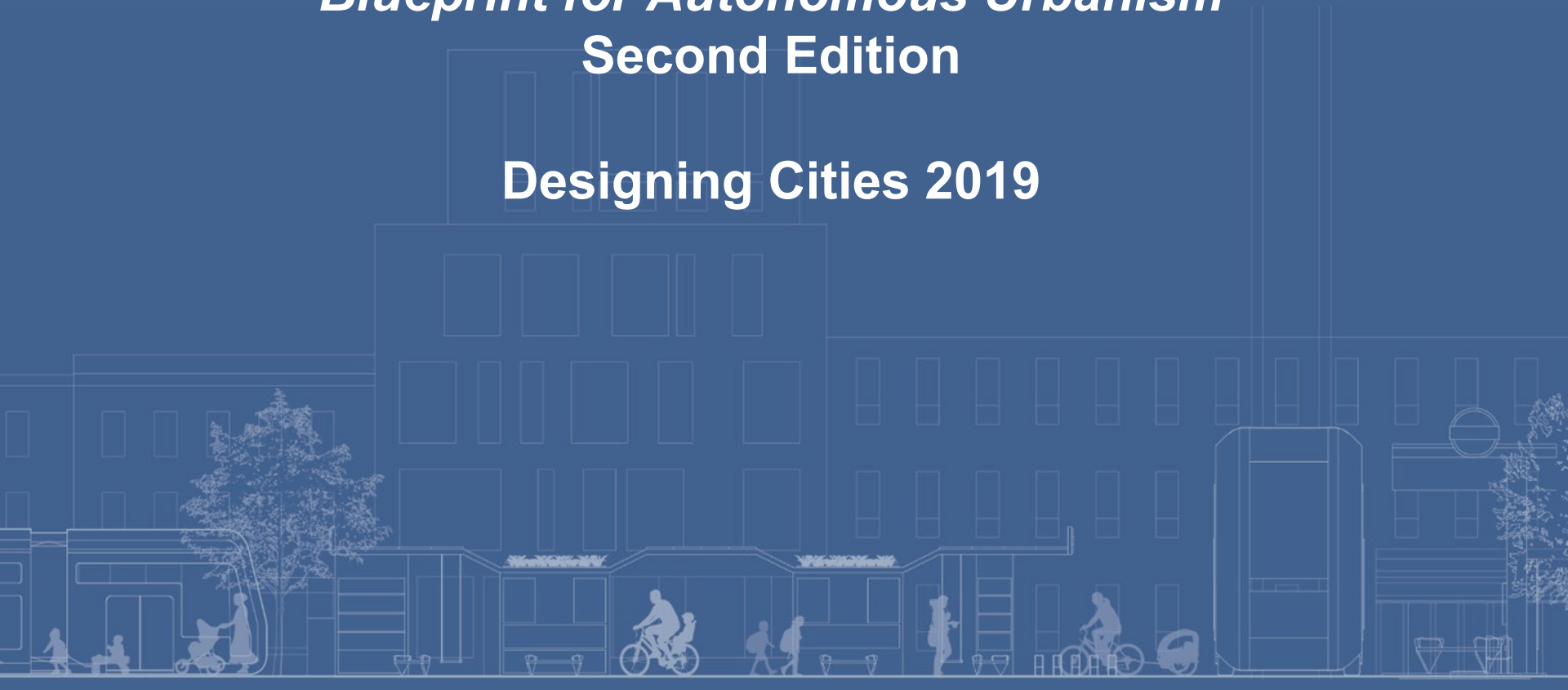
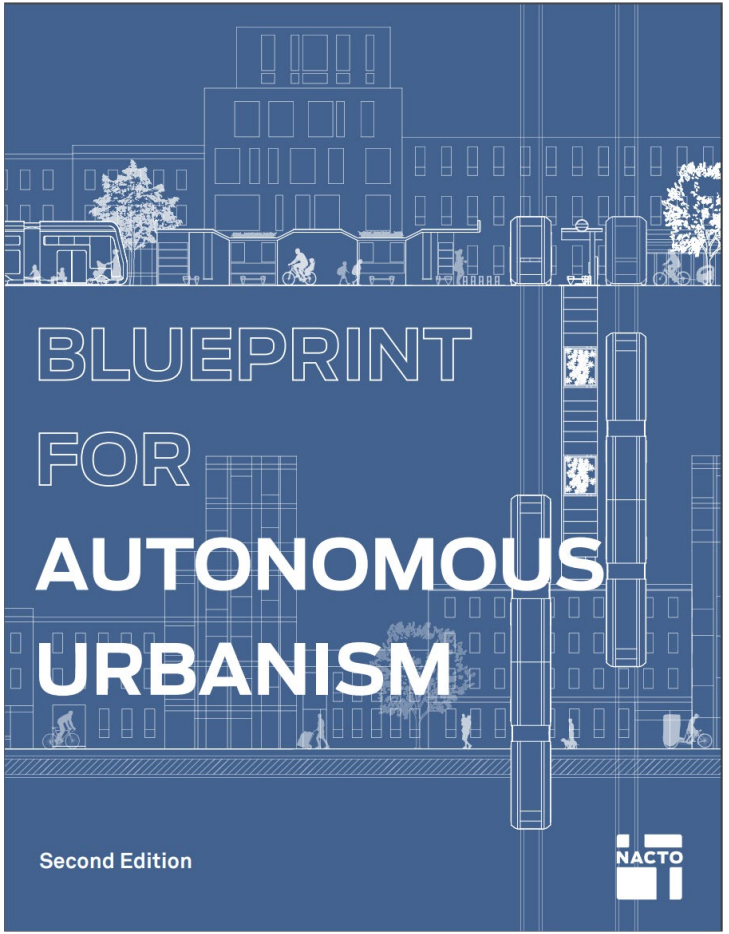
