

Real-Time Data in Apps

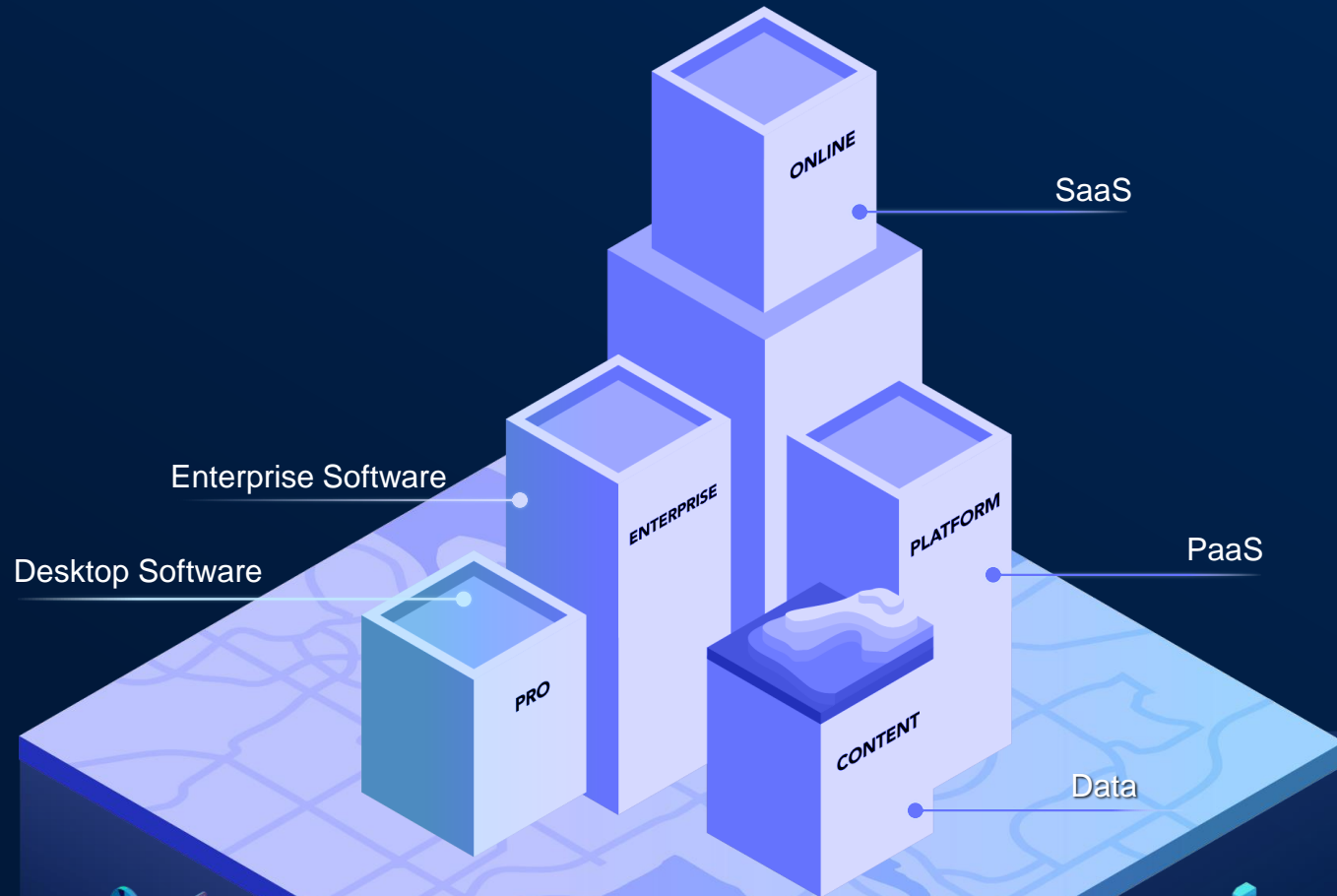
NCTCOG

Regional GIS Meeting

May 3, 2023



Capabilities of a
**COMPLETE GIS
& MAPPING SYSTEM**



Mapping

Field Operations

Spatial Analysis & Data Science

Imagery & Remote Sensing

3D Visualization & Analytics

Real-Time Visualization & Analytics

Data Management

**END USER
EXPERIENCES**

No-Code & Low-Code Builders

StoryMaps
Dashboards
Instant Apps

Experience Builder
AppStudio

Client APIs

