AI in ArcGIS

Ismael Chivite - Sr. Principal Product Manager

Prepared for NSGIC on November 18, 2025

Empower people and organizations to leverage the geographic approach…

…to understand our world and improve decision making

Esri makes the world's most powerful GIS enterprise-grade technology: ArcGIS

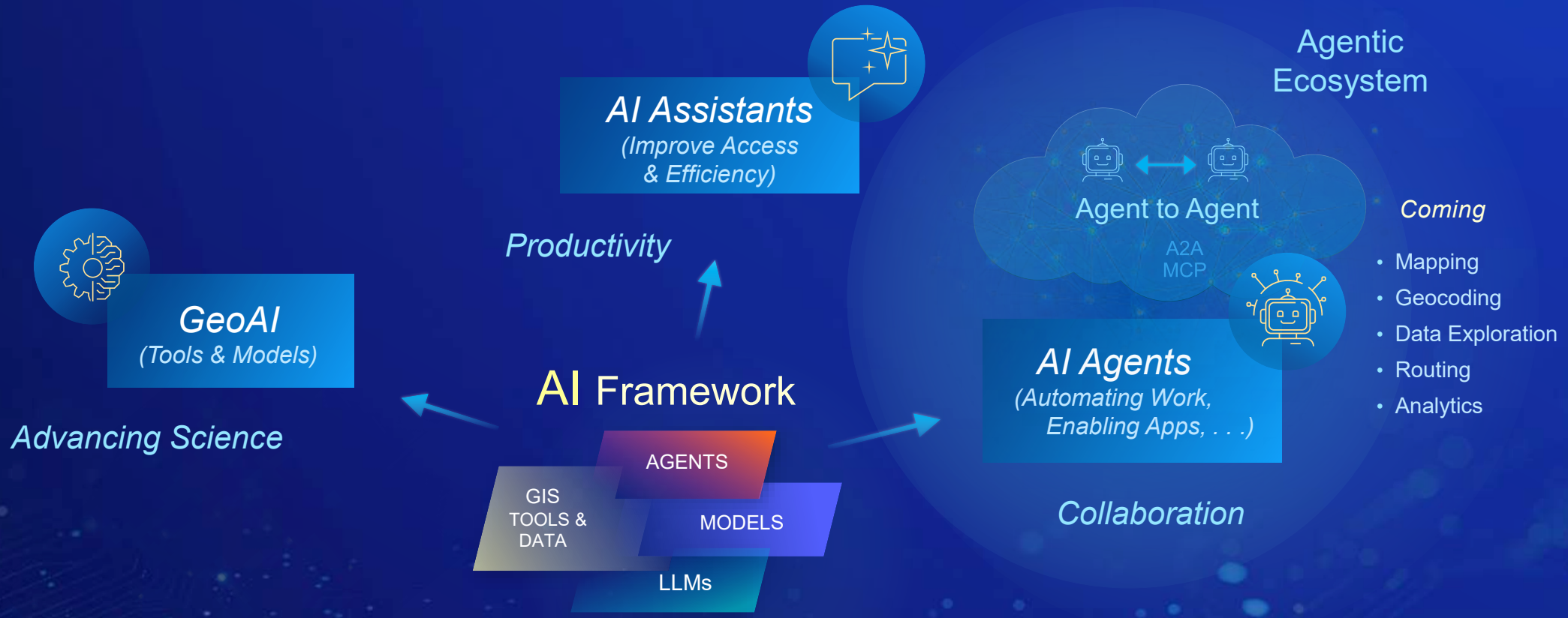
The Innovation Journey of ArcGIS . . .

Embracing Modern Technology Trends

Advancing geospatial science and technology…

ArcGIS Is Being Enhanced with AI

Integrating the Power of GIS and AI across organizations and workflows



GeoAI in ArcGIS

AI models and tools for geospatial data engineering and analysis

- *Extracting data*
  - Computer vision on Imagery, 3D, and Video data
  - Natural Language Processing on Unstructured Text data
- *Analyzing data*
  - Machine learning and deep learning on Vector, Tabular, and Time series data

AI for extracting and analyzing geospatial data

Pretrained GeoAI Models

Included with ArcGIS

- Cars
- License Plate Blurring
- Parking Lots
- Parking Spots
- Humans
- Crowd Counting
- Face Blurring
- Land Cover
- Buildings
- Roads
- Parcels
- Ag Fields
- Swimming Pools
- Well Pads
- Oil Spills
- Palm Trees
- Power Lines
- Transmission Towers
- Insulator Defects
- Wind Turbines
- Solar Arrays
- Solar Panels

- Ships
- Shipwrecks
- Oil Spills
- Palm Trees
- Trees
- Plant Leaf Disease
- Common Object Detection
- Text Parsing from Photo
- Object Tracking
- Segment Anything Model (SAM)
- **CLIP Zero Shot Classifier**
- **Text SAM**
- **Prithvi (Crops, Burn Scars, Floods)**
- Building Point Classification
- Wildfire Delineation
- Oil Tanks
- Pylons
- Optical Character Recognition
- Cooling Towers
- Agricultural field boundaries
- Cloud Mask Generation
- Ship Detection
- Tree Segmentation
- Transmission H-Structure Detection

. . . and Many More

State & Local Government

Public Safety

Conservation

Transportation

Natural Resources

Commercial Business

National Security

Insurance

Utilities

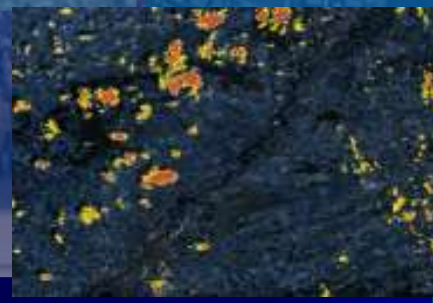
Road Extraction (Global)

Wind Turbine Detection

Elephant Detection

Cloud Mask Generation

Building Footprints



Parking Spot Detection

Solar Park Classification

Land-Cover Classification

Analyzing spatial data

Clustering, Prediction, Forecasting

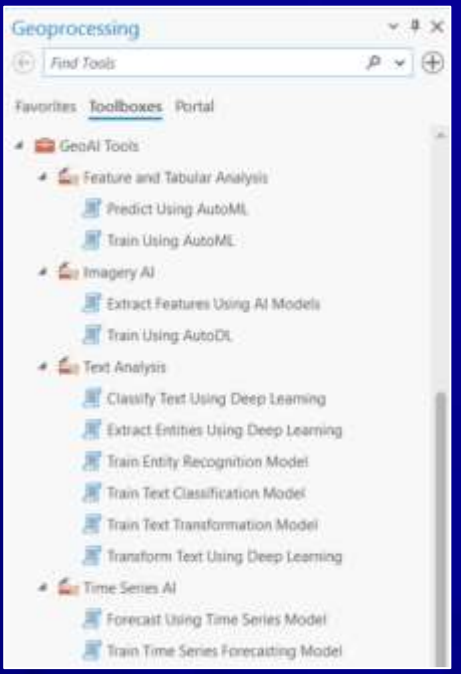
Highlights

- Fairness Metrics & Bias Mitigation
- Multi-modal Input (Text And Image as Input for AutoML)
- Multi-step forecasting
- LSTM & Transformer models
- Model explainability

