

The background features a central image of the Earth from space, showing continents and oceans. Overlaid on the globe is a complex, glowing digital network of lines and nodes in blue, purple, and orange, suggesting global connectivity or data flow. The entire scene is set against a dark, starry space background with faint grid lines and data-like elements.

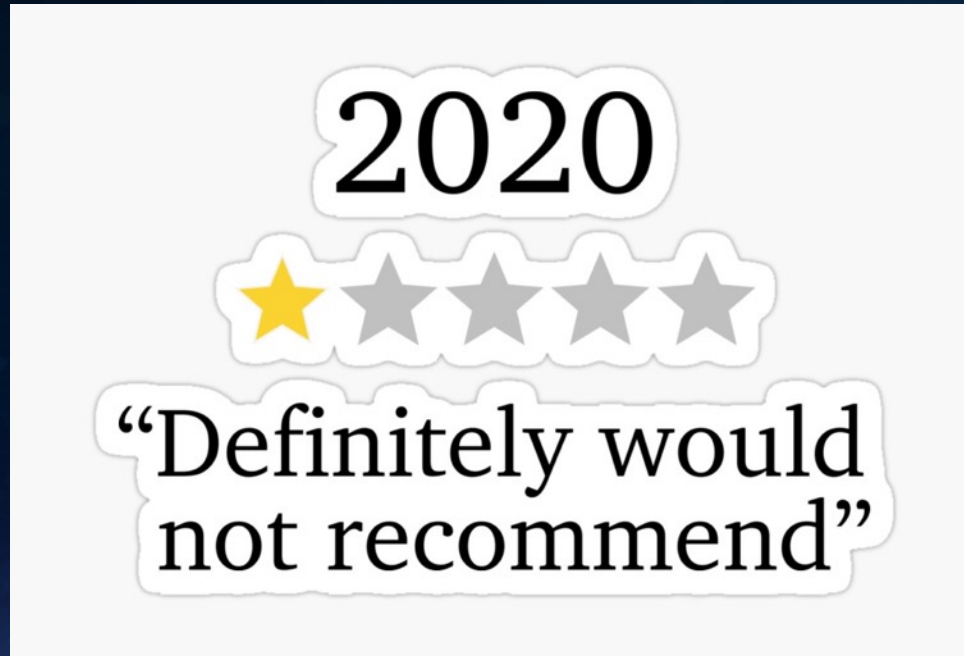
# WELCOME

to the 2020 Imagery Summit

Richard Cooke  
Director Imagery and Remote Sensing



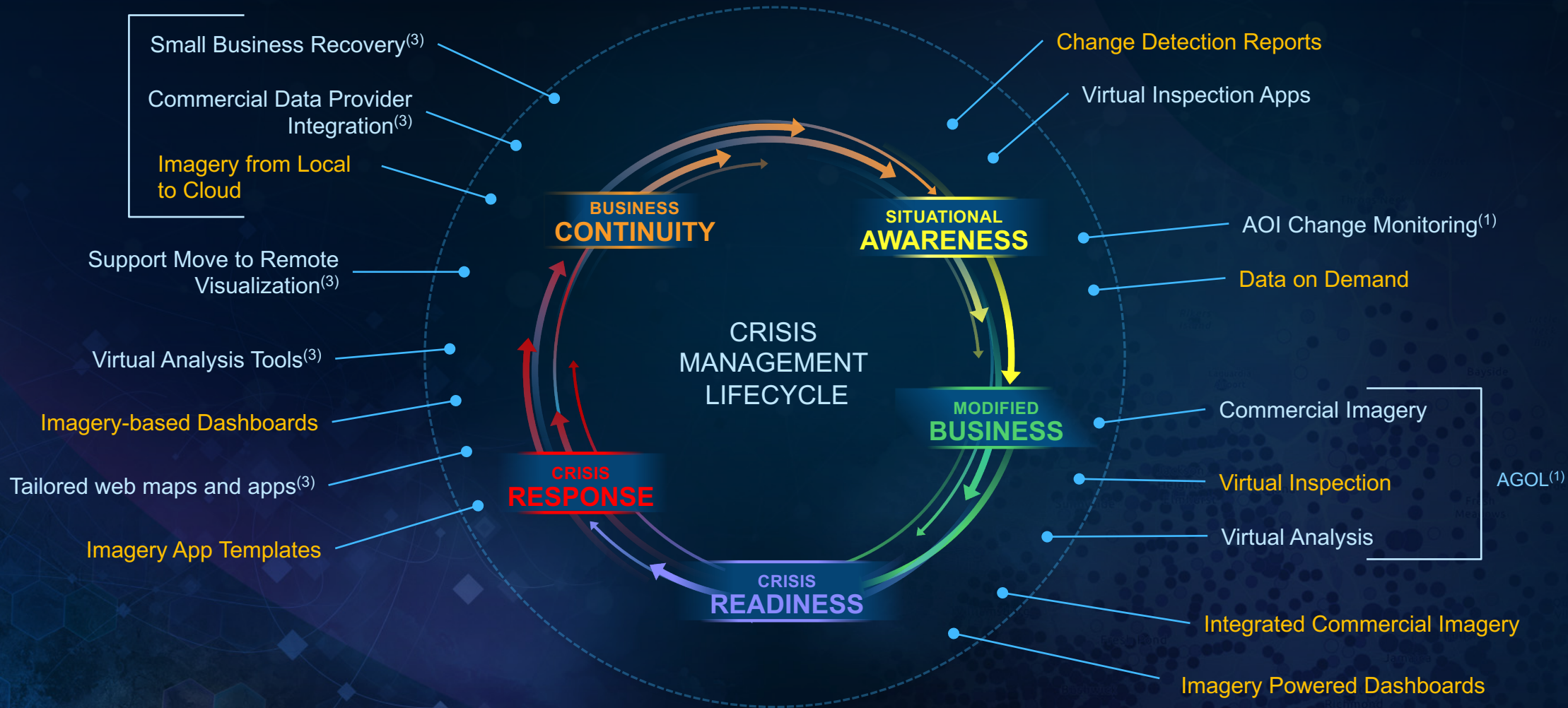
The Jury is in....



...2020 has changed how we see our collective work



# Seeing Our Work Through the COVID lens



We must reduce complexity, improve accessibility, and adapt to new patterns of work





