



Introducing ArcGIS Velocity

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2021 ESRI FEDERAL GIS CONFERENCE

Introduction

welcome
to the
connected world

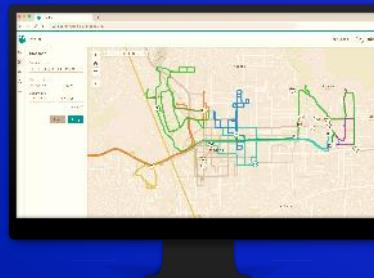


Geospatial use cases – the Internet of Things

Personnel Tracking



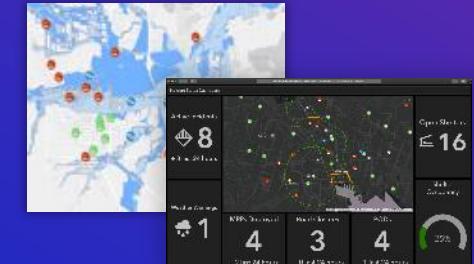
Resource Optimization



Asset & Entity Tracking



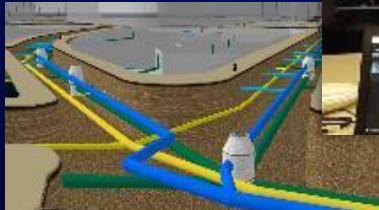
Infrastructure Protection



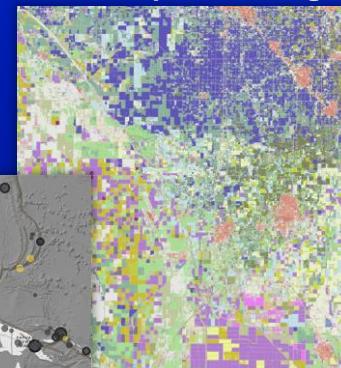
Operations Monitoring



SCADA Integration



Anomaly Detection



Air Quality Monitoring



Connected Cars

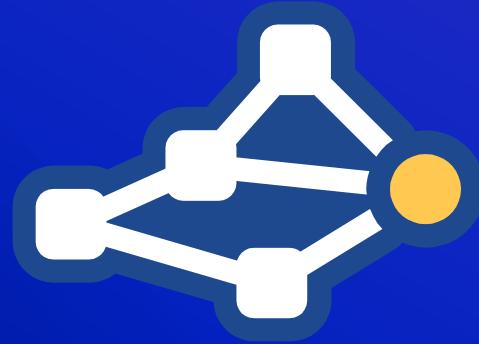


Key challenges

Tracking, monitoring, and internet-of-things use cases



Ingest



Analyze



Alert

ArcGIS Velocity

Real-time and big data capabilities for ArcGIS Online

- **Ingest real-time sensor data**
- **Analyze data to detect incidents**
 - In real-time
 - In *near* real-time
 - Over time
- **Take action**



ArcGIS Velocity

- **Configurable user experience**
 - No development required
- **Cloud-hosted SaaS**
 - Reduces on-premise infrastructure costs
- **Managed by Esri**
 - Reduces IT staff installation & maintenance
- **Scalable & resilient**

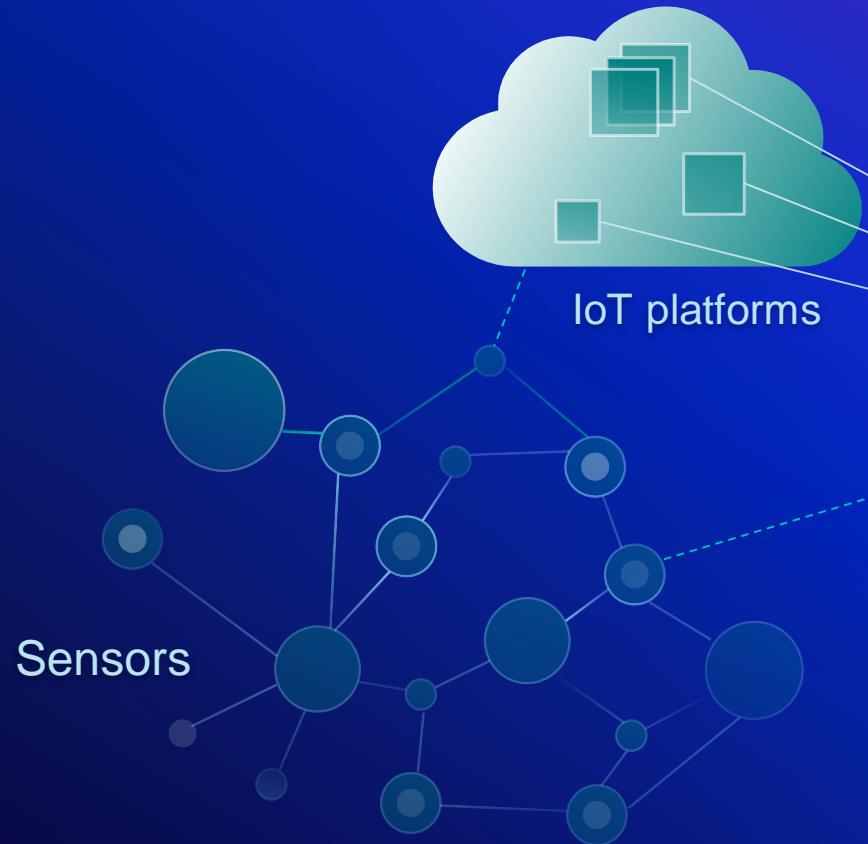
Who is it for?

