

The evolution of mobility

More innovation in transportation has been experienced over the past ten years, than in the previous century—including a dramatic rise in mobility start-ups and accompanying venture capital funding. More than 95 cities around the world are hosting pilot programs for autonomous vehicles today with another 40 cities actively preparing for future AV pilots.¹ Micromobility solutions from e-scooters to bike share programs have sprung up across the globe to solve the first and last mile gaps that fixed route transit systems often do not cover. Electric and hybrid electric vehicles are expected to account for more than 30 percent of all vehicle sales by 2025.² And just over the horizon are even more disruptive transportation technologies, including—yes—flying cars.

While these advances are increasing mobility choices for consumers and presenting valuable investment opportunities for businesses, they can at times exacerbate existing challenges, including growing congestion and carbon emissions. Governments around the world are already straining to keep pace with rapid urbanization and population growth. They also face shortfalls in infrastructure investments needed to keep pace with the growth in population, transportation demand, and new technologies. In reaction to these pressures, state and local governments are introducing new regulations and technologies to manage the transportation network more efficiently, and to mitigate the burgeoning impacts of urbanization. For example, New York is preparing to follow London and Singapore with a congestion pricing scheme, while Los Angeles built an open-source data sharing standard that helps city governments access data from micromobility companies.

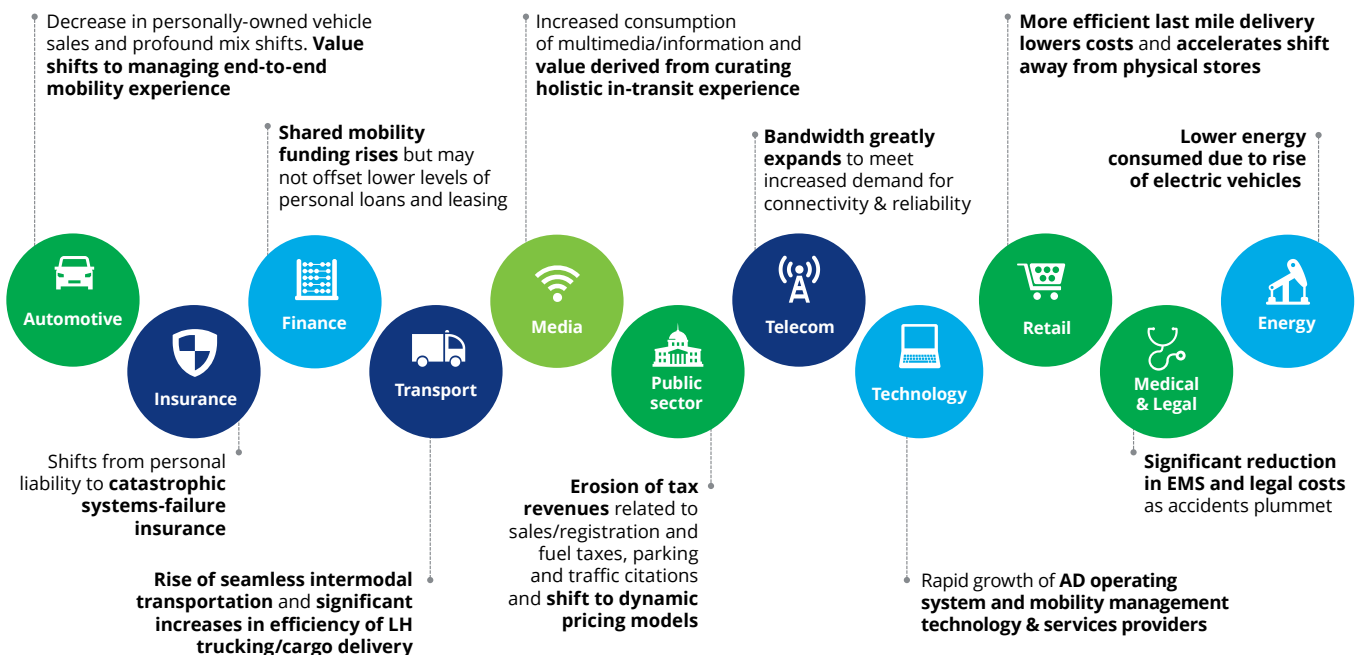
The impacts of these new innovations, and the governmental and market responses to them, will be seen across industries—from retail and entertainment to freight and logistics. Board members will need to question whether their companies have strategies in place that anticipate these shifts and understand how the future of mobility affects their business and customers.

