

Emerging Spatial Analytics

Real-Time, Graph, and Big Data Analytics



Agenda

- The development of our purpose-built analytics engines
- How real time capabilities provide situational awareness to your teams and communities – preventing problems before they occur
- How graph analytics provides layer of enhanced connected understanding
- How we help you tackle big data problems
- Examples of these capabilities working together

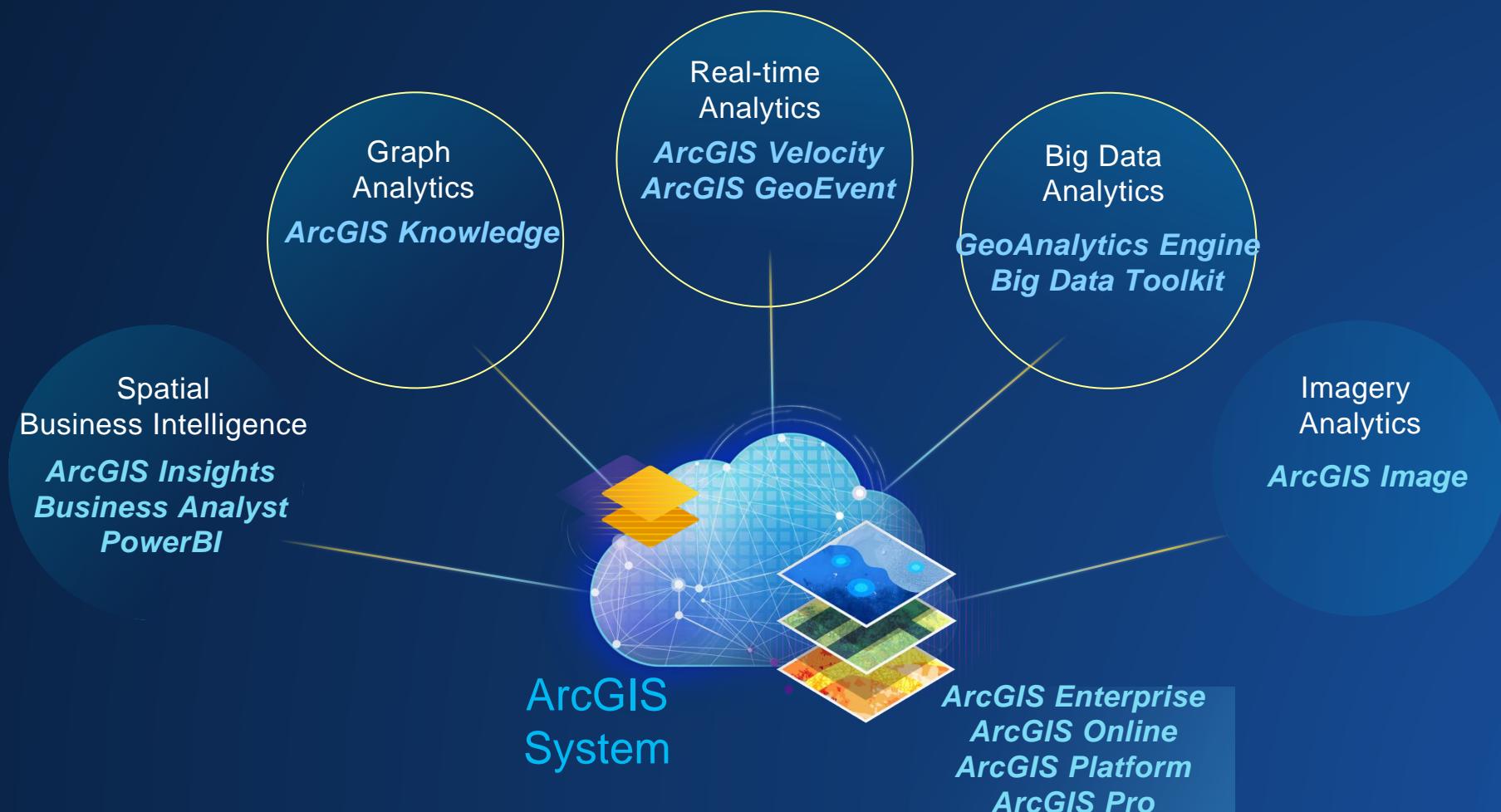
