

Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [Spectrum resource measurement and management]

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Abstract: [This document present the approaches of IEC TC65 and ETSI ERM/TG41 related to the PAR of IEEE802.15.4s

Purpose: [This document is a response to the invitation of P802.15.4s]

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Time Slotted, Channel Hopping (TSCH) Standards

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November, 2008

Spectrum resource measurement and management

Approaches of IEC and ETSI
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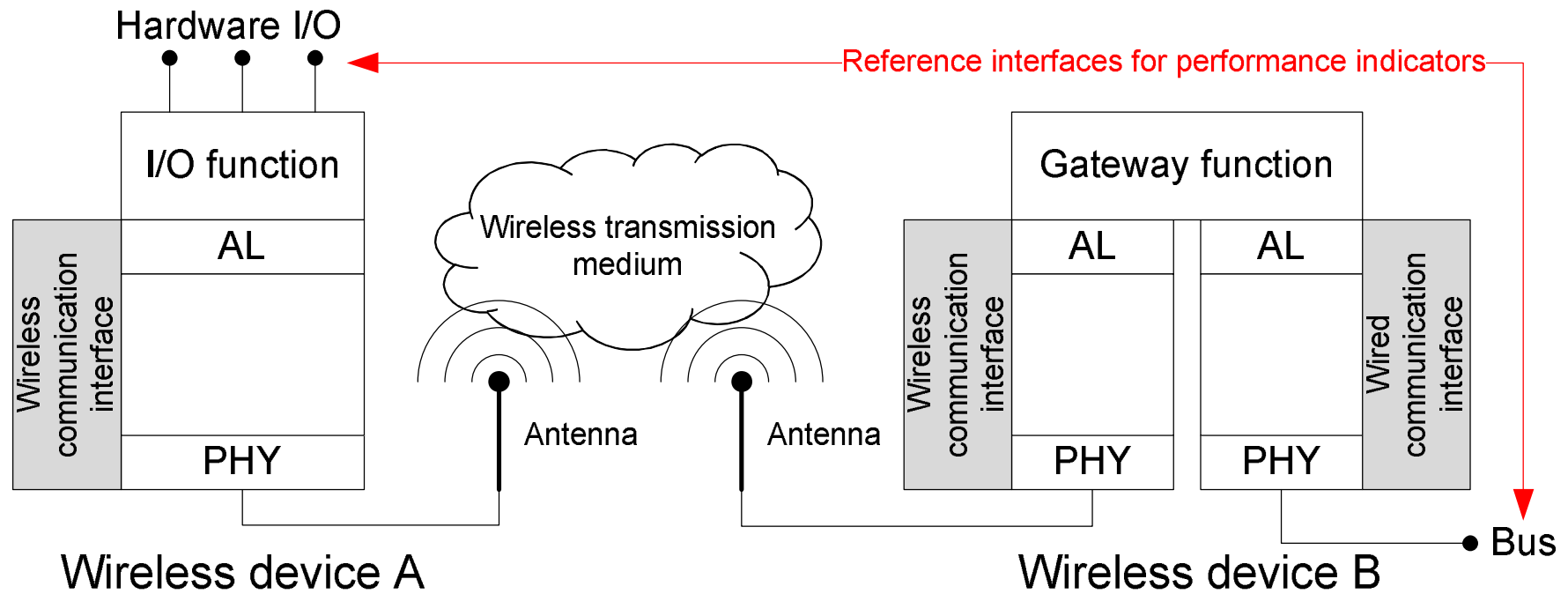
Concepts in IEC Draft 62657-1

- Geolocation licensing
 - The proposal is to consider the geolocation of the device to control its transmission characteristics. In a non-crowded area or in owned premises (where radio environment can be managed), a license for a specific band should be obtainable from the relevant national regulator.
 - By limiting the range of operation for example to a typical indoor environment, the risk of interference with devices outside the user's premises is eliminated by the attenuation of surrounding walls.

