FY2020 Operations Plan

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1 Introduction – The Wireless Innovation Forum FY2020 Objectives

The Wireless Innovation Forum (WInnForum) Board of Directors has established the following six items as high level objectives for the Forum for the period from July 1, 2019 through June 30, 2020 in executing on the WInnForum's Strategic Plan[1]:

1. *Brand the WInnForum as the Preferred Venue for technical collaborative exchanges on innovative solutions for wireless systems*

The WInnForum's Advanced Technology Committee (ATC) will execute on the "platform strategy" defined in FY2016 exploring potential new markets relevant to the Forum's mission. In FY2020, the ATC will work with the WInnForum's members and external industry experts to identify new market areas where a community of practitioners could be gathered to initiate at least one new project. The committee will also work on advancing and formalizing partnerships with end user community in existing and new market areas.

2. *Position the WInnForum as the Preferred Venue for the International Spectrum Sharing Community*

The WInnForum will work to build on its success in forming and managing the Spectrum Sharing Committee (SSC), and strengthen that community to ensure continued success. In addition, the WInnForum will undertake the following:

a. Broaden focus of standards, processes and regulatory frameworks developed for the Citizens Broadband Radio Service (CBRS, FCC Part 96) to other frequency bands.

b. Leveraging the experience in the CBRS, position the WInnForum as the venue where licensed and unlicensed communities can collaborate on how to share spectrum.

c. Identify international shared-spectrum opportunities and determine whether and how the WInnForum can participate.

d. For those international shared-spectrum opportunities that WInnForum decides to participate in, work with stakeholders to determine how to position the WInnForum to offer maximum benefit.

[1] https://www.wirelessinnovation.org/assets/documents/wireless_innovation_forum_2018_to_2022_strat_plan_-_final.pdf

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3. *Execute on the Strategic Plan of the Software Defined Systems Committee (SDS)*

The WInnForum will focus on international harmonization of extensions to the SCA; advancement of related API's as developed within the US JTNC and programs such as ESSOR and SVFuA in Europe and the WInnForum; integration of frameworks and architectural approaches as the basis of next generation of software defined radio standards; tactical radio interoperability and acceptance of the SCA 4.1. Specific goals to accomplish this include:

- Maintain its position as the international venue for SCA standards development and harmonization through the execution of projects focused on harmonizing the SCA extensions.
- Development and standardization of APIs and associated facilities relevant to software defined systems.
- Development of a strategy for integrating products based on existing software defined radio frameworks and architectural approaches.
- Establish itself as a venue that industry can contribute to the international discussion on coalition operations with organizations such as NATO.
- Address SCA 4.1 certification to satisfy international SCA certification requirements.

Projects, relationships with key domestic and international standards organizations and programs and independent positioning will showcase the WInnForum as the leading organization to influence and direct the development of interoperable solutions based on industry developed open standards, providing the incentive to attract new members.

4. *Execute on Test and Certification Strategies for WInnForum Standards*

In FY2018, both the SDS and SSC identified mechanisms to support industry through WInnForum accreditation services targeted at their respective domains. In FY2020 these WInnForum Commercialization Committees shall work towards execution of these strategies.

Previously, the SSC committee established certification programs for Certificate Authorities, CBSD Test Labs and Certified Professional Installer Training Program Administrators to facilitate the development of an ecosystem support the Release 1 specifications. In FY2020, the SCC will establish a roadmap for release 2 certification.

Pertaining to SDS accreditation services, the WinnForum will engage industry and government organizations to define the model for the certification of SCA 4.1 implementations, define the organizational approach and set up the appropriate projects/groups to support this.

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5. *Establish Relevant Projects*

The Forum's Advanced Technologies Committee, Software Defined Systems Committee, and Spectrum Sharing Committee will form both member driven projects addressing immediate needs and roadmap driven projects advancing the Forum's Advocacy Agenda or supporting the Top 10 Most Wanted Wireless Innovations list:

- The Forum's Software Defined Systems Committee shall publish and maintain its own roadmap as defined in the Committee Charter[2], and initiate projects developing extensions to the SCA and domain related API standards that address any gaps between the defined evolution roadmap and Forum accepted specification variants.

- The Forum's Spectrum Sharing Committee shall publish and maintain its own roadmap as defined in the Committee Charter[3], and initiate projects supporting that charter focused on the development and advancement of spectrum sharing technologies required for interoperable systems in applicable bands of interest worldwide.

- The Advanced Technology Committee (ATC) will seek input from the Software Defined Systems Committee and the Spectrum Sharing Committee on the current listed innovations for its 2019 review of the Wireless Innovation Forum Top 10 Most Wanted Innovations. Members of the ATC will also be invited to submit contributions that could be promoted as new innovations. The ATC will review each innovation to determine if it should (1) remain unchanged; (2) be updated with newer information; (3) be deleted because no longer an issue; (4) be superseded with other more important innovations that are required to solve more important shortcomings. A project of the Advanced Technologies Committee will be to publish a revision of the "Top 10 Most Wanted Wireless Innovations" list in FY2020.

- The WInnForum's Advanced Technologies Committee will also maintain the Advocacy Agenda of the Forum and will coordinate activities with the Software Defined System and the Shared Spectrum Committees as well as external stakeholders such as regulatory agencies, standards bodies and other government agencies worldwide.

The success of this goal will be measured by evaluating the level of member participation in each project.

[2] https://workspace.winnforum.org/higherlogic/ws/public/download/5679/SDS%20Charter%20V4%200%200%20-%2029%20January%202018.pdf
[3] https://winnf.memberclicks.net/assets/SSC/spectrum%20sharing%20committee%20scope%20and%20operations%20-%20v1.0.0.pdf

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This document presents specific plans for achieving these high-level objectives in separate sections dedicated to the FY2020 Meeting Plan, and the respective work plans of the Advanced Technologies Committee, the Software Defined Systems Committee, the Spectrum Sharing Committee, the Board of Directors, and the Forum's Corporate Administration. The budget necessary to support these objectives is also addressed in the last section of this document.

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2 Wireless Innovation Forum Organizational Overview

2.1 FY2020 Organizational Structure

The FY2020 Organizational Structure of the Wireless Innovation Forum is presented in Figure 1. The Forum is organized around three standing committees, whose responsibilities are summarized as follows:

- The role of the Advanced Technologies Committee (ATC) is to advocate for the innovative utilization of spectrum, and advancing radio technologies that support essential or critical communications:
    - Works with wireless end users and their representatives, including network operators, government acquisition authorities and research sponsors to validate concepts and requirements against technology readiness, to document domain specific requirements, use cases and business models.
    - Supports member organizations in identifying new opportunities for next generation products and services in each defined market domain.
    - Works with the regulatory and public policy community to establish a global regulatory framework promoting the adoption of emerging technologies for advanced wireless systems.
    - Provides a venue for the exchange of information on emerging radio technologies important in wireless networking and produces reports, specifications and recommendations supporting the development and deployment of advanced wireless system and next generation radio devices

  Management and oversight of this committee is provided by a Steering Group working in collaboration with a Regulatory Advisory Committee. The Steering Group is comprised of the Forum's Officers, and is responsible for drafting the Forum's "Top 10 Most Wanted Wireless Innovations" list and setting the Forum's "Advocacy Agenda" based on member input. These documents will be distributed to the members of the Forum for ballot following the Forum's standard process.

- Software Defined Systems Committee (SDS): support the harmonization of SDS standards at the international level for the mutual benefits of all stakeholders to include:
    - Defining an industry driven SDS evolution roadmap for the international community
    - Profiling SDS specifications and related APIs to define internationally accepted variants that are hosted by the Forum

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- Developing extensions to SDS standards that address any gaps between the defined SDS evolution roadmap and Forum accepted SDS specification variants
- Providing implementation and certification guides, tools etc. easing implementation and supporting proliferation
- Establishing and managing industry led certification programs where appropriate

Management and oversight of this committee is provided by a Steering Group working in collaboration with an Advisory Council.

- The role of the Spectrum Sharing Committee (SSC) is to serve as a common industry and government standards body to support the development and advancement of spectrum sharing technologies based on the three-tier architecture proposed for the 3.55 GHz rulemaking activities. While the 3.55 GHz band is the main focus on the initial activities, the Wireless Innovation Forum aims to advance this technology for all applicable spectrum bands that can benefit from it.

  This Committee is intended to facilitate the interpretation and implementation of FCC rulemaking to a level that allows industry and government parties to collaborate on implementation of a common, efficient, well-functioning ecosystem around this technology.

  The main activities that will be conducted in the committee include:

  - Detailing common industry and government functionality and architecture for Spectrum Access Systems (SAS), sensors, and devices
  - Interoperability requirements and protocol definition to allow for open competitive and well-functioning systems
  - Common framework for testing and integration of components of spectrum sharing technologies to allow for rapid certification and deployment and predictability, thus expanding the ecosystem and increasing utility of the spectrum
  - Details of requirements, processes, and methods for protection of incumbent users as required by the spectrum rules
  - Operational procedures definition for the well -functioning of the system as it pertains to spectrum assignment, managements, and interoperability

  This committee is also managed by a steering group, and includes observers necessary for the full operations and support of the system.

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In addition to these standing committees, the Forum also has an India Regional Committee whose objective is to support the needs of the members in the India region and to create significant interest in the activities of WInnF in India.

