Electric vehicles send real-time data to Chinese government

November 29 2018, by Erika Kinetz

In this June 22, 2018, photo, Shan Junhua chats about privacy near his white Tesla while charging it in Shanghai. When Shan bought his white Tesla Model X, he knew it was a fast, beautiful car. What he didn't know is that Tesla constantly sends information about the precise location of his car to the Chinese government. Automakers selling electric vehicles in China send a constant feed of information about the location of cars to the government, potentially adding to the rich kit of surveillance tools available to the regime as President Xi Jinping steps up the use of technology to track Chinese citizens. (AP Photo/Ng Han Guan)

When Shan Junhua bought his white Tesla Model X, he knew it was a fast, beautiful car. What he didn't know is that Tesla constantly sends information about the precise location of his car to the Chinese government.

Tesla is not alone. China has called upon all electric vehicle manufacturers in China to make the same kind of reports—potentially adding to the rich kit of surveillance tools available to the Chinese government as President Xi Jinping steps up the use of technology to track Chinese citizens.

"I didn't know this," said Shan. "Tesla could have it, but why do they transmit it to the government? Because this is about privacy."

More than 200 manufacturers, including Tesla, Volkswagen, BMW, Daimler, Ford, General Motors, Nissan, Mitsubishi and U.S.-listed electric vehicle start-up NIO, transmit position information and dozens of other data points to government-backed monitoring centers, The Associated Press has found. Generally, it happens without car owners' knowledge.

The automakers say they are merely complying with local laws, which apply only to alternative energy vehicles. Chinese officials say the data is used for analytics to improve public safety, facilitate industrial development and infrastructure planning, and to prevent fraud in subsidy programs.

But other countries that are major markets for electronic vehicles—the United States, Japan, across Europe—do not collect this kind of real-time data.

In this Friday, June 22, 2018, photo, Ding Xiaohua, deputy director of the Shanghai Electric Vehicle Public Data Collecting, Monitoring and Research Center sits near a data display screen in Shanghai. According to specifications published in 2016, every electric vehicle in China transmits data from the car's sensors back to the manufacturer. From there, automakers send 61 data points, including location and details about battery and engine function to local centers like the one Ding oversees in Shanghai. (AP Photo/Ng Han Guan)

And critics say the information collected in China is beyond what is needed to meet the country's stated goals. It could be used not only to undermine foreign carmakers' competitive position, but also for surveillance—particularly in China, where there are few protections on personal privacy. Under the leadership of Xi Jinping, China has unleashed a war on dissent, marshalling big data and artificial intelligence to create a more perfect kind of policing, capable of predicting and eliminating perceived threats to the stability of the ruling Communist Party.

There is also concern about the precedent these rules set for sharing data from next-generation connected cars, which may soon transmit even more personal information.

"You're learning a lot about people's day-to-day activities and that becomes part of what I call ubiquitous surveillance, where pretty much everything that you do is being recorded and saved and potentially can be used in order to affect your life and your freedom," said Michael Chertoff, who served as Secretary of the U.S. Department of Homeland Security under President George W. Bush and recently wrote a book called "Exploding Data."

Chertoff said global automakers should be asking themselves tough questions. "If what you're doing is giving a government of a more authoritarian country the tools to have massive surveillance, I think then companies have to ask themselves, 'Is this really something we want to do in terms of our corporate values, even if it means otherwise forgoing that market?'"

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A BIGGER BROTHER?

The Shanghai Electric Vehicle Public Data Collecting, Monitoring and Research Center sits in a grey tower in suburban Jiading district. One floor up from the cafeteria, a wall-sized screen glows with dots, each representing a single vehicle coursing along Shanghai's roads to create a massive real-time map that could reveal where people live, shop, work,

and worship.

Click a dot at random, and up pops a window with a number that identifies each individual vehicle, along with its make and model, mileage and battery charge.

All told, the screen exhibits data from over 222,000 vehicles in Shanghai, the vast majority of them passenger cars.

"We can provide a lot of data from consumers to the government to help them improve policy and planning," said Ding Xiaohua, deputy director of the center, a non-profit that is tightly aligned with and funded by the government.

According to national specifications published in 2016, electric vehicles in China transmit data from the car's sensors back to the manufacturer. From there, automakers send at least 61 data points, including location and details about battery and engine function to local centers like the one Ding oversees in Shanghai.

Data also flows to a national monitoring center for new energy vehicles run by the Beijing Institute of Technology, which pulls information from more than 1.1 million vehicles across the country, according to the National Big Data Alliance of New Energy Vehicles. The national monitoring center declined to respond to questions.

In this Friday, June 22, 2018, photo, a staff member looks at a laptop near a screen displaying live data from vehicles at the Shanghai Electric Vehicle Public Data Collecting, Monitoring and Research Center in Shanghai. According to specifications published in 2016, every electric vehicle in China transmits data from the car's sensors back to the manufacturer. From there, automakers send 61 data points, including location and details about battery and engine function to local centers like this one in Shanghai. (AP Photo/Ng Han Guan)

Those numbers are about to get much bigger. Though electric vehicle sales accounted for just 2.6 percent of the total last year, policymakers have said they'd like new energy vehicles to account for 20 percent of total sales by 2025. Starting next year, all automakers in China must meet production minimums for new energy vehicles, part of Beijing's aggressive effort to reduce dependence on foreign energy sources and place itself at the forefront of a growing global industry.

