PEOPLE + TECHNOLOGY = DRIVING SUCCESS

TECHNOLOGY VISION 2017 FOR AUTOMOTIVE
The automotive industry is undergoing the most significant change since Henry Ford industrialized automotive manufacturing. While the past 100 years were largely focused on incrementally enhancing manufacturing to become more efficient for mass scale, the future is about redefining the role of the vehicle for passengers.

Digital is driving the revolution. Non-traditional automotive companies are entering the industry, bringing technologies and new services that are disrupting current business models. Market incumbents and new entrants alike are redefining the role of a “vehicle.” Cars are becoming offices, gyms, and entertainment centers.

New digital automotive business models will democratize vehicle data, both for the rider experience and for vehicle performance. Vehicles will use granular, experience-relevant data to hyper-personalize the riding experience. Data on vehicle performance and drivers will give auto manufacturers valuable insights to apply in future design enhancements. Automotive original equipment manufacturers (OEMs) will gain real-time analytics on performance design versus actual use. Using these insights, they can enhance the next generation of vehicles.

Automakers must learn the technologies behind these advancements, and understand how they can exploit them to their advantage. In some ways, they must do all that they can to predict disruption and create a new, compelling value proposition. Who will they sell to in the future, and how can they position themselves to gain trust and loyalty? What features and performance factors will be most important to buyers? Sooner than later, automotive companies must stake their claim in this rapidly changing ecosystem, and accelerate their progress toward a people-first model.

The Technology Vision 2017 for Automotive explores five trends that underscore the importance of technology for people. These trends demonstrate the fact that while technology is all around us, people are still in the driver’s seat. By adapting technology to the people, we will define the future of the automotive industry.
Artificial intelligence (AI) is about to become a digital spokesperson for companies. Moving beyond a back-end tool for the enterprise, AI is taking on more sophisticated roles within technology interfaces. From autonomous driving vehicles that use computer vision, to live translations made possible by artificial neural networks, AI is making every interface both simple and smart–and setting a high bar for how future interactions will work. It will act as the face of a company’s digital brand and a key differentiator–and become a core competency demanding of C-level investment and strategy.

Companies are increasingly integrating their core business functionalities with third parties and their platforms. But rather than treat them like partnerships of old, forward-thinking leaders leverage these relationships to build their role in new digital ecosystems–instrumental to unlocking their next waves of strategic growth. As they do, they’re designing future value chains that will transform their businesses, products, and even the market itself.

Driven by a surge of on-demand labor platforms and online work management solutions, legacy models and hierarchies are being dissolved and replaced with open talent marketplaces. This resulting on-demand enterprise will be key to the rapid innovation and organizational changes that companies need to transform themselves into truly digital businesses.

We shape technologies so it adapts to us. The new frontier of digital experiences is technology designed specifically for individual human behavior. Business leaders recognize that as technology shrinks the gap between effective human and machine cooperation, accounting for unique human behavior expands not only the quality of experience, but also the effectiveness of technology solutions. This shift is transforming traditional personalized relationships into something much more valuable: partnerships.

Businesses are not just creating new products and services; they’re shaping new digital industries. From technology standards, to ethical norms, to government mandates, in an ecosystem-driven digital economy, one thing is clear: a wide scope of rules still needs to be defined. To fulfill their digital ambitions, companies must take on a leadership role to help shape the new rules of the game. Those who take the lead will find a place at or near the center of their new ecosystem, while those that don’t risk being left behind.
AI IS THE NEW UI

Experience Above All

Artificial intelligence (AI) is transforming the driving experience by making interactions simpler and smarter. From autonomous driving vehicles that use computer vision, to live translations made possible by machine learning, AI is setting a high bar for how future interactions will work in automotive.

Bytes Beat Brawn

Automakers have historically viewed horsepower as a measure of a vehicle's performance. In the future, vehicle performance—and even brand identity—will center on other features and functionality, such as comfort, entertainment, capacity and high-tech experiences.

