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Esri and MarkLogic: Location Analytics, Multi-Model Data

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Location Analytics

Multi-Model Data Integration

Location Analytics for ***ALL*** *your Data*

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Insurance

Healthcare

Government

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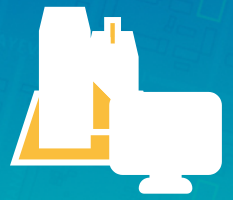
Esri ArcGIS Patterns of Use

ArcGIS | Common Patterns of Use

Mapping & Visualization



Understand locations and relationships with maps and visual representations

Data Management

Collect, organize, and maintain accurate locations and details about assets and resources

Field Mobility

Manage and enable a mobile workforce to collect and access information in the field

Monitoring

Track, manage, and monitor assets and resources in real-time

Analytics

Discover, quantify, and predict trends and patterns to improve outcomes

Design & Planning

Evaluate alternative solutions and create optimal designs

Decision Support

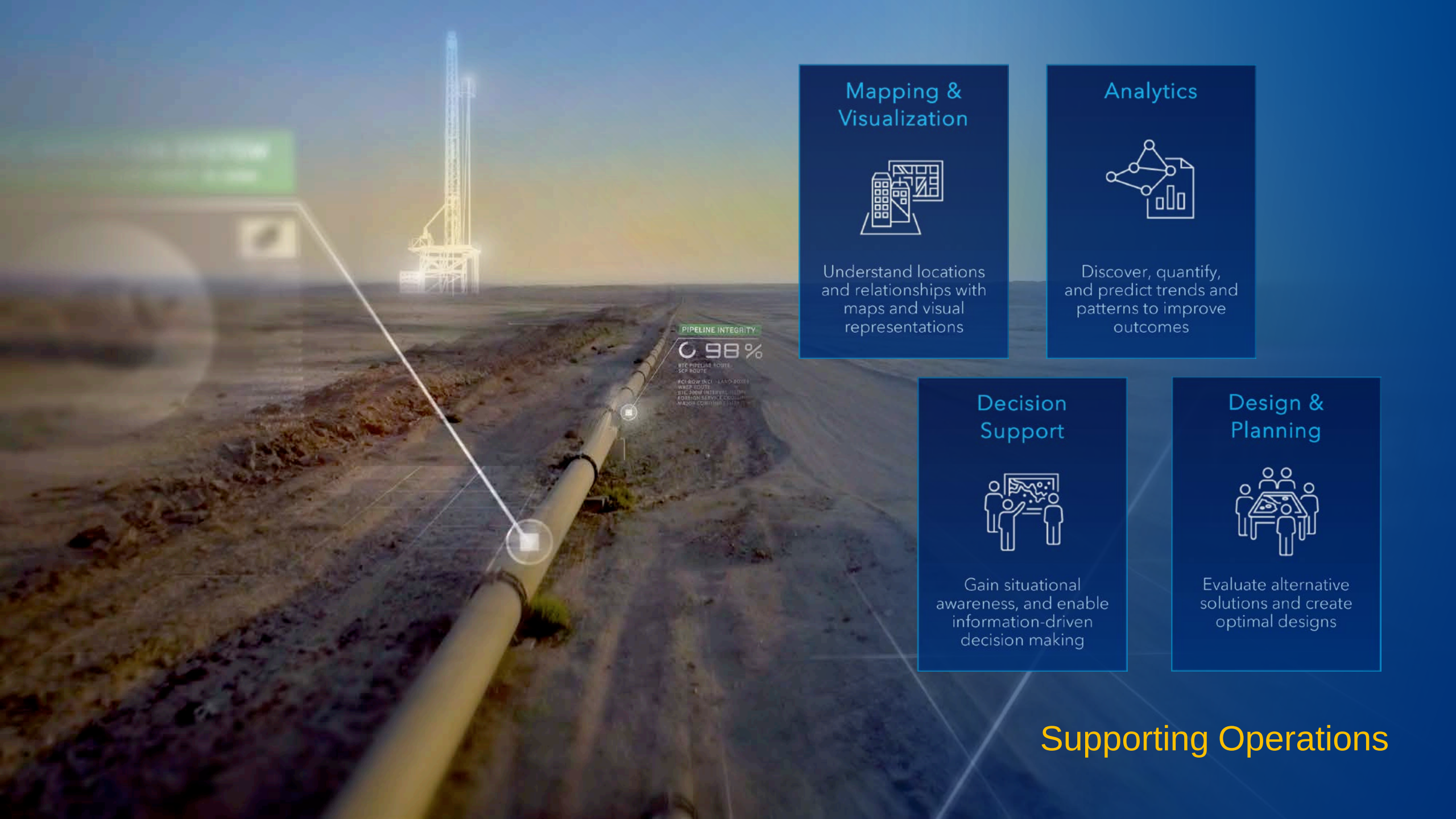
Gain situational awareness, and enable information-driven decision making

