

The Auto Industry's Key to New Mobility Services

Unlocking an era of autonomous, user-centric experiences and business models with full personalization, privacy, and security.

It's the Beginning of a New Age

A car that knows you well enough to adjust your seat, cue up your favorite music, map your destination, and unlock the door for you—even if you've never driven it before. The right vehicle for every occasion, from city errands to a weekend in the mountains, arriving at your door in minutes with the touch of a button. Streets no longer choked with parked cars—and wallets no longer dented by astronomical parking fees. Smart cities that bring new convenience, efficiency, and safety to the flow of daily urban life. It's all within reach in the near future—enabled by the transformation of the automotive industry for a new generation of mobility services.

The core technical challenges of autonomous driving are well on their way to being solved, but to fully deliver on the vision of New Mobility, the industry must address the most important task of all: getting consumers onboard. Although New Mobility concepts such as ride sharing and ride hailing are already available in many cities, they remain limited to specific use cases and consumer profiles. To lure customers away from long-held traditions associated with personal vehicle

ownership—even given the high costs, waste, and nuisance of this model—the industry will have to offer modern user experiences they truly can't resist.

New Mobility services begin with complete integration and synchronization with the individual's digital life, from the apps they use, to the media they enjoy, to the work or personal business they might need to get done while in transit. Equally important, these seamless user experiences must be delivered with the reliable security, privacy, and performance consumers demand from any other digital service—or more, given the highly personal nature of personal mobility. New Mobility users literally trust you with their lives, both digital and physical. The companies best able to gain and fulfill that trust will own the next generation of the auto industry.

Digital identity makes it possible to enable the customer-centric business models and experiences that make up New Mobility. By recognizing and managing the individual identities of people, devices, and services across the mobility ecosystem, companies can deliver consistent, personalized experiences wherever and however people use their

services while building trust through robust privacy and security. Unlocking the full customer value of New Mobility, digital identity can improve adoption and retention, increase brand value and revenue, and drive innovation and competitive differentiation as the industry continues its rapid transformation.

In this series of papers, we'll examine the business challenges and solutions on the road to New Mobility, and the pivotal role of digital identity in the future of the automotive industry.

An Automotive Industry in Transition: Challenges and Disruptions

Start with an outdated and unloved status quo, add a few global megatrends, and you have all the ingredients for massive industry transformation. To begin with, though it's hard for auto traditionalists to hear, car ownership is losing its appeal. Why spend so much on a purchase that sits idle 96 percent of the time—and even when it's in use, incurs both high costs for parking and the many frustrations of urban gridlock, slow-and-go highways, and road rage? For drivers of all ages—and especially rising generations who value experiences over possessions—there has to be a better way to get around. Meanwhile, digitization, urbanization, and the sharing economy are disrupting business models and reshaping consumer expectations. Digital technologies and experiences have already transformed the photo, music, and phone industries; now it's the automotive industry's turn—and the changes to come will be dramatic.

The digital transformation of mobility goes far beyond adding screens and connectivity to traditional vehicles. Simulated and influenced by digital-native companies, new business models will upend established industry

“85% of auto executives agree that the digital ecosystem will generate higher revenues than the hardware of the car itself”

- KPMG Global Auto Exec Survey 2017

partnerships and supply chains, ownership and revenue models, and even the fabric of the cities in which we live and move. As is so often the case, incumbency will be no guarantee of success; large, multinational organizations will have to move quickly to avoid being displaced by more agile newcomers.

Think of some of the automotive business disruptions we're already seeing:

- » In the electric vehicle space, new players with breakthrough battery and charging technologies are challenging incumbent carmakers.
- » New platform and services companies are redefining the business of personal mobility in the sharing economy.
- » IT companies have taken the lead on autonomous driving through machine learning and artificial intelligence—with profound implications for urbanization and society in general.

