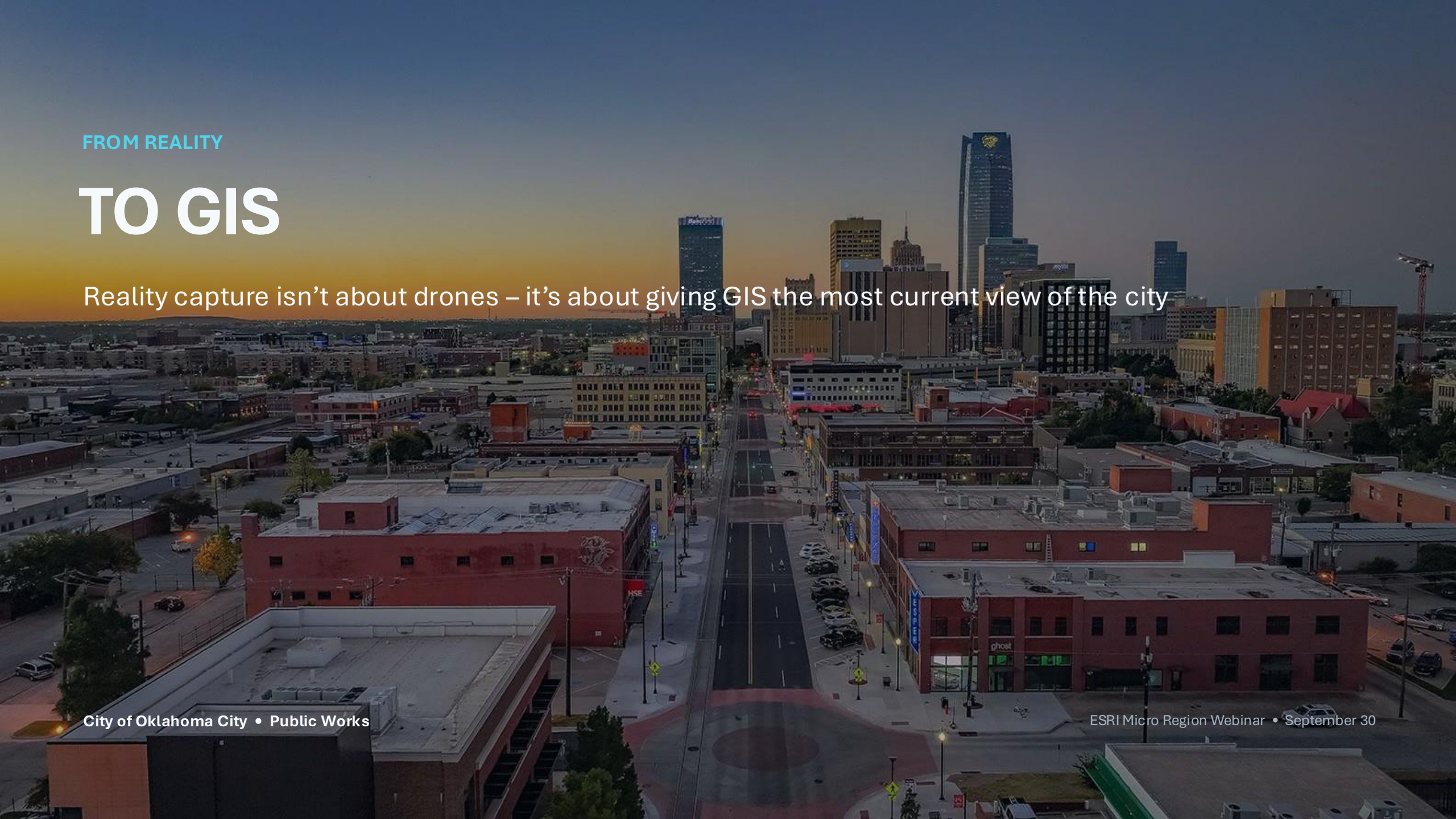


An aerial photograph of Oklahoma City at dusk. The city's skyline is visible in the background, featuring several tall skyscrapers, including the prominent One Oklahoma Center. The foreground shows a dense urban area with various buildings, streets, and parking lots. The sky is a mix of orange and blue, indicating the time is either early morning or late evening. The overall scene captures the city's layout and infrastructure from a high vantage point.

FROM REALITY

TO GIS

Reality capture isn't about drones – it's about giving GIS the most current view of the city

The gap we are trying to close

The physical city changes faster than traditional mapping cycles can always keep up.



The objective is not to replace GIS.

It is to give GIS a more current, measurable view of reality.

One capture. Multiple GIS products.