Multi-modal AutoML

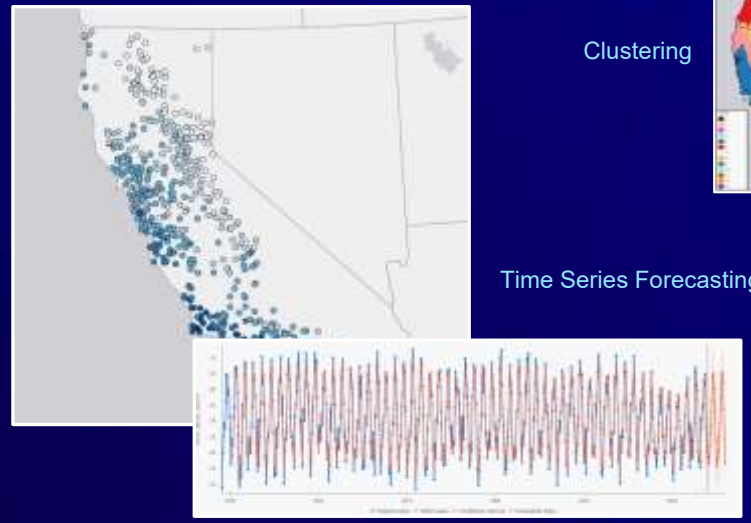
Prediction

Classification



GeoAI Toolbox

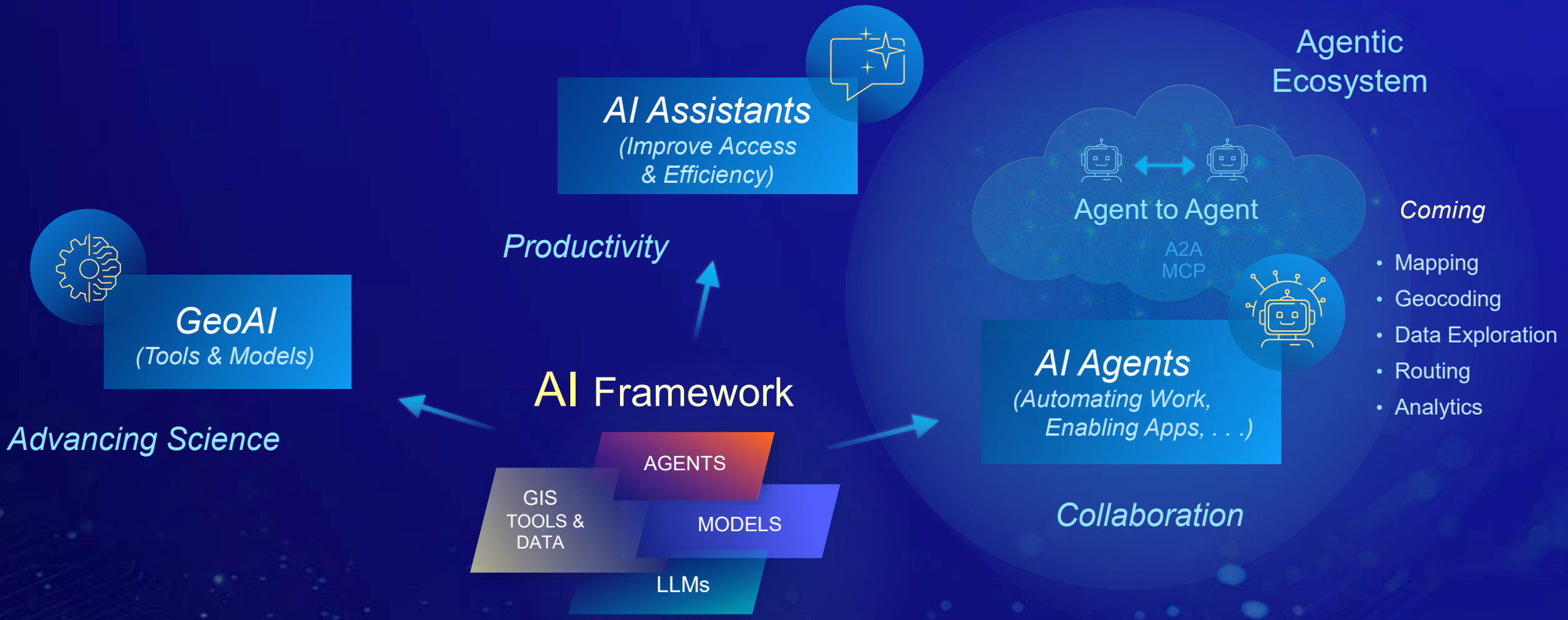
Clustering

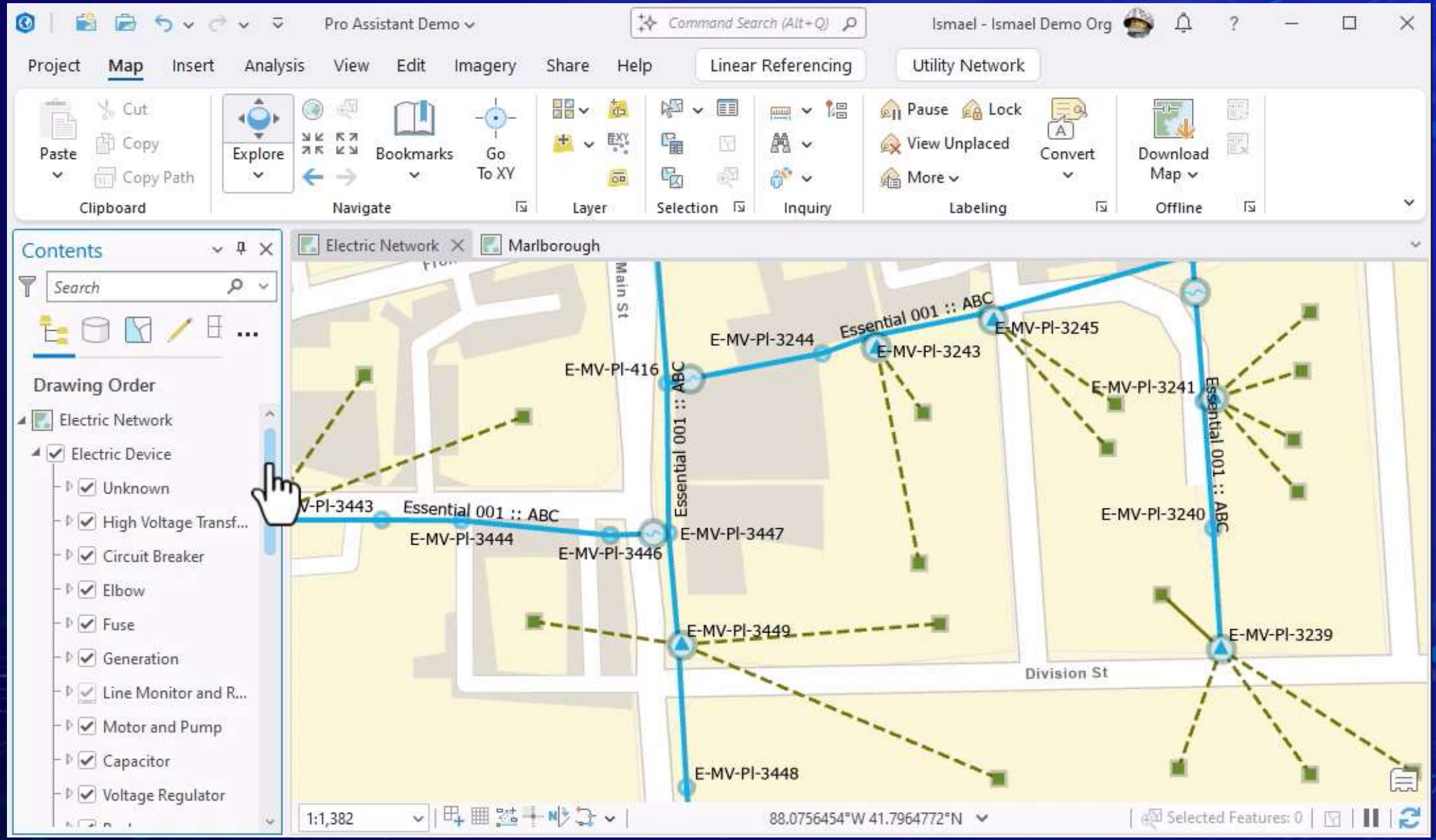


Time Series Forecasting

ArcGIS Is Being Enhanced with AI

Integrating the Power of GIS and AI across organizations and workflows

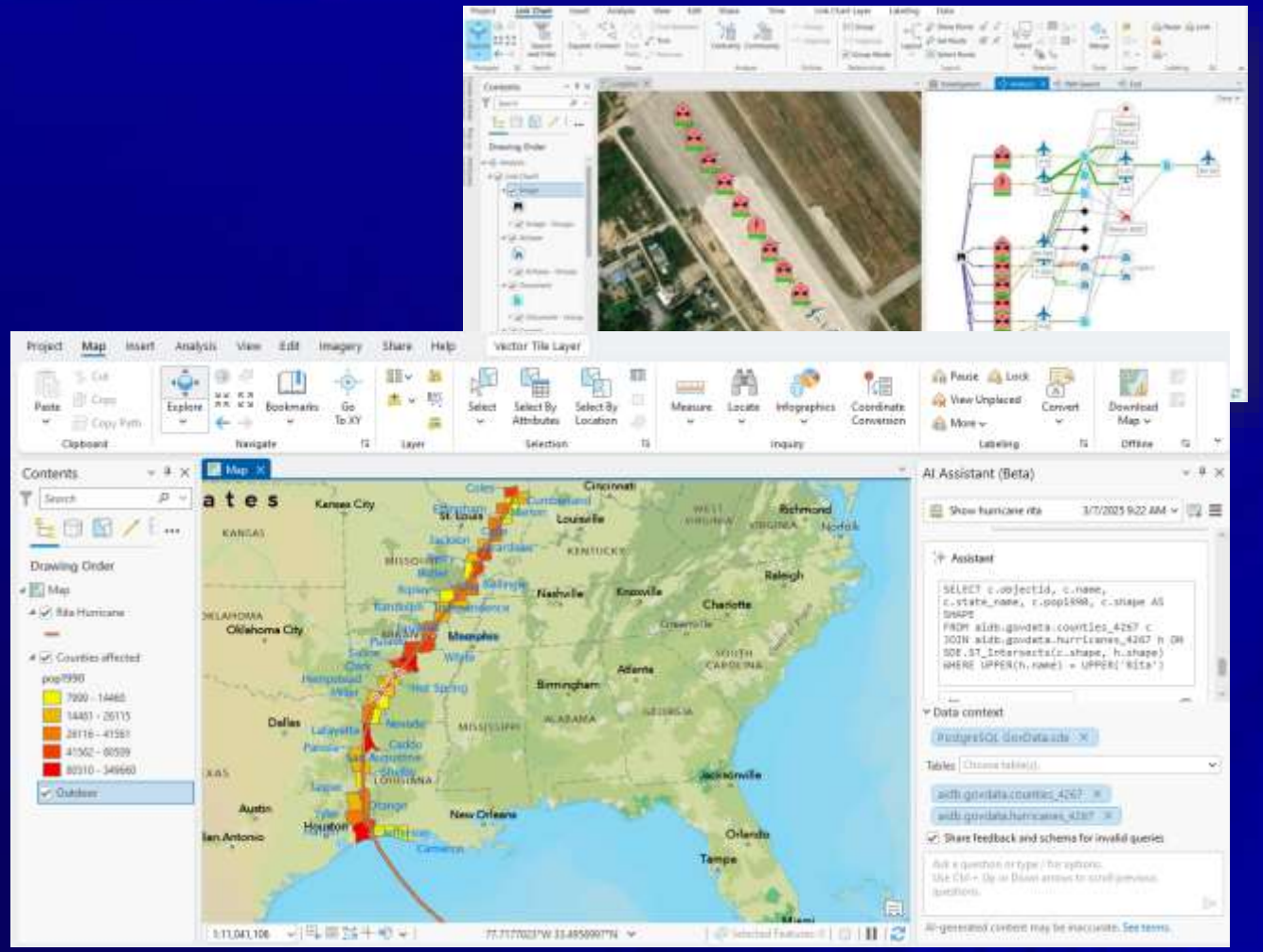



Pro Assistant Demo
Command Search (Alt+Q)
Ismael - Ismael Demo Org
Project
Map
Insert
Analysis
View
Edit
Imagery
Share
Help
Linear Referencing
Utility Network
Paste
Cut
Copy
Copy Path
Clipboard
Explore
Bookmarks
Go To XY
Navigate
Layer
Selection
Inquiry
Pause
Lock
View Unplaced
More
Convert
Labeling
Download Map
Offline
Contents
Search
Drawing Order
Electric Network
Electric Device
Unknown
High Voltage Transf...
Circuit Breaker
Elbow
Fuse
Generation
Line Monitor and R...
Motor and Pump
Capacitor
Voltage Regulator
Electric Network
Marlborough
Main St
E-MV-Pl-3244
Essential 001 :: ABC
E-MV-Pl-3245
E-MV-Pl-3243
E-MV-Pl-416
E-MV-Pl-3241
Essential 001 :: ABC
Essential 001 :: ABC
E-MV-Pl-3443
Essential 001 :: ABC
E-MV-Pl-3444
E-MV-Pl-3446
E-MV-Pl-3447
E-MV-Pl-3240
Essential 001 :: ABC
E-MV-Pl-3449
E-MV-Pl-3239
Division St
E-MV-Pl-3448
1:1,382
88.0756454°W 41.7964772°N
Selected Features: 0

