WE CHAT, THEY WATCH

How international users unwittingly build up WeChat's Chinese censorship apparatus

By Jeffrey Knockel, Christopher Parsons, Lotus Ruan, Ruohan Xiong, Jedidiah Crandall, and Ron Deibert

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About the Citizen Lab, Munk School of Global Affairs and Public Policy, University of Toronto

The Citizen Lab is an interdisciplinary laboratory based at the Munk School of Global Affairs and Public Policy, University of Toronto, focusing on research, development, and high-level strategic policy and legal engagement at the intersection of information and communication technologies, human rights, and global security.

We use a “mixed methods” approach to research that combines methods from political science, law, computer science, and area studies. Our research includes investigating digital espionage against civil society, documenting Internet filtering and other technologies and practices that impact freedom of expression online, analyzing privacy, security, and information controls of popular applications, and examining transparency and accountability mechanisms relevant to the relationship between corporations and state agencies regarding personal data and other surveillance activities.

Contents

Key Findings

- **We present results from technical experiments which reveal that WeChat communications conducted entirely among non-China-registered accounts are subject to pervasive content surveillance that was previously thought to be exclusively reserved for China-registered accounts.**
- **Documents and images transmitted entirely among non-China-registered accounts undergo content surveillance wherein these files are analyzed for content that is politically sensitive in China.**
- **Upon analysis, files deemed politically sensitive are used to invisibly train and build up WeChat's Chinese political censorship system.**
- **From public information, it is unclear how Tencent uses non-Chinese-registered users' data to enable content blocking or which policy rationale permits the sharing of data used for blocking between international and China regions of WeChat.**
- **Tencent's responses to data access requests failed to clarify how data from international users is used to enable political censorship of the platform in China.**

Introduction

A significant body of research over the past decade has shown how online platforms in China are routinely censored to comply with government regulations. As Chinese companies grow into markets beyond China, their activities are also coming under scrutiny. For example, TikTok, a video-based social media company, has been accused of censoring content on its platform that would be sensitive in China.[1] Grindr, a Chinese-owned online dating platform for gay, bi, trans, and queer people,

1 Greg Roumeliotis, Yingzhi Yang, Echo Wang and Alexandra Alper, (2019), "US opens national security investigation into TikTok," *CNBC* (November 1, 2019) <https://www.cnbc.com/2019/11/01/us-to-investigate-tiktok-over-national-security-concerns-sources-say.html>; Raymond Zhong, (2019), "TikTok's Chief Is on a Mission to Prove It's Not a Menace," *New York Times* (November 18, 2019) <https://www.nytimes.com/2019/11/18/technology/tiktok-alex-zhu-interview.html>; William Feuer, (2019), "TikTok says it doesn't censor content, but a user was just locked out after a viral post criticizing China," *CNBC* (November 26, 2019) <https://www.cnbc.com/2019/11/26/tiktok-says-it-doesnt-censor-but-a-user-who-criticized-china-was-locked-out.html>; Drew Harwell and Tony Romm, (2019), "Inside TikTok: A culture clash where U.S. views about censorship often were overridden by the Chinese bosses," *Washington Post* (November 5, 2019) <https://www.washingtonpost.com/technology/2019/11/05/inside-tiktok-culture-clash-where-us-views-about-censorship-often-were-overridden-by-chinese-bosses/>.

fell under suspicion that it could be used to monitor, track, or otherwise endanger American users.[2]

WeChat is the most popular social media platform in China and third in the world.[3] While the platform dominates the market in China, it also has made efforts to internationalize and attract users globally. Like any other Internet platform operating in China, WeChat is expected to follow rules and regulations from Chinese authorities around prohibited content. Previous Citizen Lab research shows the balancing act WeChat must maintain as it attempts to keep within government red lines in China and attract users internationally. WeChat implements censorship for users with accounts registered to mainland China phone numbers. This censorship is done without notification to users and is dynamically updated, often in response to current events.[4]

In previous work, there was no evidence that these censorship features affected users with accounts that are not registered to China-based phone numbers. These users could send and receive messages that users with China-registered accounts could not. In this report, we show that documents and images shared among non-China-registered accounts are subject to content surveillance and are used to build up the database WeChat uses to censor China-registered accounts.[5] By engaging in analysis of WeChat privacy agreements and policy documents, we find that the company provides no clear reference or explanation of the content surveillance features and therefore absent performing their own technical experiments, users cannot determine if, and why, content surveillance was being applied. Consequently, non-China-based users who send sensitive content over WeChat may be unwittingly contributing to political censorship in China.

2 Georgia Well and Kate O'Keeffe, (2019), "U.S. Orders Chinese Firm to Sell Dating App Grindr Over Blackmail Risk," *Wall Street Journal* (March 27, 2019) <https://www.wsj.com/articles/u-s-orders-chinese-company-to-sell-grindr-app-11553717942>; Jacob Rosenberg, (2019), "The Trump Administration Apparently Considers Grindr a National Security Threat. What Is Going On?," *Mother Jones* (April 4, 2019) <https://www.motherjones.com/politics/2019/04/the-trump-administration-apparently-considers-grindr-a-national-security-threat-what-is-going-on/>.

3 Bucher, Birg, (2020), "WhatsApp, WeChat and Facebook Messenger Apps – Global Messenger Usage, Penetration and Statistics," *Messenger People* <https://www.messengerpeople.com/global-messenger-usage-statistics/>.

4 Lotus Ruan, Jeffrey Knockel, Jason Q. Ng, and Masashi Crete-Nishihata. (2016) One App, Two Systems: "One App, Two Systems: How WeChat uses one censorship policy in China and another internationally," *Citizen Lab*, <https://citizenlab.ca/2016/11/wechat-china-censorship-one-app-two-systems/>.

5 We define surveillance as the focused, systematic and routine attention to personal details for the purposes of influence, management, protection or direction. See: David Lyon (2007), *Surveillance Studies: An Overview.* (Polity Press: 2007) at 14.

The report proceeds as follows:

Part 1: Background
Provides background on WeChat and an overview of previous research on surveillance and censorship on the platform.

Part 2: Technical Assessment
Presents our technical experiments, including the side-channel methods which were used to uncover the surveillance to which non-China-registered accounts are subjected, as well as the findings and discussion emergent from the analysis.

Part 3: Policy Assessment
Presents results from policy analysis, which involved interrogating Tencent's public-facing policy documents and directly contacting the company about how it treated international users' communications content.

Part 4: Data Access Request Assessment
Recounts what we did, and did not, learn from issuing a data access request for our WeChat data, and shows that this method failed to reveal content surveillance on the platform.

Part 5: Conclusion
Provides a brief conclusion, discusses the broad significance of our findings, and provides avenues for future research.

Part 1 - Background

WeChat (*Weixin* 微信 in Chinese) is one of the most popular social media apps in China, with 1.15 billion monthly active users in China and overseas as of late 2019.[6] The application is owned and operated by Tencent, one of China's largest technology companies, and was launched in 2011 as a mobile instant messaging app. Since then, Tencent's WeChat/Weixin Group[7] has developed a variety of communication functionalities in WeChat including instant messaging (e.g., one-to-one private chat, group chat), WeChat Moments (i.e., a functionality that resembles Facebook's Timeline where users can share text-based updates, upload images, and share short videos or articles with their friends), and the Public Account platform

6 Tencent (2019), "Tencent Announces 2019 Third Quarter Results," *Tencent*, <https://cdc-tencent-com-1258344706.image.myqcloud.com/uploads/2019/11/13/8b98062831f2f28d9cb4616222a4d3c3.pdf>.

7 Tencent Holdings Limited has six business groups that oversee different products and aspects of the company. The Weixin Group (WXG) is the one that develops and operates WeChat and related services. Tencent (n.d.), "Get To Know Tencent," *Tencent*, <https://join.qq.com/business.php>.

(i.e., a blogging-like platform that allows individual writers as well as businesses to write for general audiences). Forty-five billion messages are reportedly sent using WeChat on a daily basis.[8]

The Chinese market presents unique challenges for Internet platform providers due to laws and regulations that hold companies accountable for the content published or transmitted on their platforms. Companies are expected to invest in human resources and technologies to moderate content and comply with government regulations on content controls. Companies which do not undertake such moderation and compliance activities can be fined or have their business licenses revoked. Meanwhile, China's laws and regulations on content controls are broadly defined, with prohibited topics ranging from "disrupting social order and stability" or "damaging state honor and interests," to crossing "the bottom line of socialism."[9] Previous research has shown that these vaguely defined guidelines often lead companies and individuals alike to engage in self-censorship.[10]

Previous work shows that WeChat conducts pervasive political censorship for users whose accounts operate under WeChat China's terms of service; we refer to these accounts, generally, as China-registered accounts.[11] Accounts which were originally registered to mainland China phone numbers fall under these terms of service, and they remain under them even if the user later links their account to a non-Chinese phone number. Files and communications which are sent to, or from, China-registered accounts are assessed for political sensitivity among other content categories. If the content of the communications is found to be sensitive, it is censored for all China-registered accounts on the platform.

8 Yicai News (2019), "Here Comes WeChat's Big Data [in Chinese]," *Yicai*, <https://www.yicai.com/news/100095261.html>.

9 Cyberspace Administration of China (2014), "The Interim Provisions on the Administration of the Development of the Public Information Services of Instant Messaging Tools," *Cyberspace Administration of China* <https://www.cac.gov.cn/2014-08/07/c_1111983456.htm>.

10 Perry Link (2002), "China: The Anaconda in the Chandelier," *China File* <http://www.chinafile.com/library/nyrb-china-archive/china-anaconda-chandelier>.

11 We use the terms WeChat China and WeChat International to distinguish WeChat's China-based and internationally-based operations. We follow Tencent's definition of the scope of its China-based services. That is, WeChat China's technical and policy infrastructures apply to users who "register by binding a mobile number that is made available to you in the People's Republic of China (except for Taiwan, Hong Kong or Macau) (i.e., a contact number that uses international dialing code +86)." WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>.

Figure 1: Evidence of image censorship in WeChat's one-to-one chat feature from Citizen Lab testing conducted in July 2017.[12]

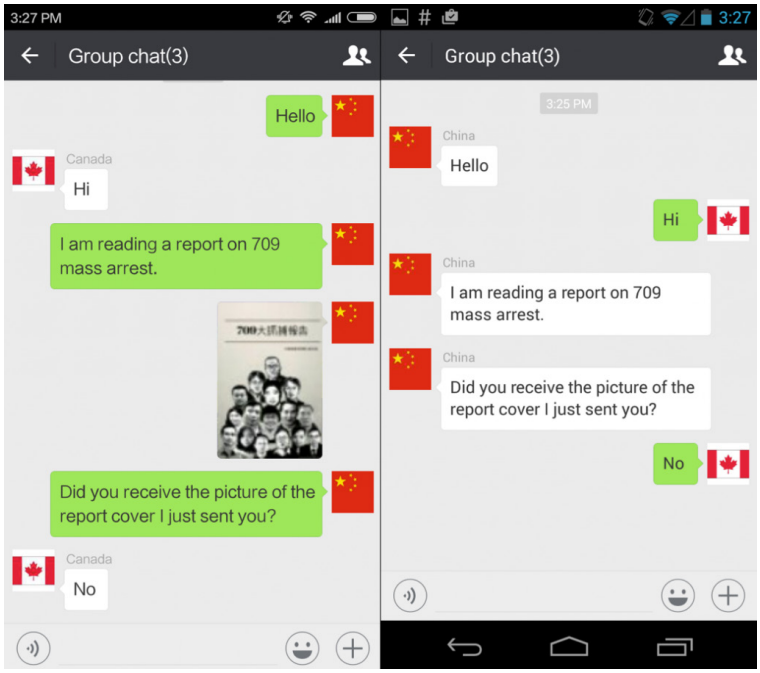


Figure 2: Evidence of image censorship in a WeChat group Chat from Citizen Lab testing conducted in January 2017.[13] *A user with a China account (on the left) attempted to send a sensitive image, which was censored.*

12 Crete-Nishihata, Masashi, Jeffrey Knockel, Blake Miller, Jason Q. Ng, Lotus Ruan, Lokman Tsui, and Ruohan Xiong (2017), "Remembering Liu Xiaobo: Analyzing Censorship of the Death of Liu Xiaobo on WeChat and Weibo," *Citizen Lab* <https://citizenlab.ca/2017/07/analyzing-censorship-of-the-death-of-liu-xiaobo-on-wechat-and-weibo/>.

13 Ruan, Lotus, Jeffrey Knockel, and Masashi Crete-Nishihata (2017), "We (can't)Chat: "709 Crackdown" Discussions Blocked on Weibo and WeChat," *Citizen Lab* <https://citizenlab.ca/2017/04/we-cant-chat-709-crackdown-discussions-blocked-on-weibo-and-wechat/>.

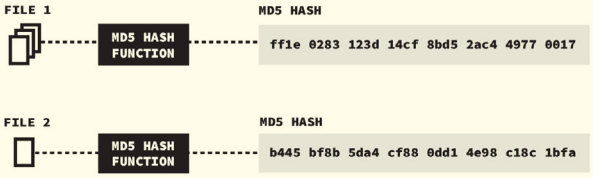
Previous work has found that WeChat placed images which are sent by China-registered accounts under two different kinds of surveillance.[14] Due to the computationally expensive and time-consuming methods required to analyze an image for sensitivity, these methods are not easily adapted to run in real-time. As a result, WeChat first subjects these images to *file hash surveillance* to assess whether the image has previously been categorized as sensitive, which is determined by checking to see if the file's hash is present in a *hash index* of known sensitive file hashes. This hash index check is performed in real time. If the image's file hash is in the hash index, it is censored in real time. Images that are not in the hash index of known sensitive files undergo *content surveillance***.** Such surveillance involves the image being analyzed for whether it is visually similar to that of any blacklisted image. Further, text that is in the image is extracted and analyzed to determine if any of the text is blacklisted. If the image is found to be sensitive, then its file hash is added to the hash index to enable future real-time censorship. Of note, previous testing found that content surveillance was never performed in real time and that the first time that a sensitive image file is transmitted it was not censored.

