15 Trends Shaping Tech In 2018
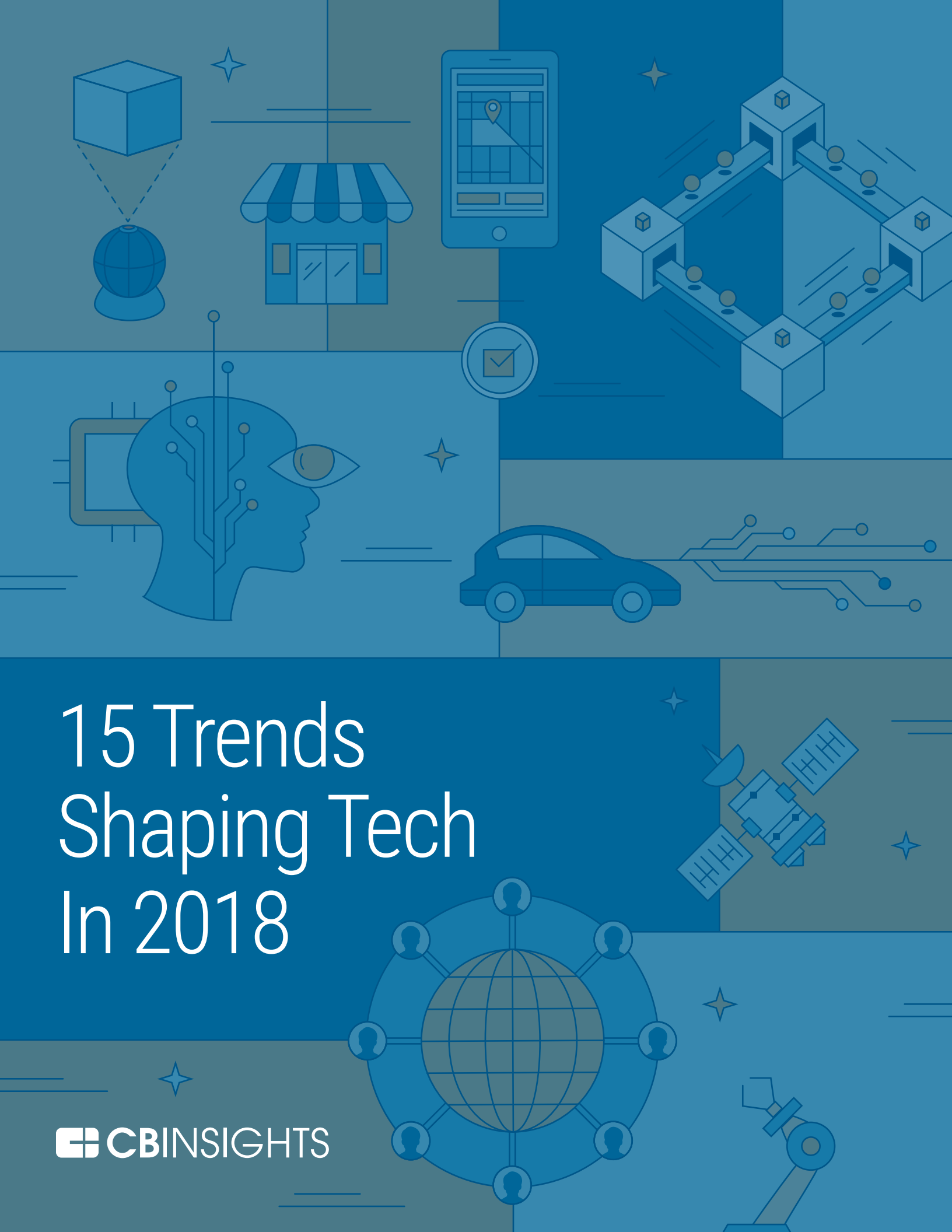
Car ownership models are shifting. The race to become an AI powerhouse is under way. Fitness is going gym-less. And pets are becoming tech-enabled. We look at the trends poised to reshape industries in 2018.

Today, companies of every stripe, not just the large tech giants, are racing to develop a tech edge through M&A as well as investing in startups as a form of "outsourced R&D." It's all part of a broader push in every industry to develop tech-enabled products and services.

Meanwhile, Amazon's onslaught into seemingly every industry, from cloud computing to grocery retail — with the acquisition of Whole Foods — means every CEO is running scared.

Tech is also increasingly in the crosshairs of governments, with increased scrutiny of cross-border activity and societal impact. But even as tech giants are facing headwinds, new US tax law may give tech companies yet another opportunity to expand their reach.

At year's end, we asked each of our industry analysts at CB Insights to look back over a year's worth of research briefs, data crunching, and reports to identify the trends they believe will rise to crest and shape the tech sector in 2018. In each case, we examine the tea leaves pointing to each trend as something to watch out for next year.

From car subscriptions to big tech's real estate ambitions to cross-border M&A, these are 15 of the tech trends we'll be watching.

Cars become a subscription good

Pay a monthly fee and drive a car for as long as you'd like. This package often includes insurance and maintenance. This takes away the pain of having to sell your car — an asset with a value that begins to depreciate the minute you buy it — and eliminates the need for maze-like leasing contracts.

**Auto companies and startups are pitching subscription cars as the new model for car ownership.**

It's one way to meet the threat of Uber and Lyft.

One well-funded startup is Fair, which launched in September 2017, and has raised upwards of $1B from investors including BMW's venture arm Penske Automotive Group and Sherpa Capital. The company has a highly-credentialed set of executives: Scott Paintor, the ex-founder of publicly listed car-buying platform TrueCar, founded the company, along with Georg Bauer who's served as a top-level finance executive at Tesla, BMW, and Mercedes-Benz.

With Fair, when you want a change from the car you've been paying for — say, for summer at the beach — you can try something new. They make it relatively easy to move from car to car without repercussions.

