

CANADATA EAST CONFERENCE
SEPTEMBER 21, 2017



BERN GRUSH
AUTONOMOUS FLEET STRATEGIST
AT GRUSHNILES STRATEGIC

The Challenges for Construction in a
World of Unprecedented Technological
Change
9:30 a.m.

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Uncertainty

Two ways out

Tip

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Conflicting predictions

Unknown interactions

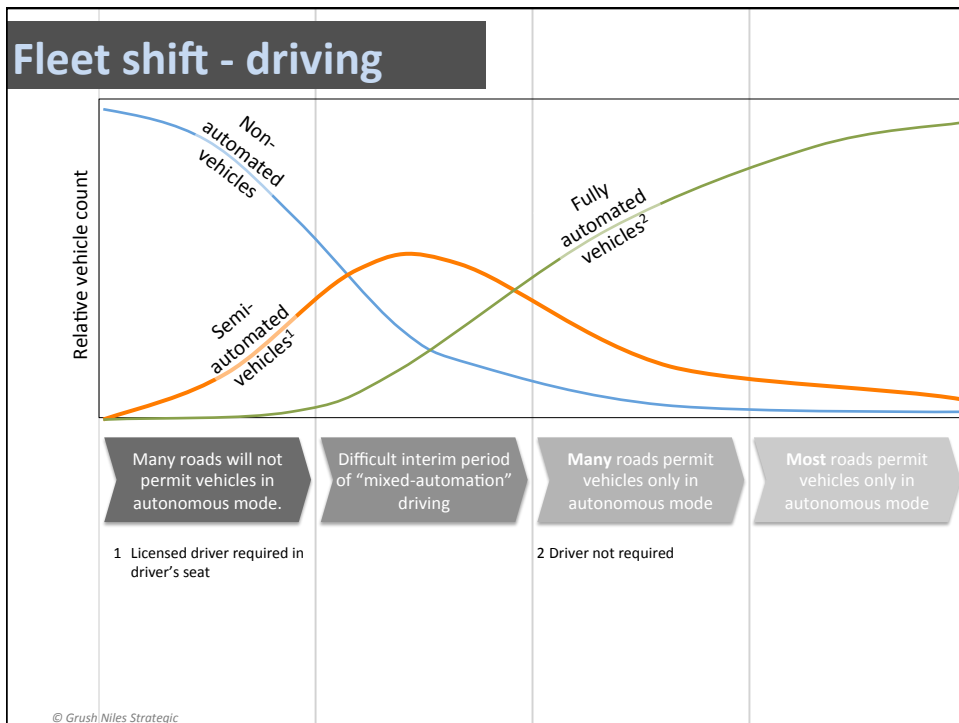
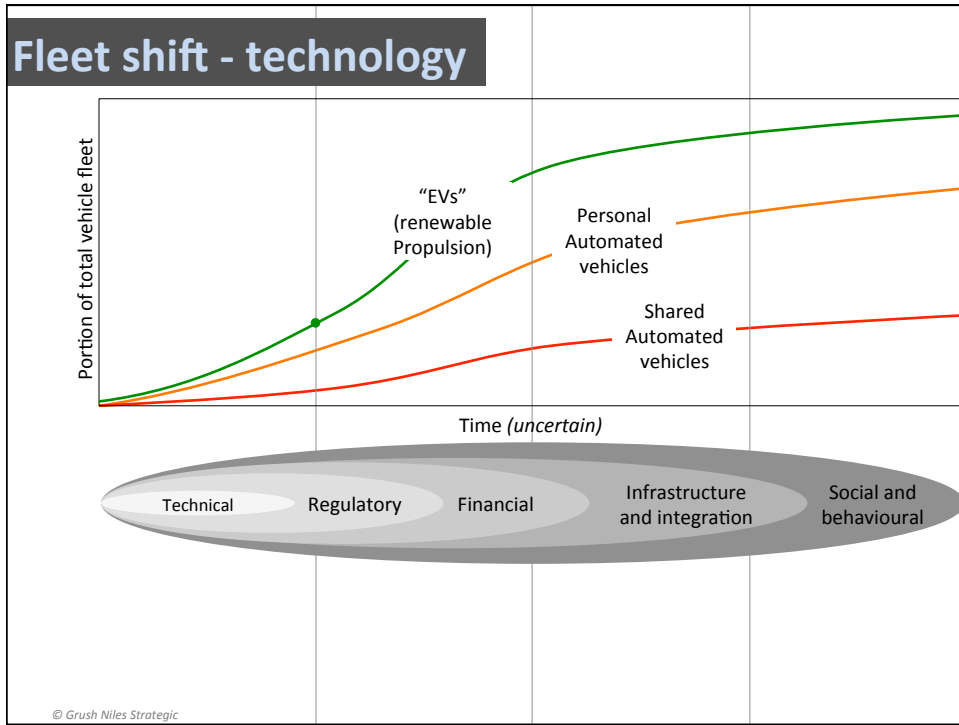
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Very probable	Safer than humans	More travel without ownership (MaaS)	Higher mobility disabled seniors	Higher mobility youth unlicensed	
Probable <small>Smolnicki, P., 2017 Gdańsk</small>	Novelty will be biggest barrier to municipal change	Public- private participation to induce MaaS	Pick-up and drop-off instead of parking	Shuttles share bus & bike lanes	Peds prohibited from disrupting driverless shuttles
	Efficiency induces traffic (more VKT)	Housing costs drop (less parking)	Housing density within 2km of transit increases	Cities will invest in shared microtransit	AV owners circle cars rather than pay for parking
	Mixed-traffic will increase congestion	Low income moves out of core	Developers use fleets to reduce construction costs	AV use near transit lines regulated	Public- private participation for first/last mile
	Cities will sprawl	Obesity will increase	Narrower lanes	Empty cars will be regulated	VKT fees will be charged
Likely / Possible	Most cities will ignore AVs in planning over next 5-15 years	Congestion will increase (zombie cars)	Mostly shared taxi/shuttle (MaaS)	Occupancy will decrease > 1.1	City core gentrifies AVs on separate lanes
Toss up	Large scale infrastructure investments will shrink		Big malls threaten small retail by offering free rides	First/last mile will be free	
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Uncertain timing