Cross-industry impacts

The future of mobility will impact different sectors as traditional revenue sources diminish and investments are needed to create value in the new ecosystem. The auto industry is already seeing significant activity with new partnerships, acquisitions, and investments as they shift from a product-oriented business model to providing services around end-to-end mobility. But other transportation-related industries need to prepare as well. Auto insurance could see premiums go down by as much as 30 percent as accidents are reduced with AVs and car ownership declines.³ Significant infrastructure upgrades will be needed to enable connectivity, digital integration, cybersecurity, and massive data storage and processing. Both energy providers and retailers will also need to integrate into this infrastructure, for management of vehicle fleets that will require close management of a complex end-to-end supply chain including battery recharging and replacement.⁴ The public sector is also heavily impacted, as traditional revenue from parking, speeding tickets, fuel tax, and vehicle registrations—a \$200 billion market in the US—are potentially in jeopardy to some degree.⁵

These examples are already playing out in today's headlines. Board members can work with their companies to guide the adaptations needed in core business offerings, operations, supply chain, customer engagement, and more as this mobility evolution continues to shift from theory to practice. ➤

Figure 1: Cross-industry impacts of the future of mobility

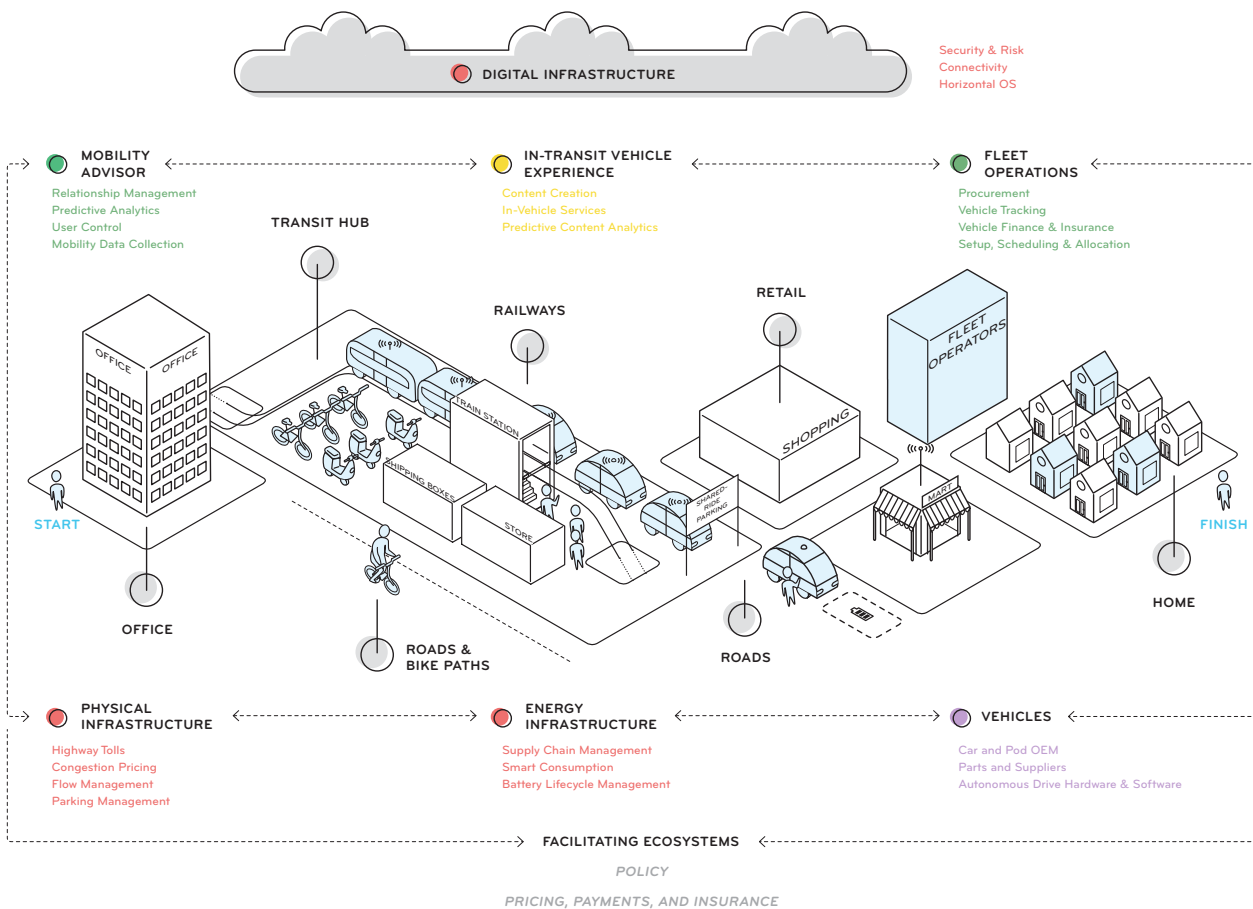


Source: Deloitte Analysis

Opportunities and strategic considerations

The transformation of the mobility ecosystem also creates new opportunities across an evolving mobility value chain. In the future, value will likely be derived from consumer-centric data, integrated systems, and services-oriented business models. The transportation system will be much more dynamic as the customer experiences a shift to seamless, integrated mobility across different modes. This multi-modal journey could give multiple touch points for payment transactions for mobility, retail, and other services.⁶ Such a shift could also give rise to white spaces for companies that enable the user experience—providing media and curated experiences across different modes of mobility and collecting the data from those consumer interactions to derive future value. Similarly, there would be more opportunities for infrastructure enablers that focus on the digital layer—enhancing our communications and information technology infrastructure to serve as the backbone of the system. Finally, there will also be opportunity in the overall management of the customer journey from point A to point B.

Figure 2: The future of mobility ecosystem



Source: "The Future of Mobility: What's Next?" Deloitte Insights, 2016.

