



# **NCHRP 8-117: TRAVEL AND LAND USE IMPACTS OF TRANSFORMATIONAL TECH**

AASHTO COMMITTEE ON ENVIRONMENT AND SUSTAINABILITY ANNUAL MEETING

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# NCHRP 08-117 Solving a Problem

- How might rapidly evolving technologies in several fields **transform** how people and institutions use land and transportation systems to support economic and social activity?



# NCHRP 08-117 Project Objective

- To develop a guidebook to help state DOT and other transportation-system decision makers assess the likely impacts of transformational technologies on land use, travel demand, and the transportation system in general.



# Approach

Researched the Literature

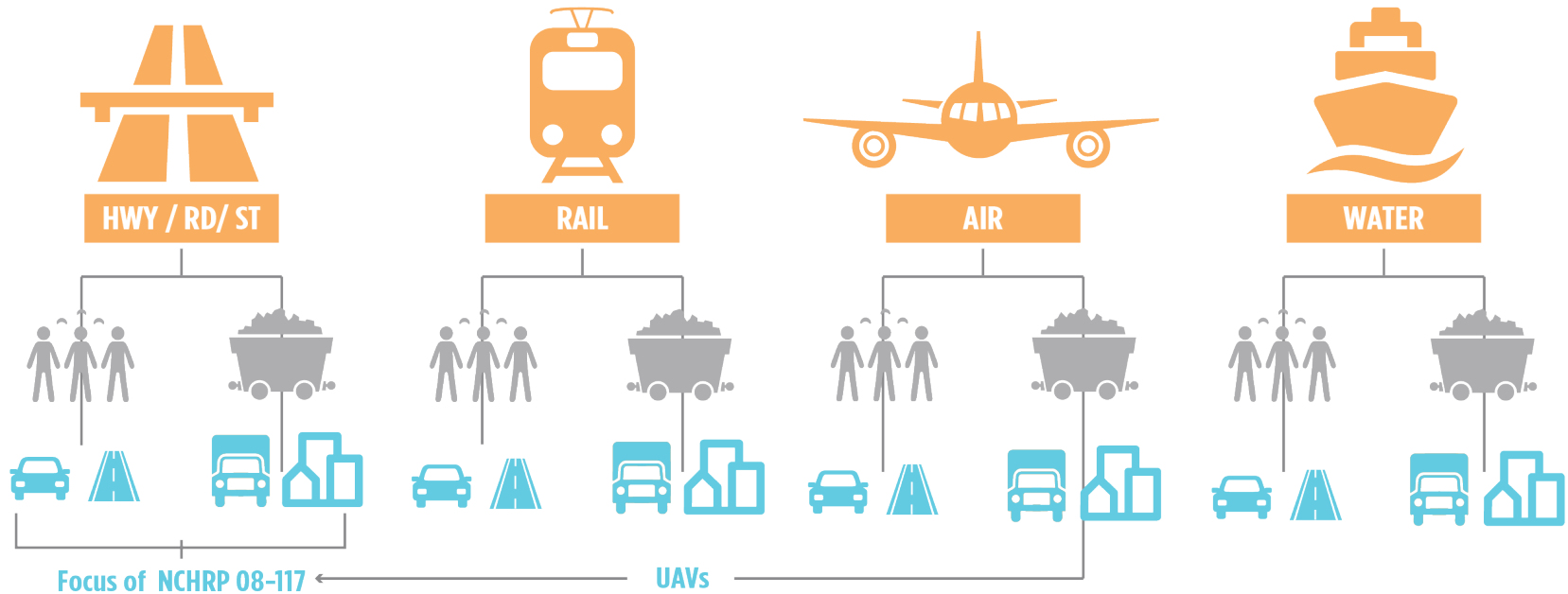
Subscribed to a half-dozen daily web news sites on new tech.

Developed a typology of technologies.

Convened a panel of invited land use, transportation experts.

