REGULATION
Embedded Systems Competition 2026

The 2026 Embedded Systems Competition, which will take place between November 24th and 27th, 2026, is held by the Brazilian Computing Society (SBC), registered under CNPJ/MF No. 29.532.264/0001-78, headquartered at Av. Bento Gonçalves, 9500 - Sector 4 Building 43.412 - Room 219, Agronomia Neighborhood, in the City of Porto Alegre - RS, Capital, CEP 91.509-900, represented through a special commission of computer systems, hereinafter referred to simply as the organizer, under the conditions established in this Regulation.

1. THE COMPETITION

1.1 The Competition is intended for technical, undergraduate, and graduate students who develop embedded computing systems in Brazil. Candidates must be regularly enrolled in universities, federal institutes, colleges, university centers, technical schools, or SENAI and SENAC educational institutions , in courses such as Computer Engineering, Electrical Engineering, Control and Automation Engineering, Computer Science, Information Systems, or related fields recognized by the Ministry of Education and Culture (MEC).

1.2 The competition is organized by an organizing committee linked to and held as a co-located event of the XVI Brazilian Symposium on Computing Systems Engineering (SBESC 2026).

1.3 To participate in the competition, students must form a group of up to 3 (three) students, 1 (one) faculty advisor, and 1 (one) faculty co-advisor (optional) from their educational institution, all of whom must be registered in the competition according to section 1.5.1.

1.3.1 A student may participate in only one registered group. However, a professor may advise more than one registered group.

1.3.2 The advisor and the co-advisor, where applicable, must be permanent faculty members of one of the institutions of the students making up the team.

1.4 Changes to the groups will be permitted upon request sent to the committee via email at competicao_sbesc@lisha.ufsc.br until October 19, 2026. Requests sent after this date will not be accepted, even if the changes occurred before October 19, 2026. For the change to take effect, it is necessary to send the registration system (JEMS) data of the student leaving the group and the student replacing them. If a student withdraws, the group must inform the committee to remove them from the competition.

1.5 COMPETITION PHASES:

1.5.1. **First Phase:**

1.5.1.1 The group must submit the Registration and Proposal Submission Form by **June 30, 2026.**

1.5.1.2 The Registration and Proposal Submission Form is available on the competition website and must contain:

a) Project Data, which must be developed using the basic kit consisting of a BigDog Lab development board and a USB power cable, as specified on the competition website and provided to the teams. The proposed solution must utilize the provided platform. It is permitted to add electronic components and additional platforms to the solution. The presented solution must adhere to at least one of the areas listed in (i) and address at least one of the aspects listed in (ii):

(i) Applied solutions which may include:

- Environment
    - Waste Disposal and Usage Solutions
    - Pollution Problem Solutions
    - Water and River Cleanliness Maintenance
    - Air Quality
    - Preserving Forests and Parks
    - Prevention and Mitigation of Climate Event Impacts
- Agriculture/Livestock
- Smart Cars/Houses/Cities
- Health
- Education
- Wearables
- Security
- Commerce
- Robotics
- Other applications

(ii) Solutions that contribute to one or more of the Sustainable Development Goals proposed by the United Nations:

1. No poverty
2. Zero hunger and sustainable agriculture
3. Good health and well-being
4. Quality education
5. Gender equality
6. Clean water and sanitation
7. Affordable and clean energy
8. Decent work and economic growth

9. Industry, innovation, and infrastructure
10. Reduced inequalities
11. Sustainable cities and communities
12. Responsible consumption and production
13. Climate action
14. Life below water
15. Life on land
16. Peace, justice, and strong institutions
17. Partnerships for the goals

(iii) Considering the areas indicated in the items above, projects that address:

- Process simplification
- Cost reduction
- Real-time analysis
- Remote monitoring
- Low energy consumption
- Use of Artificial Intelligence techniques

b) Group Members' Data; and

c) Group Identification and History.

