



Federal Initiatives for Wireless Innovation & Measurement

NSF Workshop on Mobile Community Measurement Infrastructure
Nov 12, 2014

Dr. Rangam Subramanian, MBA

Lead Technology and Spectrum Policy Strategist, Spectrum Planning Division

Office of Spectrum Management

National Telecommunication Information Administration

Department of Commerce, Washington D.C.

rangam@ntia.doc.gov, 202 482 4399

Agenda

- NTIA Overview
- Transforming Wireless World
- Federal Spectrum Innovation Initiatives:
 - Presidential Memorandums
 - Spectral Bands for Sharing Possibility
 - Model City: Collaboration and Measurements
 - Center for Advanced Communications Center & NASCTN
 - Wireless Spectrum R&D Senior Steering Group
- NITRD WSRD
 - WSRD Test-Bed portal
- Spectrum.gov

Agenda

- NTIA Overview
- Transforming Wireless World
 - Inter-Disciplinary Spectrum Innovation Need
- Federal Spectrum Innovation Initiatives:
 - Presidential Memorandums
 - Spectral Bands for Sharing Innovation
 - Spectrum Research & Development Gaps
- Model City: Collaboration for Testing
- Wireless Spectrum R&D Senior Steering Group
- Spectrum.Gov

NTIA Overview

- Created in 1978, combining -
 - White House, Office of Telecommunications Policy
 - Department of Commerce, Office of Telecommunications
- Lean agency:
 - FY2014: \$46M budget and 309 employees
- President's principle advisor on telecommunications and information policy
- Responsible for:
 - Federal spectrum management
 - Internet policy
 - Telecommunications research and engineering
 - Broadband deployment
 - First Responder Network Authority (FirstNet)



Commerce Spectrum Management Advisory Committee (CSMAC)

Interdepartment Radio Advisory Committee (IRAC)

Policy and Plans Steering Group (PPSG)

Spectrum Working Group (SWG)

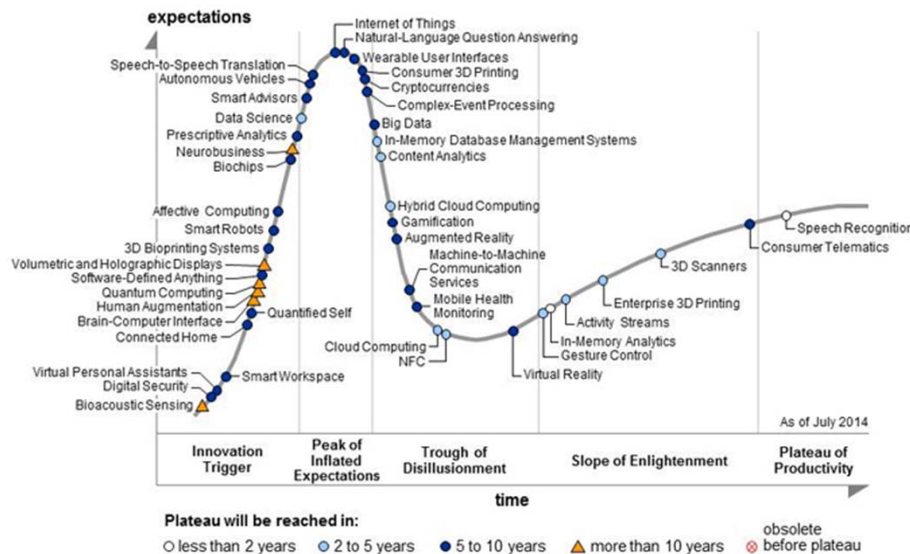
Transforming Wireless World...

IMPERATIVES

- Lack of spectrum for new siloed allocations
- Ever increasing applications and spectrum demand
- Need to optimize usage efficiencies, new spectrum R&D

IMPLICATIONS

- Spectrum sharing is a must in the future
- New paradigm, policies and spectrum rules
- Need new technologies, usage measurements, enforcement policies and implementation
- New dimensions to security threats