Constituent Engagement

Communicate and collaborate with citizens and external communities of interest

Sharing & Collaboration

Empower everyone to easily discover, use, make, and share geographic information



Mapping & Visualization

Understand locations and relationships with maps and visual representations

Analytics

Discover, quantify, and predict trends and patterns to improve outcomes

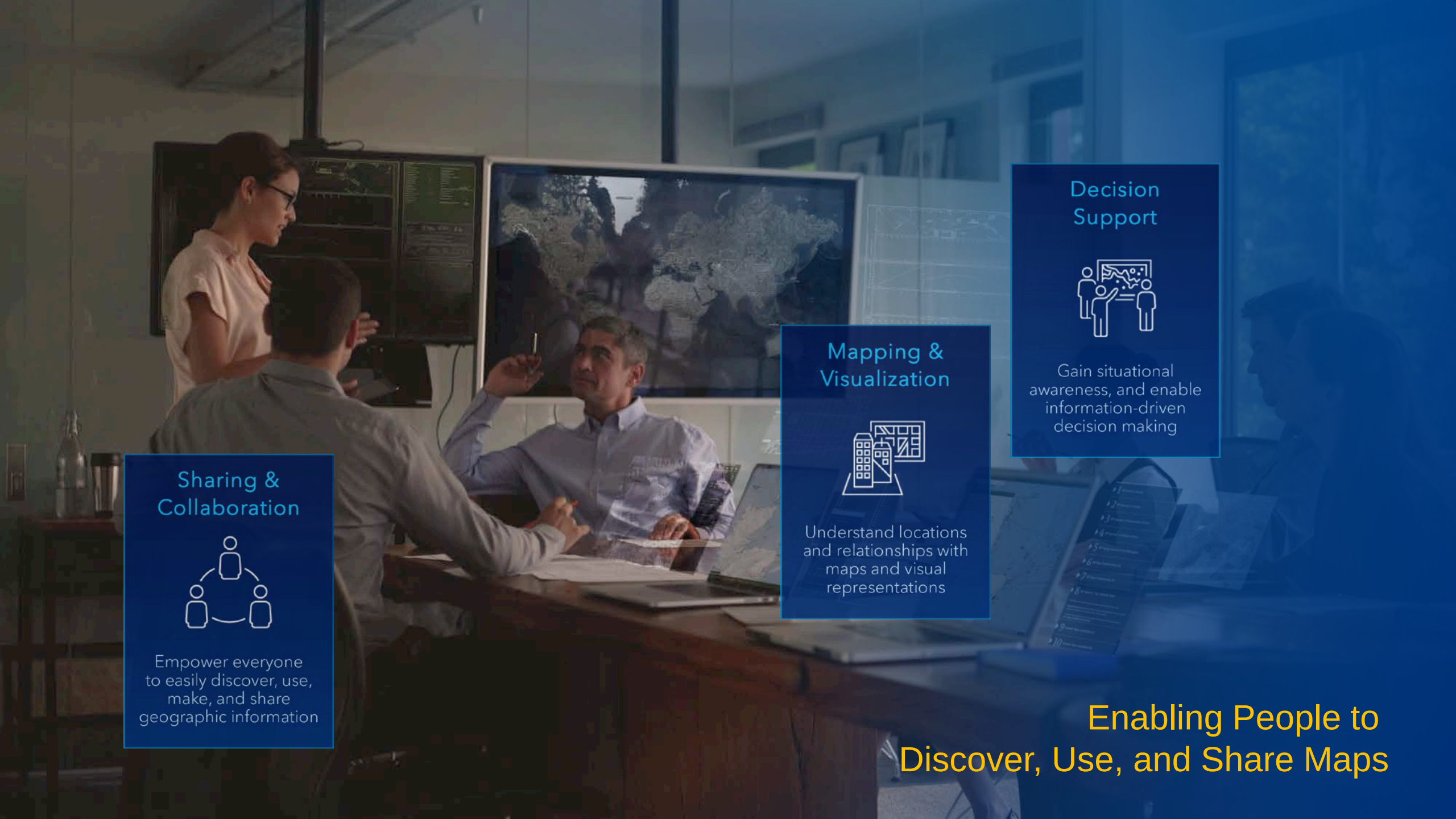
Decision Support

Gain situational awareness, and enable information-driven decision making

Design & Planning

Evaluate alternative solutions and create optimal designs

Supporting Operations


Sharing & Collaboration
Empower everyone to easily discover, use, make, and share geographic information
Mapping & Visualization
Understand locations and relationships with maps and visual representations
Decision Support
Gain situational awareness, and enable information-driven decision making
Enabling People to Discover, Use, and Share Maps

Field Mobility
Manage and enable a mobile workforce to collect and access information in the field
Monitoring
Track, manage, and monitor assets and resources in real-time
Decision Support
Gain situational awareness, and enable information-driven decision making
Enabling Anytime, Anywhere Access to Maps

Decision Support

Gain situational awareness, and enable information-driven decision making

Analytics

Discover, quantify, and predict trends and patterns to improve outcomes

Design & Planning

Evaluate alternative solutions and create optimal designs

Create Shared Situational Awareness

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MarkLogic and Esri Integration

Challenge

- Expose spatial and non-spatial data stored in MarkLogic to Esri tools
- Minimize coding required to work with new or existing databases
- Leverage MarkLogic's multi-model data management capabilities

