



# Annual Report

for

The Software Defined Radio Forum Inc.,

doing business as

The Wireless Innovation Forum

for the Year Ending

30 June 2012



## ABOUT THE WIRELESS INNOVATION FORUM

Established in 1996, the Wireless Innovation Forum™ is a non-profit "mutual benefit corporation" dedicated to driving technology innovation in commercial, civil, and defense communications around the world. Forum members bring a broad base of experience in Software Defined Radio (SDR), Cognitive Radio (CR) and Dynamic Spectrum Access (DSA) technologies in diverse markets and at all levels of the wireless value chain to address emerging wireless communications requirements through enhanced value, reduced total life cost of ownership, and accelerated deployment of standardized families of products, technologies, and services. The Forum acts as the premier venue for its members to collaborate to achieve these objectives, providing opportunities to network with customers, partners and competitors, educate decision makers, develop and expand markets and advance relevant technologies.

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## BOARD OF DIRECTORS

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<b>David Renaudeau</b>	ITU Region 1 Representative
<b>Terry Anderson</b>	ITU Region 2 Representative
<b>Boya Lu</b>	ITU Region 3 Representative
<b>Paul Sutton</b>	Academic Representative

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## FORWARD BY THE CHAIR OF THE FORUM

As I look back over the past year I am impressed at the accomplishments of the members and stakeholders of the Forum. Fiscal Year 2012 has truly been a productive year. This year the Forum members balloted and approved sixteen documents versus four in 2011. In addition to our general meetings and conferences the Forum continued our Webinar series presenting tutorial material in areas of broad member interest. All of these are evidence that the Forum is truly driving technology innovation in commercial, civil and defense communications worldwide.

The Forum hosted three General Meetings and held successful conferences, SDR'12 WInnComm Technical Conference and Product Exposition in Washington DC, and SDR'12 WInnComm Europe. These meetings provided valuable opportunities for our members and potential members to exchange information on the future of wireless communications. In addition, the Forum hosted four successful webinars: "The ADCs of SDR: Parameters, Design Considerations and Implementations", "Cognitive Radio and the ISM Band", "Generic Development Tools for Many Core Heterogeneous Processors", "Top Down Design of Wireless Systems". These are still available for reading at: [http://www.wirelessinnovation.org/webinars\\_tutorials\\_resources](http://www.wirelessinnovation.org/webinars_tutorials_resources). Thank you to the Forum staff which has put in significant time and effort to make these events successful.

The members of the Forum balloted and approved twelve documents in FY2012:

- Support of the PCAST Recommendations on Spectrum Sharing (Document WINNF-12-R-0004-V1.0.0)
- TD-LTE in White Space (Document WINNF-12-P-0003-V1.0.0)
- Approval of the SCA Next Specification Candidate (Document WINNF-12-R-0001-V1.0.0)
- Comments on Research and Development Priorities for Desirable Features of a Nationwide Public Safety Broadband Network (Document WINNF-11-R-0017-V1.0.0)
- Top 10 Most Wanted Wireless Innovations (Document WINNF-11-P-0014-V1.0.0)
- Change Proposal to Draft SCA Next CORBA Profiles for Harmonization with ESSOR Architecture (Document WINNF-11-R-0006-V1.0.0)
- Change Proposal to Draft SCA Next AEP for Harmonization with ESSOR Architecture (Document WINNF-11-R-0005-V1.0.0)
- Approved Issues and Resolutions Concerning the November 2010 Draft of the SCA Next Specification (Document WINNF-11-R-0004-V1.0.0)
- SCA Test, Evaluation and Certification Model Realization (Document WINNF-10-P-0012-V1.0.0)
- Information Process Architecture Volume 2: Survey of IPA Like Systems (Document WINNF-09-P-0021-V1.0.0)
- White Paper on SDR Technologies for the International Tactical Radio Market (Document WINNF-09-P-0006-V1.0.0)
- International Tactical Radio Security Services API Specification (Document WINNF-09-S-0001-V1.0.0)

There is always a question if the Forum documents and proceedings are utilized – they are! There were 34,322 downloads in the fourth quarter of FY2012 (2nd Quarter Calendar 2012). Continuing a productive FY2012 the Forum's membership are working on sixteen documents targeted to be balloted in FY2013.

