



SWIFT

Sustainable Ways to Integrate Future Transportation

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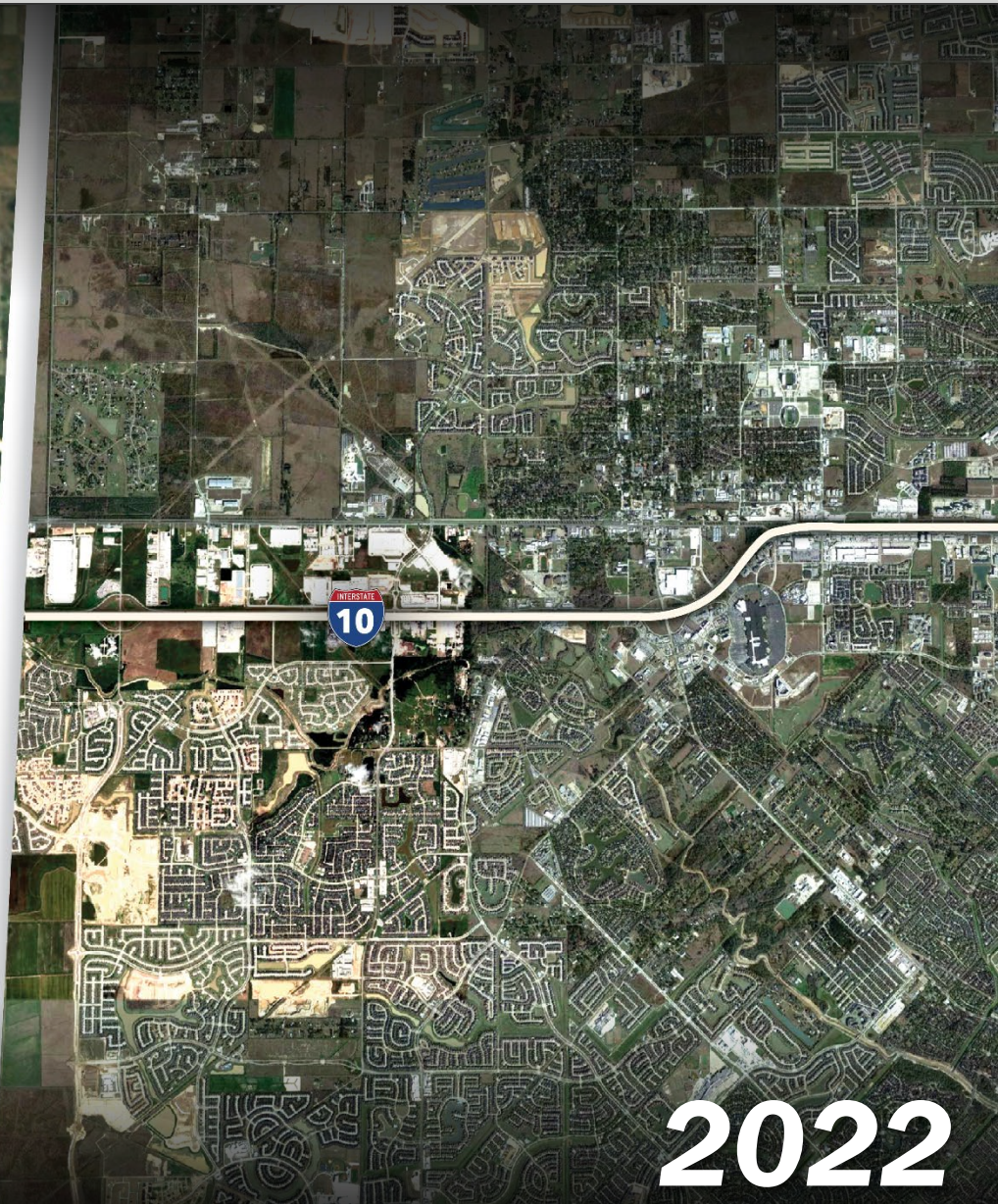
Generational Shifts & Behaviour Change + Uncertain Growth & Urbanization/ Suburbanization + Aging Infrastructure + Emerging Technology & Modes

We need to understand these uncertainties

Rapid Growth and Transformation



Example:
Katy, TX



We have a tool that can quickly evaluate:

SCENARIO #2
Behavior Changes
(Telecommute, TNC...)



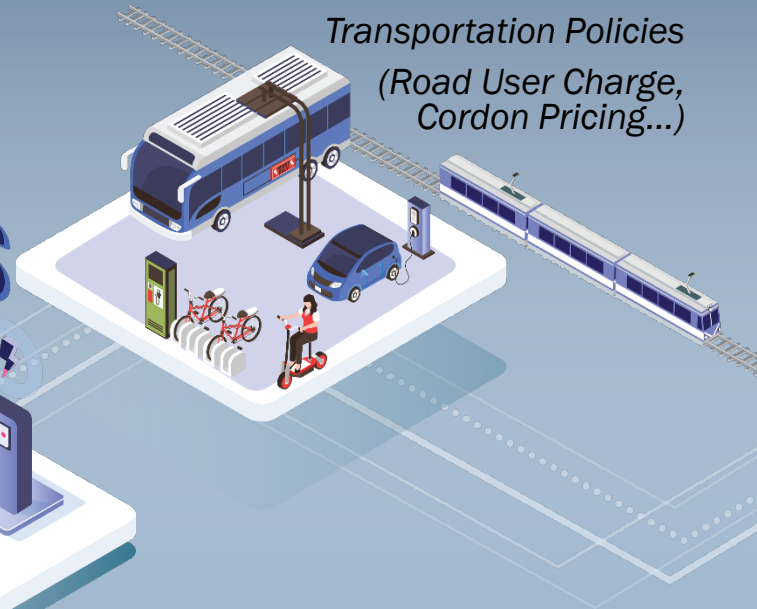
SCENARIO #1
“Surprise” Land Use
Changes



SCENARIO #3
Technology Adoption
(CV/AV, EV, eVTOL...)



SCENARIO #4
Transportation Policies
(Road User Charge,
Cordon Pricing...)



