

# When robots take the wheel

The future of mobility in an autonomous world



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# 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, Kaleido Insights 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.

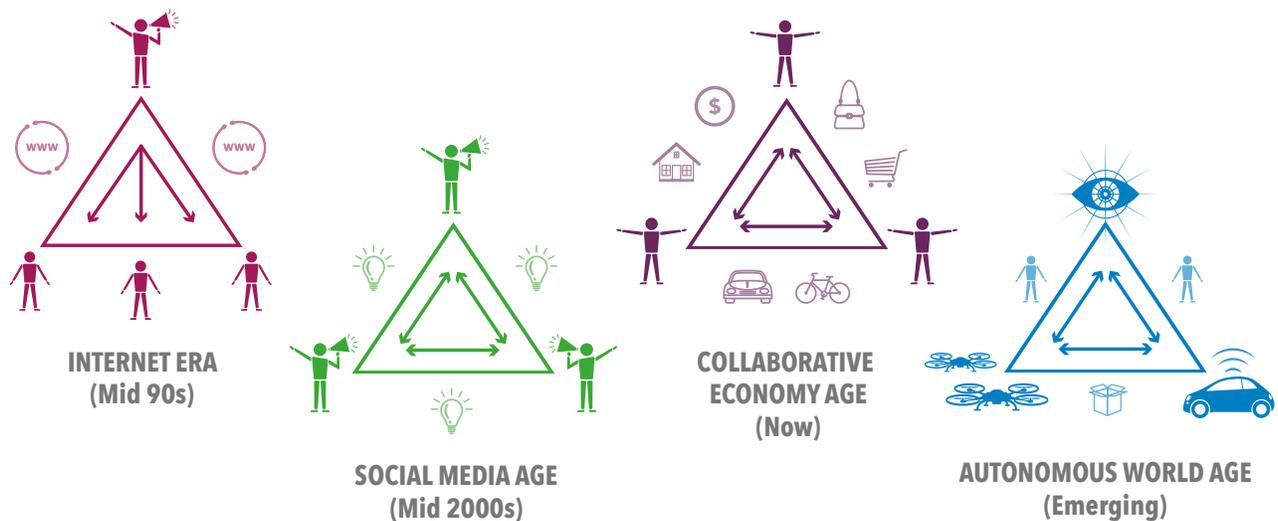
Join us, members, as we explore the “Autonomous World” and the potential impact on your industry, organization, and customer relationships. This research is just the beginning of you forging your path and growing your program development in 2016. With the help of peer-to-peer advisory and support of the council through resources, events, and more, we can guide each other on the path to innovation.

# The Collaborative Economy Sets the Stage for Autonomous 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.

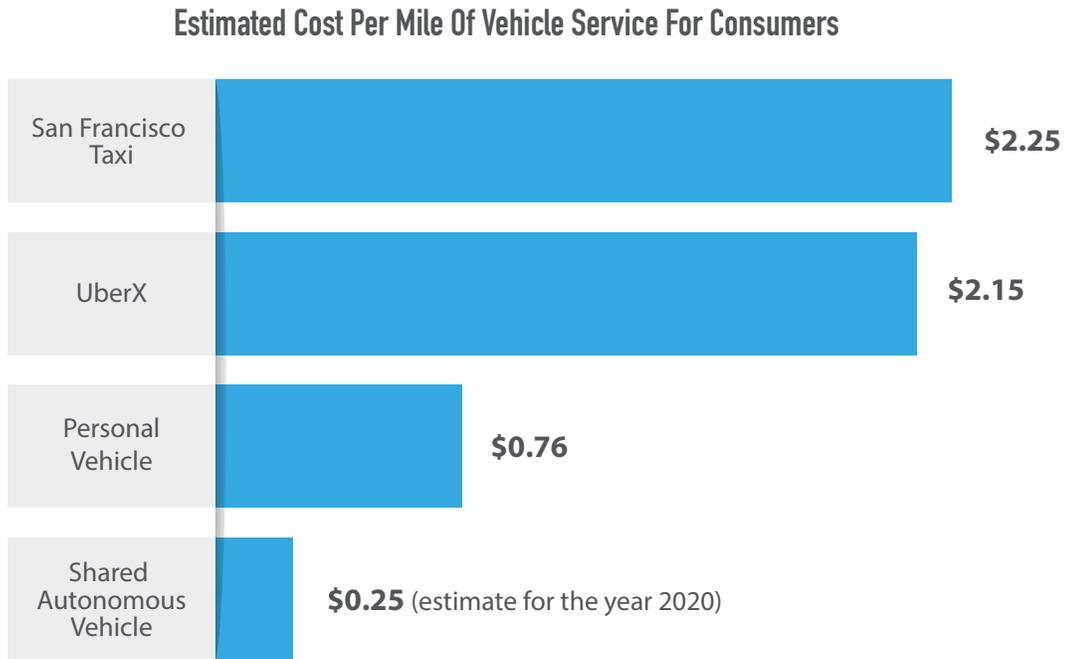
**FIGURE 1** FOUR PHASES OF DIGITAL ERAS

