A 3D topographic map of Europe, showing terrain elevation with green for lowlands and brown for highlands. The map is centered on the continent, with the Atlantic Ocean to the west and the Mediterranean Sea to the south. The text is overlaid on the map.

3D Terrain for Army Training (& Beyond)

Gary Frost – Deputy Director, STE CFT

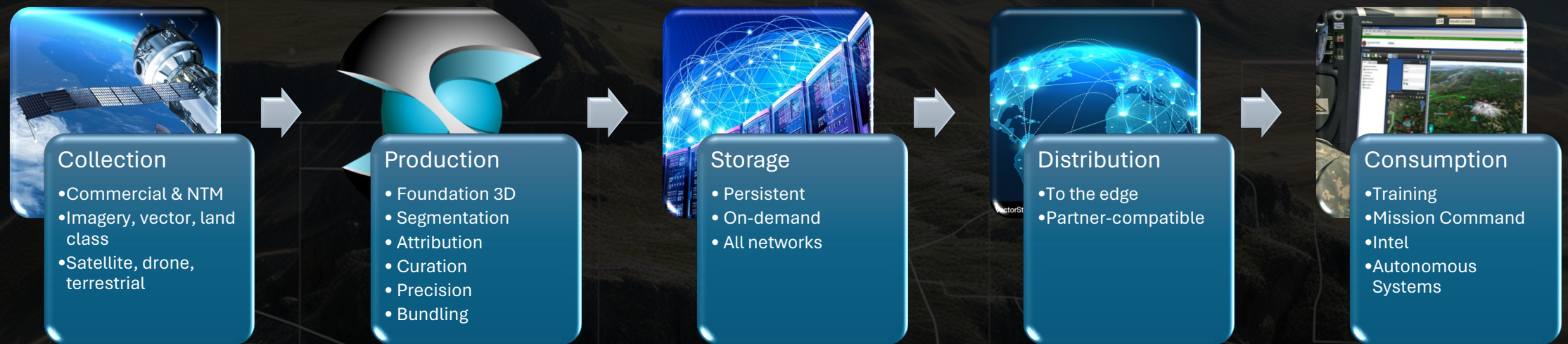
Ryan McAlinden – OWT, STE CFT

The Problem

- Precision 3D geospatial data is easier to *collect, produce and consume* than ever before
 - But...
 - It's not always well-suited for sims (attribution, 'cleanliness')
 - Distribution to the edge remains a challenge
 - QA/QC is near impossible
-



