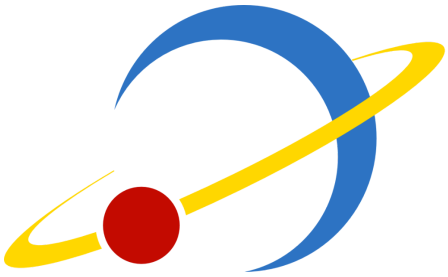

ROSPIN Space Tech Competition

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1. Competition Summary

The Romanian Space Initiative (ROSPIN) is an NGO that has been active in the space education sector since 2019. Our mission is to develop the Romanian Space Ecosystem through educational programmes, hands-on technical projects and community events. This competition brings together all of these three areas and complements our expanding portfolio of technical projects. ROSPIN is putting up €1000 and our full technical support in helping you start your own space related project. If it sounds interesting, read on!

1.1 Current ROSPIN Technical Projects

ROSPIN has three active technical projects, two in Bucharest and one in Cluj, and we are looking for a fourth starting with the 2025/26 academic year. The three projects are: ROSPIN-SAT-1 (CubeSat), SOLDERx (microgravity experiment) and River Rover (Mars rover). Their current status is described briefly below.

ROSPIN-SAT-1 is a 3U CubeSat mission designed to observe Romanian forests and vegetation, providing valuable data for reforestation efforts while also serving as an open-source platform for students and researchers to conduct in-orbit experiments. From December 2022 and until June 2024, the ROSPIN-SAT-1 team has participated in the first iteration of the ESA Fly Your Satellite! Design Booster programme, progressing from an early concept stage to a Preliminary Design Review (PDR) maturity by mid-2024.

As of February 2025, the team is just finishing a delta Preliminary Design Review (a secondary PDR version) and advancing towards the Critical Design Review (CDR), scheduled for the summer of 2025. Concurrently, FlatSat activities are starting in a newly equipped laboratory at the Bucharest HQ, where the team is integrating and testing critical subsystems such as the onboard computer (OBC), UHF antenna, and electrical power system (EPS), recently procured from EnduroSat. The project website is linked here and the team consists of roughly 50 students mainly from UNSTPB Bucharest.

The **SOLDERx** project is part of the 2024/25 REXUS/BEXUS edition organized by the European Space Agency in partnership with the Swedish National Space Agency (SNSA), the Swedish Space Corporation (SSC), the Center of Applied Space Technology and Microgravity (ZARM), and the German Space agency's (DLR) mobile rocket base (MORABA).

SOLDERx is a microgravity soldering experiment that is planned to fly on the REXUS 33/34 sounding rockets in March 2025. The team formed in September 2023 at UNSTPB in Bucharest has passed several milestones in the last 18 months including their selection in November 2023, the Preliminary Design Review (PDR) in February 2024, the Critical Design Review (CDR) in June 2024, the Experiment Acceptance Review in November 2024, the Experiment Integration in December 2024 and a Bench test in January 2025. The project received valuable technical support from team members of project ECRIDA, a previous REXUS experiment. After

the conclusion of the SOLDERx project in the spring of 2025 ROSPIN will be looking for new experiments to apply to the REXUS/BEXUS programme. The project website is linked here.

The **River ROVER** project started in the fall of 2023 with a group of students from UTCN Cluj. The team aims to participate in the European Rover Challenge competition and for the 2024 edition they worked on a miniature version of their rover suitable for the remote category. The team took part in the 2024 ERC as a visiting team to gain experience and is currently working towards building a full sized Rover for the 2026 edition.

As of February 2025, River is finishing Phase 0/A and is completing their Mission Design Review and Preliminary Requirements Review. They are planning to reach their Preliminary Design Review at the end of May 2025 with the goal to start working with hardware at this time and prepare for a Critical Design Review at the end of 2025. The team aims to participate in the 2026 edition of ERC in fall of 2026. The project website is linked here and the team consists of roughly 20 students from UTCN and UBB Cluj.

1.2 Competition Format and Benefits

This is a proposal style competition where ROSPIN is providing the context and limitations around the types of projects that the organization is looking for and interested parties apply with an appropriate project idea that can be implemented at university level within a reasonable amount of time and resources. The competition is aimed at university students looking to get involved in technical hands-on projects that have a connection to the space industry.

Students can apply individually or as a group. In the case of an individual application, we expect you to have a reasonable idea of how to recruit team members once the project kicks off and ROSPIN will help in the recruitment process. Details about the proposal contents can be found in Chapter 2, while the application and expected project timeline are detailed in Chapter 3 along with information on how to apply.

ROSPIN is looking to select one winning project idea to take forward and start implementing from the 2025/26 academic year. ROSPIN is also pledging to invest up to €1000 in hardware and software development to get the project off the ground. Note that ROSPIN expects the project team to secure sponsorships beyond the support offered by ROSPIN and to establish a strong relationship with their home university. ROSPIN will help the team in finding sponsorship opportunities and is also open to collaborations with universities across the country.

Other benefits that the winning team can expect from the collaboration with ROSPIN are:

- **Technical oversight** - the experience of the senior ROSPIN members is a great resource that technical teams should draw from. Scheduling, technical design or financial planning are critical areas where we help our teams. In addition, senior ROSPIN members and external mentors are involved in technical reviews to keep the projects on track.
- **Access to an external network of mentors and experts** - ROSPIN provides an

excellent network of individuals that can be contacted by the technical teams for advice and training.

