

Augmented Reality in Transportation

Demonstration of AR Visualizations at Public Meetings Using a Combination of Vissim Traffic Models, 3Ds Max Technology, and Roll Plots

Authors:

Avery Wilson Simao, P.E., PTOE

Jeremy Wyndham, P.E., VMA

Camilo Vargas Lopez

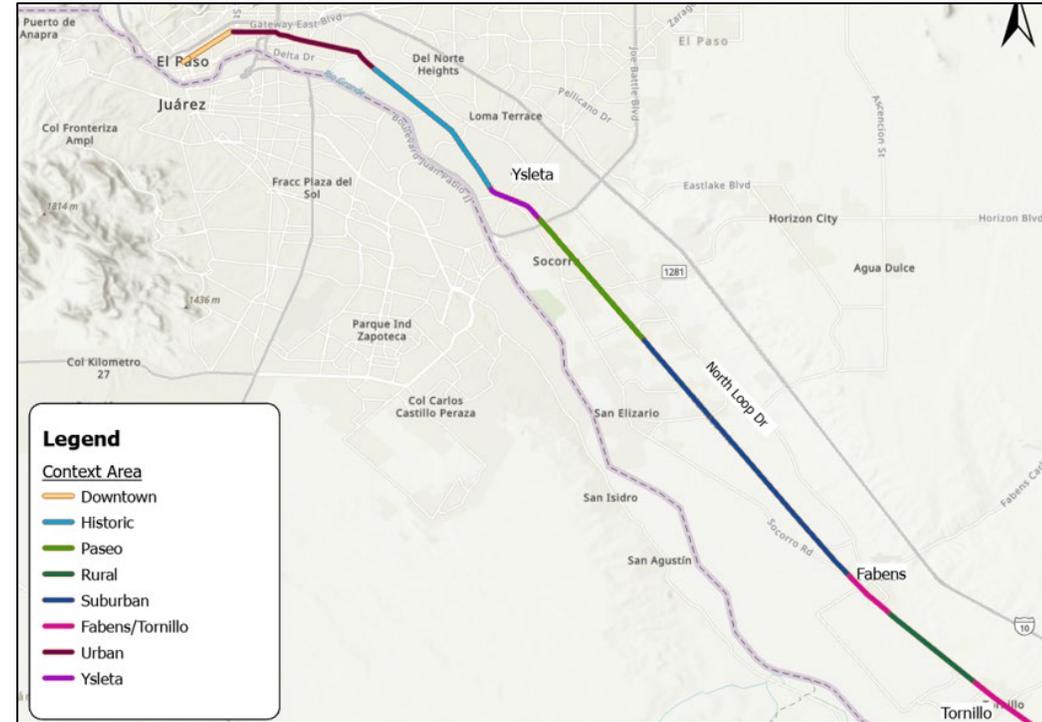
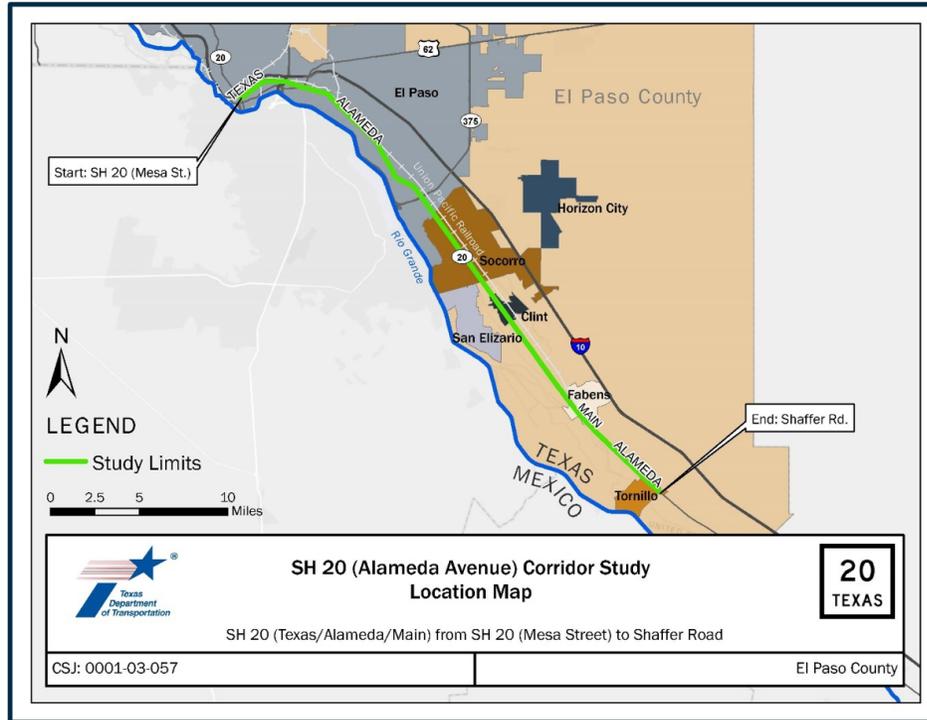
Agenda