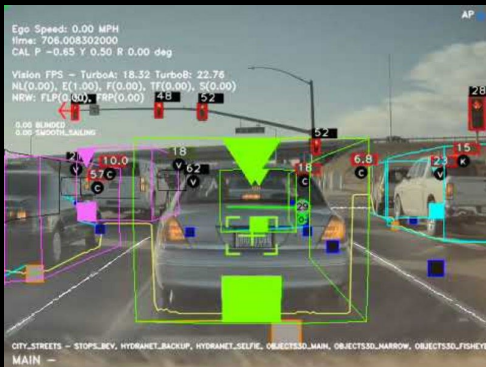
Current 3D Terrain Workflow





Way Ahead

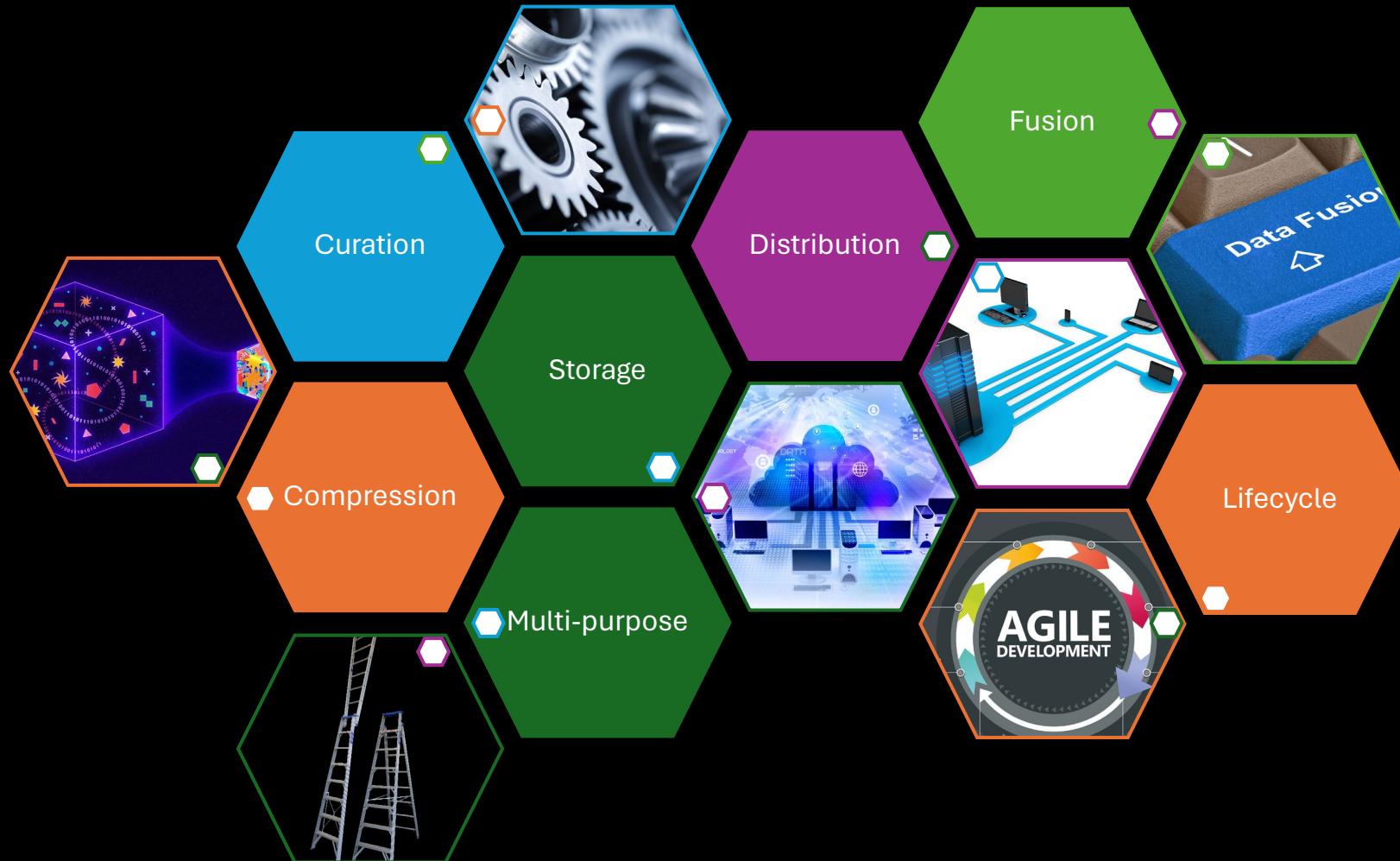
- Convergence of capabilities across training & operational
- A single, unified 'digital dirt'
- Can we use the same data for...
 - Training?
 - Mission command?
 - Intel?
 - Autonomous systems?



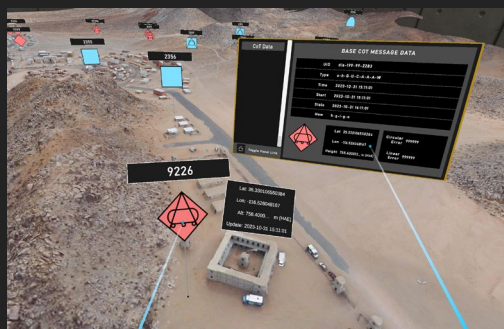
YES!

BUT...