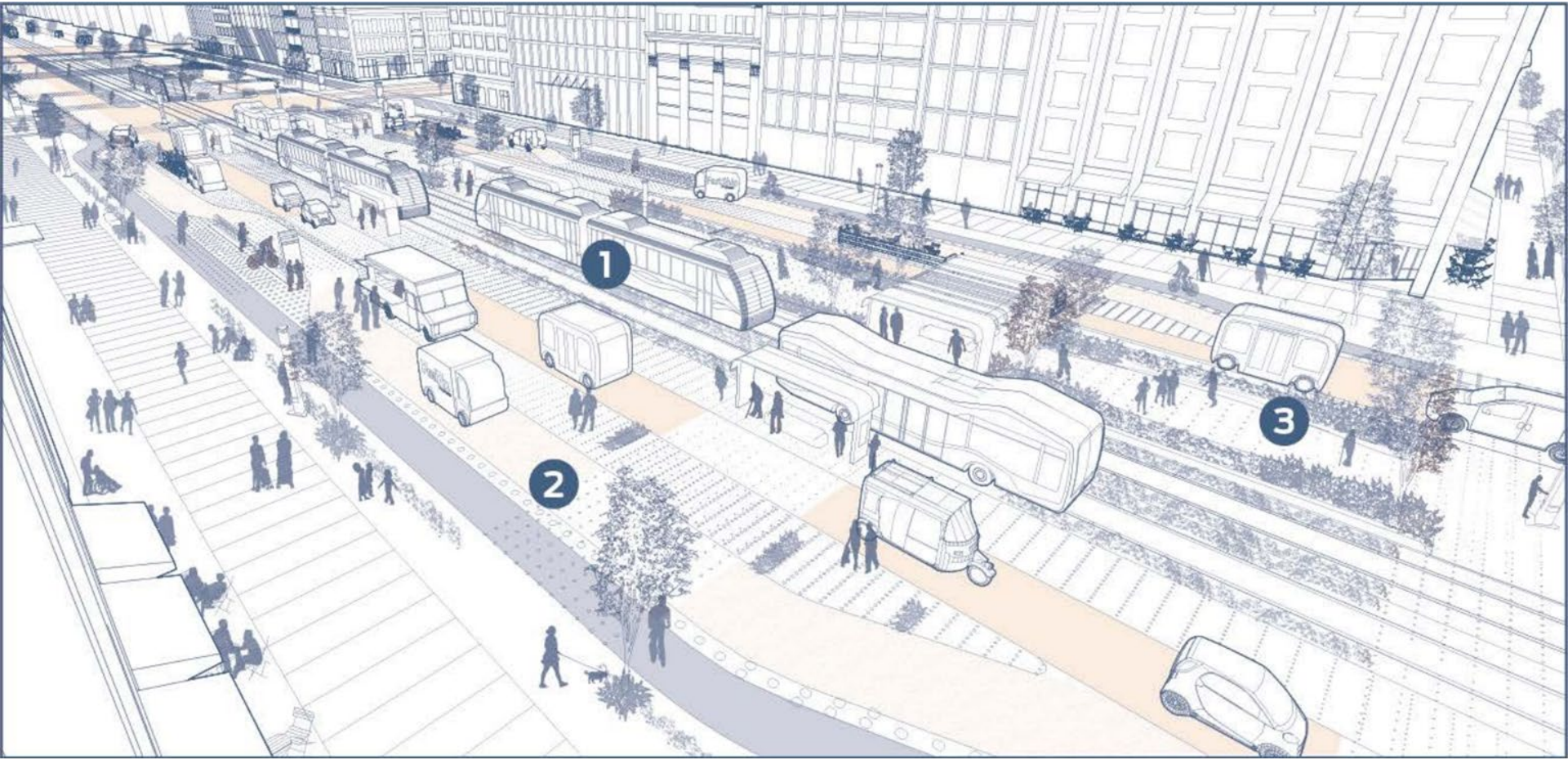
Blueprint for Autonomous Urbanism
Second Edition