- Project Overview
- Study Approach
- History of Public Involvement Techniques
- Vissim Model Development
- 3ds Max Integration
- Augmented Reality Technology & Game Engine Integration
- Public Involvement Impact/Outcomes
- Video demonstration

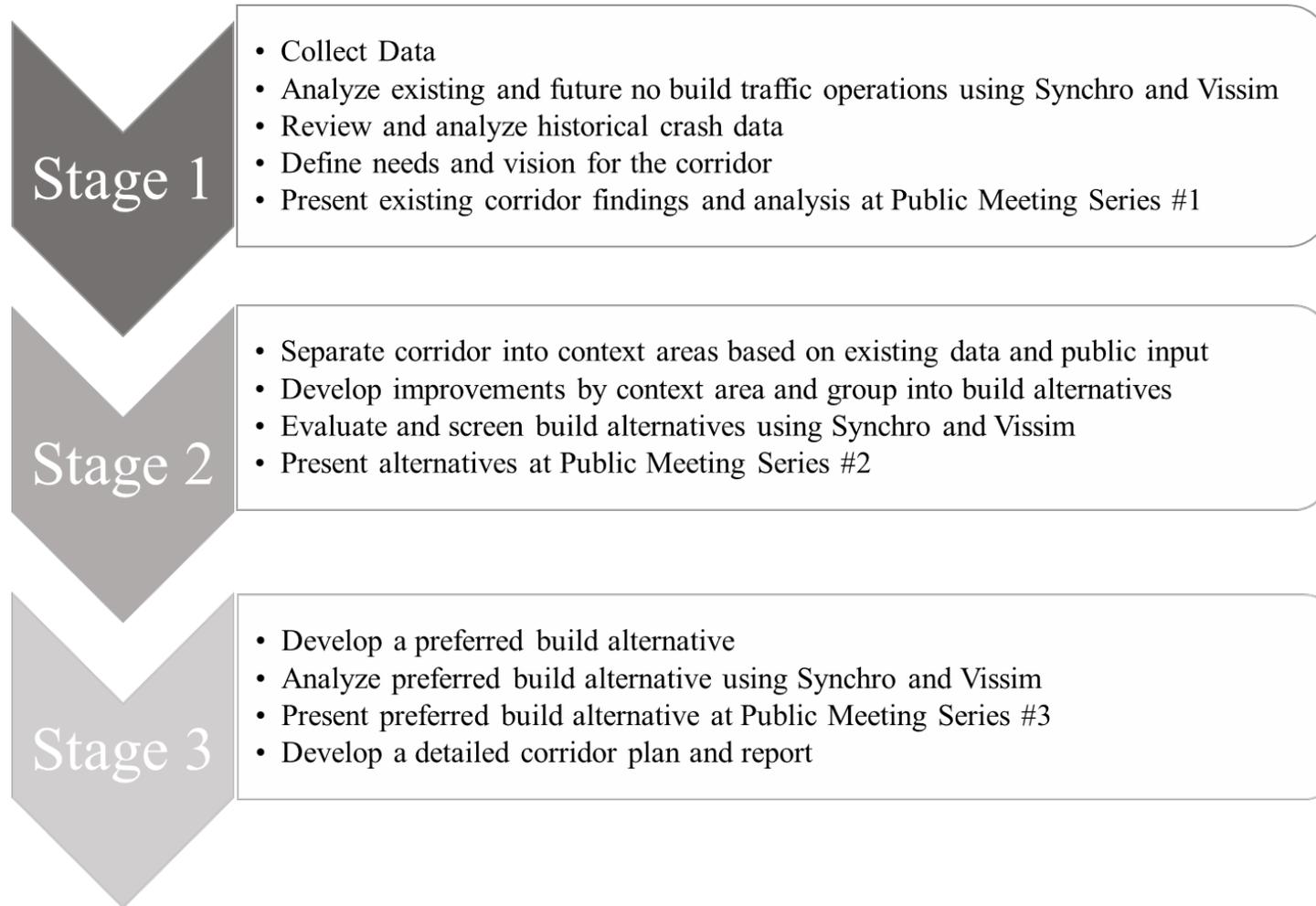
Project Overview

SH 20 (Alameda Avenue)

- 35-mile corridor
- Main Concerns: Access Control, Safety, Operations, Drainage
- Context Sensitive Design
- Extensive Public Involvement Plan



