SPECTRUM SHARING COMMITTEE RELEASE PLAN

Approved by the Spectrum Sharing Committee Steering Group

13 January 2021
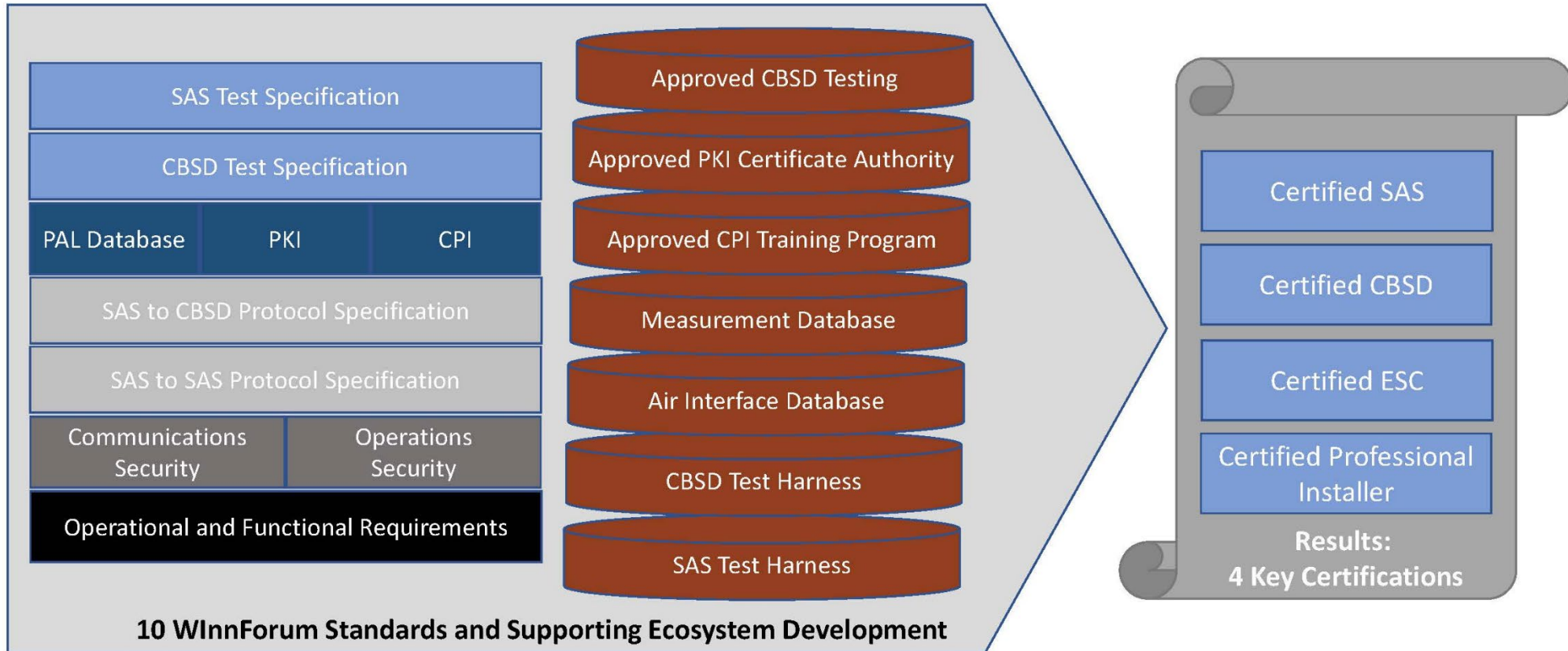
Release 1

Commercializing CBRS: Standards and Ecosystem Support

10 WInnForum Standards and Supporting Ecosystem Development

Results:
4 Key Certifications

Standards That Comprise Release 1

WINNF-TS-0112 Operational and Functional Requirements

WINNF-TS-0065 CBRS Communications Security Technical Specification

WINNF-TS-0071 CBRS Operational Security Technical Specification

WINNF-TS-0016 SAS to CBSD Protocol Specification

WINNF-TS-0096 SAS to SAS Protocol Specification

WINNF-TS-0061 SAS Test and Certification Specification

WINNF-TS-0122 CBSD Test and Certification Specification

WINNF-TS-0245 PAL Database Specification

WINNF-TS-0022 CBRS PKI Certificate Policy

WINNF-TS-0247 CPI Training Program Accreditation Standard

Release 1 Policy Documents

WINNF-SSC-0001 Air Interface and Measurement Policy

WINNF-SSC-0002 Registered Air Interfaces and Measurements

WINNF-SSC-0003 Traceability Matrix

WINNF-SSC-0004 Release Plan (this document)

WINNF-SSC-0005 <withdrawn>

WINNF-SSC-0006 <withdrawn>

WINNF-SSC-0007 Margin Policy

WINNF-SSC-0008 Coordinated Periodic Activities Policy (CPAS)

Standards Milestones

CA Accredited: Q4 2017

Baseline Standards Announced: Q1 2018

CBSD Test Code Released: Q2 2018

CBSD Test Labs Approved: Q2 2018

SAS Test Code Released: Q2 2018

CPI Training Program Accreditation: Q1 2019

For more on CBRS Status, please see https://cbrs.wirelessinnovation.org/cbrs-status-summary

Border Area Management

- Requirements on Implementing international agreements to protect Canada and Mexico

CBSD Measurement Reporting

- Initial requirements for CBSD measurements of their local interference environment and reporting those data back to the SAS.

CBSD Registration Processing

- The requirements for how a CBSD registers with a SAS, including owner registration, professional installer registration and CBSD registration.

Communications Security

- The communications security policies governing SAS and CBSD communications interfaces.

Certificate Authority Accreditation Standard