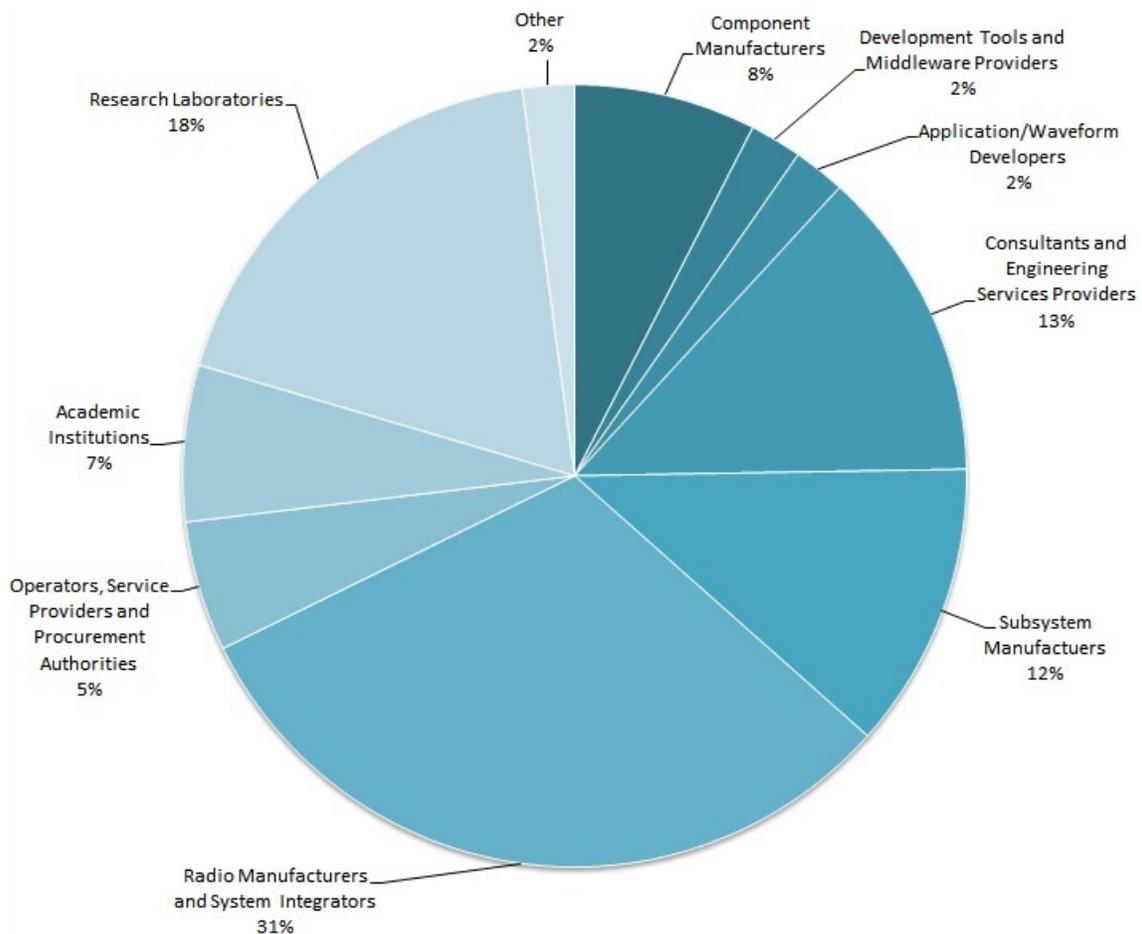
This long list of Forum accomplishments were made possible by the significant contributions of time and resources from our member organizations, the technical and business expertise of the volunteer participants, and the dedicated work of the staff. On behalf of the Forum's leadership, I would like to express our deep appreciation for all of your efforts during the past year and thank you in advance for continuing this effort in Fiscal Year 2013 and beyond.

Bruce Oberlies  
Chair of the Wireless Innovation Forum

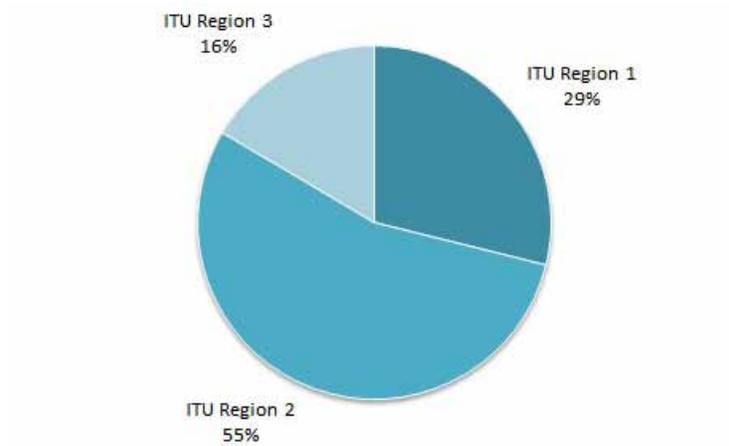
## 2012 MEMBERSHIP

The membership of the Wireless Innovation Forum (SDR Forum Version 2.0) consists of commercial, defense, and civil government organizations including wireless service providers, network operators, component and equipment manufacturers, hardware and software developers, regulatory agencies, and academia. Individual representatives from these organizations include decision makers, planners, policy makers, technologists, educators, and program/product managers. Presently numbering more than 107 organizations, the Forum's membership spans Asia-Pacific, Europe, and North America.