These committees are managed by the Forum's elected officers, which include the Chair and Vice Chair of the Forum, the Chief Technology Officer, Chief Marketing Officer, Chief Regulatory Officer, the Secretary, and the Treasurer.

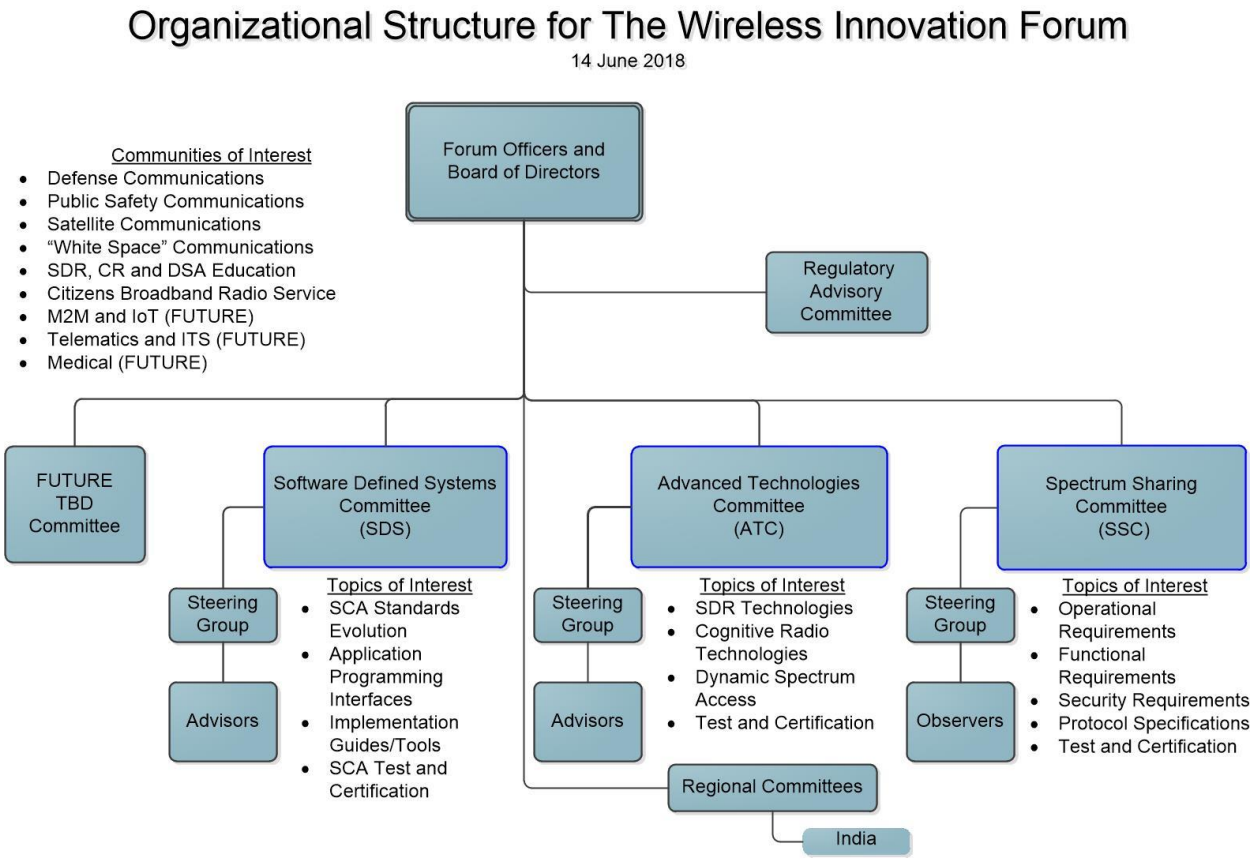

Figure 1: Wireless Innovation Forum FY2020 Organizational Structure

Management and oversight of the Forum as a whole, including the Forum's corporate affairs, is performed by the Forum's Board of Directors. These directors are elected on an annual basis, as defined in the Bylaws. The elected slate of Directors for CY2019 is provided in Table 1.

Table 1: CY2019 Board of Directors of The Software Defined Radio Forum Inc. The positions of Chief Marketing Officer and Academic Representative are currently vacant.

Position	Candidate	Organization
Chair of the Board of Directors	Manuel Uhm	Xilinx
Forum Chair/President	Bruce Oberlies	Motorola Solutions
Forum Vice-Chair/ Vice President	David Hagood	Viavi

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Secretary	John Glossner	Optimum Semiconductor Technologies
Chief Financial Officer/Treasurer	Ken Dingman	Harris
Chief Technology Officer	Louise Lamont	CRC
Chief Marketing Officer	Vacant	Vacant
Chief Regulatory Officer	Mark Gibson	CommScope
Class Directors		
Large Company	Paul Challoner	Ericsson
Medium Company	Alberto Quintana	Indra
Small Company	Kurt Schaubach	Federated Wireless
Government/Non Profit	Marc Adrat	Fraunhofer-Institut
Academic	Vacant	Vacant
At Large Directors		
General	Andy Clegg	Google
General	Jean-Philippe Delehaye	DGA
General	Doug Knisely	Qualcomm
General	Prakash Moorut	Nokia
General	Pierre Jean Muller	RED Technologies
General	Raghavan Muralidharan	Tata SED
General	Neeti Tandon	AT&T

2.2 Forum Corporate Administration

Corporate administration and member services are provided to the Forum through a combination of employees, consultants, and third-party contractors. The Forum's key personnel for FY2020 are as follows:

- Chief Executive Officer (Lee Pucker) – Reporting to the Board of Directors, the Chief Executive Officer's primary responsibility is to maximize the value the Forum brings to its members. Accordingly, the CEO drives the development of the Forum's Strategic Plan and supports the Forum's other officers in executing on that plan. The CEO proactively identifies opportunities, solves the Forum's critical problems, and makes an effort to anticipate future needs of the membership. The CEO assures that the organization and its mission, programs, products and services are consistently presented in a strong, positive image to relevant stakeholders, in particular to the Forum's membership. The CEO, with the Treasurer, oversees the organization's finances, ensuring the Forum's member's needs are met to the maximum extent possible while maintaining financial stability as a not-for-profit organization.

- Director of Marketing and Communications (Stephanie Hamill). The Director of Marketing and Communications (MarCom) has primary responsibility for managing communications

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for the Forum, including internet presence and member communications, and supporting the CEO in establishing and maintaining the Forum's leadership in advanced wireless markets, evangelizing the Forum's programs and services, and supporting the organizational objectives of the Forum's membership. Reporting to the Forum's CEO, the Director of MarCom helps assure that the Forum and its mission, programs, products and services are consistently presented in a strong, positive image to relevant stakeholders, in particular to the Forum's membership.

The slate of key consultants and contractors retained by the Forum to support its members in FY2020 are as follows:

1) Virtual Inc. – Manager of the Forum's Headquarters Operations
2) InfoEx World Services – Representative for the Forum in China
3) BBD, LLP – Audits and Finance
4) Gesmer Updegrove LLP – General Legal Counsel
5) Hogan Lovells – Communications Regulatory Counsel

In addition, the Forum retains a document editor on an as needed basis to support the creation of reports, specifications and recommendations by its members. Additional details on the Corporate Administration Work Plan for FY2020 can be found in Sections 7 and 8 of this plan.

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3 Advanced Technologies Committee (ATC) (Chair: Bruce Oberlies, *Motorola Solutions*)

The following high-level goals have been assigned to this committee by the Board of Directors:

1) Primary Goals:
    a. Brand the WInnForum as the Preferred Venue for technical collaborative exchanges on innovative solutions for wireless systems
    b. Position the WInnForum as the Preferred Venue for the International Spectrum Sharing Community
    c. Publish the updated 2019 Wireless Innovation Forum Top 10 Most Wanted Innovations
    d. Maintain the Advocacy Agenda of the Forum and will coordinate activities with the Software Defined System and the Shared Spectrum Committees as well as external stakeholders such as regulatory agencies, standards bodies and other government agencies worldwide.

2) Shared Goals:
    a. Establish Relevant Projects

The project plans to support these goals are addressed in Sections 3.2 and 3.3 below.

3.1 Charter and Structure

The Advanced Technology Committee (ATC) is led by a Steering Group comprised of the Forum's Executive Committee and the Forum's Committee chairs. The primary role of the Steering Group is to identify projects of strategic relevance to the Forum membership, to prioritize and launch projects as appropriate, and to monitor those projects to ensure and support execution. The ATC will work with the WInnForum's members and external industry experts to identify new market areas where a community of practitioners could be gathered to initiate new projects.

The ATC has the responsibility to maintain and update, when appropriate, two Forum documents: the Forum's Top 10 Most Wanted Wireless Innovations list and the Advocacy Agenda.

3.2 FY2020 Objectives

The Advanced Technology Committee has established the following committee objectives for FY2020 to support the Forum's High Level Objectives:

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3.2.1 Brand the WInnForum as the Preferred Venue for technical collaborative exchanges on innovative solutions for wireless systems

The WInnForum's Advanced Technology Committee (ATC) will execute on the "platform strategy" defined in FY2016 exploring potential new markets relevant to the Forum's mission. In FY2020, the ATC will work with the WInnForum's members and external industry experts to identify new market areas where a community of practitioners could be gathered to initiate at least one new project. The committee will also work on advancing and formalizing partnerships with end user community in existing and new market areas.