Study Approach

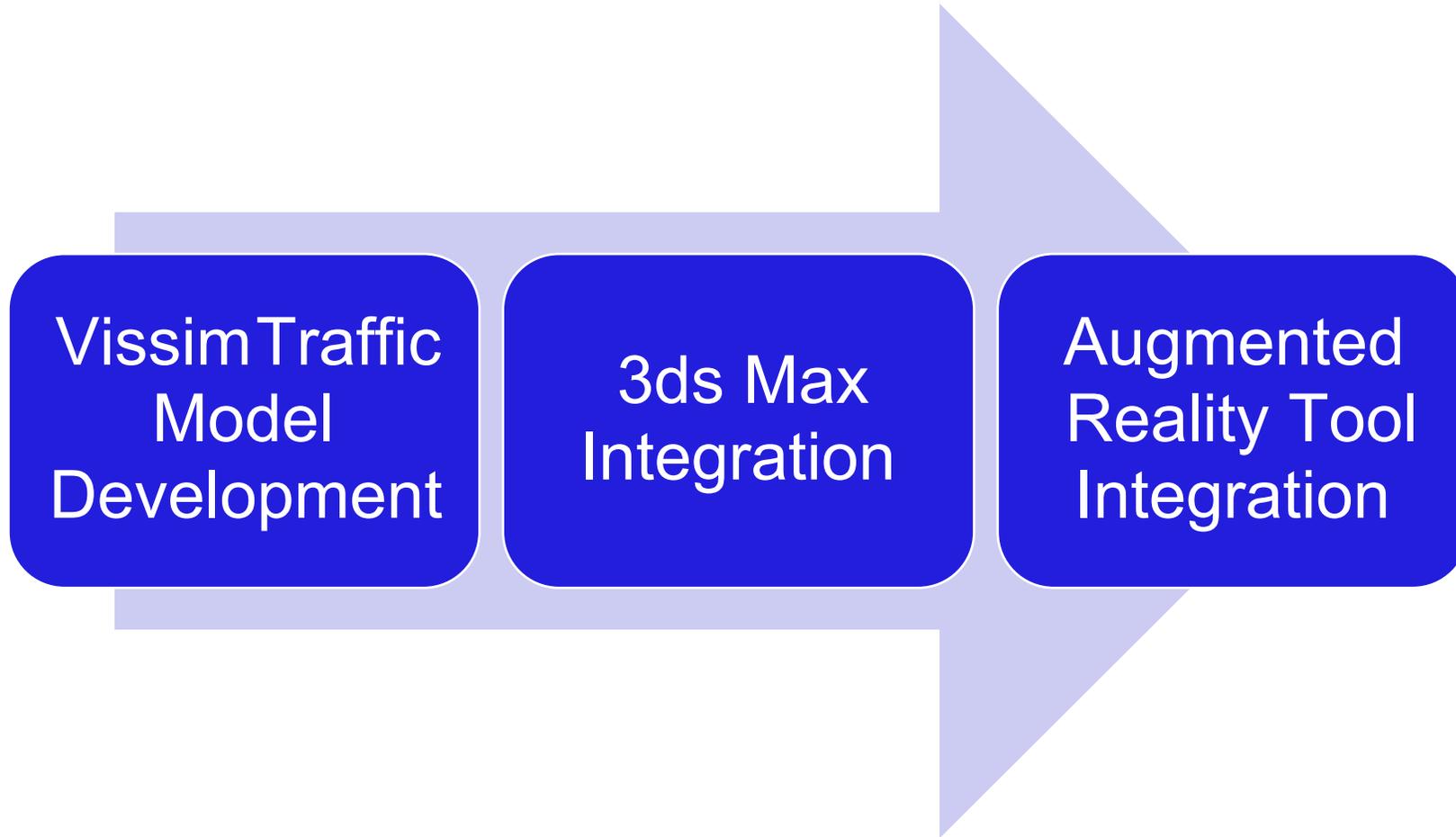


History of Public Involvement Techniques

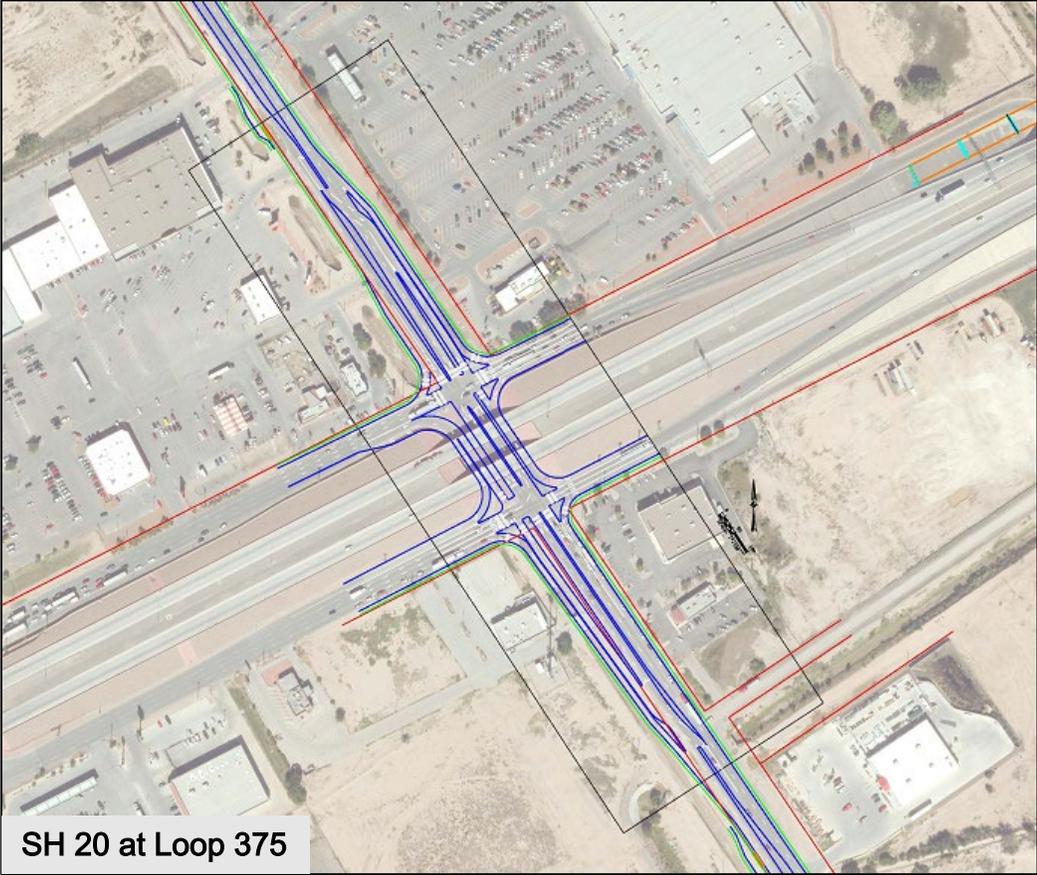
- Schematic Roll Plots
- 3D Renderings
- Fly-Throughs or static camera views of traffic animations:
www.alamedastudy.com