CAPTURE

Drone imagery



PROCESS

2D + 3D reality



INTEGRATE

ArcGIS + existing layers

A single collection can support:

- Stormwater
- Drainage
- Pavement
- Bond projects
- Construction
- Site documentation
- Aerial reference
- Change detection

A practical reality-capture workflow



Stormwater: putting infrastructure in context



GIS LAYER



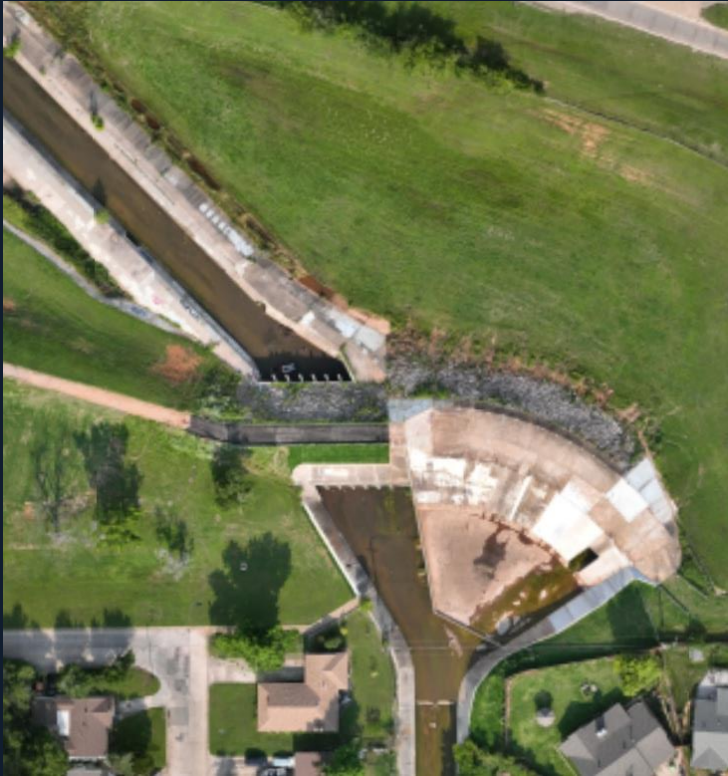
DRONE REALITY



TOGETHER

The image does not replace the storm sewer layer — it gives the layer current site context.

What 3D reveals that a 2D aerial can't



2D ORTHO • LOCATION + PLAN VIEW



3D MESH • ELEVATION + STRUCTURE + CONTEXT

ELEVATION

Interpret grade changes, terrain relationships and potential drainage paths.

RELATIONSHIPS

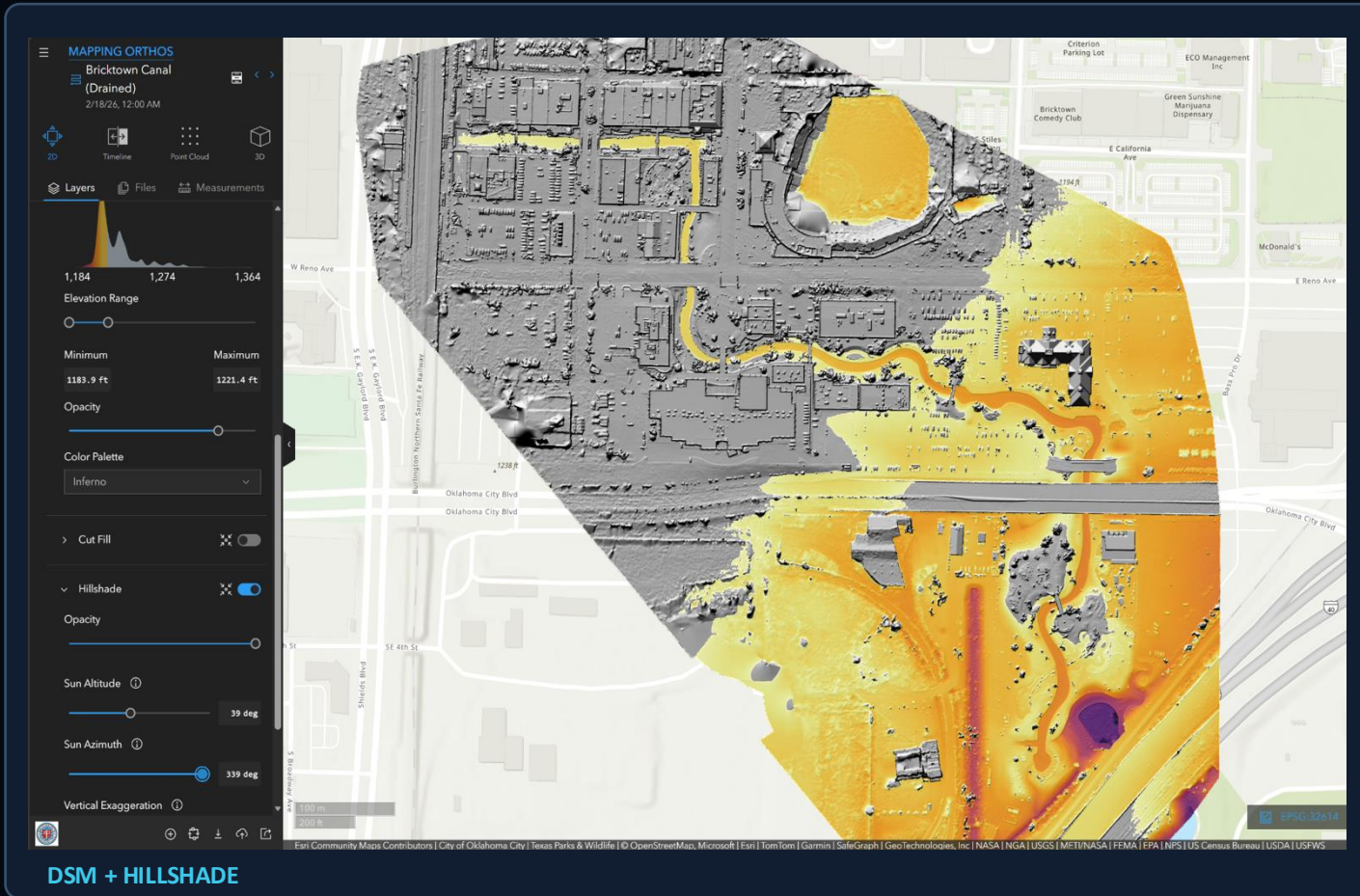
See channels, structures and surrounding terrain together.

