



# Achieving Transportation System Management and Operations Goals by Behavior Nudging in Mobility-on-Demand

## TxDOT's Houston ConnectSmart (ATCMTD) Program

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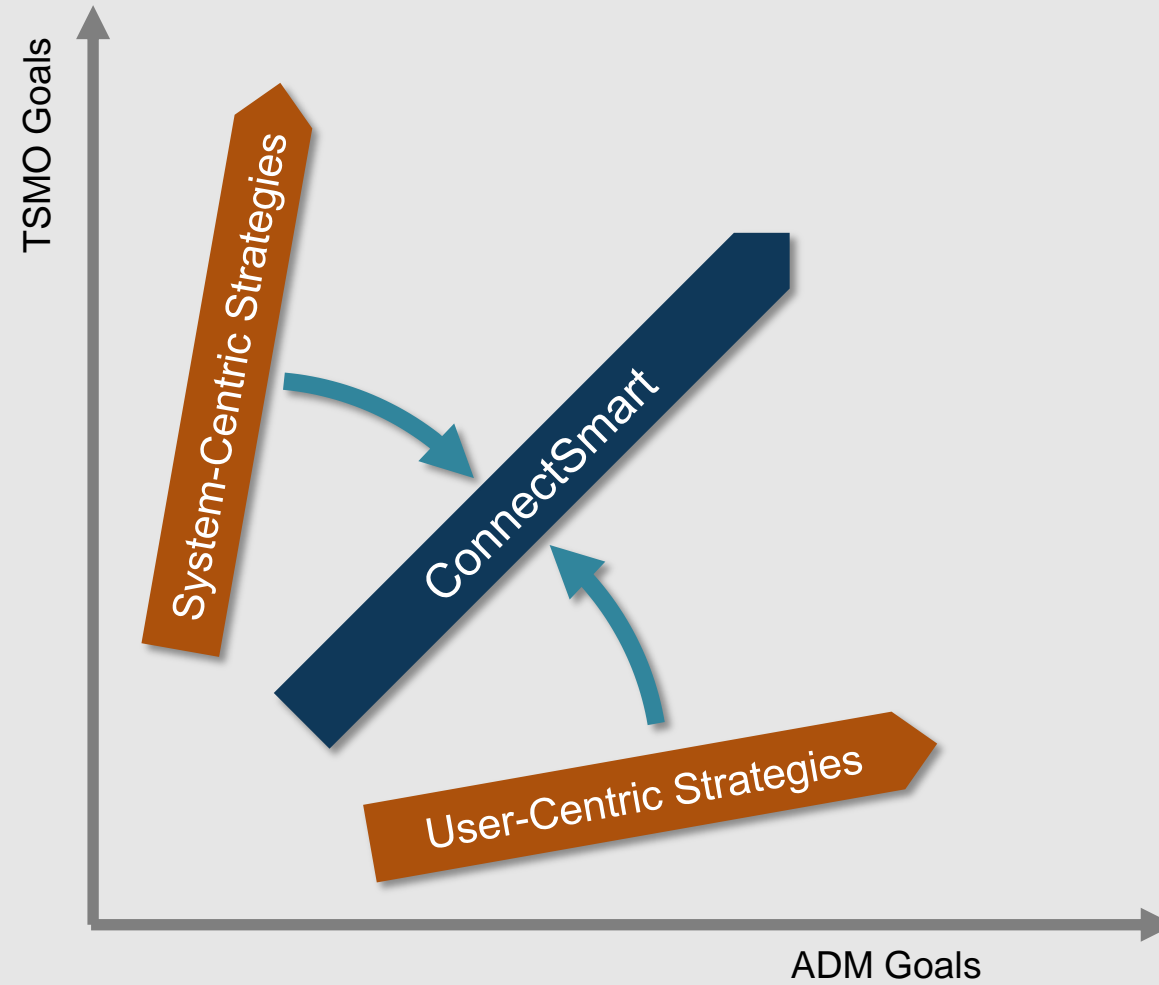
# TxDOT's Houston ConnectSmart Grant



- 2016 ATCMTD recipient
  - Three-year technology deployment and implementation
  - Kick-off in late 2019
- Platform and mobile app service area:
  - Houston metropolitan region, 8 counties
  - Ancillary services deployed in two pilot areas
- Timeline:
  - Phase 1: develop platform, integrate traffic data, refine mobility app functionalities, and develop marketing/outreach plan
  - Phase 2: implement, roll out, and continue marketing/outreach
  - Phase 3: evaluate, expand, and continue marketing/outreach



