

# Supranational LLC

## FPGA Competition

### Official Rules and Disclosures

**ENTRY CONSTITUTES YOUR ACCEPTANCE OF THESE OFFICIAL RULES**

**NO PURCHASE IS NECESSARY TO ENTER OR WIN**

**VOID WHERE PROHIBITED**

#### *Competition Sponsor*

Supranational LLC, Boston, Massachusetts (hello@supranational.net) (the “**Sponsor**”).

#### *Competition Description*

The competition (the “**Competition**”) is a skill contest that seeks to advance the development of more environmentally friendly, scalable, and cost effective blockchains using the Sponsor’s verifiable delay function (“**VDF**”), a proof of time protocol and primitive for cryptographic protocols, approach. In the Competition, individual or team contestants (each, a “**Contestant**”) compete to create implementations of the Sponsor’s VDF algorithm with the goal of optimizing the algorithm’s latency. At the start of the Competition, the Sponsor will make available its VDF algorithm as the benchmark for speed and the technical specifications of the reference hardware on which the implementations will be run for judging purposes at <https://github.com/supranational/vdf-fpga>. Contestants will produce code and the documentation described below to submit as a readme file to a GitHub repository for their Competition entry. The Competition is to submit the fastest VDF implementation targeting the AWS F1 FPGA platform. There will be two rounds in the competition, Round 1 and Round 2. There will be one winner for each round, and a prize will be awarded to each of the two winners. A Contestant can submit code to either or both rounds of the Competition. If a Contestant submits their code to both rounds, and if the submission wins both rounds, that Contestant will receive both prizes. Winning code and documentation will be published and all submissions may be made public. All source code and documentation in a submission related to the Competition must be in the public domain, or made and submitted pursuant to Version 2.0 of the Apache License established by the Apache Software Foundation (the “**Apache License**”).

### ***Compliance with Competition Rules***

Each individual who participates in any way in the creation of any of the elements of work product produced for inclusion with, or incorporation into, any Entry (defined below) in the Competition, whether or not any or all of such elements are ultimately submitted as part of an Entry, is a Contestant under these Official Rules and Disclosures (“**Rules**”). Each Contestant agrees to these Rules; acknowledges that any submissions relating to the Competition may be made available to the public; affirms that they have read and understand the terms of the Apache License.

Each Contestant represents and warrants that all source code and documentation included in any Entry is in the public domain, or incorporates elements which are used pursuant to the Apache License. If a Contestant is younger than 18 years old, or the age of majority in the jurisdiction in which they reside, a parent or guardian must consent to the minor’s participation and these Rules, as well as complete all required Competition documentation and communications. These Rules form a binding legal agreement between each Contestant and the Sponsor with respect to the Competition. You may not participate in the Competition or be considered for a Prize unless you consent to these Rules.

### ***Eligibility Requirements***

The Competition is open to legal residents of the 50 United States, the District of Columbia, and other territories worldwide except for residents of Cuba, the Crimea territory, Iran, North Korea, Quebec (Canada), Syria; residents of any country or state where participation is illegal, prohibited, restricted or subject to tax or registration under applicable local laws; and any person who is subject to sanctions, blocking or other denial lists under U.S. law, including, but not limited to, persons on the US Treasury Department’s list of Specially Designated Nationals and Blocked Persons. Contestants may work individually or in teams (a “**Team Contestant**”). Contestants must be legally able to enter a contract in the jurisdiction where they reside and the US, if not a US resident. Individuals who have not reached the age of majority in the jurisdiction in which they reside may only participate as part of a Contestant comprised of a team of two or more individuals that has at least one member (which may be the Contestant’s parent or guardian) who has reached the age of majority. Employees, contractors, interns, officers, directors, agents or other representatives of Sponsor or of any of its parent companies, subsidiaries, or affiliates, including all members of their immediate families and persons living in the same household with them, whether or not related, are not eligible to participate as a Contestant or win the Competition, and may not provide any technical or financial support to any

Contestant, except as otherwise provided in these Rules. Immediate family members include spouse, parent, child, sibling, including step-parents, children, siblings, half siblings, legal guardians and all of their respective spouses, regardless of where they reside.