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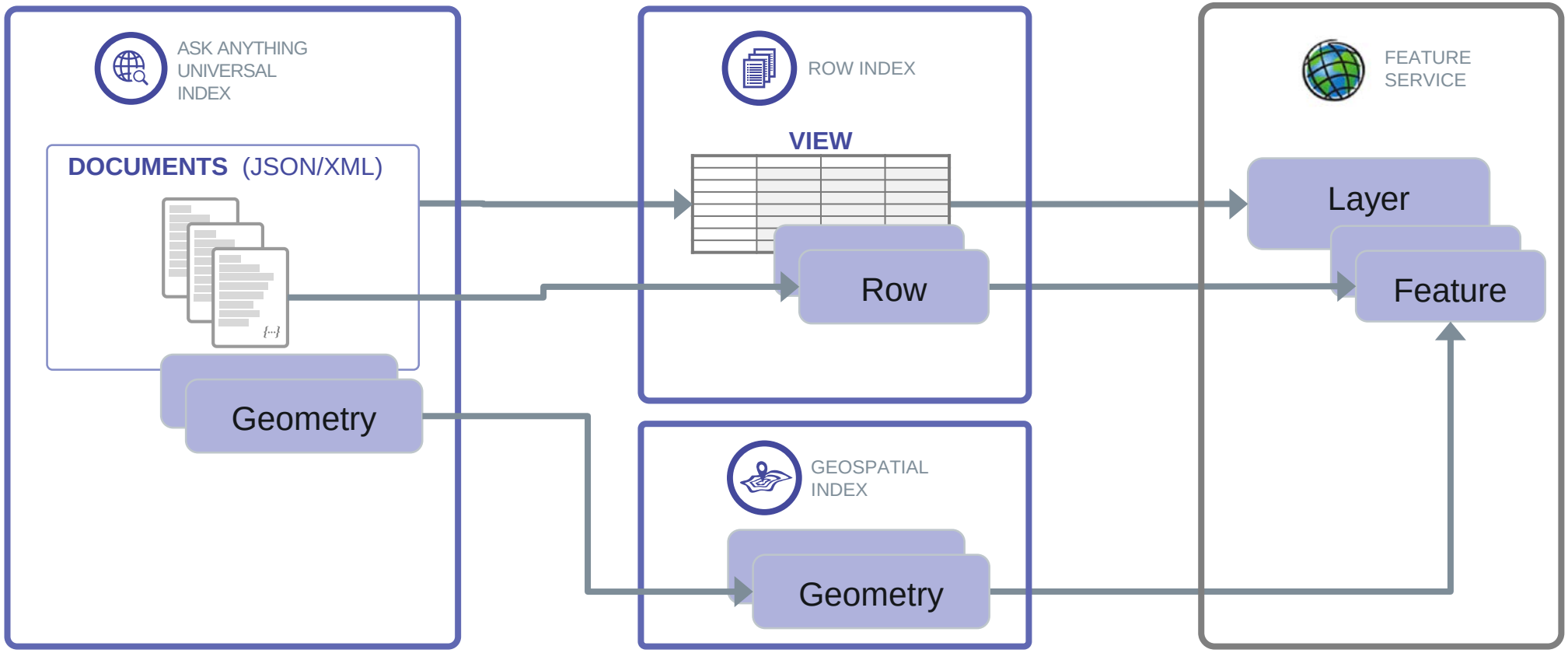
Data Architecture



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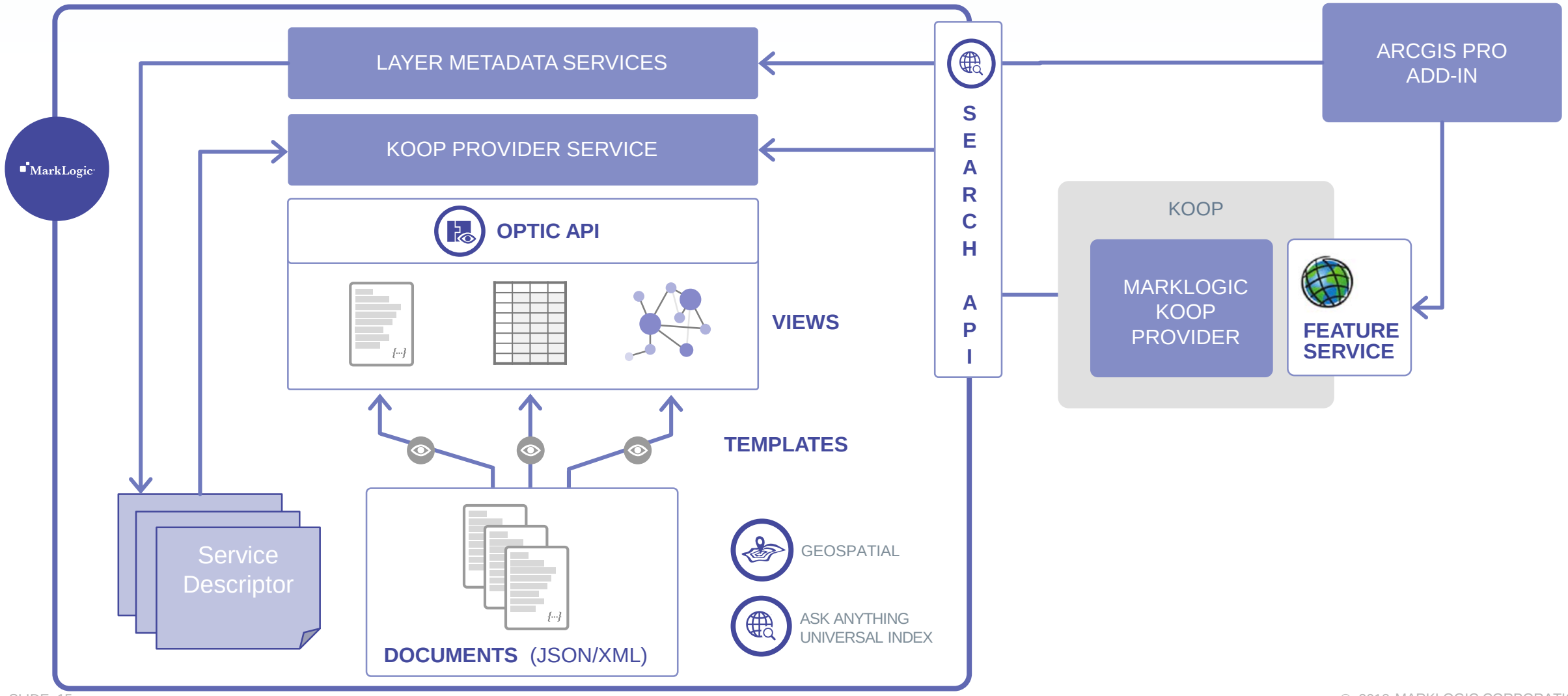
Esri Connector Architecture



