OKTHANKS
OKTHANKS.COM

# MAGIC WORMHOLE

*A clever way to send files easily and securely*

**USER RESEARCH INSIGHTS**


*Prepared by*
**OKTHANKS**

*Made possible by*
**OPEN TECHNOLOGY FUND**

*In partnership with*
**LEAST AUTHORITY**

> ***The fact is that it's really hard to transfer large files... it's always a bit of a challenge, right, and this makes it so much easier...***
>
> **— Digital Security Consultant,** *India*

## CONTENTS


**Introduction** *7*
**Methodology** *8*
**Focus** *10*
**Key Points** *18*
**User Personas** *20*
- Anh
- Dorje
- Myat
- Samer

**Additional Findings** *38*
- Speed
- Device Support

**Deployment** *40*
**Conclusion** *42*
**Thank You** *47*
**References** *48*



*For inquiries about this research, contact carrie@okthanks.com.*

*We set out to explore...*

## HOW MAGIC WORMHOLE CAN BRING ABOUT INTERNET FREEDOM

In multiple countries of the world, sharing certain photos, videos and documents can be risky. The goal of the research for Magic Wormhole was to match the secure file transfer technology with potential user communities living in highly censored and surveiled parts of the world. We spoke with 12 individuals from 6 countries in an effort to understand how the technology is relevant and could be used in various contexts.

This report serves to provide the Least Authority team with findings from our research, personas that represent use cases, and information to inform the development roadmap for Magic Wormhole.

# METHODOLOGY

We divided the project into two phases. Phase one focused on creating a list of potential use cases, where the Magic Wormhole technology might be of use. We compiled secondary research findings and existing report information into a list of 26 speculative use cases, then leveraged a set of factors to help define the focus.

## FACTORS

- Level of censorship
- How well the technology fit the needs of the potential use cases
- Availability of a partner organization
- Relevance of the case
- Likelihood of impact
- Interest from the team

*From the 26 cases outlined, we agreed on five cases to learn more about.*

## CASES

1. A case for human rights defenders safely documenting violations in Indonesia
2. A case for researchers preserving culture and history in Syria
3. A case for women gaining access to restricted educational material in Iraq
4. A case for bloggers sending their stories to friends for publishing in Vietnam
5. A case for reporting military abuses against religious minority groups in Myanmar

In phase two, we sought to hear from partners on the ground. Our aim was to learn from the communities themselves about their current methods for sending files and to discover how the Magic Wormhole technology may or may not align with the goals, objectives and behaviors of people fighting for humans rights and internet freedom. Some of the focus communities changed from the original five cases depending on the availability of partners we could speak with on the ground. In the end, we interviewed 12 people over encrypted Zoom video calls.

***This report shares our findings, and ultimately, begs to answer the question,***

**"IS THERE A CASE FOR THE MAGIC WORMHOLE TECHNOLOGY?"**

# FOCUS

WE CONDUCTED

**9**

*interviews*

WITH

**12**

*individuals*

FROM

**6**

*communities.*

# INDIA
## *ranking 138/180*

Dharamsala, India is a popular location for the Tibetan diaspora; a community of Tibetan people who have emigrated from their homeland in Tibet. His Holiness, the 14th Dalai Lama, along with some of his government officials and around 80,000 Tibetans escaped in 1959, fearing persecution from the People's Liberation Army of China. Since 1959, two other waves of exiles have fled Tibet, seeking asylum and safety in India, Nepal, Norway, Canada, Bhutan the U.K., U.S. and others. Many families and friends are divided between the diaspora and Tibet. Communication between those within Tibet and those living in exile can be difficult. China authorities censor and surveil media and conversations on WeChat which they deem threatening. These include topics of human rights, political or land laws, Dalai Lama teachings and sermons, among others. Punishment for those caught engaging in such conversations can include imprisonment, harassment and even death. Nonetheless, maintaining Tibetan culture and traditions are an important part of Tibetan life no matter where you live and many fight for rights and laws which create a more just and free Tibet.

*The information below was gathered through interviews and represents the perspectives of a digital security consultant and human rights defenders in the Tibetan community.*

### PHONES

*Android & iPhone*
- Samsung
- OPPO
- iPhone 5
- iPhone 6
- 16GB, 32GB - internal storage SD cards

### CONNECTIVITY

*Most cities have 4G*
- Bandwidth is not such a problem anymore
- $10 for 3 months unlimited data with unlimited downloads

### SHARING

*Popular file share technologies*
- WeChat
- Google Drive if you are in the diaspora and working for an organization



# IRAQ
## *ranking 160/180*

In ISIS occupied portions of Iraq, the Diwan al-Hisba (Moral Policing Administration) is bound by Islamic or Sharia law and carries out severe punishments and restrictions. Among those most severely abused and limited are women and girls, especially in respect to education, health care and clothing. Internet is often throttled or obstructed. Protests are frequent occurrences, causing poor internet connection, unrest and violence. Iraq remains one of the most dangerous countries for journalists, and the spread of misinformation makes it difficult to build trust and share truth.

