Software Defined Radio Forum Contribution

Committee: Operations Committee
Title: Software Defined Radio Forum Structure and 2003 Unified Workplan
Short Title: Work Plan 2003
Source: Allan Margulies
                          SDR Forum
                          1 Ellinwood Court, New Hartford, New York USA
                          +1 315-736-2433
                          asm@sdrforum.org

Date: 11 February 2002
Distribution: Members

Document Summary: Presents SDR Forum's plan of work for calendar year 2003

Action Desired: Membership approval
Action Required for Closure: email ballot
Desired Disposition Date: 28 February 2003

Software Defined Radio Forum Structure

and 2003 Unified Workplan

SDRF-03-H-0004-V1.0.0

(Formerly SDRF-03-A-0004)

17 March 2003

Table of Contents

List of Figures

List of Tables

Preface

The SDR Forum workplan is updated annually to reflect the planned activity for the year. Each of the major committees present the tasks and products that will be the focus of interest at general meetings and for teleconferences. The contents may change and items may be added or deleted to adapt to the rapidly changing technological environment, but overall, this document provides insight into the goals of the Forum.

Software Defined Radio Forum Structure

and 2003 Unified Workplan

1 SDR Forum Vision and Scope

1.1 SDR Vision

The SDR Forum vision is to advance the development of software defined radios to enable high quality, ubiquitous, competitively-priced wireless networking systems, equipment, and services with advanced capabilities. This vision includes a view of seamlessness across diverse networks and integration of capabilities in an environment of multiple standards and solutions.

Ease of use, mobility, enhanced productivity, and support for lifestyle choices are all desired by communications systems users. Convergence among wireless and wired services such as e-commerce, educational, entertainment, and information services requires improved interworking and interoperability.

Consequently, consumers of communications services, communications service providers, equipment suppliers and maintainers can benefit from deploying systems using the software-definable radio systems. This community of interest not only includes the needs of the general public, but also governments, and their requirements for defense, law enforcement, and emergency services, including national security and emergency preparedness.

1.2 SDR Definition

Software Defined Radios are elements of a wireless network whose operational modes can be changed or augmented, post-manufacturing, via software. They use adaptable software and flexible hardware platforms to address the problems that arise from the constant evolution and technical innovation in the wireless industry particularly as waveforms, modulation techniques, protocols, services, and standards change.

A software defined radio in the SDR Forum context goes beyond the bounds of traditional radio and extends from the radio terminal of the subscriber, through and beyond the network infrastructures and supporting sub-systems and systems, to access not only other users, but suppliers of value-added applications. SDR as a concept spans numerous radio network technologies and services, including cellular, PCS, broadband wireless, WLANS, mobile data, emergency services, messaging, paging, and military and government communications.

1.3 SDR Forum Mission

The mission of the SDR Forum is to accelerate development, deployment, and use of software-definable radio systems consistent with the objectives of the above wireless vision.

The SDR Forum will work toward the adoption of software defined radio implementations and developments within wireless systems that include the requisite functionality in terminals,

networks, and systems to provide "multiple capability and multiple mission" flexibility for voice, data, messaging, image, multimedia and future needs.

The SDR Forum shall establish requirements related to the definition of internal and external system interfaces, modules, software, and functionality that the industry can use as guidelines in building modules, products, and systems.

Further, the SDR Forum will promote the development of standards for the SDR concepts, including those focused on SDR equipment and those in supporting service application areas, in areas of interoperability and performance, and in underpinning core technologies. These standards will be supported either directly or through appropriate liaison to other industry associations and standards bodies. The SDR Forum will pursue industry wide acceptance of these standards.

To assist the wireless and supporting industries in understanding the value and benefit of a software definable radio, and in particular the SDR vision, the SDR Forum will also address market requirements, quantify the market, and develop timelines relative to the use of multi-mode, multi-band, and multi-application wireless communications systems. The Forum will actively seek and promote a favorable regulatory and policy environment for SDR devices, in order to facilitate certainty in approval and distribution of equipment by manufacturers, and to assist operators and users in early deployment of the technology.

The SDR Forum membership includes telecommunications users, equipment suppliers, and developers of technology, products, systems, hardware, and software, as well as service providers and system operators or any other organization, or entity who has interest in furthering the vision of the SDR concepts.

The Forum membership exceeds 100 entities from around the world developing SDR throughout the wireless system value chain.

2   SDR Forum Structure

To provide a visual perspective, the following diagram details the SDR Forum operating structure and the relationships among the entities within the Forum. Each major subdivision has an included charter and scope.
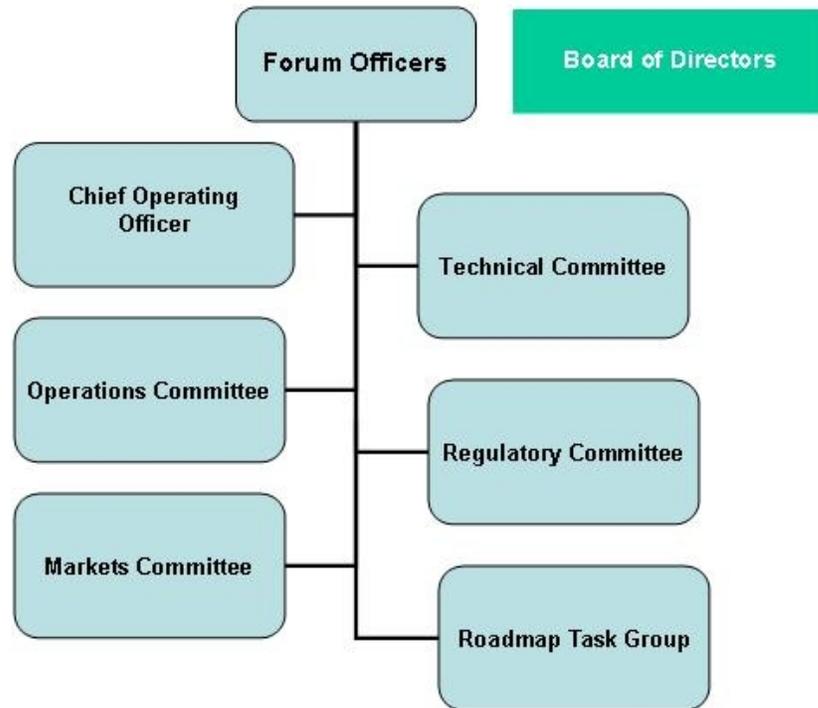
Figure 1 Structure of Forum
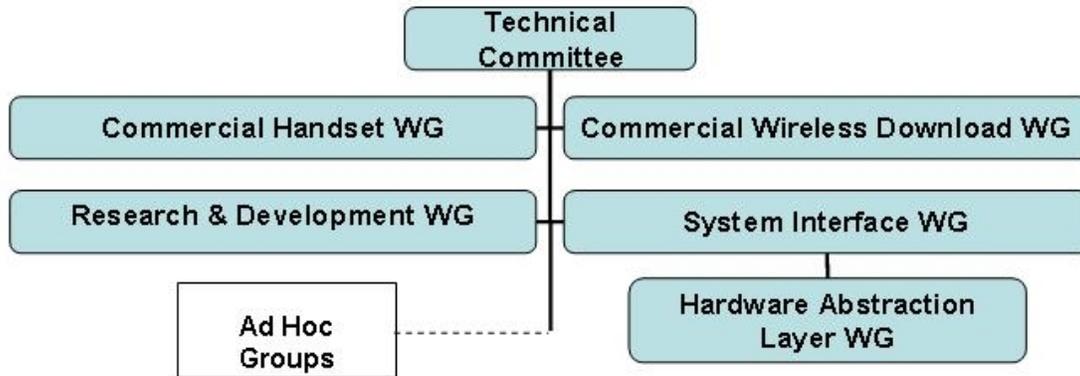
Figure 2 Technical Committee

2.1   Committee and Working Group Charters

2.1.1   FORUM STRUCTURE

The Forum is structured to address several major aspects associated with SDR and its development, implementation and application. These are:

Understanding the Market   (Markets Committee)
Implementation Aspects   (Technical Committee
Application Aspects   (Technical Committee)
Regulatory   (Regulatory Committee)

Understanding the market includes addressing and quantifying the who, what, why, where and when of SDRs. Implementation aspects include the key developments of technologies and similar items as relates to the enablers for the building of products that incorporate SDR and its concepts. Application aspects delves into those areas that are necessary enablers for using,

applying and taking best advantage of products built around SDR. Authorizing of SDRs addresses those enablers that promote a positive global regulatory climate so that SDR can be designed into products and allowed to be sold and deployed.