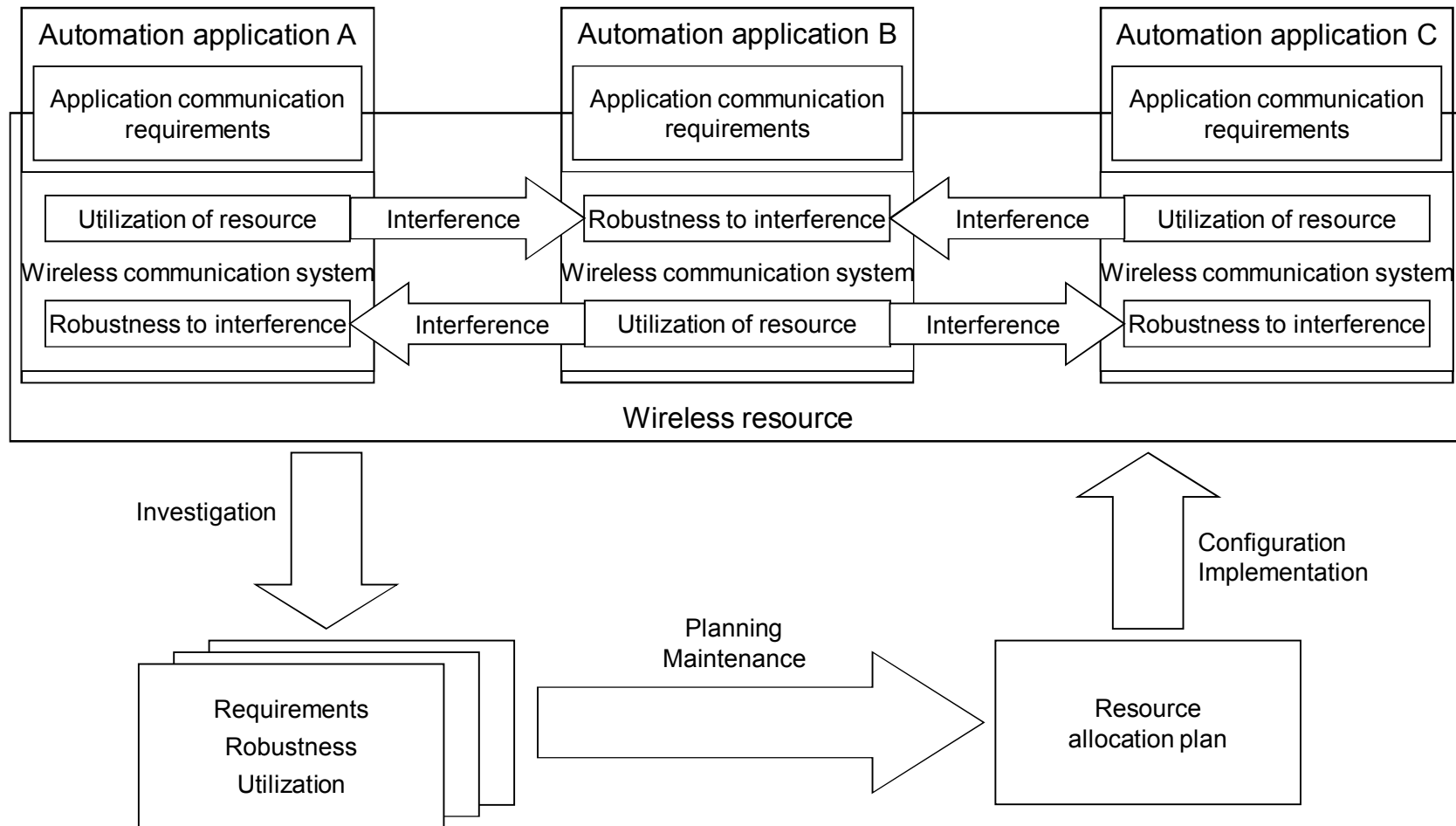
Reconfigurable Radio Systems (RRS)

- Reconfigurable Radio Systems (RRS) are expected to become important drivers for the evolution of wireless communications and to bring substantial benefits from reconfigurable flexible and cost-effective architectures for wireless devices to a better utilization of the radio frequency spectrum, thereby helping to mitigate the “spectrum scarcity” problem.
- RRS, in particular software defined radio (SDR) and cognitive radio technologies have been investigated in the commercial, public safety and military areas.

