

Amorphic Spatial Intelligence

Unlock the Spatial Data Your Organization Already Owns

Add natural language search, automated data lineage, and AI-powered spatial querying to your existing ArcGIS environment, without replacing what your GIS team already runs.

Executive Summary

City and county GIS teams do not have a data problem. They have an access problem.

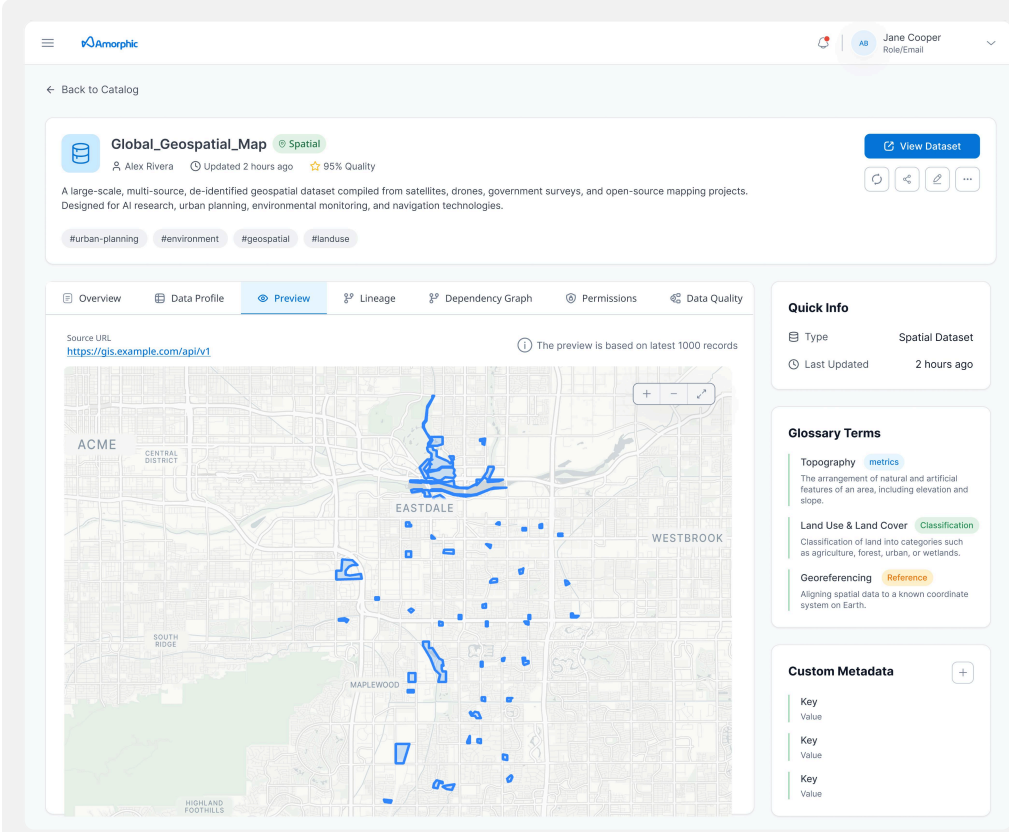
Spatial data underpins nearly every city and county operation. GIS platforms manage it with precision. But extending that value across departments and into AI-powered workflows runs into three consistent friction points.

Discoverability. Spatial catalogs are built for specialists who know what they are looking for. Staff who need a dataset but cannot name it exactly have no reliable way to find it, leaving data underused and GIS specialists fielding requests instead of building.

Lineage. Spatial datasets exist within layered hierarchies of connected resources. Reconstructing those relationships requires manual investigation on every new project.

Spatial querying. Answering a geographic question requires expertise most department staff do not have. Without plain-language access, spatial intelligence moves slowly and only through specialist intermediaries.

Amorphic Spatial Intelligence closes all three gaps without replacing the GIS platform your organization already runs.