Geospatial Analysts	Operations Officers	Asset Managers
 <ul style="list-style-type: none">• Leverage analysis tools & automate complex workflows• Share data, methods, & findings with stakeholders	 <ul style="list-style-type: none">• Synthesize different sources of data into a COP• Surface incidents of interest• Improve situational awareness	 <ul style="list-style-type: none">• Monitor assets health• Integrate asset feeds with other data• Collect data to create forecasts

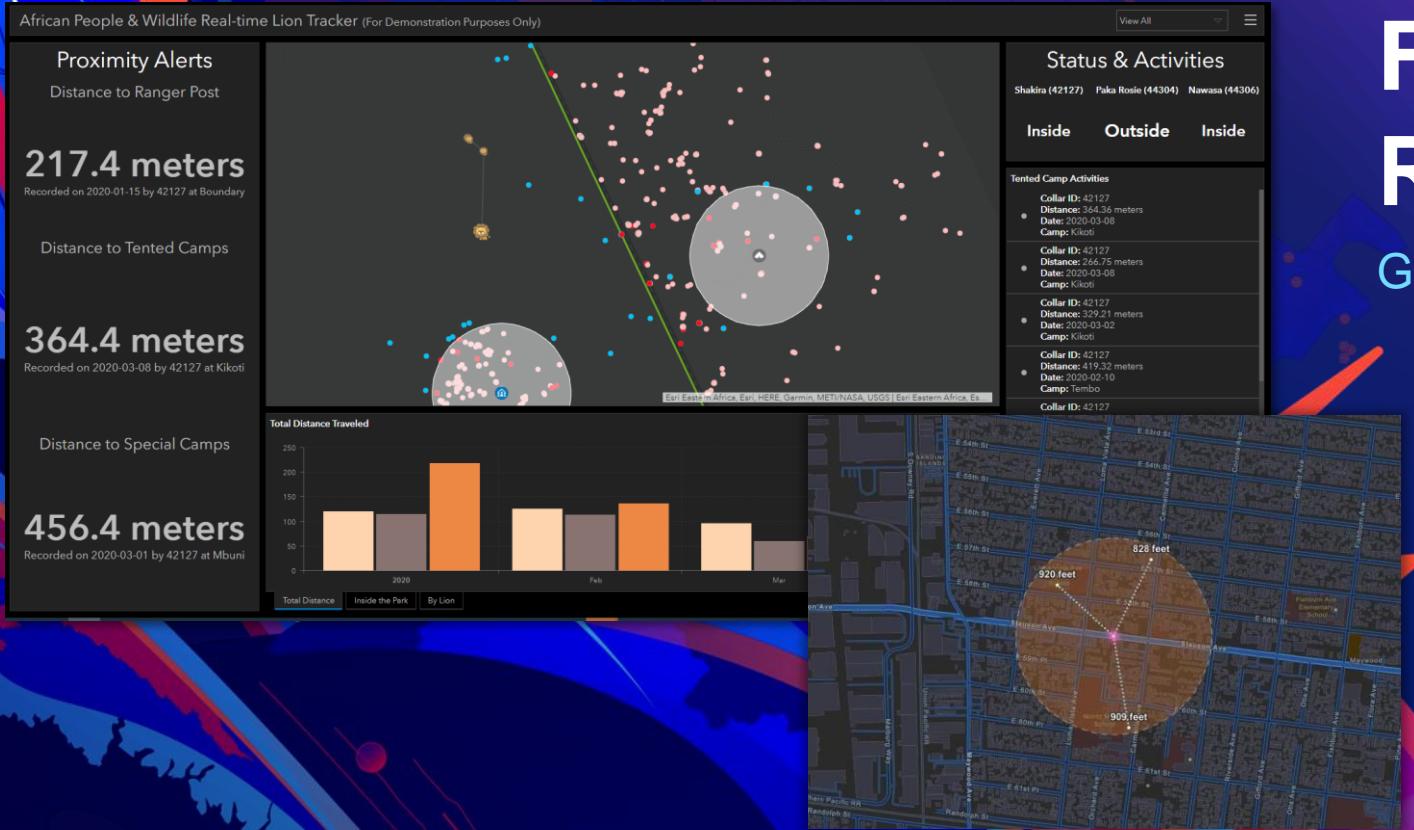
How it works

ArcGIS Velocity

Leverage sensor and IoT data for geospatial reasoning



...connects to industry leading cloud IoT platforms, data lakes, and sensor vendor APIs