Web
Mobile
Desktop

Open-Source
Game Engines
REST

Extending SDKs

Enterprise SDK
Pro SDK

Automation APIs

Python API
ArcPy

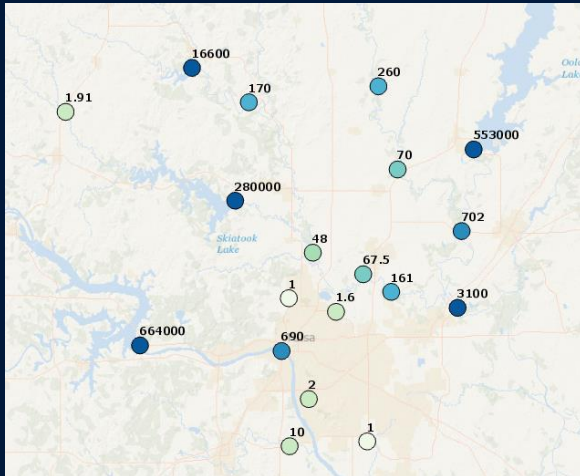


**Real-Time Visualization &
Analytics**

Real-Time Use Cases

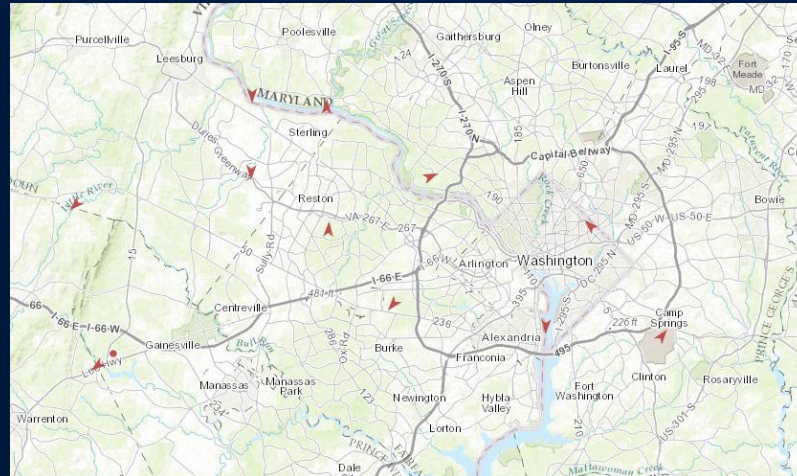
Types of Real-Time Data

Stationary sensors...



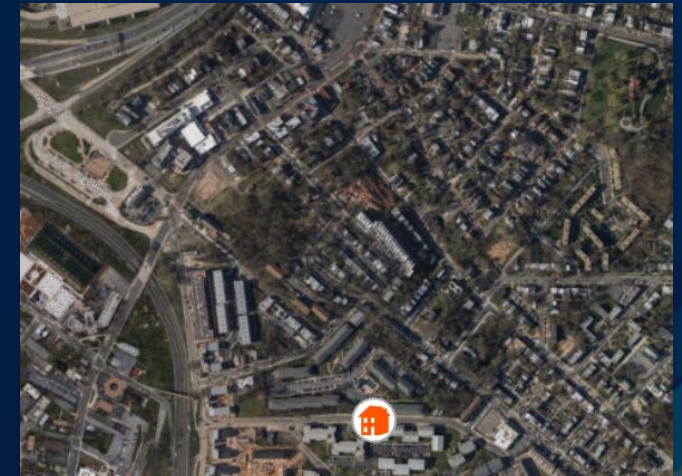
- water gauges
- weather stations
- air quality sensors
- device temperature

Things that move...