# VISION

Remote Sensing and  
the Geospatial  
Nervous System



# Our World

Resembles a Living Organism

A Complex and  
Interconnected  
Ecosystem

Self-Healing  
and Resilient

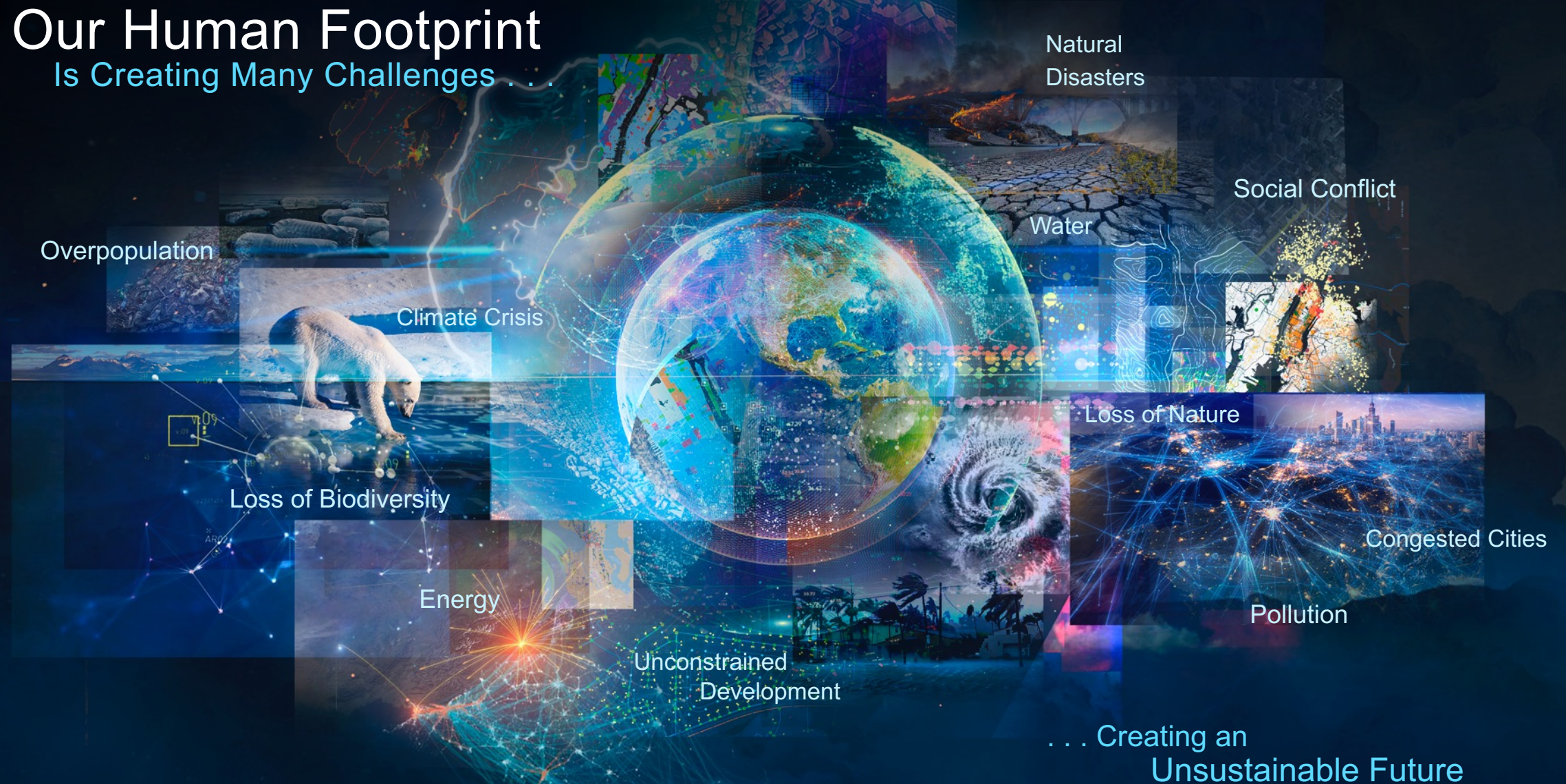
... Always Changing

... And Humans  
Are Part of It





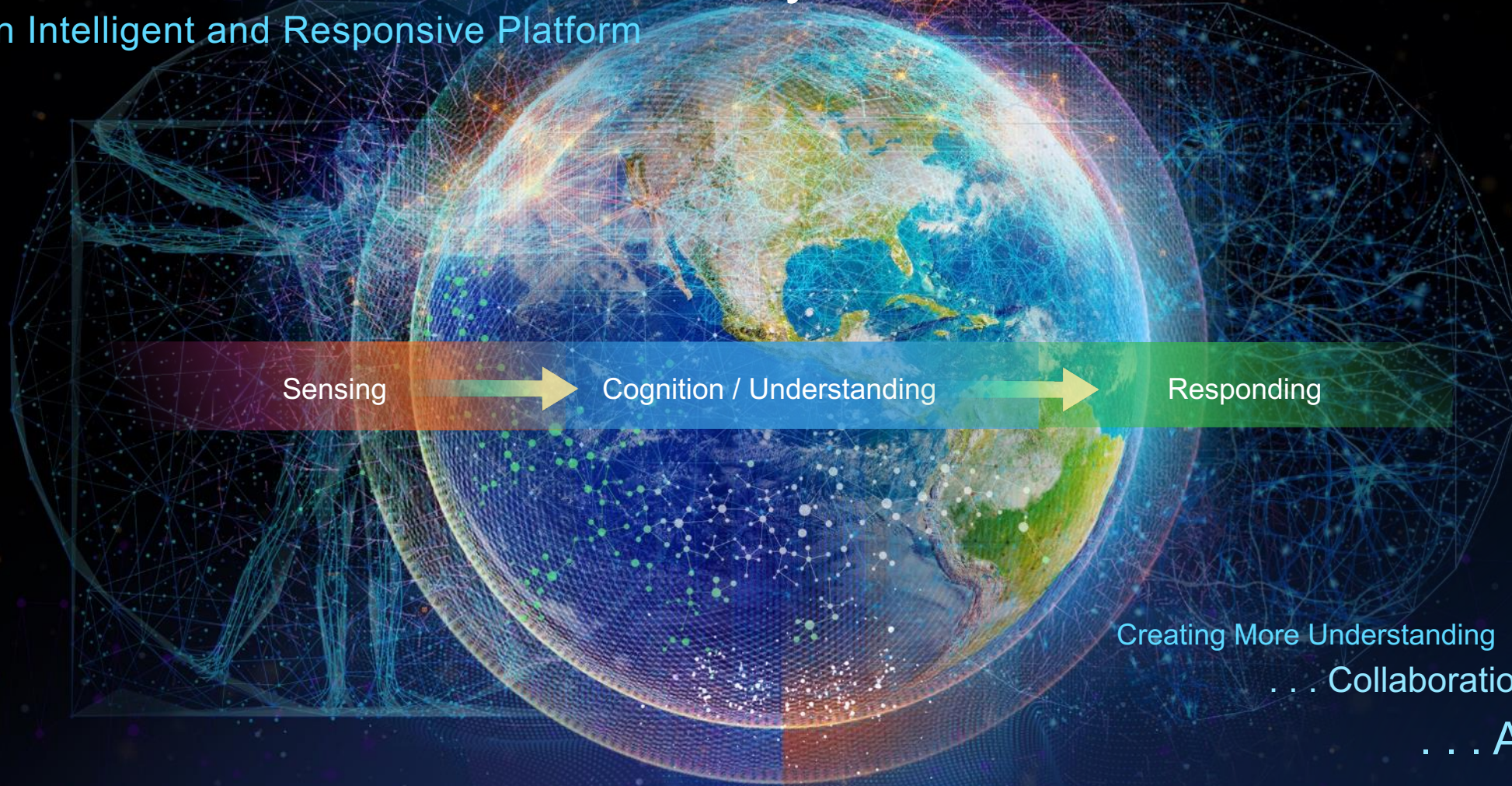
# Our Human Footprint Is Creating Many Challenges . . .





# Our World Needs a Nervous System

An Intelligent and Responsive Platform



Creating More Understanding

... Collaboration and

... Action

... *Geography Is Essential*



# GIS

Provides the Framework . . .  
. . . And Process

Geospatial  
Infrastructure

Measurement

Visualization &  
Mapping

Analysis &  
Modeling

Planning &  
Design

Decision-  
Making

Action





# GIS

Provides the Framework . . .  
. . . And Process

Geospatial  
Infrastructure

Measurement

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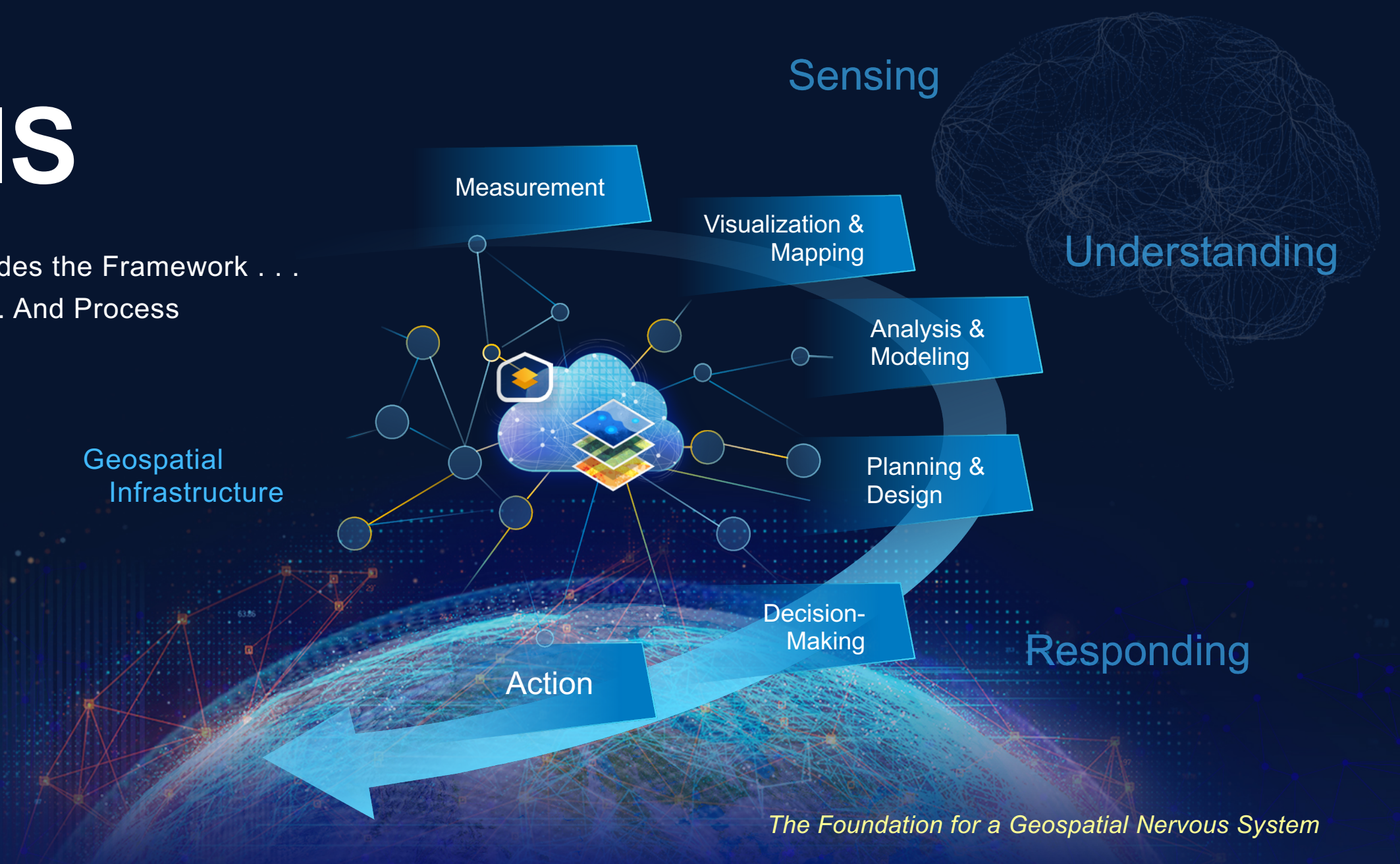
Decision-  
Making