Certified Professional Installer Training Program Accreditation Standard

- Guidelines for adoption of uniform industry working standards and curriculum required to be consistent with the protection of spectrum, both licensed and GAA, for sharing in the 3550-3700 MHz band.

Note: Detailed feature list associated with each release is captured in the SSC CBRS Requirements Traceability Matrix (WINNF-SSC-0003)

CPE-CBSD Handshake

Domain Proxy

- The baseline Operational and Functional Requirements of the CBRS Domain Proxy for initial testing and trials.

Dynamic Protection Zones

Environmental Sensing Capability (ESC)

- The requirements for implementation of an Environment Sensing Capability, and protecting federal incumbents.

Exception Management

- The requirements for how trouble tickets or exceptions are managed, including from FCC input, reports from incumbents, and reports from PAL.

FSS Protection

Grandfathered Wireless Device Protection

Operations Security

- The overall system operational security requirements to include handling of incumbent data, obfuscation of spectrum data, and processes associated with auditing and governance of the SAS infrastructure.

PAL Protection Area Definition

- Requirements on how PALs reports their coverage area to the SAS for end-to-end use of the licenses. This includes how PAL licensees define PAL Protection Areas (PPAs), request to operate in a particular geographic area within their license boundary (PPA), how PPA credentials and IDs are defined, conveyed and managed, and how the SAS accomplishes such protections.

Protocol Support for Priority Access Licensing

Propagation Modeling

- Identify appropriate 3.5 GHz propagation models for Incumbent and PAL protection and PPA definition, determine relative benefits and limitations, develop agreement on baseline needs such as underlying data, and define standardized interference aggregation methodologies.

SAS to SAS Information Sharing

- Initial support for SAS-SAS Synchronization and Information exchange.

Spectrum Grant Request Processing

- The requirements for how a CBSD requests and relinquish grants, and how grants are reassigned or terminated.