And many more...

SWIFT – Sustainable Ways to Integrate Future Transportation

A tool where uncertainties can be properly captured in the planning process

A SCENARIO-PLANNING TOOL

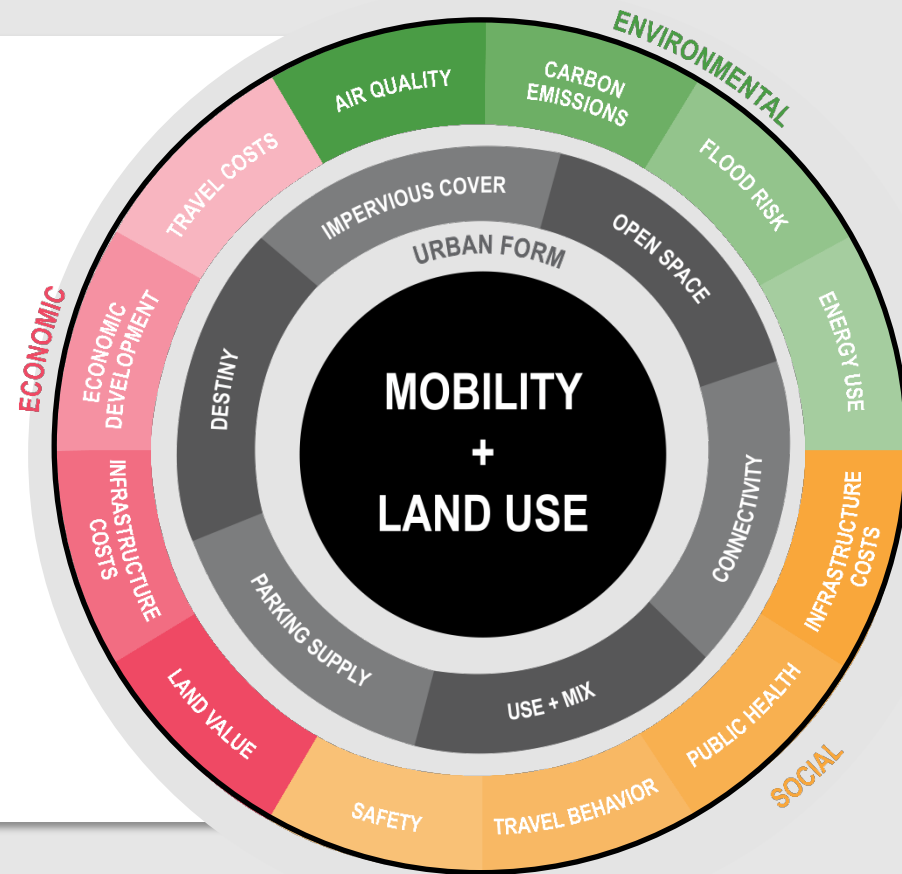
that can help us prepare a sustainable and resilient future.

AN EXPLORATORY MODEL

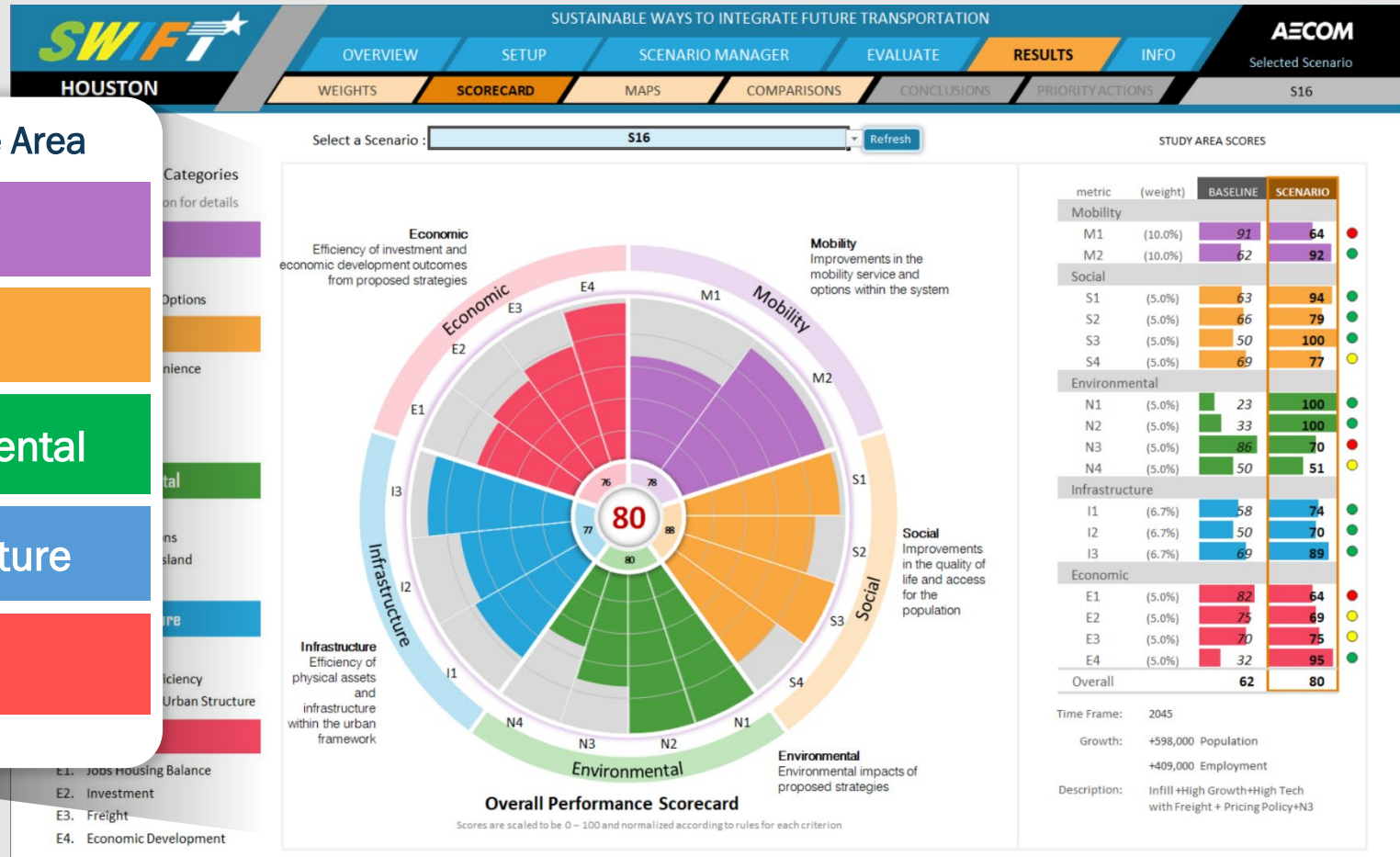
that is able to build a wide range of scenarios and evaluate their societal impacts thoroughly and quickly.

