

# Engineering global consent

The Chinese Communist Party's data-driven power expansion

Dr Samantha Hoffman



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## What's the problem?

The Chinese party-state's tech-enhanced authoritarianism is expanding globally. This expansion isn't always distinctly coercive or overtly invasive. While there's an important focus on technologies such as 5G, surveillance and cyber-enabled espionage, that narrow focus misses the bigger picture. The Chinese Communist Party (CCP) has a much more ambitious vision for harnessing a broad suite of current and emerging technologies in support of its own interests, including devices that might be seen as relatively benign, such as language translation technologies. By leveraging state-owned enterprises (SOEs), Chinese technology companies and partnerships with foreign partners—including Western universities—the CCP is building a massive and global data-collection ecosystem. The creation of that ecosystem gives the party control over large data flows. And, when the data is combined with artificial intelligence (AI) processing, the result can help build tools that can be used to shape, manage and control, including propaganda tools and the social credit system.

To explain this new phenomenon, this report provides analysis of the global operations of Chinese company Global Tone Communications Technology Co. Ltd (GTCOM), which is a subsidiary of an SOE supervised directly by China's Central Propaganda Department (Figure 1). GTCOM focuses on 'big data' collection and AI technologies such as facial recognition. It claims to collect enormous amounts of globally sourced data each year (2–3 petabytes annually, or the equivalent of 20 billion photos on Facebook). It's also responsible for identifying risks to state security—a concept that places the party's political power at its core.

## What's the solution?

For the party-state, leveraging such things as bulk data collection, as well as, smart city and AI technologies provides valuable tools for shaping global governance so that public sentiment is favourable to the CCP's own interests—not simply China's or the Chinese people's, but globally. As this approach continues to rapidly take shape, many Western governments will find themselves both struggling to understand the problem and struggling to respond.

While ideal solutions to this emerging suite of problems don't exist yet, partly because research on these issues hasn't been in-depth or forward-looking, there are a range of areas that governments should be investing in and working with industry and civil society on. This report recommends strengthening data privacy laws and foreign influence transparency schemes. It also recommends greater investment in data literacy and data transparency programs, and it calls for a rethink for how governments deal with foreign propaganda in the digital age.

# Executive summary

The Chinese party-state engages in data collection on a massive scale as a means of generating information to enhance state security—and, crucially, the political security of the Chinese Communist Party (CCP)—across multiple domains. The party-state intends to shape, manage and control its global operating environment so that public sentiment is favourable to its own interests. The party's interests are prioritised over simply the Chinese state's interests or simply the Chinese people's interests. The effort requires continuous expansion of the party's power overseas because, according to its own articulation of its threat perceptions, external risks to its power are just as likely—if not more likely—to emerge from outside the People's Republic of China's (PRC) borders as from within.<sup>1</sup>

This report explains how the party-state's tech-enhanced authoritarianism is expanding globally. The effort doesn't always involve distinctly coercive and overtly invasive technology, such as surveillance cameras. In fact, it often relies on technologies that provide useful services. Those services are designed to bring efficiency to everyday governance and convenience to everyday life. The problem is that it's not only the customer deploying these technologies—notably those associated with 'smart cities', such as 'internet of things' (IoT) devices—that derives benefit from their use. Whoever has the opportunity to access the data a product generates and collects can derive value from the data. How the data is processed, and then used, depends on the intent of the actor processing it.

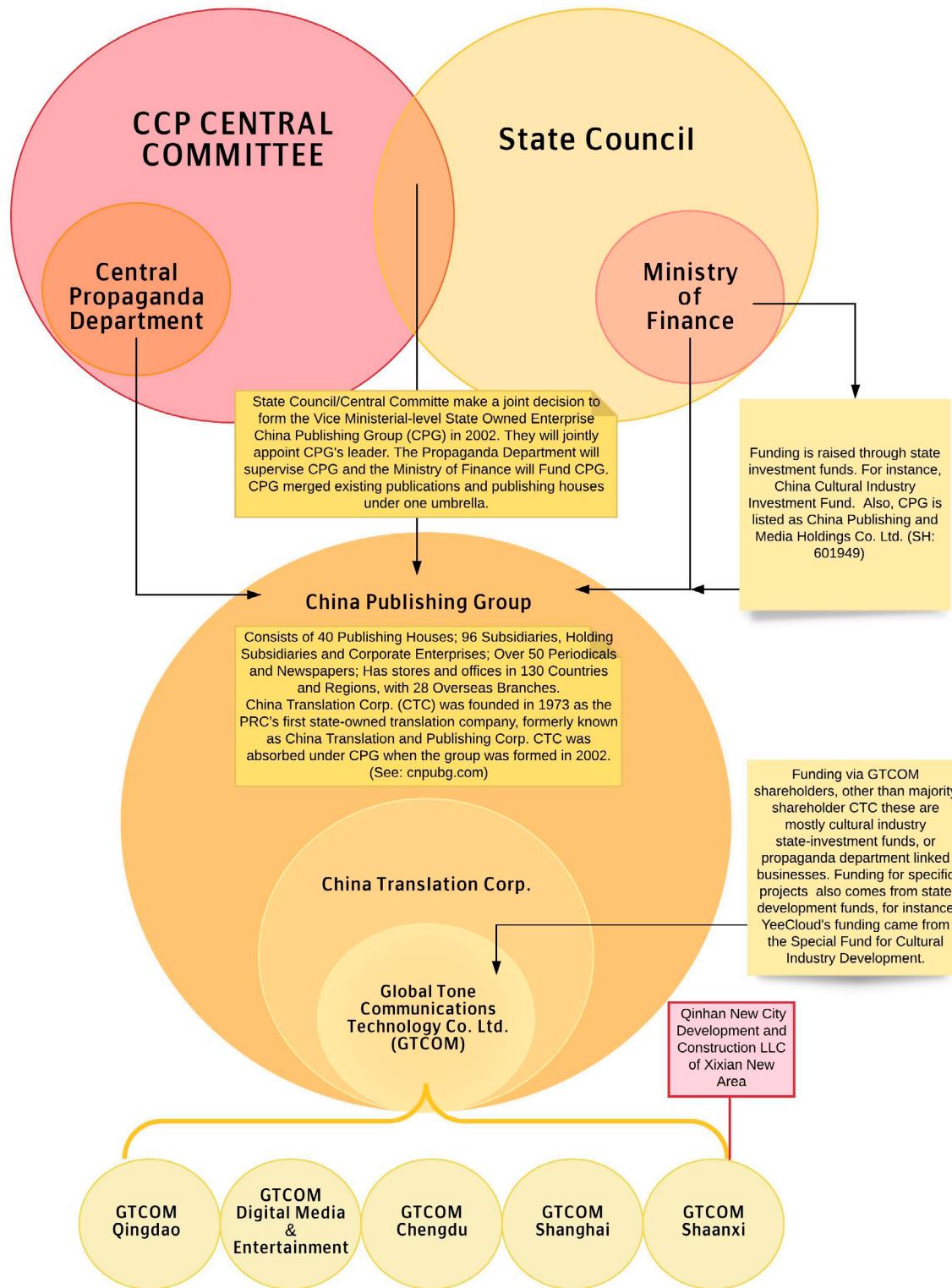
The Chinese party-state intends to use bulk data collection to support its efforts to shape, manage and control its global operating environment, and to generate cooperative and coercive tools of control. This paper uses the company Global Tone Communications Technology Co. Ltd (GTCOM) as a case study to illustrate how the global expansion of the party's tech-enhanced authoritarianism can work. GTCOM is a subsidiary of a Chinese state-owned enterprise that the Central Propaganda Department directly supervises. It provides both hardware and software translation tools. GTCOM describes itself as a 'cross-language big data' business: it collects bulk data globally in more than 65 languages and processes the data for output into other products and services for government and corporate clients (see the Appendix). The products can be applied to tools that have global implications, such as parts of China's social credit system.<sup>2</sup>

GTCOM claims to collect 'billions' of pieces of globally sourced unstructured data. Through just one of its many platforms, focused on traditional and social media collection, GTCOM claims to gather 10 terabytes of data per day (equivalent to 5 trillion words of plain text) as part of its 'cross-language big data' business, and 2–3 petabytes annually (equivalent to 20 billion photos on Facebook).<sup>3</sup> Anything translated via GTCOM's translation services is part of the bulk data it collects. GTCOM uses bulk data collection and artificial intelligence processing of data for information platforms and tools provided to the party-state. Such tools include propaganda, intelligence, social credit system-linked creditworthiness determination products, and government services.