# Why ConnectSmart?





# How Does ConnectSmart Work?



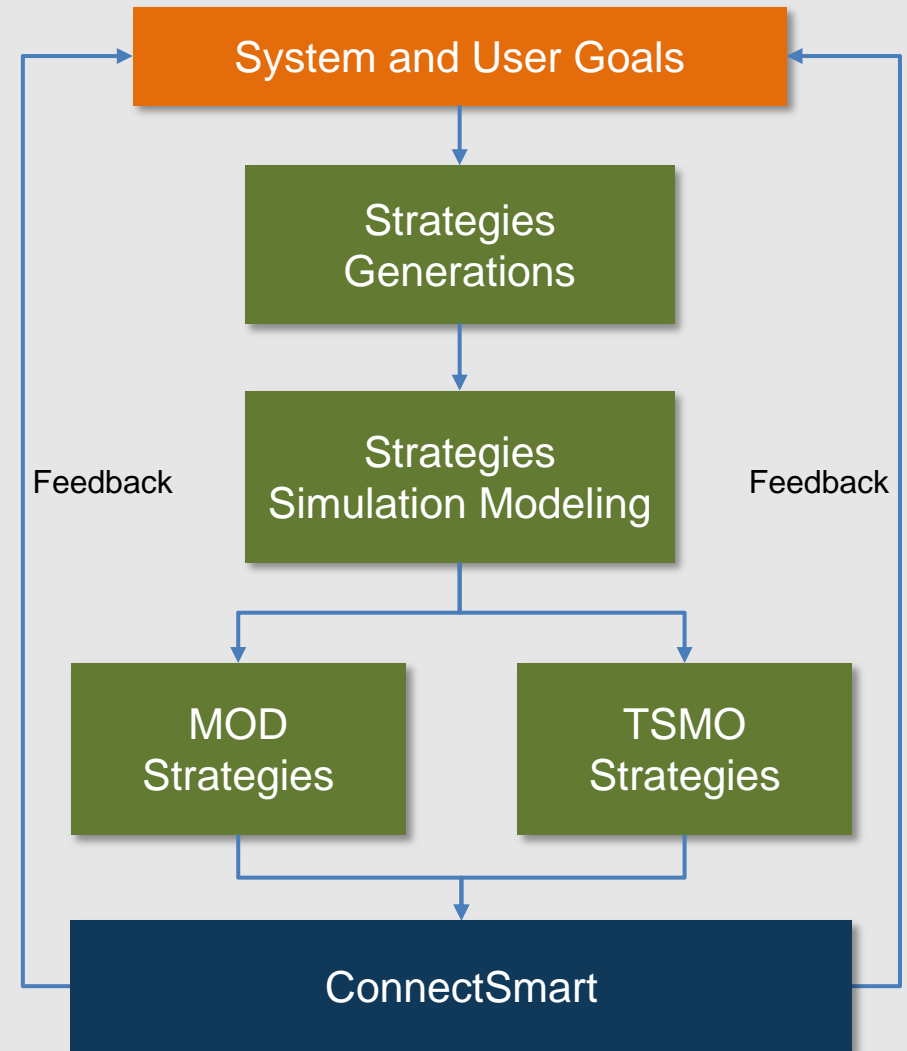
- Real time conditions
- Traveler information
- Traffic control and restriction
- ITS components

- Providing a service to travelers
- Understand traveler's behavior
- Marketing and awareness
- Partnerships