AN INTERACTIVE TOOL

that integrates land use allocation model and transportation model seamlessly with a user-friendly interface.

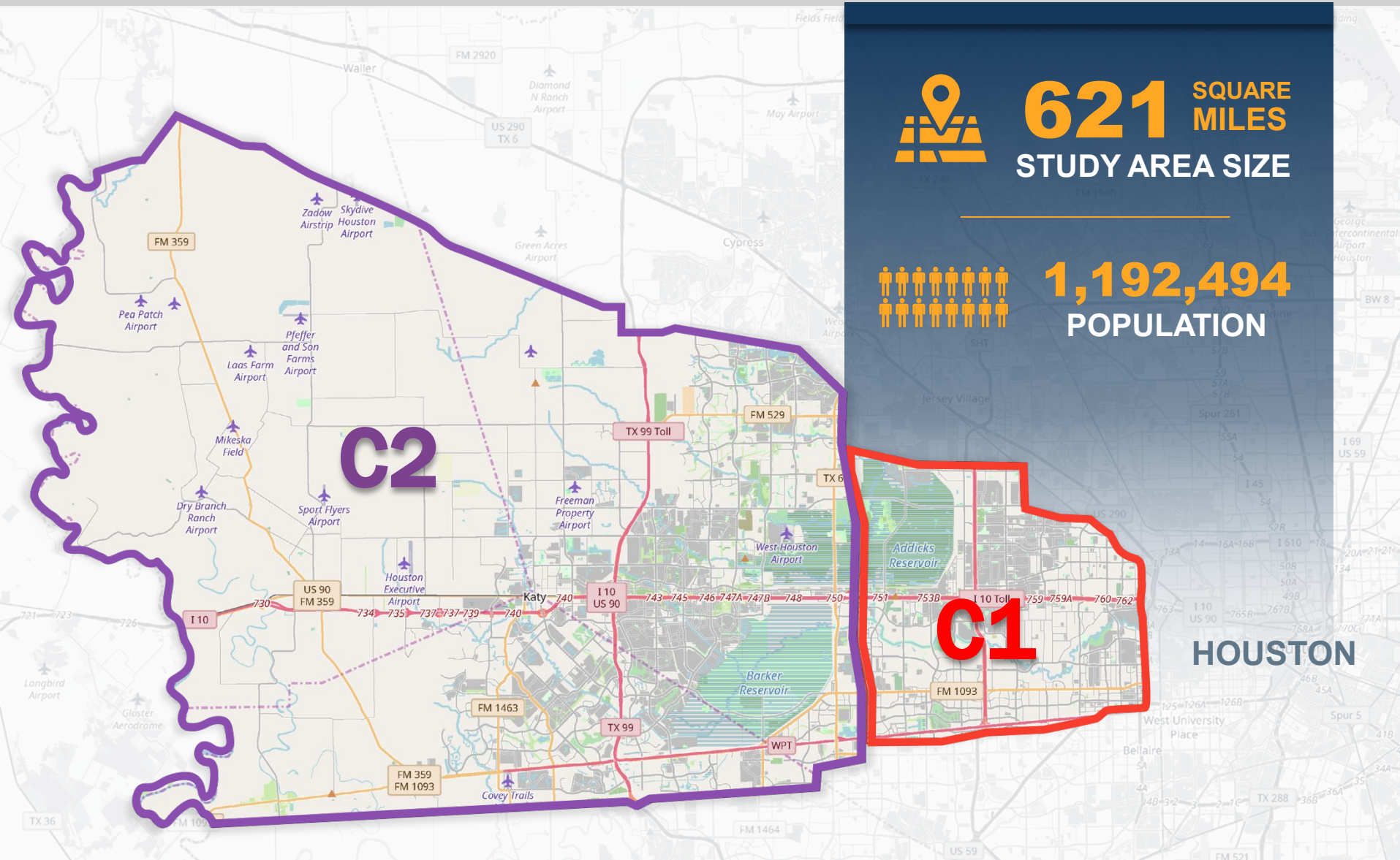


SWIFT – a Data-Driven and Performance-Based Tool



All KPIs are scored from 0 (worst condition) to 100 (best condition) with adjustable weight for each performance area

Our Study Area





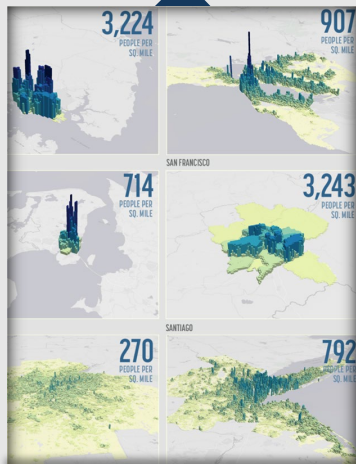
Policy Advisory Committee (PAC):

- City of Fulshear
- City of Houston
- City of Spring Valley
- Fort Bend County
- Fort Bend Development Council
- Harris County
- H-GAC
- Houston Energy Corridor
- Houston Metro
- Katy Area Economic Development Council
- Waller County
- Westchase District

