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# Tor Project

Progress Report Q3 2017 - S-LMAQM-17-GR-1121

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# Project Information

<b>Grantee:</b>	The Tor Project, Inc.
<b>Project Title:</b>	Tor Browser for Android
<b>Award Number</b>	S-LMAQM-17-GR-1121
<b>Period of performance:</b>	Q3 of the year - July 31st 2017 - September 30th 2017
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## Summary

These first two months of the project we focused on:

1. Setting up our teams development environment
2. Setting up of tests such as recruit of testers volunteers from target countries and set up testing environments
3. Start to collect numbers to build baseline for our Indicators
4. Collected needs from our stakeholders to better guide the prioritization of our tasks

Objective 1: Build a Tor Browser for Android to empower mobile users to safely, anonymously, and securely interact with Internet resources and services.

**ACTIVITY 01.1: BUILD A TOR BROWSER FOR ANDROID WITH FUNCTIONALITY AND BUILD PROCESSES IN PARITY WITH DESKTOP TOR BROWSER.**

**ACTIVITY 01.2: RESEARCH AND DEVELOP ANDROID SPECIFIC FINGERPRITING DEFENSES FOR TOR BROWSER.**

**ACTIVITY 01.3: WORK WITH MOZILLA TO MERGE AND BUILT DEFENSES BACK INTO FIREFOX MOBILE**

**Progress Report:**

For this report we are writing a single note for all the activities above. During August and September we were finishing the hiring process for Tor Browser for Android developer position.

Although we were still hiring the team we did some work related to building the baseline for Indicators we will use to report our success on some of these activities. All the baselines can be found at our Indicators reports documents [*Indicator Tracking Table - Q3 2017 report.xls* | *Indicators - complementary information.pdf*].

**Risk Assessment:**

The hiring process taking this long is a risk because forced us to start late with our timeline and have to readjust it. But we are happy to invest the necessary time in selecting the best candidates.

We have already updated the timeline for these activities, we submitted this updated version together as part of our submission of our Modularization proposal. We are including a copy of that file with this report for your review.

**Next Report [Q4 2018]:**

For the next report we hope to have the team with a development environment set and tasks assigned to developers.

We also hope to have all of Orfox backlog migrated to our issue tracker system.

**Objective 2: Specifically Build a Tor Browser for Android to empower mobile users to safely, anonymously, and securely interact with Internet resources and services.**

## ACTIVITY 02.1: ENABLE STANDALONE USE OF TOR BROWSER FOR ANDROID WITHOUT SEPARATE ORBOT INSTALLATION

## ACTIVITY 02.2: IMPROVE USABILITY OF TOR BROWSER FOR ANDROID, RELATIVE TO ORFOX, INCLUDING ANTI-CENSORSHIP BRIDGES.

**Note: Same update that we had for other Tor Browser for Android tasks. Working on hiring the rest of the team and build baseline for our Indicators.**

## ACTIVITY 02.3: IMPROVE SOFTWARE AND TOR NETWORK ARCHITECTURE TO IMPROVE USABILITY FOR LOW-SPEED NETWORKS AND LOW-POWER, LOW-RAM DEVICES.

### Progress Report:

Main goal for this period was to get ourselves set up to test our Android development environment, one of our set ups was a Tor instance where we can send events from the Android Java interface to Tor via orbot.

We started investigating how to use this development environment to test our work and collect metrics that can help us measure any improvements created by our work. We also documented timed events<sup>1</sup> that our code calls to, and used that to start testing how their minimization can affect our measurements related to CPU improvements.

For instance, while investigating how to do this we were able to perform the following test: To use a Tor process with Orbot where we limited the amount of timed events that is triggered.

Another part of our work within this activity hopes to improve bandwidth speed for users who has slow-speed networks. The Indicator we choose to measure our improvements in this area is by measuring how long it takes to load a binary file of 2MB over Tor network.

We managed to get volunteers from all countries we are targeting for this project (Colombia, India, Kenya, Nigeria) to perform a test for us during September. You can find more information about these tests at our Indicators reports attached [files: *Indicator Tracking Table - Q3 2017 report.xls* | *Indicators - complementary information.pdf*].

We also performed a survey with mobile apps developers to collect their needs related to this area and their sense of prioritization of what should be addressed first. We received responses from OONI<sup>2</sup> and Briar<sup>3</sup> projects so far.

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<sup>1</sup>[https://www.google.com/url?q=https://gist.githubusercontent.com/ahf/4f7776a47e9a84bcf6b83d0152c81d81/raw/871897d7bb166e4c791a4239cdd53763268f6cab/gistfile1.txt&sa=D&ust=1509990653079000&usg=AFQjCNGr4QWhscD1rrm\\_z6ZHWGfWtUzOGA](https://www.google.com/url?q=https://gist.githubusercontent.com/ahf/4f7776a47e9a84bcf6b83d0152c81d81/raw/871897d7bb166e4c791a4239cdd53763268f6cab/gistfile1.txt&sa=D&ust=1509990653079000&usg=AFQjCNGr4QWhscD1rrm_z6ZHWGfWtUzOGA)

<sup>2</sup> OONI Survey Answers.pdf file attached to this report

<sup>3</sup> Briar Survey Answers.pdf file attached to this report

### **Risks Assessments:**

Is clear that how to measure if our work has improved or not these conditions will depend on a strong relationship with our Internet Freedom mobile apps developers. We have already started to create this relationship through our surveys, it will be fundamental for our project to continue building it. Otherwise we will face strong risks of not knowing if what we are doing is useful or not.