**Membership by Value Chain – 30 June 2012**



### Membership by Region – 30 June 2012



## FY2012 PROGRAM REVIEW (1 JULY 2011 - 30 JUNE 2012)

### Organizational Structure

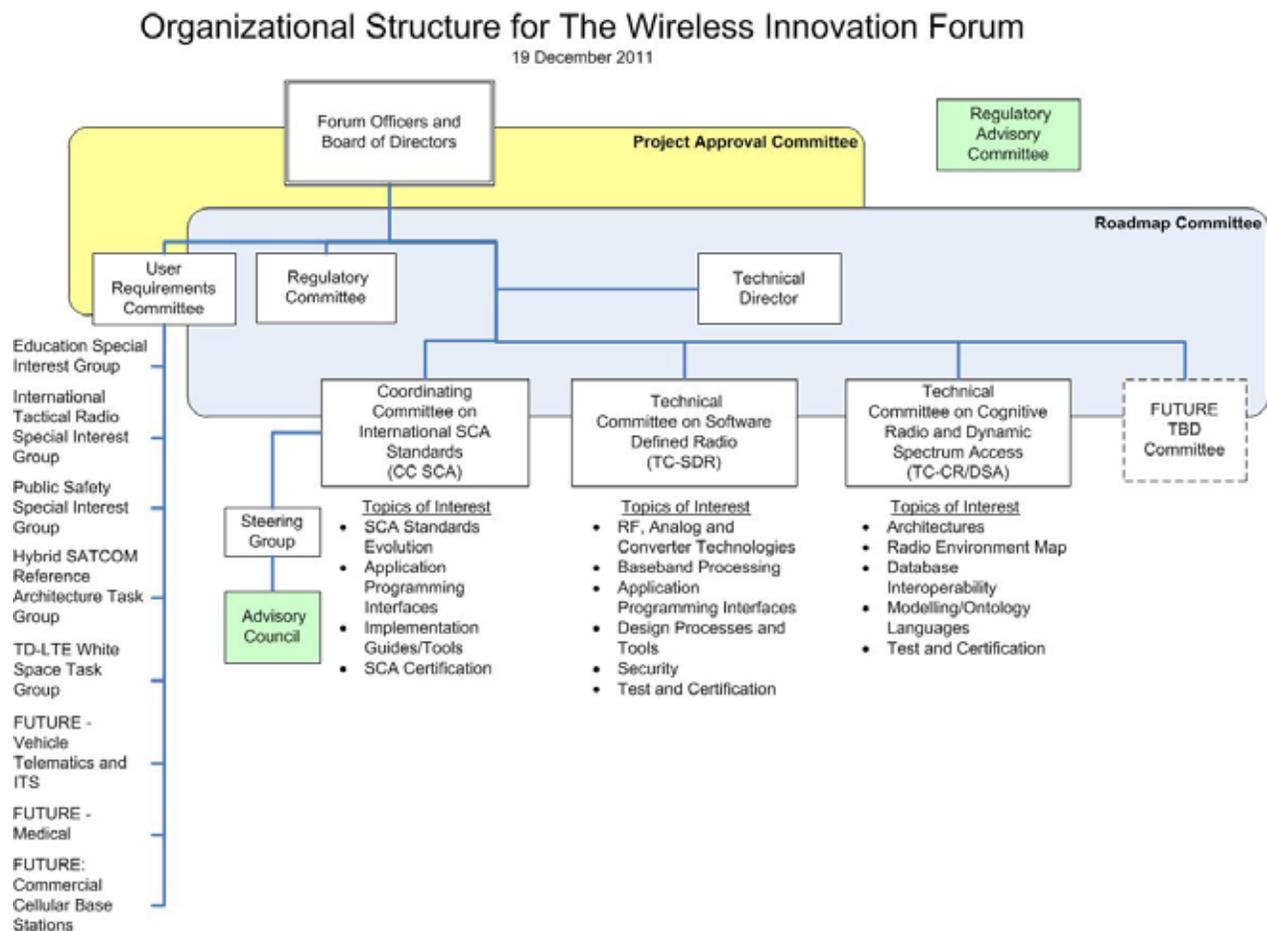
The Organizational Structure of The Wireless Innovation Forum as of 30 June 2012 is presented in the diagram below. The Forum is organized around five primary committees and a Roadmap Committee, whose responsibilities are summarized as follows:

- *The User Requirements Committee:* The User Requirements Committee acts as the primary interface for requirements with the wireless end-users and the representatives of wireless end-users in their segment, including, as appropriate, network operators, government acquisition authorities and research sponsors. Through Special Interest Groups (SIGs), the Committee works with these key stakeholders to validate concepts and requirements against technology readiness and standardization and to document domain specific requirements, use cases and business models that will drive the activities of the Regulatory and Technical committees. The User Requirements Committee also supports member organizations in identifying new opportunities for next generation products and services in each defined market domain.
- *The Regulatory Committee:* The Regulatory Committee works with the regulatory and public policy community to establish a global regulatory framework promoting the adoption of emerging technologies for advanced wireless systems. The work of the Regulatory Committee is facilitated by a Regulatory Advisory Committee made up of regulatory and public policy officials and experts from around the world working on relevant issues.
- *The Technical Committees:*
  - Committee on Software Defined Radio: provides a venue for the exchange of information on emerging radio technologies and produces reports, specifications and recommendations supporting the use of next generation technologies in radio devices.
  - Committee on Cognitive Radio and Dynamic Spectrum Access: provides a venue for the

exchange of information on emerging technologies important in wireless networking and produces reports, specifications and recommendations supporting the development and deployment of advanced wireless systems.

- o Coordinating Committee on International SCA Standards: supports the harmonization of SCA based standards at the international level for the mutual benefits of all stakeholders to include:
  - Defining an industry driven SCA evolution roadmap for the international community
  - Profiling the SCA specification and related APIs to define internationally accepted variants that are hosted by the Forum
  - Developing extensions to the SCA standards that address any gaps between the defined SCA evolution roadmap and Forum accepted SCA specification variants
  - Providing implementation and certification guides, tools etc. easing implementation and supporting proliferation
  - Establishing and managing industry led certification programs where appropriate
- *The Roadmap Committee:* Defines and publishes the Forum's "Top 10 Most Wanted Wireless Innovations"

These committees are managed by the Forum's elected officers, which include the Chair and Vice Chair of the Forum, the Technical Director, the chairs of the User Requirements and Regulatory Committees, the Secretary, and the Treasurer.



**Figure 1: Wireless Innovation Forum FY2012 Organizational Structure**

Key deliverables for 2012 from each element of the organization are provided in sections that follow.