*The information below was gathered through interviews and represents the perspective of a digital security trainer in the Iraqi community.*

### PHONES

*50% Android & 50% iPhone*
- Samsung Galaxy Note 8
- Samsung Galaxy Note 9
- Huawei Mate 10
- iPhone 6
- iPhone 7
- iPhone X

### CONNECTIVITY

*Slow internet for uploading and downloading*
- Internet is expensive
- In homes – ~$720/yr for 250-700 KB/sec
- In offices – ~$160,000/yr for 2 MB/sec

### SHARING

*Popular file share technologies*
- Twitter
- WhatsApp
- Facebook
- WeTransfer
- Viber
- WeChat

# MYANMAR
## *ranking 137/180*

It has been over a year since the country of Myanmar carried out genocide against the Muslim Rohingya minority group. The genocide caused a mass exodus of 700,000 refugees. Reports of targeted killings and mass graves are still being uncovered, as the world mourns another ethnic cleansing. According to Reporters without Borders, the northern part of the state has become a black hole for journalists trying to investigate. Media coverage and free speech online are major concerns moving forward as conflict continues and the Kachin and Shan minorities in northeastern Myanmar now face similar atrocities from the Burmese military.

*The information below was gathered through interviews and represents the perspective of a trainer and digital rights activist in the Myanmar community.*

### PHONES

*Mostly Android*
- Vivo
- OPPO

### CONNECTIVITY

*Pretty bad, no wifi infrastructure*
- Most people rely on data rather than using wifi
- Data is expensive
- SIM cards are common
- Organizations use fiber lines

### SHARING

*Popular file share technologies*
- WhatsApp
- Wire
- Signal
- Telegram



# SYRIA
## *ranking 177/180*

Although things in Syria are not as unstable as they were six years ago, much of the country is displaced. Over 400,000 people have died since 2011, and countless others are displaced refugees. The war has created an unsafe environment with destroyed infrastructures and power struggles, resulting in rubbled communities and lives. As people try to rebuild bridges of trust and loyalty within their communities, they seek to share their culture and history with the world.

*The information below was gathered through interviews and represents the perspective of a digital security consultant in the Syrian community.*

### PHONES

*Mostly Android*
- Samsung Galaxy S series
- Huawei p8
- Huawei p9
- iPhone 6 plus
- iPhone 7

### CONNECTIVITY

*Most cities have 3G*
- The government controls the internet

### SHARING

*Popular file share technologies*
- Telegram
- WhatsApp
- YouTube
- Facebook

# VENEZUELA
## *ranking 143/180*

The basic needs of many Venezuelans are not being met. Corruption runs deep and wide within the government and its politicians. Many people are living without water or even food, making each day a fight for life and death. The government controls the internet and is not interested in investing money into better infrastructure. Venezuela is known to have one of the lowest connectivity rates, despite phones being everywhere and data being inexpensive. Venezuela's president, Nicolás Maduro, controls media outlets and keeps a watchful eye on news coverages and protests with no hesitation to censor, intimidate or punish seen opposers of the government. Citizen journalists work hard to report the truth and Venezuela's current affairs with the world.

*The information below was gathered through interviews and represents the perspectives of digital security trainers in the Venezuelan community.*

### PHONES

*Mostly Android*
- Nokia
- Samsung
- Feature phones are common
- Many people don't have money to buy expensive phones

### CONNECTIVITY

*Poor infrastructure, terrible connections*
- Government controlled ISP
- Many phones have LTE
- Data plans aren't too expensive

### SHARING

*Popular file share technologies*
- Twitter
- WhatsApp
- Facebook
- USB
- Email
- WeTransfer



# VIETNAM
## *ranking 175/180*

Vietnam's Communist Party monopolizes all political power and does not allow any challenge. Media is controlled by the Party and those who are seen to publish "anti-state propaganda" (bloggers and journalists) are subject to persecution. Restrictions on basic rights, including freedom of opinion, religion, press, speech and association are harshly enforced. Social media apps and communications are routinely blocked. Even so, and regardless of facing harassment, imprisonment, torture and assault, activists and bloggers are courageously demanding more freedoms and fighting for justice with every word.