2.1.2   Markets Committee

The primary goal of the Markets Committee is to understand the SDR market and provide overall (who, what, when, where, why and how) requirements to the Forum. The Markets Committee also manages major events, public relations and membership drives. To do this, they perform market surveys, organize and hold product expositions, organize and hold SDR technical conferences, and manage all press releases and trade journal submissions.

2.1.3   Regulatory Committee

The Regulatory Committee charter is to remove regulatory barriers and promote the development of a favorable global regulatory and policy framework that will facilitate the early deployment of SDR-enabled equipment and services via submissions in formal proceedings and public discussions. Under the Bylaws of the Forum, the primary goal of the Committee is to address regulatory and public policy issues on behalf of the Corporation

2.1.4   Technical Committee

The principal goal of the Technical Committee is to produce documents related to the development and implementation of software radio functions for the purpose of providing technical guidance and standard solutions to problems.

2.1.4.1   R & D Working Group

Conduct research into technical activities and publications throughout the world as related to Software Defined Radio. This is to identify technologies which can either fulfill the needs of the marketplace, or enable new products, services, and applications. Develop briefings, working papers, bibliographies and expert lists for use by the Forum membership on the conducted research. Exchange guest speakers, as necessary, with other organizations as a means of re-enforcing and proliferating SDR concepts. Facilitate Forum members collaborating on technology demonstrations at select venues including the annual SDRF Technical Conference and Exposition. Periodically organize and conduct symposia and workshops focusing on specific enabling technologies or technical requirement domains for SDR.

2.1.4.2   Commercial Handset Working Group

Define architectural concepts and submit API's for standardization in the area of commercial SDR enabled terminals. The process is considering product-relevant enabling technologies and end-to-end architecture issues for commercial SDR devices. Commercial wireless is the focus area of current deliverables within this topic area.

2.1.4.3   Commercial Download Working Group

The Download Working Group is principally responsible for studying the technical aspects of software download to SDR devices, whether over-the-air or via other means, and includes questions related to RF reconfiguration of the equipment. In this area however, there will be a need for this group to be involved in the development of documents that may have a regulatory focus. Thus this working group, while situated as a working group under the Technical Committee, may also directly work on regulatory issues. The Group will develop and publish information regarding definitions, requirements, concepts, timelines and other features of SDR downloads for the commercial wireless industry to stimulate and drive the development of appropriate standards that address the ability of software based radio devices to be reconfigured in a proper manner subsequent to manufacture and/or deployment. Network and security aspects of download are included within the scope of the Commercial Wireless Download Working Group. The information developed will also benefit regulators around the world, and provide a major input to the Forum's reports to the FCC on security and certification aspects of SDR equipment. This work has strong support and co-ordination across all SDR Forum Committees and planned activities.

2.1.4.4   System Interface Working Group

The System Interface Working Group is responsible for identifying radio, management, network, and physical services and their interfaces. It will also maintain and promote system interface standards and develop and promulgate new standards when necessary. The product of the working group will be a yearly report on the defined interfaces.

2.1.4.5   Hardware Abstraction Layer Working Group

The role of the HAL-WG is to create SDRF recommendations related to Signal Processing Subsystems (SPS). The recommendations will cover technologies and standards that support the following goals: to reduce the porting cost of enabling SPS software to execute on diverse hardware, to improve the efficiency with which portable SPS software executes on diverse hardware, and to enable application software to interact portably with diverse SPS software and hardware.

Because the area of activity of the HAL WG overlaps the System Interface WG, the HAL WG reports through the System Interface WG rather than directly to the technical committee.

2.1.5   Operations Committee

The Operations Committee is responsible for the administrative functions of the Forum, including the scheduling and carrying out of member meetings, all member fulfillment activities, website maintenance, document distribution, and all office operations. Oversight of the committee is the responsibility of the Corporate Secretary and day-to-day operations are conducted by the office staff under the direction of the Chief Operating Officer.

2.1.6   Roadmap Task Group

The Roadmap Task Group generates a document that describes near, mid, and far-term steps in the evolution of SDR and its unifying principles as envisioned by the SDR Forum. Given a working consensus on the roadmap, SDR Forum members work those projects of interest to the members, within the common ground tasks. Some common ground tasks are market-centric, focusing member activities towards common issues shaped by a specific market. Other common ground tasks transcend individual markets. The roadmap addresses Forum functions, constituencies, markets, and common ground tasks.

2.2   Liaison Activities

The SDR Forum has identified the opportunity to improve its level of coordination with other relevant industry organizations. With the proliferation of telecommunication industry fora, special interest groups, collaborative research projects, and Standards Development Organizations (SDOs), it is more important than ever for information to have widespread distribution to ensure that relevant entities are informed. It is essential to the SDR Forum, and it's current and potential membership, that the Forum improve its coordination with groups which have appreciable levels of common interest and activities. This improved coordination will allow the SDR Forum to better focus its resources on those areas that are not well covered elsewhere in the industry, and to avoid inefficient duplication of other efforts.

To address this opportunity, the SDR Forum has defined and implemented a process whereby the correct external organizations are identified, and the appropriate level of liaison activity is established. The Forum's liaison activities are managed at the Forum's Board level under the office of the Forum Chair.

Based on member contribution and volunteerism, organizations will be selected from the candidate list, and will be activated for either formal or informal liaison attention. A formal liaison activity will be based on a formal, bilateral, agreement between the SDR Forum and the external organization. Informal activities will range from basic monitoring of the organizations meetings, to contributions made outside the context of a liaison agreement.

In all cases, an active liaison activity will have a designated rapporteur who will be responsible for serving as the recognized point of contact for the liaison relationship. This responsibility will include the issuance of a written liaison report (in the form of an SDR Forum contribution document), as well as a verbal liaison report delivered during the opening plenary of each general meeting.