The large auto manufacturers are also getting into the subscription game. At the L.A. Auto Show in November 2017, both Volvo and Lincoln announced subscription services. Porsche has also launched its own version of a subscription service, which includes a generous insurance policy, roadside assistance, full detail washes, and a personal concierge who will clean and deliver each car.
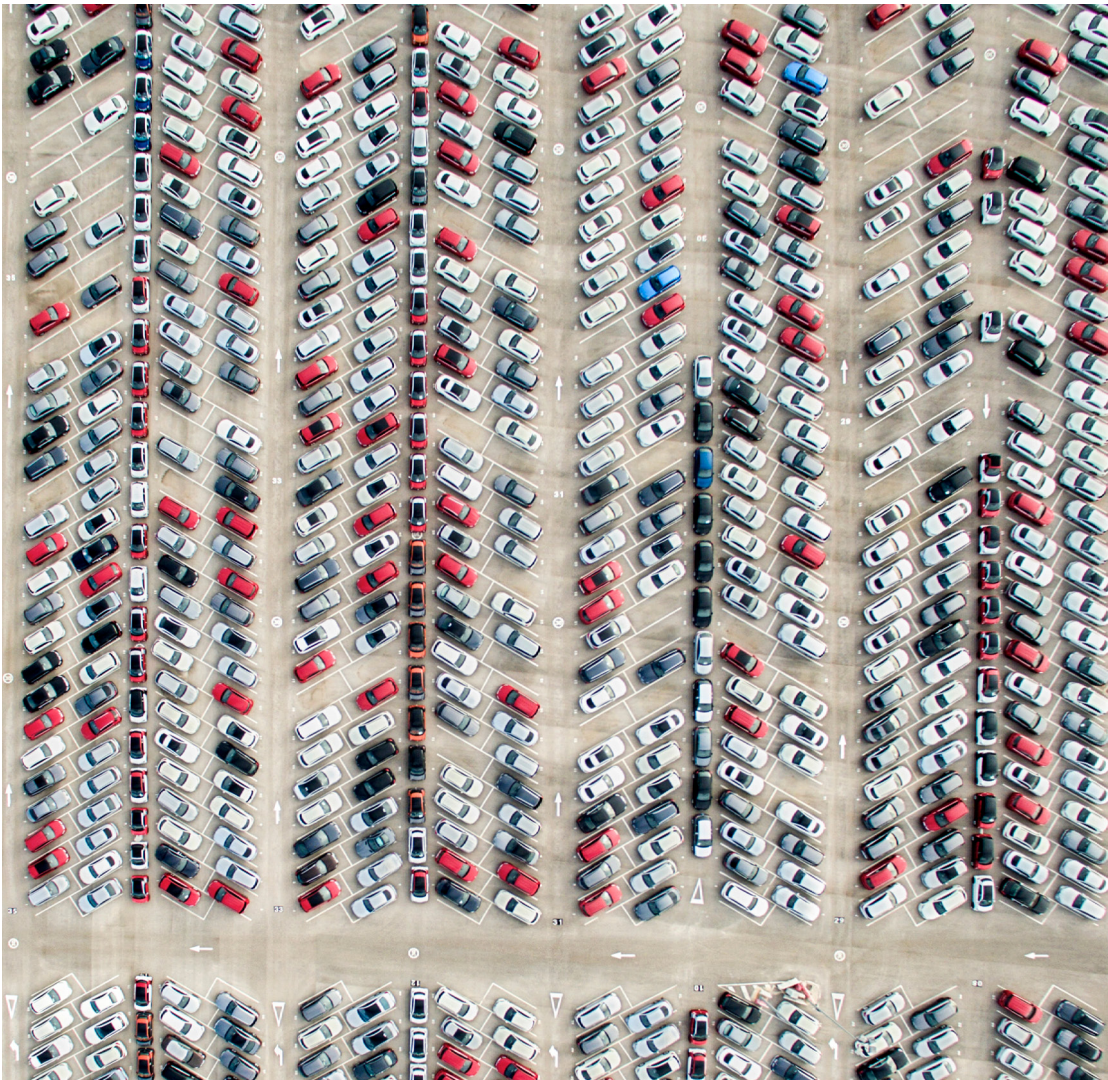
Among the issues faced is availability. Porsche, for example, has only made its service available in Atlanta. Fair is only available to California drivers. Volvo's service is only available for one model, the XC 40.

These programs are bets that a business model can be built around the fact that many consumers don't care about actually owning a car — they merely want to use it and have someone else handle the headaches. In 2018, Volvo will deliver its first subscription cars and Fair has officially partnered with 100 dealers. It will be a make or break year for this business model.

The global race for AI chip dominance heats up

We're seeing a Cambrian explosion of applications for artificial intelligence, from recognizing faces in videos for security purposes to detecting diseases in medical images at scale.

But what chips will these processes run on?

China and the US are in a race to own this segment.

Government-backed startups in China, US tech giants, and chip incumbents are all aiming to be the next NVIDIA, the company whose chips currently dominate AI processing.

In July 2017, the Chinese government said it planned to reach parity with the United States on artificial intelligence by 2020 and become the world leader by 2030. One government-backed project is to create a chip that has 20 times the performance and energy efficiency of NVIDIA's GPUs.

Chinese company Cambricon is pledging to make one billion processing units in the next three years and is developing chips specifically made for deep learning.

California-based NVIDIA is mentioned with reason. When the company launched its graphic processing units (GPUs) in 1999, they were primarily aimed at the gaming industry. But, with the rise of AI applications, the chips also showed promise for training processor-intensive AI algorithms.

Today, NVIDIA chips dominate the industry, with everyone from AI startups to corporations like Baidu and Google relying on its GPUs.

Intel, although it is the dominant processor in other areas, was not an immediate go-to for artificial intelligence. It's since had to play catch-up.

It acquired programmable chipmaker Altera, whose chips help accelerate AI tasks, for a massive $16.7B.