ArcGIS Pro assistant (private beta)

An in-app assistant to help you streamline everyday tasks

- **Use natural language to:**
  - Explore ArcGIS Pro documentation
  - Generate Query Layer SQL expressions
  - Generate Knowledge Graph Cypher queries
  - Trigger common actions in ArcGIS Pro
- **New at 3.6*:**
  - More actions
  - ArcPy code generation
  - ~~Enterprise 12.0 support~~
- **Complete this form to request access**

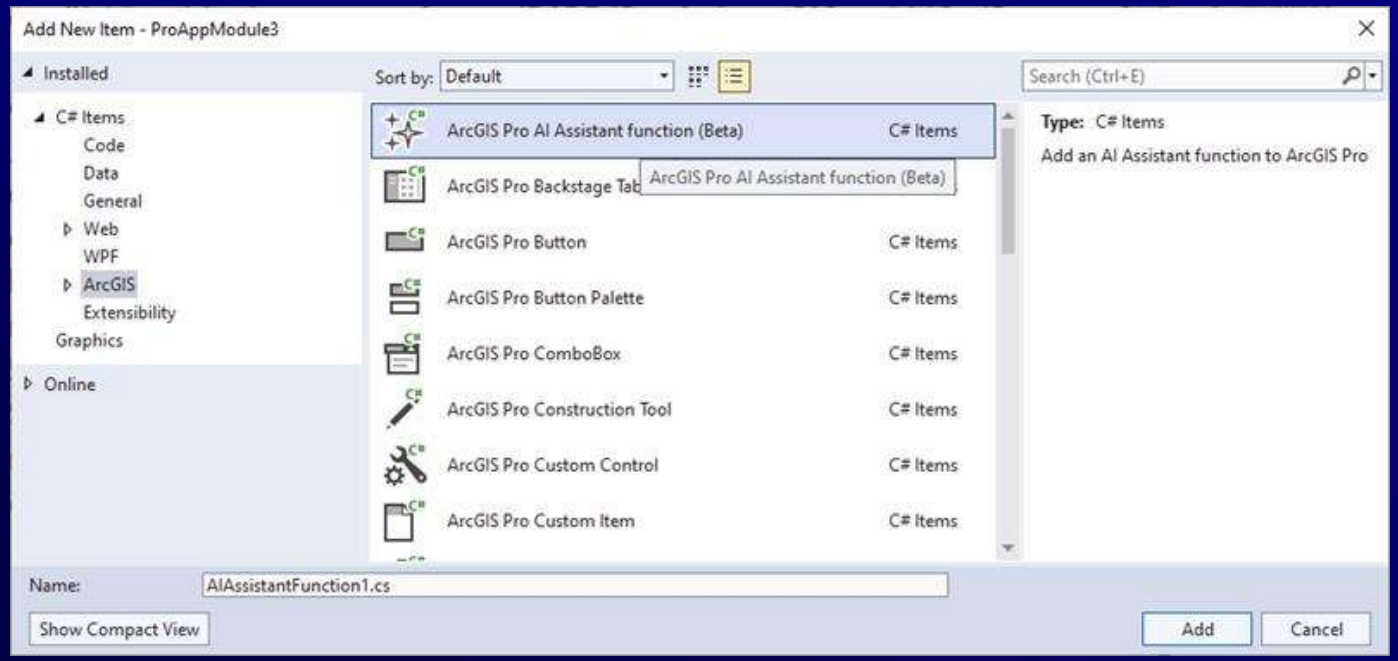


* ArcGIS Pro 3.6 assistant available December 1st 2025 for Early Adopters

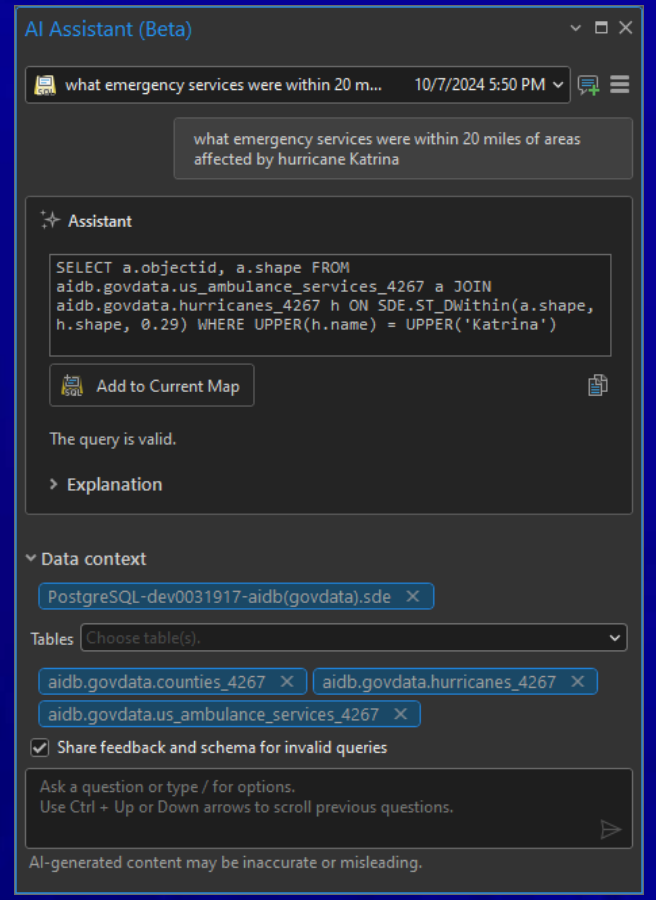
ArcGIS Pro Assistant Extensibility

Custom AI Function Template - 3.5 Beta

- Write (.NET) and register custom AI functions with the Pro AI assistant
- Registered skills are used by the AI assistant to execute user requests
- SDK Resources – Samples, Snippets, ProGuides



AI Function Template

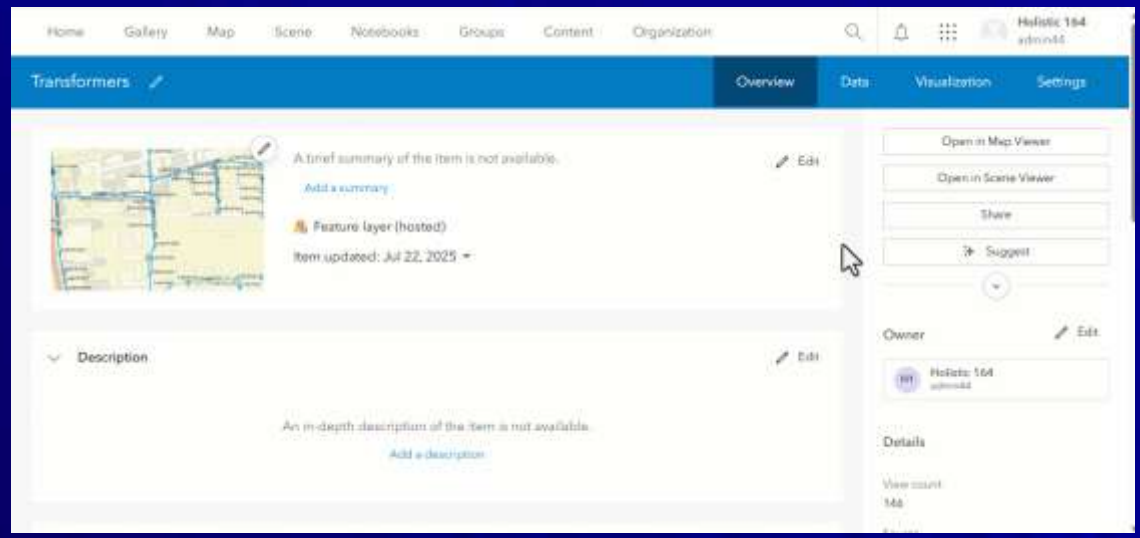


ArcGIS Pro Assistant

Item details assistant (private beta)

Document your ArcGIS items for discovery and effective use

- Item metadata is key for discoverability and effective use by AI agents (and people!)
- Suggestions to help you document ArcGIS items
  - Hosted Feature Layers
    - Title, Summary, Description
    - Fields (Display name/alias, Description, Value Type)
- Schedule:
  - ArcGIS Online R3 2025 (Private Beta)
  - ArcGIS Enterprise 12.0 (Beta)
  - ArcGIS Online R1 2026 (Beta)



- Complete this form to request access to private beta in ArcGIS Online

Home Gallery Map Scene Notebooks Groups Content Organization

Holistic 164
admin44

Transformers

Overview Data Visualization Settings

A brief summary of the item is not available.

Add a summary

Edit

Feature layer (hosted)

Item updated: Jul 22, 2025

Open in Map Viewer

Open in Scene Viewer

Share

Suggest

Description

Edit

An in-depth description of the item is not available.