- airplanes
- ships
- vehicles
- satellites
- animals
- trains
- storms
- people

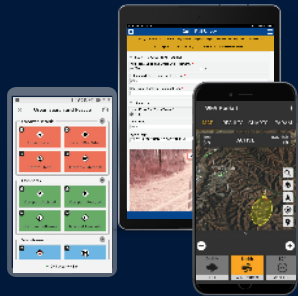
Things that just happen...



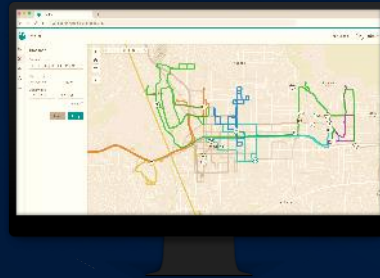
- crimes
- lightning
- accidents
- tweets

Use Cases in Real-Time Visualization & Analytics

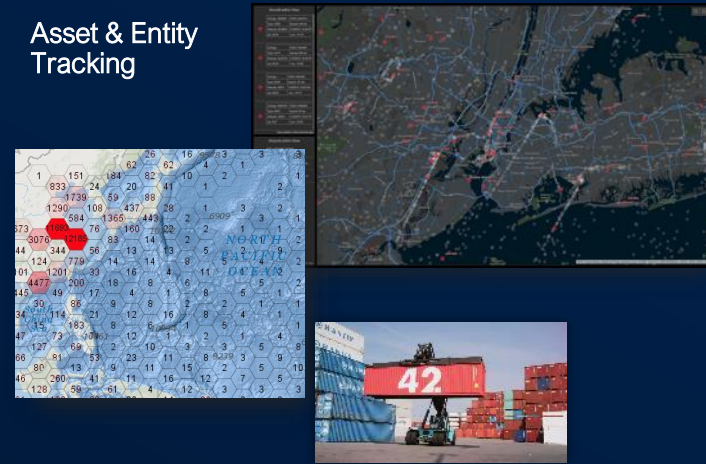
Personnel Tracking



Resource Optimization



Asset & Entity Tracking



Infrastructure Protection



Operations Monitoring



SCADA Integration



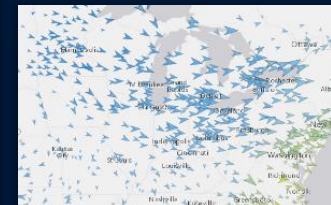
Soil & Crop Monitoring



Anomaly Detection



Air Quality Monitoring



Connected Cars



Real-Time Feeds in ArcGIS

Overview



Poll vs. Push

Real-Time Feeds in ArcGIS

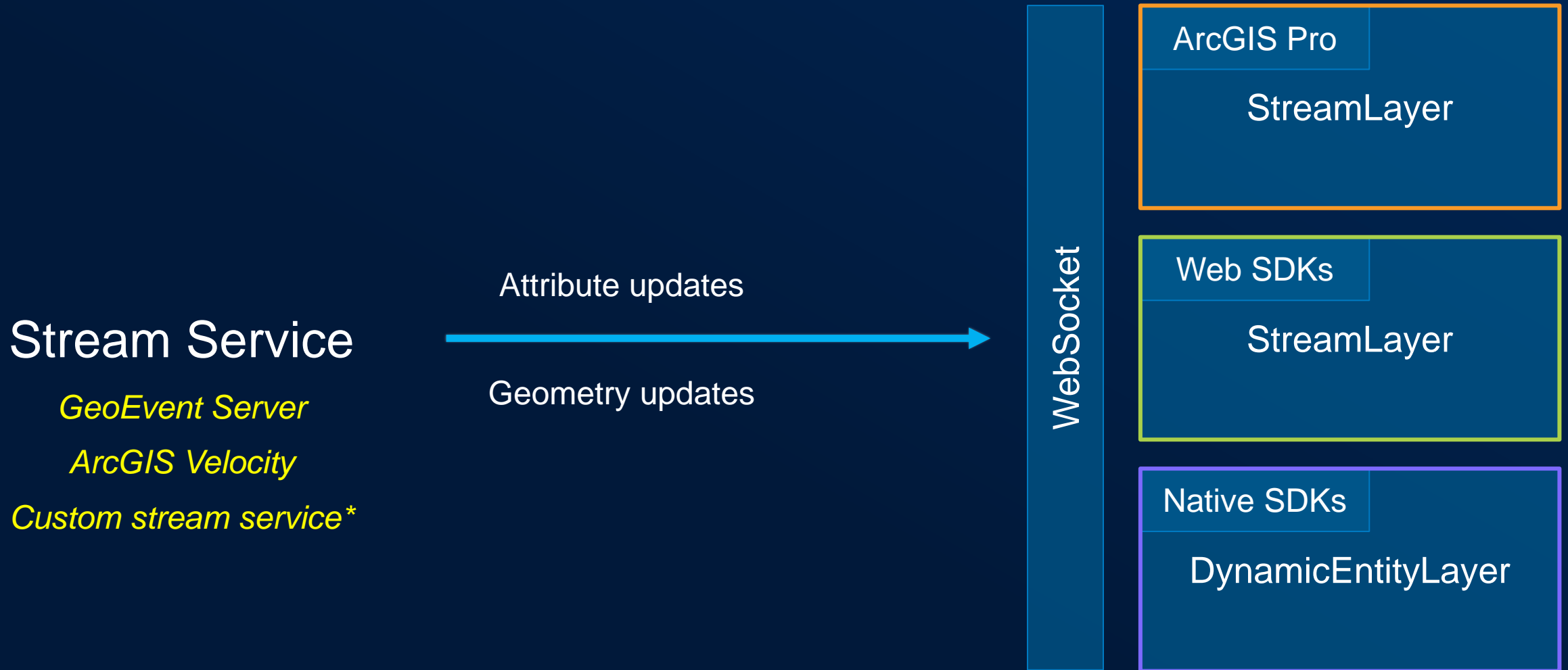
- How frequently does your data change?
- How quickly do you need updates?