Produced a guide  
(NCHRP Report 924, in publication)

# The World of Transportation



PASSENGERS



FREIGHT



PASSENGER  
INFRASTRUCTURE



PASSENGER  
VEHICLES

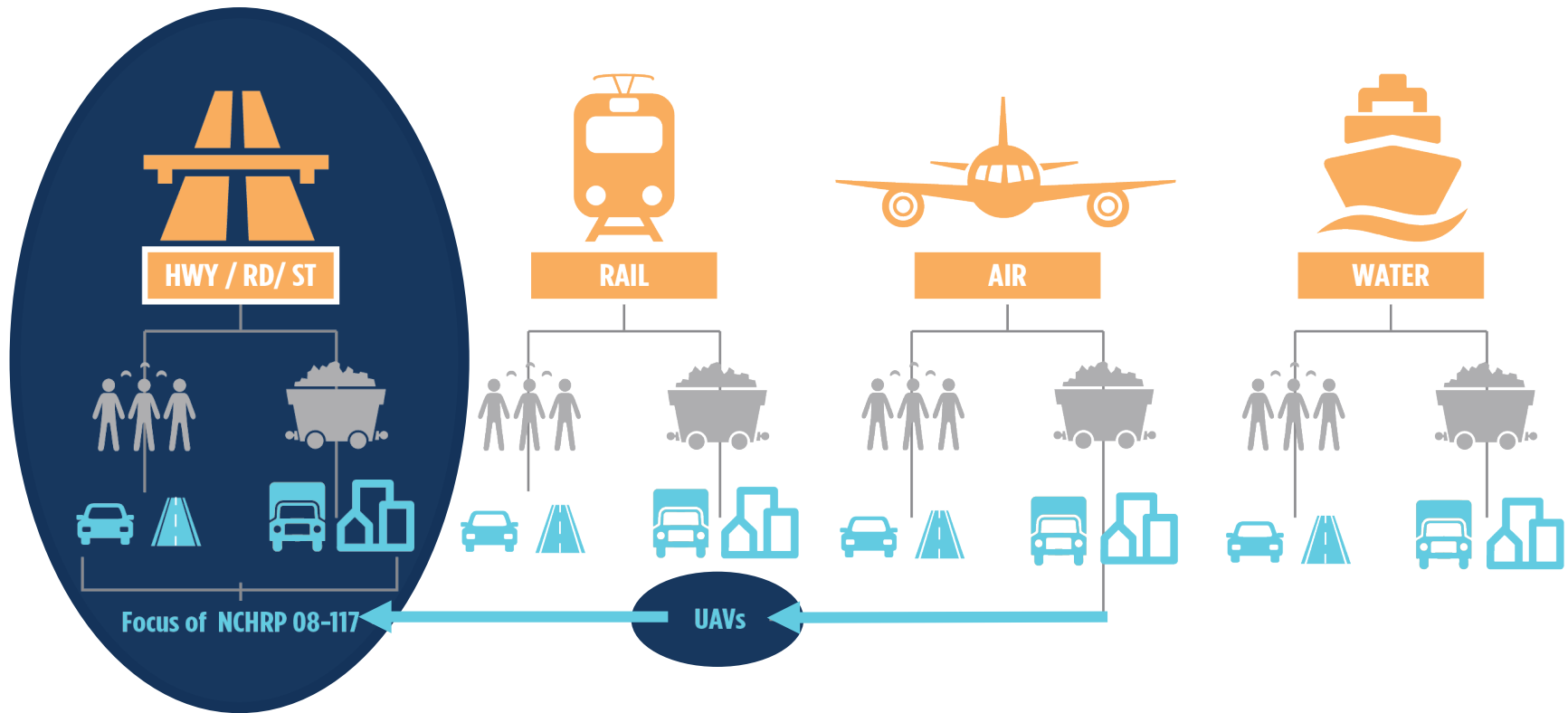


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FREIGHT  
VEHICLES

# Our Focus



PASSENGERS



FREIGHT



PASSENGER  
INFRASTRUCTURE



PASSENGER  
VEHICLES

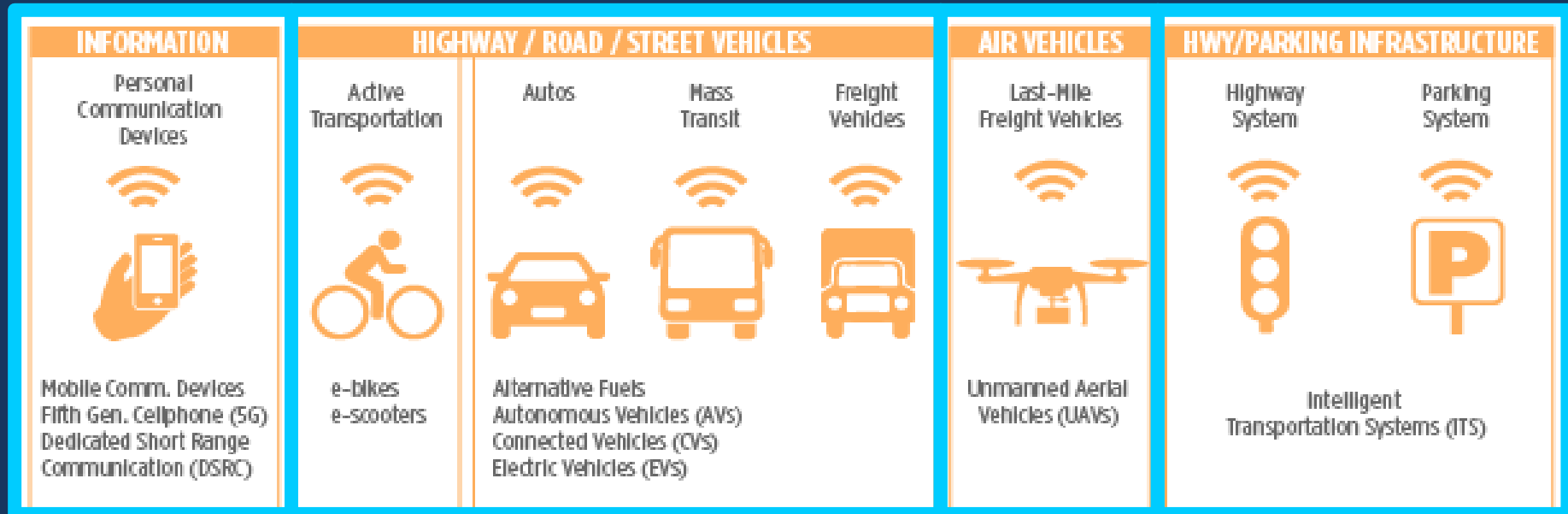


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VEHICLES

# Focus Technologies

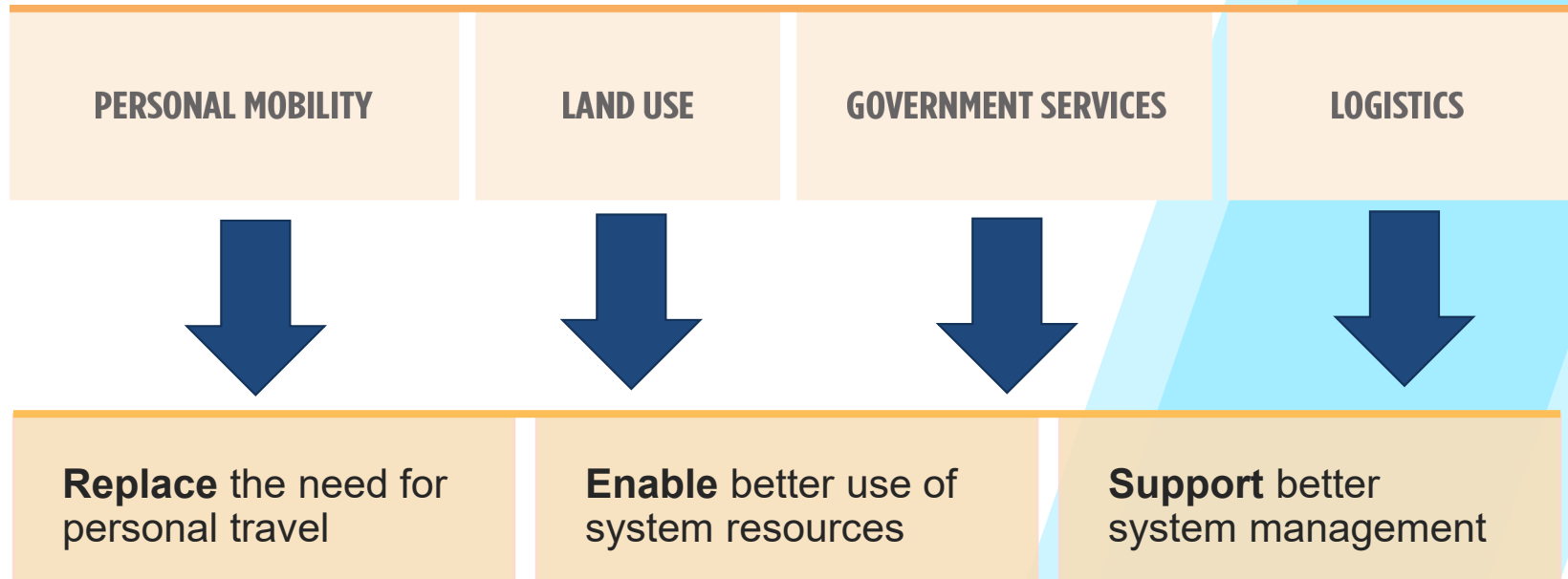