Diffusion Eras

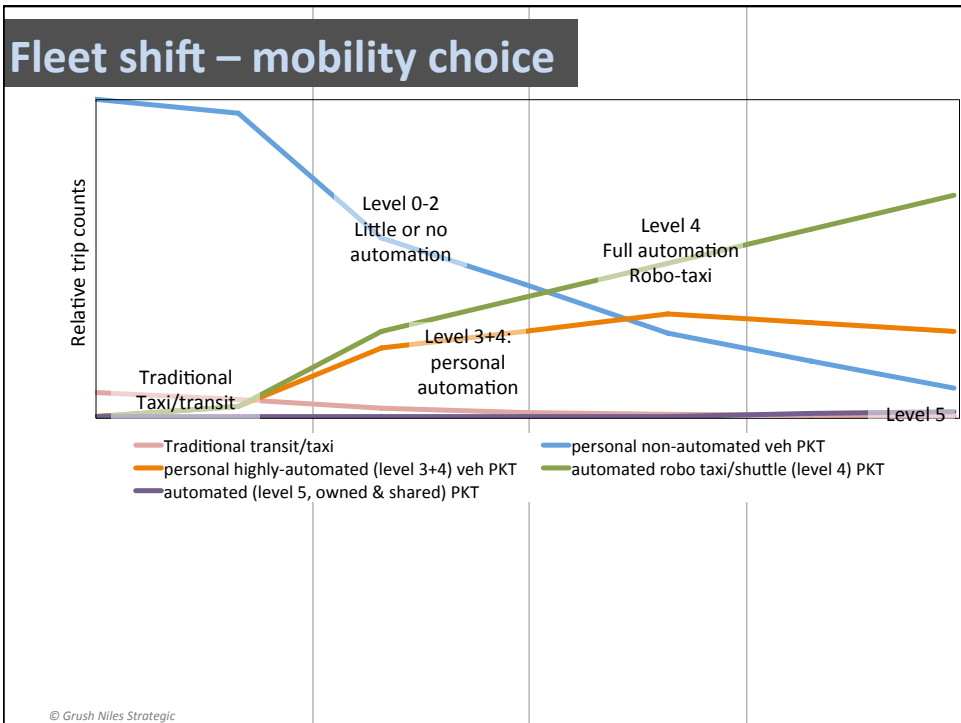
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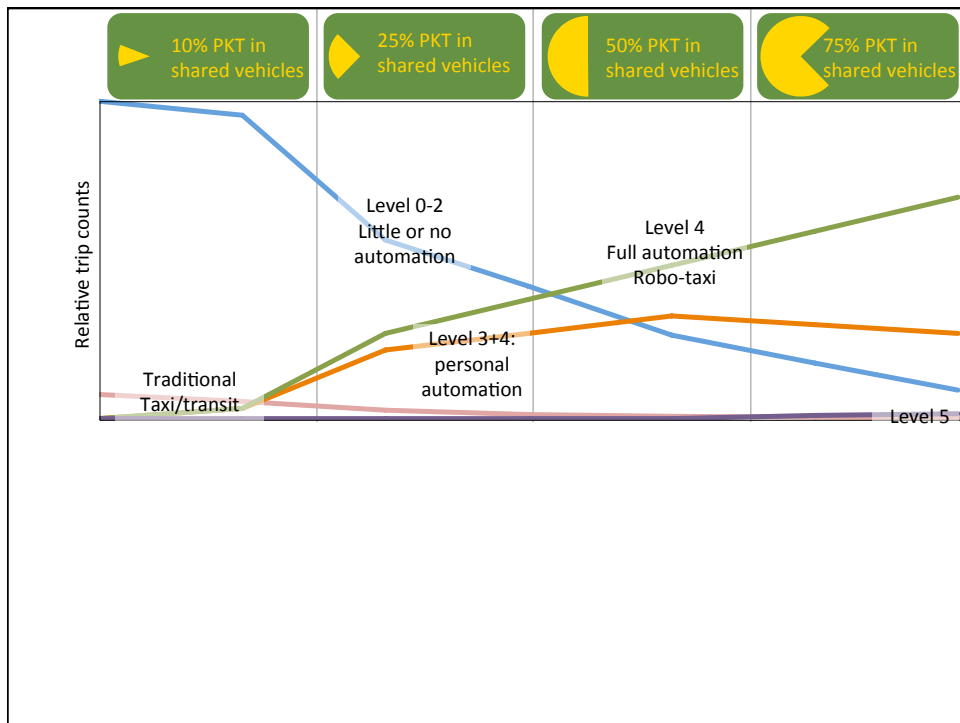
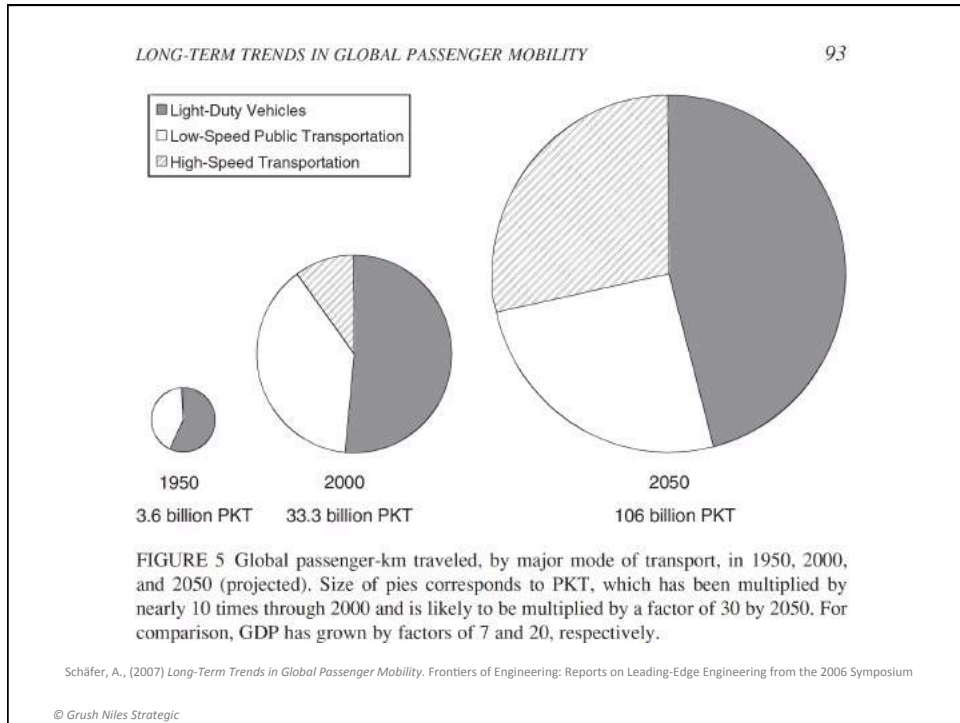