ATC will work with Forum staff on executing the "platform strategy" framework.

a. Promotion Package: Support staff in developing a promotion package.

b. Event Presence: Work with membership through a survey to identify potential trade shows/events. Prioritize one or two events where our target market is located and sign up to present/exhibit and/or co-sponsor for reduced exhibit/presentation fee.

c. General Advertising: Work with membership to identify appropriate vehicles for paid advertising. Help staff prioritize the opportunities and work with BoD to fund. Support goal of monthly blog produced by Forum staff and membership.

3.2.2 Establish Relevant Projects

The ATC will continue to maintain and update two of the Forum's documents, the 'Top 10 Most Wanted Wireless Innovations' and the 'Advocacy Agenda'.

In addition, the ATC will initiate a new project related to Spectrum Access in bands other than CBRS covered by the Share Spectrum Committee. As mentioned above, the ATC will also seek input from the Forum membership and it's Advisory Council, to initiate at least one additional new project.

3.3 FY2020 Project Plan

The following describes the projects the ATC is planning to undertake in FY2020. In addition to those described here, the ATC is planning to initiate at least one new project to be defined in collaboration of the Committee Chairs and its Advisory Council.

3.3.1 Advanced Technology Committee Watch List

The Advanced Technology Committee Watch List is a document that outlines strategic projects the ATC believes should be undertaken in support of the Forum's Advocacy Agenda, the Forum's Top 10 Most Wanted Wireless Innovations List or the Forum's Platform Strategy. The list does not restrict the projects that Topic Sponsors may support but rather guides the Advanced Technology Committee to launch new projects that are aligned with the objectives of the Committee.

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The Chair of the Advanced Technology Committee is responsible for the Watch List.

3.3.2 The Forum's Top 10 Most Wanted Wireless Innovation List

The Advanced Technology Committee (ATC) is responsible for identifying/consolidating the 10 most wanted innovations in terms of technology, regulations, or business practices as identified by the Forum members. The ATC Committee will seek input from the Software Defined Systems Committee and the Spectrum Sharing Committee on the current listed innovations and members of the ATC will also be invited to submit contributions that could be promoted as new innovations.

The process that will be adopted by the Committee in FY2020 is as follows:

1. Use the WInnF conferences (European and America) as events to gather and discuss innovations that are required to improve wireless systems performance and/or usage.
    a. Keynote speakers (identified by Forum Committees) will be invited to present on their vision of future wireless systems and express their views on the required innovations
    b. A Call for Presentations to the general public will also be made to target items on the 2019 Top 10 list or to propose new items the presenters would like to address.
    c. Round table sessions will be organized gathering those presenters and a discussion will follow around the identified innovations. There could be multiple of those round tables.
2. The WInnF CTO will launch a campaign to WInnF members to propose new innovations topics.
3. The ATC Steering group will review the contributions gathered from each of the Committees and identify items on each of their roadmaps requiring investment in significant technical, business or regulatory innovation.
4. The Forum CTO, with the support of the ATC Steering group, will form a committee to review the 2019 list and reformulate or replace the innovation with input from the Innovation gathering process described above, to select the Top 10 that will make the 2020 list.

3.3.3 Advocacy Agenda

The Advanced Technology Committee of the Forum is responsible for the Advocacy Agenda and maintaining a consolidated list of proposed changes/additions to the Advocacy Agenda.

The process that will be adopted for updating the Advocacy Agenda in FY2020 is as follows:

- The ATC Steering Group committee shall have a meeting agenda item quarterly or more frequently if needed to discuss changes to the Advocacy Agenda.

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- The Chief Regulatory Officer is responsible for consolidating all Advocacy Agenda inputs from all Forum Committees. The procedure shall be as follows:
    - The CRO shall lead a discussion of the consolidated proposals. If changes to the Advocacy Agenda are presented by any Committee, a discussion of the merits of modifying the Advocacy Agenda shall be conducted.
    - Any changes to the Advocacy Agenda shall be balloted at the subsequent ATC Steering Group Meeting
    - In addition the CRO shall maintain a consolidated Forum Advocacy Agenda proposed changes list based on inputs from all Forum committees.

3.3.4 Technical Report on 5G Millimeter-wave Spectrum Sharing

The WInnForum's Advanced Technology Committee (ATC) will work at completing a technical report on 5G Millimeter-wave Spectrum Sharing which will investigate a couple specific millimeter-wave bands determining under what conditions dynamic coordination for spectrum sharing among same or different services is needed in order to mitigate mutual interferences to an acceptable level. It will discuss what type of information would need to be collected to improve spectrum knowledge, and what kind of spectrum sharing methodology could be applied to make more efficient dynamic assignment of spectrum. Concluding with a discussion on different licensing and shared access methods that could be best suited for these mm-wave bands. This project will expand the Forum brand as a venue for licensed and unlicensed communities beyond the US CBRS ecosystem.

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4 Software Defined Systems Committee (SDS) (Chairs: Ken Dingman, *Harris Corporation* and Eric Nicollet, *Thales*)

The following high-level goals have been assigned to the committee from the Board of Directors:

1) Primary Goals:
    a. Execute on the Strategic Plan of the Software Defined Systems Committee
    b. Execute on Test and Certification Strategies for WInnForum Standards
2) Shared Goals:
    a. Establish Relevant Projects

The project plans to support these goals are addressed in section 4.2 and 4.3 below.

4.1 Charter and Structure

The current mission of the Software Defines Systems (SDS) Committee is to "oversee the evolution and adoption, at the international level, of SDS standards for the development of essential and mission critical wireless systems".

The SDS is comprised of 3 major organizational elements. A Steering Group (SG) that is responsible for coordinating the different activities within the SDS and ensuring that liaisons with the stakeholders and the Forum's Board of Directors are maintained. An Advisory Council that acts as an advisory body to the SG, representing various Government stakeholders in the identification of requirements and development of visions to support their operations. A set of Working Groups that focus on identifying needs/issues and providing solutions, executing approved projects. For FY2019, there are four active Working Groups as follows:

- Advocacy Working Group
- API Working Group: Not Active
- SCA Evolution Working Group
- SCA Test & Evaluation Working Group

The structure of the SDS organization is provided in Figure 3 below in conjunction with the relationship of the SDS to other WINNF organizational elements. Steering Group Members include:

- A4ESSOR
- Harris Corporation
- Hitachi Kokusai Electric

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- Indra
- Leonardo
- Raytheon
- Rockwell Collins
- Rohde & Schwarz
- Thales

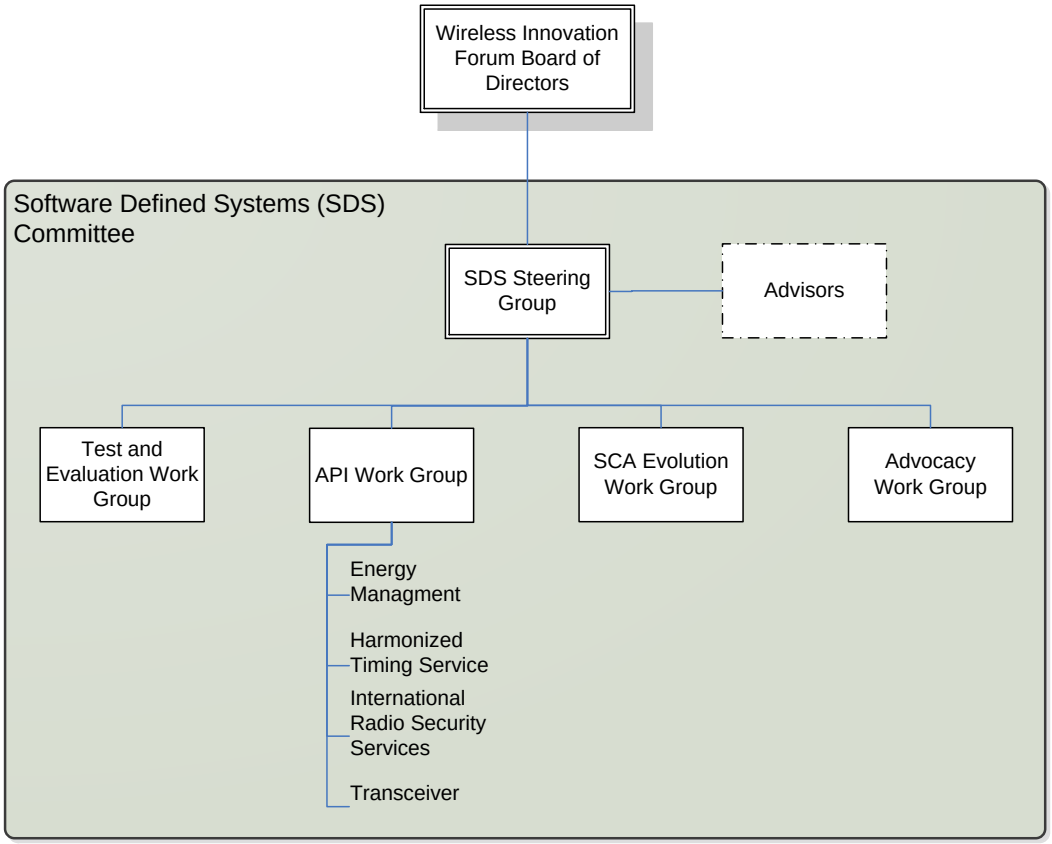

Figure 2: Software Defined Systems Committee Organizational Structure

4.2 FY2020Objectives

4.2.1 Promote Software Defined Radio Standards and Technology World-wide

This objective relates to the Outreach foundational element of the Strategic Plan and maps to the "Execute the Strategic Plan" goal assigned by the Board of Directors.