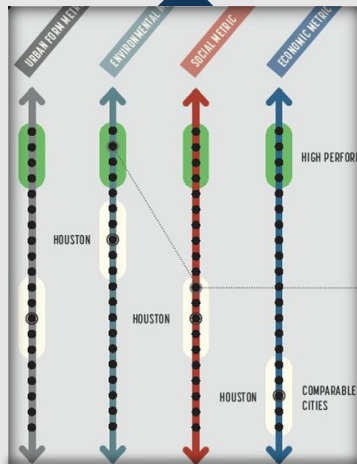
Peer Review Committee (PRC):

- Dr. Carol Lewis – Texas State University
- Dr. Ed Seymour – Texas A&M Transportation Institute
- Jason JonMichael – City of Austin
- Dr. Jerome Catbagan – AECOM Australia
- Jerry Smiley – AECOM Dallas
- Dr. Kyle Shelton – Rice University
- Marty Peate – AECOM Florida
- Dr. Robert Edelstein – ITS America
- Shelly Fialkoff – AECOM New York
- Dr. Street Lee – AECOM United Kingdom
- Suzanne Murtha – AECOM Washington DC
- Veronica Siranosian – AECOM Los Angeles

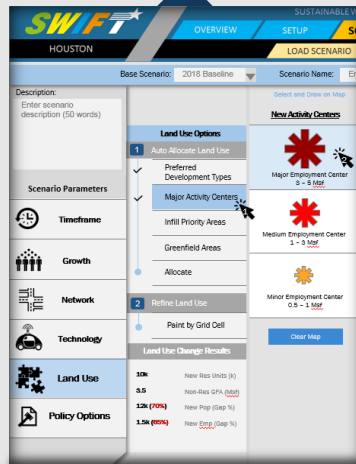
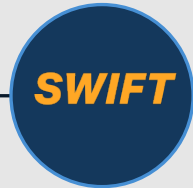
Key Elements of SWIFT Houston Project



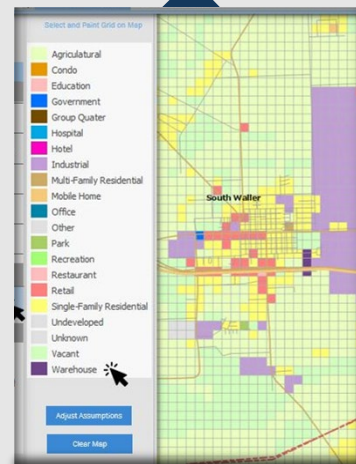
Global Best Practices, Peer Cities Analysis



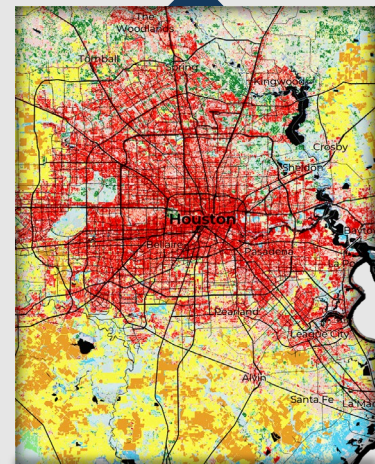
Vision, and KPI Development



SWIFT Development



Scenario Development & Evaluation



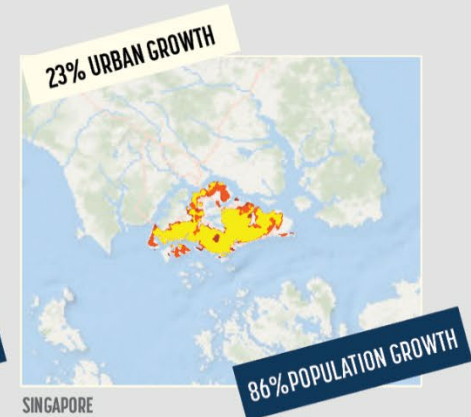
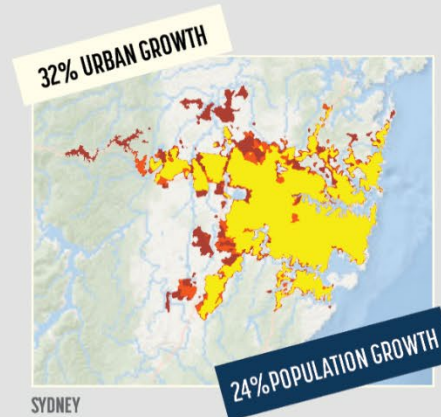
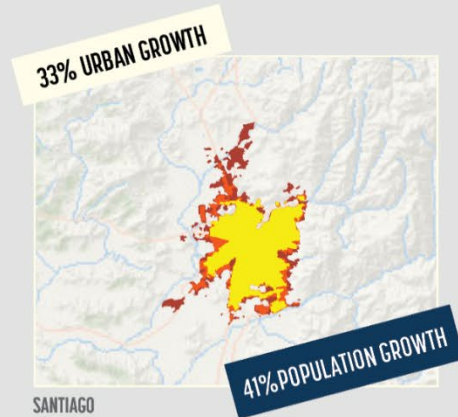
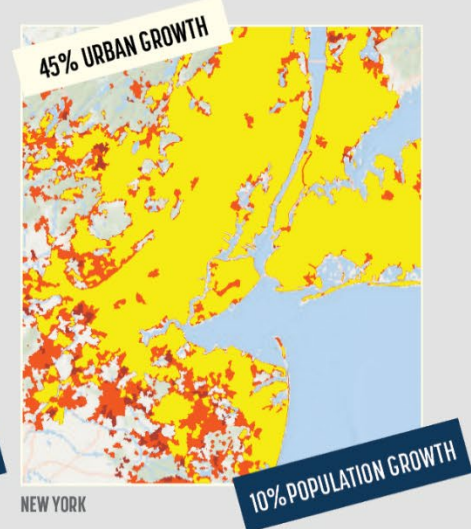
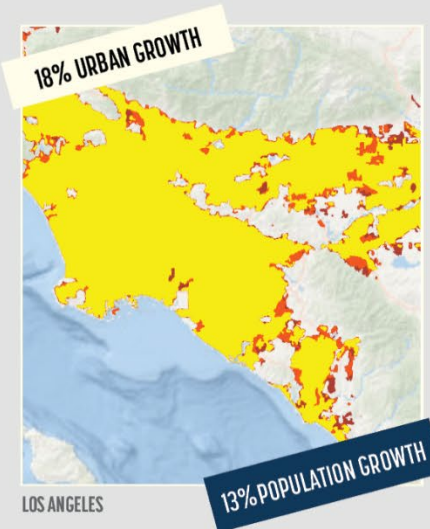
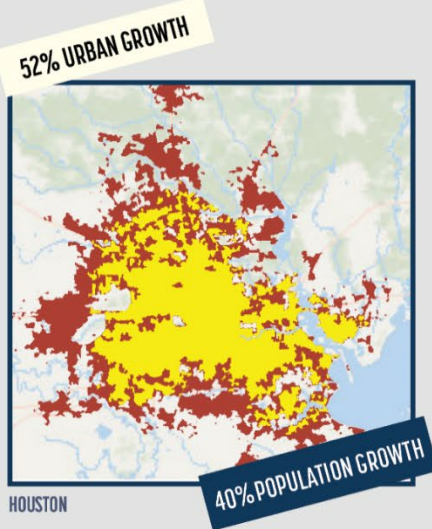
Documentation / Training