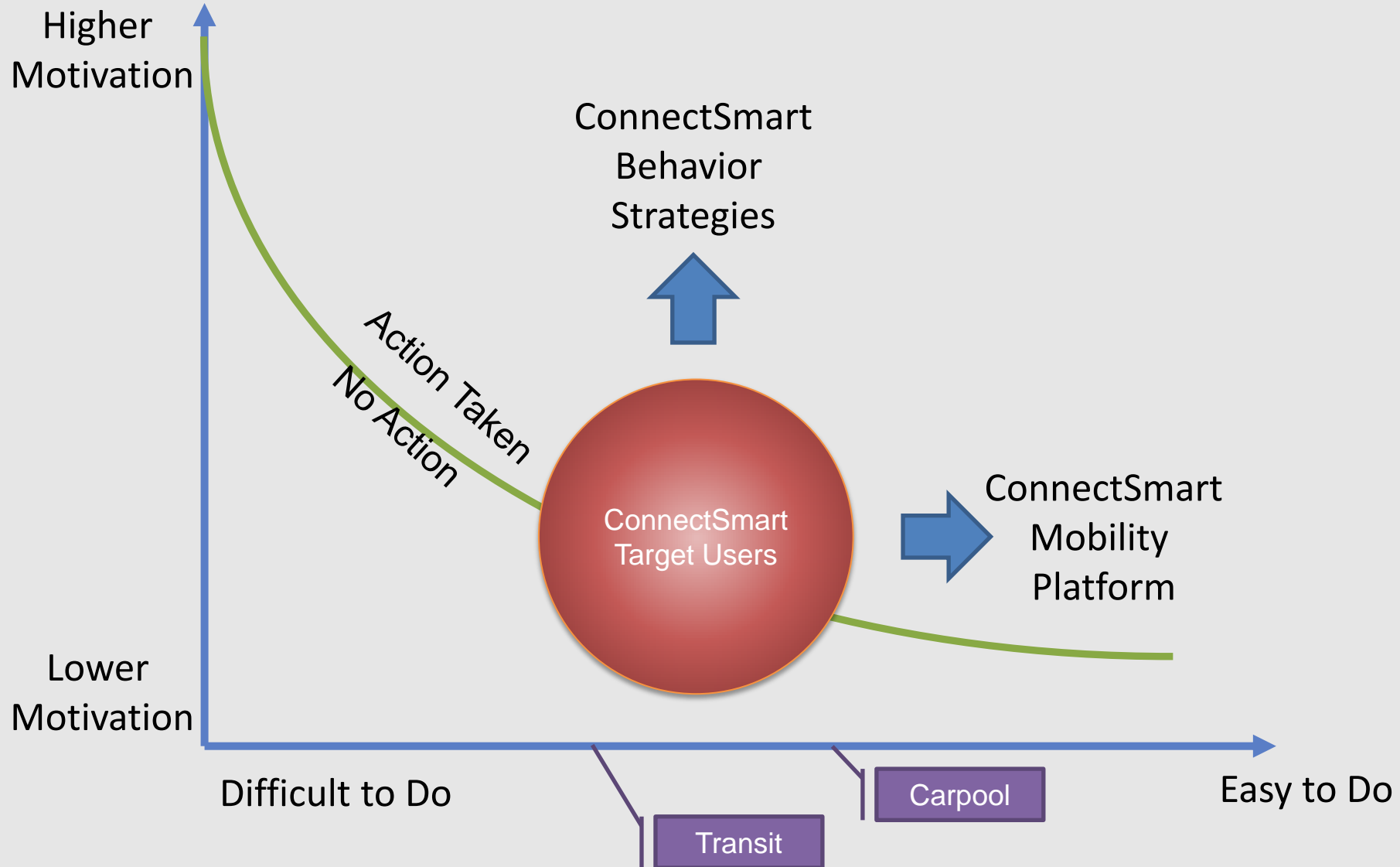
# How Does ConnectSmart Work?



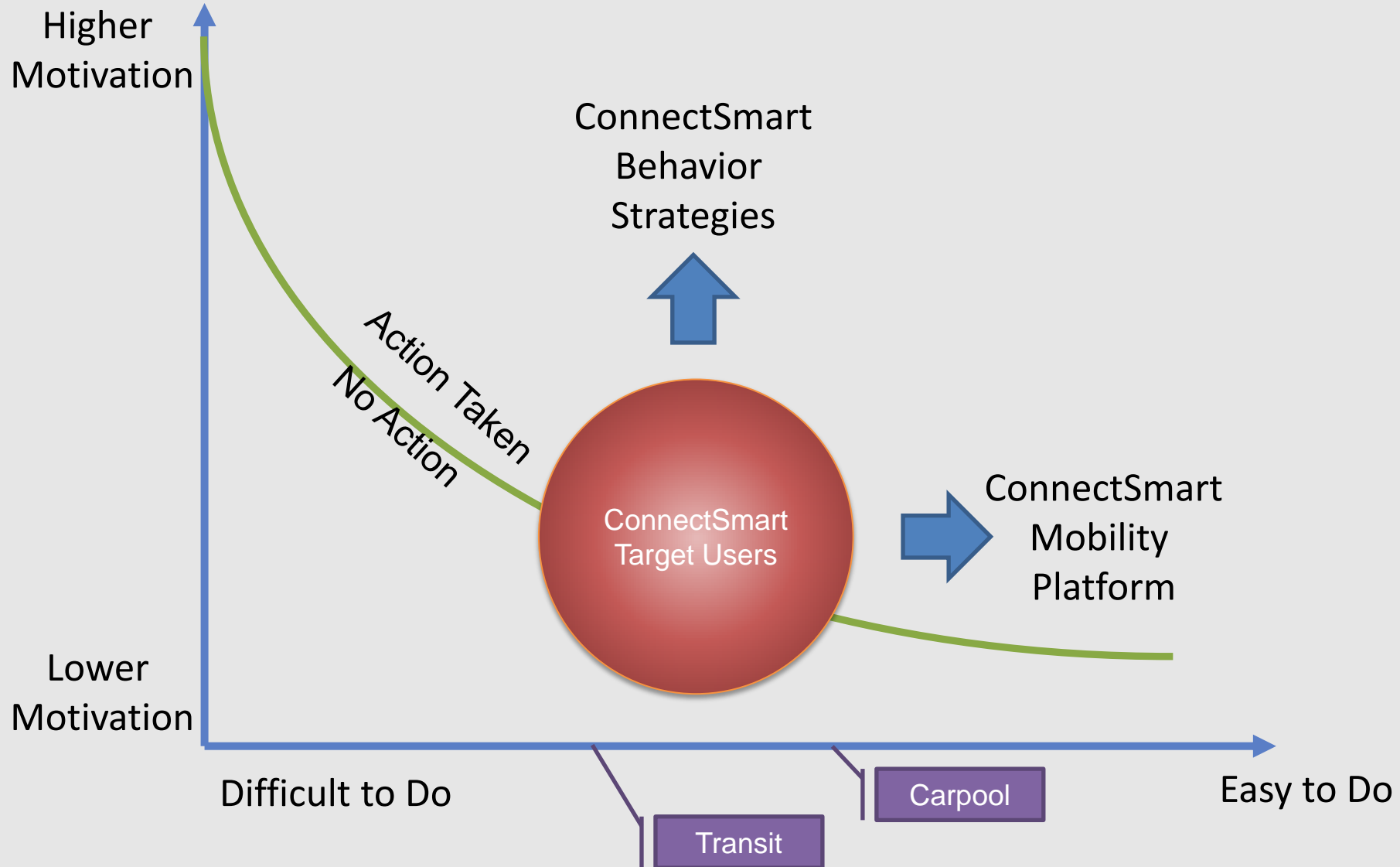
- Agencies set regional system goals
- Strategies evaluation via modeling
  - Generate and analyze ADM and TSMO strategies
  - Understand and evaluate strategy's contributions
  - Inform implementation priorities
- ConnectSmart implements both TSMO and ADM strategies with behavior change targets



