Terms & Conditions

Galileo APP Competition 2018/2019

The European Space Agency in collaboration with the European Global Navigation Satellite Systems Agency (GSA), the European Commission (EC) and with the support of Google is launching a competition open to students from European universities and trainees in post at European Research & Development (R&D) organisations. The aim of the competition is to design, develop and test a real-time position application able to provide a position and time fix by using GNSS raw measurements extracted by a Galileo-enabled smartphone equipped with Android 8.0 operating system (or later version).

The general objectives of the application are to:
   a) allow the user to select the constellations used for navigation, enabling at least Galileo only positioning, GPS only positioning and combined Galileo + GPS positioning simultaneously. The inclusion of other constellations (i.e. GLONASS and BeiDou) is not a mandatory requirement but would be an asset.
   b) allow the user to compute dual frequency positioning solutions and compare them with their respective single frequency solutions.
   c) achieve sub metre accuracy worldwide in open sky condition
   d) provide direct and real-time visualisation on an open source world-wide map of the computed positions
   e) allow the user to log their positions and the raw measurements used to compute such position
   f) demonstrate the quality of the position in the most modern and visual way

The use of GNSS raw measurements in combination of the phone's internal sensors and freely available external corrections (e.g. precise orbit & clock information) is optional.

1 Team Composition

The competition is open to all students from European universities and trainees in post at European R&D organisations at the time of proposal submission.

Teams shall be composed of a minimum of three (3) and a maximum of five (5) members.

Diversity in the composition of the team will be considered an asset and taken into account in the proposal evaluation process.

2 Competition Process

The competition will be organised in three steps:
   • Step 1: Selection of Teams
   • Step 2: App Development
   • Step 3: Competition Final
2.1 Step 1: Selection of Teams

In the first step, each team shall submit a proposal describing the plans for developing the application.

2.1.1 Proposal Requirements

Each team shall submit a proposal no longer than 20 pages including:

- Description of the application proposed to be developed
- Development and test plan, including definition of deliveries at milestones M1, M2 and M3
- Discussion of critical areas
- Technical experience of the team members
- Team organisation

The proposal shall be accompanied by 1-page cover letter summarising the key-points of the proposal.

Proposal shall be submitted via e-mail to Galileo.Services@esa.int by 12th November 2018.

2.1.2 Proposal Evaluation

The proposals will be evaluated by a jury composed by representatives of ESA, GSA, EC and Google.

The main selection criteria for the proposal will be its credibility to arrive to a working application meeting the competition objectives.

Diversity within the team will be taken into account in the selection.

Selected proposals will be invited to proceed to the second step: app development. Teams from the top five (5) selected proposals will receive on loan a state-of-the art dual frequency GNSS smartphone for developing the app.

Each team will be informed on the outcome of their proposal by 26th November 2018.

2.2 Step 2: App Development

During this step, the selected teams will be engaged in the development of the proposed app.

The teams will receive general guidance and technical support during the development phase consisting of:

- On-line tutorials on Android app development, GNSS raw measurements processing
- Mentoring sessions with the Technical Advisory Team
During this step, the teams will be progressively evaluated on their ability to arrive successfully to the Final at the following milestones:

- **M1**: Delivery of a first working version of the app implementing the general concept allowing the evaluation of the look and feel of the app.
- **M2**: Delivery of a second version of the app with around 50% of its functionality already operational and in particular position calculation using GNSS raw measurements.
- **M3**: Delivery of a third version of the app with 100% of its functionality operational and delivery of test results.

The achievement of the milestones will be followed by the Technical Advisory Team.

Following completion of the application development, each team shall provide:

- a short single document containing:
  - description of the application
  - user manual
  - test description and results
- Android Package Kit (APK) for the application
- source code of the application (open source code with no third party license and Intellectual Property Rights)

Teams having successfully completed each of the milestones will be invited to proceed to the Final.

### 2.3 Competition Final

The final presentation and award ceremony will take place at ESA-ESTEC on 18th April 2019.

During this event, each team will present their app to the jury and the public. The Technical Advisory Team will also present the test results of each app.

Live web streaming and on-line voting system will be organised, allowing the public to follow the event and cast the vote.

The awards will comprise of the following:

- 1st, 2nd, 3rd and special prizes to winners selected by the jury panel
- Winning app selected by public vote

### 2.4 Travel Costs

Expenses related with travels required to participate in the competition will be under the responsibility of the participants.
3 Schedule

<table>
<thead>
<tr>
<th>ID</th>
<th>EVENT</th>
<th>DATE</th>
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<tbody>
<tr>
<td>1</td>
<td>Announcement of Competition</td>
<td>24 Sep. 2018</td>
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<td>2</td>
<td>Registration deadline for Information Day</td>
<td>8 Oct. 2018</td>
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<tr>
<td>3</td>
<td>Information Day</td>
<td>16 Oct. 2018</td>
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<td>4</td>
<td>Proposal submission deadline</td>
<td>12 Nov. 2018</td>
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<tr>
<td>5</td>
<td>Announcement of selected teams to proceed to development phase</td>
<td>26 Nov. 2018</td>
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<td>6</td>
<td>App Development Milestone 1 (M1)</td>
<td>15 Jan. 2019</td>
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<td>7</td>
<td>App Development Milestone (M2)</td>
<td>28 Feb. 2019</td>
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<td>8</td>
<td>App Development Milestone (M3)</td>
<td>31 Mar. 2019</td>
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<tr>
<td>9</td>
<td>Competition Final at ESA-ESTEC (with live web streaming and on-line voting)</td>
<td>18 Apr. 2019</td>
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4 Prizes

Teams completing the development phase and entering in the final will be able to keep the smartphone under their property.

Each member of the teams will receive a certificate of participation.

The winners of the competition will receive the following prizes:

- **1\textsuperscript{st} prize of the jury**: 1 place for each team member to participate to the ESA/JRC International Summerschool on GNSS 2019 in Portugal (including travel costs) and 1\textsuperscript{st} prize certificate.
- **2\textsuperscript{nd} prize of the jury**: 1 place for participation to the ESA/JRC International Summerschool on GNSS 2019 in Portugal (including travel costs) and 2\textsuperscript{nd} prize certificate
- **3\textsuperscript{rd} prize of the jury**: 3\textsuperscript{rd} prize certificate
- **Special prizes for most innovative app**: up to €1,000 award
- **Winner of the public vote**: Special gadgets and goodies

Information on the 2018 programme held in Austria is available at [https://www.esa-jrc-summerschool.org](https://www.esa-jrc-summerschool.org)

5 Galileo App Utilisation

Demonstration of the winning app will be filmed and used for promotion purposes. The app is also intended to be made available for download free of charge.

**Interested to participate? Join us on-line or at ESA-ESTEC for the information day 16\textsuperscript{th} October 2018. Register via e-mail to Galileo.Services@esa.int by 8\textsuperscript{th} October 2018. We look forward to your most innovative ideas!**