Technology innovations are rapidly transforming the driving experience—and even the concept of a “car”—itself. Today, people drive cars. In the near future, cars will drive people. And once cars drive people, what is the role of a “cockpit”? Dashboard space could be used for a variety of other services that enhance the riding experience.

Startup companies, like Daqri, are redefining the semi-autonomous rider experience by tracking user physical activity to offer a safe, distraction-free driving experience.

Even traditional carmakers are investing heavily in autonomous driving. For instance, General Motors invested $500 million in Lyft to help develop a network of self-driving cars that can be summoned on demand and available for Lyft drivers to rent from hubs.¹

Others are directing dollars toward the software that supports autonomous driving. Ford alone has invested $1 billion in the artificial intelligence company Argo AI, $7 million in the digital map technology provider Civil Maps, and $150 million in the sensor company Velodyne.²

82% of drivers surveyed worldwide are ready to share their vehicle data.
AI is a critical component of fueling the highly convenient and hyper-personalized experiences that are becoming the hallmarks of new vehicles. In fact, **73 percent of executives** agree that AI will revolutionize the way we gain information from and interact with customers.³

Car manufacturers are embedding AI into vehicles to work as smart sponges that capture data on how the car is used. What are driver usage and destination patterns? What features are preferred? How many passengers typically ride in the vehicle? How does usage compare to patterns seen across the broader pool of owners of the same vehicle?

The robust data made available from in-vehicle technology gives car manufacturers valuable insights on customer preferences. Manufacturers can, in turn, optimize R&D activities and create new offerings that more closely fit the usage patterns and desired features of customers. Carmakers also can quickly roll out new capabilities that satisfy customer desires.

For instance, **Tesla** responded to customer demand when it deployed its version 8.1 software. The update included new Enhanced Autopilot capabilities, such as improved Autosteer, Auto Lane Change, Traffic-Aware Cruise Control, Side Collision Warning and Blind Spot Detection.⁴

**NEW INROADS TO REVENUE**

AI can open the door to a variety of new products and services, thereby creating additional revenue streams. The data is there to better understand customer preferences—it’s a matter of acting on it.

For instance, **Siri- or Alexa-like functionality** in cars can deliver personalized recommendations on the best Thai restaurant in town, or the local auto-lube shop with the shortest wait time—while built-in navigation will guide you right to the door. Care to stream music? Voice recognition software understands a variety of dialects and will fulfill your request—no fiddling with knobs required. Is it time for a tune-up? Predictive maintenance analytics will notify the driver in advance of any necessary service.

**OF EXECUTIVES** **BELIEVE AI WILL COMPLETELY TRANSFORM OR HAVE A SIGNIFICANT IMPACT ON THEIR INDUSTRY.**

**59%**

**OF EXECUTIVES** **AGREE THAT AI WILL REVOLUTIONIZE THE WAY WE GAIN INFORMATION FROM, AND INTERACT WITH, CUSTOMERS.**

**73%**

**DEVISE A GOVERNANCE PLAN.**

- Carmakers should develop rules around using their data, such as how to work with partners, what (and what not) to do with the data, and guidelines for data privacy and protection compliance.

**CHANGE THE MODEL OF WORKING.**

- Carmakers should adopt a mindset of working within ecosystems of partners and innovation, and develop a thirst for using analytical insights to inform product development.

**IDENTIFY NEW REVENUE STREAMS.**

- Consider how technology can unleash new revenue streams—from connected home services to in-vehicle entertainment. Carmakers can take advantage of their existing global footprint to quickly scale up successful models in all markets.
Automotive companies are increasingly integrating their core business functionalities with third parties and their platforms. For the first time, major rivals are collaborating to design future value chains that transform businesses, products and even the market itself. Automotive leaders will use these relationships to reshape their organizations for growth in a digital world.

