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# A LOOK INTO WECHAT – ENABLING AN ANALYST TO SEARCH AND MONITOR CONTENT

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# Introduction

WeChat, or Weixin (微信) in Mandarin, is a multi-function mobile application (app), first launched by China's Tencent Holdings in 2011. A distinction between WeChat and Weixin must be drawn because they are two separate products, with WeChat intended for the international market while Weixin is aimed at the domestic Chinese market (Tencent, 2020). For this report, the names WeChat and Weixin are used to describe the internationally and domestically oriented products, respectively.

Both WeChat and Weixin can operate on Android and Apple's iOS mobile operating systems. The app has practically become part of everyday life for many of its users. With over a billion users, in 2021, the media company, We Are Social, ranked them as the sixth most used social platforms in the world (Kemp, Digital 2021: The latest insights into the 'state of digital', 2021). Within China, Weixin is by far the most used social media platform with 73.2% of Chinese nationals aged between 16 and 64 using it on a monthly basis. The next most popular platform is microblogging platform, Sina Weibo, at 47.1% (Kemp, Digital 2021: China, 2021). Despite its popularity within China, WeChat appears to be used mainly within

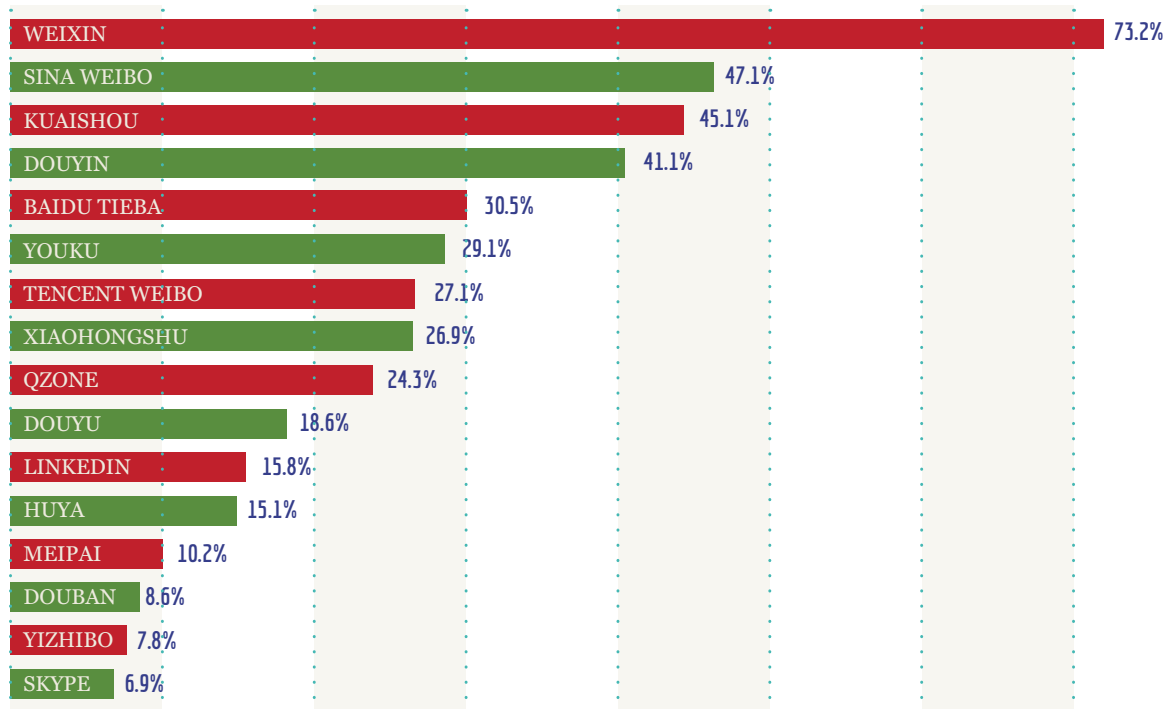
China and by overseas Chinese nationals with only small fraction of foreigners using it. While Tencent has stopped providing the breakdown of Chinese nationals and foreigners using WeChat and Weixin, in a 2020 report, Citizen Lab estimated that there are about 100 million foreigners using WeChat (Kenyon, 2020). That constitutes about 10% of the combined WeChat/ Weixin user base. Consequently, even if globally WeChat/ Weixin is ranked as the sixth most popular social media app in the world behind Facebook, YouTube, WhatsApp, Facebook Messenger and Instagram (Tankovska, 2021), it should be understood that the vast majority of users reside within China.



JAN  
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## Most - Used Social Media Platforms

Percentage of internet users aged 16 to 64 that has used each platform in the past month



**SOURCE:** GWI (Q3 2020). FIGURES REPRESENT THE FINDINGS OF A BROAD GLOBAL SURVEY OF INTERNET USERS AGED 16 TO 64. SEE [GLOBALWEBINDEX.COM](http://GLOBALWEBINDEX.COM) FOR MORE DETAILS. **NOTE:** FIGURES ON THIS CHART REPRESENT INTERNET USERS' SELF REPORTED SOCIAL MEDIA BEHAVIOURS, AND MAY NOT CORRELATE WITH THE FIGURES CITED ELSEWHERE IN THIS REPORT FOR EACH PLATFORM'S ADVERTISING AUDIENCE REACH, OR THE ACTIVE USER FIGURES PUBLISHED BY INDIVIDUAL SOCIAL MEDIA PLATFORMS.

Source: DataReportal

With such vast numbers of users, there are analysts concerned about the kind of information or content that WeChat users could potentially be exposed to. Therefore, it is important to monitor this information space. This report will explore the ways through which analysts can search and monitor the information put out and spread via WeChat. This will be done in two

main parts. The first part focuses on the application itself, including its design and operating principles. The second covers the best methods, procedures and technologies to search and monitor for information on WeChat. While both WeChat and Weixin are mentioned in this report, the focus is cast on WeChat, as it is the app version available to users outside of China.



