

Remodeling for mobility

Will new mobility mean the
end of 'old' automotive?



The better the question. The better the answer.
The better the world works.

The EY logo, consisting of the letters 'EY' in a bold, white, sans-serif font. A yellow diagonal line is positioned above the 'Y'.

Building a better
working world

“We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don’t let yourself be lulled into inaction.”¹ - Bill Gates

When Bill Gates wrote these words in 1995, little did he know how well they’d describe the automotive industry in 2016. Today’s automakers face a not-so-distant future in which they will have to change dramatically. Powerful, disruptive trends are already converging toward this outcome.

What’s more, new entrants are emerging with business models that don’t require the automakers’ capital investment, know-how in vehicle design and manufacturing, engineering prowess or dealership networks. Some of these players are well-established in other industries (think Alphabet, the parent company of Google), and others are tiny start-ups that burst into prominence (e.g., Uber and Lyft).

Can automakers confront the challenges of disruption, successfully adapt and seize the opportunities created as the new mobility industry takes shape?

We believe they can – but only if they shed their historically insular approach to how they think and operate. Openness, flexibility and collaboration will be the keys not just to survival, but to sustainable prosperity as well.

External trends threaten the status quo

A number of external trends are fundamentally changing the way people view car ownership, meet their mobility needs and, ultimately, go about their daily lives. Collectively, these trends threaten the automakers’ slow-and-steady, product-centric status quo. Presently, the trends most impacting automotive include urbanization, sharing of assets, and rapid advancements in artificial intelligence (AI), mobile and sensor technologies. In the future, even further disruption is likely as technologies such as blockchain, implantable devices, Internet of Things (IoT), drones and fog computing become mainstream in application.²

¹ Bill Gates, Nathan Myhrvold and Peter Rinearson, *The Road Ahead* (Viking Penguin, 1995).

² *Deep Shift: Technology Tipping Points and Societal Impacts, Survey Report*, World Economic Forum, September 2015.





The evolving ecosystem

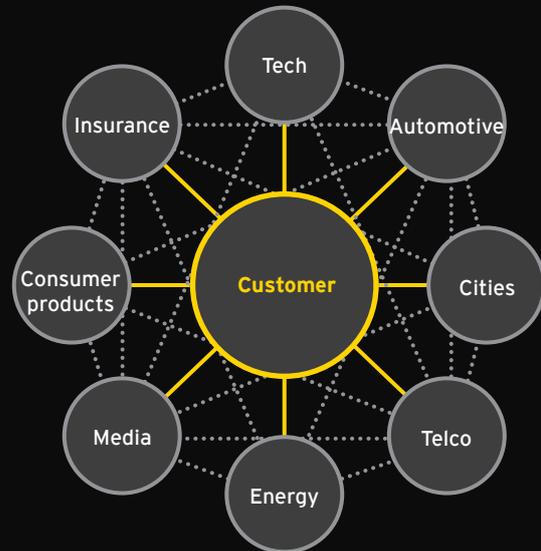
Until just a few years ago, automakers were at the center of an industry that was concentrated on affiliated functions such as financing, parts supply, logistics and retail dealerships.

'Old' automotive value chain



Now the ecosystem has grown to include many new stakeholders: cities, ride-sharing operators, government agencies, technology and telecom providers, media and entertainment companies, transit service providers, energy companies and utilities, financiers, entrepreneurs and – most crucially – consumers.

New mobility ecosystem



Automakers find themselves in a new paradigm. In this expanded ecosystem, collaboration among stakeholders will be mandatory, data will be more accessible and openly shared, and the ultimate goal will be to create a fulfilling customer experience rather than simply selling more cars.