Release 1 Still In Development

PAL Operations Support

PAL Secondary Market Support

Note: These Specifications, if any, will have no impact on existing Release 1 specifications

Issue Management and Change Requests

Following the release of revision 1 specifications, change requests will be collected from the Forum's public issues management portal

Release 2

SG Policies for WG Implementation

There will be a mix of Release 1 and post Release 1 (Release 2, Release 3, etc.) participants in the ecosystem for the foreseeable future
- Note that Release 1 will include FCC changes to Part 96 as they occur

Release 1 is a default for Devices and SAS's
- Assure that all Entities "behave properly" when working in a mixed Release environment (SAS to CBSD, CBSD to SAS, SAS to SAS)
    - Release 2 entities are responsible for working with Release 1 entities
- Post Release 1 Specs should define default Behavior Appropriately

"Release 2" is not mandatory, but if you chose to move to Release 2, it includes a mandatory Capability Exchange protocol update to allow feature discovery/capability exchange (for any Post Rel 1 SAS or CBSD) plus optional features
- Support for multiple release level and feature set operability
- Backward compatible with Release 1 -- Nothing Breaks when talking to Release 1 Entity

Capability Exchange will Support Selective Implementation of Release 2 Optional Features
- Devices and SAS's can determine Release level (Release 1 would just ignore) of "Partner"
- Devices and SAS's may inquire about Implemented Post Release 1 Features

Optional Release 2 Features are Severable (Standalone, Built on top of Release 1 if Possible)

All Post Release 1 Features are Optional

The Set of Permitted Features is "Open" to Extension.
- SAS and CBSD Proprietary Features may be exchanged through the same interface as WInnForum approved features. However, the Feature ID of those Proprietary Features shall follow the standard naming convention as defined by WInnForum, to avoid conflict with standard features and other proprietary features.

Release 2 Will Build on Release 1

Release 2 Capability Exchange	Rel. 2 Option 1	Rel. 2 Option …	Rel. 2 Option N

**Release 1 Baseline
w/ FCC Part 96 Testing
(Mandatory)**
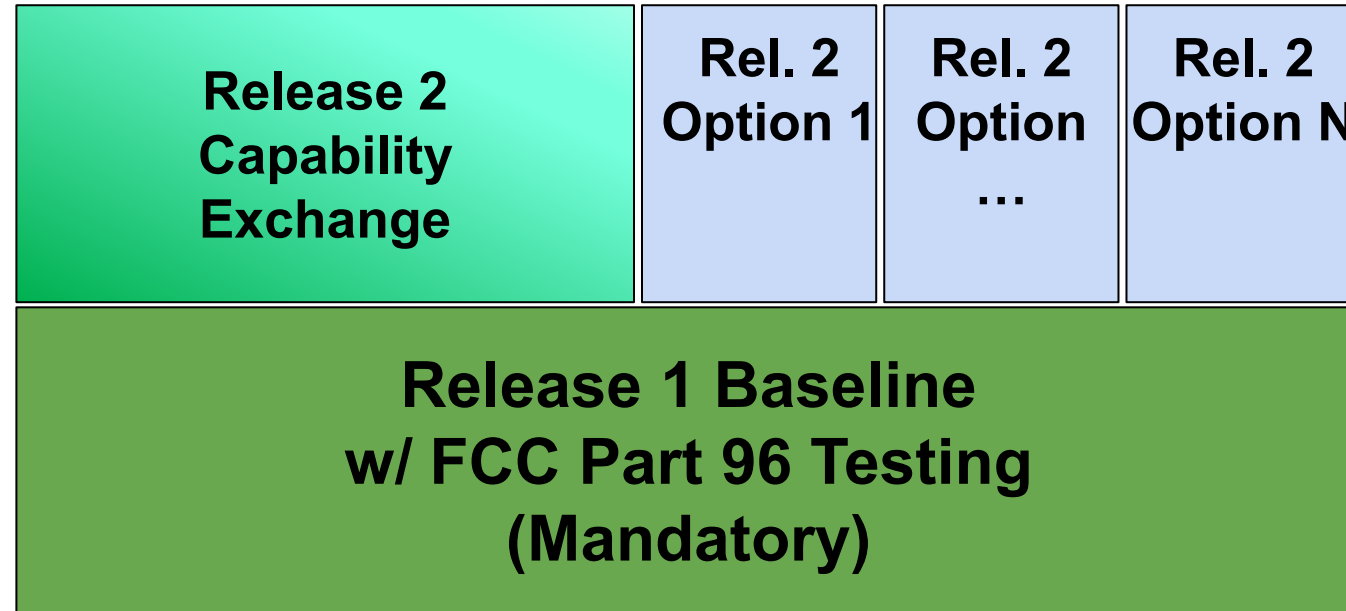
☐ **Optional "à la carte" Release 2 "Features"**

