

## 7 Ways to Future-Proof Your City for Autonomous Vehicles

November 14, 2019  
1:30 – 2:30 Pacific Time  
(10:30 Eastern)

Audience: urban/suburban/transit planners  
and private sector mobility innovators  
as public-private collaborators

Presenter: Bern Grush, Toronto

Course Preview


"Planning for Autonomous Vehicles"

Dec 5-6, 2019  
Surrey, BC

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CONTEXT

The trajectory of autonomous vehicle growth is **complex and unpredictable** as it faces **hurdles beyond technology and cost**.

AV adoption across the globe will be **slow and fragmented** based on these hurdles.

Forsgren, Kurt (2018) "The Road Ahead for Autonomous Vehicles." S&P Global Rating  
Managing Director - Infrastructure Sector Lead, U.S. Public Finance

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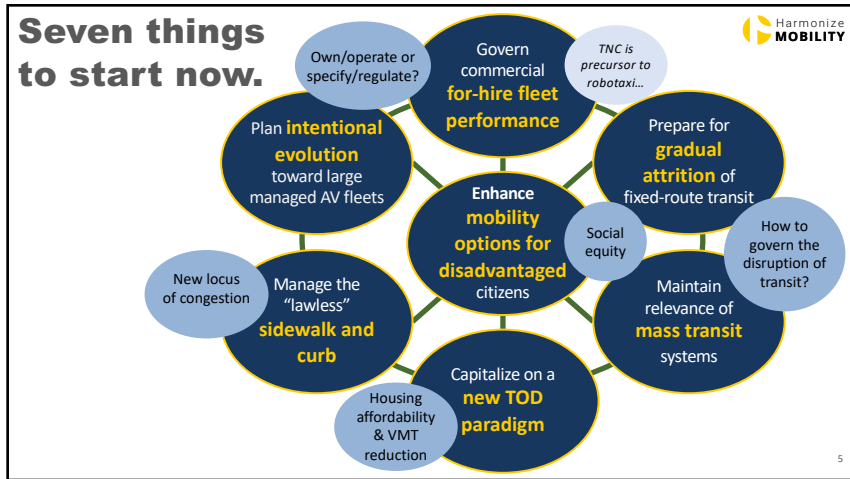
OPPORTUNITY

It is important to recognize that **uncertainty** can be turned into **opportunity**.

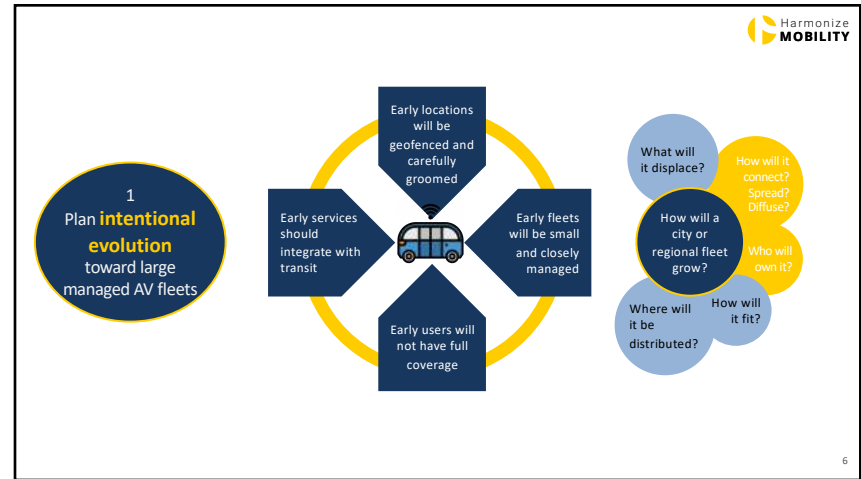
It is plausible to develop a **vision-led approach** to shaping the future rather than a 'predict and provide' approach.