Heart versus head: the strategic dilemma

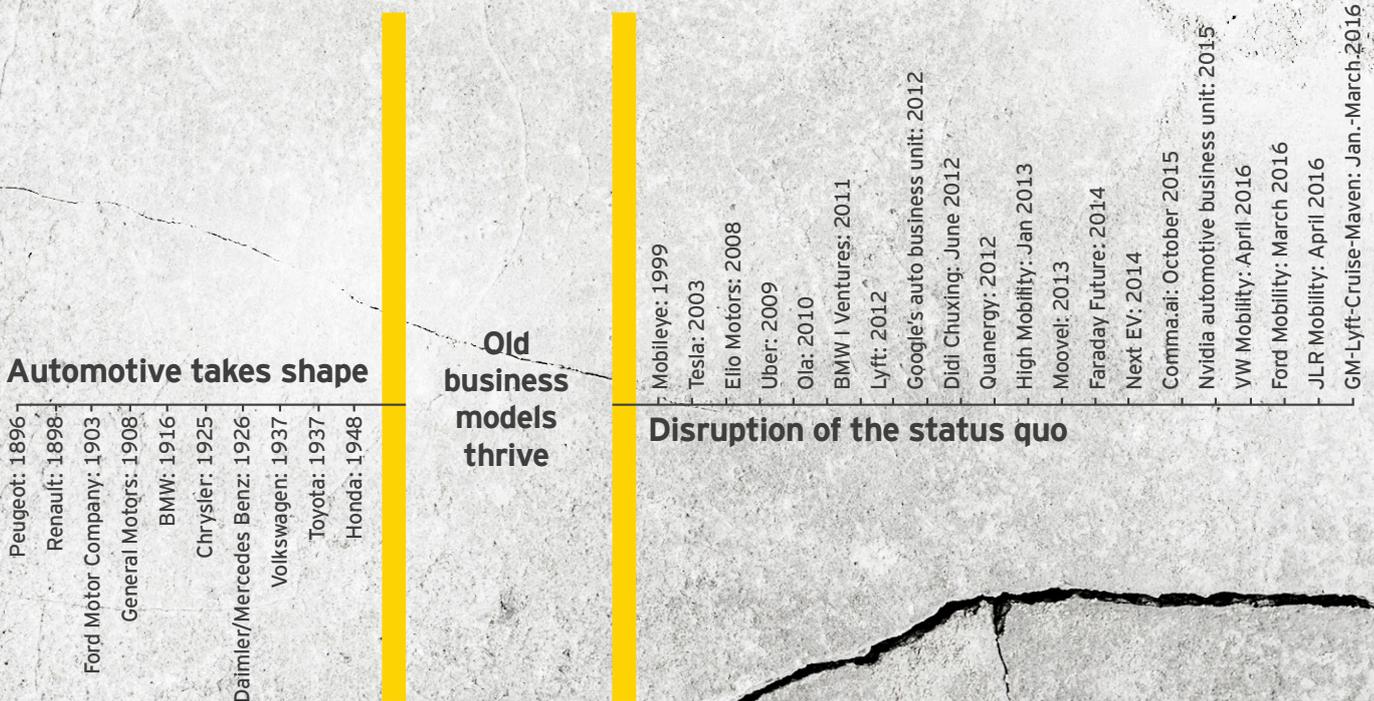
Automakers have been innovators and disruptors. They adopted and refined the assembly-line approach to mass manufacturing, for example, and used it as a competitive weapon to raise product quality while reducing prices. As a result, the car displaced horse-drawn vehicles as the transportation mode of choice. Mobility would never be the same.

The industry thrived and matured, enabling automakers to benefit from high barriers to entry. The most significant of these are expertise in vehicle design and manufacturing, well-organized supply chains, vast dealership networks and massive economies of scale. Over their decades of success, automakers have developed an entrenched mindset that combines an unshakable faith in how they operate (i.e., the old) with

a corresponding resistance to change (i.e., the new) – a mindset currently reinforced by record-high sales and forecasts in North America, China and much of Europe.

But as the new mobility industry takes shape, these same barriers to entry will become barriers to exit: automakers must overcome them to successfully transition from the status quo to the necessary open-architecture model of the future.

This strategic dilemma can be described as a struggle between heart and head. The incumbents' hearts are very much in favor of continuing to do things as they've always done them. Yet their heads are telling them that they must welcome the new mobility paradigm if they want to remain viable into the future.



Hacking paths to the future of mobility

Hack [hak] (noun):
rapid design of tomorrow's extraordinary solutions

There clearly is a need to bring the new mobility ecosystem together, explore the challenges and opportunities of the industry's paradigm shift and develop fresh ideas about the future. So, in early 2016, EY spearheaded a series of hacks where a diverse set of participants co-developed visions and prototypes for future mobility scenarios. Through these rigorous, collaborative and provocative sessions, fundamental differences among stakeholders emerged and critical questions were surfaced.

Our hack participants represented a diverse mix of industries, businesses and skill sets:

Industries – Automotive & transportation, aerospace, city and government administration, media, consumer products, technology, telecommunications, regulatory agency, energy, start-ups, consumers

Skill domains – Data science and AI, urban and infrastructure planning, legal and regulatory, IoT, entrepreneurship, design, innovation, architecture, product development, sales and marketing, digital/sharing economy

Hack results: three visions of the future

The question: The future of mobility represents tremendous changes and many opportunities. How will you succeed?



Transformation to a new type of OEM – “Original Experience Maker.”

The vision: Delivering unique mobility experiences to customers, while extending and leveraging core business strengths.