...Some Core Challenges Remain



Status

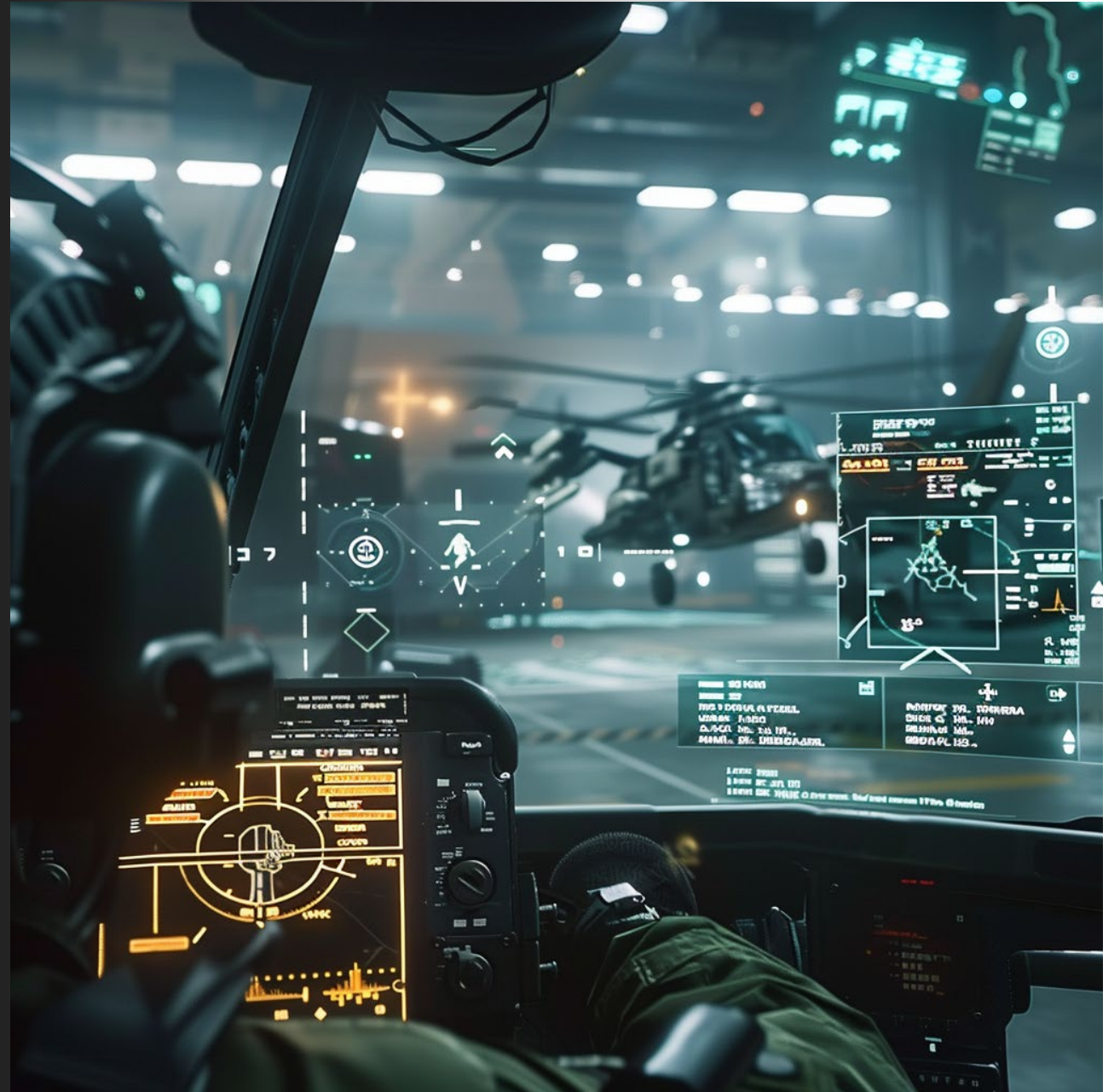


- 3D Terrain Transformation Office being stood up
 - In partnership w/ AFC, AGC, TPO-G, PEO IEWS
- Objective: continue defining & advancing state-of-the-art geospatial capabilities for the Army, Joint and Partner communities
 - To include M&S
- Focus on *transformation* and *continuous refinement*

Thinking More Broadly...

- Why converge just terrain?
- Operational systems today are built on similar technology stacks
- A unified data (and systems) architecture for our digital platforms across the Army
- Rendering, network, UI/UX