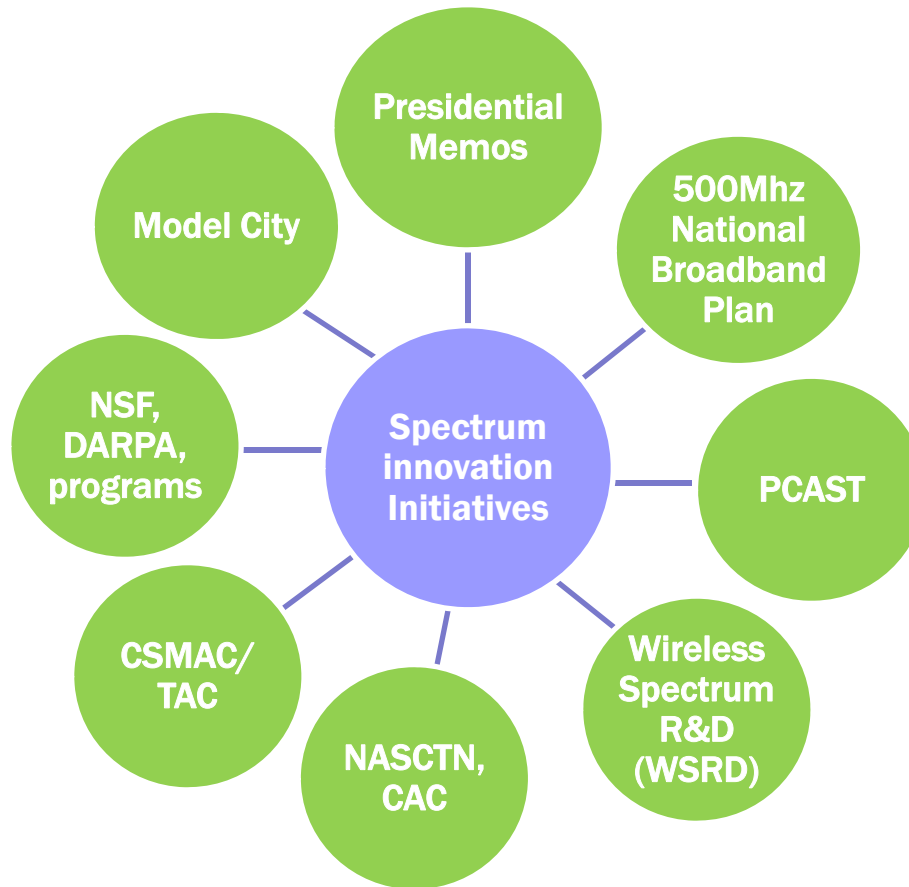


Reference: Gartner Inc., Hype Cycle Special Report for 2014

UNITED STATES FREQUENCY ALLOCATIONS THE RADIO SPECTRUM



National Spectrum Innovation Initiatives



Spectral Bands for Possible Sharing

1695-1710 MHz

1755-1780 MHz

3550-3650 MHz

5350-5470 MHz
5850-5925 MHz

Others..

Several National Initiatives in Progress to Advance Spectrum Innovation

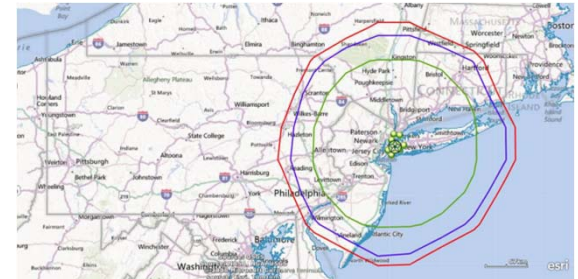
Presidential Memorandums

- June 2010: Unleashing the wireless broadband revolution
 - NTIA to work with FCC to identify and make available 500 MHz by 2020
 - Recommendation to create and implement a plan to facilitate research, development, experimentation and testing to explore innovative spectrum-sharing technologies
- June 2013: Expanding America's leadership in wireless innovation
 - Spectrum Policy Team to advance spectrum sharing policies and technologies
 - Collaboration on Spectrum Sharing: Facilitate sharing, build inventory of federal test facilities, create new policies for data sharing.
 - Government agency usage of the spectrum, incentives



Spectral Bands for Sharing Possibility

- Various bands have been identified for potential repurposing study, as a part of the FCC's National Broadband Plan, 2010, including:
 - 335 MHz in federal/shared bands
 - 110 MHz in non-federal bands
- 1755-1780 MHz AWS-3 auction in Nov 2014
- Further Notice of Proposed Rule Making (FNPRM) for the 3550-3650 MHz published by FCC in April 2014
 - 3-tier Access Model: Incumbent, Priority Access (PAA), General Authorized Access (GAA), with dynamic Spectrum Access Server (SAS)
 - NTIA/ITS measurements and evaluation in progress to right-size exclusion zones and build new models for sharing
- Study groups working on 5350-5470 MHz and 5850-5925 MHz bands for U-NII device use
- FCC Notice of Enquiry for 24 GHz band and above, released on October 17, 2014