# New Technologies / New Applications

## TECHNOLOGIES LEAD TO TRANSPORTATION APPLICATIONS



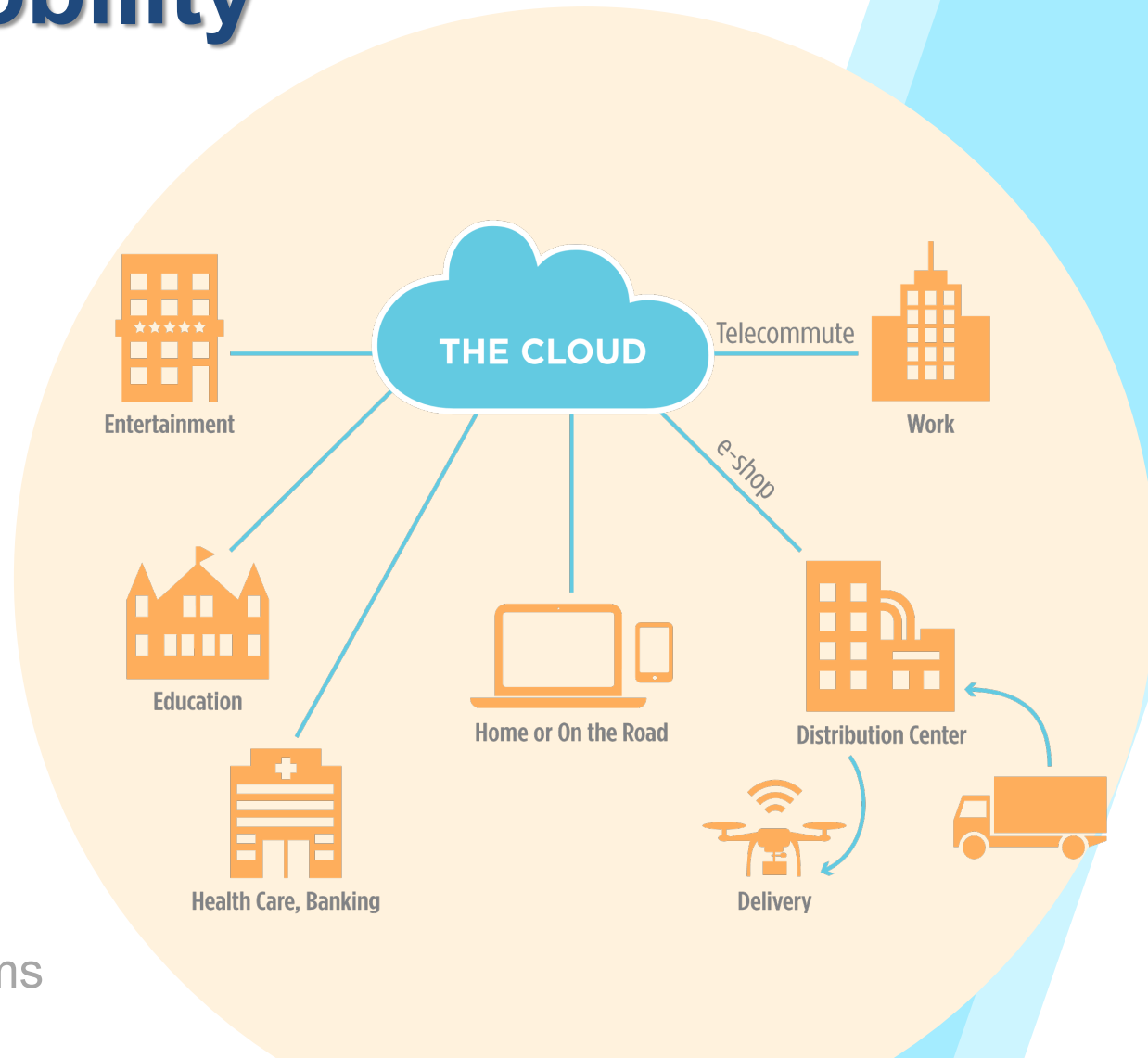
## TRANSPORTATION AND LAND USE APPLICATIONS





# Personal Mobility Apps

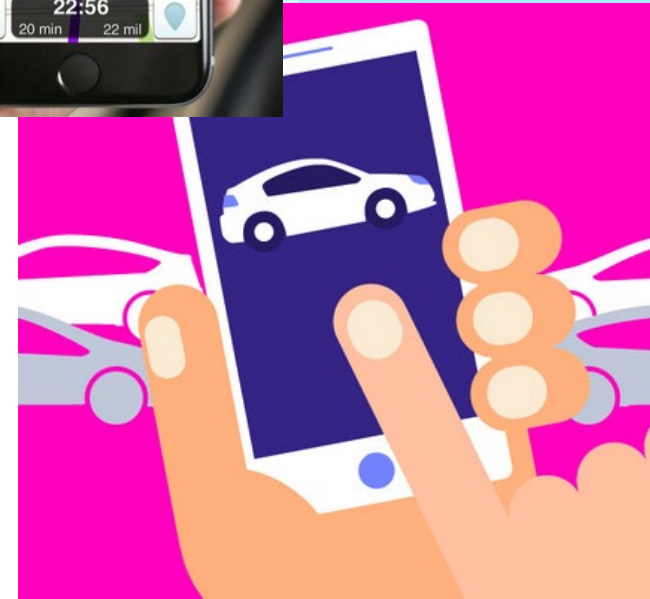
- Replace the need for personal travel
  - E-commerce
  - 3D printing
  - Internet of Things
- Enable better use of system resources
- Support better management of systems



**Policy Challenge:** Providing high-speed internet service is essential

# Personal Mobility Apps

- Replace the need for personal travel
