

TROPOS networks

| | |
|---|---|
| Digital divide | Video surveillance |
| First responder | Meter reading |
| Police | Weather surveillance |
| Fire | Traffic management |
| Telemedicine | Parking systems |
| Property values | Business incentive |
| Econ. development | Education |
| Mobile workforce | Smart Grid |

# Oklahoma City, OK

- **Nation's largest metro-scale Wi-Fi network – 555 square miles**
- **Initial deployment motivation: public safety**
- **City owned and operated for municipal applications**
  - Police, fire, virtually all mobile city workers
  - 180 applications
  - 1,500 officers spend 100,000 more hours/year in the field
  - Building inspectors: 9,300 hrs/year saved by eliminating duplicate data entry
  - Weather sensor monitoring provides early warning of severe conditions

# St. Cloud, FL

- **Economic Development**
- **City owns and operates: joint city and public use**
- **12,300 users today**
  - Public: 1/3 use as only Internet service; 1/3 use mesh in addition to wire line service
  - City: police, building inspectors, code enforcement officers, IT
- 2009 planning
  - Fire access, AMR

Cyber Spot
FREE 802.11 Access

# Amory, MS

- Community stats
  - 7K residents
  - No 3G service
- Primary motivation: open access "free" community service
  - Foundation funded
  - 10 square miles
  - But shared resource for city use
- Digital Inclusion
  - Improve education
  - Economic development
  - Quality of life



# Richgrove, CA

- **Community stats**
  - Population 3,200
  - High school diploma: 20%
  - No 3G service available
- **School owns and operates 1 square mile open access network**
- **Digital inclusion**
  - Improve education
  - Access to information
  - Only available, affordable service for most
- **Concerns**
  - No resources or knowledge to pursue NTIA funding

# Mountain View, CA (Google)

- **Community Service – open access**
- **Privately owned/operated by Google**
- **Network stats**
  - 12 square miles
  - 17,500 unique users/month
  - 600+ gigabytes/day
  - 25%+ smart phones (3G offload)

- **Scope of traffic**
  - Exceeds combined 3G traffic of Verizon, Sprint, and ATT's licensed networks combined
  - Equivalent to similarly sized DSL deployment
  - Insanely "noisy" wireless environment

# Ponca City, OK

- **City owns and operates open access network used by public and city**
  - Population 25K
  - Network coverage 78 square miles
  - Limited 3G services


- **Network stats (early)**
  - **4,000 users/day**
  - **450 GB/day**
  - **Municipal (10% of users) – mobile workforce, public safety, ITS, video; 75% workers now mobile**
  - **Public (90% of users) – adding 100 users week**
- **Network performance**
  - 4-7Mb symmetrical average performance
  - Many getting 12-24Mb

# 3) City Size Matters

- **The ability to use broadband to provide community impact is inversely correlated with city size**
- **Smaller cities lack:**
  - Bureaucracy (red-tape)
  - Competitive interests (power, elec, telco)
  - Mounting asset issues
  - Lobbying pressure
  - Right vs. Left debates
  - Grandstanding
- ***Point 3: Please consider stimulus plans and policies that do not unfairly disadvantage smaller cities where needs are high and barriers to change are the lowest***

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