*The information below was gathered through interviews and represents the perspectives of a digital rights activist and a digital security trainer in the Vietnamese community.*

### PHONES

*50% Android & 50% iPhone*
- Samsung
- Asus Zen
- iPhone 7
- iPhone 8

### CONNECTIVITY

*3G & 4G in most areas*
- Blocking social media and communication apps is common, but most people are able to circumvent
- Rural areas still have less access to internet
- Mobile broadband increased access to faster internet

### SHARING

*Popular file share technologies*
- WhatsApp
- Wire
- Signal
- Telegram

# KEY POINTS

LISTEN TO THE AUDIO

## USE OF GROUP MESSAGING

*"A lot of organizations have a lot of WhatsApp groups within the organization and actually with people outside of the organization as well. If they just want to show something in the moment they usually use WhatsApp for that."*

– **Digital Security Trainer,** *Venezuela*

**GROUP MESSAGING IS THE #1 WAY TO TRANSFER FILES.**

## CHALLENGES WITH SENDING LARGE FILES

*"We face a lot of issues when we are trying to send securely data to other people. First to send it secure; second, enough space to send larger files; and third thing, there are a lot of ads and logins [you] need to do before you send these files to the other person."*

– **Digital Security Trainer,** *Iraq*



## CONCERN FOR SAFE STORAGE ON DEVICES

*"Storage on devices is quite risky as well. Activists can easily get arrested or pulled into a police station and get their devices taken away... It's something I care about when I send files to my colleagues in Vietnam."*

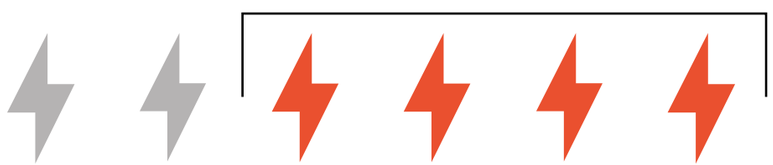
– **Digital Rights Advocate,** *Vietnam*

**4/6 communities expressed concern about safe storage on devices**

**4/6 communities said individuals in their country can be arrested for having evidence on their device**

## POOR INTERNET

**4/6 communities experience poor internet connectivity on a daily basis**



# PERSONAS

Sensitive or non-sensitive, the most common way to send files to other people is through messaging apps, primarily in group chats. However, there are certain situations when Magic Wormhole could provide a better means for sending files, because it can help keep people safe and enable them to easily send large files without being dependent on a third party.

The set of user personas to follow surface cases where Magic Wormhole provides a better alternative than the current method. These personas are told as a narrative of one personified individual, but represent patterns in behaviors and needs that were collected from multiple interviews. On the opposite page is an overview.



## ANH

Anh captures the case of organizations using Google Drive. This case is relevant in multiple countries for organizations and independents working remotely on a shared project or issue.

## DORJE

Dorje captures the case of a small organization receiving info about what's happening within a county. It represents a distinct, culture-specific challenge faced by the Tibetan community. This case also represents a challenge faced by small organizations with limited capacity and resources.

## MYAT

Myat captures the case of individuals documenting atrocities. This case is relevant in locations where individuals get arrested for having evidence on their devices. From the research, these include Iraq, Myanmar, Syria, and Vietnam.

## SAMER

Samer captures the case of individuals sending data to someone to publish when their internet is poor. This case is relevant in locations with poor internet. From the research, these include Iraq, Myanmar and Venezuela.

# ANH

**ORGANIZATIONS USING GOOGLE DRIVE**

LISTEN TO THE AUDIO

*“For my work, on the ground, with Vietnamese activists, we mostly use Google Drive. It’s easy.”*

**— Digital Rights Advocate,** *Vietnam*

As the advocacy director of an international organization, I work with many individuals all over the globe. It is easiest for me to use Google Drive when sending large files because everyone has Google and Google will take anything. It is convenient. I often need to send podcasts, .pdf tutorials and reports. If the file can’t be shared through a messaging app, then I’ll use Google Drive.

### DEVICES

**SENT FROM**

Desktop Computers and Android Phones in Vietnam

**RECEIVED ON**

Desktop Computers in the United States



## SUBSTITUTE FOR SENDING LARGE FILES OR FILE DIRECTORIES OVER GOOGLE DRIVE

*This case is relevant in multiple countries for organizations and independents working remotely on a shared project or issue.*

*Magic Wormhole will have most success as an alternative for* ***Anh*** *if it can afford the following qualities and capabilities:*

### BE EASY TO ADOPT AND USE FOR THE FIRST TIME

Adoption of Magic Wormhole requires everyone to install a new app. Creating an experience that is lightweight and makes it easy to send or receive a file for the first time will make it easier to adopt.

