Introducing ArcGIS Velocity

Kevin Armstrong
Calvin Kwon

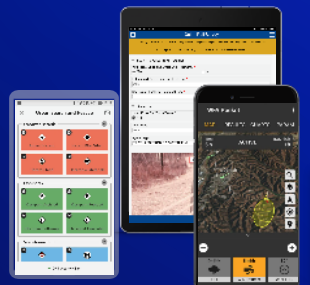
2021 ESRI FEDERAL GIS CONFERENCE

Introduction

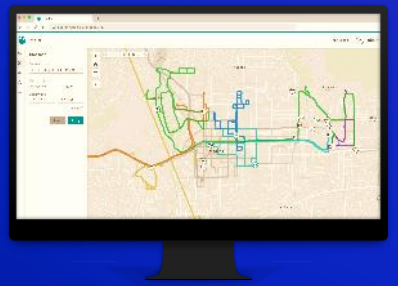
welcome
to the
connected world

Geospatial use cases – the Internet of Things

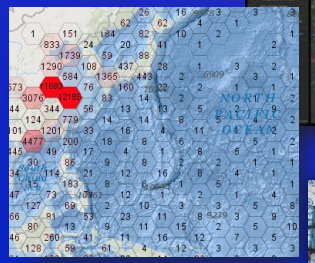
Personnel Tracking



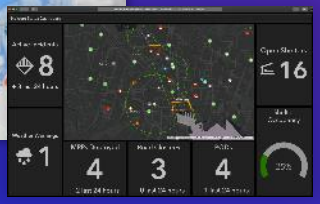
Resource Optimization



Asset & Entity Tracking



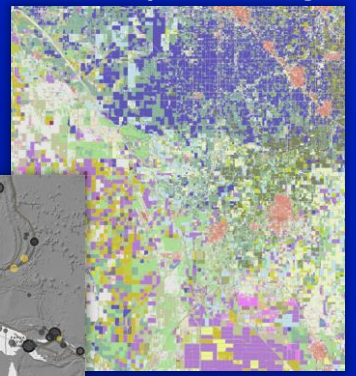
Infrastructure Protection



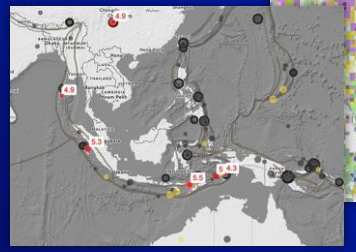
Operations Monitoring

SCADA Integration

Soil & Crop Monitoring



Anomaly Detection



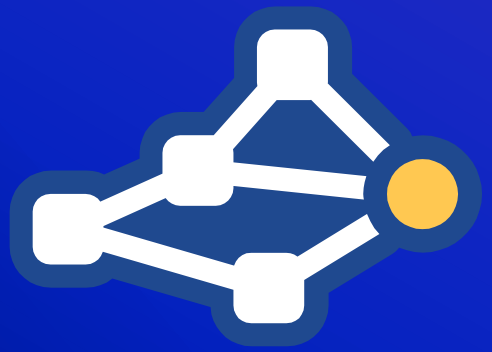
Air Quality Monitoring

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

- Leverage analysis tools & automate complex workflows
- Share data, methods, & findings with stakeholders

Operations Officers

- Synthesize different sources of data into a COP
- Surface incidents of interest
- Improve situational awareness