# Differences between WeChat and Weixin

The country of the app user's mobile phone number used for registration will determine if the user uses WeChat or Weixin. A China-based mobile phone number will result in the user using Weixin. All other countries' mobile phone numbers will result in the user using WeChat. The servers of both products are located in different locations with the Weixin server infrastructure in China while the WeChat servers are in countries and regions including Singapore and Hong Kong (WeChat, n.d.).

Because the data of WeChat and Weixin users is stored in different countries, the user data is also subjected to different data and personal protection laws. The latter is subjected to China's laws. It was reported in September 2021 that some users of Weixin, who had non-China phone numbers attached to their accounts, claimed that they were sent notifications asking them to change their account to WeChat. It is believed that this is part of Tencent's effort to further comply with China's data security and personal information regulations, including the strict Personal Information Protection Law (PIPL) (Deng, 2021).

Apart from being subjected to different terms and conditions and data privacy laws, another difference is the access to official accounts. Weixin users are unable to see official accounts registered with non-China numbers, while WeChat users are able to see official accounts registered with both China and non-China numbers. WeChat users living in selected areas outside of China are also able to access Voice over Internet Protocol (VoIP) services, such as WeChat Out. This is a feature exclusive to WeChat users. Other differences include the apps available as well as Wallet function with Weixin users having more options to choose from.



# How is WeChat being used?

Despite the name WeChat/ Weixin, the app is far more than just a messaging platform. Today, it is a multifunctional app, almost an all-in-one app, enabling and facilitating a whole host of activities, including networking, shopping, food delivery and even payment. The high versatility and range of WeChat/ Weixin functions makes it convenient to the point that users may not need many other apps.

User dependence on WeChat and Weixin cannot be understated. In a 2019 Aurora Mobile survey on Weixin, over 50% of respondents said that they are dependent on the app (Aurora Mobile, 2019). The app is used very much for personal interaction with Penguin Intelligence Survey Platform reporting that more than 60% of the respondents said that they use it for social reasons, such as accessing the Moments feature and for “personal content such as opinions on current affairs by their WeChat friends” (China Tech Insights, 2016). The Penguin Intelligence Survey also found that WeChat has become embedded in work life. Apart from WeChat groups serving as the primary means of workplace communication, the new contacts of about 57% of respondents came from interactions with contacts they discovered during their course of work (China Tech Insights, 2016).

In terms of information consumed on the app, the Aurora Mobile survey found that males and females tend to have slightly differing uses – 49.6% of males use it to follow current affairs while 60.7% of females use it to read up on food-related topics.

Official accounts are also popular, with most users saying that they would often read the information put out by the official accounts that they follow (Aurora Mobile, 2019).

This use of WeChat/ Weixin for gaining information is consistent for overseas Chinese as well. In a survey conducted on how Mandarin-speakers living in Australia got their news, just over 60% identified WeChat as their primary source. This compared to only 21% receiving directly from news media outlets. Hence, in order for news to reach these Mandarin-speaking communities, one of the ways was to have the news delivered via WeChat (Sun, 2018).

Even though the survey was conducted in Australia, it is likely that the news consumption pattern for overseas Chinese, especially first-generation, will be similar in terms of the majority consuming news via WeChat. This can be attributed to the fact that these groups are already used to consuming news via WeChat and are familiar with the way news are presented and delivered on this platform (Wang, 2020).

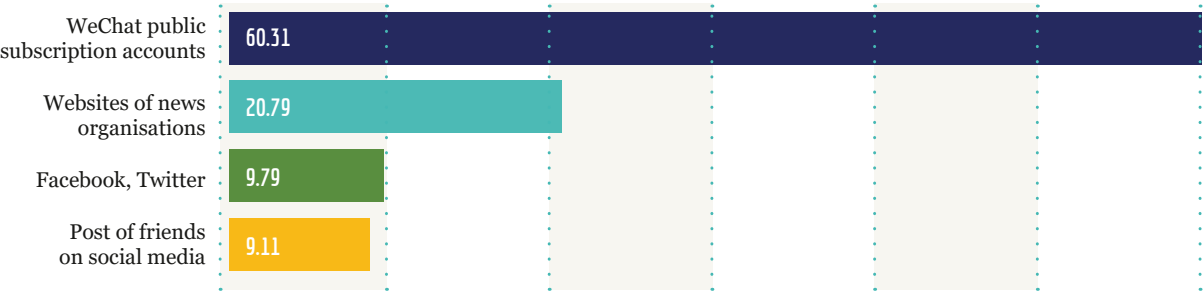


Given the current popularity and reliance on WeChat among overseas Chinese, it is likely that it will remain a popular platform for

them to communicate within the overseas Chinese community or with their relatives and friends back in China.