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For the past few years, there has been a proliferation of Open Architecture solutions being formulated, such as FACE, MORA, VICTORY, SOSA, OMS, VITA 49, ECOA, Lavosar, accompanying the SCA. There is confusion in the market place about how these relate to each other and what specific problem they are addressing. The SDS Committee addresses this proliferation of Open Architecture Standards by providing a venue for organizations to coordinate and collaborate on the various Open Architecture Standards. The objectives of the collaboration is to harmonize and optimize standards to reduce redundancy where possible and to accommodate the usage of multiple architecture frameworks when appropriate via integration strategies. One example of this is the in-progress Modular Radio Architecture (MRA) project within the WINNF. The MRA project's focus is defining a detailed strategy for integrating framework and architectural approaches (e.g., SCA, FACE, etc.) upon which the next generation of SDR standards will be defined.

Support and advancement of the SCA will **continue to be a primary focus** of the committee (see the projects planned for this FY). Through the Advocacy WG, the Committee will continue to promote the SCA, through activities such as placing articles in magazines and supporting expansion of the SCA into domains such as EW, SigInt and Radar.

4.2.2 Drive worldwide convergence to a common suite of SDR standards

This objective relates to the Standards Harmonization foundational element of the Strategic Plan and maps to the "Execute on the Strategic Plan of the SDS Committee" goal assigned by the Board of Directors.

4.2.2.1 Standard specifications development

The SDS committee will carry on past efforts to drive convergence towards an internationally supported suite of SCA-compatible SDR standards enabling reconfiguration of the products, portability of the developed applications and requisite support in the developed platforms.

The efforts are based on harmonization of existing standards developed at national or multinational levels, and development of new standards when needed. Leveraging the Advisors, the SDS Steering Group will solicit existing SDR programs to determine contributions they will be willing to submit in support of the harmonization effort.

The SDR standards of interest cover two main architecture areas:

- Execution Support, for portable embedded software development and deployment on heterogeneous environments (encompassing the SCA Core Framework and Operating Environments, considering extensions towards DSP and FPGA environments…),
- Functional Support, for abstraction of hardware-dependent or mutualized capabilities supporting the radio applications (encompassing existing APIs and WInnF-developed Facilities -- that complement APIs software interfaces with behavioral and performance engineering features).

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Recognizing the increasing interest for inter-networking capabilities required, in addition to the waveform capabilities implemented in radios, to take advantage of the breadth of radio capabilities available on emerging systems, the focus of activities will eventually expand to software-defined support of networking applications (software defined networking - SDN), leveraging the SDR assets of the SDS committee.

4.2.2.2 Standard specifications usage

Recognizing that worldwide convergence on harmonized standards is not only a question of standards development and availability, but also a question of standards usage, the SDS committee will develop an agenda focusing on developing usage recommendations and agreements for the WInnF SDR Standards.

In this respect, the committee will seek **development of market-oriented profiles** oriented to vertical markets of interest (initially military tactical radios), that will specify, among the breadth of existing standards and the options or alternatives they allow, prescriptive requirements for conformant products, enabling the target market to actually benefit from the said standard, e.g. with regards to high portability of developed waveform applications.

The committee will seek **recognition of use of SDR standards or market-oriented profiles** by as wide as possible national or multinational communities. Official recognition in policy setting registries such as the US DISR or the EDA EDSTAR will be considered, and the once-expressed interest of NATO in SDR standards will be reinvestigated. Beyond, possibility for multinational endorsements of some SDR Standards will be discussed with Advisors.

4.2.3 Standards certification

The committee will pursue the ongoing activities related to standards certification, in **developing conformance evaluation plans and procedures** for SDR standard specifications or profiles. The spearhead standard in this respect is the SCA 4.1, and others may follow.

The committee will as well initiate efforts to establish a **multinational, industry led accreditation program** for SDR Standards certification centers.

4.2.4 Roadmaps

Based on the active and planned activities, roadmaps related to the committee activities will be established.

Elements of these roadmaps that require significant technical, business or regulatory innovation will be submitted to the Forum's Roadmap Committee for inclusion in the Forum's "Top 10 Most Wanted Wireless Innovations" report as defined in Section 3.3.2 of this Operations Plan.

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4.3 FY2020 Project Plans

The SDS Committee plans to deliver multiple work products through a series of projects in FY2019. Specific work products and milestones delivered from existing and planned projects are presented below.

4.3.1 Harmonized Time Service

1. **Objectives:** harmonizing, completing and improving the JTNC Timing Service API into a WInnF Facility (= API + behavior + properties), based on multinational efforts and lessons learnt (namely encompassing the US, ESSOR Nations and Germany); complementing with timer capabilities.
2. **Work Group:** API
3. **Project Lead:** Elodie Leveugle (Thales)
4. **Milestones**
    - Plan Approved: May 2018
    - PIM completed : Sept 2019
    - PSMs completed: Dec 2019

4.3.2 Transceiver Facility PSMs

1. **Objective:** complement the Transceiver Facility 2.0 PIM Specification (Jul 2017) with PSMs for C, C++, FPGA and SCA.
2. **Work Group:** Transceiver
3. **Project Lead:** François Levesque (NordiaSoft) and Eric Nicollet (Thales)
4. **Milestones**
    - Plan Revised: Dec 2018
    - Completion: Sept 2019

4.3.3 Modular Radio Architecture Project

Objective: Study the available software frameworks that exist (e.g. SCA, OMS and FACE) and identify complementary features, overlaps and potential integration points to define a detailed strategy for integrating framework and architectural approaches upon which the next generation of SDR standards will be defined.

1. **Work Group:** TBD
2. **Project Lead:** Kevin Richardson
3. **Milestones**
    - Plan Approved: March 2019
    - Duration: 9 months

4.3.4 Harmonized Audio Port

1. **Objective:** harmonize the JTNC and ESSOR Audio Port Devices, and improve specification coverage.

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2. **Work Group:** API
3. **Project Lead:** TBD
4. **Milestones**
    - Kick-off: End 2019 the earliest

4.3.5 SDR standards profile for tactical radios

5. **Objective:** a first WInnF SDR Standard profile, aimed at the tactical radios market, specifying a set of SDR standards and choices among the options allowed by the standards for international SDR developments.
6. **Work Group:** TBD
7. **Project Lead:** TBD
8. **Milestones**
    - Kick-off: Fall 2019

4.3.6 Waveform repositories

1. **Objective:** develop a **white paper** addressing the challenges and factors (technical and non technical) influencing successful implementation of future Waveform repositories, such as the one identified in NATO Waveform Policy.
2. **Work Group:** TBD
3. **Project Lead:** TBD
4. **Milestones**
    - Kick-off: Sept 2019
    - Target Project Duration: 9 months

4.3.7 Multinational SDR Standards accreditation

5. **Objective: develop a report**, in close coordination with relevant governmental stakeholders, proposing a mechanism supported by the WInnF serving as an accreditation body for an eco-system of multinational certification centers to emerge
6. **Work Group:** Test and Evaluation
7. **Project Lead:** TBD
8. **Milestones**
    - Plan Approved: Nov 2018
    - Target Project Duration: 6 months

4.3.8 SDR Standards Harmonization Roadmap

1. **Objective:** Identify areas of discrepancy between implementations and develop a prioritized list of APIs and segments of the SDR Standards where harmonization is required. Based on this it will create a roadmap to drive convergence on a common set of SCA-based SDR Standards.
2. **Work Group:** SCA Evolution
3. **Activity Lead:** Ken Dingman (Harris) and Eric Nicollet (Thales)
4. **Milestones**

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- First consolidated roadmaps: end 2019.

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5 Spectrum Sharing Committee (Chairs: Preston Marshall, *Google* and Kurt Schaubach, *Federated Wireless*)

The following high-level goals have been assigned to the committee from the Board of Directors:

1) Primary Goals:
    a. Execute on test and certification strategy for WInnForum Standards
2) Shared Goals:
    a. Establish relevant projects

The project plans to support these goals are addressed in sections 5.2 and 5.3 below.

5.1 Charter and Structure

The Spectrum Sharing Committee (SSC) supports the development and advancement of spectrum sharing technologies based on the three-tier architecture proposed for the 3.55 GHz rulemaking activities. While the initial focus is on the 3.55 GHz Citizens Broadband Radio Service (CBRS), the Committee aims to advance this technology for all applicable spectrum bands that can benefit from it.

The charter for the Committee is to facilitate the interpretation and implementation of FCC rulemaking to a level that allows industry and government parties to collaborate on implementation of a common, efficient, well-functioning ecosystem around this technology. The primary activities of the Committee include:

- Detailing common industry and government functionality and architecture for Spectrum Access Systems (SAS), Environmental Sensing Capability (ESC), and CBRS devices
- Defining interoperability requirements and protocols to allow for open, competitive, and well-functioning systems
- Developing a common framework for testing and integration of components of spectrum sharing technologies to allow for rapid certification, deployment, and predictability, thereby expanding the ecosystem and increasing utility of the spectrum
- Establishing requirements, processes, and methods for protection of incumbent users as required by the spectrum rules
- Setting operational procedures definition for the well -functioning of the system as it pertains to spectrum assignment, managements, and interoperability

The approach to work activities by the Committee emphasizes system interoperability while achieving simplicity in interfaces and requirements. This is done to advance competitive and innovative approaches and to increase deployment speed of these systems.