It's also snapped up AI-powered startups like Saffron, Nervana, Movidius, and Mobileye. In October 2017, the company released a line of "neural network processors," that are based on technology from the company's acquisition of Nervana and meant to work closely with AI applications. It has also partnered with Facebook
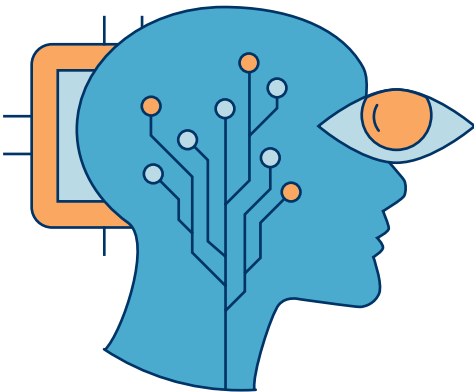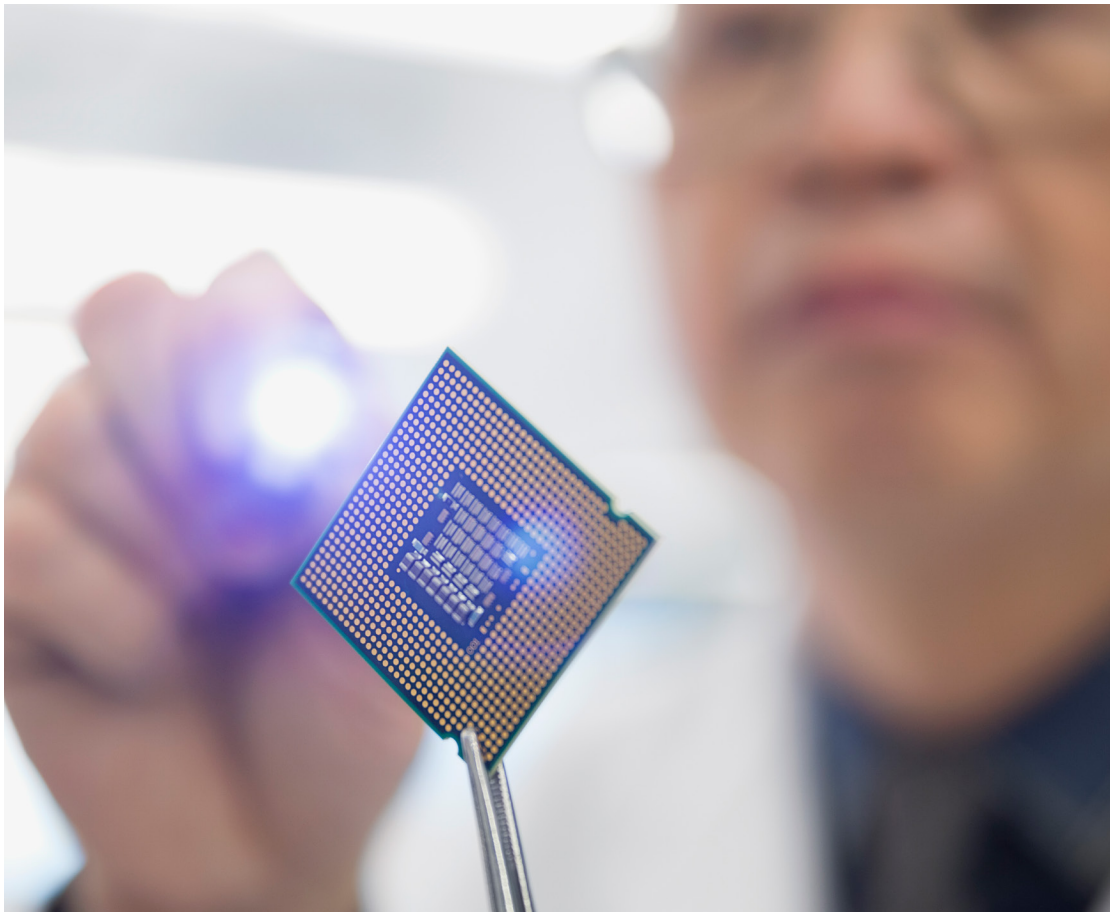
to release an AI chip with the company.

Tech's biggest names are also in the GPU race.

Google has released two generations of the Tensor Processing Unit (TPU) designed to integrate with its TensorFlow open-source library. In a strategic move, Google is also allowing people to begin building on other chips or GPUs like Intel's Skylake or NVIDIA's Volta and then move to Google's TPU.

Apple recently released its first machine-learning optimized A11 Bionic chip, with Apple-designed GPU cores, to enable AR and facial recognition in newer iPhones.

An interesting trend is the emerging startups in the space, including Knuedge, Graphcore, and Mythic. Some of these upstarts are staffed by employees who worked for competing projects like Google's TPU and Baidu's deep learning institute. It won't be surprising if they end up as big tech M&A targets, given the consolidation that the AI industry is witnessing.

# The rise of massive simultaneous online social communities (MSOCs)

Live video is already popular, but it's not exactly interactive — unless you count Facebook's reaction emojis.

However, HQ Trivia's recent success is a big indicator of what's to come in 2018. The live-streamed trivia video game airs twice a day on iOS, once in the morning and once in the afternoon, challenging its viewers to log in simultaneously and answer trivia questions in rapid-fire fashion for a cash prize.

It's currently only available to Apple users, with an Android release slated for 2018, but the app clocked more than 200,000 viewers a session in the first weeks of December. Those numbers may not seem that impressive off the bat – it's dwarfed by social networks like Facebook, which, as of January 2017, had 214 million users in just the United States – but the real differentiator that HQ Trivia presents is the fact that it is simultaneous. Millions of strangers, at lunch breaks, breakfast, morning commutes, are plugging into these apps, opening the door for shared, simultaneous experiences over cyberspace.

We've been edging toward this moment for a while now, with many attempts at something similar. Free video streaming sites like Omegle and Chatroulette grew popular in the early 2010s, by allowing people to connect with strangers over live, one-on-one video chat.

While these soon fell out of favor, other companies have since tried the concept. Life on Air, the company behind group video chat House Party, introduced individual live streaming to big populations via Meerkat. While the company soon shuttered Meerkat, it was the natural predecessor to Twitter's Periscope and Facebook Live. Now Facebook has launched Bonfire, which replicates House Party, and allows you to have video chats with big groups of your friends.
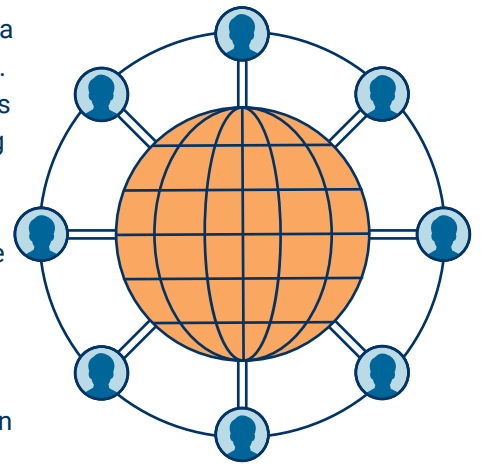
HQ Trivia's growing success has rolled out a new proof of concept. Not only does it let you collaborate with strangers anonymously, but participants can also earn money, perhaps the biggest draw.

The app already has competitors.

The Q, launched by the founders of video streaming app Stream, hit the market in December 2017. Similar to HQ Trivia, it lets users compete to answer trivia questions and then win money. In India, an app called Showtime replicates the same concept.

HQ Trivia is proof of concept that there is demand for live, simultaneous experiences with millions of strangers. We expect to see more of these launch next year.

# The great cash windfall of 2018 will give large tech companies even more power

The tax plan just signed into law will allow US corporations to repatriate overseas profits at a tax rate of 15.5%.

For cash-rich tech companies like Apple, Oracle, Alphabet, and Microsoft, the deal would allow them to bring back literally billions from offshore.

What will companies do with this cash windfall? The choices range from share buybacks to M&A to reinvesting in capital expenditures or investing in startups. It's likely to be a shot in the arm to a tech sector that has already felt dominant in 2017.

Apple in particular has a cash mountain overseas. It has $252B in offshore profits not taxed by the United States.

