

Hi there!

Welcome to **Issue #12** of Tech Talk.

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### In this issue:

- Alphabet's Wing has launched its first commercial drone delivery ✓
- China is designating urban spaces for testing autonomous vehicles
- Alphabet's Waymo is planning to lose its safety drivers ✓
- Boeing and Porsche are teaming up to develop a flying electric car ✓
- Elon Musk's SpaceX is seeking permission to launch 30 000 more satellites to beam internet down to Earth ✓
- Huawei says its all-important Android replacement Harmony might not be ready for years ✓

**The purpose of this note is to create interesting talking points**, and to increase awareness regarding some of the most interesting trends and themes which are taking place currently, with the aim of trying to determine where the world is going.

Regards,



Nicholas Dakin  
Equity Analyst

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### [CNBC - Alphabet's Wing launches first commercial drone delivery](#) ✓

**Investment Themes:** Smart Mobility, E-Commerce

- Wing launched the US's **first commercial drone delivery** flight.
- The drone that can deliver items such as food and medicine to homes within minutes.

**The bottom line:** As is the case with Waymo, Alphabet's industry-leading autonomous driving division, Wing has taken the lead in drone delivery. It was the first drone delivery company to receive Federal Aviation Administration (FAA) certification. It has also partnered with FedEx. Amazon is close on its heels, however. UPS is also getting in on the action - pharmacy chain CVS is partnering with UPS, which also received a Federal Aviation Administration certificate earlier this month to make limited drone deliveries.



## [The Economist - Chinese firms are taking a different route to driverless cars](#)

**Investment Theme:** Smart Mobility

- **Beijing-e-Town** is one of a growing number of urban spaces across China designated for testing autonomous vehicles (AVs). Digital lane markers can switch parts of the road to AV-only on demand. In the absence of driving software which can handle chaotic city streets, Chinese firms are turning the streets themselves into something that software can handle by installing sensors to guide cars, writing and enforcing rules about how humans move around, designing (or redesigning) urban landscapes to be AV-friendly and, critically, limiting AV firms' legal liability in the event of inevitable accidents. **All this is easier in authoritarian China.**
- It therefore increasingly seems that if AVs are to become widespread, it may happen **first not in the West but in China**, which may seem counterintuitive. Technologically, the **West appears streets ahead**. "Everybody is behind Waymo and Cruise (General Motors)," concedes a senior Chinese AV executive. Waymo's cars alone have self-driven **more miles than all Chinese AVs put together.**

**The bottom line:** *The potential demand for AVs among 1.4bn Chinese is huge - \$2 trillion by 2040, according to McKinsey. Baidu, Pony.ai and WeRide are leading the AV race in China currently.*

### Life in the slow lane

Selected autonomous-vehicle milestones

1939	World's Fair Futurama exhibit shows cars guided by automated highways
1940	Norman Geddes, in "Magic Motorways", predicts AVs by the 1960s
1957	RCA Labs shows an AV guided by circuits embedded in a Nebraska road
1960	A British AV, guided by magnets in the road, drives round a test track at 130kph
1987	European countries spend €749m on a self-driving research project called EUREKA
1987	HRL Laboratories' off-road AV navigates tricky terrain at an average speed of 3kph
1995	"No Hands Across America", a 5,000km journey driven 98.2% autonomously
2004	The DARPA Grand Challenge offers \$1m for an AV that navigates 240km offroad. No entry is successful
2005	The second Grand Challenge is held. Five teams complete a slightly easier route
2008	Rio Tinto, a mining firm, begins testing self-driving mine trucks
2009	Google begins the self-driving car project that will become Waymo
2010	An Audi AV climbs Pikes Peak, a popular race route, at high speed
2012	Nevada issues America's first licence to operate a driverless car, to Google
2016	First AV fatality, when Tesla Model S crashes into a lorry in Florida
2018	Waymo launches a limited self-driving taxi service in parts of Phoenix, Arizona

Source: *The Economist*

The Economist

## [Business Insider - Huawei says its all-important Android replacement Harmony might not be ready for years](#) ✓

- The **Trump administration blacklisted Huawei in May**, meaning that any firm wanting to do business with the company has to obtain a government licence.
- **The blacklist had one immediate dramatic effect:** Google would no longer be able to license its apps and services to Huawei. However, Huawei can continue to use Google's Android platform, since it is open-source.
- Accordingly, Huawei's recently-launched **Mate 30 phone comes without any Google apps at all**, in a major blow to the company's hopes of gaining ground in the Western smartphone market. Access to Google services is one of the key reasons people buy Android phones.
- A senior Huawei executive has admitted that Harmony, the company's proposed replacement for the Android operating system on its phones, could take years to build.