Action

Understanding

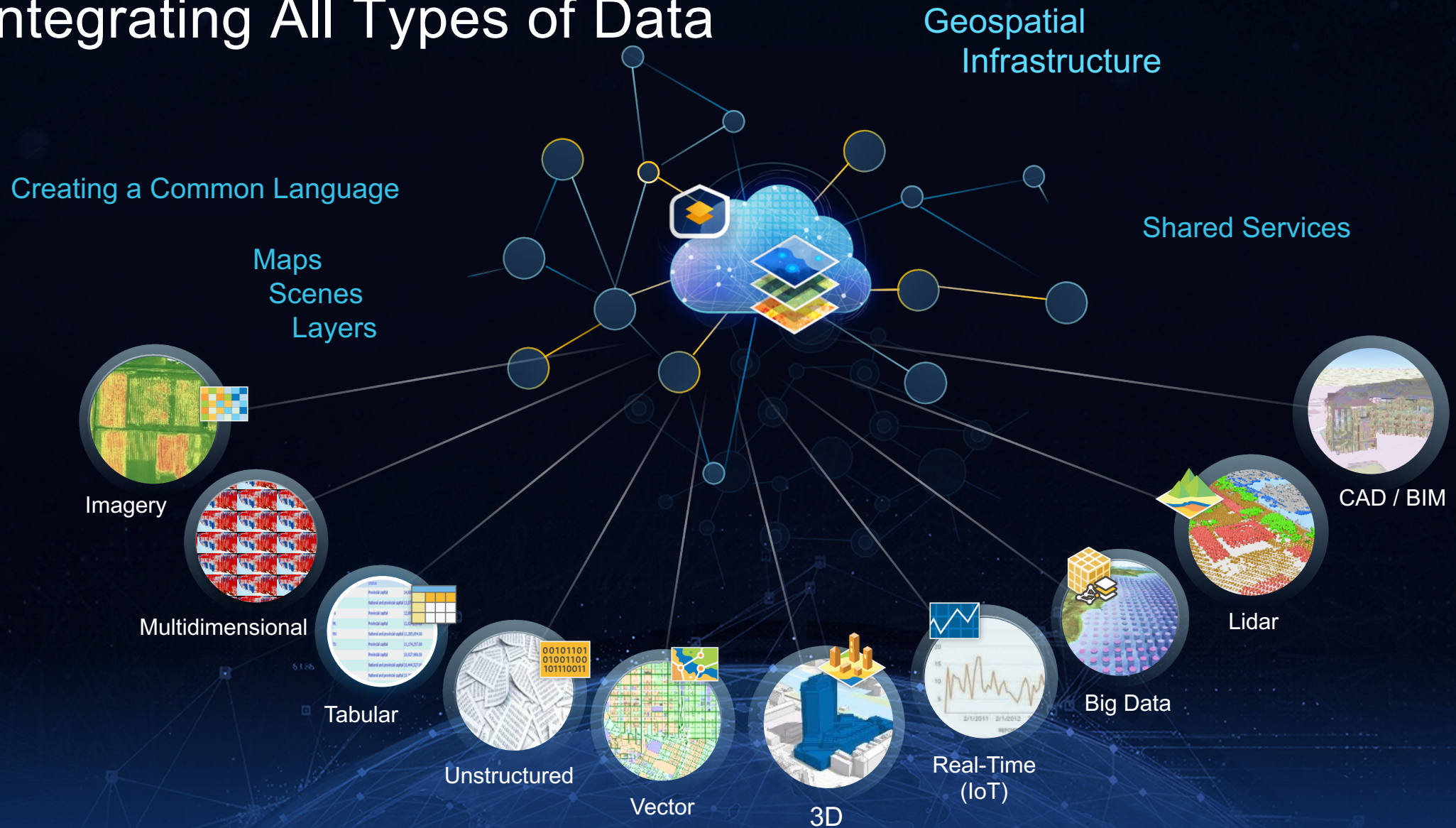
Responding

*The Foundation for a Geospatial Nervous System*





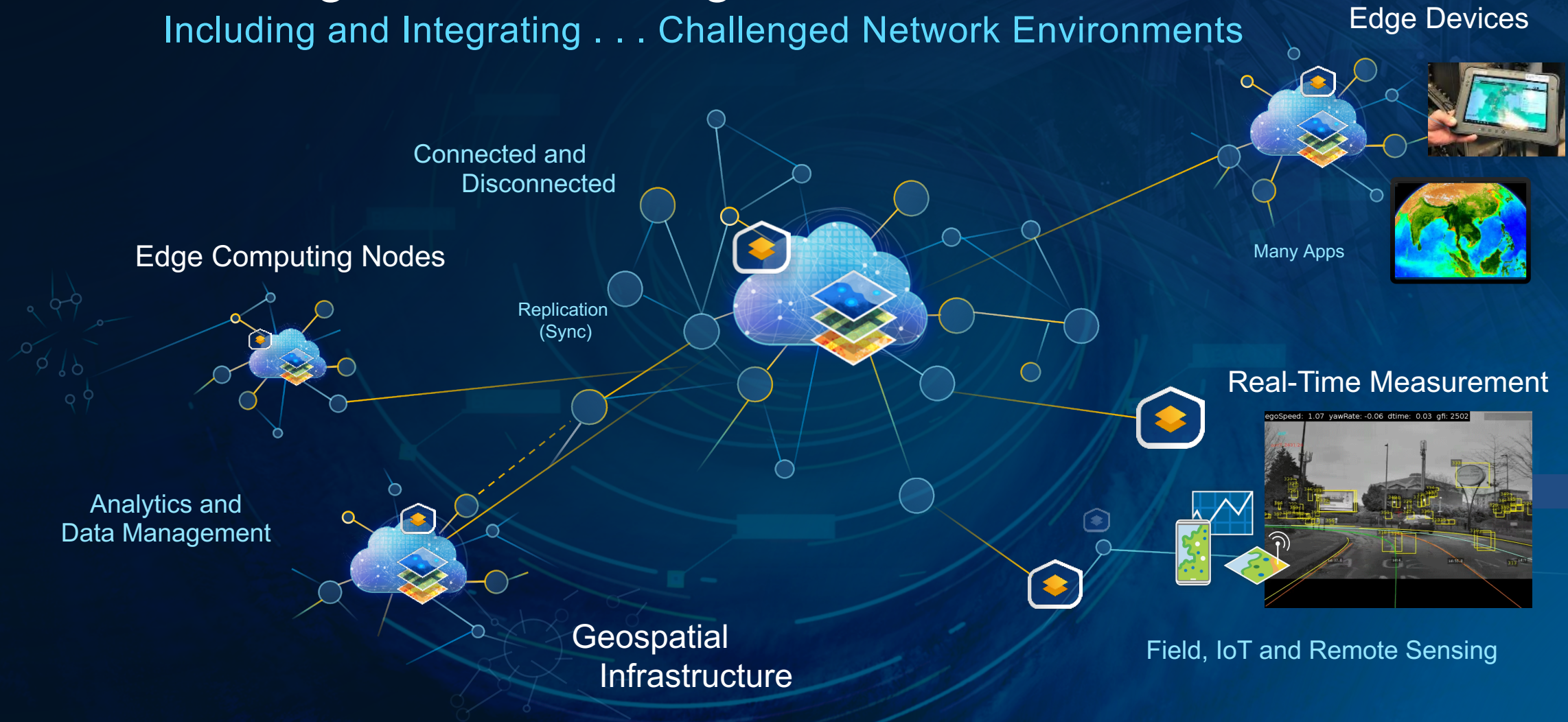
# Integrating All Types of Data





# Extending GIS to the Edge

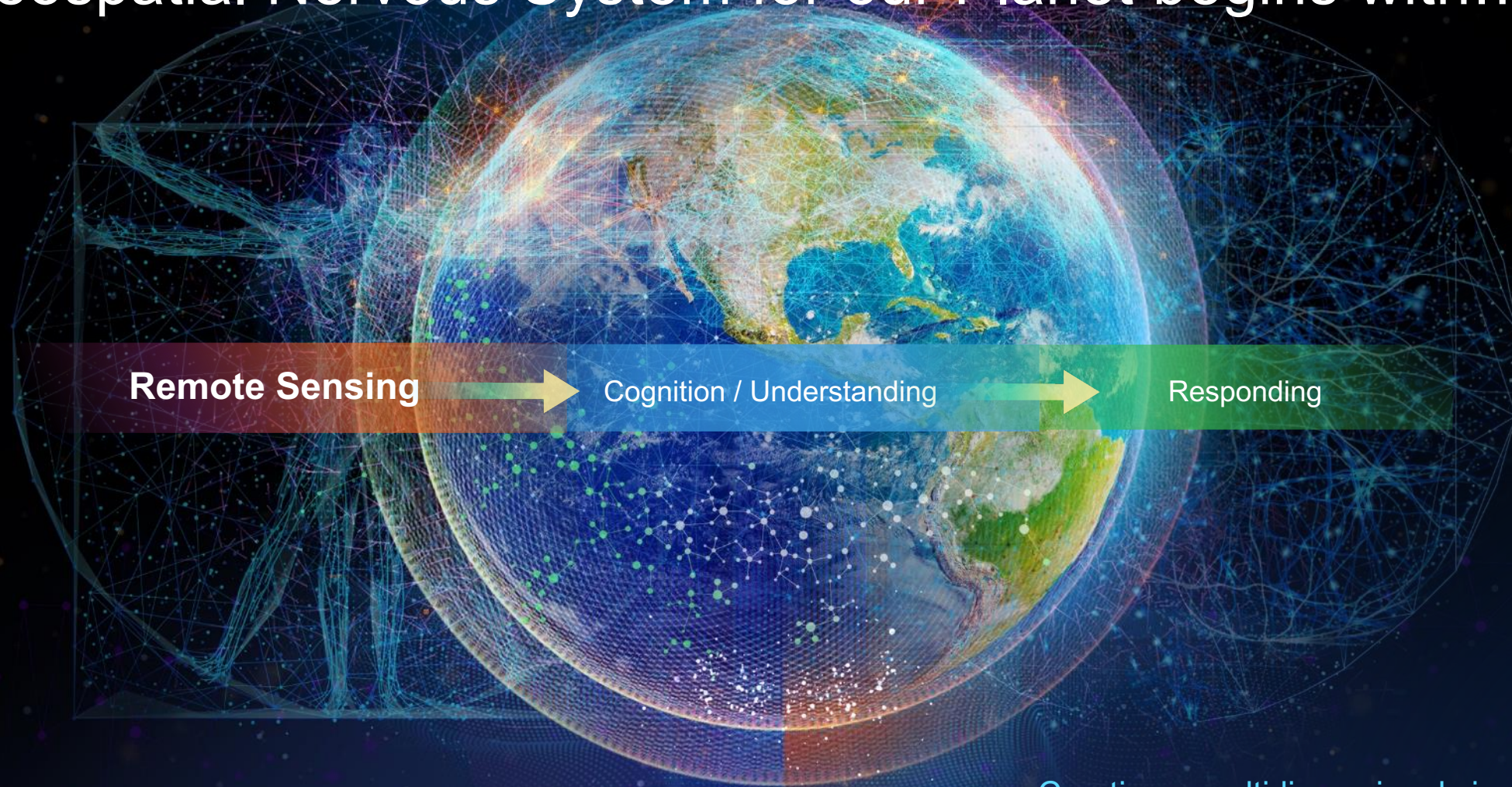
Including and Integrating . . . Challenged Network Environments



*Supporting GIS Workflows in All Environments*