### ***How to Enter the Competition***

In order to enter the Competition, each individual or team Contestant must complete the following actions by the End Date listed below: (1) Click on the “Entry Form” link located at <https://github.com/supranational/vdf-fpga> and fully and accurately complete the Competition entry form (“**Entry Form**”) by providing your legal first and last names, street address, city, zip or similar code, telephone number, email address, and agreement to these Competition Rules; and (2) Submit the completed Entry Form by email, along with the source code and documentation meeting the Entry Specifications described below (collectively, such source code and documentation is referred to as the “**Technical Submission**”), to [hello@supranational.net](mailto:hello@supranational.net). The Sponsor may, in its sole discretion, establish a private github.com repository as an alternative for sharing code that is part of an Entry. The Entry Form and Technical Submission together are considered a Contestant’s entry into the Competition (“**Entry**”). An Entry is not complete, may be rejected or returned to a Contestant by the Sponsor, and will not be considered for any Prize if any component of an Entry is missing. If an Entry is submitted by a Team Contestant, each individual member of the team must complete the Entry Form as described above, and all members of the must designate on their individual Entry Form the same point of contact to receive official Competition correspondence. A Contestant may submit a scanned or copy of the Entry Form, but must provide an original of the Entry Form(s) to the Sponsor in the event that the Contestant is named a winner in the Competition.

### ***Entry Period***

**Round 1:** The reference VDF and the specifications for the hardware on which the source code submitted in each Entry will be run will be released on or before 17:00 Eastern Daylight Saving Time (EDT) on August 8, 2019. This will start Round 1 of the Competition. Contestants may submit their Entries at any time after Sponsor releases the updated Competition technical documentation, VDF and reference hardware requirements as described in the section below titled “Communications During Competition” below, and at or before 11:59:59 p.m. EDT on September 30, 2019. Participants are responsible for determining the corresponding time zone in their respective jurisdictions. The Sponsor’s computer system is the official timekeeping device with respect to all matters relating to the Competition.

**Round 2:** The baseline for Round 2 will be released on or before 17:00 Eastern Daylight Saving Time (EDT) on October 16, 2019. This will start Round 2 of the contest. Contestants may submit

their Entries at any time after Sponsor releases the updated Competition baseline as described in the section below titled “Communications During Competition” below, and at or before 11:59:59 p.m. EDT on December 31, 2019. Participants are responsible for determining the corresponding time zone in their respective jurisdictions. The Sponsor’s computer system is the official timekeeping device with respect to all matters relating to the Competition.

### ***Cost of Entry***

The submission of an Entry is free of charge, and Contestants are not required to make any purchases from the Sponsor or any other party, in order to submit an Entry.

### ***Entry Limits***

There is no limit to the number of Entries one Contestant may submit. For example, an individual can submit one Entry individually and another Entry as a member of a Team Contestant. However, each those two Entries would be considered completely separately, as if each Entry were submitted by unrelated Contestants. Elements of the documentation or implementation cannot be duplicated or incorporated by reference in multiple Entries. Each Entry must meet all of the Entry Specifications and submission due dates on its own.

### ***Technical Submission Entry Specifications***

Entries that do not meet the following specifications (the “**Entry Specifications**”) will not be eligible to be judged and will not be considered for any prize:

1. The Technical Submission submitted as part of an Entry must be in the public domain, or made and submitted pursuant to the terms of the Apache License. The Apache License and instructions for applying it can be found here: <https://www.apache.org/licenses/LICENSE-2.0>.
2. The Competition is to submit the fastest VDF implementation targeting the AWS F1 FPGA platform. The object of the Competition is produce code that will solve a VDF at a given number of iterations, bitwidths, and moduli on the reference hardware. The repeated squarings VDF must be used, but the Sponsor does not require computation of a proof, and only the speed of computation of the output will be judged. The VDF must be computed in the RSA setting, and output the same as the Sponsor’s sample code found at <https://github.com/supranational/vdf-fpga>. The judging criteria will be provided at the start date of each round of the Competition. Any revisions will be announced on the Github readme.md at least 2 months before the end of the Competition.
3. The Contestant, or each member of a Team Contestant, must certify that the entire

Technical Submission incorporates content that is in the public domain or covered by an Apache License and that the Contestant has all legal rights necessary to grant the license granted in subsection (1) above.

4, Each Entry must be submitted with a Readme file that completes the Entry Form and describes in English the methods used in the software component of the Technical Submission.

5. To provide a uniform platform for fairly judging all Entries, each Entry must run on the reference hardware without modification to that hardware or reliance on anything external to the hardware other than code submitted in the Entry. Therefore, actions such as upping the clock speed of the machine, having it make a request from an external machine, hacking the machine so it does not do a fresh install when reinstallation is attempted and all similar behaviors are prohibited. Similarly, snooping around on raw disk access to find traces of other Contestants; hacking into, spying on or otherwise gaining access to another Contestant's Entry materials; and all similar behaviors are prohibited.

