

WSRD Workshop V: Concluding Panel notes

Concluding Panel Notes

1. *Informing Policy*: What you are trying to solve in each band should be the driver; incumbent systems will drive what meaningful information is derived; policy informs the testing; monitoring helps to inform the process and goes hand in hand with shaping policy going forward; Concept of a forum (unsure of scope, charter, members etc.) similar to WSRD SSG to discuss this further using the 3.5 information that Mike Cotton is putting forward; need a specific policy question/analysis to help inform; CAC (Center for Advanced Communication) should be leveraged to find monitoring best practices, capabilities, acceptable validity.
 - a. ACTION:
 - i. Benchmark monitoring capabilities – monitoring with acceptable validity; WSRD SSG will create a platform determining who will leverage pilot from 3.5 and add structure to the overall framework;
 - ii. Center for Advanced Communications should be leveraged to find what the monitoring best practices are
 - iii. Data Analytics – Research Area to make sense out of the collected data;
2. *Enforcement* : There is agreement that enforcement is important but differences of opinion on policing in any given environment; flexibility is important, but how do you manage that? What is the role of the Feds? Fed sharing--who resolves disputes? Intentional interference vs non-intentional – how to handle? How do we manage spectrum from a SW/HW side; do you need to lockdown software, what are the ramifications?
 - a. ACTION -
 - i. Strong consensus – SW HW hardening issues needs more research.
 - ii. Need for social science research – try to understand the motivations that drive people to cheat-hack devices etc. Motivating or demotivating the willingness to play by spectrum rules; not much information available.
 - iii. Further research is needed in terms of crowd sourcing particularly where devices grab information for use on the enforcement side;
 - iv. Where is the funding? Fed, State, local govt, private sector? Research on various funding possibilities and/or options to reduce the cost of enforcement.
3. *Usage*: “Monitoring” conveys many meanings; split into 3 subtopics:
 - a. *How to use spectrum monitoring information* – challenges are defining what you want to measure and how to measure it; need to be very specific. Three main reasons to monitor– for access, accuracy, or enforcement. Focus on the critical problems that will not be solved without Fed R&D investments.
 - b. *How can we measure better*- develop a system of monitoring systems; Reduce the cost of sensors.
 - c. *How does this process interact with other priorities* - inherent tradeoff with spectrum efficiency and privacy. How to limit information while preserving spectrum efficiency.
 - d. ACTION-
 - i. AWS3 Auction; some form of sharing will be necessary with auction revenues helping to fund;
 - ii. Deploy monitoring in a few verticals giving data of high quality/value;
 - e. IMPLEMENTATION –

- i. How to use - deploy monitoring in the wireless test city; link in a safe environment (engineering test environment); link monitoring and sharing in an underutilized spectrum band.
- ii. Measure better– research goal example – be able to create a virtual model that can recreate an environment and predict what you can see; Should we have a sensing challenge?
- iii. Interaction - pick a realistic system using spectrum and analyze privacy and security needs;

4. Actionable Items and Votes:

a. GROUP 1

- i. Benchmark monitoring capabilities – monitoring with acceptable validity; WSRD SSG will create a platform determining who will leverage pilot from 3.5 and add structure to the overall framework;
- ii. Center for Advanced Communications should be leveraged to find what the monitoring best practices are (2 votes)
- iii. Data Analytics – Research Area to make sense out of the collected data; (38 votes)

b. GROUP 2

- i. Boundaries of trust and research in terms of this; hardening the platforms to trust what they will do? (10 votes)
- ii. There is a need for social science research – Understanding the motivations that drive people to cheat/hack devices etc. Understanding the users’ willingness to play by spectrum rules. (2 votes)
- iii. How do we use crowd sourcing to gather secondary measurement data for use on the enforcement side? (18 votes)
- iv. Modeling the costs of enforcement and determining sources of funding to implement?(10 votes)

c. GROUP 3

- i. AWS3 Auction; some form of sharing will be necessary; auction revenues could help fund; (1 votes)
- ii. Deploy monitoring in a few verticals giving data of high policy value; (16 votes)
- iii. IMPLEMENTATION – deploy monitoring in the wireless test city; (14 votes)
- iv. link monitoring and sharing experiments in a safer environment (engineering test environment); (3 votes)
- v. link monitoring and sharing in an underutilized spectrum band; (0 votes)
- vi. MEASURE BETTER – research goal example – be able to create a virtual model that can recreate an environment and predict what will happen; (24 votes)
- vii. Sensing challenge? (9 votes)
- viii. Interaction - pick a realistic system using spectrum and analyze privacy and security needs; (6 votes)