The drivers:

- ▶ Emphasis on delivering an integrated car-centric experience to the beat of new technologies
- ▶ Leverage existing product design development and delivery assets
- ▶ Reimagine the car to deliver exceptional experiences and to remain at the core of personal mobility

The result:

- ▶ Cars designed as tailored and configurable personal space
- ▶ Hyper-personalized experiences delivered through connectivity and enabled by virtual reality, AI and autonomous functionality
- ▶ The automaker positioned at the center of strategic business partnerships encompassing media, consumer products, entertainment and other industries



“INSTINCT” – An intuitive mobility platform. Your co-pilot for an enriched fulfilling life.

The vision: The ultimate “mobility-as-a-platform” transforms consumers’ mobility experiences. With the ability to predict and plan journeys at the moment of intent, it requires no conscious intervention by the user, becoming a seamless part of consumers’ lives.

The drivers:

- ▶ Consumers expecting more technology that is pre-emptive; “does it for them” (think NEST)
- ▶ Emergence of AI and IoT enabling predictive actions and features
- ▶ The work/leisure distinction is blurring; a desire to maximize personal fulfillment is driving behavior
- ▶ Total consumer-centricity demanded by younger generations

The result:

- ▶ Enabled by AI and IoT and integrating social, work, family and home data; consumers enjoy hyper-personalized experiences
- ▶ Understanding of where consumers want to go and why, and journeys designed accordingly
- ▶ Personalized experience choices “delivered” to consumers through wearable and eventually implantable technology
- ▶ Mobility experiences designed for consumers to achieve better, fulfilling lives



“TA:DA” – Harnessing the power of shared data to benefit all. The perfect marriage of business, entrepreneurs, citizens and technology for social good.

The vision: An open trading platform for mobility data to generate benefit for all ecosystem stakeholders. Achieved by breaking down barriers to collaboration through aligning incentives creating recognizable value that benefits all.

The drivers:

- ▶ Multiple stakeholders (e.g., cities, citizens, government, transport providers, automakers) could derive increased value from mobility data
- ▶ More data control is currently driving less data relevance and destroying value
- ▶ Perceived barriers to sharing are used to protect stakeholder interests (e.g., competitive position)
- ▶ Incentives to share are neither clear nor available, and data has different relative value to different stakeholders

The result:

- ▶ A collaborative hub to enable a new notion of competition, with automakers as one of numerous stakeholders cooperating as equal partners
- ▶ A democratizing and open mobility data trading platform
- ▶ Incentives driven by market-based mechanisms providing genuine bargaining power to all participants, including consumers

The status quo must go

Along with the visions of the future created, a wealth of creative ideas and new avenues of potential opportunity for automakers were produced. Under all scenarios, however, it was clear that automakers would not be able to approach and conduct their businesses as they'd done for decades.

In other words, the status quo would have to go:

- ▶ When starting from an incumbent position, automakers will not out-innovate disruptors unless they view their own legacy business as an enemy. They will succeed only by confronting their old modes of operating, overcoming inherent constraints and shaking up their businesses.

- ▶ From the disruptor's perspective, cars will no longer be the focal point of mobility and will become just one element of a much larger platform of experiences tailored to the multifaceted needs of individual consumers.
- ▶ The collaborative ecosystem perspective emphasizes the open exchange of data among stakeholders to create shared benefit and forces automakers into an equal-participant role in the mobility ecosystem as power shifts substantially to consumers.

Overcoming challenges requires radical change

How will the automakers, as incumbents, succeed in the new mobility industry?

Through our work with clients, interactions with ecosystem stakeholders at our hacks and our own research, we have identified five inherent challenges automakers must overcome. Converting these challenges into opportunities will require them to radically change their thinking about their customers, business partners, employees and – especially – themselves.

1. Innovation: new ways are the way to go

Automotive has a history of innovation and today's car is much more technically advanced than it was in the past.

But creating new business models requires innovation that stresses exponentially more diversity of thought, speed of design and embraces risk and failure.

Our experience indicates that few automakers have a solid approach for developing a large portfolio of ideas, evaluating their value, designing sound in-market experiments, learning from failures and understanding when to scale. This has resulted in automakers employing varying degrees of ideation and experimentation on connected services, mobile apps and vehicle-as-a-service offerings; however, few are engaged in truly innovating ways likely to revolutionize their own business.

2. Connecting with consumers: essential to success

Automakers need to view consumers as individuals for whom experiences, products and services must be personalized. This is especially critical as millennials and generation Z, who have grown up with mobile and on-demand everything, and who prioritize experiences and personalization, become a major portion of the consumer population. These consumers pay for what they value, but they are increasingly opting out of relationships with service providers if they don't get what they consider a fair value exchange. This trend is playing out in other consumer industries, ranging from banking, retail, telecoms and prominently in the TV/cable industry, where providers have been forced to offer customized content packages as viewers increasingly refuse to pay for content they don't want.³

But there's a fundamental problem: automakers lack an ongoing relationship with consumers. After a single purchase or leasing transaction, customer interactions are infrequent and often impersonal. And in some instances, the customer relationship is managed by third-party dealerships. In contrast, potential entrants to the market and leading ride-sharing providers enjoy a much closer connection with their customers.