The screenshot displays the Amorphic Spatial Intelligence web application interface. At the top, the Amorphic logo is on the left, and a user profile for Jane Cooper is on the right. Below the header, a navigation bar includes a 'Back to Catalog' link. The main content area features a dataset card for 'Global_Geospatial_Map' by Alex Rivera, updated 2 hours ago, with a 95% quality rating. The card includes a description, tags (#urban-planning, #environment, #geospatial, #landuse), and a 'View Dataset' button. Below the card is a tabbed interface with 'Preview' selected, showing a map of a city with various data layers. The map includes labels for ACME, CENTRAL DISTRICT, EASTDALE, WESTBROOK, SOUTH RIDGE, MARLEWOOD, and HIGHLAND FOOTHILLS. To the right of the map, there is a 'Quick Info' section with 'Type: Spatial Dataset' and 'Last Updated: 2 hours ago'. Below that is a 'Glossary Terms' section with entries for 'Topography' (metrics), 'Land Use & Land Cover' (Classification), and 'Georeferencing' (Reference). At the bottom right is a 'Custom Metadata' section with a table for key-value pairs.

Key	Value
Key	Value
Key	Value
Key	Value

Four Capabilities That Change What Your Teams Can Do

ArcGIS Online Connector and Spatial Data Ingestion

Your ArcGIS data, automatically indexed and ready to use.

Amorphic connects to ArcGIS Online via REST API and to SQL Server geodatabases via JDBC, ingesting spatial datasets, metadata, and item relationships automatically. Beyond the data itself, Amorphic captures the full technical metadata from each ArcGIS item, including tags, spatial references, coordinate system information, and custom attributes, making that detail searchable and visible in the catalog. Ingestion can be scoped to specific ArcGIS groups, giving administrators control over which content enters the platform. Once data lands in Amorphic, it is immediately available for search, lineage visualization, and spatial querying without any additional setup. No manual export, no data migration, no disruption to existing GIS workflows.



Feature Layers ingested as full datasets;
Dashboards, Hub Pages, and Hub Site
Applications ingested as searchable catalog
entries



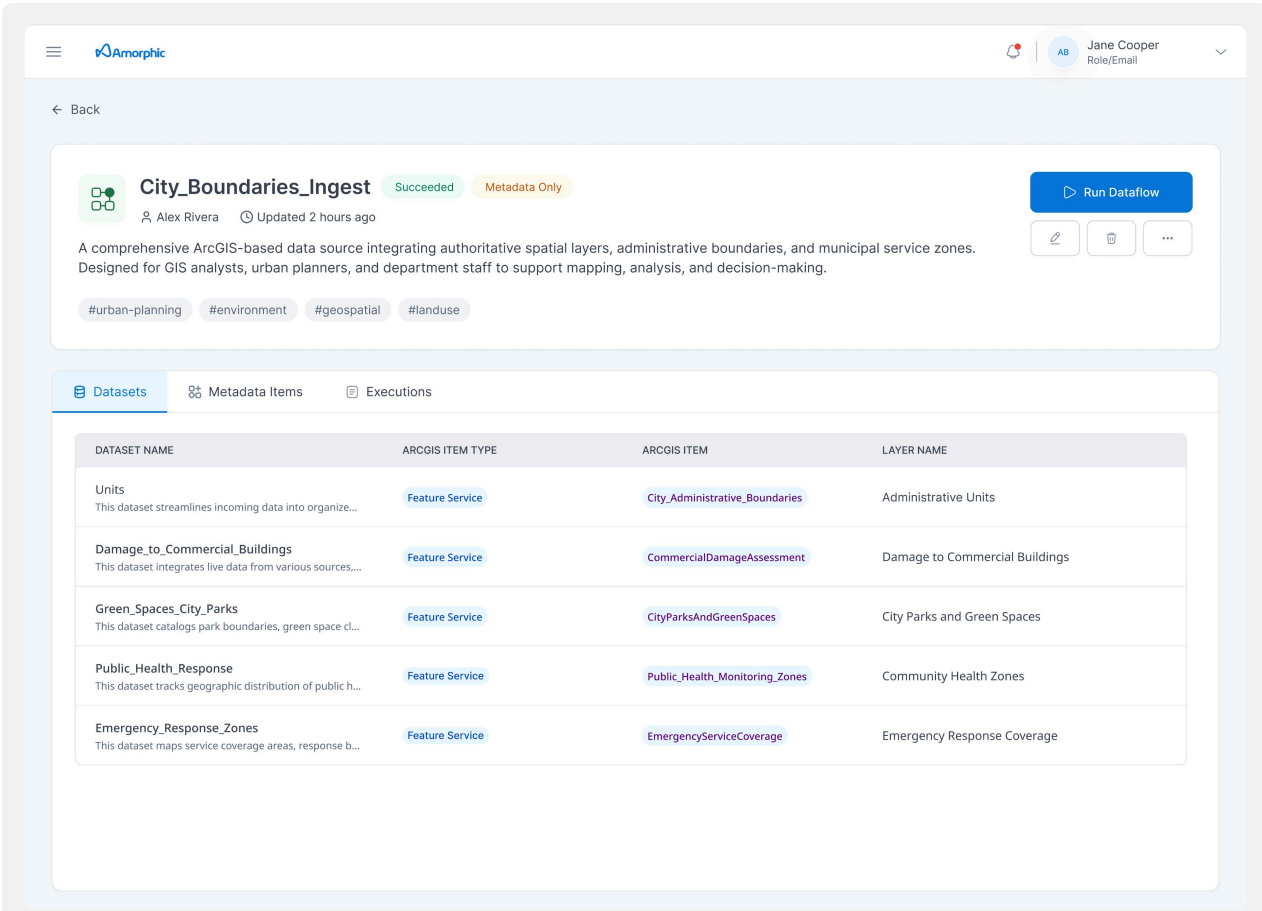
SQL Server geodatabases and other sources
with spatial columns supported