### ***Contestant Disqualification***

Sponsor reserves the right to disqualify any Contestant that it believes has violated these Rules, is not eligible to participate in the Contest, has provided false information, has acted in a harassing, illegal or unethical manner with respect to the Sponsor or any other Contestant, or has tampered with the fair operation or administration of the Competition.

### ***Sponsor's Decisions Final***

Sponsor's decisions as to all issues related to the Contest, including eligibility, shall be final.

### ***Communications With Contestants During Competition***

Round 1: On approximately August 8, 2019, Sponsor will release updated Competition technical documentation, VDF and reference hardware requirements, if any.

Round 2: On approximately October 16, 2019, Sponsor will release and updated latency baseline upon which the Round 2 prizes will be measured against and awarded.

In addition, beginning on the Start Date and ending on December 31, 2019, Contestants may submit questions about the competition to the Sponsor by sending an email to the Sponsor at [hello@supranational.net](mailto:hello@supranational.net). Sponsor will review all questions received and if Sponsor, in its sole discretion, determines that providing a response to the question would benefit the administration or enhance the outcome of the Competition, the Sponsor will post the pertinent information via

Github. In posting this information, Sponsor will make all efforts to not identify the Contestant who asked the question and may, in its sole discretion, provide both the question and response, or simply the response, rephrase the question or combine multiple questions into a single response. Contestants are responsible for consulting the Github identified above periodically for updates and responses to questions. Sponsor is not responsible for providing any additional notice of information published. All documentation posted by Sponsor, including responses to questions or other information, to the Github will be automatically incorporated into and made a part of these Official Rules and become binding on all Contestants. Sponsor reserves the right to request from those Contestants who submit questions, including all members of a Team Contestant, identifying information such as name, address, country of regular residence or similar for purposes of verifying compliance with the eligibility requirements, prior to accepting or responding to any questions.

### ***Sponsor Resources***

Sponsor may offer all Contestants additional resources which may include tool licenses, server access, or other resources to facilitate the Contestants participation (“**Offered Resources**”). The Contestant is not required to accept or use such Offered Resources, and such Offered Resources, whether accepted or not by the Contestant, will not change the judging criteria applied. Contestant may be required to sign agreements (NDA, limitation of use, etc) in order to receive such Offered Resources. In addition, the Sponsor reserves the right to monitor Contestant’s use of any Offered Resources to ensure such Offered Resources are used for the intended purpose. In the case of server access, the Sponsor will retain access to login and may inspect or copy files, inspect jobs, etc. to ensure proper usage.

### ***Judges and Judging***

In the Competition, code must be produced that will solve a VDF at a given number of iterations on the reference hardware. The repeated squarings VDF must be used, but the Sponsor does not require computation of a proof, and only the speed of computation of the output will be judged. The VDF must be computed using the settings provided, and must output the same as the Sponsor’s sample code. The number of iterations and judging criteria will be provided on the Start Date. Any revisions will be announced on the Github identified above. The Sponsor will run all submitted Entries on the reference hardware and the Contestant or Team Contestant in each round whose Entry correctly completes the iterations the fastest will be declared the Proposed Winner in that track.

The judges’ decision will be final.

### ***Prizes to be Awarded; Ties***

A prize will be awarded in each of the two rounds. Each round will have one winner and the winner will be rewarded based on their performance against the baseline performance set for that round. The baseline for the first round is 48 nanoseconds and the baseline for the second round will be determined before the start of that round. The participant with the lowest latency in each round will be declared the winner for that round. There is maximum of \$100,000 in prizes total for both rounds. In Round 1, the winner will receive \$3,000 per nanosecond reduction in the baseline latency, up to a maximum of \$100,000. In Round 2, the winner will receive a \$5,000 award for each nanosecond reduction in the baseline up to the amount remaining from the \$100,000 maximum prize pool, less the Round 1 awards. If the same Entry is declared the winner (the “**Winner**”) in both rounds, that Contestant or Team Contestant will be declared the Winner of both the Track One Prize and the Track Two Prize. In the unlikely event of a tie for any prize, that prize will be divided by the number of tied Contestants or Team Contestants, with each Contestant or Team Contestant receiving a pro rata share. Each prize is expressed in US Dollars and net of any taxes Sponsor may be required by law to withhold. Prizes will be paid in bitcoin or other cash equivalent at Sponsor’s discretion. No other cash alternatives or alternative prizes of any description will be awarded. In the event that a Team Contestant is declared a Winner of any prize, that prize will be awarded in equal portions to each member of the Team Contestant as reflected in the Entry Forms timely submitted, regardless of their role in creating the Entry. In the event any Winner or member of a winning Team Contestant has not reached the age of majority in the jurisdiction where he/she resides, the prize, or that member’s portion of it, will be awarded to their parent or legal guardian, who must complete the steps identified below to claim the prize or portion of it. WINNER(S) ARE RESPONSIBLE FOR ALL TAXES, TARIFFS, STAMPS, DUTIES, RESTRICTIONS AND LIMITATIONS ON THE PRIZE AWARDED. Winning Contestants, and each member of a winning Team Contestant, must supply the Sponsor with all information and documentation requested by Sponsor, including but not limited to a Social Security or other Tax Identification Number and government issued photo identification (passport for non-US citizens), for purposes of Contestant identification, due diligence, and legal compliance, including all state, local and federal tax reporting, withholding and filing requirements. Non-compliance will result in forfeiture of the prize awarded to the non-compliant Winner.