# A Geospatial Nervous System for our Planet begins with...



Creating a multidimensional view of our world



# The Geospatial Revolution Is Just Beginning . . .

The Geospatial Nervous System . . .

. . . That Emerges



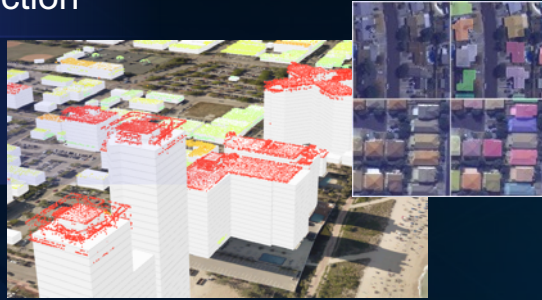
. . . Will Profoundly Transform Our World



# Your Work Across Industries

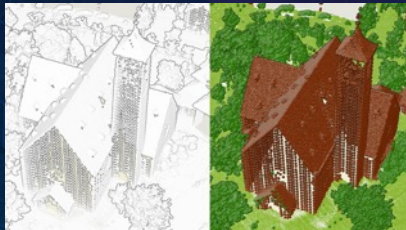
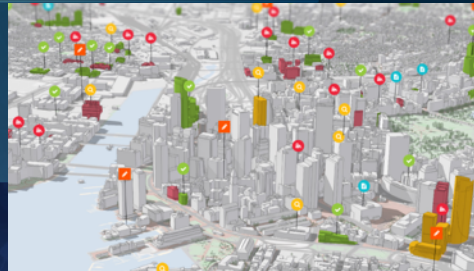
## Building Detection

