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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.

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AB Jane Cooper
Role/Email

← Back to Catalog

Global_Geospatial_Map

Spatial

Alex Rivera · Updated 2 hours ago · 95% Quality

View Dataset

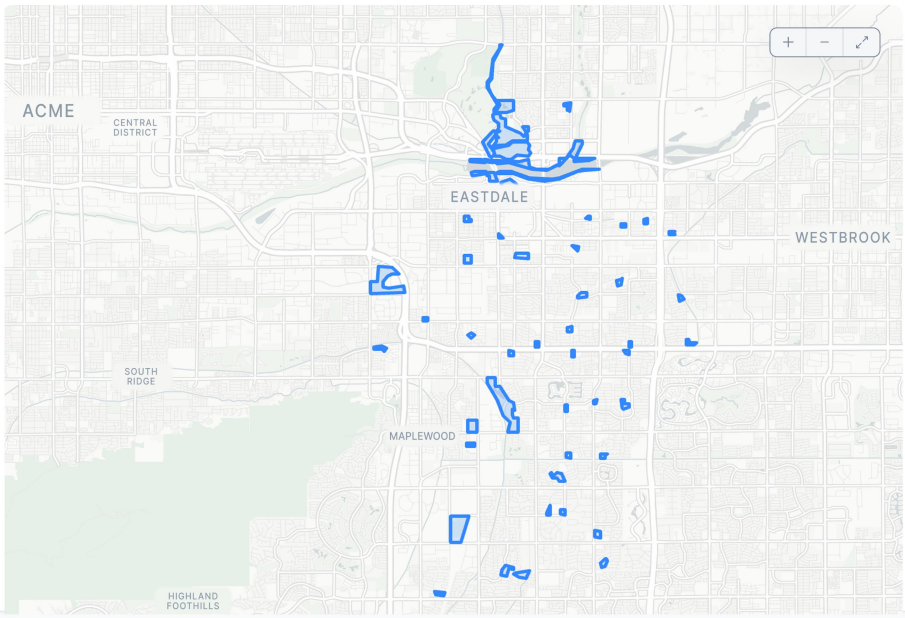
A large-scale, multi-source, de-identified geospatial dataset compiled from satellites, drones, government surveys, and open-source mapping projects. Designed for AI research, urban planning, environmental monitoring, and navigation technologies.

#urban-planning #environment #geospatial #landuse

Overview | Data Profile | Preview | Lineage | Dependency Graph | Permissions | Data Quality

Source URL
https://gis.example.com/api/v1

The preview is based on latest 1000 records



Quick Info

Type	Spatial Dataset
Last Updated	2 hours ago

Glossary Terms

Topography metrics
The arrangement of natural and artificial features of an area, including elevation and slope.

Land Use & Land Cover Classification
Classification of land into categories such as agriculture, forest, urban, or wetlands.

Georeferencing Reference
Aligning spatial data to a known coordinate system on Earth.

Custom Metadata

Key
Value

Key
Value

Key
Value

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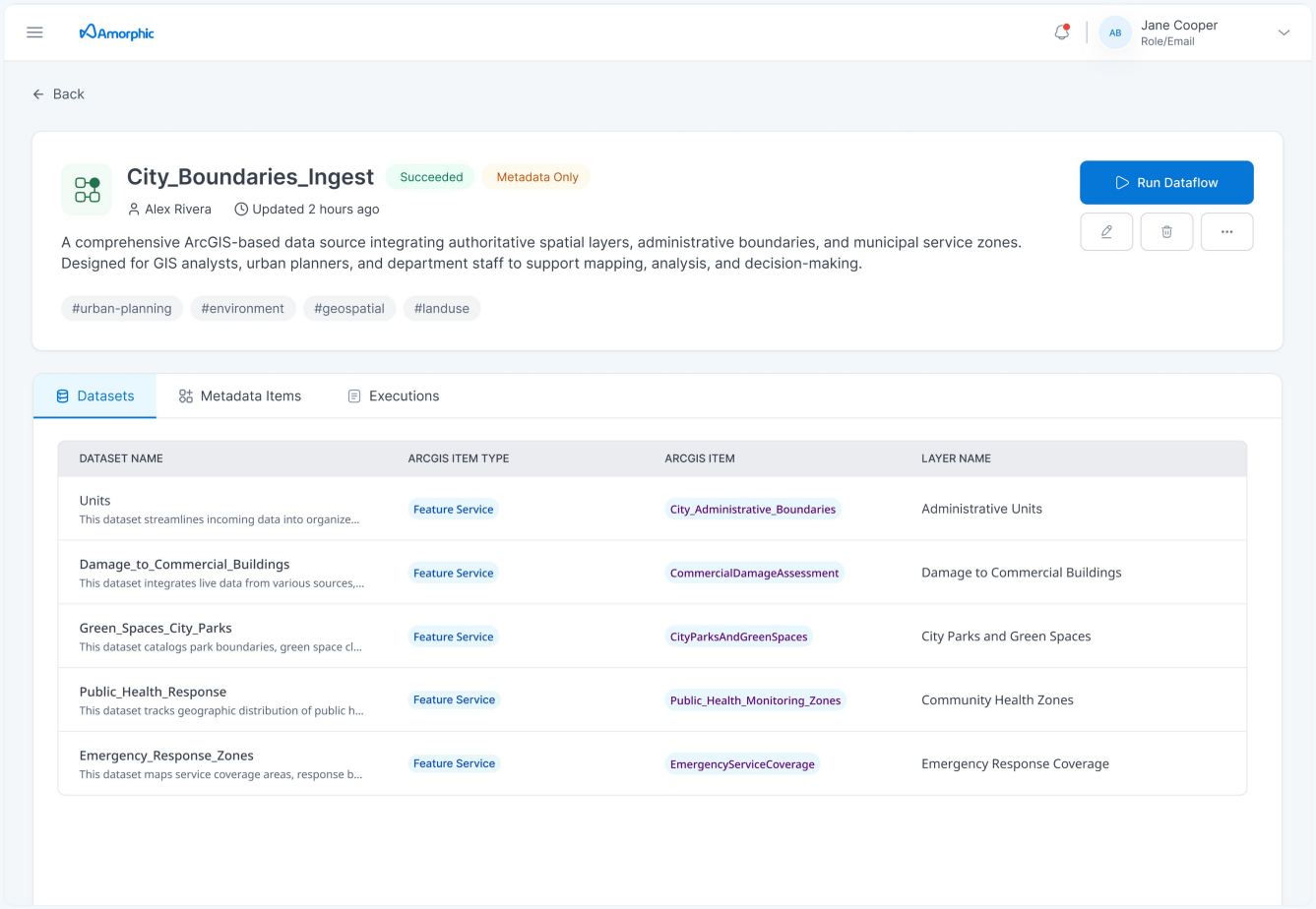
Four Capabilities That Change What Your Teams Can Do