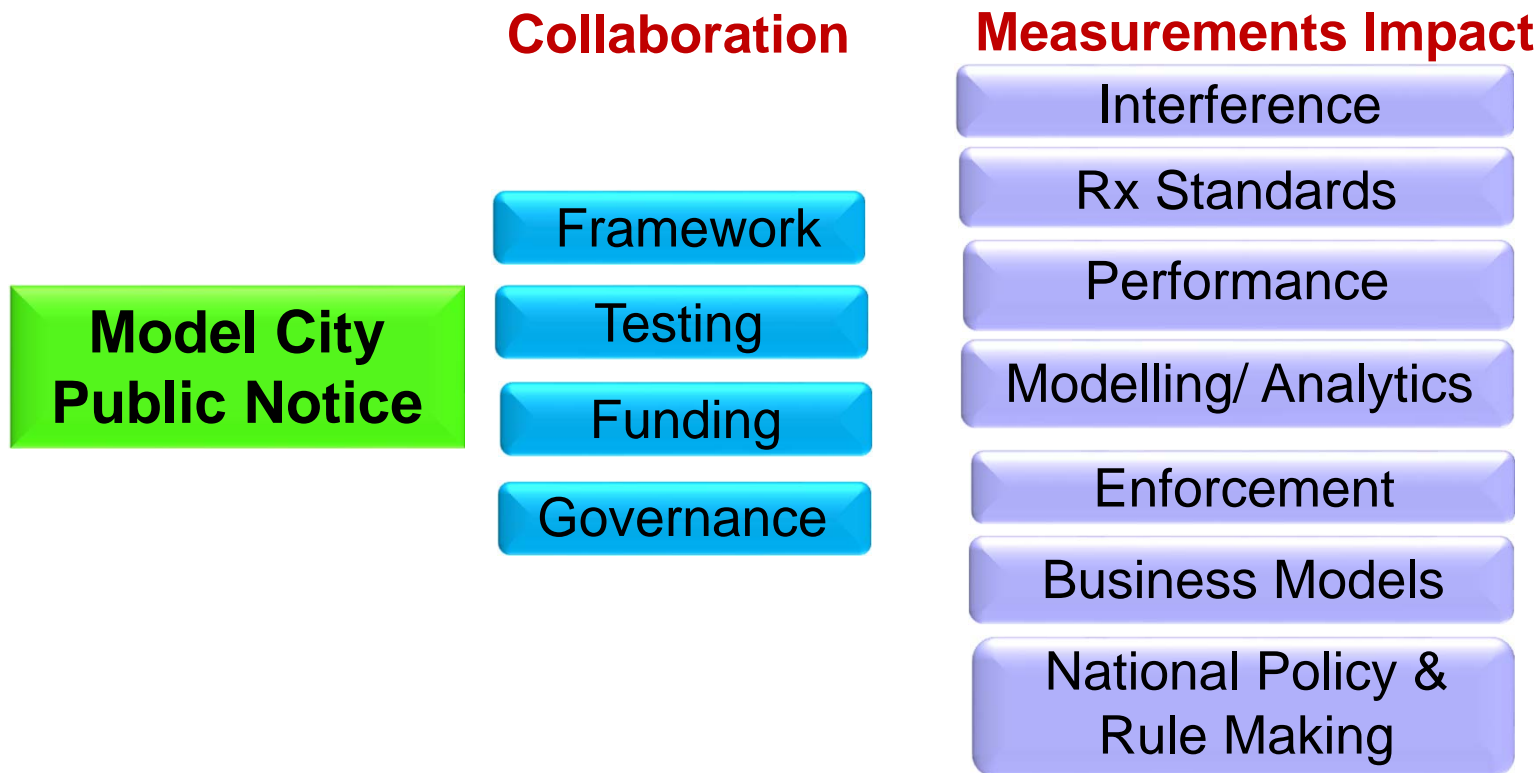
Courtesy CSMAC Working Group Report:
Tactical Link to LTE base Station Interference
Study, near NY



Courtesy: Defense Video and Imagery: SPN-43
Air Marshalling Radar, 3500-3650MHz

Model City: Collaboration and Measurements

Aug 2014, Public Notice Goal: Seek public comment to establish a public-private partnership facilitating the creation of an urban test city that would support rapid experimentation and development of policies, underlying technologies, and system capabilities for advanced, dynamic spectrum sharing.



