

# FYI in 45

# Transportation Planning for the Autonomous Age

Panelists:

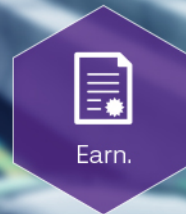
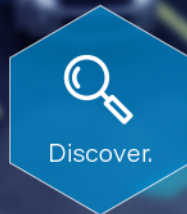
Krista Goodin

Marwan Madi

Moderated by:

Andrew Beaton

*April 23, 2018*



**CDM  
Smith.**

# Today's Discussion

- ▶ What emerging technologies will affect future mobility?
- ▶ How will these technologies affect the transportation ecosystem?
- ▶ Why scenario planning?
- ▶ What short- and long-term actions should agencies take to prepare for success?



# Our Panel



**Krista Goodin, AICP**  
Senior Transportation Planner



**Marwan Madi**  
Principal Transportation Technology Lead



# Defining the Technologies Affecting Future Mobility

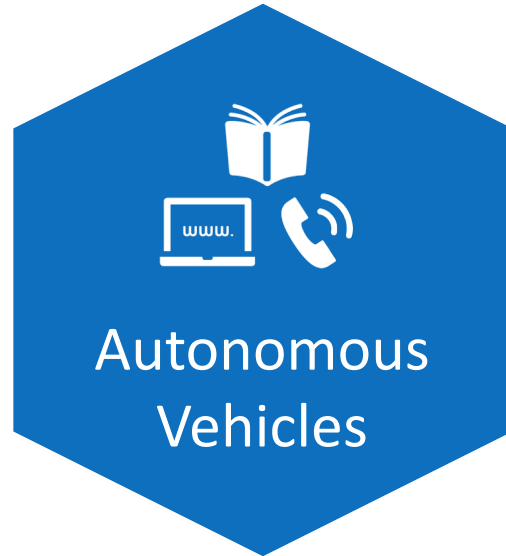
# Over Time – 50 Million Users



# Top Three Emerging Technologies



# Top Three Emerging Technologies



# Top Three Emerging Technologies



Connected  
Vehicles



Autonomous  
Vehicles



Shared Mobility  
(MaaS)