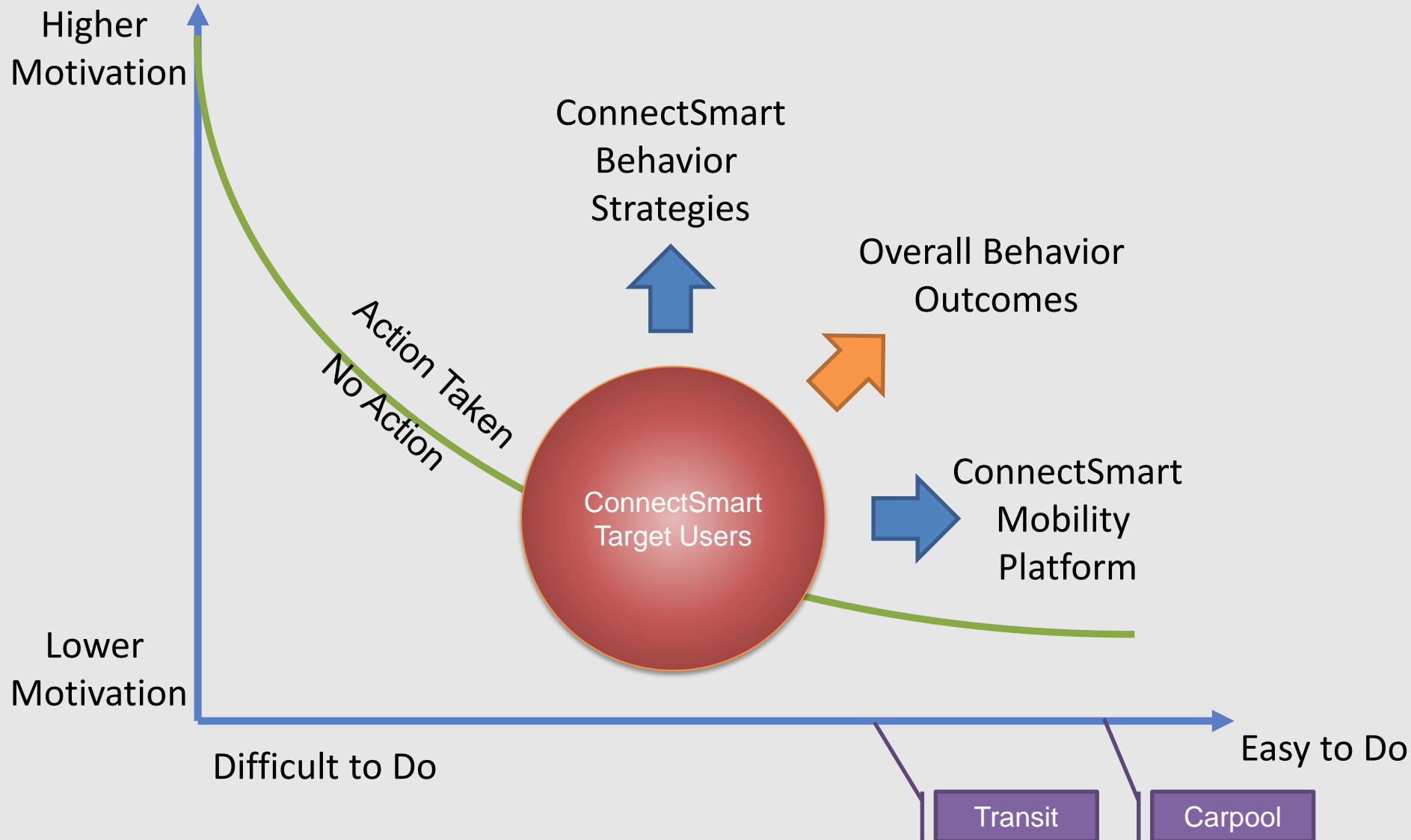
# Behavior Nudging Framework



# Behavior Nudging Framework