As GTCOM is a company openly contributing to state security and intelligence data collection, the case study sheds light on many other issues that should be of critical importance to global decision-makers. It demonstrates, for instance, the global consequences of the PRC's military–civil fusion priority, which 'seeks to break down the barriers between China's civilian and military sectors'.<sup>4</sup> Rather than acting in isolation, GTCOM relies on strategic cooperation with other major Chinese firms such as Huawei,

Alibaba Cloud and Haiyun Data and research arrangements with a global network of academics and research institutions as a way of collecting data. Huawei's relationship with GTCOM, for example, illustrates how Huawei can embed technology into its products as a means to collect data that goes directly back to servers that the party-state controls, for uses that would serve its intent in addition to GTCOM's translation services.

**Figure 1: Global Tone Communications Technology Co. Ltd (GTCOM) organisational structure**



Source: Created by author.

# Engineering consent

Digital tools are revolutionising the old art of public opinion manipulation.<sup>5</sup> Advances in data collection and analytics, human–machine interaction and AI are transforming how public sentiment is monitored, analysed and manipulated. Technology assists state and corporate actors to read public sentiment and use language more effectively to shape it.<sup>6</sup> It enables the automation and amplification of messaging towards target groups.<sup>7</sup> The possibilities are limited only by whether the actors have the intent, capability and opportunity to act.

UK-based political consulting firm Cambridge Analytica demonstrated the power of digital technologies when it used the data of 50 million Facebook users to influence the 2016 US presidential election—and, allegedly, the Brexit referendum, too.<sup>8</sup> But there's no consensus on what ethical and legal norms should guide how political actors use digital technologies to win power or how large technology companies should use personal data to generate profit. And no amount of clear norm-setting is likely to deter today's resurgent authoritarian actors, as Russia demonstrated with its interference in the 2016 US election.<sup>9</sup>

While Russia's use of digital technologies to manipulate international public opinion is well documented, similar efforts by the Chinese party-state haven't been closely examined.<sup>10</sup> This paper shows how the party-state is constructing an international data-collection ecosystem in order to support its interests. It shows how Beijing is deploying its own data-collection resources but also exploiting China's international technology companies and leveraging relationships with other global partners. Through this rapidly expanding ecosystem, it seeks the capability to collect mass real-time data on a global scale.<sup>11</sup> This paper examines one little-known entity, GTCOM, to demonstrate how this ecosystem works.

Data can be used for multiple purposes depending on the intent of the actors involved.<sup>12</sup> For the Chinese party-state, bulk data collection and AI processing of data are tools for engineering global consent and shaping global governance in pursuit of its objectives.

# Making the world harmonious with the party

The CCP has clearly articulated an intent to manipulate public opinion in order to protect and expand its power. This intent is embedded in General Secretary Xi Jinping's concept of global governance, which he calls the 'Community of Common Destiny for Mankind'. As Liza Tobin set out in the *Texas National Security Review*, Xi Jinping likened the idea to a Swiss army knife. He described it as 'a Chinese-designed multifunctional tool for solving the world's problems'.<sup>13</sup>

Propaganda and ideology sit at the core of the party's efforts to shape global governance. At a National Propaganda and Ideological Work Conference in August 2018, General Secretary Xi Jinping said the goal of propaganda and ideological work was to 'promote the solidarity of all people in ideals and beliefs, values and morals, and ethical concepts in order to make greater contributions to serving the whole of the party and the state'.<sup>14</sup> Similarly, Central Party School scholars have said that the People's Republic of China (PRC) seeks a 'high degree of unity between sentiments of the Chinese nation and sentiments of the world'.<sup>15</sup>

The party places its own 'political security' at the foundation of state security.<sup>16</sup> It describes political security as being reliant on sustained 'ideological security' and 'cultural security'.<sup>17</sup> They're best summarised as protecting the CCP's versions of the 'truth'—truth about China, the Chinese people and culture, and what China's future is and is not.

The toolkit that prevents threats to state security is known in party-speak as 'social management'. Social management describes how the CCP leadership attempts to shape, manage and control society (and also the party's own members) through a process of co-option and coercion.<sup>18</sup>

The party sees the most powerful threats to its ideological, cultural and general political security as emerging from outside China. According to this logic, preventing external risk requires the party's political, ideological and cultural security effort to go global. The party-state's descriptions of its own threat perceptions matter. It describes the protests in Hong Kong as involving foreign 'black hands', and implies that it blames 'hostile forces' outside the PRC for the protests as much as political opposition that has organically emerged from inside.<sup>19</sup> Similarly, 'hostile forces' internal and external to the PRC are viewed as a potential cause of a 'colour revolution' event in the PRC.<sup>20</sup>

Xi's 'Common Destiny' vision has been described as a form of 'international social management', suggesting that the party's internal social management tools are applied externally for the party's benefit. According to one article, Xi's vision is 'global in its perspective', promoting the Confucian vision of 'being harmonious but different' and 'making way for the new frontier of social management'.<sup>21</sup>

The description of 'international social management' as being linked to 'being harmonious but different' has real-world implications. A 2017 article on a Xinjiang Government website, for example, said the region had a 'harmonious but different' system.<sup>22</sup> The article quoted Xi as saying that the concept 'reinforces the capacity of cadres and masses of various ethnicities to tell right from wrong, defends against the thought infiltration perpetrated by foreign enemy powers, sturdily raising the correct view on motherland, history and ethnicity'.<sup>23</sup> For Uyghurs currently detained in Xinjiang on the basis of their ethnicity, there's no evidence that 'being harmonious but different' is about anything other than the party's power at the cost of their own identity, culture and society.<sup>24</sup>



Figure 2: The tree of state security

国家安全为人民、靠人民，军民携手同心，共担国家安全义务。



Note: The tree of state security is nourished by security education and awareness of one's duty, which produces the fruits of scientific security, information security, economic security, cultural security, military security, homeland security, ecological security, nuclear security, social security, natural resources security, and protects the country from internal menaces and foreign disturbances.

# Global Tone Communication Technology Co. Ltd

Beijing-headquartered GTCOM demonstrates how the CCP doesn't just rely on visibly coercive technology and overtly invasive surveillance to achieve its broader objectives, such as reshaping global governance. GTCOM was established in 2009 as a subsidiary of the Central Propaganda Department-controlled SOE China Translation Corp., which is a member of China Publishing Group (see Figure 1). The self-proclaimed 'world leading big data and artificial intelligence enterprise' is in the business of 'cross-language big data'; that is, the collection of bulk data in at least '65 languages and 200+ countries' (Figure 3).<sup>25</sup> The data is used to generate 'industrial knowledge graphs, algorithmic models and visualisation platforms for finance, technology, intelligent manufacturing, smart cities, national security, and industry consulting and analysis' for government and the private sector.<sup>26</sup>

Figure 3: Screenshot of GTCOM's 'Company introduction' page, as archived on 5 July 2019



Note: The page has since been altered to remove 'world leading big data and AI enterprise' and the phrase 'smart cities', and now focuses on 'financial big data', even though it's clear from all of the company's activity that the nature of the business hasn't changed, only the marketing strategy.