As these new opportunities arise, the board can bring a perspective of weighing potential investments that a company may want to pursue against a set of strategic considerations and near term vs. longer term challenges:

Regulation and government

Government can play a lot of different roles from being regulators, innovators, conveners, to catalysts and funders. They can create incentives to accelerate the adoption of mobility innovation, particularly in standing up pilots to attract economic development. However, regulations are emerging across the US and globally in a patch-work fashion. Regulations ranging from AV standards to carbon-reduction goals to new vehicle classifications on emerging modes will play a significant role in shaping the future ecosystem. ➔



Cybersecurity

Data security and privacy are critical concerns for consumers. Hackers have demonstrated the ability to remotely infiltrate the operating mechanisms of a car, and the vast amounts of data generated by autonomous vehicles will be ripe for privacy breaches. Privacy concerns have also stalled ambitious “Smart City” development efforts as consumers expect protections and digital trust needs to be earned.

Public attitudes and adoption

AV acceptance may be flat lining with consumers,⁷ and micromobility is facing backlashes in certain cities, in part due to a few high-profile accidents with fatalities. Meaningful movement forward into a future with integrated mobility and autonomous vehicles will require building significant consumer trust and proving that alternative forms of mobility are safer than existing ones.

What can the board do to stay ahead?

The future of mobility will have varying impacts across markets, industries, existing players, and new entrants. These disruptive impacts, the uncertainties presented by forces of acceleration and delay, and the board's fiduciary responsibility for oversight of a company's operations and strategy suggest that board members need to have sufficient understanding of the future of mobility and be able to recognize the challenges and opportunities it will present for the company. ➔



Connecting the trends:

In their role of bringing outside perspectives to companies, board members can help companies connect the dots with other transformative trends prevalent in the market to develop a holistic view of how these emerging trends will impact their business and market position:

Future of work

- Autonomous vehicles and trucks could put traditional driver jobs at risk across different fields like taxi and truck drivers, farmers, and construction workers, but equally it could create new forms of employment in engineering, personal aids travelling with senior citizens, fleet maintenance, and technology fields.

Environmental sustainability

- A move towards shared, electric, and integrated modes of mobility, as well as the introduction of new, environmentally-friendly modes of micromobility better suited to short journeys, could yield more sustainable outcomes given their smaller carbon footprints.