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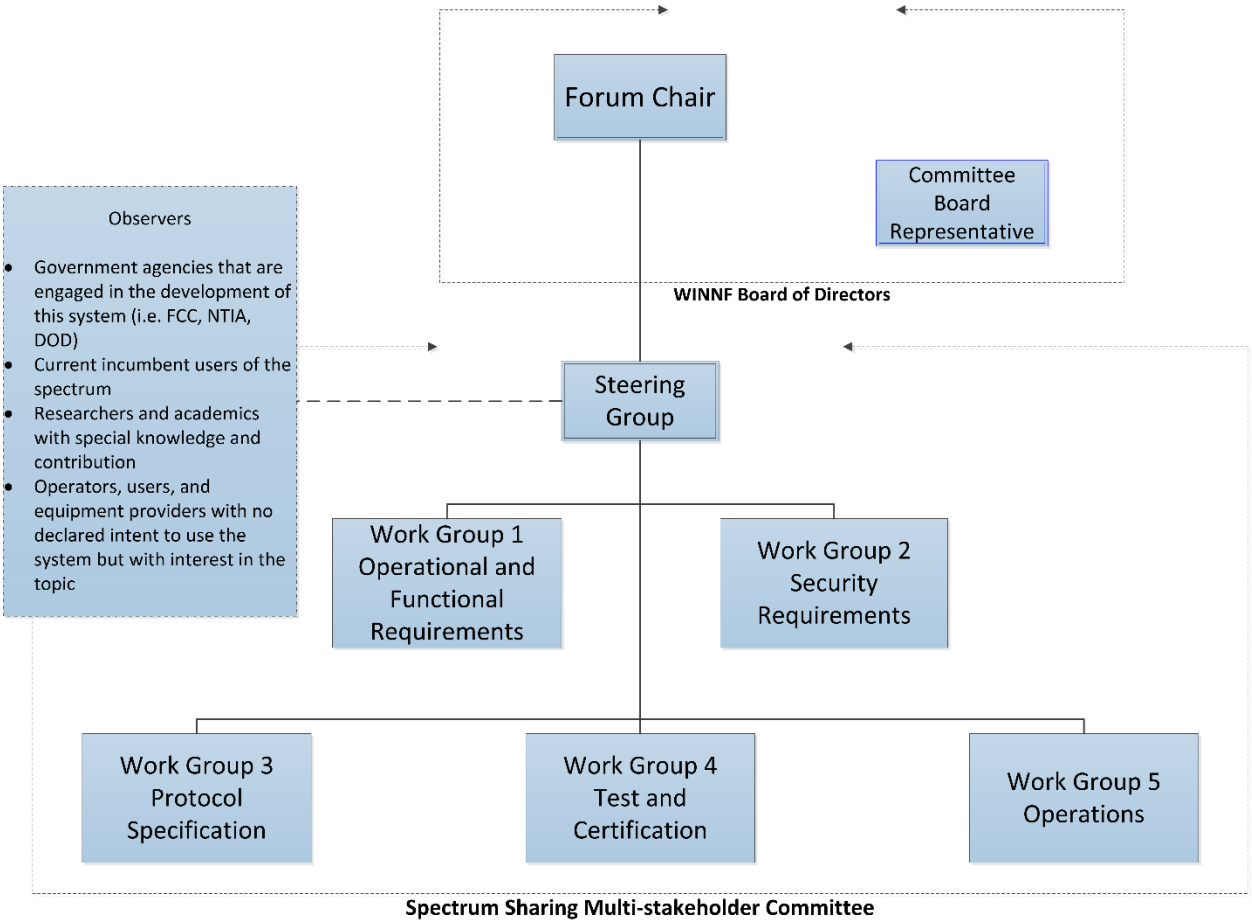

The Committee is led by a Steering Group responsible for managing the overall activity flow and ensuring consensus and agreement with results from the discussions, such that progress can be made properly and timely to serve the interest of all the stakeholders. Membership of the Steering Group is comprised of the following:

- Committed SAS developers and operators (engaged in the development of the system and intend on participating in this market)
- Committed Sensor and/or Device developers and wireless equipment suppliers (engaged in the development of the system and intend on participating in this market)
- Committed users and service operators (engaged in the development of the system and intend on participating in this market)

Steering Group member companies include:

- Airspan
- AT&T
- CableLabs
- Charter
- Comcast

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- CommScope
- CTIA
- Ericsson
- Federated Wireless
- Google
- Huawei
- Motorola Solutions
- Nokia
- Pathfinder Wireless
- Qualcomm
- RED Technologies
- Samsung
- Sony
- T-Mobile
- Telrad
- Verizon
- WISPA

The Steering Group identifies projects of strategic relevance to the membership; assigns, prioritizes, and launches new projects within subcommittee Working Groups; sets desired outcomes and monitors projects within the Working Groups to ensure their support and timely execution; and approves Working Group recommendations.

Further, the Steering Group ensures that activities are not directed at policy-making or liability management. While the Committee may, from time to time, make formal technical recommendations to the FCC or other regulatory bodies, following the Forum's standard policies and procedures, it is nonetheless a standards and technical implementation forum.

5.2 FY2020 Objectives

5.2.1 Facilitate Full Commercial Deployment

The committee will undertake activities to support commercial deployment of GAA Category A and Category B devices in second half of CY2019. This includes:

- Update the Release 1 standards to address issues found during testing and initial commercial deployment, and rules clarifications issued by the FCC related to the Part 96 rules
- Support the Certified Professional Installer Training Program Administrator Accreditation Program and maintain the associated database
- Establish, manage and maintain an informing incumbent database as required
- Support WInnForum approved CBSD test labs as required

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- Support WInnForum Approved Certificate Authorities as required

5.3 FY2020 Project Plans

The detailed Release Plan for the Spectrum Sharing Committee can be found here:

https://cbrs.wirelessinnovation.org/

To achieve the stated objectives, the committee work groups and task groups will meet weekly or bi-weekly via Go To Meeting, as required, and plans five face to face meetings as follows in FY2020:

1. September 2019 (Ottawa)
2. November 2019 (San Diego)
3. January 2020 (Location TBD)
4. March 2020 (Location TBD)
5. May/June 2020 (Location TBD)

Plans for FY2020 by work group are as follows.

5.3.1 SSC Work Group 1: Operational and Functional Requirements (Chair: Andy Clegg, Google)

The objective of this Working Group is to work on further defining Spectrum Access Systems (SAS) functional requirements as they relate to creating an interoperable system across the various providers of systems and equipment within the industry. There is no intent in this Working Group to define a common architecture and design for SAS systems. This Working Group will further track and articulate common functional questions that require industry consensus for further clarification and definition.

FY2020 Goal

WG1's FY2020 goals are to continue to develop the standards and requirements that will allow the CBRS community to translate the FCC rules into implementable and interoperable functions, building upon current work product. The group will also define new additional requirements to improve efficiency and usage of the CBRS band. The WG will work with the government to refine or clarify certification requirements though the course of the first commercial CBRS certification processes.

Standards Deliverables:

In FY2020, the group will continue to close issues related to Release 1 Certification Testing and continue complete requirements for Release 2. Below are listed some of the key requirements defined in Release 1:

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- **Border Area Management**
- **CBSD Measurement Reporting**
- **CBSD Registration Processing**
- **Domain Proxy**
- **Dynamic Protection Zones**
- **Environmental Sensing Capability (ESC)**
- **Exception Management**
- **FSS Protection**
- **Grandfathered Wireless Device Protection**
- **Operations Security**
- **PAL Protection Area Definition**
- **Propagation Modeling**
- **SAS to SAS Information Sharing**
- **Spectrum Grant Request Processing**
- **Quiet Zone Management**

In FY 2020, the group will continue to work on Release 2, which plans to add the following functionality:

- **CBSD to CBSD Operation**
- **Channel Assignment Optimization**
- **GAA Coexistence**
- **PAL Leasing**
- **Enhancements from Release 1**

Delivery Plan:
Release 1 will continue to evolve based on issues identified in certification testing. Release 1 will continue to be a priority. WG 1 will continue to discuss and approve requirements for Release 2 capabilities and plans to have a Release 2 requirements document published within six months of the end of CBRS Initial Commercial Deployment. With that schedule, Release 2 should be published in very late 2020 or early 2021.

Group member activity and participation are high and the group regularly receives contributions of very high quality. In the opinion of the Group Chairs the stated deliverables have a high likelihood of successful completion by the scheduled date.

5.3.2 SSC Work Group 2: Security Requirements

Work on the security completed in FY2017 and so the group has recessed until such time as new requirements are identified.

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5.3.3 SSC Work Group 3: Protocol Specifications (Chair: Nancy Lee, Nokia)

The goal of this working group is to define the detailed protocols for data and communications across the various open interfaces within the system. The interfaces are limited to what is the minimum needed for implementation of an open and interoperable system. Other interfaces may be included later. The objective is to use common interfaces and as light of a protocol as possible to allow for innovation and development of the subsystems in a healthy competitive environment while preserving the openness of the system.