In this report, we revisit how WeChat implements image surveillance. For the first time, we examine how WeChat conducts surveillance and censorship of documents sent over the platform. Moreover, we examine whether images and documents communicated entirely among non-China-registered accounts are subject to the same surveillance practices which were previously found to apply to communication to, or from, China-registered accounts.

What is an MD5 hash?

Hash functions are designed to map a data input, such as a message or a file, into a short, fixed-size output called a hash. The MD5 hash function is a cryptographic hash function, which is a hash function with special cryptographic properties. Cryptographic hash functions have many additional properties over ordinary hash functions, but one such property is that it should be infeasible to find two different inputs such that the hash function maps them to the same output. That is, it should be infeasible to find two different inputs with the same hash. MD5 is an older cryptographic hash function designed in 1991.

The diagram below illustrates the process of mapping a file (e.g., a document or an image) to an MD5 hash. In this example, two different images are inputted to a cryptographic hash function resulting in two unique MD5 hashes.



14 Knockel, Jeffrey and Ruohan Xiong (2019), "(Can't) Picture This 2: An Analysis of WeChat's Real-time Image Filtering in Chats," *Citizen Lab* (July 15, 2019)

Part 2 - Technical Assessment

Measuring communications surveillance can be challenging due to its inherently invisible nature. In the absence of censorship, which restricts communication in a way that has a measurable effect (e.g., a message fails to be delivered), surveillance can be difficult to detect. To detect the communications surveillance of non-China-registered accounts, we developed and ran two side-channel experiments. In both experiments, we employ two channels, one communicating entirely among non-China-registered accounts and a second communicating with a China-registered account. By utilizing the hash index that censors China-registered WeChat accounts as a side channel, we were able to infer that content surveillance was occurring in the first channel by measuring for censorship in the second. We develop and performed a third experiment testing whether recalling a message containing a file removes that file's hash from the hash index.

In short, while we did not detect censorship in communications among non-China-registered accounts, we did demonstrate that such accounts are nevertheless subject to content surveillance. Such surveillance was discovered by confirming that politically sensitive content which was sent exclusively between non-China-registered accounts was identified as politically sensitive and subsequently censored when transmitted between China-registered accounts, without having previously been sent to, or between, China-registered accounts. In the remainder of this section, we explain our pre-experiment analysis, our experimental designs, and we present our experiment's results.

2.1 Background

Before designing our side-channel experiments, we first explored whether sensitive documents sent to, or from, China-registered accounts were surveilled and censored using a hash index. By sending sensitive documents to a China-registered account, we could observe which files were censored. We found that documents such as UTF8-encoded plain text (*.txt), Microsoft Word (*.docx), and Portable Document Format (*.pdf) documents which contained certain sensitive keyword combinations such as "法輪功 [+] 法輪大法" (Falun Gong + Falun Dafa) were censored. As part of our investigation, we sent multiple documents across multiple days. Of particular note, we sent over 50 during November 25–26, which was immediately before our experiment, as well as over 50 during December 3–5, which was during our experiment. We found that all sent documents were subject

to surveillance and censored in the same way as images had been found to be surveilled and censored in previous work.[15] Namely, we confirmed that documents underwent file hash surveillance and that such files were not censored in real time until they had undergone non-real time content surveillance and their file hash had been added to the hash index.

We also sought to confirm whether images were still subject to surveillance and censored as described in previous work.[16] We found that, unlike in previous work where content surveillance of images was not performed in real time, images were now sometimes censored in real time even if they had never been sent over the platform before. Because of this new capability of WeChat's censorship implementation, we designed our experiment to send a large number of images such that we expected, with high probability, that at least one would not be censored in real time.

2.2 Statistical Experiment

In this section, we present our first side-channel experiment which tests for content surveillance of sensitive documents and images transmitted over WeChat. We call this experiment the *statistical experiment* because of this experiment's use of statistical analysis.

2.2.1 Methodology

In this experiment, we use two WeChat group chat conversations to serve as our two communication channels:

1) **Non-China group chat**. This group chat contains three non-China-registered WeChat accounts which were registered to Canadian phone numbers. In this group chat, a non-China-registered account sends content entirely among other non-China-registered accounts.

2) **China group chat**. This group chat contains two non-China-registered WeChat accounts which were registered to Canadian phone numbers and one WeChat account that was registered to a mainland China

15 Knockel, Jeffrey and Ruohan Xiong (2019), "(Can't) Picture This 2: An Analysis of WeChat's Realtime Image Filtering in Chats," *Citizen Lab* (July 15, 2019) <https://citizenlab.ca/2019/07/cant-picture-this-2-an-analysis-of-wechats-realtime-image-filtering-in-chats/>

16 Knockel, Jeffrey and Ruohan Xiong (2019), "(Can't) Picture This 2: An Analysis of WeChat's Realtime Image Filtering in Chats," *Citizen Lab* (July 15, 2019) <https://citizenlab.ca/2019/07/cant-picture-this-2-an-analysis-of-wechats-realtime-image-filtering-in-chats/>

phone number. In this group chat, a non-China-registered account simultaneously sends content to both a non-China-registered and a China-registered account. In this group chat, we are interested in whether the China-registered account receives the content or if the content is instead censored.

Our experiments rely on testing for the presence of a file's hash in WeChat's censorship hash index. By sending a file in the **China group chat** and measuring whether that file is censored in real time, we can test whether its hash is already in the hash index. However, as a consequence of this test, we introduce the hash into the hash index if it was not already present. Thus, it is important that, whenever we perform a new test, we send a unique file with a hash that has never been sent over WeChat before. We call such a file a *novel* file, since its hash is novel to the WeChat platform.

In the remainder of this section, we explain the design of our side-channel experiment to test for content surveillance of document and image files when sent entirely among non-China-registered accounts.

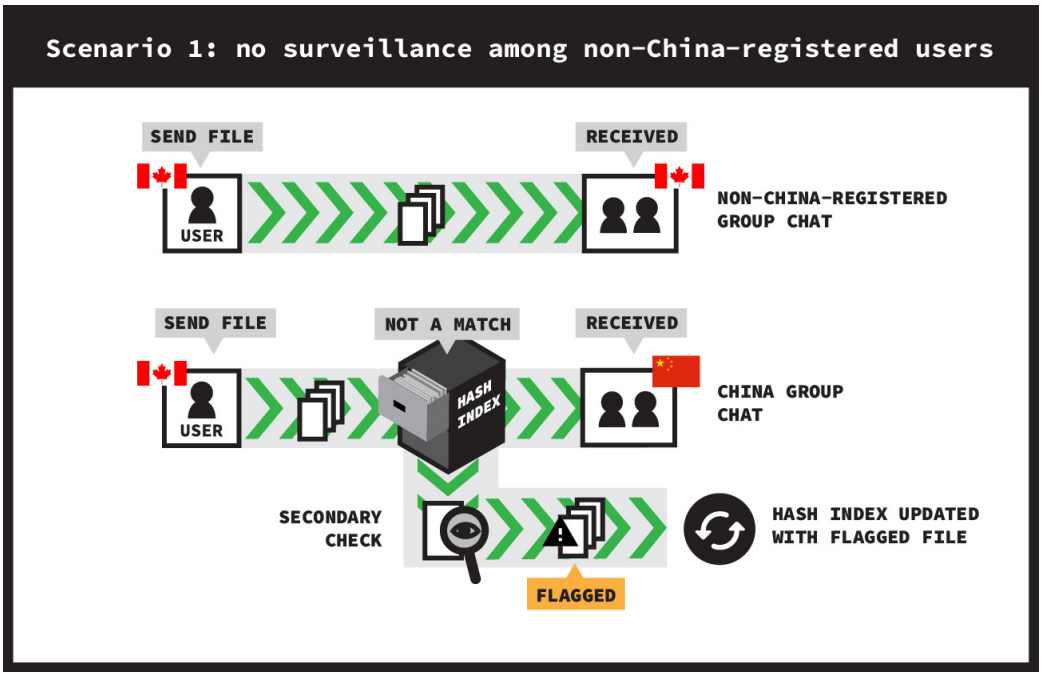


Figure 3: In the case of no content surveillance, the hash index is not updated when non-China-registered accounts send a novel, sensitive document to other non-China-registered accounts (top). Thus, when the same document is sent to China-registered accounts, the document is not censored (bottom).

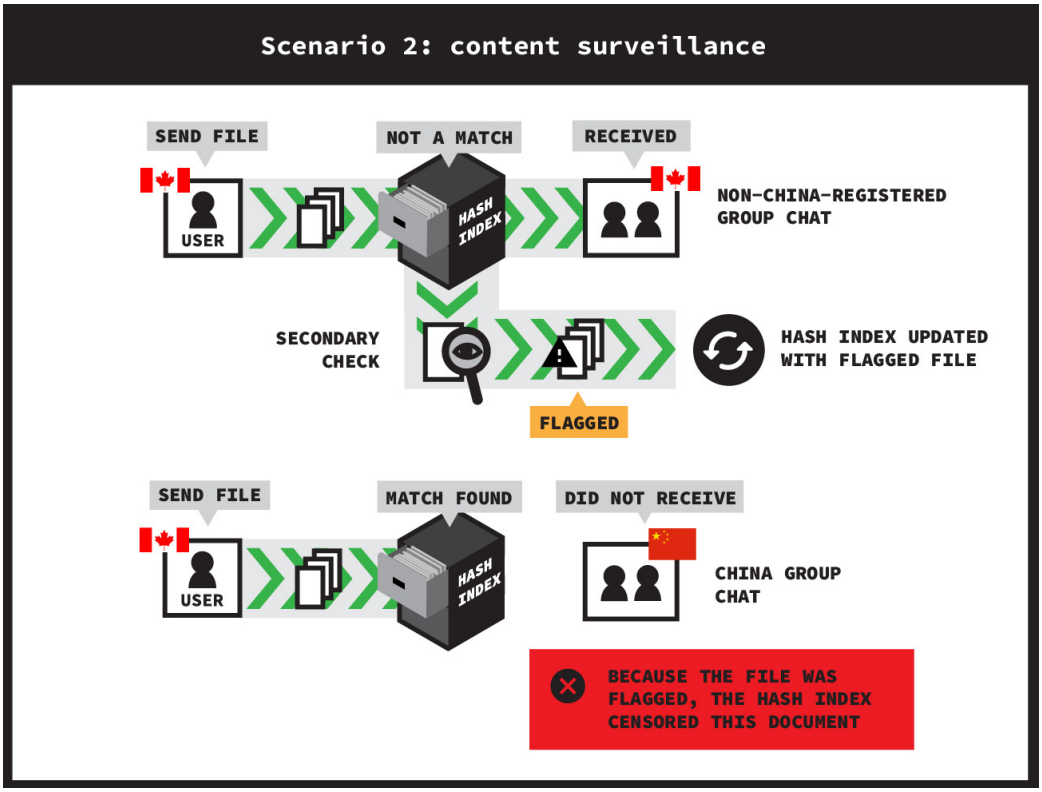


Figure 4: In the case of content surveillance, the hash index is updated when non-China-registered accounts send a novel, sensitive document to other non-China-registered accounts (top). Thus, when the same document is sent to China-registered accounts, the document is censored (bottom).

We performed the following test to evaluate whether document content surveillance takes place among non-China-registered accounts:

- **Document side-channel test**. We first send a novel, sensitive document in the **non-China group chat** and then send the same document in the **China group chat**. If the document is censored in real time when sent to the China-registered account, then we conclude there was surveillance of the sensitive document during the communication among the **non-China group chat**.

In this document side-channel test, the hash index serves as a side-channel by leaking information about whether the **non-China group chat** is under content surveillance by measuring for censorship in the **China group chat**. This method is sufficient for testing for the existence of document surveillance because, at the time of testing, WeChat did not censor documents in real time. Thus, whenever we observe real-time document censorship, we can conclude that the document had previously been subject to surveillance.

In the case of image files, we observed that sometimes WeChat censors them in real time even if they have not previously undergone content surveillance on the

platform. To accommodate this behaviour, we send a sufficiently large number of images such that, if images sent entirely among non-China-registered accounts undergo content surveillance, then we will still be able to distinguish the effect this surveillance has on real-time censorship even if real-time censorship sometimes happens in the absence of content surveillance. Specifically, we first conduct the following test:

1) **Image side-channel test**. We first send *n* novel, sensitive images in the **non-China group chat** and then send the same images in the **China group chat** one minute later. We count how many images were not received by the China-registered account.

We then compare the number of censored images from the previous test to that of the following test:

1) **Image control test**. We send *n* novel, sensitive images in the **China group chat**. We count how many were not received by the China-registered account.

The difference between these two tests is that in the **image side-channel test**, we first send an image among the non-China-registered accounts before sending it to a China-registered account, whereas in the **image control test**, we send the image to a China-registered account without sending it to non-China-registered accounts first. If there is a significantly larger number of images censored in the **image side-channel test**, then we can conclude that sending images among non-China-registered accounts is facilitating real-time Chinese censorship.

We use statistical hypothesis testing to determine whether there is a statistically significant increase in the number of images censored in the **image side-channel test** than in the **image control test**. Namely, we perform a chi-squared test[17] under the null hypothesis that sending images from non-China-registered accounts to non-China-registered accounts does not affect the probability that they will be censored in real-time when they are later sent to a China-registered account. If, according to the chi-squared test, we may reject the null hypothesis, then we can conclude that images sent entirely among non-China-registered accounts are under content surveillance and are contributing to WeChat's Chinese censorship system.