Group-level filtering for selective, controlled
ingestion from ArcGIS Online



All spatial data indexed in one catalog
alongside other enterprise data



The screenshot displays the Amorphic web application interface. At the top, there's a navigation bar with the Amorphic logo, a user profile for Jane Cooper, and a 'Back' button. The main content area shows a dataset card for 'City_Boundaries_Ingest' by Alex Rivera, updated 2 hours ago. The card indicates it has 'Succeeded' and 'Metadata Only' status, and includes a 'Run Dataflow' button. Below the card, there are tags for #urban-planning, #environment, #geospatial, and #landuse. A tabbed interface below the card shows 'Datasets', 'Metadata Items', and 'Executions'. The 'Datasets' tab is active, displaying a table of ingested datasets.

DATASET NAME	ARCgis ITEM TYPE	ARCgis ITEM	LAYER NAME
Units This dataset streamlines incoming data into organize...	Feature Service	City_Administrative_Boundaries	Administrative Units
Damage_to_Commercial_Buildings This dataset integrates live data from various sources,...	Feature Service	CommercialDamageAssessment	Damage to Commercial Buildings
Green_Spaces_City_Parks This dataset catalogs park boundaries, green space cl...	Feature Service	CityParksAndGreenSpaces	City Parks and Green Spaces
Public_Health_Response This dataset tracks geographic distribution of public h...	Feature Service	Public_Health_Monitoring_Zones	Community Health Zones
Emergency_Response_Zones This dataset maps service coverage areas, response b...	Feature Service	EmergencyServiceCoverage	Emergency Response Coverage

Natural Language and Semantic Search

Find any spatial dataset by describing what you need.

Staff type a question in plain English and receive relevant datasets with metadata and an embedded map preview. No exact dataset name required. The search works across all ingested spatial content regardless of item type, surfacing Feature Layers, Dashboards, and Hub resources in a single unified result set. Non-GIS staff can access spatial data independently; GIS specialists spend less time on discovery requests. From search results, users can select one or more datasets and move directly into the SQL AI environment to query them, making the catalog the starting point for end-to-end spatial analysis rather than a dead end.