- Roof Types
- Height



## Urban & Community Planning

- 3D Basemaps
- 3D City Modeling



GeoAI  
Automate Manual  
LiDAR classification

## Land use Land Classification



## Emergency Management

- Flood Mitigation
- Damage Assessment



## Public Safety

- Threat Assessment





# Your Work with Site Scan for ArcGIS

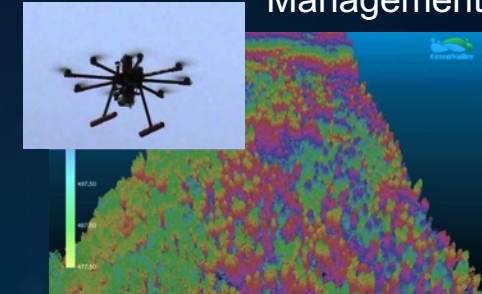
## Assessment Changes



## Events Planning



## Natural Resource Management



## Land Use Planning

## Infrastructure Inspections



## Emergency Management

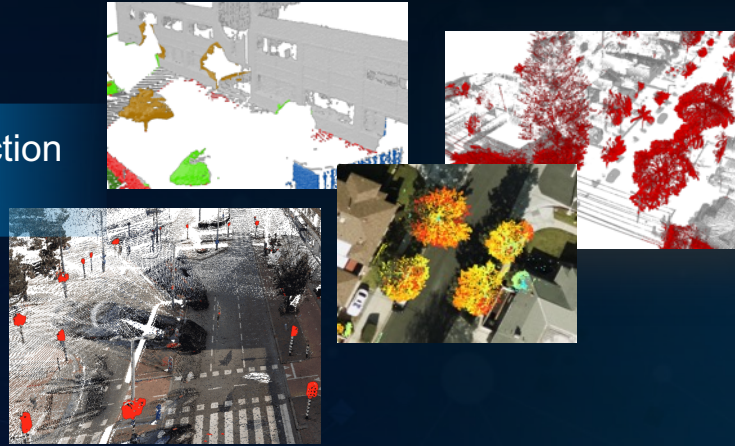
- HazMat
- Damage Assessment



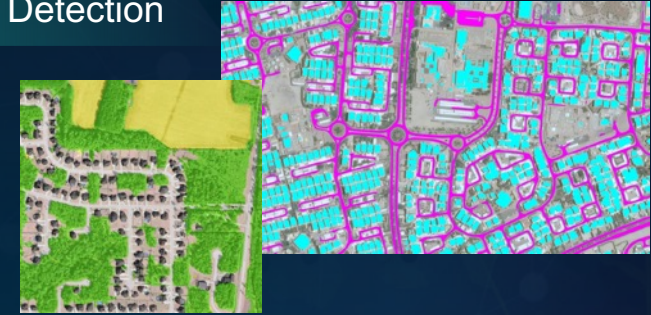


# Your Work in Raster and GeoAI Analytics

Asset Extraction  
from Lidar



Building Footprint/Parcel  
Change Detection



Road Asset Extraction  
from Oriented Imagery



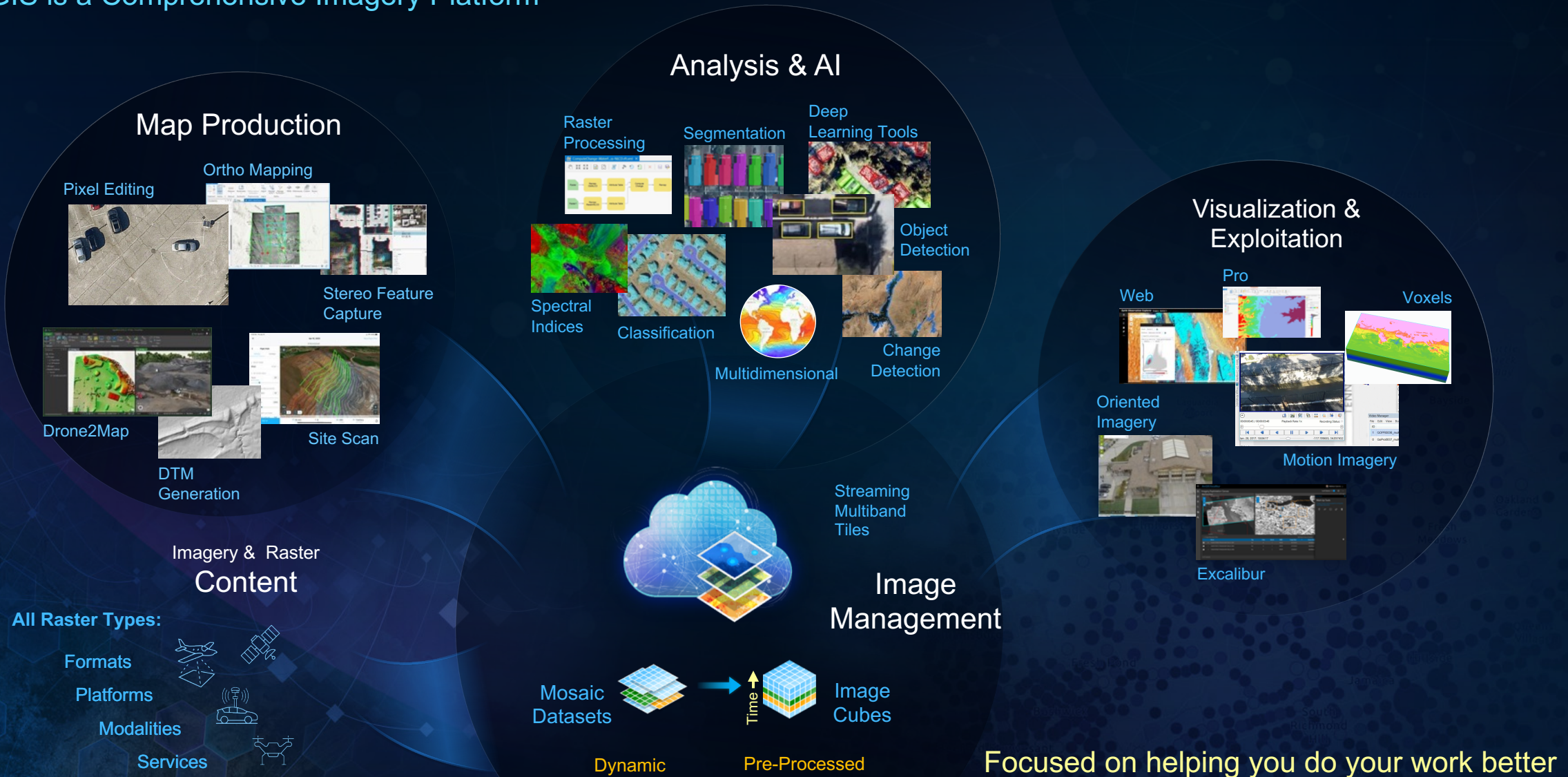
Road Crack  
Detection





# Our Work: Imagery and Remote Sensing

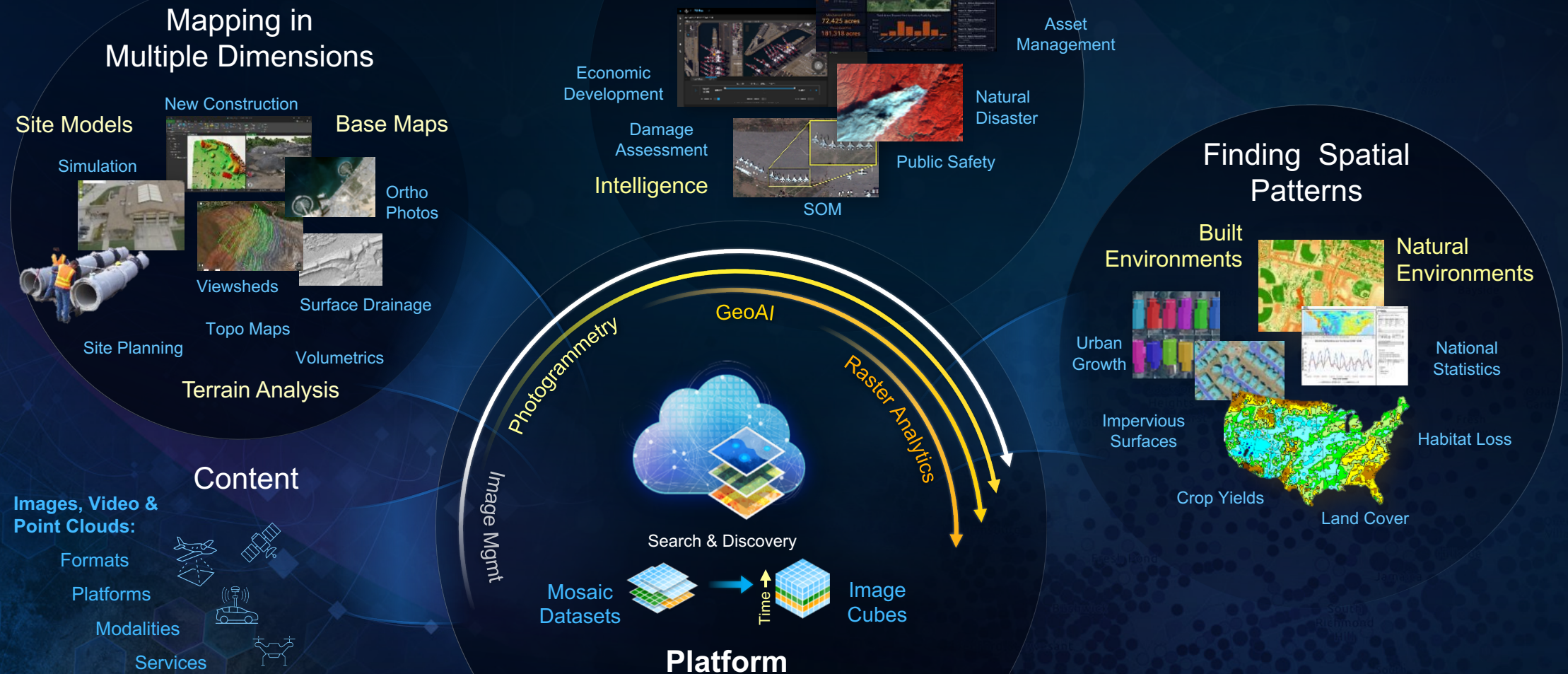
ArcGIS is a Comprehensive Imagery Platform