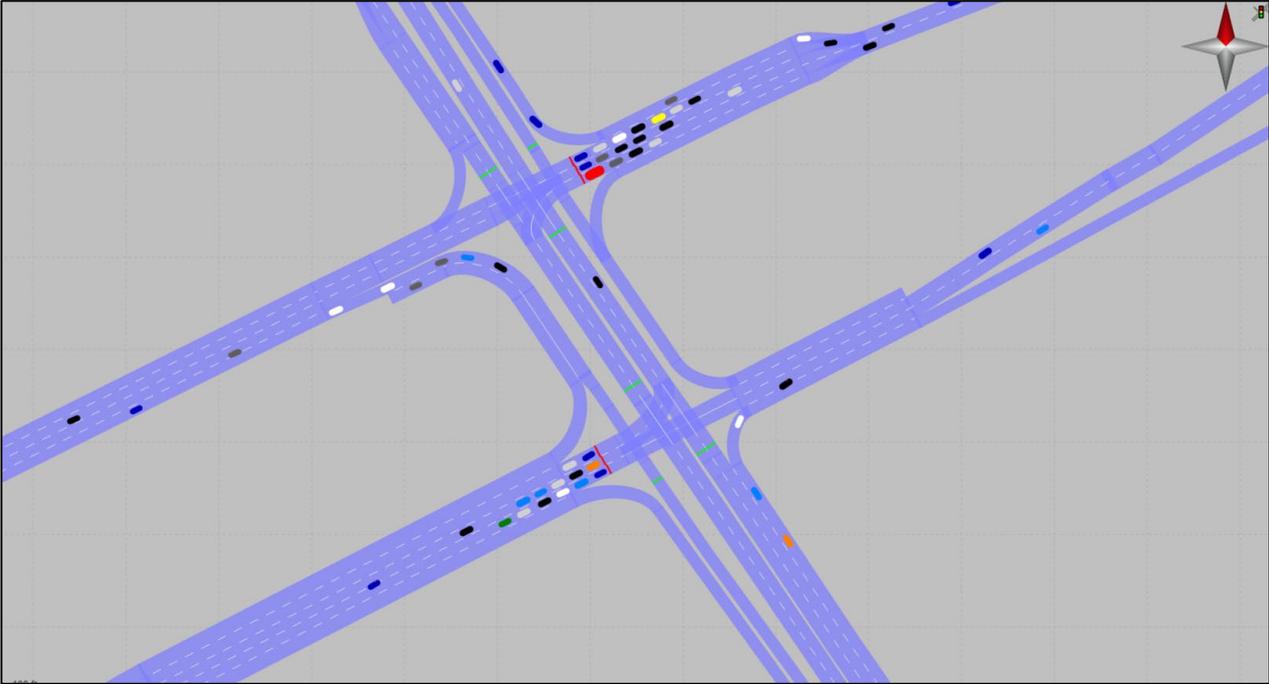
Development of the AR Traffic Visualization Tool