Refresh Interval

WebSocket

Stream Layer
Dynamic Entity Layer

Real-Time Feeds in ArcGIS



Real-Time Basics

Stream Layer (Pro / Web Apps) or Dynamic Entity Layer (Native)

- Connect to stream service
- Track-aware: multiple observations for a single object
- How to manage stale features?
- Same client-side capabilities as other layers*
 - 2D / 3D support,
 - Define a renderer,
 - Analysis,
 - ...

Leveraging Real-Time Feeds

ArcGIS Pro, Web Apps, Native Apps



Real-Time Data in ArcGIS

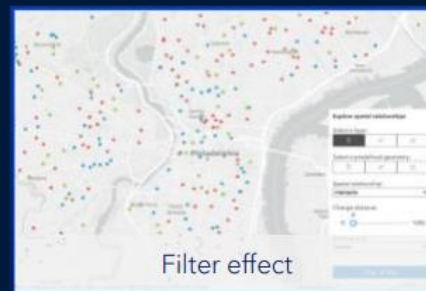
ArcGIS Pro SDK for .NET

- Stream Layer – visualize and analyze real-time data
 - ArcGIS Stream Service
 - Supports points, lines, and polygons
- Cache observations in memory
 - Work with latest and previous observations
- Real-Time API enables visualization and analysis in real-time