Asset Managers

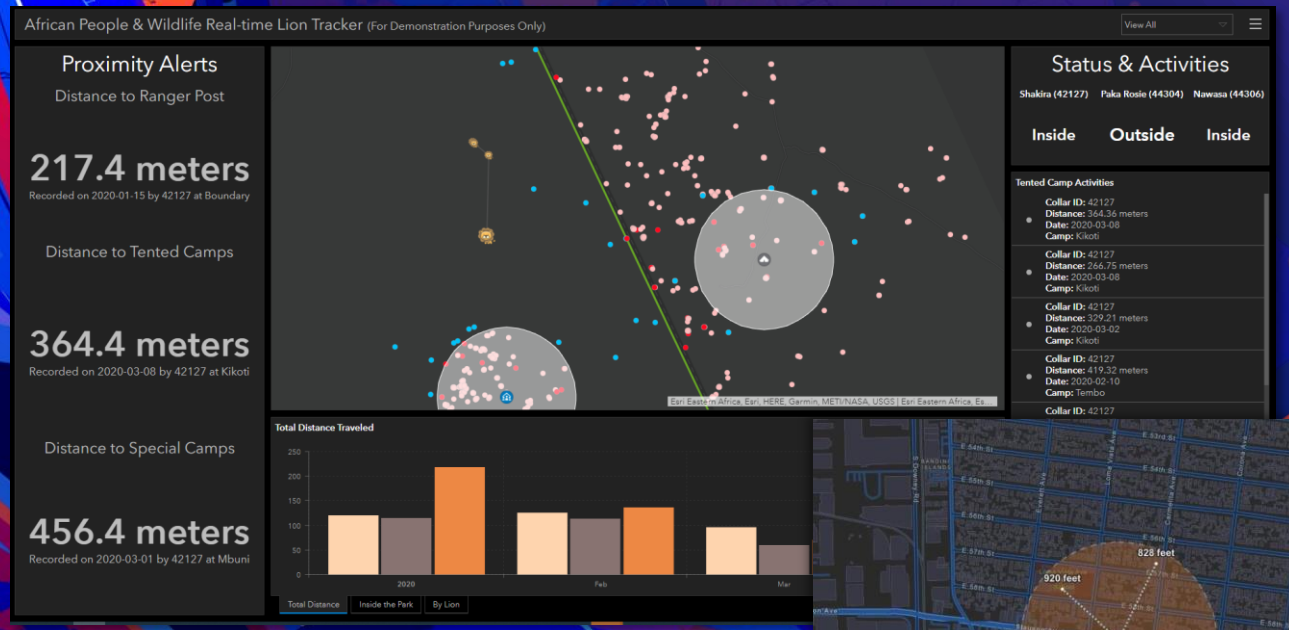
- Monitor assets health
- Integrate asset feeds with other data
- Collect data to create forecasts