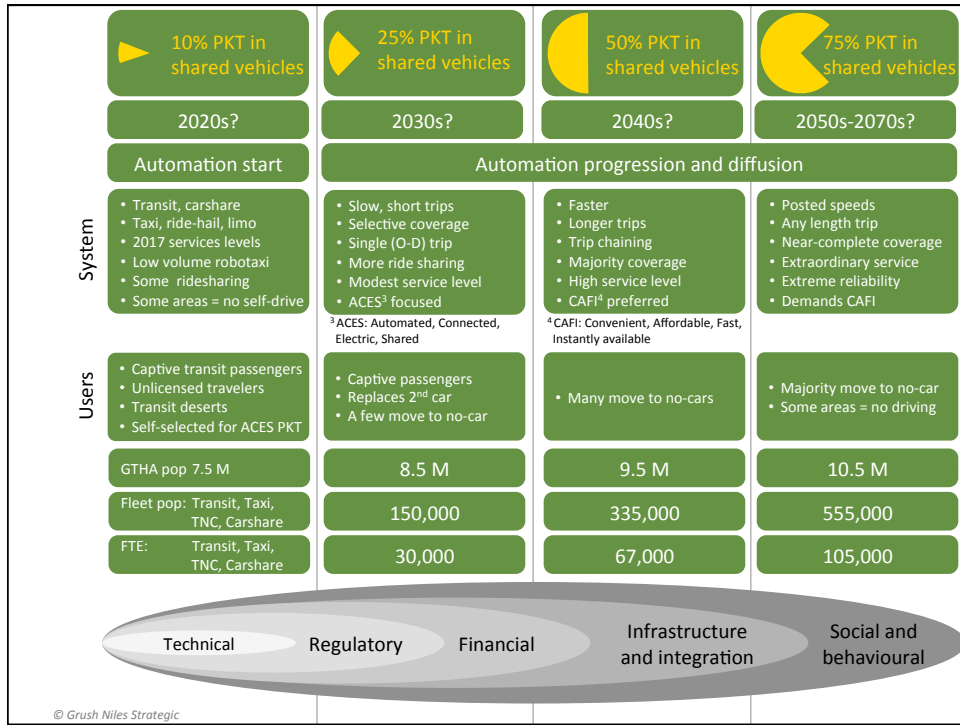
Vehicle sales and trip taking

How much will change?