GTCOM claims to collect 'billions' of pieces of globally sourced unstructured data. Unstructured data doesn't have a predefined data schema or isn't organised in a predefined model. Common types of unstructured data include chat, messaging and log data; time-series data derived from 'internet of things' (IoT) sensors; and large multimedia objects, such as video, audio and images. The data is contributing to GTCOM's key services, such as sentiment analysis. Sentiment analysis applies a combination of natural language processing (NLP) and machine learning to identify and extract subjective information by 'mining' unstructured data.

GTCOM's network of partnerships and alliances facilitates bulk data collection (see section below 'A global data ecosystem', including from traditional and social media. GTCOM claims that one of its many platforms, InsiderSoft, which is focused on visualising traditional and social media data, collects 10 terabytes of data per day, and about 2–3 petabytes per year.<sup>27</sup> Ten terabytes could equal 4,000 hours of high-definition video streaming, 5 trillion words of plain text, 1 million minutes of stereo audio, or the 'amount of data produced by the Hubble Space Telescope per year'. Three petabytes could be 20 billion photos on Facebook or 1.5 trillion pages of typed text.<sup>28</sup> InsiderSoft claims to have 'full coverage of news, webpage(s), forum(s), Tieba, blog(s), Weibo, WeChat, Twitter, Facebook, apps and videos'.<sup>29</sup>

GTCOM offers tools that can turn bulk data into usable information. GTCOM's YeeSight datamap, for instance, integrates 'a dozen of the most advanced natural language processing, big data and artificial intelligence techniques such as machine translation, semantic analysis, smart media reporting, data mining' (Figure 4). It's applied to scenarios such as 'information intelligence analysis, industry survey analysis, and social incident monitoring'.<sup>30</sup>

**Figure 4: Image of a YeeSight commercial platform powered by open-source traditional and social media data**



GTCOM's data collection through the language services it provides helps government and enterprise decision-making — for example, through the generation of sentiment analysis — which corresponds to strategic efforts such as the Belt and Road Initiative (BRI) and its components, including the Digital Silk Road.<sup>31</sup> The Digital Silk Road, in particular, calls for building such capabilities as a public services platform, a dispute resolution mechanism and strengthened risk warning.<sup>32</sup> GTCOM's Shaanxi subsidiary operates a Belt and Road Initiative Language Services and Big Data Platform for government and businesses involved in the BRI. An article published on a Ministry of Commerce webpage in 2018 claimed the BRI Platform has acquired 30 million pieces of data and 500 million pieces of social data (though it's unclear precisely what that means in terms of data sources and type).<sup>33</sup>

## GTCOM and party-state security

GTCOM is part of the party-state's ecosystem of actors with responsibility for identifying and managing state security risks. Its toolkit goes far beyond the automated translation of 'foreign voice data into Chinese' to include real-time text analysis, voice recognition and image recognition technology.<sup>34</sup> In 2017, GTCOM's Big Data Director, Liang Haoyu (Figure 5), said:

Through the real-time listening and interpretation of cross-language data, the company has established information security system for countries and regions, and ultimately finds relevant security risks in targeted areas through open channels ... [Only with] image recognition on top of text and voices, can [we] better prevent security risks.<sup>35</sup>

For example, this state-security-relevant work can support military intelligence data collection, military–civil fusion projects and the social credit system. That GTCOM is collecting for Chinese state agencies and key projects isn't surprising, given the company is controlled by the Central Propaganda Department.

GTCOM's facial recognition and voice recognition tools suggest its purpose is more comprehensive than the collection of public sentiment data for state security. The company has a patent for the automatic detection of human faces on news pages, whereby face data is stored in a database and facial recognition technology is used to detect similar faces in that database.<sup>36</sup> GTCOM Big Data Director Liang said:

GTCOM is trying to build up its recognition [capability] for objects, settings and human faces, in conjunction with texts and voices, to provide real-time monitoring of security risks. In the future, [GTCOM] will be able to find the requested facial structure through image recognition and provide technical support and assistance for state security.<sup>37</sup>

**Figure 5: GTCOM's Director of Big Data, Liang Haoyu, giving a speech in 2017 at a National Network Security Propaganda Week event**



Note: The image behind Liang Haoyu reads '90% of military grade intelligence data can be obtained from open data analysis.'

There are strong indications that GTCOM generates military and other state security intelligence out of the data it collects (and not only because an image from GTCOM Big Data Director Liang Haoyu's aforementioned speech shows a screen claiming '90% of military-grade intelligence data can be obtained from open data analysis'). GTCOM runs the 2020 Cognitive Research Institute (the 2020 Institute), which is a mechanism through which the company does R&D to enhance 'machine learning, deep neural networks, natural language processing, speech recognition, AI chips, data mining, distributed computing'.<sup>38</sup> The 2020 Institute has numerous NLP (natural language processing) algorithms, including for automatic text identification, sentiment analysis, event element extraction, sensitivity determination (whether text contains 'violent, reactionary, pornographic or other sensitive information'), relation extraction, and 'military text classification'.<sup>39</sup>

The 'military text classification' algorithm classifies text according to subfields such as nuclear, shipping, aviation, electronic and space.<sup>40</sup> In addition to its clear focus on military data, the 2020 Institute that's responsible for GTCOM's R&D has ties to research that's intended to benefit the People's Liberation Army (PLA). The institute is directed by Zhao Tiejun, Professor and Dean at the School of Computer Science and Technology at the Harbin Institute of Technology (HIT) and director of a Ministry of Education – Microsoft Key Laboratory of NLP and Speech at HIT.<sup>41</sup> HIT is one of the PRC's top universities and it's considered one of the PRC's 'Seven Sons of National Defence' (国防七子) for the strong contribution it makes to PLA research.

Given that the CCP's state security strategy prioritises ideological security and cultural security, propaganda is also a part of the party's state security strategy. GTCOM is controlled by the Central Propaganda Department, so at a minimum it's reasonable to assume that the Propaganda Department has direct access to all of GTCOM's products and all of the data it collects, and can use the data to generate information that supports the department's activities. GTCOM has been described as enhancing the PRC's 'cultural exports', increasing the PRC's 'cultural [data] mining capabilities', and establishing a foundation for the PRC's 'humanistic diplomacy strategy' (人文外交). Humanistic diplomacy has been defined as having three main parts: 'ideological diplomacy', 'cultural diplomacy' and 'people-to-people diplomacy'.<sup>42</sup>

Data and the information it helps generate can also support the party-state's development of tools for shaping public discourse. Separately from GTCOM, research funded by the National Natural Science Foundation of China, the National Key R&D Program of China and a key project of the 'National Society Science Foundation of China' has worked specifically on automatic news comment generation; that is, synthetic comments on news articles.<sup>43</sup> The methodology is based on NLP and large-scale datasets of real comments in Chinese and English. Given GTCOM's Propaganda Department ownership, its state security role and the fact that it collects bulk data in 65 languages, the research indicates a potential tool that a state-controlled company such as GTCOM could use, especially given that the research was funded with national-level grants. It's also simply indicative of how GTCOM's bulk data may be used by others who have access to it, such as researchers working in cooperation with GTCOM's 2020 Institute.

Other R&D associated with GTCOM may also have security implications, even if it's not immediately obvious. For instance, among GTCOM's patent applications is a machine translation method based on generative adversarial networks (GANs).<sup>44</sup> GAN can be used to synthesise images based on AI or use visual speech recognition to perform lip-reading and speech output (it's the same type of technology

commonly associated with synthetic media, meaning ‘fake news’ and ‘deep fakes’).<sup>45</sup> It’s an intriguing patent not because of the technology itself, but because GTCOM is controlled by the Propaganda Department. The department’s intent isn’t simply to use GTCOM to provide language services, but to shape global public discourse.