There is a hierarchy of organizations with which the SDR Forum has formed liaison relationships. Figure 3 indicates the relationships of the relevant organizations and it indicates the interactions that are required.
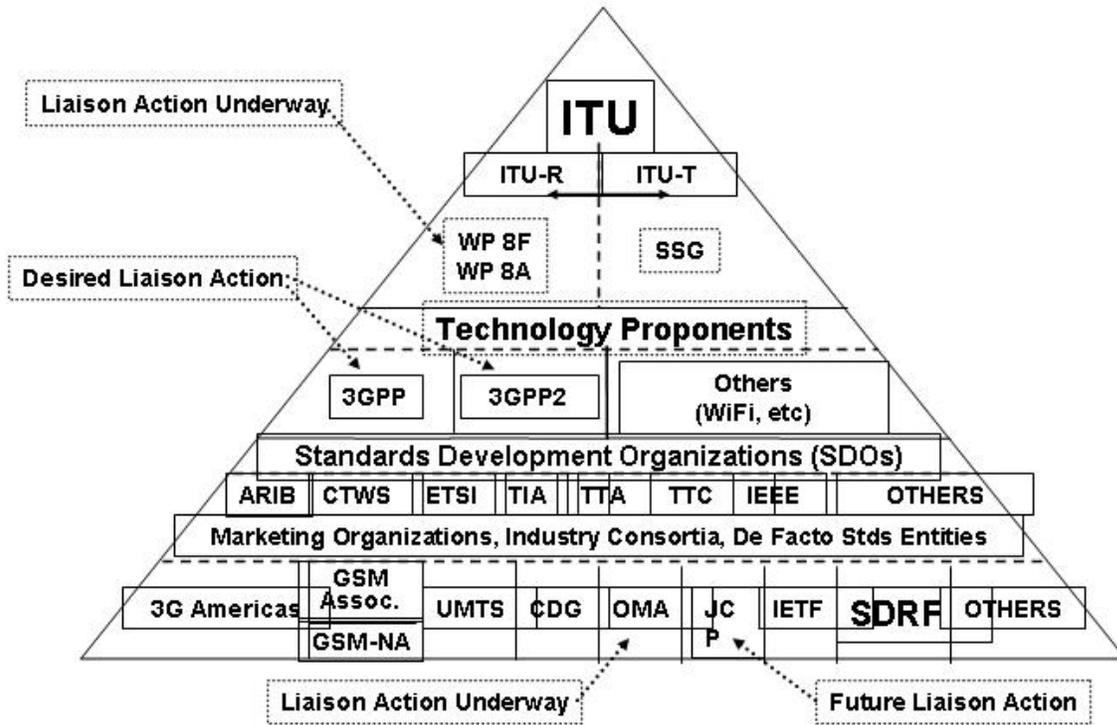
Figure 3 Liaison Pyramid

Figure 4, however shows some of the SDR Forum's specific relationship between the national and international organizations which are managed at the Form Chair and Board of Directors level.
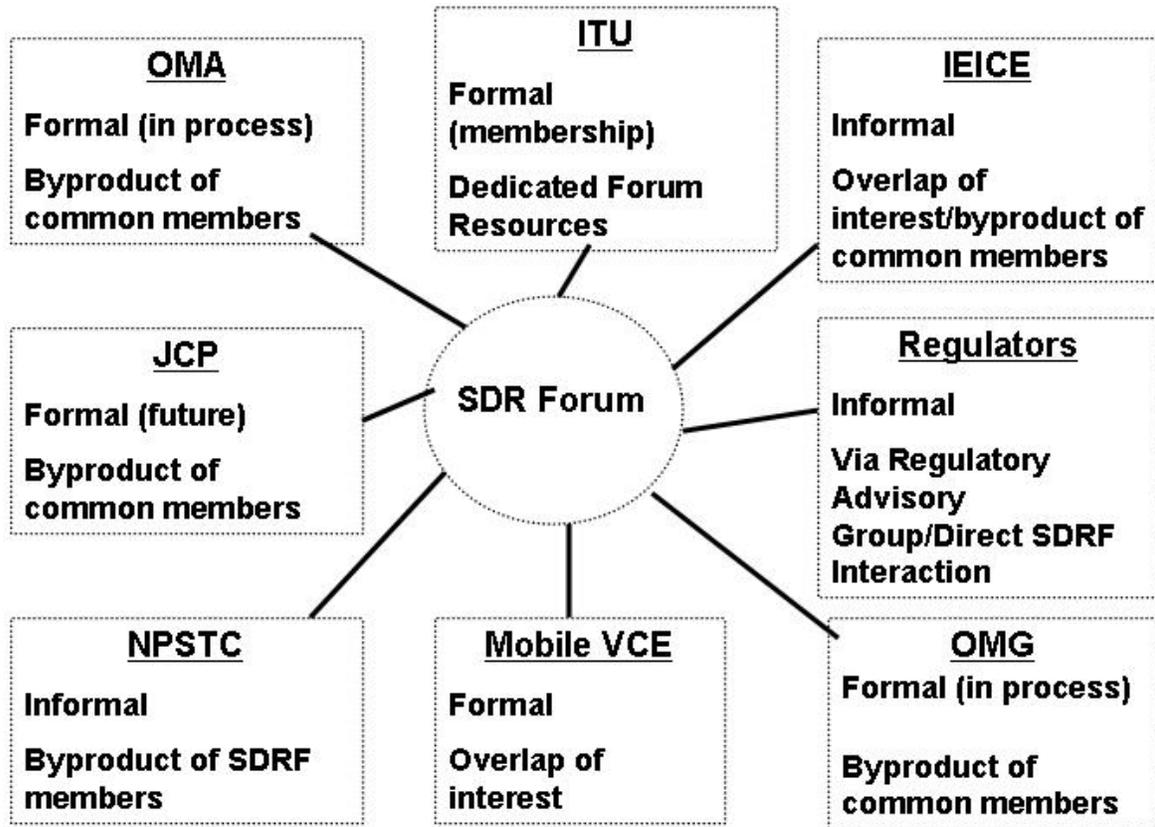
Figure 4 Liaison Relationships

3   SDR Forum Electronic Methods

The following E-mail reflectors have been set up to facilitate work by correspondence between meetings. To register for a reflector, members should send a request to info@sdrforum.org.

Table 1 E-mail Reflectors

Group	E-mail Reflector
Markets Committee	markets@sdrforum.org
Regulatory Committee	regulatorywg@sdrforum.org
Technical Committee	
Commercial Handset	handset@sdrforum.org
Download WG	download@sdrforum.org
System Interface WG	systemif@sdrforum.org
R & D WG	researchdevelopment@sdrforum.org
HAL WG	halwg@sdrforum.org

To send a message to all the participants in a reflector group, send an E-mail to the E-mail address shown above, e.g. **Do not send your request to subscribe to an email reflector to these addresses** - your request would be sent to everyone on the email reflector list.

To subscribe to an E-mail Reflector, send an E-mail to info@sdrforum.org with the single line in the body of the E-mail message: subscribe [E-mail Reflector name] e.g. subscribe systemif

To unsubscribe to an E-mail Reflector, send an E-mail to info@sdrforum.org with the single line in the body of the E-mail message: unsubscribe [E-mail Reflector name] e.g. unsubscribe systemif

Some Committees and Working Groups have dedicated web pages on the SDR Forum website. Please follow links on the website to access these pages if provided.