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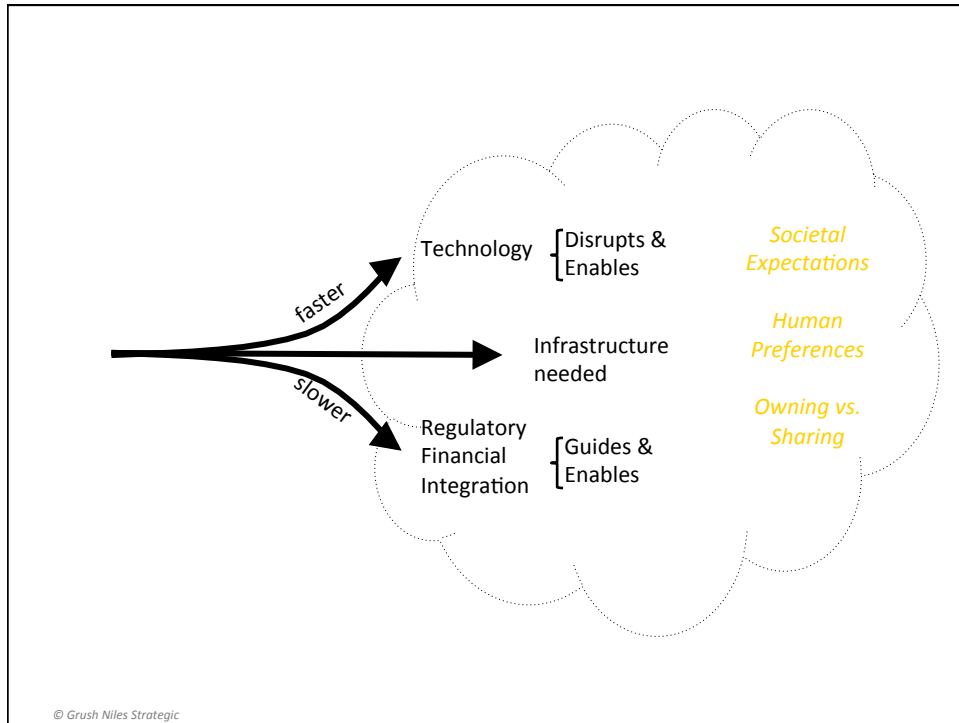






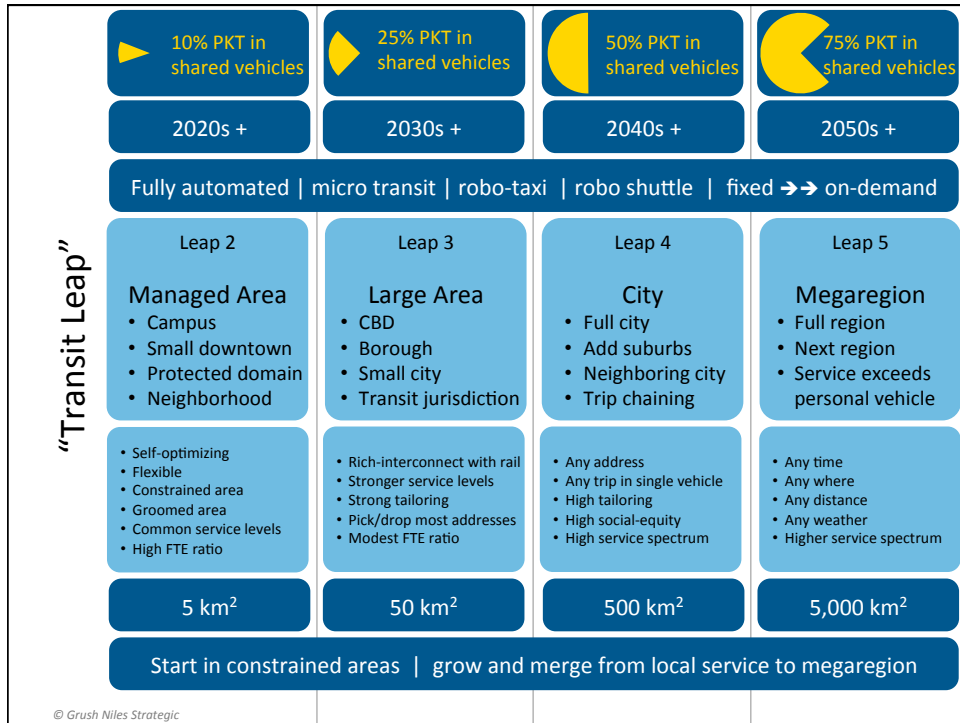
Why so hard?

