

Info / Guidelines

The Internet Society seeks to improve the quality of people's lives in all parts of the world by providing them meaningful access to an open, secure, trusted and globally-connected Internet. According to [Internet Society 2017 Global Internet Report](#) security will be the most pressing challenge of the next decade, and IoT will play a critical role in it.

[The Internet of Things \(IoT\)](#) promises to change the way we live for the better. Projections for the impact of IoT on the Internet and the global economy are impressive, forecasting explosive growth in the number of IoT devices and their use in a wide variety of new and exciting applications. According to one estimate, "connected devices will number 38.5 billion in 2020, up from 13.4 billion in 2015."

We invite all our chapters members to participate on 2018 Chapterthon and work together to make our increasingly connected world a safer place.

What is a Chapterthon?

Chapterthon is a global Internet Society (ISOC) Chapters marathon, where all ISOC Chapters can participate by developing a project within a timeline and budget to achieve a common goal for the development of Internet. Once the project is finalized, the best project receives a prize.

For 2018, the topic is Internet of Things (IoT) – The future is ours to shape.

Project shall fit in one of the following categories:

- Consumer awareness and education campaigns on Internet of Things (IoT) in general and IoT Security in particular to inform the consumers what IoT is, why it is important to keep it secure.
- Advocacy Program for policymakers to encourage them to take an active role in guiding the IoT marketplace and strengthening protection for consumers.
- **Promotion of the [OTA IoT Trust Framework](#) that requires a shared responsibility including industry (Manufacturers and retailers) embracing security and privacy by design and adopt responsible privacy practices to protect the Internet and consumers from cyber threats.**
- **Develop a smart IoT solutions, be aware of the program timeline (1,5 months to complete it).**
- Creation of videos in local languages for all the above.

Funding

- Each project will receive funding up to 2,000.00 USD and applicants will have **1.5 months** to carry out the project.
- At the end of the project, applicants must present a **3 minute video** that includes project specifics and the **benefits for the school**.
- In order to select a winner, all videos will be shared with the Internet Society members' community for voting.

- The best project will receive an award of **3,000 USD**.

Who can participate?

The Chapterthon is open to all **ISOC Chapter members**. In the first phase, members must contact the Chapter board to share their ideas. Each Chapter board will decide which project will represent them in the competition.

Only one project can be presented per Chapter.

Project Eligibility Criteria

All project proposals must follow the Internet Society [Beyond the Net common criteria requirements](#).

Specific Requirements for Chapterthon Projects

1. All projects should be related to the topic and sub-topics selected for the Chapterthon.
2. The program will allow just one (1) project per Chapter. This means if we receive different projects from the same Chapter, just one of them will be able to participate. In these cases, we will send the competing projects to the Chapter board and they will choose which project will represent them.
3. Participants should finish the project according to provided deadlines. Projects that do not meet these deadlines cannot participate in the contest.
4. Participants cannot ask for extensions of deadlines.
5. Participants that do not provide or send video and reporting on time, will not be able to compete for the prize. (See deadlines in the table below in this document).
6. The project can be carried out in collaboration or in partnership with another local organization.
7. Negative campaigning against other projects is prohibited. Any team participating in negative campaigning will be disqualified.

How to participate?

Phase one: All Chapter members

1. Think about a project that fits under the topics above. (Download the [Proposal form](#) to start thinking about your application.)
 2. Contact other Chapter members and form a team.
 3. Make sure the community you want to help wants to join you in the project.
 4. Think about local sponsorship.
 5. Send your project idea and an estimated budget to the Chapter board.
- You may refer to the [Chapter list](#) to find your Chapter board contact details.

If your Project is selected by the Chapter board:

1. Define with the board members the role they will play in the project.
2. Complete the Online Application Form via Zoomgrants (below).

Note that all funding related to the project will be wired to the Chapter bank account. Funds will not in any case be wired to individual members.

We strongly recommend you review the following tutorials before applying:

- [How to plan a project](#)
- [How to write a grant proposal](#)
- [Answer the questions in this form](#) to help create your proposal

[Apply via ZoomGrants\(tm\)](#)

Applications can be submitted from 20 June to 10 August 2018.

