



Infrastructure convergence

The nexus of Mobility 2030

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As technologies, networks, sectors and new modes of mobility converge, how can investors seize upon the resulting opportunities?

Mobility 2030 may seem the domain of futurists, but as the demand for smarter, cleaner, and more connected ways of moving people increases, that future is coming closer into view. And there are investor returns to be had.

With mass urbanization straining public transportation systems, clogging streets, and clouding the air, both public and private investors are looking to self-driving cars, electrified roads, Mobility as a Service (MaaS) models, and other mobility disruptors as practical solutions. And as these technologies converge, real investment opportunities are taking shape.

New demands, new perspectives

Perspectives are shifting around Mobility 2030. Heightened awareness for eco-sustainability is driving demand for cleaner, more decentralized, and digitized energy systems; while public appetites are increasing around electric and autonomous vehicles (EVs/AVs). Moreover, intense global competition for traditional infrastructure assets (e.g. toll roads and power plants) is inflating prices, threatening investors with a far greater risk of stranded assets than ever and encouraging them to look for new and innovative ways to grow along with Mobility 2030.

A number of recurring questions have emerged, including:

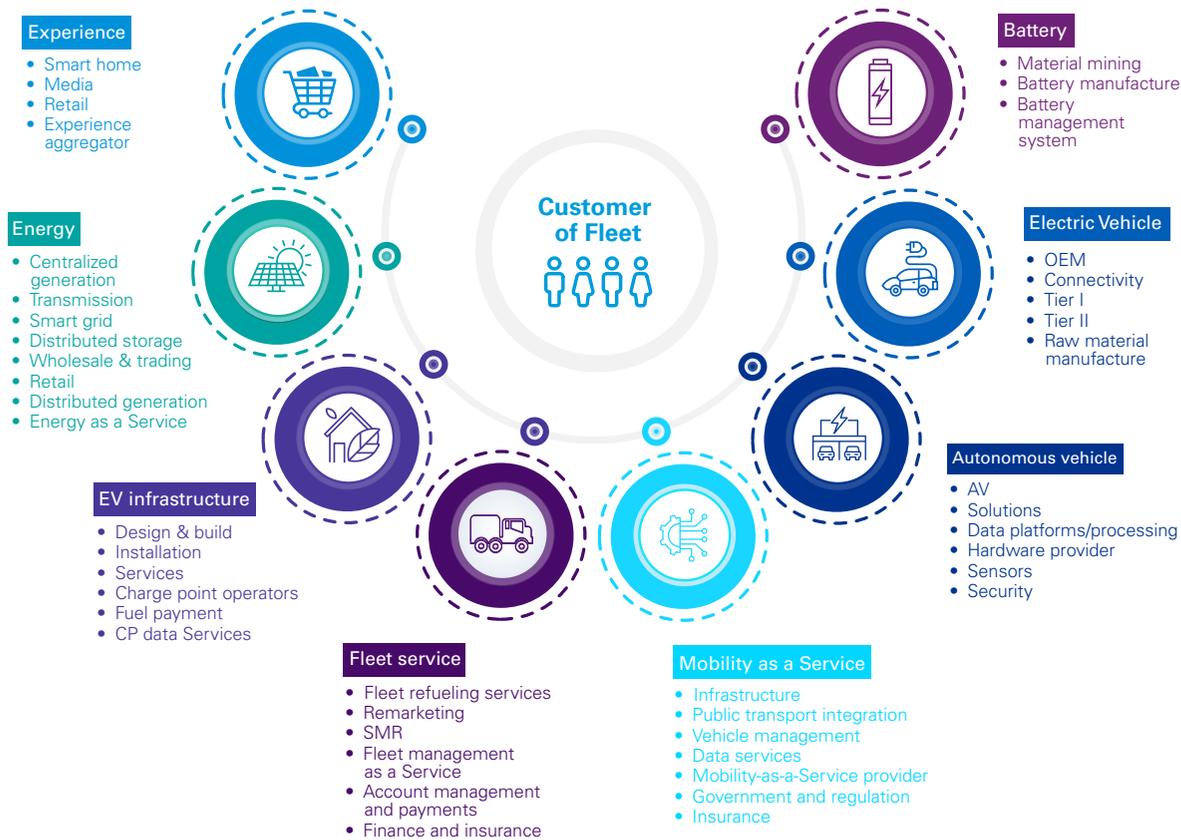
- **How will customers respond** to potentially radical changes to our daily lives and environments enabled by technology? What will their future behaviours be?
- **Where will value be created** across the future mobility ecosystem? How big will the 'value pools' be and how will they evolve?
- **What will the new ecosystem look like** and how will the various players' roles change? Who are the emerging customers for EVs, AVs and MaaS? What will these customers value?
- **What are the potential participation strategy options**, given existing asset bases and capabilities? Who are the key players across the value chain? Which organizations – or countries – are set to win?
- **What are the implications for financial, business and operating models?** How should financial ambitions change? Where and when should car companies, energy providers, etc. participate? How can they evolve to participate effectively?

In response, traditional investors are either playing it safe or are overly focused on individual mobility technologies. Some are clinging to old solutions to new problems, and left wondering why they have not moved the needle. Likewise, too many government decision-makers are chasing 'smart city' visions through a patchwork of siloed technology solutions. Seizing opportunity in Mobility 2030, however, means looking at how infrastructure works as an integrated whole. The true value proposition of the Internet was not which web browser or dotcom would win out, but how this step change in technology would reinvent business models. A similar lesson will be learned for Mobility 2030.

