ArcGIS & AI

A platform for geospatial AI

Rami Alouta
Lead Solution Engineer

Advancing the science, experience and impact of GIS, powered by AI

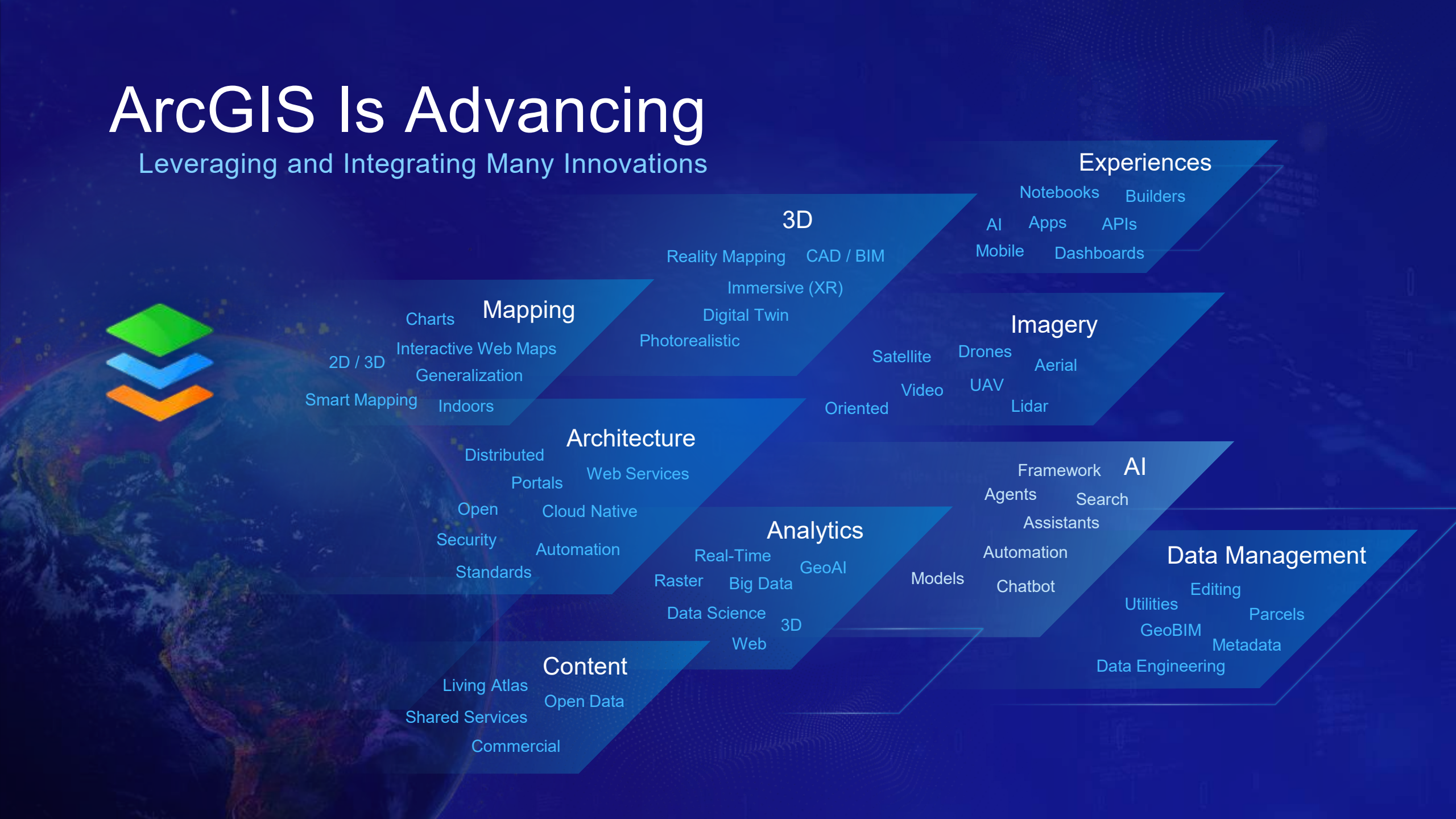
ArcGIS Is . . .

Empowering Organizations to Leverage Spatial Intelligence

Geospatial AI to help real people solve real problems

ArcGIS Is Advancing

Leveraging and Integrating Many Innovations



ArcGIS Is being enhanced with AI

Integrating the Power of GIS and AI across Organizations and Workflows

AI Tools & Models

Advancing the science of GIS

Science

AI Assistants

Enhancing user experiences

Productivity

Agentic AI

Automating tasks & expanding GIS

Impact

ArcGIS

- GIS Tools & Data
- Agents
- Models
- LLMs

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What is a Geospatial AI Agent?

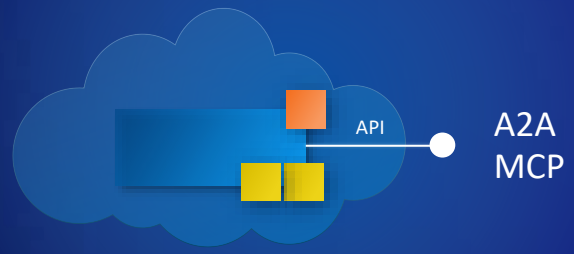
A ***Geospatial AI Agent*** is a type of agent that has been specifically configured to handle geospatial tasks.

These agents understand the foundational principles of geography, GIS tools and geospatial data.

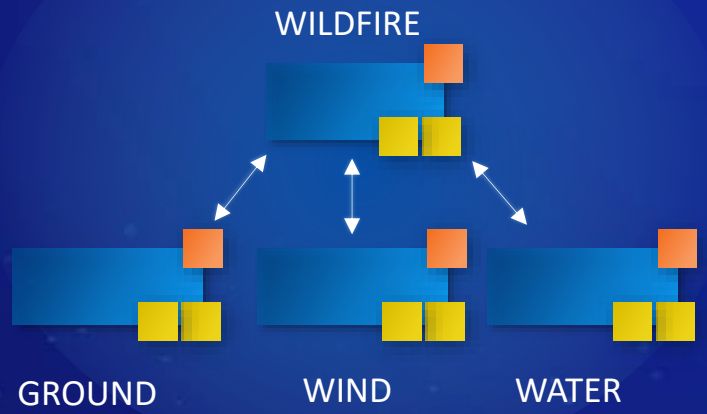
Agentic AI

Properties of Agents and Agentic Systems

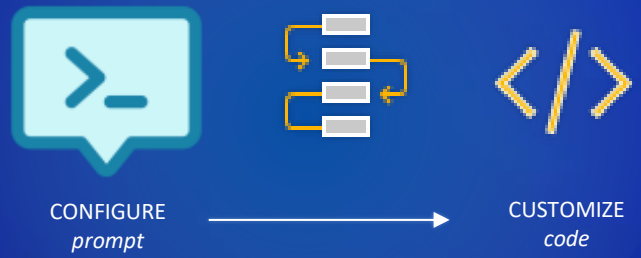
Service-Oriented



Can Be Orchestrated



No, Low, and Pro Code



ArcGIS for Agentic AI

Supporting Geo-Enabled and Geo-Centric Workflows

GEO-**ENABLED**
"Bringing GIS to Agentic Ecosystems"

GEO-**CENTRIC**
"Bringing Agentic AI to GIS Workflows"