Center for Advanced Communications (CAC) & NASCTN

Facilitating Collaborative Research and Testing

- MOU between NIST and NTIA to establish the CAC in Boulder, CO:
 - Provide a single focal point for engaging industry, academia, and other government agencies
 - Promote interdisciplinary research, development, and testing in advanced communication-related areas (radiofrequency technology, digital information processing, cyber security, *etc.*)
 - Enhance coordination of NIST and NTIA research and testing functions
- National Advanced Spectrum Communications Test Network (NASCTN)
 - Advancing testing collaboration between stakeholders and various national testbeds (including DOD testbeds that are available)





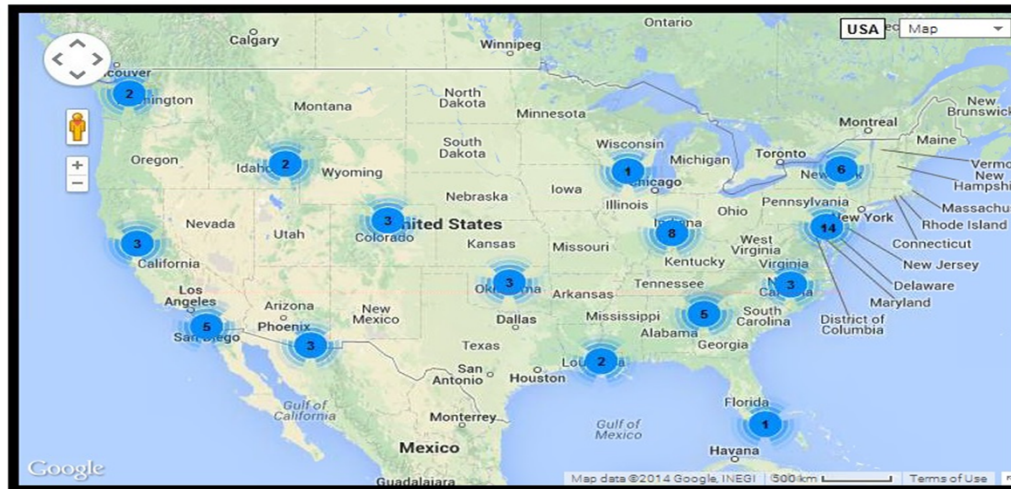
Wireless Spectrum R&D (WSRD) Senior Steering Group (SSG)

- **Goal** – Coordinate spectrum related R&D activities across the government, private sector and academia
- **Objectives:**
 - Transparency: Government initiated R&D programs
 - Smart investment: Best areas and gaps for government R&D investment
 - Solicit opportunities: Technology transfer opportunities with the private sector
 - Effective Collaboration for harvesting core activities and identifying potential breakthroughs or “low hanging fruit”
- **Agencies**: DARPA, DHS, DOD, DOE, DOJ, FAA, FCC, NASA, NIST, NSF, NTIA, Others..
- Federal spectrum R&D inventory, Test-bed inventory and portal, 6 workshops and 5 interim reports so far. Next workshop planned for March 2015, on incentives for sharing.

WSRD Test-Bed Portal

<http://www.nitrd.gov/Subcommittee/wsrdr/Testbeds/map.aspx>

- Contains listing of major test beds in the nation, that can be used by different stakeholders
- Enables information exchange across government-industry-academia
- Additional information can be updated in the site



- Aberdeen Test Center (US Army Test Ranges)
- AFRL Aerial Layer Networking Facilities
- BGPMux, DTunnels

Welcome to the Wireless Spectrum Research & Development Senior Steering Group's Testbed Information Portal. Designed for the purposes of information exchange, it is our hope that this will prove useful for government, academic, and industry researchers in need of spectrum testing facilities.