US companies with most cash overseas ($B)
as per latest quarterly filings (December 2017)

Company	Amount
Apple	$252.3
Microsoft	$127.9
Cisco	$67.5
Oracle	$54.4
Alphabet	$52.2
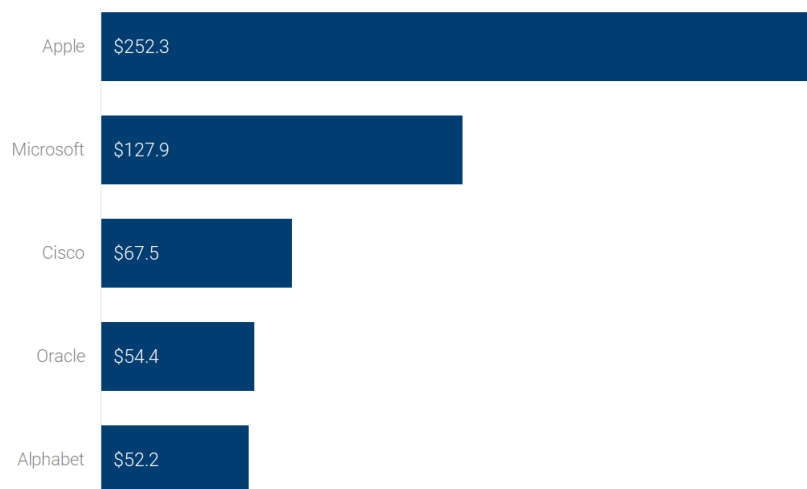
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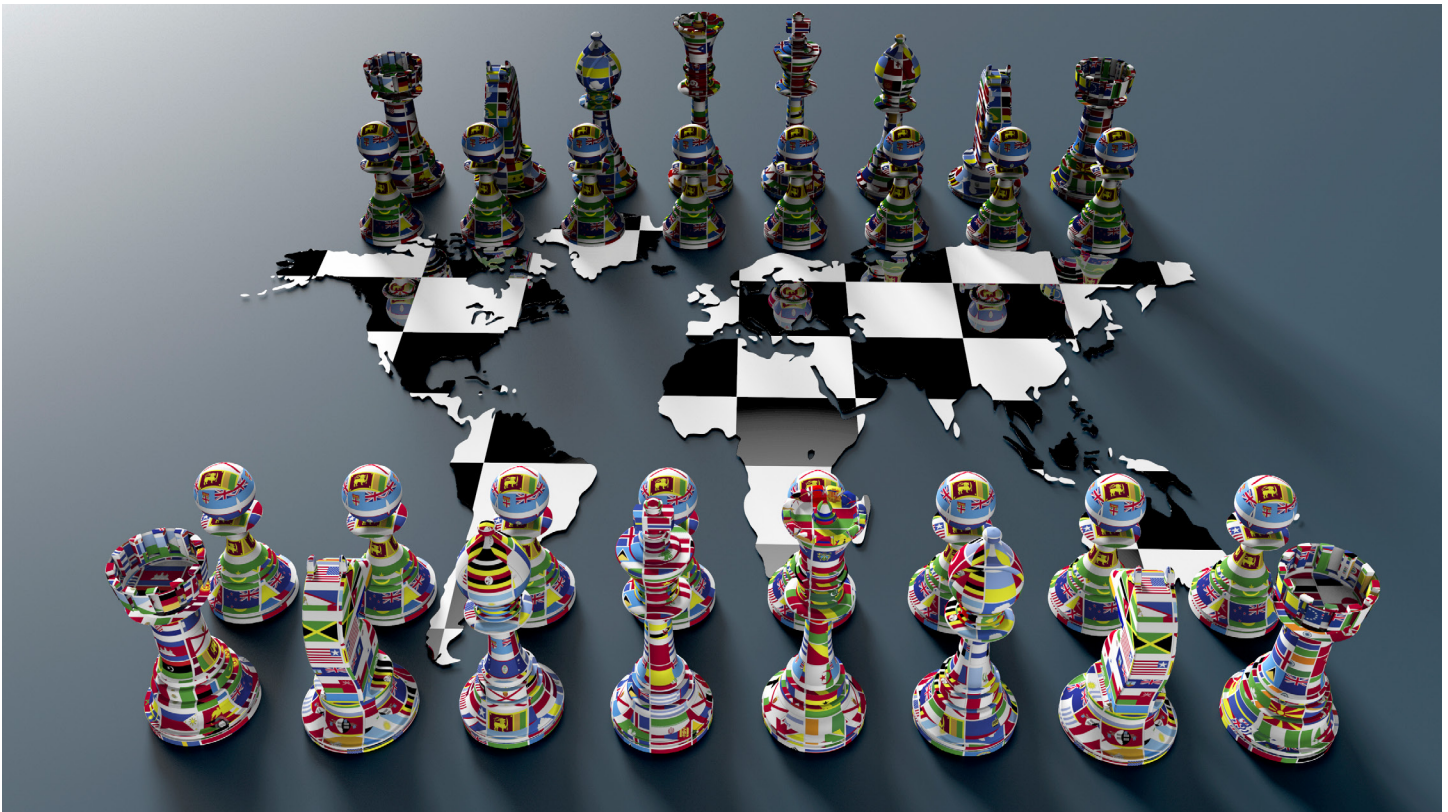
Cross-border M&A and partnerships draw scrutiny

Not all is rosy in M&A land. While the tech industry often behaves as if it is borderless, its increasing prominence is changing that. In just the past year, the US government chose to block two cross-border deals, both of which involved semiconductor companies and China.

The most recent such deal was blocked by President Donald Trump, who stopped the acquisition of Lattice Semiconductor Corporation by a Chinese investor. In a statement, the White House listed some of the reasons: Chinese government connections, the transfer of intellectual property and technology, and the fact that its technology was used by the US military.

Geopolitical tensions are dictating how deals look the world over in and outside of tech In July 2017.

India chose to block China's Shanghai Fosun Pharmaceutical Group Co's $1.3B takeover of Indian drug maker Gland Pharma.

Fosun Pharma returned in September 2017 with a slightly slimmer offer of $1.1B, reducing its proposed stake from 86% to 74%. This specific number is strategic: deals over 74% in India's pharmaceutical sector require review. The deal has now proceeded.

This geopolitical chill may spread to other areas. One is healthcare data.

As both China and the US seek to boost personalized medicine, they'll require a massive and diverse genotype and phenotype dataset. While this raises the need for more cross-border deals, the US government has voiced concerns that there should be stronger control over genomics data. If in the wrong hands, this data could conceivably be used to create more dangerous bioweapons, for example.