MCP in ArcGIS Enterprise

Live Demo

ralouta.aiddev

Load Web Map

Web Map ID

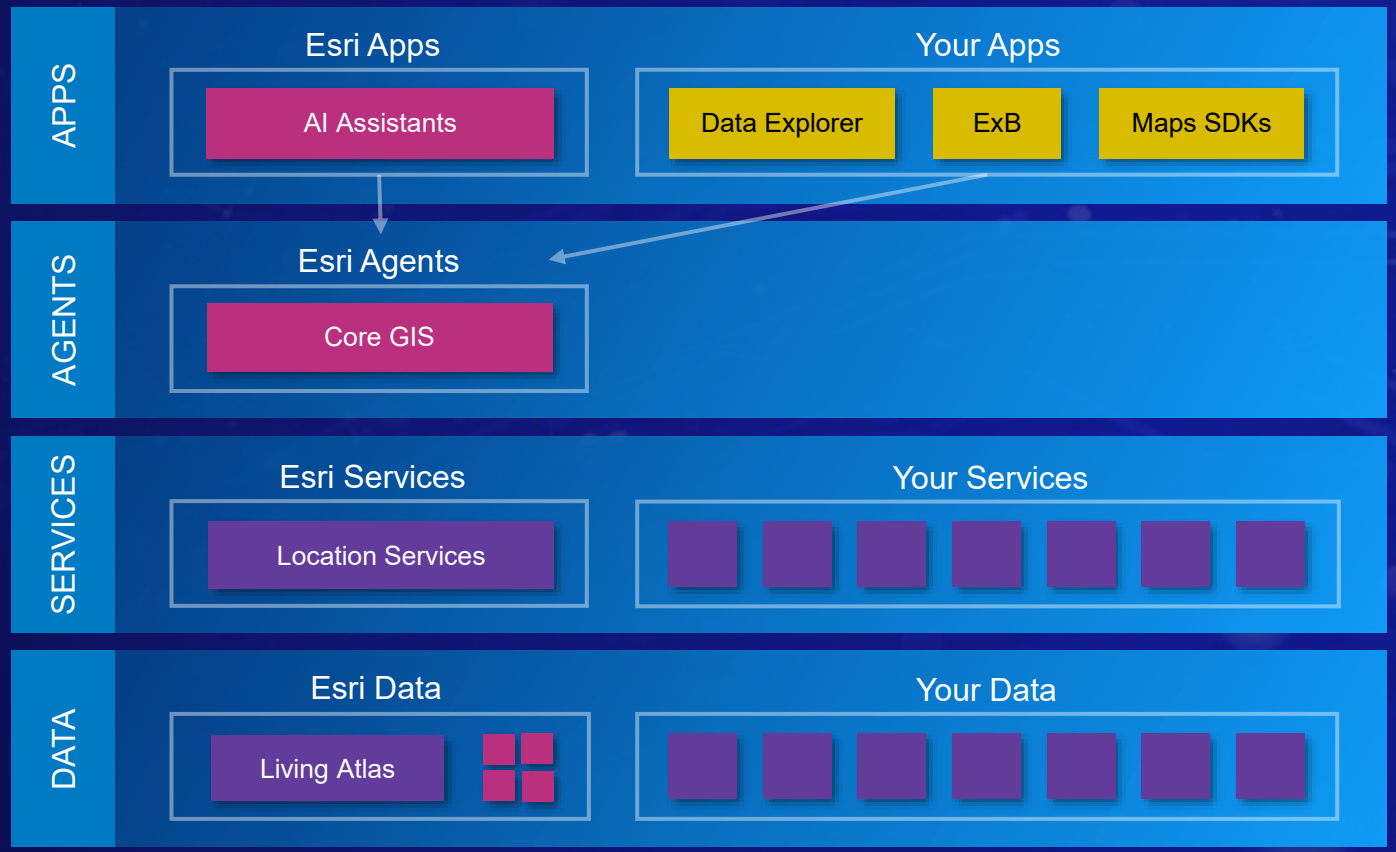
Enter web map item ID

Load map

New map

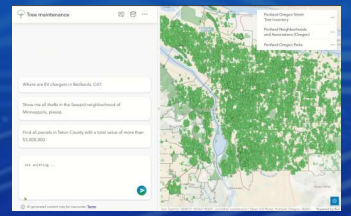
New Map creates a fresh Web Map item in ArcGIS Online immediately, then opens it here for editing.

AI Agents Power Apps and Workflows



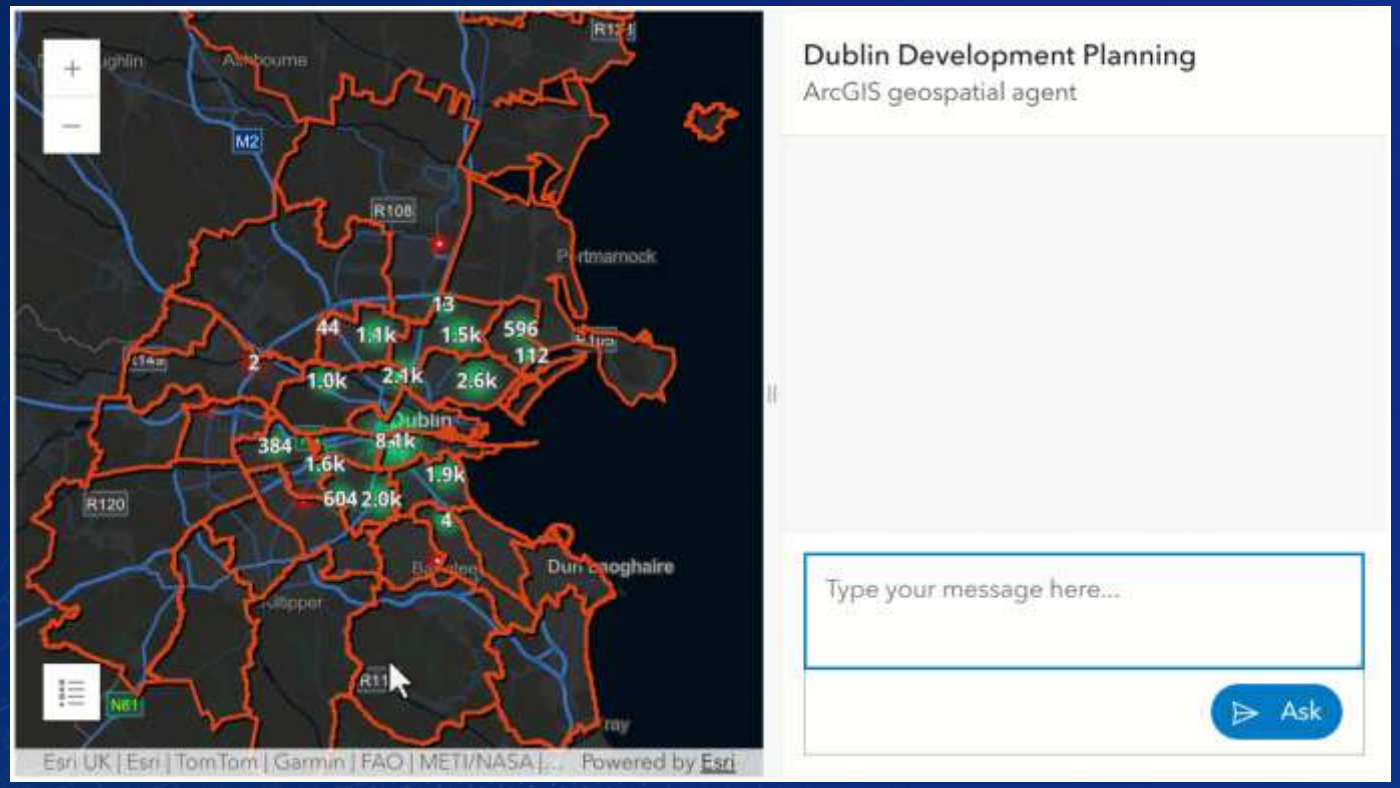
Assistants

Agentic Mapping Apps



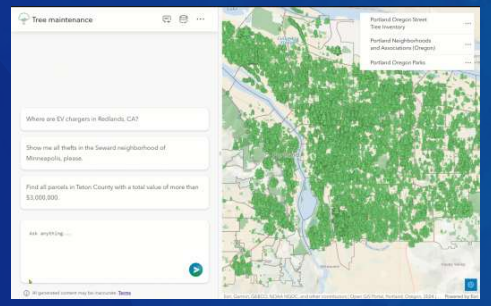
Building Agentic Mapping Apps

Streamline Workflows and Simplify Access to Geospatial Knowledge



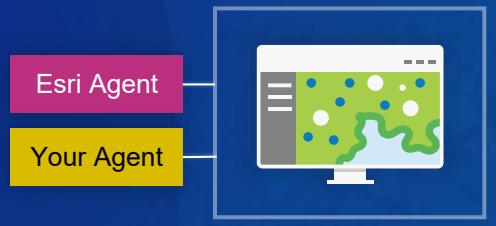
Natural language UX powered by geospatial agents