### ALLOWS YOU TO SHARE WITH A GROUP OF PEOPLE

Because so many files are shared among teams and in groups, the use of Magic Wormhole would expand to more scenarios if one could send the same file(s) to multiple people at once.

### INTEGRATE INTO A TEAM’S WORKFLOW

Google Drive is easily accessible by many people, and naturally fits into their email workflow. In addition, it allows people to organize their files collectively. Using Google Drive doesn’t require the user to move the files to another location when they receive them. Magic Wormhole could better integrate into workflows by letting the user indicate where to save files when they receive them.

*“I think it’s all about what is available and what is convenient to use.”*

**— Digital Security Trainer,** *Vietnam*

### BENEFITS

- Information isn’t stored on Google servers*
- Encrypted file sharing of large files and file directories
- Supports media and document sharing
- No login
- No third party

** This is a benefit for someone who does not want to store information on Google Drive. In some cases, having cloud storage is a benefit because it allows people to always have access to their information even if a device gets confiscated.*

# DORJE

**A SMALL ORGANIZATION RECEIVING INFO ABOUT WHAT'S HAPPENING WITHIN A COUNTRY**

LISTEN TO THE AUDIO

*“It’s really difficult to get info outside Tibet... We use WeChat, which is not secure. But we don’t have any other way.”*

**— Digital Security Consultant,** *India*

I live within the diaspora of India and work for a small human rights organization seeking to serve the whole Tibetan community. I communicate a great deal with colleagues and political activists living inside Tibet reporting on human rights offenses. Getting content out of Tibet can be a challenge. The authorities often censor and block messages discussing politics and environmental issues on WeChat, but we have no other communication alternative. As a small organization, we lack safe spaces and tools that are easy to setup and use. Our capacity and resources are limited so we focus on using what we can to send content.

### DEVICES

**SENT FROM**

Android Phones in Tibet

**RECEIVED ON**

Desktop Computers, Android Phones and iPhones in India



## SUBSTITUTE FOR SENDING FILES OVER WECHAT

*This case represents a distinct, culture-specific challenge faced by the Tibetan community. It also represents a global challenge faced by small organizations with limited capacity and resources.*

*Magic Wormhole will have the most success as an alternative for* ***Dorje*** *if it can afford the following qualities and capabilities:*

### BE AVAILABLE IN TIBET

Google Play is not available in Tibet. In addition, any app that mentions encryption is blocked in China. A distribution strategy is needed. We recommend working closely with this community to introduce the app and nurture a trustworthy relationship. This relationship will have a direct impact on the adoption of a new technology.

### BE EXTREMELY EASY TO USE

Many individuals sharing content within this community are low-tech and unaware of digital security. They will use what is in their comfort zone. For a new tool to have a chance at adoption, it must be so easy that its use can become habitual.

### HAVE LANGUAGE SUPPORT

The likelihood of adoption is much greater if the app is localized for Tibetans. Many individuals don’t speak English. In addition, this community is very responsive to things that acknowledge and show appreciation for their culture.

### OPTION TO AUTOMATICALLY DELETE FILES FROM THE DEVICE AFTER SENDING

For individuals living inside Tibet, information that is politically sensitive or honoring the Dalai Lama is considered illegal. When an individual is traveling, it is risky to keep this information on their phone because it could be exposed at a checkpoint. This scenario is most common in parts of the country that are more politically sensitive.

### BENEFITS

- No intermediary upload server
- No login
- Supports media and document sharing
- Encrypted file sharing

*“Tibetans are so used to using WeChat. It’s become very habitual.”*

**— Digital Security Trainer,** *India*

# MYAT

**INDIVIDUALS DOCUMENTING ATROCITIES**

LISTEN TO THE AUDIO

*“They [investigative journalists] were using WhatsApp, and then when they got arrested their devices were confiscated... People could see what they were sharing with their editors.”*

**— Trainer & Digital Rights Activist,** *Myanmar*

I am a journalist documenting human rights atrocities in Myanmar. I currently send evidence to my colleagues through WhatsApp because it allows me to quickly share what’s happening. Recently a colleague of mine was arrested and had his device confiscated by the police. They saw the pictures he had taken of abuses and who he sent them to. This isn’t good for him or the people in the group. I’m concerned because this could happen to me.

