

The Tor Project develops and distributes the world's strongest privacy and anonymity software, a key tool for consumers to avoid ubiquitous surveillance. We are grateful for the support in our work to help consumers access a free, private tool to browse the internet and through which they can avoid pervasive tracking online. We're happy to share more of our accomplishments during 2018 below:

***Goal: Developing a more robust browser for use on Android mobile devices***

This year with your support, we released Tor Browser for Android (alpha)<sup>1</sup> and it is currently available in the Google Play Store.<sup>2</sup> So far, ~1.4M people have downloaded the browser and 3,272 people have reviewed it. More mobile consumers are able to easily avoid tracking and invasive advertising profiles with this tool, and we look forward to releasing the stable version in 2019.

“It's great to be on the ground floor of what is the future of browsers. When you build a house, you start with a good foundation. That's what you have done here...” - Greg Oehring, Google Play Store review.

“Very nice. Thanks! Start[ing] not to use Chrome, so much ads and tracking going on!” - AJ T, Google Play Store review.

***Goal: rewriting our user interface to make it more user friendly***

We also released Tor Browser 8.0 for desktop during this grant cycle. With your help, we made great strides in improving this tool's usability. Tor Browser 8.0 comes with a series of improvements that address a set of long-term, user-reported issues.<sup>3</sup> We believe that making Tor Browser easier to use means that more people, no matter their circumstance or technical skill level, will be able to use this tool.

User feedback about these usability changes has been positive, for example: “I'm noticing significant UX and client smoothness, which goes a long way towards me being able to realistically tell people to just route everything through [Tor] by default,” and “I remember back when it was [called] the Tor Browser Bundle and wasn't very well integrated. So much has changed for the better.”

Wired called this version of Tor Browser “easier than ever.”<sup>4</sup>

***Goal: modifying the Tor network codebase to encourage third-party developers to integrate Tor into their apps***

We continue to build relationships with other projects and organizations who share our privacy goals; we also continue to make improvements that make Tor easier for developers to adopt and integrate into their tools.

This year, we made important changes like decreasing the memory load, CPU load, battery usage, and binary size of Core Tor. All of these improvements benefit mobile applications that use Tor, like Open Observatory of Network Interference (OONI) Probe (an application that collects data on internet

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<sup>1</sup> <https://blog.torproject.org/new-alpha-release-tor-browser-android>

<sup>2</sup> [https://play.google.com/store/apps/details?id=org.torproject.torbrowser\\_alpha&hl=en\\_US&showAllReviews=true](https://play.google.com/store/apps/details?id=org.torproject.torbrowser_alpha&hl=en_US&showAllReviews=true)

<sup>3</sup> <https://blog.torproject.org/new-release-tor-browser-80>

<sup>4</sup> <https://www.wired.com/story/tor-anonymity-easier-than-ever/>

mentorship), Briar (a secure, encrypted chat app), Orbot (a tool that routes your mobile app traffic through the Tor network), and OnionBrowser (an iOS web browser that routes traffic through the Tor network).

An example of third parties integrating Tor into their application is Brave, an ad-blocking web browser, releasing a beta version of Private Tabs with Tor. This feature routes Brave web activity over the Tor network and gives them the privacy protections that only the Tor network can offer.

***Goal: providing additional metrics to researchers and others interested in Tor usage***

Data collected and publicly catalogued on our metrics.torproject.org portal continued to be utilized by researchers during the grant period. Google Scholar counts 77 publications citing Tor Metrics in 2018.<sup>5</sup> One example of a study that cites data from the metrics portal is “Inside Job: Applying Traffic Analysis to Measure Tor from Within,” which explored traffic analysis attacks on the Tor network and was conducted out of the U.S. Naval Research Laboratory.<sup>6</sup> Another metrics resource was released this year: Onion Weather. This resource can help developers and researchers learn more about Tor network’s health around the world by country.<sup>7</sup>

***Goal: encouraging the addition of more relays to improve the capacity and reliability of the Tor network***

With the increased demand for better privacy online, Tor’s technology is being adopted by big commercial solutions like Brave and CloudFlare, so they can provide a solution that meets the demands of their customers and users. We believe that the tendency is to have other commercial solutions doing the same, and we want to be able to scale our network to meet this demand.

