

WSRD Workshop: Making Data Available for National Spectrum Management

NIST Boulder Laboratories – May 3-4, 2023

WORKSHOP OBJECTIVE

Identify challenges associated with obtaining, disseminating, and using data about spectrum to support *policy making, operations, and R&D* with applications to spectrum sharing & optimization through improved analysis, modeling & prediction. Discuss ideas for resolution of these challenges through the action of researchers, industry, agencies, regulators, and/or legislators with potential inputs to R&D agency prioritization and the National Spectrum Strategy.

WORKSHOP OUTPUT

Making Data Available for National Spectrum Management: Workshop Summary Report with record of discussion on challenges and ideas for resolution. To be published by NITRD.

WORKSHOP AGENDA IN BRIEF

Wednesday, May 3

- 7:30 am Check-In
- 8:30 am Keynote Session
- 10:45 am Break
- 11:00 am Session 1: Requirements Perspectives
- 12:30 pm Lunch
- 1:30pm Tours of NIST and NTIA Boulder Labs
- 3:00 pm Session 2: Constraints and Policy Issues
- 5:30 pm Reception

Thursday, May 4

- 8:00 am Session 3: Spectrum Data Collection
- 10:15 am Break
- 10:30 am Session 4: Spectrum Data Storage and Dissemination
- 12:30 pm Lunch
- 1:30 pm Tours of NIST and NTIA Boulder Labs
- 3:00 pm Session 5: Summary of Challenges and Ideas for Challenge Resolution
- 5:30 pm Adjourn

WEDNESDAY, MAY 3

7:30 am Check In

8:30 am Keynote Session

8:30 am Welcome from WSRD Co-Chair
Mike DiFrancisco, NTIA OSM

8:35 am Welcoming Remarks
Kamie Roberts, NITRD NCO *virtual*

8:40 am Perspectives on Data for National Spectrum Management and Implications to
National Spectrum Strategy
Matt Pearl, EOP/National Security Council *virtual*

9:00 am Overview of the NIST Privacy Framework
Dylan Gilbert, NIST

9:20 am Spectrum Use and Planning
Joel Taubenblatt, FCC WTB

9:40 am Observations on Data for Federal Spectrum Management & IT Modernization
Alan Rosner, NTIA

10:00 am Insights on Policy and Regulatory Issues that may Shape the Future of Spectrum
Monitoring
Dale Hatfield, UC Boulder & Silicon Flatirons

10:20 am Technical Keynote Linking Data Collection, Storage, Dissemination, and Operations
John Chapin, NSF

10:45 am Break

WEDNESDAY, MAY 3

11:00 am **Session 1: Requirements Perspectives**

Session Briefings and Panel to Address Key Questions

Tom Rondeau, DOD OUSD (R&E) - *MODERATOR*

Lisa Guess, Cradlepoint-Ericsson

Charles Cooper, NTIA

Joel Taubenblatt, FCC WTB

Steve Ellingson, Virginia Tech

Key Questions:

- What are the Top 5 “most wanted” spectrum data sets in each of the following three areas:
 - Policy Making
 - Spectrum Management and Operations?
 - R&D
- What are the most important data characteristics for each area (completeness, accuracy, diversity, etc.)

NOTE: Workshop participants are encouraged to continue thinking about these questions throughout Day 1 and Day 2. The group will reconvene in Session 5 to establish a non-prioritized Top 5 for each area.

12:30 pm **Lunch**

1:30pm **Tours of NIST and NTIA Boulder Labs**

Make sure to sign up for the tours during check-in as space is limited.

WEDNESDAY, MAY 3

3:00 pm **Session 2: Constraints and Policy Issues**

Session Briefings and Panel to Address Key Questions:

Derek Khlopin, NTIA - *MODERATOR*

Martin Doczkat, FCC

Lisa Guess, Cradlepoint-Ericsson

Martin Weiss, University of Pittsburgh

Mark Walker, CableLabs

Key Questions:

- What are the legal, policy, and privacy constraints and how can they be overcome while supporting the needs of policy making, spectrum management and operations, and R&D?
- Are there digital equity or inclusion issues to be considered?
- What operational security issues need to be considered? (For agency operations but also for key spectrum dependent functions – health care, transportation, etc.)

5:30 pm **Reception**

THURSDAY, MAY 4

8:00 am Session 3: Spectrum Data Collection

Session Briefings and Panel to Address Key Questions:

Melissa Midzor, NIST NASCTN - *MODERATOR*

Mike Cotton, NTIA ITS - *MODERATOR*

Won Namgoong, University of Albany

Kobus van der Merwe, Univ. of Utah (POWDER)

Greg Wagner, DISA DSO

Andy Clegg, Google

Jenifer Alvarez, Maxar/Aurora Insight

Brian Jordan, Aerospace Corporation

Key Questions:

- How (technically) can we collect spectrum data in a way that:
 - is affordable, scalable, trustworthy, power-efficient, and useful,
 - is legal and respects privacy concerns,
 - meets the needs of policy, operational and R&D users?

Key Factors:

- Data ownership
- Hardware affordability, directionality; Receiver System challenges - interpolation, probability of false positives/negatives (Receiver Operating Characteristics curve over an area); backhaul bandwidth, storage bandwidth.
- Crowd sourcing issues - trust, systematic errors.
- Software systems challenges - moving computation to the data - virtual platform standards.

10:15 am Break

THURSDAY, MAY 4

10:30 am Session 4: Spectrum Data Storage and Dissemination

Session Briefings and Panel to Address Key Questions

Kaushik Chowdhury, Northeastern University - *MODERATOR*

Nada Golmie, NIST CTL

Doug Boulware, NTIA ITS

Monisha Ghosh, Notre Dame University/Spectrum X

Keith Gremban, CU Boulder/Silicon Flatirons

Key Questions:

- How do we make spectrum data available broadly to support policy making, operations, & R&D?
 - How do we control who gets access?
- How to pay for a data storage and distribution infrastructure?
- Who controls it – governance to maximize benefits and prevent misuse?
- Are there new techniques for accomplishing goals while storing less privacy-sensitive data?
- How do we label data to make it useful for all possible (legal) purposes?

Key Factors:

- A quantity problem - Vast amounts of data; Do we need to be shipping disc drives around the country? Or contract with a big cloud that hosts all the data and folks upload their processing algorithms to it?
- A standards/metadata/labeling problem - how to capture/represent enough information that downstream processing by 3rd parties (& AI) is enabled?
- An architecture problem - how to federate different repositories/systems?

12:30 pm Lunch

1:30 pm Tours of NIST and NTIA Boulder Labs

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THURSDAY, MAY 4

3:00 pm **Session 5: Summary of Challenges and Ideas for Challenge Resolution**

Workshop Output Session

Keith Gremban, CU Boulder/Silicon Flatirons – *SESSION CHAIR*

Goals:

- Document the top 5 “most wanted” spectrum data sets in each of the following three areas:
 - Policy Making
 - Spectrum Management and Operations?
 - R&D
- Summarize challenges associated with obtaining and using data about spectrum to support policy making, operations, and R&D.
- Discuss and document ideas for resolution of these challenges through the action of researchers, industry, agencies, regulators, and/or legislators.
- Discuss what results should be included in the National Spectrum Strategy to address data-driven processes for long-term spectrum planning that increase transparency into current and future Federal and non-Federal spectrum use and that anticipate and enable technological advances in order to facilitate spectrum access.