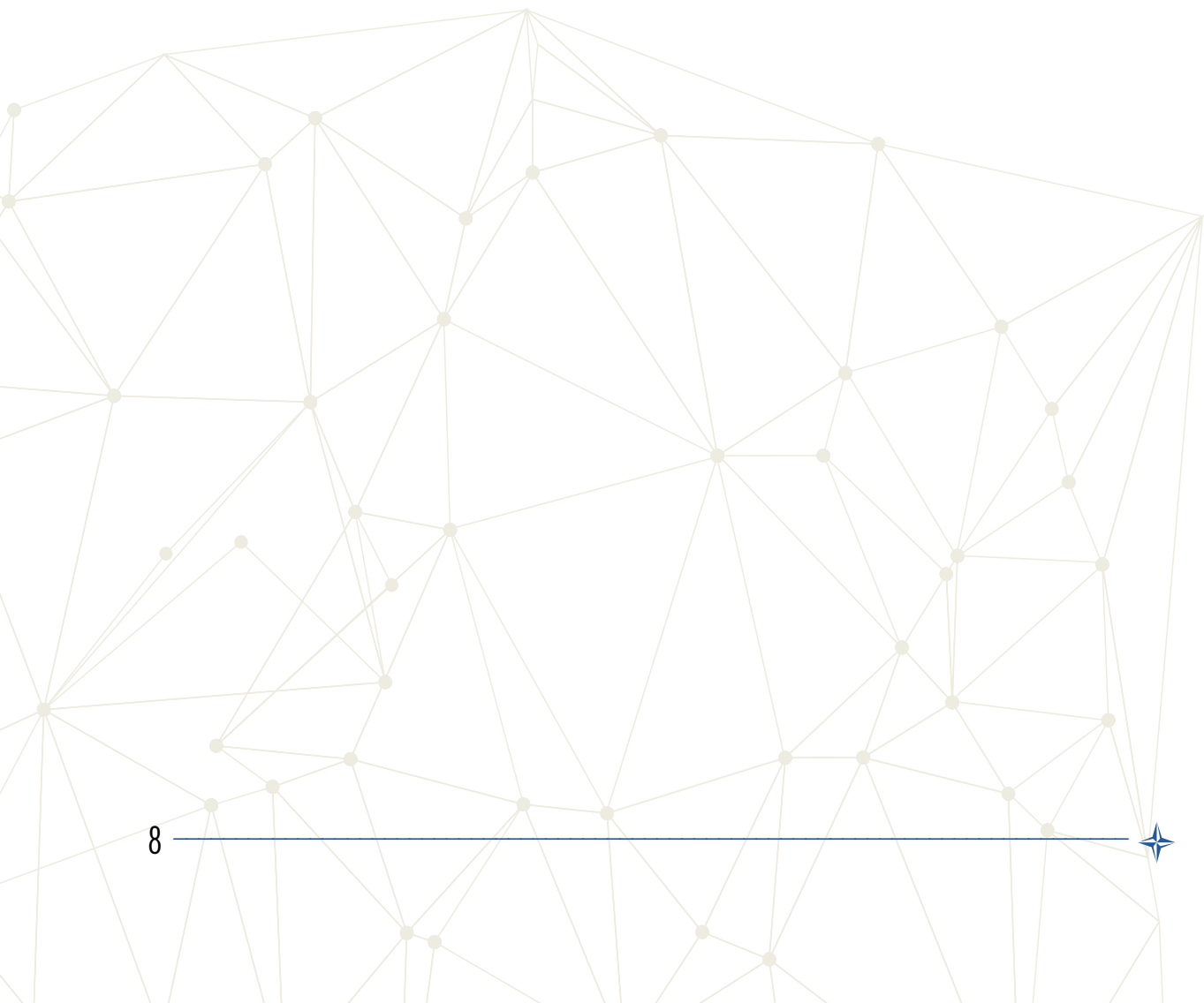
Ranking of which platforms survey participants accessed most

Respondents ranked each platform in order from 1 to 4



News sources among Mandarin-speakers in Australia

Source: The Conversation



# Censorship on WeChat and Weixin

China uses a mix of human resources and automation to police the social media environment within China. This is done across their information environment and not just on WeChat/ Weixin. There has been notable research done on the censorship regimes for both WeChat and Weixin. Existing scholarship and research has shown that conversations on both WeChat and Weixin are being monitored but have differing levels of censorship applied to them. A study conducted by the Citizen Lab showed that content deemed sensitive is censored for Weixin users, even if they are in a conversation with WeChat users (Knockel, et al., 2020). Such censorship practices are applied not just in public chat groups but also private and closed ones (Vilmer & Charon, 2020).

self-censorship (Li A. J., 2018). Moreover, China requires Chinese social media users to submit proof of identity when registering for a social media account (Chen, 2021). This will likely encourage further self-censorship as users are less likely to be able to hide behind the cloak of anonymity.

Other than using technology for censorship, there are also instances of self-censorship by users. There have been reports of WeChat accounts blocked or users harassed by Chinese authorities after sharing politically sensitive material. With users reliant on WeChat for many everyday functions, the blocking of the account can cause major inconveniences in their daily lives. For instance, the blocking of account can cause financial distress as many users have their banking accounts linked to WeChat. All of these potential consequences have perpetuated a “climate of fear” and growing





# WeChat's ability to influence

The Chinese government is currently able to reach audiences, in particular foreign audiences, via several platforms, including foreign-owned social media platforms and Chinese-owned platforms, such as WeChat (Harold, Beauchamp-Mustafaga, & Hornung, 2021). Internationally, the overseas Chinese communities as well as businesses that have relations in China are seen as a key targets of influence (Vilmer & Charon, 2020). As many Chinese government agencies already have WeChat accounts, WeChat can potentially offer a ready-made platform to reach the Chinese diaspora and businesses who have an interest in China. They also have an advantage if those groups, especially the overseas Chinese, are native Chinese-speakers and are less proficient in other languages (Harold, Beauchamp-Mustafaga, & Hornung, 2021). Consequently, they are likely to be more reliant on platforms, such as WeChat for information.

Yet WeChat's ability to influence opinion is more likely derived from the interplay between its ability to censor and its architecture. With the combination of effective use of technology and self-censorship, articles or comments deemed inappropriate are unlikely to appear on WeChat or be visible for long. This provides an information void, which is then flooded with opinions and narratives that are deemed "appropriate". For instance, during

the 2019 Hong Kong protests, WeChat had initially censored footage of the protests. What followed was Chinese state media actively pushing out their own reports, footage and opinion of the protests (Kuo, 2019). Similarly, when Huawei's Chief Financial Officer, Meng Wanzhou, was arrested in Canada in 2018, it was reported that foreign media articles relating to her arrest were immediately censored on WeChat (Mozur, 2020). There were, however, substituted by Chinese media reports on the arrest, including Meng updating her status on her WeChat account (Brown, 2018).