17 Wikipedia (2020), "Chi-squared test," *Wikipedia* (Last updated February 14, 2020) <https://en.wikipedia.org/wiki/Chi-squared_test>.

For each image test, we send *n* novel images. Our desire is to choose an *n* high enough that our statistical test has sufficient power to determine whether content surveillance between non-China-registered accounts exists. However, we also want *n* to be sufficiently low to minimize the risk of WeChat taking adverse action against our testing accounts (e.g., WeChat has been known to suspend or ban accounts in response to censorship testing[18]). In our experiment, we will evaluate choosing *n* = 60.

For both document and image testing, each test requires that we send novel, sensitive documents or images that have not previously been sent over the platform to ensure that the sensitive files' hashes are not already in the hash index. In principle, we could use entirely different sensitive documents and images. However, this approach would limit us to only performing as many file transmissions as we have known sensitive files. Thus, to facilitate testing, we generate novel, sensitive files by performing subtle modifications to a single sensitive document and a single sensitive image; we call each of these *seed* files. These modifications are designed to change these files' hashes without changing their ability to be recognized as sensitive and, thus, let us generate an indefinite number of sensitive documents and images. In the remainder of this section, we explain, for both documents and images, which seed file we use and how we generate novel copies of a seed file such that the derivative files remain sensitive.

Lorem ipsum
法轮大法
法輪大法
法轮功
法輪功
Lorem ipsum

Figure 5: The text of the sensitive seed document.

For documents, we use as our seed document a *.docx file which contains the characters for Falun Dafa and Falun Gong in both simplified and traditional Chinese, as well as some filler text (see Figure 5). To create a novel, still-sensitive copy of it, we then append 64 alphanumeric characters chosen uniformly at random.

18 Xiong, Ruohan and Jeffrey Knockel (2019). "An Efficient Method to Determine which Combination of Keywords Triggered Automatic Filtering of a Message," *FOCI 2019* <https://www.usenix.org/system/files/foci19-paper_xiong.pdf>.

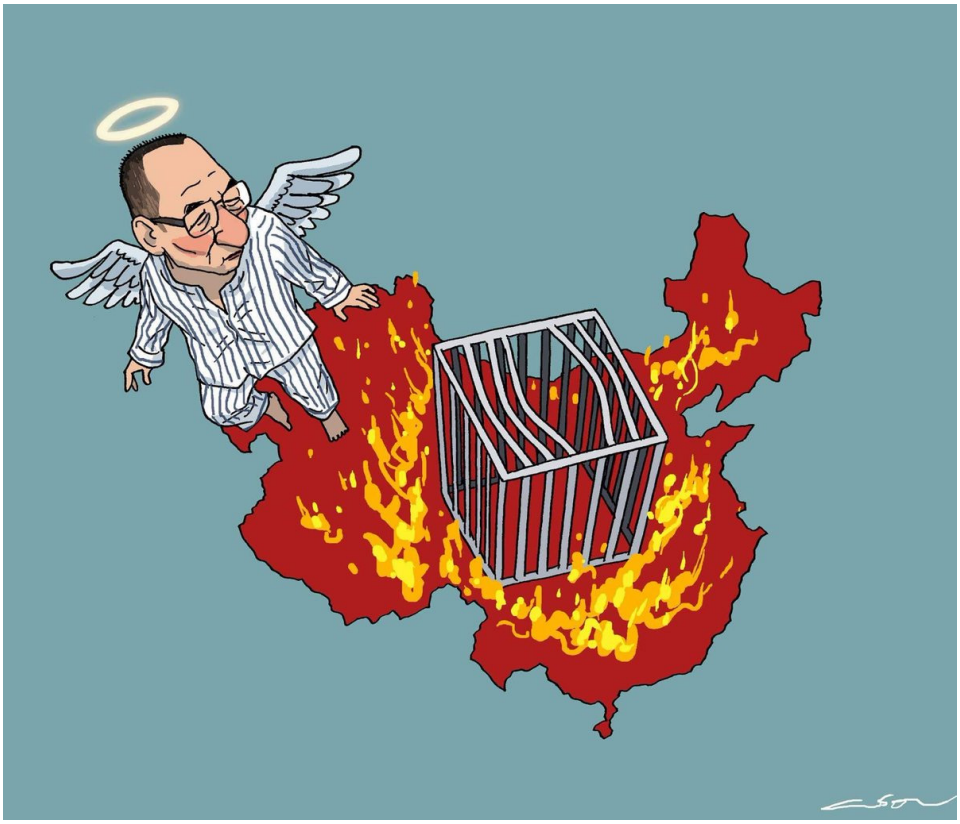


Figure 6: Our sensitive seed image, a cartoon memorializing the passing of Nobel Peace Prize awardee Liu Xiaobo.

For images, we use as our seed file a cartoon of Liu Xiaobo (see Figure 6) that was found to be censored on WeChat in previous work.[19] To create a novel, still-sensitive copy of it, we append 24 KiB of random bytes to it. Since the seed file we used was a JPEG-encoded image, all data past the JPEG end-of-file marker is ignored when rendering the image; however, the appended data still causes the file to hash to a different value.

2.2.2 Experimental Setup

We ran our experiment to test for document and image file surveillance across three separate days: November 27, December 2, and December 6, 2019. We spread the experiment across three days to ensure that the behaviour we observed was consistent across time and to reduce the risk of adverse action taken against our test accounts. All measurements were performed from a University of Toronto network in Toronto, Canada. For each test, on each day, we transmitted novel, sensitive documents or images which had never previously been communicated

19 Knockel, Jeffrey and Ruohan Xiong (2019), "(Can't) Picture This 2: An Analysis of WeChat's Realtime Image Filtering in Chats," *Citizen Lab* (July 15, 2019) <https://citizenlab.ca/2019/07/cant-picture-this-2-an-analysis-of-wechats-realtime-image-filtering-in-chats/>

over the platform. In the remainder of this section, we present the results of these experiments.

2.2.3 Results

Test	Nov. 25–26	Nov. 27	Dec. 2	Dec. 3–5	Dec. 6	Total
Document side-channel		1/1	1/1		1/1	3/3
Document control	0/≥50			0/≥50		0/≥100
Image side-channel		20/20	20/20		20/20	60/60
Image control		17/20	14/20		18/20	49/60

Table 1: For each test, the number of files which were censored on each date.

Table 1 shows the results of our experiment testing for document and image surveillance on each of the three days it was conducted. Although our experimental design did not explicitly contain a **document control test**, we reference one to be consistent with our presentation of the image test results. Specifically, this test refers to our implicit results from investigating how document censorship worked on WeChat, which confirmed that WeChat lacked the capability to censor documents in real time (see Section 2.1).

Our results show that on each day of testing, if a sensitive document is first sent from a non-China-registered account to non-China-registered accounts, before sending it to a China-registered account, they are censored in real time when sent to a China-registered account. This finding shows that documents sent even entirely among non-China-registered accounts undergo content surveillance and that these documents are used to build-up the censorship system to which China-registered accounts are subjected.

Unlike with documents, we observed that WeChat can sometimes censor images in real time.[20] Out of 60 images sent across three days, 49 images were censored in real time when only sending them to China-registered accounts. However, if we first sent them from a non-China-registered account to other non-China-registered accounts, then all 60 out of 60 images were censored in real-time when sent to a China-registered account. To confirm that the difference in these two results are

20 As of now, it is unclear why certain images are censored in real time while others are not.

statistically significant, we performed a chi-squared test under the null hypothesis that sending images from non-China-registered accounts to non-China-registered accounts does not affect the probability that they will be censored in real time when they are later sent to a China-registered account. We reject the null hypothesis because we found that there is only a $p = 0.00078$ probability of observing at least as large of a difference by chance. This result shows that, in addition to documents, images sent even entirely among non-China-registered accounts also undergo content surveillance, and that images sent among non-China-registered accounts are also used to build-up the censorship system to which China-registered accounts are subjected.

Finally, for our image testing, we evaluate our choice of sending $n = 60$ images across each image test. At no point during testing were any of our test accounts banned for sending this number of images. Moreover, choosing this number yielded highly significant results. These findings show that sending 60 images across three different days is powerful enough to result in statistically significant results and suggests that an even smaller value of n could be used in future experiments to further minimize risk of account closure.

2.3 Collision Experiment

In Section 2.2, we presented a side-channel experiment that confirmed that documents and images which are communicated entirely among non-China-registered accounts undergo content surveillance. Unlike documents, novel images were sometimes censored in real time when sent over WeChat for the first time. Consequently, we used statistical methods to show that such images were increasingly censored when previously exposed to surveillance. In this section, we present an alternative experiment that does not require statistical analysis and which further confirms the findings of the past experiment. The method of our follow-up experiment, the *collision experiment*, takes advantage of the fact that WeChat uses MD5 as its file hash algorithm and that this hash function has known vulnerabilities relating to hash collisions.

2.3.1 Methodology

Our method in the collision experiment is similar to the statistical experiment described in Section 2.2, but with one significant difference. In this experiment, we never send a sensitive image in the **China group chat**. Instead, we send a non-sensitive image that has been specially crafted to have the same MD5 hash as that

of a novel, sensitive image. As we have demonstrated in previous work[21], due to a vulnerability[22] in the MD5 hash algorithm, given any two images, we can modify the images' metadata such that they have the same MD5 hash.

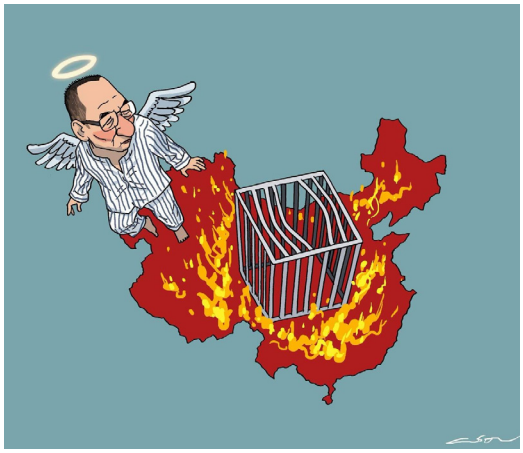


Table 2: The sensitive (left) and non-sensitive (right) seed images used in our experiment. Examples of MD5 hash collisions are here[23] (left) and here[24] (right).

Specifically, we conduct the following two tests:

1) **Collision side-channel test**. We first generate 20 novel, sensitive images with the same MD5 hashes as 20 non-sensitive images. We send the 20 sensitive images in the **non-China group chat** and then send the 20 non-sensitive images in the **China group chat** one minute later. We count how many of the non-sensitive images were not received by the China-registered account.

We then compare the number of censored images from the image collision side-channel test to that of the following test:

2) **Collision control test**. We first generate 20 novel, sensitive images with the same MD5 hashes as 20 non-sensitive images. We send the 20 non-

21 Knockel, Jeffrey and Ruohan Xiong (2019), "(Can't) Picture This 2: An Analysis of WeChat's Realtime Image Filtering in Chats," *Citizen Lab* (July 15, 2019) <https://citizenlab.ca/2019/07/cant-picture-this-2-an-analysis-of-wechats-realtime-image-filtering-in-chats/>

22 Albertini, Ange and Marc Stevens (2019), "Hash collisions and their exploitations," <https://github.com/corkami/collisions>

23 n.d.. <https://raw.githubusercontent.com/citizenlab/chat-censorship/master/md5-collision-example/lxb-afa92a14854d6ac92d8a8446145b4d1b.jpeg>

24 n.d.. <https://raw.githubusercontent.com/citizenlab/chat-censorship/master/md5-collision-example/citlab-afa92a14854d6ac92d8a8446145b4d1b.jpeg>

sensitive images in the **China group chat**. We count how many were not received by the China-registered account.

Like in the image experiment performed in Section 2.2, if there is content surveillance of communications sent entirely among non-China accounts, then we would expect a larger number of images to be censored in the **collision side-channel test** than in the **collision control test**. In fact, in this experiment, since we only send benign images in the **non-China group chat** test, if there is surveillance, then we expect that all non-sensitive images should be censored in the **collision side-channel test** and that none of the non-sensitive images will be censored in the **collision control test**.

2.3.2 Experimental Setup

We performed this experiment on January 30, 2020, on a University of Toronto network in Toronto, Canada. Unlike with our statistical experiment, we performed the collision experiment on a single day because this experiment does not require measuring a large number of image transmissions.

2.3.3 Results

Test	Jan. 30, 2020
Collision side-channel	20/20
Collision control	0/20

Table 4: For each test, the number of non-sensitive images which were censored.

In the **collision side-channel test**, all 20 of the 20 non-sensitive images were censored, whereas in the **collision control test** none of the 20 non-sensitive images were censored. Without the use of statistics, these results demonstrate that images are under content surveillance even when sent entirely among non-China-registered accounts, and that they are used to invisibly build up WeChat's censorship system.[25]

2.4 Retention Experiment

WeChat provides a feature to recall[26] a message which lets users delete a chat message that has been sent within the last two minutes to prevent users from viewing it if they have not viewed the message already. The international version

25 As a secondary consequence, these results also show that WeChat still uses the MD5 hash function for hashing files for its hash index.

26 WeChat (n.d.), "How do I recall a sent message?" WeChat <https://help.wechat.com/cgi-bin/micromsg-bin/oshelpcenter?opcode=2&plat=2&lang=en&id=120813euEJVf1410236fI7RB&Channel=helpcenter>.

of WeChat's privacy policy contains links to support documentation[27] that advises users based in the European Union to use the recall feature to remove personal information from chat messages. In this section, we design and perform an experiment to evaluate whether, after a chat message containing a file is recalled, WeChat still retains its hash in the hash index.