- Enable better use of system resources
  - Mobility as a Service (Maas)
  - Route Guidance apps
- Support better management of systems



**Policy Challenge:** Ensuring the agency's public safety, welfare, equity, and environmental goals are met.

# Land Use Apps

- Replace the need for personal travel
- Enable better use of system resources
  - Land Use applications
- Support better management of systems



Remote Office



Restaurant

**Policy Challenge:** Estimating traffic impacts of hyper-utilized buildings

# Government Services Apps

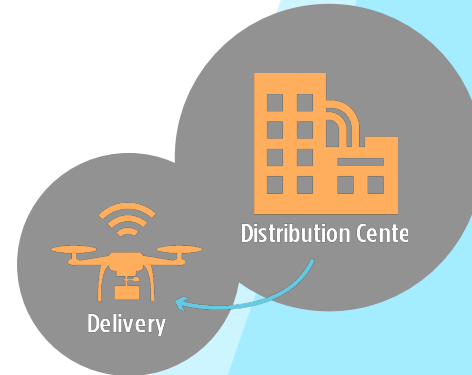
- Replace the need for personal travel
- Enable better use of system resources
- Support better management of systems
  - General governmental services
  - Transportation Services
  - Parking Services



**Policy Challenge:** Getting data smart;  
Developing partnerships with private industry

# Logistics Apps

- Replace the need for personal travel
- Enable better use of system resources
- Support better management of systems
  - Improving Line Haul
  - Improving Last-Mile Delivery