### DEVICES

**SENT FROM**

Android Phones in Myanmar

**RECEIVED ON**

Android Phones in Myanmar



## SUBSTITUTE FOR SHARING IN A WHATSAPP GROUP

*This case is relevant in locations where individuals get arrested for having evidence on their devices. From the research, these include Iraq, Myanmar, Syria, and Vietnam.*

*Magic Wormhole will have most success as an alternative for* ***Myat*** *if it can afford the following qualities and capabilities:*

### USE MINIMAL DATA

Within many of the relevant locations, data is expensive. Commonly, companies offer zero-rated data from WhatsApp, enabling users to send texts, videos and other content without incurring data charges. In order to compete, Magic Wormhole should use minimal data when sending and receiving files.

### REQUIRE MINIMAL STEPS TO SHARE

Because of the prominent use of WhatsApp, it’s very easy for individuals to use it to send files. In an effort to match this ease of sharing, Magic Wormhole should require the least amount of steps as possible.

### FACILITATES STORING INFORMATION IN A SECURE LOCATION ON THE PHONE

Evidence on the phone can cause trouble for individuals in these communities. In an effort to protect these individuals, downloading files to a secure location is important.

### ALLOWS YOU TO SHARE WITH A GROUP OF PEOPLE

Currently, most everything is shared in a group. Providing access to multiple people while protecting their identity can provide a great benefit.

### BENEFITS

- No user history that reveals sensitive content
- Encrypted file sharing
- No login
- No third party

# SAMER

**INDIVIDUALS SENDING DATA TO SOMEONE TO PUBLISH WHEN THEIR INTERNET IS POOR**

LISTEN TO THE AUDIO

*“So he called me and said, ‘I have a lot of data. I can’t upload it. From home, from mobile network.’ So I told him to come to [the coworking space] to upload this data.”*

**— Digital Security Trainer,** *Iraq*

I am a human rights defender in Iraq. Our internet gets shut down during exams. This means for 3-4 hours everyday the internet is down. I have a large network of people reporting alongside me and our goal is to get the story posted as quickly as possible. If there is a protest or large gathering the internet bandwidth is low and it is hard to get content shared. Therefore, we may have someone attach the story to a USB and send it with a driver to a location with great internet (because we pay for it!) so we can get it published faster.

---

### DEVICES

**SENT FROM**

Android Phones in Iraq

**RECEIVED ON**

Desktop Computers,
Android Phones &
iPhones in Iraq



## SUBSTITUTE FOR PHYSICALLY TRANSFERRING FILES

*This case is relevant in locations with poor internet. From the research, these include Iraq, Myanmar, and Venezuela.*

*Magic Wormhole will have most success as an alternative for* ***Samer*** *if it can afford the following qualities and capabilities:*

### TRANSFERS FILES FAST

If the transfer is fast, there’s an opportunity for people to send files out from a public event when they are momentarily connected.

### HANDLE INTERNET TIMEOUTS WELL

If the Magic Wormhole app handles timeouts well, and is able to pause and restart a transfer, individuals could send a set of files and depend on the app to send them when there’s a connection.

### ALLOW YOU TO SEND FILES BACK TO A PERSONAL COMPUTER

Multiple people asked about the ability to send files back to their personal computer while they are in another location. In some instances, this distributes the information to another device in case the phone gets confiscated. In other instances, this is useful because it allows one to clear their phone of information that could get them in trouble.

### BENEFITS

- Encrypted file sharing of large files and file directories
- No login
- No third party

# ADDITIONAL FINDINGS

LISTEN TO THE AUDIO

## SPEED: A SIDE-BY-SIDE COMPARISON

*"Would it really be faster than WhatsApp? If it's photos and videos, WhatsApp really reduces the file size."*

**— Digital Security Trainer,** *Venezuela*

### TRANSFER TIMES

*Original file size: 40.7 MB*

| WORMHOLE | SIGNAL | WHATSAPP |
|---|---|---|
| 5:18 | 1:50 | >1:00 |
| 5 MINUTES, 18 SECONDS | 1 MINUTE, 50 SECONDS | LESS THAN 1 MINUTE |



## DEVICE SUPPORT: ANDROID VS. IOS

From our interviews we found that individuals working within human rights and the Internet Freedom Community as activists, journalists and trainers, are all mobile first. In some cases, they only have one mobile phone for both work and personal life. However, when working alongside an organization, they generally have access to a laptop or desktop device in their working environment (office, coworking space, friend's house).

### PREDOMINANTLY ANDROID

**MYANMAR**

***Vivo, OPPO***

- Many people cannot afford to buy new or high end phones.
- Many individuals share computers at a coworking space.

**SYRIA**

***Samsung Galaxy S series, Huawei p9 & p8, iPhone 6 plus & 7***

- Activists have modern smart phones, but many also have laptops.

**VENEZUELA**

***Nokia, Samsung***

- Researchers phones aren't the best and sometimes get stolen.
- Most people can't afford expensive phones.