2.4.1 Methodology

To test whether WeChat retains a hash of a recalled file, we perform the following test:

- **Hash retention test**. We send a novel, sensitive document in the **non-China group chat** in a group chat and then immediately recall the document. One hour later, we send the same document in the **China group chat**. If the document is censored in real time when sent to the China-registered account, then recalling the document did not remove the hash from the file index.

For this test, we generate novel, sensitive documents as described in Section 2.2.1.

2.4.2 Experimental setup

We performed this experiment on January 7, 2020, on a University of Toronto network in Toronto, Canada. To test if the results would be different for European Union users, we repeated this experiment on January 9, 2020, using a WeChat account registered to a Belgian phone number and using a VPN server in Belgium. On each day of testing, we ran the test five times.

2.4.3 Results

Test	Jan. 7, 2020	Jan. 9, 2020
Hash retention	5/5	5/5

Table 4: The number of recalled images which were censored on each day.

For both days of testing, in all five tests, the recalled document was never received by the China-registered account. This result shows that recalling a document after it is sent does not remove that file's MD5 hash from WeChat's hash index, either for users outside or inside the European Union.

27 WeChat (n.d.), "How do I manage my account including how to export my personal data or request my account to be deleted?" *WeChat* <https://help.wechat.com/cgi-bin/micromsg-bin/oshelpcenter?opcode=2&lang=en&plat=ios&id=180323e2Ermm180323yqauAZ&Channel=help-center>.

2.5 Summary

Our experiments reveal that content surveillance is applied to both China-registered accounts as well as to non-China-registered accounts. Content surveillance between users of non-China-registered accounts is functionally undetectable unless those users conduct their own side-channel research to detect whether the documents or images that they shared have both been hashed for censorship purposes and, also, that the hashed documents or images are actually being censored. Put another way, in cases where documents or images are hashed but the files themselves are not presently censored, it would not be possible to know which, if any, files had been analyzed and hashed for potential censorship activities using the experiments we performed.

While there is a system in place to monitor and generate hashes for the documents and images transmitted between non-China-registered accounts for content which raises social or political concerns in China, our research has not demonstrated that there is an equivalent application of a censorship system in place for the communications which take place between non-China-registered accounts. Put plainly, we have not witnessed censorship between non-China-registered accounts of materials which are censored among China-registered accounts. By conducting our side-channel experiment, we were nevertheless able to measure the existence of content surveillance for such materials transmitted among non-China-registered accounts.

Moreover, the experiments show that non-China-registered accounts cannot remove hashes of sensitive content which they have sent when communicating entirely with other international users as a side effect of recalling their content. Consequently, while it may appear to users that they can recall the content of their communications, at least some of the metadata associated with such communications—such as the hashes of sensitive files—are disassociated from the retraction system. It is unclear based on our technical findings whether such a hash register would be associated with individual accounts. Nevertheless, these hashes will be used to build-up WeChat's censorship system.

Finally, our experiments conducted on multiple days across November 2019 – January 2020 consistently show content surveillance of documents and images sent among non-China-registered users. However, our data cannot answer for how long non-China registered users' files have been subject to such surveillance, and we cannot distinguish between this surveillance behaviour being a recent addition

versus a long-standing behaviour. Although such surveillance was consistently observed on each day of testing, we cannot speak to whether such surveillance was consistently applied across days which were not tested.

Part 3 - Policy Assessment

Before a company can make their application available on the Google Play store or Apple's App store, they must first develop and publish a privacy policy to accompany the given application. These public-facing documents are intended to inform users about how their data will be used and protected. Quite often, privacy policies and accompanying terms of service documents will include information such as what is, and is not, considered personal information or sensitive information, as well as detailed information concerning the kinds of activities a company may take towards a user's data.

For this report, we analyzed the international (i.e., Singapore) as well as the mainland China (i.e., Shenzhen) privacy policies and terms of service documents that were associated with WeChat. The analysis was meant to help us understand how the company asserts that it handles personal information and, through this analysis, better understand whether Tencent's international policy documentation suggests that international users' communication might be used to develop, enhance, or maintain the hash index which is used to censor communications between China-registered WeChat accounts. We also sent detailed questions to Tencent's international data protection office to seek clarity concerning the company's privacy policy and terms of service documentation. We also hoped that responses from the office would confirm the report's technical findings and disclose the rationales for which content transmitted between non-China-registered accounts was used to develop, enhance, or maintain the censorship system which is applied to China-registered accounts.

Overall, we found, first, that neither the China nor international public policy documents made clear to users that non-China accounts could have their content surveilled and the resulting hashes used to censor content for China-registered accounts. Second, we found it was plausible that the international policy documents could permit content surveillance of international users' communications, but the company did not respond to these questions. Third, we found that it was unclear on what basis the hashes of international users' communications could be shared with WeChat China, and the company did not respond to these questions.

3.1 Methodology

We undertook three related activities to assess Tencent's mainland China and international privacy policies and terms of service documents for WeChat[28]: downloading relevant policies (e.g., privacy policies and terms of service agreements); assessing the aforementioned policies using a pre-determined series of structured questions; and contacting the company's international data protection office with questions about whether content transmitted between non-China-registered accounts was ever used to develop, enhance, or maintain the censorship system applied to China-registered accounts.

3.1.1 Obtaining Relevant Public-Facing Policies

Relevant policies were downloaded from Tencent's websites in December 2019. We specifically downloaded the following policies which apply to China-registered WeChat accounts:

- Agreement on Software License and Services of Tencent Weixin (Simplified Chinese[29] and English[30] versions)
- Weixin Privacy Policy Protection Guidelines (Simplified Chinese[31] and English[32] versions)
- Standards of Weixin Account Usage (Simplified Chinese[33] and English[34] versions)

Each of these documents are available in several languages, including English, simplified Chinese, and traditional Chinese.

28 In this section we refer to policy documents applicable to WeChat's China-registered accounts as WeChat China documents and those to non-China-registered accounts as WeChat International documents.

29 Weixin (2019), "Weixin Privacy Protection Guidelines [in Chinese],", *Weixin* (September 30, 2019) <https://weixin.qq.com/cgi-bin/readtemplate?lang=zh_CN&t=weixin_agreement&s=privacy> [https://perma.cc/UG33-CYTP]

30 Weixin (n.d.), "Agreement on Software License and Service of Tencent Weixin," *Weixin* (n.d.) <https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=default&c-c=CN> [https://perma.cc/DJB5-U7DD]

31 https://weixin.qq.com/cgi-bin/readtemplate?lang=zh_CN&t=weixin_agreement&s=privacy [https://perma.cc/UG33-CYTP]. Our analysis is based on the Privacy Policy Protection Guidelines published on September 30, 2019. WeChat has updated the document on January 21, 2020, whose changes pertain to primarily a new functionality WeChat introduces to its platform.

32 Weixin (2019), "Weixin Privacy Protection Guidelines," *Weixin* (September 30, 2019) <https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=privacy&cc=CN> [https://perma.cc/WD5C-J3ZR]

33 https://weixin.qq.com/cgi-bin/readtemplate?&t=page/agreement/personal_account&lang=zh_CN

34 Weixin (n.d.), "Standards of Weixin Account Usage," Weixin (n.d.) <https://weixin.qq.com/cgi-bin/readtemplate?&t=page/agreement/personal_account&lang=en_US>.

We downloaded the following policies which applied to non-China WeChat accounts:

- WeChat Privacy Protection Summary[35]
- WeChat – Terms of Service[36]
- WeChat Acceptable Use Policy[37]

We primarily analyzed WeChat China's documents in English to facilitate comparing them directly with WeChat's international policies. We did, however, also examine the simplified Chinese version of WeChat China's documents to determine if there were significant differences between the Chinese and English; such discrepancies could potentially be notable because the Chinese version of the documents prevails over any versions of the documents in case of any inconsistency and discrepancy.[38]

3.1.2 Structured Question Set

We assessed the collected privacy policies, terms of service documents, and acceptable use policies using a structured question set. This question set is based on similar assessments that Citizen Lab researchers have conducted in the past of telecommunications companies, fitness tracker companies, online dating companies, and stalkerware companies.[39] Assessment categories were divided into specific questions pertaining to:

- **How Tencent presents and has developed its privacy policy:** e.g., "Is there

35 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 1, 2018) <https://www.wechat.com/en/privacy_policy.html> [https://perma.cc/3S76-6MCX]

36 WeChat (2018), "WeChat -- Terms of Service," *WeChat* (March 21, 2018) <https://www.wechat.com/en/service_terms.html> [https://perma.cc/ZH6Y-GJWK]

37 WeChat (2015), "WeChat -- Acceptable Use Policy," *WeChat* (November 13, 2015) <https://www.wechat.com/en/acceptable_use_policy.html> [https://perma.cc/2FUB-7J94]

38 Weixin (n.d.), "Agreement on Software License and Service of Tencent Weixin," *Weixin* (n.d.) <https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=default&c-c=CN> [https://perma.cc/5KRJ-28NE]. Section 12.6 of the Agreement on Software License and Service of Tencent Weixin reads, "In case of any inconsistency and discrepancy between the Chinese version and any version of other language, the Chinese version shall prevail."

39 Parsons, Christopher, Adam Molnar, Jakub Dalek, Jeffrey Knockel, Miles Kenyon, Bennett Haselton, Cynthia Khoo, Ron Deibert (2019), "The Predator in Your Pocket: A Multidisciplinary Assessment of the Stalkerware Application Industry," *Citizen Lab* <https://citizenlab.ca/docs/stalkerware-holistic.pdf>; Hilts, Andrew, Christopher Parsons, and Jeffrey Knockel (2016), "Every Step You Fake: A Comparative Analysis of Fitness Tracker Privacy and Security," *Open Effect* <https://openeffect.ca/re-ports/Every_Step_You_Fake.pdf>; Parsons, Christopher, Andrew Hilts, and Masashi Crete-Nishihata (2017), "Approaching Access: A comparative analysis of company responses to data access requests in Canada," *Citizen Lab* <https://citizenlab.ca/wp-content/uploads/2018/02/approaching_access.pdf>; Parsons, Christopher (2015), "The Governance of Telecommunications Surveillance: How Opaque and Unaccountable Practices and Policies Threaten Canadians," *Telecom Transparency Project* <http://www.telecomtransparency.org/release-the-governance-of-telecommunications-surveillance/>.

a link to a privacy policy on the company's webpage?," "Is there a reference to compliance with: national privacy laws, international guidelines, and/or self-regulatory instruments from associations?," "Is there a statement concerning which nation/court proceedings must go through?"

- **How Tencent addresses questions from its users of WeChat:** e.g., "Is there a contact to a privacy officer listed?" and "Is there a description/discussion of who you can complain to if you're unsatisfied with the information provided by the company?"

- **How Tencent captures personally identifiable information (PII):** e.g., "Is there specification about the kinds of PII (i.e., information about the 'users') collected? If so, what types of categories are listed?," "Is there any distinction made between sensitive and non-sensitive PII?," and "Are there specifications for where the information is stored?"

- **How, or under what conditions, Tencent might disclose collected data:** e.g., "Is there a specification on the kinds of organizations that users' information may be disclosed to?," Does the company use the term 'sharing' or 'selling' information to third parties?," and "Does the company reserve the right to share information with other parties in the case that they suspect a law has been violated or to exercise the company's own legal rights, or to remain compliant with the law?"

- **Are there rationales under which Tencent might 'hash' the content of international users' communications?**

- **Are there rationales under which Tencent might block or censor content?**

Combined, these questions were designed to help us understand the company's compliance with laws designed to protect persons' privacy, whether the company has processes in place to help individuals answer questions about their privacy or business practices, the kinds of data that the company asserts it does collect and disclose to other parties, and specifically whether the policies permit or justify Tencent's hashing of communications content transmitted between non-China-registered accounts.

3.1.3 Communication with Data Protection Office

We contacted Tencent's international data protection office to seek further clarity concerning the privacy policy and terms of use policies which applied to international users. We adopted this methodology to better understand how the company interpreted its policies as well as to seek confirmation or denial that it hashed the content of its international users' communications. The letter contained eight core questions; a copy of the letter is available in Appendix A.

In addition to seeking clarity concerning the company's public policy documentation, we also sought to better understand the extent to which persons who were involved in Tencent's international policy work understood, or were made aware of, how WeChat functionally operated. Specifically, we contacted the company after completing our experiments that showed communications between non-China registered accounts were used to develop, enhance, or maintain the hash index that is used to censor content between China-registered account users. Additionally, we wanted to understand if the international data protection officer was aware of such surveillance of international users' communications content.

3.2 Results

The following sections present the most significant findings that emerged from our policy assessment.

3.2.1 General Policy Questions

WeChat China's and WeChat International's websites both provided links to their respective services' privacy policies or terms of service on the homepage of their respective websites. Links on WeChat China's homepage directed users to the Chinese versions of respective policies, and from there users could choose to view the policies in other languages.