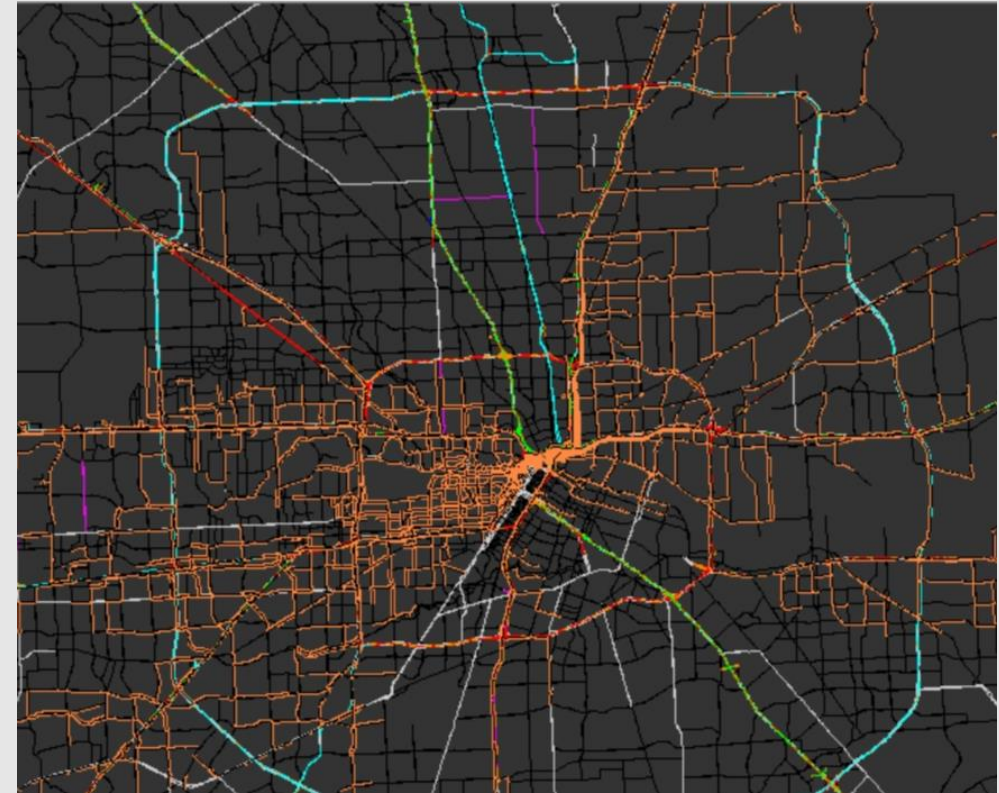
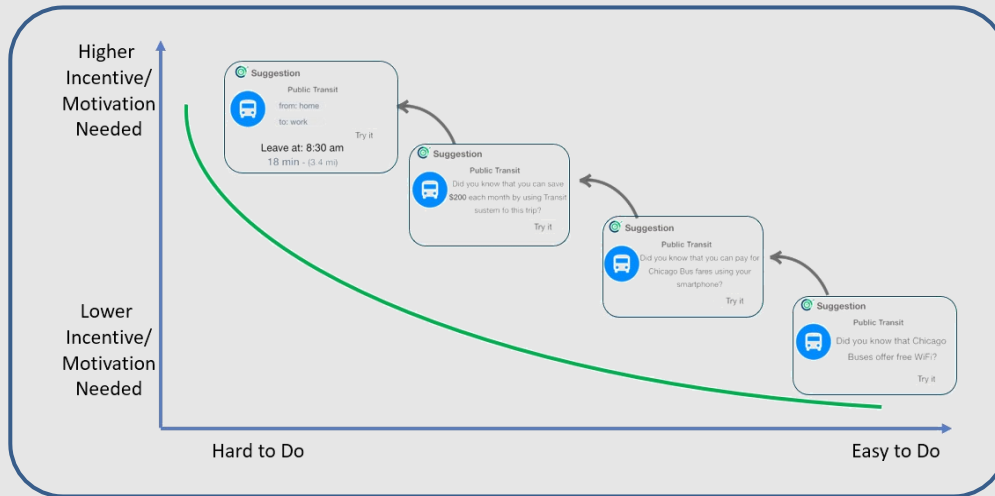
# Behavior Nudging Framework







