Executive Summary

The future of mobility and self-driving vehicles is on the horizon, with on-demand business models of the Collaborative Economy setting the stage for this eventual “autonomous world.” When intelligent technology systems operate with minimal human participation in the application of driverless cars, all industries must adapt to an inevitable transformation of societal behaviors and expectations.

In this report, Crowd Companies examines how self-driving cars will disrupt a series of industries and their business models: auto manufacturing, taxi and car services, travel and hospitality, insurance, logistics, medical, municipalities, retail, telecommunications, energy, and media. These impacts are dependent on the expert assumptions that self-driving cars will be available for public consumption beginning in 2018, will reach complete autonomous capability by 2022, and will be as safe as (if not safer than) human-driven cars. Auto manufacturers and tech companies are also accepting these predictions as gospel, investing heavily in self-driving car prototypes and testing amidst legislative roadblocks.

Join us, members, as we explore the “Autonomous World” and the potential impact on your industry, organization, and customer relationships. This research is just the beginning of you forging your path and growing your program development in 2016. With the help of peer-to-peer advisory and support of the council through resources, events, and more, we can guide each other on the path to innovation.
The Collaborative Economy and the Autonomous World go hand-in-hand, with the former setting the stage for the latter (See Fig. 1). In the Collaborative Economy, people get what they need from each other, rather than buying products and services from brands. By gaining access to products and services through on-demand business models, customers reduce the need for ownership. Autonomous technologies further enable these models, allowing companies to more easily automate product and service delivery in new marketplaces.

**FIGURE 1. FOUR PHASES OF DIGITAL ERAS**

The Collaborative Economy has given birth to Uber, Lyft, and other start-ups that have conditioned people to summon rides rather than drive or own cars. In the next phase, the Autonomous World, the human drivers will be supplanted by self-driving vehicles.

On-demand access to transportation and carpooling services has grown significantly in recent years, with more than 11 million people in the United States alone utilizing ridesharing services today. By seamlessly ferrying customers from point A to point B at the tap of an app, Uber, Lyft, BlaBlaCar, and other companies are contributing to our increased preference of vehicle access versus ownership. When drivers are eventually ousted in favor of autonomous cars, riders will experience more efficient routes, increased safety, and reduced transportation costs (see Fig. 2). Alphabet (formerly Google) is leading the way, currently working on a ride-hailing service that utilizes its self-driving car fleet, while GM is close behind with its recent $500 million investment in the development of an autonomous fleet utilizing Lyft’s platform exclusively.
At Crowd Companies, we’re examining autonomous technologies under an umbrella term of the Autonomous World. We define it as follows:

**Autonomous World: A future state when intelligent technology systems, operating without human participation, enable new business models in a more efficient society.**

These intelligent technology systems can take the form of many hardware and software products, including self-driving vehicles, drones, and other artificial intelligence that impacts the transportation industry and beyond. The Autonomous World is our futuristic vision, with society experiencing an inevitable “semi-autonomous world” with minimal human interaction before fully autonomous systems are operable and dependable.

As access to mobility services is prioritized over car ownership, many customers have already purchased the last car they’ll ever own. It’s an exciting premise for many who see the opportunities and cost-savings associated with the consumerization of driverless cars. Denise Fletcher, Vice President and Chief innovation officer at Xerox, envisions, “the Internet of Things will be an enabler for autonomous vehicles during transport in anticipating consumer needs and

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**FIGURE 2. SELF-DRIVING CARS EXPECTED TO CUT TRANSPORTATION COSTS**

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Estimated Cost Per Mile of Vehicle Service for Consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Francisco Taxi</td>
<td>$2.25</td>
</tr>
<tr>
<td>UberX</td>
<td>$2.15</td>
</tr>
<tr>
<td>Personal Vehicle</td>
<td>$0.76</td>
</tr>
<tr>
<td>Shared Autonomous Vehicle</td>
<td>$0.25 (estimate for the year 2020)</td>
</tr>
</tbody>
</table>

Source: ARK Research
Many incumbent manufacturers are developing self-driving car prototypes, while other innovators have already released or are testing their autonomous vehicles and feature sets on the road. As research and development continues within manufacturer labs and academia, federal and state regulators assess the legal implications of autonomous vehicles.