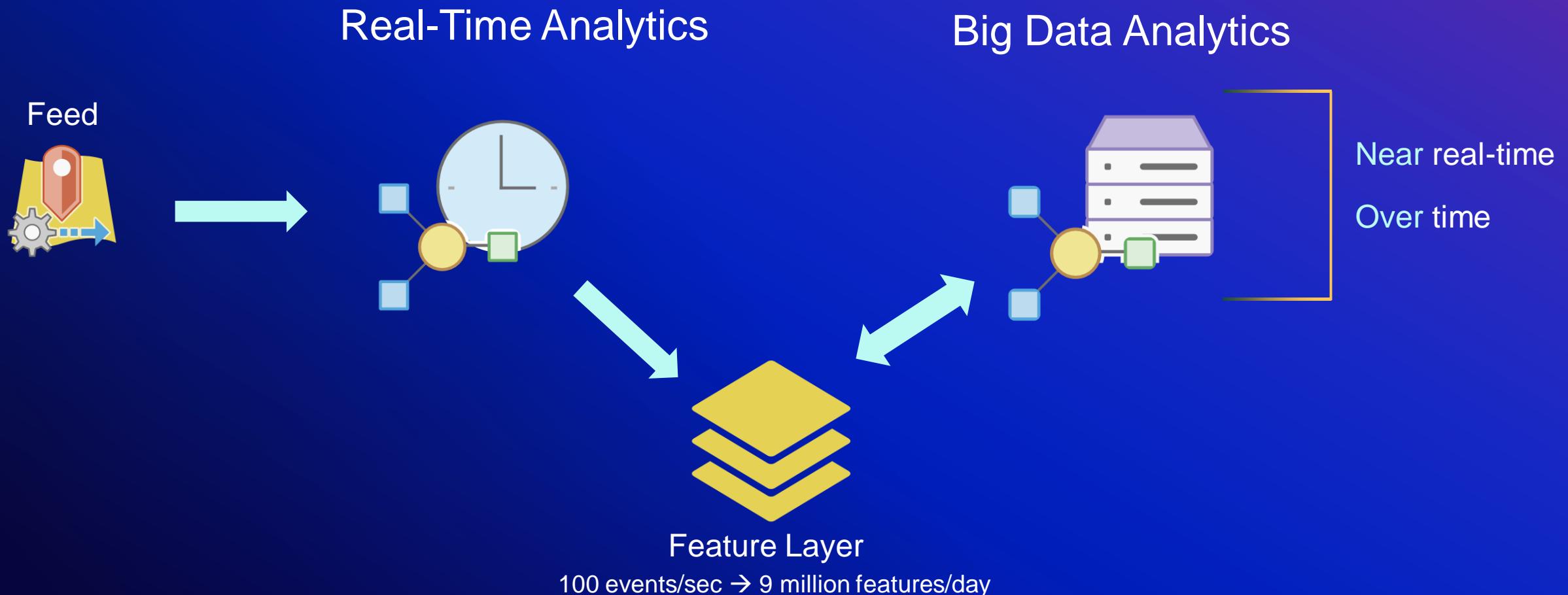


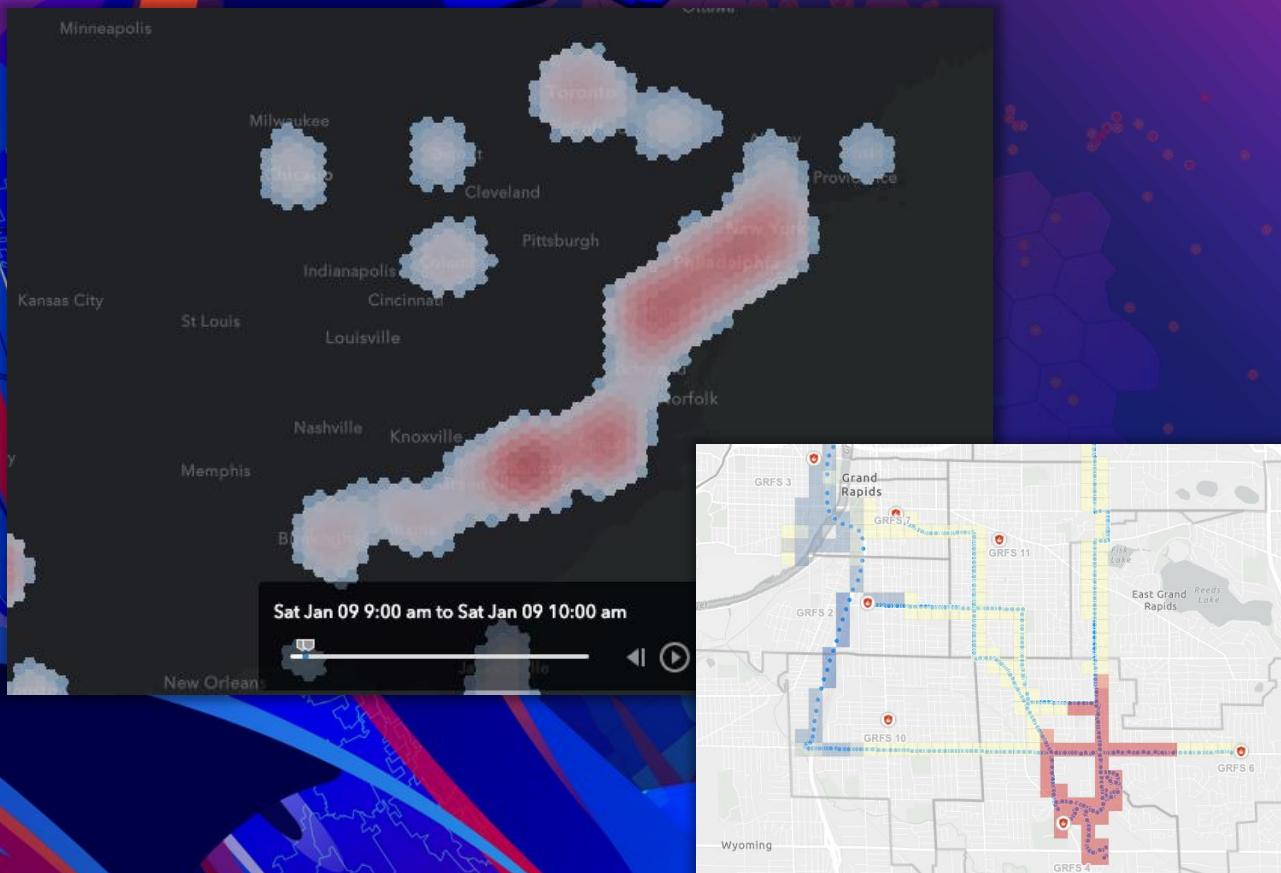
Feed & Real-Time Analytics

Geofencing and alerting

End-to-end analysis

Evaluate incidents, trends, and patterns against any decision timeline





Big Data Analytics

AVL big data analytics
Incident detection & assessment

Big Data Analytics

Perform batch analysis on stored big data

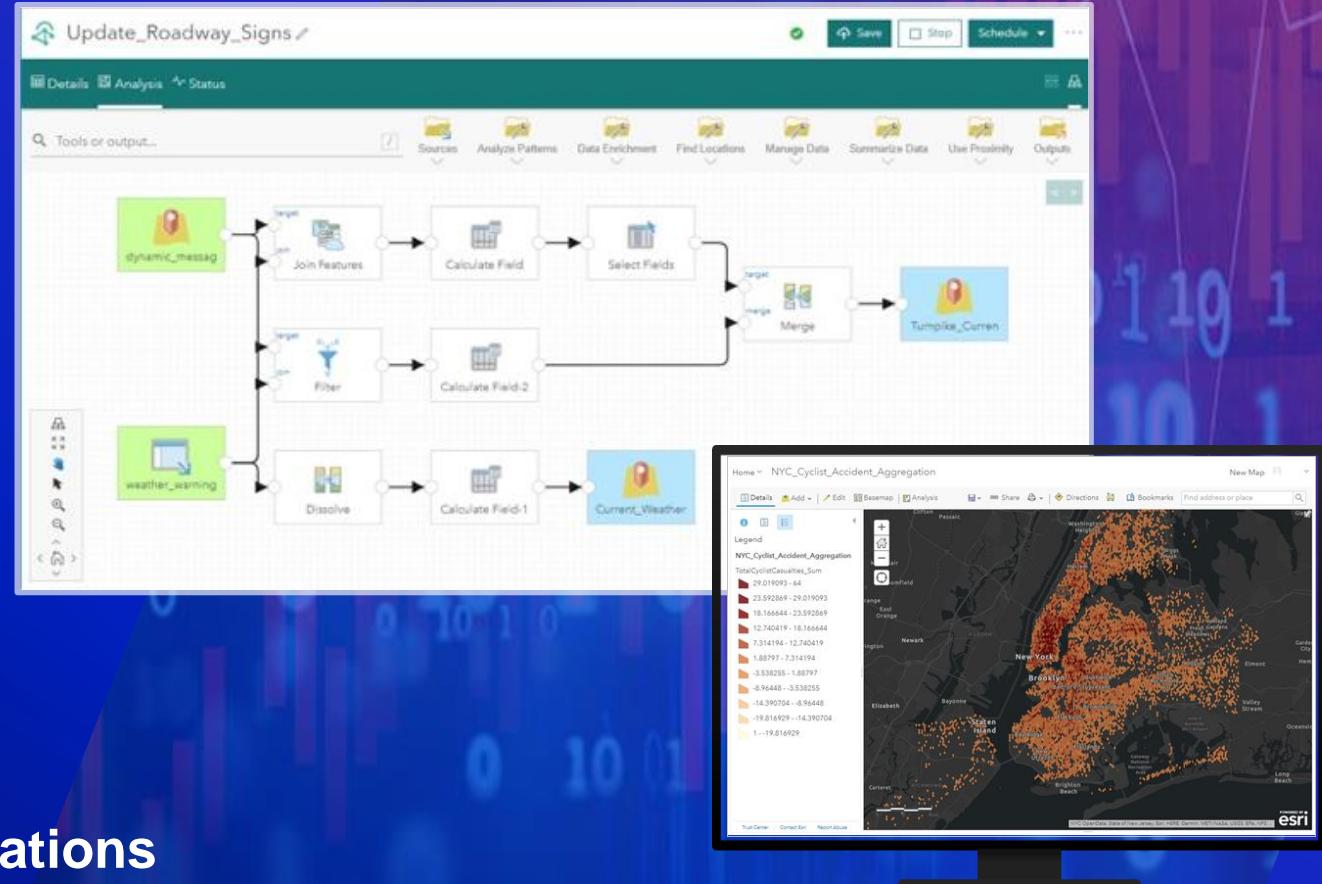
- **Input Sources**

- ArcGIS (Feature Layers)
- Cloud (Amazon S3, Azure Blob)
- Web & Messaging (HTTP, RSS...)

- **Analytic Tools**

- Analyze Patterns
- Find Locations
- Manage, Summarize, Enrich Data

- **Output results to one or more destinations**



...big data analysis pipelines on demand or scheduled for recurring execution

Spatiotemporal analysis

Tools for transforming, enriching, and analyzing geospatial data

- **Summarize Data**
 - Aggregate Points
 - Join Features
 - Reconstruct Tracks
 - Summarize Attributes
 - Summarize Within
- **Find Locations**
 - Detect Incidents
 - Find Dwell Locations
 - Find Similar Locations
- **Enrich Data**
 - Calculate Motion Statistics
- **Use Proximity**
 - Create Buffers
 - Calculate Distance
 - Snap to Network

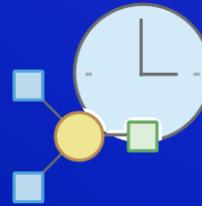
- **Analyze Patterns**
 - Calculate Density
 - Calculate Journeys
 - Find Hot Spots
 - Find Point Clusters
- **Manage Data**
 - Filter
 - Calculate Fields
 - Dissolve Boundaries
 - Overlay Layers
 - Select Fields
 - Map Fields
 - Project
 - Merge