Answers to the questions in the ZoomGrants form can be submitted in English, French, and Spanish.

A ZoomGrants tutorial [can be downloaded here](#) (PDF).

As part of the evaluation process, be ready to provide any additional information about your application.

General Guidelines

- Applications must be aligned with the Internet Society's [values and principles](#) and should address at least one of the Internet Society's strategic objectives;
- Applications from Chapters/SIG's must be the result of teamwork. The role of each chapter member must be clearly described in the application.
- Applications must demonstrate the ability of the Chapter/SIG team to effectively manage a project and the different activities related to it; budget, timeline, outcomes, challenges, monitoring, reporting etc.
- Sponsorships or co-funding (in-cash or in-kind) from other entities or local organizations is not mandatory but considered a positive point to your proposal. Any extra support should be indicated on the budget section of the application form.
- Projects may not be a commercial endeavor subject to taxation.
- Applicants are required to carefully evaluate projects costs and provide a complete and accurate budget on how the funding will be spent. Follow guidelines on each programme application form.
- Project Budget indirect costs, for medium and large grants shall not exceed 15% of the total grant amount.
- All reports from any previously granted Internet Society funding, must have been duly submitted and approved by the respective department.
- Only Applications received online via the [ZoomGrants platform](#) will be considered.
- The Internet Society has defined the terms and conditions for the release of grant funds, to comply with US regulations, a grant agreement will be issued by Internet Society and must be signed by one of the members of the Chapter Board. The grant agreement is not valid without an ISOC signature.
- Applicants are recommended to review the [terms and conditions](#) of the grant agreement prior to submitting an application.

- If selected, grantees must agree to give the Internet Society credit as follows when making public statements about the project – “This project was made possible in part through a donation from the Internet Society” and include the official Internet Society logo with such statement.
- The Chapter and/or project leader(s) must agree to share the knowledge, experience and outcomes with the Internet Society community at large and must indicate how it plans to do so.

Questions

3. Project Title

The title should be short and attractive while describing the project meaning. Use your imagination and keep it simple.

Maximum characters: 255.

Open IoT mesh routing: Decentralizing long-range packet radio networks

4. Project Team

List Chapter /SIG members involved in the project, their expertise and role in the project. The project team should be composed of a minimum of 3 Chapter /SIG members. Please indicate their email and membership ID.

Maximum characters: 1500.

Grant Gallo, grant@peoplesopen.net #199817

Grant is a firmware developer and hardware prototyper for the Disaster Radio Project. He has a degree in Electrical Engineering from Cleveland State University and has more than five years experience in technical support. He has also extensive experience with wireless network technologies and has contributed to community network projects. He will be the lead developer for this project.

Jenny Ryan - jenny@peoplesopen.net #779171

Jenny works on administrative, social and documentarian support for humanitarian endeavors around access, equity and justice. She's a former academic with a background in ethnographic and communication studies. Core projects in line with deep-hearted values include building community spaces such as Sudo Room and Omni Commons, and developing decentralized alternative infrastructure such as People's Open Network and disaster.radio.

Marc Juul - isoc@juul.io - #588001

Marc is a software developer on the Disaster.Radio project. He has 5 years of experience working on community wireless networks in the SF Bay Area and 10 years experience starting and running community technology spaces in Copenhagen, Denmark and Oakland, CA. Marc hold's engineering degrees in IT and Biotechnology from the Technical University of Denmark.

He will be acting in an advisory role, reviewing documentation and code and providing feedback,

5. Project Location

Indicate the name of the community or institution where the project will be implemented and why you have chosen it.

Sudo Mesh holds events, meetings, and stores equipment in Sudo Room, a hackerspace in Oakland, California that resides in and has shared ownership over the Omni Commons, a building composed of a collective of collectives working on shared projects and collective stewardship of commons-based resources. Omni is home to dozens of community groups and organizations who collaborate on projects and campaigns relevant to our livelihoods, shared struggles, and future utopias.