FUELING NEW BUSINESS MODELS
From conceptualization to the wheels hitting the road, today’s automobile requires 36 months—and that doesn’t include being equipped with the latest AI, internet of things and digital service technologies that many original equipment manufacturer (OEMs) and startups are working on right now. By the time an automobile is manufactured, the initial concepts are outdated.

To compete, automotive companies must compress timeframes to bring products to market faster. Technologies such as AI, gaze-tracking the crowd, mixed reality, embedded sensors and generative design can help automate processes. Rather than building these unique capabilities in-house, automotive businesses must engage the ecosystem—startups, universities and digital transformation companies—to deliver leading-edge capabilities.

Faurecia is collaborating with others in the ecosystem to reinvent the cockpit of the future. And Volkswagen is partnering with Nvidia to develop an AI cockpit that uses a self-learning intelligent digital assistant to anticipate user needs based on context and additional smart data. Nvidia is also working with Bosch to create an autonomous driving "supercomputer" that integrates Bosch radar with other sensors to deliver unprecedented AI-powered self-driving technology.
Competitors are increasingly working side-by-side. For example, Mercedes-Benz, BMW and Audi created an Open Data Platform to generate dynamic map and traffic data for drivers. The platform collects and analyzes geo-data from on-board sensor technology and computing platforms in cars developed by these brands. The Open Data Platform is a result of the joint acquisition of Nokia’s HERE business by Audi, BMW and Daimler. Participating companies can use this shared data to improve the driving experience by delivering real-time information about road conditions and hazards. Other ecosystem players, such as municipalities, road authorities, smartphone makers and app developers, can also tap in to this open platform.

**ROLES ARE SHIFTING**

The ecosystem economy offers a chance for automotive companies to rethink their role in the value chain. For instance, OEMs can evolve from just producing and selling vehicles to solving the future mobility needs of their customers. It is not future-forward to simply develop a reliable product and sell it to a network of suppliers. The ubiquity of data offers new opportunities to create ongoing revenue streams. How can OEMs collaborate with software developers to provide predictive maintenance services, or with smartphone developers to improve mobility services, or the likes of Zipcar to offer ridesharing services? Among auto executives surveyed, 76 percent agree that competitive advantage will not be determined by an organization alone, but by the strength of the partners and ecosystems chosen.

Ford’s relationship with Argo AI is intended to help Ford meet its goal of having a fully autonomous vehicle by 2021. Fiat Chrysler is working with Google to install its self-driving technology in a fleet of minivans. When speed is everything, these types of partnerships are what can accelerate the development of new services and features for automakers.

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**RECOMMENDATIONS**

- **DETERMINE WHAT TO CONTROL.**
  - Manufacturers must determine what they want to control, and where they want to partner.

- **EXPLORE THE POSSIBILITIES.**
  - Brands should look for ways to be relevant outside of the car to capture a larger share of mind, for example through mobility services.

- **COMPLEMENT CORE OFFERINGS.**
  - The development of contextual- and location-based services can offer value to customers.

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**OF AUTO EXECUTIVES AGREE THAT COMPETITIVE ADVANTAGE WILL NOT BE DETERMINED BY AN ORGANIZATION ALONE, BUT BY THE STRENGTH OF THE PARTNERS AND ECOSYSTEMS CHOSEN.**

76%

**OF EXECUTIVES AGREE OR STRONGLY AGREE THAT IN FIVE YEARS, ECOSYSTEMS WILL HAVE SHARED RESPONSIBILITY FOR A BRAND.**

58%
WORKFORCE MARKETPLACE

INVENT YOUR FUTURE WORKFORCE

On-demand labor platforms and online work management solutions are dissolving traditional hierarchies and creating a more fluid workforce. Such flexibility is necessary for automotive companies to speed digital development and get compelling offerings to market faster than ever before.
FINDING TALENT
As cars become more connected and sophisticated, manufacturers need a variety of new skill sets to keep pace with fast-evolving market requirements. Rather than hiring a host of data scientists, software engineers and security experts, automotive companies can pursue crowdsourcing, talent marketplaces and other ways to access those skills on demand to expand their resource pool.