### EVENLY ANDROID & IOS

**INDIA**

***Samsung, OPPO, iPhone 5 & 6***

- Most Tibetan's own a smartphone.
- Monks inside Tibet do not have laptops. Everything is kept on their phone.

**IRAQ**

***Samsung Galaxy Note 8 & 9, Huawei mate 10, iPhone 6 & 7, X***

- If the internet is down or poor, journalists and activists will go to an organization's office to post faster.

**VIETNAM**

***Samsung , Asus Zen, iPhone 7 & 8***

- Activists are usually on the lower income level so they use Android devices that are easily replaceable.
- It's common for an activist to have more than one Android phone.

# DEPLOYMENT

LISTEN TO THE AUDIO

When creating tools for highly censored and surveiled communities, it's important to not only consider the features offered, but also how your team distributes the app and earns trust within the community. Working closely with community partners to design, test and deploy will contribute to the success of the technology. In addition, it's key to position the app in a way that is relevant to the identified communities.

## ADOPTION

*"I will use this software just because I trust you... People feel more comfortable if they know the people behind the apps."*

**— Digital Security Trainer,** *Iraq*

### DISTRIBUTION CHALLENGES

With connectivity and censorship issues at hand, the way people commonly download apps on their phone varies per country. Below are some examples. When deploying a new tool, it's important to work closely with your focus communities to establish an effective and safe distribution plan.

**MYANMAR**
Zapaya is a very popular way to get apps because of connectivity issues.

**TIBET**
There is no access to Google Play in Tibet. Individuals most commonly have apps downloaded to their phone from the store who sells them the phone.



## HOW TO SELL

*"When you're in trainings, the people are always asking you, 'why this tool is better than others?'"*

**— Digital Security Trainer,** *Venezuela*

**3/9**

**PARTICIPANTS ASKED WHY THEY WOULD TELL PEOPLE TO USE THIS TECHNOLOGY**

### MENTALITY ON SECURITY

Depending on your focus communities, the way you position the app and its benefits may change. Though, there's one global takeaway from this research — **SECURITY IS A HARD SELL.**

Many people will use what's available and convenient, regardless of the risk it may pose. In addition, within some communities, like Tibet, anything that says encryption is blocked.

*"They can be very alert about their own security, but their habits can sometimes conflict with their concerns."*

**— Digital Rights Advocate**
*Vietnam*

*"The regime already knows about me, so why should I care."*

**— Digital Security Consultant**
*Syria*

*"Most people don't even know about digital security, so they do as they will and hope they don't get in trouble."*

**— Digital Security Trainer**
*India*

# CONCLUSION

To conclude, there are many cases in which Magic Wormhole can bring about internet freedom. Below, we've highlighted the opportunities.

## *Biggest Opportunity (The Magic)*
## SHARING LARGE FILES IN GROUP CHATS

### MOST USEFUL WITH CURRENT CAPABILITIES
A small organization receiving info about what's happening within a country, as represented by Dorje's persona.

### MOST LIKELY SUBSTITUTE FOR CURRENT METHOD
Organizations sending large files over Google Drive, as represented by Anh's persona.

### A MUST
Optimize for poor internet since many of the focus communities experience this on a daily basis.

### A DEFINITE CASE
Individuals documenting atrocities, as represented by Myat's persona.

### WORTH SERIOUS CONSIDERATION
To have the ability to send files back to a personal computer, as represented by Samer's persona.
*50% of participants asked if this was possible.*



## RECOMMENDED CAPABILITIES

Below, we've categorized recommended capabilities from the lowest to highest development effort required.

### 1. CORE FUNCTIONALITY WITH IMPROVED USER EXPERIENCE

**Be extremely easy to use**
- An onboarding experience for receiving that safely guides users to a download location and delivers the files immediately once the code is entered
- A simple experience when downloading the app for the first time
- Handle app permissions gently

**Transfers files fast**
- Transfer speed that competes with WhatsApp

**Have language support**
- Translation support

### 2. CORE FUNCTIONALITY WITH ADDITIONAL FEATURES

**Handle internet timeouts well**
- Ability for file transfers to resume sending if they get interrupted
- An offline experience that allows the user to queue files to be sent automatically when connected

**Integrate into a team's workflow**
- Ability for the user to determine the download location when receiving a file

**Facilitates storing information in a secure location on the phone**
- Ability for the user to choose a secure location to save to by default

**Offer the option to automatically delete files from the device after sending**
- Auto delete files after they are sent

### 3. REQUIRES NEW TECHNICAL FUNCTIONALITY

**Allows you to share with a group of people**
- Ability to share one set of files and their code with multiple people in a group
- Ability to integrate with messaging apps

**Allows you to send files back to a personal computer**
- An experience that allows you to send to a trusted device without having to manually enter a code on the receiving side

**Be easy to adopt and use for the first time**
- Web interface similar to Google Drive so that users aren't required to download an app to use it

**Be available**
- iOS support

# NEXT STEPS

Based on the use cases that were represented in our study, we divided the next steps of the project into immediately actionable steps, options to explore, and additional capabilities to explore after the first release of the app.