■ **Mandatory to claim conformance with Release 2**

■ **Mandatory for operation in the band**

Forward/Backward Compatibility

		CBSD Capability	
		Rel. 1	Rel. 2
SAS Capability	Rel. 1	Rel. 1	Rel. 1
	Rel. 2	Rel. 1	Rel. 2

Industry assumes that there will be a mix of Release 1 and post Release 1 (Release 2, Release 3, etc.) participants in the ecosystem for the foreseeable future

- Note that Release 1 will include FCC changes to Part 96 as they occur

Release 1 is a default for Devices and SAS's

- Assure that all Entities "behave properly" when working in a mixed Release environment (SAS to CBSD, CBSD to SAS, SAS to SAS)
- Release 2 entities are responsible for working with Release 1 entities

The WInnForum "Lean Standards Development Model (LSDM)™"
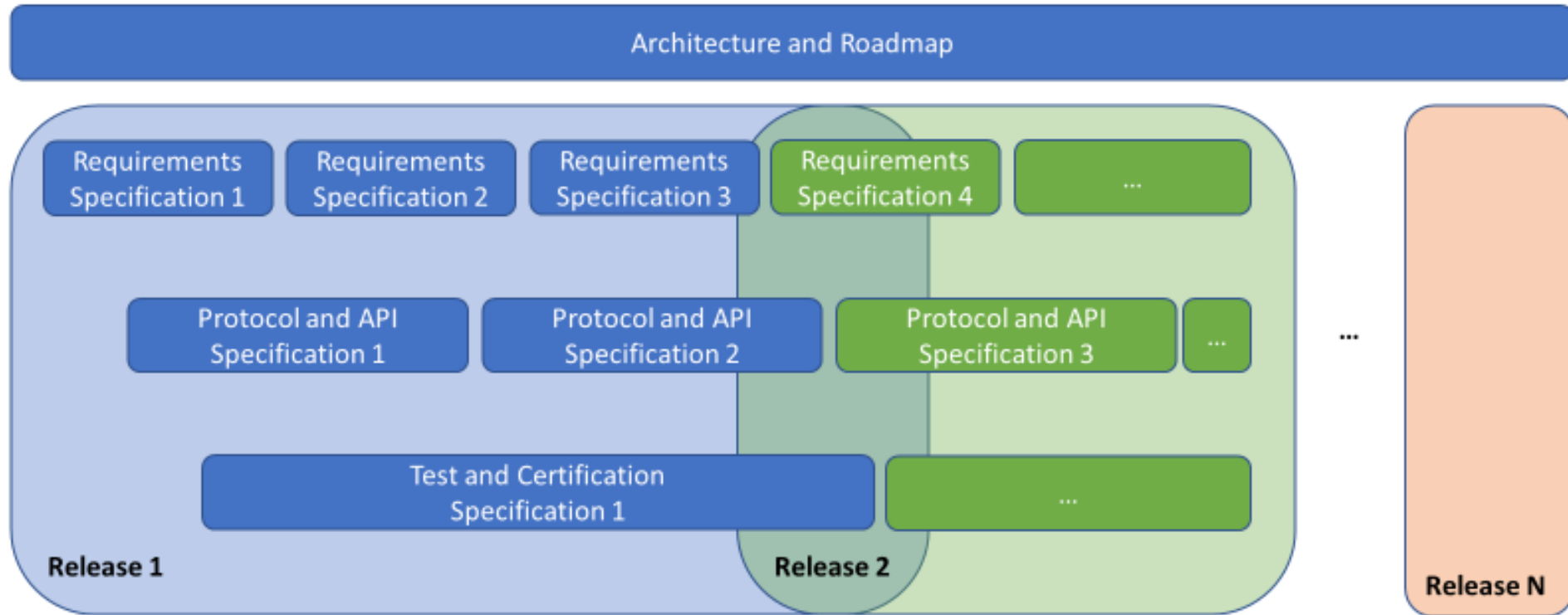
Types of Release 2 Features