### ***Winner Notification and Announcement***

The Contestant declared a Winner will be notified via the email address on the Entry Form. Upon notification, the Contestant and each member of a Team Contestant Winner must complete and return to Sponsor an Affidavit of Eligibility and Publicity Release within five (5) days. Upon

fulfillment of these requirements, the Contestant will be definitively declared the Winner of the prize for which they were notified, and Sponsor will announce the Winner's identity (or pseudonym) on Sponsor social media. Personal data other than the name of the Winner, will not be released, unless consented to by the Winner (see the section below title "Privacy"). The date of the award announcement shall constitute the award date. In the event that the prize notification email is returned or undeliverable, Sponsor is unable to contact a Winner, or a Winner does not comply with the requirements of the prize notification email during the timeframes provided or is otherwise disqualified under these Rules, Sponsor will declare a new Winner of the prize, following all the judging and notification procedures described above. By accepting a prize, the Winner and every member of the Team Contestant Winner grants its permission (except where prohibited by law) to the use of Contestant's name and Prize won for future advertising and publicity in any form, media or technology now known or later developed, for any lawful commercial purpose, throughout the world in perpetuity, without additional compensation, notification or permission. By accepting a prize, the Winner and each member of Team Contestant Winner agrees to release, discharge and hold harmless the Sponsor from any claims, losses, or damages arising out of the Competition or the acceptance or use, misuse or possession of the prize awarded to the Winner.

### ***Prize Delivery***

In the event any Winner or any member of a Team Contestant Winner is subject to or is the subject of any order or legal process issued by any US governmental agency having jurisdiction over the affairs of the Winner or Team Contestant member (i.e. garnishment, child support order, judgment, lien, and the like), the Sponsor's delivery of the prize or Team Contestant's portion of the prize to the official representative of the governmental entity claiming a right to the prize shall be thus deemed as the Sponsor's awarding the prize to the Winner or Team Contestant Winner member. The Sponsor shall be entitled to rely in good faith, upon any documents presented by the representative seeking to collect the prize in lieu of the Winner or member of the winning Team Contestant. The Sponsor shall not be liable for any claim for damages incidental thereto.

### ***Estimated Numerical Odds of Winning***

The odds of winning a prize will depend on the number of Contestants and the skill of the Contestants.

### ***Privacy***

Personal data provided to Sponsor during the Competition, including name, age, mailing address,



and phone number, as well as information provided on affidavits of eligibility and releases of liability and publicity, including government issued identity documents and social security or other tax identification information, is being collected specifically for purposes of administration of the Competition and complying with legal processes/regulatory requirements such as tax reporting and recordkeeping, and for the purposes set out in the affidavits/releases with respect to publicity. Personal data will be retained and accessed only by those Sponsor employees who have a legitimate business interest in accessing the data or a legal right to do so. This personal data will be transferred into the United States. You affirmatively consent to the transmission, processing, and storage of this personal data in the United States, and acknowledge that you have the right to inquire as to how it is being processed, except how the Entry is judged, and may do so by making such a request in writing to: [hello@supranational.net](mailto:hello@supranational.net). However, personal data will only be released to the public if consented to by the Winner.

