

[FP Tech Desk](#)

THE REAL SECRET OF GOOGLE'S DRIVERLESS CAR: “*IT IS BUILT TO SPY ON YOU!*”

Trending: [Fort McMurray](#) | [Apple](#) | [Earnings](#) | [Oil](#) | [Loonie](#) | [Housing](#) | [Valeant](#)

The real prize and threat of the driverless car revolution is data: ‘The car knows a lot about you’

[Claire Brownell](#) |

[More from Claire Brownell](#)



Mike Faille for National Post

Of course, the companies and governments working to make driverless cars a reality are under pressure to put safeguards in place to mitigate those risks. But there will also be pressure to keep costs low and leave the door open to make money from all that valuable data.

“There are some who feel the real business opportunity in autonomous vehicles is in the ownership, the processing and the ultimate sale of that data,” said Barrie Kirk, executive director of the consulting firm Canadian Automated Vehicles Centre of Excellence (CAVCOE). “There’s a big opportunity there for companies who own the data to make money.”



Eric Risberg/AP Photo fileA row of Google self-driving Lexus cars in 2014.

The race to solve the remaining technological problems holding driverless cars back may well prove more lucrative than selling the vehicles themselves. The lure of that prize is attracting some of the world’s biggest companies, including Amazon.com, Microsoft Corp. and perhaps even Apple Inc.

To get a sense of the technological puzzle pieces that need to be laid in place before self-driving cars go mainstream — and what’s at stake if they are sloppily assembled — it’s helpful to think about what humans need in order to drive.

Humans use their senses to collect information about the environment around them that the brain can then process. Likewise, driverless cars use information from a variety of sources — including radar, a laser surveying technology called lidar and three-dimensional maps — to make continuous decisions that get them to their destinations without crashing into anything

But a car's computer also needs wireless networks — such as the ones created by the routers on Stratford's hydro poles — to transmit that data about the car's surroundings. That data would go back to the car's computer and possibly a central hub elsewhere as well.

The key concept here is that this data collection and processing must be continuous. Think about how frustrating it is when an email gets stuck in your smartphone's outbox and imagine that same lag applied to your self-driving car telling nearby vehicles it's about to merge onto a highway.



Bryan Mitchell/BloombergAn antenna capable of communicating information to properly fitted vehicles sits atop a traffic signal in Michigan.

There are security issues with the data as well. What if your car's operating system told advertisers how often you stop for fast food on the way home from work? Or what if someone decided to simply hack into the four-wheeled computer your car has already become, stole your information and took over control of the vehicle?

Self-driving car prototypes already generate mind-bogglingly massive amounts of data. The one being tested by Google's parent company Alphabet Inc., for example, collects about one gigabyte of data per second, or a feature-length, high-definition film's worth of data every five seconds.



If the world's one-billion-plus cars were self-driving, each one would generate about two petabytes — or two million gigabytes — of data every year on average, according to an estimate by big data strategist Mark van Rijmenam.

The battle over ownership and control of that data has already begun. Apple Inc. reportedly ended talks last month about a driverless car partnership with German auto makers Bayerische Motoren Werke AG (BMW) and Daimler AG (Mercedes-Benz) because of a disagreement over whether the cars would use Apple's cloud software, according to a report in the German publication *Handelsblatt* (Apple has yet to officially confirm it is working on self-driving cars).

Those same two German automakers had an easier time making a deal with a third, Audi AG, to purchase the HERE mapping service from Nokia Corp. for 2.8 billion euros (about \$4 billion) in December. HERE is one of a handful of digital mapping services that is making the detailed three-dimensional maps driverless cars will need to navigate.

And those three-dimensional maps require a whole lot of — you guessed it — data and computing power. In April, Reuters reported that the trio of automakers is in talks with Microsoft Corp. and Amazon.com Inc. about providing the cloud computing power necessary to make those maps work.

All that data being collected and transmitted could include a lot of sensitive information. Last month, a group of researchers at New York City's Cornell Tech discovered a vulnerability that allowed them to find people who had shared Google Maps directions to abortion clinics and addiction treatment centres. And that's just a tiny fraction of the type of personal information a self-driving car could collect.

There are also already safety concerns that will only increase as more connectivity and technology is added to cars.

One of the things I find worrying is that people, especially younger people, are willing to trade personal data for a benefit. The car knows a lot about you.

Last summer, two people demonstrated they could hack into a Jeep Cherokee being driven by a reporter for *Wired* magazine, taking remote control of everything from the air conditioning to the stereo and eventually cutting the transmission. The demonstration led to a recall of 1.4 million vehicles.

Parties interested in the data collected by self-driving cars might not even need to resort to hacking. CAVCOE's Kirk said there would be little to stop whoever owns the data from selling it to insurance companies, advertisers or just about anyone else if the vehicle's terms of service included a clause granting permission to do so.

“One of the things I find worrying is that people, especially younger people, are willing to trade personal data for a benefit,” he said. “The car knows a lot about you.”

All that data will also need to be transmitted with lightning-fast speed, requiring better networks. As self-driving cars and other aspects of the so-called Internet of Things develop, there will likely be a huge increase in the number of physical objects sending and receiving information wirelessly over the Internet.

As that happens, latency — the lag between asking for something and receiving it on a mobile device — will go from an annoyance to a matter of life and death. When your car asks if any of its sensors are detecting a reason why it shouldn’t change lanes right now, you want it to get an accurate answer right away.

In anticipation of this need, Chinese telecommunications and hardware company Huawei Technologies Co. Ltd. has been testing faster networks that use a technology called 5G in locations around the world, including Vancouver through a partnership with Telus Corp.

“It’s clear that industry is transforming itself,” he said. “I think the biggest scale we’ll see is connecting to the car.”

The opportunity to do that has BlackBerry Ltd., best known for its mobile handsets, hoping its reputation for security and privacy can help its transition into a software company. Its subsidiary QNX Software Systems already makes technology powering entertainment, navigation, safety and other features that are in more than 60 million vehicles worldwide.

At the Consumer Electronics Show in Las Vegas in January, QNX announced it’s joining the race to provide self-driving car technology. The company is working on a system that allows vehicles to communicate with each other (known as V2V) and infrastructure such as traffic lights (V2I) through sensors that broadcast information.

Grant Courville, QNX’s senior director of product management, said V2V-enabled cars will broadcast a 320-byte message to nearby vehicles up to 10 times per second with basic information including position, acceleration and brake status. Vehicles that can autonomously respond to that information can prevent collisions, conserve fuel and provide a smoother ride.

He said insurance companies or advertisers who try to purchase this data would be out of luck, because the company doesn’t plan to keep it.

“It needs to be received in real time, it needs to be analyzed in real time, it needs to be acted upon in real time, but it doesn’t need to be stored,” he said. “QNX would never hold onto that data at all.”

For such technology to work and keep everyone safe, it needs to be compatible with other V2V systems, including ones made by competitors. But Courville said that when it comes to developing technology and infrastructure for self-driving cars, everyone is getting along better than you might expect.

Like developing the Internet itself, ushering in the age of self-driving cars is going to require cooperation, Courville said. And he believes the legacy automakers, tech companies and governments all seem to understand that.

“The battles have been fought. Everyone is aligned and has agreed,” he said. “For the common good, for safety reasons, for efficiency reasons and ultimately, to get to the point of autonomous driving, the cars need to talk to each other in a standard way.”

Financial Post

cbrownell@nationalpost.com

[Twitter.com/clabrow](https://twitter.com/clabrow)