

# P802.19.1 System Requirements

Date: 2010-02-23

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# Abstract

**This contribution proposes requirements for P802.19.1 based on the official requirement guidelines created during LA meeting.**

**Requirements will serve as a framework for developing system architecture and draft standard.**

# Guidelines to Create System Requirements

- **SDD Components:**

- System Architecture
- Outline
- Terminology
- System Requirements
- Assumptions

## **Requirements Guidelines Agreed in January Meeting:**

- **Provide wording for system requirements for the coexistence system as a single entity.**
- **Provide general functional requirements, which should be categorized according to the following categories:**
  - Discovery
  - Communications
  - Etiquette
  - Algorithms
  - General
- **Should the paragraph above be used as guidelines for functional requirements section of the SDD?**
  - No objections

## Definition of “P802.19.1 system”

- For the purpose of this contribution we understand the term “P802.19.1 system” as follows:
  - P802.19.1 system is a system that provides or enhances the coexistence of dissimilar or independently operated TVWS networks and devices.

## Requirements (1/10)

- **P802.19.1 system shall enable discovery of P802.19.1 compliant TVBD networks and devices.**  
(Discovery)

Explanatory note: P802.19.1 system is required to identify potential P802.19.1 compliant TVBD networks or devices that need to coexist as one crucial step in order to achieve coexistence.

The term discovery should be understood as determining the presence of TVBD network or device and identifying its attribute such as ID.

## Requirements (2/10)

- **P802.19.1 system shall be able to obtain information required for TVWS coexistence.**  
(Communication)

Explanatory note: P802.19.1 system obtains this information from outside world, for example, from TVWS database, from P802.19.1 compliant TVBD networks/devices and etc.

## Requirements (3/10)

- **P802.19.1 system shall have means to exchange obtained information.**  
(Communication)

Explanatory note: Without constraining the mechanism of communication, this requirement puts a high level requirement to provide a means of exchanging information necessary for TVWS coexistence.

## Requirements (4/10)

- **P802.19.1 system shall be able to provide reconfiguration commands and corresponding control information to P802.19.1 compliant TVBD networks and devices to implement TVWS coexistence decisions.**  
(Communication )

Explanatory note: Examples of reconfiguration commands are: to change center frequency, to adjust transmit power and etc.



## Requirements (5/10)

- **P802.19.1 system shall be able to update information required for TVWS coexistence.**  
(Communication)

Explanatory notes: This requirement highlights the capability to update/refresh coexistence related information, such as location information of TVBD networks and devices, spectrum utilization by TVBD networks and devices.

## Requirements (6/10)

- **P802.19.1 system shall support secure communication.**  
(Communication)

Explanatory Notes: P802.19.1 system may use some sensitive information to provide coexistence, e.g. TVWS network or device dedicated information and geolocation. P802.19.1 system shall support means to obtain and exchange such information without compromising the privacy and security of the information.

## Requirements (7/10)

- **P802.19.1 system should be able to analyze obtained information.**  
(Algorithm)

Explanatory Notes: An example of analysis is the processing of raw data to generate a set of new data for assisting decision making.

## Requirements (8/10)

- **P802.19.1 system shall enable TVWS coexistence decision making.**  
(Algorithm)

Explanatory note: As an example of decision making, deciding on which actions should be taken by TVBD networks/devices to solve coexistence problem.

## Requirements (9/10)

- **P802.19.1 system shall be able to support different architectural options of decision making for TVWS coexistence (e.g. centralized, distributed and autonomous).**  
(Algorithm)

Explanatory note: This requirement underlines the possibility of having various approaches to implement decision making in coexistence scenarios. It also underlines P802.19.1 system must be capable to support these different approaches of decision making for coexistence.

## Requirements (10/10)

- **P802.19.1 system shall be able to support common time.**  
(General)

Explanatory Notes: Efficient use of the available spectrum resources may require timesharing between the coexisting networks or devices. Also, common silence periods for sensing the TVWS primary users enable more reliable sensing results. Thus, P802.19.1 system shall be able to support common time reference for coexisting P802.19.1 compliant networks and devices.