1. **"Non-Regulatory Impacting" Features (NRI): Does not impact approved Release 1 testing**
    - "In addition to" features versus "instead of" features
    - Example: Enhanced Grouping Parameters
        - Extends the concept of Coexistence Group in Release 1 to allow a CBSD to register with a SAS indicating it is part of a "user/operator defined" group
        - Does NOT change how the SAS treats the CBSD with respect to incumbent or PAL protections

2. **Features that may impact Part 96 certification (RI)**
    - Example: 2-D Antenna Patterns
        - Allows SAS to increase utilization of spectrum
        - Allows SAS to improve incumbent and PAL protection if applied beyond GAA
    - Impact of these features will be different for SAS and CBSD

These two types of features need to be treated separately with respect to "certification"

Release 2 Testing
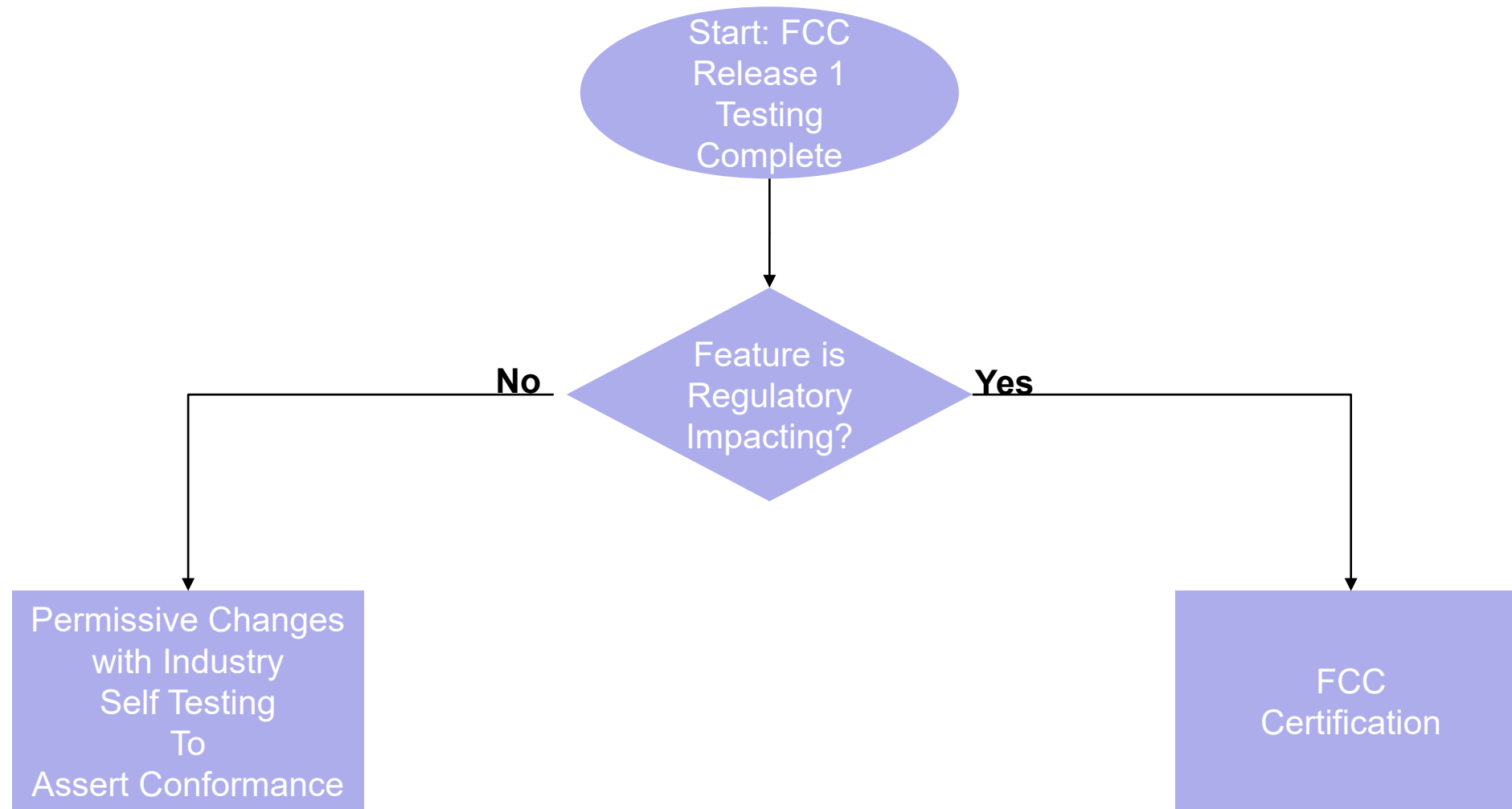
Current Plan for Release 2 NRI Features (Details in follow on slides)