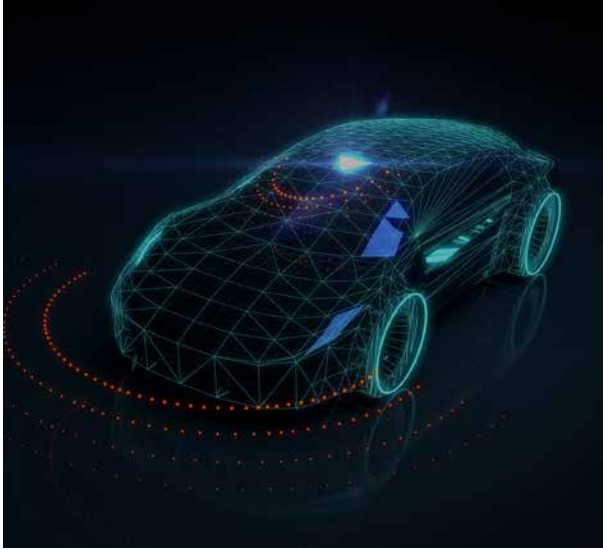
The question now is, which companies will take the lead in delivering future mobility services: established carmakers who understand that the game is changing; disrupters from the world of digital services; or other players we don't even know about yet?

The Rapid Emergence and Growth of New Mobility

The New Mobility industry is currently coalescing around a nexus of both traditional industries and new smart technologies, in areas touching every part of the personal mobility experience. As the industry evolves and expands, both types of companies will have an initial role to play—but the changing nature of that role, and its prominence compared with other players, will be determined over time.

Carmakers are definitely in the running for the pole position in New Mobility. Their core challenge is to master the new digital technologies now taking root within the vehicle itself, as well as in the secure delivery of new digital services directly to the consumer.

The digital and connected car already poses significant security challenges for the automotive industry. The electronic backbone of most cars—the CAN bus—was designed decades ago, well before people thought about cybersecurity. Since then, innovations such as connected HD displays, 4G



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connectivity, assisted driving, and myriad comfort features have each added their own electronic control unit (ECU) to the CAN bus. Today, upwards of 100 ECUs can be found in the typical new car, all listening and talking to the CAN bus.

Connected cars now extend both services and data beyond the vehicle itself. Most new cars already communicate with their drivers through remote keyless systems and smartphone apps controlling features like programmable heating, GPS, and in-vehicle infotainment (IVI). Connected cars also feed data on location, RPM, speed, mission-critical ECU failures, and diagnostic functions back to the automaker's back-end. Full Internet coverage including streaming music and video will soon be widespread in the market, and new standards like automotive Ethernet are on the horizon.

There is much more to come. Assisted and autonomous driving will add more ECUs and data-generating sensors to the vehicle's architecture. Cars will exchange data with other cars and surrounding infrastructure such as charging stations, traffic lights, stop signs, even pedestrians crossing the street around the corner. Autonomous cars allow time to be spent watching movies and listening to music. In early 2017, Intel reported that autonomous cars will soon generate 4TB of data each day, including inter-ECU traffic as well as external communications. That kind of high-volume connectivity creates tremendous potential for hackers to read or manipulate data. The ideal solution would be "security by design," rebuilding the electronic backbone of the car around today's knowledge and experience of cybersecurity.

New Mobility Models and Experiences

New Mobility services put people front-and-center—not the car. It's no longer about design, horsepower, or big wheels; the focus has now shifted to the purpose of the journey (business, leisure, commute, travel) and the most appropriate way of getting there in terms of cost, time, and convenience.

In these soon-to-be old days, most people own one car and use it for all purposes, from the daily commute to long-distance vacations. This can mean dealing with an oversized gas-guzzler on city streets where a smaller, more economical car would make more sense—or else taking that small, economical city car on days-long interstate trips with cramped legroom, poor visibility, and constant anxiety about the larger vehicles looming on all sides. Wouldn't it be better to be able to choose the ideal type of car for each trip—an SUV for skiing, a convertible for a trip to the beach, an electric micro-car for quick errands, a van for back-to-school shopping? And better yet—to complement this on-demand flexibility with car sharing, ride hailing, bike sharing, and public transportation for complete freedom of choice and convenience?

The trend is obvious: We are moving from a car-centric automotive world to the user-centric world of New Mobility.

Next up: [The Rise of the Smart City](#) explores how the New Mobility will require an ecosystem combining smart infrastructure and new business models.

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