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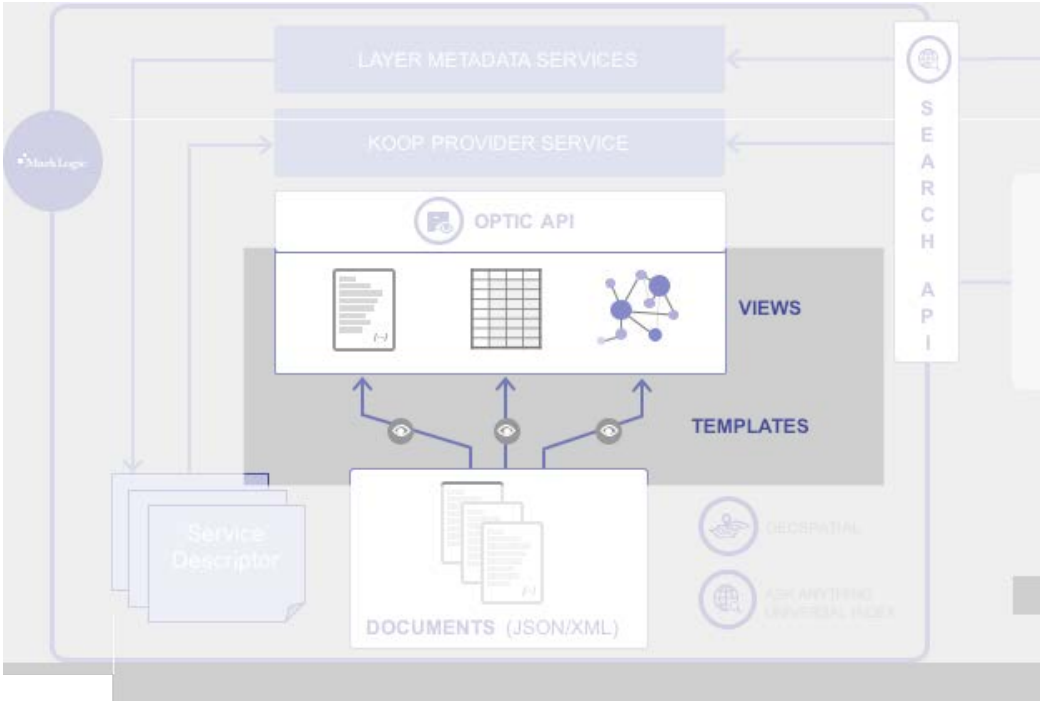
TDE

- Project different **views** of your data
- Expose views as **layers**
- Views determine what **fields** are exposed in the layers
- Each row becomes a feature accessible via the feature service
- *Easily create views to expose existing data sets as feature service layers/tables*



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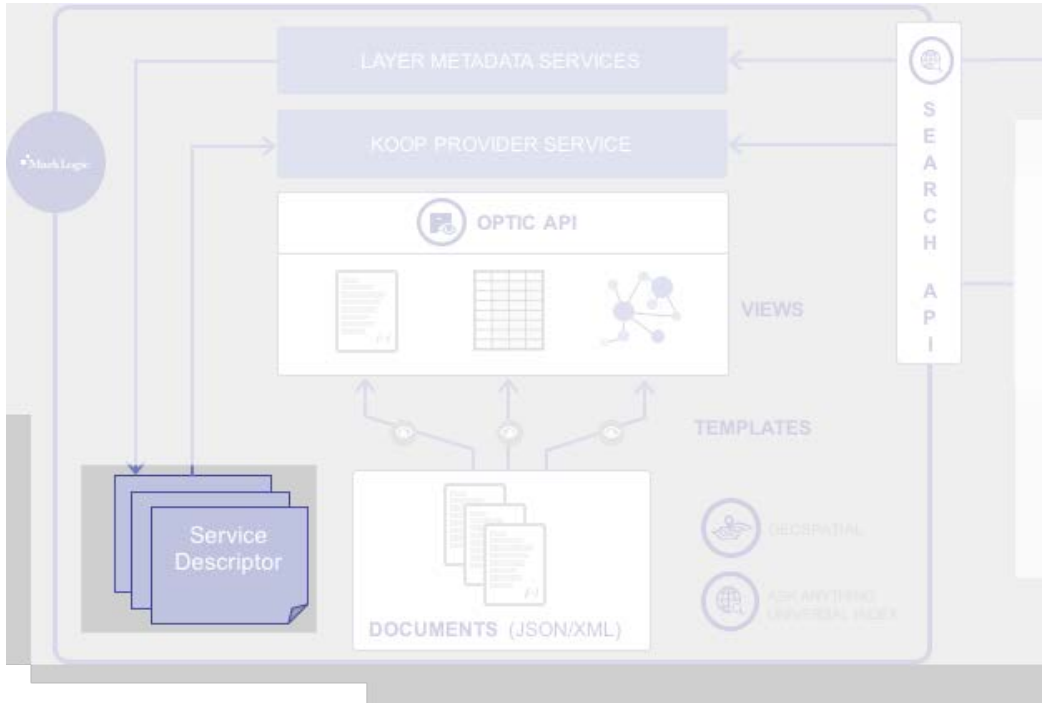
Feature Service Descriptors

- Defines the **Feature Services**
- Configures **Layers**
- Set the **View** for each Layer
- Set the **Bounding Query** for each layer
- Set what **Geospatial Indexes** to use
- Generate Feature Service and Layer metadata responses