Global Best Practice and Comparable Cities Review



WHEN DID
DEVELOPMENT OCCUR?



1990
2000
2014

0 12.5 25 50 mi

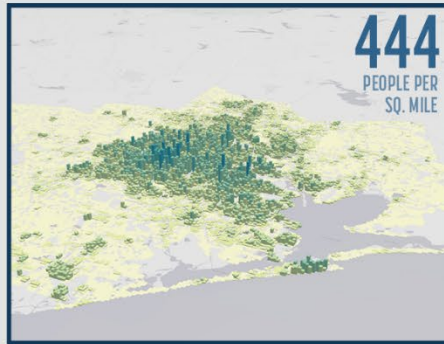
FIGURE 1: URBAN EXPANSION
NEW YORK UNIVERSITY, 2016; UNITED NATIONS

BEST PRACTICE REVIEW

Global Best Practice and Comparable Cities Review



HOW ARE RESIDENTS DISTRIBUTED?



HOUSTON



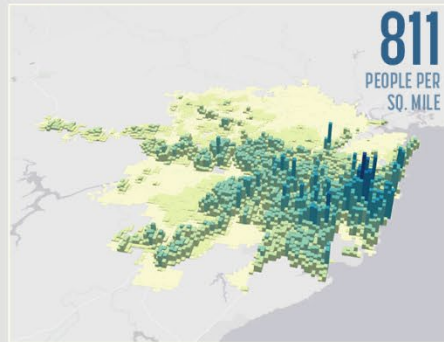
SINGAPORE



SAN FRANCISCO



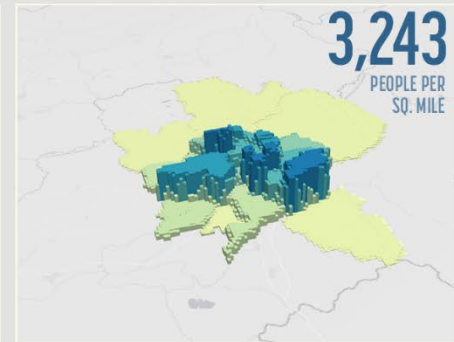
WASHINGTON DC



SYDNEY



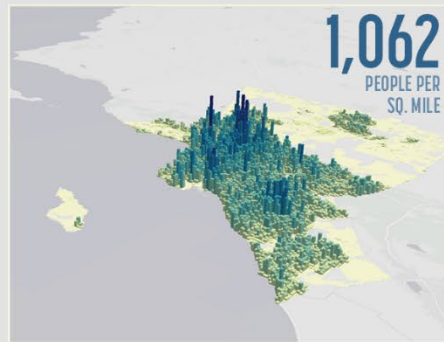
COPENHAGEN



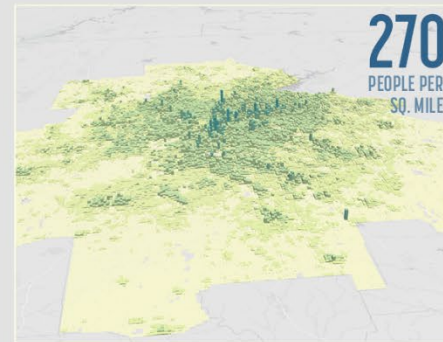
SANTIAGO



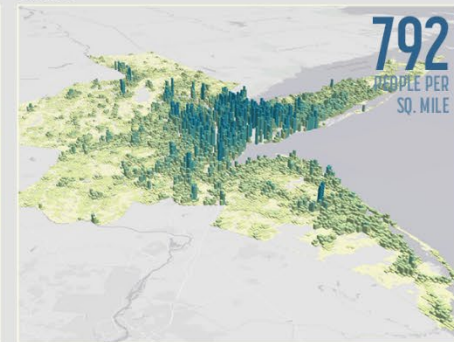
SAN DIEGO



LOS ANGELES



ATLANTA



NEW YORK

BEST PRACTICE REVIEW

Global Best Practice and Comparable Cities Review



HOW DO PEOPLE TRAVEL TO WORK?