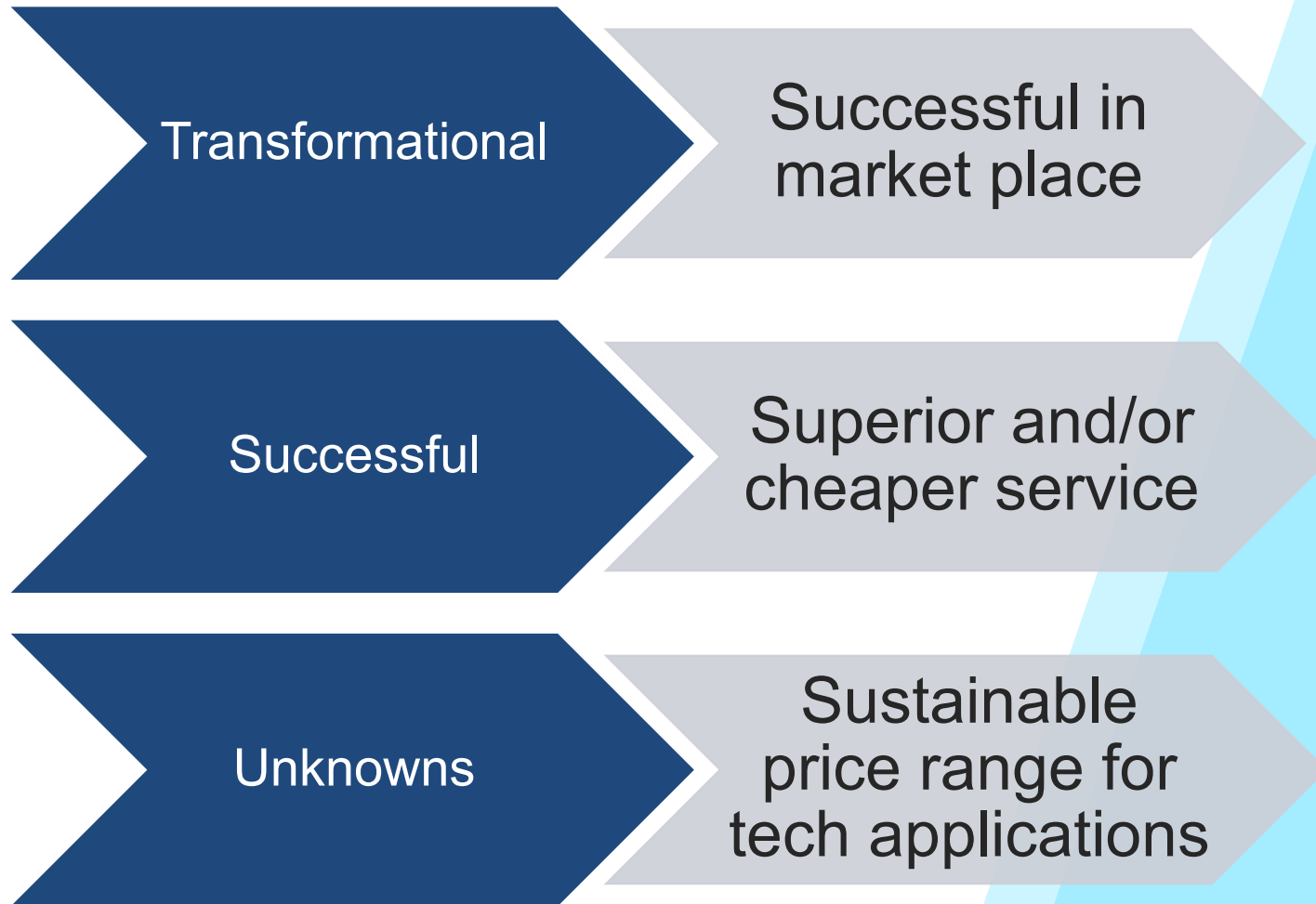
**Policy Challenge:** Providing space for platoons or UAVs;  
Ensuring safety of structures under new loads

