

Wireless Communications Alliance Symposium

SPECTRUM



BRIDGE

Connecting You to the World of Spectrum

Technology Solutions to the Spectrum Crisis

The Emerging Secondary Market

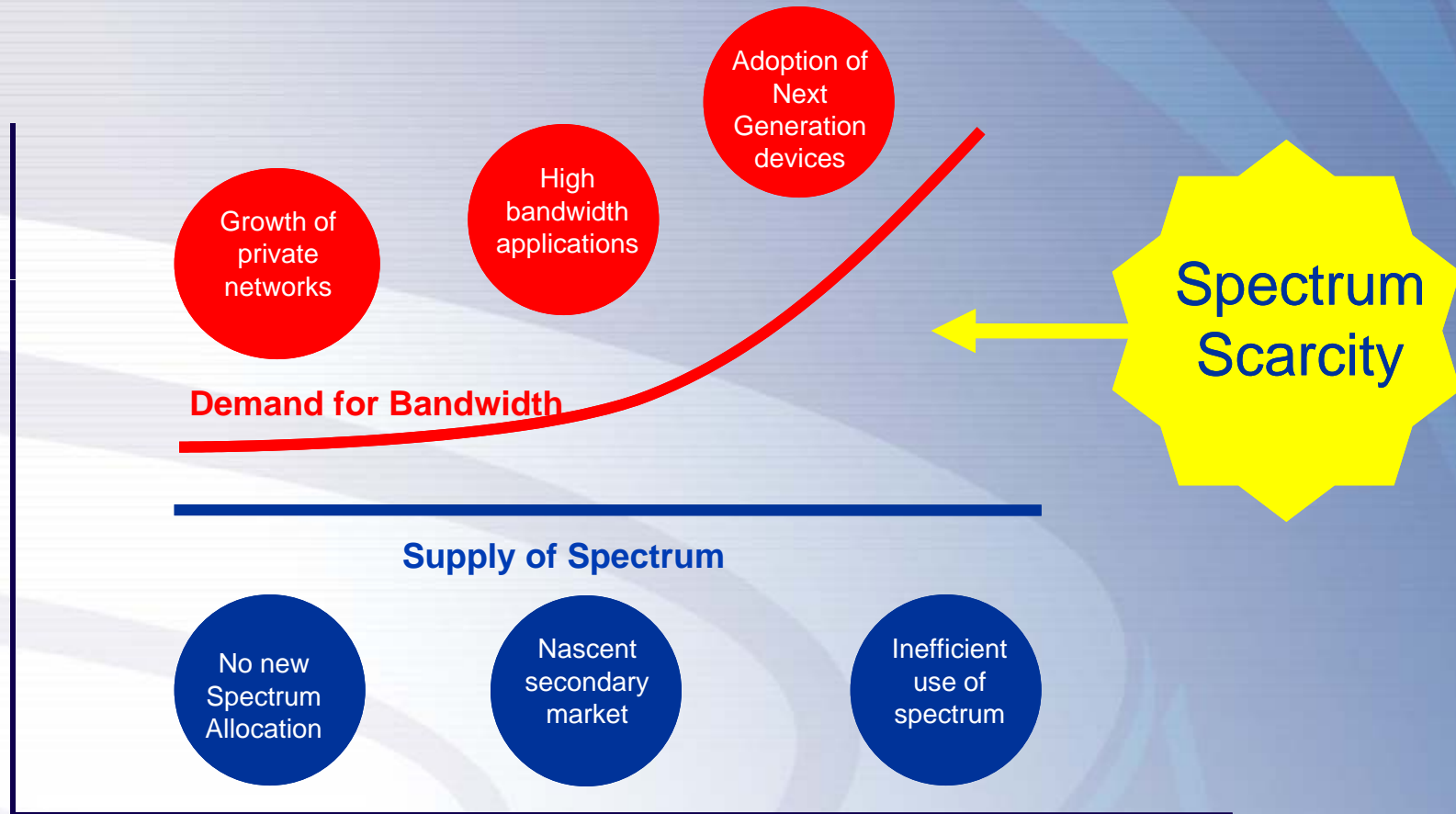
*In a recent interview with “The Hill,”
Commissioner Meredith Attwell Baker stated:*

“We need a more vibrant secondary market. I’m talking about more spectrum sharing between private and federal. There’s going to be a lot that can be done in those areas that almost all depend on a better database. One of the recommendations you’re going to see is a more user-friendly, a more thorough database that can be used on an hour-to-hour, minute-to-minute basis.”

“We need to find more spectrum, I think we need to leverage the spectrum that exists currently more efficiently, and we need to encourage new technologies an innovation.”