General SDR Forum contact information:
The SDR Forum
1 Ellinwood Court
New Hartford, NY 13413   USA

Telephone: +1 315-736=2433

Fax: +1 315-736-2195

The Forum website is located at: http://www.sdrforum.org

4   SDR Forum Key Leadership Contact Details

SDR Forum Chair*
Mr. Stephen BLUST (USA)
Cingular Wireless
stephen.blust@cingular.com
+1 404 236 5924

SDR Forum Vice Chair*
Mr. Christian SERRA (France)
Thales
christian.serra@fr.thalesgroup.com
+33-14-613-2355

SDR Forum Vice Chair*
Mr. Ken RIORDAN (USA)
Motorola
kenneth.riordan@motorola.com
+1- 847 523 2602

Chief Operating Officer
Mr. Allan MARGULIES (USA)
SDR Forum
asm@sdrforum.org
+1 315 736-2433

Board of Directors Chair*
Mr. Mark CUMMINGS (USA)
enVia
markcummings@envia.com
+1 408 866 8086 x226

Treasurer*
Mr. Peter COOK (USA)
Peter G. Cook Consultancy
pgcook@pgcook.com
+1-480-733-8225

Secretary*
Mr. John FITTON (USA)
Harris Corporation,
jfitton@harris.com
+1-716-242-3794

Markets Committee Chair*
Mr. Lee PUCKER (CAN)
Spectrum Signal Processing
Lee_Pucker@spectrumsignal.com
+1 604-421-5422 x 250 v
+1 604-421-1764 f

Regulatory Committee*
Mr. Dick SHRUM (USA)
Alion Science and Technology
rshrum@alionscience.com
+1-301-918-1524

Technical Committee Chair*
Dr. John BARD (USA)
Space Coast Communications
jbard@spacecoastcomm.com
+1 321 591-6199

ITU Region 1 Representative*
Mr. Calinel PASTEANU (GER)
Siemens
calinel.pasteanu@mch.siemens.de
+49 89 722 32517

ITU Region 2 Representative*
Chris DICK (USA)
Xilinx Inc
chris.dick@xilinx.com
+1 408 879 5377 v
+1 508 355 7668 f

ITU Region 3 Representative*
Mr. Takuzo FUJII (JPN)
Hitachi-Kokusai
fujii-t@wave.dti2.ne.jp
+81-425-54-6111   ex.3024

Large Company Representative*
Dr. Bruce FETTE (USA)
General Dynamics Decision Systems
bruce.fette@gd-decisionsystems.com
+1 480-441-8392

Medium Company Representative*
Mr. Jack ROSA (USA)
Hypres
jrosa246@aol.com
+1-914-592-1190 ext 7888

Small Company Representative*
Dr. Andy FELDSTEIN (USA)
Innovative Concepts
andy@innocon.com
+1-703-893-5890

**Government/Non-Profit
Representative***
John S POWELL (USA)
NPSTC
jpowell@uclink.berkeley.edu
+1-510-410-2858 v
+1-509-691-1230 fax

Member At Large*
André Krützfeldt (USA)
Sun Microsystems, Inc.
Andre.Kruetzfeldt@sun.com
+1-650-352-4754 v/f

**Network Operator/Service Provider
Representative***
Stephen HOPE (UK)
Orange PCS
stephen.hope@orange.co.uk
+44 79 73 99 28 64 v
+44 79 73 99 66 37

***Denotes Director of Forum

5   SDR Forum Working Group Contact Details

Roadmap Task Group
Mr. Christian SERRA (FRA)
Thales
christian.serra@fr.thalesgroup.com
+33-14-613-2355

R & D WG
Dr. Dave MUROTAKE (USA)
SCA Technica
dmurotak@scatechnica.com
+1-603-321-6536

Commercial Handset WG
Mr. Andre KRUETZFELDT (USA)
Sun Microsystems
andre.kruetzfeldt@sun.com
+1-650-352-4754 x40827

System Interface WG
Ms. Dawn SZELC (USA)
The MITRE Corporation
dszelc@mitre.org
+1-703-883-7770

Commercial Wireless Download WG
Mr. Jim HOFFMEYER (USA)
Panasonic Technologies Company
jhoffmeyer@research.panasonic.com
+1-303-828-5240

System Interface Ad Hoc Oversight
Mr. Peter G. COOK (USA)
Peter G. Cook Consultancy
pgcook@pgcook.com
+1-480-733-8225

Hardware Abstraction Layer WG
Dr. John CHAPIN (USA)
Vanu Inc
jchapin@vanu.com
+1-617-864-1711 x203

6 SDR Forum Meeting Schedule

6.1 Five Major Meetings Per Year

Winter Meeting (~February), generally held in USA

Spring Meeting (~April), generally held in Asia-Pacific region

Summer Meeting (~June), generally held in USA

Fall Meeting (~September), generally held in Europe

Annual Business Meeting (~November), generally held in USA

6.2 2003 Schedule (as adopted)

Table 2 Meeting Schedule

Date	Meeting Number	Location	Comments
21-23 January	32	San Jose	Also, Reconfigurable Logic Workshop
9-11 April	33	Singapore	Also, SCOUT meeting (8 April), and IEICE Symposium (14 April)
17-19 June	34	Toronto	
16-18 September	35	Paris	
17-20 November	36	Orlando	Also, Technical Conference and annual business meeting

7 Proposed Long-Range SDR Forum Work Program Plan

7.1 Update of Existing Documents

A set of documents will be maintained as the current representation of SDR Forum views positions. Other documents will be retained but clearly identified as historical in nature.

7.2 Development of New Deliverables

A series of documents or work activities are to be completed as discussed in this section and further delineated in this and subsequent sections. This work is organized within the Committees of the Forum as shown below.

7.3 Markets Committee

7.3.1 SDR Forum Background Material

The Markets Committee shall work to develop/update the following documents representing the SDR Forum to the wireless community:

- SDR Forum Fact Sheet

- SDR Primer

- SDR Forum Frequently Asked Questions (General)

- SDR Forum Frequently Asked Questions (Media)

- Flow Chart relating SDR Forum to other organizations (ITU, FCC, OMG, OMA, 3GPP, Etc.)

- Backgrounder on History of SDR

These documents either do not exist or have been identified by SDR Forum Members as being out of date. The Technical and Regulatory Committees will provide input for these documents as required. Generation of these documents will be ongoing, with each document being submitted for approval by the Steering Committee as it becomes complete.

7.3.2 Membership/Media Kits

The Markets Committee shall work with Ken Zeszutko Public Relations to develop a membership kit for new and potential SDR Forum Members and a media kit that can be broadly distributed for the purpose of Media Relations. These Kits shall include the following items (as appropriate):

- Cover Letter/Introduction to the Forum

- SDR Forum 2003 Work Plan

- SDR Forum Governance Sheet (To be extracted from the work plan)

- SDR Forum Organization Chart (To be extracted from the work plan)

- SDR Forum Brochure

- Recent Press Releases

- Appropriate White papers (Approved for inclusion by the Forum)

- Sample List of Forum Members

- "Join the Forum" Form

- Membership Benefits

- Contact Information

The Kits will be expanded to include the SDR Forum Background Material (See 2.1.1) as the Forum approves them for release.

7.3.3   Web Site Update

The Markets Committee shall review the website for ease of use and access to information, make recommendations for changes, and implement the changes with internal and external resources.

7.3.4   Membership Polling

The Markets Committee shall seek membership and Steering Committee input regarding desired member information requirements, develop a vehicle for acquiring that information, and implement the information gathering process.

7.3.5   Product Marketing

The Markets Committee shall develop and implement a marketing/liaison plan to formalize the delivery of SDR Forum "products" to the SDR community. This could include:

- Review of exist SDR Forum documents to separate "products" from work items and contributions.

- Evaluation and socialization of the impact and context of each "product".

- Creation of a marketing plan for each major work item identified in the work plan

- Packaging of Technical Committee and Regulatory Committee outputs on a regular schedule (with context and impact) in a format TBD that can be disseminated to the SDR

community at large

- Collateral support of previous years products (press releases, articles, etc.)

7.3.6 New Membership

The markets committee will support the SDR Forum COO in the recruitment of new members for the SDR Forum. Potential new members will be identified and communicated to the COO, with leads coming from a variety of sources. The level of detail of these leads will vary from just the name of an organization to an actual contact person/email/phone/address.

The markets committee will assist the COO in validating new member leads and expanding the necessary contact information. If the lead checks out, a pre-approved canned email will be sent out by the COO to the potential new member. This email will provide a brief overview of the Forum, its benefits, and will reference that a hardcopy kit will be mailed out and that the Forum will follow up with a phone call within the week.