WeChat China and WeChat International both included references to the national laws and regulations with which the respective entities comply. In the case of WeChat China, the policies included general references to "relevant laws and regulations" without specifying the specific ones the company complied with, with exception of policies concerning content moderation.[40] In the case of disputes, users

40 Weixin (n.d.), "Agreement on Software License and Service of Tencent Weixin," *Weixin* (n.d.) <https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=default&c-

must submit them to the local people's court[41] in Nanshan District, Shenzhen City, Guangdong Province of the People's Republic of China.[42]

In contrast, WeChat International's policies made reference to the Digital Millennium Copyright Act (DMCA) (i.e., US copyright law) and broad references to European laws, though the policies did not explicitly cite the General Data Protection Regulation (GDPR). WeChat International's policies asserted that the governing jurisdiction for any disputes or claims, with the exception of those that pertained to US- and EU-based users, was the Hong Kong Special Administrative Region. The Hong Kong International Arbitration Centre was responsible for conducting any arbitration between users and WeChat International. However, in cases of US-based users, the governing law and dispute resolution would take place in the state or federal courts of California, with trial by jury and class action legal proceedings waived as a condition of using the service. For EU-based users, if the person was classified as a "consumer" (per EU Direction 83/2011/EU) then disputes were to be referred to, and resolved by, "the court of the person's place or residence of domicile."[43]

Both WeChat China's and WeChat International's privacy policies made partial references to their terms of services and other applicable documents, including the Standards of Weixin Account Usage for WeChat China users and the Acceptable Use Policy for WeChat International users. However, the entities did not always provide links to the relevant documents to which they referred. While WeChat China linked to its terms of services in its privacy policy, its privacy policy did not provide links to the terms of services. In the case of WeChat International, its terms of service included links to the privacy policy, and vice versa.

WeChat China noted when the last updated date and effective date were for its privacy policy but it did not do so for its terms of service. WeChat International provided information about when each of the respective documents was last

c=CN>; https://perma.cc/5KRJ-28NE. In the case of content regulation, WeChat China specified that users must not, among other things, "violate the basic principles established by the Constitution", or "contradict to *Interim Provisions on the Administration of the Development of Public Information Services of Instant Messaging Tools* and comply with the requirements of 'seven bottom lines' including laws and regulations, socialist systems, national interests, legitimate interests of citizens, public order, social morality and information authenticity." Italics in original.

41 The Supreme People's Court of the People's Republic of China (2009), "Constitute of the People's Republic of China," *China Court* <http://en.chinacourt.gov.cn/public/detail.php?id=4446>.

42 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>.

43 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>.

updated. Neither of the two entities provided access to historical versions of any of their policies.

3.2.2 Engaging with Company Through Questions or Complaints

We examined whether WeChat China and WeChat International provided specific contact information so that users could communicate with the company, which they may want to do in order to better understand how the platform captures, processes, or stores their personal information.

Both WeChat China and WeChat International had dedicated legal contact information, though neither identified a specific named privacy officer or point of contact. WeChat International explicitly noted that EU residents "have the right to lodge a complaint with [their] country's data protection authority."

While WeChat China and WeChat International promised to protect users' rights to access, correct, and delete personal information, they both included caveats.[44] WeChat China provided a detailed operational guide in its privacy policy on how users can access, amend, or delete personal information and on how to withdraw permission within the application. In addition to data access, correction, and erasure, WeChat International outlined data portability features which were exclusively reserved for EU users.[45]

3.2.3 Capture of Personal Information

Many social media services are designed to collect vast quantities of personal information, some of which is intimately sensitive in nature. We examined whether WeChat China and WeChat International clearly indicated the types of information that they collected as well as whether they provided rationales for the collections. We also examined if there were specifications for where information was stored in these policies.

44 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>. For specificity, WeChat International defined personal information as "any information, or combination of information, that relates to you, that can be used (directly or indirectly) to identify you." Types of personal information WeChat International identified included "Registration Data and Log-in Data" (i.e., a user's "name, user alias, mobile phone number, password, gender, and IP address") and "user profile search data" (i.e., "record of search inquires").

45 WeChat (n.d.), "How do I manage my account including how to export my personal data or request my account to be deleted?," *WeChat* <https://help.wechat.com/cgi-bin/micromsg-bin/oshelpcenter?opcode=2&lang=en&plat=ios&id=180323e2Ermm180323yqauAZ&Channel=help-center>.

WeChat China and WeChat International policies distinguished between sensitive personal information and non-personal information. WeChat China's policy did not provide a definition of personal information but did indicate the types of information it collected and, from among those, which constituted sensitive information.[46] Notably, WeChat China asserted that in addition to the types of data it outlined in its policies, the company could collect and process relevant personal information without asking for users' content under various circumstances.[47] WeChat International defined personal information as "any information, or combination of information, that relates to you, that can be used (directly or indirectly) to identify you."[48] WeChat International further specified what types of information were regarded as "shared information" (i.e., "information about you or relating to you that is voluntarily shared by you on WeChat"). Of particular note, WeChat International recognized a difference between 'regular' personal information and 'sensitive' personal information. Sensitive personal information included that about "your race or ethnic origin, religious or philosophical views or personal health" and "is subject to stricter regulation than other types of Personal Information...Before communicating any Personal Information of a sensitive nature within WeChat, please consider whether it is appropriate to do so."[49] The WeChat International's definition of sensitive personal information is contrasted against that in WeChat China's, where sensitive information includes a user's mobile phone number, voice biometrics, location information, movement (e.g., number of steps), contact/friends information, and payment records.[50] Furthermore, whereas search

46 Weixin (2019), "Weixin Privacy Protection Guidelines," *Weixin* (September 30, 2019) < https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=privacy&cc=CN>;https://weixin.qq.com/cgi-bin/readtemplate?lang=zh_CN&t=weixin_agreement&s=privacy. Types of sensitive information included mobile phone numbers, voice biometrics, location information, the number of steps users recorded in WeChat China's movement function, bank account information, and "recommended contacts/friends" information.

47 Weixin (2019), "Weixin Privacy Protection Guidelines," *Weixin* (September 30, 2019) < https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=privacy&cc=CN>;https://weixin.qq.com/cgi-bin/readtemplate?lang=zh_CN&t=weixin_agreement&s=privacy. WeChat China broadly named 10 scenarios in which such instances might happen. For instance, "when it is directly related to national interests such as national security and national defense, or it is directly related to major public interests such as public safety, public health, and public knowledge."

48 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>. Types of personal information WeChat International identified included "Registration Data and Log-in Data" (i.e., a user's "name, user alias, mobile phone number, password, gender, and IP address") and "user profile search data" (i.e., "record of search inquires").

49 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>.

50 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>; Weixin (2019), "Weixin Privacy Protection Guidelines," *Weixin* (September 30, 2019) < https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_

data were explicitly defined as personal information in WeChat International's policies, WeChat China did not make an equivalent specification.

WeChat International stated that chat data, which constitutes "[c]ontent of communications between you and another user or group of users" is "stored on your device and the devices of the users that you have sent communications to. We do not permanently store this information on our servers and it only passes through our servers so that it can be distributed to users you have chosen to send communications to."[51] WeChat China's statement on the duration of data retention was relatively vague, noting that "in general, we will only keep your personal information for the time necessary to achieve a specific purpose."[52] Whereas WeChat International explained it only retained chat data for 120 hours,[53] WeChat China cited only two examples (i.e., "mobile phone number" and "information in Moments"[54]) to show how long it stored personal information. Specifically, users' mobile phone numbers are stored for as long as they use WeChat, and information in Moments is stored until a user deletes the corresponding information.

WeChat China noted that all personal information collected within the territory in China would be stored in China. For users of WeChat International, the personal information would be transferred to, stored, or processed in Ontario, Canada or in Hong Kong. The company provided justifications noted for the choice of each location.[55]

agreement&s=privacy&cc=CN> ;https://weixin.qq.com/cgi-bin/readtemplate?lang=zh_CN&t=-weixin_agreement&s=privacy.

51 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>.

52 Weixin (2019), "Weixin Privacy Protection Guidelines," *Weixin* (September 30, 2019) < https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=privacy&cc=CN>;https://weixin.qq.com/cgi-bin/readtemplate?lang=zh_CN&t=weixin_agreement&s=privacy at Section 2.2.

53 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>.

54 Weixin (2019), "Weixin Privacy Protection Guidelines," *Weixin* (September 30, 2019) < https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=privacy&cc=CN>. WeChat China noted that it would store a user's phone number for as long as he or she uses WeChat services. As for information in WeChat Moments, information would be saved "to ensure your normal use of the Moments functions" and would be deleted if a user deletes corresponding information in Moments.

55 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>. WeChat International noted that Ontario Canada "was found to have an adequate level of protection for Personal Information under Commission Decision 2002/2/EC of 20 December 2001)." In the case of Hong Kong, WeChat International "rely on the European Commission's model contracts for the transfer of personal data to third countries

3.2.4 Disclosures of Information

One of the growing concerns over the global expansion of Chinese Internet companies which have operational entities in mainland China and overseas is whether user data collected outside of China is shared with members and affiliates of the company in China, China-based third-parties, or Chinese authorities.[56] The prospect of such sharing is particularly significant given that technical research, discussed in Section 2, revealed that non-China-registered accounts' information was being subject to content surveillance for the purpose of extending what was censored for China-registered accounts. As such, we examined WeChat China's and WeChat International's policies to determine the extent to which the companies asserted their rights to disclose collected information to third-parties and the conditions under which such disclosures were authorized.

We found that the clarification varied between the two entities with respect to the disclosure of information to third-parties and members or affiliates of Tencent. WeChat China made it clear that it would not share users' personal information with third-parties outside of Tencent.[57] However, it was left unclear how personal information would be shared among services owned by Tencent. We found the opposite in WeChat International's policies, where there were sometimes very clear specifications about which Tencent-related group companies the application could share personal information.[58] WeChat International acknowledged that it shared user data with certain third-party service providers, as well, without specifying with whom or what types of information were shared.

(i.e., the standard contractual clauses), pursuant to Decision 2001/497/EC (in the case of transfers to a controller) and Decision 2004/915/EC (in the case of transfers to a processor)."

56 See, for example, an ongoing class action lawsuit in the US against Chinese-owned TikTok that claims it transferred "vast quantities" of user data to China: BBC News (2019), "TikTok sent US user data to China, lawsuit claims," *BBC News* (December 3, 2019) <https://www.bbc.com/news/business-50640110>.

57 Weixin (2019), "Weixin Privacy Protection Guidelines," *Weixin* (September 30, 2019) < https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=privacy&cc=CN>;https://weixin.qq.com/cgi-bin/readtemplate?lang=zh_CN&t=weixin_agreement&s=privacy. WeChat China stated that "at present, [Tencent] will not actively share or transfer [the user's] personal information to a third party outside of Tencent" and that if there was any disclosure, Tencent would "directly obtain or verify the third party has obtained [the user's] prior express consent to such share or transfer of [the user's] personal information."

58 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>. For Tencent-related group companies, WeChat International stated that it shared personal information "our group of companies, including Tencent International Service Europe BV (located in the Netherlands), Tencent International Service Pte. Ltd (located in Singapore), WeChat International Pte Ltd (located in Singapore) and Oriental Power Holdings Limited (located in Hong Kong) and WeChat International (Canada) Limited (located in Canada) that run the Hong Kong and Canadian Servers," Additionally, "in the event of an internal restructuring of our or our affiliates businesses, or the sale of WeChat or any of its assets to a third party, the entity that consequently operates WeChat may be a different entity to us and we will transfer your information accordingly so that your service can continue."

WeChat China and WeChat International acknowledged that they may share information with law enforcement organizations under certain conditions, though the level of specificity varies between the two companies. WeChat China strongly implied that it would disclose the user's personal information to law enforcement organizations without specifying whether such disclosure would be conducted under a court order or which organizations would potentially receive information (e.g., police department based in the signing place of WeChat China agreements versus police departments based in any part of China).[59] Moreover, the circumstances under which the company "may share, transfer, or publicly disclose personal information without prior consent of the subject of the personal information" were broadly defined.[60] Though the entity did not specify which jurisdictions it would not share information with, WeChat China did acknowledge that the governing jurisdiction was mainland China.

In contrast, WeChat International stated that any disclosure of information to "government, public, regulatory, judicial and law enforcement bodies or authorities" would be carried out where the company "[is] required to comply with applicable laws or regulation, a court order, subpoena or other legal process, or otherwise have a legal basis to respond to a request for data from such bodies, and the requesting entity has valid jurisdiction to obtain [the user's] personal information."[61] The company did not commit to informing users about such disclosures. Similar to WeChat China's policies, WeChat International did not specify any countries with whom data would not be shared.

3.2.5 Behaviours of Hashing and Blocking User-Generated Content

Social media companies operating in China are known to control sensitive information in compliance with local laws and regulations.[62] As of early 2020, there

59 Weixin (2019), "Weixin Privacy Protection Guidelines," *Weixin* (September 30, 2019) < https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=privacy&cc=CN>. For clarity, WeChat China stated that, "Except for the circumstances prescribed by laws and regulations, Tencent will not make public or disclose the user's personal information to any third party without permission of the users."

60 Weixin Privacy Protection Guidelines Section 5 noted at least six circumstances under which it may disclose personal information without seeking prior consent. Without citing specific laws and regulations, these circumstances included vaguely defined and potentially overarching terms such as "national security or national defense," and "public safety, public health, or major public interests."

61 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>.

62 MacKinnon, Rebecca (2009), "China's Censorship 2.0: How companies censor bloggers," *First*

are increasing concerns about how Chinese-owned companies might exploit data generated outside mainland China or among their international users in the face of domestic political pressure, such as to block the availability of certain content, or conduct surveillance of particular persons or classes of communications. We examined whether there was any mention of, or justification for, performing hashing of communications content for the purpose of facilitating blocking access to content in either of WeChat China's or WeChat International's policies.