# Reshaping the Transportation Ecosystem



# Rethinking Aspects of Mobility





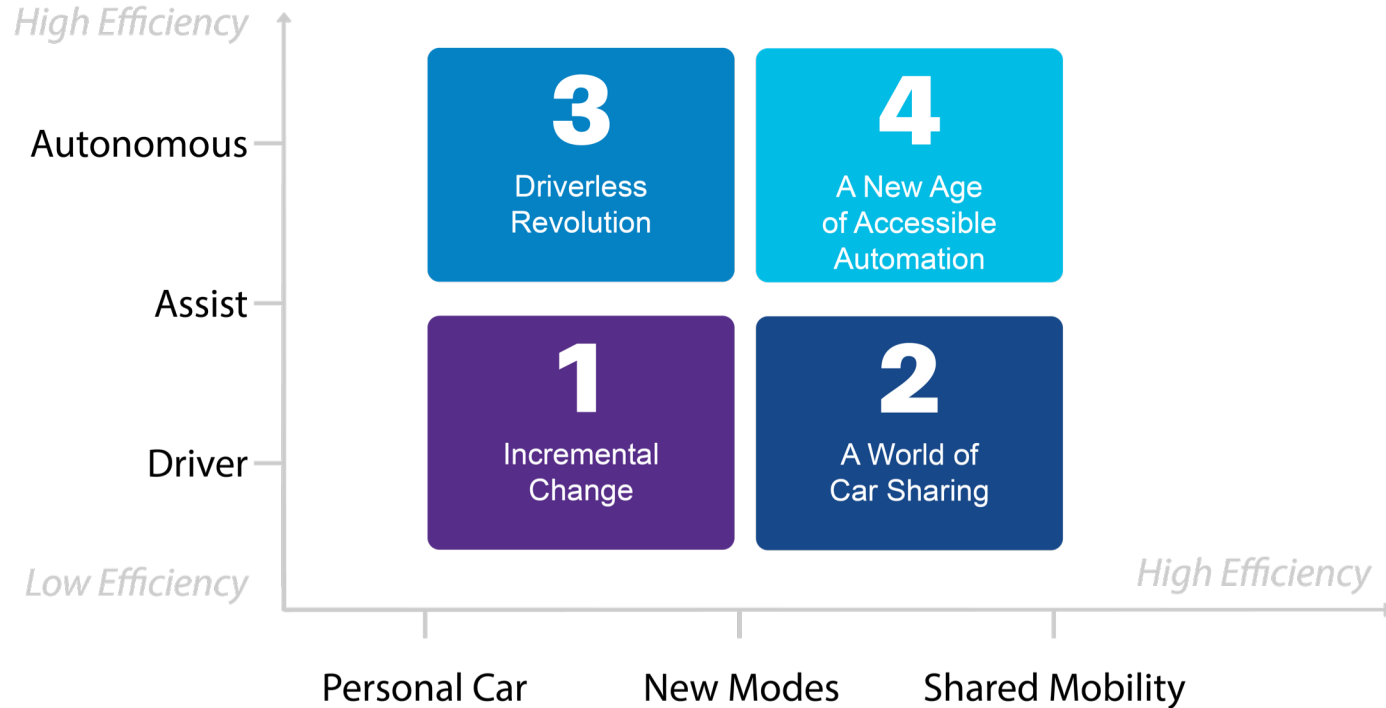
# Highest Impact



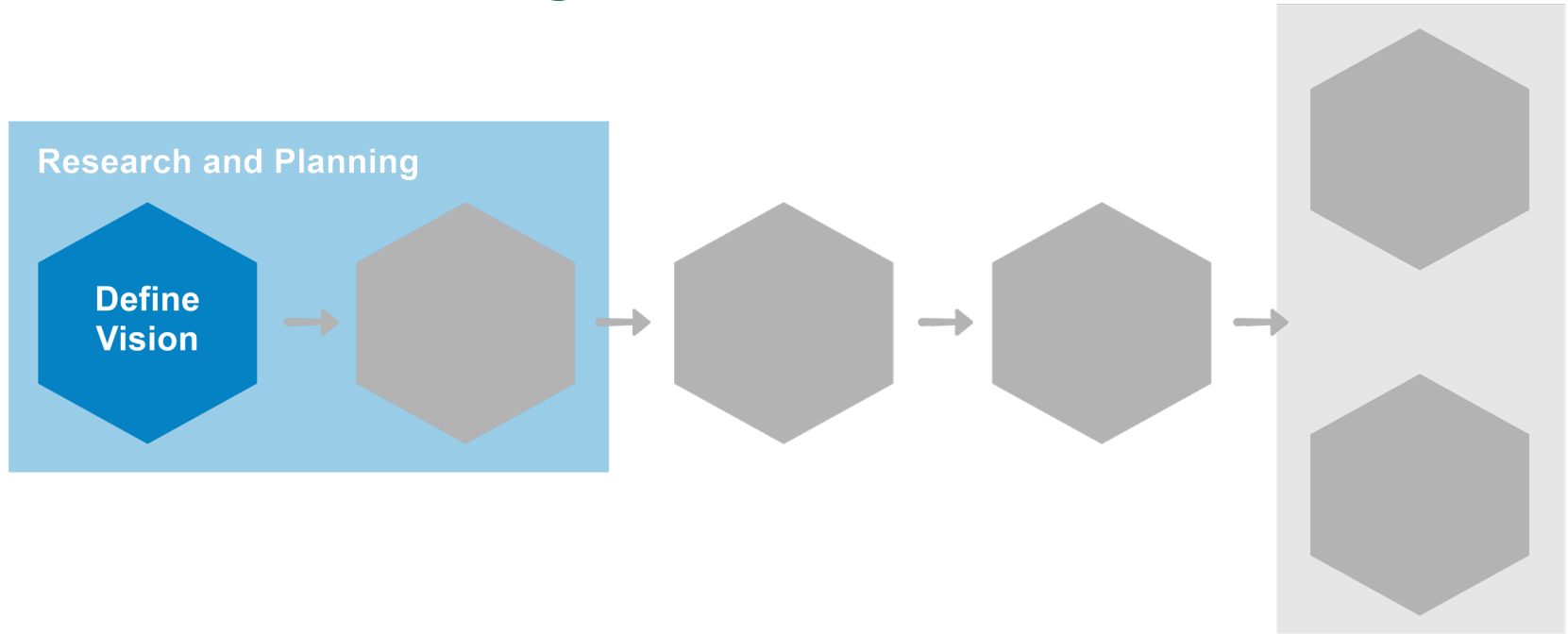
An aerial, high-angle view of a multi-lane highway. Several cars are visible, moving away from the viewer. Each car is surrounded by concentric, semi-transparent blue and green circular waves, representing sensor ranges like radar or lidar. The waves vary in size and density, suggesting different sensor types or ranges. The highway has yellow dashed lane markings and a concrete divider on the right side. The overall image has a blue tint.