- FCC Commissioner Meredith Attwell Baker,
November 24, 2009, The Hills Hillicon Valley

The Problem is Complex



The Solution is Simple

Increased bandwidth driven by:

Availability

Enable on-demand
availability of
spectrum increasing
certainty of supply
and new network
capabilities

Coverage

Access

Provide “greenfield”
access to broad
band spectrum

Capacity

Allocation

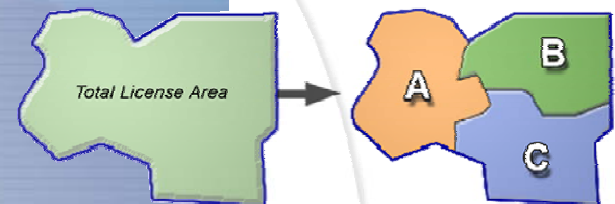
Intelligently manage
new and existing
spectrum allocations
to optimize network
performance and
bandwidth

Utilization

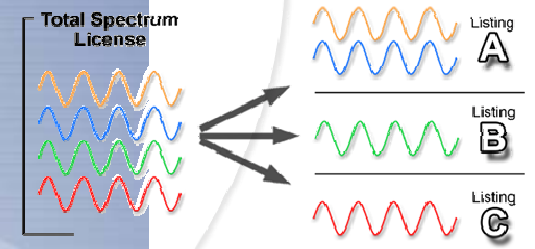
Universal Spectrum Access (USA)

Secondary Market Opportunities are Increasing Availability

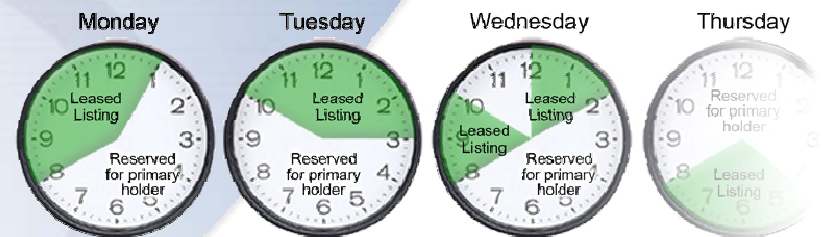
- FCC Rules Enable Creative Spectrum Use
- Wholesale License transfers
- Leasing
 - Short Term
 - Long Term
 - Partitioning
- Repurposing of Spectrum
 - Waivers for Legacy Rules
- Spectrum Sharing
- Use of White Spaces



Geographic Partitioning



Disaggregation



Time Sharing

Accessing Available Spectrum on the Secondary Market : SpecEx.com

The screenshot shows the SpecEx.com website, which is described as 'THE ONLINE MARKETPLACE FOR SPECTRUM™'. The page features a navigation bar with links to Marketplace, About SpecEx, Tools, Community, and Help. A dropdown menu for 'Marketplace' is open, showing options: Search Spectrum, Request Spectrum, Showcase, Classifieds, and Towers. The main content area displays six portfolio maps: VHF Portfolio, UHF Portfolio, 2.5 EBS Portfolio, Broadband, Nationwide 220, and 218-219 MHz (IVDS) Portfolio. A 'Spectrum Showcase' section prompts users to 'Click on a map to view detailed information'. On the right, there are sections for 'SpecEx Optimizing Spectrum Values', 'Spectrum Showcase View featured spectrum', 'Buy Spectrum Search available Spectrum', 'Sell Spectrum Monetize Assets', and 'Spectrum Valuations What is your spectrum worth?'. At the bottom, there are three main sections: 'SpecEx Spectrum Index™' showing a daily index value of 272.58, a percentage change of -1.01%, a point change of -2.78, and a prior close of 275.36; 'Search Available Spectrum' with 2,015 listings available, filters for State and Frequency Band, and a 'Search' button; and 'Request Spectrum' with a 'Submit Request' button. Red circles highlight the 'Marketplace' dropdown menu, the 'Search Available Spectrum' section, and the 'Request Spectrum' section.

SpecEx
THE ONLINE MARKETPLACE FOR SPECTRUM™

E-mail:
Password:
[Apply for an Account](#) | [Forgot Password?](#) [Sign In](#)

[Marketplace](#) [About SpecEx](#) [Tools](#) [Community](#) [Help](#)

Search Spectrum
Request Spectrum
Showcase
Classifieds
Towers

VHF Portfolio

UHF Portfolio

2.5 EBS Portfolio

Broadband

Nationwide 220

218-219 MHz (IVDS) Portfolio

Spectrum Showcase
Click on a map to view detailed information

SpecEx
Optimizing Spectrum Values

Spectrum Showcase
View featured spectrum

Buy Spectrum
Search available Spectrum

Sell Spectrum
Monetize Assets

Spectrum Valuations
What is your spectrum worth?