### **Collaboration on Reports, Recommendations and Specifications**

A primary purpose of the organization is to facilitate collaboration between members and the broader community to promote the advancement of software defined radio, cognitive radio and dynamic spectrum access technologies. To support this objective, the Forum held three General Meetings in fiscal year 2012. These meetings are the face-to-face working meetings of the Forum membership, providing them a venue to explore the reconfigurable radio market and to advance the Forum's work plan in support of the commercial, public safety, and international tactical radio communities. Each General Meeting also includes a one day workshop exploring a specific topic relevant in the members in supporting the organizations objectives. The general meetings held in FY2012 and the associated workshops are as follows:

- September Meeting – 70th General meeting 12 to 15 September 2011 at the Hyatt in Montreal, (Hosted by Ultra Electronics)
  - o Workshop: “Enabling Interoperability”
- March Meeting- 71st General Meeting 12 to 15 March 2012 in San Diego
  - o Workshop: “Disaster Recovery”
- June Meeting – 72nd General Meeting 25 to 27 June 2012
  - o Collocated with the Wireless Innovation Forum European Conference on Communications Technologies and Software Defined Radio (SDR'11 WinnComm Europe)

The Forum also hosted 4 webinars in FY2012

- “The ADCs of SDR: Parameters, Design Considerations and Implementations”, 25 Aug 2011
- “Cognitive Radio and the ISM Band”, 29 Sep 2011
- “Generic Development Tools for Many Core Heterogeneous Processors”, 9 Feb 2012
- “Top Down Design of Wireless Systems”, 29 Feb 2012

The Forum plans to continue these webinars in FY2013. Participation in these webinars will always be free for members, but non-members may from time to time be invited to participate for a fee.

In addition to these meetings and workshops, the Forum also provides teleconferencing and web conferencing services to facilitate collaboration between meetings, and maintains a group portal supporting file libraries, document management and discussion forums. Through these services, the members of the Forum balloted and approved the following work products in FY2012, which have been made publically available through the Forum's document library ([http://www.wirelessinnovation.org/page/Document\\_Library](http://www.wirelessinnovation.org/page/Document_Library)):



- Support of the PCAST Recommendations on Spectrum Sharing (Document WINNF-12-R-0004-V1.0.0)
- TD-LTE in White Space (Document WINNF-12-P-0003-V1.0.0)
- Approval of the SCA Next Specification Candidate (Document WINNF-12-R-0001-V1.0.0)
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- White Paper on SDR Technologies for the International Tactical Radio Market (Document WINNF-09-P-0006-V1.0.0)
- International Tactical Radio Security Services API Specification (Document WINNF-09-S-0001-V1.0.0)

Members also collaborated on the development of a number of other work products that are expected to be balloted in FY2013:

- “Business Models for Open Source Air Interfaces” – This report is being developed by the Commercial Baseband Processing Technologies Work Group for baseband providers, computer manufactures (MIDS), automotive electronics suppliers, handset manufacturers, infrastructure manufacturers, software services companies, and operators who need access to air interfaces for new platforms being developed or who may want a competitive baseband environment and access. The report will provide a description of open source licenses, potential business models, languages and development environments (C, python, Matlab), potential customers and markets for open source air interfaces, potential developers, and currently available open source projects.
- “Business Models for New Entrants in the SDR Tactical Radio Market” – The ITR-SIG will complete work on this report which identifies the business models for participants in the SDR tactical radio value chain. In addition, comparisons will be made to business models in the commercial wireless infrastructure industry. The report is being prepared for tactical radio customers, primes, contractors and suppliers worldwide to the tactical radio market.
- “Cognitive Radio Information Services Project : Anticipating Future CR Needs with the Development of a Radio Environment Map (REM)” – This specification is being produced by the Cognitive Radio Work Group for third party database providers and white space radio manufacturers to provide database structures and standardized formats and functionalities that support the flexibility necessary to accommodate current and future cognitive radio spectrum applications, such as mobility, spectrum economic transactions, dropouts, handovers, available networks, and services, etc.
- “Cognitive Radio Technology Survey for Public Safety Applications” – This survey is being developed by the Public Safety Special Interest Group for the public safety community leadership, researchers, product developers, regulatory, and standards developers who are planning the evolution of communication capabilities and/or can benefit from awareness of future technology developments. The survey is based on the technology requirements identified in the Cognitive Use Case documents published by the Public Safety SIG and the Quantification Document under development by the Cognitive Radio WG to identify both current and projected maturity and also availability of technology to fulfill those requirements to:
  - o Help public safety agencies plan communications system life cycle
  - o Inform public safety standards and regulatory bodies regarding evolving systems capabilities
  - o “De-mystify” cognitive radio for public safety leaders and users
  - o Identify for researchers technology gaps and dependencies, and
  - o Support roadmap development efforts of the Wireless Innovation Forum.
- Component-Based Radio Management Framework – The use of the SCA has grown beyond its origins and use within the JTRS program. However, it has not gained a wider commercial acceptance. The

recent release of the SCA 4.0 specification has provided a way forward for more flexibility of the implementation allowing for application to other domains and markets. This project will take the Platform Independent Model (PIM) and Platform Specific Model (PSM) approach of SCA 4.0 and develop a component-based approach to radio management frameworks that can be extended in a modular fashion and be applied across a wide range of commercial systems.