FIELD CONTEXT

Inspect geometry and conditions from viewpoints a 2D image cannot provide.

From imagery to terrain intelligence

Reality capture becomes more useful when the imagery is transformed into a measurable surface.



CANAL 3D VIEW

WHAT THIS ADDS

- Elevation context beyond the orthomosaic
- Terrain breaks and drainage relationships
- A surface that can support measurement and analysis

From surface model to flood scenario

The next step is not just seeing the terrain — it is using elevation-derived information to explore how water may interact with the site.



WORKFLOW

1 CAPTURE

Collect current, high-resolution imagery.

2 MODEL

Create an elevation-aware surface from the capture.

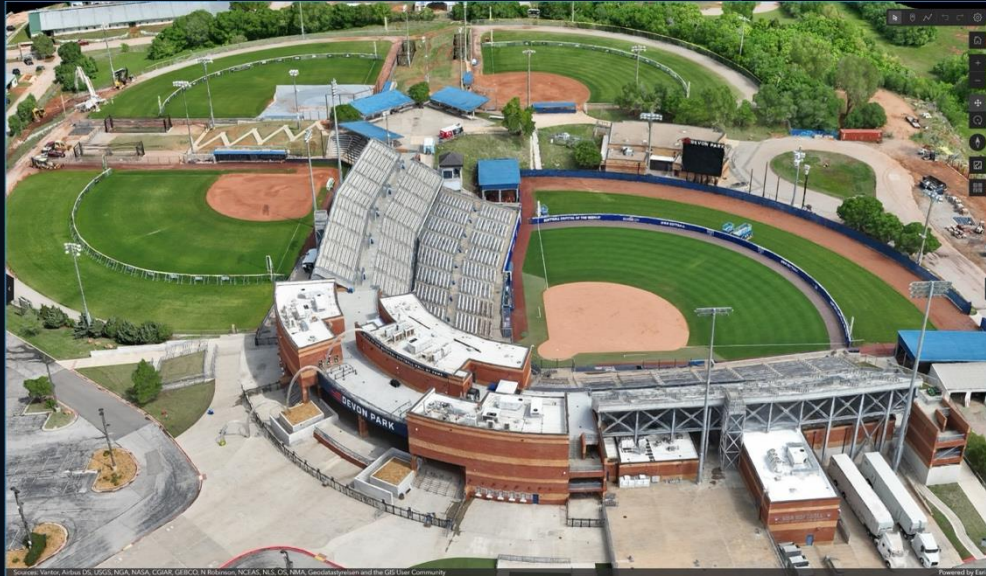
3 ANALYZE

Use the surface as an input to scenario-based drainage analysis.