We found that both companies discussed the possibility of retaining and using content for several purposes. WeChina China acknowledged that it "may use information collected by certain features for [...] other services" and that such practices were justified on the basis of enabling performance and service optimization.[63] In addition to stating that WeChat International and its affiliate companies "are allowed to retain and continue to use Your Content after you stop using WeChat," WeChat International wrote in its terms of services that:

> **"you are giving us and our affiliate companies a perpetual, non-exclusive, transferable, sub-licensable, royalty-free, worldwide licence to use Your Content (with no fees or charges payable by us to you) for the purposes of providing, promoting, developing and trying to improve WeChat and our other services, including new services that we may provide in the future... As part of this licence, we and our affiliate companies may, subject to the our WeChat Privacy Policy, copy, reproduce, host, store, process, adapt, modify, translate, perform, distribute and publish Your Content worldwide in all media and by all distribution methods, including those that are developed in the future."**

Further, WeChat International might justify its hashing of content on the basis that doing so constitutes services improvement and security protections. Specifically, the company's policies stated that WeChat "may be required to retain or disclose Your Content in order to enforce these Terms or to protect any rights, property or safety of ours, our affiliate companies or other users of WeChat."[64]

Monday <https://firstmonday.org/article/view/2378/2089>.

63 Weixin (2019), "Weixin Privacy Protection Guidelines," *Weixin* (September 30, 2019) < https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=privacy&cc=CN>. In particular, WeChat China stated that, "Tencent is granted to use the non-confidential contents uploaded or published by you (such as video published via Time Capsule, selfie stickers) for achieving the performance of the Software and Services, including without limited to storage, displaying to relevant users, granting and allowing other use."

64 WeChat (2018), "WeChat -- Terms of Service," *WeChat* (March 21, 2018) <https://www.wechat.com/en/service_terms.html>.

In terms of blocking content, WeChat China asserted that Tencent would act in accordance with laws and regulations based on its "reasonable judgement" to "remove or obscure relevant contents at any time without notice, impose punishment on the violating account including but not limited to warning, restriction or prohibition of the use of some or all of the functions, account banning or cancellation, and announce the results of treatment."[65] Similarly, WeChat International stated that it "may review (but make no commitment to review) content (including any content posted by WeChat users) or third party programs or services made available through WeChat to determine whether or not they comply with our policies, applicable laws and regulations or are otherwise objectionable. We may remove or refuse to make available or link to certain content or third party programs or services if they infringe intellectual property rights, are obscene, defamatory or abusive, violate any rights or pose any risk to the security or performance of WeChat."

3.2.6 Data Protection Office Non-Response

We contacted WeChat's international data protection office on January 20, 2020, using the contact email that was provided in the company's international Privacy Policy.[66] We did not receive a response from the Office, including even an acknowledgment that they received our initial letter, by February 3, 2020. As a result, we sent a reminder email on February 3, 2020; as of writing, we have still not received any response from WeChat's international data protection office to the questions posed to them.

3.3 Discussion

It was easy to identify and access the international and China-specific versions of the privacy policies, terms of service, and associated documents linked with the WeChat service. Both China-registered and non-China-registered accounts were presented with data access, correction, and deletion capabilities, indicating that the company was compliant with basic rights afforded under the Personal Information Protection and Electronic Documents Act (PIPEDA), Canada's data privacy legislation. Similar rights are extended to persons living in European countries which are subject to the GDPR, or countries with GDPR-like legislation.

65 Weixin (n.d.), "Agreement on Software License and Service of Tencent Weixin," *Weixin* (n.d.) <https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=default&c-c=CN> [https://perma.cc/5KRJ-28NE>] at Section 8.5.1.

66 The email address was: dataprotection[@]wechat[.]com.

While it is clear from public information that content may be blocked for China-registered accounts, it is unclear how international data is used to enable content blocking or the policy rationale which permits the sharing of data used for blocking between international and China regions of WeChat. As per their policies, WeChat International does reserve the right to block content for its international users. Specifically the company:

> **"may review (but make no commitment to review) content (including any content posted by WeChat users) or third party programs or services made available through WeChat to determine whether or not they comply with our policies, applicable laws and regulations or are otherwise objectionable. We may remove or refuse to make available or link to certain content or third party programs or services if they infringe intellectual property rights, are obscene, defamatory or abusive, violate any rights or pose any risk to the security or performance of WeChat."**[67]

While WeChat China's policy documents clearly permit a wide range of blocking and WeChat International's policies appear to permit some sort of blocking, these policies at best explain the motivation for content surveillance of non-China-registered users but do not enable it. In the remainder of this section, we discuss whether according to policy documents WeChat International is permitted to analyze non-China-registered users' data for political sensitivity and whether WeChat International is permitted to share users' data or the results of this analysis to entities in China.

3.3.1 Enabling Content Surveillance

The international public-facing policy documents do include language that could permit communications content surveillance and, therefore, prospectively the hashing of the contents of communications for the purposes of developing or enhancing WeChat's censorship system. Specifically, the international policy documentation reveals that WeChat might review content, which could be interpreted as permitting the company to assess content to derive hashes from it. The company, elsewhere, acknowledges that individuals may share "sensitive information" on WeChat, "such as information about your race or ethnic origin, religious or philosophical views or personal health" and that "content and information that you input to WeChat, such as photographs or information about your school or social activities, may reveal your sensitive Personal Information to

67 WeChat (2018), "WeChat -- Terms of Service," *WeChat* (March 21, 2018) <https://www.wechat.com/en/service_terms.html>.

others."[68] WeChat is not providing an exclusive listing of what constitutes sensitive information; even what is listed, however, might be inclusive of political speech where it is aligned with philosophical views. Further, sensitive information exists in multiple kinds of shared content and not just the text that is typed. As such, sensitive information—including communicating certain philosophical views—might be found in photos and, presumably, documents or other kinds of files.

Analysis of international users' communications are also authorized in the privacy policy and terms of service documents that they agree to. WeChat International includes a standard, broadly encompassing, class of language which authorizes them to transmit users' communications without running afoul of copyright claims. Specifically, the company's public-facing documentation includes:

> **"you are giving us and our affiliate companies a perpetual, non-exclusive, transferable, sub-licensable, royalty-free, worldwide licence to use Your Content (with no fees or charges payable by us to you) for the purposes of providing, promoting, developing and trying to improve WeChat and our other services, including new services that we may provide in the future… As part of this licence, we and our affiliate companies may, subject to the our WeChat Privacy Policy, copy, reproduce, host, store, process, adapt, modify, translate, perform, distribute and publish Your Content worldwide in all media and by all distribution methods, including those that are developed in the future."[69]**

WeChat might further justify analyzing content based on the assertion that the company "may be required to retain or disclose Your Content in order to enforce these Terms or to protect any rights, property or safety of ours, our affiliate companies or other users of WeChat."[70] Content might be retained per this language, as well as assessed, if it is found to infringe upon "any rights, property or safety of ours" or the company's "affiliate companies or other users of WeChat." Specifically, without a better understanding of the way(s) in which WeChat's international and China operations are associated, such as whether they constitute affiliate companies or China-registered WeChat accounts are "other users of WeChat" per the international company's terms of service and privacy policy, it is challenging to definitively know

68 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>. See "Sensitive Personal Information."

69 WeChat (2018), "WeChat -- Terms of Service," *WeChat* (March 21, 2018) <https://www.wechat.com/en/service_terms.html>.

70 WeChat (2018), "WeChat -- Terms of Service," *WeChat* (March 21, 2018) <https://www.wechat.com/en/service_terms.html>.

if these elements of the company's international public policy documentation authorize the analysis the content of international users' communications for that which is 'sensitive' in China, or the hashing of such content of communications, or the sharing the results with the Shenzhen-domiciled element of the company.

In contrast, the terms of services and privacy policies WeChat enforces on its China-registered accounts include a clear statement that would authorize the company to conduct content surveillance for the purpose of content blocking. Specifically, WeChat China's terms of services state that:

> **"If Tencent finds or receives any report or complaint from others against the user on violation to this Agreement, Tencent is entitled to remove or obscure relevant contents at any time without notice, impose punishment on the violating account including but not limited to warning, restriction or prohibition of the use of some or all of the functions, account banning or cancellation, and announce the results of treatment."** [71]

In line with WeChat International's documents which justify the analysis of international users' communications for security and performance improvement reasons, the language used in the policy documents pertaining to WeChat's China-registered accounts allows Tencent to read and analyze users' communications.[72]

In conclusion, it remains highly plausible that WeChat could attempt to justify subjecting its international users' communications to content surveillance based on the contents of the company's public-facing policy document. Moreover, the company can clearly engage in content surveillance of the communications transmitted using China-registered accounts. To be entirely certain about the policy rationale undergirding content surveillance of international users' communications, however, the company's international data protection officer would have needed to reply to our letter. We have not received a response as of this report's publication date.

71 Weixin (n.d.), "Agreement on Software License and Service of Tencent Weixin," *Weixin* (n.d.) <https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=default&c-c=CN>[https://perma.cc/5KRJ-28NE]

72 Weixin (n.d.), "Agreement on Software License and Service of Tencent Weixin," *Weixin* (n.d.) <https://weixin.qq.com/cgi-bin/readtemplate?lang=en&t=weixin_agreement&s=default&c-c=CN> [https://perma.cc/5KRJ-28NE]. According to the Agreement of Software License and Service of Tencent Weixin, "to the extent permitted by laws, Tencent is granted to use the non-confidential contents uploaded or published by you (such as video published via Time Capsule, selfie stickers) for achieving the performance of the Software and Services, including without limited to storage, displaying to relevant users, granting and allowing other use."

3.3.2 Enabling Content or Metadata Disclosure

In specifically assessing the policies to ascertain whether they do, or do not, permit the disclosure of international users' communications content or metadata to parties in China, we found that the permissibility of such disclosures remained ambiguous. On the one hand, the international entity denoted a specific list of subsidiary international organizations with whom it might disclose information, and then more broadly identified classes of external organizations—such as those that enable SMS delivery or VoIP functionality—that might receive information about the user or their usage of WeChat. It is possible that these subsidiary or third-party organizations might, themselves, have disclosure policies that include sharing information about international users' communications with a China-based organization that ultimately routes data to WeChat's China-based entity. However, if this is the case, and presuming it is typical behaviour, then the failure to specify such practices would be misleading to someone who had read the privacy policy and terms of service with the intent of learning how the company typically handled users' communications. Should such disclosures be sufficiently irregular that they do not merit including information about them in the public-facing policy documents, then WeChat could and should notify individuals that data is being disclosed when it takes place, such as through in-app dialogues or automated chat sessions initiated by the company. Ultimately, then, while it is possible that the public-facing policy documents might authorize the sharing of international users' data with WeChat China, the prospect of this sharing is not clear or apparent from reading these policies.

Similarly ambiguous is how WeChat's China-based entity handles communications between its China and international users. The policy documents pertaining to WeChat's users with a China-registered account state that the company "may use information collected by certain features for our other services." Whereas these policy documents make it clear that Tencent does not share or transfer personal information to third parties outside of Tencent, it is left unclear how or whether information and contents of internationally-based users of Tencent-affiliated services are shared within the company.

In summary, it remains unclear on what basis the hashes of international users' communications might be disclosed to WeChat China. To be certain on what basis, if any, WeChat justifies the sharing of hashes between the international and China-specific iterations of WeChat, the company's international data protection officer would have had to reply to the letter we issued to them. As of publication, however, the company has failed to even acknowledge their receipt of the messages we have sent them, let alone respond to the questions we posed to the company.

Part 4. Data Access Request Assessment

Tencent is subjected to the Personal Information Protection and Electronic Documents Act (PIPEDA) because it has a substantial commercial connection to Canada by merit of doing business with persons residing in Canada and because some of the company's data centres are located in Canada.[73] Principle 4.9 of PIPEDA outlines Canadians' access and correction rights; Canadians have a right to "be informed of the existence, use, and disclosure of their personal information and be given access to that information."[74] Individuals may have to prove their identity so that companies can retrieve their information. Organizations must provide some response to the requester within thirty days and may (as part of that response) inform requesters that the company is availing itself of an additional thirty days to prepare a response. Access should be provided at a minimum, or zero, cost.

In this section of the report, we discuss and assess the findings which emerged from filing a PIPEDA-based data access request upon Tencent's international business. Overall, while we found that there was a limited data export tool that employees were quick to help us use, the employees would not respond to questions about data not contained in the export tool, inclusive of how images were hashed, or whether such hashes were shared with WeChat China.

4.1 Methodology

One of the project researchers created a non-China-registered WeChat account. From this account, the researcher communicated with other accounts which our team created, all of which were registered internationally.[75] Specifically, the researcher transmitted unique and sensitive chat messages, documents, and images in a group chat which contained two other non-China-registered accounts. To confirm that the hashes of the documents and images were added to the hash index, a pair of experiments were conducted, as discussed in Section 2.

73 WeChat (2018), "WeChat Privacy Protection Summary," *WeChat* (May 10, 2018) <https://www.wechat.com/en/privacy_policy.html>. See "Where do we process your data"; see also: Office of the Privacy Commissioner of Canada (2017), "Commercial Activity," *Office of the Privacy Commissioner of Canada* (January 30, 2017) <https://www.priv.gc.ca/en/privacy-topics/privacy-laws-in-canada/the-personal-information-protection-and-electronic-documents-act-pipeda/pipeda-compliance-help/pipeda-interpretation-bulletins/interpretations_03_ca/>.

74 Office of the Privacy Commissioner of Canada (2013), "Access to Personal Information," *Office of the Privacy Commissioner of Canada* (May 16, 2013) <https://www.priv.gc.ca/leg_c/interpretations_05_access_e.asp>.

75 The contents of these communications are detailed in Section 2.

We used PIPEDA-based data access requests to better understand the kinds of personal information that Tencent collects when an international user installs WeChat and uses the service. In particular, we explored whether such requests could be used to reveal to international users that the content of their communications were being used to develop the hash index which was used to censor the communications of China-registered accounts.

The researcher filed two rounds of personal information requests. The first round entailed two separate emails: one to Tencent's international data protection office, and the second to Tencent's China-based data protection office. The second round entailed a single follow-up email to Tencent's international data protection office.