- “Hybrid SATCOM Reference Architecture for Public Safety Applications” – This report is being prepared by the Satellite Communications (SATCOM) Special Interest Group for use by organizations such as the US Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) and first responder providers who require the use of SATCOM systems to support emergency services during natural and/or man-made disasters . The report will document use cases where disruption of traditional terrestrial emergency services is expected, and explore the market need for integration of commercial and military satellite systems with terrestrial communications, highlighting areas where satellite communications provides both primary and back-up communications. The report will also propose a notional architecture for a hybrid LOS/BLOS platform compliant with the Forum's Information Processing Architecture. .
- Integrated Model of SDR Systems and Software – Leverage prior work in integrating systems (SysML) and software (UML) modeling developed for large scale government communications systems and develop a common, modular specification that can be applied across a range of SDR systems developed or used by forum members. This effort will leverage prior work performed in the government sector, specifically the Government Reference Architecture (GRA), which developed in integrated systems and software perspective of large scale, SCA based, SATCOM communications systems.
- “International Security Services API, Revision 2” – This specification is being developed by the International Security Services API Task Group for nations, international organizations and companies who need software interoperability and portability between international and independently developed software radios. The international radio security services API will specify how to interface and operate with a common set of radio security services improving interoperability and portability of software through the use of a common open software architecture.
- Open Source Transceiver Facility Implementation – This project will take the Transceiver Application Programming Interface (API) specification completed above and develop an open source implementation for the USRP radio system. This implementation will be available to forum members for use and as a reference implementation to apply to other radio systems.
- “Realization Model for the Coordination of International SCA Standards” – This recommendation is being developing by the CC SCA Steering Group in collaboration with the CC SCA Advisory Council for stakeholders (i.e., manufacturers, vendors, Governments) of the international SCA-based ecosystem who seek increased harmonization among SCA-based international standards. The model is expected to continue to evolve over time with updates to be published at least on an annual basis.
- “SCA Standards Roadmap” – The CC SCA Steering Group will work with the Advisory Council to develop and publish an SCA Standards Roadmap with updates on a six month cadence.
- “SCA Next Recommendations” – The SCA Next Work Group (Chair:) will support the continued evolution of SCA Standards through the technical analysis, evaluation and recommendation of corrections, extensions and improvements, delivering formal recommendations to JTRS JPEO for consideration of incorporation into future versions of the specifications. This will include evaluation and recommendation of SCA Standards extensions that could come from other Programs (i.e., ESSOR Program, SvuFA Program). The anticipated cadence for providing recommendations is every 6 months.
- “SCA Waveform Applications Portability Guidelines” – The SCA Implementer's Work Group will develop and publish a set of SCA waveform application portability guidelines for the waveform developers and radio platform manufacturers who require reducing the cost, effort and time needed to perform the development and porting of waveforms among different processing architectures

(i.e: DSP, FPGA). The report will provide a compilation of portability recommendations, guidelines and best practices for waveform development with portability as the main target.

- “SCA API Requirements Specification” – The SCA API WG will generate and release a specification that establishes a set of requirements of what normative material a complete API must contain.
- “Software Communications Architecture Interpretation Guide” – This report is being prepared by the SCA Implementers Work Group (Chair: Steve Bernier (CRC)) for the participants in the international software defined radio community where the SCA and SCA derivatives are relevant who need clarity on the SCA to harmonize the development of embedded system software in order to lower development and maintenance cost as well as time to market. The output of this activity will be submitted to the JTRS as comments and for inclusion in their next release of the specification, and will also be shared with the ESSOR program and on the Forum site for the international community to standardize on a single interpretation.
- “Test Guidelines and Requirements for Secondary Spectrum Access of Unused TV Spectrum, also referred to as TV White Space” – This Report is for equipment designers and manufacturers, test & measurement vendors, test & evaluation departments, certification authorities, spectrum stakeholders, wireless service providers and end-users who are impacted by software defined radio and cognitive radio (SDR/CR) system technology developments such as dynamic waveform activation, opportunistic scheduling, dynamic spectrum access, secondary and unlicensed spectrum access (e.g. by TVBDs) and policy based operation which are features not implemented in traditional radio systems. The report will define the usage models and test requirements for personal portable devices in unused TV spectrum, with the overlaying spectrum availability, and will provide a basis for test and certification for radio manufacturers and regulators who need to understand the usage scenarios and test requirements for devices that can dynamically access unused spectrum in the TV bands through the use of cognitive techniques.
- “Transceiver Facility Specification – Version 2.0” – This revised specification is being developed by the Transceiver System Interface Work Group and captures the information needed for interoperability between waveform applications and transceiver subsystems, expressed as generic and abstract requirements for properties and programming interfaces, including the associated real-time issues. The specification is being prepared for radio system integrators, waveform providers, SDR platform providers and radio head manufacturers, who seek increased efficiency when integrating waveform applications with target platforms (incl. radio heads), and who seek increased portability for their waveform applications.

In addition, the Forum's Roadmap Committee will work to publish a revision of the Forum's “Top 10 Most Wanted Wireless Innovations” in Fiscal Year 2012.

### **Technical Conference**

The Forum held its annual US technical conference and product exposition November 29th to December 2nd, 2011 at the Hyatt regency in Crystal City, Virginia. This event acts as the primary vehicle for the organization to fulfill its education mandate, and featured more than 100 papers and presentations focusing on software defined and cognitive radio technologies, standards, regulatory issues and business activities - presented by an international array of researchers and organizations in the commercial, civil and defense communications markets to attendees from over 22 countries. The event provides an international perspective on the current state of the art for advanced wireless communications and included keynotes, workshops, panels, tutorials and product demonstrations (image above) from over 25 exhibitors.