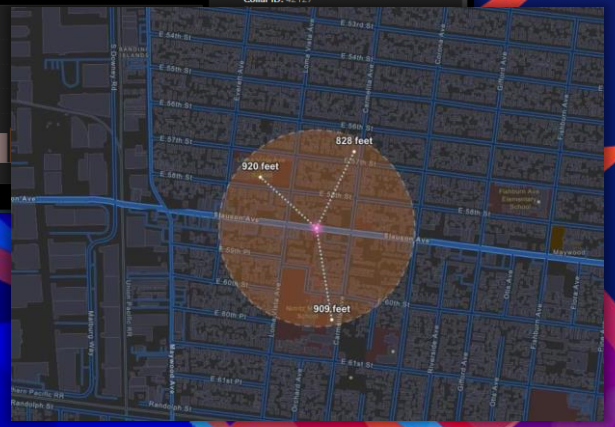
How it works

ArcGIS Velocity

Leverage sensor and IoT data for geospatial reasoning

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



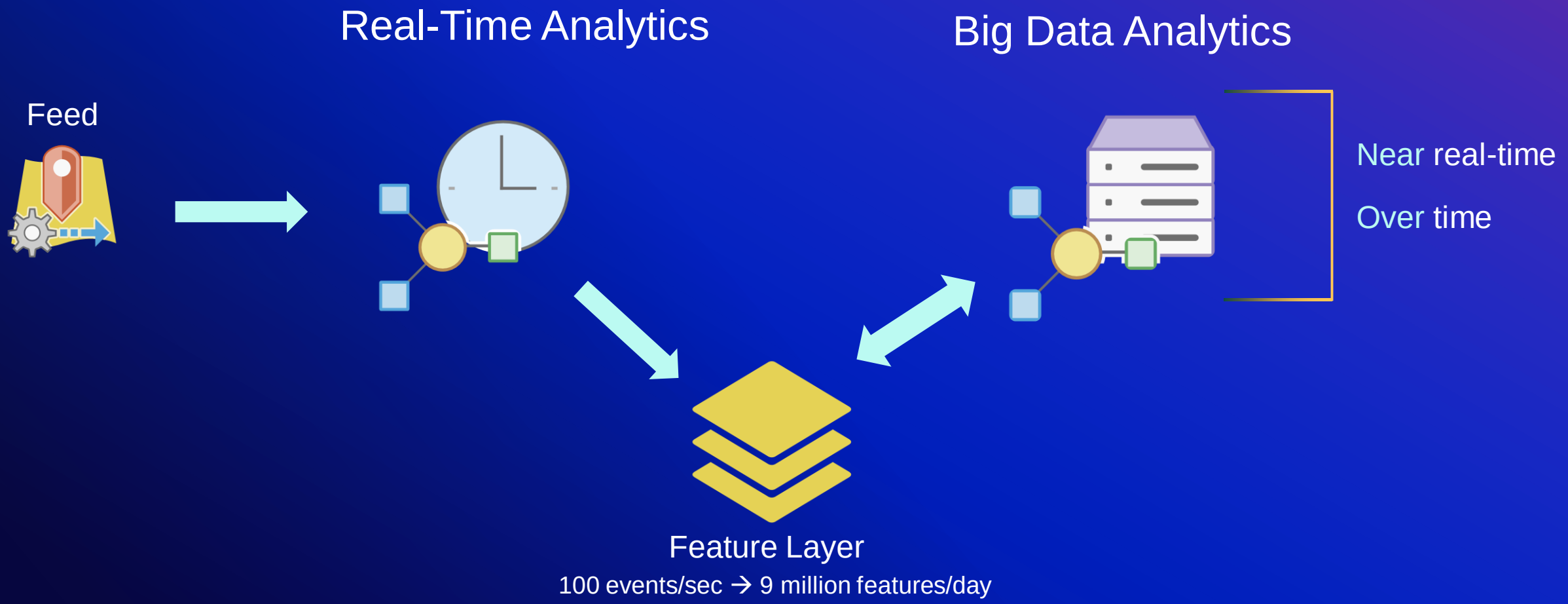


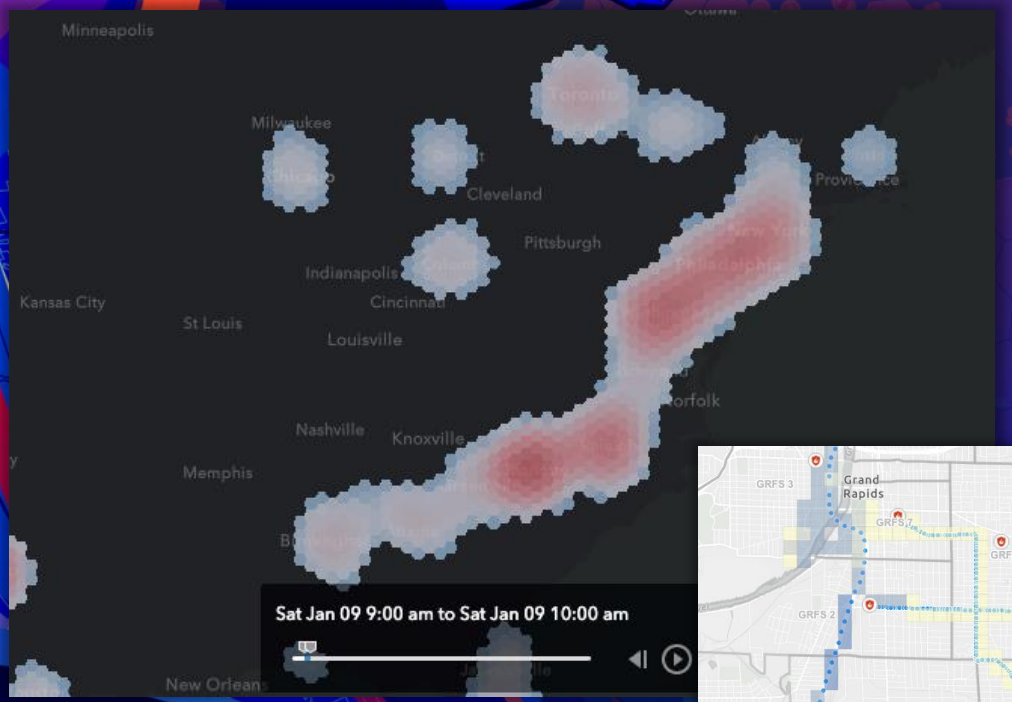
Feed & Real-Time Analytics

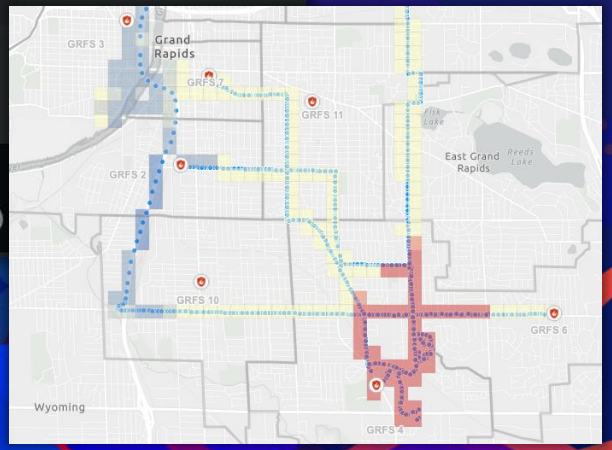
Geofencing and alerting

End-to-end analysis