- Mobility Options Discovery and Engagement
  - Select Link Analysis for O-D specific pain points and mobility strategies exploration
  - Baby-steps to break big asks to smaller achievable tasks



# ConnectSmart Key Capabilities

# Multi-modal Trip Planner



9:35

Plan a trip BCycle

Current location  
1245 Wilshire Blvd Garage

Transit Driving Walking Cycling

Today, 9:35 AM

20 min  
17 min

17 min (10.6 mi)  
9:35 AM - 9:52 AM

View Steps Start Trip

9:32

Plan a trip BCycle

MacGregor Park  
University of Houston

Transit Driving Walking Cycling

Today, 9:32 AM

9 min

9 min (1.1 mi)  
9:32 AM - 9:41 AM

View Steps Start Trip

9:52

Plan a trip BCycle

Strake Jesuit College Preparatory  
Baylor College of Medicine

Transit Driving Walking Cycling

Today, 9:52 AM Earliest

- 44 min  
9:58 AM > 10:43 AM  
5 • [Bellaire 2] • 3
- 54 min  
10:01 AM > 10:55 AM  
5 • [Bellaire Quickline 402] • 4
- 46 min  
10:16 AM > 11:02 AM  
5 • [Bellaire 2] • 3
- 1 hr 4 min  
10:00 AM > 11:04 AM  
7 • [Gessner 46] • 1

9:52

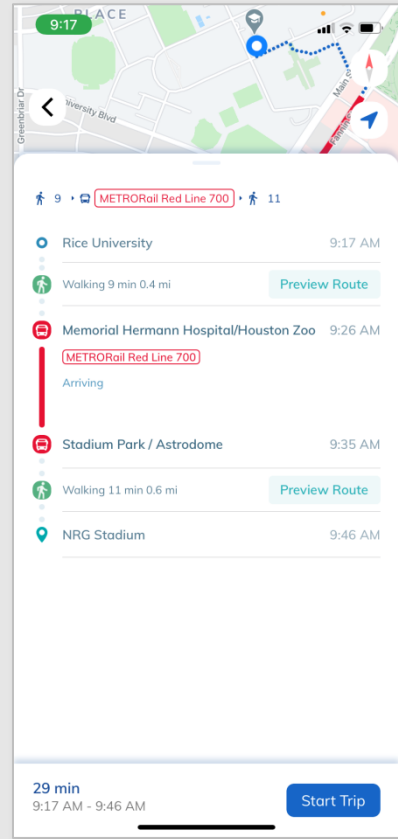
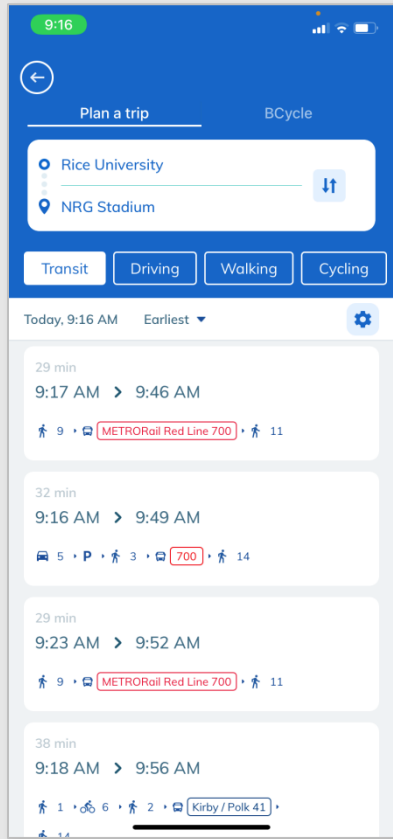
5 • [Bellaire 2] • 3

- Strake Jesuit College Preparatory 9:58 AM
- Walking 5 min 0.3 mi [Preview Route](#)
- Bellaire Blvd @ Pella Dr 10:04 AM  
[Bellaire 2]  
Arriving
- Holcombe Blvd @ Fannin St 10:39 AM
- Walking 3 min 0.2 mi [Preview Route](#)
- Baylor College of Medicine 10:43 AM