In support of this event, in FY2012 the Forum arranged a travel grant with the US National Science Foundation to provide support to students at US Universities active in software defined radio and cognitive radio in attending the conference. The goal of this grant was to provide students with exposure to industry and the real problems they will face when entering the workforce in the design, development, manufacture and deployment of advanced wireless systems. Such exposure will help them to better understand how their course work at university applies in a real world setting, and will accelerate the pace at which they become productive upon graduation. At the conference they will meet and interact the leading researchers and practitioners in this field. 26 travel grant awards were made by the conference's program committee, with grants of up to \$600 made to students living within 300 miles of the event, and grants of up to \$1400 made for students living more than 300 miles away. Grants were made against actual expenses, and receipts were required before payment was made. The Forum also provided lodging at the conference hotel for a fixed number of nights as a matching contribution.

The Forum is scheduled to hold its next annual US technical conference and product exposition January 8 to 11, 2013 at the Marriott Wardman Park in Washintgon, DC. In FY2012, the Forum formed a Technical Program Committee, issued the call for papers, tutorials, demonstrations and workshops for this event, and began soliciting for sponsors and exhibitors.

In addition, in 2012 hosted its second European Conference on Communications Technologies and Software Defined Radio. This conference was held June 27 to 29, 2012 in Brussels, Belgium and featured over 42 papers and presentations focusing on research and development related to software defined radio, cognitive radio and dynamic spectrum access in European Programs. The conference attracted over 120 delegates from 25 countries representing organizations at all level of the wireless value chain. The conference also included a small exhibition with 11 exhibitors. The Forum is scheduled to hold its second European Conference on Communications Technologies and Software Defined Radio in June of 2013. In FY2012, the Forum began forming the program committee for this event to define the technical program.

### **Achievement Awards**

Each year, the Forum presents awards in three categories:

- Wireless Innovation Forum International Achievement Award – This award is presented to an individual, group of individuals, or organization that made especially significant contributions to international furtherance or acceptance of Software Defined or Cognitive Radio
- Wireless Innovation Forum President's Award – This award is presented to individuals in recognition of their sustained outstanding contributions in support of the Wireless Innovation Forum and its activities.
- Wireless Innovation Forum Technology of the Year – This award is presented to an individual or organization for a breakthrough product or technology in the field of software defined or cognitive radio as selected by the members.

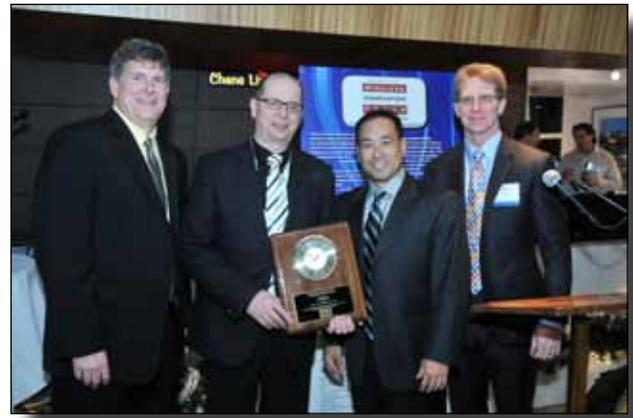
In FY2012, The JTRS JPEO Technical Directorate was awarded the International Achievement Award, Mr. Claude Belisle of CRC was awarded the President's Award, and the Elektrobit Specialized Device Platform was awarded the Technology of the Year.



*Claude Belisle, center, with Forum CEO Lee Pucker, left and Forum Chair Bruce Oberlies.*



*John Armantrout of JTRS JPEO, with Forum CEO Lee Pucker, far right, Manuel Uhm 2nd to right and Forum Chair Bruce Oberlies, left.*



*Pekka Heikkinen of Elektrobit, with Forum CEO Lee Pucker, far right, Manuel Uhm 2nd to right and Forum Chair Bruce Oberlies, left.*

## **Other Member Services**

The Forum manages a number of other smaller programs for its members that are collectively referred to as "other member services". These include the following:

- **Linked-In Group** – The Forum manages a members-only Linked-In group to facilitate networking among representatives of its member organizations. As a result of member surveys and focus groups, during FY2012 we attempted to expand our LinkedIn presence as it was indicated that our members were more inclined to use it as a networking tool rather than Facebook or Twitter.
- **Member Newsletter** – The Forum provides up to date information on opportunities and news within the advanced wireless community through the Forum's "SDR, CR and DSA News and Opportunities" e-newsletter. In FY2012, we switched from bi-weekly to weekly emails to better serve the members as a result of member communications survey.
- **Member Discounts** – The Forum negotiates discounts for its members for relevant market studies, events and other items. In FY2012, the Forum secured discounts as follows:

### **Products/Services**

- 10% Discount on membership in The Object Management Group.
- 15% Discount on Real Wireless marketing report "White space devices: Market, technology, risks and opportunities"
- 50% discount for members interested in purchasing Frost and Sullivan's report "U.S. Military Software Defined Radio Markets"
- 10% discount for members interested in purchasing Forward Concepts Markets Study market research study number 8030 entitled – "Cellular Handset and Chip Markets '08, An In-Depth, Global Analysis of Cellphones, Chips & Subscribers" and their market research study number 7020 entitled - Cellular Handset and Chip Markets 07, An In-Depth, Global Analysis of Cellphones, Chips and Subscribers.
- 10% discount for Wireless Innovation Forum members on the applicable "North American Price" for all Elsevier Communications Engineering print books that are in-stock.
- One hard copy version at a discount of 25% off the then applicable "North American Price" or "International Price" or one electronic version of the Report (in .pdf format) and an "Enterprise License" to distribute copies thereof to the eligible Forum Member's employees on a worldwide basis, at a discount of 25% off the then applicable "Enterprise License" price discount for Wireless Innovation Forum members interested in purchasing ARCchart Market Research Report entitled "Software-Defined Radios in Mobile Phones, an Analysis of the Maturing Wireless Technology Set to Disrupt the Mobile Ecosystem.
- 25% discount on the "Single User" or "Multi-User" price as shown on their report website for Pioneer

Consulting to provide a discount for members interested in purchasing their market research study entitled "Commercial Software Defined Radio - The Emergence of Multiprotocol Multiband Support in Base Stations".