Configure apps (No Code)



Data Explorer
Instant App
Experience Builder

Code custom apps



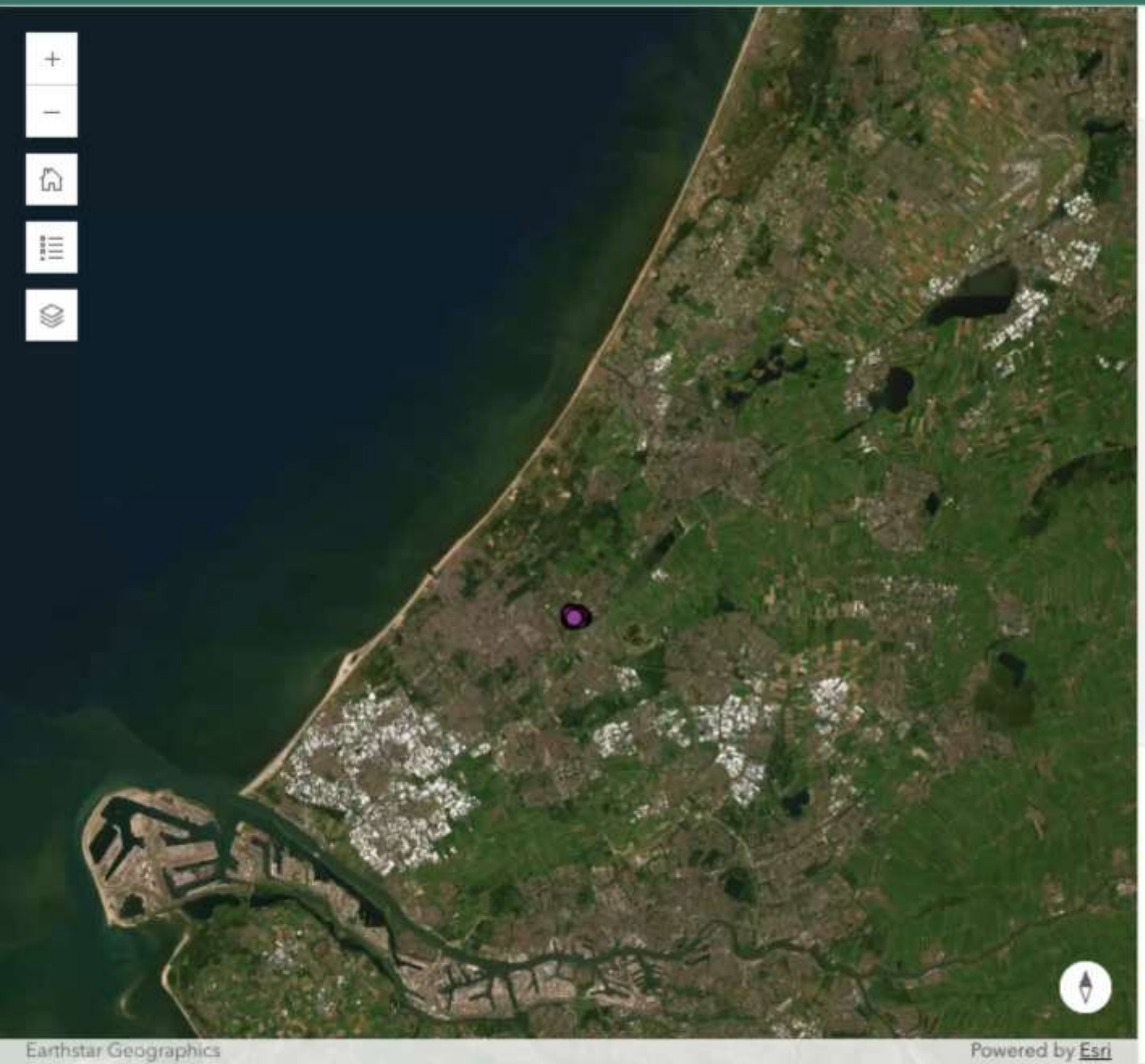
ArcGIS Maps SDK
for JavaScript

Expanding the reach of GIS

Building Agentic Mapping Apps

With the Maps SDK for JavaScript

RA
Rami Alouta
ralouta_arcdev



Map Assistant

Ask questions about the map and its data.

Summarize the plant identification review status

Show oak trees

Show approved plants

Hello! Ask me anything about this map.

Type your message here...

