

White Space requirements

I-D: [draft-ietf-paws-problem-stmt-usecases-rqmts-01](#)

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Requirements grouping

- Data Model Requirements
- Protocol Requirements
- Operational Requirements

Data model Requirements – location specific

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- D3: The Data Model MUST support specifying the location of the subject and the uncertainty by which the location was determined, when confidence level is considered 95%

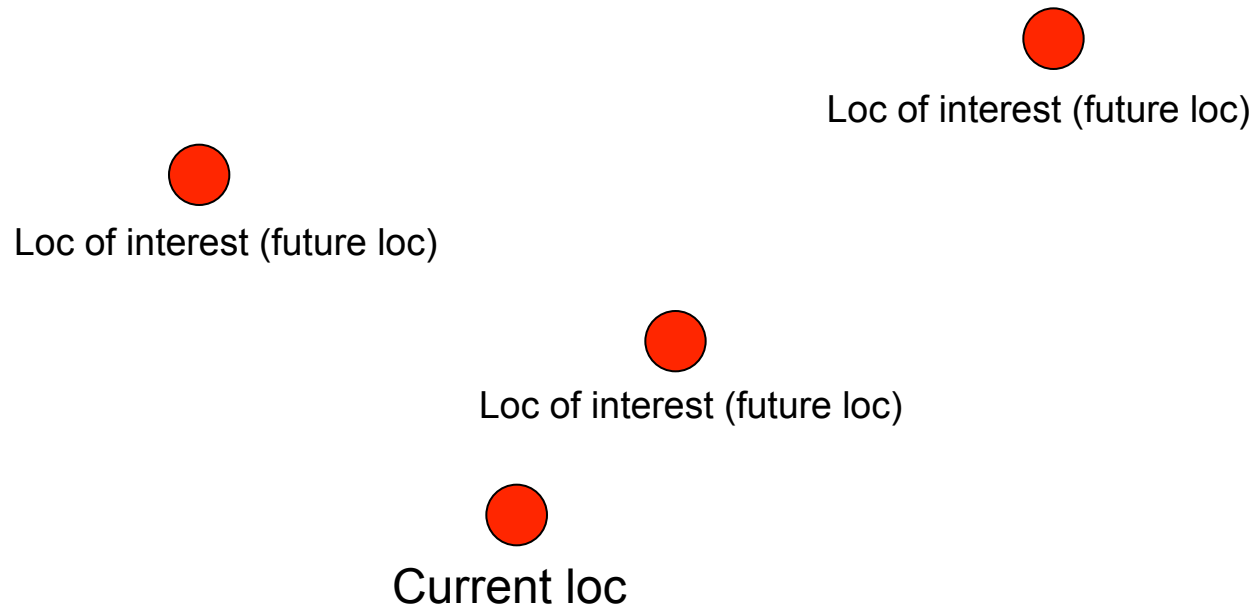
If the uncertainty by which the location was determined does not meet the regulatory requirement (eg FCC's $\pm 50\text{m}$), then the subject must not place a query

Data model Requirements – location specific

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- D4: copy-paste error, replace with:

The Data Model MUST support specifying multiple (independent) locations.

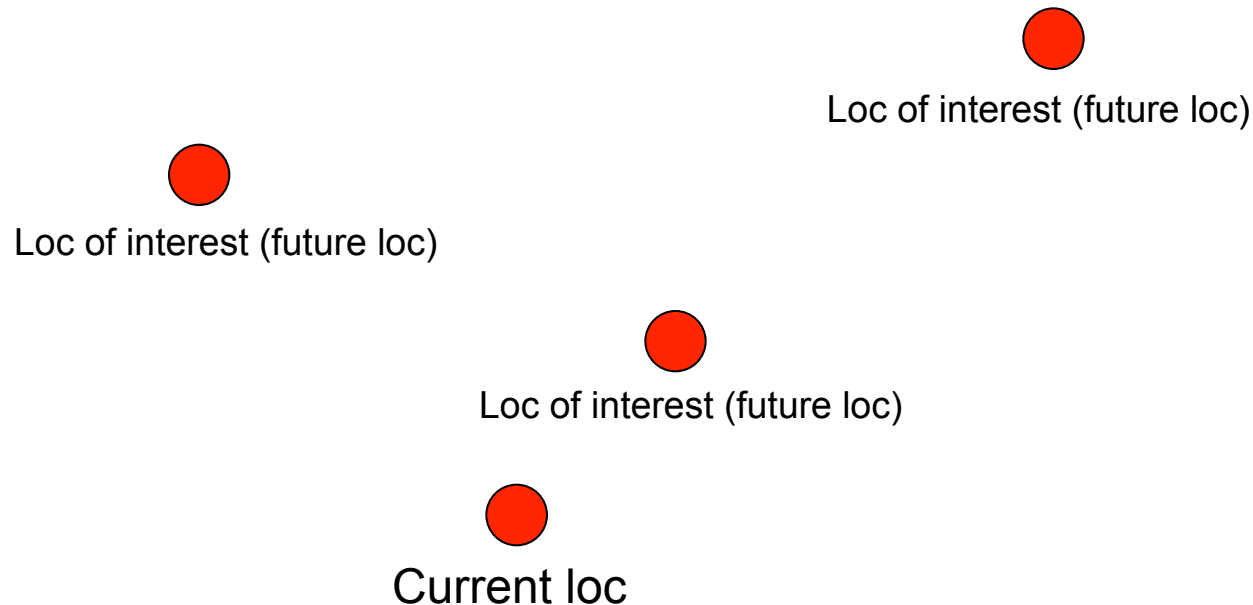


Response: return channel availability info for each location

Data model Requirements – location specific

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- D.7: The Data Model MUST support specifying channel availability information for multiple locations.