IMAGE → SURFACE → ANALYSIS

FLOOD SIMULATION

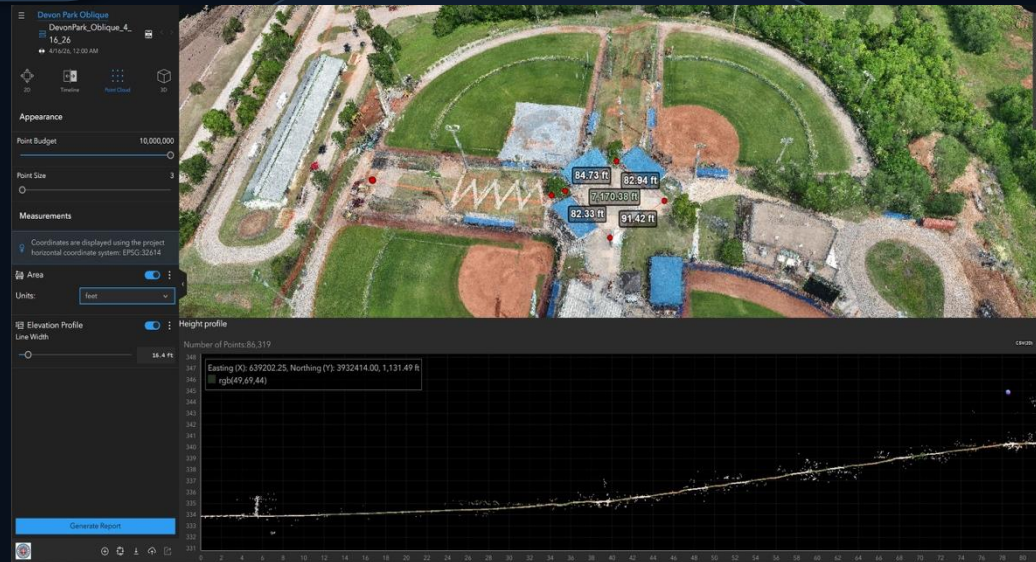
3D reality: more than a picture



3D MESH



Point Cloud



MEASURE

The model becomes useful when we can interrogate it.



Construction monitoring: current aerials + 3D site views



STORM WATER QUALITY

Repeat drone flights give the team a current view of active construction sites.

CURRENT AERIALS

Refresh site imagery as conditions change.

3D SITE VIEW

See worksite conditions from multiple perspectives.

MONITOR

Create a visual record that supports ongoing site review.

The value is not a one-time flight — it is a current, repeatable view of the worksite.

Planning & bond work: connecting project data to reality



EXISTING CONDITIONS



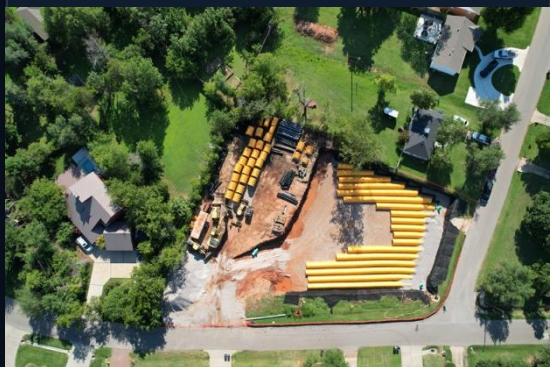
CONCEPT / DESIGN



UPDATED GIS CONTEXT

A current aerial can become the common reference for planning, design and operations.

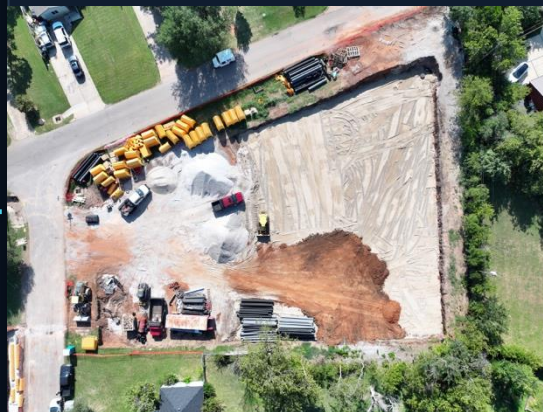
Construction progress: building a persistent record over time