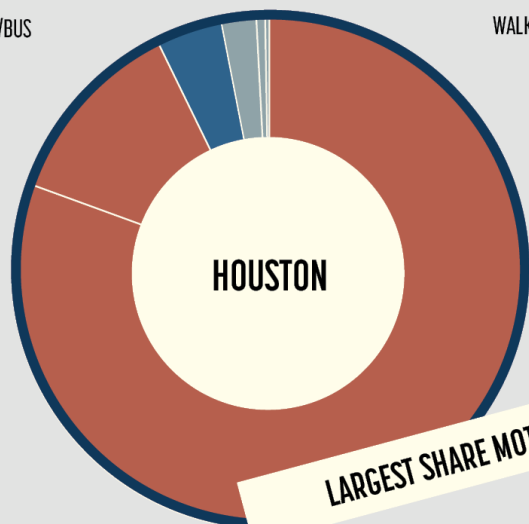
PUBLIC TRANSPORTATION

TRAIN/BUS



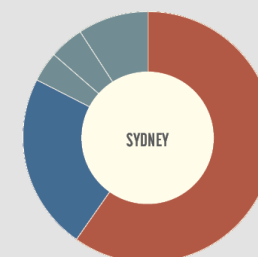
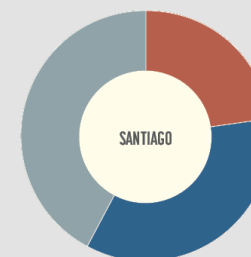
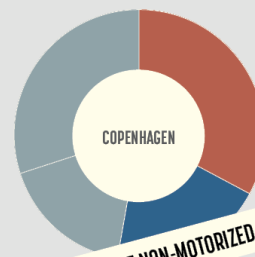
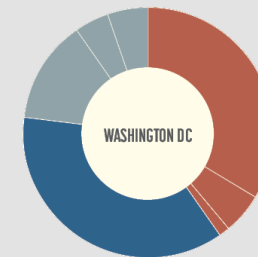
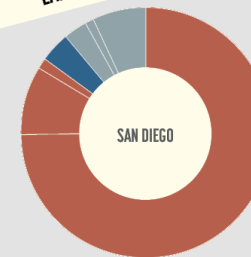
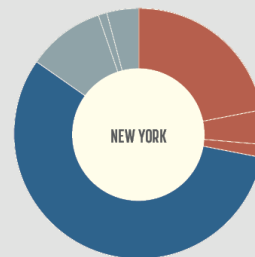
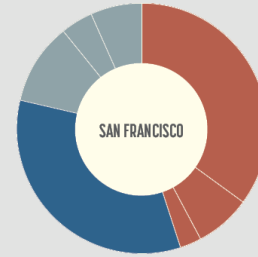
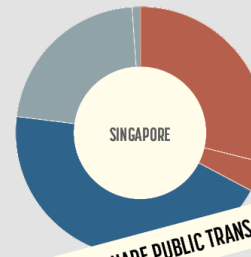
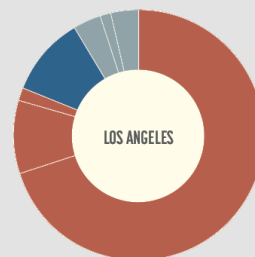
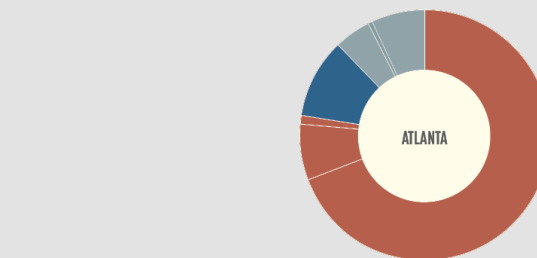
NON-MOTORIZED

WALK/BIKE/WORK AT HOME



MOTORIZED

DRIVE/CARPOOL/MOTORBIKE



BEST PRACTICE REVIEW



Our region's mobility system will **safely connect** people, places and goods, be **adaptive** to emerging technologies, **enable and support economic opportunity**, while considering **quality of life** and the **natural environment**.