Feature	Requirements (WG1)	Protocols (WG3)	Operations (WG5)	CBSD Test (WG4)	SAS Test (WG4)
Capability Exchange	Complete	Complete	Not Applicable	Complete	In Development
Enhanced Group Handling	Complete	Complete	Not Applicable	Complete	In Development
Enhanced Antenna Patterns*	Complete	Complete	Complete	Complete	In Development
Single Frequency Groups	Complete	Complete	Complete	Complete	In Development
Indoor Penetration Loss*	In Development	Introduced, Not Started	To Be Determined	To Be Determined	Introduced, Not Started
CPE-CBSD Indicator	Complete	Complete	Not Applicable	Complete	In Development
Passive DAS Support	Complete	Complete	Complete	In Development	In Development
Registration Enhancements	In Development	Introduced, Not Started	To Be Determined	Introduced, Not Started	Introduced, Not Started
Support for Beamforming *	To Be Determined	To Be Determined	To Be Determined	To Be Determined	To Be Determined

Reminder: Release 2 will be active when the Capability Exchange feature has been completed. Release 2 will continually evolve as new features are added. An individual feature will be considered complete and available for adoption when the associated test has been balloted and approved.

Note: Starred (*) items contain both RI and NRI variants

Key
Not Applicable
Introduced, Not Started
In Development (includes document in ballot)
Complete

Current Plan for Release 2 RI Features (Details in follow on slides)

Feature	Requirements (WG1)	Protocols (WG3)	Operations (WG5)	Test (WG4)
Enhanced Antenna Patterns*	Complete	Complete	In Development	In Development
Indoor Penetration Loss*	In Development	Introduced, Not Started	To Be Determined	Introduced, Not Started
Enhanced CPE-CBSD Support for IAP	In Development	In Development	In Development	Introduced, Not Started
Enhanced Propagation Models	Introduced, Not Started	Not Applicable	Not Applicable	Introduced, Not Started
Grant Optimization/Grant Update	In Development	In Development	Not Applicable	Introduced, Not Started
Support for Beamforming*	To Be Determined	To Be Determined	To Be Determined	To Be Determined

Reminder: Release 2 will be active when the Capability Exchange feature has been completed. Release 2 will continually evolve as new features are added. An individual feature will be considered complete and available for adoption when the associated test has been balloted and approved.