GTCOM also works with strategic partners whose research is clearly relevant to state security. For instance, it has a strategic cooperation agreement with Haiyun Data that includes cooperation on public security.<sup>46</sup> It appears that GTCOM will have access to Haiyun’s bulk data from its policing platform, and Haiyun will have access to GTCOM’s translation services.<sup>47</sup> Haiyun Data provides data visualisation platforms for Ministry of Public Security bureaus across China, including in Xinjiang. Haiyun Data notably contributes to the CCP’s police state in Xinjiang, where it was awarded status as a “technical support unit” of Xinjiang’s “public safety video laboratory”, which is linked to Xinjiang’s Public Security Bureau.<sup>48</sup> Haiyun’s research covers lip-recognition technology, which can read lips from video (such as surveillance footage) where no sound was recorded. This technology is described as contributing to ‘public security, military intelligence, identification [of people]’.<sup>49</sup> It’s conceivable that Haiyun’s lip-reading technology and GTCOM’s technology for auto-text generation and language translation from videos can complement each other. Moreover, strategic cooperation agreements give GTCOM more access to information and possibly other valuable R&D. Like GTCOM, Haiyun seeks to expand its global presence and global R&D network. For instance, in January 2019, a Chinese media article claimed that Haiyun had signed an agreement for the establishment of a joint AI laboratory with Australia’s University of Technology Sydney (Figure 6).<sup>50</sup>

**Figure 6: Reported January 2019 agreement on establishing an AI lab at the University of Technology Sydney (UTS), signed between Haiyun Data (HYDATA) and UTS**



## Background on GTCOM's ownership structure

GTCOM is under the direct control of parent companies China Translation Corp. (CTC) and China Publishing Group (CPG; CTC is a member unit of CPG).<sup>51</sup> CPG is a collective of cultural industry SOEs that the Central Propaganda Department has directly supervised and controlled since it was established in 2002 (see Figure 1). CPG has a unique status among cultural SOEs as a ‘deputy ministerial level’ SOE.<sup>52</sup> The CCP Central Committee and the State Council jointly appoint CPG’s head.<sup>53</sup>

At a 2011 CPG meeting, Central Propaganda Department officials’ presence at the meeting made ‘fully clear [to the company] that higher authorities attach great importance to and fully affirmed the work of the group company’.<sup>54</sup> The Propaganda Department is clearly involved in CPG’s day-to-day management.<sup>55</sup> Its oversight of GTCOM is similarly not concealed:

- CPG General Manager and Deputy Party Secretary Huang Zhijian dual-hats as the Director of the Propaganda Department’s Cultural Reform Office.<sup>56</sup> The Cultural Reform Office is a key office within the department that coordinates closely with industry.<sup>57</sup>
- In August 2017, then Politburo Standing Committee member Liu Yunshan, whose portfolio oversaw propaganda, led an inspection tour of CPG, where GTCOM CEO Yu Yang (‘Eric Yu’) was pictured presenting on GTCOM’s YeeSight, a cross-language ‘big data ecosystem’ (Figure 7).<sup>58</sup>
- The Propaganda Department can be seen on inspection tours of GTCOM and its five China-based subsidiaries. At GTCOM’s Shaanxi Province subsidiary, the provincial Propaganda Department Cultural Reform Office director conducted an inspection in December 2017, as did the Central Propaganda Department in August 2018.<sup>59</sup> The inspections are an indicator of GTCOM’s status and of its importance to Central Propaganda authorities.
- GTCOM was also referred to as a ‘state-owned enterprise’ on both government and private job websites as recently as April 2019.<sup>60</sup>

GTCOM’s ownership structure isn’t hidden in Chinese-language sources, but CEO Eric Yu claimed in a 2017 English-language interview that GTCOM is an ‘independent company’.<sup>61</sup> The claim is intriguing, given that until at least 2014 Eric Yu was dual-hatting as the Deputy General Manager of GTCOM’s state-owned parent company, CTC, and as GTCOM’s General Manager (Figure 8).<sup>62</sup> It’s another indicator that GTCOM isn’t independent from its Propaganda Department-controlled SOE parent company.

Yu’s claim that GTCOM is independent was probably made based on the fact that GTCOM was corporatised as a limited liability company in 2012. However, this ‘only limits the state’s liability toward the [state-owned] enterprises but doesn’t change their ownership structure’.<sup>63</sup> The Ministry of Finance has directly funded CPG since it was formed in 2002. A State-Owned Assets Supervision and Administration Commission article from late 2018 showed that CPG is the largest of 99 cultural enterprises funded by the ministry, and unique because of its ‘deputy ministerial level’ status.<sup>64</sup>

Figure 7: Liu Yunshan's 2017 visit to CPG and GTCOM

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## 刘云山同志视察译见大数据

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译见数据地图

中译语通（GTCOM）聚焦机器翻译、大数据和人工智能技术，构建起全球大数据挖掘、分析与应用生态和智能语言科技生态，拥有实时更新和积累的全球最庞大的互联网数据（文本、语音以及图片影像），及数据的实时挖掘与分析技术，在政府、企业、科技、文化、医疗和安全等各个垂直领域深度布局，已成为大数据与人工智能领域的领袖企业。

GTCOM has held B-round and C-round pre-initial public offering financing since 2017. The investors in the company during these fundraising efforts reveal problems with Yu's attempt to suggest that GTCOM is independent. A first shareholders meeting was held on 20 September 2017.<sup>65</sup> Nine shareholders were identified, and the percentage of their stake in GTCOM was provided.

Figure 8: GTCOM CEO Eric Yu on a visit to Facebook's Silicon Valley headquarters in December 2014, where he is named in the article (above the photo) as both CTC's Deputy General Manager and GTCOM's General Manager