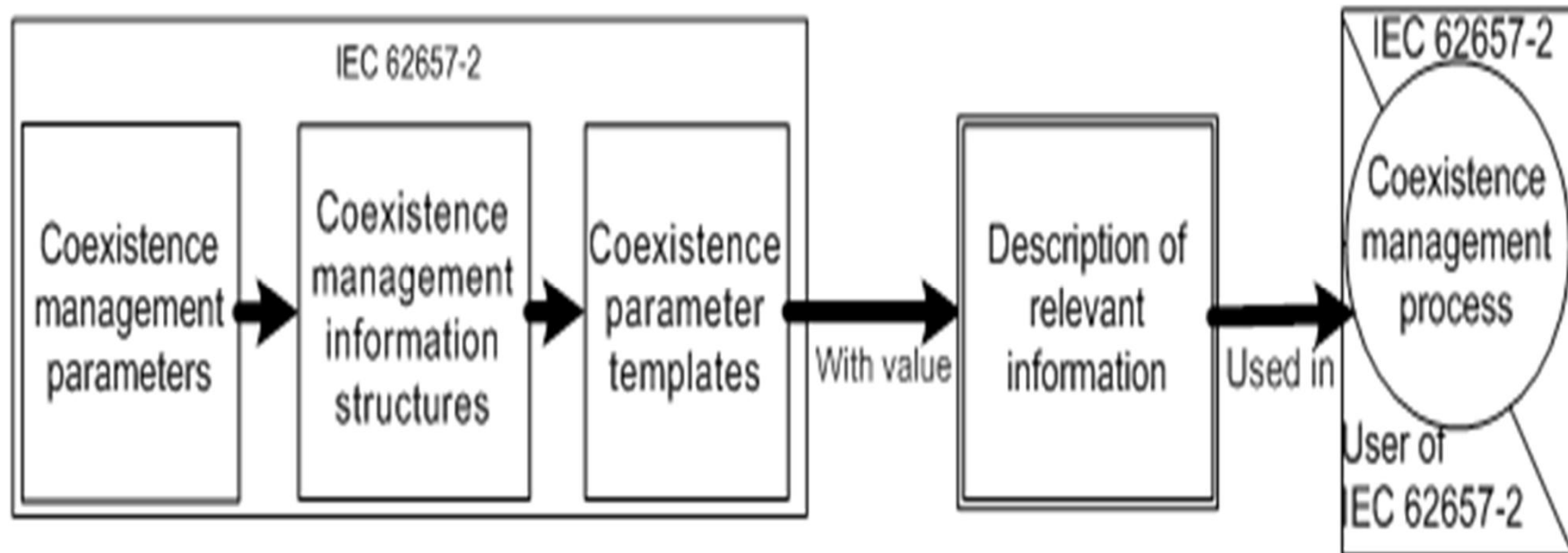
Reference interfaces



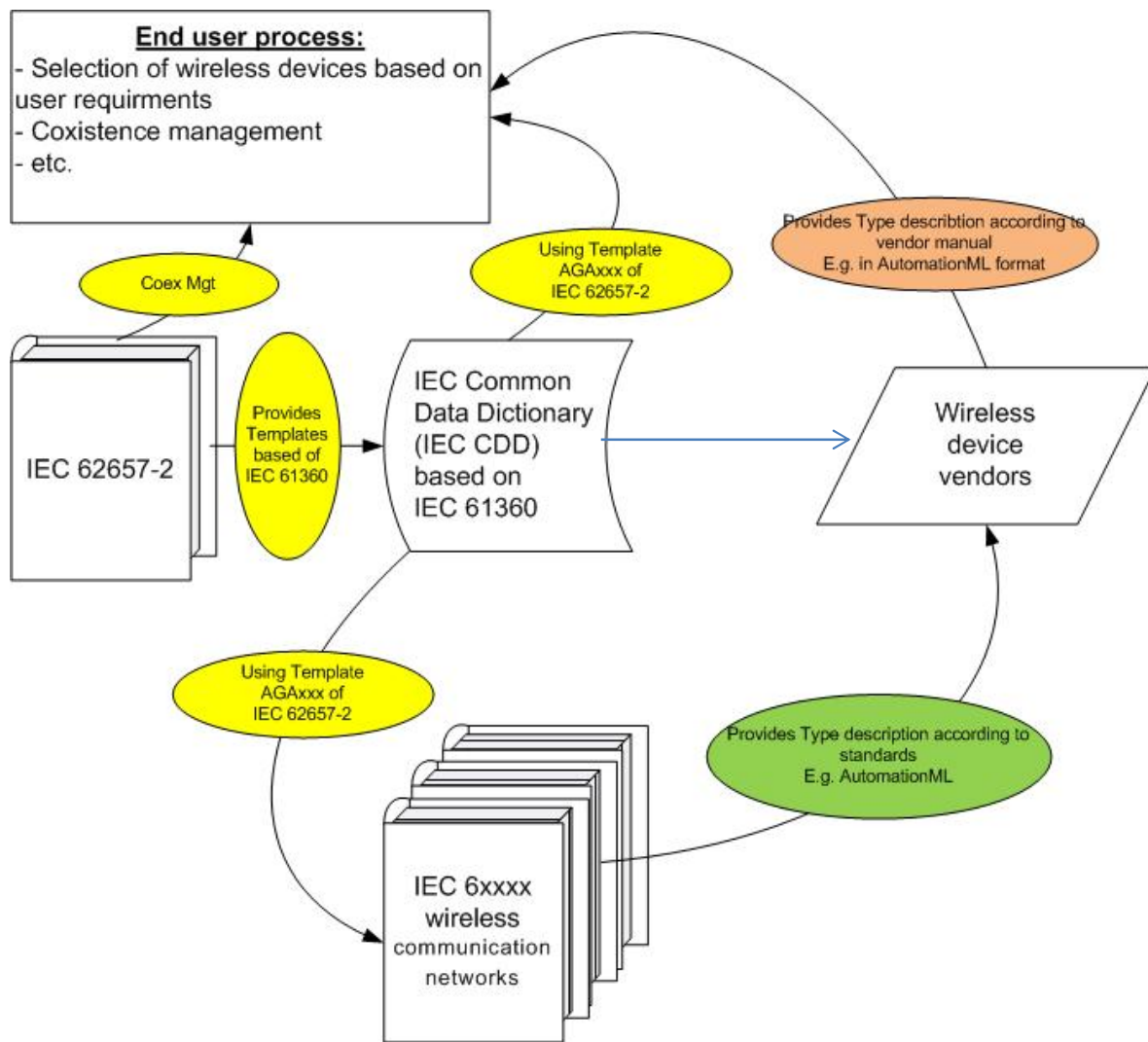
Coexistence management in IEC 62657-2



Principle for use of coexistence parameters



Common Data Dictionary



Central Coordination Point (CCP) concept

- ETSI draft EN 103 329 specifies the CCP concept especially for the usage in the spectrum of 5 725 MHz to 5 875 MHz under consideration for the use by Wireless Industrial Automation (WIA).
- IEC 62657-x will specify the CCP behaviour.