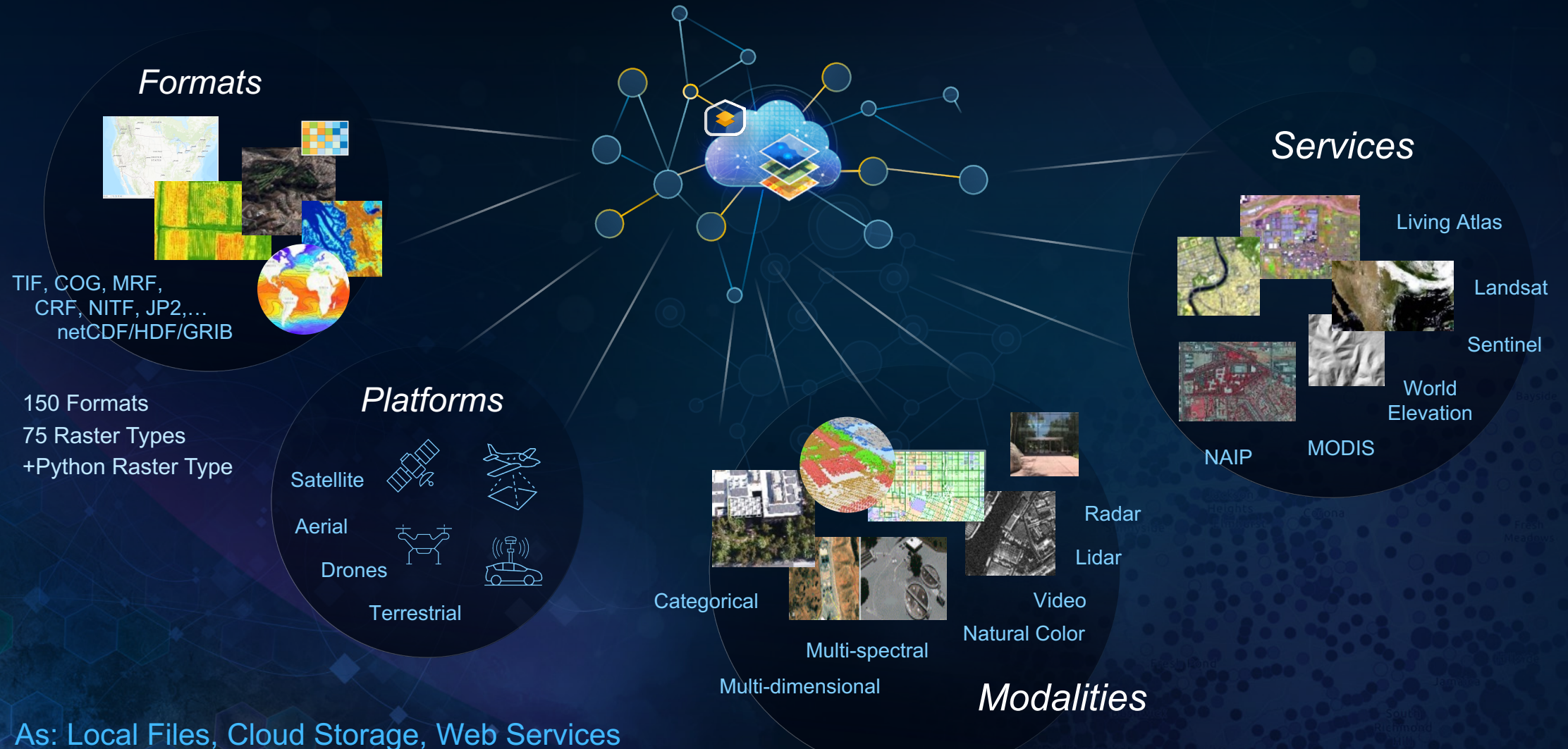
# The ArcGIS Imagery Platform

Transforming Remotely Sensed Content  
Into Information





# Content – Support for All Imagery and Rasters

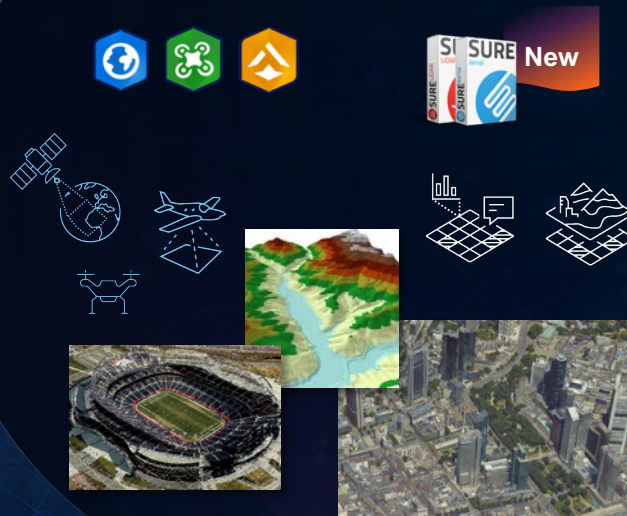




# The ArcGIS Imagery Platform

Focused On the Problems You are Trying to Solve

## Reality Capture and 3D Data from Imagery and Lidar



Collection, Processing, Data  
Management and Analysis

## Observations and Spatial Patterns



Visualization, Analysis, GeoAI

## Remote Monitoring and Inspection



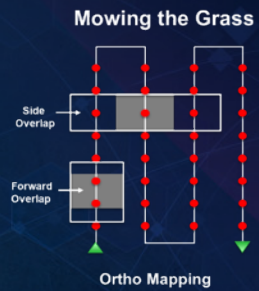
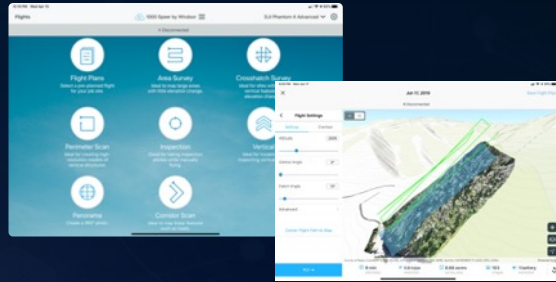
Situational Awareness, Automation of  
Data Collection, Asset Management,  
Urban Planning