4.1.1 Round One Data Access Request

The first request asked questions about the different kinds of data which might be collected in the course of using WeChat, inclusive of geolocation information, IP address logs, subscriber information, personally identifiable information, as well as any information pertaining to communications between users, any MD5 hashes of the content of communications exchanged using WeChat, or whether any communications sent using WeChat had been found to violate Tencent's terms of service and, if so, whether such violations pertained to violations associated with users who were located in China. The request also asked the company to disclose whether the content of any communications, or hashes derived from such communications, had been used to enable or optimize the detection of terms of service violations for users located in the People's Republic of China or any other jurisdiction. The request, finally, asked Tencent to disclose if any personal information, or information about the researcher's account or devices, had been shared with any other third-parties and, in the request made to Tencent Singapore, specifically whether it had been shared or disclosed with Shenzhen Tencent Computer Systems Company Limited. Shenzhen Tencent Computer Systems Company Limited is the portion of the company that is domiciled in the People's Republic of China and, thus, is required to comply with Chinese law that mandates the blocking of particular content that is communicated using WeChat. The letter cited PIPEDA and informed Tencent of its requirement to respond within thirty days and at a minimal cost.

Copies of this request as sent to the Tencent Shenzhen and Tencent Singapore data protection offices are available in Appendices B and C, respectively.

4.1.2 Round Two Data Access Request

After receiving an initial response—discussed in Section 4.2—another letter was sent which reiterated requests for the below data:

- Communications between the researcher and other users.
- The geographic location where data which the researcher contributed to the WeChat social network was stored and, more specifically, whether any of the data was stored in the People's Republic of China.
- Social networking information, inclusive of MD5 hashes or other hashes computed upon the researcher's chat messages, images, or files sent using the service.
- Results indicating whether any of the chat messages, images, or files sent using the service had been determined to violate the company's terms of service and, if so, the basis for which these messages were categorized as violating the terms of service.

In cases where the data was not retained, the researcher asked that Tencent positively confirm that the data was not retained.

The follow-up letter also asked Tencent to disclose "whether (and, if so, which of) any of my chat messages, images, or files sent using your service, or any hashes computed upon these items, have been used for the purposes of detecting terms of service violations for users located in the People's Republic of China or any other jurisdiction" as well as "whether (and, if so, which of) any of my chat messages, images, or files sent using your service, or any hashes computed upon these items, have been shared with, or disclosed to, Shenzhen Tencent Computer Systems Company Limited either by Tencent International Service Pte. Ltd. or a subsidiary, and to which other parties in China or outside China (inclusive of all subsidiaries) with whom this data has been shared."

A copy of this letter is in Appendix D.

4.2 Data

The first data access request ("PIPEDA request") was sent on November 29, 2019, to the email address associated with the Tencent Shenzhen and Tencent Singapore data protection offices. Our interactions with Tencent Singapore took place according to the following timeline:

- December 2: Tencent provided instructions to access and use WeChat's "Export Personal Data" tool
- December 2: Researcher informed Tencent that, although they were using the latest version of the app, they could not find an "Export Personal Data" tool using the provided instructions
- December 5: Tencent responded that they can facilitate the data export but, to do so, the researcher had to verify their identity. Identity verification was based on providing eight different items for verification. Tencent requested that the researcher provide as many as possible
- December 5: Researcher provided Tencent with the eight items for verification
- December 16: Tencent responded by directing the researcher to paste a link[76] into a WeChat chat and to open the URL in WeChat to export the personal data
- December 18: The researcher followed the instructions. Using the export tool accessible from the link, the researcher was required to confirm their email address. After confirming their email address, the researcher was automatically emailed a link to a web page that provided a downloadable *.zip file that contained information pertaining to the researcher's use of the application

The *.zip included the following information:

- Personal account information: WeChat ID, Registration Region, Linked Accounts (i.e., email attached to the account), Registration Time, and Phone Number.
- Contact Data: Friends and Group Chat Contacts. No accounts were listed under the latter category.[77]
- Moments Data: My Moments, My Comments and Likes, Hide My Moments, and Hide User's Moments. No information was provided in this category, presumably because the researcher did not use these aspects of WeChat.
- Location and Login Information: Location Information and Login Devices. The latter identified the mobile device the researcher used while interacting with WeChat, whereas no information was presented for the former category.

Information which was requested in the initial letter but not provided in the response included:

76 The URL we were provided was: https://support.weixin.qq.com/security/readtemplate?t=exportdata/index

77 We did not explore how WeChat differentiated between Friends and Group Chat Contacts.

- IP address log information
- Information pertaining to whether and, if so, how the researcher's communications data was used to generate the censorship index for China-registered accounts
- Information of whether information about the researcher—inclusive of account information, communications content, or MD5 hashes of their content—had been shared with any third-parties

The second round of the data access request sent on December 18 reiterated that the researcher sought access to information discussed in Section 4.1.2. No subsequent communications have been received by Tencent Singapore as of the time of publication.

At no point did the researcher receive a response to the letter that they issued to Tencent Shenzhen.

4.3 Discussion

The data which Tencent Singapore provided to the researcher fell short of the information which had been requested. Most notably, it excluded information that was principally sought concerning the extent to which, and rationales upon which, derived elements of the researcher's communications might have been communicated to other parties such as Tencent Shenzhen. This failure took place despite the researcher's repeated engagements with Tencent Singapore employees; they were actively involved in communicating with the researcher to guide them to the Export Personal Data tool, but failed to provide substantive communications concerning the most pressing of the researcher's questions about the company's data handling practices.

Tencent Singapore's response, which directed users to a data export tool, parallels past experiences of researchers who have sought access to information retained by other companies, including fitness tracker companies and social media companies. Specifically, data export tools have been shown to not include all of the information that users provide to services, and companies routinely fail to answer questions about data collection, processing, and storage beyond what is presented through data export tools.[78] However, in the case of Tencent there is evidence—as denoted

78 Parsons, Christopher, Andrew Hilts, and Masashi Crete-Nishihata (2018), "Approaching Access: A comparative analysis of company responses to data access requests in Canada," *Citizen Lab* (February 12, 2018) <https://citizenlab.ca/wp-content/uploads/2018/02/approaching_access.pdf>; Tsui, Lokman and Stuart Hargreaves (2019), "Who Decides What Is Personal Data? Testing

in Section 2—that either the Singapore or Shenzhen part(s) of the company are using non-China-registered users' communications to develop a hash index that is subsequently applied to censor communications between a subset of Tencent's user base: those who have registered their accounts in China.

Moreover, in cases where individuals are specifically asking about how their communications are treated—in this case, whether and why the contents of communications are subject to content surveillance and where the content of communications are stored—it is reasonable for a company to provide such information in a good faith effort to explain its data processing practices. The terms of service and privacy policy which applied to the service were ambiguous in how the company handled users' data. Thus, the questions that were posed by our researcher constituted the sole remaining non-technical method that individuals might use to understand WeChat's international data collection, processing, and storage activities.[79]

To explain the company's handling of user data, it might have crafted a specific letter or other communication to a user. It might also have directed the user to a specific part of a company's privacy policy or terms of service document to clarify how the company might interact with the contents of users' communications. Tencent Singapore did not engage in either of these types of clarifying activities, preventing international users of the WeChat service from understanding how the company treats the contents of their communications, knowing who has access to or obtains the contents of their communications or derivations of them, or even where data is being stored.

Part 5 - Conclusion

In this report, we present technical experiments which reveal that WeChat communications that are conducted entirely among non-China-registered accounts are subject to content surveillance. We found that documents and images that were transmitted entirely among non-China-registered accounts were analyzed for Chinese political sensitivity. Upon analysis, files deemed politically sensitive were

the Access Principle with Telecommunication Companies and Internet Providers in Hong Kong," *International Journal of Communication* 13.

79 For details on how, and why, the terms of service and privacy policy were ambiguous on the issues of data collection, processing, and storage, see Section 3 of this report.

used to invisibly train and build up WeChat's Chinese political censorship system. We also conducted analysis of WeChat's public-facing policy documents, made data access requests, and engaged with Tencent data protection representatives to assess whether those methods could also explain, or uncover, the content surveillance carried out towards international users' communications. We found that none of the information WeChat makes available to users explains the rationales for such surveillance or the transmission of content hashes from WeChat International to WeChat China.

The failure of data protection officials to respond to our questions regarding WeChat's privacy policies is particularly notable given that Tencent staff were initially quick to assist our researchers in using an automated data-export tool associated with WeChat's commitment to facilitate access, modification, and removal of international users' content. Perhaps, however, the failure is less surprising given that the same staff were unwilling to provide any assistance or information above and beyond helping us use this tool: our more specific data access request questions were never acknowledged, let alone responded to.

Companies operating around the world staff their companies with privacy and data protection professionals to, in part, ensure that questions about companies' policies can be addressed. In the case of WeChat's international operations, however, it remains unclear to whom users can turn if they want to understand the company's policies. In the case of WeChat's failure to explain its content surveillance policies, as well as the apparent retention of hashes of content even after a user has recalled it, makes clear that the company must more meaningfully communicate with its users. However, as of today, individuals clearly cannot turn to the designated staff working at WeChat international and speak to individuals that users would rightly expect to be able to answer these kinds of questions.

Tencent has not only failed to explain to its international users how their communications content is being used to facilitate the censorship apparatus that is applied to China-registered WeChat accounts, but the company has also failed to explain, or clarify, whether international users' communications content are subject to surveillance that is not associated with the censorship of content that is deemed sensitive in China. Put another way, the content surveillance and hashing system we discuss in this report is at least part of the broader censorship system which has been fully deployed towards China-registered accounts. The infrastructure for hashing communications between internationally registered accounts exists and could, in theory, be (re)purposed to hash additional kinds of sensitive files (e.g.,

files associated with terrorism or child abuse imagery or leaked documents which governments do not want to have circulated about their operations). It is unclear how challenging it would be to repurpose the existing system(s) for determining what is, and is not, sensitive content, nor whether significant engineering efforts would be required to integrate the censorship system that is currently applied to China-registered accounts to internationally registered accounts.

Granted, social media surveillance and content moderations are not unique to WeChat. Surveillance constitutes a fundamental feature of all mainstream profit-oriented social media businesses.[80] As companies push to grow products internationally, they will inevitably experience pressures from governments to remove content or provide user data, as demonstrated by the requests documented in annual corporate transparency reports.[81] In the case of China, attention is typically centered on foreign companies that are attempting to enter the Chinese market and must decide whether and how to comply with the government's strict content regulations. Recent revelations of Google working on a search engine to enable geographically-based filtering features in an effort to re-enter China is but the latest example.[82]

While content surveillance and content moderation are ubiquitous across social media platforms, our research findings point to a worrying situation where globalized companies extend information controls beyond the borders of their home country and incorporate these practices into general product designs and business operations. There are at least three potential reasons why Tencent has designed its surveillance and censorship system in such a way. First, it may have been an intentional design decision for the purpose of complying with China's political and regulatory restrictions (e.g., only using communications among China-registered accounts to train their censorship system may be ineffective if those

80 Ronald Deibert (2019), "The Road to Digital Unfreedom: Three Painful Truths About Social Media," *Journal of Democracy* 30(1).

81 Parsons, Christopher (2016), "Transparency in Surveillance: Role of various intermediaries in facilitating state surveillance transparency," *Centre for Law and Democracy* <http://responsible-tech.org/wp-content/uploads/2016/06/Parsons.pdf>. Transparency reports may not, however, be particularly effective in genuinely expressing the regularity at which governments attempt to block, or have content taken down. For more, see Parsons, Christopher (2017), "The (In)effectiveness of Voluntarily Produced Transparency Reports," *Business & Society* <http://journals.sagepub.com/doi/full/10.1177/0007650317717957>.

82 McKune, Sarah, Ronald Deibert (2018), "Google's Dragonfly: A Bellwether for Human Rights in the Digital Age," *Just Society* <https://www.justsecurity.org/59941/googles-dragonfly-bellwether-human-rights-digital-age/>.

users are prevented from engaging in the very censored topics needed to train the system). Second, it may be a side effect of technical efficiency considerations (e.g., it may be simpler to engineer a platform that performs political content surveillance on all communication versus only on some). Finally, it may be a side effect of a content blocking system enabled for non-China-registered users which does not block Chinese political content but possibly does block other kinds (e.g., possibly terrorism content or pornography). In the case of our findings, there is no evidence attributing Tencent's surveillance behaviours enforced on international WeChat users to the direction of the Chinese government. We cannot conclusively determine which of these scenarios is true and it is possible there are other explanations that we have not considered. Regardless of the reasons, the implications of our research are clear: users of WeChat are not provided sufficient transparency into how their data is used to understand whether and how their data enables political censorship in other jurisdictions.

Building on the findings in this report, there are multiple avenues for future research. The technical experiments that we developed are capable of detecting content surveillance of documents and images on WeChat. However, our methodology, insofar as it relies on using WeChat's censorship hash index as a side channel, cannot be used to test whether there is surveillance of chat message text sent entirely among non-China-registered accounts. WeChat automatically censors chat message contents from or to China-registered accounts if they contain a blacklisted keyword combination, but it is currently an open question as to how WeChat generates or maintains these keyword combination blacklists. These keyword blacklists may be generated from users' communications similarly to how the hashes of users' images and documents populate WeChat's censorship hash index. Further research is required to explore if these keyword blacklists are built up from chat text sent among non-China-registered users in the same way as these users' communications contribute to the document and image hash index.

Furthermore, our report looked at one platform, Tencent's WeChat, and found that Tencent uses non-China-registered users' communications to build up its censorship system. Future work is required to understand if this behaviour is unique to Tencent or if it is common for internationally operating Chinese social media companies to use communications among their non-Chinese users to implement Chinese political censorship.

