

P1900.5.1

Submitter Email: lynn.grande@gdc4s.com

Type of Project: New IEEE Standard

PAR Request Date: 20-Sep-2011

PAR Approval Date: 09-Nov-2011

PAR Expiration Date: 31-Dec-2015

Status: PAR for a New IEEE Standard

1.1 Project Number: P1900.5.1

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: Standard Policy Language for Dynamic Spectrum Access Systems

3.1 Working Group: Policy Language and Architectures for Managing Cognitive Radio for Dynamic Spectrum Access Applications (COM/SC/DYSPAN-P1900.5)

Contact Information for Working Group Chair

Name: Lynn Grande

Email Address: lynn.grande@gdc4s.com

Phone: 954-892-2473

Contact Information for Working Group Vice-Chair

Name: James Hoffmeyer

Email Address: jhoffmeyer@ieee.org

Phone: 303-931-3840

3.2 Sponsoring Society and Committee: IEEE Communications Society/Standards Committee (COM/SC)

Contact Information for Sponsor Chair

Name: Curtis Siller

Email Address: c.siller@comsoc.org

Phone: 480 857 0192

Contact Information for Standards Representative

None

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 11/2013

4.3 Projected Completion Date for Submittal to RevCom: 10/2014

5.1 Approximate number of people expected to be actively involved in the development of this project: 15

5.2 Scope: This standard defines a vendor-independent policy language for managing the functionality and behavior of dynamic spectrum access networks based on the language requirements defined in IEEE 1900.5, "Standard Policy Language Requirements and System Architectures for Dynamic Spectrum Access Systems".

5.3 Is the completion of this standard dependent upon the completion of another standard: Yes

If yes please explain: P1900.5 defines the language requirements to which this language will adhere.

5.4 Purpose: The purpose of this standard is to define a policy language for interoperable, vendor-independent control of Dynamic Spectrum Access functionality and behavior in radio systems and wireless networks. This standard defines the relationship of that policy language to the needs of at least the following constituencies: the regulator, the operator, the user, and the network equipment manufacturer.

5.5 Need for the Project: Cognitive Radio, Software Defined Radio, and similar technologies are increasingly being adopted within industry. Concurrently, multiple business models as well as other needs, such as military and public safety, are emerging, most with conflicting goals and operating procedures. Devices, networks and applications that can use Cognitive Radios for Dynamic Spectrum Access applications require an interoperable means of specifying rules to govern the functionality and behavior of Cognitive Radios in a scalable manner. Policy-based management has this general capability; hence, this standard fulfils this need, since it enables these entities to be re-purposed to solve different application-specific needs and to serve in different scenarios where multi-vendor operation and interoperability is required. The functionality targeted in this standard will lead to the optimum exploitation of the radio eco-space, for all stakeholders, in order to obtain required metrics (e.g., Quality of Service). This in turn will support the development of anytime and anywhere wireless access to resources and services, thus perpetuating the industry and its investments.

5.6 Stakeholders for the Standard: Stakeholders include wireless devices end users, regulators, operators and network

equipment manufacturers.

Intellectual Property

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No

6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

7.1 Are there other standards or projects with a similar scope?: No

7.2 Joint Development

Is it the intent to develop this document jointly with another organization?: No

8.1 Additional Explanatory Notes (Item Number and Explanation): The standard developed under this PAR will take into consideration both the Policy Language Requirements of IEEE 1900.5 and the results of the Modeling Language for Mobility Work Group (MLM-WG) within the Wireless Innovation Forum (SDRF v2) Committee on Advanced Wireless Networking and Infrastructure. MLM-WG is developing use cases, an ontology, corresponding signaling plan, requirements and technical analysis of the information exchanges that enable next generation communications features such as spectrum awareness and dynamic spectrum adaptation, waveform optimization, capabilities, feature exchanges, and advanced applications. The MLM-WG expects this effort to lead to specifications/standards for languages and data exchange structures to support these capabilities.

Recognizing that the MLM-WG and P1900.5 have partially overlapping scopes, the IEEE Standards Association and the Wireless Innovation Forum (SDRF v2) entered into a memorandum of understanding in January 2010 to formalize collaboration between the two groups on the topic of policy languages for cognitive radio. The MLM-WG will contribute all work under the applicable IEEE copyright and the IEEE patent policy and procedures to the P1900.5.1 project so that P1900.5 WG members can review. All meetings regarding the development of this standard will be held according to IEEE P&P for individual projects and will include MLM-WG and P1900.5.1 WG members.

It is expected that the project will involve the following activities:

1. Development of a number of use cases for Autonomous Spectrum Management.
2. Analysis of the signaling requirements, message structures and protocols required to support the use cases
3. Cognitive Radio Ontology extensions needed to support policy based radio control
4. Development of policies and rules for policy based radio control that implement the use cases
5. Analysis of existing languages with respect to the capabilities of expressing the policies
6. Selection of language (features) and/or extensions of the existing languages
7. Verification of language against 1900.5 requirements.
8. Evaluation of the costs and benefits of the policy language approach, in terms of time delay, communication overhead, memory/CPU usage, etc. This will require additional use cases and scenarios to be developed.