# Site Scan for ArcGIS

Plan, Collect, Process, Analyze and Share

## Site Scan Flight Planning



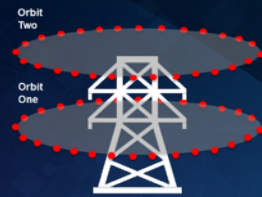
Ortho Mapping

### Hatch Pattern



3D Mapping

### Orbital Pattern



Inspection and Modeling



Image Analyst

## Drone Flight Planning

Point Clouds  
Orthomosaics

Fleet Management  
3D Integrated Mesh

Analysis Tools



ArcGIS Pro

## Image Management



Image Server

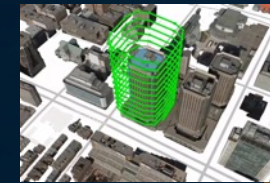


ArcGIS Online/Enterprise

New



## Site Scan for ArcGIS



Perimeter Scan



Vertical Scan



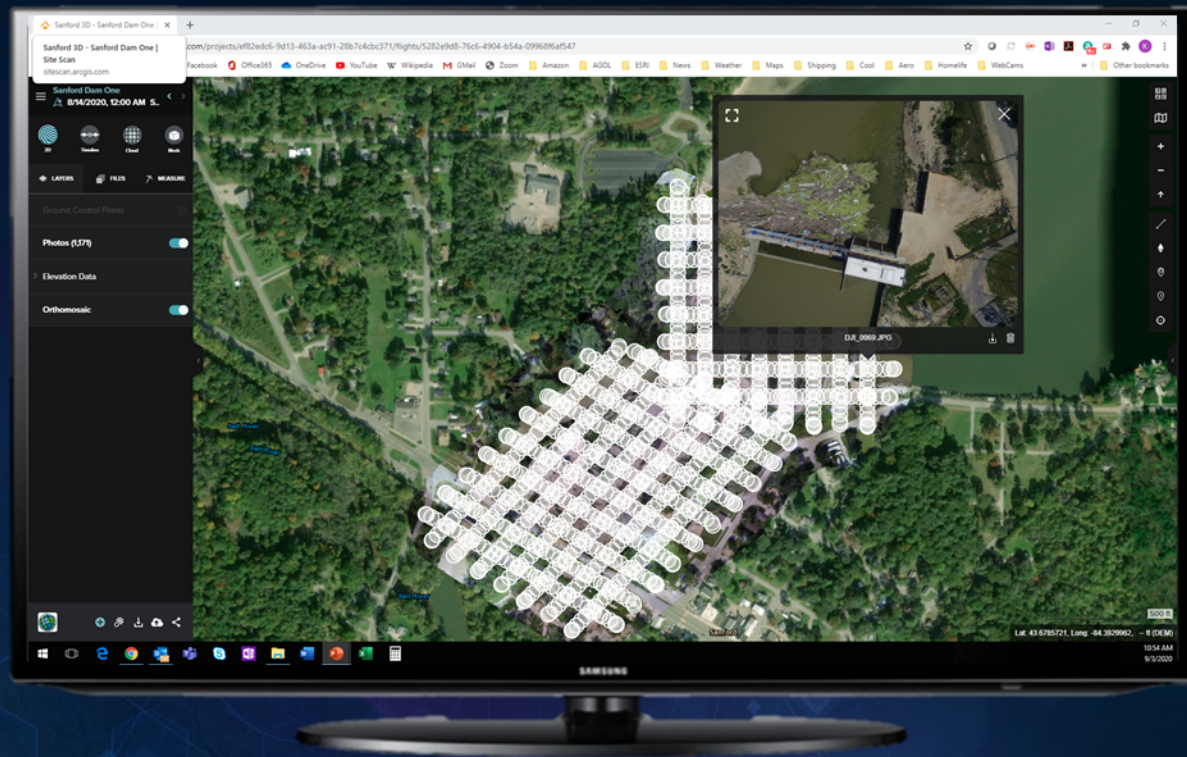
Site Scan Manager



3D Point Clouds and Meshes with Volumetric Tools

A complete platform for integrating drones into your workflows





# Demonstration Site Scan for ArcGIS

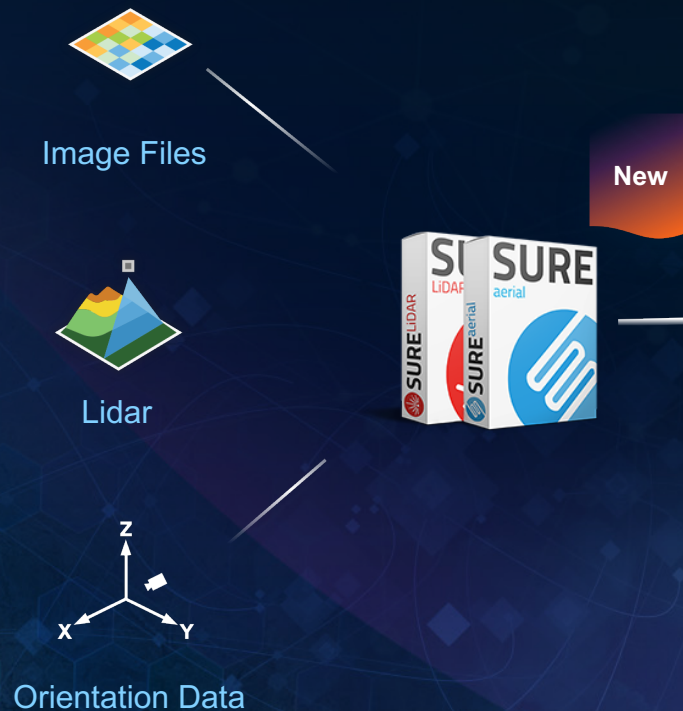
Jeremiah Johnson



# SURE for ArcGIS

Automated Data Production System for Mapping and 3D

## Inputs

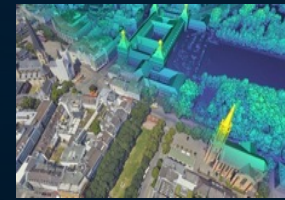


## ArcGIS

- Pro
- Enterprise
- Online



True Orthophotos



Textured Meshes



Point Clouds



Digital Surface Model

## Data Products

## Applications

- Mapping
- 3D Visualization & Simulation
- Change Detection
- Surface Analytics

Fully Integrated with ArcGIS

Fast, Highly Accurate, Massively Scalable, and Cost Effective

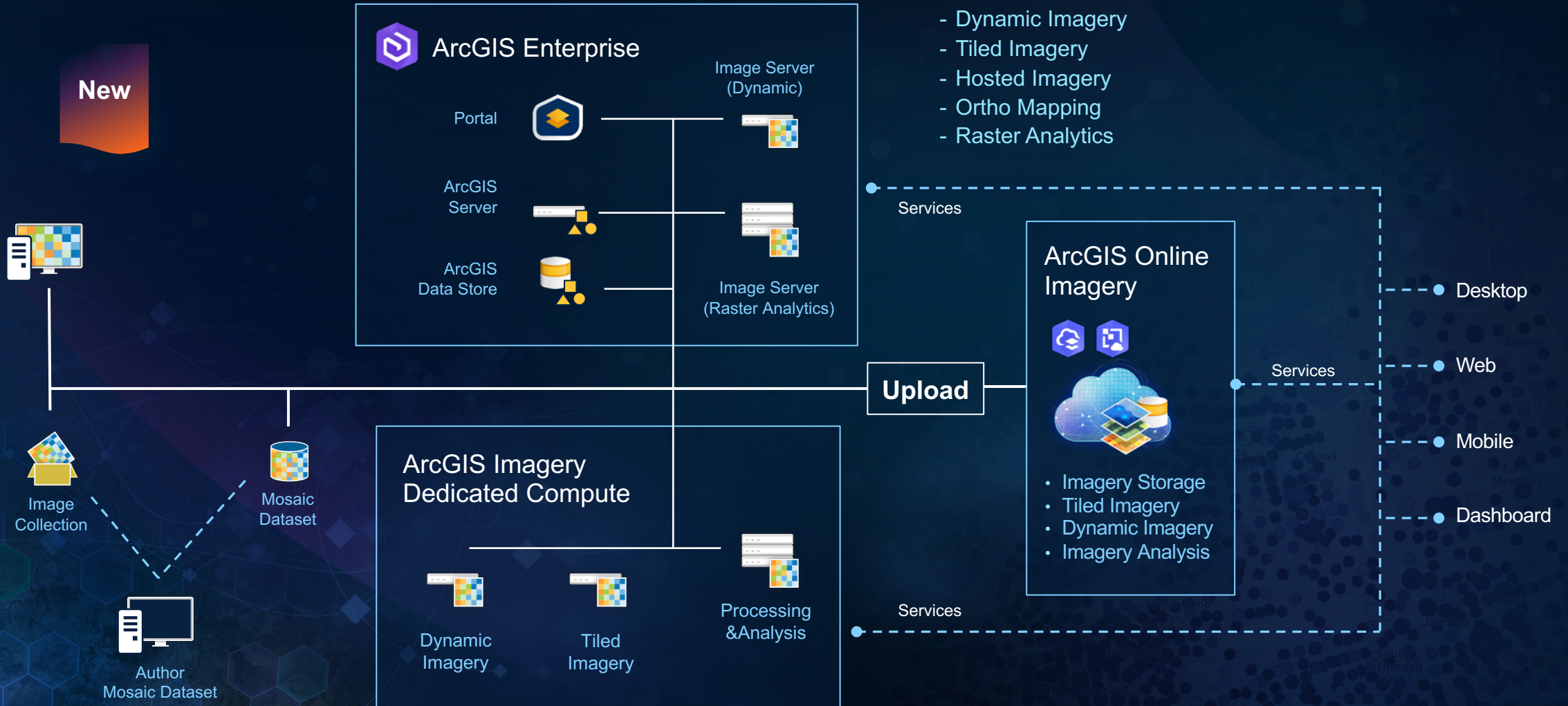


# ArcGIS Imagery

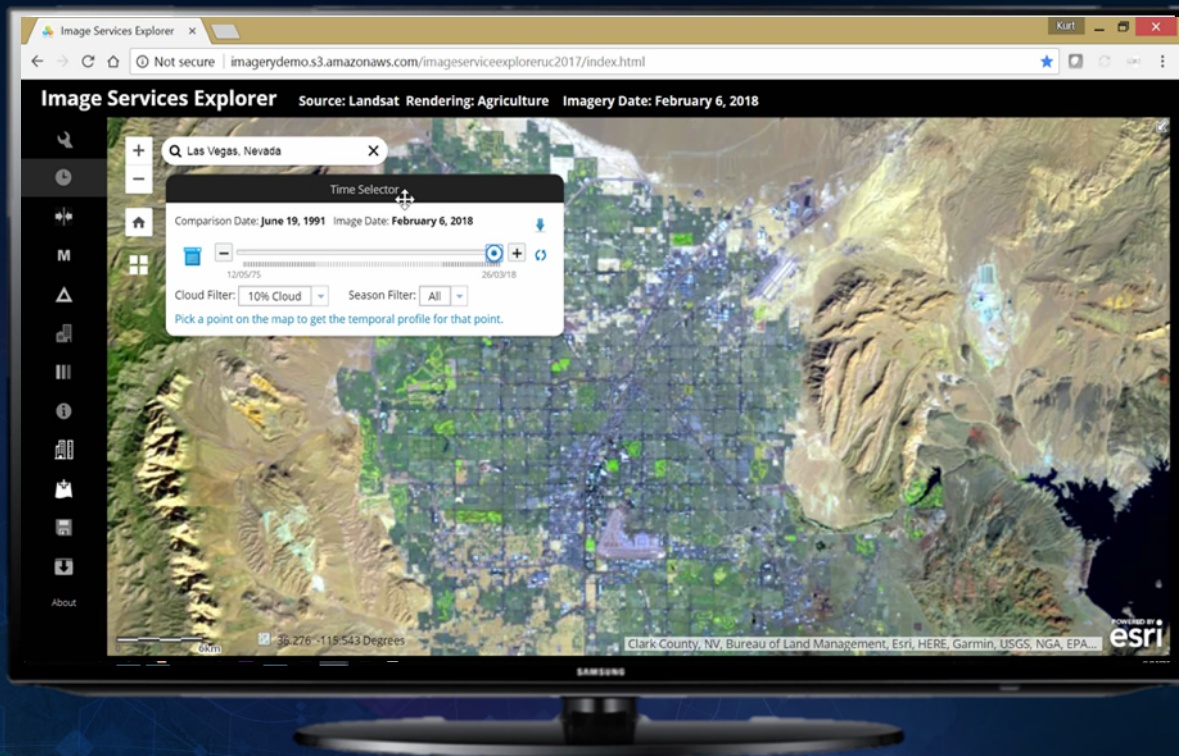
## Image Management and Raster Analytics in the Cloud

### ArcGIS Image Server

- Dynamic Imagery
- Tiled Imagery
- Hosted Imagery
- Ortho Mapping
- Raster Analytics







