



Wireless World Research Forum (WWRF)



WWRF WG6 Reconfigurability

Charter

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- Editor: Panagiotis Demestichas, University of Piraeus, pdemest@unipi.gr
- Editorial team: Didier Bourse, Motorola, France, Didier.Bourse@motorola.com, Terence Dodgson, Samsung, UK, terry.dodgson@samsung.com



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1. Description and Goals

This section describes the goals of Working Group 6 (WG6) of the Wireless World Research Forum (WWRF).

WG6, being part of WWRF, adheres to the overall forum's objectives. One objective is to formulate visions on strategic future research directions in the wireless field, among industry and academia. Moreover, the aim is to generate, identify, and promote research areas and technical trends for mobile and wireless system technologies. It is intended to constructively contribute to the work done within ETSI, 3GPP, IETF, ITU, the UMTS Forum, and other relevant bodies regarding commercial and standardization issues derived from the research work.

- Definition of technical visions on all aspects related to reconfigurability (end-to-end reconfigurable wireless networks)
- Facilitation of worldwide technical interactions, with industry and academia, on all aspects related to reconfigurability (end-to-end reconfigurable wireless networks).
- Realization of white papers.
- Dissemination of scientific results in the WWRF community during meetings, and establishment of information flows with other WWRF WGs and SIGs.
- Promotion of activities and results outside WWRF, through the presentation of white papers and contributions.
- Creation of subgroups of strong interest in specific aspects, so as to ensure that all aspects of reconfigurability are considered within WWRF.
- Provision of forum for discussion and harmonization on standardization and regulation work.

The next sections provide further information on the points above.

2. Scope

WG6 addresses research aspects that will expose the full benefits of the valuable diversity within the Radio Eco-Space, composed of wide range of technologies such as mobile, broadcast, and broadband radio access (wireless local area) networks. WG6 will address research issues relevant to reconfigurable devices and supporting system functions, which will offer an expanded set of operational choices to the users, application service providers, operators, regulators in the context of heterogeneous radio access systems.

WG6 will address the following groups of research areas.

Application Scenarios, System Requirements, Roadmaps

Contributions on the following main points are anticipated and will be solicited.

- Elaboration on scenarios aggregating technical, business and regulatory visions.
- Collection of system requirements and definition of reference architectures for realizing end-to-end reconfigurability.
- Identification of technical challenges and research directions for end-to-end reconfigurability.
- Elaboration on business paths and technology roadmaps for the realization of reconfigurability.



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Network Architecture and Support Services.

Contributions on the following main points are anticipated and will be solicited.

- Reconfiguration policies. Strategies for deriving best reconfiguration patterns. Evaluation of gains, in terms of capacity/QoS, and feasibility, in terms of signaling load and delay.
- Reconfiguration services, e.g., components for download, security, error/fault tolerance, etc.
- Reconfiguration management plane, encompassing policies and services, and interworking with legacy control, management, user-data planes.
- Network architectures supporting reconfigurability. Identification of functional entities and deployment in physical infrastructures.
- Reconfiguration profiles.
- Flexible network elements.

Cognitive Radio, Spectrum and Radio Resource Management

Contributions on the following main points are anticipated and will be solicited.

- Cognitive radio.
- Spectrum management (ASM) in a reconfigurability context. Definition, development and performance assessment.
- Radio resource management schemes for composite reconfigurable wireless networks. Definition, development and performance assessment.
- Network planning for segments based on reconfigurable elements.
- Network architectures supporting advanced spectrum and radio resource management schemes.

Reconfigurable Elements, Flexible Air-Interfaces, SDR

Research issues for the configuration/reconfiguration of equipment, i.e., terminals and network elements, will be addressed.

Contributions on the following main points are anticipated and will be solicited.

- Frameworks and functionality for equipment local reconfiguration management.
- Open interfaces for reconfiguration support.
- Flexible protocol stacks, requiring minimal alterations between successive reconfigurations.
- Extended execution environments capable of supporting the reconfigurability context.
- Physical layer hardware architectures and software environments enabling end-to-end reconfigurable radio.
- Abstract models of physical layer resources (RF and baseband).
- Reconfigurable RF and baseband. Receiver and transmitter architectures, critical components, design choices. Transceiver algorithms, interworking with the reconfigurable RF part, software and hardware architectures, critical components.
- Control entities offering interfaces towards the equipment management components.

Proof of concept

Contributions on the following main points are anticipated and will be solicited.

- Specification of criteria and experiments for proof-of-concept.



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- Architectures, platforms and models for proof-of-concept.
- Results and feedback from proof-of-concept activities

3. Criteria for success

With respect to the goals and scope defined above, the success of WWRF Working Groups and Special Interest Groups can be measured by:

- The availability, completeness and quality of position documents

This is related to the number and quality of the white papers and presentations, available to the WWRF community and external bodies. It is critical to create and maintain white papers in all areas having active members. Outputs from any WG/SIG will be placed in the public area of the WWRF website, once they reach a stable state. The success can be measured through the regular creation, maintenance and release of such position documents and by performance to planned schedules for deliverables.