The aforementioned examples have highlighted how information can be controlled on WeChat. These mechanisms of control are reinforced by the reliance on WeChat as a multi-function app, an ecosystem of sorts, where users can perform most online tasks via the app. What would require non-WeChat users multiple apps or website visits, WeChat users can perform just on WeChat. This creates a conducive environment with a captive audience that has minimal need to venture out of the app.



# Searching and monitoring information on WeChat

There is no single best way of searching and monitoring WeChat as it will depend on the resources, needs and requirements of the respective analyst. The next two sections will suggest how analysts can use the aforementioned methods to search and monitor WeChat to understand the narratives about an organisation or topic being promulgated through the app. Due to privacy and ethical reasons, we excluded the searching and monitoring of private chats from the scope of this investigation, and the monitoring was mainly performed for official accounts and articles.

On WeChat, official accounts are accounts that businesses and organisations create as their public interface for their followers, akin to a Facebook page. WeChat articles are the content that official accounts generate.

There will be a case study in the next section illustrating how each method works.

## In-app search engine

The WeChat app has an in-built search engine powered by Sogou (搜狗). Sogou, which literally means search dog in Mandarin, is China's number three search engine, behind Baidu and Qihoo 360 (Li & Zhu, 2021).

Using the in-built search engine is the most comprehensive among the available methods, as it searches across most of the functions within the app. For searching articles, the search function allows the user to refine the search parameters, including filtering those by official accounts followed as well as those shared by friends. Like most search engines, users can also sort the results based on factors like overall ranking, date the article was posted and the number of views. Other than searching across all of the WeChat functions, the in-built search engine also allows users to search directly within particular functions of interest. This can be done by tapping on the specific function they want to search before entering the keyword.

### ***Via "Chats"***

The in-built search engine can be accessed in three main ways. The most straightforward is to go to the "Chats" tab and enter the search instructions in the search function found at the top. The search function allows users to search through a number of WeChat functions including their contact list, official accounts and articles. The search engine also allows limited multilingual search queries where it would automatically search the term in



Chinese characters. These functions are usually applicable for terms with specific translations like countries and brand names.

### Searching in “Chats” Steps

- 1 Tap on “Chats”
- 2 Key in keyword(s) in search bar



Source: WeChat

### Using “text”

Users can also perform searches while reading articles of interest. To perform such

a search, the user just needs to highlight the text of interest before tapping Search. This search option is particularly useful for users interested in deeper analysis of particular keywords found within articles of interest.

### Searching via text Steps

- 1 Highlight the text of interest within article
- 2 Tap Search



Source: WeChat



## Via “Discover”

The other option is via the “Discover” tab, where there is a “Search” option. The search functions are similar, allowing users to search for articles, official accounts, mini programmes, music and content in the user’s “Moments”.

### Searching in “Discover”

#### Steps

- 1 Tap on “Discover”
- 2 Tap on “Search”
- 3 Key in keyword(s) in search bar



Source: WeChat



## Web-based search engine

Apart from the in-built app search engine, Sogou also has a web-based search engine, which allows searches in WeChat. The WeChat search engine can be accessed either via the Sogou's main page (<https://www.sogou.com/>) or the Sogou WeChat page (<https://weixin.sogou.com/>). For the former, users have to click on 微信 (Weixin) to display the WeChat search results. Upon entering the latter page,

the user will be able to see some articles relating to certain set categories, such as the popular news of the day, cars, health and military.

Unlike the in-app search engine, the web-based searches are limited to solely articles and official accounts. The web-based search engine does not allow users to refine their searches.