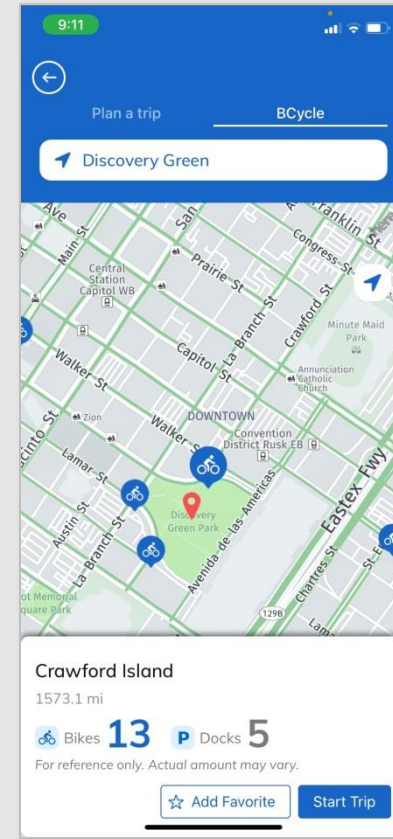
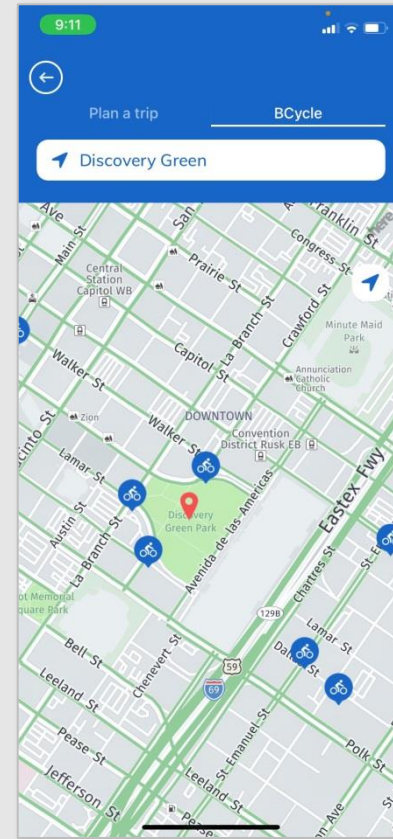
44 min  
9:58 AM - 10:43 AM