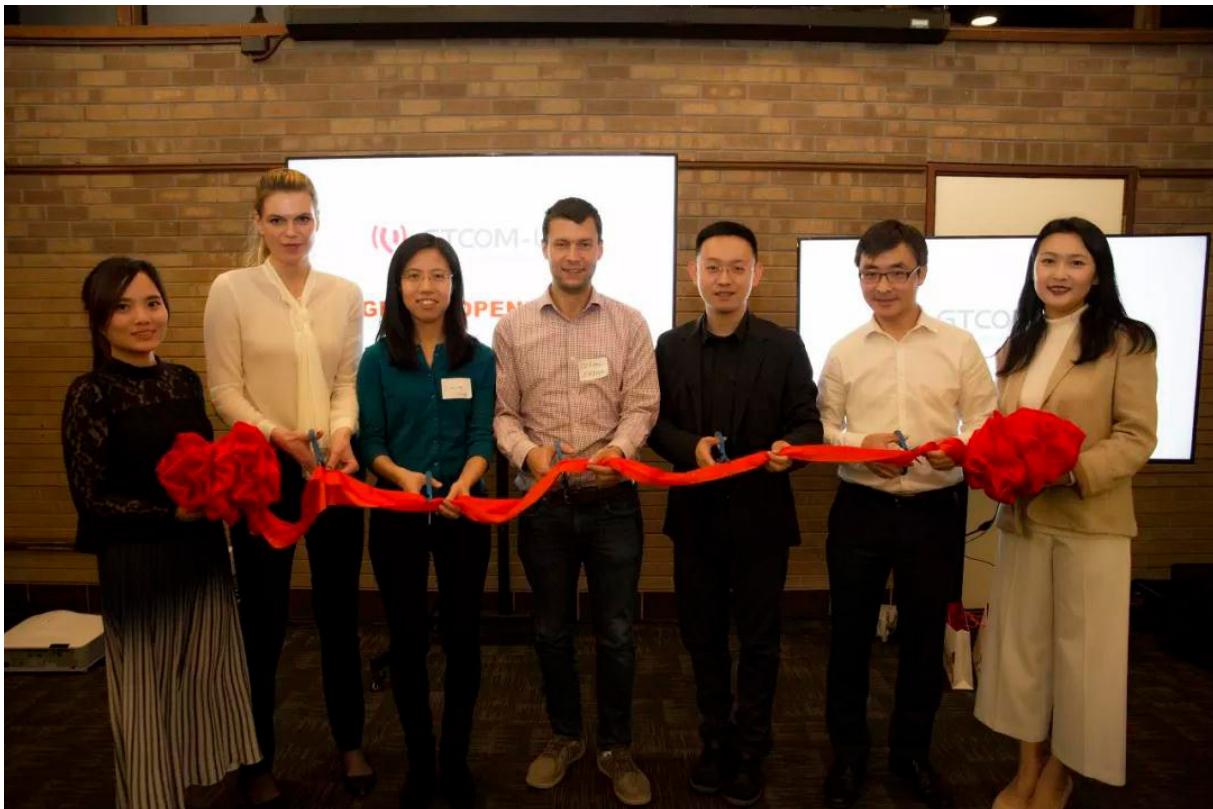


As to who those shareholders are, like those of China's other SOEs, which are typically listed, GTCOM's shareholders are identifiable as controlled by or directly linked to the party-state. GTCOM's state-owned parent company, CTC, owns nearly 80% of GTCOM; Shanghai Tengxing ('Soaring Star') Network Technology Co. Ltd owns 8.86%; Qingdao Lianyu Investment Holdings owns 7.39%; Shanghai Xinhua Distribution Group Co. owns 5.34%; and the remaining investors hold about 0.001% each. Soaring Star is wholly owned by two state-owned cultural investment funds: Ningbo East Lake Equity Investment Cooperative and Beijing Cultural Capital Digital Investment Management Co.<sup>66</sup> Shanghai Xinhua Distribution's majority shareholder is its affiliate, Shanghai United Media Group. United Media's director is a former Deputy Director of Shanghai Municipality's Propaganda Department, and its chairman, Li Shuang, is also the deputy secretary of Shanghai Xinhua Distribution's Party Committee. Other shareholders are opaque investment funds whose public records just indicate involvement with GTCOM or the 'cultural industry'. It seems that all these shareholder roads lead to the CCP.

## GTCOM-US

GTCOM has established a presence in the US in what appears to be an attempt to expand both its business and research networks. It registered as ‘GTCOM Technology Corporation’ in New Jersey and California as a foreign stock company.<sup>67</sup> Its key personnel have been identified as Yan Guoqing (‘Allen Yan’), head of GTCOM-US; and Tom Nigro, head of North American Sales and Marketing.<sup>68</sup> GTCOM-US CEO Allen Yan’s biography states that he ‘led his team in reaching strategic cooperation with Alibaba, Cisco, Microsoft, [and] Softbank’.<sup>69</sup>

**Figure 9: Ribbon-cutting at the launch of GTCOM’s business in North America**



Source: ‘Stanford Forum INSPIRE: GTCOM’s JoveArch quantitative analysis engine shines under the spotlight’, GCOM, 12 November 2018, [online](#).

GTCOM-US held two launch events in November 2017 in Stanford, California (Figure 9), and New York, New York. It hosted the 8 November 2017 event at Stanford University—The Stanford Forum: INSPIRE, which focused on the application of big data in the financial sector. According to GTCOM, the event was attended by ‘experts in data science and artificial intelligence from world-renowned universities such as Stanford University, Santa Clara University, UCLA and UC Berkeley, as well as companies such as PIMCO, Google, Facebook and Thinknum’.<sup>70</sup>

GTCOM-US appears to be as closely connected to the party-state as its PRC headquarters. The New York event held on 23 November 2017 was co-organised with the China General Chamber of Commerce–USA (CGCC-USA), Alibaba Cloud US and China Unicom Americas (Figure 10).<sup>71</sup> CGCC-USA is a Chinese party-state-controlled entity. Its co-hosting of the GTCOM-US launch indicates the party-state’s support for the company’s growth in the US. As John Dotson described it in *China Brief*,

groups like the CGCC-USA have a dual purpose: ‘on the one hand, pursuing trade ties beneficial to Chinese companies; while on the other hand, acting as vehicles for cultivating business and political elites, and propagating narrative messages in support of PRC government policies’.<sup>72</sup> Alibaba Cloud, meanwhile, is a GTCOM strategic partner (see section below ‘A global data ecosystem’).

**Figure 10: GTCOM-US launch event ad**



**GTCOM's US Launch Event - Big Data and AI: New Inspirations in Finance**

private private.  
Thursday, November 23, 2017

GTCOM is thrilled to extend a warm invitation to our FinTech event “Big Data, AI - New Inspiration for Financial Industry” in New York and would be beyond delighted to have you in attendance. Join us for an exciting afternoon as we explore the next generation of financial analysis tools and our solution to liberate your insights regardless of language, culture or country. You will meet the best minds in FinTech and data science from Bloomberg, PIMCO, Bank of China, Credit Union, Two Sigma, CGCC, Alibaba and China Unicorn. With GTCOM’s solution, investors will have in their hands the best set of financial analysis models and a powerful multi-lingual big data processor. Intended for a global perspective on the financial landscape, investors will become better forecasters of stock price trends and how to best facilitate investment strategies. Attendees will have an exclusive first look at GTCOM’s top-of-the-line solution in big data and AI and will also learn about how your organization can take advantage of this fantastic technology. GTCOM is co-organizing this event along with China General Chamber of Commerce - USA , Alibaba Cloud U.S. and China Unicorn Americas.

Source: Algorithmic Traders Association, [online](#).

## Control through convenience

The CCP’s tech-enhanced authoritarianism isn’t always visibly coercive; nor is its surveillance always overtly invasive. Control can be garnered by creating an instinctive desire within the individual to use or be part of a product or system. One way of doing this is to use technologies that create convenience for the individual, as well as for enterprise and governments. Ease of use and convenience are core selling propositions of many tech companies’ products and services, albeit without the state attaching its control interests as part of the package.

For governments, convenience can be created through public services. For instance, AI traffic management systems and public health safety supervision for smart cities allow for more efficient service provision. The issue isn’t necessarily the piece of equipment collecting data, or how a particular technology is deployed, but rather the intent of any actor who has access to the raw data from that equipment. Companies such as GTCOM provide services that by default require access to data that the product generates. How data is used is a decision made by those who obtain it.

Bulk data collection in conjunction with the ability to leverage AI processing—which is GTCOM’s business model—creates the capability to quickly turn large amounts of data into usable information. The PRC’s smart cities equipment, for instance, both provides an advertised service and generates information that contributes to the party’s social stability risk assessments.<sup>73</sup> The same information that allows for traffic management or public safety can also be directed to products that allow the party to optimise its capacity for control.

The choice to accept PRC-sourced service-providing technologies increasingly means acceptance of the party-state’s values system. It has long-term implications for democracies. These decisions could also pose more immediate threats at the individual level. Turkey, for example, has at least 10,000 Uyghurs living in exile, according to Human Rights Watch.<sup>74</sup> From afar, they already struggle to escape the CCP’s authoritarian reach, with or without technology.<sup>75</sup> Nevertheless, in 2018, Turkish

mobile operator Turkcell signed an agreement to collaborate with Huawei on 5G and smart cities development.<sup>76</sup> Huawei's smart cities projects ('safe cities') involve the deployment of sophisticated public security technologies, including surveillance technologies such as license and facial recognition.