Add a description

Owner

Edit

H1 Holistic 164
admin44

Details

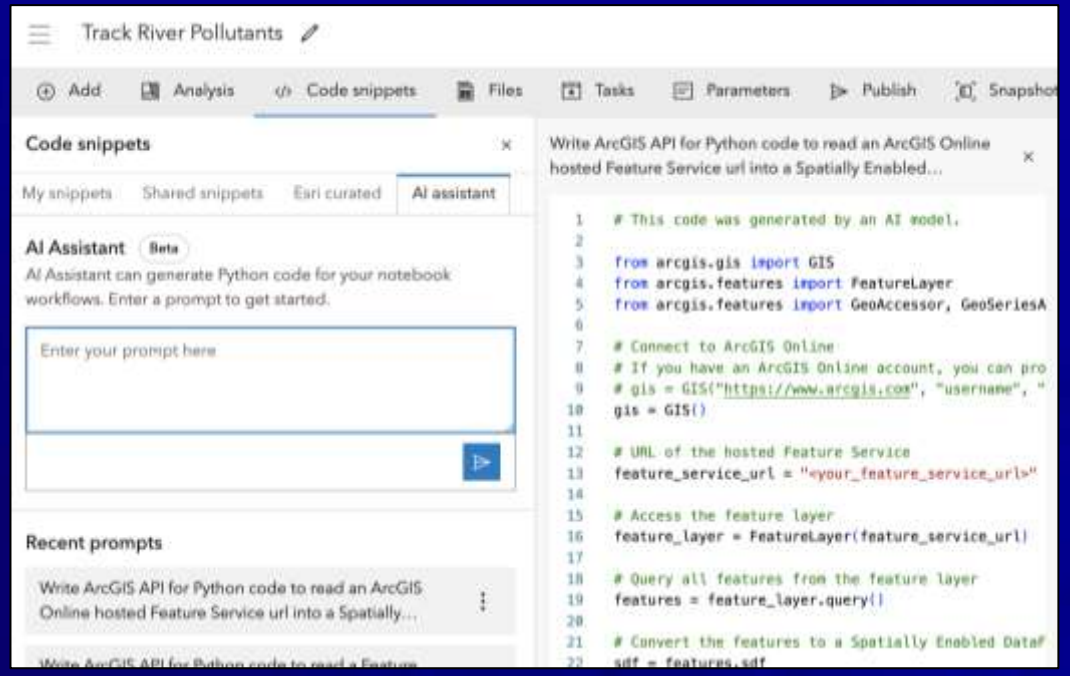
View count
146

ArcGIS Notebook assistant (beta)

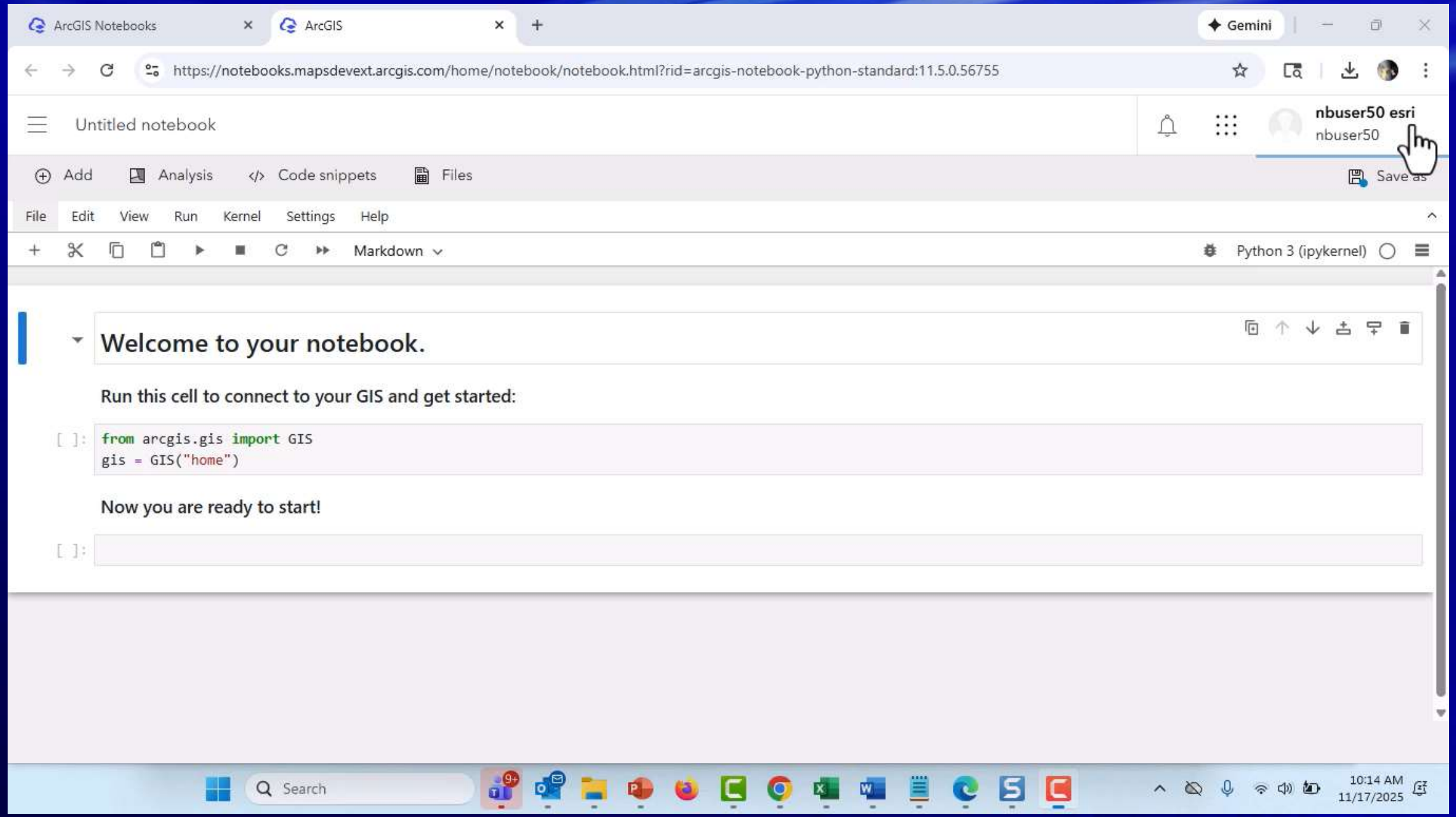
For task automation, data engineering and analysis

- Generates, fixes and explains Python code
- Available in:
  - Standard (for admin tasks and light data engineering)
  - Advanced (for advanced analytics, and large data engineering)
- Optimized for latest version of the Python API

- Beta release planned ArcGIS Online 26.R1



Python assistant in Notebooks

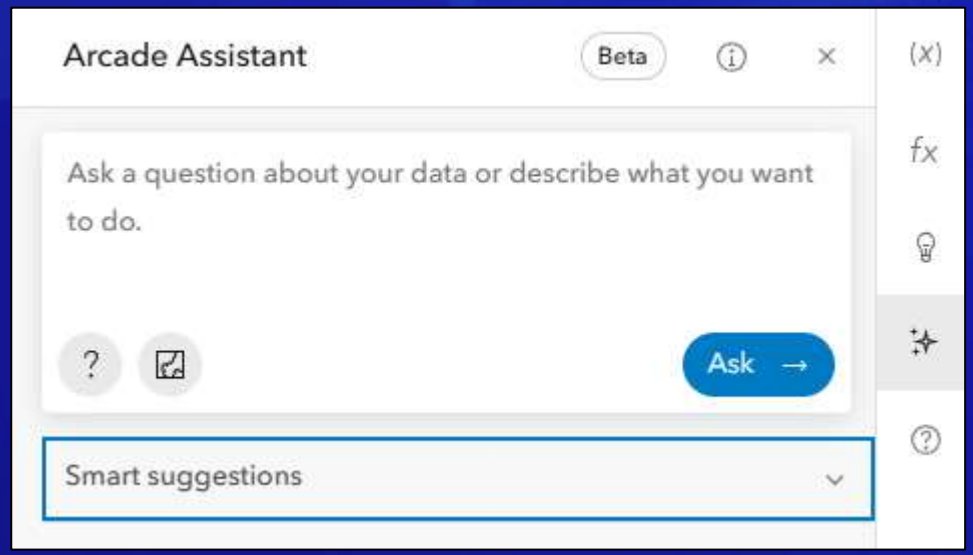

ArcGIS Notebooks
ArcGIS
Gemini
https://notebooks.mapsdevext.arcgis.com/home/notebook/notebook.html?rid=arcgis-notebook-python-standard:11.5.0.56755
Untitled notebook
nbuser50 esri
nbuser50
Add
Analysis
Code snippets
Files
Save as
File
Edit
View
Run
Kernel
Settings
Help
Markdown
Python 3 (ipykernel)
Welcome to your notebook.
Run this cell to connect to your GIS and get started:
[ ]:
from arcgis.gis import GIS
gis = GIS("home")
Now you are ready to start!
[ ]:
Search
10:14 AM
11/17/2025

Arcade Assistant (beta)

Your helper to write Arcade expressions

- Initially added to Map Viewer (June 2025)
  - Announcement in ArcGIS Blog
- Now also available in
  - Scene Viewer
  - Field calculations in map viewer, home app and web editor
- Coming in 2026:
  - Field Maps Designer
  - Experience Builder
  - Dashboards
  - ArcGIS Pro

Arcade assistant



Water Sources Panama - Data | Panama Water Sources - Overv

https://ismael.maps.arcgis.com/home/item.html?id=9b437abd56bd457585a4175e317432e3#data

Home Gallery Map Scene Notebooks Groups Content Organization

Ismael Chivite
Ismael

Water Sources Panama

Overview Data Visualization Usage Settings

Table
Fields
Update data
Calculate field

Editing is disabled but you have privileges to edit this layer.