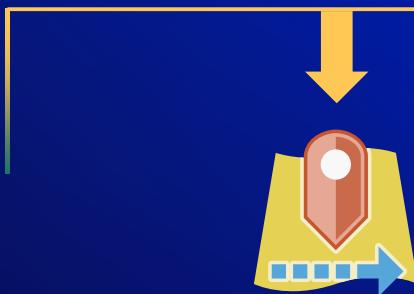
Visualization

Live or historic observations

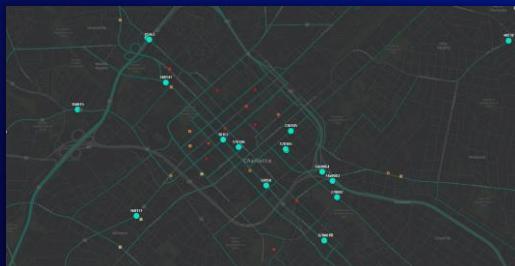
Real-Time Analytics



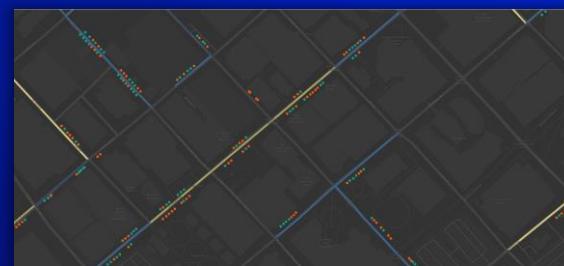
Big Data Analytics



Stream Layer



Feature Layer



Map Image Layer



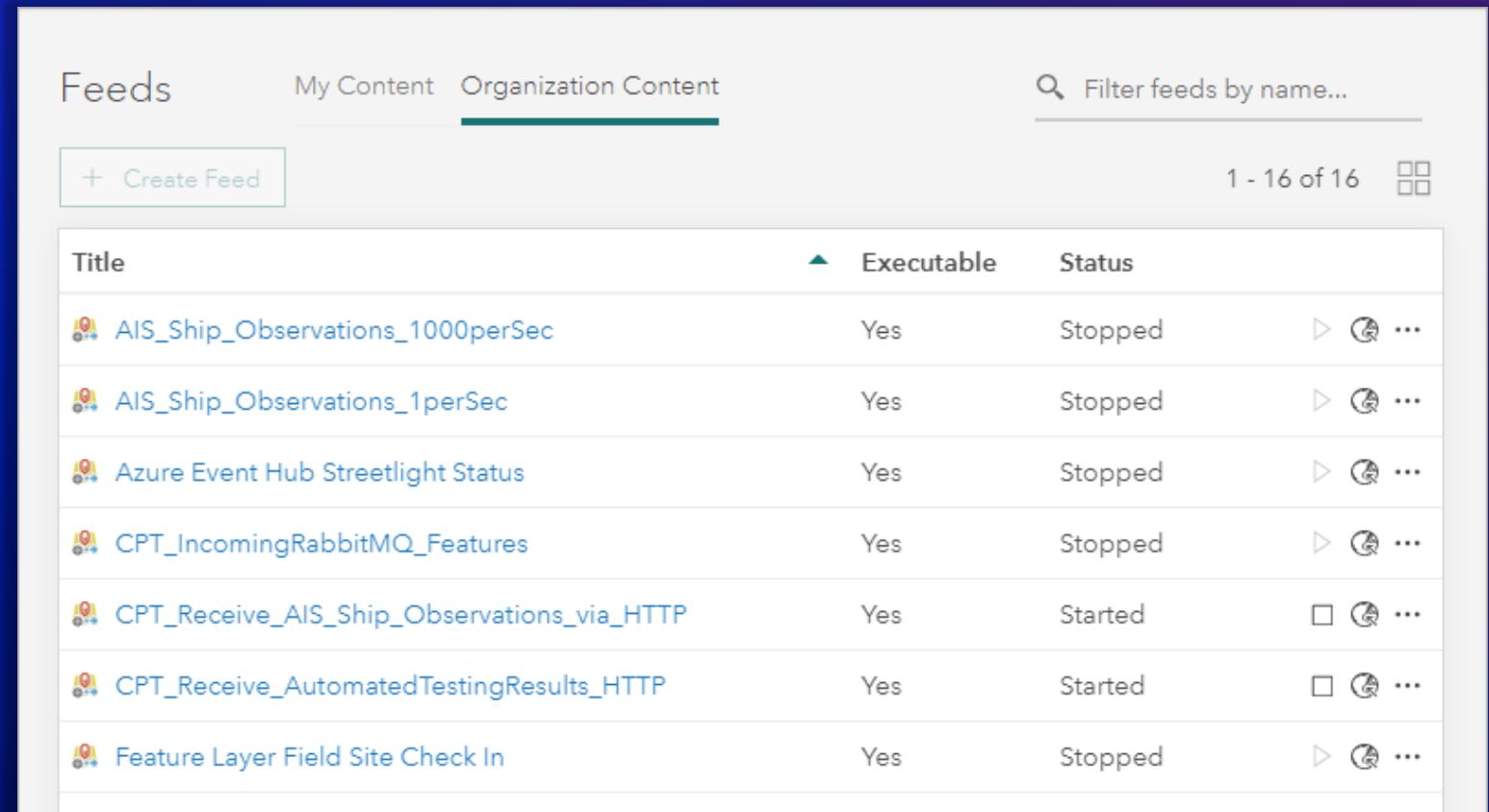
Administration

Running feeds and analytics

- **View feeds and analytics**

- Check item owner
- View logs
- Adjust sharing

- **Stop running tasks**



The screenshot shows a user interface for managing feeds. At the top, there are tabs for 'Feeds', 'My Content', and 'Organization Content', with 'Organization Content' being the active tab. A search bar is located at the top right with the placeholder 'Filter feeds by name...'. Below the search bar, a page number '1 - 16 of 16' and a refresh icon are shown. A 'Create Feed' button is located in the top left of the main content area. The main content area is a table with the following data:

Title	Executable	Status	Actions
AIS_Ship_Observations_1000perSec	Yes	Stopped	▶ ⚙️ ⋮
AIS_Ship_Observations_1perSec	Yes	Stopped	▶ ⚙️ ⋮
Azure Event Hub Streetlight Status	Yes	Stopped	▶ ⚙️ ⋮
CPT_IncomingRabbitMQ_Features	Yes	Stopped	▶ ⚙️ ⋮
CPT_Receive_AIS_Ship_Observations_via_HTTP	Yes	Started	□ ⚙️ ⋮
CPT_Receive_AutomatedTestingResults_HTTP	Yes	Started	□ ⚙️ ⋮
Feature Layer Field Site Check In	Yes	Stopped	▶ ⚙️ ⋮