Similarity search surfaces related datasets even when terminology differs



Embedded map preview shows spatial data directly in the platform



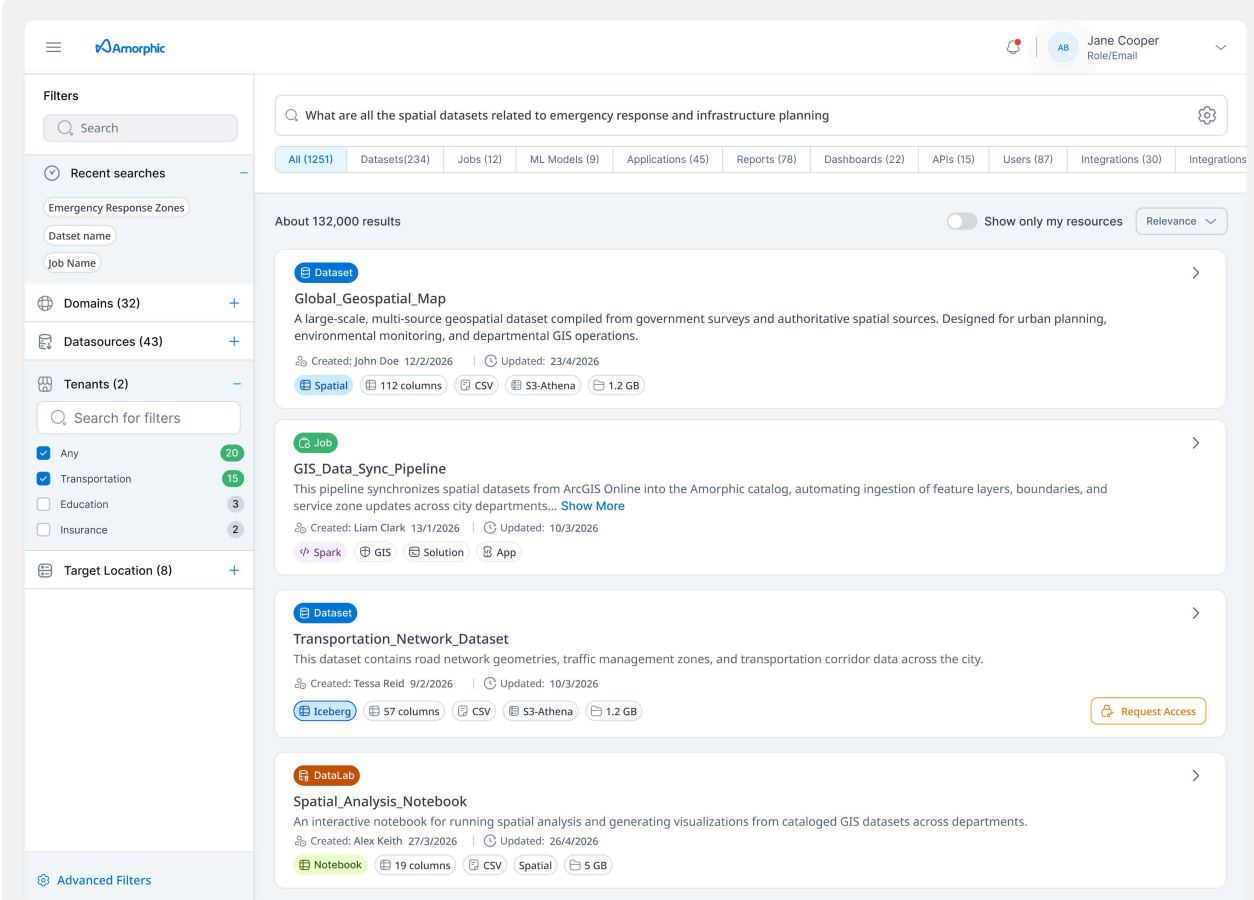
Click any map point to see its underlying data inline



