

# **IEEE Standards Coordinating Committee 41 on Dynamic Spectrum Access Networks**

<http://www.scc41.org/>

## **Activities, Technical Issues & Results**

Contribution to ITU-R WP5A SDR/CR Seminar

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# Abstract

**Standards drive the interoperability of competing products and are the foundation for bringing research and technology into commercial markets. Dynamic Spectrum Access (DSA) is a key application that utilizes Cognitive Radio and Software Defined Radio to create new market opportunities. Because the technologies required to enable Dynamic Spectrum Access span a number of technical societies, the IEEE Standards Association formed Standards Coordinating Committee 41 (SCC41) so that it can sponsor standards projects that cross the boundaries of the Communications Society, the Electromagnetic Compatibility Society, the Computer Society, and others.**

**This presentation focuses on the standards activities that are currently in progress in SCC41, the results that have been achieved, the challenges facing SCC41, the technology/standardization space that is relevant to SCC41, and the new projects that have been proposed. SCC41 also welcomes interested entities to join by participating in on-going projects or proposed new ones that will contribute to the realization of increased efficiency in radio spectrum utilization.**

# Presentation Outline

- **What is IEEE SCC41?**
- **SCC41 Standards Development Subgroups; Results & Accomplishments**
- **The SCC41 Technology Space**
- **Challenges for SCC41**
- **Project Approval Criteria for SCC41**
- **New Projects being proposed for SCC41**
- **SCC41 Call for participation**

# Overview

## **What is a SCC?**

SCC stands for Standards Coordinating Committee. It is formed when standards crosses the boundaries of multiple IEEE societies. SCC41's scope on Dynamic Spectrum Access (DSA) crosses the boundaries of the Communications Society, the EMC Society, the Computer Society and more.

## **What is the scope of SCC41 as approved by the IEEE-SA Standards Board?**

***This Standards Coordinating Committee will develop standards related to dynamic spectrum access networks. The focus is on improved use of spectrum.***

***New techniques and methods of dynamic spectrum access require managing interference, coordination of wireless technologies and include network management and information sharing.***

# SCC41 Standards Development Subgroups

## Progress and Results

- **P1900.1 WG - Terminology and Concepts for Next Generation Radio Systems and Spectrum Management**  
**Status: In comment resolution and will enter recirculation around mid-February**
- **P1900.2 WG - Recommended Practice for Interference and Coexistence Analysis**  
**Status: 1<sup>st</sup> P1900 standard to pass Sponsor Ballot**
- **P1900.3 WG - Dependability and Evaluation of Regulatory Compliance for Radio Systems with Dynamic Spectrum Access**  
**Status: Scope redefined and work restarted.**
- **P1900.4 WG - Architectural Building Blocks Enabling Network-Device Distributed Decision Making for Optimized Radio Resource Usage in Heterogeneous Wireless Access Networks**  
**Status: Substantial progress and increasing participation. 23 entities currently participating. Planning to go to ballot this summer.**

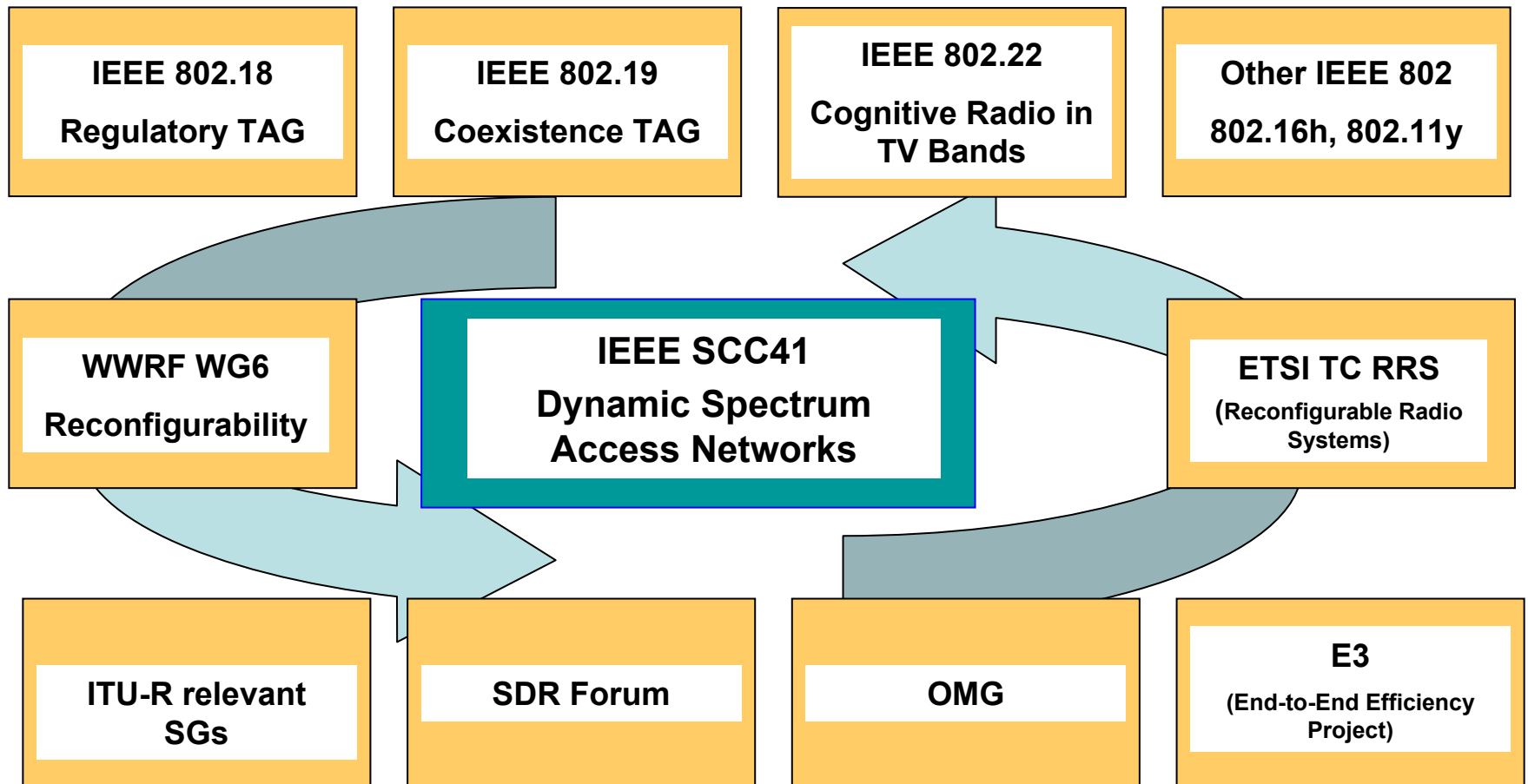
# ***What is the Technology Space for SCC41?***