Administration

Subscription utilization

ArcGIS Velocity

GETTING STARTED

- Feed
- Real-Time Analytic
- Big Data Analytic

HELP TOPICS

- About this product
- Create a feed
- Ingest and visualize real-time data
- Design a real-time analytic
- Process streaming data with tools and outputs

SUBSCRIPTION UTILIZATION

- Running feeds and analytics: 60%
- Storage: 53.3%

Last week

Storage Utilization

Usage

Category	Usage (%)
Features	5%
Available	45%
Logs	10%
Metrics	10%
Message buffer	10%
System	15%

By features

Feature	Storage (%)
DTSC_Trackpoints_One_Week_July_2019_rw_dts_c_4iot	22.01%
CiscoDNADeviceLocationHistory_kgerton_a4iot	20.82%
DTSC_Trackpoints_One_Week_July_2019_dsc_c_4iot	18.01%
connvehicles_obs_history_charlotte_a4iotprod	13.42%
Load_CSV_CiscoDNADeviceLocationHistory_pnasuti_jot	6.05%
Charlotte_WAZE_KeepLatest_charlotte_a4iotprod	2.64%
[91 more]	12.83%

ArcGIS Velocity

Storage Utilization

Auto-refresh

Usage

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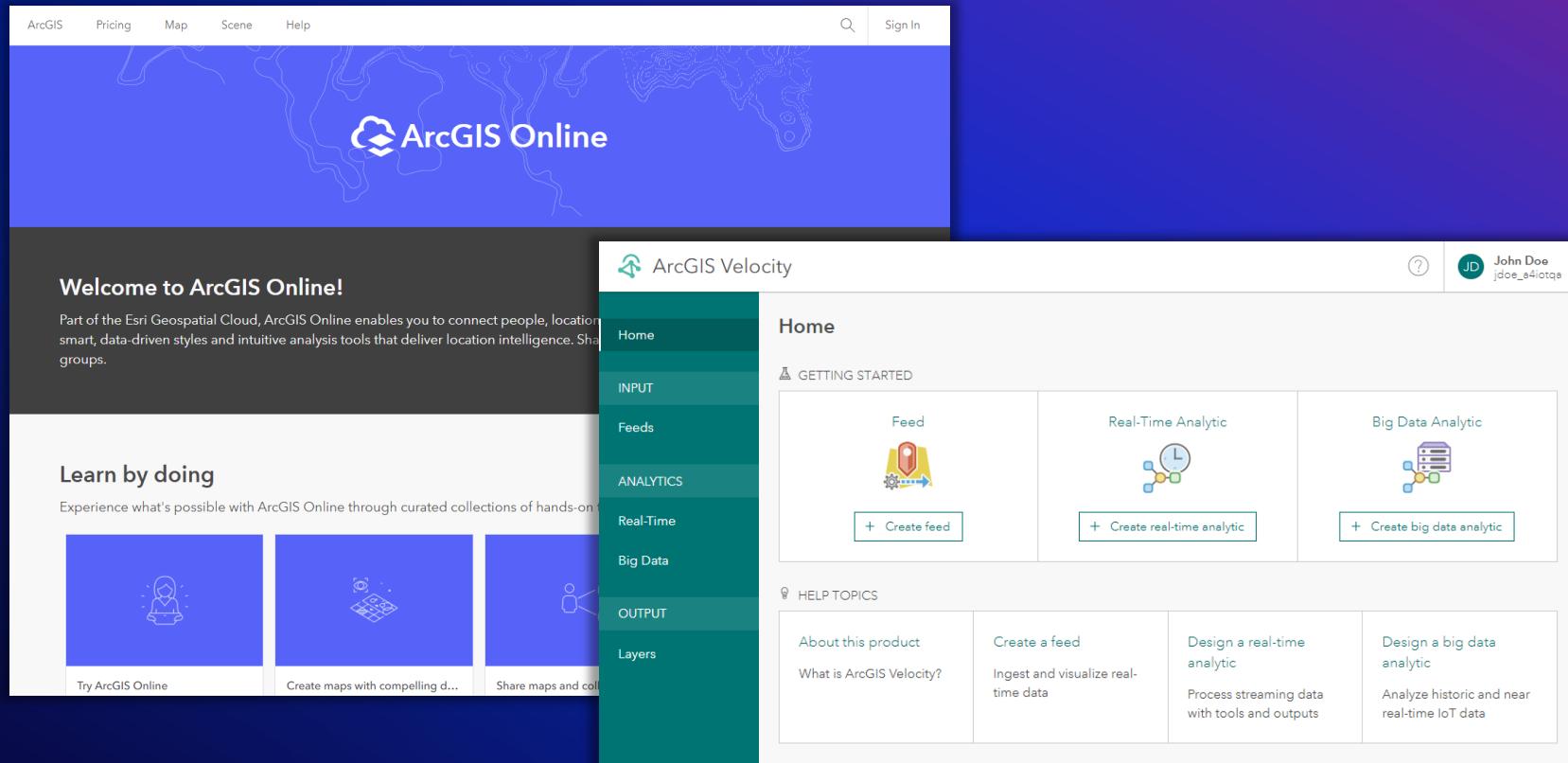
By features