### ***Limitation of the Sponsor Liability; Termination***

The Competition is void where prohibited by law or subject to registration or tax and is subject to all applicable US federal, state and local laws and regulations. Sponsor is not responsible for, and by participating, each Contestant releases the Sponsor from, any liability, claims, losses, and damages arising out of or relating to their participation in this Competition or the acceptance, use, misuse, or possession of any prize received in this Competition. Sponsor is not responsible for any problems related to technical malfunctions of electronic equipment, computer online systems, servers, or providers, computer hardware or software failures, phone lines, network traffic, congestion on the internet or any website, unauthorized intervention, telecommunication miscommunication or failure, unavailability of any website or platform, and failed, lost, delayed, incomplete, garbled, or misdirected communications which may limit a person's ability to participate in the Competition in any way. Sponsor is not responsible for any other errors or malfunctions of any kind, whether network, printing, typographical, human or otherwise relating to or in connection with the Competition, including, without limitation, errors or malfunctions which may occur in connection with the administration of the Competition, the announcement of any Winner, or in any Competition-related materials. Sponsor reserves the right to modify, suspend, cancel or terminate without the award of any prizes the Competition in the event Sponsor in its sole discretion determines that it cannot operate as intended, including due to any legal obligation, dispute, act of God, war or civil unrest, infection by computer virus, hacking or other technical impairment. Sponsor further reserves the right to cancel or suspend the Competition in its entirety should tampering, unauthorized intervention, fraud, technical failures or other causes corrupt the administration, security, fairness, integrity or proper administration of the Competition and, if terminated, at Sponsor's discretion, determine the Winner(s) using all non-suspect, eligible Entries received up to time of cancellation using the procedures outlined above.

### ***No Offer or Contract of Employment***

Each Contestant and each member of a Team Contestant agrees that their participation in the Competition and any Entry submitted is voluntary, and not in confidence or trust; that no confidential, fiduciary, agency or other relationship or implied in fact contract exists between the Contestant and the Sponsor nor is any created by the Contestant's participation in the Competition; that under no circumstances will participation in the Competition, submission of an Entry into the Competition, selection as a winner or anything in these Rules be construed as an offer or contract of employment with Sponsor, and that no Entry constitutes a work for hire.

### ***Dispute Resolution***

The Sponsor shall be the sole arbiter of the Competition and the interpreter of these Rules, including as to eligibility. Its decisions shall be final. Entry into the Competition constitutes agreement by Contestants to abide by these Rules, as well as any other rules established by the Sponsor. The Sponsor reserves the right to disqualify any Contestant if any of the Rules are violated in any way. The Sponsor reserves the right to refuse awarding any prize to a person who is determined to have violated any Rule as outlined above, to be ineligible to enter, to have gained unfair advantage in participating in the Competition, or obtained a winner status using fraudulent means. Except where prohibited by law, any action arising out of or relating to this Competition or these Official Rules shall be resolved individually and exclusively by final and binding arbitration administered by the American Arbitration Association ("AAA") and conducted before a single arbitrator, all pursuant to the AAA Commercial Arbitration Rules as supplemented by AAA's Supplementary Procedures for Consumer-Related Disputes (collectively, the "AAA Rules"). If brought by a US resident, the arbitration shall be held at a location in the state in which you live. If brought by a non-US resident, the arbitration shall be held in the state where Sponsor is located. There shall be no authority for any claims to be arbitrated (or otherwise disputed) on a class or representative basis; arbitration can only decide Sponsor's and your individual claims and the arbitration may not consolidate or join the claims of other persons or parties who may be similarly situated. ANY AND ALL DISPUTES, CLAIMS AND CAUSES OF ACTION ARISING OUT OF OR CONNECTED WITH THE GIVEAWAY, OR ANYTHING AWARDED IN CONNECTION WITH THE GIVEAWAY, WILL BE RESOLVED INDIVIDUALLY, WITHOUT RESORT TO ANY FORM OF CLASS ACTION. ANY RIGHT TO A TRIAL BY JURY IS HEREBY WAIVED. Notwithstanding anything to the contrary in these Rules, for US residents, if the amount in dispute arising out of or relating to this Competition or these Rules is less than the jurisdictional maximum of a small claims court applicable in the US state in which the Contestant bringing the claim lives, the Contestant may bring an action in such small claims court for such dispute, which will be in lieu of arbitration or

an action in any other court.

***Applicable Forum and Governing Law***

The validity, enforcement, interpretation, and performance of these Rules and the Competition itself shall be governed by the laws of the Commonwealth of Massachusetts, United States of America, excluding all conflict of law rules. If any provisions of the Rules are held to be invalid or unenforceable, all remaining provisions hereof will remain in full force and effect, unless and until Sponsor determines that such invalidity or unenforceability warrants termination of the Competition. To the extent permitted by law, all participants, without or not they ultimately become Entrants expressly waive any and all rights to litigate or seek any other recourse to judicial or any other procedure in case of disputes or claims resulting from or in connection with these Rules and the Competition.