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A hardware solution
Acquire and operate

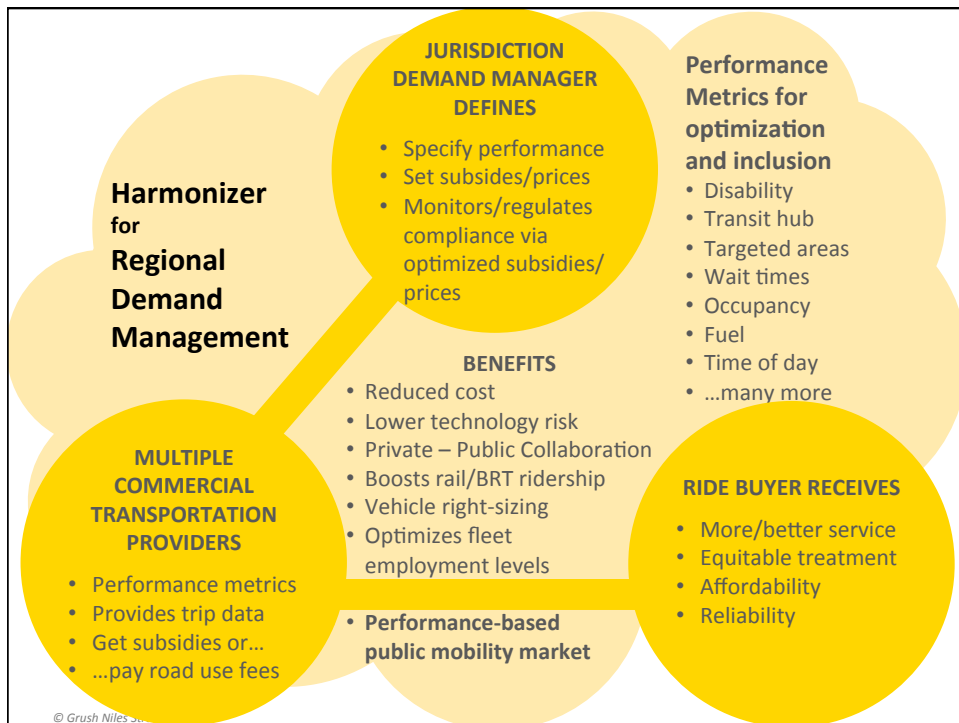