Concept of Central Coordination Point

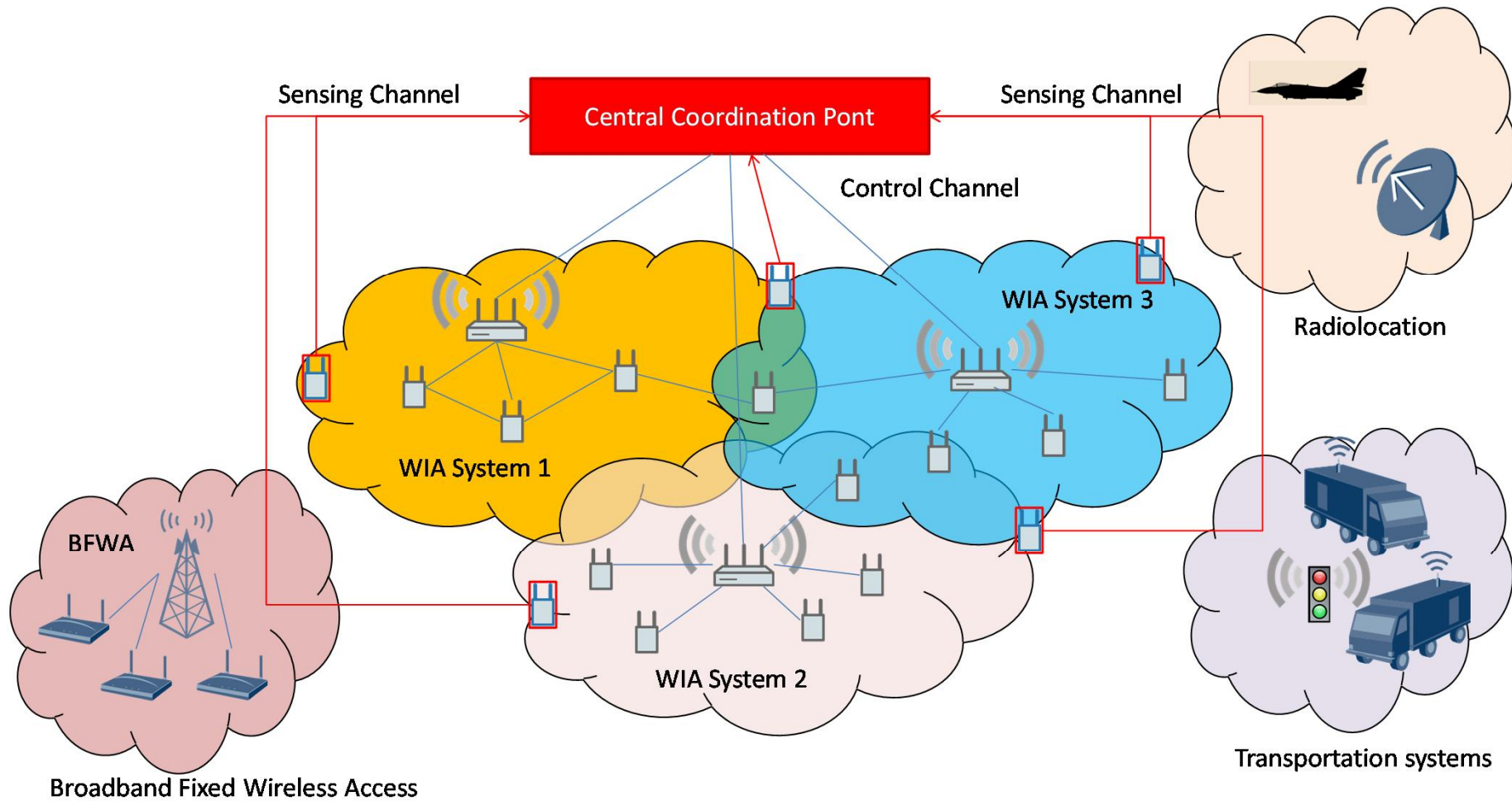
- Coordinate between multiple devices and/or multiple wireless networks with respect to bandwidth, time and space instead of using mitigation techniques individually per radio device