To incorporate more user traffic on our network, we need to support our Tor relay operators community. These volunteer-run services form the backbone of the Tor network and are used to pass traffic through the network, allowing millions of people to communicate privately. More relays make the Tor network faster, stronger, and more decentralized. We have updated and simplified our guide to running a Tor relay so that more volunteers can get involved; we also hired a full-time relay advocate to organize meetups and provide technical support to this important group.

***Goal: continuing our work organizing the Tor open-source community of contributors and creating training materials for use in trainings in the U.S. and around the world***

With your help, we have expanded our Community and User Experience teams. These teams meet with users, partners, volunteers, and community members and conduct trainings and user testing throughout the world. This year, we visited Colombia, Kenya, and Uganda with our user testing program; finalized our new support.torproject.org portal; and have put extensive work into the community.torproject.org portal, which will host more training materials and support our outreach work. Both portals will be launched soon and will help us connect more easily with our community.

Additionally, we hosted our first Tor development meeting in the Global South this year in Mexico City, Mexico. We organized meetups and sessions with local Tor users; volunteers; and open source, activist,

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<sup>5</sup> [https://scholar.google.co.uk/scholar?as\\_ylo=2018&q=%22tor+metrics%22&hl=en&as\\_sdt=0,5](https://scholar.google.co.uk/scholar?as_ylo=2018&q=%22tor+metrics%22&hl=en&as_sdt=0,5)

<sup>6</sup> <https://www.robjansen.com/publications/insidejob-ndss2018.pdf>

<sup>7</sup> <http://labs.ooni.io/projects/vanilla-tor>

and tech community members. We're excited to continue building relationships with individuals and organizations in Mexico and throughout the Global South.

**Describe any unanticipated outcomes, challenges, or other changes that occurred during the project's duration.**

We could not complete two of our goals:

- 1. Porting additional operating systems to a sandbox, which permits Tor network use in a truly anonymous environment*
- 2. Investigating how to make the Tor network even more secure in a world of quantum computing*

These goals were quite ambitious, but are very important security features to protect our users. Porting an additional operating systems to a sandbox is extremely hard work, and we discovered that we will need to hire a specialist whose time is fully dedicated to sandboxing in order to accomplish this goal. We did carry out discussions with the Mozilla Firefox team at their All Hands meetings and our Dev Meetings about the challenges related to this work. We learned that it is important to be more realistic with goals that demand us to add new skills to our team.

The Tor Project is in a growing phase, and we are hiring a lot of people who add new skills to our teams, and are still looking for the right person with this particular skill so we can achieve this goal. This process can take a long time as it involves our current developers to build code exercises and other types of evaluations for candidates.

A similar issue happened with the second goal. We started to research and build some experimental code related to creating better defenses for a quantum computing type of attack. Our Network team had some personnel changes that forced us to re-prioritize of some of our goals. And this goal was sent to the bottom of the list because it demanded some specialized cryptography work.

These personnel changes and needs impacted our plans, but we managed to reorganize our priorities and achieve most of our goals for 2018.

**Include any lessons learned and/or any advice for other organizations facing similar circumstances.**

In a landscape where tech tools often use invasive tactics to collect user data in the name of improving usability and user experience, the Tor Project uses a unique approach. We follow ethical standards related to user data that prioritize user privacy. Our process of combining security training with user feedback sessions, as well as integrating our UX team with our development teams, has served as an example of how to implement an end-to-end process for usability of privacy and security tools. Our work is inspiring other projects to apply good practices of usability and prioritizing privacy in their development processes, and we hope that more organizations will do the same.

**Briefly describe any other significant work your org performed during this grant period, context for how this grant fits into the rest of the organization's work.**

This year brought exciting changes: our new Executive Director, Isabela Bagueros, officially stepped into her role after our previous ED retired and moved on to Tor's Board of Directors. In support of this new direction, we have prioritized diversifying our funding and hired a talented group of fundraising and administrative professionals. This allows us to increase our stability and sustainability.

Every day, the Tor Project is developing and refining Tor software in response to changes in technology and user behavior. The goal is for Tor to remain the world's strongest privacy software and to put this usable tool into the hands of as many people as possible.