Vissim Traffic Model Development



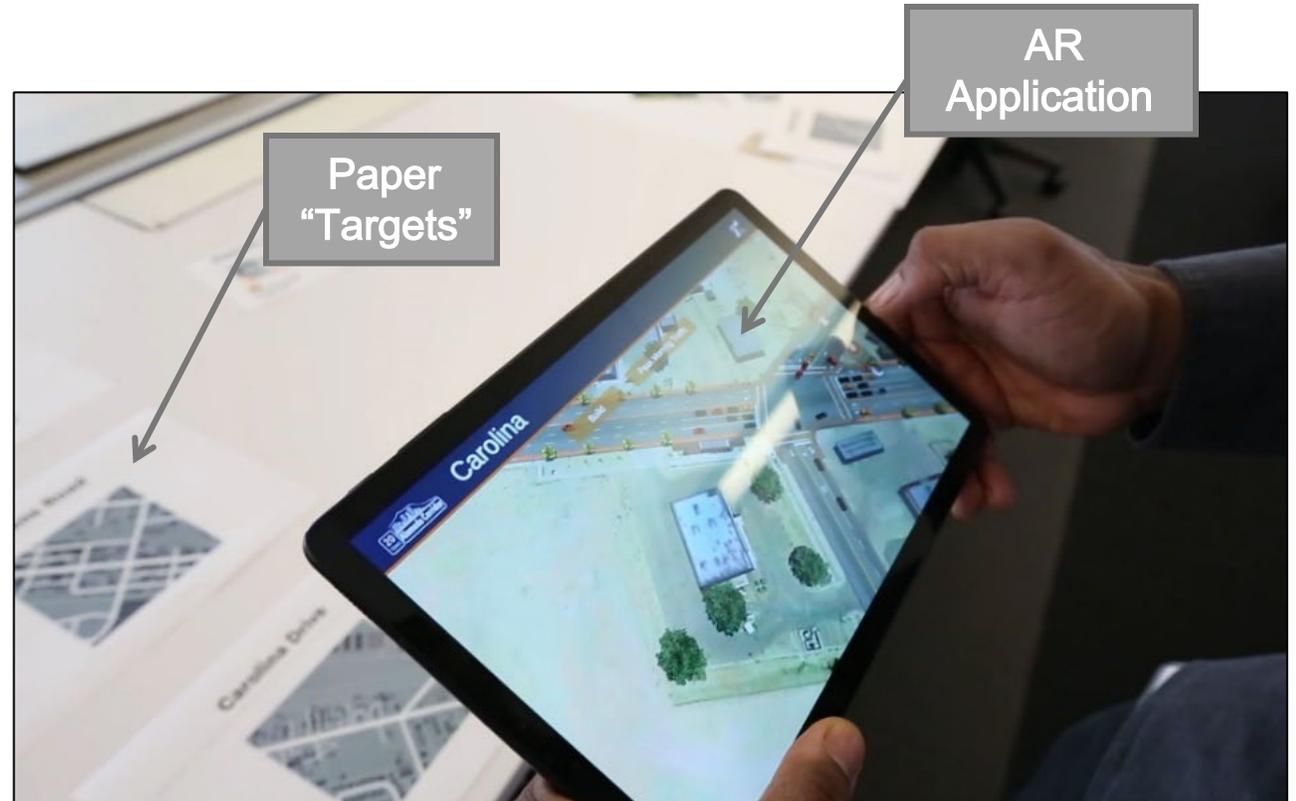
Mesh File + Aerial Imagery



Vissim Network Geometry

Augmented Reality Technology

- Unity Game Engine
- Three phases in the development process
 - Integration of 3D assets
 - Development of Graphic User Interface (GUI)
 - Scripting and programming
- Method:
 - Animated models are loaded into Unity
 - “Image Targets” are developed and printed on paper
 - Multiple tablets at roll plot station with app to read “targets”



