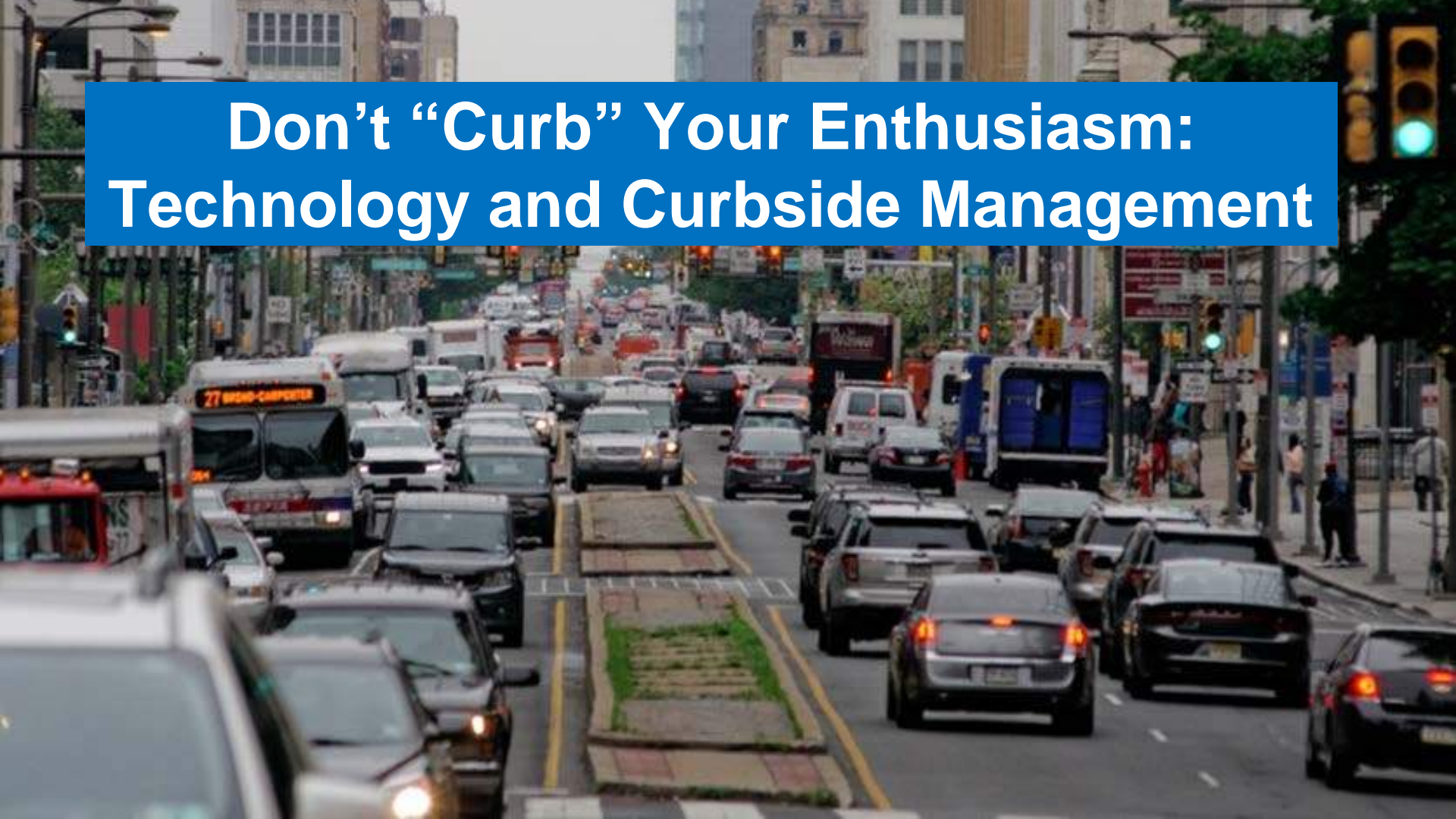


# Don't "Curb" Your Enthusiasm: Technology and Curbside Management



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*BS Civil Engineering, University of Notre Dame, 2017*

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**AECOM**



# Overview

**1) The Curb Today**

**1) Digital Curbs (Coord)**

**1) Philadelphia Curbside Inventory**

**1) Flex Zones (AECOM)**

# The Curb Today

Who here has seen this:



# The Curb Today

Or this:



# The Curb Today

Or even this:



# Changing Mobility Patterns



*Increased TNC/ride-hailing use*



*New mobility options*



*On-demand services shifting trip generation patterns*



*Lower prices incentivized shared-uses (Microtransit)*

# Challenges in Curbside Management



***TNCs creating greater congestion***



***E-commerce increasing delivery volumes***



***Safety risks and inefficiencies for alternative transportation***



***Fixed uses leave revenue on the table during off-peak hours***

# As these trends continue, what are the impacts?

## NOW

**180%** increase in car trips on city streets due to TNC adoption<sup>1</sup>

**70%** of all TNC trips in U.S. generated in 9 cities: New York, LA, Chicago, SF, Wash DC, Seattle, Boston, Miami, Philadelphia<sup>1</sup>

**30%** of downtown urban traffic congestion caused by drivers looking for parking<sup>2</sup>

## IN THE FUTURE

**40%** increase in freight delivery volumes by 2030<sup>3</sup>

**50%** e-commerce market share for Amazon forecasted by 2021 (up from 34% in 2016)<sup>4</sup>

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[www.cyclehoo.com](http://www.cyclehoo.com)

# THE DIGITAL CURB



PREDICTABLE

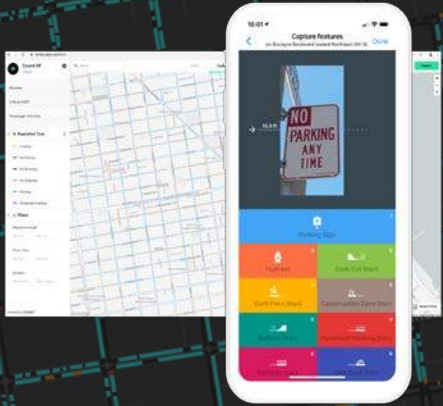


DYNAMIC

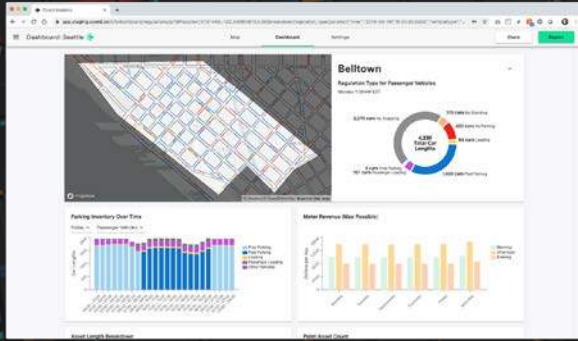


PRODUCTIVE

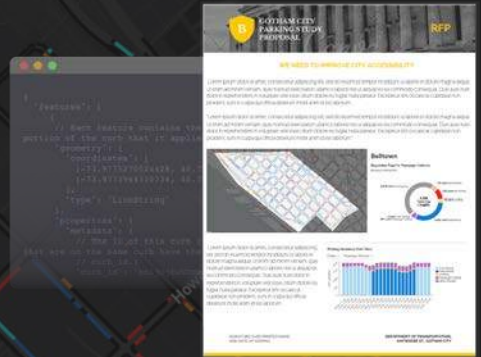
[www.cyclehono.com](http://www.cyclehono.com)



DIGITIZE CURBS



ANALYZE CURBS



USE CURBS

The future of the mobility ecosystem requires a lot of data—starting with the curb.

*What can cities do with the digital curb?*

- More efficient **curbside management** from cities
- **Reduce complaints** & build trust with residents & businesses
- **Improve accessibility**: route commercial vehicles to legal curb space
- Change prices based on usage to adjust **parking capacity**
- Communicate trade-offs & gain **'buy-in'** for public projects