Designing Cities 2019



Introducing...

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WHEELS

How Jaywalking Could Jam Up the Era of Self-Driving Cars

Actions for Cities Today

Section 1:
Shaping the Autonomous Future Today

Police & Fire

First responders must consider how automat vehicles may impact operations. Agencies mu inform themselves on how automation might risks of terrorism or cyberattack, and coordin with other agencies to reduce risks and take advantage of opportunities posed by autonon vehicles.

Potential action items:

- **Engage with transportation and technology experts** to develop understanding of AV technologies, exp the implications of converting fleets t and train first responders on AV techn
- **Coordinate with transportation and p works departments to use street de enforce slower vehicle speeds** and in pedestrian/bike/transit-only space in downtown areas to reduce risk and le of autonomous vehicle-as-weapon at
- **Develop in-house expertise on cybersecurity threats** that could ram access vehicle data and controls.

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Actions for City Council and the Departments (continued...)

Sustainability, Energy, and Environment

Sustainability offices and related agencies should begin planning and implementing charging infrastructure for municipal fleet vehicles. They can also work with Transit Authorities, City Planning, and Revenue Services departments to determine Electric Vehicle Supply Equipment (EVSE) siting strategies and adoption plans.

Potential action items:

- **Develop strategies for allowing companies to site EVSE infrastructure**, considering potential impacts on the energy grid.
- **Quantify the positive and negative environmental impacts of AVs,** considering the development of regional transportation and energy models.

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Section 1:
Shaping the Autonomous Future Today

Information Technology

Information technology departments must prepare for the enormous datasets that AVs will generate. They should determine what data city agencies will need, and what capacities the city as a whole needs to develop to store, analyze, and protect this information. Data management policies should be updated holistically and routinely to adapt to new data needs and threats. Initially, they will need to work closely with the taxi commission to determine how best to acquire data from ride-hail companies.

Potential action items:

- **Define journey data as "personally identifiable information"** and ensure that existing policies around data management are appropriate and up-to-date.
- **Determine current data storage requirements** and capabilities to inform an understanding of future needs.
- **Explore cybersecurity concerns and privacy protocols** with sister agencies.
- **Prioritize open formats** and tools in all development and procurement in order to ensure that cities can take advantage of the best technologies without getting locked into proprietary tools.
- **Support DOTs in the development of digital systems** to manage assets, enable regulation, monitoring, management, and planning.

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Actions for City Council a the Departments (continued...)

Parking Authority

Parking and transportation managers should work with the Transportation and Planning departments to create a comprehensive parking strategy for the city, including a plan to gradually remove metered parking, obtain real-time information about on-street parking demand, and assess different future uses for city-owned parking garages.

Potential action items:

- **Plan to shift from on-street vehicle storage** by developing plans that consider the reuse and reallocation of space devoted to curbside and municipal parking.
- **Future-proof for reduced parking demand** by creating redevelopment strategies for existing city-owned garages and other developments with required off-street parking.
- **Explore opportunities for sensor technologies** to better understand on-street parking demand in real-time.

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Section 1:
Shaping the Autonomous Future Today

Transit Authority

Transit authorities should focus on network redesign, improved communications, and emerging operations tools to increase transit ridership. They should explore electrification options and test new technologies that can enhance service reliability and convenience.

Potential action items:

- **Coordinate with transportation and public works departments to better designate road space for buses**, increasing the reliability and convenience of service and rebuilding a constituency for transit.
- **Explore existing and emerging technologies that improve transit service reliability** such as real-time information, off-board fare payment, transit-signal priority, and electrification.
- **Redesign bus-networks** to prioritize efficiency and reliability and eliminate transfer fees to encourage ridership.
- **Develop and support digital systems** to better enable regulation, monitoring, management, and planning of transit services.
- **Establish working group or taskforce that includes labor** and employee representatives to assist in the development of workforce training programs and address concerns and training needs of operations, maintenance, and customer relations staff.

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Blueprint for Autonomous Urbanism
Second Edition

Actions for City Council and the Departments

A wide array of city departments and government stakeholders play key roles in guiding and shaping AV policy and regulating AV technologies. Cities can accrue the full benefits of AV technology through thoughtful policy coordination and strong communication between these departments and stakeholders. Early action can help cities set the stage today for a successful, sustainable, human-focused autonomous future.

Mayor, City Manager, and City Council

Local political leaders must assess existing and potential technologies by considering how they can support city needs and goals. In budgets and policy, political leaders should focus on the rapid redesign of city streets to prioritize high-efficiency modes like transit, biking, and walking. To ensure positive outcomes, they should engage now with elected officials at the state and federal level to ensure that urban interests are represented.

Potential action items:

- **Direct transportation and public works departments to build people-focused infrastructure** that can increase transit reliability and convenience, and address safety issues today.
- **Lobby to shift control over local speed limits to local governments** and authorize the use of active speed-reduction tools, like speed cameras, that are proven to increase safety outcomes.
- **Establish an interagency working group,** including labor representatives, on shared, connected, electric, and automated mobility to map out action plans for all city agencies to increase safety and plan for adoption of shared, electric vehicles in both the near and autonomous, futures.
- **Explore and pursue pricing strategies** to reduce VMT and congestion and better manage curbside demand.

Transportation & Public Works Departments

Transportation departments should focus on redesigning streets to support high-efficiency modes like buses, biking, and walking; revising on-street parking requirements to better manage curb-space usage, and enhancing pedestrian space.

Potential action items:

- **Take advantage of quick-build tools** to rapidly increase the quality and quantity of transit facilities, protected bike lanes, and pedestrian spaces.
- **Create a detailed asset map of curbs and curb-side regulations** including loading zones and parking areas for regulatory, maintenance, and management purposes.
- **Coordinate with Transit Authorities to enhance bus operations** through transit only lanes, transit signal priority, and improved bike/walk connections to transit stops.
- **Explore curb pricing for commercial and passenger vehicles** to improve safety and efficiency and manage congestion.