Note: Starred (*) items contain both RI and NRI variants

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In Development (includes document in ballot)
Complete

Capability Exchange

- Ability to exchange list of features supported.
- Mandatory to claim WInnForum Release 2 Compliance

Enhanced CBSD Group Handling

- Initially includes extensible grouping parameters and various single frequency groups

Enhanced Antenna Patterns

Indoor Penetration Loss

- Application of indoor penetration measurements to improve coexistence modeling

CPE CBSD Indicator

- Indicates to the SAS during registration if a device is a CPE-CBSD

Enhanced CPE-CBSD Support for IAP

Enhanced Propagation Models

- New propagation models to better support coexistence

Grant Optimization/Grant Update

- Existing Grant may be updated without relinquishing the Grant

Passive DAS Support

- Support for a network of spatially separated Transmission Points (TPs) powered by the same single physical Radio Unit (RU), in which there are only passive elements (feeders, splitters, diplexers, etc.) between the RU and each of the TPs.

Registration Enhancements

- Re-registration/Registration update
- CPI Operations and CPI Training

Self Certification for Features Not Impacting Part 96

- **WInnForum CBRS Release 2 Self-Testing Policy is defined in document WINNF-TS-4005**
- **Companies (members and non-members) must agree to Policies and Procedures for Self Testing balloted and approved by the WInnForum members to claim "conformance" with WInnForum Standards for that feature, including:**
  - Agreeing to follow the test specifications defined by the WInnForum CBRS Test and Certification work group for the mandatory Release 2 capability exchange and for supported Release 2 optional features
  - Agreeing to use the WInnForum test harness developed by the WInnForum CBRS Test and Certification work group for supported features
  - Agree to submit, on company letter head, a signed letter to the WInnForum summarizing the testing for each feature, including the output of the test harness, if applicable, and indicating that all tests were passed

- **WInnForum will maintain a public website detailing which products are compliant with which feature**
- **Will start with Feature-by-Feature case, but may later move to feature bundle profiles**
- **Interoperability testing "in addition to" the self testing**
  - Not required as part of certification
  - Entities might require that as part of their business agreement

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Release 2 Policy Documents

WINNF-SSC-0009 Grouping Parameters Registration Policy

WINNF-SSC-0010 Registered Grouping Parameters

WINNF-SSC-0012 CBRS Vendor Admin ID Registration Policy

WINNF-SSC-0013 Recognized CBRS Vendor Admin IDs

WINNF-SSC-0014 CBRS SAS Administrator IDs

A note on professional installation and release 2

For all "Release 2" features, WInnForum is updating TR-5001 to provide guidance for the CPI

WInnForum is updating the CPI specification (TS-0247) as follows

- Indicates that a CPI can choose not to support a Release 2 feature
- Spells out the requirements for CPI working with 3rd party subject matter experts, such as a DAS installer, for release 2 features, should they so choose
- Requires that the CPI should do reasonable due diligence on the qualifications of the subject matter expert and retain records on the basis of trust of this subject matter expert for traceability
- Re-emphasizes that the CPI will not lose their credential if the qualifications of the "subject matter expert" are misrepresented
- Re-emphasizes that the CPI is still responsible for all other requirements as currently stated in 0247, and this applies to all data entered into the SAS as per this:
    - The obligation that a CPI interfacing with the SAS to correct inaccurate data discovered in the course of operations. An explanation of the requirement that the SAS Administrator holds the CPI responsible for accurate data entry, and an explanation of the responsibility for the CPI to correct the inaccurately entered data.

All Training Program Administrators will be required to train the responsibilities defined by this update and so all CPIs will be certified for all releases

- This training is ONLY on the responsibilities, not on any of the technical details in 5001
    - This training can be provided as a single, simple update (1 slide) to the CPI's and ask for confirmation of understanding as per the existing standard
- CPI exam may be updated to ensure the CPI understands their responsibility if they chose to do a release 2 feature