Appendix

A. Letter to WeChat Data Protection Office

Attn: Data Protection Officer
Tencent International Service Pte. Ltd.
10 Anson Road
#21-07 International Plaza
Singapore
079903

Dear Tencent Data Protection Officer,

I am writing to you to learn more about how Tencent International handles and manages the data which is communicated by its users. Specifically, and in light of allegations concerning how competing services such as TikTok may be censoring certain classes of content, I want to better understand the division of the communications services provided to domestic Chinese users of WeChat versus the services provided to international users of WeChat's communications services.

I am particularly curious to know whether any of the communications content or metadata that WeChat's international users send to other international users is ever used to update, modify, or otherwise interact with the blocklists that Tencent is lawfully required to apply to communications between domestic Chinese WeChat users. In reading your company's international terms of service and privacy policy, it seemed like the respective policies might permit such activities. The specific questions that I have about Tencent International's communications service offerings follow.

1) In the discussion of "Types of Information We Process", Tencent International acknowledges that it collects log information such as metadata, which is "information related to items you have made available through WeChat, such as the date, time or location that a shared photograph or video was taken or posted." Would such metadata include a hash of the files or other contents shared using WeChat communications services? And, if so, could such hashes be used in the development or maintenance of the domestic blocklist system that

WeChat is lawfully obligated to apply to its domestic Chinese users?

2) In the discussion on how Tencent International processes its users' information, there is a section entitled "Pseudonymised and Aggregated Data", which notes that some activities are undertaken within the app to facilitate fraud detection and undertake account safety analysis. Does, or would, this section authorize Tencent International to process communications between its international users for the purpose of developing the domestic blocklist system that Tencent is lawfully obligated to apply to its domestic Chinese users?

3) In the WeChat Privacy Policy, Tencent International acknowledges that it may share information with government, public, regulatory, judicial and law enforcement bodies or authorities "where we are required to comply with applicable laws or regulations, a court order, subpoena or other legal process, or otherwise have a legal basis to respond to a request for data from such bodies, and the requesting entity has valid jurisdiction to obtain your personal information". Has Tencent International ever, or does Tencent International currently, disclose information pertaining to international WeChat users to such bodies in China, for the purposes of complying with legal requests directed at enhancing, developing, or maintaining the blocklists that Tencent is lawfully obliged to apply to its domestic Chinese users?

4) The WeChat Privacy Policy denotes a range of international Tencent subsidiaries with whom international WeChat users' information might be shared. Is it the case that no log data, non-personal data, personal information, or shared information is disclosed to Tencent's Shenzhen-operated domestic business? If information is shared between the Tencent international businesses which are involved in the operation of the communications service offered to international users, can you clarify which specific information is provided and how it is classified by the company (i.e., as log data, non-personal data, personal information, or shared information)?

5) The WeChat Terms of Service document indicates that Tencent International's business may "share Your Content with third parties that we work with to help provide, promote, develop and improve WeChat in accordance with the WeChat Privacy Policy". Can you confirm that

such sharing does not include the disclosure of log data, non-personal data, personal information, or shared information with Tencent's China-domiciled business operations? If some data is shared from the international business with the China-domiciled business operations, can you clarify what data is specifically shared and the purposes behind such sharing processes?

6) The WeChat Terms of Service document indicates that Tencent International "may be required to retain or disclose Your Content in order to enforce these Terms or to protect any rights, property or safety of ours, our affiliate companies or other users of WeChat." Can you clarify whether, under these terms, Tencent International would be permitted to share an international user's content with the China-domiciled elements of Tencent's business operations? And, if these terms would authorize such sharing, whether and under what conditions such sharing would take place?

7) The WeChat Terms of Service document denotes that Tencent International's international users provide the company and its affiliate companies "a perpetual, non-exclusive, transferable, sub-licensable, royalty-free, worldwide license to use Your Content (with no fees or charges payable by us to you) for the purposes of providing, promoting, developing and trying to improve WeChat and other services … As part of this license, we and our affiliate companies may, subject to the WeChat Privacy Policy, copy, reproduce, host, store, process, adapt, modify, translate, perform, distribute and publish Your Content worldwide in all media and by all distribution methods[.]" Can you clarify whether, under these terms, Tencent International would be permitted to share an international user's content with the China-domiciled elements of Tencent's business operations? And, should these elements of the Terms of Service document authorize such sharing of an international user's data with the China-domiciled elements of Tencent's business operations, would such data ever be shared for the purposes of enhancing, developing, or maintaining the blocklists that Tencent is lawfully obliged to apply to its domestic Chinese users?

8) The aforementioned questions have, generally, sought to understand whether there are terms, conditions, or policies which would authorize

> Tencent International's businesses to share international user's log data, non-personal information, personal information, shared information, or other classes of information to Tencent's China-domiciled businesses, or any other Tencent businesses operating within the People's Republic of China. Is it the case that such international users' information is never transmitted to the China-domiciled businesses, or any other Tencent businesses or affiliates operating within the People's Republic of China, for the purposes of enhancing, developing, or maintaining the blocklists that Tencent is lawfully obliged to apply to its domestic Chinese users?

Thank you for your attention to these questions, and in advance for the time that you may commit in responding to these questions. If you have any additional questions regarding this letter, please feel welcome to contact me at: [Researcher email address].

Best Regards,

[Name]

B. PIPEDA Data Request to Shenzhen Tencent Computer Systems Company Limited

November 29 2019

Shenzhen Tencent Computer Systems Company Limited

Tencent Legal Department (Privacy & Data Protection Centre)

Tencent Building, Kejizhongyi Avenue, Hi-tech Park, Nanshan District, 518057 Shenzhen, People's Republic of China

Re: Subject access request

Dear Sir or Madam,

I am a customer of WeChat, and I am interested in both learning more about your data management practices and the personal data you process about me. This is a request to access my personal data under Principle 4.9 of Schedule 1 and section

8 of Canada's federal privacy legislation, the Personal Information Protection and Electronic Documents Act (PIPEDA).

I am requesting a copy of all records which contain my personal information from your organization.

The following is a non-exclusive listing of all information that your organization may hold about me, including the following:

- **Mobile app data**: Information collected about me, or persons/devices associated with my account, using one of your company's mobile device applications
- **Geolocation data**: collected about me, my devices, and/or associated with my account (e.g. GPS information, cell tower information)
- **IP address logs**: associated with me, my devices, and/or my account (e.g. IP addresses assigned to my devices/router, IP addresses or domain names of sites I visit and the times, dates, and port numbers)
- **Subscriber information**: that you store about me, my devices, and/or my account
- **Personally identifying information**: that is unique to me, my devices, and/or my account, such as name, email addresses, phone numbers, responses to relationship questions, or device identifiers.
- **Any additional kinds of information**: that you have collected, retained, or derived from the mobile or website services you provide, including but not limited to:

    a) communications between myself and other users;
    b) social networking information, inclusive of MD5 hashes or other hashes computed upon my chat messages, images, or files sent using your service;
    c) whether any of the chat messages, images, or files sent using your service have been determined to violate your terms of service and, if so, whether any such terms of service violations pertain to violations associated with users who are located in the People's Republic of China; and
    d) whether any of my chat messages, images, or files sent using your service, or any hashes computed upon these items, have been used to enable/optimize detecting terms of service

violations for users located in the People's Republic of China or any other jurisdiction.

- **Disclosures to third parties**: Any information about disclosures of my personal information, or information about my account or devices, to other parties, including law enforcement and other state agencies. I am specifically interested in knowing whether and which of my information has been shared with, or disclosed to, Tencent International Service Pte. Ltd., and to which parties in China or outside China with whom my data has been shared.

If your organization has other information in addition to these items, I formally request access to that as well. If your service includes a data export tool, please direct me to it, and ensure that in your response to this letter, you provide all information associated with me that is not included in the output of this tool. Please ensure that you include all information that is directly associated with my name, phone number, e-mail, or account number, as well as any other account identifiers that your company may associate with my personal information. Finally, please provide this data, where possible, in a structured and non-proprietary digital format.

You are obligated to provide copies at a free or minimal cost within thirty (30) days of receipt of this message. If you choose to deny this request, you must provide a valid reason for doing so under Canada's PIPEDA. Ignoring a written request is the same as refusing access. See the guide from the Office of the Privacy Commissioner at: http://www.priv.gc.ca/information/guide_e.asp#014. The Commissioner is an independent oversight body that handles privacy complaints from the public.

Please let me know if your organization requires additional information from me before proceeding with my request.

Here is my information that may help you identify my records:

- First Name: [name]
- Last Name: [name]
- Email Address: [email address]
- Telephone Number: [phone number]

Sincerely,

[name]

C. PIPEDA Data Request to Tencent International Service Pte. Ltd., #1

November 29 2019

Tencent International Service Pte. Ltd.

10 Anson Road, #21-07 International Plaza, Singapore 079903

Re: Subject access request

Dear Sir or Madam,

I am a customer of WeChat, and I am interested in both learning more about your data management practices and the personal data you process about me. This is a request to access my personal data under Principle 4.9 of Schedule 1 and section 8 of Canada's federal privacy legislation, the Personal Information Protection and Electronic Documents Act (PIPEDA).

I am requesting a copy of all records which contain my personal information from your organization.

The following is a non-exclusive listing of all information that your organization may hold about me, including the following:

- **Mobile app data**: Information collected about me, or persons/devices associated with my account, using one of your company's mobile device applications
- **Geolocation data**: collected about me, my devices, and/or associated with my account (e.g. GPS information, cell tower information)
- **IP address logs**: associated with me, my devices, and/or my account (e.g. IP addresses assigned to my devices/router, IP addresses or domain names of sites I visit and the times, dates, and port numbers)
- **Subscriber information**: that you store about me, my devices, and/or my account
- **Personally identifying information**: that is unique to me, my devices, and/or my account, such as name, email addresses, phone numbers, responses to relationship questions, or device identifiers.
- **Any additional kinds of information**: that you have collected, retained, or derived from the mobile or website services you provide, including but not limited to:

e) communications between myself and other users;
f) social networking information, inclusive of MD5 hashes or other hashes computed upon my chat messages, images, or files sent using your service;
g) whether any of the chat messages, images, or files sent using your service have been determined to violate your terms of service and, if so, whether any such terms of service violations pertain to violations associated with users who are located in the People's Republic of China; and
h) whether any of my chat messages, images, or files sent using your service, or any hashes computed upon these items, have been used to enable/optimize detecting terms of service violations for users located in the People's Republic of China or any other jurisdiction.

- **Disclosures to third parties**: Any information about disclosures of my personal information, or information about my account or devices, to other parties, including law enforcement and other state agencies. I am specifically interested in knowing whether and which of my information has been shared with, or disclosed to, Shenzhen Tencent Computer Systems Company Limited, and to which other parties in China or outside China with whom my data has been shared.

If your organization has other information in addition to these items, I formally request access to that as well. If your service includes a data export tool, please direct me to it, and ensure that in your response to this letter, you provide all information associated with me that is not included in the output of this tool. Please ensure that you include all information that is directly associated with my name, phone number, e-mail, or account number, as well as any other account identifiers that your company may associate with my personal information. Finally, please provide this data, where possible, in a structured and non-proprietary digital format.

You are obligated to provide copies at a free or minimal cost within thirty (30) days of receipt of this message. If you choose to deny this request, you must provide a valid reason for doing so under Canada's PIPEDA. Ignoring a written request is the same as refusing access. See the guide from the Office of the Privacy Commissioner at: http://www.priv.gc.ca/information/guide_e.asp#014. The Commissioner is an independent oversight body that handles privacy complaints from the public.

Please let me know if your organization requires additional information from me before proceeding with my request.

Here is my information that may help you identify my records:

- First Name: [name]
- Last Name: [name]
- Email Address: [email address]
- Telephone Number: [phone number]

Sincerely,

[name]

D. PIPEDA Data Request to Tencent International Service Pte. Ltd., #2

November 29 2019[83]
Tencent International Service Pte. Ltd.
10 Anson Road, #21-07 International Plaza, Singapore 079903

Dear Data Protection/Privacy Officer,

Thank you for providing me access to your data export tool. However, the data provided by this tool did not include all of the data that I requested.

For the following items, please provide a copy of all retained data:

- communications between myself and other users;
- where data which I contribute to the WeChat social network is stored and, more specifically, whether any of my data is stored in the People's Republic of China;
- social networking information, inclusive of MD5 hashes or other hashes computed upon my chat messages, images, or files sent using your service; and
- results indicating whether any of the chat messages, images, or files sent

83 The second letter issued to Tencent Singapore was mistakenly dated November 29, 2019, but sent by email on December 18, 2019.

using your service have been determined to violate your terms of service and, if so, the basis for which these messages were categorized as violating the terms of service;

For any listed items for which you do not retain data, please explicitly indicate that you do not retain this data.

I am also interested in how my personal information is being used. Specifically, I wish to know whether (and, if so, which of) any of my chat messages, images, or files sent using your service, or any hashes computed upon these items, have been used for the purposes of detecting terms of service violations for users located in the People's Republic of China or any other jurisdiction. For any of these items not used for this purpose, please explicitly indicate that you do not use this data for this purpose.

Finally, I am interested in knowing how my personal information is being shared. I am specifically interested in knowing whether (and, if so, which of) any of my chat messages, images, or files sent using your service, or any hashes computed upon these items, have been shared with, or disclosed to, Shenzhen Tencent Computer Systems Company Limited either by Tencent International Service Pte. Ltd. or a subsidiary, and to which other parties in China or outside China (inclusive of all subsidiaries) with whom this data has been shared. For any of these items not shared with other parties, please explicitly indicate that you do not share this data with other parties.

For your convenience I have attached a copy of my original letter.

Sincerely,

[name]