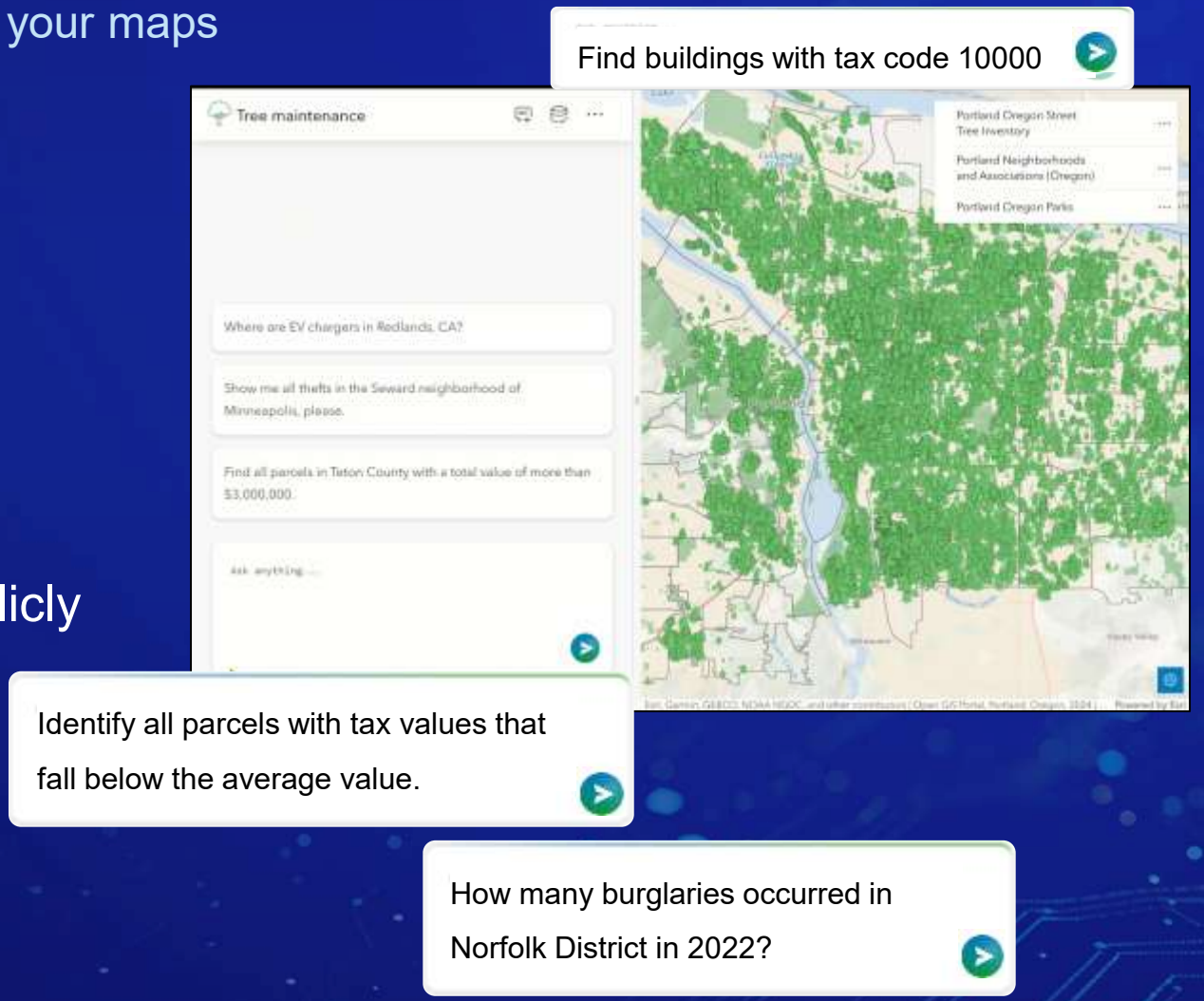
Ask

Data Explorer Instant App template

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



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ArcGIS AI Assistants

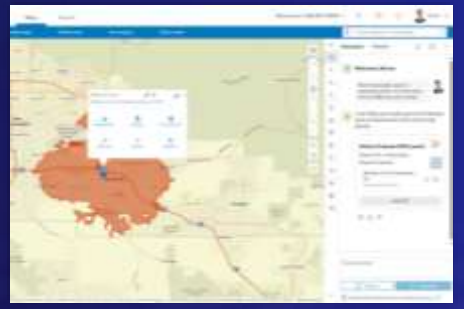
Streamlining Your Work and Making ArcGIS Easier

Arcade (Code Generation)

Solutions (Discover and Deploy)

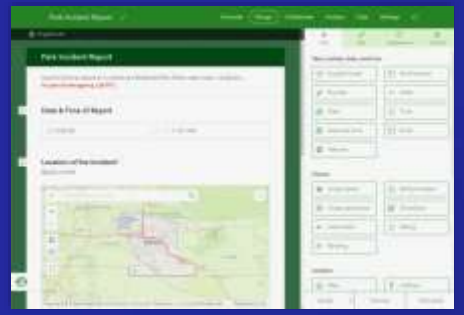
Documentation (All Products)

Business Analyst (Analysis & Mapping)



ArcGIS (Copilot Integration)

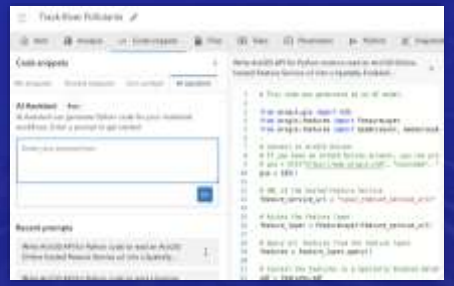
Survey123 (Survey Creation)



Pro (User Productivity)

StoryMaps (Storytelling, Writing)

Notebooks (Code Generation)



Apps

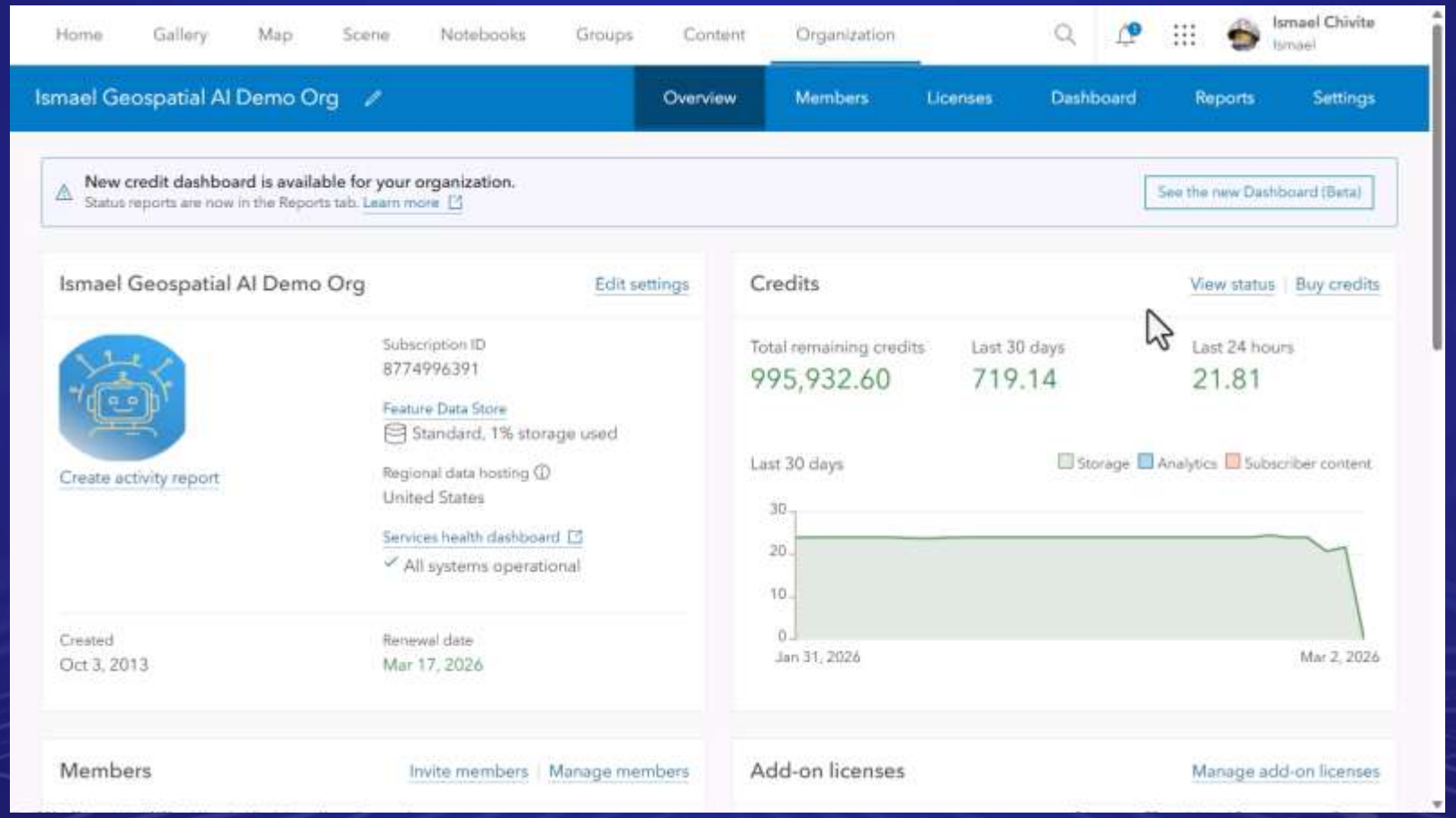
- Pro
- StoryMaps
- Hub
- Business Analyst
- Instant Apps
- Survey123
- Field Maps
- Drone2Map
- Microsoft Teams
- Notebooks
- ArcGIS Solutions
- . . .