**Simulate → Train → Rehearse → Plan →
Prepare → Fight → Assess**



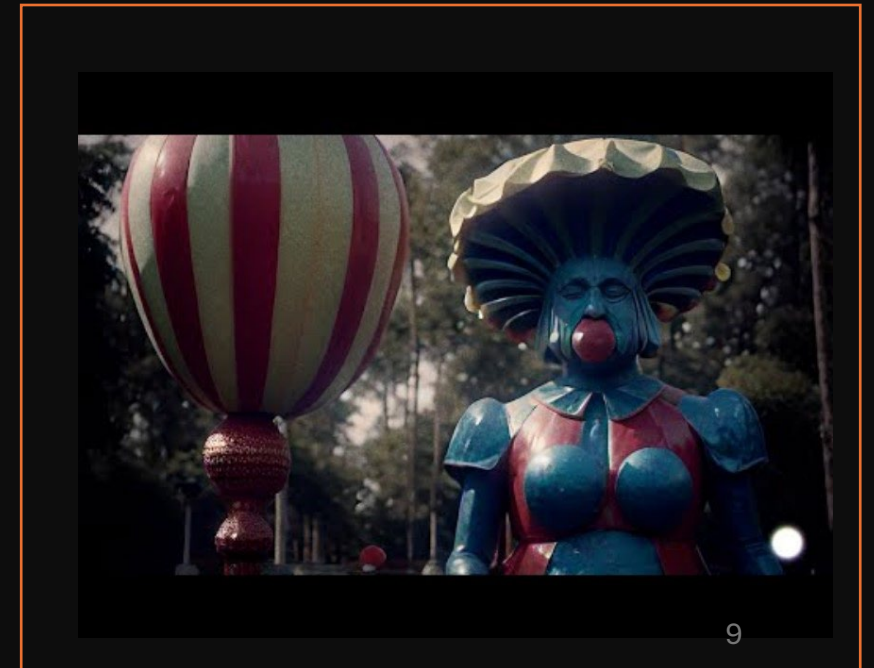
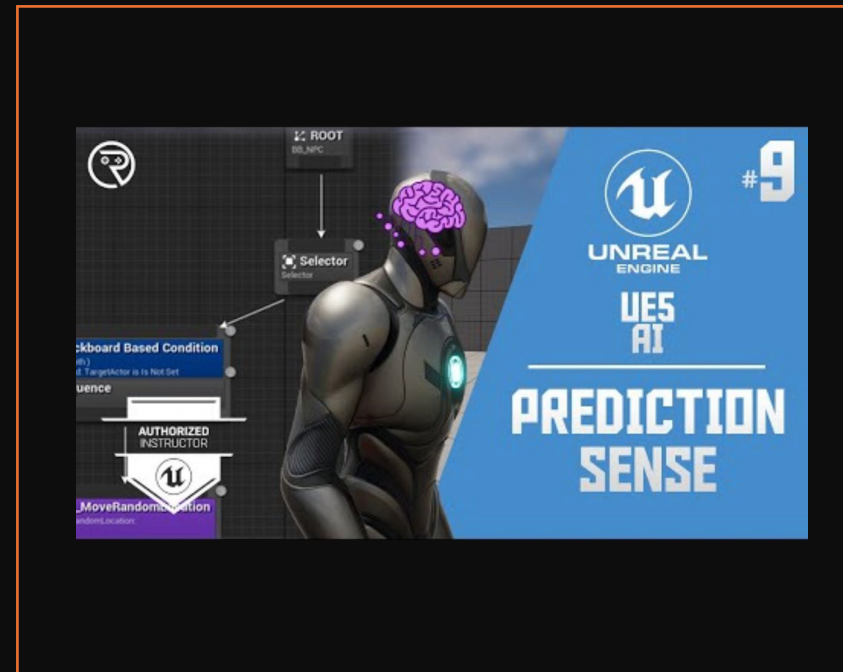
4D Terrain

- What is the 4th Dimension? Not Time...
- Rather the non-visual elements of the environment
 - Electromagnetic
 - Spectrum
- Modeling/simulating for:
 - Autonomous system navigation
 - Sensor employment
 - Communications systems



AI & Terrain

- Utility
 - Previously unconsidered effects
 - Moving from deterministic to truly stochastic
- Plight
 - Hallucinations
 - Lack of training data
 - DoD != rest of the world
 - Still human-in-the-loop intensive