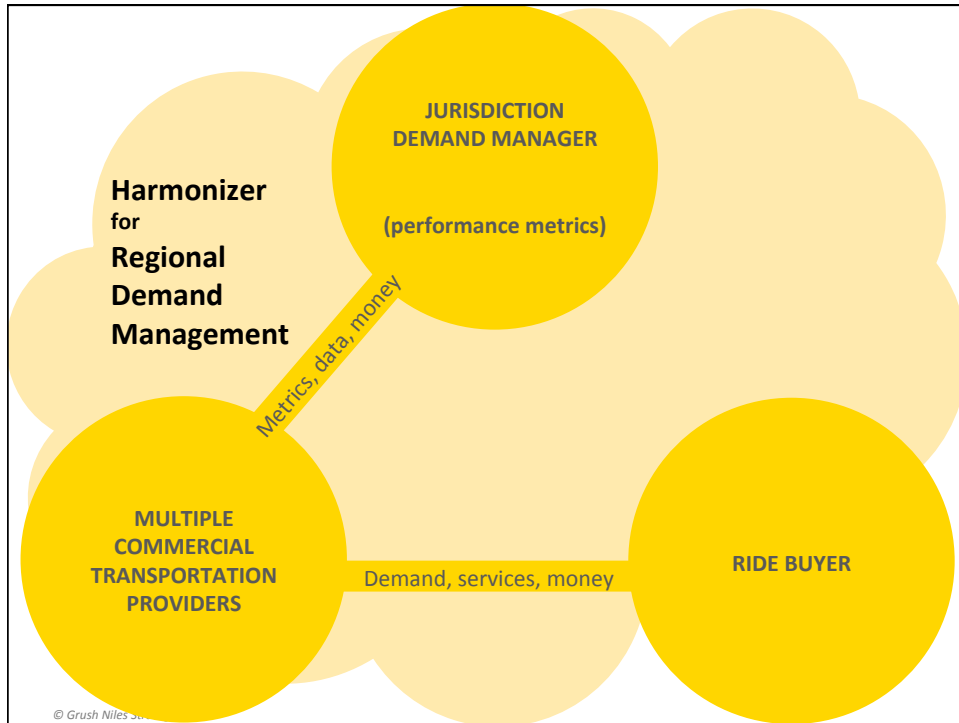
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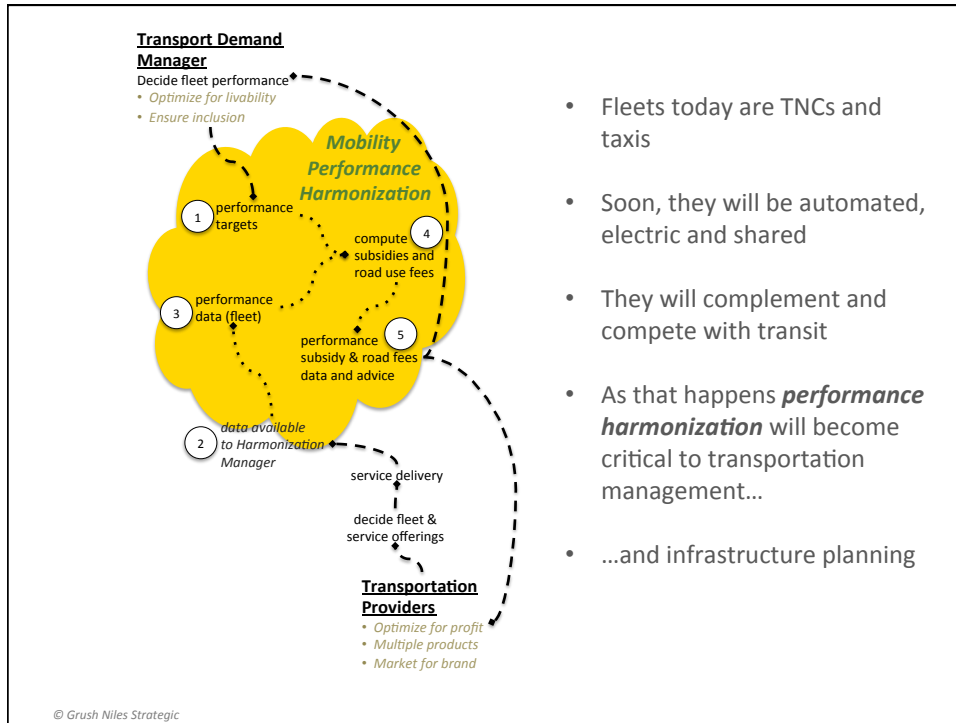