Evaluate incidents, trends, and patterns against any decision timeline







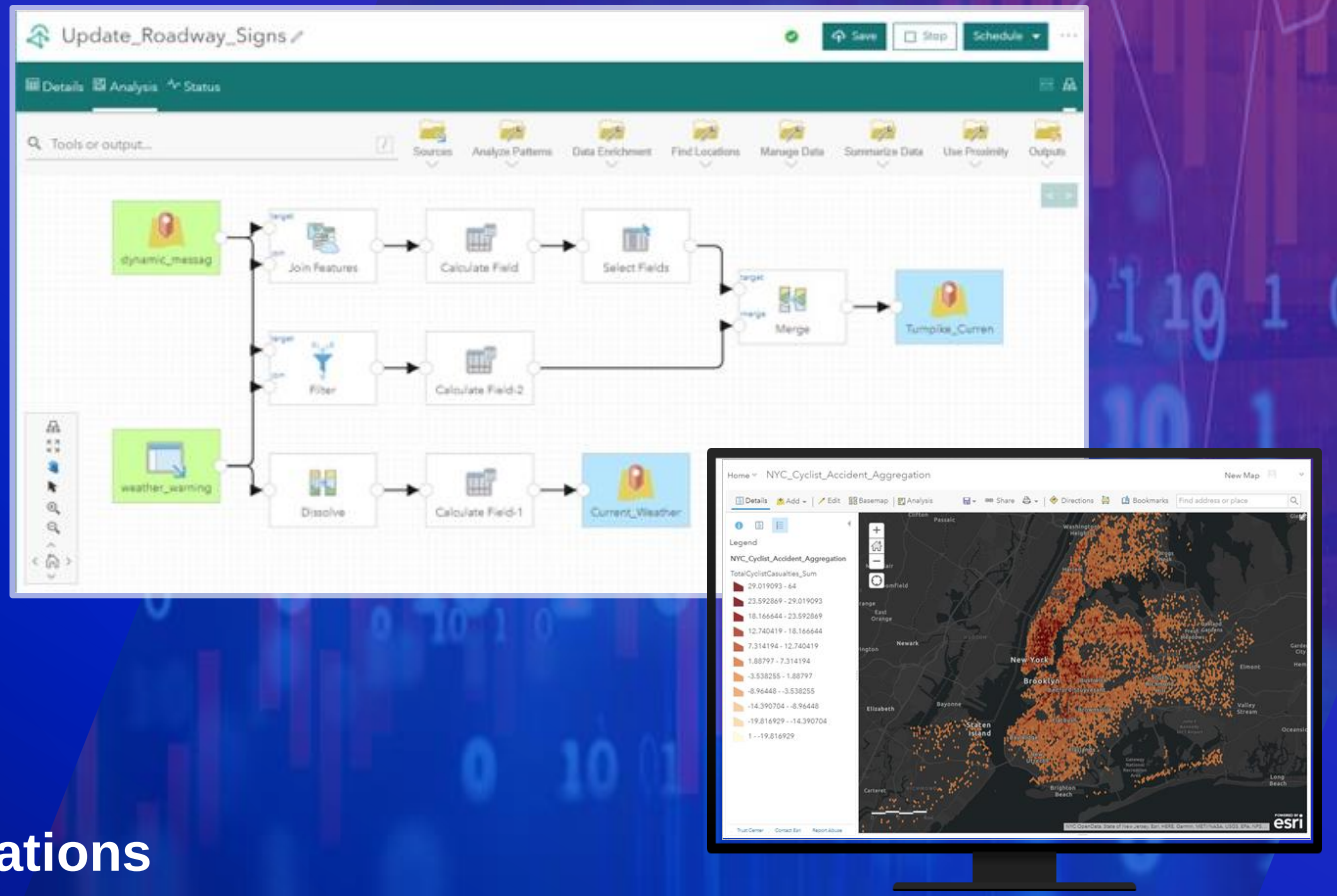
Big Data Analytics

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