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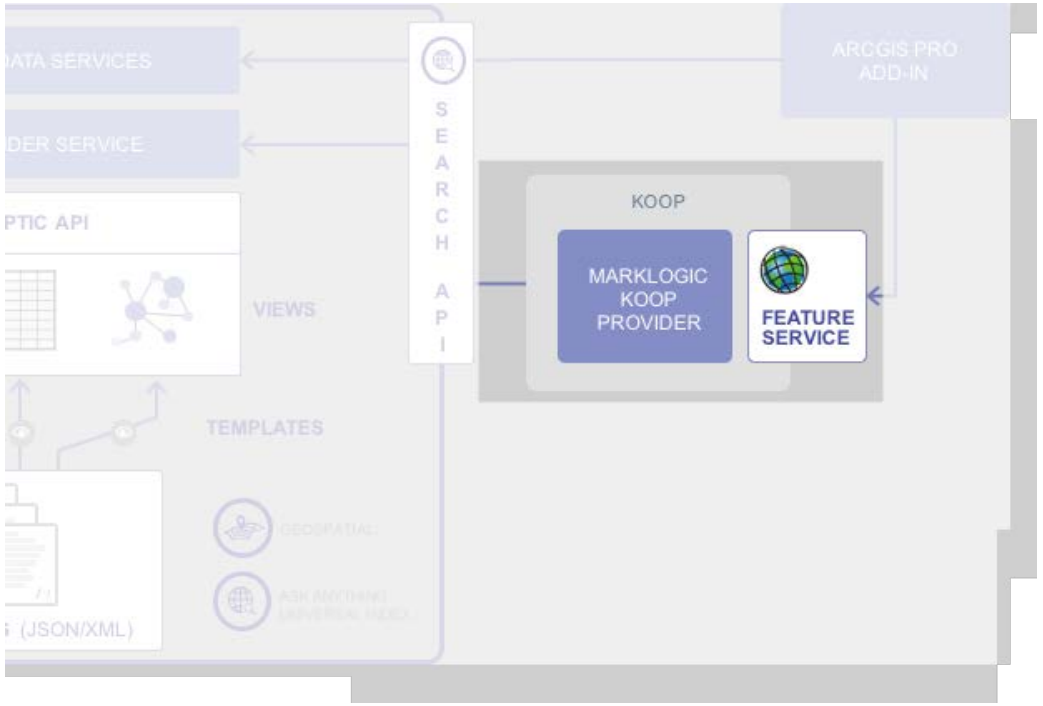
Koop

- Extensible JavaScript toolkit for connecting incompatible spatial APIs
- Maintained by Esri
- Node.js Express server
- Translate GeoJSON into Esri JSON
- Pluggable ”Providers”
- http://koopjs.github.io/



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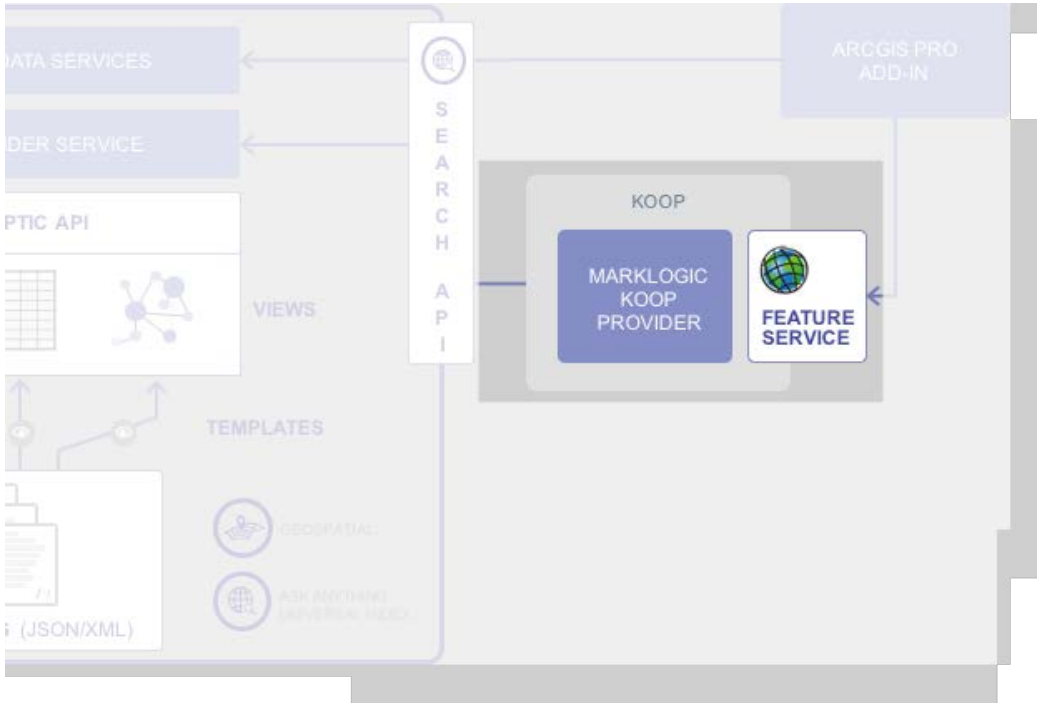
MarkLogic Koop Provider

- Provider plugin for Koop
- Pass-thru to a REST extension service
- Translates Feature Service requests to Optic API calls
- Configurable via Feature Service Descriptors
- https://github.com/koopjs/koop-provider-marklogic



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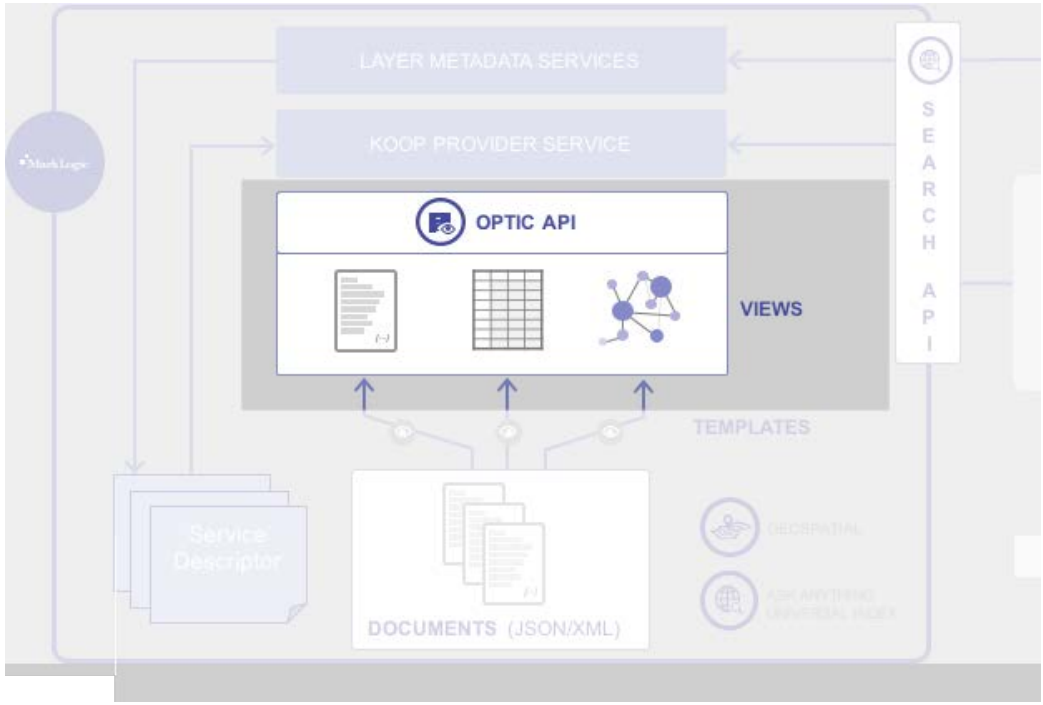
Optic API