# Philadelphia Curbside Inventory

A partnership to survey over 100 curb miles



**Why:** Obtain data to create a highly accurate digital curb

**When:** May-June 2019

# Philadelphia Curbside Inventory

**101** DIGITAL  
CURB  
MILES

**245** MILES  
SURVEYED  
(DOUBLE COVERAGE FOR DATA VERIFICATION)

CENTER CITY

LOGAN SQUARE

UNIVERSITY CITY

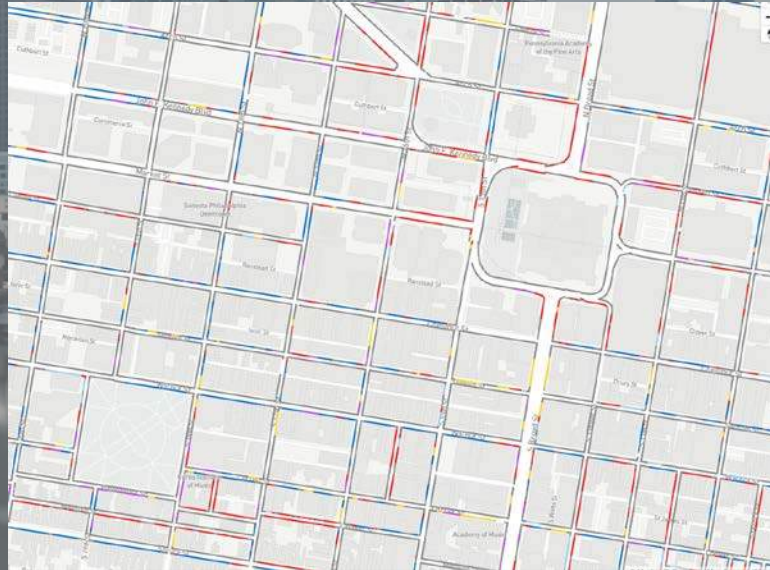
SOUTH STREET

RITTENHOUSE SQUARE

**240** PERSON  
HOURS

**7** BUSINESS  
DAYS  
(4-5 DATA COLLECTORS EACH DAY)