The Chinese government has shown its interest in tracking vehicles.

"The government wants to know what people are up to at all times and react in the quickest way possible," said Maya Wang, a senior China researcher for Human Rights Watch. "There is zero protection against state surveillance."

"Tracking vehicles is one of the main focuses of their mass surveillance," she added.

Last year, authorities in Xinjiang, a restive region in western China that has become a laboratory for China's surveillance state, ordered residents to install GPS devices so their vehicles could be tracked, according to official media. This summer the Ministry of Public Security, a police agency, began to roll out a system to track vehicles using windshield radio frequency chips that can identify cars as they pass roadside reading devices.

Ding insisted that the electric vehicle monitoring program is not designed to facilitate state surveillance, though he said data could be shared with government public security organs, if a formal request is made. The center said it has not shared information with police, prosecutors or courts, but has used the data to assist a government investigation of a vehicle fire.

In this Friday, June 22, 2018, photo, a dialog box shows details of a vehicle from amongst thousands tracked and displayed at the Shanghai Electric Vehicle Public Data Collecting, Monitoring and Research Center in Shanghai. According to specifications published in 2016, every electric vehicle in China transmits data from the car's sensors back to the manufacturer. From there, automakers send 61 data points, including location and details about battery and engine function to local centers like this one in Shanghai. (AP Photo/Ng Han Guan)

There is a privacy firewall built into the system. The monitoring center has each car's unique vehicle identification number, but to link that number with the personal details of the car owner, it must go through the automaker—a step it has taken in the past. Chinese law enforcement can also independently link the vehicle identification number with the car owner's personal information.

"To speak bluntly, the government doesn't need to surveil through a platform like ours," Ding said. He said he believed the security forces

"must have their own ways to monitor suspects," as other governments do.

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DATA ON WHEELS

Many vehicles in the U.S., Europe and Japan transmit position information back to automakers, who feed it to car-tracking apps, maps that pinpoint nearby amenities and emergency services providers. But the data stops there. Government or law enforcement agencies would generally only be able to access personal vehicle data in the context of a specific criminal investigation and in the U.S. would typically need a court order, lawyers said.

Automakers initially resisted sharing information with the Shanghai monitoring center; then the government made transmitting data a prerequisite for getting incentives.

In this Friday, Oct. 12, 2018, photo, Volkswagen Group China chief executive Jochem Heizmann reacts during an interview in Beijing. More than 200 manufacturers, including Tesla, Volkswagen, BMW, Daimler, Ford, General Motors, Nissan, Mitsubishi and U.S.-listed electric vehicle start-up NIO, transmit position information and dozens of other data points to Chinese government-backed monitoring centers, The Associated Press has found. Generally, it happens without car owners' knowledge. (AP Photo/Ng Han Guan)

"The automakers consider the data a precious resource," said a government consultant who helped evaluate the policy and spoke on condition of anonymity to discuss sensitive issues. "They gave you dozens of reasons why they can't give you the data. They give you dozens of excuses. Then we offer the incentives. Then they want to give us the data because it's part of their profit."

There was concern that data pulled from electric vehicles might reveal

proprietary information about, for example, how hybrids switch between gas and battery power, and eventually set automakers up for commercial competition with a Chinese government entity. As cars become more connected, carmakers are looking to tap new revenue streams built on data—a market McKinsey estimated could be worth $750 billion by 2030.

Ding said a Tesla executive came to Shanghai and grilled him about the rules. "The first question is who are you, the second question is why you collect this data, and the third question is how to protect the privacy of the users," Ding said.

Tesla declined to comment.

Ding said confidentiality agreements bar the data center from sharing proprietary information.

Still, he is open about his commercial ambition. He'd like to wean the center from government funding and make money from the data, without infringing on anyone's privacy or intellectual property. "We have done some explorations," he said. "But there is still a distance from truly monetizing it."

In this photo taken Friday, Oct. 12, 2018, Volkswagen Group China chief executive Jochem Heizmann walks out for an interview in Beijing. More than 200 manufacturers, including Tesla, Volkswagen, BMW, Daimler, Ford, General Motors, Nissan, Mitsubishi and U.S.-listed electric vehicle start-up NIO, transmit position information and dozens of other data points to government-backed monitoring centers, The Associated Press has found. Generally, it happens without car owners' knowledge. (AP Photo/Ng Han Guan)

CHINA'S EDGE

The Chinese government's ability to grab data as it flows from cars gives its academics and policymakers an edge over competing nations. China tends to view technology development as a key competitive resource. Though global automakers have received billions in incentives and

subsidies from U.S., European and Japanese governments, they are contributing data to the Chinese government that ultimately serves Beijing's strategic interests.