# So What are the Impacts?

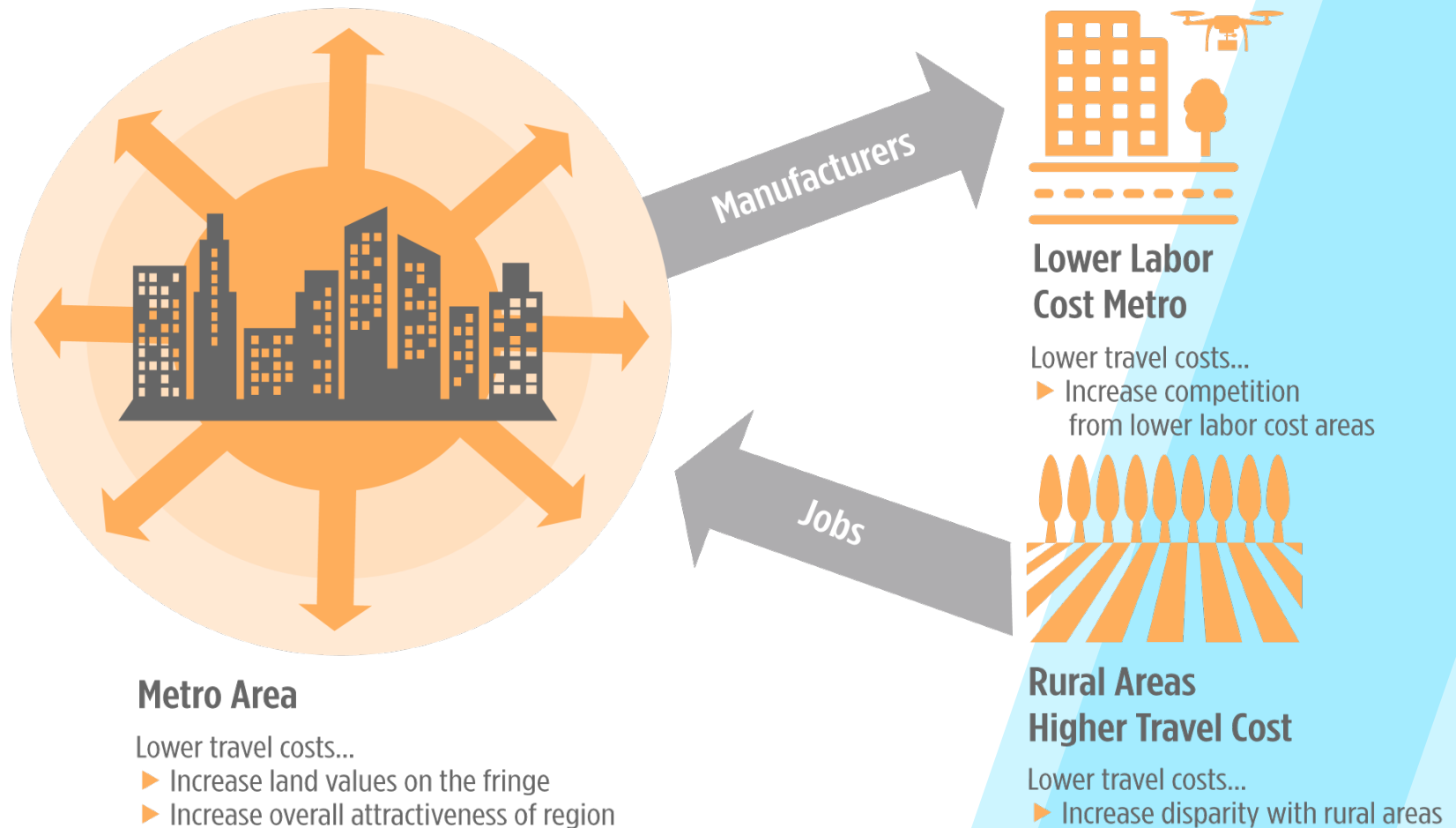
- It depends
  - The applications of the technologies will have a greater impact than the technologies themselves.
  - Applications evolve daily.
  - The market is still trying to figure out which applications will win.
  - Study predictions range widely.



# What is Transformational?



# Inter-Regional Land Use Impacts





# Guidance for Demand Modelers

- NCHRP Report 896 (Updating Regional Transportation...)
  - Recommends scenario planning
  - Suggests procedures for updating models, but gives no answers
- Florida DOT MPO Guidance
  - Suggests testing 6 AV rollout scenarios (slow to fast)
  - Provides recommended model parameters for each
- VDOT Guide (VTRC, “Ways to Consider Driverless Vehicles in Virginia...”)
  - Recommends 6 scenarios with parameters



# How does one plan for Chaos?



# Questions / Comments?



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**Thank you!**