**The bottom line:** *Customers with existing Huawei mobile phones are able to still access Google's Play app store, Google Maps and other products provided by Google Mobile Services, because of a temporary exemption that allows US suppliers to continue to service existing equipment. Despite the ban, Huawei has shipped 200 million phones to date in 2019 – two months earlier than it did in 2018 and a rather impressive feat!*

## [CNN Business - Boeing and Porsche team up to develop flying electric car](#) ✓

**Investment Theme:** Smart Mobility

- Boeing and Porsche are teaming up to "explore the premium urban air mobility market and the extension of urban traffic into airspace," through "a **fully electric vertical takeoff and landing vehicle**."
- Porsche's parent company, Volkswagen AG, is the **world's largest automaker**. It has announced a major push into the development of electric vehicles, setting a target of building **22 million electric cars** across its brands over the next 10 years.



An artist rendering of a possible version of an electric flying car that Porsche and Boeing are planning to work together to develop.

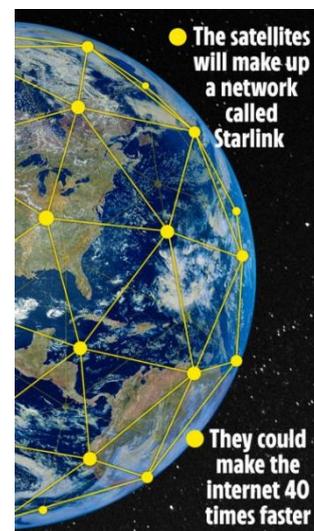
**The bottom line:** As I mentioned in a previous note, Boeing has also formed a strategic partnership with aviation start-up, Kitty Hawk. Kitty Hawk recently unveiled its third futuristic aircraft design, the HVSD, an electric aircraft designed to go anywhere and land anywhere fast and quietly.

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## [Los Angeles Times - SpaceX seeks permission to launch 30,000 more satellites](#) ✓

**Investment Themes:** 5G, Internet-of-Things

- Elon Musk's SpaceX has bet its future on a network of small satellites that could beam the internet down to Earth.
- It has requested permission to operate as many as **30,000 satellites**. The company had received prior permission from the U.S. government to operate about **12,000 satellites** and launched **60 initial satellites in May**.
- SpaceX makes its money by **launching satellites for commercial and government customers** and ferrying cargo for NASA to the International Space Station.
- Musk also intends to use revenue from Starlink to fund his passion project: a **Mars spaceship known as Starship** that would be capable of ferrying up to 100 people to the red planet.



**The bottom line:** The global internet connectivity market is worth about \$1 trillion, and everyone wants a piece of the pie. Jeff Bezos' Project Kuiper plans to launch over 3 000 satellites. Then there's Google's Loon project, a network of stratospheric balloons designed to bring internet connectivity to rural and remote communities worldwide. A single balloon can cover over 5 000 square kilometres with internet access. Smaller players such as Swarm, with its sandwich-sized SpaceBEE satellites, are getting involved too. Yesterday, Musk sent a tweet via a Starlink satellite. It therefore shouldn't be too long before Starlink's internet is available in certain parts of the world.

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## [TechCrunch - Waymo to customers: 'Completely driverless Waymo cars are on the way'](#) ✓

**Investment Theme:** Smart Mobility

- Following on from the article above: Waymo, **Google's self-driving project**, has been using its ride-hailing app to shuttle Phoenix residents in a geofenced area since April 2017. All of these "self-driving rides" have had a human safety driver behind the wheel, however.
- **Waymo is planning to lose its safety drivers:** A driverless ride won't have a safety driver behind the wheel, although a Waymo employee would likely be present in the vehicle initially.

**The bottom line:** Waymo is leading the autonomous vehicle race. It has clocked more than 10 million 'real-world' miles since 2009 and its software now drives the same distance inside a sprawling simulated version of the real world every 24 hours. In 2018, Morgan Stanley said Waymo could be worth as much as \$70 billion. UBS values Waymo anywhere from \$45 billion to \$135 billion, and says it could generate as much as \$114 billion in revenue by 2030. At the end of 2018, VW was willing to pay \$15 billion for a 10% stake.

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