Three companies currently have permits and have been testing fully autonomous car prototypes in California, considered “ground zero” for the driverless car movement due to its inclusion of Silicon Valley innovators and test centers: Google, Tesla, and Ford.6-8 Hyundai and Audi have secured their permits to test prototypes in Nevada.9 Other auto manufacturers and companies are in development stages of prototypes (Honda, Lexus, Mercedes, Uber, and Volvo10-14) or have developed vehicle models with self-driving features (BMW15) like adaptive cruise control, assisted parallel parking, lane correction and detection, and automated lane changes.16 Some of these companies, like Ford,17 are innovating from their own research and innovation centers, while others are partnering with academic and independent research institutions such as the Center for Automotive Research at Stanford (CARS18) and SimLab.19

What role do humans play when robots do it better? What are the business strategies required to compete in the autonomous world?
While manufacturers and tech giants move forward on test tracks, concerned legislators are creating roadblocks to slow consumer adoption in favor of public safety. The U.S. Department of Transportation released an official policy statement in May 2013 that advised self-driving cars will be limited to testing and, "not authorized for use by members of the public for general driving purposes." In 2016, the Department plans to revisit its cautious position and greater weigh the potential benefits of consumer use of autonomous mobility technologies.20

This reassessment comes at a crucial time, as six individual state and district governments21 begin to determine the appropriate precautions for driverless car legislation based on federal guidance. For example, the California Department of Motor Vehicles released a proposal in December22 that would require drivers to be present in self-driving vehicles, which could severely limit the ability to test self-driving cars. This caused Google to retort, balking at the rules that interfere with its grand design and vision for an autonomous future.23 As of Jan. 1, 2016, Ontario, Canada, also announced it will allow self-driving cars on its roads, offering a potential safe haven for auto manufacturers to continue testing prototypes when local governments pose restrictions.24

In order to effectively analyze the impacts of self-driving cars on global industries, we have accepted two core assumptions as fact. These assumptions are regarding the rapid public consumption of autonomous vehicle technology and the increased safety of self-driving vehicles. These future-state assumptions, based on the most recent data and analysis available at the time of this writing, are detailed below.

**Assumption 1 - Self-driving cars will reach complete autonomous capability by 2022.**

According to Morgan Stanley Research on the adoption of autonomous vehicles, we are currently in a passive autonomous driving state (Phase 1) and
will move to limited driver substitution (Phase 3) by 2019’s end. Vehicles will have complete autonomous capability by 2022 (see Figure 3). Looking further out, two decades or more, and society will reach 100% autonomous penetration.

**FIGURE 3. TIMELINE FOR ADOPTION OF AUTONOMOUS VEHICLES**

Another study by Juniper Research released in December 2015 arrives at similar conclusions, predicting 20 million fully autonomous vehicles will be on the road by 2025, with consumer adoption taking off in 2021.25

This research is widely accepted by industry experts as an accurate prediction of autonomous vehicle adoption. Reilly P. Brennan, Executive Director of The Revs Program at Stanford University, agrees. “We will have real autonomous vehicles that consumers can experience in 2016. Some of these will be in limited environments,” he shares. “After that point, we will see more blended environments with combinations of 100% manually driven vehicles, shared control vehicles, and 100% autonomous vehicles. We won’t be able to tell them apart easily.”

Terry Young, CEO of futurist agency Sparks & Honey, also foresees driverless autonomy in the near future. He believes that by 2019, “there will be driverless vehicles that work extremely well on the street, as long as there aren’t regulatory blocks.” He elaborates on his prediction, “We’ll leapfrog beyond regulation faster than we think. We’ll move to a world where the majority of cars are driverless, and there will be special designated areas for manual driving.”
Auto manufacturers agree and are working diligently toward meeting similar deadlines. Ford shared at the North American Auto Show this year that it’s increasing its test fleet of autonomous vehicles three-fold in 2016, and Volvo announced its self-driving fleet will hit the roads in Sweden by 2017.  

Assumption 2 - Self-driving cars with complete autonomous capability will be as safe as, if not safer than, human-driven cars.

Driverless vehicle prototypes have been found at fault for zero accidents, though they have reported accident rates twice that of normal cars. Rather, inattentive or aggressive drivers take the blame for 100% of these accidents, most often hitting autonomous cars from behind in slow-speed crashes, according to a study by the University of Michigan’s Transportation Research Institute. Google cars have been in 17 minor crashes in 2 million miles of testing and account for most of the reported accidents.