Mott MacDonald, (2019) "Cutting through the Hype" The Future of Transportation, Executive Briefing  
authors of report "Planning for connected autonomous vehicles"

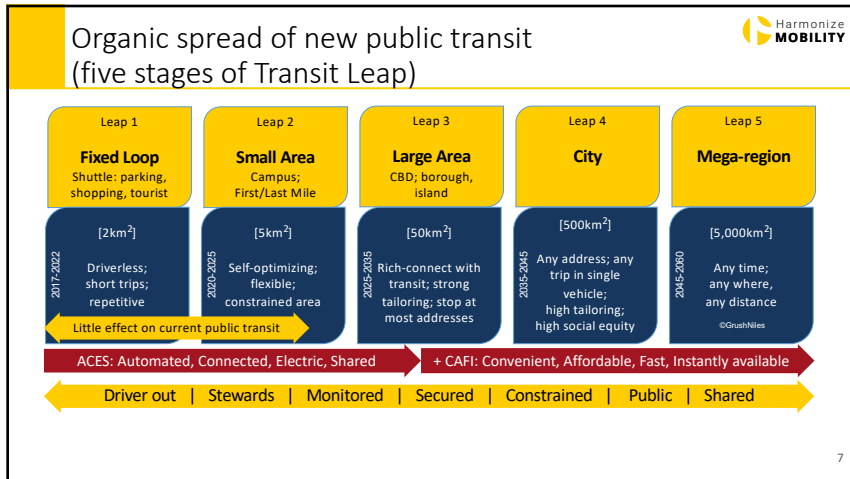
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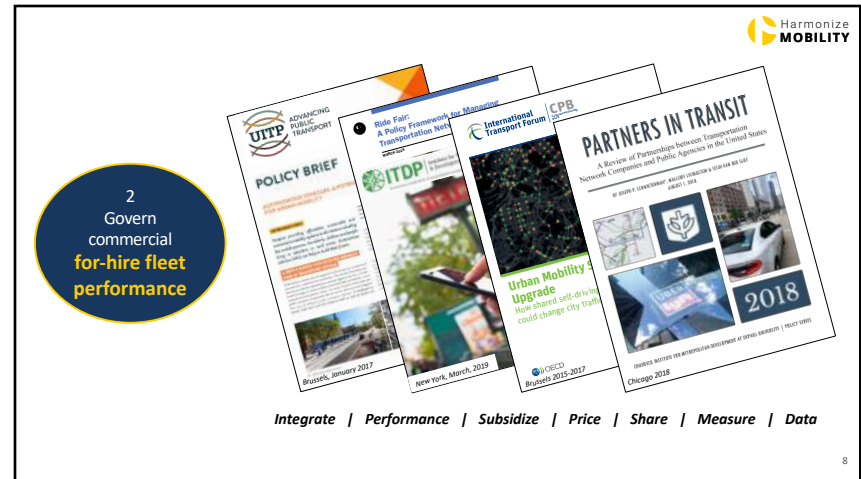
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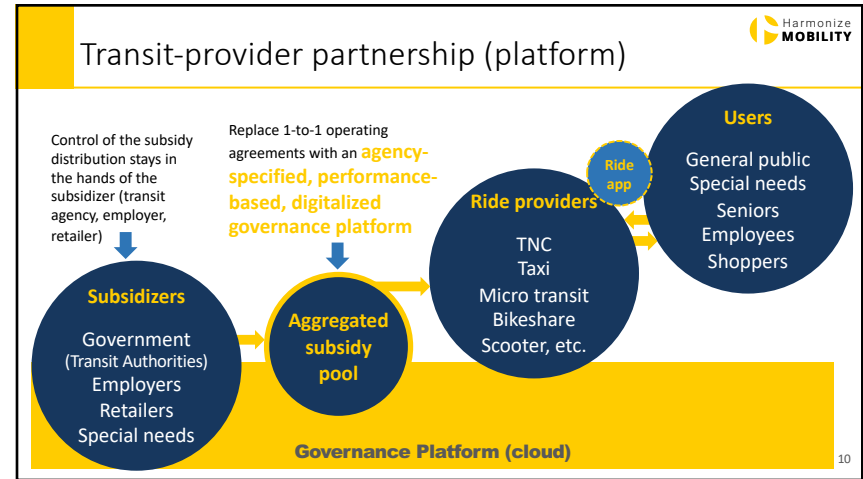
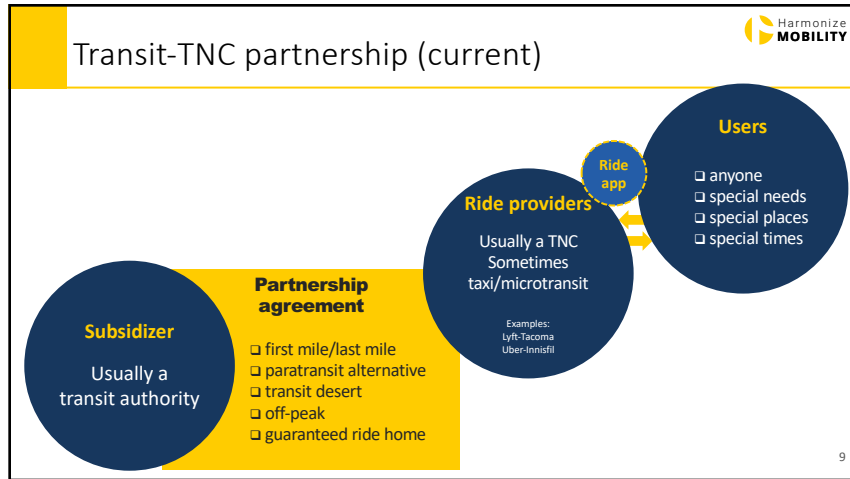
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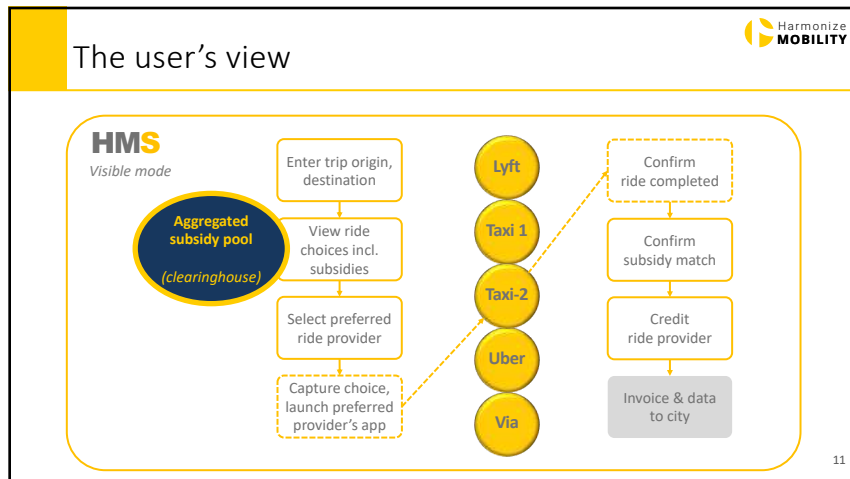