Powered by Natural-Language and Generative AI

. . . Helping users be more productive

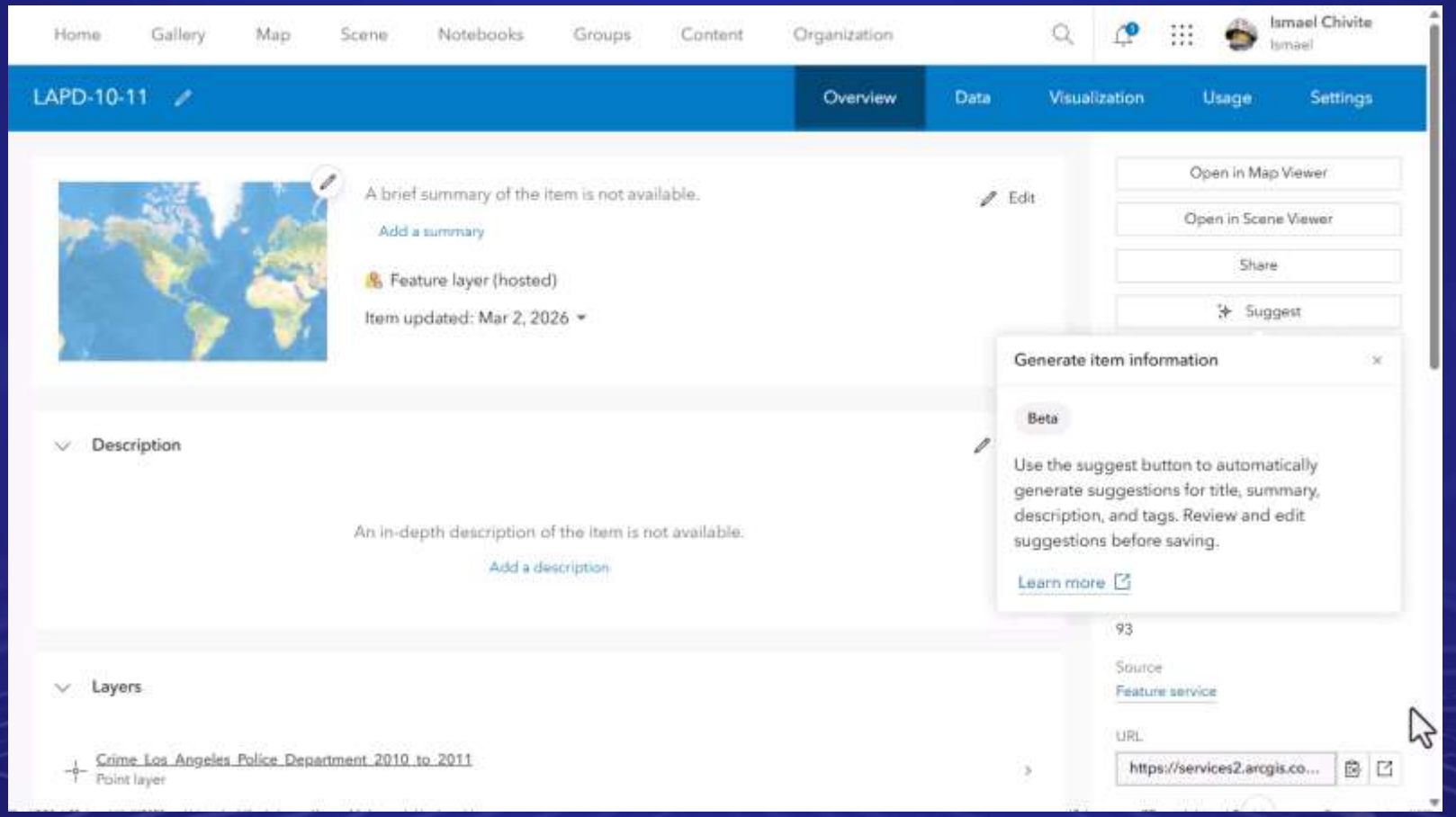
New Role Privilege for AI Assistants

Allows you to progressively rollout assistants across your organization

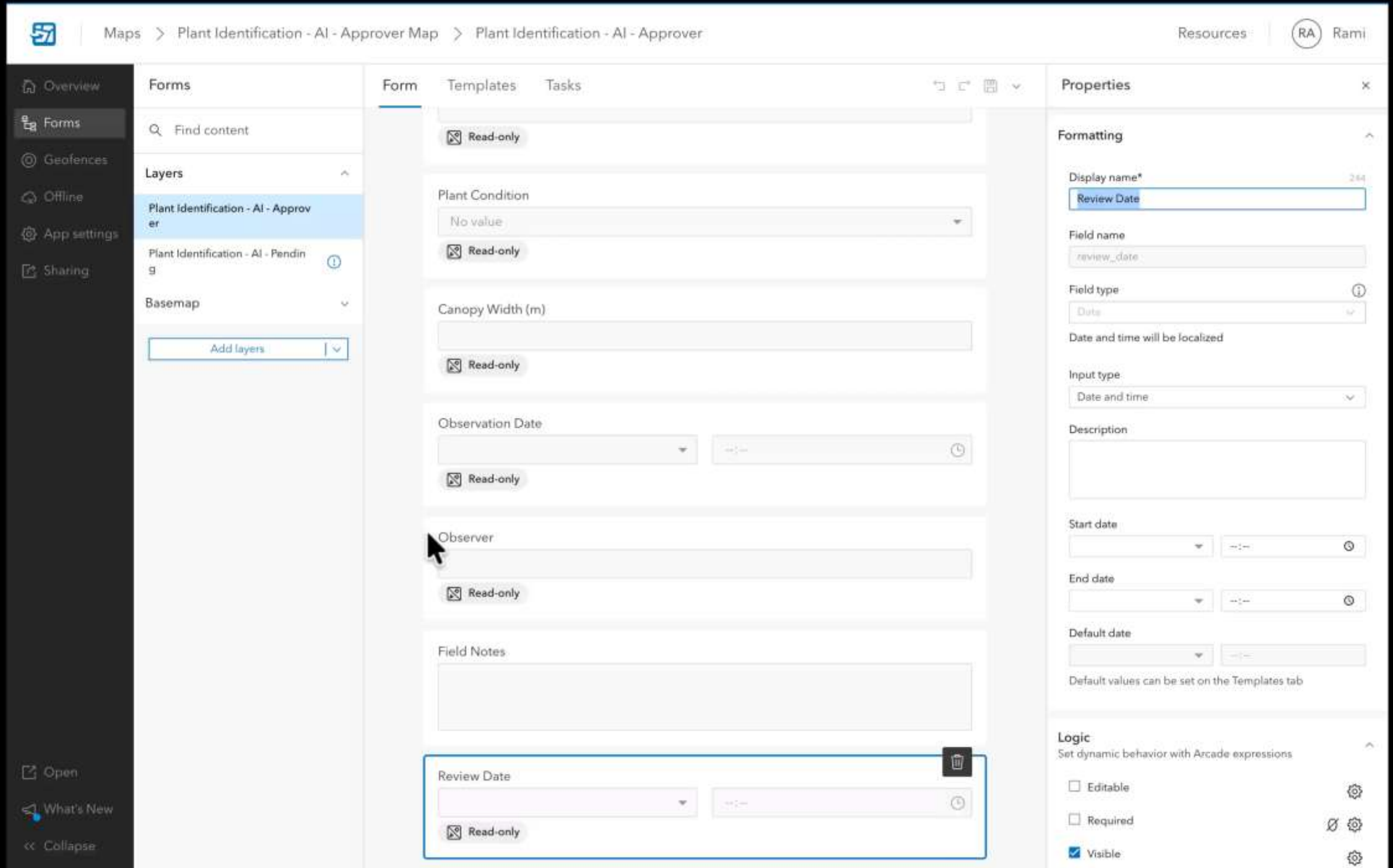


New Item Details Assistant

Make your data more discoverable, usable and AI-ready



Beta


Maps
Plant Identification - AI - Approver Map
Plant Identification - AI - Approver
Resources
RA
Rami
Overview
Forms
Geofences
Offline
App settings
Sharing
Open
What's New
Collapse
Forms
Find content
Layers
Plant Identification - AI - Approver
Plant Identification - AI - Pending
Basemap
Add layers
Form
Templates
Tasks
Read-only
Plant Condition
No value
Read-only
Canopy Width (m)
Read-only
Observation Date
Read-only
Observer
Read-only
Field Notes
Review Date
Read-only
Properties
Formatting
Display name*
Review Date
Field name
review_date
Field type
Date
Date and time will be localized
Input type
Date and time
Description
Start date
End date
Default date
Default values can be set on the Templates tab
Logic
Set dynamic behavior with Arcade expressions
Editable
Required
Visible

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AI Tools and Models

AI-Driven Geospatial Data Extraction & Analytics

Data Types:

- Imagery, 3D, Text, Vector and Time Series

Workflows:

- Feature Extraction, Change Detection, Text Entity Extraction . . .
- Feature Classification, Pixel Classification, Image Interrogation
- Similarity Search, Predictive Analysis, Anomaly Detection . . .