We can assume that, as driverless prototypes continue to be tested and as more consumers adapt to the technology on the road, these accident rates will remain low and even decrease in the future. More than 30,000 auto accidents occur annually in the United States alone and one million globally, with 90% caused by human error. Autonomous vehicles will undoubtedly shift these statistics when human error is completely or partially eliminated. A 2016 study from Virginia Tech Transportation Institute, commissioned by Google, found that the crash rate for self-driving cars is lower than the national crash rate. Semi-autonomous cars are also contributing to greater driver safety, with features like obstacle warning systems and automatic reaction that can save distracted drivers from peril.

Meanwhile, legislators continue to assess public safety concerns and ethical considerations regarding safety and machine decision-making in life-or-death situations continues to be debated. Much of the debate surrounds the right amount of trust to put into machine-learning technology versus human drivers. It’s a difficult issue that many current Tesla owners grapple with, as Michael Brito, Head of Social Marketing at W2O Group and Tesla owner elaborates, “It’s less about trusting Tesla technology and more about not trusting other people’s driving habits and patterns. I have learned over the last 20 years of driving, especially in Silicon Valley, that in order to be safe, I need to be a very defensive driver.”
### Auto Manufacturers

**Disruptions:** The majority of major car manufacturers have already announced their self-driving car prototype (or plans). Many also have programs in place that address access and on-demand models like BMW DriveNow and Ford’s partnership with Getaround. As these prototypes are tested and refined, the traditional speed-to-market of car manufacturing will prove too slow, requiring a new process for innovation. Different skill sets will be required at auto manufacturing companies to meet the demands of customers demanding self-driving vehicles and new passenger experiences.

**Impacts:** Auto manufacturers will offer additional services to keep pace with evolving consumer needs, like insurance, safety, logistics, cleaning, navigation, and more. Piecemeal feature sets will be less important as cars are completely redesigned around an immersive, experiential customer journey. Car manufacturers must focus on talent acquisition and creating innovation centers capable of rapid prototyping to meet the speed at which customers expect autonomous innovation. The car-as-a-service business model will become prevalent as customers lease, rent, or summon the latest vehicle models on demand.

Terry Young, CEO of Sparks & Honey, foresees a shift in the traditional auto manufacturing model, predicting that, “cars will be highly modular and look completely different than they do today. The auto industry hasn’t hired, trained, or thought of how to adapt to this. They come from a traditional manufacturing background with a seven-year lifecycle and aren’t used to rapid iteration. Customers will demand a faster innovation speed in driverless car development that mirrors the speed of change in other technologies, like our handsets. It’s going to be a brand new world for the automotive sector and its ecosystem.”

### Taxis and Car Services

**Disruptions:** As more consumers own and carpool within autonomous vehicles, the need for traditional taxis, car services, and other on-demand transportation (i.e. Uber, Lyft) will decrease.
**Impacts:** Taxi companies, car services, and other ride-sharing startups will need to shift their business models toward managing self-driving car fleets. This will impact employment in these sectors, leading to heavy job loss among drivers without transferable skills. The tables will turn as the ride-sharing drivers who once disrupted taxis find themselves disrupted by robotic adversaries.

Crowd Companies member Roland Smart, Oracle, concurs. “Traditional taxi services will be dramatically affected (more than they already are), and current Uber and Lyft drivers will be impacted by the very companies that employ them today. That might get ugly,” he opines. Loïc Le Meur, entrepreneur, thought leader, and Tesla owner, agrees, predicting that there will be a, “huge job destruction of taxi drivers and Uber drivers.”

**Travel and Hospitality**

**Disruptions:** Short-flight air travel, passenger trains, and other forms of municipal transportation will decline as driverless cars offer safe, reliable, and affordable travel alternatives. Long-distance travel is also impacted when autonomous vehicles provide an efficient, comfortable, and private way to see the world, including the option to sleep in the car. Driverless vehicles will allow for the ultimate road trip, wherein interactions with passengers and the environment are immersive in an entirely different way.

**Impacts:** Prices for short-haul flights will dip as airlines respond to decreased demand against self-driving car trips. Tourist destinations in more remote areas will build when they’re more accessible. Autonomous cars can serve as tour guides, further impacting the decline of travel agents. The need for short-term hotels will decrease as passengers comfortably sleep in their vehicles. A branded model of self-driving car may emerge, offering overnight sleep conversion. The two-hour flight gives way to Road Trip 2.0.