## *To begin*

### ACTIONABLE STEPS

We believe the Magic Wormhole technology would provide the most significant impact on the use cases of Dorje and Samer, and recommend of the following actionable steps to make this possible.

- **DORJE** represents the case for small organizations receiving information about what's happening inside a country.
- **SAMER** represents the case for individuals sending information to someone else to publish when their internet is poor.

#### DEVELOP MUST-HAVE FEATURES

- Optimize for poor internet
- Increase speed

#### DESIGN AND IMPLEMENT A SEAMLESS USER EXPERIENCE

- Design and develop UI for desktop and mobile apps
- Design and develop an easy onboard experience
- Name the app and market it well
- Language support and translations for focus communities

#### DISTRIBUTE

- Launch an official website where the app can be download from
- Distribute the app on app stores

#### ENGAGE COMMUNITIES

- Test with focus communities
  *Okthanks can connect Least Authority with participants that offered to test*
- Expand the communities you talk with as the opportunity arises
  *There are other regions that aren't represented in this research that could benefit from the technology*



### EXPLORE OPTIONS

We recommend exploring opportunities to integrate the Magic Wormhole technology into existing apps that facilitate group sharing to address the full needs of the use cases represented by Anh and Myat.

- **ANH** represents the case for small organizations using Google Drive.
- **MYAT** represents the case for individuals documenting atrocities.

#### LEAST AUTHORITY TAHOE PROJECT

To facilitate group file sharing and collaboration

- Participants expressed concern about devices getting confiscated because they have sensitive information on them. Cloud storage via Google drive ensures that the information is accessible in the case that the individual phone gets confiscated. In a similar way, a shared file system via Tahoe would ensure access in these cases. We believe the persona of **ANH** would be best served by this solution.

#### SIGNAL

A messaging app many journalists and human rights defenders are being trained on and adopting to easily and securely send files

#### ZOM

A mobile messenger for Tibetans, to enable safe distribution of large video files

#### OPEN ARCHIVE / SAVE

An app that connects to a web dev server hosted by an organization, to aid field workers in sending media back to their team

## *After first release*

### ADDITIONAL CAPABILITIES

After first release, we recommend considering the following additional capabilities.

#### SEND FILES TO PERSONAL COMPUTER

This ability expands on the current technology in a way that doesn't require heavy technical work, while broadening opportunities for use.

#### DELETE FILES FROM LOCAL DEVICE AFTER SENDING

Storing photos and videos of human rights offenses puts many documenters at risk. Having an easy way to clear their phone of sensitive information after it's sent to a secure location would help keep them safe at work.

#### IOS SUPPORT

Given that Magic Wormhole facilitates file sharing, it is important for the tool to work cross platform. For information on popular devices among focus communities, see "Device Support" on page 39.

# *Thank you!*

With gratitude, we would like to formally thank all of the individuals who took time out of their busy lives to chat with us. This work could not have been completed without the help and support of each of you! In an effort to keep anonymity, we will not name the interviewees here, but you know who you are, and we humbly thank you!

We would also like to thank the Open Technology Fund Usability Lab who made this project possible. It is because of you, we are able to do such exciting and important work!

Last, but not least, we would like to thank our partners at Least Authority for allowing Okthanks and the Guardian Project, to critically question use cases for the Magic Wormhole file transfer technology and for their continued patience throughout the process. We look forward to your continued success!

**TOGETHER WE ARE BUILDING TOOLS THAT SERVE COMMUNITIES WELL AND IT'S A GREAT PLACE TO BE!**

*Sincerely,*
**THE OKTHANKS TEAM**

okthanks

# REFERENCES

## COUNTRY INFORMATION


About. (2018, October 6). Retrieved from https://syrianarchive.org/en/about/

Crackdown on Dissent. (2017, November 29). Retrieved from https://www.hrw.org/report/2017/11/29/crackdown-dissent/brutality-torture-and-political-persecution-venezuela

Freedom House, Freedom on the Net 2017, available at: https://freedomhouse.org/report/freedom-net/freedom-net-2017