In FY2020 the group will maintain release 1 specifications in alignment with test specifications and work towards publication of release 2 specifications supporting new features defined in WG 1.

Deliverables:

Change requests for Version 1 of the following policy documents and specifications:

- WINNF-SSC-0009 Spectrum Sharing Committee Policy and Procedure CBRS Grouping Information Registration
- WINNF-SSC-0010 Signaling Protocols and Procedures for Citizens Broadband Radio Service (CBRS): WInnForum Recognized CBRS Grouping Information
- WINNF-TS-0016 Signaling Protocols and Procedures for Citizens Broadband Radio Service (CBRS): Spectrum Access System (SAS) - Citizens Broadband Radio Service Device (CBSD) Interface Technical Specification
- WINNF-TS-0096 Signaling Protocols and Procedures for Citizens Broadband Radio Service (CBRS): Spectrum Access System (SAS) - SAS Interface Technical Specification

Delivery Plan:

Point releases of Release 1 specifications will be published if needed to address issues identified in certification testing or by the industry. WG 3 plans to publish interim releases of the protocol specifications towards Release 2 in response to industry interest. WG 3 will continue to discuss and approve requirements for Release 2 capabilities and plans to have Release 2 specifications published within three months after publication of Release 2 requirements. With that schedule, Release 2 specifications should be published in the first half of FY2021.

5.3.4 SSC Work Group 4: Test and Certification (Chair: Masoud Olfat, Federated Wireless)

The goal of this working group is to define the test and certification standards for the SAS and across the various interfaces within the system. The objective is to implement a test architecture that enables a competitive, innovative, and open environment for the development of the SAS and other ecosystem elements. The Release 1 certification has been limited to what is the minimum needed for the creation of a simple and standard certification process for an open and

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interoperable system. In Release 2, the certification will include additional FCC rules that are not addresses in Release 1 (e.g. PAL Leasing) and will be extended to the requirements and specifications that are aimed to improve the performance of CBRS deployment, and address market requirements. Moreover, the working group will address change requests for additional functionalities as part of Release 1 CBRS specifications.

FY2020 Goal

The FY2020 goal for WG4 is to fully support certification against CBRS Release 2 Standards to allow for commercial deployment of GAA and PAL Category A and Category B devices by July 2020. The certification includes testing CBRS features, requirements, functionalities, and protocols that are built upon Release 1 work product and improve efficiency and utilization of the CBRS band. During Fiscal Year 2020, the working group supports change requests for point release of Release 1 documents, as a result of Release 1 test and certification process, Initial Commercial Deployment (ICD), and new FCC rules.

Standards Deliverables:

The work group will address development of Test and Certification for Release 2 CBRS SAS functionalities. The work group will also address development of Test and Certification for Release 2 CBRS CBSD functionalities. The group will also update the test code for these two releases in parallel with the specification work. In addition, the working group will address the change requests for Release 1 Test and Certification documents as a result of lab and field testing and new FCC rules (e.g., new FCC rule for CPE CBSDs (Consumer Premises Equipment)).

Change requests for the following documents and specifications are published during FY2020:

- WINNF-TS-0061: Test and Certification for Citizens 3 Broadband Radio Service (CBRS); Conformance and Performance Test Technical Specification; SAS as Unit Under Test (UUT); Addendum to Release 1
- WINNF-TS-0122: Test and Certification for Citizens Broadband Radio Service (CBRS); Conformance and Performance Test Technical Specification; CBSD/DP as Unit Under Test (UUT); Addendum to Release 1
- WINNF-TS-0061: Test and Certification for Citizens 3 Broadband Radio Service (CBRS); Conformance and Performance Test Technical Specification; SAS as Unit Under Test (UUT); Release 2
- WINNF-TS-0122: Test and Certification for Citizens Broadband Radio Service (CBRS); Conformance and Performance Test Technical Specification; CBSD/DP as Unit Under Test (UUT); Release 2

Test Lab Authorization Deliverables:

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In FY2018 and FY2019, the work group established a CBSD test lab authorization program with 4 test labs designated as "WInnForum CBRS Approved". In FY2020, the group will continue to support this program and expand the list of approved test labs.

Delivery Plan:

Point releases of Release 1 CBSD Test and Certification document (WINNF-TS-0122) will be published in Q3 of 2019 to address new FCC rules for CPE CBSDs. Point releases of Release 1 CBSD Test and Certification document ((WINNF-TS-0122) and SAS Test and Certification Document ((WINNF-TS-0061) will be published by the end of 2019 to address potential issues identified in certification testing or ICD process. WG4 plans to publish the Release 2 test and Certification documents (both SAS and CBSD/DP certification) by the end of FY2020.

5.3.5 SSC Work Group 5: Operations (Chair: Richard Bernhardt, WISPA)

The charter of working group 5 is to support common operational needs for a vibrant CBRS ecosystem. Work in FY2018 focused on the following:

Functionally, Working Group 5, Operations for SSC, will provide guidance in the next phases of CBRS Standards deployment. Working by way of point releases to Release 1 on urgent matters which require adjustment for current standards as well as Technical Reports (TRs) for informative guidance, WG5 and its associated Task Groups provides adjustments to specifications as needed. Moving into Release 2, WG5 will provide operational guidance in two areas:

- New Features and methodologies which provide CBRS stakeholders with means to achieve more efficient use of: a) CBRS spectrum, b) better communications or interaction between operators and SASs; c) burden reduction to the ecosystem while allowing for best protection of incumbents; d) better collaboration and outcomes on co-existence in the band; e) access to the use of new technologies or processes to improve outcomes in the ecosystem based on experiential or practical data.
- Replacement or update of specifications where issues are identified such that operational guidance will improve, repair, insert or replace a methods where any of the following arise: a) gaps in the specification; b) errors or issues arise based on either present language or updated/better solutions are identified; c) new language which suggests efficiencies or corrects road blocks.

FY2020 Goals

Working Group 5 will focus on the vitality of the CBRS ecosystem by providing operational guidance throughout the Band with the following continuing Task Groups:

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- GAA Co-Existence TG: Will provide guidance for Release 1 as it progresses for best practices related to GAA co-existence by way of dot updates as needed. For Release 2 documentation, WG5 will continue the creation of Operational Technical Reports offering methodology for Stakeholders, especially SASs, to deploy best practices in interference management. Release 1 surrounded Part 96 general cooperation requirements, where, in a series of offered Technical Reports, WG5's GAA Co-Ex TG provides diverse methodologies that can be adopted in the post-incumbent and PAL protection areas of GAA.

- Certificates of Authority (PKI) Administration: In coordination with security, validation and verification needs of the CBRS Band, WG5 in Release 1 released a CA Specification providing guidance for each aspect of certificate (PKI) based protections. In this year, WG5 will continue with CA-PKI best practices, industry updates, more efficient methodologies, and advanced procedures as provided by the CA industry for use in CBRS.

- Certified Professional Installers (CPI) and the CPI System: In Release 1, WG5 published a model, CPI specification, and guidance for Training Program Administrators (TPAs). It issued a RFP seeking candidates for accreditation under the Specification to train and certify CPIs to be capable of operating in the CBRS ecosystem. The guidance provided an ongoing stream of applicants for the role. An examination was produced and the combination of the CPI specification, TPA certification, and the examination allow for CPIs to be trained and deployed; monitored and records kept, discipline and oversight provided, and ongoing methods for updating and keeping CPIs present. In Release 2 and during the FY, further TPAs will be entertained for approval by the Steering Group; updated specifications will be provided for efficiency and update; and, new areas considered.

- PAL: As the FCC considers parameters for PAL auctions and a secondary market for the sale and use of PAL access, this TG is focused on creating best practices methodology for PAL use, spectrum allocation, secondary market practices, fairness, and efficiency. Tasked with providing a framework for all aspects of PAL operations, this TG will provide in this period TRs and other documents to give guidance for the use of PALs in the CBRS ecosystem.

- Other Operational: In FY2019, WG5 completed work to advance CBRS Handshake KDB, setting forth best practices needed to solve for a perceived gap in the Rules. The FCC created a KDB following upon the support of WG5, WG4 and WG1's guidance to meet an operational demand. Gap filling where operations are improved can render the need for the formation of a focused subject matter TG. Such TGs are created as Needed: WG5 will provide for the addition of subject matter related TGs as the need arises in FY2020. This may include creating TGs that provide guidance based on outcomes in ICD or early GAA and PAL deployment in FY2020. With actual real-world data, new operational guidance may be needed. As of yet not fully identified, issue and new matters, including new methods, practices,

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technologies, or otherwise will guide the creation of additional TGs for best operational practices.

Each of the TGs will work in concert with WG5 to provide operational guidance and documents in the given subject areas.

As experiential data and the realization of potential gains are identified with such data; or, as issues may arise requiring best practices, or operational guidance, WG5 will create substantive, editorial, or guidance documents which may specific guidance or changes to specifications; or may be offered as best practices to assist the ecosystem in achieving better functionality. WG5 and its associated TGs will provide Release 2 documentation in FY2020 in accordance with these areas and its charter. The group (WG5) will continue support for CBRS Operations across all areas of CBRS.

Standards Deliverables:

Standards updates based on operations needs in all areas will be provided on an on-demand basis. Release 2 operations updates will be provided in FY2020 as well.