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<sup>1</sup>, with more than 11 million people in the United States alone utilizing ridesharing services today<sup>2</sup>. 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<sup>3</sup>, while GM is close behind with its recent \$500 million investment in the development of an autonomous fleet utilizing Lyft's platform exclusively.<sup>4</sup>

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



Source: ARK Research

At Kaleido Insights, 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.<sup>5</sup> 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 delivery,” while Mary Putnam, Digital Innovation and Business Development for Hallmark Cards, Inc., foresees that self-driving cars will, “give people some free time to catch

up on life, emails, and connections to be more intentional about their day.” Both Denise and Mary are Kaleido Insights members who examine disruptive technology opportunities for their businesses.

This report is the first in a series on autonomous technology impacts. It will dig deeper into the industry impacts of the autonomous world specifically, in the transportation and automotive sectors and beyond. Our goal is to answer these two bold questions:



# Auto Manufacturers Develop Prototypes Amidst Legislative Roadblocks

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.<sup>6-8</sup> Hyundai and Audi have secured their permits to test prototypes in Nevada.<sup>9</sup> Other auto manufacturers and companies are in development stages of prototypes (Honda, Lexus, Mercedes, Uber, and Volvo<sup>10-14</sup>) or have developed vehicle models with self-driving features (BMW<sup>15</sup>) like adaptive cruise control, assisted parallel parking, lane correction and detection, and automated lane changes.<sup>16</sup> Some of these companies, like Ford,<sup>17</sup> 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 (CARS<sup>18</sup>) and SimLab.<sup>19</sup>

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.<sup>20</sup>

This reassessment comes at a crucial time, as six individual state and district governments<sup>21</sup> 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 December<sup>22</sup> 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.<sup>23</sup> 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.<sup>24</sup>

# Corporate Innovation Programs are Hindered by Inefficient, Slow, or Competing Organizational Models

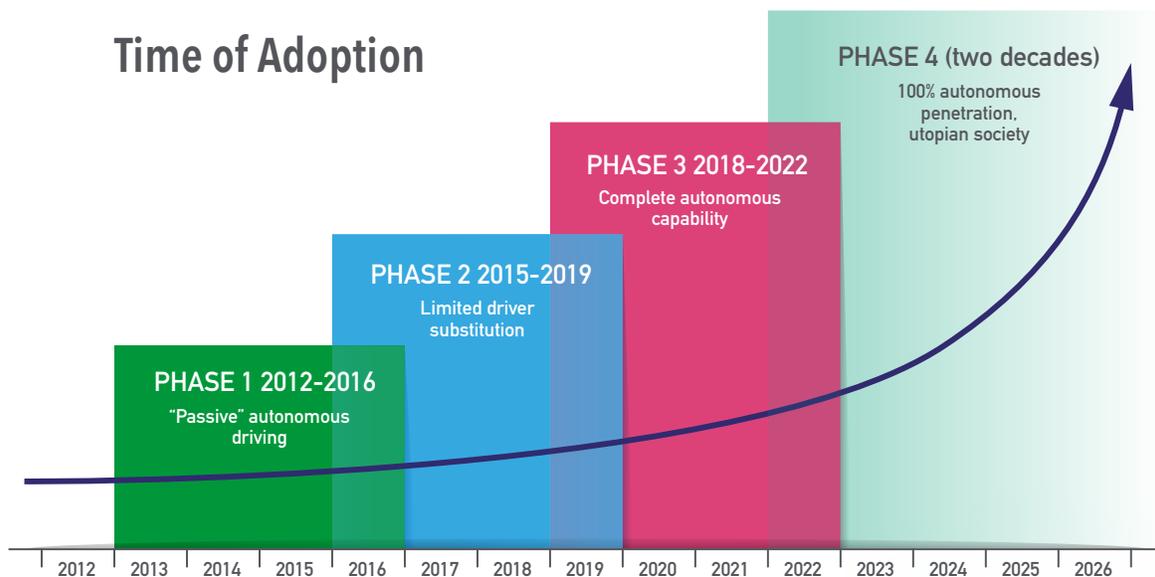
In order to effectively analyze the impacts of self-driving cars on global industries, we have accepted two core assumptions as fact. These assumptions are regarding the rapid public consumption of autonomous vehicle technology and the increased safety of self-driving vehicles. These future-state assumptions, 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



Source: Company data, Morgan Stanley Research

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.<sup>25</sup>

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.<sup>26</sup>

## **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.<sup>27</sup>

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.<sup>28</sup> 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.<sup>29</sup> 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.<sup>30</sup>

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. <sup>31</sup> 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."