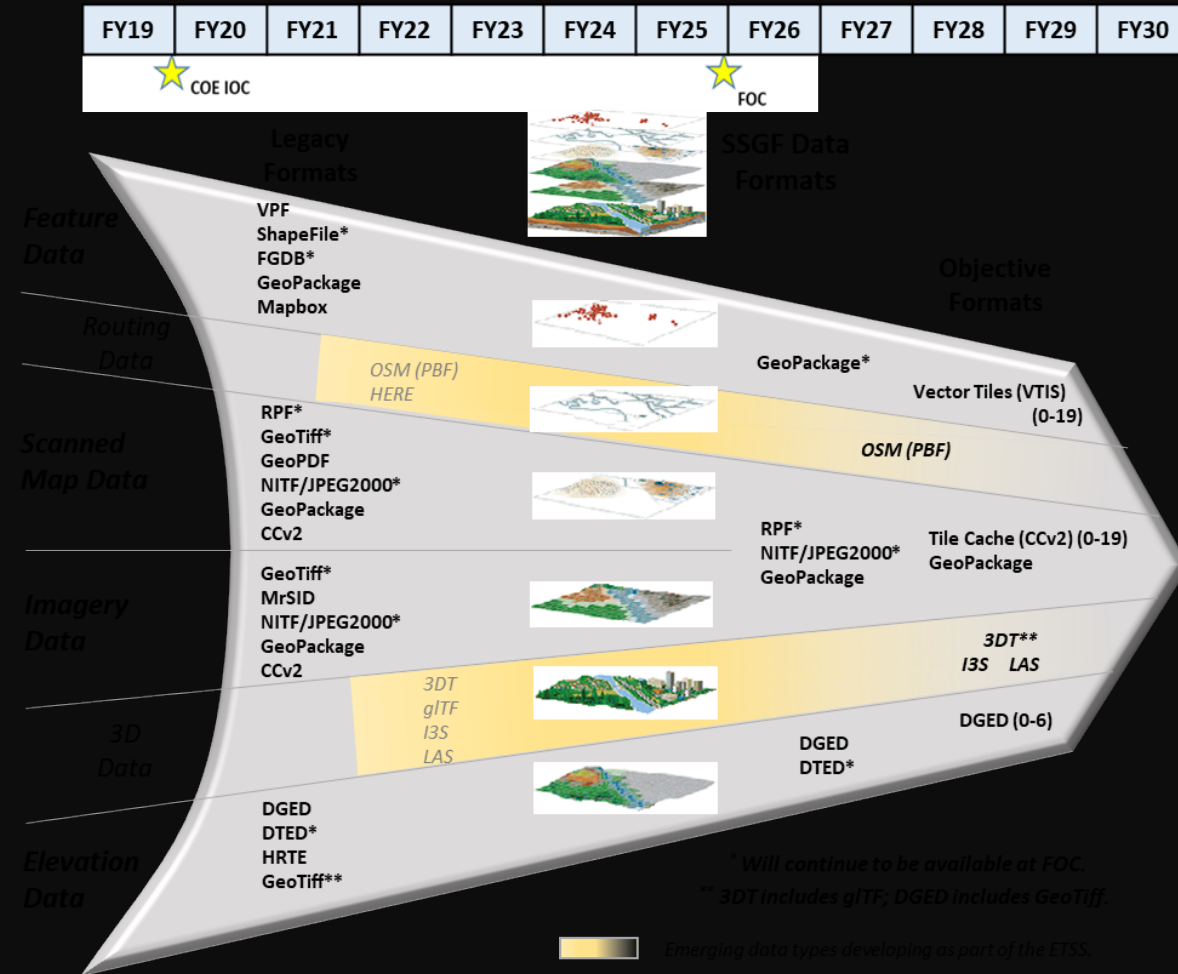
The Ubiquitous Standards Slide

- CHALLENGE**

- To develop a DoD and IC wide standard for the production, storage, and interoperability of 3D geospatial data.