ArcGIS

Enterprise Analytics System



ArcGIS

Enterprise Analytic Products

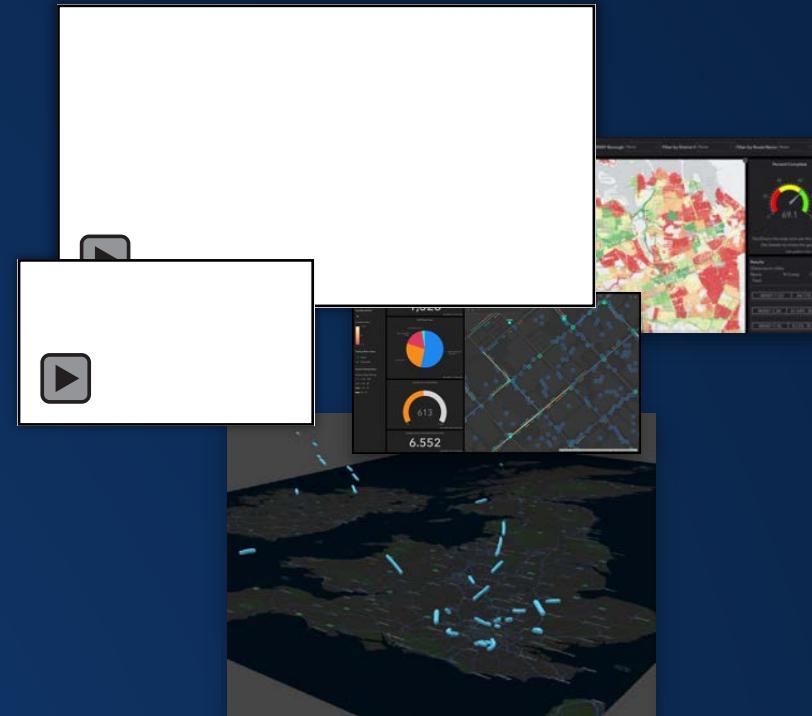


Real-Time Visualization & Analytics

ArcGIS Velocity & GeoEvent Server



GeoEvent Server
GeoAnalytics Server



Velocity

Real-Time Situational Awareness

Monitoring & managing the location of risk

Asset Management



Fleet



Personnel



Supply Chain



Infrastructure

Threat Monitoring



Special Events



