

SDR Forum Smart Radio Challenge Written Qualification Submittal Preparation Instructions and Requirements

This document provides instructions for the creation of qualification submittals (Proposal) in Phase 1 of the SDR Forum Smart Radio Challenge. The goal of the proposal is to provide sufficient information so as to persuade the Phase 1 panel of judges that the team is qualified for advancement to Phase 2. Further, should more than 10 teams respond in any one topic area, the proposal will be utilized to down select from qualified teams to a maximum of 10. The Phase 1 panel of judges will evaluate the submitted proposal as follows:

- Overall technical approach (50%)
- Maturity of design process (10%)
- Use of materials provided by the corporate sponsors (10%)
- Feasibility and performance (10%)
- Commercial Viability (10%)
- Documentations and Deliverables (10%)

The quality of technical content of the proposal will be the principle basis upon which proposals will be evaluated. The proposed research and development must be responsive to the chosen Problem as selected from the Smart Radio Challenge Problem Set (Appendix 1), although it need not use the exact approach specified in the Problem. Each proposal must address only a single Problem.

Limitations on the Length of the Proposal

The Smart Radio Challenge is designed to reduce the investment of time and cost to student teams in preparing a written qualification submittal. Those who wish to respond shall submit a direct, concise, and informative research and development proposal of no more than 25 pages. Promotional or non-project related discussion is discouraged. In the interest of equity, pages in excess of the 25 page limitation, except as defined below, will not be considered or reviewed.

Format of Proposal

The proposal shall be submitted in English only. Pages shall be of standard 8.5" x 11" paper with one-inch margins. The type font shall not be smaller than 10 points. Engineering drawings, etc. may be provided on 11" by 17" (folded) paper should the team so choose, but these drawings will count as 2 pages in the 25-page count. Student teams shall choose a team name, and this name must be in the header of each page along with the Problem number. The footer must include the page number. Specific proposal sections that must be addressed are as follows.

Proposal Cover Sheet

The proposal coversheet shall include the team name as well as the names of the university, the team lead, and the technical advisor. Contact information for the team lead shall also be provided. The names of the other team members may also be included at the team's discretion. The Smart Radio Challenge Problem that the team has selected shall be stated, and a brief technical abstract shall be provided outlining key challenges in the Problem and the university team's proposed solution. The cover sheet is limited to one page in length, and counts as one page of the 25-page count.

Note that the information contained in the cover sheet of proposals selected for advancement to phase 2 will likely be published on the smart radio challenge website.

Problem Overview

In this section, the team must provide an overview of the Problem and the key challenges/risks they perceive in addressing the problem. The problem overview is limited to one page in length, and counts as one page of the 25-page count.

Technical Proposal

The technical proposal shall be limited to no more than 18 pages and counts as 18 of the 25 page count. It will include four subsections as follows:

- Proposed Solution - This subsection shall provide an explicit detailed description of the team's proposed solution to the problem. This section may include preliminary designs, analysis, simulations, etc. as defined by the team. Key elements that should be addressed in this section include, but are not limited to:
 - Trade-offs that were made in defining the proposed solution
 - Ability of the proposed solution to address the defined Problem
 - Technology readiness of the proposed solution
 - Size, weight and power of proposed solution
 - Constraints inherent in the proposed solution
- Risk Assessment - In this section, the teams shall identify the primary risks (cost, performance, schedule) in creating the proposed solution and what the plan is for mitigating those risks.
- Deliverables – In this subsection, the teams shall detail the proposed deliverables, including engineering notebooks, hardware and software documentation, source code, view cell presentations, papers, and demonstrations. Deliverables should include, at a minimum:
 - Problem specific deliverables, as defined in the Smart Radio Challenge Problem Set, with supporting documentation

- A one-page monthly status report detailing progress that has been made to date, as well as identifying issues that have come up, and how these issues are being addressed.
 - Engineering Notebooks, showing daily work entries, written in English, from each team member, detailing the work that was performed, the design process that was followed and the trade-offs that were made
 - Anticipated published papers, with proposed publication dates. A minimum of one publishable paper must be produced in Phase 2.
 - A “final report” detailing what was accomplished and what was learned.
- **Materials** - In this subsection, the teams shall identify the materials they intend to utilize in the creation of the proposed solution. This includes a description of the use of materials provided by the corporate sponsors, as well as materials from other sources as appropriate. It is recognized that additional sponsors may offer their products during the proposal development time, or even during the development phase. The SDR Forum will make additional sponsor product notification to all teams if additional products are offered. The total cost of the resulting design, including assembly costs, will also be outlined in this section.