- **Functionalities that contribute to a DSA eco-system**
- **Radio technologies and their control mechanisms to enable DSA**
- **Spectrum sharing and co-existence techniques that promote optimal and equitable spectrum usage in a DSA environment**
- **Spectrum planning mechanisms to manage interference, optimize spectrum availability, and guarantee QoS**
- **Autonomics and other mechanisms to ease complexity and to facilitate flexibility in the management of DSA networks**
- **Processes for reasoning, inference, problem solving, planning, and learning in a cognitive continuum**
- **Authentication & Authorization technologies to ensure security, integrity and trust**
- **Testing regimes that help with the implementation of regulatory policies for DSA**
- **Accounting, charging mechanisms to facilitate the economics of flexible spectrum usage**
- **Fault management capabilities to ensure system reliability and availability while optimizing spectrum usage**

# Challenges for SCC41

- **Global regulations governing DSA are still being evolved – requirements for DSA continue to change**
- **Speed of DSA standardization to meet market needs – standards usually take too long**
- **Ensure that standards have commercial relevance - will it be adopted by the industry?**
- **Broad participation by business sectors and research entities – how to recruit broad participation?**
- **Relevant business cases that provide the proper grounding for DSA standards – need vision and expertise to build good business cases**
- **The number of standards and industry organizations engaged in DSA standardization is growing: ITU-R, IEEE 802, SDR Forum, ETSI, ... - how to develop effective cooperative and collaborative relationships?**

# Overview of DSA Standards/Industry Fora Potential Liaisons for SCC41





# Criteria for New Project Approval

## 1. Broad market application

Each IEEE SCC41 standard shall address a well defined problem or need, be commercially relevant, have applicability to multiple market segments if possible, and cater to an open market where many vendors can play and many users can benefit.

## 2. Consistency

Each standard in the IEEE 1900 series of standards shall make a contribution to the P1900 family of standards and be developed to be consistent with other standards in the series.

## 3. Distinct Identity

Each IEEE SCC41 standard shall have a distinct identity and does not substantially overlap and/or duplicate the work in other existing industry standards.

## 4. Achievable Scope

To make sure that a standard will be successful, for a SCC41 project to be authorized, it is required to demonstrate that the problem can be solved technically and that the scope is achievable in an 18 month or less time-frame.

## 5. Balanced and committed participation

To uphold the IEEE-SA principle of open, balanced, consensus-based, inclusive participation, a project requesting approval shall be scrutinized for balance in the participants. This means that a diversity of stakeholders should be represented. Also, to ensure successful and timely completion of the standard, the project team shall demonstrate commitment to get the standard completed.

# **New Projects Proposed for SCC41 in Berlin Meeting, December, 2007**

- **Policy Language for Cognitive Radio and Dynamic Spectrum Access Applications**
- **Spectrum Sensing Techniques**
- **Protocols for Optimised Radio Resource Usage**
- **Dynamic Frequency Hopping**

# SCC41 Call for Participation

**SCC41 would like to invite interested entities to:**

- **Participate in standards work in progress:**
  - Working Group P1900.3 on Conformance Testing
  - Working Group P1900.4 on Distributed Radio Resource Management
- **Participate in proposed new Working Groups:**
  - Proposed Working Group on Policy Language for Cognitive Radio & DSA
  - Conference calls are being held for Spectrum Sensing project
- **Propose new standards projects in the DSA space!**