# Philadelphia Curbside Inventory

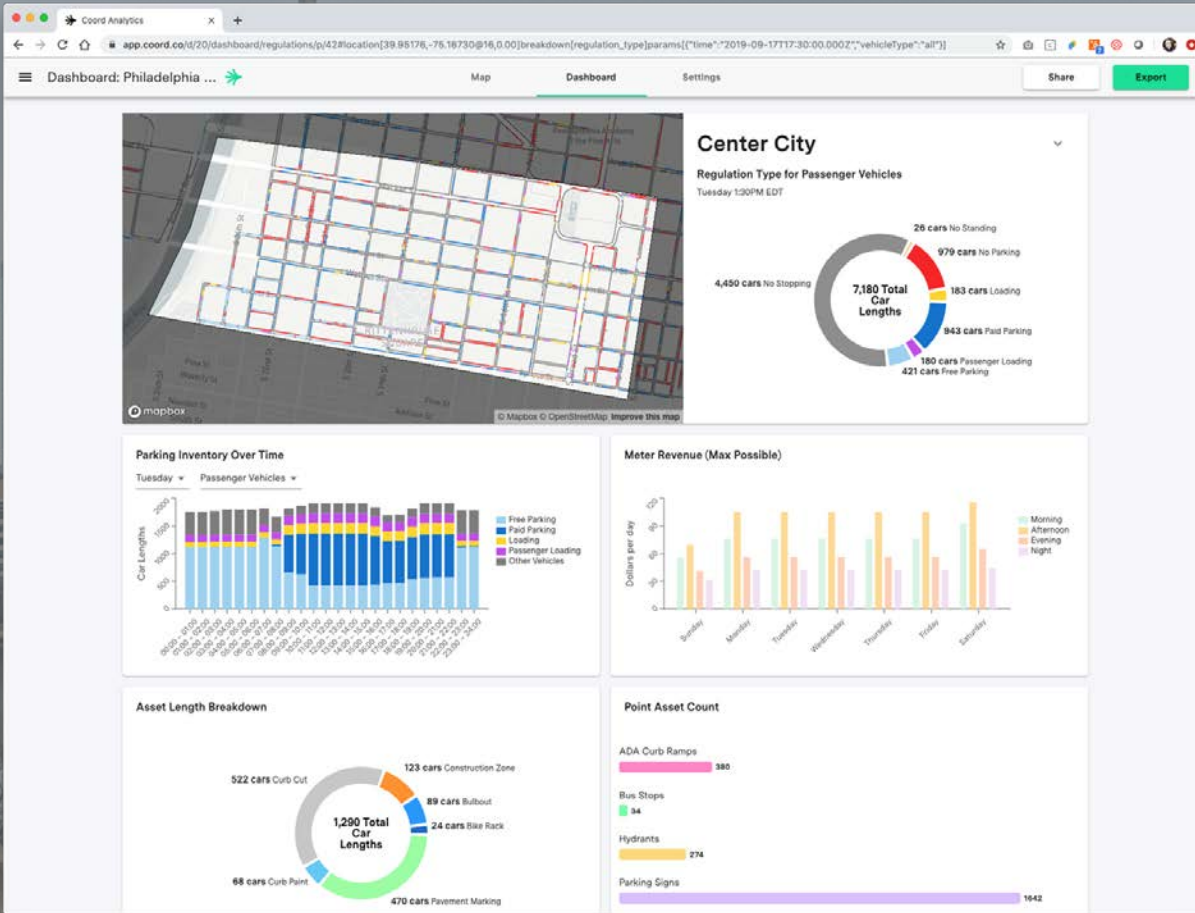




NO STANDING  
←  
NO STANDING  
ANYTIME  
←  
NO STANDING  
7AM - 6PM  
←

NO  
PARKING

# Philadelphia Curbside Inventory



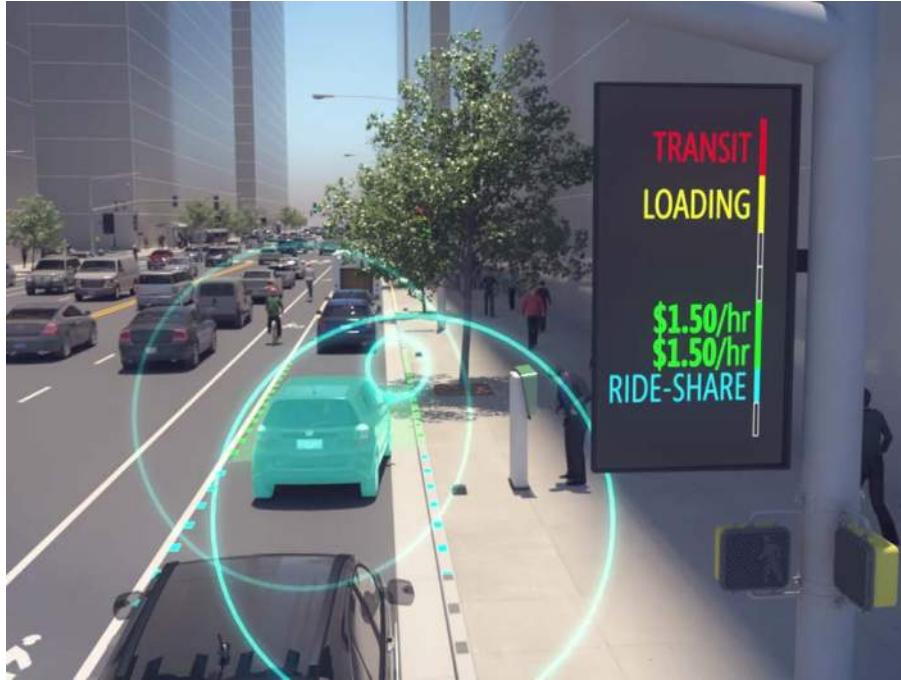


# FLEX ZONES

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# Flex Zones Overview

*Flex Zones is a dynamic curbside management solution using an integrated software and hardware system to enable real-time control over curb space.*