6. Project Summary

Describe in no more than 20 lines of text, what the project is about, the problem it will solve and how you will do it.

Maximum characters: 1000.

Disaster.Radio is a project dedicated to enabling communication in real-time disaster scenarios using solar-powered long-range low-bandwidth radios that continue to function after the power-grid goes down and are entirely open source and open hardware.

Recently, long-range packet radios such as GoTenna have become more popular and technologies such as LoRa have made multi-mile long-range low-power links feasible at low cost. There is increasing interest in decentralized networks using such packet radios - yet no open mesh routing protocols exist that are suitable to the unique constraints of such networks. Currently, Disaster.Radio nodes have only very basic relaying where all nodes repeat all packets. The goal of this project is to develop a simple mesh routing algorithm optimized for very low-bandwidth omnidirectional packet radios (a few kilobits per second), with small maximum packet sizes, that relays packets only when needed for delivery of packets to target nodes.

You can learn more about the Disaster.Radio project on <https://disaster.radio/>

7. Project Goals and Objectives

To help you create measurable, tangible and realistic objectives, you may review the [“How to Plan a Project” presentation](#)

Maximum characters: 1500.

We will design a mesh routing algorithm suitable for Disaster.Radio and similar hardware as previously described:

1. The first milestone will be a write-up of the proposed algorithm and reasoning for design parameters.
2. The second milestone will be an implementation of the algorithm on the physical Disaster.Radio hardware. This will be a very simple mesh-routing algorithm since it will be designed to operate on single-radio nodes with omni-directional antennas, meaning that the every routing decision is the reduced to a binary choice: Should the node repeat the packet or not.
3. After the end of the ~1 months timeline the next step will be field-testing on Disaster.Radio hardware deployed around Oakland and Berkeley.

8. Project Timeline

List the key tasks or activities needed to successfully implement the project. Please consider marathon deadlines, remember that you have a little more than a month complete the project.

Maximum characters: 1500.

- Deadline at 1.5 weeks: Design and write up a description of the proposed minimal mesh routing algorithm;
- Deadline at project end: Implement the mesh routing algorithm on Disaster.Radio hardware.

9. Project Impact on IoT

Describe how the project will benefit the community and contribute for the development of IoT security and privacy awareness.

Maximum characters: 1500.

As long-range protocols like LoRa become increasingly popular there will be increased demand for decentralized protocols that don't involve central points of failure such as with star-topology networks like LoRaWAN-based The Things Network. There is currently a lack of open mesh routing protocols for very simple long-range low-bandwidth packet radios. The GoTenna products implement a protocol similar to what we propose and have been gaining adoption but these are unfortunately using a proprietary secret protocol.

We believe the Internet should be implemented using open standards that allow anyone to create interoperable hardware and software. Open standards have been a big part of the success of the Internet, so why should the Internet of Things be any different?

Designing communications protocols and mesh routing algorithms is a difficult and involved problem, but these very low-bandwidth radios that implement only OSI Layer 1 and have APIs consisting of "pick a channel and a transmission speed and hand me some bytes" are simple enough that a single person can realistically design and implement a proof of concept in ~1

month. We're hoping that this work can be demonstrated in the field and inspire both continued development and other similar efforts.

10. Project Risks

List any potential risks that may interfere on the project roll-out and how you plan to overcome it.

Maximum characters: 1500.

Designing a mesh routing algorithm, even a very simple one, will almost certainly require multiple iterations of testing and modification. We're unlikely to have time for more than one cycle during the ~1 month period but plan to continue work on a volunteer basis after the end of the project period. Another

Since many IoT are low-power devices operating on battery or solar there is the risk that a mesh algorithm will be too power-hungry since all radios will need to be constantly receiving (when they are not sending) in order to receive packets that need to be relayed. This could be a significant power draw compared to the deep-sleep mode that client device can often utilize in more traditional star topology IoT networks where only servers/gateways need to be receiving at all times. We've looked up the power draw of reception and transmission of a few popular packet radios and while the power draw will be greater than what could be achieved in a non-meshing topology we still believe there are many scenarios where the benefits outweigh the increased power requirements, e.g. easy of deployment, cost reduction (gateway nodes are usually more expensive) and ability for the network to dynamically adapt to topology changes.

