


FirePoint  **Challenge**
“The **SPARC**”

FP
Challenge
7 Overview
TM

Contents

Contents	2
i. CCDC Aviation & Missile Center and FirePoint Innovations	3
ii. Goal Statement.....	3
iii. Intellectual Property.....	4
iv. Resource Utilization.....	4
v. Eligibility.....	4
<i>Faculty Advisors</i>	4
<i>University-Based Teams</i>	4
<i>Campus Resources and Business Entities</i>	5
vi. Awards.....	5
<i>Networking Opportunities</i>	5
<i>Awards</i>	5
vii. Registration	5
viii. At-A-Glance	5
ix. Competition Timeline	6
.....	6
x. Deliverables for Phase 1	7
<i>Registration</i>	7
xi. Scoring Rubrics.....	8
<i>General Information</i>	8

i. CCDC Aviation & Missile Center and FirePoint Innovations

- a. The Combat Capabilities Development Command, Aviation & Missile Center (DEVCOM AvMC) is the Army's focal point for providing research, development, and engineering technology and services for aviation and missile platforms across the life cycle. DEVCOM AvMC's mission is to "deliver collaborative and innovative aviation and missile capabilities for responsive and cost-effective research, development and life cycle engineering solutions" in order to equip the Warfighter with the best technology today and tomorrow.

FirePoint Innovations (FirePoint) is a Center of Wichita State University (WSU) and a Partnership Intermediary for DEVCOM AvMC. collaboration and partnering, technology transfer and transition, and innovation and outreach to assist the DEVCOM AvMC in accomplishing its RDT&E goals. FirePoint builds effective collaborations that leverage a variety and wide range of resources to benefit universities, small businesses, industry, and the U.S. Army.

The SPARC is an outreach effort organized by FirePoint on behalf of DEVCOM AvMC to engage universities and small businesses regarding the future of software engineering and its potential impact on the Warfighter.

ii. Goal Statement

- a. University-based teams will participate in the Student Practical Architecting Challenge (SPARC). The challenge is divided in three phases spanning the course of 9 months. Teams will compete for financial awards totaling \$38,500 and will have access to networking opportunities with Government and Industry experts. Using dedicated campus and/or small business resources, members will collaborate internally to produce a software product. The product will have to satisfy a desired capability while being maintainable. Teams will use a development platform of their choice.

iii. Intellectual Property

- a. All competing University-based teams will retain all intellectual property rights of their subsystem. FirePoint will not have the rights to use any of the submitted deliverables and/or any other form of intellectual property from any team without prior written agreement between FirePoint and the team. WSU is not responsible for mediating any agreement between the participants regarding their intellectual property.

By competing in this competition, teams hereby grant limited media rights to FirePoint for outreach related articles and awards. Teams should be aware that pictures may be shared to the general public in outreach articles. If a team creates a patentable item during the progression of the competition, it will be the team's sole responsibility to seek patent protection. FirePoint will not share any specific technical details from the team's submitted deliverables with the general public.

iv. Resource Utilization

- a. Teams will use their own resources to participate in this challenge

v. Eligibility

Faculty Advisors

- i. A team may have one faculty advisor who will act as a facilitator for team activities. A faculty advisor may be chosen by the team members, should have expertise in software architecture and/or development. The faculty advisors will not be allowed to: architect, design, and/ or produce the software product.

University-Based Teams

- i. Each team that registers will consist of a full-time and/or part-time undergraduate and/or graduate students attending a specific university. Each member must be 18 or older at the time of the start of Phase 1. A team may add or remove members as it sees fit. Multiple institutions may combine to form a team. Multiple teams from the same university may be formed. Students that graduate mid-way through the competition and are no longer considered students may be allowed to continue participation on a case-to-case basis.

Campus Resources and Business Entities

- i. The development and production of the software product will require procedures to test the capability of the product. It is the responsibility of the university-based team to ensure that the resources required will be available for student use.

vi. Awards

Networking Opportunities

- i. During the challenge there will be networking opportunities with key Government and industry experts in the field of software development and qualification. Awarded teams will be given the opportunity to present their proposals to the expert panel. Award winning teams will be given funds for travel and lodging up to (2) people to present their product to a panel of Industry and Government experts.

Awards

- i. Two awards will be awarded on each phase. Teams in 1st and 2nd places of Phase 1 will receive \$7,000 and \$2,000, respectively. These awards will increase to \$10,000 and \$12,500 in Phases 2 and 3, respectively, for the team in 1st place, and to \$3,000 and \$4,000 for the team in 2nd place. Selection of winning teams will be based on the rubric listed under the “Scoring Rubrics” article. The announcement of winners for each phase and this award will be distributed after the three phases of the competition have been completed. All teams participating in Phase 1 can participate in Phase 2, and all teams participating in Phase 2 can participate in Phase 3. Participation in Phases 2 and 3 is only possible if the team has participated in the previous phase.

vii. Registration

- a. Each team will be required to register prior to the challenge. The purpose of this is to ensure that we have the correct team member and contact information.

viii. At-A-Glance

- a. The competition will consist of three phases. In the first phase, student teams are requested to design a software product that fulfills several

requirements while being maintainable for unknown, unprecedented, and/or unpredictable futures. The purpose of each subsequent phase will be disclosed only after the previous phase has been completed.

ix. Competition Timeline

Timeline:

Registration until 1/20/23.

Phase 1: 1/20/23 to 3/9/23.

Phase 2: 3/24/23 to 5/11/23.

Phase 3: 5/23/23 to 7/10/23.

Deliveries occur on the last day of the period. Teams will be provided with instructions for the next phase on the first day of the next phase period.

x. Deliverables for Phase 1

Registration

- i. See *vii. Registration* above

D1. Design Description and Justification Report: An MS Word document that describes both (1) the design of the SW product and (2) the justifications for the different choices and trade-offs made by the student team. The report shall include a dedicated section that explains in detail what architecture and design choices the team has done to make the solution maintainable.

D2. Source code: All code developed and necessary to run the SW product, in a ZIP file.

D3. Architecture models: All architecture models developed by the team. These may be any combination of diagrams, UML models, etc. The architecture models must incorporate (within the models) descriptions of key architecting and coding decisions that have been made to make the solution maintainable, as well as the main decisions that were driven by performance drivers derived from the user requirements.

D4. Verification and validation evidence: An MS Excel table that lists for each user requirement and or maintainability the following information:

- State of compliance. This is, whether the requirement is satisfied or not.
- Evidence. This may be the identification of test data, simulation results, or any other document that contains evidence of the requirement being satisfied. All such information must be also delivered as a ZIP file.

xi. Scoring Rubrics

General Information

Each product will be scored according to the following rubrics. The scoring panel of judges will consist of experts in industry, government, academia, and business. Scores will only be used during the resulting score will determine the teams in 1st and 2nd place.

Scoring Criteria:	Weighted Percent:
Satisfaction of requirements – Evidence is provided on the satisfaction of the user/system requirements	33%
Maintainability – The product responds adequately to maintenance scenarios identified by the panel of judges.	33%
Documentation – The documentation provided by the teams provides detailed justification of how architectural and design decisions have addressed maintainability.	34%