Converging mobility

The largest investor returns will go to those who understand convergence. A more integrated and citizen-centric approach is needed to integrate future mobility solutions with their inter-dependence on other systems and technologies. Consider the following:

- **MaaS solutions to the 'last mile' problem.** Personal car ownership will drop in coming years as the near-term complexities and costs of owning EV/AVs drive a stronger focus on transportation that is aligned to user needs. This will impact existing infrastructure, giving rise to smarter infrastructure demand that will require new financial business models. MaaS enables several solutions to age-old challenges, such as new funding sources – from road pricing to time-of-use rates and new user-pay models. MaaS is not limited to the personal auto. It presents tremendous opportunities for commercial and industrial fleets, heavy industry and next-generation freight, warehousing, and logistics.
- **5G connectivity.** With the slow and steady adoption of 5G infrastructure comes the promise of faster, more reliable, and complex connectivity. This will result in deeper inter-dependencies, richer data pools, and the ability to link vehicles, roads, and mobility assets (e.g. parking lots, charging stations, public transport hubs, etc.) in unique and yet-to-be-seen ways.
- **Transportation to address the energy planner's 'peak demand' issue.** The energy sector has yet to wake up to the exponential demand that will be required from the electrification of transportation. Still, future mobility offers numerous solutions to energy storage. Consider the potential for EV/AVs to act



Historically, the transportation industry has operated along largely linear value chains. This is all changing. Various sectors are converging, eager to seize revenue opportunities in a new mobility ecosystem. The results is a complex web of interconnected value chains.

as large batteries for renewable energy (aka. ‘distributed storage’). This energy is flexible; it can feed into the grid during the day to power electrified trains and take electricity from the grid at night to store unused wind power, addressing a decades-old problem for energy planners.

- **Smart cities will stabilize electricity systems.** Digitized infrastructure (e.g. EV/AVs, solar panels, and electrified/autonomous mass transit) is automated, open and programmable. This increases predictability and stabilization of energy demand. In Canada, our grid is well-placed to be flexible because of significant investment to date in smart meters and smart grids.
- **A data-rich network.** A digitized mobility network will result in massive amounts of data. The potential applications of this rich data for future mobility, as well as to other sectors, is unlimited.



Sectoral impacts of mobility

Having enjoyed years of strong, steady revenues and a good share of the value chain, mobility incumbents and perhaps even entire sectors may be completely eliminated, while opportunities for new services (and new entrants) will emerge. The impact is likely to be far-reaching:

- **Automotive:** Original equipment manufacturers (OEMs) are likely to splinter into either 'Metalsmiths', those that manufacture increasingly sophisticated vehicles but lose the end customer interface by selling into mobility service fleets; or 'Gridmasters', OEMs that continue to manufacture vehicles, but also provide platforms for a variety of customer (mobility) services.
- **Energy:** A decline in internal combustion engine (ICE) vehicle sales will dramatically reduce the demand for hydrocarbons. As such, fuel retailers will be required to adapt their business models to fit into the new EV value chain or risk holding stranded assets.
- **Government:** Fewer fuel sales will mean fewer tax revenues, thus requiring governments to seek alternative funding sources and/or consider supporting new technologies that could be exported for national gain. Job losses in sectors like commercial driving will also prompt action, as will the need to regulate new mobility players/sectors in a way that enables growth and innovation.

- **Financial services:** New business models, driver-less vehicles, MaaS options, and vehicle leasing alternatives will upend traditional financing and insurance approaches. Within the payments market itself, expect new mobility services (e.g., charge point payments and mobility services contracts) to give rise to new payment mechanisms.
- **Consumer:** How will passengers occupy their time in driver-less vehicles? The answer is up to retailers, entertainment, and other service providers who will have the opportunity to develop content for passengers to consume during their commute.
- **Infrastructure:** From EV charging stations to AV drop-off sections, and smart roads to in-car entertainment platforms, the future of mobility will call for more connected, intuitive, and data-driven mobility infrastructure. Moreover, the future of mobility will task transport authorities with managing not only the physical infrastructure but the data exchanges, integration, and maintenance of transport services. To that end, 'smart' traffic management may become increasingly important.
- **Telecommunications, media, and technology:** The future of mobility is nothing without the data to keep it safe, connected, and evolving. Herein, there are sizable opportunities for telco, media, and technology organizations to develop and maintain the platforms, tools, and communication infrastructure to keep Mobility 2030 on track.

Got a question?

Learn more about KPMG's vision for Mobility 2030 by visiting home.kpmg/ca/Mobility2030 or contact **Clark Savolaine** and **Chris Sainsbury**.

The big idea: The future of mobility is convergence. Seizing on these opportunities therein will require a higher degree of partnering than anything infrastructure investors have experienced in the past. They will need to consider the new business model interactions residential, commercial, and industrial consumers will require from their transit operators or power generators. They will also need to think about which investments made today will help prepare them for an unpredictable future. Now is the time to make peace with the risks brought on by these disruptions and recognize the tremendous opportunity of infrastructure convergence.

What is Mobility 2030? Mobility 2030 is our vision for the future of mobility. It is the convergence of new transportation technologies (e.g. electric and autonomous vehicles), 'smart' infrastructure, and on-demand transportation services. Mobility 2030 defines the new era of mobility that is reshaping roads and cities, driving massive societal changes, and inspiring cross-industry collaborations – all of which is giving rise to a multi-trillion dollar industry¹.

1. <https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/02/mobility-2030-transforming-the-mobility-landscape.pdf>

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