Direct link to the source item in the originating GIS system



Select datasets from search results to query directly in Spatial SQL AI



The screenshot displays the Amorphic user interface. At the top, the user is logged in as Jane Cooper. A search bar contains the query: "What are all the spatial datasets related to emergency response and infrastructure planning". Below the search bar, a filter sidebar on the left shows categories like Domains (32), Datasources (43), and Tenants (2). The main results area shows "About 132,000 results" and lists several items:

- Global_Geospatial_Map** (Dataset): A large-scale, multi-source geospatial dataset compiled from government surveys and authoritative spatial sources. Designed for urban planning, environmental monitoring, and departmental GIS operations. Created: John Doe 12/2/2026 | Updated: 23/4/2026. Tags: Spatial, 112 columns, CSV, S3-Athena, 1.2 GB.
- GIS_Data_Sync_Pipeline** (Job): This pipeline synchronizes spatial datasets from ArcGIS Online into the Amorphic catalog, automating ingestion of feature layers, boundaries, and service zone updates across city departments... [Show More](#). Created: Liam Clark 13/1/2026 | Updated: 10/3/2026. Tags: Spark, GIS, Solution, App.
- Transportation_Network_Dataset** (Dataset): This dataset contains road network geometries, traffic management zones, and transportation corridor data across the city. Created: Tessa Reid 9/2/2026 | Updated: 10/3/2026. Tags: Iceberg, 57 columns, CSV, S3-Athena, 1.2 GB. [Request Access](#)
- Spatial_Analysis_Notebook** (DataLab): An interactive notebook for running spatial analysis and generating visualizations from cataloged GIS datasets across departments. Created: Alex Keith 27/3/2026 | Updated: 26/4/2026. Tags: Notebook, 19 columns, CSV, Spatial, 5 GB.

Automated Data Lineage and Dependency Graph

See exactly where every piece of spatial data comes from, including what you have not yet ingested.