Real-Time Data in ArcGIS

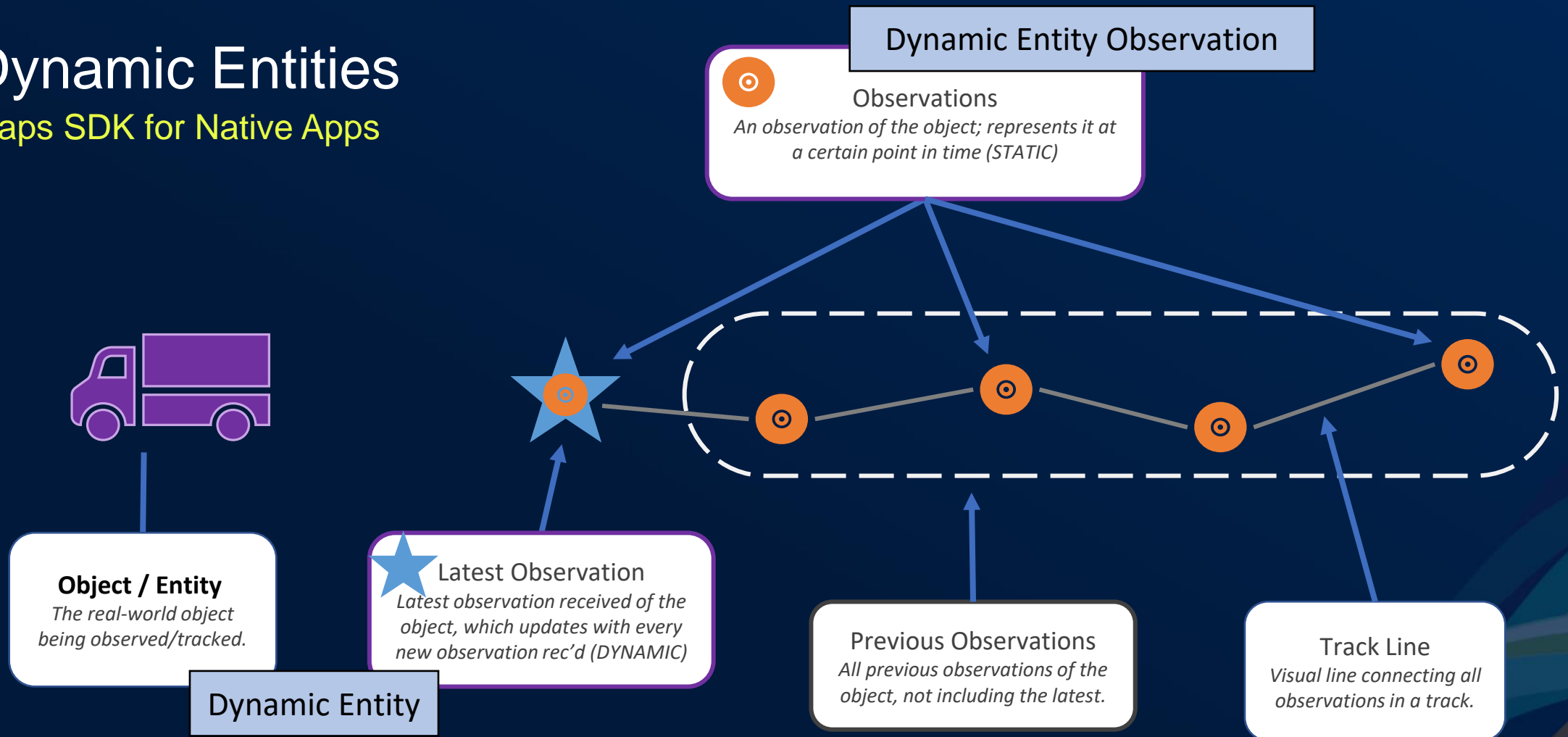
Web Apps and the Maps SDK for JavaScript API

- Create a StreamLayer to leverage feeds in web applications
 - ArcGISStreamService or websocketUrl
 - Supports points, lines, and polygons
- Same client-side capabilities as other layers



Dynamic Entities

Maps SDK for Native Apps



Leveraging Real-Time Capabilities in your Apps

Wrap Up

- Stream Layers
- Dynamic Entity Layers

- GeoEvent Server
- ArcGIS Velocity

- Real-time support in Pro, Web Apps, Native Apps (Dynamic Entity Layer)

Additional Resources

- [Real-Time Visualization and Analytics](#)

Gain insights into real-time and big data through location intelligence

- [Real-Time Visualization Lessons](#)

- [Real-Time Lesson Gallery](#)



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