SWIFT Process



INPUT
SCENARIOS

SWIFT

OUTPUT

NETWORK

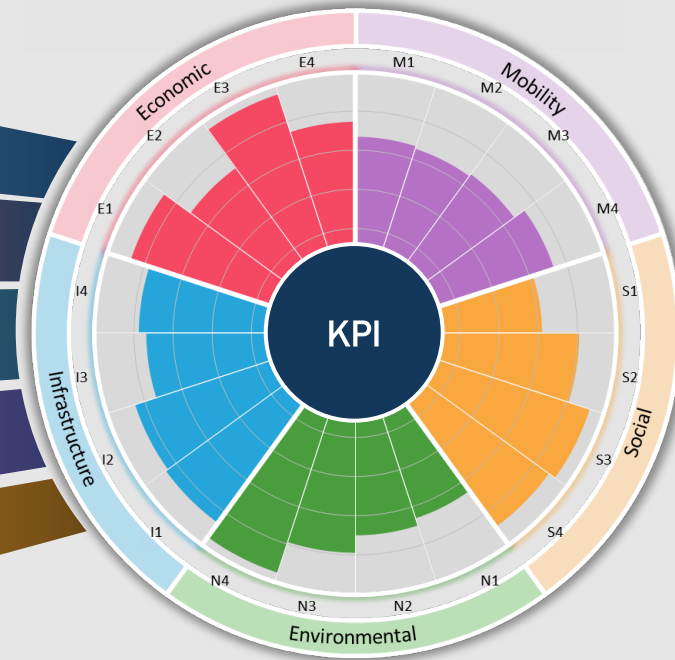
TECHNOLOGY

LAND USE

GROWTH

POLICY

SWIFT



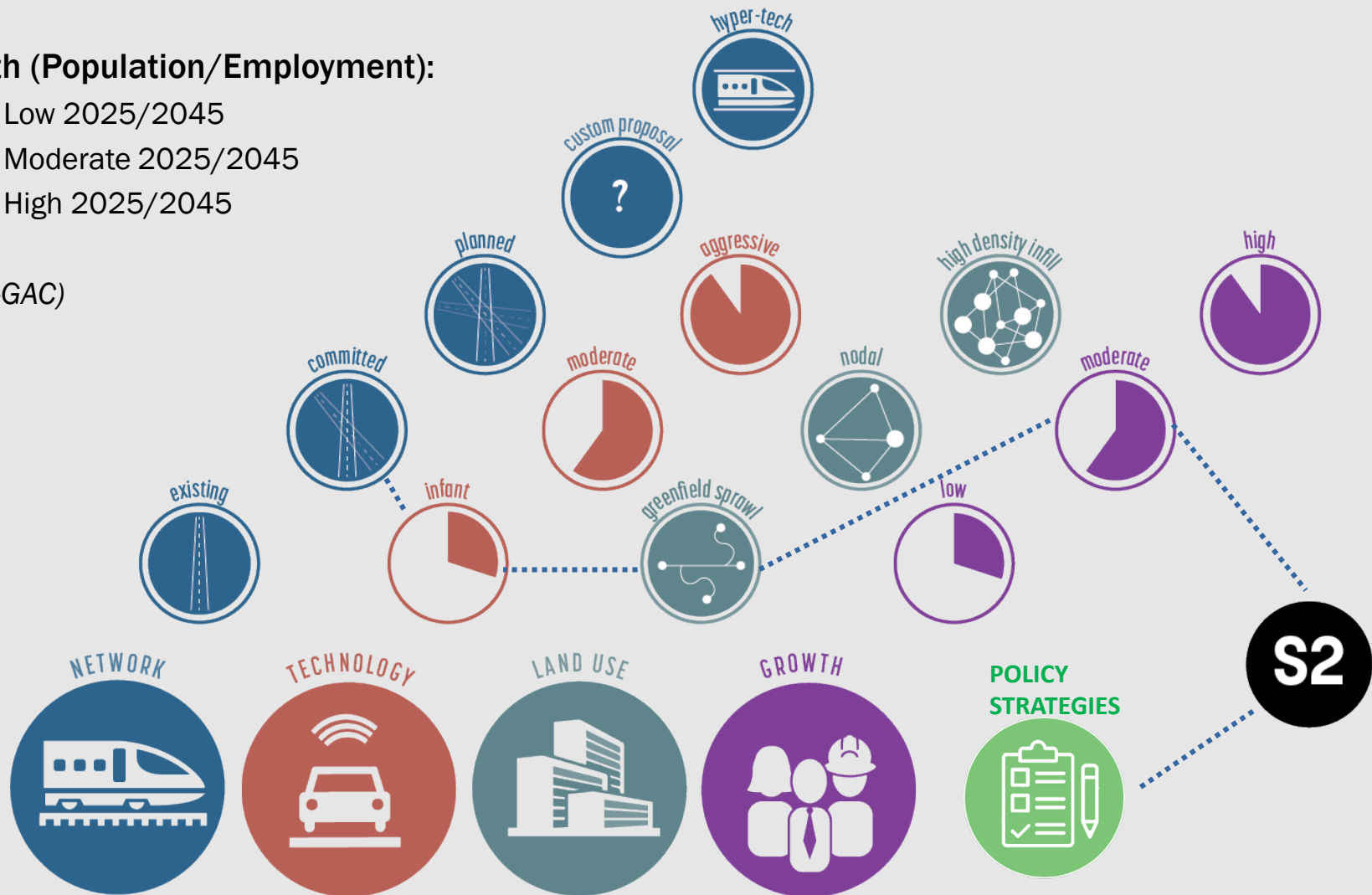
How do We Build Scenarios?



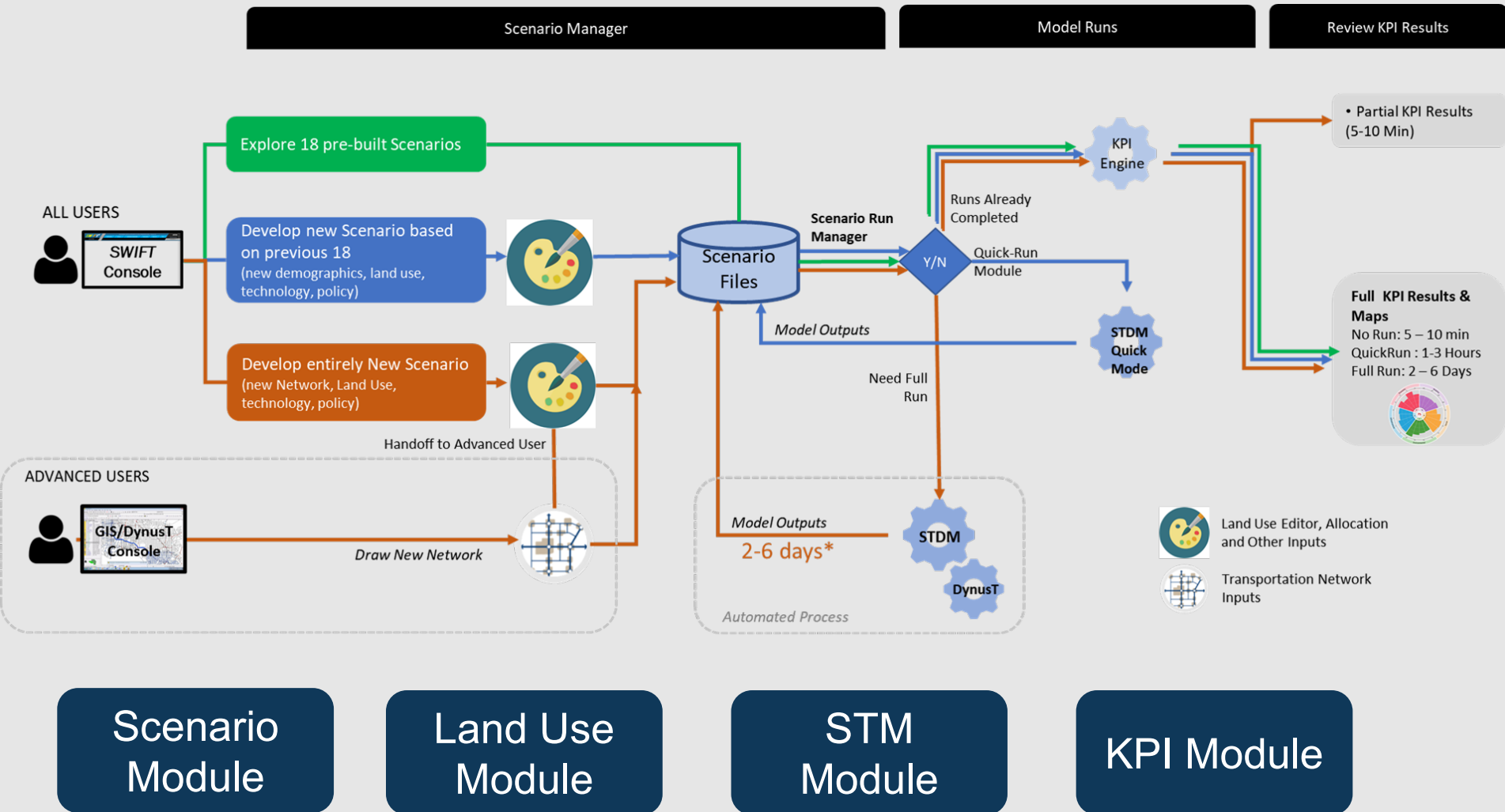
Growth (Population/Employment):