# Autonomous Vehicle Disruptions Will Impact Every Industry



## 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.

Kaleido Insights 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. Loic 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.<sup>32</sup>



## 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.<sup>33</sup> 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.<sup>34</sup> 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<sup>35</sup>) 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.

# How Kaleido Can Help

The onslaught of disruptive technologies impacting your customers, organization, and ecosystem are increasing exponentially. Kaleido analysts work in concert to decipher actionable insights from the noise, helping you to envision the clear impacts on your future business models, customer experience design, marketing, content, and automation roadmap. As a team, we can create an action plan for innovation that helps you plan for future growth and respond to current threats to your business viability.

By constantly keeping pulse on how your customers, partners, competitors, startups, and cross-industry technology leaders are evolving, we're able to advise our clients on the right path forward. Kaleido advisory relationships, webinars, speeches, and workshops are grounded in research rigor, impact analysis, and decades of combined expertise. Expect us to raise and ask the tough questions as we vet your level of disruption in order to guide your adaptation in a future filled with super humans, fluid organizations, and enlightened ecosystems.

Our tools are many, and include quantitative survey panels, investment analysis, use case analysis, ethnography, qualitative research interviews, and secondary research approaches. If you're interested in building a relationship with our analysts, we'd love to hear from you. Please email [info@kaleidoinsights.com](mailto:info@kaleidoinsights.com) to start a conversation, or visit [www.kaleidoinsights.com](http://www.kaleidoinsights.com) to learn more about our offerings.

**Contact Us:** We are happy to respond to your questions, receive comments, or possibly collaborate with your organization. You can reach us at [info@kaleidoinsights.com](mailto:info@kaleidoinsights.com)

# About Us



**Jeremiah Owyang** focuses on how new technologies impact business models and how corporates must innovate. He focuses on how disruptive technologies—such as social media, collaborative economy, autonomous world, blockchain and more—and how they impact the relevance to corporations. He is well recognized by both the tech industry and the media for his grounded approach to deriving insights through rigorous research.

Jeremiah is frequently quoted in top-tier publication and cited in books and press and media. He was featured in the “Who’s Who” in the Silicon Valley Business Journal, and his Twitter feed was named one of the top feeds by Time.

He is also the Founder of Crowd Companies, an innovation club for Fortune 500 companies, which he also manages independently from Kaleido Insights. Jeremiah was an Industry Analyst at Forrester Research, a founding partner at Altimeter Group, and a web marketing leader at Hitachi.



**Jaimy Szymanski** focuses on the impact of technology on customer experience (CX) and digital transformation. Jaimy advises digital leaders and change agents in managing digital transformation and innovation efforts to reach evolving consumers and employees.

She has worked in strategic advisory and planning capacities with organizations including: Bristol Myers-Squibb; Enterprise Holdings; Facebook; Google; Hallmark; HBO; Intel; LinkedIn; Nestle; Ogilvy & Mather; and Save the Children International. Her research has been covered by USA Today, Mashable, Forbes, Inc., Huffington Post, and more.

Jaimy’s experience derives from her recent work as an independent analyst and previously Altimeter Group, where she focused on digital transformation and social business strategy. Her career path has led to a deep body of research on technology disruption, covering topics that include digital and mobile CX, retail innovation, digital culture, the collaborative economy, autonomous technologies, blockchain, and more.

## ENDNOTES

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- <sup>29</sup> <http://www.fastcompany.com/3055356/fast-feed/the-first-study-of-self-driving-car-crash-rates-suggests-they-are-safer>
- <sup>30</sup> Interview with Loic Le Meur, Entrepreneur, Speaker, and Thought Leader.
- <sup>31</sup> <http://www.bloomberg.com/news/articles/2015-06-25/should-a-driverless-car-decide-who-lives-or-dies-in-an-accident->
- <sup>32</sup> <http://www.dezeen.com/2015/11/25/self-driving-driverless-cars-disrupt-airline-hotel-industries-sleeping-interview-audi-senior-strategist-sven-schuwirth/>
- <sup>33</sup> <http://www.nlc.org/Documents/Find%20City%20Solutions/Research%20Innovation/City%20of%20the%20Future/City%20of%20the%20Future%20FINAL%20WEB.pdf>
- <sup>34</sup> Interview with Reilly P. Brennan, Stanford.
- <sup>35</sup> <http://project.wnyc.org/commute-times-us/embed.html#5.00/42.000/-89.500>

## METHODOLOGY

In addition to utilizing the most up-to-date reports, news, and data available at the time of writing, Kaleido Insights also interviewed 11 industry stakeholders for our research, including six industry leaders. Industry stakeholders were selected based on their expertise and experience related to the self-driving vehicle market and other autonomous world impacts.

