World CanSat/Rocketry Championship

| WCRC |

1. INTRODUCTION

- A **World CanSat/Rocketry Championship** (hereinafter: **WCRC**) is generally an international competition open to elite competitors from around the world, representing their nations (as university student Teams or as independent student Teams), and winning this event will be considered the highest or near highest achievement in this field.

1. INTRODUCTION

- This event is important for everyone, and for each founder country and for organizations, institutions and companies, and most important for education and students because the CanSat/Rocketry program is a vertical type of education compared to the horizontal they have in their studies.

2. BACKGROUND

- **What is a CanSat?**
- A CanSat is a simulation of a real satellite. All components are housed inside a can up to 350 ml. CanSat provides an affordable way to gain basic knowledge and skills in Space engineering for teachers and students, as well as experience engineering challenges when designing Satellites. Students are able to design and build a small electronic payload that can fit into the cans to 350 ml. CanSat is launched by Rocket, Balloon, Plane or Drone and delivered in apogee. With the Parachute, the CanSat slowly descends to the ground and carries out its mission during descent (for example: measures air pressure and temperature and sends telemetry). By analyzing the data collected by CanSat, students will explore the reasons for the success or failure of its mission.

2. BACKGROUND

- One of the main advantages of the CanSat/Rocketry concept is its interdisciplinary: combination of mathematics, physics, informatics/programming, mechatronics, telecommunications, aviation and rocketry, mechanics, etc.
- CanSat is a simulation of a real, large, Satellite and contains all the subsystems/components as a real Satellite, but with limited complexity.

2. BACKGROUND

Benefits of CanSat/Rocketry Based Education:

CanSat/Rocketry is an effective educational tool for:

- Learning by doing;
- Involving students in technology and engineering as a practical complement to other, fundamental, subjects they study, such as mathematics and physics;
- Emphasizing teamwork where each student has a specific task/role that creates a sense of responsibility for him/her;
- Students gain experience of the complete process: defining the mission, design, development/constructing, programming, testing, launching and analysis;
- Conducting simple experiments with balloon/rocket/plane/drone;
- Learning methods can be adapted to the age level of students, or to their needs and abilities;
- Students are able to analyze the reasons for success or failure after descending CanSat and Rocket to the ground;
- Acquired knowledge and experience can be applied to other projects as this concept enables obtaining of ideas and stimulates students' thinking;
- Useful for a further education/career guidance process;
- Provide Opportunities and Network for Launching their Own Small Satellites (Pico/Nano Satellites/PocketQube/ UNITYsat) to Low earth Orbit in a frugal way!
- Provide Opportunities and Network for Sharing and Learning from each other teams from various countries.

3. FOUNDERS

SERBIA

INDIA

ITALY

TUNISIA

PERU

CANADA

4. COMMON RULES

- Each founder country is responsible for its Continent and the Organization of the Competition and has the opportunity, if it wishes, to organize the Competition on its continent and with another country from the same continent and on the soil of that country. So, the Competition may not always be in the same country, but the founder country from that continent must be co-organizer with another country on which the Competition is organized.

4. COMMON RULES

- The responsibility of each founder country is to promote, organize and hold the Competition on its continent by the end of the current year, the World Finals will be held always next year.

4. COMMON RULES

- Each year all founder countries will agree on the basic rules (primarily for: **FLIGHT MISSION**), as a separate document (*The basic rules of the qualification Competitions*), for qualifying Competitions across continents, with the **aim** of making the Competitions as similar as possible to all participants Worldwide. Each founder country may make certain changes to these basic rules for the purposes of its Competition only if such changes will improve the Competition itself and will not deviate much from the mentioned **aim**.

5. CHAMPIONSHIP PHASES

The **WCRC** consists of 3 phases:

- Phase 1 – **National CanSat/Rocketry Competition** as qualification for **Continental CanSat/Rocketry Competition**. In this Competition student Teams participate across their own state. If the state does not have a National Competition, then all student Teams can directly participate in the **Continental CanSat/Rocketry Competition** (i.e. Phase 2).

- Phase 2 – **Continental CanSat/Rocketry Competition** as qualification for World Finals
  (Based on document: *The basic rules of the qualification Competitions*)

- Phase 3 – **World Finals CanSat/Rocketry Competition**
  (Based on document: *The basic rules for World Finals*)

6. EVALUATION AND SCORING IN CHAMPIONSHIP PHASES 2 AND 3

6.1 The Jury

- The Jury, appointed by founder countries, will be comprised of CanSat Experts, Education Experts, Engineers and Scientists who will evaluate the Teams' Performances during **Phases 2 and 3**.
- The Jury will typically have 3-5 members, and their fields of expertise can vary from science to engineering or education. The Jury board will be usually comprised of:
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  - Space Science/Engineering Expert
  - IT/Electronics Expert
  - Education Expert
  - Radio Communication Expert
  - Rocketry Expert

6. EVALUATION AND SCORING IN CHAMPIONSHIP PHASES 2 AND 3

6.2 Scoring

- Performance in the following areas will be evaluated during **Phases 2 and 3**:

A. Technical Achievement

B. Scientific value

C. Professional competencies

D. Outreach

6. EVALUATION AND SCORING IN CHAMPIONSHIP PHASES 2 AND 3

6.3 Marking scheme

- The overall balance between the items to be evaluated is as follows:
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Technical Achievement 35%
Scientific Value 35%
Professional Competencies 20%
Outreach 10%

TOTAL 100%

6. EVALUATION AND SCORING IN CHAMPIONSHIP PHASES 2 AND 3

6.4 Prizes for Phases 2 and 3

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  - 1st Prize
  - 2nd Prize
  - 3rd Prize

- The following rule will apply:

  - A Team can’t receive more than one prize.

6. EVALUATION AND SCORING IN CHAMPIONSHIP PHASES 2 AND 3

6.5 Quotas for World Finals

A total of 37 Teams can compete in the World Finals:

- **From Asian/Australian Continent 15 Teams**
- **From African Continent 5 Teams**
- **From North American Continent 5 Teams**
- **From South American Continent 5 Teams**
- **From European Continent 7 Teams**

- **Each Team can consist of a minimum of 3 members and a maximum of 5 members.**

7. QUESTIONS

- cspd.office@gmail.com