Start Trip

# Transit and Bikeshare Integration



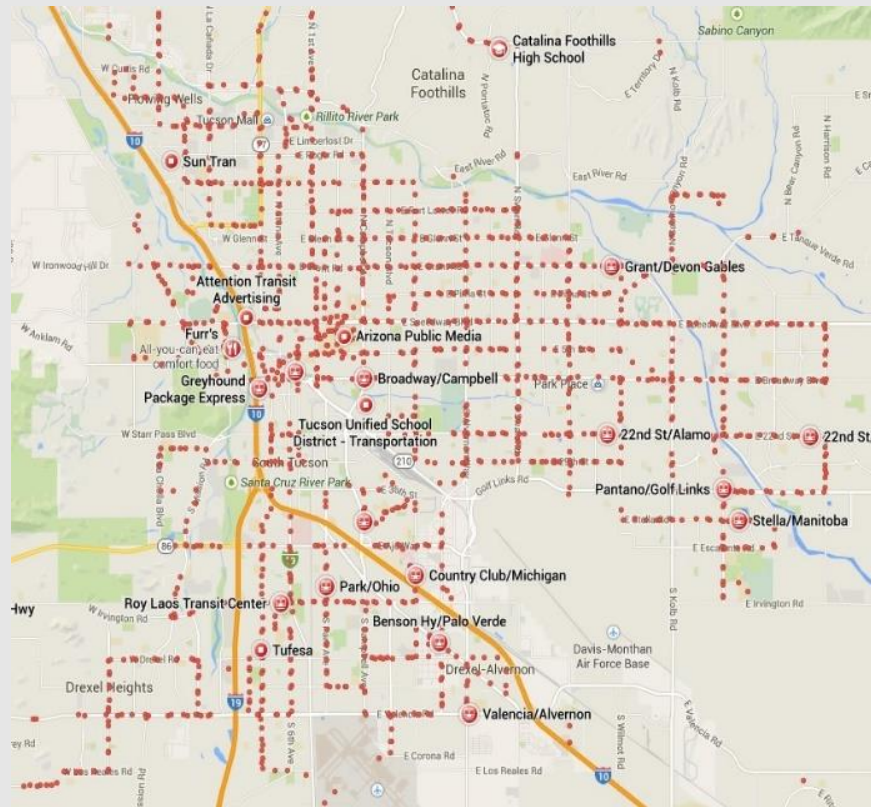
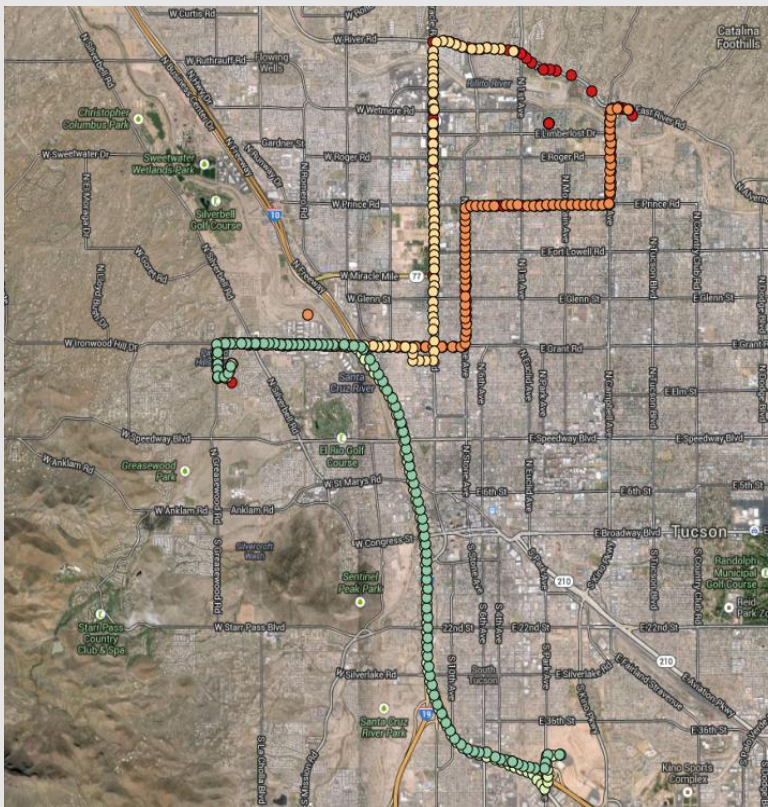
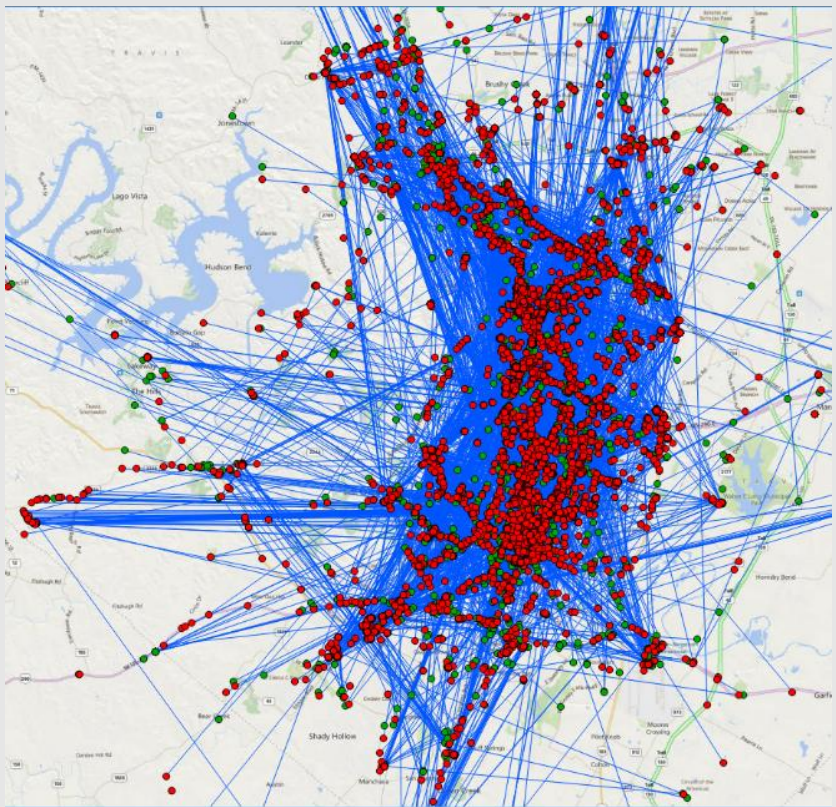
Transit Integration



BCycle Integration



# Location-based Data





# Other Transportation Service Capabilities



- Carpool pre-matching
- Transit hailing
- Demand responsive transit
- Dashboards for agencies and transport providers
- Among other proposed transportation/mobility services



- ConnectSmart serves as the springboard for:
  - Future mobility management methods
  - Future regional comprehensive public-private collaborations
- Commuter awareness and behavior change is the key for success
- ConnectSmart is designed and developed with the following in mind:
  - Inclusivity, scalability, adaptability, and robustness for future application and expansion

# Thank you!

TxDOT Houston ConnectSmart Program