# Scenario Planning

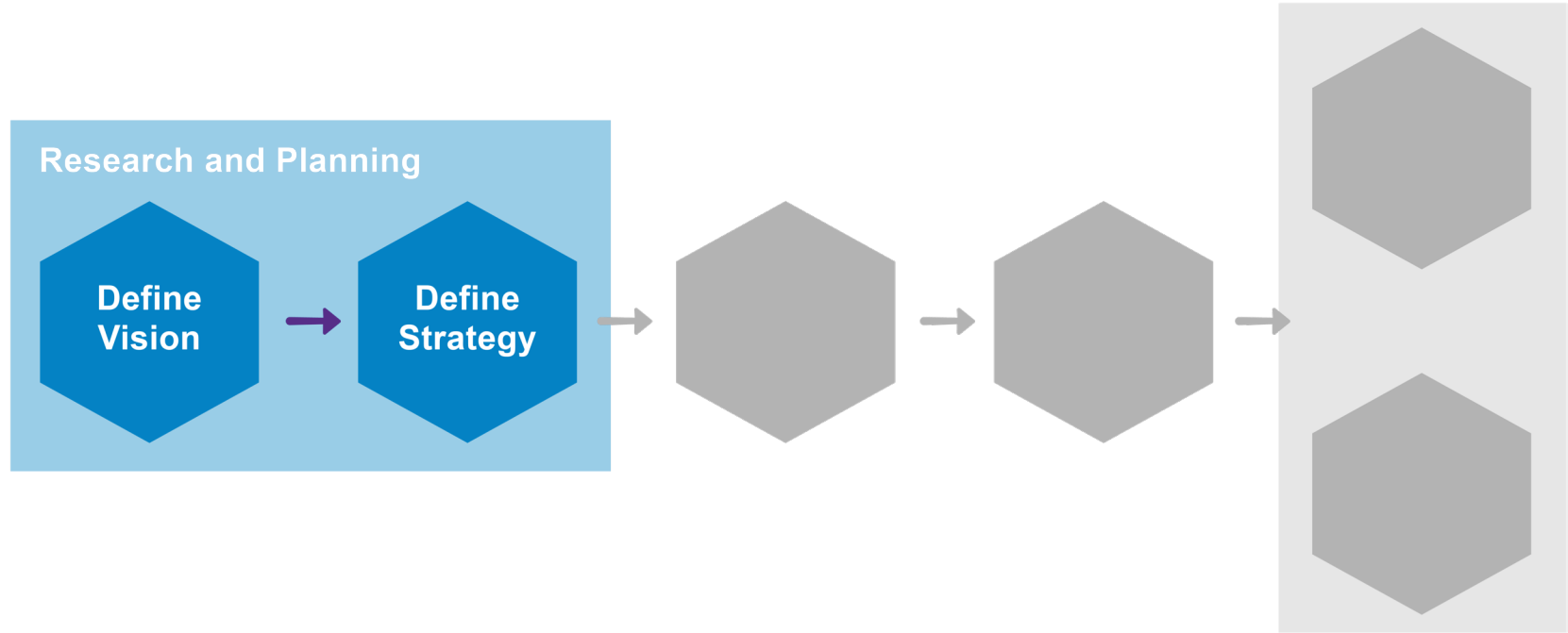
# Planning Approaches



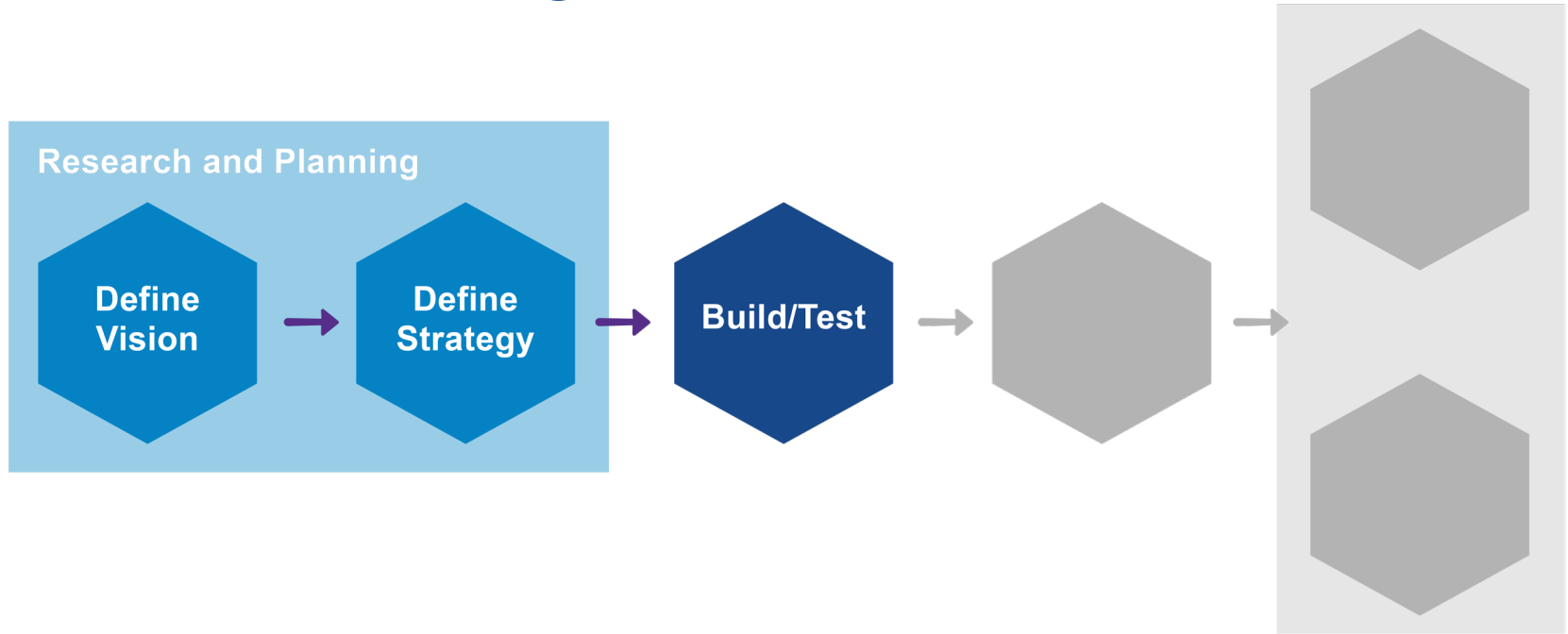
# Scenario Planning Process



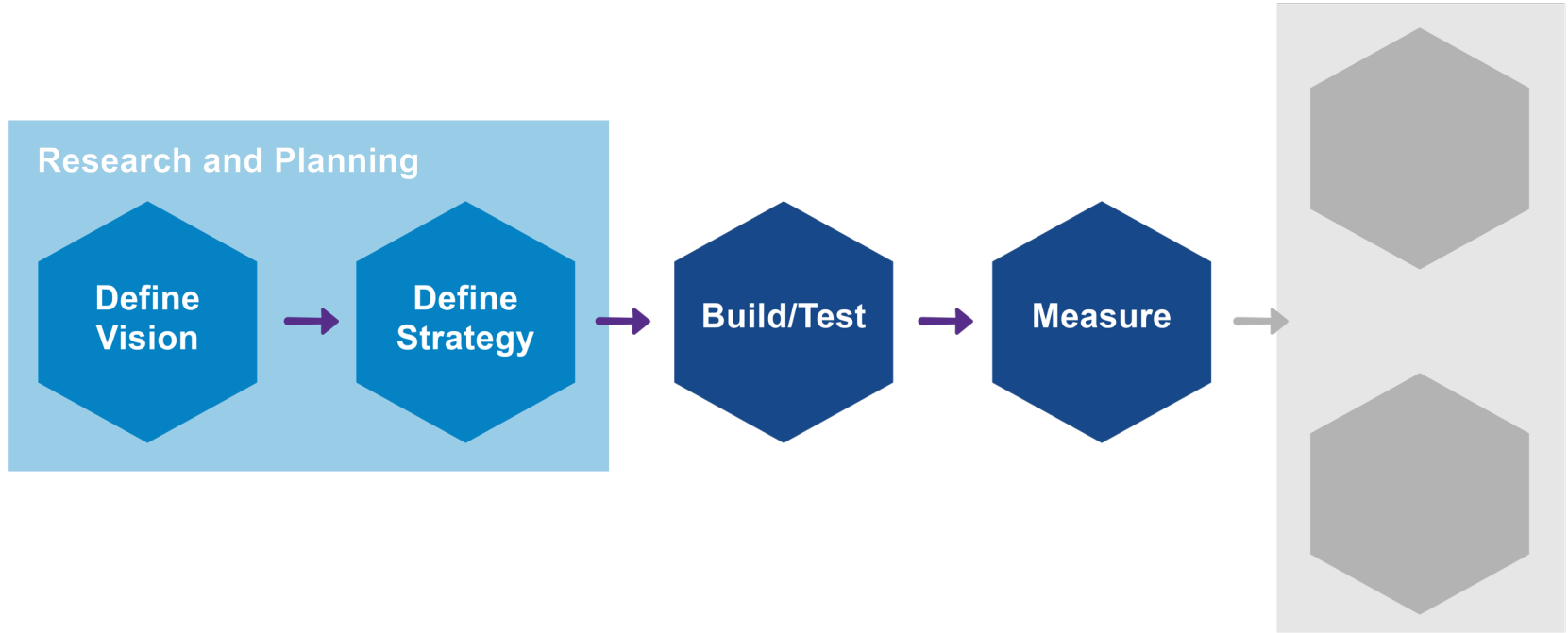