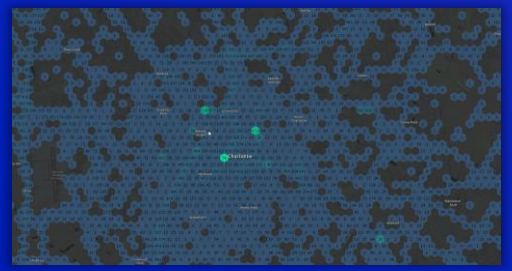
Real-Time Analytics

Big Data Analytics

Stream Layer

Feature Layer

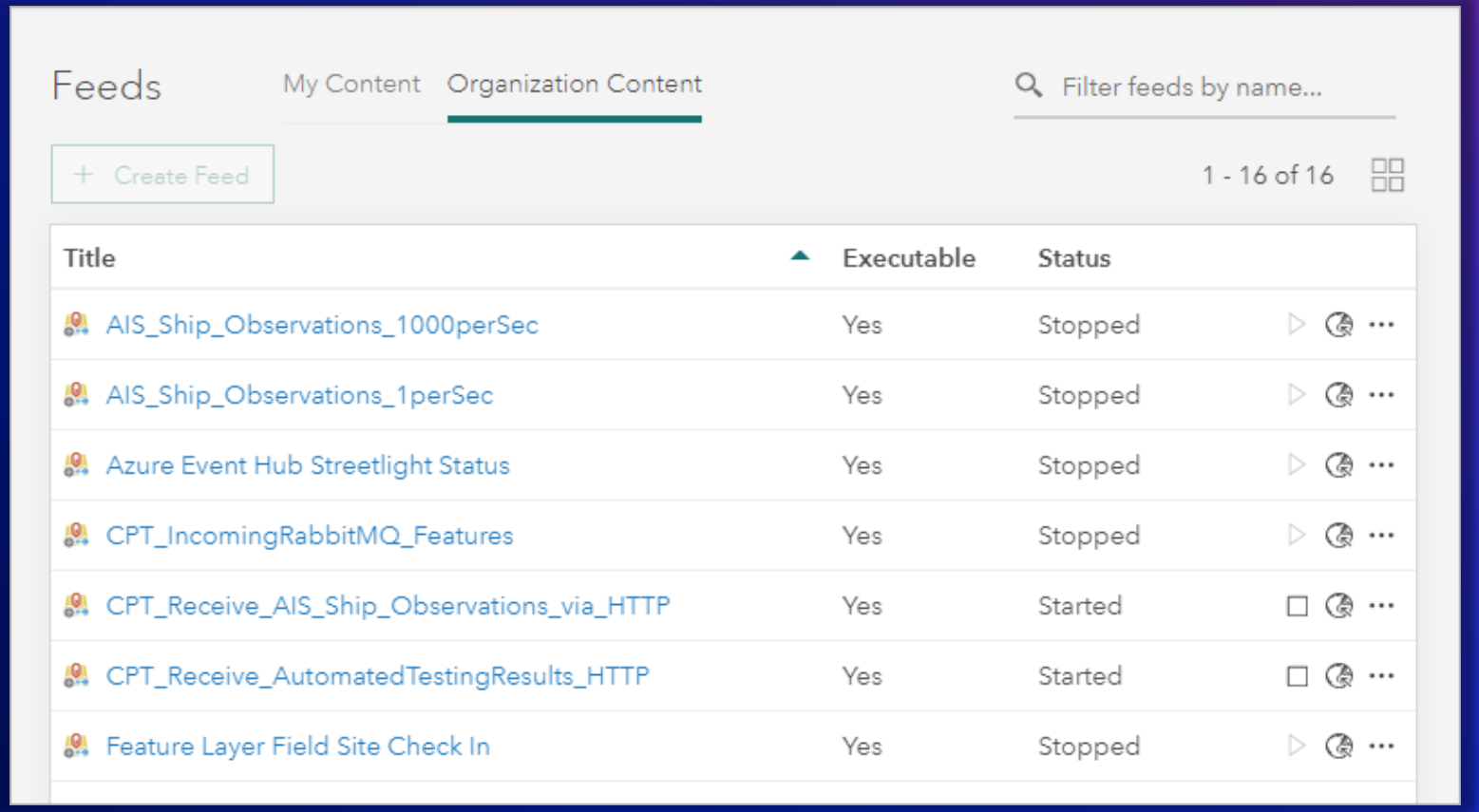
Map Image Layer



Administration