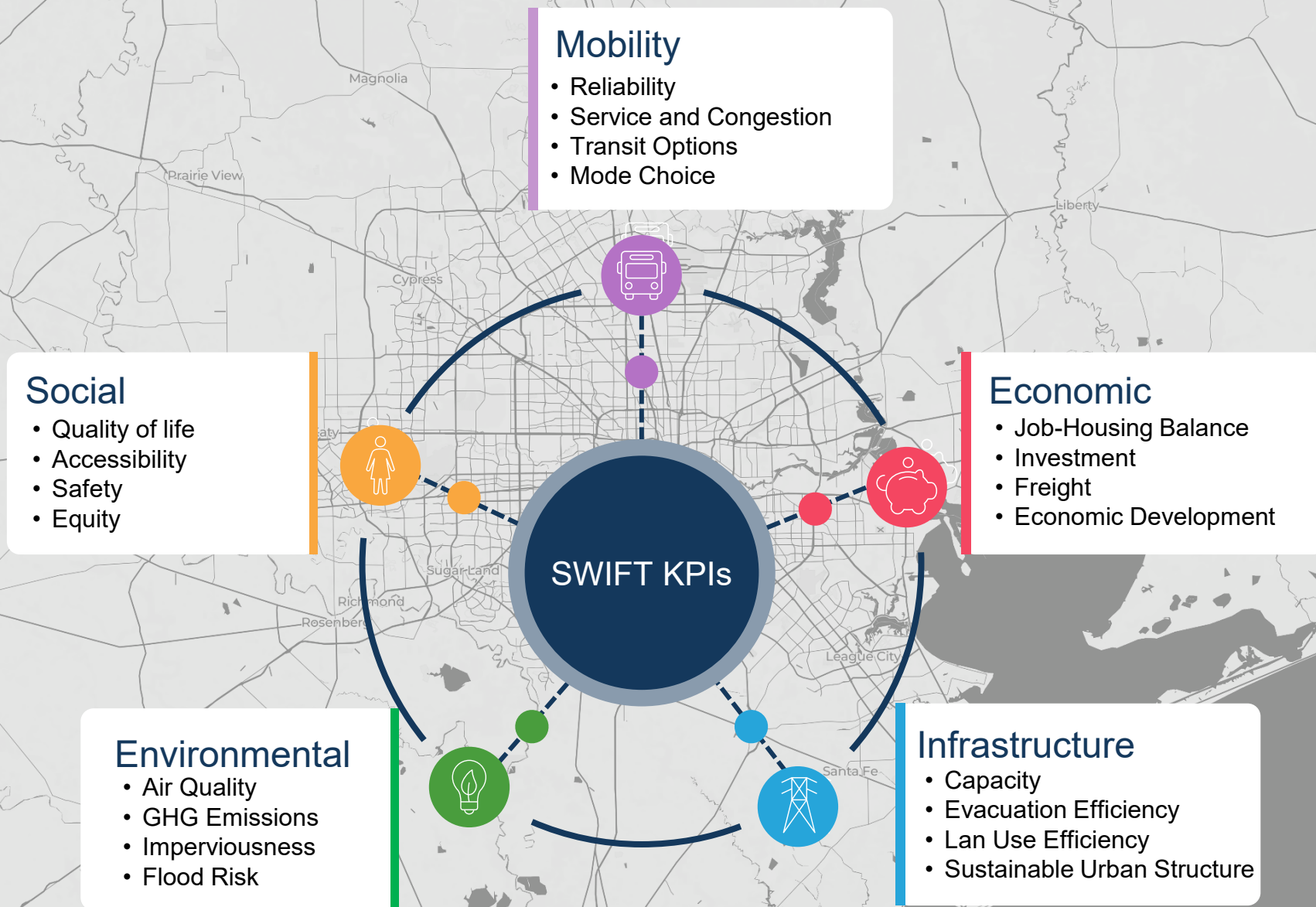
- Low 2025/2045
- Moderate 2025/2045
- High 2025/2045

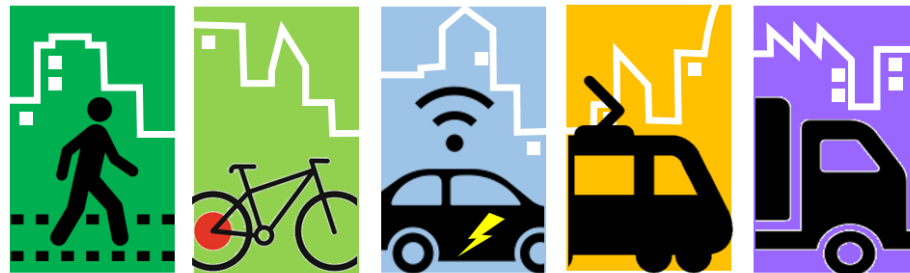
(H-GAC)



SWIFT Model Architecture



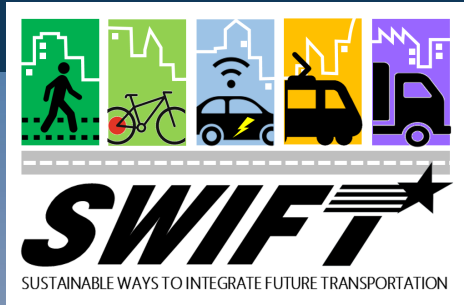




SUSTAINABLE WAYS TO INTEGRATE FUTURE TRANSPORTATION

PROGRAM DEMO

BY JOHN SONG



Thank you

Catherine McCreight, MBA, MA
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