# Scenario Planning Process



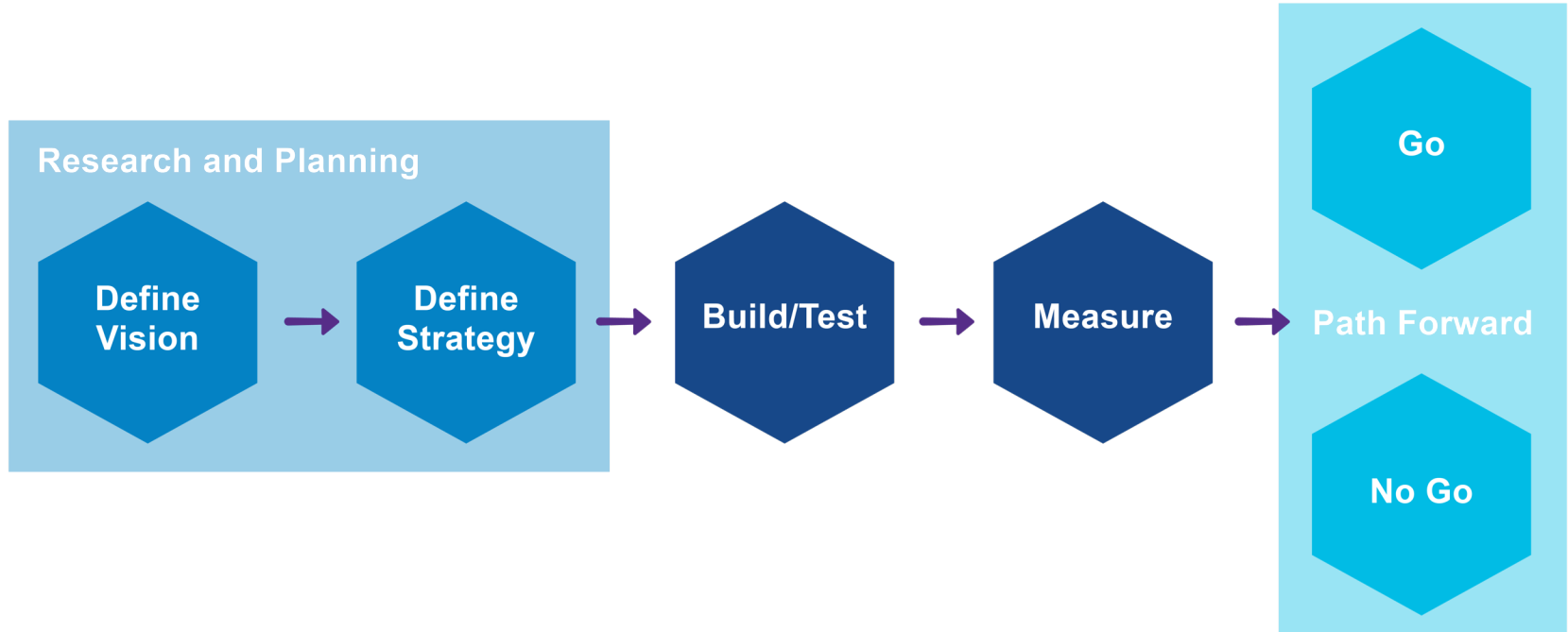
# Scenario Planning Process



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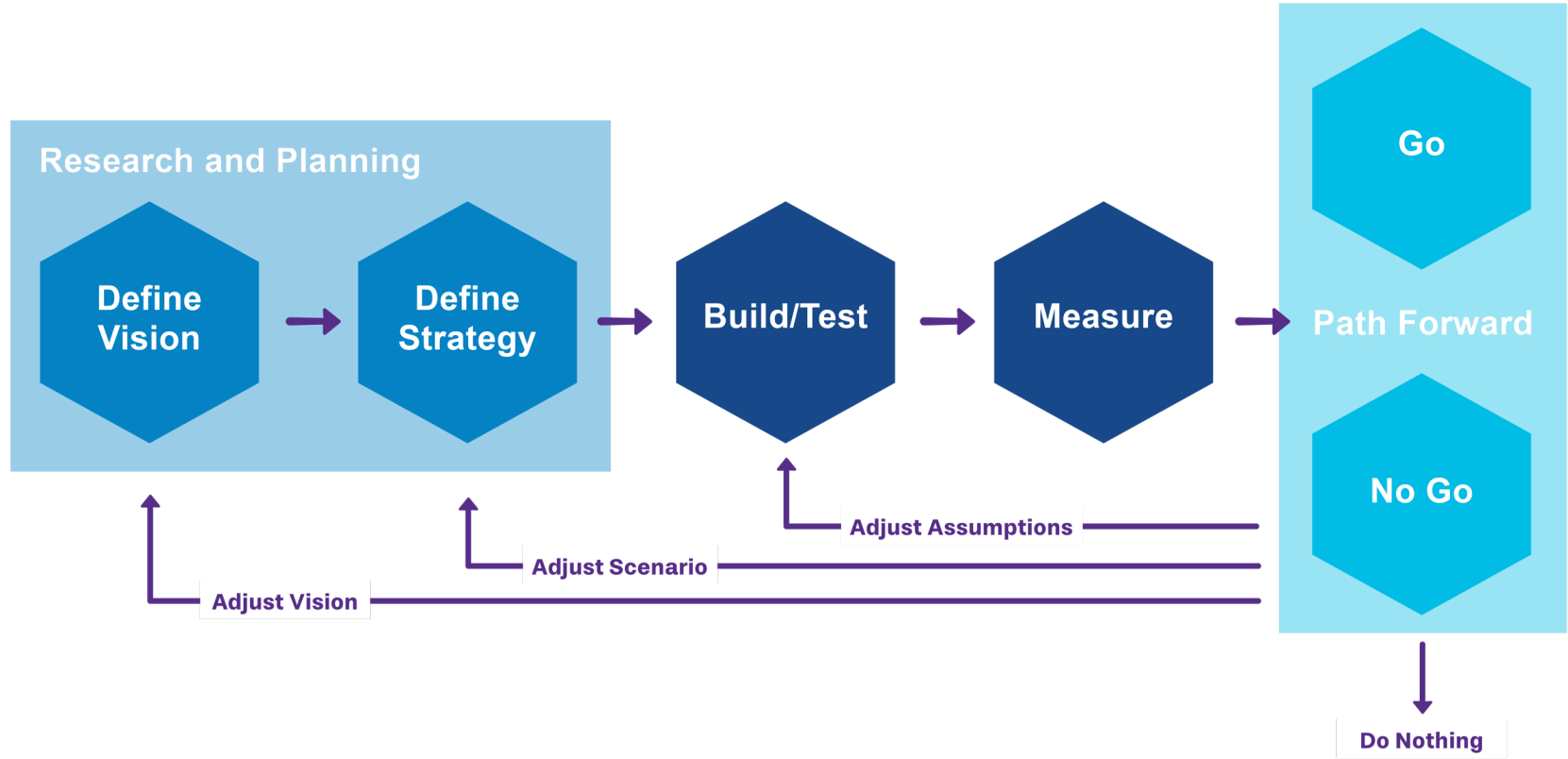


# Scenario Planning Process





# Scenario Planning Process



# Benefits

- ▶ Lays groundwork for long-term preparedness and short-term transition
- ▶ Provides info for tradeoff analysis
- ▶ Puts challenges and uncertainties into context
- ▶ Scenarios adapt over time
- ▶ Incremental transitional steps
- ▶ Data helps guide direction

An aerial view of a multi-lane highway with several cars. Blue, concentric wave-like lines emanate from each car, representing sensor ranges or communication fields. The entire image has a blue tint.