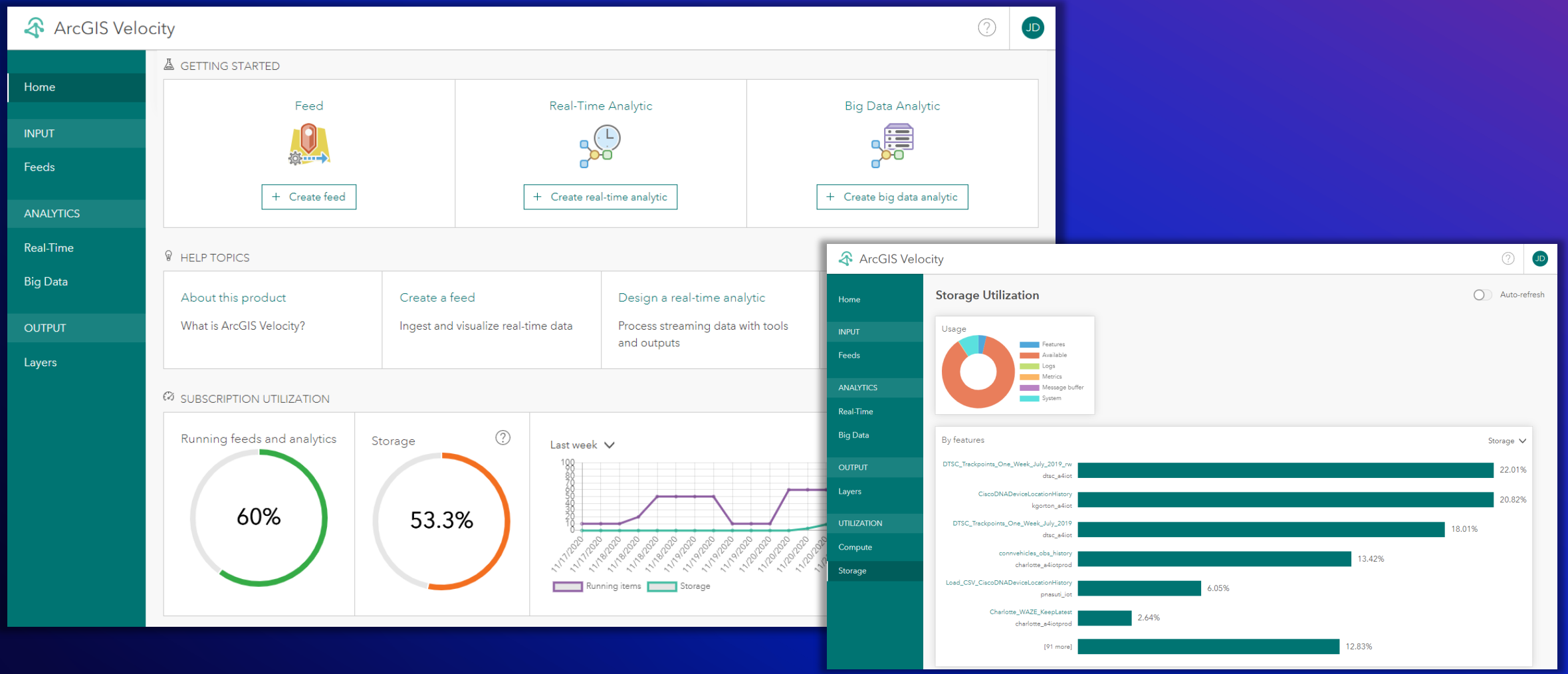
Running feeds and analytics

- **View feeds and analytics**
  - Check item owner
  - View logs
  - Adjust sharing
- **Stop running tasks**