EARLY



PROGRESS



ACTIVE SITE



COMPLETE

Repeat capture turns construction progress into a spatial record of change

Project progress • site conditions • documentation • communication

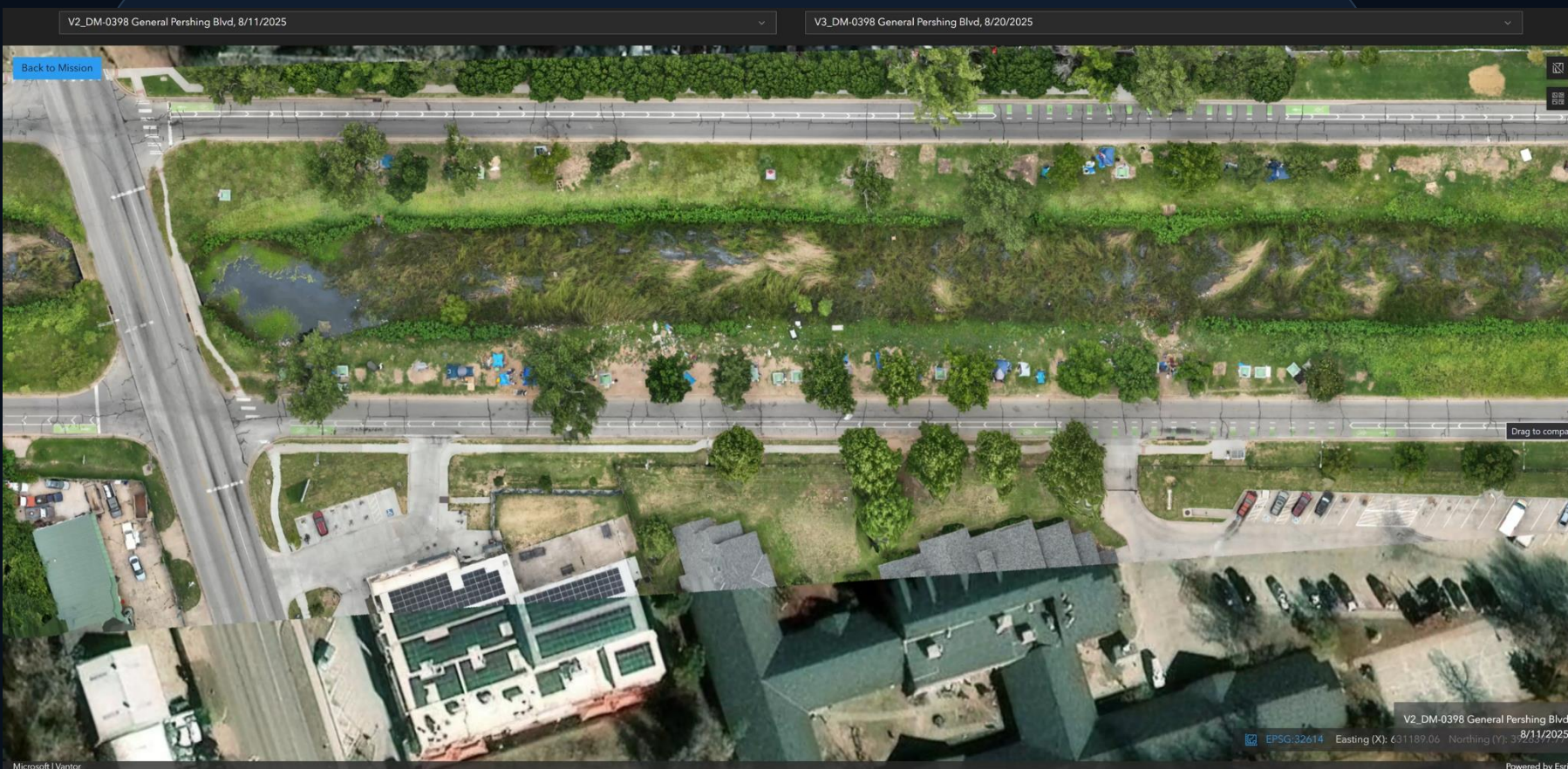
Documenting site change: a municipal before / after

TIME

LOCATION

CHANGE

A spatial record of change —
not just a photograph.



