Wireless Spectrum R&D Inventory Template Attachments

Attachment A: Topic Areas

1. Testing
    a. Create wireless test beds and demonstrate new concepts [#3]
    b. System testing and development of testing methods [#23]
    c. Testing of spectrum-efficient technologies to qualify against specific regulations, environments (e.g. space), or mission requirements [#19]
2. Modeling and Simulation
    a. Development of simulation tools relevant to spectrum efficiency, access, and sharing [#6]
    b. Models to predict propagation, signal strength, or interference [#15]
    c. Development of systems and models to transition from legacy architectures to new spectrum-sharing architectures, hardware, protocols and policy [#7?]
3. Methods and Processes that Engender Efficient Spectrum Use
    a. Advancing dynamic mechanisms to share spectrum, including both cooperative and non-cooperative models, and mechanisms to manage spectrum resources across functions and systems [#1]
    b. Metrics to quantify spectrum parameters relevant to efficiency, access, and sharing [#14]
    c. Mechanisms to make better use of the spectrum allocations and assignments [#11]
    d. Development of methods to create and maintain a comprehensive spectrum survey and inventory [#4]
    e. Methods to operate at higher frequencies where spectrum is more readily available
4. Technological Development that Enables Efficient Spectrum Use
    a. Next-generation developments in smart radio hardware, including software-defined radios and cognitive radio systems [#16]
    b. Advancing situational awareness, including spectrum sensing, geo-location, real-time monitoring [#2]
    c. Innovations that Can Lead to Improvements in Spectrum Efficiency [#21]
    d. New Frontiers and Research that May Lead to Transformational Improvements in the Use of the Radio Spectrum [#22]
    e. Methods to improve spectrum efficiency, including antenna design, modulation, interference mitigation, channel bonding [#12]
    f. Energy-efficient or "green" spectrum technology [#8]
5. Education and Outreach
    a. Development of programs to promote collaboration among spectrum stakeholders (e.g., industry, academia, government agencies) [#5]
6. Spectrum Access Policy and Regulation
    a. Enforcement of spectrum rules [#9]
    b. Spectrum allocation/assignment: economic factors [#18]
7. Security, vulnerability of spectrum-sharing technologies, counter measures to access spectrum despite adversarial actions [#17]
8. Integration of DSA networks and the Internet or other communications infrastructure [#10]
9. Dynamic Spectrum Management across Multiple Warfighting Functions (e.g., Communications, Electronic Attack, Electronic Support [SIGINT], Radar) [#20]