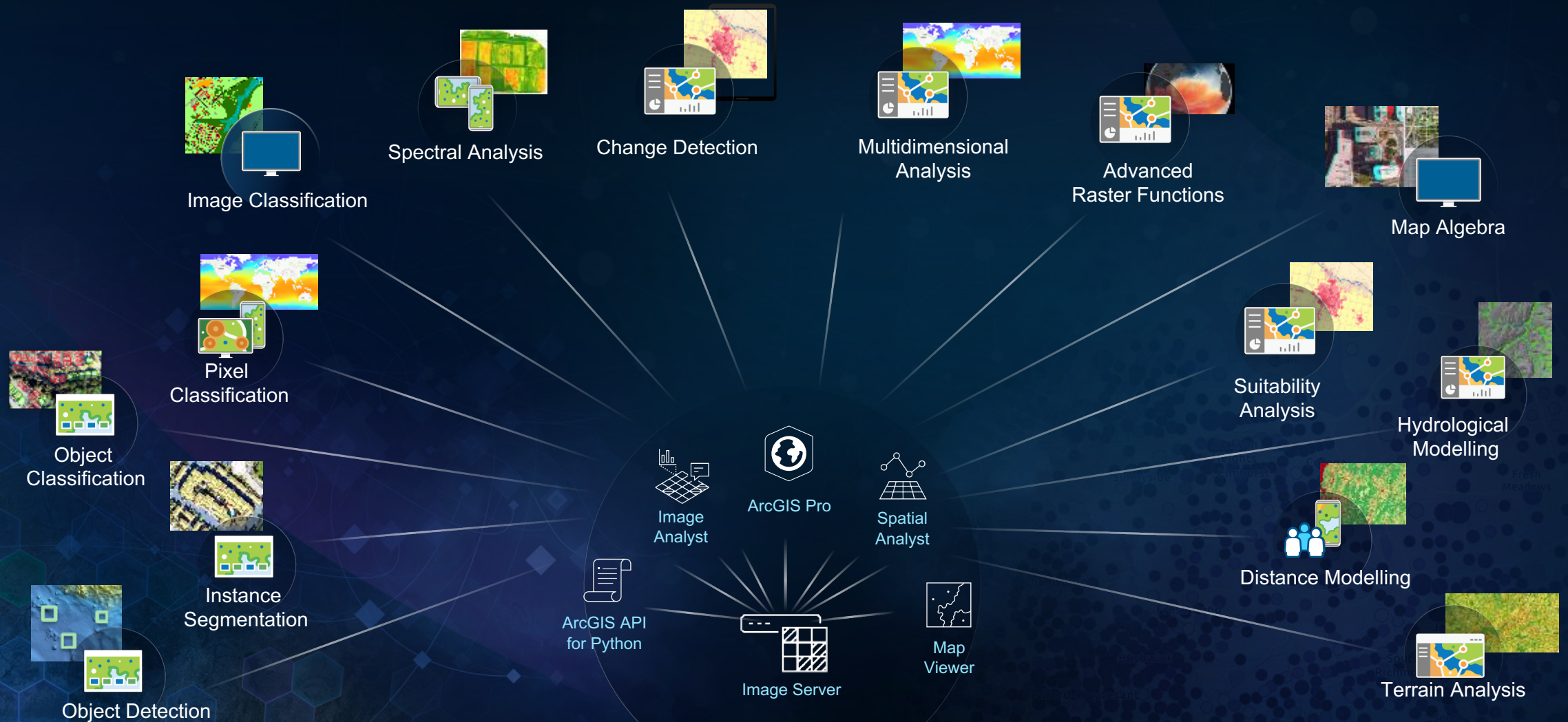
# Demonstration ArcGIS Imagery

David Wright



# Image Analysis

Extracting Information from Imagery





# Deep Learning in ArcGIS

Different data types, tasks and integration



**Integration**

A collection of logos for various software and libraries used in deep learning and GIS, including: learn, OpenCV, jupyter, SciPy, tensorflow, conda, pandas, matplotlib, fastai, sympy, pytorch, and arcpy.

**New**

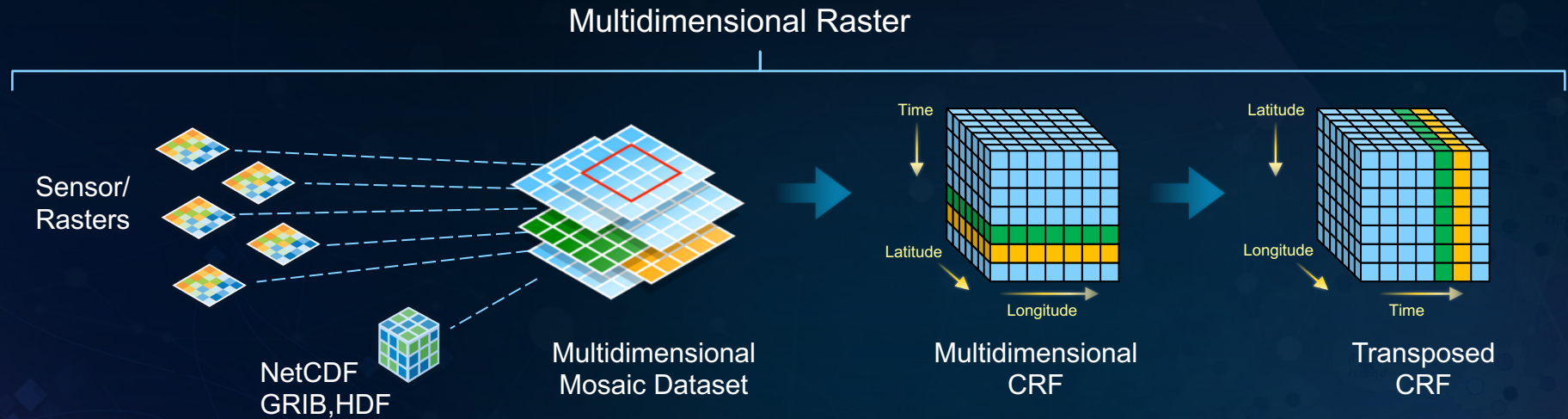
**Deep Learning models on the living atlas:**

- Building footprint extraction
- Tree classification from LiDAR
- Land cover classification



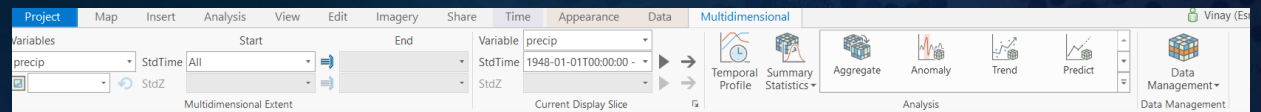
# Identifying Change with Multidimensional Data

Increasing Demand to Handle Large Scientific Datasets, Deep Temporal Data Stacks, Image Cubes, Data Cubes

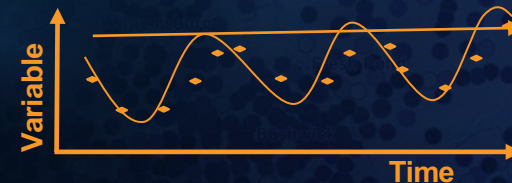
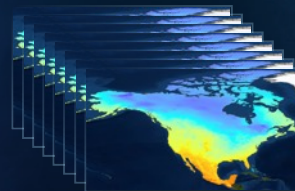


## Geoprocessing

Anomaly detection, Aggregate data, Detect anomalies, Predictive analysis, Trend analysis



- Management of large datasets
- Contextual Multidimensional Tab
- Charting tools
- Map Viewer supports multidimensional analysis workflows
- Multidimensional Raster Functions and Python functions
- ArcPy enhanced to work with Multidimensional rasters



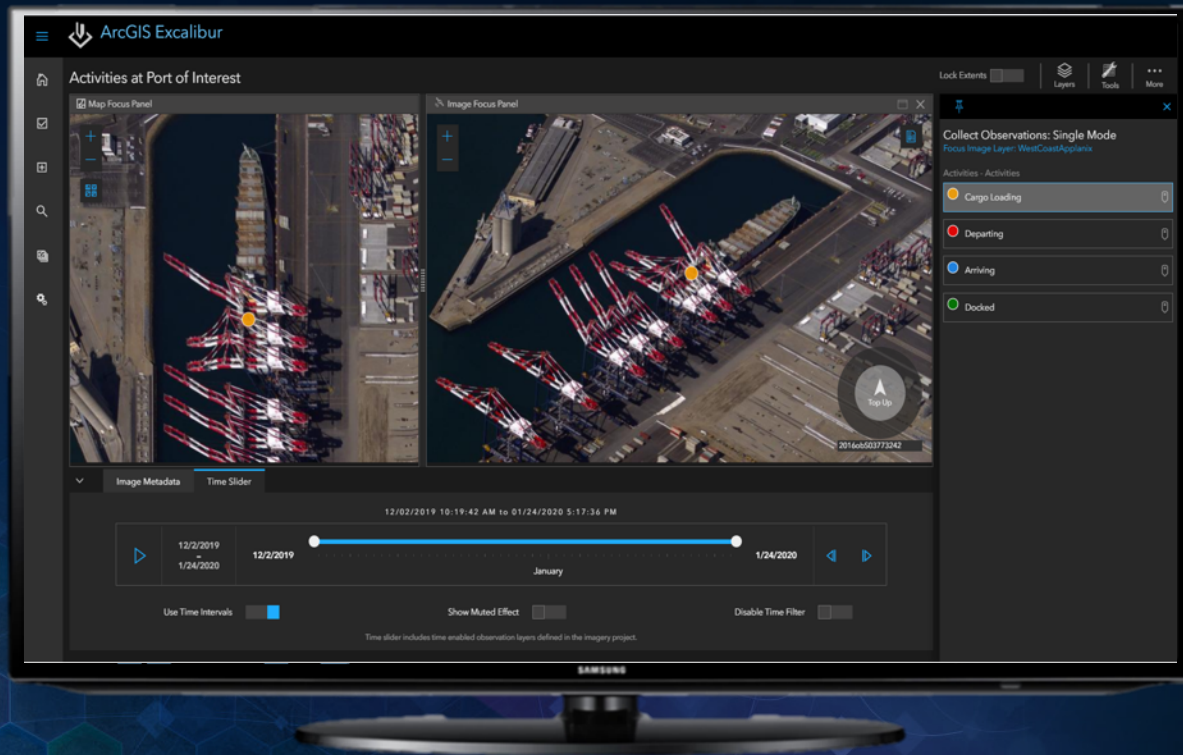


# Visualization & Exploitation

Enable Human Interpretation of Imagery & Derived Data







# Demonstration Excalibur and ArcGIS Image Analyst

Kyle Talbot



# The Challenge of Making Complex Things Easy

## The Challenge of Making Complex Things Easy