Inspection: extending the inspector's field view



GROUND

Inspector observations where access is practical

DRONE

Inspect hard-to-reach or unsafe areas from above

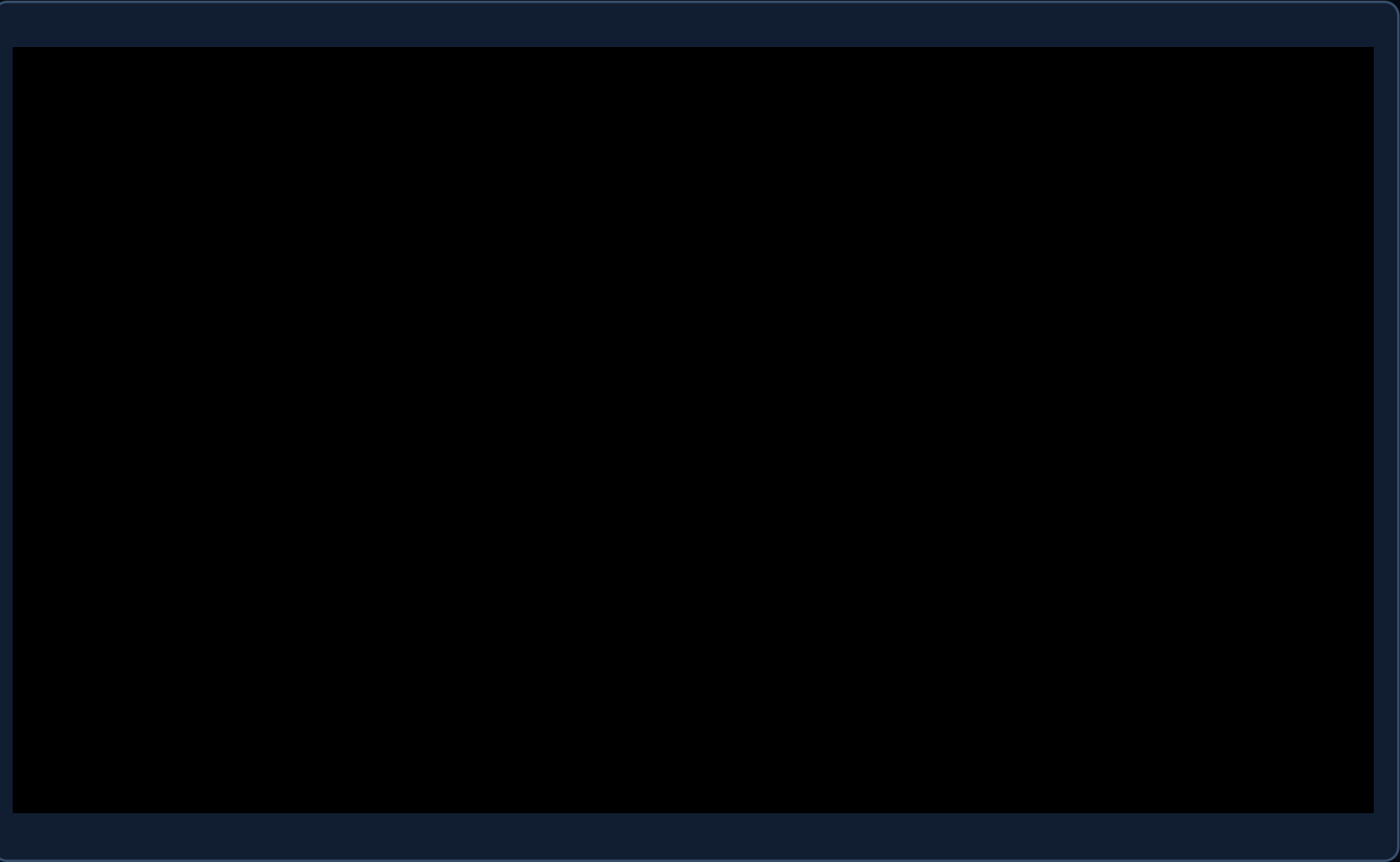
RECORD

Capture conditions for review and documentation

Not replacing the inspector — extending what the inspector can safely see.

A current view of the North Canadian River corridor

A repeatable flight can document channel condition across a long corridor and create a map product that can be shared beyond the flight team.



AIR DEPOT → MIDWEST BLVD.



MAP / PDF EXPORT

WHY IT MATTERS

One collection can support visual review, GIS reference, documentation and a shareable map product.

Sometimes the most valuable product is simply 'today'



PROJECTS

ASSETS

RIGHT-OF-WAY

STORMWATER

BASEMAP / IMAGERY

Not every flight needs to produce an elaborate 3D model.

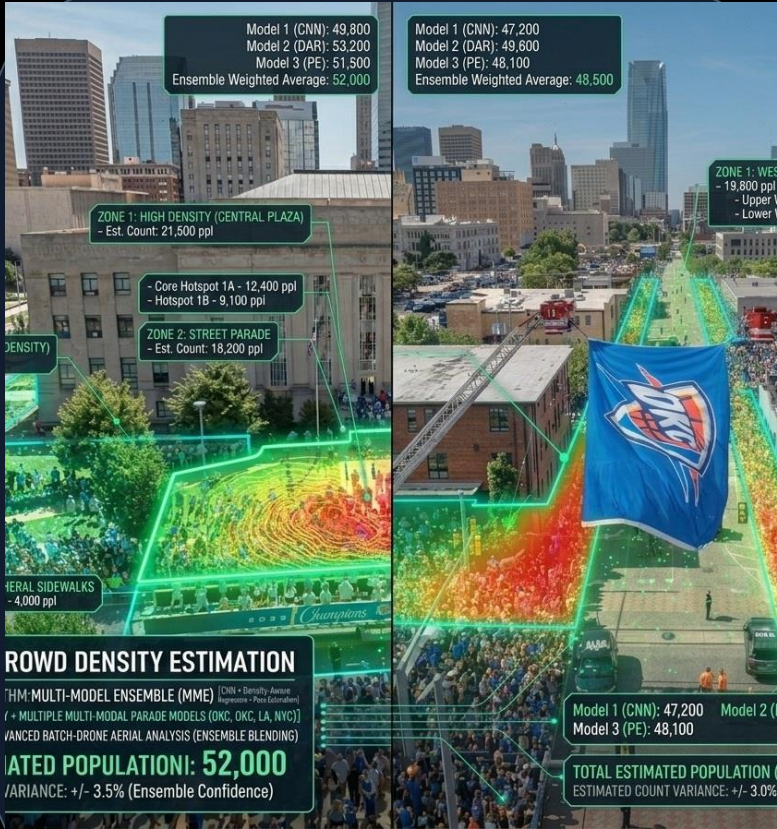
Sometimes the value is a current, high-resolution reference.