- **Internal knowledge transfer** - being part of ROSPIN puts you in touch with an amazing network of people within the organization, many of whom run their own technical projects. Knowledge transfer inside the organization is encouraged and it benefits everyone involved.
- **Financial resources** - ROSPIN will invest in its technical projects and will provide support to its technical teams in securing sponsorships and creating strong links with universities. It is the responsibility of the team to come up with funding routes beyond the initial support from the organization as no technical projects can happen without external funding. A connection with a university is generally mandatory to start a technical project and we have signed collaboration agreements with several universities so far.
- **Exposure** - ROSPIN is already a strong brand in the local space industry and educational environment, making it easier to tap into our network of supporters and get exposure at national level.

2. Project Themes and Proposal Contents

2.1 Project Themes

All technical projects in ROSPIN started with someone who had an idea and a goal. At ROSPIN, we aim to support a growing number of technical projects within the organization. These projects will most likely be connected to an international competition. Based on our research and experience here are the most common project themes that we expect to see in your proposals.

Small satellite projects: these can range from Pocket Qubes to CanSats to CubeSats. The European Space Agency frequently runs the Fly Your Satellite and Fly Your Satellite Design Booster programmes that help teams progress their small satellite designs and even get them to the launch pad. Pocket Qubes have recently been included in FYS. ESA is likely to run the FYS program again towards the end of 2025 and you can find more information here. On the CanSat side, university competitions such as the World CanSat/Rocketry Championship exist.

Rover design projects: these projects are literally closer to the ground and bring together mechanical, automotive, electronics and aerospace engineers in competitions such as the European Rover Challenge. Teams have to design a rover from scratch to meet certain navigation and experimental challenges

Modified gravity experiments: there is a wide range of programmes offered by the European Space Agency to support university student teams in developing and testing their own experiments in modified gravity. The Academy Experiments programme offers multiple platforms for teams to conduct their engineering or scientific experiment, these are the Large Diameter Centrifuge, the Bremen Drop Towers, the Parabolic Flights, the ICECubes Facility on board the International Space Station, the Space Rider and the Orbital Robotics Lab. These one-of-a-kind facilities offer a wide range of microgravity or hypergravity conditions and a new round of experiment opportunities should open in the fall of 2025. In addition, the REXUS/BREXUS programme that the ROSPIN SolderX team is finishing at the moment, offers the opportunity for developing different kinds of microgravity experiments that will fly either on a rocket or on a balloon and every year new teams are selected.

Rocket model competitions: this is for those passionate about rockets and propulsion. There are several high profile competitions that involve the design, build, fire and test of rocket models of different classes and sizes. In Europe, the premiere competition is The European Rocketry Challenge or EuRoC, taking place in Portugal every fall. In the US, the Space Port America Cup is the most well known competition with participants from all over the world.

If your project idea does not belong in any of the categories/themes above, that's not an issue. We are only providing the list above as a starting point for your research and we are still looking forward to seeing a wide variety of project ideas, as long as they are within the scope of the competition. Note that ROSPIN is mainly interested in projects that involve hardware

development. However, if you decide to apply with a design project in mind, appropriate for competitions such as ESA Student Aerospace Challenge or Mission Idea Contest, you are still eligible to be supported by ROSPIN, but without the financial element given the theoretical nature of the project.

2.2 Proposal Contents

Your application will consist of a written document, no longer than 10 pages, that should answer the questions below and convince the ROSPIN leadership team to support your project. The document should be written in Word format and be submitted as a single PDF file. The topics you should cover are as follows:

- The background of the project initiators - it is important to understand the experience and skill set of those starting the project. Please include contact information and LinkedIn accounts where available for all the team members at the time of application.
- The motivation behind starting the project - why have you decided to apply and what drives you to take the project to completion?
- A description of the competition, project objectives, scope and high level timeline - this will give the leadership team an overview of the direction of the project and how it complements other ongoing activities in ROSPIN. It will also help outline the technical support required to run the project.
- A rough order of magnitude estimation of the budget required for the first year of the project and for its full completion. This may be difficult to pin down this early in the process, but it is crucial to understand if we are talking about a 100 Euro or 100k Euro project.
- A roadmap to obtain university support and sponsorships. The former is more important at this stage, since a lot depends on having some sort of support from a teaching body: having a working space (especially if the team is not from Bucharest and does not have access to the ROSPIN headquarters), having the capability to enroll in competitions and having access to tools and labs. A connection with a university is generally mandatory to start a large scale technical project.

ROSPIN will not provide a template for the proposal. The submission process for the proposal is detailed in Chapter 3.

3. Timeline and How to Apply

The important dates are summarized below:

- **February 24th 2025** - the ROSPIN Space Tech Competition opens.
- **March 30th** - deadline for proposal submission.
- **March 31st - April 6th** - proposal assessment by the ROSPIN leadership team.
- **April 7th - 13th** - interviews with the top candidates.
- **April 14st** - announcement of the competition winner(s).

Note that ROSPIN reserves the right to select multiple winners based on the range of applications submitted.

The project is expected to have roughly the following timeline after selection:

- April - June - get to know the ROSPIN leadership team and plan the recruitment phase to build the project team.
- July - August - build the core team and start working on any relevant deliverables or applications for the competition, should it start in fall 2025.
- September - December - recruit the extended team, finalize the project concept and apply to the relevant competition.
- January 2026 onwards - execute the project and start working with hardware.

The project proposal can be submitted by filling in this Google Form by March 30th 2025 at 23:59 Romania time.

If several people are involved in the project, only one person should fill in the application as they will have the opportunity to fill in the details of all applicants as part of the proposal. There is also an optional field in the form where applicants can attach CVs and other relevant documents. **Note that only university students are eligible to apply and the proposal must be written in English.**

Good luck and may the best ideas win!