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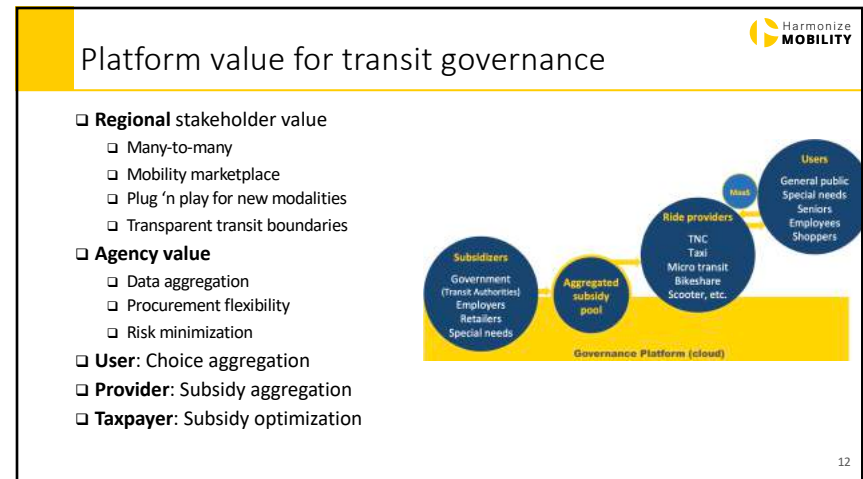