A hardcopy membership kit will be mailed out (for next day delivery) the same day the email is sent. A follow-up call will be made by the COO within 2-3 days of this action.

7.3.7 Public Relations

The SDR Forum has retained the firm of Ken Zeszutko Public Relations to manage the Forum's public relations. The Markets Committee shall support Ken Zeszutko Public Relations in this effort including providing input to press releases and identifying SDR efforts that may be worthy of media attention.

7.3.8 Major Events

The Markets Committee shall provide direct support in the planning and execution of major events including supporting the 2003 Technical Conference.

7.4 Regulatory Committee

7.4.1 Support global regulatory and policy activities

There will be ongoing liaison and interaction with all interested regulators; participate in relevant proceedings, providing formal comments when applicable; broadly distribute the Forum's regulatory and policy material; and seek to expand regulatory outreach and liaison in all areas.

- Americas – formal comment on FCC proceedings related to the Spectrum Policy Task Force Report (e.g., NOI's relating on Unlicensed Devices, receiver standards, interference temperature) and further promoting development of SDR devices; expand liaison with NTIA (U.S. Federal Government regulator) and Canadian Industry Canada; initiate outreach with America's CITEL organization.

- Europe – continuing interaction with EU/TCAM Group on SDR (TGS) and formal response to Consultation Document; participate in U.K. Radiocommunications

Agency SDR Round Table and similar relevant events.

- Asia – continuing interaction with Japan's MPHPT and IEICE, and participate in Tokyo Workshop; expand liaison with Korea, Taiwan, Singapore, and China.

- Global Activities – expand, in coordination with Technical Committee, participation in and input to ITU-R Study Group 8 work program relating to regulatory and policy aspects of software defined radio; prepare for and participate in ITU-R/SG8A Workshop on SDR.

7.4.2 Second Report to Regulators on SDR Security

As a follow-on to the Interim (First) Report, this product will update earlier material; document the scope, goals and timeline of ongoing work; discuss the range and type of solutions being considered, with their relevant dependencies; identify and develop security approaches and techniques directly applicable to the unique RF-related software download concerns of regulators; and provide appropriate conclusions and recommendations relative to SDR security.

7.4.3 Regulatory White Paper

The Regulatory Committee will develop a comprehensive but concise document identifying regulatory issues and implications, with current SDR Forum position and/or views on each item; distribution intended mainly for regulators, policy officials and new Forum members, to provide baseline knowledge of rules and regulations to promote SDR development and deployment.

7.4.4 DL-Series Regulatory Document (DL-REG)

The Regulatory Committee will develop, on the basis of above new and ongoing activities and products, a paper in the "Download Series" that provides an understanding of current regulatory activities relating in particular to radio software download implications and requirements of SDR technology development and deployment.

7.4.5 Examine/Study implications of other regulatory regimes (continuing) –

In response to requests/concerns of Forum members, the Regulatory Committee will to consider, understand, evaluate and act upon potential regulatory implications and restrictions beyond the traditional scope of wireless regulators, such as those relating to export control and trade.

7.5 Technical Committee

7.5.1 Commercial Handset WG

The long term activity will include the following steps:

- Draft SDR terminal High Level API to enable Network Operators, Manufacturers, 3rd Party Application Providers and Users to control terminal reconfiguration.

- Synchronize and consolidate the High Level API with the emerging Radio Engine related API's with the emerging SDR Systems Interface Definitions document (SI-SSID)

The workgroup is preparing a Java Specification Request (JSR) document that will be submitted to the Java Community Process (JCP).

7.5.2 Commercial Wireless Download WG

The Commercial Wireless Download WG is responsible for a series of SDR Forum documents on radio software download. The documents in this series are:

- DL-DFN: Overview and Definition of Software Download for RF Reconfiguration

- DL-REQ: Requirements for Software Download for RF Reconfiguration

- DL-GLO: Report on Global Radio Technology Development Organization Perspectives on Software Download for RF Reconfiguration

- DL-REG: Report on Global Regulatory Views on SDR and Radio Software Download for RF Reconfiguration

- DL-TIM: Timelines for Software Download for RF Reconfiguration

- DL-SIN: Software Download for RF Reconfiguration Security and Integrity

- DL-SOL: Specifications of Common Solutions for Software Download for RF Reconfiguration

The documents in this series are:

- DL-DFN: Overview and Definition of Software Download for RF Reconfiguration: This document provides a complete high-level perspective on the scope of radio software download (that is, the downloading of software for RF reconfiguration) in the context of software defined radio (SDR) terminals and base stations with reference to applications, requirements, methods and implementations. The document presents a list of considerations that are relevant to the development of detailed requirements. The SDR Forum Download Working Group developed this document with input from the Terminal and Network Architecture Working Group. COMPLETED (to be reviewed for relevant updates).

- DL-REQ: Requirements for Software Download for RF Reconfiguration: This document presents specific requirements for protocols for downloading software to a software-defined radio (SDR) device for its reconfiguration. The SDR device could be a small handheld communication device such as a cell phone, a slightly larger wearable device such as a manpack, or an immobile networked device such as a wireless base station. The requirements specified in this document have purposely been made general enough to encompass software downloads to all of the above types of SDR devices. The SDR Forum intends to seek comments on the initial version of this document from relevant other organizations for

18

consideration for a subsequent version of this requirements document. COMPLETED (to be reviewed for relevant updates)

- DL-GLO: Report on Global Radio Technology Development Organization Perspectives on Software Download for RF Reconfiguration: This document provides a summary and analysis of work in the area of software download and related security issues being performed by recognized Standards Development Organizations (SDOs), Partnership Projects (3GPP and 3GPP2), Technology Proponents, and other commercial organizations (such as the Open Mobile Alliance). The analysis includes an assessment of how many of the software download technical requirements defined in SDR Forum Document DL-REQ have been addressed or are being addressed and how many remain to be addressed. This document includes a summary and analysis of organizations that represent public safety and other civil Government applications of SDR and organizations that represent military applications of SDR. However, commercial wireless is the focus of the current deliverables in this software download series of documents. 2Q 2003

- DL-REG: Report on Global Regulatory Views on SDR and Software Download for RF Reconfiguration: This document provides an understanding of how regulatory activities around the world are poised to support SDR and in particular how these agencies are anticipating what may be required to facilitate the usage of software download for RF reconfiguration. The document is the primary source of regulatory factors and requirements relating to software download aspects of SDR. The document includes the results of a survey and analysis of SDR-related regulatory actions throughout the world. The document also provides a timeline projection for anticipated global regulatory activities. This document in conjunction with the technical requirements document, DL-REQ, provides a comprehensive requirements view of software download for RF reconfiguration. Commercial wireless is the focus area of current deliverables within this topic area. This document is the primary responsibility of the Regulatory Committee.

- DL-TIM: Timelines for Software Download for RF Reconfiguration: This document provides a composite summary of the timelines for the software download aspects of software defined radio developmental activities around the world. Included is a perspective on timeframes of:

  1. technical and regulatory requirements of the software download aspects of SDR, and

  2. technical standardization and regulatory activities needed to meet these requirements.