The party-state's problem-solving tactics are also a way of shaping behaviour to protect the party's interests. GTCOM has some products that contribute to the social credit system, including a financial credit rating product that provides 'credit ratings agencies with analysis of network-wide information monitoring, comprehensive stock prices, trading volume, sentiment, and related event impacts enriching credit rating instruments'. The party's vision is for the social credit system, and the creditworthiness decisions it generates, to have a global impact.<sup>77</sup> In late 2018, the BRI International Cities Credit Union was formed. According to party-state media, it's a credit alliance involving 35 cities in seven countries.<sup>78</sup> The 'credit union' probably has no immediate impact, but what if, in the long term, creditworthiness decisions are increasingly based on the party-state's version of, for instance, positive and negative 'sentiment'?

The intent behind the social credit system is to protect and expand the party's power, so the result of accepting the systems' outputs is also accepting the party's intent. GTCOM's "technology big data" solutions, for example, include a "Science and Technology Credit Evaluation System" (SciTech Credit).<sup>79</sup> SciTech Credit refers to a part of the social credit system outlined in a 2004 Ministry of Science and Technology decision titled 'Establishing a credit management system in the National Science and Technology Plan'.<sup>80</sup> When SciTech Credit was launched in 2004, then Minister of Science and Technology Xu Guanhua said it was an integral part of the social credit system and combined institutional and moral constraints and legal administration and social supervision.<sup>81</sup>

SciTech Credit was designed to apply to personnel and institutions involved in science and technology activities. It addresses genuine problems, such as poor research ethics.<sup>82</sup> The definition of what's ethical is determined by the party. It's political, and it deals with party-state security risks. One motive for SciTech Credit was a case in which researchers from a technology company were accused of stealing research from the 863 Program (a national high-tech development plan) and selling it to another country.<sup>83</sup> 'Ethical' behaviour is judged by responsibility to the party-state's interests, not to those whom the research affects. Urumqi, Xinjiang, was the first city to officially launch a SciTech Credit system in 2005.<sup>84</sup> In 2018, the local government said the system helped create a 'healthy and orderly environment for Urumqi'.<sup>85</sup>

# A global data ecosystem

For GTCOM, strategic cooperation with globally recognisable Chinese companies—notably Huawei and Alibaba Cloud—provides assistance in two key areas in the form of:

- the opportunity to conduct bulk data collection by providing translation services to both companies, which have deeper market penetration
- the development of or access to capabilities that support its bulk data collection.

Collection of bulk bilingual data is the basis for the neural machine translation services (a type of statistical machine translation) that GTCOM provides. According to GTCOM researchers, the company must be ‘acquiring more quantities and higher quality [cross-language] data’ in order to improve its product.<sup>86</sup> GTCOM collects ‘cross-language big data’ (that is, data in more than 65 languages). It’s reasonable to assume that *any* text translated using GTCOM technology is going back to GTCOM’s servers. Wherever GTCOM’s translation services are embedded, the company collects bulk data. Since the translation services are performed automatically on platforms that embed GTCOM’s technology, the fact that GTCOM’s technology is in use might not be apparent to the user. That the data is collected and sent back to servers of a company that the Propaganda Department controls, and to a company that openly turns that data into products that support the Chinese party-state’s security objectives, will be even less apparent to the user.

GTCOM has a strategic cooperation agreement with Alibaba Cloud and, per the agreement, GTCOM embeds its translation services with Alibaba’s machine translation service for Alibaba Cloud. Based on this information, it’s reasonable to assume that GTCOM supports Alibaba Cloud’s neural machine translation service for Alibaba’s major international businesses that rely on Alibaba Cloud. Those include AliExpress, Lazada, ICBU, Tmall Global, Taobao Overseas and DingTalk.<sup>87</sup> The arrangement began in October 2016, when Alibaba Cloud and GTCOM signed an agreement to ‘jointly build the language ability layer and the big data analysis ability layer for global users, so as to provide comprehensive services for innovation in big data applications’ (Figure 11). The agreement also revealed the benefit for GTCOM, which is that Alibaba Cloud would provide GTCOM with wider access to realise its ‘global plan in the fields of cloud computing and big data’.<sup>88</sup> By December 2016, the agreement was already being implemented.<sup>89</sup> As Alibaba Cloud Vice President Yu Sicheng described the relationship in January 2017: ‘Now, AliCloud and GTCOM move forward hand in hand … [They will] form a scientific ecological platform, and together be the future of big data.’<sup>90</sup>

**Figure 11: GTCOM CEO Eric Yu and Alibaba Cloud Vice President Yu Sicheng sign a strategic cooperation agreement in October 2016**



GTCOM's algorithms are deployed on its platforms to allow for many types of searches and analyses, such as 'sensitive word' searches, 'sentiment analysis' and relationship extraction (between people, organisations and products). One GTCOM product, YeeCloud, is funded via the National Industrial Development Fund.<sup>91</sup> YeeCloud is a translation tool specialising in the translation of CVs, files, certificates and other items.<sup>92</sup> Other Chinese companies providing translation services funnel data through GTCOM's YeeCloud platform to provide translations. Hong Kong-listed Chinese software company Kingsoft's iCIBA translator is funnelled through YeeCloud.<sup>93</sup> Similarly, Chinese tech giant Baidu's Fanyi translator also appears to be funnelled through YeeCloud, combining the company's machine and human translation services.<sup>94</sup> The data, therefore, is funnelled through a cloud server of a company controlled by the Propaganda Department. It's reasonable to assume that the data (such as data from resumes/CVs) can be integrated into GTCOM's government products, and any of GTCOM's algorithms can be used to extract desired information.

A key factor in the global debate about whether Huawei should participate in 5G networks is the risk that its technologies can be used for espionage. Huawei's relationship with GTCOM illustrates how Huawei can embed technologies into its products that allow its data to go straight to servers that the party-state controls. That data can be used for products that range from the state security applications that Liang Haoyu identified to the language translation services that GTCOM provides. In May 2019, Huawei and GTCOM signed an agreement to 'jointly expand the application ecology for big data artificial intelligence and language technology'.

GTCOM's Language Box tool was already a 'de-facto tool in Huawei's intelligent conference rooms'.<sup>95</sup> Huawei's intelligent conference room solution is deployed as an option in Huawei safe cities and smart cities packages. For instance, Huawei made an agreement with Malta in 2016 on a safe city solution that included 'wired–wireless communications and voice and video conferencing technologies'.<sup>96</sup> Huawei conferencing solutions were also provided to the African Union headquarters, where data was allegedly stolen every day for five years between 2012 and 2017.<sup>97</sup> GTCOM has reported providing conference translation services for the African Union as recently as 2018.<sup>98</sup> Language Box provides a service and, to function correctly, GTCOM logically relies on collecting data to maintain product quality. If Huawei's smart conferencing product collects data that goes to a server to which, by design, the party-state apparatus has access, then Huawei isn't fully disclosing the risks associated with its technologies and the data collected from them, and how the data might be used.

Huawei and GTCOM already had an existing relationship before the May 2019 agreement and claim to have together made 'breakthroughs in data mining, software development [and] machine learning training'.<sup>99</sup> The 2019 agreement expanded the relationship: it said Huawei's HiCloud would provide GTCOM with 'powerful global data transmission and marketing support in order to expand the scenario-based application of AI, big data technologies in different fields by deeply mining and exerting its impressive resource value'.<sup>100</sup>

Huawei might not be the only company embedding GTCOM's translation hardware into its services. GTCOM and Cisco signed a strategic cooperation agreement, which appears to be the result of engagement with GTCOM-US.<sup>101</sup> GTCOM has said its Language Box (the same product Huawei integrates in its smart conferencing solution) can be integrated into Cisco's WebEx video conferencing solution.<sup>102</sup> It isn't clear whether this is taking place, or the specific nature of GTCOM's relationship with Cisco beyond GTCOM's claim that a strategic cooperation agreement was signed.