Open talent marketplaces, such as Catalant, Upwork and Onforce, and other collaborative forums, will unleash the power of people. Daimler is using hackathons to regularly convene students and young professionals to explore topics such as “cloud data and internet of things for future transportation.” Teams share ideas, develop prototypes and pitch them in 24 hours. Last year, the top team developed an app that allows drivers to use their smartphone to assess damage to their vehicle.

ELEVATING EXPERIENCES FOR EMPLOYEES
Technology advancements mark the dawn of a connected industrial workforce that is human-machine-centric. An Accenture automotive survey found that 52 percent of executives expect improved productivity from a connected workforce, and 47 percent anticipate improved operational efficiency. While this new machine-enabled workforce can elevate efficiency, 70 percent of survey respondents are concerned about a shortage of skilled human workers.

OEMs must find new ways to attract and retain the right employees. To do so, businesses must enable staff to feel connected to and aligned with the goals of the company. Encouraging innovation and creating a positive environment where employees are rewarded for their ingenuity and hard work will lead to employee satisfaction and long-term employment.

OF EXECUTIVES AGREE THE DIGITAL REVOLUTION IS DRIVING A NEW ERA OF CORPORATE ECONOMIC STRUCTURE.

OF EXECUTIVES AGREE THAT IN FIVE YEARS, ORGANIZATIONS WILL BLEND WORKFORCES INTO A ‘BORDERLESS ENTERPRISE’.
DESIGN FOR HUMANS

INSPIRE NEW BEHAVIORS

Today’s technology is adapting to people and individual human behavior. Automotive leaders understand that technology can shrink the gap between effective human and machine cooperation. By combining rich data from IoT with technologies like artificial intelligence, human capabilities are augmented, allowing customers to do more and enabling workers to achieve more.

BUILT FOR YOU

By the year 2030, autonomous cars could represent about 25 percent of all passenger vehicles in mature markets. Autonomous driving is dramatically influencing the design of vehicles and the experiences they deliver. The product is no longer just a car; it’s a personal driver. The front seat becomes a comfortable cockpit, custom-configured for the user. Some solutions adjust the environment in the car, based on the user’s preferences. For instance, eyesight has developed technologies that track a driver’s eyelids and head position to warn of drowsiness. Touch-free infotainment controls use hand-sensing, allowing riders to control the system with simple hand swipes.

Even traditional safety features, such as anti-lock braking systems, will go away as autonomous vehicles become safer. The car of the future won’t slam on the brakes, drift into the next lane or exceed the speed limit. So rather than the odometer taking up prime real estate in the dashboard, that space can be used for high-tech navigation, or it might become the entertainment epicenter of the car.

Amid the growing move toward autonomous cars, building a high-horsepower vehicle will no longer be the hallmark of high performance. Companies must design for humans, and that means automakers will have to evolve what their brands are known for and what their cars designed for.
PERSONALIZATION DRIVEN BY SOFTWARE

Now, personalization is largely tied to software, which makes it easier for other ecosystem players to join the effort of designing cars for humans. For example, Bose is developing suspension technology that “isolates passengers from road vibrations, shaking and unwanted motion.” 16 OEMs are now using laminates, carbon fiber, sheet metals and other unique materials to give a car personality. Mood lighting is transforming car interiors. Exterior lighting can be used to create a recognizable nighttime “signature” for a vehicle. 17 The possibilities for custom configurations are endless.

KEEPING UP WITH SHIFTING PREFERENCES

Digital-based personalization breaks the link between machine and software. Sensors embedded in the vehicle will wirelessly receive software updates via the cloud, long after the car is purchased. Owners may even feel as though they are getting a new car with each major software update.