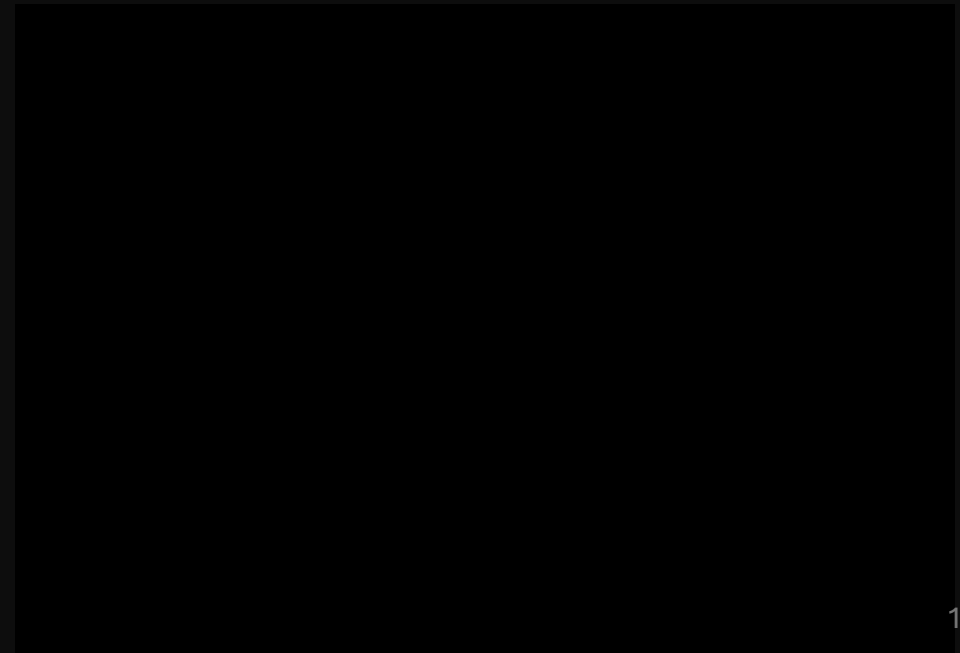
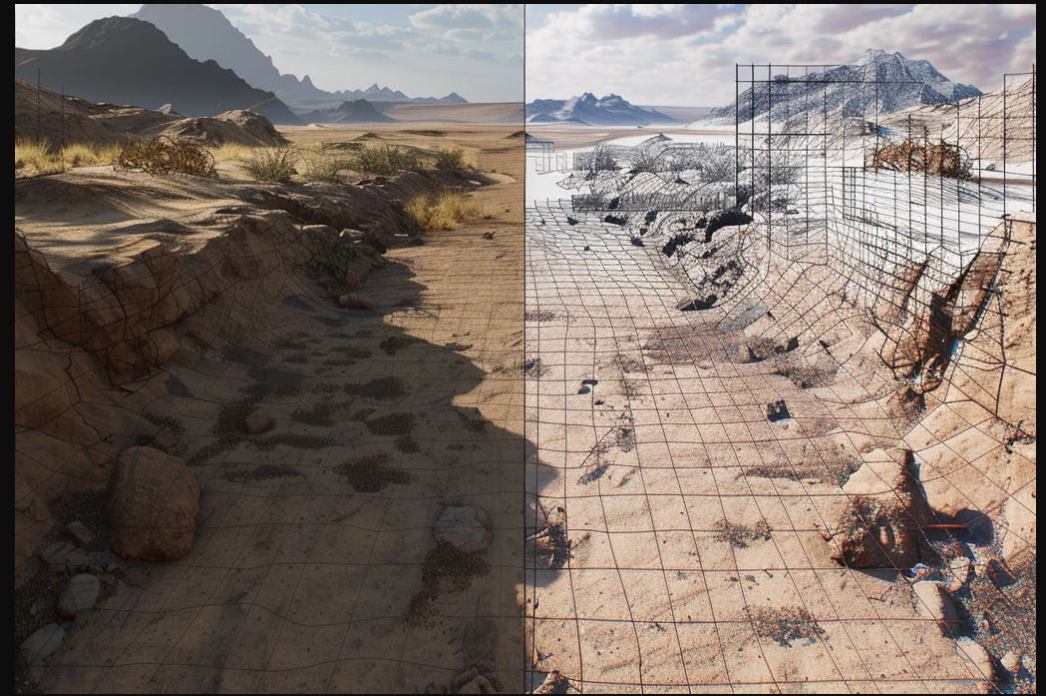
- IMPACT**

- Lower the barriers to entry for emerging 3D technologies such as One World Terrain, IVAS, and Drone captured 3D environments.
- Standardize within the OGC and the DISR to ensure both commercial and DoD / IC seamless adaptation.



How Can Industry Help?

- Use Army-approved formats for your systems
 - Work with Army-supplied data
 - If it doesn't exist, ask for it
- Don't stove-pipe or blackbox your terrain pipeline
- 3D is heavy, investigate alternatives
 - E.g. Gaussian Splatting



Thank you