Another is cybersecurity. In September 2017, US Homeland Security issued a ban on Russian cybersecurity company Kaspersky Lab. It asked US government agency computers to remove all of its software, including its popular antivirus product. This was against the backdrop of growing concerns over Russia's ability to "weaponize" Facebook in efforts to influence the US election. While the Kaspersky incident remains murky, it is a sign of how the intersection of tech and geopolitics is incredibly volatile.
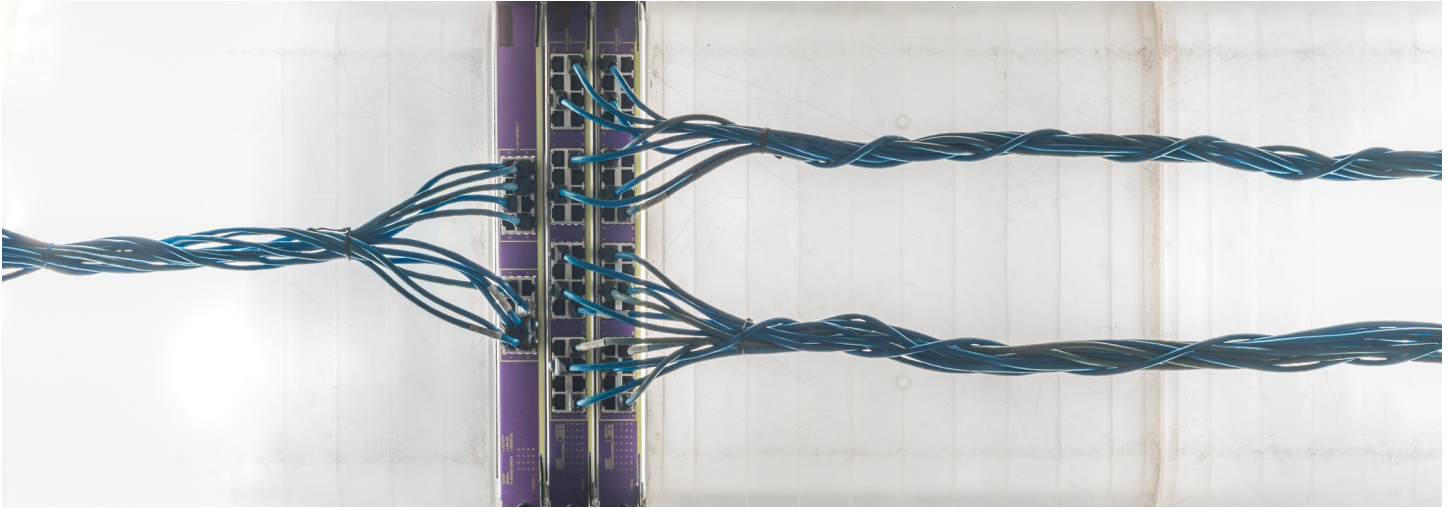
People take cybersecurity into their own hands

From Equifax to Uber to Yahoo, 2017's major hacks have shown there is little guarantee a business can protect its customers' data. And once user data is out in the wild, it's nearly impossible to track it down, leaving the door wide open for all sorts of cyber attacks.

It's not just high net worth individuals that need protection. All of us accessing our Facebook accounts or using Google credentials to log into sites across the internet are exposing ourselves to massive risks daily, with our PII (personally identifiable information) on the line.

We're starting to see an interesting mindset crop up: cyber-safety begins with the individual.

A particularly vulnerable gate are the mobile devices of individuals. Companies are cropping up that focus on securing these devices from risky apps and bad behavior.

Appthority, which has raised $23.3M in total funding, operates a cloud-based platform that grades mobile apps on risky behavior that may lead to things like malware and intellectual property exposure. Cellphone users can install it on their phones and scan their apps before installing or opening.

Another vulnerability goes beyond even downloads: the browsers users access.
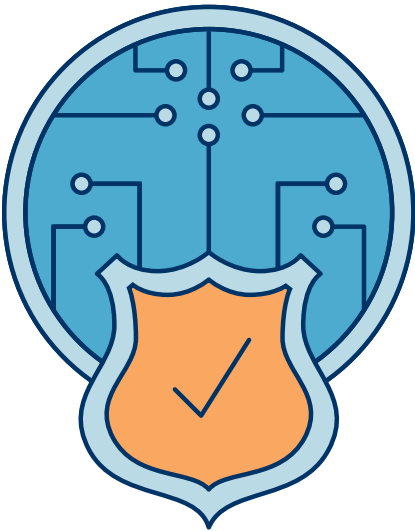
Some companies are creating specific browsers for those who want to stop their information from getting out in the first place.

Brave is an open-source web browser created by the co-founder of the Mozilla Project and the creator of Javascript, Brendan Eich. It blocks website trackers and removes intrusive ads, claiming that the less data an individual shares with advertising customers, the more privacy they have online.

This trend of focusing on the individual extends to enterprises. Their weakest link is now popularly known as a "single employee." Companies are responding to this with training programs. Facebook holds a "Hacktober" event every October during which it puts employees through a variety of attacks, from phishing to spam. Winners are rewarded with prizes.

Zimperium takes it a step further, analyzing behavior on employee phones to protect employers against Wi-Fi, cellular, and host-based threats. It's raised $60.3M in funding from investors including Samsung Ventures and SoftBank Group.

Cyberinsurance companies are also doubling down on their efforts and focusing on the individual.

In April 2017, insurance firm AIG began offering specific plans to individuals who were being cyber-targeted, or were victims of attacks like cyber-extortion. The plan, known as Family CyberEdge, includes data restoration and reputation management.

For the cybersecurity world, the new mantra is simple. Change begins with you.

Pay-per-second cloud computing

A few months ago, Amazon introduced per-second-billing for a few key services of its AWS division. This meant that users of this cloud computing service could access specific tools for a cheaper price.

This created waves in the cloud computing industry. Google quickly followed suit, introducing the same model for even more of its cloud services. More recently, more specialized companies like startup Snowflake Computing — which provides data warehousing in the cloud — have done the same.

This set the precedent for a wider trend: cloud computing companies attempting to make their products accessible to those who couldn't pay for as much, like small companies and self-employed entrepreneurs.

Why is this important?

One way to understand cloud computing is as computing capacity, or data storage, or processes that can stretch and contract depending on the needs of an organization (to accommodate a sudden spike in users, for example). Per-second-billing is just the latest manifestation of a world moving toward democratized and hyper-fractionalized access to our most powerful tools.

Imagine accessing powerful deep learning models or massive data sets or quantum computing capacity — a kind of supercomputer that uses quantum physics to vastly outperform conventional supercomputers — billed by the second.

For small companies, harnessing even a few minutes of time with these tools opens up a whole new world of possibilities.