GeoAI Models:

- Ready-to-Use, ArcGIS Living Atlas of the World
- Train Your Own, Deep Learning Studio, Pro or Python
- AI Services, Wide Range of LLMs Integration

Available with ArcGIS Pro 3.7

- Location Embeddings

Object Detection

3D Feature Extraction

Change Detection

Time Series Forecasting

Entity Extraction

Building Footprint Detection

Landcover Classification

AI Tools and Models

Key Terms

Model Types

How does Esri integrate with…

Generalized Models

Foundation Models

Vision Language Models

Multimodal Models

Large Language Models

Open-Source Models

Task Specific Models

Natural Language Processing Models

Fine-tuned Models

AI Tools and Models

Key Terms

Model Types

- **Foundation Models**
- **Task Specific Models**
- **Generalized Models**
- **Open-Source Models**

GeoAI Tools and Models

Key Terms

Model Types

Foundation Models

Build once, adapt everywhere

Why it matters:

Foundation models speed up results and enable large-scale analyses that were once impractical.

Task Specific Models

Optimized for a single use purpose

Why it matters:

Best choice when reliability, precision, and repeatability are critical.

Generalized Models

One Model, Many Applications

Why it matters:

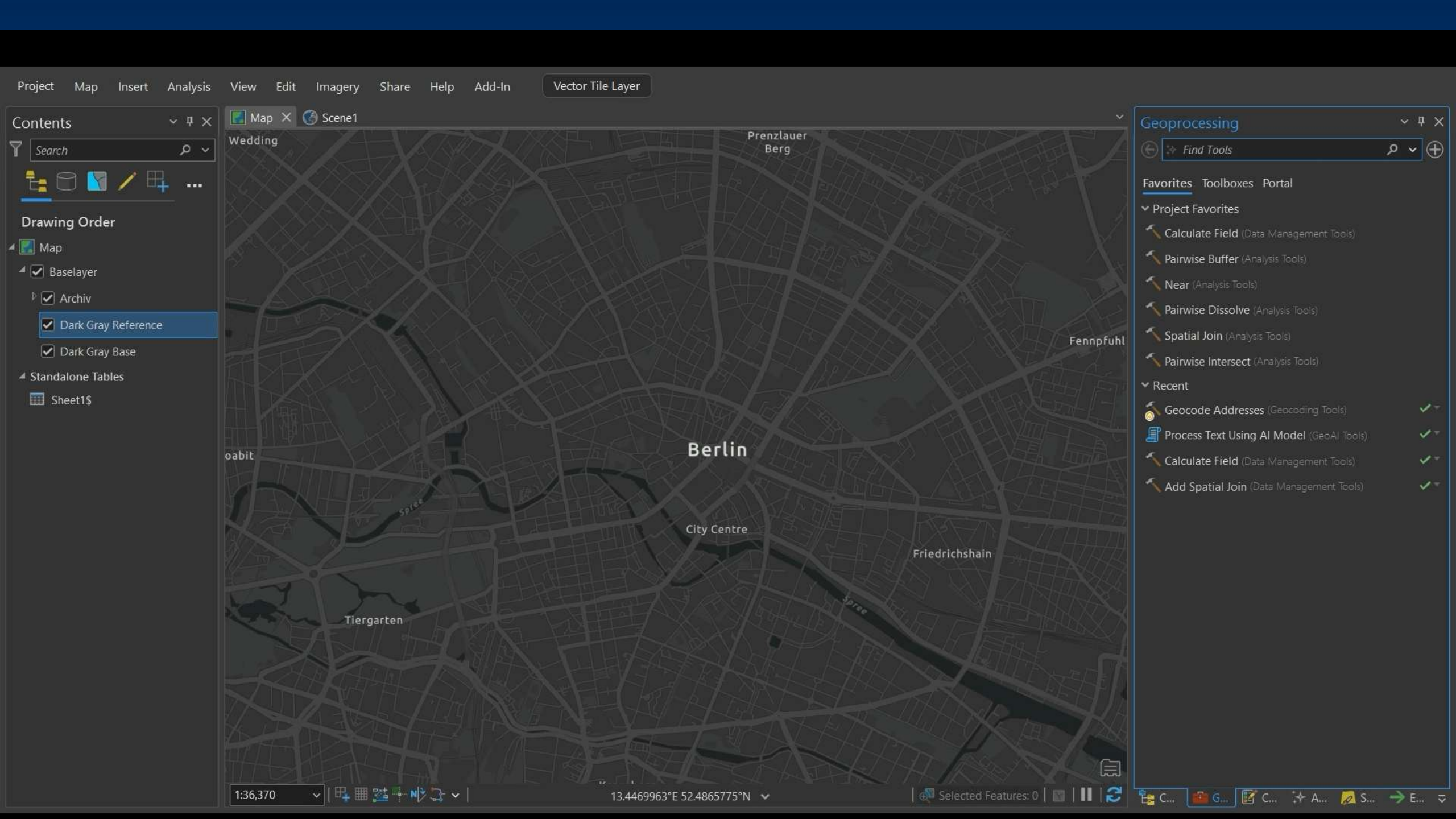
Ideal for customers who need results across many use cases without creating or managing many separate models.

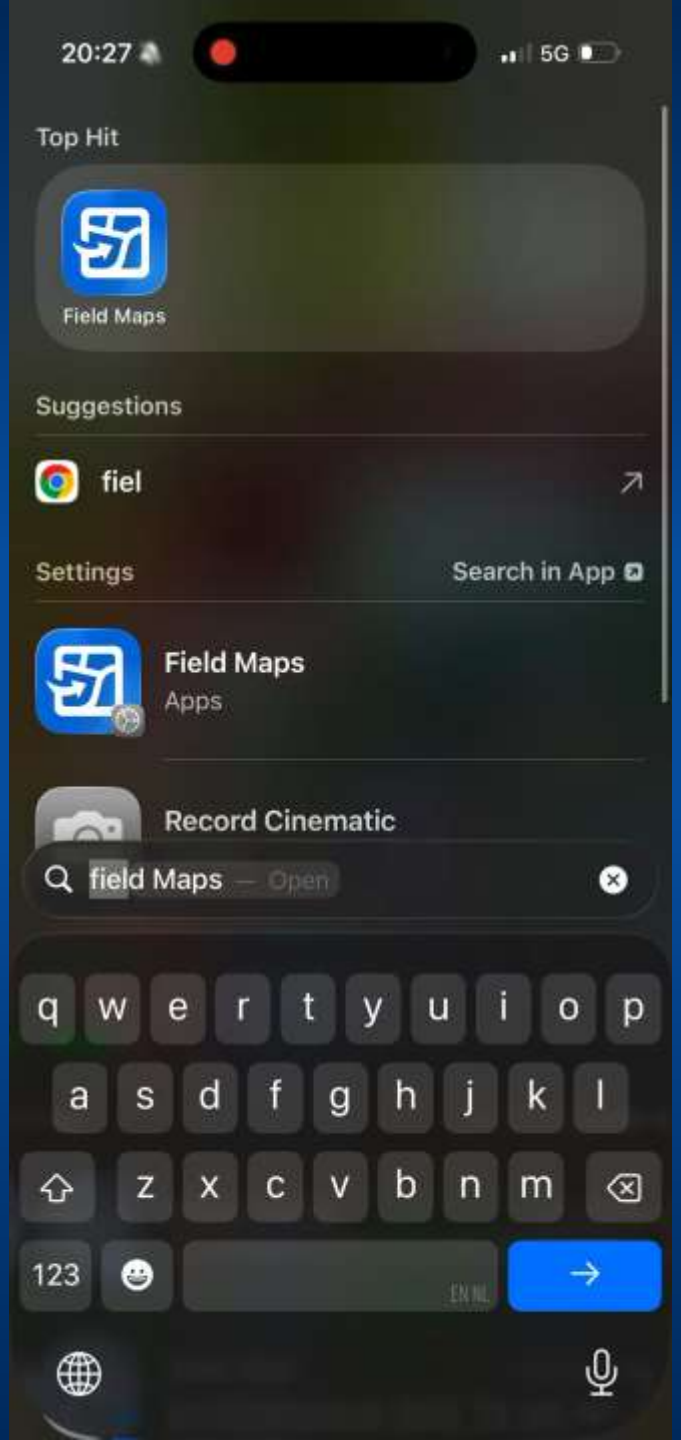
Open-Source Models

Extensible and community-driven

Why it matters:

Provides flexibility and innovation while allowing organizations to retain control.