The opportunity to collect translation data also extends to any company that uses GTCOM data visualisation platforms or translation products. GTCOM CEO Eric Yu described GTCOM's language translation technology as being automatically embedded in the big data platforms that GTCOM provides to companies such as 'Haier, GE, Alibaba and many other industry clients'.<sup>103</sup> For instance, Haier's COSMOPlat, which is described as a 5G-empowered mass customisation product that 'digitally integrates the entire factory process and supply chain, including interaction, R&D, and procurement, to better serve individual customers'.<sup>104</sup> The COSMOPlat ecosystem integrates a product jointly developed with GTCOM called 'Haier Translation – Industry Big Data'.<sup>105</sup> The product 'helped Haier Group complete its global grid data management and control, access and accommodate 7 types of databases, and achieve PB-level [petabyte-level] data processing and visual exploration analysis'.<sup>106</sup>

# Research collaborations

GTCOM relies on research alliances that give it access to researchers focused on NLP and machine translation. GTCOM leads the Language Big Data Alliance (LBDA), which was established by ‘government departments’ to forge alliances with linguistics researchers worldwide who work on big data analytics and NLP. Its members include nearly 200 PRC universities and a growing list of foreign universities. An article on a January 2019 meeting said that 15 foreign institutions’ membership applications to the LBDA were approved. Previously identified foreign university members include the University of Bristol, the University of Vienna, the University of Mainz and the University of Geneva.<sup>107</sup> Single members of staff from those foreign universities are often pictured participating in LBDA- or GTCOM-organised events.<sup>108</sup>

The LBDA prioritises setting up data-sharing agreements with its members, which serves GTCOM’s data accumulation interests.<sup>109</sup> GTCOM CEO and LBDA president Eric Yu described the objective in a 2017 interview, stating:

[T]he benefit [of membership] goes both ways. [The LBDA was] established by government departments, working on enterprises and public institutions, colleges and universities, and scientific research institutions for promoting the mutual application and sharing of language big data for the mutual application and sharing of language big data and related technological resources in the fields of teaching, research and more.<sup>110</sup>

The LBDA and GTCOM’s corporate strategic partners have been instrumental in the development of some GTCOM products, which expand GTCOM’s data collection ecosystem. In May 2018, the LBDA held a summit in London where GTCOM launched its JoveEye platform. JoveEye is described as an ‘AI powered big data knowledge service platform for scientific research’. A media release for the event said that JoveEye was created alongside:

Huawei, Haier, Alibaba, and other educational organisations, including the University of Kent, the University of Bristol, and the University of Geneva. Additionally, research organisations, such as the Austrian Research Institute for Artificial Intelligence, assisted in the development of JoveEye. JoveEye incorporates neural network technology, and translates the various languages ...<sup>111</sup>

The platform integrates globally sourced data, including from scientific journals, periodicals, patents, theses, blogs, news media, e-commerce websites and social platforms, and has GTCOM’s auto-translation technology built in.<sup>112</sup>

GTCOM markets the LBDA globally, but it seems without clear disclosure of its relationship to the CCP’s Central Propaganda Department. A press release for the London event described the LBDA as ‘a non-profit community dedicated to offering AI and Big Data solutions to leading research institutions, universities, colleges and enterprises around the world’ (Figure 12).<sup>113</sup> It omitted information on the data-sharing arrangements that are expected of LBDA members. The event was promoted by a UK-registered public relations firm that appears to represent many major Chinese tech firms and media companies, including TikTok, Hikvision and Cheetah Mobile.<sup>114</sup> The name of this firm is ‘The Honey Partnership’, and its social creative agency is referred to as ‘Make Honey’ or ‘Honni’ in English; in Chinese, it’s called 红你 (*hongni*), which translates as ‘Red You’.<sup>115</sup>

**Figure 12: The LBDA's London-based public relations firm for its May 2018 London event**

## ② Honni 红你 | Blog - Honni 红你 | The Honey Partnership

<https://honné.global> › blog

Following an avalanche of new business wins, social creative agency, Honni, part of the marketing services group The Honey Partnership, seeks a hands-on ...

The greatest value of the LBDA, from GTCOM's perspective, appears to be the LBDA's access to key research and researchers globally and, where it can, their datasets and networks. One example is GTCOM's cooperation with Gerhard Budin, deputy head of the Centre of Translation Studies of the University of Vienna (Figure 13). GTCOM claims that Budin signed an agreement on behalf of the university with GTCOM on establishing a joint laboratory in March 2017. Budin is also Vice President of the International Institute for Terminology Research and Chair of a technical subcommittee in the International Organization for Standardization.<sup>116</sup> The Vienna joint lab, according to GTCOM, would also include technological research and work with 'the European Commission, the European Parliament, the United Nations, the CIUTI and other international organisations, universities and research institutes to build a synergistic innovation platform in cross-language big data for industries, universities and institutes.' GTCOM's claim may be linked to Budin's projects co-funded by the European Union (Figure 13).<sup>117</sup>

**Figure 13: GTCOM CEO Eric Yu and deputy head of the University of Vienna's Centre of Translation Studies Gerhard Budin signing a joint laboratory cooperation agreement in March 2017**



Beyond the LBDA, GTCOM uses the translation industry as a way of gaining access to researchers and to build brand recognition globally. From 3 to 5 August 2017, in Brisbane, Australia, for instance, GTCOM was a 'top partner' of the International Federation of Translators World Congress (FIT 2017), which represented 80,000 translators in 55 countries.<sup>118</sup> GTCOM committed to deeper cooperation in machine translation and AI with the International Federation of Translators, the Australian Institute of Interpreters and Translators, the New Zealand Society of Translators and Interpreters, the University of Sydney, the University of Queensland and the University of Auckland.<sup>119</sup>

GTCOM also claims it signed a strategic cooperation agreement with a University of New South Wales (UNSW) academic on the sidelines of the 2017 conference<sup>120</sup> and has publicly discussed their broader relationship with the UNSW. For example, in a 2017 interview,<sup>121</sup> CEO Eric Yu was asked:

“GTCOM is working with many including Australia and New Zealand on MT (machine translation) and AI, can you talk a little about the time frame of this exciting work, and what the expected outcomes are?”

He replied:

“Universities again are benefiting from the Open platform offering new technologies and solutions that would not be seen otherwise. In the case of UNSW, they have advanced project based learning, real clients of their own, and new curriculum, new degrees in translation, and interpreting addressing MT and able to lead in research in Language technologies. This means as we are using open source they also are moving towards VR, AR, Big Data and best practice using YEEKIT, YeeSight, etc”

GTCOM also forms collaborations with universities and companies operating in other illiberal regimes. For instance, Russia and China already cooperate on AI research.<sup>122</sup> In Russia, GTCOM signed strategic cooperation agreements with the Skolkovo Foundation, Lomonosov Moscow State University and Russia-based global mobile technology group i-Free in 2017.<sup>123</sup> The Skolkovo Foundation is known as ‘Russia’s Silicon Valley’; it has strong Kremlin links that have been well documented in international media, which makes the relationship interesting at a minimum, given GTCOM is a company controlled by the Central Propaganda Department.

## So what?

The CCP uses technology to make an unbreakable knot of the party’s political control and China’s social and economic development. Developments such as smart cities are the embodiment of this strategy because they allow the CCP to blur the line between cooperative and coercive control. It may seem contradictory, but as already outlined throughout this paper, the technology supporting the Chinese party-state’s vision for tech-enhanced authoritarianism doesn’t always involve distinctly coercive and overtly invasive technologies. In fact, it relies on technologies that provide services. Service provision helps the party collect data that’s processed and turned into information that contributes to other tools for shaping, managing and controlling society. This is why it’s important to understand the bigger picture—the ‘social management’ process that the party uses to prevent threats to state security.