- Query layer to join entities and aggregate over documents
- Efficiently distributes work across the cluster
- Combine joins and aggregates with document queries
- Join triples
- Extract parts of documents



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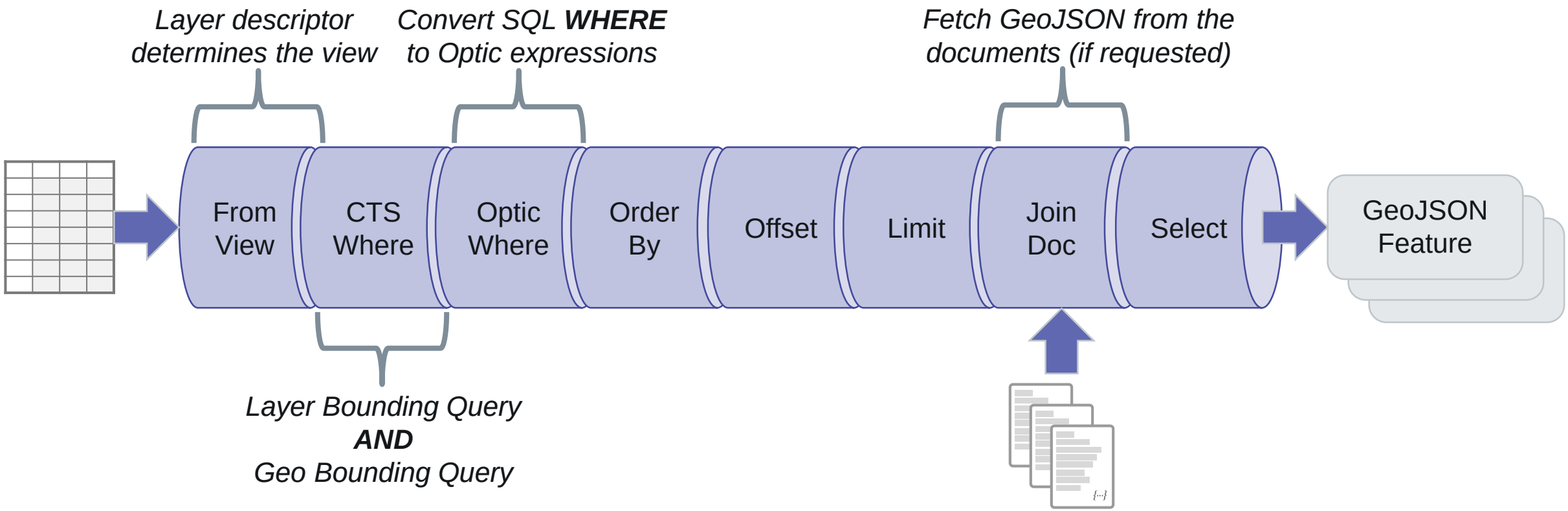
Optic Query Pipeline



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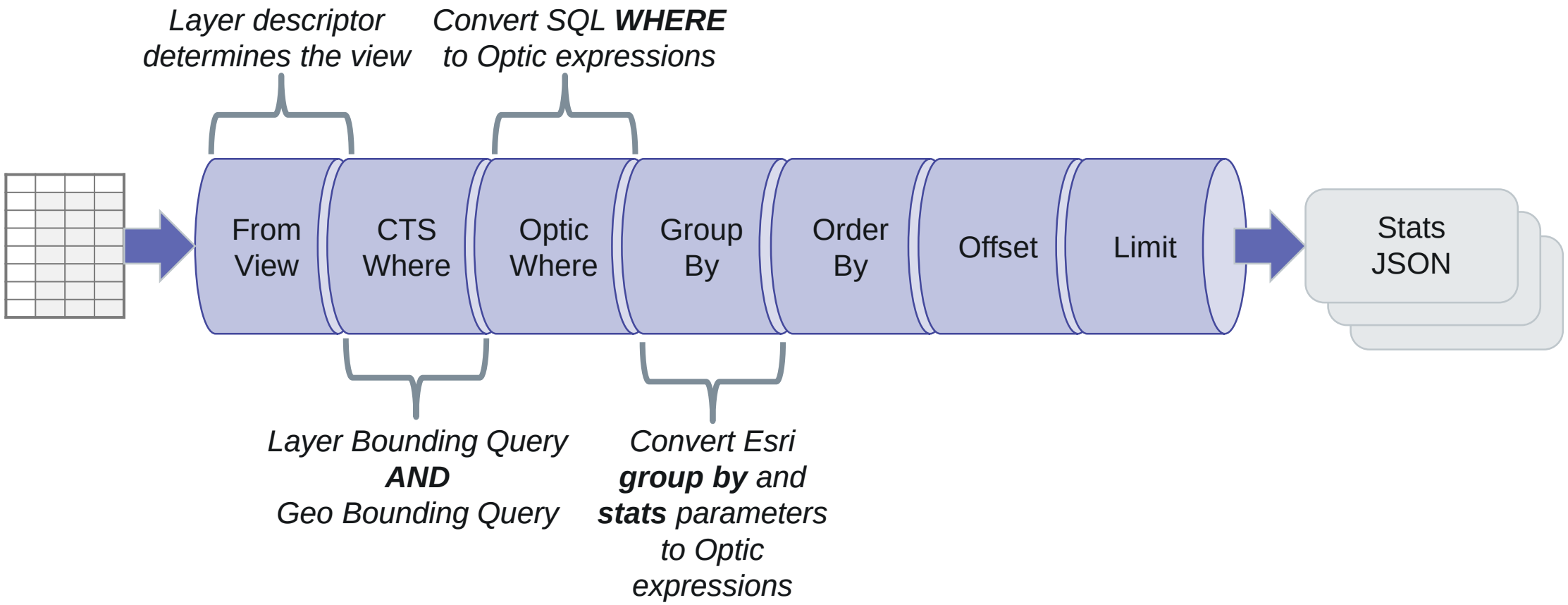
Optic Aggregation Pipeline