Sogou's web-based main search page. Source: Sogou



Sogou's web-based Weixin search page. Source: Sogou

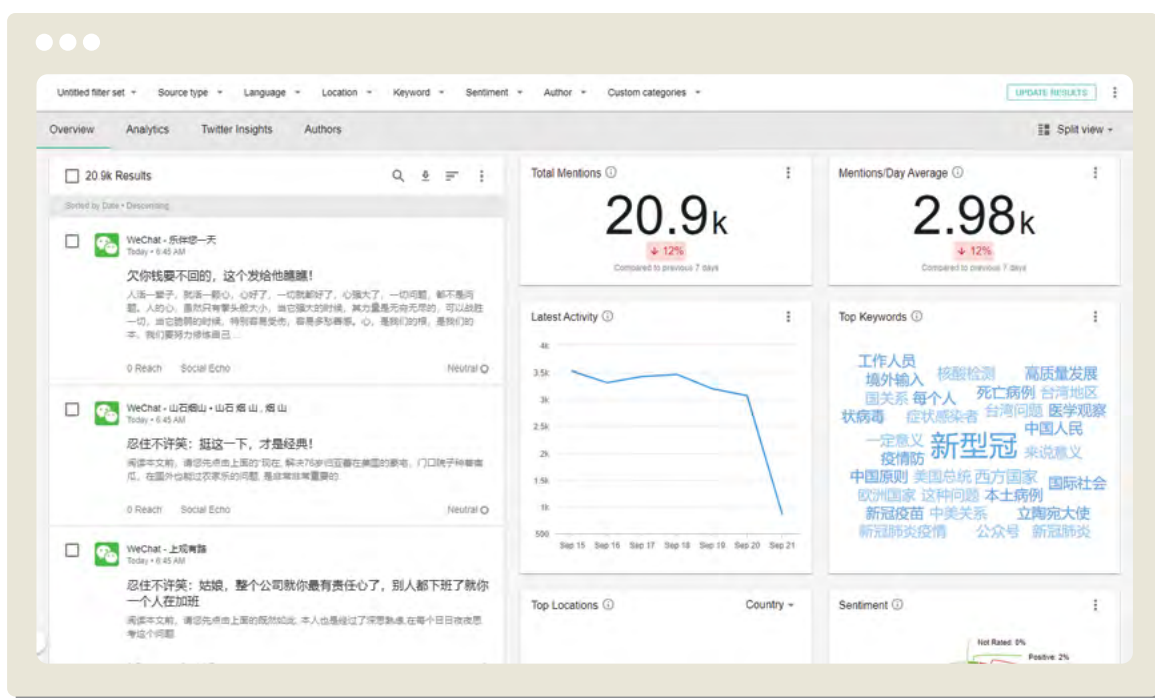


## Media monitoring company

For this report, the vendor solution that we had subscribed to was provided by media monitoring and social listening platform Meltwater. We provided the vendor with a list of 50 keywords that we wanted to monitor; the keywords were both in English and Chinese characters. Articles with the respective keywords were then presented in a dashboard. The vendor's dashboard included sorting the results by date, both in ascending and descending order. It also had several analytics functions, including a word cloud showing the top keywords, a keyword trend line which tracked the frequency of the keyword mentions, as well as the allowing

users to search within the search results. The analytics functions are relatively useful as they can provide a quick general overview of the interest in the keywords.

However, not all of the data is collected, as data is only gathered from a pool of profiles rather than all. As with media monitoring, there was also a limit to the data collection rate and frequency. In this case, it was limited to a maximum of 100 posts per keyword every hour. Even though the dataset is not the full set, it still is relatively large as we had over 100,000 mentions of our 50 keywords over 30 days. This total dataset did provide a sample of the conversation related to the keywords.



Screenshot of vendor dashboard.

Source: Meltwater



# Case study using NATO as keyword

To demonstrate how each search engine works, we performed a search using NATO's name in Chinese characters – 北大西洋公约组织 – as the keyword.

## In-app search engine

The in-app search engine was easy to use. Using either the search function found in “Chat” or “Discover”, the same results

were returned. The ability to refine the search results in the in-app search engine was quite useful as we were able to see the latest articles related to the subject of NATO. As the search was performed in the

### Search results of articles in the in-app search (results sorted by date on the right)





middle of September 2021, the top results were mainly about AUKUS – the security pact between Australia, the United Kingdom, and the United States. This was expected given that AUKUS was announced around the same time.

While the in-app search engine could not show the total number of articles that had mentions of the keyword, it was able to offer additional filters, such as whether the results were from accounts followed or shared by

friends. The former can be useful in tracking the narratives promulgated by official accounts of interest. This filtering is not available for neither the web-based search engine nor the media monitoring company.

Additionally, the in-app search also provided recommendations on possible related searches as well as related videos. These were also features that neither the web-based search engine nor the media monitoring company could provide.

## Recommended related results and videos in the in-app search



Source: WeChat





NATO does not have an official WeChat account. However, the in-app search engine suggested other official accounts that the algorithm deemed to be similar to NATO.

Official accounts recommendations in the in-app search



Source: WeChat

Given that the in-app search engine allowed for the search results to be sorted by date chronologically, it was possible to have an

idea of how NATO was being covered and mentioned over a given time period.

The app has an index tool, 微信指数 (WeChat Index), which measures the overall popularity of the keyword. The tool takes into account 90 days of available data. The tool can be accessed via the Mini Program, 微信指数. This function can potentially be useful