From aerial imagery to crowd-size insight

The flight captures the event. Analysis turns that imagery into information we can use.



AERIAL CAPTURE



ANALYSIS / ESTIMATION

OPERATIONAL INSIGHTS

CROWD SIZE

Estimate attendance from aerials rather than relying only on ground-level observation.

DENSITY

Identify where people are concentrated across the event footprint.

PLANNING

Add spatial context for emergency access, staffing, staging and future event planning.

IMAGE → ANALYSIS → DECISION SUPPORT

State Fair Park: Reality Capture for Emergency & Operational Awareness

State Fair Park shows the full loop: current capture provides the reference, and operational GIS layers turn the imagery into context.



AERIAL + STREET NETWORK



Sources: Vantor, Airbus DS, USGS, NGA, NASA, CGIAR, GEBCO, N Robinson, NCEAS, NIS, OS, NMA, Geodatastyrelsen and the GIS User Community

Powered by Esri

911 + GIS

Current imagery supported updates to street features used for emergency planning

Operational Awareness

Aerial imagery + 3D Mesh provided Police a current view of the site

What makes reality capture useful

START WITH THE GIS QUESTION

Define the decision or workflow before choosing the capture product.



CAPTURE ONCE, USE MANY TIMES

Plan collections so one flight can support multiple teams and GIS uses.



FIT FOR PURPOSE

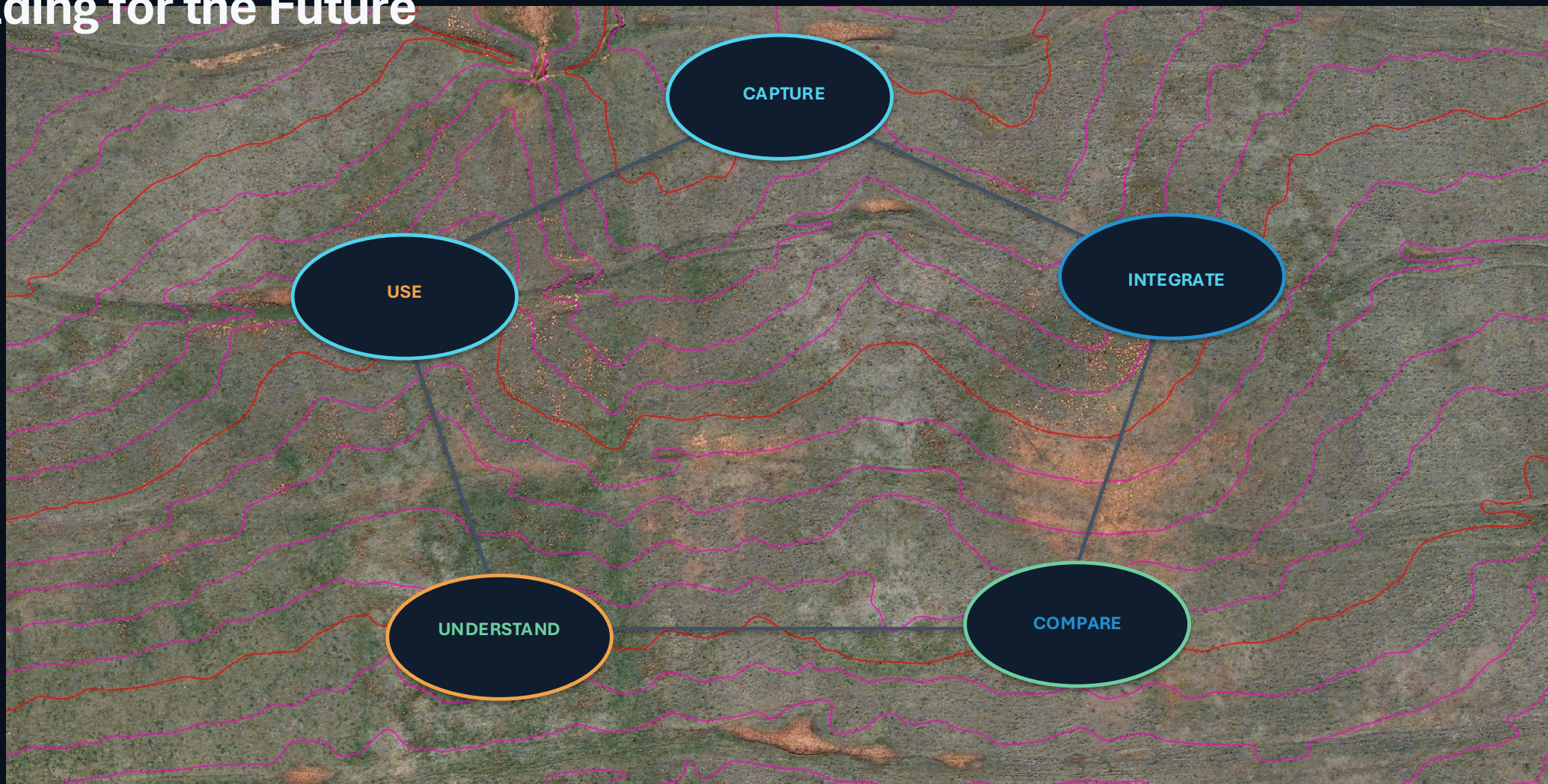
Current does not automatically mean authoritative. Match accuracy and product to the task.