4th Industrial Revolution (4IR)

- The new mobility ecosystem is likely to expand through advanced digitally integrated platforms—vehicle-to-vehicle and vehicle-to-infrastructure, 5G connectivity, and more. The future of mobility is yet another example of the 4th Industrial Revolution—a marriage of physical and digital technologies. This will present new opportunities across 4IR technologies like machine learning and AI, and it will also require significant investments in and advancements of our transportation and urban infrastructure.



Future of mobility in action—the movement of goods:

The converging trends of future of mobility are not limited to the movement of people; they are unfolding in the movement of goods as well. Last year, 12.2 percent of all retail sales were e-commerce—and that figure is rapidly growing.⁸

Across the supply chain, we have witnessed three core pillars that will underpin the future network for movement of goods—(1) holistic decision making, driving agility and optimization by harnessing and harmonizing data, (2) connected community, enabling end-to-end visibility and transparency across all nodes of the supply chain, and (3) automation, utilizing the right human or machine for work.

E-commerce giants and freight and logistics providers are racing to build out vertically integrated, closed-loop movement of goods networks that have the scale and speed to meet consumer demands for on-demand delivery. This is leading to related impacts on congestion in urban environments, as evidenced again in New York City, which now receives over 1.5 million deliveries every day.⁹

A key role of the board is to ask management to regularly provide forward-leaning perspectives on emerging market trends, to work with the company to protect and extend competitive advantages, to create opportunity out of disruption, and to hedge against the unknowns. As the value chain that once was entrenched in traditional automotive and transportation business models is rapidly shifting, companies will be faced with a multitude of decisions.

Understandably, legacy incumbents will want to preserve their current business model as long as possible. Disruptive innovators are moving quickly to build asset-light, digitally enabled business models where they slice off profitable service and customer segments. It is important that the board help management strike the right balance between optimizing the returns from today's assets and investments while investing sufficiently for what could be a very different future competitive landscape.

The board can effectively help management prepare the company for a more uncertain future by:

- Developing a deep understanding and consensus on how the future of mobility could impact the company's operations, products and services, workforce, and engagement of customers
- Taking a global view of the company as the evolution of the future of mobility progresses at different speeds and in different ways across geographies due largely to localized regulatory pressures
- Determining how the company can create sustainable, enduring value as the ecosystem evolves Identifying the need for partners and seeking appropriate players

While uncertainty abounds, particularly about the rate of technological change, adoption, and overall market transition, there is a fundamental shift taking place in how goods and people are moved. As the mobility market evolves, companies across the spectrum will have opportunities for value creation and capture, and the board should be positioned to advise on the strategic opportunities as they are presented. ➤

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Questions for the board to consider asking:

1. How is our company preparing for the future of mobility—across our strategy for customer engagement, operations and supply chain, and talent attraction and retention?
2. What risks or opportunities do we face if transportation shifts away from personally owned automobiles towards a more autonomous, electric, and intermodal mobility ecosystem?
3. The new mobility ecosystem is creating white spaces for investment. Where should our company focus based on our capabilities, assets, and strategy?
4. Could the future of mobility provide us an opportunity to expand our business into different domains in addition to strengthening our core business? Can more precise transportation data help us enhance our current offerings and build new businesses?
5. The adoption of mobility technologies, services, and data can present new risks around cybersecurity and customer privacy. How are we addressing these risks?
6. As we make investments to address the future of mobility, are we moving too fast or too slow vis a vis our competitors and the market? Are there partnerships/alliances we should consider?
7. The development of key mobility technologies like autonomous vehicle sensors and software, delivery robots, drones, and enabling connectivity is still underway. How are we balancing our investments against the risk of delayed implementation timelines?
8. Many of these technologies face potential headwinds from regulation, public opinion, etc. How are we preparing for the unknowns as we integrate these new technologies into our operations?
9. What mobility-related regulations will have most impact on our future business strategy, and how are we tracking and informing those regulations? For example, are we prepared to adapt to potential regulatory measures such as congestion pricing?
10. Where in management does responsibility for the future of mobility reside? Does that area have adequate resources to adapt and drive the upcoming changes ahead?



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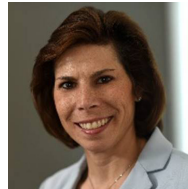


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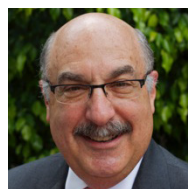
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