SpecEx Spectrum Index™

Daily Index Value:	272.58
Percentage Change:	↓ -1.01%
Point Change:	↓ -2.78
Prior Close:	275.36

Search Available Spectrum

2,015 Spectrum Listings Available

State:

Frequency Band:

[Advanced Search](#) [Search](#)

Request Spectrum

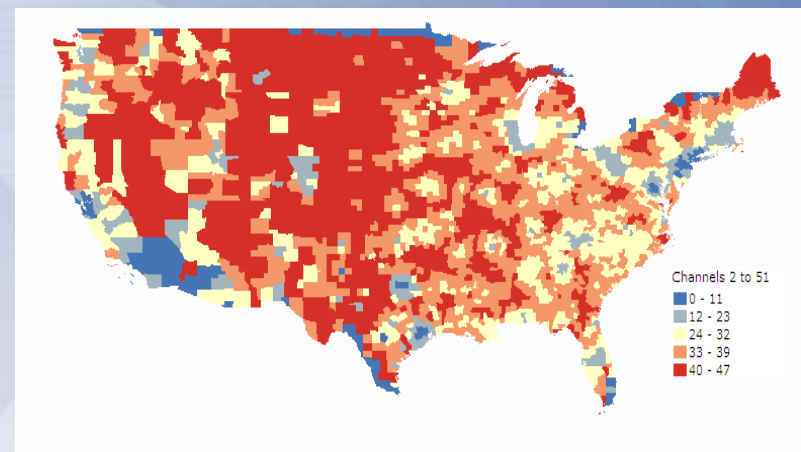
Need Help Locating Spectrum?
Put our team of experts to work for you.

[Submit Request](#)

Access to TV White Spaces

TV White Spaces Rules Allow Expansion & Augmentation

- Over 100 MHz of Low Frequency Spectrum
 - VHF, UHF, and 550 MHz – 700 MHz band
 - Allocated by Database via FCC Rules
 - 6 MHz Channels Provide Broadband Data Rates with Robust Propagation Characteristics
- New Opportunities
 - Rural Broadband
 - Long Distance, Middle Mile Backhaul
 - Any Non-Line of Sight Application
 - Remote Sensing/Surveillance

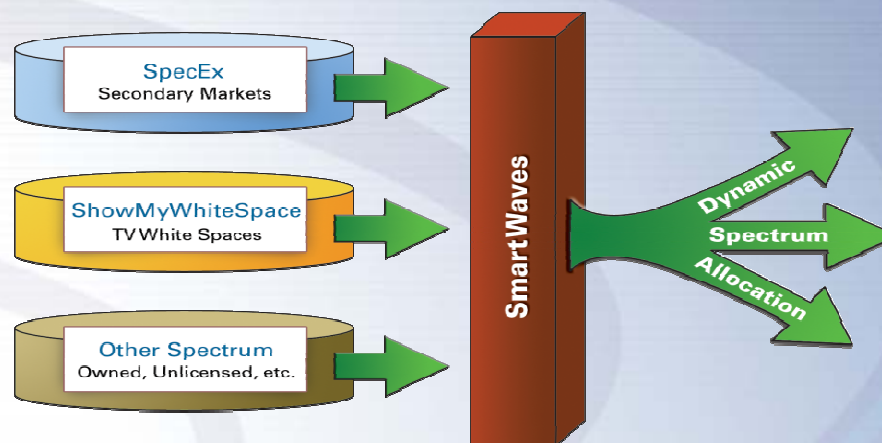


Cognitive Network

- An Automated Dynamic Spectrum Allocation System for the efficient use of bandwidth within a wireless network based on user specified priorities, network environment, and available network assets.
 - Database driven network architecture making real time spectrum allocations.
 - Exchange based system transacting spectrum and bandwidth throughout the network to the highest priority user.
 - Dynamic allocation of all customer resources including licensed and unlicensed spectrum, radio equipment, and network assets.

Spectrum/Bandwidth Allocation Through Universal Spectrum Access

- Dynamic Allocation of:
 - “Owned Spectrum”
 - Unlicensed Spectrum *(incl. TV and other White Spaces)*
 - Spectrum on the Secondary Market *(short term leases)*
- Database Driven Architecture
- Spectrum is Put to its Highest Economic Use



New Entrants with New Applications

- ***New* Applications:**
 - Wireless IPTV, Vehicle/Asset Tracking & Control, Smart Grid
- ***New* Technology:**
 - Software Defined Radios
 - Cognitive Radios/Networks
- ***New* Users**
 - Utilities, Transportation, Private Enterprises
- ***New* Approaches to Spectrum Allocation**
 - **Universal Spectrum Access**

The Assertion of Secondary Markets

What are your views on bringing more wireless spectrum to the market?

"On a high level, I think we need, one, to explore ways to get more spectrum into the market. Secondly, we need to identify ways that we can help drive more efficient uses of spectrum (software, cognitive radio). Third, we need to think big about creative uses of spectrum, creative ways to allocate spectrum. We should think very creatively about how we can take this unique public resource (the spectrum) and make sure its potential is being maximized by the great entrepreneurs and innovators who are out there."

**-FCC Chairman Julius Genachowski,
August 3, 2009, Interview with GigaOM**

Spectrum Bridge

Thank You

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