WeChat Index



Source: WeChat

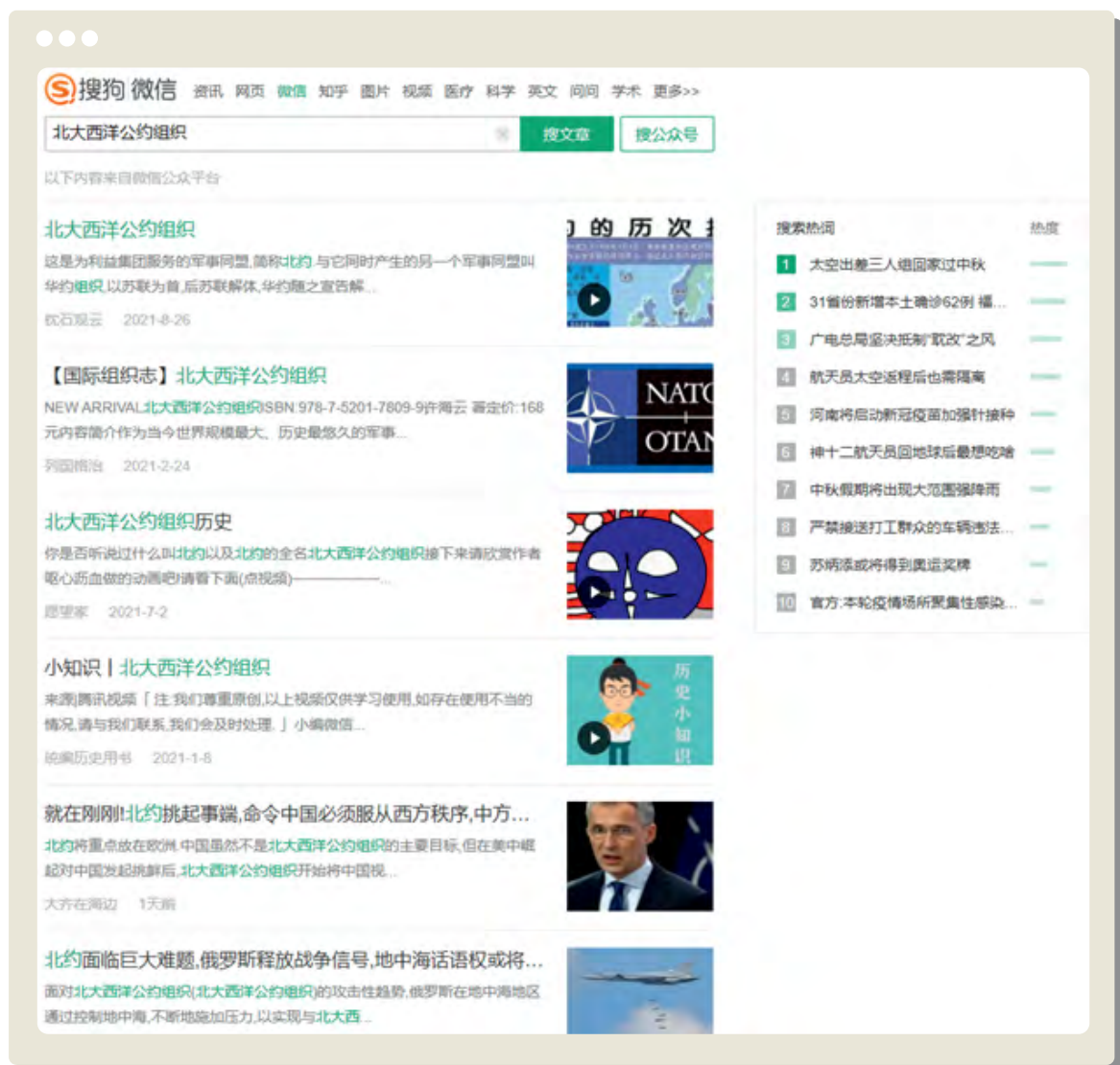


as it offers a snapshot of the popularity of the keyword within set periods of time.

## Web-based search engine

For the web-based search engine, the results on the first page of the search

showed a mixture of articles covering NATO and analyses of China-NATO relations. As the results were not sorted in chronological order, it made it hard to identify the latest articles relating to NATO. However, the web-based search engine did indicate a total of over 3,300 returned articles mentioning the keyword, thus



Search results of articles in Sogou's web-based search engine  
Source: Sogou



giving an indicator regarding the level of interest.

Even though both the in-app search engine and the web-based search engine are powered by Sogou, the results returned were different. While Sogou has not explained how their algorithms generate the returns, some have suggested that the results are ranked according to four main factors (1) weightage assigned to account posting the article; (2) relevance of the search term in relation to factors such as

public account names and summary of the article; (3) popularity of the article; and (4) frequency and recency of the article (Kingham, 2021). These factors may have possibly led to the difference in search returns.

Unlike the in-app search engine which made recommendations for similar official accounts, the web-based search engine returned that NATO did not have an official account and did not suggest other official accounts to follow.



Search results of public accounts in Sogou's web-based search engine

Source: Sogou

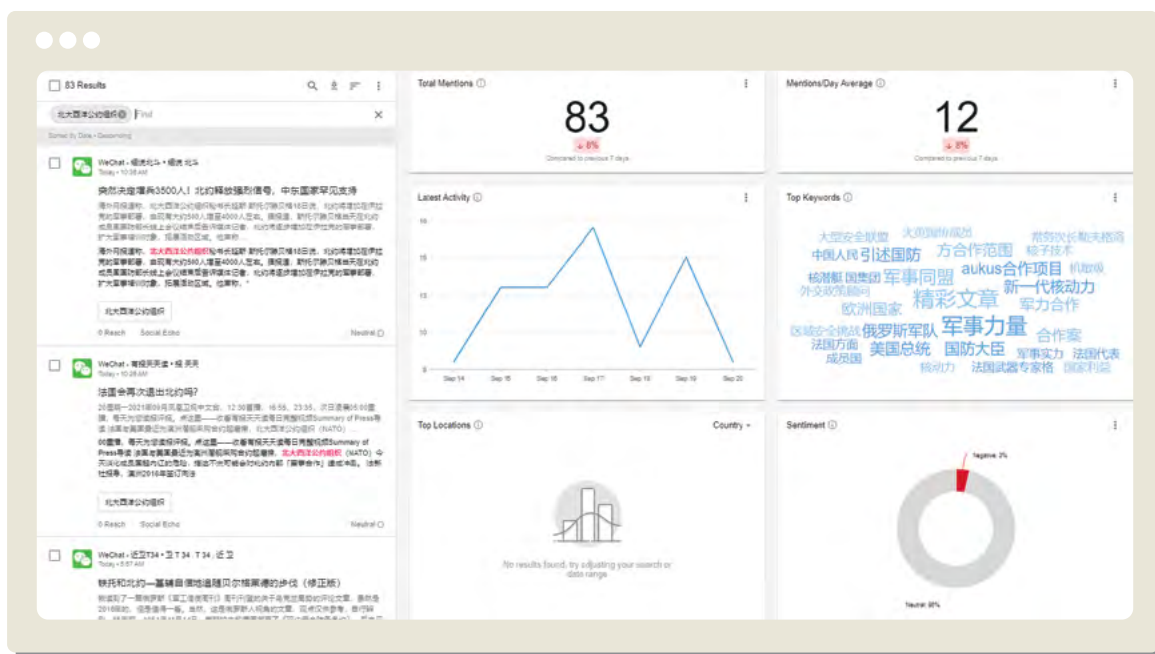


## Media monitoring company

As the dashboard contained the articles containing any of the 50 keywords, the first step was to narrow it down to just the keyword of interest. This was done by searching the keyword in the dashboard. At first glance, the vendor solution had considerably fewer articles than both the in-app and web-based search engines. This is likely because the search period was much shorter, spanning from early August to mid-September 2021. The data was available only from early August 2021 because it marked the start of the subscription period. There is also the remote possibility that it was coupled by the system limiting the collection to a maximum of 100 posts per keyword every hour.

