

# Random Power (RaP!) Hackathon Rules

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## Application



Applications to the Random Power Hackathon should be sent by email to [hackathon@randompower.eu](mailto:hackathon@randompower.eu) by **October 25<sup>th</sup>, 2020 @ 23:59**.

*If you feel more comfortable, fill in the application form at:*

[https://docs.google.com/forms/d/e/1FAIpQLSctMC2XcPlx9\\_Q6gopDGC4Xh4op\\_bVS1oxas5pvB8xeVNazaA/viewform](https://docs.google.com/forms/d/e/1FAIpQLSctMC2XcPlx9_Q6gopDGC4Xh4op_bVS1oxas5pvB8xeVNazaA/viewform)

but send anyway a conformation email at the address specified above.

The application should contain two documents (PDF or Docx):

- A. A description of your team, expertise, c.v. and any other information you think may be useful to assess your motivation to participate;
- B. A short project description (not exceeding one A4 page, 11 point font, single line spacing).

**Out of all the applicants, 15 teams will be selected to participate to the second phase, that will take place remotely on 28&30<sup>th</sup> October 2020. The selected teams will be notified by October 26<sup>rd</sup> at the latest.** During the event, the teams will have access to the random bit stream produced by the Random Power platform and develop their own project, qualify it, show the achieved performance outlining, if relevant, the advantages connected to the use of RaP.

## Team



Your team can be made of a single person or by a maximum of 3 people. Team member age range is 18-30 years; undergraduate and graduate students are welcome, as well as teams from companies, start-ups and friends. A document in PDF or Docx (see point A, section “Application”) containing a short description of the team must include:

- Team's name and reference person contacts;
- Name, family name and age of all team members;
- Work/study position of all team members;

- Brief description of each team member (5 to 10 lines each).

## Project



The project description should not exceed 1 page (A4 Page, 11 point font, single line spacing) and should address:

- The topic;
- The unmet need(s), if any;
- How your idea answers the question: ***“What will you do with a pocket-size quantum random number generator?”***;

The topic is free for you to choose. Here there are a few suggestions about topics that can be addressed:

- An efficient algorithm for prime number extraction from bit sequences;
- Random seed generation for cryptographic algorithms;
- Homomorphic Full Encryption protocol with Quantum Random Number Generator;
- Image &/or data obfuscation with a matrix of random bits;
- Random bits & gaming;
- Efficient simulations, AI & Neural network training algorithms that make use of random numbers;
- Embedding in the Unix kernel the random power bits as an entropy source;
- Create a mobile application that makes use of Random Number to encrypt data/ communication
- Encryption of Databases
- Identity verification and privacy enforcement

Consider these as nothing but suggestions but be creative, this is what matters most!

## Selection of the teams admitted to the final round



The selection will be announced on October 23<sup>rd</sup>, following the evaluation by a board composed of referees from the Random Power Project partners and supporting companies and institutions. A maximum score of 100 points will be assigned, 30 points max. for the team and 70 max. for the project. A minimum of 75 points is required to be admitted to the Final.

## Hackathon schedule



### October 28<sup>th</sup>:

- **9:30 am:** Welcome address, introduction to the event, presentation by Massimo Caccia, Principal Investigator of the Random Power project
- **11:00 am: competition starts!**
- **1:00 pm luncheon speech:** A collaborative model of industry and fundamental research, Luigi Ruggerone, Trend Analysis and Applied Research - Intesa Sanpaolo Innovation Center
- **5:00 pm tea-time speech: self-presentation of the competing teams + highlight of the submitted proposal**
- **7:30 pm: recap, Q&A, end-of-the-day message**

### October 29<sup>th</sup>:

- **9:30 am: Breakfast address**
- **11:00 am: coffee-time speech:** The Role of Randomness in Cryptography - Marco Macchetti – Nagra-Kudelski group
- **1:00 pm luncheon speech:** Privacy Preserving Techniques and correlated randomness, Dimitar Jetchev, CTO, INPHER
- **5:00 pm tea-time speech:** Not all random generators are created equal: why the quality of randomness is crucial for applications, Elias Combarro, University of Oviedo (Spain) and CERN openlab collaborator
- **7:30 pm: recap, Q&A, end-of-the-day message**

### October 30<sup>th</sup>:

- **9:30 am: Breakfast address**
- **12:00 am competition ends!**
- **1:00-3:00 pm presentation by the teams – 10' allocated to each team**
- **5:00 pm: announcement of the top 3 teams, celebration & farewell**

## Other useful information



### Communication with the organisers

*During the day (9:30 am to 7:30 pm) the teams will have a direct access to the organizers through a dedicated channel*

### Registration

*The selected teams will be asked to register on a dedicated INDICO web page*

### Privacy Statement

YOUR DATA WILL BE KEPT CONFIDENTIAL AND NOT TRANSFERRED TO THIRD PARTIES.

BY SUBMITTING THE EMAIL TO THE HACKATHON SELECTION PROCESS, YOU AGREE THAT YOUR DATA WILL BE READ AND USED BY THE RANDOM POWER PROJECT

CONSORTIUM PARTNERS TO CONTACT YOU AND TO WRITE YOU EMAILS TO ORGANISE THE FINALS.

THE DATA OF THE WINNERS WILL BE SAVED FOR 5 YEARS TO GUARANTEE AUDIT ON RANDOM POWER PROJECT TO EUROPEAN COMMISSION OR ATTRACT-EU MEMBERS. NON- WINNERS DATA WILL BE DELETED THE DAY AFTER THE COMPETITION

## ***Intellectual property issues***

### *Original ideas for fundamental societal challenges*

You have been selected to join the Random Power Hackathon because of your ability to think creatively, originally and independently. Therefore, we expect all participants to use and present material of which they are the author, or otherwise to credit the original author and respect his/her rights. If you are employed, we also expect you to make sure that you have the permission of your employer to contribute to the Random Power Hackathon.

**In other words:** by participating in the Random Power Hackathon, you represent and warrant the following: you will not present or use content that is copyrighted, protected by trade secret or otherwise subject to third party intellectual property rights or other proprietary rights unless you are the owner of such rights or have permission from their rightful owner to present or use the content. We recommend using only third party works that are licensed through an open source (for software), open hardware (for electronics) or creative commons license (for all other works).

### *Hackathon participation – a win-win situation*

You as participant (or your employee if applicable) should remain the owner of all works you create during the Random Power Hackathon. If you are employed, please do make sure you respect your terms of employment vis-à-vis your employer in terms of ownership and declaration of intellectual property. The only thing we ask you in return is to allow us to use your works for non-commercial and promotional purposes, such as campaigns for future hackathons. An event of this kind can only grow and prosper if we can all show the world the benefits of such an event, in particular the concrete and real results achieved in 3 days of hard work.

**In other words:** All submissions to and creations during the Random Power Hackathon remain the intellectual property of the individuals or organizations that developed them. By registering for the Random Power Hackathon, entering a submission and creating works during event, however, the participant agrees that the organizers and the partners receive an irrevocable, nonexclusive, royalty-free license to use, distribute to the public, and publicly display and perform such submission and works for non-commercial and promotional purposes.

### *Expecting the unexpected*

The unique and interdisciplinary setting of a hackathon provides a fertile ground for new endeavours: it is not rare for a new product or business to see the light after such an event.

The Random Power team will gladly provide initial informal advice to teams during and after the event, to the extent that resources allow, on how to transform new ideas into real-world solutions and you might be offered the opportunity to enter the team!

# RANDOM POWER

## Random Power Hackathon organisers & supporters



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