11. Project Sponsors

Describe any sponsorship, donors, funding, institutional or in-kind support that you have collected outside ISOC resources.

Maximum characters:

1500.

The Disaster.Radio project has in over the past few months received the following donations, though none are earmarked specifically for the development of this mesh routing protocol.

Private Donor	\$2500	August 2018
Institute for the Future	\$5000	July 2018
Peace & Life Foundation	\$1000	June 2018

12. Measuring the Project Success and Impact

The project success is directly in line with its objectives. Make sure your goals are measurable and tell us how you plan to measure your success.

Maximum characters: 1500.

- We will test the mesh routing algorithm on the Disaster.Radio hardware in a lab setup, and if time permits in nodes deployed across multiple miles in Oakland, CA. We will look at total network bandwidth usage and reliability of packet delivery as compared to a naive flooding protocol (every node re-transmits each packet). If performance is better than the naive approach that is one measure of success.
- Another measure of success is whether we manage to attract collaborators in the form of either open source developers or other projects willing to port test the protocol on different hardware and software platforms.

13. Chapter Visibility

Describe how the project will contribute to the Chapter/SIG visibility and development in the region or globally.

Maximum characters:

1500.

We are in active conversation with communities and institutions across the globe who are eager to deploy disaster.radio networks for a wide variety of use cases, including fire evacuation safety, lost hikers and pets, community garden monitoring, and emergency communications and mapping. Current collaboration possibilities are under discussion with project organizations in Toronto, CA; Argentina; Seattle, Washington; Nigeria; Brazil; and elsewhere.

Most recently we handed out more than 50 Disaster.Radio development kits at the Internet Archive's Decentralized Web Conference and held a free follow-up un-conference at our headquarters the following weekend where ISOC stickers were handed out alongside Disaster.Radio equipment.

Other Projects Sponsors and Revenues (if any)

List potential project sponsors (do not include ISOC funding here), which may include in-kind donations or funding. Note that you are not accountable to ISOC on these funds, but they support your overall application.

For in-kind donations you can enter the estimated value, for e.g. training location value - 300.00USD, Video sponsors 250.00 USD etc.

Here are some future funding opportunities. We're one of the seven finalists in the Mozilla WINS Challenge and have already produced the first 50 Disaster.Radio hardware development kits.

<i>Item Description</i>	<i>Amount (USD)</i>	<i>In-Kind Value (USD)</i>
Mozilla Foundation WINS Challenge Award	\$50,000 - \$400,000	
Educational Kit Sales	\$100,000	
Storage and Meeting Space - Sudo Room		\$2,500
<i>TOTAL</i>	<i>\$150 - \$450,000</i>	<i>\$2,500</i>

Internet Society Funding ONLY

List ONLY expenses to be covered by this ISOC funding; e.g professional services, equipment, transportation if any etc. You can use some funds for making the video but they should be minimal.

<i>Item Description</i>	<i>No. of Items (if applicable)</i>	<i>Amount (USD)</i>
Professional Services: Engineer	1	\$1800
Professional Services: Administrative	1	\$200
<i>Total</i>		<i>\$2000</i>

Budget Narrative (Discuss/justify the items and amounts you entered above.)

In this section include any complementary information that helps the selection committee understand your budget.

Maximum characters: 65000.

We have long sustained this project on volunteer energy and charitable donations. However, to further the evolution of alternative networks, we seek to create an equitable system for individual self-sustainability and community resilience. To this end, we're seeking grants and collaborations for funding individuals working to sustain the project.

Given the additional time and labor needed to set up our nonprofit to administer and support contract employees, we've also allocated a small portion of the grant fund to provide a stipend for our Treasurer.

Additional Documents

* Bank Account and nonprofit infoz - Jenny will handle