Delivery Plan:

Technical Reports on GAA Coexistence Methods will be published, based on cleared balloting in the latter portion of 2019. Updated CRs will be published in the areas of CA and CPI as balloted in FY2020. Other TRs and recommendations to other WGs will be provided on an as needed basis throughout FY2020.

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6 Board of Directors

6.1 General Governance

A primary responsibility of the Board of Directors in FY2020 is monitoring the operations of the Forum ensuring compliance with the 2018 to 2022 Strategic Plan and this Operations Plan. Meetings of the Board of Directors are planned for the following dates:

- Web conferences the second Thursday of each month at 10AM Eastern US Time
- November 2019 in San Diego, California (in conjunction with WinnComm)

Additional interim Board Meetings may be scheduled as required.

An additional key role of the Board of Directors is monitoring the financial performance of the Forum. The CEO will send the status of membership and the updated FY2020 financial forecast to the Finance Committee monthly. In addition, the financial performance is reviewed following the schedule below:

- October 2019 Board Meeting – Review the audited financial results for FY2019 to be presented to the members at the Annual, and the Q1 FY2020 forecast with projections for the remainder of the year.
- Annual Meeting of the Members – Present FY2019 audited financial results to the members, present updated FY2020 projections
- January 2020 Board Meeting – Review Q1 FY2020 unaudited financial results and projections for the remainder of the year.
- April 2020 Board Meeting – Review Q2 FY2020 unaudited financial results and projections for the remainder of the year.
- June 2020 Board Meeting – Review the FY2020 forecast and approve the FY2021 Operation Plan and Budget and submit to the membership for approval.

Additional work by the Board to monitor performance and explore strategy is undertaken by the following Board committees:

- **Audits Committee** – Provides board oversight of the organization's annual financial audit, including reviewing the adequacy and reliability of the Forum's internal controls and financial reporting, review the independence of and performance of the Forum's external auditor, review alleged violations of the Forum's stated policies, and reports to the board on recommendations. Chair: Assigned by the Chair of the Board

- **Finance Committee** – Provides board oversight of the Forum finances including recommending financial policies and internal controls, reviewing the annual budget prepared by staff and recommending it to the full board for approval, and monitoring financial reports prepared by the staff, including monitoring of investments, against the approved budget. Chair: Treasurer

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- **Employee Compensation and Contractor Performance Committee (ECCP)** – as defined in the Forum's Bylaws

- **Governance and Policy Committee** – provides oversight and assessment of the Board, identifies requirements for Board orientation and education. Reviews current best practices and governance trends and makes recommendations to the full board on bylaws and policies. Chair: Secretary

- **Nominating Committee** – As defined in the Forum's Bylaws. The CY2017 Nominating Committee is formed by the Chair of the Board of Directors on or before the start of the June General Meeting, and presents the proposed slate of Directors to the Board at the October 2017 Board meeting.

- **Outreach Committee** – provides input to the Board on venues and events that the Forum should have representation in attendance.

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7 Infrastructure and Support Services

7.1 Executing on the Growth Strategy

High Level Objectives Supported:

- Brand the WInnForum as the Preferred Venue for Technical Collaborative Exchanges on Innovative Solutions for Wireless Systems
- Position the WInnForum as the Preferred Venue for the International Spectrum Sharing Community
- Establish Relevant Projects

In FY2017, the WInnForum developed a Platform Strategy supporting the following positioning:

***For** individuals striving to set their organization apart and achieve their market goals in their particular wireless industry, **who** need an ideal setting for incubating and advancing new potentially disruptive technologies, specifications or guidelines, **the Wireless Innovation Forum is** a member driven, standards development organization **that** brings together groups of leading organizations from across multiple market segments around the world and at all levels of the wireless value chain to collaborate in advocating for the innovative use of spectrum and advancing radio technologies that support essential or critical communications worldwide.*

***Unlike** other group collaboration organizations that are focused on lobbying for a specific segment of the wireless market, **the Forum will** act as an honest broker in advancing technology supporting an ecosystem that spans multiple markets and bring you together with other thought leaders in a multi-stakeholder community to create highly recognized reports, specifications and recommendations.*

***Also unlike** other standards bodies focused on supporting the wireless market, **the Forum is** agile, providing a venue for thought leaders to quickly build an ecosystem and rapidly advance projects under a proven development model that can be tailored to your specific needs and under IPR terms aligned with Industry best practices.*

Elements of the Platform Strategy to be executed in FY2020 are included in the below.

7.1.1 Continued Product Execution

Per the Platform Strategy, Forum staff will continue to work to complete the following in FY2020:

- The Forum will evaluate staff required to support the commercialization framework and make adjustments as required to meet member needs.
- Forum Staff will work with the Board of Director's Governance Committee to review relevant policies and make associated recommendations to the Board.
- Forum staff will strengthen the member experience by providing tools, instructional webinar(s), and reference materials.

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- Forum staff will support the ATC in new project creation by preparing promotional literature and materials for use on an as needed basis for exhibit booths, speaking opportunities, etc.

7.1.2 Marketing Strategy

For FY2020, Forum staff will focus on developing promotional materials and executing a marketing mix that will most effectively and efficiently promote the Forum. Event presence and supporting materials plan will be provided by the end of Q1.

7.1.2.1 Podcast

Summary: "Setting the Standard" The podcast about WInnForum and advanced radio technologies standards development. Features interviews with industry leaders, current news and Forum project updates.

This project helps solve the issue of the dissemination of misinformation. By going to the source of the standards creators users get the most accurate information. It will also help promote name recognition of the Forum and establish the Forum as the premier source for standards development in the wireless space. In addition, this project can help encourage new membership and project initiation through discussion.

7.1.2.2 SEO Outsourcing

As of the end of FY2019, bids are being pursued for improving the Forum's digital presence. Since the creation of the Forum's web sites, which has certainly evolved and grown over the past decade from one site to five, the sites themselves are in need of optimization. This should be addressed by experts in the field and will be included in the budget projection. The initial project is expected to take six months and include:

- Site evaluation and reporting, keyword analysis
- Search engine optimization, metadata implementation, fixing broken links and errors
- Social media advertising (if needed)
- Post scheduling and maintenance
- Periodic review

7.1.2.3 Database review and maximization

Database deletions due to GDPR had a very negative impact on the Forum's non-member database, reducing our reach considerably. A thorough review of our database including

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appropriate segmenting to improve effectiveness is due along with efforts at expansion including implementing form completions for document downloads from the Forum's site. Other possibilities will also be explored.

7.1.3 Member Retention

Both new member marketing and current member retention are priority aspects in generating revenue. With the Forum's diverse and growing market segments (Spectrum Sharing, SCA, etc.) the audiences are quite different for each segment. As such, staff will produce separate promotion materials for each committee audience detailing outputs, benefits to members, current members specific to this group, etc. In addition, staff will update the membership benefits page to better reflect and highlight current benefits.

In addition, staff will personally contact member organizations that are forecasted at below 100% retention confidence to discuss what can be done to increase their satisfaction with their membership.

Also important to member retention is member onboarding. Forum staff will refine our onboarding procedure to welcome our members and train them on the groups collaboration site. Tools will include scheduled emails, training videos and supporting documentation.

7.1.4 Support Committee Outreach

For FY2020, Forum staff will support the SDS Outreach Work Group and SSC Awareness Task Group in their efforts to educate the community on the work products their committees have developed and to grow membership in support of planned work efforts.

7.2 Expanding Accreditation Services

High Level Objectives Supported:

- Execute on Test and Certifications Strategies for WInnForum Standards

Staff will continue work to develop and implement the business models necessary to support accreditation services required by the Forum's membership as standards evolve. Such models will include flow and transfer the information required to manage the procedures of the accreditation services, such as: providing access to application materials and requirements; receiving application materials and maintaining database of applicants; maintaining schedule of re-accreditations needed; sending re-accreditation notices as needed.

7.3 Managing the CBRS Informing Incumbent Portal

WInnForum Staff will begin supporting the CBRS Informing Incumbent portal as a convenience to its members.

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7.4 Member Services and Group Support

7.4.1 Project Support

Forum staff will support each steering group in the establishment and maintenance of project roadmaps, including identifying and presenting a "watch list" of strategic issues that must be evaluated and tracked to each steering group on a monthly basis. Staff will also collect additional data pertaining to each watch list issue, as required for follow up by the steering groups.

The Forum's staff will work with Forum leadership to provide the facilities, infrastructure and services necessary for the members of the Forum's standing Committees to collaborate as required to achieve the objectives stated in this operations plan. Specific services defined for FY2018 as necessary in achieving the high level goals comes are:

- Remote Collaboration Services. Much of the work of the Forum's members is done using electronic utilizing the following tools provided by the Forum:
    - Webconferencing: A Go-To-Meeting account has been established for each committee. In addition, the Forum maintains a Go To Webinar account which can be used to host online workshops as required.
    - Online Communities: A collaboration area has been established for each work group, task group and special interest group on the Forum's "Groups Portal" (http://workspace.winnforum.org). Each collaboration area can host multiple project specific file libraries and list servers.[4]

  Forum staff will support its members in making use of these services as required, including supporting group leaders in maintaining portal communities, scheduling and hosting web meetings, and organizing workshops.