Learning curve - going through the development environment setup was something we knew would take some time. To avoid the risk of having a other developers going through the same pain we are documenting it so is easier for others.

### **Next Report [Q4 2017]:**

For next quarter we hope to start implementing some of the changes that can address the problems reported to us by OONI, Guardian Project / Orbot, Briar and Onion Browser teams. We are meeting with almost all of them face to face at our Tor Meeting in Montreal and hope to work tasks prioritization together.

We also want to continue to improve how we are measuring bandwidth speed improvements, we want to improve the UI for our testers and maybe even get it done through OONI tests and get the support of their network to do these tests.

We might spend some time next quarter planning a ‘hackfest’ gathering with some mobile developers, this might help a lot with features implementation and testing.

### **ACTIVITY 02.4: IMPROVE THE TOR NETWORK’S CONTROLLER INTERFACE TO ALLOW MOBILE APPS TO REDUCE BANDWIDTH AND BATTERY USE.**

#### **Progress Report:**

Our priority for the first months of this project was to collect needs from our stakeholders by conducting a survey with mobile apps developers.

We collected these requirements through surveys as well as face to face and online meetings with stakeholders.

Based on the information we got, we decide to prioritize the creation of an API for devs to use Tor in their apps:

- Ticket: **Make it easier for mobile app developers to embed tor<sup>4</sup>** - this work will benefit iOS and Android developers. We hope to have some of these tasks already done by next quarter report.

We also organized our tasks related to implementation of new designs that can allow a better

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<sup>4</sup> <https://trac.torproject.org/projects/tor/ticket/23684>

controller interface for battery<sup>5</sup> usage and bandwidth<sup>6</sup> control.

### **Risks Assessments:**

Things seems to be moving fine with this phase of the project. The risks we are assessing at the moment are very similar to the ones related with the other Network team activities. Since we are working on such lower layer of the stack, we need the collaboration of our stakeholders to know where to be more effective and learn if our efforts are having any impact or not. Establishing this at the beginning of the project will definitely influence at our success at the end.

### **Next Report [Q4 2017]:**

Work on “**Make it easier for mobile app developers to embed tor<sup>7</sup>**” children tickets.

Continue to work on new design documents for control interface for enhanced battery awareness on Android and bandwidth control port interface for Android.

## **ACTIVITY 02.5: ENABLE BETTER REPORTING OF NETWORK AND CONNECTION ERRORS TO APPS THAT USE TOR NETWORK**

### **Progress Report:**

For these first months of the project we worked with a set of stakeholders on collecting requirements from them so we could better prioritize these requests and address as many as possible.

We collected these requirements through surveys as well as face to face and online meetings with stakeholders.

We are also in direct conversations with some of these stakeholders and are still waiting on survey answers from Guardian Project (for Orbot) and Onion Browser (iOS).

Since OONI doesn't have Tor integrated in their app, they couldn't give us direct feedback on this topic but offered to review what we build in the future and give us feedback.

The requirements received from Briar<sup>8</sup> developer is very similar to the ones we have collected from the Tor Browser team<sup>9</sup>, which also wishes for more automatic ways to detected network access problems (to local wifi or to the Tor network) so their app can better troubleshoot what to do for the user.

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<sup>5</sup> <https://bugs.torproject.org/24107>

<sup>6</sup> <https://bugs.torproject.org/24108>

<sup>7</sup> <https://trac.torproject.org/projects/tor/ticket/23684>

<sup>8</sup> Briar Survey Answers.pdf file attached to this report

<sup>9</sup> <https://pad.riseup.net/p/tor-client-progress>

We are following the discussions regarding the experience the Tor Browser<sup>10</sup> and UX teams are planning on building<sup>11</sup>, to learn how to better support their needs. Added some commentary about bootstrap progress reporting details at ticket #22266<sup>12</sup>.

### **Risks Assessments:**

For this phase of the project, our main risks are:

1. Understand the experience the Tor Browser team and UX team wants to build
2. 'Open a can of worms' - in other words, get overwhelmed with the work needed to meet the requests because of the actual conditions of things, demanding long and complex code refactoring.
3. Prioritization - how to prioritize and make all stakeholders happy. By checking with a diverse set of apps developers will help us make sure we are prioritizing what benefits the most the Internet Freedom community. A risk here is that we don't address everything the community is asking for due to limitations of this project and that could leave people unhappy. Good communication is essential to manage people's expectations.

### **Next Report [Q4 2017]:**

Continue to work with Tor Browser and UX teams on bootstrap messages. Sync with stakeholders on any other task that should be prioritize and is not covered by the work we are doing with the Tor Browser team.

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<sup>10</sup> <https://gitweb.torproject.org/tor-launcher.git/plain/README-BOOTSTRAP>

<sup>11</sup> Tor Launcher Progress Bar Success and Errors Brief [draft]:  
<https://docs.google.com/document/d/1jZNFYXzii7A6gCTJtvpO-PAO-WNZa2RuEEXYJwxC-BA/edit>

<sup>12</sup> <https://trac.torproject.org/projects/tor/ticket/22266>