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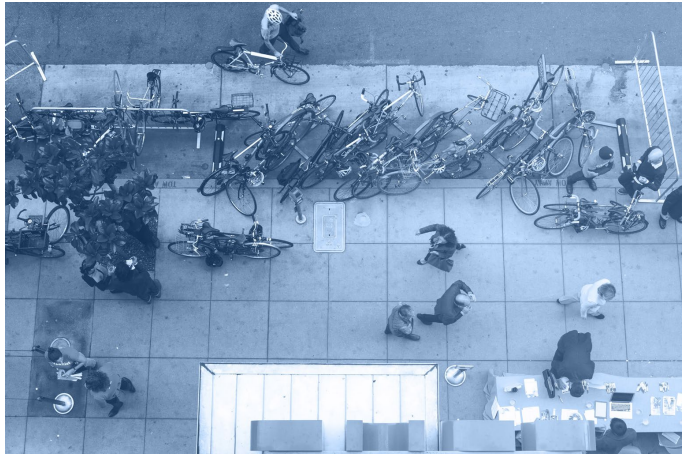
Transit

Urban Freight

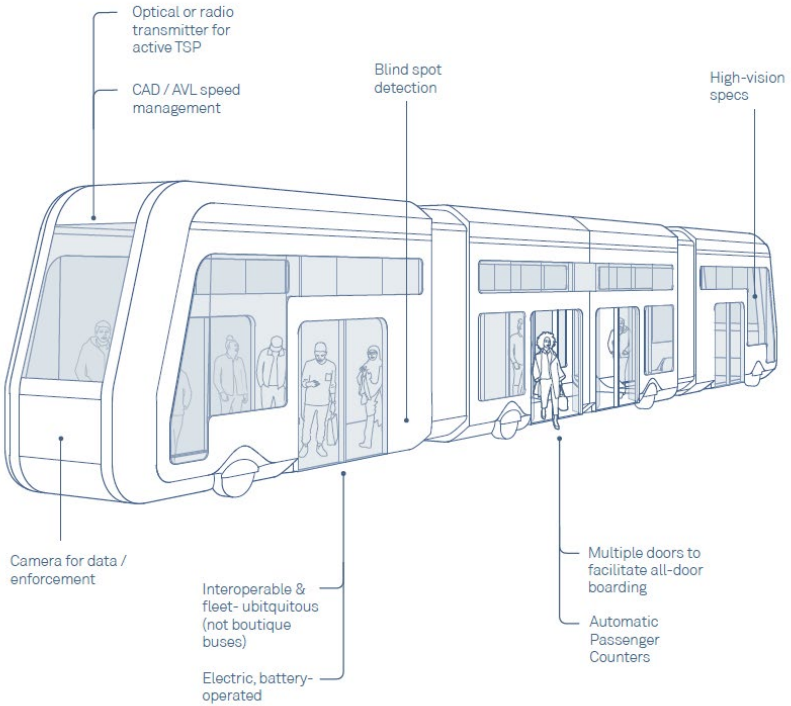
Data



Pricing

The Bus of Tomorrow

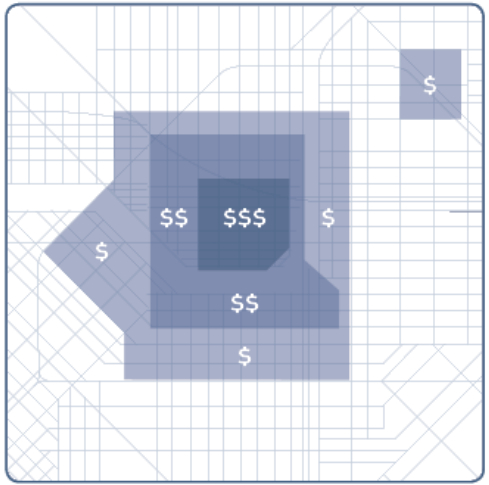
Technology offers huge opportunities to re-invent the bus, the workhorse of transit in North America. Even before autonomous transit vehicles appear on the market, cities and transit agencies can realize many of the promised safety, efficiency, and customer experience benefits by upgrading buses and station infrastructure. These decisions can help to bridge the gap between current service and fully integrated Mobility As A Service frameworks.



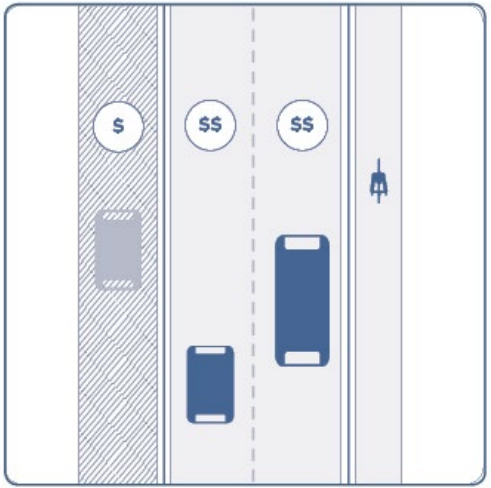
Focus technology on enhancing transit

TRANS LINK
306

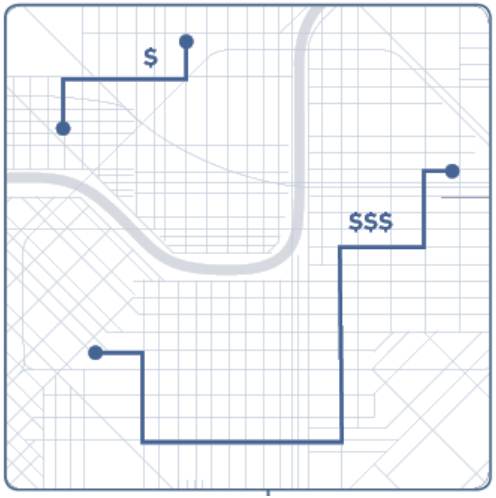
Changing behavior by pricing:



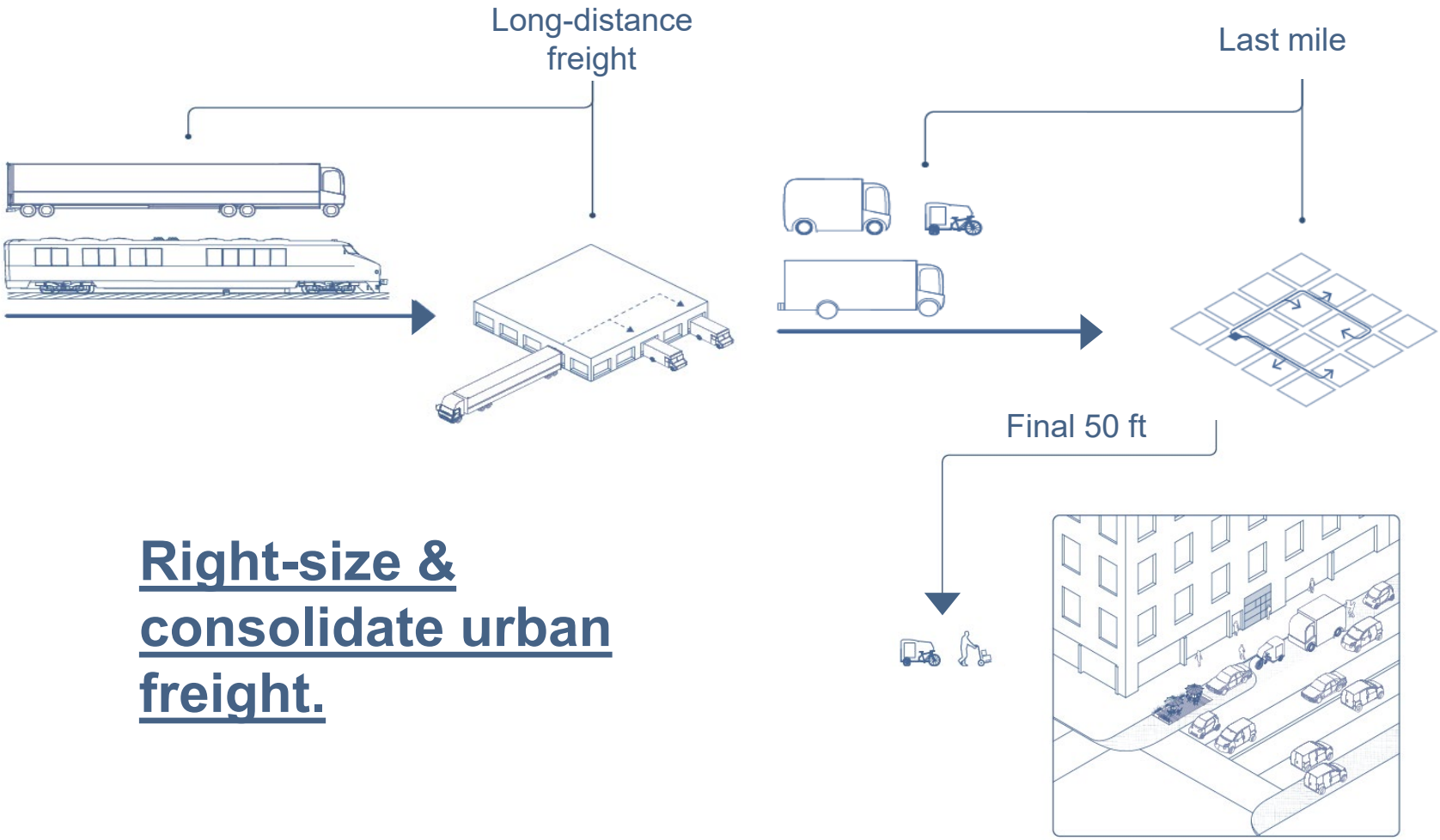
Places



Curbs



Trips



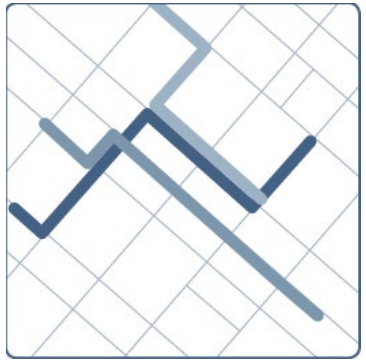
Right-size & consolidate urban freight.

Manage data for the public good.

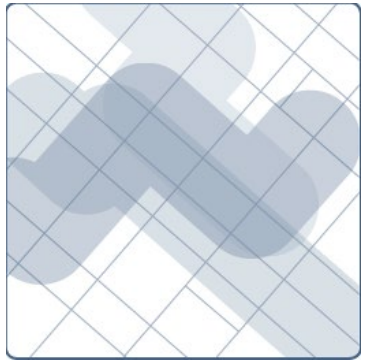
1. Public
2. Protected
3. Purposeful
4. Portable

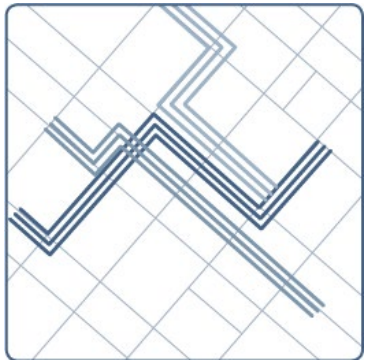
Data Anonymization Approaches

Raw

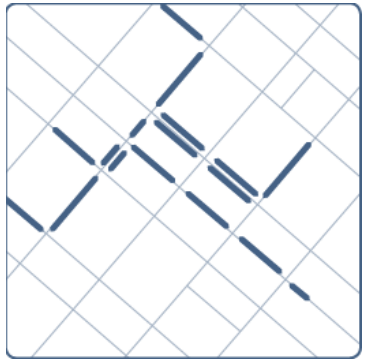


"Blur"



