

CENIC One Gigabit or Bust™ Initiative
Minutes of the Wireless Task Force Meeting on March 17, 2004

Chair: Dewayne Hendricks

Speakers: Robert Tai, Dale Wong, Heather Kopeck, *UCLA School of Public Policy and Social Research Applied Policy Project*

Task force was formed after Gartner Report -- no wireless mention

Policy issues

Emerging tech

UCLA Presentation:

Spectrum reform (SR) is critical for Gigabit to succeed via wireless. What strategy should SR advocates pursue in achieving policy?

Spectrum -- how wireless communicates

Radio spectrum worth \$782 billion

“Radio spectrum is to the information age what oil and steel were to the industrial age.”

-- Senator Pressler, Former Chair Senate Commerce Committee

2% of spectrum is unlicensed

-- WiFi, cordless phones, walkie-talkies

Interference concerns

CENIC and others could initiate a rulemaking change

Spectrum Policy Task Force by FCC

-- new innovations will lead to spectrum reform

- Additional spectrum for unlicensed devised

- Where are more bands?

- broadcast bands, white space

- transitioning from analog to digital will free bands

- PRO: additional spectrum

- CON: licensees may not give them up

- Interference temperature -- measures interference in an area, underlay sharing

- PRO: more underlay devices in licensed bands

- CON: licensees don't believe metric works

- separate metrics from management

- need development of interference metric (cognitive)

- Smart Radio
 - automatically detects unused bands. SW enabled
 - “opportunistic spectrum sharing”
 - PRO: unlicensed may operate in licensed bands
 - CON: licensed users don’t think it works

- Spectrum sharing devices must be allowed to operate in licensed bands

RECOMMENDATIONS

1. Develop metric.
 - Increase unlicensed spectrum fro wireless devises
 - New tech and public support = CENIC’s goal

2. Ease spectrum sharing to current bands

QUESTIONS

Test results -- where are they?
 Underlay sharing authorized to go into licensed bands
 Experimental license from FCC and it becomes public
 Available on Web site

FCC moving from command & control to exclusive rights
 Vendors support each other -- Microsoft and Intel
 Maybe resell the unused BW, sublease the spectrum

DEWAYNE’S Qs

FCC -- private spectrum
 NTIA -- gov’t spectrum
 Ultrawideband first used in 1903

DEWAYNE’S PRESENTATION

Access to broadband

History of wireless broadband

- 1st comes technology, over time it becomes more accessible
 - Horse -- telegraph
 - 2 years from first signal to commercial business (1901-1903)
 - 1903-1912 -- wireless outfitted on ships

tremendous rate of speed
pulse devices were ultraband

Impact of Titanic -- interference was an issue
need to start regulatory FCC in 1934
NOW property is scarce resource, was commons

Hams can experiment without license
Hundreds of spectrums

ARS got STA
operators all over built equipment and tested it
showed spectrum overlay was successful

1996 -- TAPR states that it works, they have results

WiFi -- makes everyone a Ham

Property Model Problems
Everyone wanted 30 MHz to 3 GHz
Switched to commons (1980s) -- FAILED

U-NII for "community networking"
Added 255 MHz
Point to multi-point (P2MP) now 12 miles, was 2-6 miles
P2P now 60 miles, was 15 miles

Last year's GOBI Innovation award winner
powerful use of unlicensed microwave
old: \$2M, new: \$50K power: 1/100th of old system
10 year difference
same range

- Recapture bold thinking from 1981
- Move to open spectrum
- Develop and deploy cognitive radios
- Fast bits anywhere/anytime

Smart radio exists. It's deterministic.

Cognitive radios don't use heuristics
steer toward solutions, are goal-oriented
doesn't guarantee a solution
Artificial intelligence model

Cognitive radio will take us from light speed to warp speed, from scarcity to something like open commons.

Dewayne covered whole South Bay (30 miles) in 1997 with own equipment.

FTTH doesn't offer mobility.

This is not new stuff.

- Put technologies to more productive use
- Weed knowledge base
- Hook up old-timers with new folks

Cell phone companies don't want this to work.

Hams have self-organizing mesh networks

WiFi and WiMAX

PCs will have both for short and long range
will figure out what it needs when

Follow certain rules -- scalable

ex. use minimal power

Build the chips, it'll happen.

Someone will build it.

Apple envisioned this ~10 years ago.