- The dynamic interchange of ideas

This can be measured by assessing the number and quality of contributions to group meetings, the number of participants, the level and consistency of contributions, and the degree of coverage of the WG/SIG research areas. These should be of a level sufficient to sustain the activities of the working group and its value to the forum. Each group should achieve consensus and mutual understanding over white papers/presentations and have a successful and fruitful cooperation with other groups inside and outside WWRF.

- The influence on key stakeholders

This can be measured through the recognition and adoption of WG/SIG ideas and concepts by WWRF members and external bodies such as standardization bodies, research efforts, or products. This also relates to the number and quality of presentations to external bodies.

4. Duration

No duration limit is foreseen. As required by the WWRF, group charters will be revised at least annually and seek approval of the steering board. The WWRF can terminate any WG or SIG at any time should the need arise.

5. Schedule and deliverables, Resource requirements

The following deliverables will be made:

- White Papers and shorter versions of them in presentation format, called "White Presentations" covering topics within the group's scope.
- Short summaries of contributions and discussions at group meetings. These could also include reports on missing or over-represented areas in the WG/SIG activities. Report on group activities and progress to the plenary at each WWRF meeting.



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- Dissemination of white papers and other documents through the WWRF Book of Visions and external media such as scientific journals, conferences and books, as requested and agreed.
- All deliverables will be reviewed and updated as necessary.

Working Groups/Special Interest Groups requires the following resources:

- Adequate space and time in forum meetings to conduct group meetings, including sufficient time for fruitful discussions;
- Support for dedicated mailing list(s), website and document repository;
- WWRF mechanisms supporting liaison and collaboration with other WWRF groups and external bodies.

6. Liaison/collaboration with external organizations

Working Groups and Special Interest Groups will pursue the following liaisons and collaborations with external organizations:

- Standardization and regulation bodies, to influence future generation wireless standards (examples are IEEE 802, ETSI, ITU-R, ARIB, IETF/IRTF)
- Professional societies for widespread dissemination of WWRF results (examples are IEEE Societies, IEE, ACM)
- Complementary or similar groups in other fora, to share perspectives and co-ordinate activities toward common visions and research agendas (examples are mITF, UMTS Forum)
- Research funding bodies and large research projects with common interests and research goals (examples are multinational projects such as European FP6 IPs and NoEs, and nationally-funded projects such as FuTURE, DARPA and NSF projects)

Interaction with external organisations will utilise any liaison agreements and processes executed by the WWRF.

7. Co-ordination with other WWRF bodies

The WG/SIG chair and/or vice-chair will represent the working group in the forum steering board. Representatives of each WG/SIG will participate as members of the Vision Committee, contributing to the development of the visions and reference models that guide the technical direction of the forum. The Vision Committee will develop specific technical action plans, from which the working group will derive specific deliverables and schedules.

Relationships will be pursued between all WGs and SIGs. Mechanisms ensuring that there is a continuous information flow between them should be put in place:

- Joint sessions and discussions on overlap issues, common studies and complementary activities in order to leverage synergies between the different WWRF Groups.
- Parallel sessions should mainly address diverging topics that are not of common interest.



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- Presentation of white papers and relevant contributions in meetings of other WWRF Groups.

8. Meetings and communications

- Specific WG and SIG meetings will be held during each WWRF meeting, as well as cross-WG/SIG meetings, where found appropriate.
- Interim meetings may be scheduled as needed either through physical meetings or, more typically, via conference call. Specific task forces or drafting committees can be appointed by the chairman to prepare white papers, specific technical documents or to find solutions to technical problems.
- Communication outside the meetings will be conducted through dedicated mailing lists and exploders to distribute information such as meeting minutes or general announcements of interest to working group members.

wgx@wireless-world-research.org

sigx@wireless-world-research.org

To subscribe, please contact the mailing list administrator:

mail-lists@wireless-world-research.org.

- A web page within the forum's website will be maintained by each Working Group and Special Interest Group, for sharing of information and documents.

9. Membership

Membership to Working Groups and Special Interest Groups follows the same rules as for WWRF:

- All WG and SIG activities are open to all representatives of WWRF member organisations. This includes contribution to and participation in WWRF meetings, as well as access to mailing lists, unfinished documents, and the "members only" section of the WWRF website.
- Representatives of non-member organisations are welcome to contribute to and participate in the WG meetings co-incident with WWRF meetings.
- Voting in Working Groups and Special Interest Groups is limited to attending representatives of member organizations.
- The Working Group and Special Interest Group charters are available to all interested parties.