Expect to see broader, flexible access to cutting-edge tools in computing through the cloud in 2018.

The future of fitness is no gym at all

Fitness is becoming increasingly techie and accessible. Thanks to a few key trends, being fit is no longer tethered to the gym.

The first is connected hardware. A prime example is the heavily-funded Peloton, which has raised $452.7M from a long list of investors, including Kleiner Perkins, Comcast, and Fidelity Investments. The company creates internet-connected bikes with fitness trackers. These bikes are equipped with tablets that can connect to its streamed on-demand workouts.

In this sense, Peloton also straddles the second trend: live streaming. Several startups are creating businesses to build on this trend. One is Maryland's BurnAlong, which lets users live stream their workout to friends or chosen fitness instructors. Another, New York-headquartered Forte allows users to stream live classes from boutique studios directly to devices, as well as sync the app with their smartwatches.

Fast moving in on the live-streaming trend are a host of other fitness companies. ClassPass, a well-known subscription-service gym membership that lets you sign up for classes at specific studios, is also rolling out a live stream version of its service at $15 a month.

Customers who use it can stream fitness classes from any of ClassPass' sessions right into their homes.

Aaptiv, on the other hand, differentiates itself based on the idea that it's difficult to watch videos while working out, and instead hosts several audio clips of classes on its app.

The third trend is the increasing convergence of travel and fitness. Last year, American fitness company Equinox, which operates several fitness brands including indoor cycling company SoulCycle, opened up a gym-branded hotel that marketed itself as a way to stay fit while traveling.

This has also happened the other way around, with hotels integrating more fitness into their services. Westin Hotels & Resorts provides rentals of a full kit of clean New Balance workout clothes and sneakers for $5. The two brands have also partnered to create three- and five-mile running routes in areas around hotels.

In April 2017, Westin also partnered with Peloton to give hotel guests access to the company's newest bikes in select guest rooms as well as to fitness studios in certain hotels.

Even the aspects of fitness that are harder to replicate are being digitized. California's Handstand lets users book personal trainers on-demand for hour-long sessions.

Fitness pod companies. On the top left is Misspao.

Swallow a smart pill for better diagnostics and treatment

In November 2017, the US Food and Drug Administration approved its first smart pill.

The product, Abilify MyCite, is essentially a sensor-enabled version of Japanese drug maker Otsuka Pharmaceutical's existing schizophrenia and bipolar drug, Abilify. By partnering with Californian digital medicine company Proteus, the original pill will be enhanced with sensors that track whether a drug regimen is being adhered to.

The pill will give off signals when it's been ingested, which will then be picked up by a dermal patch and turned into data. With permission, this will either go to a patient's mobile app or straight to a doctor and other caregivers.

While Proteus already has clearance to sell digital pills and patches, this is the first time the FDA has approved a medicine that uses its technology. Abilify is one of the best-selling drugs in the United States, with over $7B in sales in a single year at one point.

Other smart pills, namely those that have cameras attached to them, have been tested in other countries recently.

PillCam has partnered with Israel's Given Imaging to create the PillCam Colon 2, which is a capsule with two tiny cameras installed on both ends. After it's been swallowed with water, the PillCam captures images on its journey along the digestive tract, and then sends these back to a recorder that a patient wears on their belt.

It keeps its eye out for polyps which, if not removed, can turn cancerous in the colon.

PillCam offers a potential alternative to regular colonoscopies, which require the insertion of a flexible tube, with a camera on one end into the colon. The procedure is generally considered safe, but unpleasant for several reasons, including the fact that patients need to drink a bad-tasting solution in order to prepare.

Smart pills are attractive for a few reasons: they're less invasive than traditional procedures, easily scalable, and don't require the constant presence of different healthcare providers. Regulators have been slow to approve these pills, but we expect to see more uptake in coming years.

Proteus Digital Health
Valuation: $1.33bn

| $11M | $32.7M | $32M | $25.4M | $17.5M | $45M | $52M | Series H $50M | Total Funding $417.2M |
| 2004 | 2006 | 2008 | 2009 | 2012 | 2013 | 2014 | 2016 | |
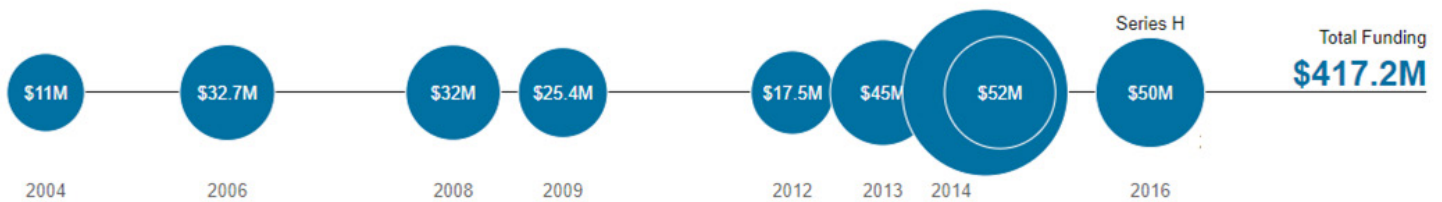
Personalize the pooch

The Samsung Dream Doghouse was released in 2015, equipped with an automated dog feeder, a Samsung tablet, a treadmill lined with fake grass, and a hydrotherapy pool. At the time, the UK/Ireland president of Samsung Electronics said the home was perfect for "the discerning dog of the future."

The discerning dog of the future (and its owner) certainly have a lot of technology to look forward to.

KickStarter-backed ZenCrate is another "smart" dog den. It plays music at specific times to calm dogs, operates a motion-activated fan, and is Wi-Fi-enabled to collect and transmit data. It's also padded with orthopedic memory foam.

Hong Kong's Tesla Technology takes it a step further. It has two products, T-Pai and the Dog PC. T-Pai is a double-decker dog house equipped with an automatic flush toilet, auto feeding, constantly regulated temperature, and games.
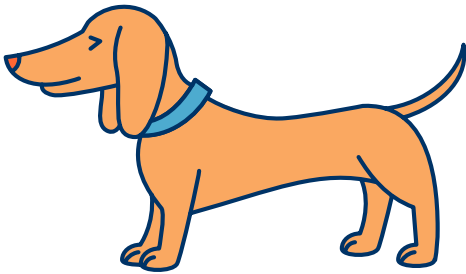
The Dog PC is a mini-computer with a small screen, an HD camera, a speaker, and a food box. It aims to solve dog separation anxiety by providing apps that can help alleviate negative emotions like worry, fear, anxiety, and boredom. It even has a study mode for dogs to learn from educational programs. Dogs can use their paws to navigate the PCs.