- Avis is offering a year-round link for rental discounts for Wireless Innovation Forum members.

#### Events

- 15% discount to the Intro Course to Software Communications Architecture (SCA) and Rapid Application Development (RAD), 14-16 February 2012, San Diego
- 25% discount to IWCE 2012, 20-24 February 2012, Las Vegas
- 15% discount to Broadband MEA, 25-27 March 2012, Dubai
- 15% discount to MilSpace 2012, 27 - 28 March 2012
- \$200 discount to 4G World Asia, 17-19 April 2012, Singapore
- 15% discount to ISR 2012, 18 - 19 April 2012
- 15% discount to Tactical Communications 2012, 23 - 25 April, 2012, Mayfair Conference Centre, London
- 10% discount to IMS World Forum, 24-26 April 2012, Madrid, Spain
- 15% discount to 3G, HSPA+ & LTE Optimisation, 17-18 April 2012, Andels Hotel, Prague, Czech Republic
- 15% discount to Broadband and ip&tv Asia 2012, 15 - 16 May 2012, KL Convention Centre, Kuala Lumpur, Malaysia
- 20% Discount to LTE World Summit, 22-24 May 2012, Barcelona, Spain
- 20% discount to LTE Forum 2012, 5-6 June 2012, Istanbul, Turkey
- 20% discount to International Software Radio, 20-21 June 2012, London
- 15% Discount to ISART 2012: Developing Forward Thinking Rules and Processes to Fully Exploit Spectrum Resources, 25-26 July 2012
- 20% discount to Super Wi-Fi Summit, 3-5 October 2012
- 20% discount to Mobility Tech Conference, 3-5 October 2012
- 15% discount to Broadband World Forum 2012, 16-18 October 2012, Amsterdam
- £100 discount to Global MilSatCom 2012, 27-29 November 2012

Product and Services Directory – This directory provides insight into products and services offered by Forum member organizations to help individuals operating at all levels of the wireless value chain to quickly find partners that can help address their specific requirements. There is no cost for members to participate in this directory, and members are offered assistance in ad creation if desired.

## CURRENT MEMBERS

Aeroflex Corporation  
Air Force Research Lab - IFGC  
Alliance for ESSOR (a4ESSOR)  
Al Yah Satellite Communications  
Company  
Aselsan AS  
ASOCS  
Aviacomm  
Battelle Memorial Institute  
Bharat Electronics Limited (Central  
Research Lab)  
Boeing  
Center of Excellence  
CERDEC Space & Terrestrial  
Communications  
Directorate  
Cognitive Radio Technologies, LLC  
Coherent Logix, Inc.  
Communications Research Centre  
(CRC)  
Comtech Mobile Datacom  
Corporation  
CTVR  
DataSoft Corporation  
Datron World Communications Inc.  
DEAL-DRDO  
DSO National Laboratories  
Elektrobit Wireless  
Communications Ltd  
Engility  
Etherstack  
ETRI  
Ettus Research LLC  
Fairwaves  
FMV  
Fraunhofer-Institut  
General Dynamics C4 Systems  
GIRD Systems, Inc.  
Green Hills Software, Inc.  
Harris Corporation  
Hitachi Kokusai Electric Inc.  
Huawei Technologies Co., Ltd  
Indra Sistemas  
Innovative Integration  
Institute for Infocomm Research  
Institute for Telecommunications  
Research  
ITT Exelis  
Kolodzy Consulting, LLC  
L-3 Communications Government  
Services Inc.  
Mathworks  
MIT Lincoln Laboratory  
MITRE Corp (Washington C3  
Operations)  
Motorola Solutions  
NASA Glenn Research Center  
NAVSYS Corporation  
NCOIC  
NEC Corporation  
NICT  
Oak Ridge National Laboratory  
Objective Interface Systems, Inc.  
OMG  
Optimum Semiconductor  
Technologies, Inc.  
Pentek Inc.  
PrismTech  
QinetiQ  
Radmor SA  
Rafael Advance Defense Systems  
Ltd.  
Raytheon  
Research in Motion Limited  
Reservoir Labs  
Rockwell Collins  
Rohde & Schwarz  
Rolta  
RWTH Aachen University  
SAIC  
Selex Elsag  
Southwest Research Institute  
Space Coast Communication  
Systems, Inc.  
SPAWAR  
Spectrum Bridge, Inc.  
Spectrum Signal Processing by  
Vecima  
Tata Consultancy Services  
Tata Power SED  
TDK Corporation  
Telefunken RACOMS  
Thales Communications  
Tubitak Uekae  
u-blox  
University of Oulu  
ViaSat, Inc.  
VISTology, Inc.  
Wireless @Virginia Tech  
ZTE Corporation



## MESSAGE FROM THE TREASURER

I am pleased to present the audited financial report for the Wireless Innovation Forum, indicating that the overall financial health of the organization continues to be strong. The Forum's Statement of Financial Position showed total assets of \$ 258,745 as of June 30, 2012.