# Competition for Curb Space

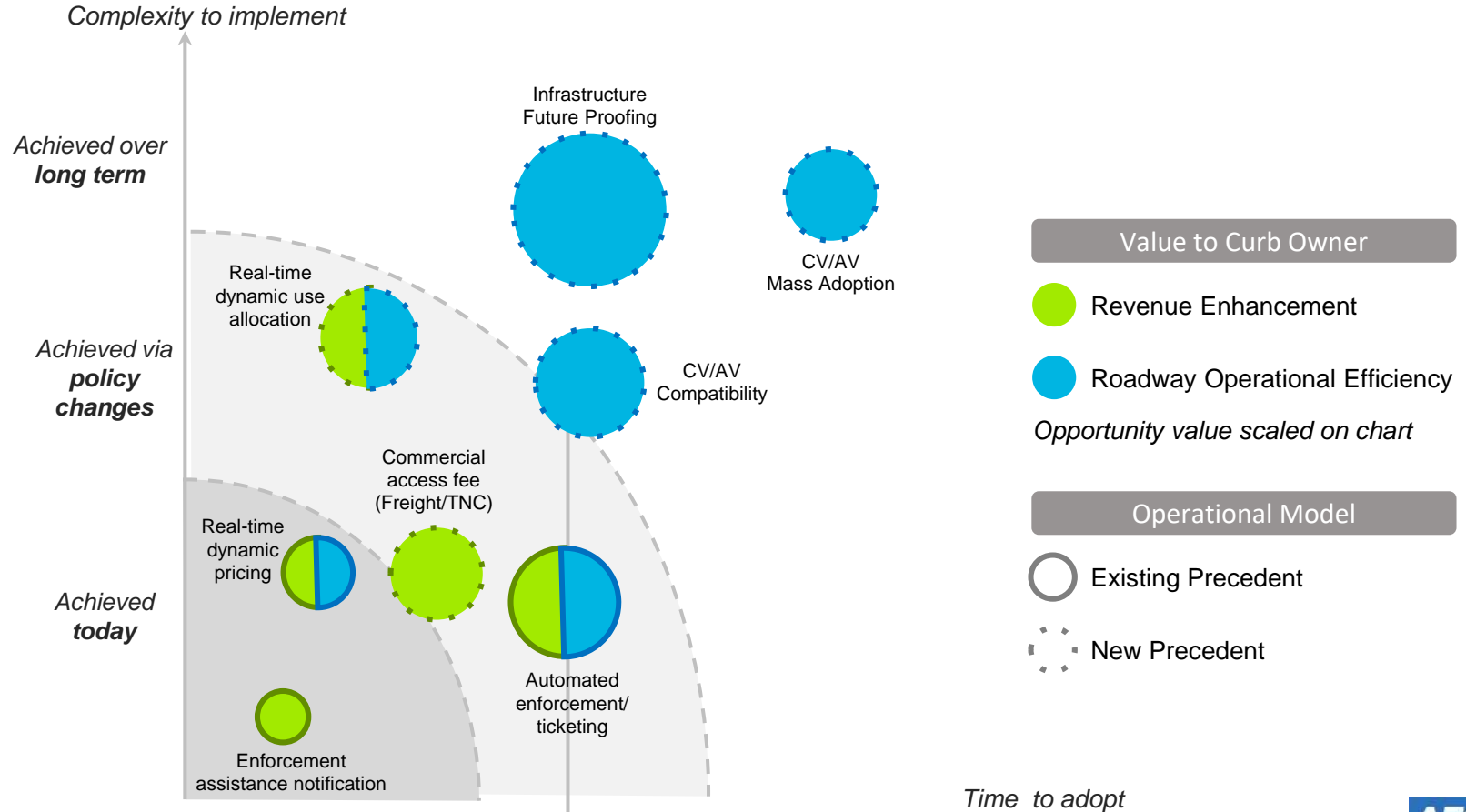
## *Competing Uses*

- Non-Commercial Parking/PUDO
- Commercial Parking/PUDO (includes TNCs)
- Private Transit (i.e. Shuttles)
- Public Transit
- Permanent Uses (i.e. Delivery Zones, Bike Share)
- Special Cases (i.e. Special Events, Emergency Access, Seasonal Uses)