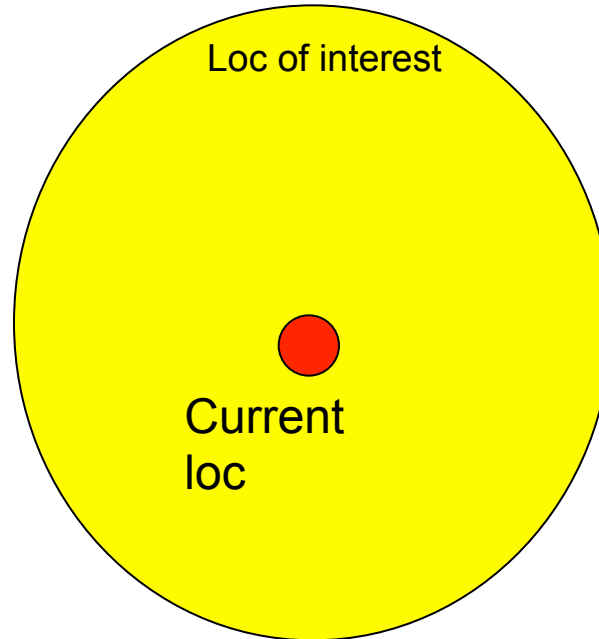


Response: return channel availability info for the locations specified (union)

Data model Requirements – location specific

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- D8: The Data Model MUST support specifying channel availability information for an area around a specified location.



Radiation parameters requirements in -01

- D.1: The Data Model MUST support specifying the antenna height parameter of the subject.
- D.6: The Data Model MUST support specifying the maximum output power of the subject.
- D.9: The Data Model MUST support specifying multiple spectrum masks, each containing (1) the lowest applicable frequency in MHz, (2) the highest possible frequency in MHz, (3) the maximum total EIRP over the frequency range defined by the spectrum mask, (4) the general spectrum mask in dBr from peak transmit power in EIRP, with specific power limit at any frequency linearly interpolated between adjacent points of the spectrum mask expressed as in [80211P] or [FCC47CFR90.210], and (5) measurement resolution bandwidth for EIRP measurements.

Replace radiation parameter requirements with

- D1: The Data Model MUST support specifying the antenna and radiation pattern related parameters of the subject, such as:
 - Antenna height
 - Maximum output power
 - Radiation pattern (directional dependence of the strength of the radio signal from the antenna)
 - Spectrum mask with lowest and highest possible frequency
 - spectrum mask in dBr from peak transmit power in EIRP, with specific power limit at any frequency linearly interpolated between adjacent points of the spectrum mask
 - measurement resolution bandwidth for EIRP measurements

Transmitter identifier requirements

- D.2: The Data Model MUST support specifying an ID of the **transmitter** subject. This ID would be the ID of the **transmitter** device used to be certified by a regulatory body for a regulatory domain.
- D.2.1 The Data Model MUST support specifying a contact or a list of contacts of this transmitter. For example, facility or on-site technical manager, administrator, any operational contacts may be specified.

Other Data Model Requirements

- D5: The Data Model MUST support specifying a list of available channel list and time constraints for the channel list availability.
 - Specify for a given location the
 - Available channel list with the lower and upper frequency values for each channel
 - The time intervals the channels are available

Protocol Requirements - Discovery 1/2

- P.1: The protocol MUST provide a mechanism for the subject to discover the WS Database it has to use at a given location.

Protocol Requirements – Discovery 2/2

- P.2: The protocol MUST support regulatory domain discovery.
- Note: this implies that after discovery the transmitter first queries the DB to find out the regulatory domain before it queries for the available channel list

Protocol Requirements – security specific

- P.4: The protocol between the master device and the WS Database MUST support mutual authentication and authorization.
- P.5: The protocol between the master device and the WS Database MUST support integrity and confidentiality protection.
- P.6: The protocol MUST support both username/password and digital certificates based authentication.
- P.12: A master device MUST be capable of validating the digital certificate of the WS Database.
- P.13: A master device MUST be capable of checking the validity of the WS Database certificate and whether it has been revoked or not (ie requires support for OCSP)

Protocol Requirements: supporting PUSH operation

- P.3: The protocol between the master device and the WS Database MUST support pushing updates in channel availability changes to subjects.

Other protocol requirements

- Is there a need to have these requirements at protocol level, is it enough to have them as data model requirements?
- P.8: A master device **MUST** place its location into the query it makes to the whitespace database.
- P.9: A master device **MUST** be able to query the whitespace database for channel availability information for a specific expected coverage area around its current location.
- P.10: A master device **MUST** send Device ID, serial number and device location in the query it makes to the database.
- P.11: A master device **MAY** send additional information in the query it makes to the database such as antenna height above ground level or antenna characteristics.

This should be an operational requirement

- P.7: A master device MAY register with a trusted white space database.

Operational Requirements

- O1 through O11
- They are not needed for the Data Model or Protocol Design
- But without them the usage of the protocol is not clear

Operational Requirements

- O.1: A master device MUST query the WS Database for the available channels as often as required by the regulation (eg, FCC requires once per day) to verify that the operating channels continue to remain available.
- O.2: A master device MUST determine its location with the accuracy required by the regulation (eg, FCC requires +/- 100m) before placing a query to the DB.
- O.3: A master device which changes its location during its operation, MUST query the WS Database for available operating channels each time it moves more than the distance specified by the regulation (eg FCC specifies 100m) from the location it previously made the query from.
- O.4: The WS Database MUST provide the available channel list when requested from an authenticated and authorized device and MAY also provide time constraints for the channel list, maximum output power and start and stop frequencies for each channel to the master device.
- O.5: A master device MUST query the WS Database and include the FCC ID of the slave device in the query before allowing the slave device to use the available channel.