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[91 more]	12.83%

Wrap up

Licensing

Annual subscription on top of ArcGIS Online



The image shows two side-by-side screenshots of Esri's geospatial cloud services. On the left is the ArcGIS Online interface, featuring a world map background, a 'Welcome to ArcGIS Online!' banner, and a 'Learn by doing' section with three cards: 'Try ArcGIS Online', 'Create maps with compelling d...', and 'Share maps and coll...'. On the right is the ArcGIS Velocity interface, with a 'Home' section, 'GETTING STARTED' with 'Feed', 'Real-Time Analytic', and 'Big Data Analytic' options, and a 'HELP TOPICS' section with links like 'About this product', 'Create a feed', and 'Design a real-time analytic'. A yellow bracket on the right side of the image groups the two interfaces together.

Tiered Licensing

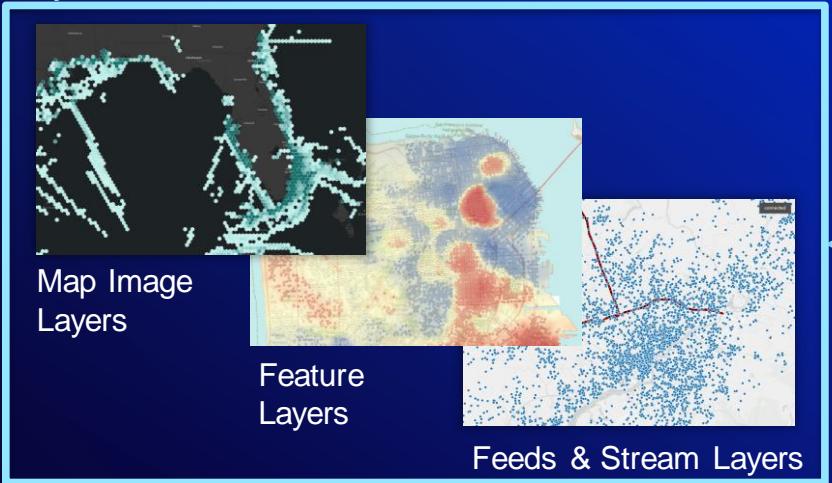
- Data velocity
- Storage capacity

Licensing

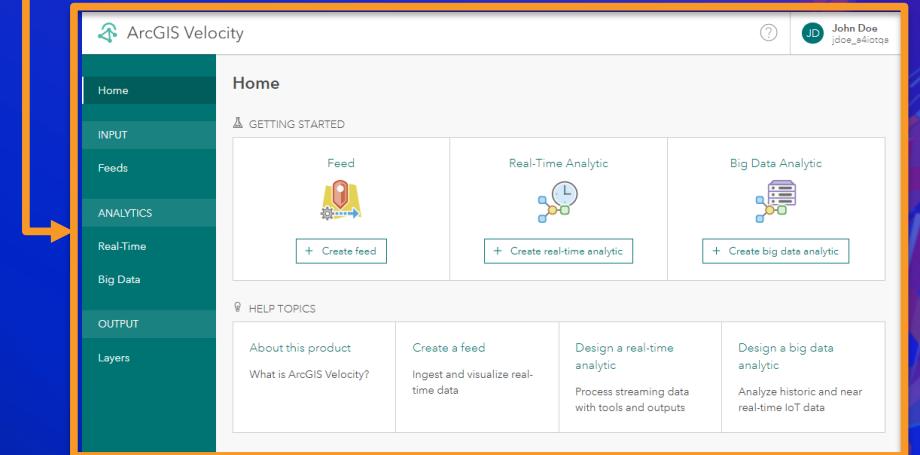
User types and access



Layers & Feeds - all users



App - Creators and GIS Pros



Road Ahead

What's coming

- **I/O**
 - Verizon Connect Reveal feed
 - Google IoT Core feed
 - gRPC feed
 - Enhanced support for OAuth authentication with HTTP Polling feed
 - Google BigQuery data source
 - HTTP Output enhanced to support PUT and Delete
 - Output to Online-hosted feature layers
- **Layers**
 - Feature layer view support
 - Relative time query support
- **Analytics**
 - Detect Gaps tool
 - Control Event Volume tool
 - Dynamic geofences
 - Generalized Linear Regression tool (big data analytics only)
 - Forest-based Regression & Classification tool (big data analytics only)



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OF
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