- Face to Face Meeting and Event Services. The Forum will provide complete meeting and event services as required, including planning, registration management, site selection and facilities management, speaker management and agenda/program development for ad-hoc project meetings, committee meetings, workshops and conferences. Where possible, meetings will be hosted at the Forum's offices in Reston, Virginia and Wakefield, Massachusetts, or at member facilities.

[4] Note: in FY2019, Kavi was purchased by Higher Logic, and the WInnForum's collaboration area was moved to "Higher Logic Workspace". A number of deficiencies have been found with this implementation and Higher Logic has promised remedial action to address. Should said action be deemed insufficient, WInnForum staff will explore options to move to a new platform. This will obviously impact other operations should such a change occur.

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Staff will create and maintain the supporting communication vehicles for the events including web presence and print publication as well as promotion through press releases, email campaigns, social media and sell sheet distribution when applicable.

- Project Facilitation and Management Services. Forum staff will provide services throughout the lifecycle of member projects as follows:
    - Project Initiation, including supporting the development of project proposals
    - Project Support, including schedule and budget management, tracking risks, soliciting contributions, following up on action items with volunteers and reporting
    - Editorial services, including graphics design, to ensure project reports, recommendations and specifications have a professional look and feel
    - Document Advancement and Electronic Balloting

7.4.2 Project Promotion and Committee Brand Management

Forum staff will support all three committees in outreach activities to grow participation and gain new members. Support items include:

- Maintaining an active external web page for each committee highlighting work products and committee goals
- Press release announcement of approved projects and final work products
- Social media and email campaigns to inform the community of progress and grow participation
- Hosting webinars providing a tutorial review of relevant work products and printing these webinars on You Tube
- Developing and editorial pitch when appropriate to promote activities and results.
- Print materials for distribution at partner conferences and events to include sell sheet and media packet.
- Support in revision of Top Ten Most Wanted Wireless Innovations, including document design, edit and publicity campaign
- Support in revision of WInnForum Advocacy Agenda, including document design, edit and publicity campaign

In providing these services, Forum staff will leverage the WInnForum Standards logo to establish a brand extension for each committee where required.

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In addition, staff will undertake an ongoing review of the Forum's communication vehicles to ensure a dynamic and efficient response to member needs and opportunities for member promotion using these vehicles, such as product announcements, event announcements, etc.

7.4.3 Daily News Feed

Feedback provided by members in satisfaction surveys and one on one interviews indicates that the daily news feed provided by the Forum is a key value provided by the Forum and so as a part of our member retention strategy, Forum staff will continue this service in FY2019 as well as explore ways to expand the value, such as, for example, including one banner ad per week (additional revenue) by sponsor.

7.5 Summit Management and Promotion

High Level Objectives Supported:

- Brand the WInnForum as the Preferred Venue for Technical Collaborative Exchanges on Innovative Solutions for Wireless Systems
- Position the WInnForum as the Preferred Venue for the International Spectrum Sharing Community

The US and European Summits act as primary vehicles for the Forum's members to network with the community and gain insight into current trends in SDR, CR and DSA technology. These conferences are a key element of the Forum's brand, and so Forum staff will work to strengthen both the conference programs and participation. All conference content is to be largely driven by the Forum's individual committees, with Forum staff coordinating the committee meetings and encouraging the committees to participate and develop the content.

Positioning of the Forum's Summits as set by the Board of Directors is as follows:

***FOR** researchers, technology providers, system integrators, their customers, and government authorities, **WHO** seek to facilitate the development and adoption of technologies and standards supporting the innovative utilization of spectrum and the development of wireless communications systems, WInnComm **IS THE** event **THAT** provides a venue for facilitating discussion between stakeholders to establish or expand ecosystems in the wireless communications market, define and promote interoperability standards supporting those ecosystems, and educate regulators on associated issues.*

***UNLIKE** other conferences that have a more academic or large system trade show focus, WInnComm is focused on information exchanges between stakeholders to report and discuss the development, adoption, transfer and commercialization of technologies, standards, regulations and certification processes, and demonstrating new technologies that enhance value, reduce total life cost of ownership and allow timely delivery of products and services.*

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Plans for each conference are as follows:

7.5.1 WInnComm 2019

WInnComm 2019 will be held in 18 to 22 November 2019 in San Diego, California. Important dates for this conference in FY2020 are:

- Paper Abstracts Due: **10 July 2019**
- Abstract Acceptance: **31 July 2019**
- Program Announced: **15 August 2019**
- Final Papers and Presentations Due: **30 October 2019**

Forum staff provides administrative support to the technical program committee in defining conference and workshop topics, which are to be largely driven by the committees, issuing the call for proposals, collecting and reviewing abstracts, reviewing papers and setting the program.

All operations of conference events from pre-conference services such as registration and exhibits management to onsite event management will be conducted to the highest degree of professionalism and membership service. Staff will look to maximize the attendee experience for all participants while focusing on efficiency and economies.

Satisfaction surveys by attendees will be used to determine attendee satisfaction, perceived problems, and potential improvements. The survey results will be used to guide plans for future conferences.

Forum staff will continue to place a priority on promoting the conference in order to increase attendance as well as brand recognition. The event web page, which is the primary public presence for the event will be updated frequently to ensure that it is dynamic, as well as reviewed often for accuracy and brand consistency. The web page and event will be promoted through press releases, email distribution and social media mentions. All communications vehicles will carry the same consistent branding presented on the web page. In addition, Forum staff will design and produce event proceedings for the conference, which will be distributed in an online store. The availability of the proceedings is a public marketplace will help advance the Forum's brand and help establish the Forum as a leader in producing technical publications.

7.5.2 WInnComm-Europe 2020

The Forum will move away from having a regular annual Forum-wide European conference to a model of adhoc regional workshops driven by the needs of each commercialization committee, with the three committees coming together in a common annual US event. These Committee led ad-hoc in-person "workshops" will act as a primary vehicle for outreach within the advanced wireless community. This includes exploring emerging requirements, collaborating to define solutions that address those requirements, educating the community and identifying new markets and new business opportunities for emerging technologies.

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For any adhoc regional workshops or meetings, the Forum will provide complete meeting and event services as required, including planning, registration management, site selection and facilities management, speaker management and agenda/program development for ad-hoc project meetings, committee meetings, workshops and conferences. Where possible, meetings will be hosted at member facilities.

Staff will create and maintain the supporting communication vehicles for the events including web presence and print publication as well as promotion through press releases, email campaigns, social media and sell sheet distribution when applicable.

7.5.3 WInnComm 2020

WInnComm 2020 will be held in the Washington, DC area in the fall of 2020. In FY2020, Forum staff will identify potential dates, source and analyze potential venues, confirm the final venue, develop the project timeline and develop the budget for this event.

Forum staff provides administrative support to the technical program committee in defining conference and workshop topics, which are to be largely driven by the committees, issuing the call for proposals, collecting and reviewing abstracts, reviewing papers and setting the program.

All operations of conference events from pre-conference services such as registration and exhibits management to onsite event management will be conducted to the highest degree of professionalism and membership service. Staff will look to maximize the attendee experience for all participants while focusing on efficiency and economies.

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7.6 Awards

The Forum will launch the 2019 Awards program in July, with nominations pursued in emails and on the web site. Finalists will be announced in September 2019, and will be encouraged to attend the November conference where winners will be announced and receive their awards.

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8 Other Corporate Administration

8.1 Annual Meeting of the Members

The Annual Meeting of the Members, as described in the Forum Bylaws will be held in conjunction with WInnComm 2019.

8.2 Corporate Filings

The Forum will continue to evaluate and improve internal office functions related to financial controls and reporting, archival storage of documents, and membership initiation and renewal. Finance and Accounting Procedures will be updated in Q1 FY2020 to reflect the change in banks, change in accounting software, and modifications of the membership renewal processes.

In addition, the Forum shall ensure filings as follows:

- 990 filing with the IRS – 15 May 2020
- California Tax Exempt Return – 15 May 2020
- Canadian Information Return – 15 November 2019
- Canadian Extra-Provincial Annual Report – 2 January 2019
- 1099s to recipients – 31 January 2020
- 1099 and 990s to IRS – 28 February 2020
- Foreign Bank Account Report Form – 15 October 2019
- Fairfax County, VA Business, Professional, Occupational License-01 March 2020
- Fairfax County, VA Personal Property Tax-01 May 2020 – filing only; no tax paid
- Virginia Corporate Commission Report - 30 April 2020
- Virginia Corporate Commission Registration Fee -30 April 2020

8.3 Insurance

In addition, the Forum shall perform an insurance review (D&O, E&O, Liability, etc.) to be completed to be completed in advance of the renewal date.

- Error and Omissions plus Certification Insurance: April 2020
- General Liability Insurance: August 2019
- Directors and Officers Insurance: January 2020

In addition, the Forum will secure cancellation insurance, as appropriate, for each major event.

8.4 FY2021 Planning

The FY2021 Operation Plan will be developed on the following schedule:

- Board Approval of High Level Goals for FY2021 – March 2020

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- High Level Goals and Ops Plan Process Presented to Group Leaders –Mar 2020
- Draft Budget Presented to the Finance Committee – May 2020
- Draft Plan Submitted to Officers – May 2020
- Final Draft Approved by Forum Chair and CEO – June 2020

The final plan will be presented to the Board of Directors for their approval during the June 2020 Board Meeting and will be submitted to the membership for final approval immediately thereafter.

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