Croatia's Canelio turns dog training into a mobile game. Its connected clicker sends feedback to the app which in turn helps owners teach their dogs to behave in certain ways.

On the health side, wearables help track heart rates, breathing, and exercise patterns to help owners figure out how their dog is doing. FitBark's $70 dog monitor provides data on everything from sleep to daily routines, and claims to use this data to aid vets.

PitPat's slightly more expensive dog monitor, at around $62, also calculates things like calories burned in order to help with feeding schedules.

Then there are the startups taking it a step further. For those unsure about their pooch's ancestral history there's Embark, a company similar to human genome analysis company 23andMe. Embark, which has raised $6.5M in funding, collects a dog's cheek swab and analyzes it to figure out things like a pooch's pedigree, its geographical ancestry, and the possibility of genetics-related diseases. Embark's mail-in kit costs $199.

Searches for the term 'pet tech' since 2012
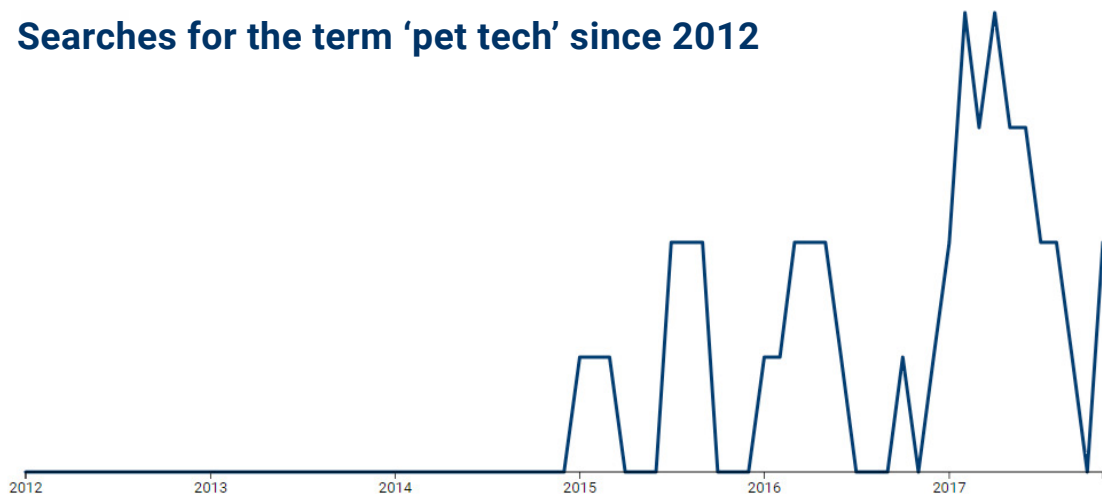
Under pressure, physical retail invades new spaces

Shopping is going places. Much of it has moved online. In the next iteration, physical retail is becoming decentralized, moving away from conventional stores or malls and into new niches. Look for new retail concepts in co-working spaces, in your Uber, in unmanned pop-up stores and vending machines.

Maybe you'll even be able to buy goods via a small storefront in your own house or apartment complex.

It sounds strange but Walmart calls it "in-home e-commerce." In November 2017, Walmart filed a patent that envisioned an end-to-end system to supply and operate an unattended storefront right inside a home (most likely an apartment building).
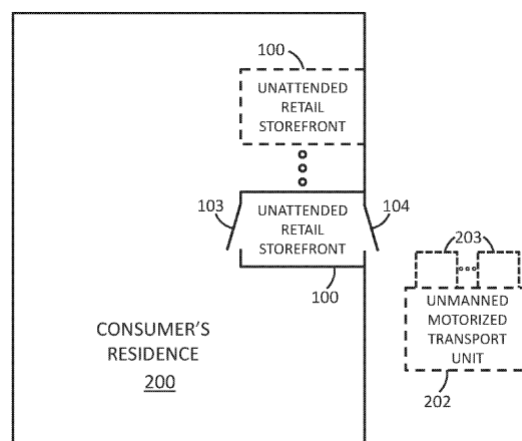
Goods would be delivered by what the patent dubs an "unmanned motorized transport unit," perhaps a drone, to a specific "inventory-loading portal."

Purchases are tracked by sensors, which detect when an object is removed from a store, and charge the customer who removed it.

Similarly, Bodega is attempting to build an unmanned, automated kiosk as well. Smart-store kiosks would be filled with goods and exist inside buildings or co-working spaces. Cameras detect who is using the vending machine. Once a pin has been entered, customers can select the item they want, and are then charged accordingly as they walk away with it.

This is a concept popular in other parts of the world. Japan's Acure, for example, operates a vending machine stocked with goods. Users that have the Acure app installed on their phones wave their phone in front of a built-in QR reader to make purchases.

Chinese company BingoBox allows customers to scan in with a QR code and pay for things with their phones. It's not entirely unmanned — the store is restocked everyday and there is remote customer service available — but sensors detect when objects leave stores. Alibaba e-commerce rival JD.com has also entered this space. In December 2017, it announced a partnership with China Overseas Land & Investment to develop automated stores and automated medicine dispensers across China.

Holograms become a format for augmented reality

Ever since Star Wars' Princess Leia first appears to Luke as a buggy hologram, holograms have played a big role in our speculation about the future. But adopting holograms in our daily lives raises several questions.

How are holograms viewed — through a device or with bare eyes? What surface are holograms projected on? What are the actual applications for these holograms?

AR is beginning to create real applications for holograms, and answer some of these implementation questions.

One possibility for device is the cellphone — something that Apple has begun to explore.

In 2012, Apple filed a patent for projected holograms, pictured below. In the patent, the company details a system in which images can be projected into mid-air and viewed without the use of any sort of headset. This is a type of augmented reality that reduces the need for clunky head-gear or eye-wear. Recent rumors suggest that this patent may even fuel some of what Apple does next with its UI.

Apple's newest operating system, iOS 11, included ARKit, a framework that lets developers create augmented reality apps for the iPhone and iPad.

With it, 8i, a California-based company has developed technology that turns humans in videos into holograms. 8i launched "Holo with ARKit" on the iOS app store in October 2017.

While the app doesn't actually project holograms, it instead turns an image of a person into a hologram within the screen as the iPad or iPhone films a scene, so that it appears as if holograms of a person are appearing in real life.

Others exploring AR and holograms include dedicated mixed reality device makers. The giant in the room, Magic Leap, has raised nearly $2B from investors like Warner Bros. Entertainment, Morgan Stanley, and Alibaba Group and plans to release a product by 2018.

Another is $8M-backed startup Lightform, which is working on a computer that allows a user to project holograms onto any surface. Looking Glass has already created a device that you can project and view holograms on.