Layer: Water_Sources_Panama | Filter | Total: 3753 | Data updated: November 3, 2025 at 9:18 AM | Column visibility | Add field

Unique ID	Source	Use	Elevation	Depth	Province	District	SubDis
P000_0001	Well	Domestic	104.99	32.00	Bocas del Toro	Bocas del Toro	Bastime
P000_0002	Well	Domestic	242.78	74.00	Bocas del Toro	Bocas del Toro	Bastime
P000_0003	Well	Domestic	100.00	30.48	Bocas del Toro	Bocas del Toro	Bastime
P000_0021	Well	Tourism	50.00	15.24	Bocas del Toro	Bocas del Toro	Bocas c
P000_0023	Spring	Farming	0.00	0.00	Bocas del Toro	Bocas del Toro	Bocas c
P000_0024	Spring	Farming	0.00	0.00	Bocas del Toro	Bocas del Toro	Bocas c
P000_0026	Well	Domestic	0.00	0.00	Bocas del Toro	Bocas del Toro	Bocas c
P000_0027	Well	Domestic	0.00	0.00	Bocas del Toro	Bocas del Toro	Bocas c
P000_0028	Well	Domestic	83.01	25.30	Bocas del Toro	Bocas del Toro	Bocas c
P000_0029	Well	Domestic	74.02	22.56	Bocas del Toro	Bocas del Toro	Bocas c
P000_0030	Well	Domestic	62.01	18.90	Bocas del Toro	Bocas del Toro	Bocas c
P000_0031	Well	Domestic	70.01	21.34	Bocas del Toro	Bocas del Toro	Bocas c
P000_0032	Well	Domestic	177.17	54.00	Bocas del Toro	Bocas del Toro	Bocas c
P000_0033	Well	Domestic	124.67	38.00	Bocas del Toro	Bocas del Toro	Bocas c
P000_0034	Well	Domestic	127.95	39.00	Bocas del Toro	Bocas del Toro	Bocas c
P000_0035	Well	Domestic	144.36	44.00	Bocas del Toro	Bocas del Toro	Bocas c

Learn
Collapse

Content subject to change

ArcGIS Assistants (Online) | Release Plan *

2025.R3

Preview
- Business Analyst
- Survey123
- Translation
- StoryMaps (November 2025)

Beta
- Documentation
- Arcade
- Hub
- ArcGIS for Microsoft Teams

Private Beta
- Item Details
- Data Explorer Instant App
- Pro

2026.R1

General release
- Business Analyst
- Survey123
- Translation
- StoryMaps

Preview
- Documentation
- Arcade
- Hub
- ArcGIS for Microsoft Teams

Beta
- Item Details
- Data Explorer
- Pro
- Notebooks
- Solutions

2026.R2

General release
- Business Analyst
- Survey123
- Translation
- Documentation
- StoryMaps
- Arcade
- ArcGIS for Microsoft Teams

Preview
- Hub
- Data Explorer
- Notebooks
- Item Details

Beta
- Pro
- Solutions
- JavaScript Maps SDK

2026.R3

General release
- Business Analyst
- Survey123
- Translation
- Documentation
- StoryMaps
- Arcade
- ArcGIS for Microsoft Teams
- Item Details
- Hub
- Data Explorer
- Notebooks
- JavaScript Maps SDK

Preview
- Pro
- Solutions

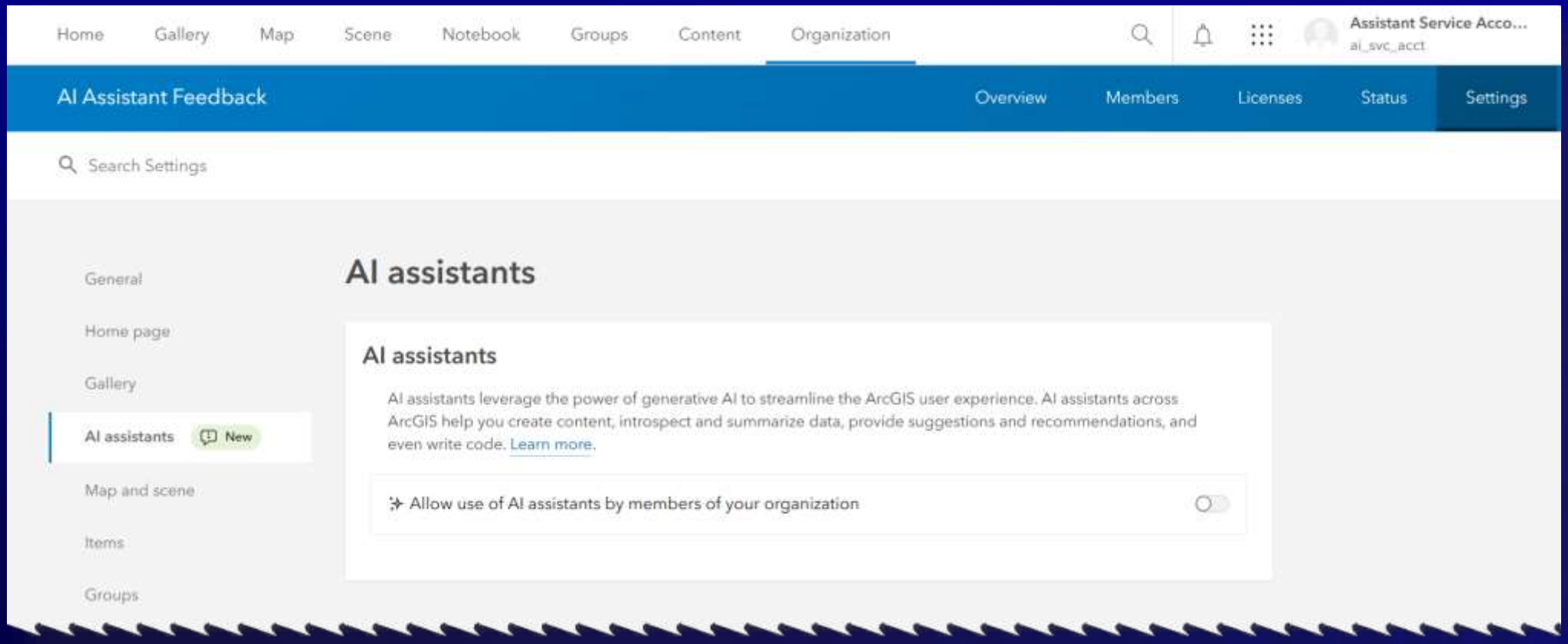
Beta
- ArcGIS Online assistant
-

* Tentative release plan. Subject to change.

How to enable AI assistants in your organization

AI assistant organization setting

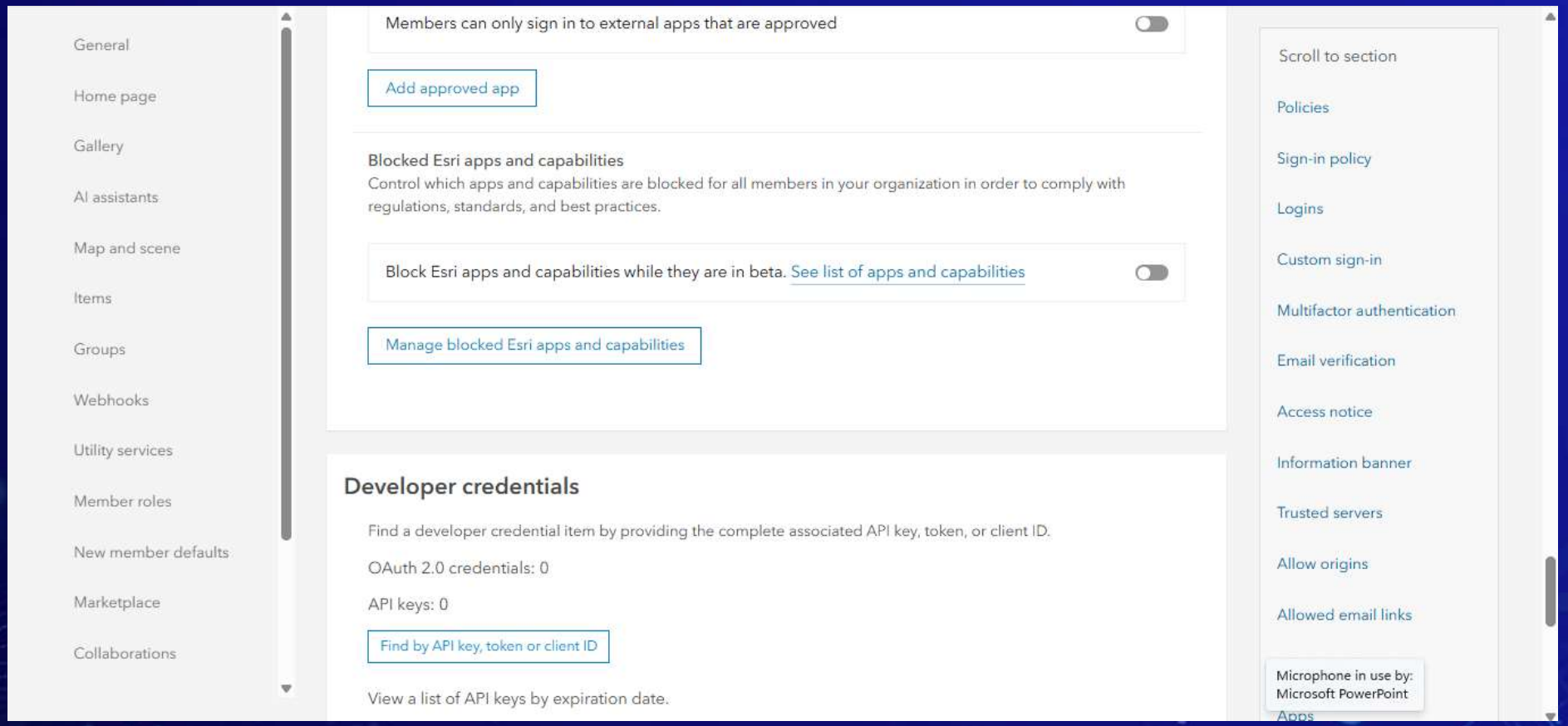
Opt-in workflow to enable use of generative AI in ArcGIS