CASE STUDY

# VTrans 2040

# VTrans 2040

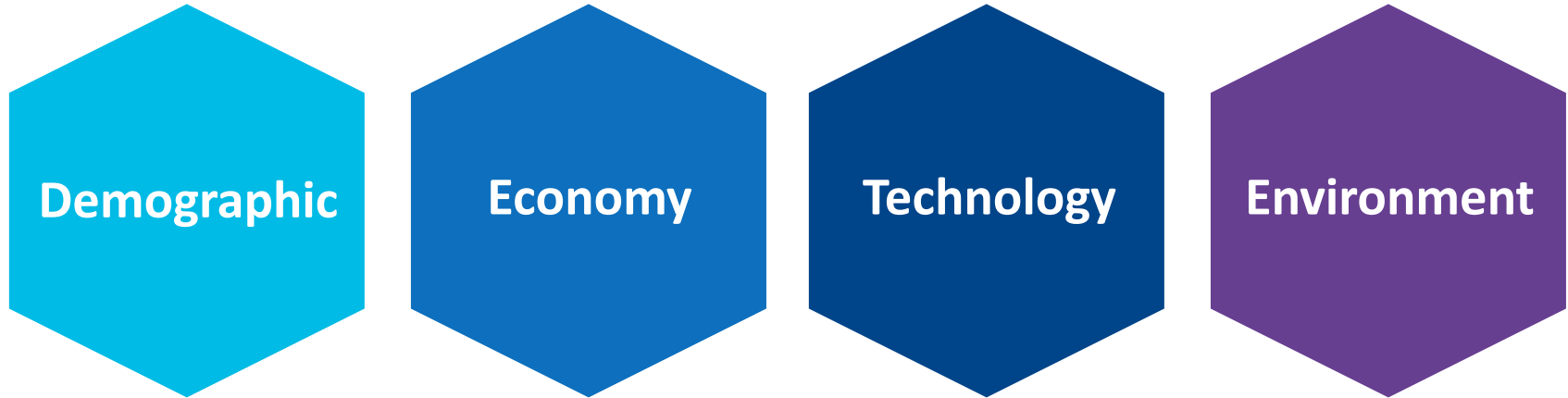


*VTrans2040 is the long-range, statewide multimodal policy plan that provides the overarching vision and goals for transportation in the Commonwealth of Virginia. It identifies transportation conditions and trends anticipated over the coming years and their potential influence on transportation.*

## 4 Main Project Elements

- 1 Visioning upfront
- 2 Trends analysis on projected demographics
- 3 Needs analysis for shorter-term issues
- 4 Scenario planning looking out to 2040

# Trends and Assumptions



# Scenario

## INDUSTRIAL RENAISSANCE



# Scenario

## TECH-TOPIA





# Scenario

## SILVER AGE



# Scenario

## GENERAL SLOWDOWN



## QUESTIONS

- ▶ Travelers in 2040
- ▶ Roadway demands
- ▶ Freight network
- ▶ Transportation & system costs

## QUESTIONS

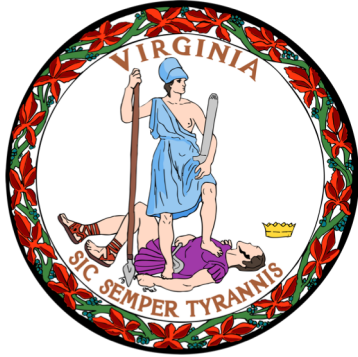
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## EARLY FINDINGS

- ▶ Increase demand
- ▶ Tech will enhance system performance
- ▶ Balance demand with performance
- ▶ Preserve walkable & multimodal places
- ▶ Be aware of risks

# Collaborations and Partnerships





# Action Items for Agencies

# Preparation For the Emerging Technologies

- ☒ Stakeholder involvement
- ☒ Bring the right people to the table

# Preparation For the Emerging Technologies



Stakeholder involvement



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- ☒ Data collection, analysis, etc.
- ☒ Scenario planning
- ☒ Test



# Developing a Better Framework

An aerial, high-angle view of a multi-lane highway. Several cars are visible, moving away from the viewer. Each car is surrounded by concentric, semi-transparent blue and green circular waves, representing sensor ranges like radar or lidar. The waves extend outwards from the cars, overlapping with each other and the road lanes. The overall color palette is a cool blue, giving it a technological or futuristic feel. The text 'Bold Predictions' is centered over the middle of the image in a white, sans-serif font.

# Bold Predictions







/Autonomous  
/Sensing  
/Communication  
/Battery  
/Navigation  
/Mirrorless  
/Ecology

Self-Driving

48  
mph



An aerial, high-angle view of a multi-lane highway. Several cars are visible, moving away from the viewer. Each car is surrounded by concentric, semi-transparent blue and green circular waves, representing sensor ranges like radar or lidar. The waves overlap between adjacent cars, suggesting a networked or cooperative driving system. The road has yellow dashed lane markings. A concrete divider separates the highway from another road on the right. The entire image has a blue tint.

# Questions & Answers

# Contact Information

## Panelists



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## Moderator



**Andrew Beaton**  
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Thank You