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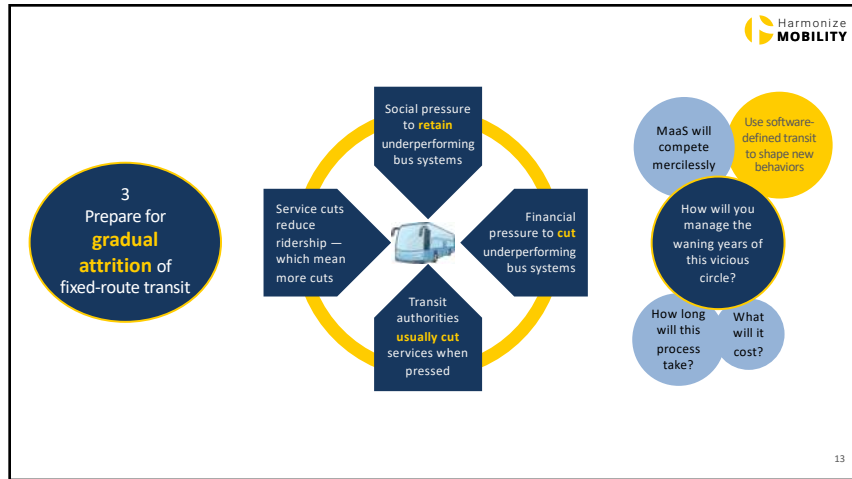
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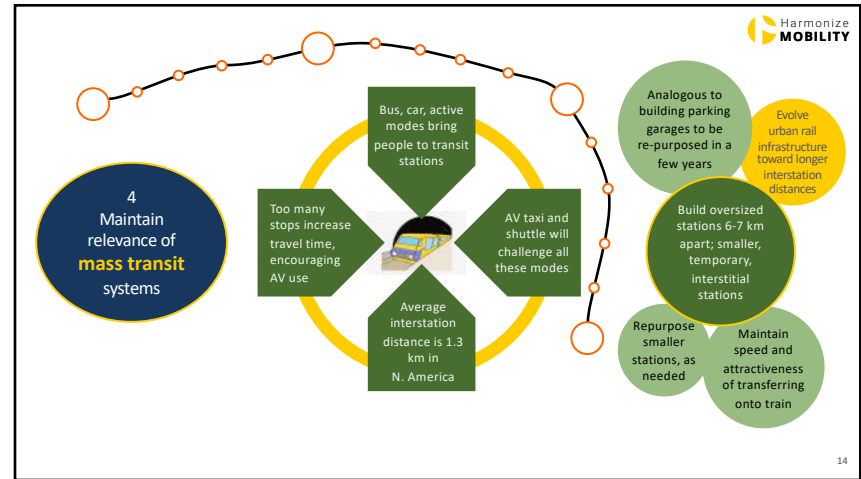
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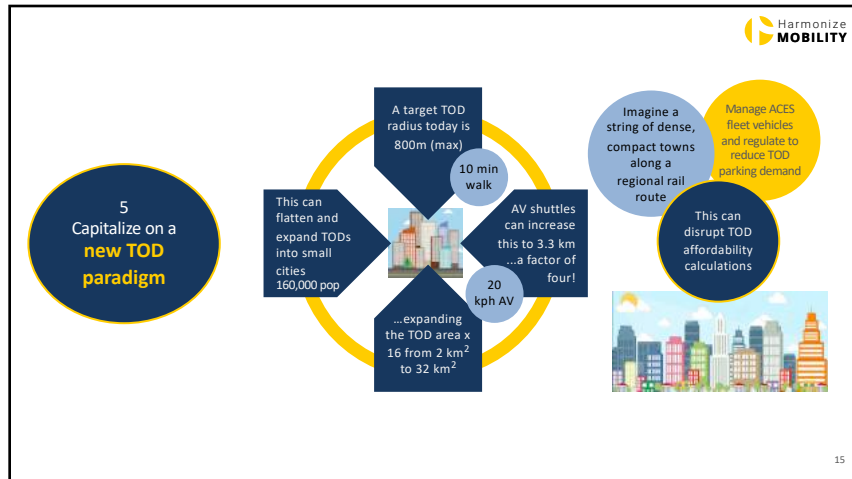
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**Drivers of change for sidewalk and curb...**