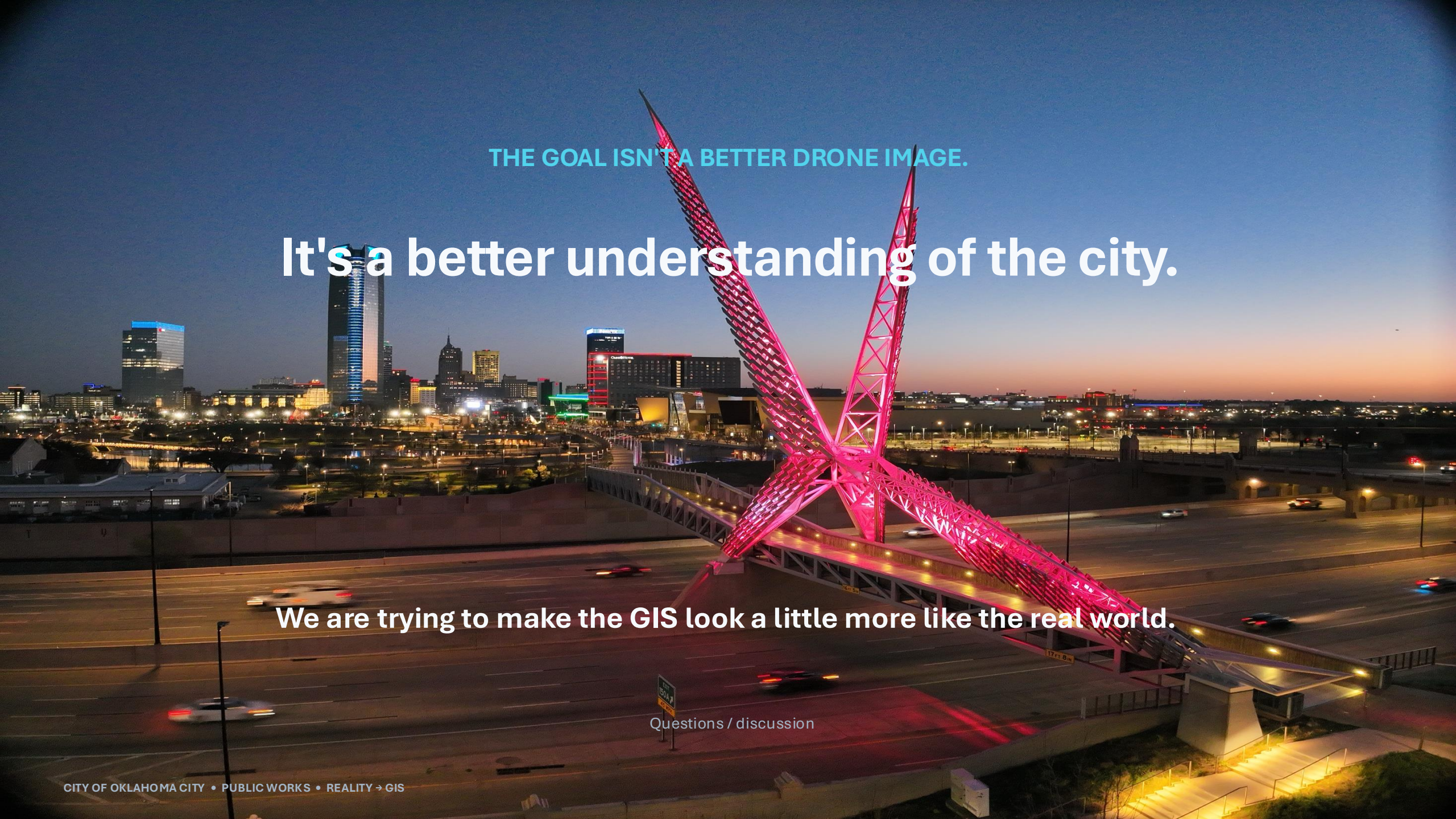
MAKE IT PART OF GIS

Value increases when imagery and 3D products connect to existing layers and systems.

Building for the Future



The opportunity is to make reality capture part of the normal GIS data lifecycle.



THE GOAL ISN'T A BETTER DRONE IMAGE.

It's a better understanding of the city.

We are trying to make the GIS look a little more like the real world.

Questions / discussion