Severe Weather

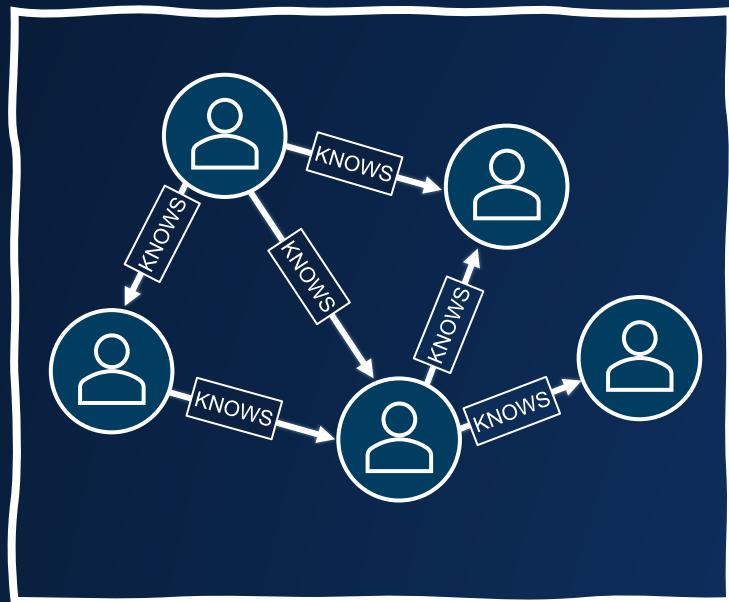


Corporate Security



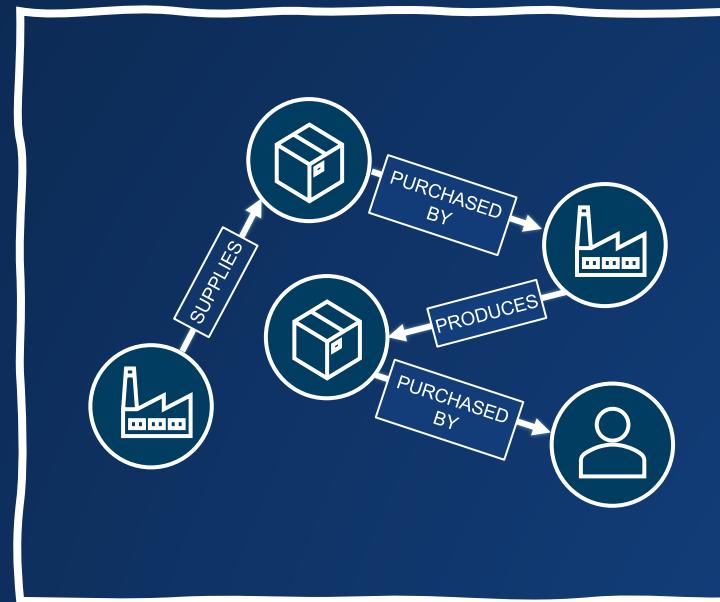
Emergency Management

The world is connected – so are your communities



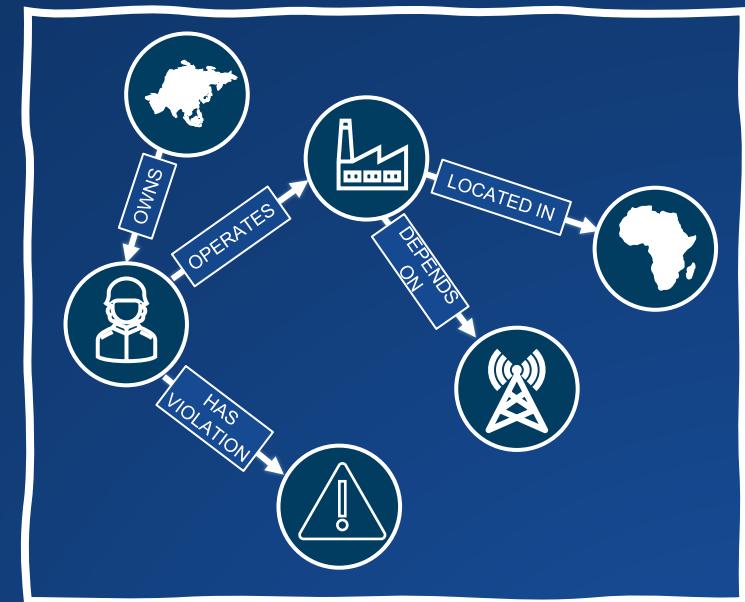
Networks of People

Phone calls, Social media, Employees, Gangs, Terrorist groups, Influencers, Contact tracing, etc.



Transaction Networks

Supply chains, Financial transactions, Orders, Payments, Blockchain, Contamination