Financial performance for fiscal year 2012 was one of the most challenging years in the history of the organization with a net operating loss of \$ 196,769 versus the annual operating plan which projected a net loss of \$ 33,252. The higher net loss was largely attributed to revenue shortfalls across several key events during the year, as organizations across the globe began reducing travel funds to control expenses during these turbulent economic times. Lower travel funds resulted in lower attendance at Forum events with the additional effect of increasing operational expenses from unplanned hotel attrition charges due to lower than expected room usage (note that the Forum books events 9 to 12 months or more in advance to secure sufficient event locations). Expenses were managed carefully by the Forum's leadership team to prevent further losses for the year, including successful transition of operations activities to a management company providing cost efficiencies during the latter portion of the year and projected for future years. Other key Fiscal Year 2012 financial performance parameters include:

- Total Revenue \$ 943,603
- Total Expenses \$ 1,140,372

For fiscal year 2013 planning, significant changes were incorporated into the planning process to more readily protect the Forum from continued economic uncertainty, including: utilization of a zero based budget methodology vs. prior incremental approach, budgeted plan to re-build reserves with a 4% set-aside, additional management reserve for execution flexibility and continued careful expense control.

The Wireless Innovation Forum is a tax exempt organization under Section 510(c)(6) of the Internal Revenue Code and operates on a modified cash accounting basis in accordance with Statement of Financial Accounting Standard (SFAS) No 117, Financial Statements of Not-for-Profit Organizations.

Despite the financial challenges presented by fiscal year 2012, the Wireless Innovation Forum has sufficient assets to continue to be a viable organization.

Mark Turner  
Wireless Innovation Forum Treasurer

## Summary Statement of Forum Assets, Liabilities, and Net Assets (Modified Cash Basis) for Year Ending 30 June 2012

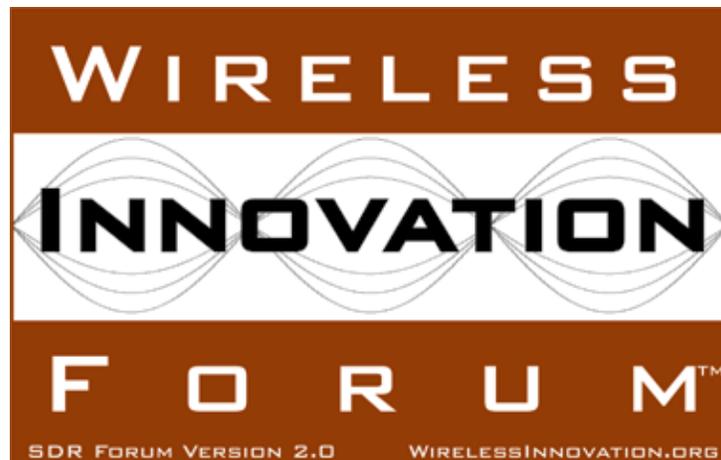
		30 June 2012
<b>Assets</b>		
Current Assets		
Cash and Cash Equivalents		\$174,111
Short Term Investments		111,630
<i>Total Current Assets</i>		<i>285,748</i>
Long Term Investments		-
<i>Total Other Assets</i>		<i>-</i>
<b>Total Assets</b>		<b>285,748</b>
<b>Liabilities and Net Assets</b>		
Current Liabilities		
Net Assets		
Unrestricted Net Assets		277,607
<i>Total Net Assets</i>		<i>277,607</i>
Total Liabilities and Net Assets		\$ 285,748

<sup>1</sup>Summary statement is based on the report from the independent auditor, and should not be considered complete. Full audited financial statements, including notes, are available for review upon request. The Software Defined Radio Forum Inc.'s Form 990 filings with the US Internal Revenue Service are publically available at <http://www2.guidestar.org>.

**Summary Statement of Forum Revenues, Expenses, and Change in Net Assets (Modified Cash Basis) for Years Ending 30 June 2011, 30 June 2012.**

	30 June 2012
<b>Unrestricted Net Assets</b>	
Revenue	
Membership Fees	\$432,500
Facility Fees	415,724
Program Fees	64,098
Government Grant	21,992
Interest and Other Revenue	9,289
<i>Total Revenue</i>	<i>943,603</i>
Program Expenses	
Advertising	10,578
Consulting	13,474
Facilities and Event Food	379,414
Insurance	6,622
Management Fees	49,583
Office Expense	5,286
Scholarships/Prizes/Awards	22,471
Travel and Transportation	25,589
<i>Total Program Expenses</i>	<i>513,017</i>
General and Administrative Expenses	
Payroll Expenses	383,232
Advertising and Publications	4,818
Bank Charges	23,297
Consulting	33,529
Currency Exchange Loss	5,925
Dues and Subscriptions	4,720
Insurance	6,420
Management Fees	47,250
Miscellaneous and Other Expenses	5,909
Office Expense	29,591
Outside Services	3,084
Professional Fees	27,810
Telephone	10,697
Training and Seminars	2,714
Travel and Transportation	23,458
Website	14,901
<i>Total General and Admin. Expenses</i>	<i>\$627,355</i>
<b>Total Expenses</b>	<b>1,140,372</b>
<b>Change in Net Assets</b>	<b>(196,769)</b>
<i>Net Assets Beginning of the Period</i>	<i>474,376</i>
<b>Net Assets End of the Period</b>	<b>\$277,607</b>

<sup>2</sup>Summary statement is based on the report from the independent auditor, and should not be considered complete. Full audited financial statements, including notes, are available for review upon request. The Software Defined Radio Forum Inc.'s Form 990 filings with the US Internal Revenue Service are publicly available at <http://www2.guidestar.org>



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