## *Locations*

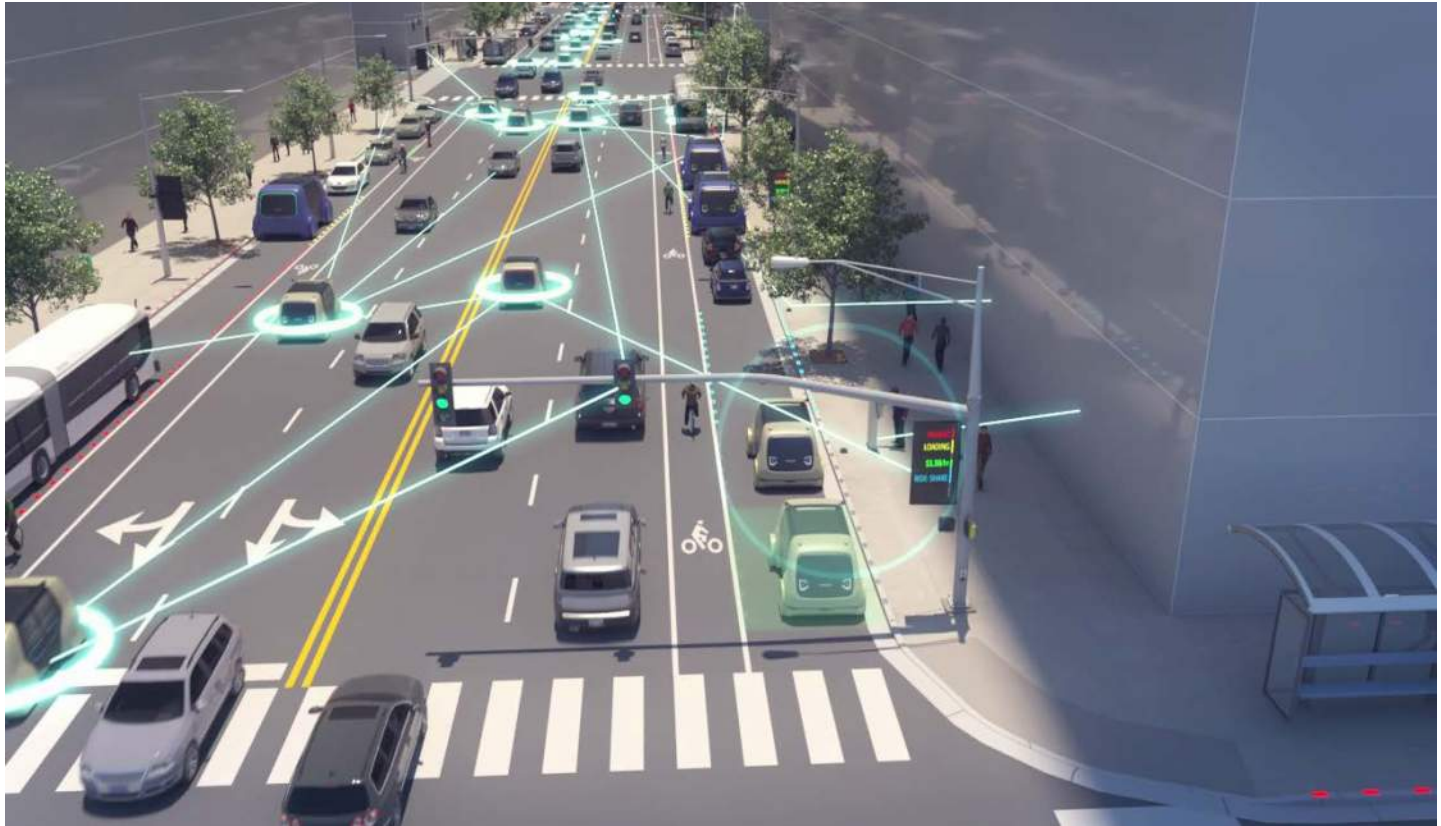
- Urban Streets in CBD
- Transit Hubs
- Convention Centers
- Airports
- Ports
- University Campuses
- Stadiums/ Entertainment Complex
- Shopping Center/Mall

# Value Created to Curb Owners through Flex Zones



# Cities of the Future

*Bridge to Smart City Infrastructure by collecting and immediately applying and leveraging data.*



# Thank You!

**AECOM**

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## Sources and Image Credits

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3. *“Material Handling Industry (MHI) Annual Industry Report”*, Deloitte, 2017 ([link](#))
4. *“The Final 50 Feet: Urban Goods Delivery System”*, University of Washington, Seattle DOT, 2018 ([link](#))

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1. Dainfo ([link](#))
2. Philadelphia Business Journal ([link](#))
3. Seattle Times ([link](#))