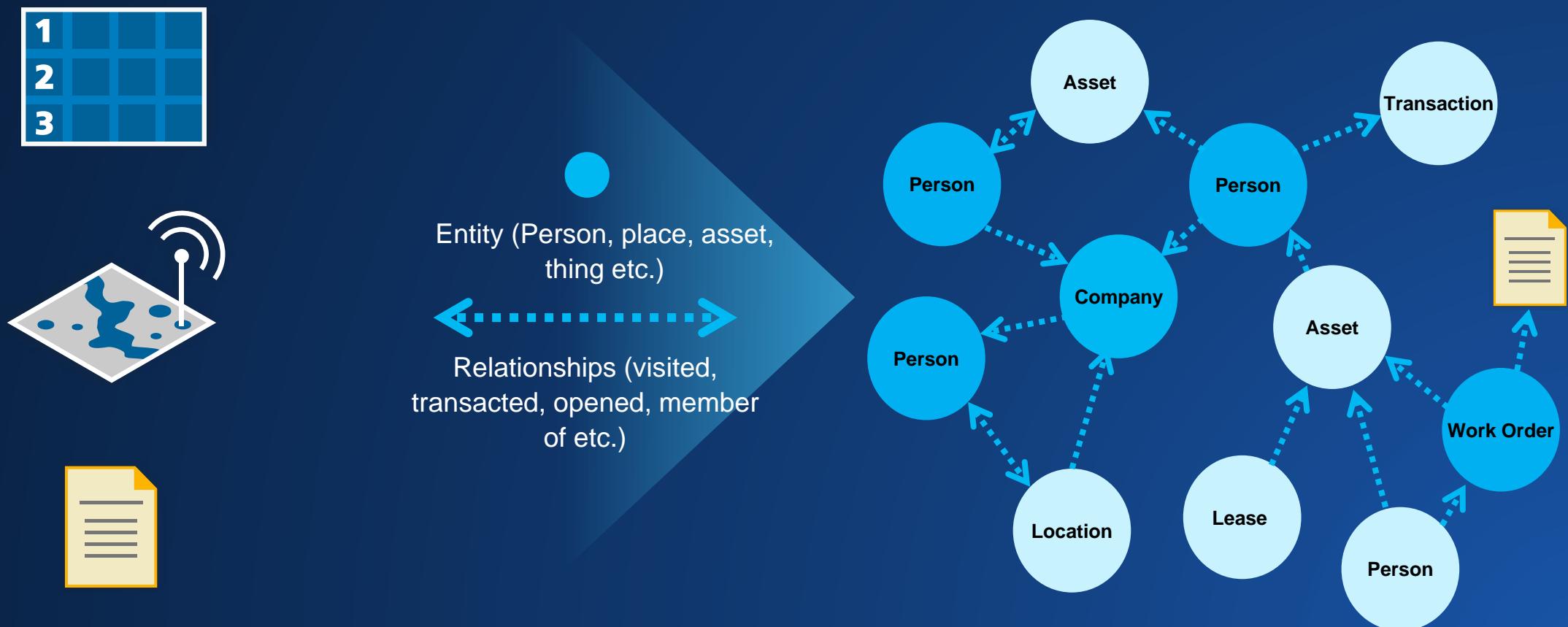
Virtual & Physical Networks

Content management, Domain-specific content, SOM, Infrastructure



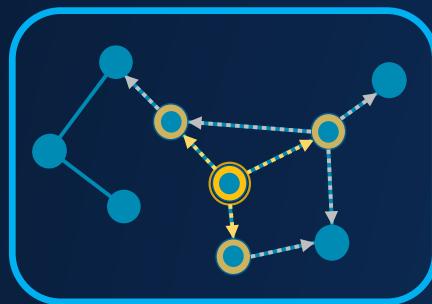
ArcGIS Knowledge

- A Knowledge graph is a collection of data points, called **entities**, and lines between those points, called **relationships**. These both can be spatial or non-spatial.



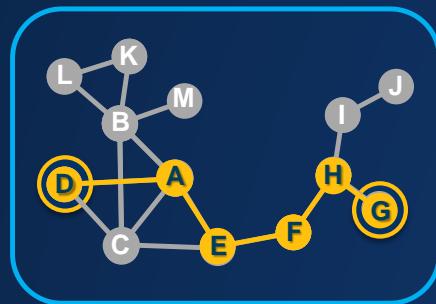
Quicker and more consumable insight with ArcGIS Knowledge

“What is connected to this specific entity, 1 degree away, or 2 degrees away...?”



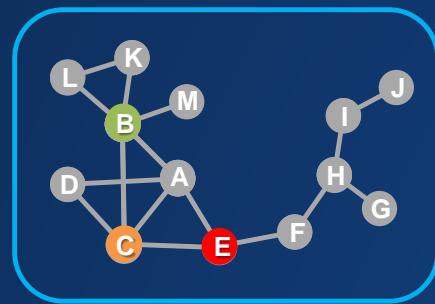
Neighborhood Analysis

“What is the shortest path and how are two or more entities connected?”



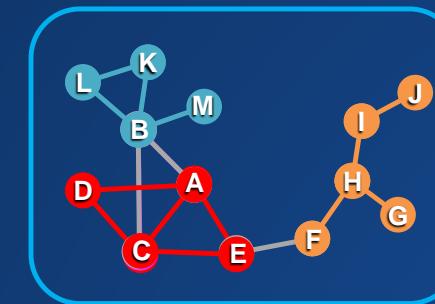
Path Finding

“What are the most important or influential entities?”



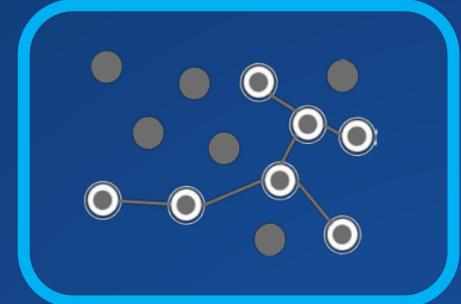
Centrality

*“What assets, people, events **behave similarly**, or have similar relationships?”*



Community Detection

*“Which entities or paths
match a specific pattern of
relationships and/or
properties?”*