As consumers' mobility choices are increasingly based on their mobility experiences, directly connecting with them will be essential to success. Unless the automakers dramatically improve their ability to interact by gathering, understanding and acting on consumer intelligence, they risk losing customers.

3. External collaboration: sharing required

For automakers, many supplier relationships have been defined by formal closed contracts, tense negotiations and a rigid tier structure – a useful interaction model for purchasing parts. But the new mobility industry requires working closely with a broader set of ecosystem partners. While there have been success stories of cities and automakers working together, an effective model for collaboration in this ecosystem hasn't yet materialized.

The motivations of these potential partners are often very different and sometimes in opposition. However, each has assets, capabilities and data that can be leveraged by others for great collective impact. Consumers will also play a role in this ecosystem beyond that of a customer. As consumers (drivers and riders) understand the value of their data to the ecosystem, they will demand a fair value exchange, effectively using their data as a currency to obtain benefits. Are automakers ready to work with customers as suppliers of data?

Only 10% of executives say they're well-prepared to leverage a cross-industry ecosystem.⁴

³ Marcie Merriman, "Think Tank: Generation Z, the Next Big Retail Disruptor," Women's Wear Daily, August 2015.

⁴ Changing lanes 2016-17: the automotive C-suite's agenda, survey.

This is an opportunity for automakers to lead in working with other key stakeholders to openly share technology, data and expertise. This requires re-evaluating assets that have long been considered secret, aligning incentives and sharing risks and rewards.

4. The war for talent: new strategies for battle

The automotive industry has always employed highly talented engineers and technologists, but few of the best AI engineers and data scientists. Traditional organizational constructs, compensation models and incentives prevent the automotive industry from attracting and retaining the talent required to innovate and sustain a disruptive mobility business.

Our research among young entrepreneurs and freelance technologists revealed that automotive is not considered a desirable industry in which to innovate. When asked what was attractive about the technology industry, they cited open sourcing, shared equity and the alignment of purpose with their personal values as important elements.

Technology companies and start-ups draw the best technologists and data scientists looking to disrupt the auto industry through software. Automakers must adapt to access and develop talent in unconventional ways or else a shortage of talent in these disciplines will put automakers at a distinct competitive disadvantage.

5. Outdated operating models: time for something new

As incumbents with significant legacy operations, automakers strongly prefer to leverage their old processes and systems versus creating new ones. However, multiple challenges relating to governance, innovation, partnerships, talent and back-office services arise from overreliance on the core business operating model.

If automakers set up new business units to compete in the new mobility industry – as proposed in our hack sessions – they must design new operating models for these units. Leveraging relevant capabilities from the core business must not come at the expense of remaining tied to the old ways of operating. This doesn't mean abandoning the core business – adept organizations will create feedback mechanisms for the new units to transfer knowledge and process innovation back to the core for continuous improvement.

"I don't have an interest in driving; there are so many other things I'd rather spend that time doing, like learning guitar."

- Millennial, EY Future of mobility hack participant

"The dynamics get very funky very quickly if somebody thinks they're getting screwed."

*- Mark Fields, Ford Motor Company
President and CEO on tech partnerships*



How will automakers hack through uncertainty and meet the challenge to remodel for mobility?

How will you innovate and operate like a start-up in order to revolutionize your business?

How will you conquer the consumer connection challenge?

How will you develop and embrace an ecosystem of business partners for shared benefit?

How will you develop and maintain talent pools in emerging skills to be competitive?

How will you design an operating model to support your new business models? And how will these businesses interoperate with your current business for maximum value?

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EY Automotive & Transportation contacts:

Randall J. Miller

Global Automotive & Transportation Leader
+1 313 628 8642
randall.miller@ey.com

John Simlett

Associate Partner, Transformational Growth
+44 20 7951 9489
jsimlett@uk.ey.com

Kristin M. Schondorf

Global Automotive & Transportation Mobility Leader
+1 313 799 4400
kristin.schondorf@ey.com

Mike Longo

Global Automotive & Transportation Sector Resident
+1 313 628 8289
michael.longo@ey.com

Anil Valsan

Global Automotive & Transportation Lead Analyst
+44 20 7951 6879
avalsan@uk.ey.com

Regan Grant

Global Automotive & Transportation Marketing Leader
+1 313 628 8974
regan.grant@ey.com

Connect with us

@EY_Automotive

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