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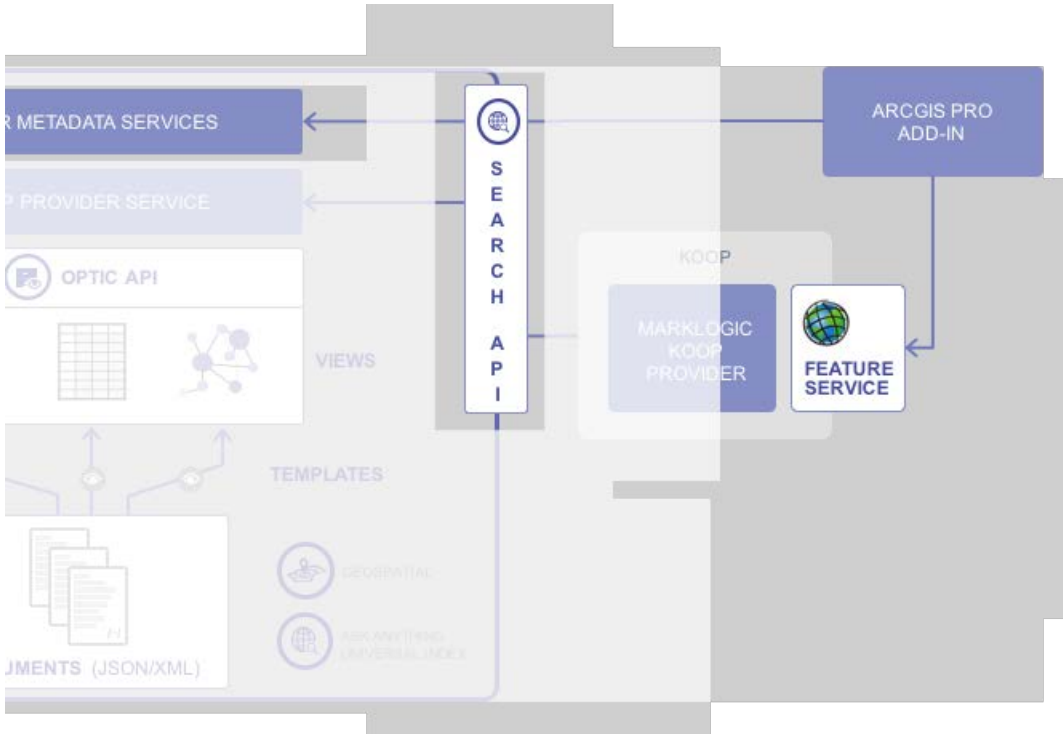
ArcGIS Pro Add-In

- Configuration driven
- Query and explore documents directly from with ArcGIS Pro
- Quickly visualize search results as “overlays”
- Save searches as new layers in the Feature Service
- Export features into standard Esri formats



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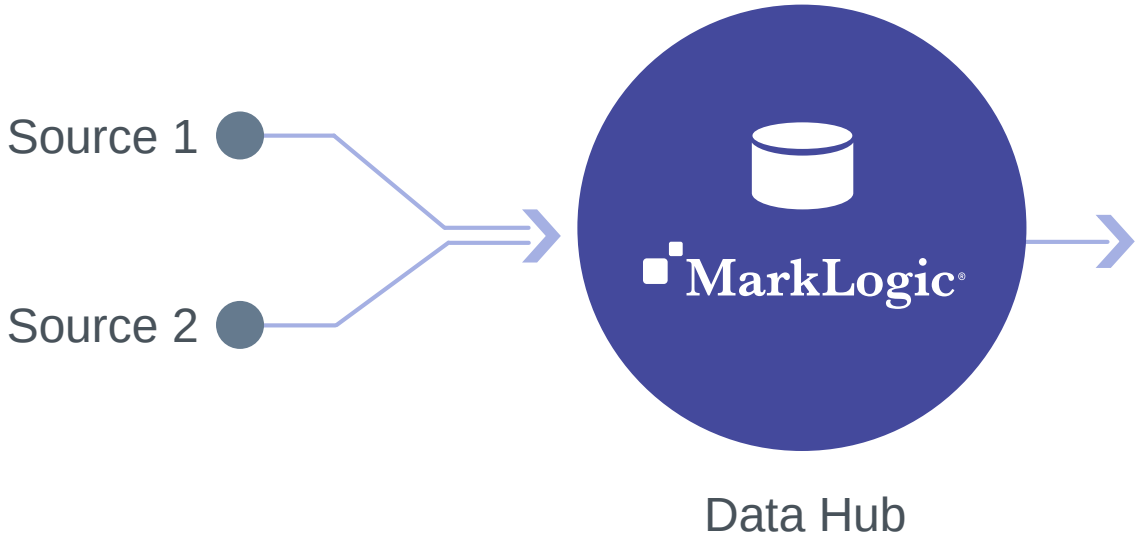
Insights Demo

