



A new era of resilience

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As we bring Canada's transport system into the 21st century, how do we ensure service resiliency in a system comprised of intelligent infrastructure, electrification, and broadband assets that are all co-dependent on one another?

How can owners, investors, and operators adjust their infrastructure strategies to manage these risks and support mutual outcomes?

First and foremost, we cannot take resiliency for granted. The convergence of automated vehicles (AVs), electrified infrastructure, connected devices, and new service models is central to the Mobility 2030 concept, and is creating a growing range of transport options for residents, businesses and communities. With that convergence, however, comes new technological and logistical risks (e.g. power outages, cyber incidents, weather, accidental third-party damage, etc.). And as social, technological, and environmental factors coalesce to shape the 'smart cities' of the future, we cannot take our assets, or their role in delivering reliable and effective mobility services, for granted.

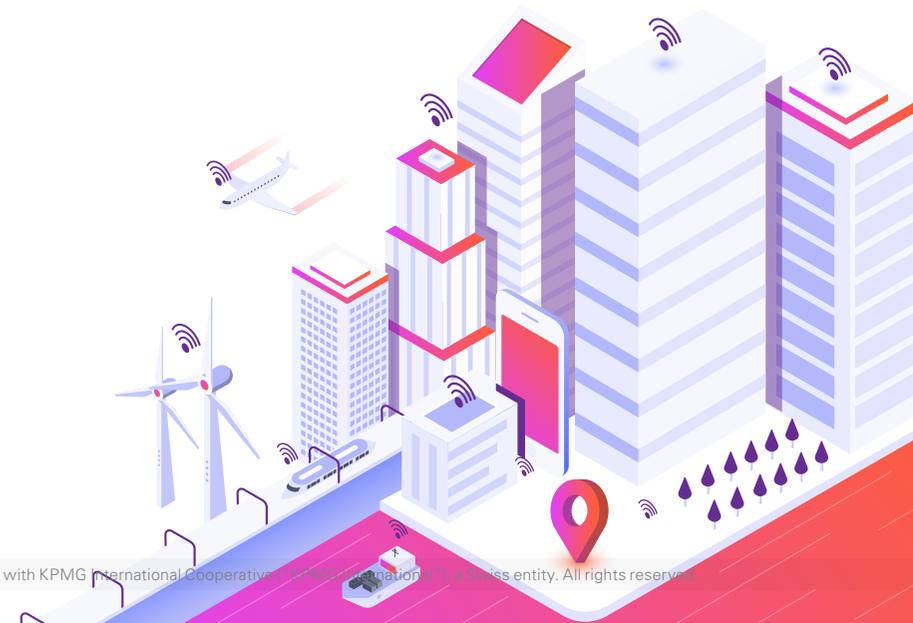
A number of recurring questions have emerged, including:

- **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?

One of the best ways to understand the importance of infrastructure is to sample life without it. The occasional infrastructure failures we have all experienced are a stark and sudden reminder that power, water, transportation, and the ability to communicate can be taken from us without notice. In some cases, the result may be more annoying than debilitating; but there is always the risk of an infrastructure failure leading to stunted economic growth, depressed productivity – or worse – the endangerment of human lives. The bottom line is that infrastructure resilience – the ability to operate under pressure and deliver required outcomes – is critical to our long-term success.

Managing the complexity of co-dependence

Within this interconnected vision are physical assets, digital platforms and networks that are susceptible to any number of threats, each with the potential to disrupt service if damaged or corrupted. Therefore, effective asset management is crucial to understanding and mitigating these threats and building resiliency in this increasingly connected mobility eco-system. This requires viewing mobility assets through a service delivery lens; that is, recognizing they are more than physical roads, data towers, and parking lots, but interconnected components that deliver ever-more sophisticated mobility services. Only when stakeholders understand how all parts work together to deliver required (and desired) outcomes, can they be effectively managed and protected.



Resilience for mobility

Maintaining a resilient mobility system goes beyond protecting individual assets from damage and degradation. It relies on having consumer alternatives in place to ensure cities and citizens keep moving when other options fail. Those alternatives could include:

- **Multi-modal MaaS aggregation:** The ability for customers to access and pay for multiple modes of transport (e.g. trains, buses, car rentals, bike sharing programs, etc.) from various providers through a single payment platform/app.
- **Car subscription services:** The ability for customers to engage in shorter and more flexible leasing contracts that enable full-time access to a vehicle but with the option to change models or 'pause' their usage as they see fit. These contracts help original equipment manufacturers (OEMs) maintain relationships with customers and compete with on-demand platforms.
- **On-demand mobility:** One-click, on-demand ride-hailing services such as Uber and Lyft, as well as car-sharing programs (e.g. BMW's DriveNow) and dynamic shuttle services (e.g. ViaVan) which combine elements of mass transit with dynamic routing.
- **Commercial vehicle innovation:** Peer-to-peer consignment sharing and logistics platforms, as well as partnerships/innovations that facilitate last-mile deliveries (e.g. autonomous delivery pods, drones, automated vehicles, etc.).

New ways of working

Understanding how assets and innovation are converging to deliver on the promises of Mobility 2030 is essential. To that end, a growing toolbox of infrastructure technologies and operating models are helping owners, builders and operators work together to better optimize design, maintain asset performance, understand and manage risk, and sustain effective operation. Combining insights, they are creating synergies, sharing knowledge, and uncovering ways to better understand and manage asset-service interdependencies to deliver required outcomes.

This shared view of service is fundamental to designing assets and introducing strategies to support resilience in service delivery. Even still, developing and managing these shared solutions will require mechanisms to facilitate collaboration and enhance the sharing of knowledge and analysis of information. After all, failure to unite Mobility 2030 stakeholders towards effective solutions will only make the system more vulnerable to underperformance or chronic system failures, and the inability to respond to emerging risks will result in disruption for end users. Left unresolved, these issues will drive up costs for asset owners which will be passed to customers, ultimately impacting the brand, regulatory standing of service providers and, more importantly, the satisfaction and trust of customers that rely on these critical services.

Ready to respond

Collaboration is critical to ensuring resilience in Mobility 2030. So too, however, is an ongoing investment in the maintenance and refurbishment of assets, as well as the creation of resilient strategies to ensure appropriate measures and mitigations are in place to adapt and respond to potential threats. For example, those measures could include having standby teams at the ready to respond to failures and execute repairs when needed or maintaining warehouses with spare equipment and manpower in logistically strategic locations. All of this planning requires investment and resources which drives costs for end users, yet at the same time, it creates opportunities for those who can provide successful resilience measures.

Got a question?

Learn more about KPMG's vision for Mobility 2030 by visiting home.kpmg/ca/Mobility2030 or contact **Ross Homeniuk** and **Natalie Lye**.

The big idea: Mobility 2030 may focus on the merger of technologies, systems, and modes of transportation; but the resilience of those individual parts must remain at the fore to ensure the continuous delivery of service to meet the needs and expectations of users. Securing that resilience relies on stronger collaboration between infrastructure stakeholders, robust maintenance programs, and investments to ensure the security, stability, and reliability of each asset in this emerging space.

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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