There are several ways of finding the right facility for your needs:

- 1) search geographically using the map,
- 2) search using full-text search:
- 3) find labs by a particular characteristic that you require using the drop-downs:

* Available to:

Indoor/Outdoor

Frequency

Available Technology

GENI/others

Display GENI and non-GENI facilities

We invite you to contribute information on testing facilities that are not currently listed, and that are available for use. Please contact

Spectrum.gov

- Compendium of federal agency spectrum usage in 225 MHz to 5 GHz
- Delivers high-level information for each band significantly used by federal agencies – in exclusive or shared mode
- Launched on April 11, 2014

National Telecommunications & Information Administration
United States Department of Commerce

TOPICS: Spectrum Management, Broadband, Internet Policy, Domain Name System, Public Safety, Grants, Institute for Telecommunication Sciences

NEWSROOM | PUBLICATIONS | BLOG | OFFICES | ABOUT | CONTACT

Home » Publications » Other Publications » 2014
View | Edit | Outline | Detail

Federal Government Spectrum Use Reports 225 MHz to 5 GHz

Topics/Subtopics: Spectrum Management

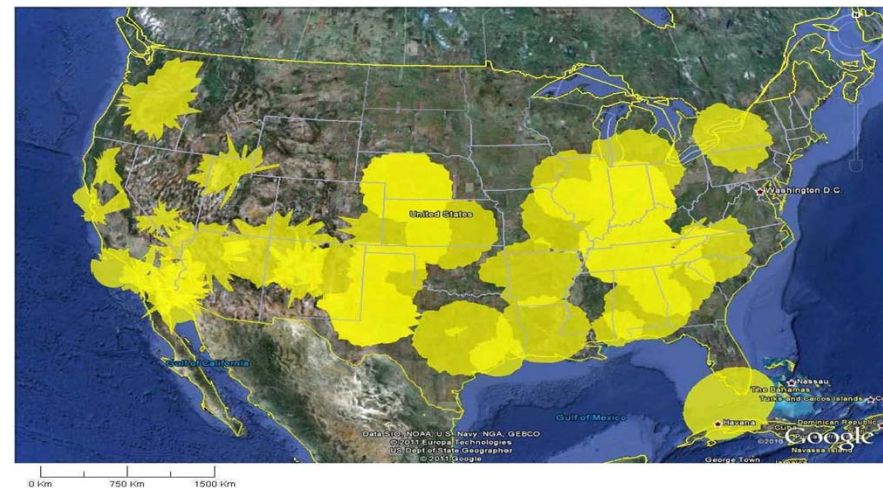
Date: March 18, 2014

225.0-328.6 MHz	1350.0-1390.0 MHz	2200.0-2290.0 MHz
328.6-395.4 MHz	1390.0-1392.0 MHz	2290.0-2300.0 MHz
395.4-399.9 MHz	1392.0-1395.0 MHz	2300.0-2305.0 MHz
399.9-400.05 MHz	1395.0-1400.0 MHz	2305.0-2310.0 MHz
400.05-400.15 MHz	1400.0-1427.0 MHz	2310.0-2320.0 MHz
400.15-401.0 MHz	1427.0-1429.5 MHz	2320.0-2345.0 MHz
401.0-402.0 MHz	1429.5-1432.0 MHz	2345.0-2360.0 MHz
402.0-403.0 MHz	1432.0-1436.0 MHz	2360.0-2390.0 MHz
403.0-406.0 MHz	1436.0-1625.0 MHz	2390.0-2395.0 MHz
406.0-406.1 MHz	1525.0-1535.0 MHz	2395.0-2400.0 MHz
406.1-410.0 MHz	1535.0-1555.0 MHz	2400.0-2417.0 MHz
410.0-420.0 MHz	1555.0-1610.0 MHz	2417.0-2450.0 MHz
420.0-450.0 MHz	1610.0-1610.6 MHz	2450.0-2483.5 MHz
450.0-454.0 MHz	1610.6-1613.8 MHz	2483.5-2495.0 MHz
454.0-456.0 MHz	1613.8-1626.5 MHz	2495.0-2500.0 MHz
456.0-460.0 MHz	1626.5-1660.0 MHz	2500.0-2655.0 MHz
460.0-470.0 MHz	1660.0-1660.5 MHz	2655.0-2690.0 MHz
470.0-512.0 MHz	1660.5-1668.4 MHz	2690.0-2700.0 MHz
512.0-608.0 MHz	1668.4-1670.0 MHz	2700.0-2900.0 MHz
608.0-614.0 MHz	1670.0-1675.0 MHz	2900.0-3100.0 MHz
614.0-902.0 MHz	1675.0-1700.0 MHz	3100.0-3300.0 MHz
902.0-998.0 MHz	1700.0-1710.0 MHz	3300.0-3500.0 MHz

Printer-friendly version

Welcome to Our New Website
We are currently updating our website to better serve you. [Read more.](#)

1300-1305 MHz Band Segment Contour – Continental United States





Questions??