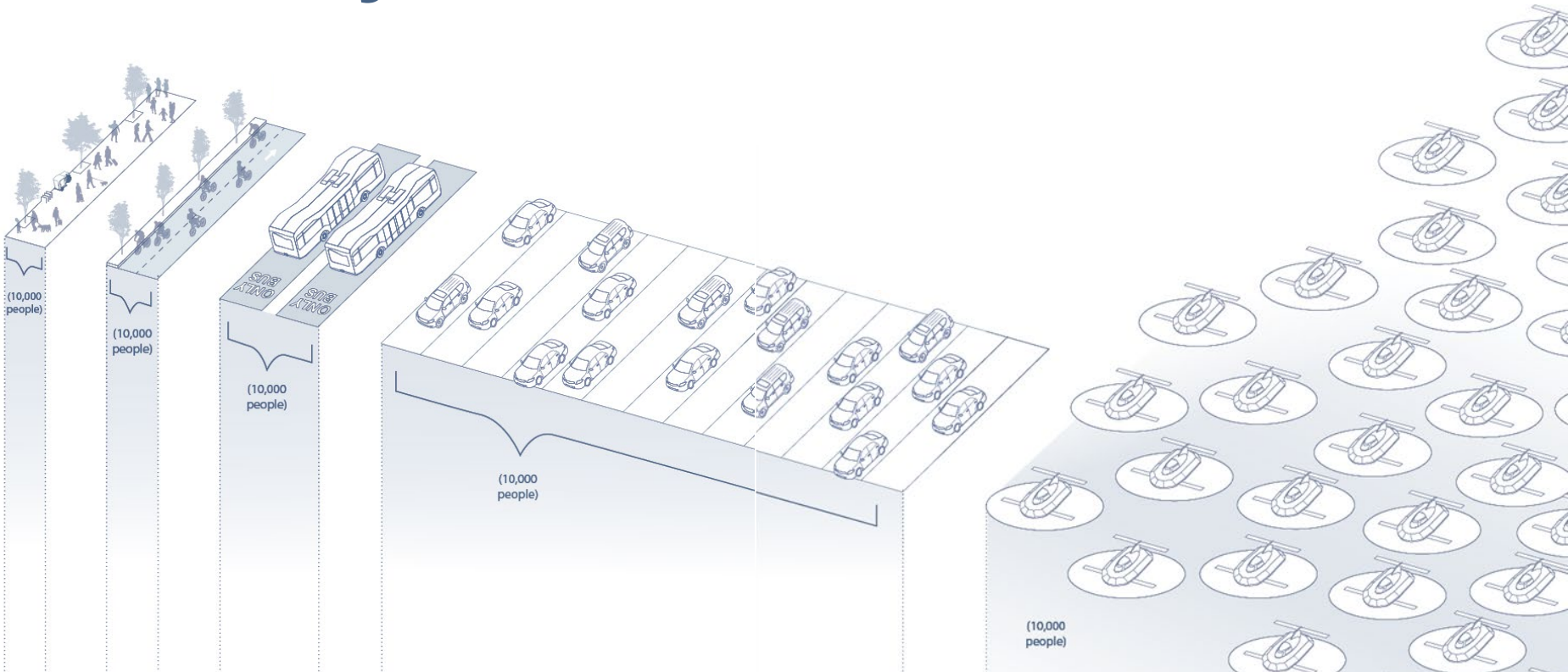


K-Anonymization



SharedStreets

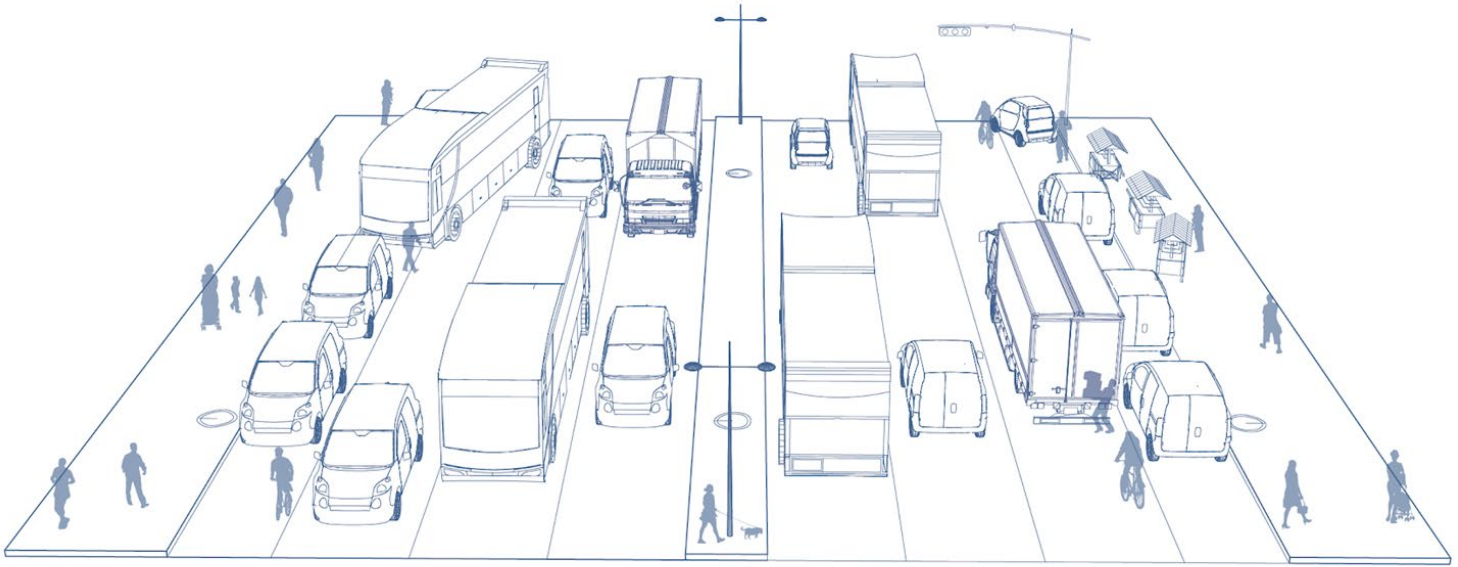
AV technology must focus on efficiency