1.5.1.3 Group registration is conducted through the **JEMS platform**.

1.5.1.4 Each student may register in only one single group.

1.5.1.5. Each submission will be evaluated by a committee composed of professors and professionals active in the field, to be defined by the Commission, based on the following criteria:

Criterion	Points	Description
Originality of the proposal	20	Degree of innovation and differentiation compared to existing solutions; creativity in the use of the platform.
Adequacy to the proposed areas and aspects	15	Alignment with the SDGs and technical aspects (embedded AI, low power consumption, monitoring, real-time, etc.).
Clarity and quality of the system specification	20	Detailed requirements, initial diagram, operating plan, and technical justification.
Implementation and validation plan	15	Schedule structure, test metrics, and development feasibility.

Criterion	Points	Description
Technical complexity level	15	Degree of technical challenge compatible with the use of the platform, sensors, algorithms, and integrations.
Potential for execution within the competition deadline	15	Technical risk, predictability, and completeness of the planning.

1.5.1.6. The Committee will select up to 20 (twenty) submissions with the highest scores to participate in the next phases of the competition. **The selected groups will be announced in July 2026 on the event website**.

1.5.2 **Second Phase:**

1.5.2.1 All groups selected for this phase will receive a basic kit containing a BigDog Lab development board and a USB power cable for the development of their projects. **The boards will be sent in July 2026**, once the groups provide the necessary shipping information.

1.5.2.2. **Groups must submit a partial report in Portuguese on the project's development, as well as a video showing the project's progress, by October 27, 2026**, via the event website. Delays will result in the group's disqualification from the competition and the mandatory return of the provided board to the committee. The partial report and video must follow the content and formatting guidelines available on the competition website.

1.5.2.3. The committee will analyze the reports, and groups that have completed 80% (eighty percent) or more of the project development will be approved for the final phase. **The list of approved groups will be published on the website starting November 3, 2026**.

1.5.3. Final Phase:

1.5.3.1 **Groups approved for this phase will have until November 17, 2026**, to submit the final Project report, which must consist of the following documents/artifacts:

a) **Complete Report**: The report must be in English and follow the template available on the website. The report must include: (i) declaration of originality, (ii) title, (iii) abstract (following the attached template and containing up to 250 words), (iv) keywords, (v) system block diagram, (vi) functions and implementation, (vii) test plans, (viii) validation and analysis of results, and (ix) references. The report must be up to 20 (twenty) pages, including cover and references, in A4 format, with margins of 3 cm (top and left) and 2 cm (bottom and right). Titles and subtitles must be in Arial 12, bold, left-aligned with 1.5 line spacing. The body text must be in Arial 10, justified, with 1.5 line spacing. The report must be submitted in PDF format via JEMS

b) **Proof of Enrollment**: A document from the university proving that the group members are regularly enrolled students. This can be a letter signed by the department head or digital

copies of enrollment proof for the current semester, showing the academic registration number, student name, and enrolled subjects, with the coordinator's stamp and signature or digital authentication.

1.5.3.2. **All groups participating in the final phase must present at SBESC 2026, which will be held from November 24 to 27, 2026. Registration and travel costs for the event must be covered directly by the group.**

1.5.3.3. After the submission of the final project report and the presentations at the event, a selected panel of judges, consisting of at least 03 (three) members from research institutions, educational institutions, or industry companies, will elect the winners for prizes to be announced on the event website.

1.5.3.4. Groups will only be considered eligible for awards if they:

a) Present during the event under the conditions described in section 1.5.3.2, represented by at least one registered student who must be duly registered for the event.

b) Have submitted the final project report within the stipulated deadline.

1.5.3.5 Projects classified for the final phase will compete in the following award categories:

a) **Best Project Award**: In this category, the final versions of the projects will be evaluated by an examining board composed of professors or professionals in the field, as defined by the Commission, according to the following criteria:

Criterion	Points	Description
Minimum Viable Product (MVP)	15	The prototype executes the core solution as described in the final report.
Stability and Robustness	10	Stable operation, absence of crashes, and consistent response times.
Data Reliability and Demonstrated Results	10	Results are consistent with what the system promises to measure, detect, or analyze.
Live Testing Demonstration	5	Presentation of practical tests during the demo to validate functionality.
Utilization of Native Platform Resources	10	Effective use of GPIOs, integrated sensors, communication protocols, timers, LEDs, ADCs, PWM, etc.
Embedded Architecture Quality	10	Firmware organization, modularity, correct use of interrupts, drivers, and RTOS (if applicable).
Computational Efficiency	5	Optimized use of memory, processing power, energy, or load reduction techniques.
Integration with External	5	Well-integrated expansions and coherent use