Direct Querying

Big data analytics, where your data lives

ArcGIS GeoAnalytics Engine makes working with spatial data and performing spatial analysis easy and intuitive for data scientists



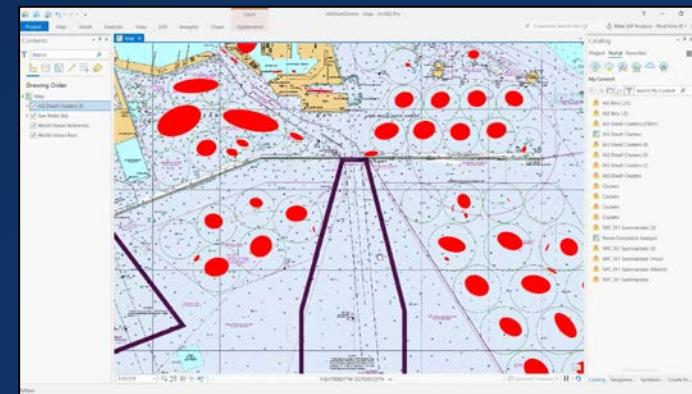
Cloud native,
Spark native



Ready-to-use
spatial analytics

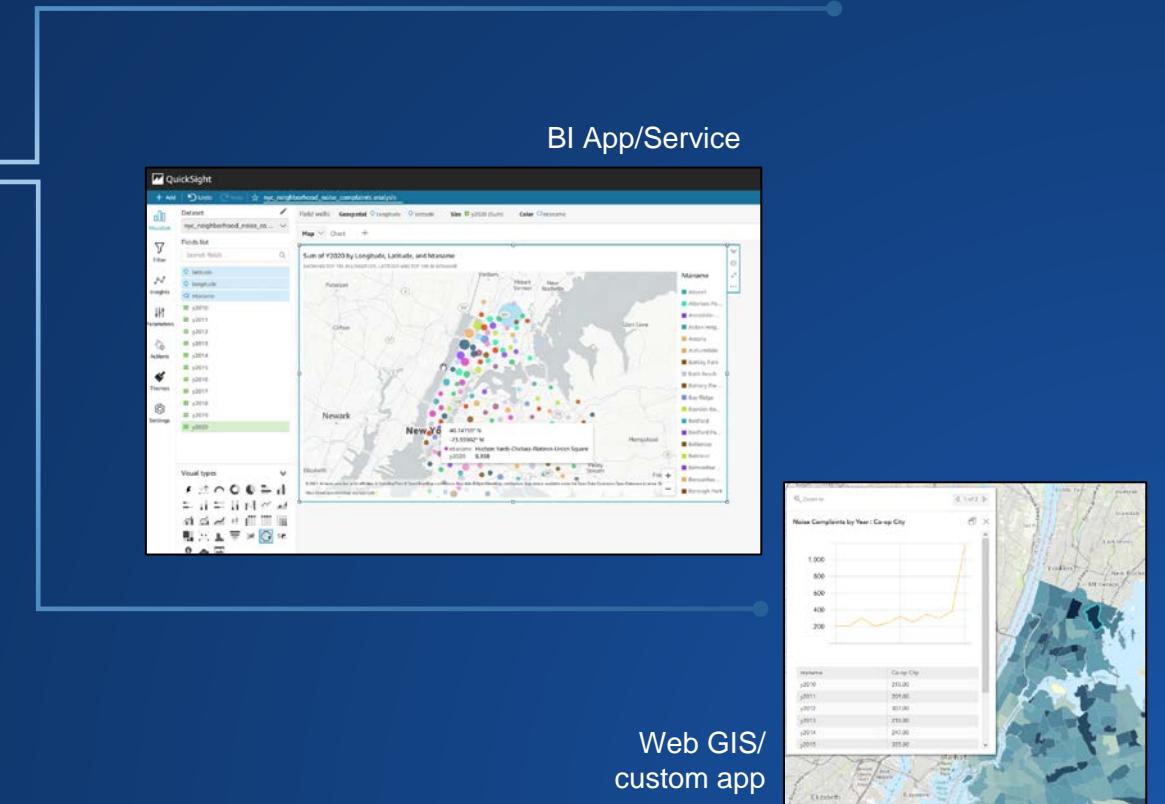
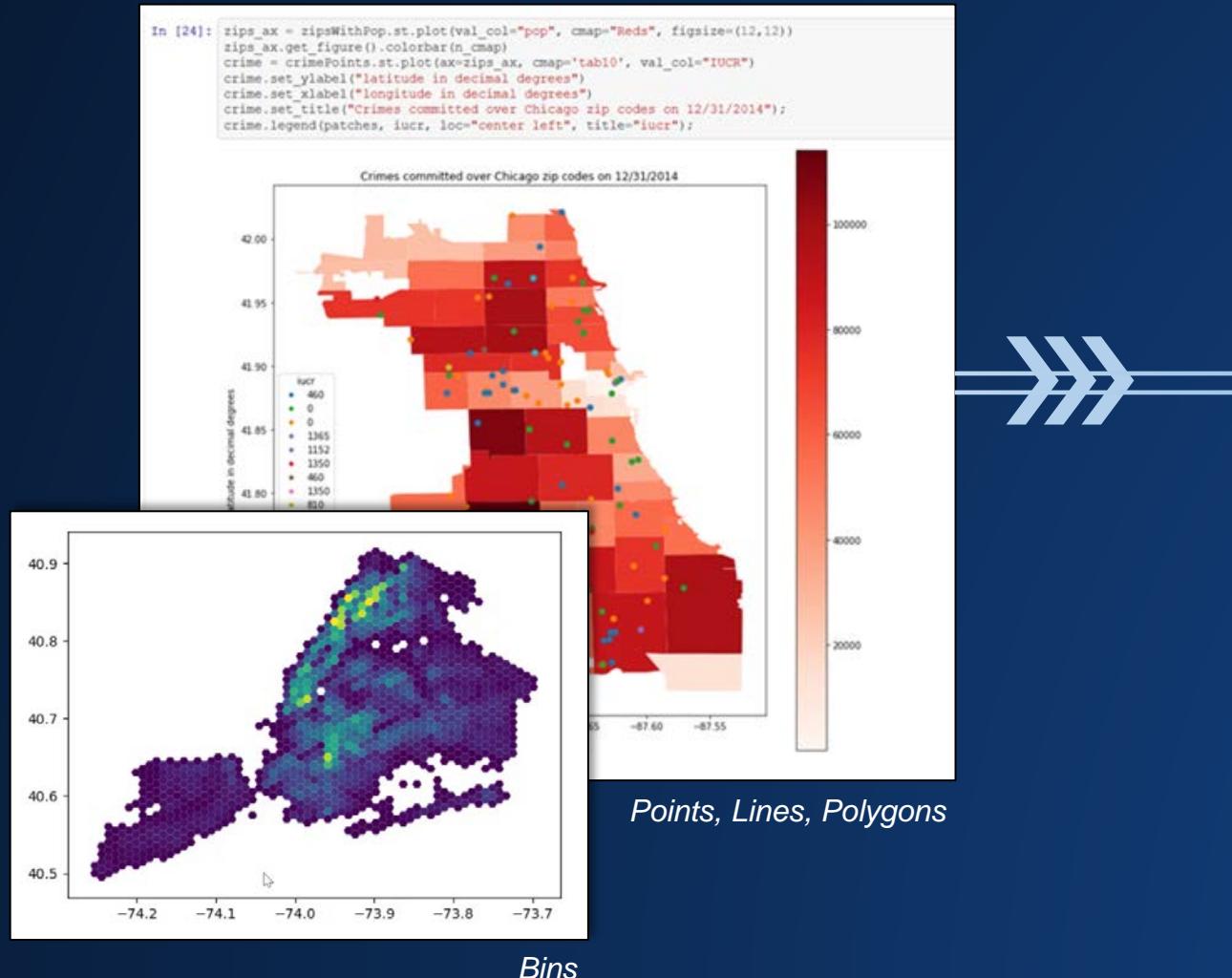


Results where you
need them



DataFrame Plots

Quick plots for verifying data and results



Use Case Example: Winter Weather Operations

- Ingest real time snowplow data
 - Active fleet
 - Distance traveled and served
 - Materials used
- Track and manage progress efficiently
- Transparency of status to public



Use Case Example: Infrastructure Operations

Real-time event feeds with work order and asset data

- Gain visibility and operability into worker and work order performance
- See where and which critical assets should be proactively maintained



Use Case Example: City Bus Operations

- View active buses and bus lines
 - Buses approaching alert areas based on braking feeds
 - Buses currently in high-risk areas
- Deeper view into commonalities of driver and asset performance
- Transparency of status to public





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