  The document contains timeline information for software download for both the SDR Forum and external organizations and a process chart depicting the Forum relationships with external organizations. In addition, the document analyzes and reports on the interactive timeline factors among the requirements, technical and regulatory aspects and identifies areas for special coordinated effort to advance software download development. An action plan of what specific deliverables are required of the Forum and of the identified external organizations is presented. Also provided is the timing of the critical "entry" points into the developmental activities for each of these organizations (both standards organizations and regulatory organizations) to ensure that radio software download is standardized and

available in the marketplace in a timely manner. Commercial wireless is the focus area of current deliverables within this topic area. 4Q 2003

- DL-SIN: Software Download for RF Reconfiguration Security and Integrity: This document is intended to include aspects related to ensuring security, integrity, and related items associated with software, firmware, or equivalent that is resident in the radio device after insertion via download or other means, either from original manufacturer or through subsequent actions. Commercial wireless is the focus area of current deliverables within this topic area. 1Q 2004 depending on contributions.

- DL-SOL: Specifications of Common Solutions for Software Download for RF Reconfiguration: Consistent with the definition of radio software download outlined in the previous document, this document covers the relevant factors associated with the download and establishes substantive requirements of a technical or other nature that form the basis for the development of common globally standardized solutions. Commercial wireless is the focus area of current deliverables within this topic area. Begin in 4Q 2003.

The relationship of these documents is seen in the figure below. DL-DFN is the overarching document that provides a foundation for the remaining documents and drives their development. Documents DL-TIM, Dl-REQ, DL-GLO, and DL-REG are parallel documents that provide the basis for further work in DL-SIN and DL-SOL. It is these latter two documents that are the ultimate goals of this series of SDR Forum documents on software download. As work on these documents progresses, certain documents such as DL-SIN and DL-SOL may be combined into a single document.
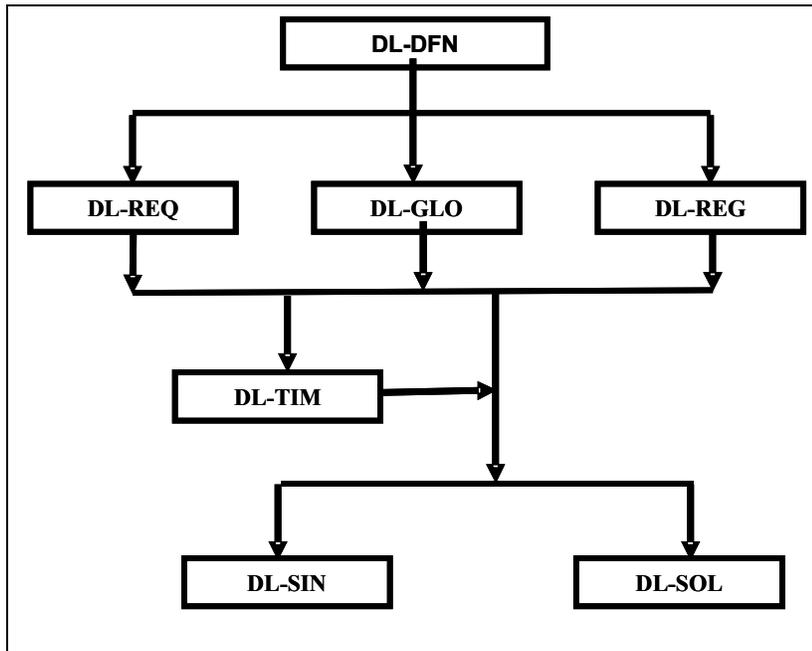
Figure 5 Relationship of Documents

7.5.3 System Interface WG

The System Interface Working Group plans for a series of interface definition documents collected into a yearly report, SDR System Interface Definitions. A Technical Compliance white paper will also be accomplished. This group will provide a year ending SCA Reference Implementation Report as well.

Long term work products include maintenance of the Reference Implementation. We will also maintain our current liaison relationships with the JTRS JPO, SDRF Liaison to the JPO and JTRS Liaison to the SDRF.

7.5.4 Hardware Abstraction Layer WG

The System Interface Working Group plans to work through a Request For Information process and potentially go through a Request For Proposals process on the path to an eventual SDRF recommendation. Intermediate documents will publish the findings of the WG related to the diversity of signal processing subsystems and the technologies that can improve portability across this diversity.

7.5.5 R & D WG

The R&D Working Group plans to conduct the following work during 2003. Much of this work will be performed by correspondence using email circulation via the Group reflector, and through bi-weekly teleconferences.

1) The R&D WG will survey the state-of-the-art in:

   - Hardware technology (RF enablers, digital enablers) (chair: Jonathan Ellis, PredaComm)

   - Software technology (SDR definition tools, Radio virtual machines, Waveform development, co-design tools) (chair: Kevin Maier, Spectrum Signal Processing)

   - System technology (smart antennas and adaptive processing, scalable systems, advanced terminal management and security technology, and testbed architecture) (chair: Prof. Jeff Reed, Virginia Tech MPRG)

2) Key experts identified in the survey will be invited to present their information to the SDR Technical Committee during 2003, including the presentation of invited papers at symposia and the Technical Conference.

3) The R&D WG will conduct a technical symposium on Reconfigurable Logic Devices during the San Jose meeting.

4) The R&D WG recognizes that technology push and market pull are complementary aspects of the R&D cycle. The R&D WG establish a Service Provider Requirements study group (chair: Bo Piekarsky, TELASIC) and a Public Safety Requirements study group (chair: Fred Frantz, NLECTC) to develop use cases and requirements data bases.

The study groups plan to conduct a Technical Requirements Workshop during 2003, possibly as tracks during the 2003 Technical Conference, focusing on the domains of Service Providers and Public Safety. These study groups will conduct joint meetings with other SDRF groups including the Markets Committee and the TNA Working Group.

5) The R&D WG members will support the planning and review of the 2003 SDRF Technical Conference by coordinating with conference planners, encouraging our peers in the submission of papers, assisting in the peer review of submitted papers, and assisting in organizing and chairing sessions as needed.

6) The R&D WG will continue to support an internal website which include informal discussion boards and posting area for working papers, for the purposes of informal peer review and comment. The website is hosted by Virginia Tech MPRG.

7.5.6 *System Ad Hoc Groups (SAHG)*

Previously, the Security and Architecture Working Group had focused on high-level considerations of security, architecture and business case aspects of SDR application. In order to provide a better delivery mechanism to the work of other SDRF organizations the structure has been changed to eliminate the Security and Architecture WG in favor of ad-hoc study groups with a common set of operating procedures, but different topics of focus.

The SAHG will also take a leading role in collecting agenda items for SDR Forum meetings with a sufficiently fine granularity and detailed specificity to permit deconflicting of meeting times. This will help participants to decide what sessions they wish to attend, and facilitate intergroup consideration of topics of mutual interest.

The SAHG operating mode is characterized by a dual mode of operation.

- Internal. Work with SDRF working units to understand their efforts, and consider their needs for information from the focus area of a particular Ad Hoc group (initially security, architecture, and business case). Take on specific tasks within the ad hoc area to bring back input to their documents.

- External. Work with other organizations and the open literature to stay aware of developments in the ad hoc area of focus. In particular, focus on topics of interest to current SDRF projects.

The initial groups will be:

- Ad Hoc Security Overview Group

Provide an overview perspective of wireless security with focus on the implications of the introduction of SDR technology. Understand the threat structure to wireless operations.   In the SDR Forum FCC response, focus on measures to ensure security of software that can modify the emission characteristics of radios. For software download, work with the security implications of transfer, installation, and instantiation. Explore the interaction between configuration management and software security. In conjunction with market positioning, understand the impact of security on the external perception of SDR.

- Ad Hoc Architecture Overview Group

  Continue to monitor the activities of groups proposing radio system architectures, and bring understanding of the implications of their work on proposals being generated within the SDR Forum.

- Ad Hoc Business Case Group.