Criterion	Points	Description
Components		of additional sensors/actuators.
Technical Communication & Clarity	10	Mastery of the subject matter; logical and objective technical explanation.
Fluid and Well-Organized Demonstration	5	Clear stages, efficient time management, and a well-conducted practical demo.
Supporting Materials	5	High-quality visual presentation (slides, displays) and organized hardware setup.
Potential Benefit of the Solution	5	Real-world applicability, social impact, or technical significance.
Alignment with the Challenge	5	The final solution delivered effectively meets the goals proposed in the initial registration.

b) **Innovation Excellence Award**: In this category, the three highest-ranked projects nominated for the Best Project Award will compete, evaluated based on the following criteria:

Critério	Pontos	Descrição
Conceptual Innovation	10	Introduces a new approach, model, technique, or an unprecedented use of the platform.
Creativity in Technology Application	10	Combines components, algorithms, sensors, or architectures in a non-trivial way.
Potential Scientific/Technological Advancement	5	Potential to contribute new knowledge or breakthroughs to the field.
Technological Maturity Level	15	Tested and validated solution with robust architecture and a functional demonstration.
Operational Capability in Real-World Environments	5	Functions reliably outside of a controlled laboratory setting.
Technical Scalability	5	Ease of expanding functions, supporting more users, or integrating new modules.
Direct Impact on Target Audience	15	Solves a real, measurable, and relevant problem.
Adherence to Sustainable Development Goals	5	Clearly contributes to one or more UN Sustainable Development Goals.
Quality of Life, Safety, or Efficiency Potential	5	Demonstrable and objective gains in these specific areas.
Market Fit and Demand	5	Clear identification of the user/customer and a proven need for the solution.

Critério	Pontos	Descrição
Viable Business Model	5	Potential for monetization, cost management, economic scalability, and production feasibility.
Entry Barriers and Competitive Advantage	5	Ease of adoption and a clear advantage over existing products or solutions.

1.5.2.6. The winning projects in each category will be announced once the evaluations are completed and before the end of the event; they will also be published on the event website **by November 30, 2025**.

2. AWARDS

2.1 The awards for the winners will be published on the Event Website.

2.2 The prizes will be presented in person during SBESC 2025, on the date specified by the

3. DISQUALIFICATION

In the event of fraud, attempts to circumvent these regulations, or any action that infringes upon the rules described herein, the group will be automatically disqualified from this competition at the discretion of the organizing committee.

Teams disqualified, whether due to delays or failure to submit the reports (partial or final) and the video, must return the development board to the SBC. This requirement also applies to teams disqualified for the reasons mentioned in the previous paragraph.

4. FINAL PROVISIONS / GENERAL GUIDELINES

4.1. The prizes are personal and may not, under any circumstances, be transferred to third parties.

4.2. These regulations may be amended, suspended, or canceled at any time and for any reason. In such cases, the organizing committee will notify the participating groups via the website.

4.3. The competition dates may be modified at the discretion of the organizing committee; any changes will be communicated to the participating groups and updated on the website.

4.4. All doubts and/or questions arising during this Competition must be sent to the organizing committee at the following email address: competicao_sbesc@lisha.ufsc.br

4.5. The regulations for this competition will remain available on the website.

4.6. The judicial district of Porto Alegre, State of Rio Grande do Sul, is hereby designated as the venue for resolving any legal disputes resulting from this competition.

IMPORTANT DATES

Proposal submission: **until June 30, 2026.**

First phase results: starting **July 21, 2026.**

Shipping of basic development kits: **starting July 22, 2026.**

Deadline for partial report and video submission: **October 27, 2026.**

Second phase results: **starting October 27, 2026.**

Deadline for final report submission: **November 17, 2026**.

Final phase (presentation during SBESC 2025): **November 26 to 29, 2026.**