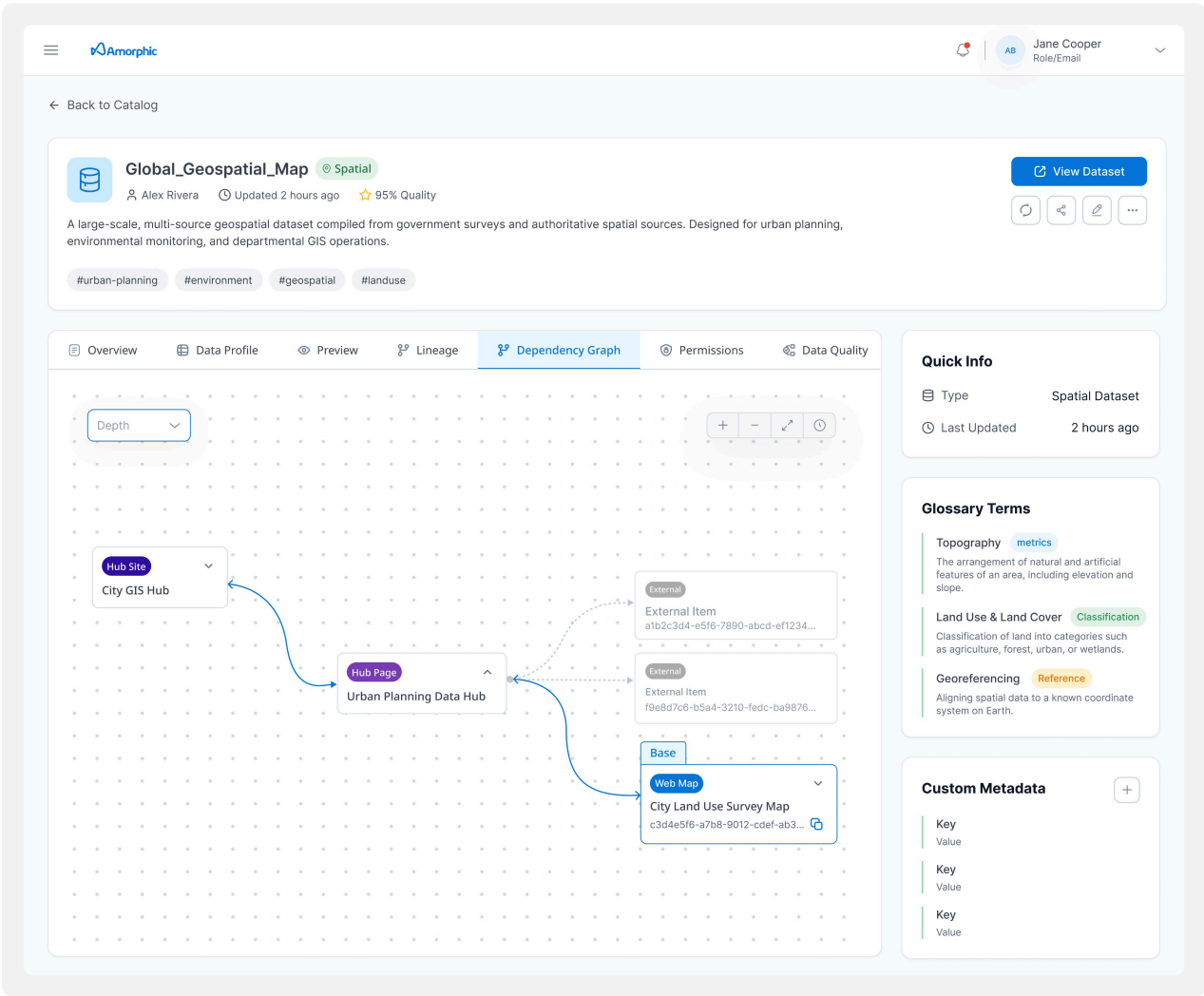
Amorphic captures the full ArcGIS item hierarchy on ingestion: Feature Layers through Feature Services, Dashboards, Hub Pages, and Hub Site Applications. This dependency graph is surfaced visually in the catalog with embedded links back to the source. Items not yet ingested into Amorphic appear as grayed-out nodes, giving teams full ecosystem visibility from day one without requiring complete ingestion of the ArcGIS environment. For developers building new maps, analytics pipelines, or data products, visible dependencies mean fewer surprises mid-project and significantly less time spent reconstructing source relationships before work can begin. Every node in the graph links directly back to the originating item in ArcGIS Online, so developers can navigate from the catalog to the source and back without switching contexts.

Visual dependency graph for every GIS-sourced dataset, including grayed-out nodes for non-ingested items

Embedded source links for direct navigation to originating GIS items

Full ecosystem visibility without requiring complete ingestion

Lineage also captured for SQL Server data through ETL transformations



Spatial SQL AI

Ask a geographic question. Get an answer without writing a query.

Analysts type the question they need answered and the system builds and executes the spatial SQL query automatically. The model is automatically provided the dataset schema and geometry type at query time, improving accuracy on spatial queries without additional configuration from the user. Spatial AI supports standard geographic operations including boundary analysis, proximity queries, and point-in-polygon calculations. Users can review the generated query, refine it with natural language feedback, or run it directly. Supports ST_Within, ST_Buffer, ST_Contains, and other spatial functions via Athena. Results can be saved as new datasets, queried further, or routed to PowerBI or Amazon QuickSight for visualization.



Natural language spatial queries against any cataloged dataset



Auto-context provides the model with schema and geometry type for improved accuracy



Spatial SQL functions via Athena: ST_Within, ST_Buffer, ST_Contains, and others



Query results saveable as new datasets or exportable to external BI tools

Workbook Name: City Parks Spatial Analysis

Fetch park IDs, names, and buffered geometries (100 units) from the City Parks dataset

Thinking...

```
-- Unify all spatial datasets into a common structure:
-- feature_id | geom | attribute | source_dataset...
```

The above query returns park boundaries with a 100-unit buffer applied, ready for spatial analysis or export.