### Industry Leaders

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

## DISCLAIMER

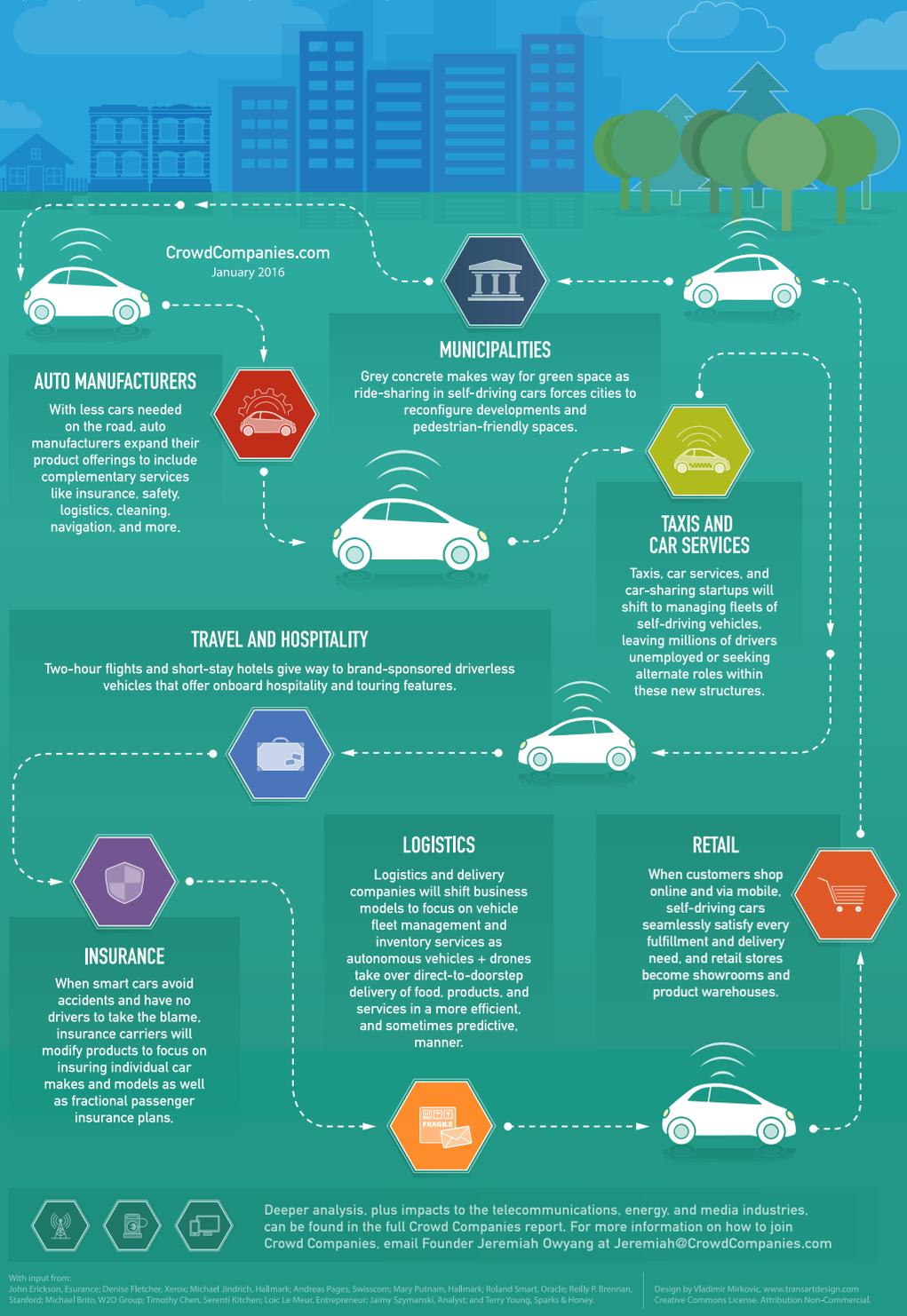
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# Appendix A - Autonomous World Infographic

KALEIDO  
INSIGHTS

## WHEN ROBOTS TAKE THE WHEEL THE FUTURE OF MOBILITY IN AN AUTONOMOUS WORLD

The future of mobility and driverless vehicles is on the horizon, with on-demand business models and Collaborative Economy behaviors setting the stage for an "Autonomous World." In this infographic and its accompanying report, Crowd Companies examines how self-driving cars will impact many industries, within the transportation sector and beyond.



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