Read Configure AI assistants help topic for details

Beta blocker org setting

Allows administrators to block features in Beta



Read Configure AI assistants help topic for details

Advancing Trusted AI in ArcGIS

New Trusted AI section in trust.arcgis.com

- trust.arcgis.com
- Outlines Esri's guiding principles for AI in ArcGIS
  - Security
  - Privacy
  - Transparency
  - Fairness
  - Reliability
  - Accountability

esri

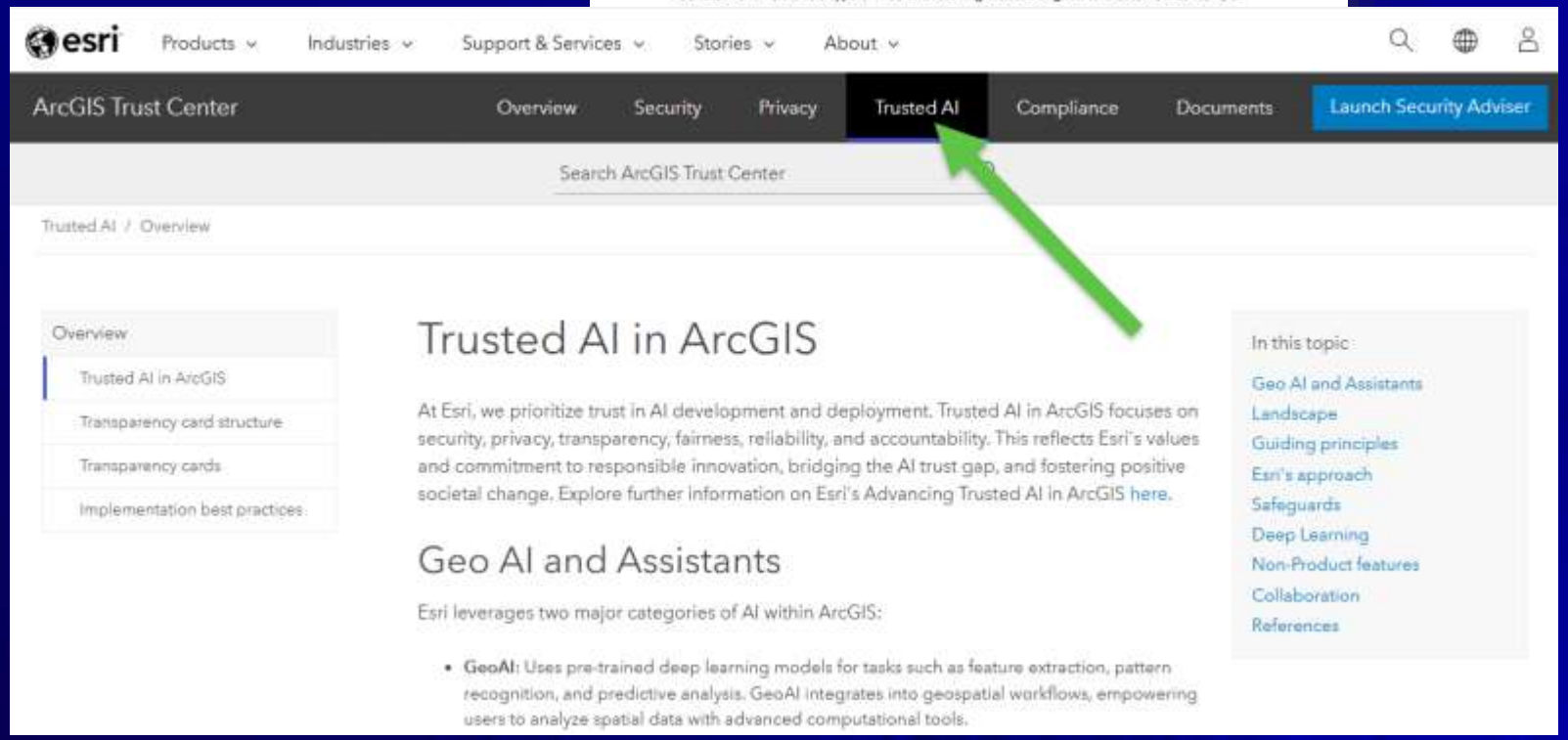
Advancing Trusted AI in ArcGIS

Trusted Artificial Intelligence (AI) goes beyond simply achieving accurate results for ArcGIS products. It is a journey of continuous advancement that encompasses a holistic approach prioritizing security, privacy, transparency, fairness, reliability and responsible development and deployment of AI. We recognize the power of AI technology and its potential to transform society and design a better, more sustainable future. The rapid advancements in generative AI highlight the urgent need for frameworks that guide trusted AI deployment and bridge the AI trust gap.

Legacy of AI Trust and Innovation

Before the generative AI boom of the past few years, when people talked about AI, typically they were referring to machine learning and deep learning models used in pattern recognition, forecasting, object detection, change detection, and more. Over a decade ago, Esri started with machine learning to perform clustering, regression, and classification on spatial data. More recently, work has continued in both the machine learning and deep learning space, including the introduction of pre-trained deep learning models that are trained using massive, diverse datasets to make it easier to get started with tasks such as feature extraction, point cloud classification, and image redaction. This work falls under the umbrella of what Esri refers to as GeoAI.

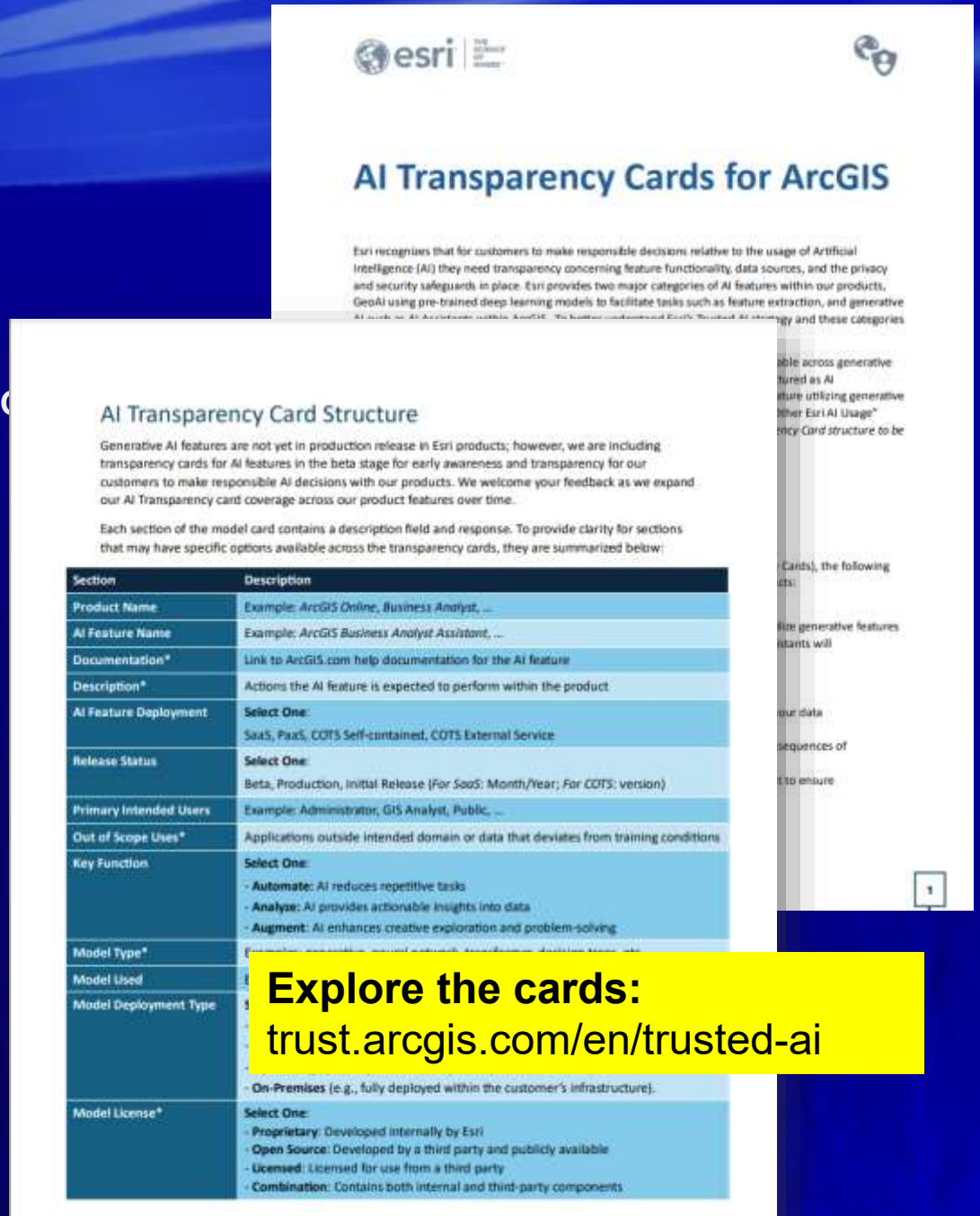
Generative AI refers to a type of machine learning model designed to create new content, or



Transparency Cards: Building Trust in AI

In-depth details about our AI features

- **What Are Transparency Cards and Why Do They Matter?**
  - Short, structured summaries of our AI features
  - Empower you to make informed, decisions about using AI in ArcG
- **What They Include:**
  - Purpose of AI in the product
  - Certification, deployment method, how you can manage access
  - Data storage, processing location
  - Scoped usage and intended users
  - Models, training data and level of human interaction
  - Security, guardrails and best practices…
- **Who Should Use Them:**
  - Analysts, developers, and decision-makers working with AI tools
- **Key Benefit:**
  - Supports transparency for your informed use of AI



esri

AI Transparency Cards for ArcGIS

Esri recognizes that for customers to make responsible decisions relative to the usage of Artificial Intelligence (AI) they need transparency concerning feature functionality, data sources, and the privacy and security safeguards in place. Esri provides two major categories of AI features within our products. GeoAI using pre-trained deep learning models to facilitate tasks such as feature extraction, and generative

AI Transparency Card Structure

Generative AI features are not yet in production release in Esri products; however, we are including transparency cards for AI features in the beta stage for early awareness and transparency for our customers to make responsible AI decisions with our products. We welcome your feedback as we expand our AI Transparency card coverage across our product features over time.