A software solution

Specify and regulate

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- Fleets today are TNCs and taxis
- Soon, they will be automated, electric and shared
- They will complement and compete with transit
- As that happens **performance harmonization** will become critical to transportation management...
- ...and infrastructure planning

The investment tip...

With a new definition of transit...

...transit oriented development will expand and flatten.

New best practices for TOD will change land values.

- radius grows x 4 from 0.8 to 3.16 km
- area expands x 16 from 2.01 to 31.37 km²

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<p>Current TOD 600m radius Human walks 5km/hr $600/5000 * 60 =$ 7.2 mins</p> <p>Area = $.6*.6*3.14 = 1.13$</p> <p>Shuttle 25km/hr (average) 2 min wait (lost) 5.2 mins @ 25km/hr $5.2/60 * 25 = 2.16$ km radius</p> <p>Area= 14.66</p> <p>$14.66/1.13 = 12.97$</p>	<p>Current TOD 800m radius Human walks 5km/hr $600/5000 * 60 =$ 9.6 mins</p> <p>Area = 2.01</p> <p>Shuttle 25km/hr 2 min wait (lost) 7.6 mins @ 25km/hr $7.6/60*25 = 3.16$ km radius</p> <p>Area = 31.37</p> <p>$31.37/2.01 = 15.6$</p>
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