  In conjunction with SDR Forum efforts to understand the Wireless Communications Market, apply the structure of our business model and work to move from a qualitative to a quantitative perception.

Figure 6 Document Process

```
SDR Forum                    ┌─────────────────────┐
Member Inputs  ─────────────▶│ Identify User Needs │◀─────────────
                             └─────────────────────┘        Industry and User Inputs
                                        │
                                        ▼
                             ┌─────────────────────┐
                             │  Understand Impact  │
                             │       Areas         │                    Dialog
                             └─────────────────────┘
                                        │
                                        ▼
                             ┌─────────────────────┐
                             │  Define Technical   │
                             │ Concerns & Standards│
                             │       Needs         │
                             └─────────────────────┘
                                        │
                                        ▼
   N                 N                         Y
        ◇                    ◇                        ┌──────────────────┐
     SDR Forum           Does SDO Exist              │ SDR Forum Delivers│
     Seeks SDO to        for Concern    ───────────▶ │    Standards      │
       Accept            and Need                    │   Requirements    │
      Ownership     Y                                │    Document       │
        ◇                    ◇                        └──────────────────┘
                                                              │
                                                              ▼
   ┌────────────────────┐                          ┌──────────────────────┐
   │ SDR Forum Develops │                          │ SDO Considers Input  │
   │Standard Recommendation                        │ in Standards Activities│
   └────────────────────┘                          └──────────────────────┘
             │                                                │
             ▼                                                ▼
     SDR Forum Releases                              SDO Develops &
  Standard Recommendations to                     Releases Standards to
         Industry                                      Industry
```

24

8   Overall deliverables/workplan of SDR Forum for 2003

This table provides the schedule of when approval of the deliverables will be achieved following the procedures of the Forum. Additional detail and sub-components of these deliverables is provided in the next section. The entries in this table are considered to be the "end product" deliverables.

Table 3 Deliverables Schedule

Meeting / Timing	Responsible Group	Deliverable
21 -23 Jan 2003 General Meeting San Jose, CA USA	Regulatory	Guidance on formal comment to TCAM/TGS questionnaire, FCC SPTF Report – develop/adopt via email after meeting
	Regulatory	Assist on prep for U.K. Regulatory Round Table (Feb 20) (event postponed until late summer)
	Roadmap Task Group	SDR Roadmap 2003
8-10 April 2003 General Meeting Singapore	Markets Technical Regulatory Regulatory Regulatory	Revised Members Package Review/adopt "White Paper", distribute widely Review/decide action on formal FCC/other actions Assist on regulatory aspects of Tokyo Workshop (Apr 14)
17-19 June 2003 General Meeting Toronto, Canada	Markets Technical	Markets Report Update Download Timelines (DL-TIM-1) Download Global Summary (DL-GLO)
	Regulatory	Decide action plan for "Second Report to Regulators on SDR Security" (FCC-RPT-2)
	Regulatory Regulatory	Review/decide action on formal FCC/other actions Finalize regulatory input to Roadmap-2003
16-18 Sep 2003 General Meeting Paris, France	Regulatory	Review/decide action on formal FCC/other actions
20 Nov 2003 General Meeting Orlando, FL USA	Markets	SDR Conference & Product Exposition
	Regulatory Regulatory Regulatory	Download Regulatory Document (DL-REG) Review/decide action on formal FCC/other actions (Tentative) "Second Report to Regulators on SDR Security" (FCC-RPT-2)
	Regulatory	Assist/regulatory aspects of ITU-R/8A Workshop (Dec3

Meeting / Timing	Responsible Group	Deliverable
Jan 2004 General Meeting	Regulatory	Review/decide action on formal FCC/other actions

8.1 Definition and Discussion of Deliverables/Projects

The following table is an expansion of the deliverables and activities. It is structured to present additional detail and information, including the requisite timings of the final products and the needed subcomponents. **While not a full scope project management presentation, this table is intended as an aid to sequence the work and to provide a basis for soliciting appropriate input contributions in a timely manner to progress the work to successful conclusion.**

Table 4 Deliverables

Deliverable	Identifier	Lead Working Group	Target Date	Comments
2003 Update to Road Map Document	RoadMap-2003 Subcomponents: Call for inputs, improvements, changes Divide Existing Report into Public and Forum Only Sections Draft Issue of Rev 2003 Dialog among WGs Draft Preliminary Approval Final 2003 Edition Approved	Roadmap Task Group	Nov 2003 April 03 Meeting June 03 meeting Sept 03 meeting Nov 03 meeting Jan 03 meeting	The 2003 update will provide a revised perspective on 2003 and beyond. The 2003 edition of the document will be restructured to provide a publicly available prospective and Forum members only section.
Business Case	BC	Technical committee SAHG Business Case Group	Volume I Draft 1/03, Final 4/03 Volume II Nov 03	Exploration of the participants in the Wireless System market, and the transactions that flow between them in the context of system security and structure.

Deliverable	Identifier	Lead Working Group	Target Date	Comments
FCC Report	FCC-RPT-1	Regulatory Committee	June 03	This will need to be finalized between meetings by correspondence with e-mail ballot.
	FCC-RPT-2		Sept 03	This will need to be finalized between meetings by correspondence with e-mail ballot.
Hardware Abstraction Layer RFI/SUMRFC	HAL-RFI HAL-SUMRFC	Technical Committee (HAL-WDG)	AprJan 03 RFI	Create a SDRF recommendation or recommendations related to the Signal Processing Subsystem (SPS).Request for Information regarding Hardware Abstraction Layer issues. The document will describe the diversity of signal processing subsystem hardware and the induced portability problems, provide a preliminary list of relevant technologies, and include a questionnaire that organizations can fill out to inform the HAL WG of relevant information.
			Jun 03	The HAL WG will present an initial quick look at the RFI responses to the technical committee plenary at the June general meeting.
			Sep 03 RFCSUM	The HAL-SUM will categorize and organize the responses into a public document.
				The HAL WG anticipates spending the remainder of 2003 making progress towards 2004 deliverables which have not yet been defined.
Technical Conference	Abstracts Due	Markets Committee	1 May 03	These documents are abstracts from potential speakers
	Notification of Acceptance		15 Jun 03	This set of documents shall notify potential speakers of their paper's acceptance. Responsibility: Dr. Jeff Reed
	Camera Copy Due		1 Sept 03	These documents shall be the final copy of papers submitted by the selected speakers.
	Attendee Flyer		1 Sept 03	Color flyer mailer publicizing the conference and product exposition. Document shall include chair bios, selected speakers, and exhibitors.

Deliverable	Identifier	Lead Working Group	Target Date	Comments
Market Survey	Markets Report	Markets Committee	June 03 meeting	SDR Market Report: Develop a pl an to capture the current and future market needs for SDR. This needs analysis shall provide overarching (commercial, civil, and military) requirements driving the requirements of the SDR Forum's technical and regulatory committees.
Membership	Prospective Members Package	Markets Committee	Apr 03 meeting	Prospective Members Package
	New Membership Package	Markets Committee	Apr 03 meeting	New Members Package:
Press Releases and Trade Journal Publications	PR-1	Markets Committee	Feb 6 03	Press release: SDRF to address FCC regulatory concerns. Responsibility: Regulatory committee Press release: SDRF to Address EC regulatory concerns. Responsibility: Regulatory committee Press release: SDRF to address Asian regulatory concerns. Responsibility: Regulatory committee Press release: SDRF delivers Mid year report to FCC. Responsibility: Regulatory committee Press release: SDRF delivers End Year report to FCC. Responsibility: Regulatory committee
	WP Article	Markets Committee	March 03	Press release: SDRF releases RFI seeking technologies for software portability. Responsibility: HAL-WG Article to be published in a trade journal documenting the SDR Forum's workplan.