Several OEMs will follow in 2018 and release entertainment systems that are regularly updated and equipped with new features based on customer feedback and likes. Among executives surveyed, 31 percent strongly agree understanding customer objectives gives insight into opportunities.

Automotive manufacturers can save costs and accelerate the launch of new functionality and features because rather than field-testing and bringing enhancements to market after two years, they can deploy overnight. Data flowing from the vehicle reveals how features are being used. The manufacturer can update products on the fly and generate revenue much faster than in the past.

OF EXECUTIVES REPORT A SIGNIFICANT TO MODERATE GAP BETWEEN WHAT CUSTOMERS WANT VS. NEED.

OF EXECUTIVES AGREE THAT BY UNDERSTANDING CUSTOMER OBJECTIVES, ORGANIZATIONS TRANSFORM FROM PROVIDER TO PARTNER.
Automotive companies of today are not just creating new products and services; they are redefining the industry. However, the new rules of the game have not been redefined in tandem. Those automotive players who take the lead in setting new standards will find a place at or near the center of their new ecosystem, while those that do not risk being left behind.

DRIVING STANDARDS

Connected vehicles and autonomous driving are new industry segments, and these vehicles are moving full speed ahead—but legislation has yet to catch up. Currently, manufacturers are all playing by their own set of rules while major unknowns remain.

What if someone in a driverless car was injured and required a trip to the hospital? Would the car know? Where would they take the passenger? Where does liability lie if something goes wrong with the car’s software? What about security? Manufacturers have a leading responsibility to ensure data privacy and security with all of the data they are able to retrieve from connected vehicles. However, there are no standards to define how data can be shared with other parties in the ecosystem.

This year, Ford and Toyota established the SmartDeviceLink Consortium, a nonprofit to manage open source software for smartphone app development for vehicles. Smartphone app developers can use the open source platform to integrate their app functions with in-vehicle technology. Mazda, PSA Group, Fuji Heavy Industries and Suzuki Motor Corporation were the first automakers to join the consortium followed by suppliers Elektrobit, Luxoft and Xevo.
WHO SHOULD TAKE THE WHEEL?

The automotive industry is undergoing major transformation, but no one is governing the changes. Of executives surveyed, 67 percent believe their organizations are entering entirely new digital industries. The ecosystem is wide open, and cars are only one piece of the puzzle. Now, software vendors, mobility companies, entertainment providers, car-sharing companies and others are part of the value chain.

Someone must assume a lead role in defining standards, such as how data should connect to shared platforms. Who is allowed to connect to the platform—and who is not?

Government also has a role to play in establishing standards. Right now, regulations vary from country to country. In the United States, regulations state that platforms that combine customer, car and usage data need to be open so that suppliers, garages and manufacturers can access this data. Standards are different in Europe.

The European Commission has begun to explore standards to govern the evolution of vehicle automation, and they will soon enforce General Data Protection Regulation (GDPR) rules that apply to personal data. These evolving standards will address complex issues, such as communication between the vehicle and surrounding infrastructure, privacy and data protection safeguards and interoperability.

The industry is evolving at hyper-speed, and ecosystem participants must be proactive in helping to establish standards.
These five themes are mile markers on a continually evolving journey into the digital age for automotive companies. The world is changing at speed, and automotive companies can play a lead role in using technology to improve driving and riding experiences for customers. By adopting a people-first mindset, companies can harness the technology innovations of tomorrow, while having the people to strategically guide the enterprise on the road ahead.
AI IS THE NEW UI

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ABOUT THE RESEARCH

Accenture conducted a global survey of more than 5,400 business and IT executives across 31 countries, including 103 automotive leaders. The purpose was to understand their perspectives on how technology is impacting their organizations, and to identify their priority technology investments over the next few years. The survey was collected from November 2016 through January 2017.

ABOUT ACCENTURE

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions – underpinned by the world’s largest delivery network – Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With more than 411,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.

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