Concept of Central Coordination Point

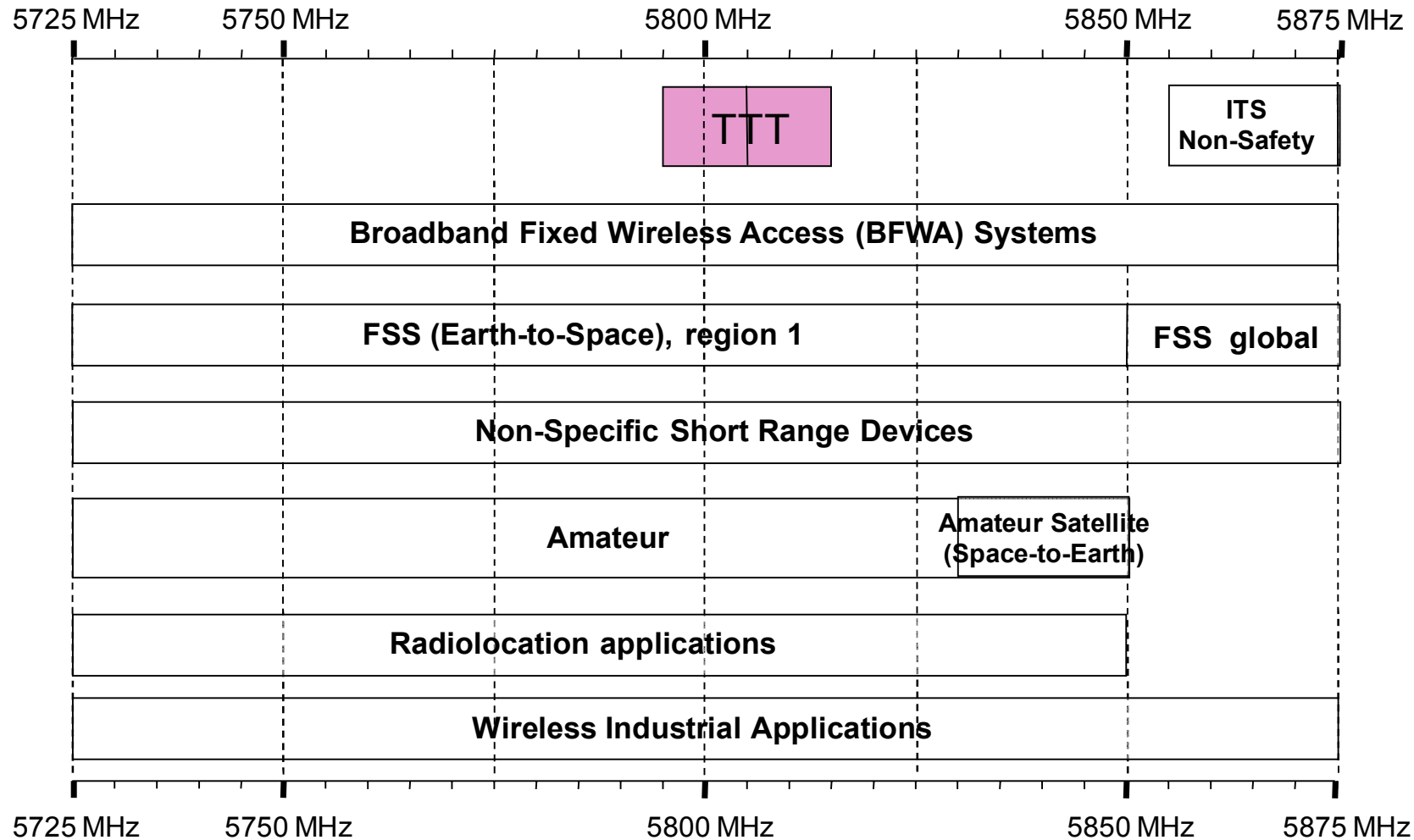
CCP shall fulfil the following basic requirements:

- Support of spectrum coordination mechanisms to provide coexistence between different systems and services in the same frequency range, with the aim of:
 - Protection of incumbent radio systems (e.g. Radiolocation, BFWA, ITS).
 - Avoidance of harmful interferences.
- Support of mechanisms for automatically spectrum allocation and spectrum access, with the aim of:
 - Recognition of free and occupied spectrum.
 - Detection and classification of incumbent radio systems and services.
- Support mechanisms for continuous surveillance of the frequency spectrum condition.