It isn’t only the customer deploying a piece of technology (notably, those technologies associated with smart cities, such as IoT devices) that derives benefit from its use. Whoever has the opportunity to access the data that a product generates and collects can derive value from the data. How the data is processed and then used depends on the intent of the actor processing it. Data is power, and market dominance is power. The possibilities of what can be done with that power are limited only by whether actors have the intent, capability and opportunity to act. The GTCOM case study illustrates how the

party-state's tech-enhanced authoritarianism expands globally. The Propaganda Department's use of GTCOM to conduct bulk data collection supports its efforts to shape global public opinion and the party's broader state security objectives.

National and local governments across the globe—under liberal and illiberal regimes alike—are choosing to buy technologies from PRC companies such as GTCOM's strategic partners, Alibaba and Huawei. For instance, ASPI's *Mapping China's technology giants* report conducted research into 75 smart city projects, most of which involved Huawei.<sup>124</sup> Many of those projects include more coercive and overtly invasive technologies, such as surveillance cameras and facial and licence plate recognition technologies, but they can also include services such as smart transportation and smart parking meters. The projects can also include the smart conferencing solutions that Huawei provides, and which integrate GTCOM's technology.

Companies such as GTCOM and its strategic partners Huawei and Alibaba can simultaneously act in their best interests to provide services and generate profit and to support the party-state's larger objectives. After all, it's the party-state that allows them to operate. No single PRC-based actor is shielded from the reality of the CCP's suite of state security legislation, which delivers the consistent message that every individual and entity is responsible for state security.<sup>125</sup>

## Policy recommendations

This report makes the following policy recommendations:

1. Governments should strengthen data privacy laws and ensure that they understand how their data is being collected and used. Importantly, they must take into consideration the intent of all actors with access to their data and the data of their citizens.
2. Transparency schemes such as Australia's Foreign Influence Transparency Scheme and the US's Foreign Agents Registration Act must be regularly updated and must stay flexible so they remain relevant to addressing important issues involving transparency and political influence.
3. Governments must invest more in data literacy programs and in promoting data transparency. For example, new frameworks for dealing with honesty and transparency in data collection would help to address what some actors, such as the CCP, are currently exploiting.
4. Governments must rethink their toolkits for dealing with foreign propaganda and update those toolkits to deal with the realities of the digital age.
5. Governments must recognise intent among different actors, who may have different interests and different values. 'Country-agnostic' policy approaches, for example, may feel politically correct but are detrimental for decision-makers and for publics, as they obscure realities by ill-defining the nature of the problem.

# Appendix 1: Known GTCOM products and services

**Chongqing International Image Dissemination Big Data Centre** GTCOM Chongqing

**Belt and Road Initiative Language Services and Big Data Platform** GTCOM Shaanxi

**Big Data Solutions** covering government and enterprise, financial industry, science and technology, smart tourism, manufacturing, and industry

**Global Call Centres** at both GTCOM Shaanxi and GTCOM Qingdao

**Conference Interpreting** for government, major events like the Olympic Games, international organisations and corporations

**Language Big Data Alliance** nearly 200 Chinese universities, and an estimated 15+ foreign universities have had membership applications accepted

**2020 Cognitive Intelligence Research Institute** focused on R&D, involving Chinese and global universities and research institutes, appears to involve data-sharing agreements. Also develops algorithms such as a "military text classification".

**LanguageBox** "a smart solution for conferences" that provides precise machine-generated simultaneous interpretation, automatic smart shorthand transcription and mobile conference room management services

**YeeBox** "facilitates cross-language communication" providing one to one interpretation in 11 languages with "response within 30 seconds"

**JoveTrans** "an AI-powered smart voice recorder and translation device" that supports "simultaneous interpretation in 35 languages"

**Speech Recognition** "employs mature multilingual speech recognition and speech synthesis technologies." Provides services in Chinese, English, Japanese, Korean, German and Portuguese

**Machine Translation** "Relying on the billions of pieces of corpora data accumulated over the past 45 years," with "customization available in five areas: engineering, finance, healthcare, military and patents"

**Natural Language Processing** a "unique algorithm cloud platform and a machine-translation training system" linked to 2020 Cognitive Intelligence Institute

**Computer Vision** to "automatically analyze the contents of massive image and video data"

**Semantic Computing** knowledge graphing, text semantic knowledge representation and similarity calculation (See "NexMagic")

**Intelligent Q&A** responding to factual, computational and logical reasoning questions

**YeeCloud** real-time translation, translation of CVs, files, certificates, essays, "innovative plans", multiple currency international settlement

- **Kingsoft translation service ICIBA** (Jinshan Aiciba) appears to be funneled through YeeCloud, and
- **Baidu's Fanyi** translator also appears to be funneled through YeeCloud
- Yeecloud offers **plugins** on websites such as Wikipedia
- "**Dolphin Translate**" uses YeeCloud

**YeeKit** an "intelligent language-technology platform" based on technologies such as "neural network machine translation, multilingual and natural-language processing, speech recognition, multilingual search and cloud application technology." Includes tools and apps **YeeKit**, **YeeCaption**, **YeeWeb**, **YeePhone**, **FindYee**

**JoveEye** "AI-powered" big data knowledge service platform for scientific research. Reportedly jointly developed with "Huawei, Haier, Alibaba, and educational organizations, including the University of Kent, the University of Bristol, and the University of Geneva"

**JoveBird** Financial Big Data Platform

**JoveMind** Knowledge Graph Building and Analysis Platform, "for network and risk control"

**NexMagic Scholar** NexMagic Global Expert Index, Academic Index, Industrial Index, Public Index, Nexmagic Index; "academic influence index", "industry influence index", "public cognition index"

**InsiderSoft** Global big data and public opinion monitoring and analysis platform. InsiderSoft's website specifically states it has: "full coverage of news, webpage(s), forum(s), Tieba, blog(s), Weibo, WeChat, Twitter, Facebook, apps and videos"

**Yeesign (DataMap)** includes:

- **Spider** news and social networking platform;
- **Governor** big data governance platform;
- **Miner** cloud analysis platform;
- **Express** integrated open platform;
- **Data Map and Data Galaxy** Visualised Analysis Platform;
- **Manager** "massive data storage and multiple high-performance computing frameworks based on Apache Hadoop, covering data storage, batch processing, real-time computing, data ETL, SQL engine, workflow engine, task management and other aspects"

**YeeWorld** "think-tank type of information-and-research platform"

**LITx Academy** an education academy platform linked to the Language Big Data Alliance

**CN Keywords** "a new media platform that integrates a multilingual encyclopedia with intelligent search, big-data analysis and other cutting-edge technology"

**Science and Technology Credit Evaluation System** linked to the Social Credit System

Source: Created by author using information from GTCOM websites.

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# Acronyms and abbreviations

2020 Institute	2020 Cognitive Research Institute
AI	artificial intelligence
BRI	Belt and Road Initiative
BRI Platform	BRI Language Services and Big Data Platform
CCP	Chinese Communist Party
CGCC-USA	China General Chamber of Commerce-US
CPG	China Publishing Group
CTC	China Translation Corp.
GAN	generative adversarial networks
GTCOM	Global Tone Communications Technology Co. Ltd
HIT	Harbin Institute of Technology
IoT	internet of things
LBDA	Language Big Data Alliance
NLP	natural language processing
PLA	People's Liberation Army
PRC	People's Republic of China
R&D	research and development
SOE	state-owned enterprise
UNSW	University of New South Wales