Audi’s Sven Schuwirth, Vice President of Brand Strategy and Digital Business, also foresees a future where driverless cars serve as sleep vessels, severely disrupting the airline and hotel industries. He tells Dezeen Magazine that he predicts domestic flights and business hotels will be unnecessary, as people sleep and work in their cars. Twenty years from now, he believes hotels will shift their business models as drivers use their facilities then return to their cars to sleep.

**Insurance**

**Disruptions:** Fewer accidents will lead to less insurance claims by car owners. Autonomous vehicles may have multiple owners or one owner but shared by multiple people, leading to less vehicle owners on the road that need to be insured.
**Impacts:** Insurance companies will need to consider fractional models for insuring passengers of self-driving cars, as well as building underwriting into the car itself versus underwriting a driver, which is the most popular model currently. Autonomous vehicle programming will serve as a reference point for insurance companies in understanding how and why accidents occurred. Driving records will matter less, while the performance and safety records of individual car models will carry greater weight.

**Logistics**

**Disruptions:** Autonomous vehicles will be used for deliveries to maximize efficiency and minimize error. Deliveries will, therefore, be cheaper, more prevalent than ever, and skew more local to increase efficiencies. This will enable just-in-time and predictive deliveries of food, products, and services, impacting multiple industries along the supply chain. Courier services/deliverers/drivers will need to shift roles as they’re needed for final delivery to door only, perhaps managing delivery vehicle fleets and package inventory.

**Impacts:** Initially, less delivery drivers will be needed as self-driving car usage grows. In the long-term they may be altogether obsolete as drones replace them to solve the “final 10 feet” from car to doorstep. Consumers will expect real-time product and service fulfillment from companies. Middle men distribution companies will be cut out of the supply chain as delivery is made possible direct from manufacturer to consumer. While humans may be needed for stop gaps for some time, in the long run, we may hear “Ding Dong!”, your every need is automatically fulfilled via autonomous delivery.

CEO of Serenti Kitchen, Timothy Chen, the creator of the Cooki robot, agrees that the delivery industry will be heavily impacted by the advent of autonomous vehicles. “Deliveries will be cheaper, and the on-demand industry will be more robust than ever,” he predicts. “More choices will lead to a decentralization of the ways we get food. It will enable people to get more food ‘just in time,’ with planning ahead to have ingredients delivered later via drone or autonomous vehicle. Geofencing will aid in optimal delivery timing, just as customers need it.”

**Medical**

**Disruptions:** Network-based, self-learning, and fatigueless self-driving cars will lead to fewer accidents than the current human-driving rate, in turn causing less hospital visits and longer life spans over time. Autonomous vehicles can safely and efficiently transport patients of all ages to the hospital for non-emergency situations. Medical services, devices, and pharmaceuticals can arrive faster to patient locations via self-driving car delivery. An increase in autonomous technology-related ailments (i.e. “text neck” with smartphone usage, as Terry Young of Sparks & Honey adds, and low sleep and cardiovascular disease) is likely to increase as more consumers use self-driving vehicles and come to depend on their technologies, efficiencies, and services.
**Impacts:** The population will swell due to less auto accidents and easier care options for homebound seniors. Hospitals will increase focus on preventative care around conditions associated with prolonged autonomous vehicle use and dedicate less staff toward ER departments and services. Nursing homes and other lifelong care services will see steady growth in patient enrollment and stay length. Autonomous vehicles may begin “diagnosing on the go” in both non-emergency and emergency situations. Self-driving cars will make the roads safer and increase access to efficient medical care for all ages and demographics.

**Municipalities**

**Disruptions:** Though a driverless future is on the horizon, a mere 6% of cities’ current long-term transportation plans consider the potential effects of self-driving cars. With more people carsharing in autonomous vehicles (UberPOOL and Lyft Line already account for 50% and 60% of rides, respectively), cities must plan for less urban congestion. Traffic in downtowns will lessen as autonomous vehicles can more efficiently route themselves. Land use in surrounding areas will shift as living further away from urban centers is easier. Less high-density parking will be needed in cities, opening up those land parcels to other developments.

**Impacts:** Urban planners will need to shift their development plans to accommodate less vehicles on the road, less need for parking options as self-driving cars remain perpetually in motion, and more car sharers within cities. More parklets and less parking garages will yield pedestrian-friendly layouts. Cities will receive less to no income from parking tickets. Watch as grey concrete gives way to green space.