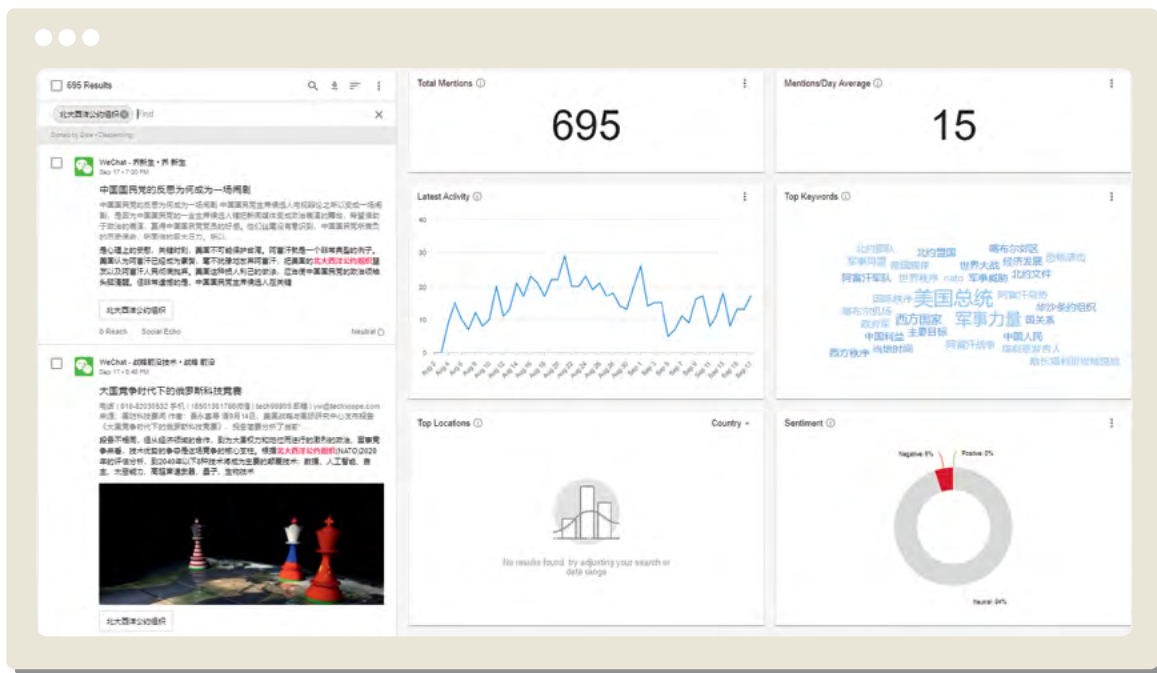
Although the sorting function was mainly limited to sorting by date, the activity chart was useful in helping identify unusual activities related to the keyword. For the last seven days of results, there was spike because of the AUKUS announcement. This was also reflected in the word cloud where the terms – aukus合作项目 (aukus cooperation project) and 新一代核动力 (next-generation nuclear power) – were among the more prominent terms.

In the case of the early August to mid-September 2021 results, the spike in the articles mentioning NATO was between mid to end August 2021. This corresponded with the period when Kabul, the capital of Afghanistan, fell to the Taliban, leading the subsequent effort to conduct mass evacuations.



Vendor dashboard for keyword (last seven days)

Source: Meltwater



Vendor dashboard for keyword (August to mid-September 2021)  
Source: Meltwater

One key feature that the vendor could provide was the ability to download 20,000 posts into a CSV file. The posts can be either the first 20,000 or a randomised sample. The data downloaded included the title of the post, the account that posted and the sentence with the keyword. The CSV file format makes it possible to programme a software or script to analyse the data.

We had analysed the downloaded data and were able to develop an understanding of the types of articles WeChat users were reading on the subject of NATO. Typically, the articles were not specifically about NATO but rather about the US. Even though the US is a member state of NATO, the articles would generally emphasise and focus on

the US and make a distinction between the US and NATO. NATO would be mentioned as an alliance used by the US to advance its foreign-security policy objectives. Some of the articles would adopt a nationalistic tone with mentions of how the Chinese helped defeat NATO during the Korean War. There were also notable interest in Ukraine and Russia. Regarding the former, the articles were generally critical of Kyiv wanting to forge closer relations with the US and NATO. Turning to Russia, the articles discussed the positive trajectory of Sino-Russian relations and would also often explain Moscow's perspective on its security environment, as well as its military capabilities and perceived threats, with the US and NATO among them.





Downloaded data from vendor solution  
Source: Meltwater

# Conclusions

	Multiple keyword search	Sorting of data	Download data	Analytics functions	Search beyond official accounts & articles	Free
In-app search engine	✗	✓	✓	✓	✓	✓
Web-based search engine	✗	✗	✗	✗	✗	✓
Media monitoring company	✓	✓	✗	✓	✗	✗

While there is no best or worst method, among the three, the most comprehensive search capability is offered via the in-app search engine. Not only does it allow filtering of the gathered information, but it also grants the analyst an overview of the channels that may contain information relating to the keywords. However, access to the app will require the analyst to possess a WeChat account and to search one keyword at a time. The latter obstacle will also be an issue for the analyst when using the web-based search engine. Moreover, the web-based search engine does not offer the option of filtering or sorting the information.