Human Rights Watch, World Report 2018, available at: https://www.hrw.org/world-report/2018

Iraq: Women Suffer Under ISIS. (2016, April 5). Retrieved from https://www.hrw.org/news/2016/04/05/iraq-women-suffer-under-isis

No Country for Human Rights Activists. (2017, June 18). Retrieved from https://www.hrw.org/report/2017/06/18/no-country-human-rights-activists/assaults-bloggers-and-democracy-campaigners

Refugee Routes Blocked. (2018, August 25). Retrieved from https://rsf.org/en/news/refugee-routes-blocked-reporters-well

Reporters Without Borders, 2018 World Press Freedom Index, available at: https://rsf.org/en/ranking/2018

Venezuela's Humanitarian Crisis. (2016, October 24). Retrieved from https://www.hrw.org/report/2016/10/24/venezuelas-humanitarian-crisis/severe-medical-and-food-shortages-inadequate-and

Wikipedia Contributors. (2018, December 8). Tibet. In Wikipedia, The Free Encyclopedia. Retrieved 18:23, December 17, 2018, from https://en.wikipedia.org/w/index.php?title=Tibet&oldid=872664332


## PHOTO ATTRIBUTIONS

**Anh**


"Protesters' Anger" by Jas[illegible]n is licensed under CC BY-NC 2.0
https://www.flickr.com/photos/lewishamdreamer/1745690835/in/photolist-3Eg84R-WfWaC8-P9gHx-dtFdgo-dxB5Kv-busy1c-5eN7U5-i77Kyf-P8Ms1-4M5ifS-dxB3MX-7Pi1S3-jTzE4H-T9uL9Q-3JEwdq-dazcMq-ddZTry-i77HAM-nptc2k-h1YE2h-DUsVN-as69Gc-f39GHy-qwrtzv-9zZUaV-7Bur7c-2aKxWku-kF4S8t-7PLdch-26uSo5z-GGnvSZ-mQY5Kz-8Etj8y-qSY8nx-7T22G8-cWKZuJ-eq6w9W-2a9hkwS-kF5Gug-276mAGD-7Pe3i6-chKEbw-bc2jyt-9ddw8m-dKrqvo-f3BF7S-kEsRmM-7nGtpo-ff9YZr-2bpbbR8


**Dorje**


"Tibet-5637" by Dennis Jarvis is licensed under CC BY-SA 2.0
https://www.flickr.com/photos/archer10/2212427003/


**Myat**


"Víctimes de la repressió FOTO: Dan Kitwood / Getty" by Jordi Bernabeu Farrús is licensed under CC BY 2.0
https://www.flickr.com/photos/jordibernabeu/36364213904/in/photolist-Xpo6Tf-EVQQQ-Z2er7m-fPEcXB-fJCx7T-2Hy2Ay-EVPPH-EVSmh-fPZzwC-fJVcz7-281YEMm-24d9kiz-26mw9Vb-XsyxwS-XhQTkp-6DtCwh-7GEcak-ZSn2yj-fM8fMY-KskmwF-2Hy2Wj-EVQR9-Z2er2b-FGjUm-2HtHxK-Y5h482-eutMvT-71Y7LS-2HtJ5p-2Hp6eG-ekko1V-2Hp6jQ-4j7w2c-eutR6s-tNBwjz-EVSPs-26mwa7o-KsknZa-7GEc8P-LYC4Db-Gr8syr-6DmdfR-JJ63S2-6DtFWY-6DmjJt-6Dm8y6-6Dq3JE-27JpBMM-281Yzbb-6DsMo7


**Samer**


"WhatsApp Image 2017-05-24 at 20.29.04 (1)" by Manuela d'Ávila is licensed under CC BY 2.0
https://www.flickr.com/photos/manueladavila/34908875385/in/photolist-VbM7rP-P1mER8-TC97kt-UEb2Yr-26mHfWc-SgukmW-ULFAFZ-UC5ENf-TC971v-g3vH8p-JCExmw-qMa3FB-Tfhr8M-T34Nmy-HT8PoN-oiXHZu-UF4Dhc-ou38eP-2awbDTz-dXUXC5-oiYh4Q-WSemc1-S6pJkC-TC9vE4-okV9B5-MRha66-UKNtqQ-quAXT5-JpSabu-WTsddZ-VQC9kK-28dgSpE-UKPrqW-dEFvTi-JBJZLE-29WvS2i-28qjxg8-UN7Va9-dXUXCL-TC97TH-24ged6J-rDduha-VSuPt1-26Fw5C1-TC9gKF-VrZZ8Q-UN8Mtf-UEbvuP-TC95wD-TC9tT8