Each section of the model card contains a description field and response. To provide clarity for sections that may have specific options available across the transparency cards, they are summarized below:

Section	Description
Product Name	Example: *ArcGIS Online, Business Analyst, …*
AI Feature Name	Example: *ArcGIS Business Analyst Assistant, …*
Documentation*	Link to ArcGIS.com help documentation for the AI feature
Description*	Actions the AI feature is expected to perform within the product
AI Feature Deployment	**Select One**: SaaS, PaaS, COTS Self-contained, COTS External Service
Release Status	**Select One**: Beta, Production, Initial Release (*For SaaS*: Month/Year; *For COTS*: version)
Primary Intended Users	Example: Administrator, GIS Analyst, Public, …
Out of Scope Uses*	Applications outside intended domain or data that deviates from training conditions
Key Function	**Select One**: - **Automate:** AI reduces repetitive tasks - **Analyze:** AI provides actionable insights into data - **Augment:** AI enhances creative exploration and problem-solving
Model Type*	
Model Used	
Model Deployment Type	- **On-Premises** (e.g., fully deployed within the customer's infrastructure).
Model License*	**Select One**: - **Proprietary**: Developed internally by Esri - **Open Source**: Developed by a third party and publicly available - **Licensed**: Licensed for use from a third party - **Combination**: Contains both internal and third-party components

Explore the cards:
trust.arcgis.com/en/trusted-ai

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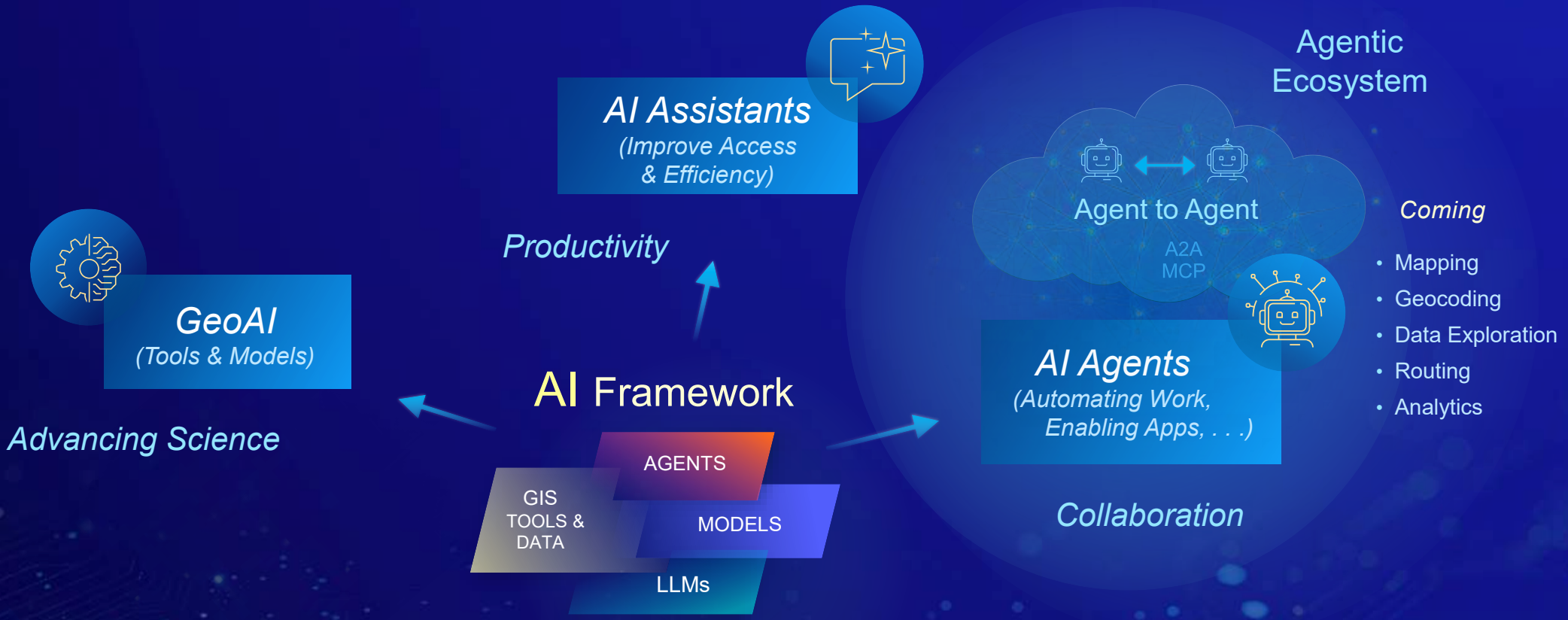
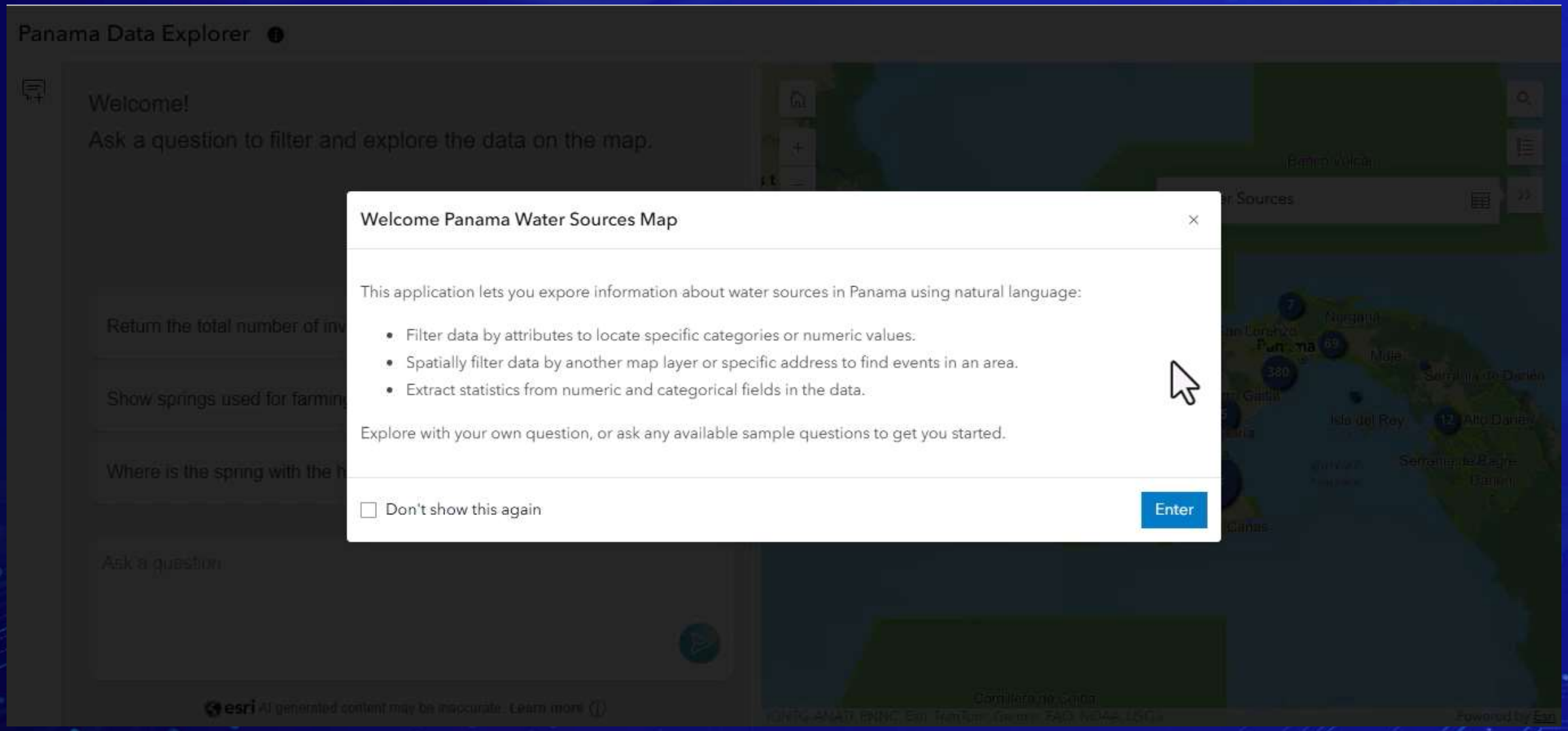



Panama Data Explorer
Welcome!
Ask a question to filter and explore the data on the map.
Welcome Panama Water Sources Map
This application lets you expore information about water sources in Panama using natural language:
Filter data by attributes to locate specific categories or numeric values.
Spatially filter data by another map layer or specific address to find events in an area.
Extract statistics from numeric and categorical fields in the data.
Explore with your own question, or ask any available sample questions to get you started.
Don't show this again
Enter
Return the total number of inv
Show springs used for farmin
Where is the spring with the h
Ask a question
esri AI generated content may be inaccurate. Learn more

What is an AI agent?

- An AI agent is a software component that, given a task, can make decisions on its own to solve it, using a pre-defined set of business rules, tools and data.
- At their core, AI agents use Large Language Models to reason and use the tools & data at their disposal within the constraints of rules provided.
- Geospatial AI agents are a type of agent that has been specifically configured to handle geospatial tasks. These agents understand the foundational principles of geography, GIS tools and GIS data.