Meanwhile, as tech innovates to create new ways to display and interact with holograms, the types of applications are also expanding. Zebra Imaging has created a holographic visualization tool to help train military and intelligence professionals. The company also uses its 3D holographic maps to coordinate relief efforts after disasters.

Scotland's Holoxica creates 3D, full-color holographic images from medical scanners for education and training.

And, in perhaps the most widely appreciated application of holograms yet, dead artists like Tupac Shakur and Michael Jackson have made it on stage at music concerts to reboot old performances — as holograms.

3D printing moves from novelty to essential industrial tool

When the dream of 3D printing industrial objects first took off, it had a lofty goal: by printing objects where they would be used, the technology could help replace long, unwieldy supply chains. This would therefore lower labor costs, eliminate human error, decrease waste, and eliminate transportation costs like fuel.

Bit by bit, thanks to adoption from large retailers and equipment manufacturers, this dream is getting closer to reality.

A prime example is Adidas, which partnered with 3D printing company Carbon to announce the launch of the "Futurecraft 4D shoe" in April 2017. The company is using Carbon's printer that works with a light-sensitive polymer resin to print the shoe. According to reports, Carbon takes the current 1.5 hours of printing a sole down to 20 minutes.

Carbon, which has raised $375M in funding, was among the first to launch a super-fast 3D printer.

In May 2017, it introduced a new service called SpeedCell, which it claims has twice the volume and build-area of its original M1 printer. This lets people print larger parts. Known as the M2, it's also meant to work closely with robots.

GE, perhaps the biggest corporate player in the market, has also launched its own dedicated 3D printing group, GE Additive. In November 2017, GE unveiled the world's largest 3D printer for

metals. It can print parts that are as large as 1 meter in diameter.

GE Additive is already printing fuel nozzles for its LEAP jet engines that power single-aisle jets for Airbus and Boeing.

In addition, GE is producing the Advanced Turboprop, the first commercial aircraft engine that has had a large part of its components made by "additive manufacturing methods," which include 3D printing.

Most active corporates in Industrial 3D Printing
2013 – 2017 YTD (12/5/2017)

Each green line signifies investment round, orange represents M&A

Innovations in materials are also helping move the process along.

Take printing metal, for example, which Massachusetts-based Desktop Metal claims to have cornered the market on, producing the most efficient metal 3D printer yet.

Eventually, the hope is that logistics companies begin to pair with manufacturers, which could bring 3D printing further into the mainstream. UPS has taken the helm, by launching a network of on-demand 3D printers and partnering with SAP for manufacturing. The duo has also chosen to open up this network for outside collaboration, perhaps setting the tone for the future.

Technology improves elder care

As people age, they may lose partners, see loved ones move far away, or become isolated due to limited mobility. Increased loneliness can then lead to depression and other negative mental and physical health conditions.

Technology is aiming to improve elders' quality of life through a number of new products and services.

A slew of companies have released companionship robots. Hasbro's line of Joy For All Companion Pets are realistic robot animals that have realistic fur and make "pet-like sounds" when interacted with.

Japan's PARO takes it a step further. The plush-covered harp seal can memorize voices, respond to touch, light, audio, and temperature sensors, and rise with the sunlight. It also sells at a higher price point than some of the others, at around $5000 an animal.

Robots can also serve as a kind of home health aide. The Netherlands' Tinybots has created Tessa, an internet-connected robot that can be synced with tasks and reminders. For elders, it announces the next appointment, when to take medicine, and other deadlines to keep up with.

But while these robots can provide affection and useful reminders, they can't understand aberrations in behavior — how often does someone eat a meal or visit the bathroom? What does a change in this behavior mean?

That's where surveillance technology plays a role. Sensara installs a set of smart sensors that catalog and analyze the daily lifestyles of elders, helping them and their caregivers optimize for better lifestyles and health outcomes.

Alarm.com runs a wellness program that operates a similar system, reporting on details like the frequency of bathroom visits. These sensors can be installed anywhere — from under chairs to in the kitchen.

In October 2017, American electronics store Best Buy rolled out its Assured Living program, apparently in response to the many customers who were entering the store looking for technology that would help them keep tabs on aging parents. For $1-$2 a day, customers can buy a no-contract monitoring service and track data using an online dashboard or mobile app. Once the system learns an individual's daily routines, it can notify caregivers of abnormalities.

Even medicine has been automated – one solution is PillDrill, a device that reminds you when to take a pill and lets you wave your pillbox over it once it's been taken. After that, it sends out a notification that the pill has been taken.

Other smart devices include HERO, which stores, dispenses, and manages pills on schedules. It connects to a phone app that sends push alerts when pills have been taken.

Some companies also connect to highly personalized caregivers. California's Honor Technology, which has raised $62.1M from investors including Andreessen Horowitz, screens caregivers and then matches them with seniors. From there, families are able to monitor the caregiver's activities and the time they spend in a home.

# Big tech as real estate and property developer

The best tech companies may now offer you housing as a perk of employment. But there's more to this trend than just the belief that work is life and life is work. Tech company hiring is beginning to push out locals, and housing prices have become so high that even tech's own entry-level employees can't afford rent.

This isn't just limited to places like San Francisco. Many local communities are finding it more and more difficult to retain long-time residents and attract new, young residents. Driven in part by imbalances in how many workers there are and how many homes available, big tech companies are fueling a massive housing crisis. As an answer, they're creating their own homes.

In July 2017, Google spent roughly $30M buying 300 pre-fab-ricated homes for its employees, with plans to plant these in Mountain View.

In the same month, Facebook also revealed its plans for a giant spread in its corporate campus at Menlo Park, California. It's located directly across the street from the company's headquarters, and will have around 1,500 units of housing. The "mixed-use village" would have transportation and amenities like a grocery store and a pharmacy. While the majority of housing would be for Facebook employees, there will be a portion open to the community. Some of these offerings will be priced below market rate.

Above: The Apple Park is still under construction.
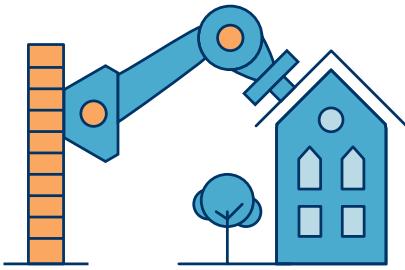
Of course, real estate isn't just about housing. Apple, known for its focus on design, has also ventured into the real estate industry — but, seemingly, purely with aesthetics in mind.

Apple Park, opened to employees in April 2017, was built like other Apple products, with design central to its architecture rather than pure utility. It is resplendent with cafes, a wellness center, a transportation hub, and a major auditorium. It's still under construction but, because of the quality of its design, it's considered another beautiful Apple product.