Project
Map
Insert
Analysis
View
Edit
Imagery
Share
Help
Add-In
Vector Tile Layer
Contents
Search
Drawing Order
Map
Baselayer
Archiv
Dark Gray Reference
Dark Gray Base
Standalone Tables
Sheet1$
Map
Scene1
Wedding
Prenzlauer Berg
Fennpfuhl
Berlin
City Centre
Friedrichshain
Tiergarten
Spree
1:36,370
13.4469963°E 52.4865775°N
Selected Features: 0
Geoprocessing
Find Tools
Favorites
Toolboxes
Portal
Project Favorites
Calculate Field (Data Management Tools)
Pairwise Buffer (Analysis Tools)
Near (Analysis Tools)
Pairwise Dissolve (Analysis Tools)
Spatial Join (Analysis Tools)
Pairwise Intersect (Analysis Tools)
Recent
Geocode Addresses (Geocoding Tools)
Process Text Using AI Model (GeoAI Tools)
Calculate Field (Data Management Tools)
Add Spatial Join (Data Management Tools)


20:27
5G
Top Hit
Field Maps
Suggestions
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Settings
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Field Maps
Apps
Record Cinematic
field Maps — Open
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
EN NL

AI-Powered Plant Identification

Collector view → AI enrichment → In Review

This notebook is the AI enrichment step in the field collection workflow. All the mechanics live in the `plant_identification/` package — the notebook itself stays short and readable.

Four steps:

1. Load the Collector view layer
2. Query pending features with photo attachments
3. Analyse photos with AI (shot-type-aware merge)
4. Apply the enriched attributes and flip status to `In Review`

Empty markdown cell, double-click or press enter to edit.

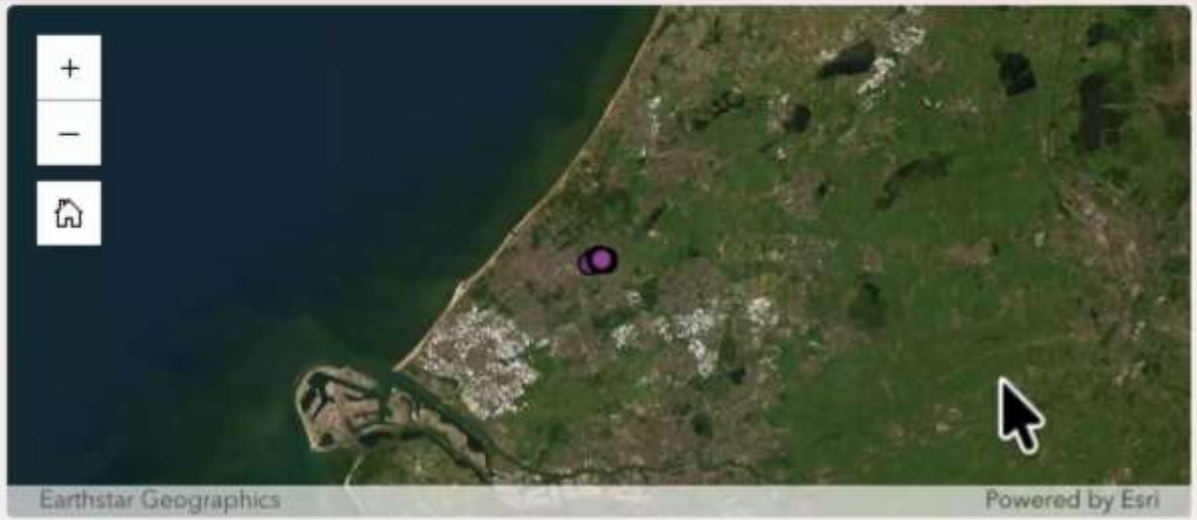
Keep Undo

```python
import sys, os
sys.path.insert(0, os.path.abspath(".."))

import plant_identification as pi

cfg = pi.load_config("../configs/plant-identification.example.json")
gis = pi.connect(cfg.portal_url, username=cfg.username)
```

[1] ✓ 8.2s Python

```
Setting `verify_cert` to False is a security risk, use at your own risk.
Signed in as: ralouta.aiddev (ArcGIS Online)
```

REVIEW PLANT SUBMISSIONS



Select a Submission | Approve Submission

Search

Rose | Rosa
Date of Submission: 4/21/26, 6:35 PM
Observer: Rami Alouta
Status: Needs Revision
Select to Approve

Tree |
Date of Submission: 4/23/26, 8:08 AM
Observer: Rami Alouta
Status: In Review
Select to Approve

Linden | Tilia
Date of Submission: 4/21/26, 7:42 PM
Observer: Rami Alouta
Status: In Review
Select to Approve

Approved | Pending Review | Needs Revision | In Review | Rejected

< 11 of 44 >

No plant name recorded - In Review

Plant Observation Summary

Common Name	N/A
Latin Name	N/A
Family	N/A
Plant Type	Tree
Plant Condition	Healthy
Height (m)	5.00
Canopy Width (m)	1.75
Observation Date	23 Apr 2026
Observer	Rami Alouta

Detect Objects Using Deep Learning

Imagery → Model → Features

This notebook runs a deep-learning object-detection model over a patch of imagery, cleans the raw detections, and publishes them as a hosted feature layer. All the mechanics live in the `detect_objects/` package — the notebook itself stays short and readable.

Five steps:

1. Load imagery
2. Draw the analysis area on the map
3. Pick a deep-learning model
4. Detect objects
5. Clean and publish the results

Setup — sign in and load the run configuration

```
import sys, os
sys.path.insert(0, os.path.abspath(".."))

import detect_objects as do

cfg = do.load_config("../configs/detect-objects.example.json")
gis = do.connect(cfg.portal_url, username=cfg.username)
```