CCP concept for sharing with other incumbent services and applications



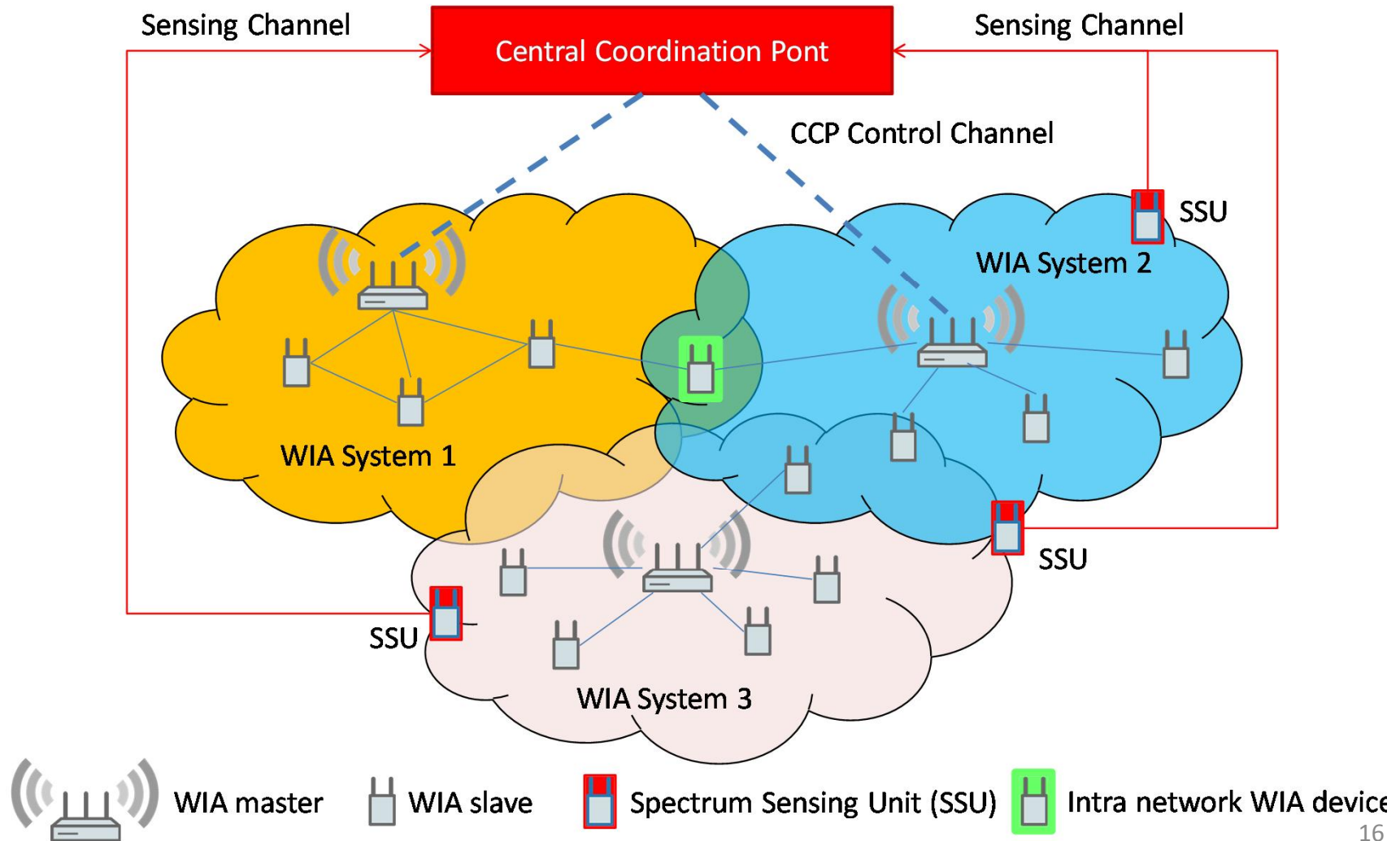
Incumbent services and applications in the 5,8 GHz WIA



Parameters of incumbent services and applications

Incumbent service application	Frequency band [MHz]	Type	Application characteristic	Transmit power [eirp]
Radiolocation	5725 – 5850	Defence	Dynamic in time and location	25 – 2800 kW
BFWA	5725 – 5875	Fixed Service	Static	4 W
TTT	5795 – 5815	Transport and Traffic Telematics	Static	2 W – 8 W
ITS non-safety	5855 – 5875	Transportation	Dynamic in time	1 mW – 200 mW

CCP concept for intra-system coexistence



CCP communication with intra-system devices

- CCP shall communicate with network access points or with individual wireless devices by means of one or more communication channels and protocols.
- Support of different radio technologies.
- Support of interface for interoperability.
- Support of interface for coordination.