What would you like next?

Explain the Query

Edit / Run the Query

Code Edited... Run the Query

Thinking...

Results are here

I found the city park boundaries and applied a 100-unit buffer across 6 records.

What would you like next?

Download as CSV

Ask Anything...

Claude 3Haiku Chat Configuration

AI responses may be inaccurate, please verify the responses.

Results

I found the city park boundaries and applied a 100-unit buffer across 6 records.

OBJECTID	PARKNAME	BUFFERED_WKT
1	Central City Park	POLYGON ((-118.243 34...
2	Riverside Community Park	POLYGON ((-118.243 34...
3	Memorial Gardens Park	POLYGON ((-118.243 34...
4	Lakeside Recreation Area	POLYGON ((-118.243 34...
5	Veterans Memorial Park	POLYGON ((-118.243 34...
6	Northside Sports Complex	POLYGON ((-118.243 34...

Ways Cities And Counties Put This To Work

GIS Data Discovery and Catalog Management	Give every team a searchable window into all spatial data, reducing duplication and freeing GIS specialists from constant discovery requests.
Public Safety and Emergency Response	Query incident coverage, resource locations, and service area gaps in plain language, without a specialist in the room.
Public Health Surveillance	Map where incidents cluster geographically and query density by zone without involving GIS staff for each request.
Urban Planning and Permitting	Combine GIS data with permitting records for spatial queries on land use, development density, and infrastructure proximity.
Infrastructure and Utilities Management	Connect spatial records with work order systems and query the combined data to identify coverage gaps and prioritize maintenance.
Law Enforcement and Crime Pattern Analysis	Surface crime density patterns and query incident data by geographic area without routing every request through an analyst.
Citizen Services and Public Portal Development	Process and analyze spatial data internally, then use those outputs to power resident-facing portals for permits, service requests, and public infrastructure.

Who Amorphic Spatial Intelligence Serves

 GIS Manager Less time on discovery requests. More time building.	 Department Analyst Independent access to spatial data. No waiting on the GIS team.
 GIS Developer Faster delivery on every GIS project, from first look to final product.	 IT Director Spatial data governed across the organization. Full control over access and visibility.
 Department Director Every department moves faster on spatial decisions. No organizational bottlenecks.	

What Organizations Achieve



GIS Data That Every Team Can Use

Any staff member can find, preview, and query spatial data without a GIS specialist. Functionally inaccessible data becomes a shared resource.



Developer Productivity On Every GIS Project

Automated lineage eliminates manual dependency reconstruction. Developers see the full source chain from the moment they open a dataset.



Spatial Analysis Without The Bottleneck

Departments get answers directly. GIS team time shifts from fielding queries to building with data.



GIS As The Entry Point For Broader Data Unification

Organizations that solve the GIS access problem consistently expand Amorphic to connect police, fire, HR, and permitting data alongside it.



No ArcGIS Replacement Required

Amorphic connects via API without disrupting existing workflows or tools. The GIS investment is extended, not replaced.



Faster Development Of GIS-Powered Applications

One environment where ArcGIS data, lineage, and enterprise sources are all connected. No manual dependency discovery. Shorter development cycles.

Government-Grade Security And Control

Amorphic Spatial Intelligence is designed for the security and compliance requirements of city and county government. It deploys into the customer's own AWS environment, keeping all spatial data within the organization's infrastructure and governance boundary. Access controls apply consistently across every platform surface, from catalog search and lineage views to SQL AI queries. AI assists analysis and discovery; human judgment governs every decision.

Role-Based Access Controls

Full Audit Trails

Encryption At Rest And In Transit

Customer-Controlled AWS Deployment

Compliance-Aligned Controls

Human Judgment In Every Decision

Discover how Amorphic Spatial Intelligence can give your organization full access to the spatial data it already owns.

Contact Cloudwick To Schedule A Demonstration. 



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