Administration

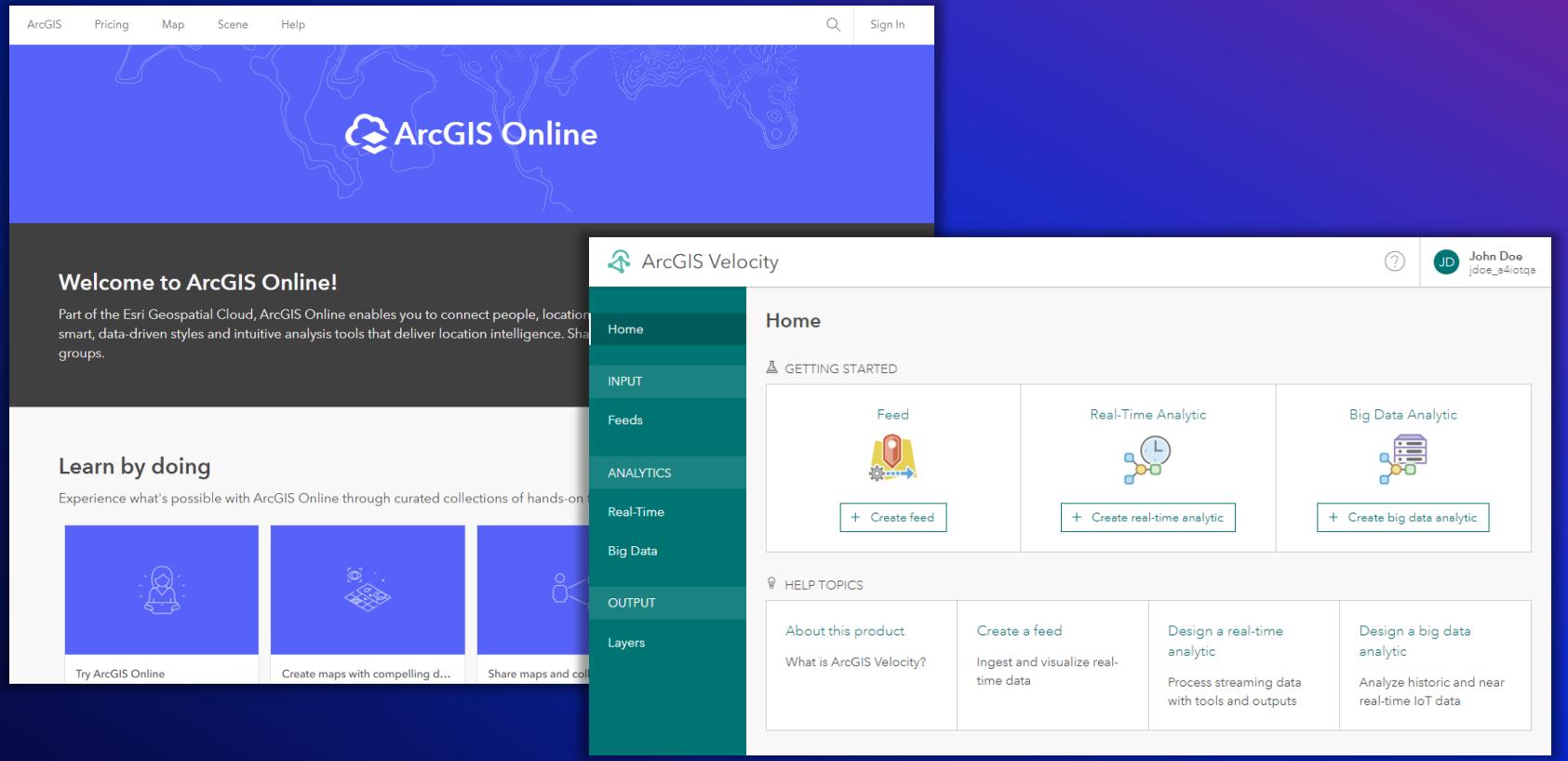
Subscription utilization



Wrap up

Licensing

Annual subscription on top of ArcGIS Online



Tiered Licensing

- Data velocity
- Storage capacity

Licensing

User types and access

Viewer

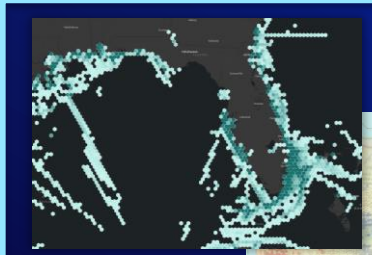
Editor

Field Worker

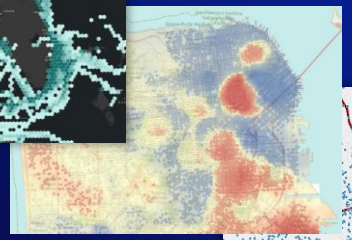
Creator

GIS Professional

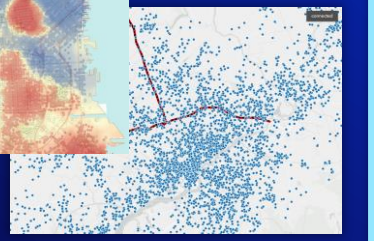
Layers & Feeds - all users



Map Image Layers

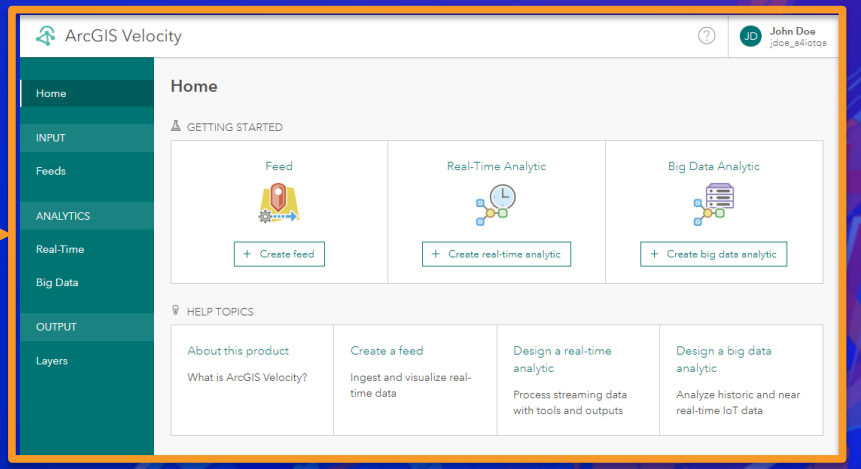


Feature Layers



Feeds & Stream Layers

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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