Work Plan

In this section, an explicit detailed work plan for creating the proposed solution shall be provided. The work plan must detail the development process that will be followed and include a schedule that identifies key milestones with that development process. The planned role of each team member in achieving said milestones must also be identified, and a schedule of deliverables must be included. The Work Plan must not be more than 3 pages, and will count as three pages of the 25-page count.

Facilities

In this section, the student team will identify the physical facilities that they will utilize in creating the proposed solution. This includes identifying laboratory space, test equipment, fabrication facilities, etc. Also state whether the facilities where work will be performed meet environmental laws and regulations of federal, state, and local governments for, but not limited to, the following groupings: airborne emissions, waterborne effluents, external radiation levels, outdoor noise, solid bulk waste disposal practices, and handling of toxic and hazardous materials. The facilities description shall be no more than 2 pages in length and will count as two pages in the 25-page count.

Intellectual Property

All information that is either provided in the proposal, or will be used in the creation of the proposed solution, and is considered the protected intellectual property of the university or 3rd party affiliate must be identified. This material does NOT count towards the 25-page count.

Curriculum Vitae of Team Members

A resume or Curriculum Vitae of no more than 2 pages shall be provided for each member of the team. This material does NOT count towards the 25-page count.

Proposal Section Markings

The proposal sections shall be marked as follows:

- Cover Sheet – No marking
- 1.0 Problem Summary
- 2.0 Technical Proposal
 - 2.1 Proposed Solution
 - 2.2 Deliverables
 - 2.3 Materials
 - 2.4 Risk Assessment
- 3.0 Work Plan
- 4.0 Facilities
- 5.0 Intellectual Property
- 6.0 Curriculum Vitae

Smart Radio Challenge Terms and Conditions

The faculty advisor and a representative of each team's university must sign the "Smart Radio Challenge Terms and Conditions" included in Appendix 1. This signature is the confirmation of the team members that they will abide by all rules of the contest and of the sponsors, and that the faculty advisor will monitor and affirm that the team has done so. The signed document must be returned with each proposal in order for the proposal to be considered. The terms and conditions document does not count towards the 25 page limit.

Delivery

Electronic delivery of the proposal must be made no later than midnight GMT (8:00 PM US-EDT) on the proposal due date. Proposals should be in PDF format and should be emailed with the subject line "Radio Challenge Proposal from team <team name>_" to info@sdrforum.org. Teams may follow up with paper proposals should they so choose.

Questions during Phase 1

Student teams are encouraged to ask questions of the SDR Forum during the phase 1 development. Questions and responses will be posted on the Radio Challenge website in a Phase 1 FAQ.

Appendix 1 Terms and Conditions

I / we certify that we agree to follow all rules of the Smart Radio Challenge contest, as described on the web page <http://www.radiochallenge.org/09rules.html>,

I / we agree to all terms and conditions of license for all tools and products provided to our team from the sponsors of the Challenge. If we are unable to agree to the terms and conditions associated with any sponsor product, we will notify the SDR Forum of this condition, and will return the associated tool or product to the SDR Forum. At the conclusion of the contest, we agree to return tools or products and to remove these tools and products from the computers on which they were installed, if that is a condition of the sponsored product license.

I / we agree to identify all intellectual property used, to include references to publications by others used in this development, and to abide by international intellectual property rights, patents, and copyright law.

----- Printed name of teammate 1	----- Signature of teammate 1	----- date
----- Printed name of teammate 2	----- Signature of teammate 2	----- date
----- Printed name of teammate 3	----- Signature of teammate 3	----- date
----- Printed name of teammate 4	----- Signature of teammate 4	----- date
----- Printed name of advisor	----- Signature of advisor	----- date
----- Printed name of Team	----- Printed Name of University	----- date