Deliverable	Identifier	Lead Working Group	Target Date	Comments
R&D overview and bibliography	RD-SUM 2003	Technical Committee (R & D WG)	Jan 0403 Final 2004 Version Draft Sept 03	The R&D WG will survey the state-of-the-art in: Hardware technology (RF enablers, digital enablers) Software technology (SDR definition tools, Radio virtual machines) Systems technology (smart antennas and adaptive processing, scalable systems, advanced terminal management and security technology, and testbed architecture). The RD-SUM 2003 will be updated with information obtained during the 2003 year, including the RCL Symposium, the Smart Antenna Symposium, the Requirements Workshops, and other activities. The information for the survey will be collected by issuing a Request for Information (RFI) in each of the study areas and will be broadly issued after the June plenary meeting . Working by correspondence, each study group will issue a preliminary report by the end of November 2003. The report will be an input submission to the SDR Forum for the 2003 work period
Technical Committee RFI	TC-RFI	Board of Directors	Jan 03 RFI	Seek technology contributions from its members to advance the state of the art in software defined radio
Security	SEC Volume II	Technical committee SAHG Security Overview Group	June 03 Draft Sept 03 Final	Security is the system attribute that maintains the privacy and integrity of the system and the information distributed across it. It includes accurate delivery, denial of interception, and non-repudiation. Threat analysis, the study of likely sources of international interference is inherent in the topic.
SDR JSR	JSR	Technical Committee (Commercial Handset WG)	Nov 03 meeting	Software Defined Radio Java Specification Request Prepared This document is the detailed Java Specification Request for SDR Forum defined commercial wireless terminal architecture . (JSR is descibed in http://www.jcp.org/jsr/overview/index.en.jsp)

Deliverable	Identifier	Lead Working Group	Target Date	Comments
SDR System Interface Definitions	SI-SSID	Technical Committee (System Interface WG)	Jan 03 Draft Nov 03 Final	Yearly Report Outline - Wayne Bonser (AFRL) Radio Control service - Vince Kovarik (Harris) Modem service - Don Stephens (CommLargo) Antenna, Amp, RF, etc - Dawn Szelc (MITRE)This document will be the final report for the body of work on SDR system interfaces completed in 2003.
Support on SDRF Report on Wireless Security	-RWS	Technical committee	Sep 03 2nd Rpt	Technical Committee input to Regulatory Committee's report on Wireless Security
Technical Compliance	SI-TCOM	Technical Committee (System Interface WG)	MayApril 03 meeting-Draft1st revision June Sept 03 meeting-Final2nd submission	Compliance issues draft- Dawn Szelc (MITRE) Spectrum, Functional performance, Standards compliance, etc. The SIWG will take the latest version of the OMG document and incorporate changes directly. This will be submitted to the SWRADIO DSIG.

Deliverable	Identifier	Lead Working Group	Target Date	Comments
SDR Forum Background Material	M-Fact M-FAQ M-Flow M-Hist	Markets	6 Jan	Work Items to include: Begin review of existing documents
			22 Jan	Submittal of the first round of questions for Technical and Regulatory committees for resolution
			9 Apr	Final submittal of questions to Technical and Regulatory Committee for resolution
			17 June	Final receipt of question responses from Technical and Regulatory Committees
			16 Sep	Final compilation of revised documents
			31 Oct	Final approval of all new docs for release by Steering Committee
Member Kits	M-Member	Markets	31 Jan	Work Items to include: Creation of appropriate documents (many will be extracted from the final work plan)
			28 Feb	Final Review/approval by Steering Committee
			As Available	Inclusion of appropriate SDR Forum Background Materials

Deliverable	Identifier	Lead Working Group	Target Date	Comments
Media Kits	M-Media	Markets	31 Jan	Work Items to include: Creation of appropriate documents (many will be extracted from the final work plan)
			28 Feb	Final Review/approval by Steering Committee
			As Available	Inclusion of appropriate SDR Forum Background Materials
Update web site	M-WebRvw M-WebCrit	Markets	17 Feb	Work Items to include: Review the current website its good and bad points. Produce a report or summary
			24 Mar	Develop a set of objective criteria / requirements for a new / revised website, Produce a report and circulate for comment
			21 Apr	Update from comments and finalize the report
			5 May	Solicit bids from website developers (using final report)
			19 May	Review bids and make recommendation, send to Executive Committee for comment
			2 June	Let contract for website work
			11 Aug	Monitor website development work, Review the completed website, Recommend changes as necessary, Review & approve final changes in the website
			2 Sep	Send out notice to members about the website changes
			28 Oct	Send out press release to to draw attention to the website
SDR Forum Newsletter	M-NLTmplt Newsletters	Markets	November	Markets committee to explore producing a newsletter from the Forum to the SDR Community.

Deliverable	Identifier	Lead Working Group	Target Date	Comments
Membership Polling/Quality Control		Markets	10 Mar	Work Items to include: Seek input on "wanted" and "needed" information to include 1) Input from select members regarding desired info. 2) Input from Executive Committee regarding desired info.3) Input from COO regarding desired & needed info.
			24 Mar	Develop objective set of criteria for information by type and collection methods Review with select members, Exec. Comm., COO
			31 Mar	Incorporate feedback in final document
			21 Apr	Determine what can be performed internally and by contractor
			19 May	Assign and monitor internal work
			2 Jun	Solicit bids for that which needs to be performed by contractor, review bids and select contractor
			2 Jun	
			1 Sep	Monitor contractor work to include reviewing contractor and internal work at completion,
			28 Oct	Providing feedback to Contractor and internal person and update per feedback
			8 Dec	Send information release to members promoting Polling /Tracking
				Press release of information to the outside world

Deliverable	Identifier	Lead Working Group	Target Date	Comments
SDR Forum "product" marketing		Market	14 Mar	Work Items to include: Review of existing documents to separate SDR Forum "products" from work items and contributions and to establish context and impact of each product
			14 Mar	Development of marketing plan for each major 2003 deliverables (in context of previous works)
			11 Apr	Approval of marketing plan
			2 May	Identification of delivery mechanism for work items to organize forum products with context and impact
			16 May	Socialization of delivery mechanism through technical and regulatory committees
			19 June	Approval of delivery mechanism
			1 Sep	Compilation of existing products into formal entity
			17 Oct	Approval of product compilation for release by Steering Committee
			Ongoing	Addition of new products as they become available
New Membership		Markets	Ongoing	Provide support to the COO in the recruitment of new members
New Member Briefing		Markets	Ongoing	Organize a new member briefings, as appropriate, at each of the SDR Forum meetings following the San Jose meeting
Meeting Theme		Markets	Ongoing	Work with other committee heads and Ken Zeszutko Public Relations to define and publicize a meeting theme for each meeting following the San Jose meeting.
Major Events	Workshops	Markets	Ongoing	The Markets Committee shall provide direct support in the planning and execution of several workshops throughout the year. The format and content of these workshops will be identified by the steering, technical, and regulatory committees, and the workshops will be sponsored and hosted by the SDR Forum.

Deliverable	Identifier	Lead Working Group	Target Date	Comments
Major Event	Technical Conference	Markets	Ongoing	The Markets Committee shall provide direct support in the planning and execution of the 2003 Technical Conference.
Public Relations	Press Releases, etc.	Markets	Ongoing	The Markets Committee shall support Ken Zeszutko Public Relations in this effort including providing input to press releases and identifying SDR efforts that may be worthy of media attention