Growing users

Growing conflict

Growing variety of uses

Growing variety of devices

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**New issues coming...**

New delivery methods

Approaching automation

Loss of parking revenue

Approaching automation

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**The most pressing and immediate issues are already here...**

Loading people

Loading goods

- A natural and long-standing problem that is worsening
- Mixed full- and semi-automation could worsen still

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**Drone endangers wheelchair user (Oct 2019)**

Emily Ackerman


Starship delivery drone

<https://www.wtae.com/article/food-delivery-robot-causes-operations-after-monday-incident/29554279>  
<https://www.evoitech.com/products/Access-Concerns-Take-Robots-Off-Oakland-Pa-Sidewalks.html>

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**Sidewalk and Curb Behaviour for Automated Vehicles: Arriving, Stopping, Parking, Waiting, and Loading**  
(ISO "new work initiative")

- Changing requirement
  - Automation
  - Precision
  - Variety
  - Demand increase
  - Lower human attention to task
  - Higher or lower conflict ratios?

**Level 0** — No structured consideration for access, parking, stopping, (un)loading

**Level 1** — access/park/stop/(un)load is managed • ADA (or equivalent) compliant

**Level 2** — Assisted, partial and monitored automation • Mostly manual

**Level 3** — Conditional, mixed and monitored automation • Assisted operation


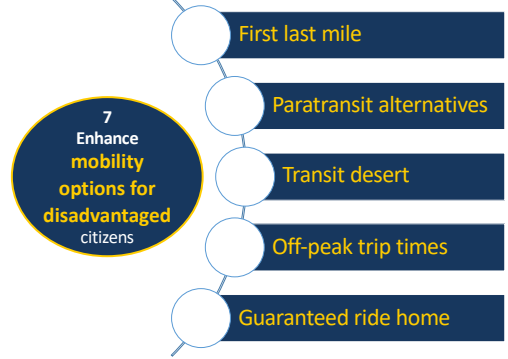
**Level 4** — Highly automated/assisted operation • Guarded manual

**Level 5** — Fully automated • No manual vehicle or mobility device

*Early stage: Proposed only*

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**7 Enhance mobility options for disadvantaged citizens**

- First last mile
- Paratransit alternatives
- Transit desert
- Off-peak trip times
- Guaranteed ride home


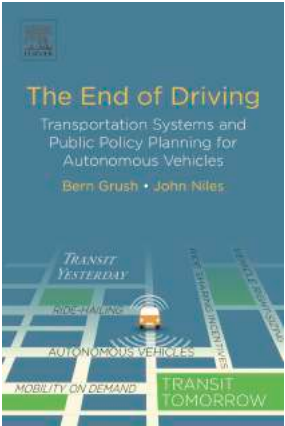
**Mobility Justice**

- Employment justice
- Environmental justice
- Social Justice
- Urban Justice

**Universal Basic Mobility**

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**Planning for Autonomous Vehicles**

December 5, 2019 8:00-3:30  
December 6, 2019 8:00-2:00

Surrey, BC  
<https://tinyurl.com/Surrey-AV-course>


In collaboration with TransLink

Audience: urban/suburban/transit planners and private sector mobility innovators as public-private collaborators

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Surrey, BC Course modules: Dec 5-6, 2019

**Contexts**

- Two Markets
- Multiple Transitions
- Conflicting Narratives
- Contexts of Change
- Digitalization and New Mobility

**Challenges**

- Diffusion
- Barriers
- Mobility Justice
- Infrastructure Risk
- 50% City

**Opportunities**

- Land Use (including TOD)
- Autonomous Transit Fleets
- Software-Defined Transit
- Behavioural Economics
- What About Mass Transit?
- One City's Way Forward

Context | Diffusion | Deployment | Tools

<https://tinyurl.com/Surrey-AV-course>

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