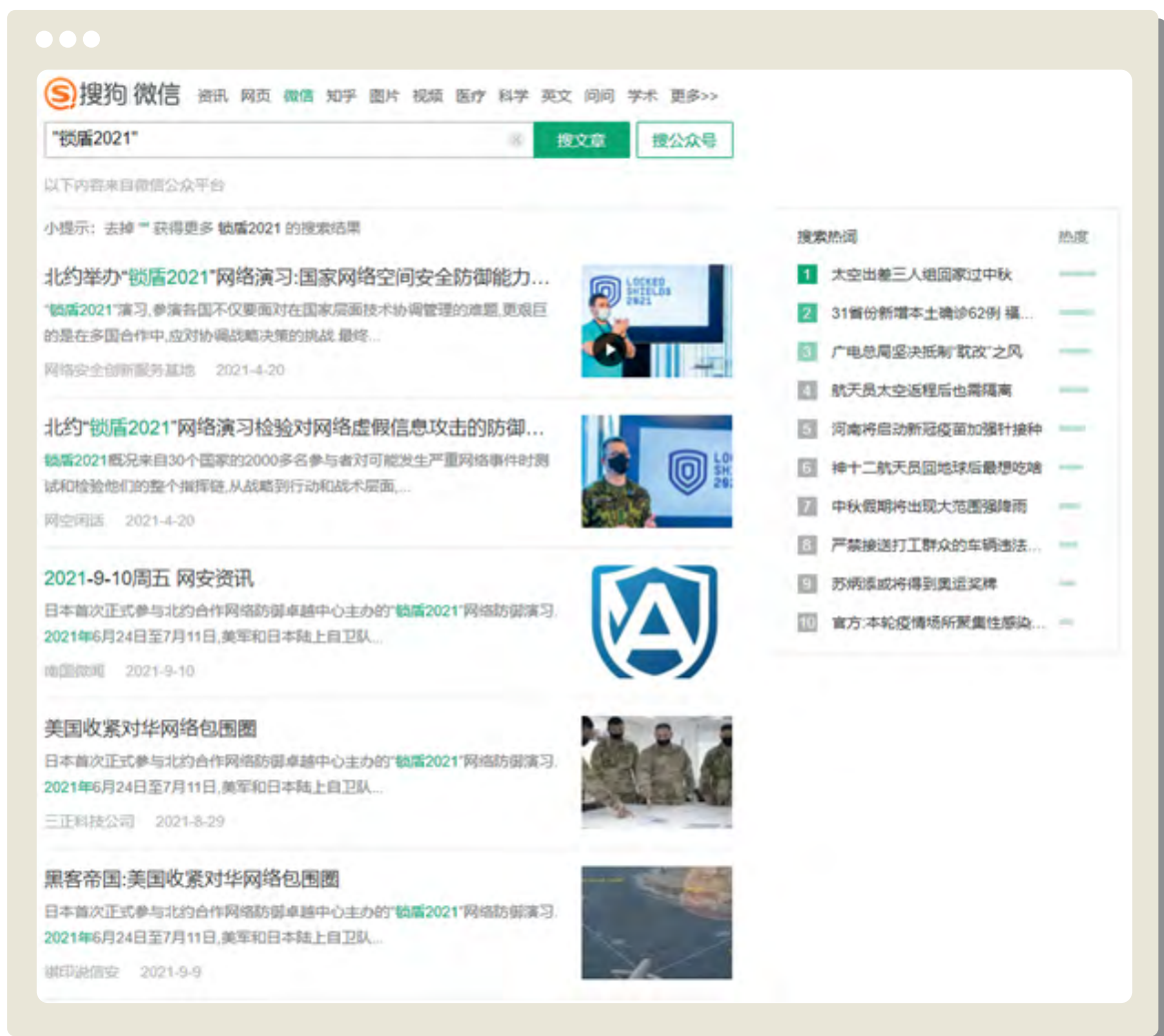
Like most search engines, one of the most effective ways of searching is to narrow and refine the search term as precisely as possible. Utilising search tools like Boolean searches in the web-based search engine will also help get more relevant search results. For instance, searching NATO exercises, which have unique exercise names, using the web-based search engine can be quite effective in searching out

the relevant articles. To illustrate this, we performed three different searches using the web-based search engine on the NATO cyber defence exercise LOCKED SHIELDS 21 using (1) the Chinese characters 锁盾2021 using a Boolean search; (2) 锁盾2021 without a Boolean search; and (3) a more generic term 北大西洋公约组织网络防御演习2021 (NATO cyber defence exercise 2021).

As shown, the Boolean search returned the most relevant results, with all of the results reflecting LOCKED SHIELDS 21. The non-Boolean search and the search for the more generic term of NATO cyber defence exercise 2021 saw a return of two and three relating to LOCKED SHIELDS 21 among its top search. The simple experiment showed that with effective use of Boolean searches and precise keywords, the web-based search engine can be quite useful in searching and identifying articles featuring the relevant keywords.

Because the in-app and web-based search engines are not designed for





Boolean search for LOCKED SHIELDS 21 using Sogou's web-based search  
Source: Sogou

media monitoring, they are less suited for searching and monitoring multiple keywords. This is where the tested vendor solution proved useful. Due to its suitability for media monitoring, it allowed for the automated monitoring of 50 keywords at a time. The information was presented on a dashboard which presented the information at a glance, including some quick analytics, which

the analyst might find useful. The ability to download the data into a CSV file can also be useful, as it enables the option of automating some of the analysis. However, all of these convenient features come at a cost, as media monitoring tools, like the one trialled, are often subscription based. Furthermore, the cost does not include programming software and scripts to analyse the CSV files.







Non- Boolean search for LOCKED SHIELDS 21 using Sogou's web-based search  
Source: Sogou

Because the searches are often most effective using keywords in Chinese characters, basic knowledge and understanding of the Chinese language is necessary to know what keywords to use. All three methods trialled have some form of translation capabilities. The in-app search engine has a built-in function. The web-based search engine and vendor solution are web-based and the results

can be translated using online or browser translation tools. While it is not optimal, considering the risk of details and nuances being lost, it nevertheless offers some level of understanding of what is being said about the keyword on WeChat.





Generic search term for NATO cyber defence exercise 2021 using Sogou's web-based search  
Source: Sogou



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