AR Scene Setup

- ARSession
- ARSessionOrigin

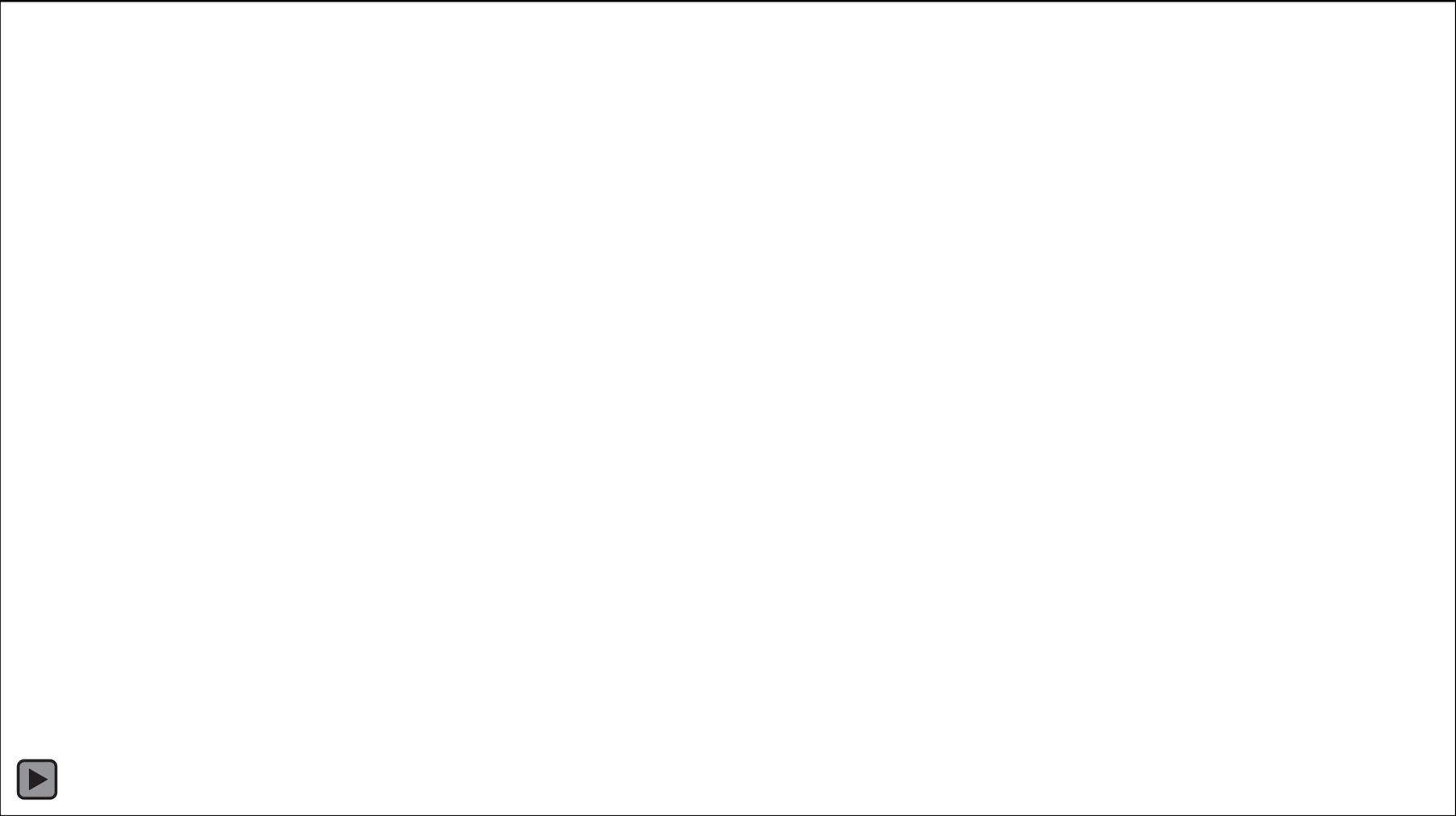
AR Virtual Camera

- AR Pose Driver
- AR Camera Manager
- AR CameraBackground

Trackables

- 2D Image Tracking
 - Reference Image Library
 - 3D Models Library
 - React to Changes of Tracked Images

Video Demonstration



Public Involvement Outcomes

- Trust is built with calibrated models and realistic traffic visualizations
- Hands-on/integrated approach increases and encourages public engagement
- User friendly for all ages and varying ability levels
- Proven approach that can be applied to a variety of corridor and development studies

Thank You!