**Retail**

**Disruptions:** As on-demand delivery of groceries, products, and retail goods grows, there will be less need to visit brick-and-mortar retail locations. Brands and stores offering seamless doorstep delivery will satisfy customers. Michael Jindrich, Strategy Consultant for Hallmark, believes “buy online, pickup in-store” (BOPIS) models are ripe for disruption as orders are fulfilled en route to picking up passengers, eliminating the need to visit physical stores.

**Impacts:** Retailers must invest in improving online and mobile shopping experiences with efficient delivery options to retain customers. Physical stores may thrive if offering personal shoppers or “destination experiences,” catering to shoppers seeking tactile showrooms. In-car and curbside stores will emerge as branded autonomous vehicles bring retail directly to customer homes, complete with payment capabilities and en-route consulting. An influx of direct-from-manufacturer delivery demand transforms traditional retail locations into product warehouses.
**Telecommunications**

**Disruptions:** Autonomous vehicles will have numerous communication methods with the networked world, using a combination of embedded connectivity, tethered connectivity through the driver’s phone, vehicle-to-vehicle hopping, quick burst transfers with roadside units, portable communication devices, and more. Data usage from passenger mobile devices and the cars we ride in (telematics) will be extremely high as we use data much more fluidly.

**Impacts:** Mobile carriers will begin offering different types of data plans, moving away from current data package offerings and caps. Data packages will evolve as data markets grow between devices and inanimate objects that deliver services to customers using their devices (mobile, in-home, and in-vehicle). Andreas Pages, Swisscom, also foresees that customers who offer personal and usage information to carriers will be rewarded with lower rates or promotional packages. Rush hour data plans emerge for the heavy media-consumption commute, used to catch up on favorite sitcoms or video games.

Stanford’s Brennan elaborates further on the impacts expected to the telecom industry: “I doubt that our current paradigm of purchasing a passel of cellular data from a carrier will be primary in the future because we are going to want to give and take data much more fluidly,” he remarks.

**Energy**

**Note to readers:** This report assesses the industry impacts of autonomous vehicle proliferation. An upcoming report that addresses the societal impacts will dig deeper into the environmental impacts of driverless cars.

**Disruptions:** The majority of self-driving car prototypes are fully electric or hybrid, increasing the need for electric charging stations as a supplement to or replacement for traditional gas stations. Autonomous smart vehicles also tout powerful intelligence systems, allowing them to further contribute to energy savings via wireless communications with homes and buildings to control heating, cooling, electricity, and more.

**Impacts:** Gas stations must be equipped with an adequate amount of electric vehicle charging stations as demand increases, or risk losing business to new players offering only charging stations and no gasoline pumps. Utility vendors will offer compatible resources with new technologies (or create their own products and applications) that allow for the remote control of energy via the Internet of Things (IoT). Energy savings will be the norm, not a practice of the environmentally conscious minority.
Media

Disruptions: Media consumption will increase as drivers shift from piloting vehicles to sitting in the cabin of autonomous vehicles during their commute (U.S. average ~25 minutes\(^3\)) and other travel leisure time. Technology within self-driving cars will have the ability to automatically report traffic and location data to media companies who can then deliver targeted messaging (advertising and promotions) to passengers about nearby concerts, events, protests, parking options, and more, similar to today’s Waze and INRIX.

Impacts: Content marketing and advertising will be changed dramatically. Retailers, brands, and venues will advertise directly to an autonomous vehicle filled with a relevant audience that can pay attention (and, interact) without driving distraction. Episodic content will be timed exactly for passenger commute duration and location. Media buying will shift from large commercial and traditional investments to real-time interactive advertising channels.

AUTONOMOUS VEHICLE DISRUPTIONS WILL IMPACT EVERY INDUSTRY

With your Crowd Companies membership, you have access to invaluable conversations and advice from leaders in multiple industries. These conversations and peer-to-peer advisory are where the true value lies, whether discussing Collaborative Economy program development, planning for Autonomous World impacts, or staying ahead of the next technology innovation.

Lean on your fellow council members to help solve problems and test solutions in a safe and confidential environment. You won’t be able to participate in these discussions anywhere else, so take advantage of it! Work with each other to identify the areas of your business that will be most impacted by driverless cars. Ask the tough questions to vet out your level of disruption and how you can help foster the market and enable inevitable customer behaviors. Consider your on-demand programs in motion today and how you can adapt them to thrive in an autonomous future.