space required
to transport **60 people**

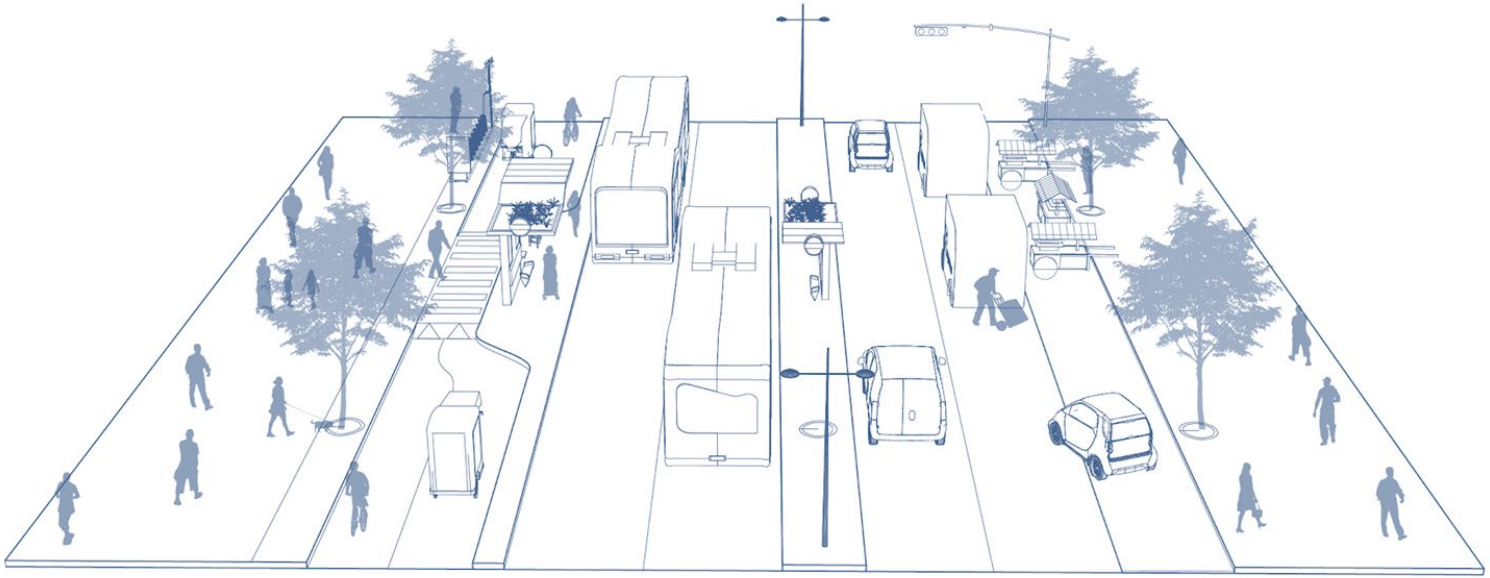
Image: @jonorcutt

Cities can (and must) act now!