Geospatial Agents and NLGIS

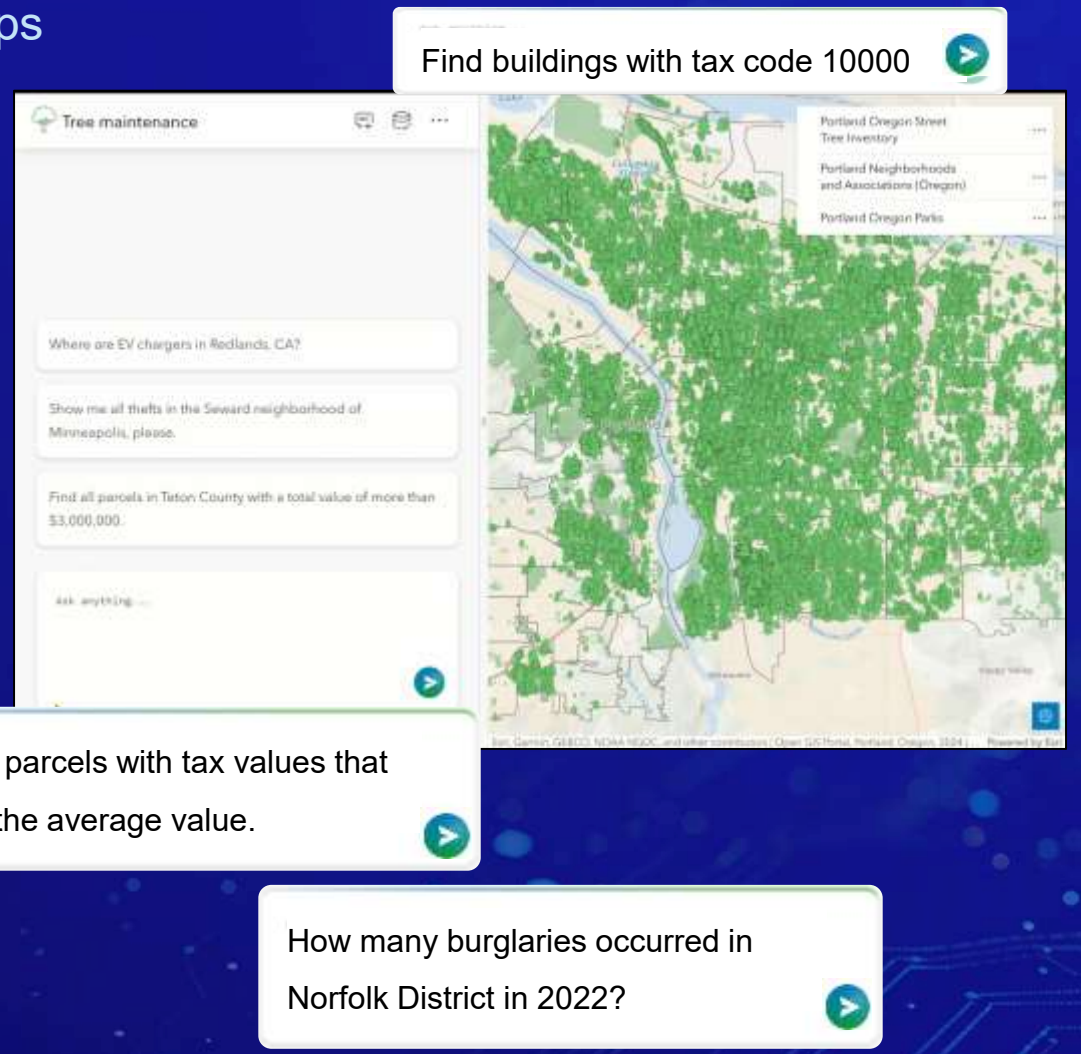
- The user experience of GIS has evolved over time, from command line to graphical user interfaces in desktops, browsers and mobile devices.
- With the introduction of Large Language Models, new user experiences based on natural language interactions are possible.
- Natural Language GIS applications allow end users to navigate and explore maps using natural language prompts, simplifying access to geospatial information and capabilities.
- Geospatial AI agents power Natural Language GIS applications.

Data Explorer Instant App template (beta coming in Q1 2026)

Create a modern, natural language experience for your maps

- Configurable Instant App template
- Enables natural language for:
  - Map exploration
  - Essential geographic analysis and filtering
  - Data summarization
- Share apps within your organization, or publicly

- Request access to private beta



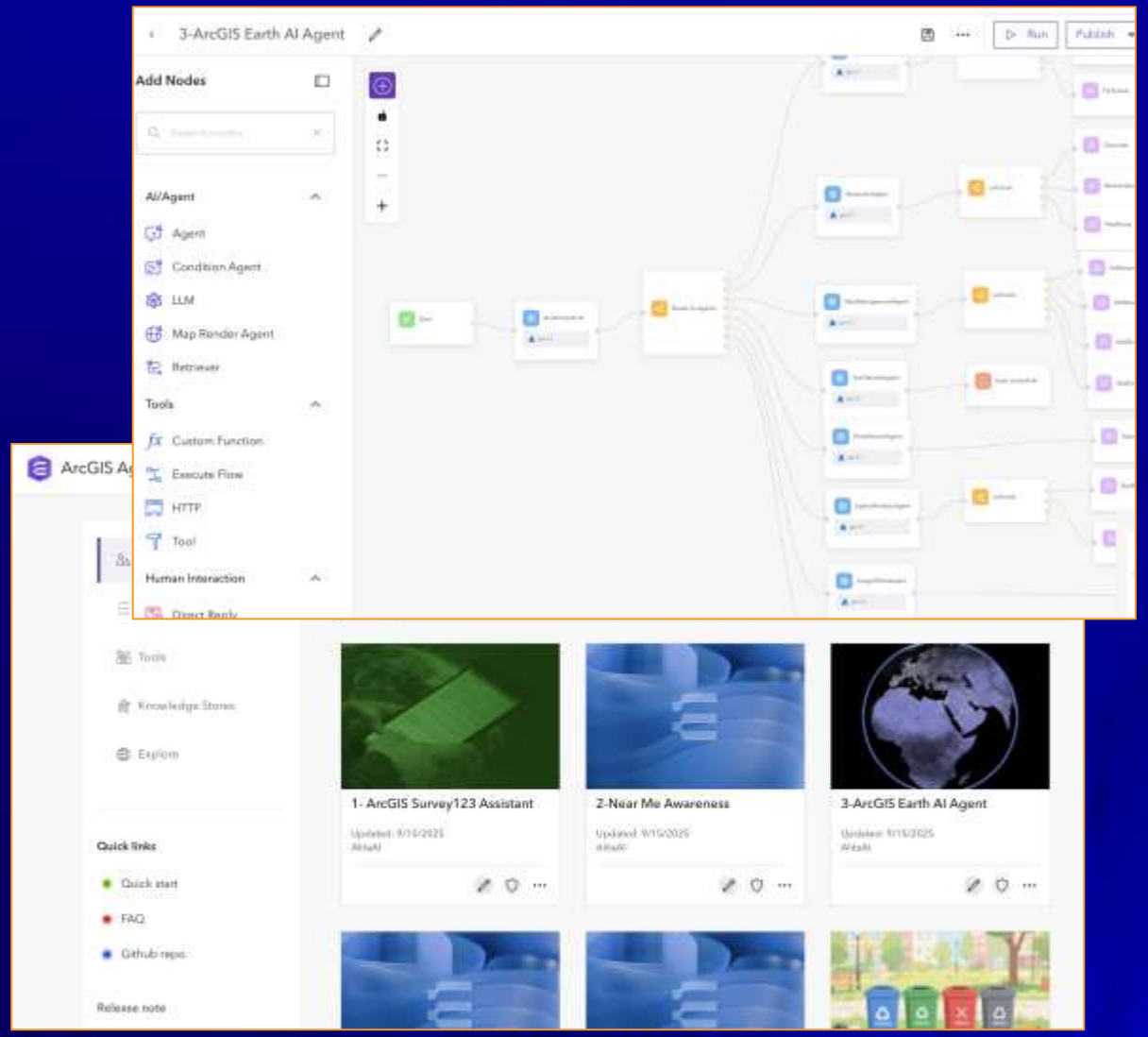
Geospatial Agents and Agentic ecosystems

- In an agentic ecosystem, agents can collaborate with each other, with and without the help of a human.
- Standard protocols like A2A enable agent collaboration.
- Just like we share GIS web services today, via REST and OGC protocols, we will share Geospatial Agents in the future, through A2A.
- This opens the doors bring geospatial capabilities into any AI system and enable agent-based automation

ArcGIS Agent Builder (beta 2026)

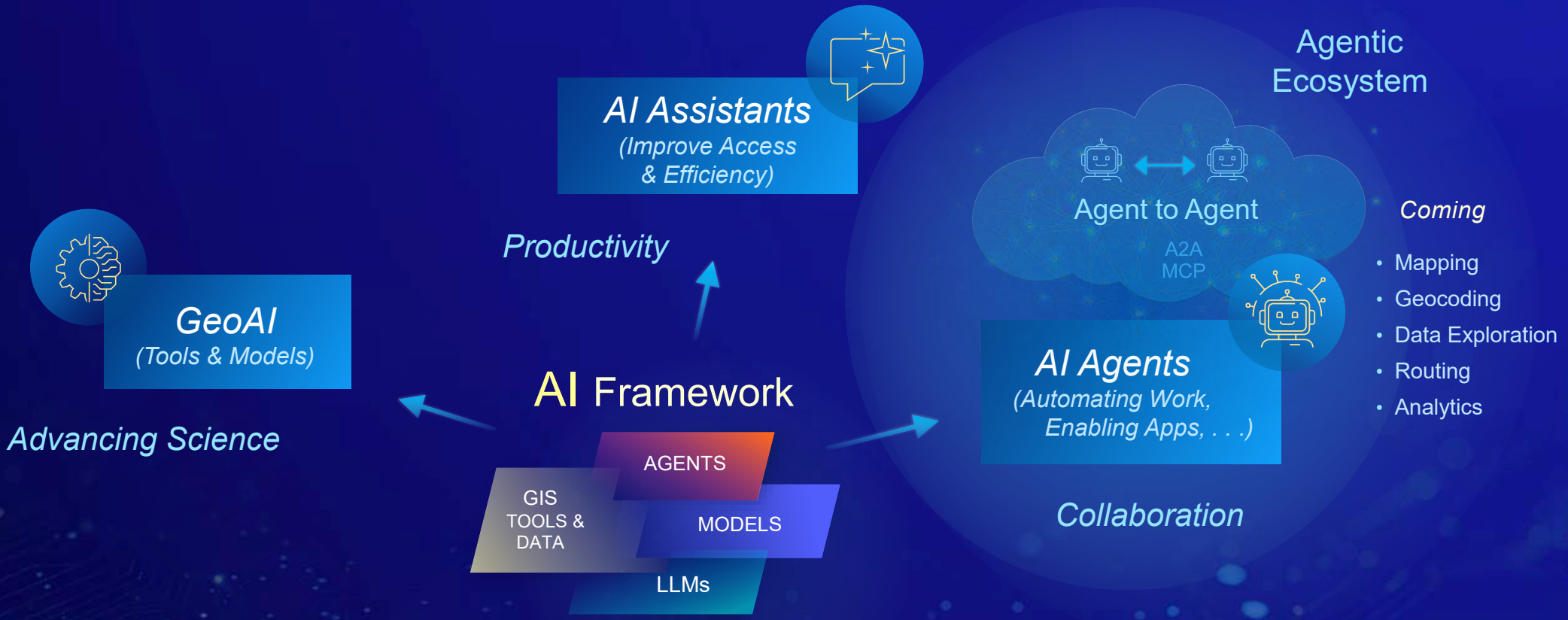
Design, configure and deploy geospatial agents

- A no-code environment for building geospatial AI agents.
- Create customized orchestration flows designed for AI agents, enhanced with ArcGIS capabilities.
- Full lifecycle of AI Agents: Design, configuration, and optimization.
- Deploy agents for use within ArcGIS or third-party agentic apps (via A2A)



ArcGIS is a Geospatial AI Platform

Integrating the Power of GIS and AI across organizations and workflows



Q&A

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