We understand that shifting your business model in response to new customer behaviors and expectations within the Autonomous World is no easy feat. That’s why, in 2016, Crowd Companies will be bolstering its member resources and expanding its coverage to include the Autonomous World in session call discussions, group calls, e-newsletter content, Mobilize conversations, in-person events, and the release of another report on the societal impacts of autonomous vehicles. We may not be able to predict the future, but we can guide each other on the path to innovation.
Methodology
In addition to utilizing the most up-to-date reports, news, and data available at the time of writing, Crowd Companies also interviewed 11 industry stakeholders for our research, including six council members. Industry stakeholders were selected based on their expertise and experience related to the self-driving vehicle market and other autonomous world impacts.

Crowd Companies Members
John Erickson, Vice President of Analytics & Research, Esurance
Denise Fletcher, Vice President & Chief Innovation Officer, Xerox
Michael Jindrich, Strategy Consultant, Hallmark
Andreas Pages, Head of Crowdfunding, Swisscom
Mary Putnam, Digital Innovation and Business Development, Hallmark Cards, Inc.
Roland Smart, VP of Social & Community Marketing, Oracle

Industry Stakeholders
Reilly P. Brennan, Executive Director, The Revs Program at Stanford
Michael Brito, Head of Social Marketing, W2O Group
Timothy Chen, CEO, Serenti Kitchen
Loic Le Meur, Entrepreneur, Speaker, and Thought Leader
Terry Young, Founder and CEO, Sparks & Honey

About the Authors

Jeremiah Owyang, Founder, Crowd Companies | Jeremiah@CrowdCompanies.com
Jeremiah helped major companies navigate the first phase of sharing, called social media, and he’s committed to helping companies through the second phase of sharing, as people share and create the physical world around them. Over the course of his career, Jeremiah has identified big trends before they happen, and helped major companies through the transition. He was a founding partner and research director at Altimeter Group, where he is currently on the board of advisors. Jeremiah spent time as an analyst at Forrester as well, covering social computing for the interactive marketer.

Jaimy Szymanski, Research Analyst | Jaimy.Szymanski@Gmail.com
Jaimy is a digital experience analyst, providing contracted research consulting services to Crowd Companies. Working as an independent advisor, she explores how organizations adapt core digital strategies to reach the new “connected customer.” With a background in research and analysis, marketing, and social media consulting, Jaimy’s career is driven by the desire to further the evolution of companies adapting to digital disruption. Jaimy and Jeremiah worked together at Altimeter Group, where Jeremiah was the Research Director.
Appendix A

**Autonomous World Infographic.** While this report is for Crowd Companies members only, the below infographic was released to the public in January 2016. For a poster-sized version, please contact Jeremiah@CrowdCompanies.com.
Endnotes

1 UberPOOL and Lyft Line account for 50% and 60% of rides, respectively, and UK’s BlaBlaCar reached 20 million users in 2015.
2 http://dupress.com/articles/smart-mobility-trends-ridesharing/
4 http://www.buzzfeed.com/johanabhuiyan/lyft-driverless-cars#.wFMedBp2an
5 http://www.autoblog.com/2015/12/11/fast-car-purchase-mcelroy/
6 https://www.google.com/selfdrivingcar/
7 http://qz.com/538436/tesla-model-s-autopilot/
10 http://www.slashgear.com/testing-hondas-tech-for-its-2020-self-driving-car-27411711/
13 http://www.theguardian.com/technology/2015/may/22/uber-self-driving-car-pittsburgh
18 http://cars.stanford.edu/
19 http://www.wired.com/2015/11/this-sim-for-self-driving-cars-is-more-useful-than-it-sounds/
21 http://www.fool.com/investing/general/2016/01/02(driverless-cars-in-2016-7-numbers-everyone-should.aspx
22 http://techcrunch.com/2015/12/16/a-proposed-california-law-would-require-drivers-for-driverless-cars/
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28 Interview with Loic Le Meur, Entrepreneur, Speaker, and Thought Leader.
31 http://www.nlcr.org/Documents/Find%20City%20Solutions/Research%20Innovation/City%20of%20the%20Future/City%20of%20the%20Future%20Final%20WEB.pdf
32 Interview with Reilly P. Brennan, Stanford.
33 http://project.wnyc.org/commute-times-us/embed.html#5.00/42.000/-89.500