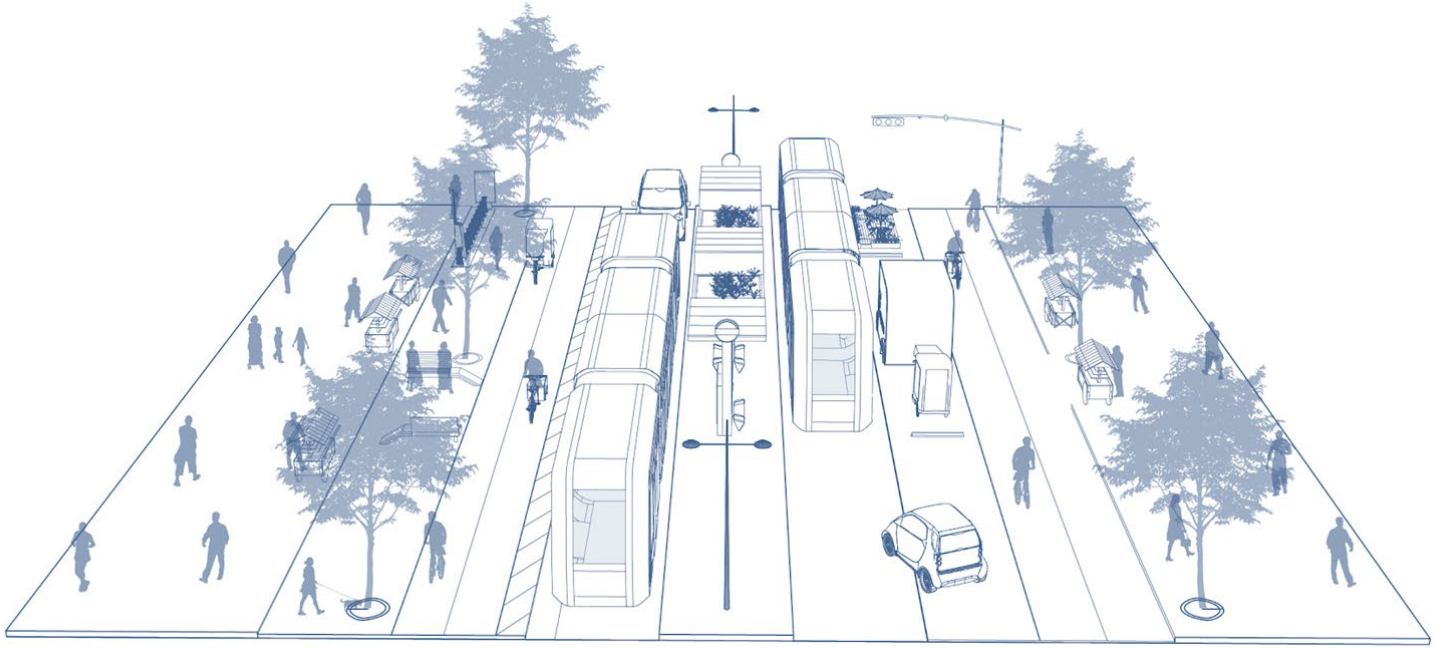
Present

- SOVs prioritized
- Inefficient transit
- Increasing VMT
- Unsafe streets



Interim-*Blueprint 2.0*

- Streets designed for safety
- High-capacity modes prioritized
- Data-driven decision-making
- Technology serves the public interest



Future

- Frequent, high-capacity transit
- People-centered street design
- Significant VMT reductions
- AV-enabled safety outcomes

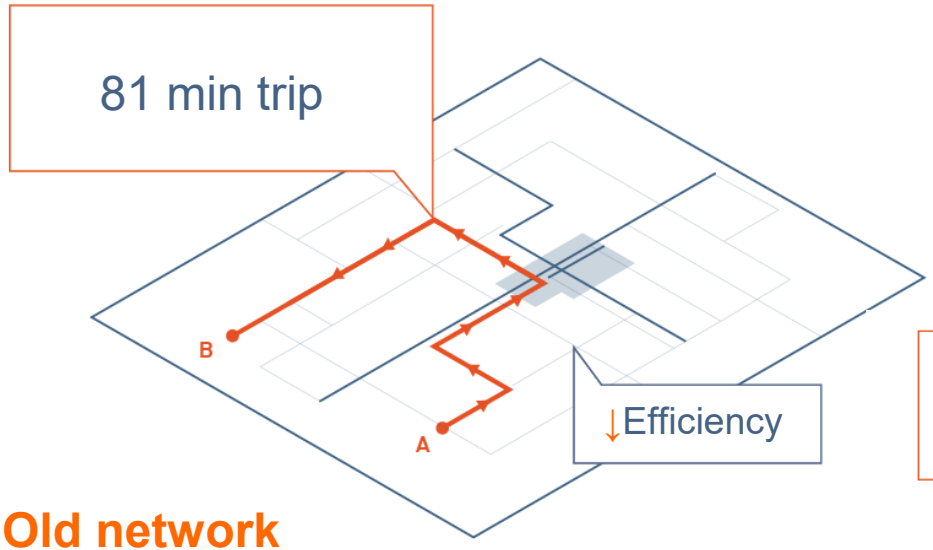
Blueprint for Autonomous Urbanism: Second Edition

www.nacto.org/publications/bau2

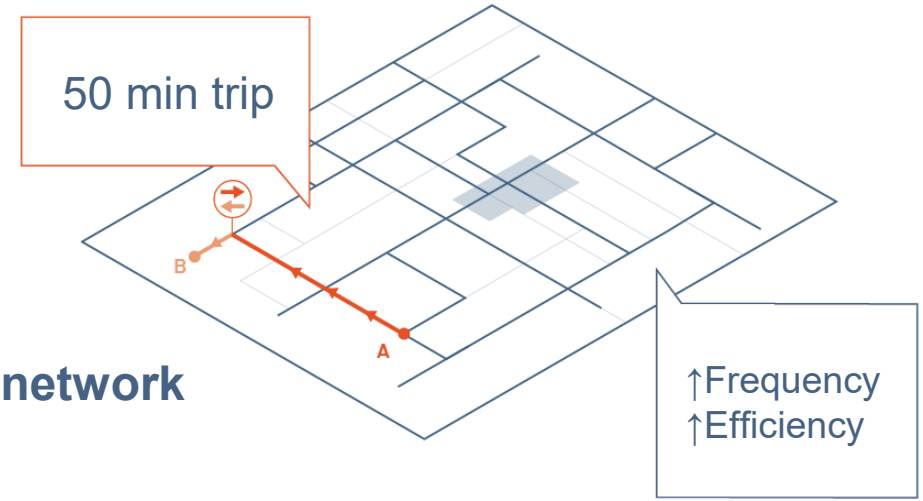
Understanding Automation

Today		*Emerging*		*Probable Future*	*Potential Future*
Level 0	Level 1	Level 2	Level 3	Level 4	Level 5

Focus AV technology on enhancing transit



Old network



New network