[17] ✓ 10.7s Python

ArcGIS Reality

Multi-Platform, Multi-Sensor, Multi-Scale, Multi-Deployment

Process & Manage

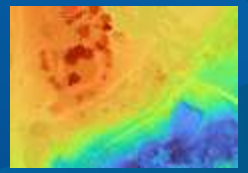
3D

Mesh

Point Cloud

Digital Elevation Model

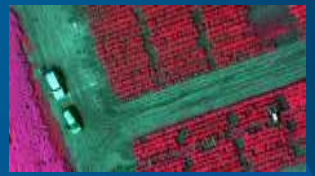
Terrain Model



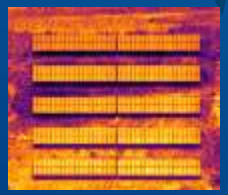
Surface Model

True Ortho

Natural Color



Multispectral



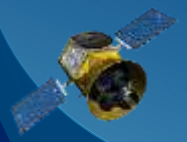
Thermal

Oriented Imagery

Still Images & Video

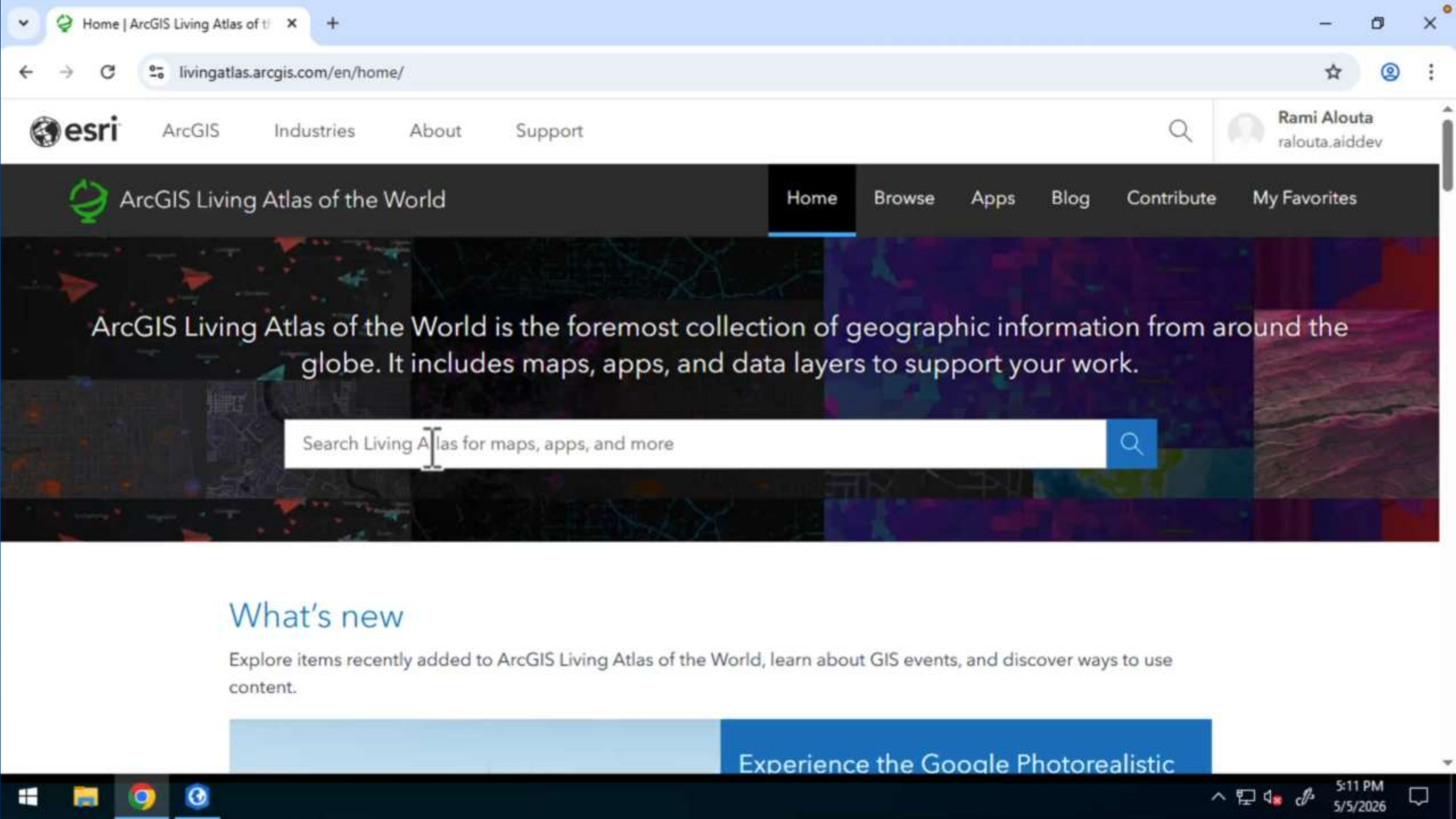
Input Imagery

Drone
Aerial
Satellite



RGB
Thermal
Multispectral
Lidar (Coming soon)

Analyze & Share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Support
Rami Alouta
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ArcGIS Living Atlas of the World
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Blog
Contribute
My Favorites
ArcGIS Living Atlas of the World is the foremost collection of geographic information from around the globe. It includes maps, apps, and data layers to support your work.
Search Living Atlas for maps, apps, and more
What's new
Explore items recently added to ArcGIS Living Atlas of the World, learn about GIS events, and discover ways to use content.
Experience the Google Photorealistic
5:11 PM
5/5/2026

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AI Tools & Models

Advancing Science

AI Assistants

Improve Access & Efficiency

Productivity

AI Agents

Automating Work, Enabling Apps, . . .

Collaboration

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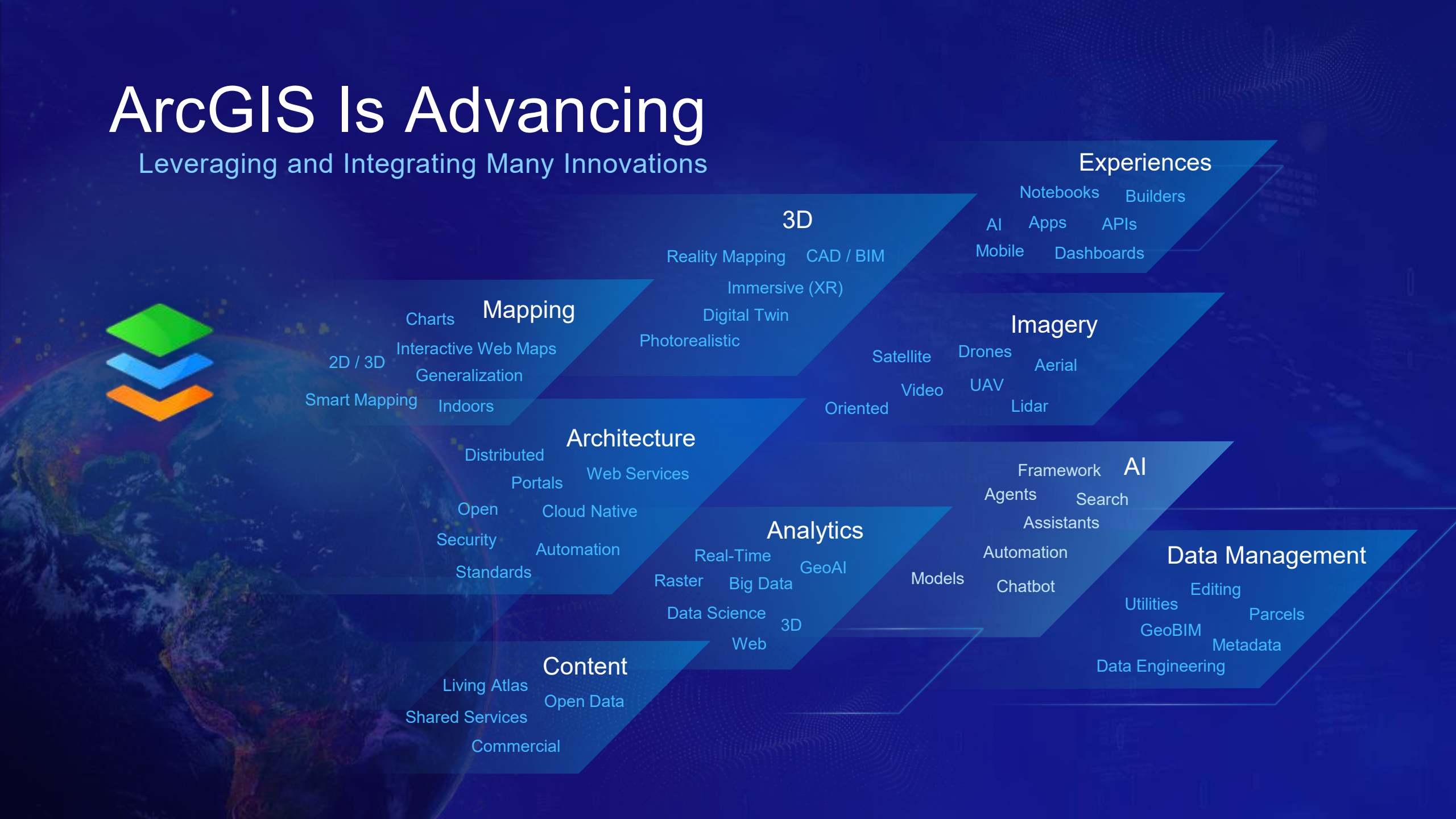

esri
THE
SCIENCE
OF
WHERE