Integrate data from multiple sources and visualize subsets in Insights



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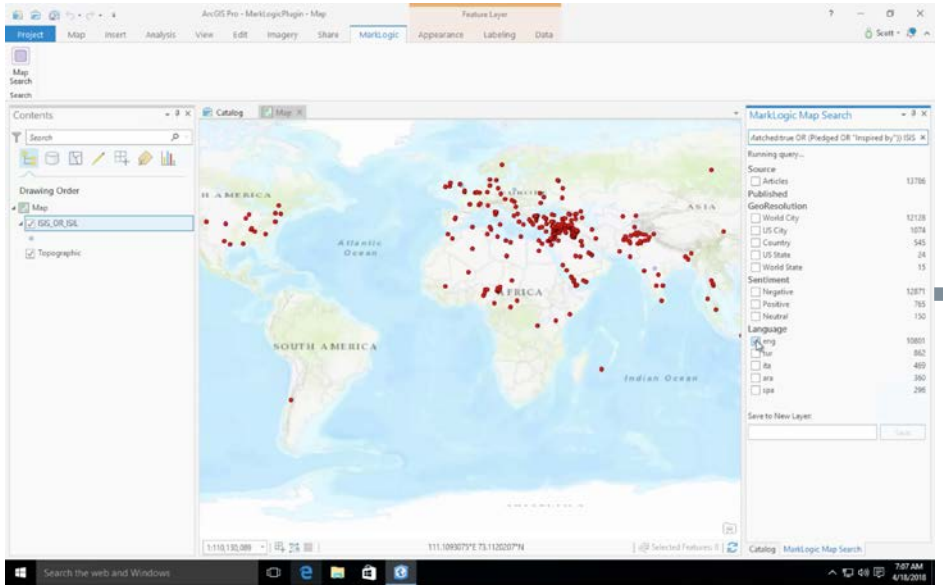
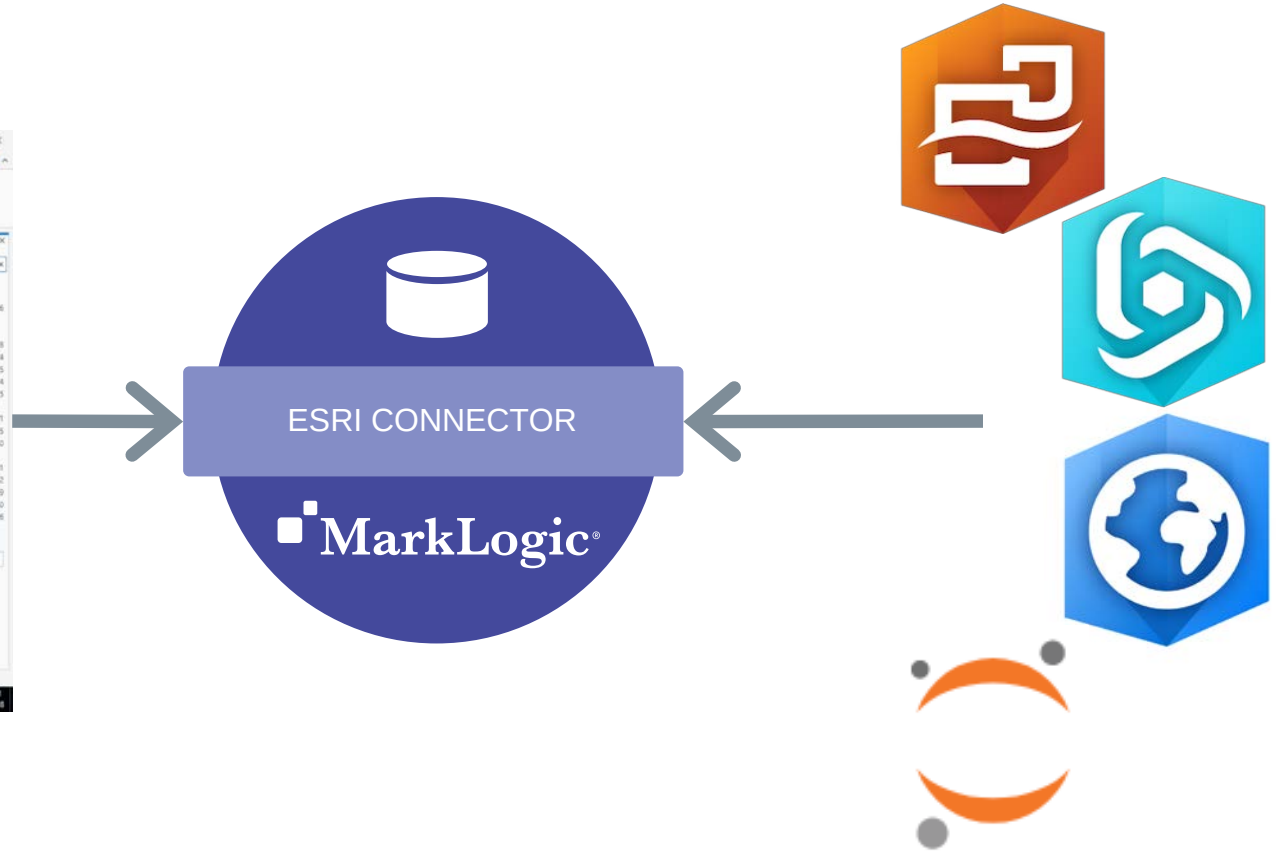
ArcGIS Pro Demo

Use ArcGIS Pro to directly explore and analyze data in MarkLogic
Access stored layers from other analysis tools





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Demo

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Esri Connector Capability Summary

- Expose the power of full-text indexing, geospatial indexing and row-based indexing via one interface
- Configuration-based
- Standard interface to expose data to any Esri tool
- Expose data from existing or new applications
- Leverage existing index configurations
- JSON and/or XML documents

Location Analytics for ALL your Data

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Preview of New Capabilities

MarkLogic as an Insights Data Source

- Insights will provide an extensible data source architecture
- MarkLogic data source available in July 2018
- Search and discover data in MarkLogic directly from Insights
- Analyze and visualize structured data projected from documents
- Analyze and visualize linked data

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Questions?