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IEEE Standard for Policy Language for Dynamic Spectrum Access Systems

IEEE Communications Society

Developed by the
Dynamic Spectrum Access Networks Standards Committee

IEEE Std 1900.5.1™-2020

IEEE

STANDARDS

IEEE Standard for Policy Language for Dynamic Spectrum Access Systems

Developed by the

Dynamic Spectrum Access Networks Standards Committee
of the
IEEE Communications Society

Approved 3 December 2020

IEEE SA Standards Board

Abstract: A vendor-independent policy language for managing the functionality and behavior of dynamic spectrum access networks based on the language requirements defined in IEEE Std 1900.5™, IEEE Standard Policy Language Requirements and System Architectures for Dynamic Spectrum Access Systems, is defined in this standard.

Keywords: Description Logic, Dynamic Spectrum Access, First Order Logic, Horn-based rules, IEEE 1900.5.1™, IEEE 1900.5.2™, Policy Language, RIF Framework for Logic Dialect (RIF-FLD), rule interchange format (RIF), Spectrum Consumption Modeling, Web Ontology Language (OWL 2)

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PDF: ISBN 978-1-5044-7261-6 STD24537
Print: ISBN 978-1-5044-7262-3 STDPD24537

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Introduction

This introduction is not part of IEEE Std 1900.5.1-2020, IEEE Standard for Policy Language for Dynamic Spectrum Access Systems.

Acknowledgments

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IEEE Standard for Policy Language for Dynamic Spectrum Access Systems

1. Overview

1.1 Introductory prevailing conditions

In the development of this standard, the following conditions were to be met:

a) The development of this standard was required to follow the specifications of IEEE Std 1900.5™-2011.[1]

b) According to IEEE Std 1900.5-2011, the language should be based both on the Web Ontology Language (OWL 2) and on a rules language compatible with OWL 2, that is, be compatible with a suitable rule interchange format (RIF) dialect.

c) The development of the standard required some linguistic constructs that are not available in current RIF dialects as RIF Basic Logic Dialect (RIF-BLD), RIF Production Rule Dialect (RIF-PRD), and RIF-Core.

d) Consequently, this new standard is introducing a new dialect of RIF [RIF Spectrum Consumption Modeling (SCM) Dialect based on RIF Framework for Logic Dialect (RIF-FLD) called "RIF-DSA"].

e) Since this standard is addressed to the community of radio and networks community, to make the language usable to this community, introductory material on formal languages like RDF, OWL, and RIF, as well as logic and theory of computation, needed to be included.

f) One requirement of IEEE Std 1900.5-2011 was that the language should be able to use ontologies to define policies. Toward this end, an example ontology was used. This ontology is not part of the standard.

1.2 Scope

This document defines a standard for a formal language to specify policies for radio devices that use cognitive patterns in their operating behavior.

[1] Information on references can be found in Clause 2.