In 2011, the U.S. Department of Energy's Idaho National Laboratory began a nationwide study of how electric vehicle owners drive and charge their cars. Participants gave explicit written consent to allow the government laboratory to collect their data, and even then it wasn't delivered in real time, said John Smart, who leads the center's advanced vehicles group. Instead, the team got historical data on a weekly basis. Cars were assigned random numbers for the study, so owners remained anonymous.

Nothing of its kind has been done since in the U.S., Smart said.

"The cost is very high to collect data," he explained. "The government hasn't felt the need to provide that money and the manufacturers making their own investments are choosing to keep the findings to themselves for proprietary reasons."

In this Wednesday, Sept. 12, 2018, photo, Jose Munoz, the head of Nissan's China operations speaks during an interview in Shanghai, China. More than 200 manufacturers, including Tesla, Volkswagen, BMW, Daimler, Ford, General Motors, Nissan, Mitsubishi and U.S.-listed electric vehicle start-up NIO, transmit position information and dozens of other data points to government-backed monitoring centers, The Associated Press has found. Generally, it happens without car owners' knowledge. (AP Photo)

In this Wednesday, Sept. 12, 2018, photo, An Baojia, right, makes a phone call near his Tesla vehicle at a charging station in Shanghai. More than 200 manufacturers, including Tesla, Volkswagen, BMW, Daimler, Ford, General Motors, Nissan, Mitsubishi and U.S.-listed electric vehicle start-up NIO, transmit position information and dozens of other data points to Chinese government-backed monitoring centers, The Associated Press has found. Generally, it happens without car owners' knowledge. (AP Photo)

In this Aug. 27, 2018, file photo, a cameraman takes video of a Nissan Sylphy Zero Emission, the Nissan's first all-electric vehicle built in China, at the Nissan factory in Guangzhou, Guangdong province, China. More than 200 manufacturers, including Tesla, Volkswagen, BMW, Daimler, Ford, General Motors, Nissan, Mitsubishi and U.S.-listed electric vehicle start-up NIO, transmit position information and dozens of other data points to government-backed monitoring centers, The Associated Press has found. Generally, it happens without car owners' knowledge. (AP Photo/Vincent Yu, File)

In this April 14, 2017, file photo, a security guard moves past Tesla electric vehicle charging station in Beijing. More than 200 manufacturers, including Tesla, Volkswagen, BMW, Daimler, Ford, General Motors, Nissan, Mitsubishi and U.S.-listed electric vehicle start-up NIO, transmit position information and dozens of other data points to government-backed monitoring centers, The Associated Press has found. Generally, it happens without car owners' knowledge. (AP Photo/Ng Han Guan, File)

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When it was published, in 2015, the Idaho National Laboratory's study was the largest ever done. All told, bundled with some additional data, the study helped Idaho researchers analyze 21,600 electric vehicles over 158 million driving miles (254 million kilometers).

In the same amount of time it took Idaho researchers to publish their study, the Shanghai Electric Vehicle Public Data Collecting, Monitoring and Research Center began gathering real-time information from more than 222,000 vehicles and amassed over 4.7 billion miles (7.6 billion

kilometers) of driving history.

"As a researcher, I think that data set could be used to answer hundreds of questions," Smart said. "I have a notebook a half an inch thick full of questions."

Global automakers stressed that they share data to comply with Chinese regulations. Nearly all have announced plans to aggressively expand their electric vehicle offerings in China, the world's largest car market.

"There are real-time monitoring systems in China where we have to deliver car data to a government system," Volkswagen Group China chief executive Jochem Heizmann said in an interview. He acknowledged that he could not guarantee the data would not be used for government surveillance, but stressed that Volkswagen keeps personal data, like the driver's identity, secure within its own systems.

"It includes the location of the car, yes, but not who is sitting in it," he said, adding that cars won't reveal any more information than smart phones already do. "There is not a principle difference between sitting in a car and being in a shopping mall and having a smart phone with you."

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Jose Munoz, the head of Nissan's China operations, said he was unaware of the monitoring system until the AP told him, but he stressed that the

automaker operated according to the law. Asked by the AP about the potential for human rights abuses and commercial conflicts posed by the data sharing, Munoz smiled and shrugged.

"At Nissan, we are extremely committed to the Chinese market," he said. "We see it as the market that has the greatest opportunity to grow."

Ford, BMW and NIO declined to comment. Mitsubishi did not respond to multiple requests for comment.

General Motors and Daimler said they transmit data in compliance with industry regulations and get consent from car buyers on how their vehicle data is collected and used.

Tesla declined to answer specific questions and instead pointed to a privacy policy buyers sign at the time of purchase, which stipulates that vehicle data can be shared "with other third parties when required by law," though there was no specific mention of the government monitoring centers in the Chinese version of the policy.

Interviews with car owners suggest such disclosures aren't effective. Only one of nine electric vehicle owners was aware data from his car is fed to the government—and he said he only knew because he is an electric vehicle engineer.

"It's useless to be concerned about it," said Min Zeren, who owns a Tesla Model S. "If you're concerned about it, then there's no way to live in this country."

https://techxplore.com/news/2018-11-electric-vehicles-real-time-chinese.html