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



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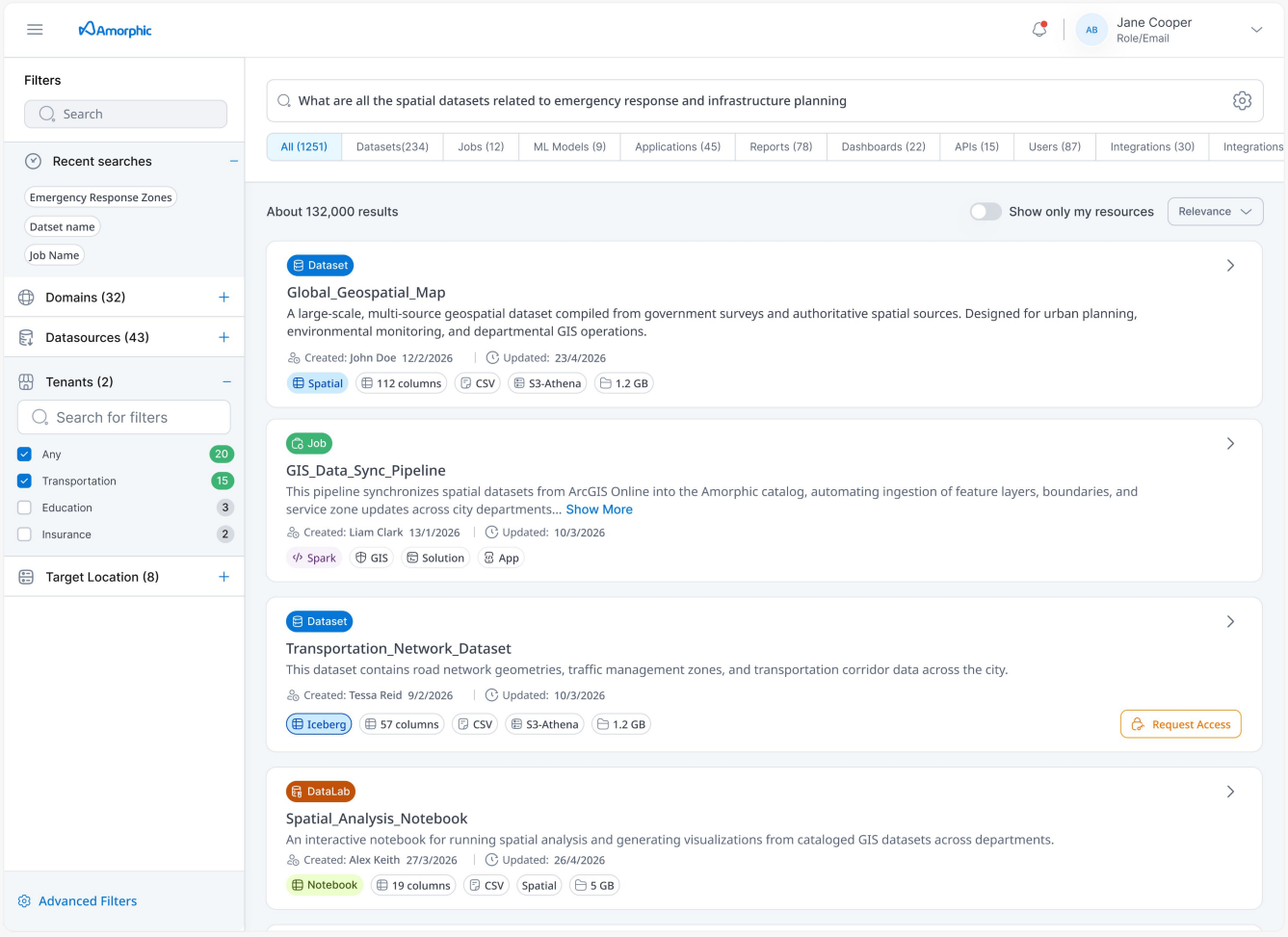
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NATURAL LANGUAGE AND SEMANTIC SEARCH

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



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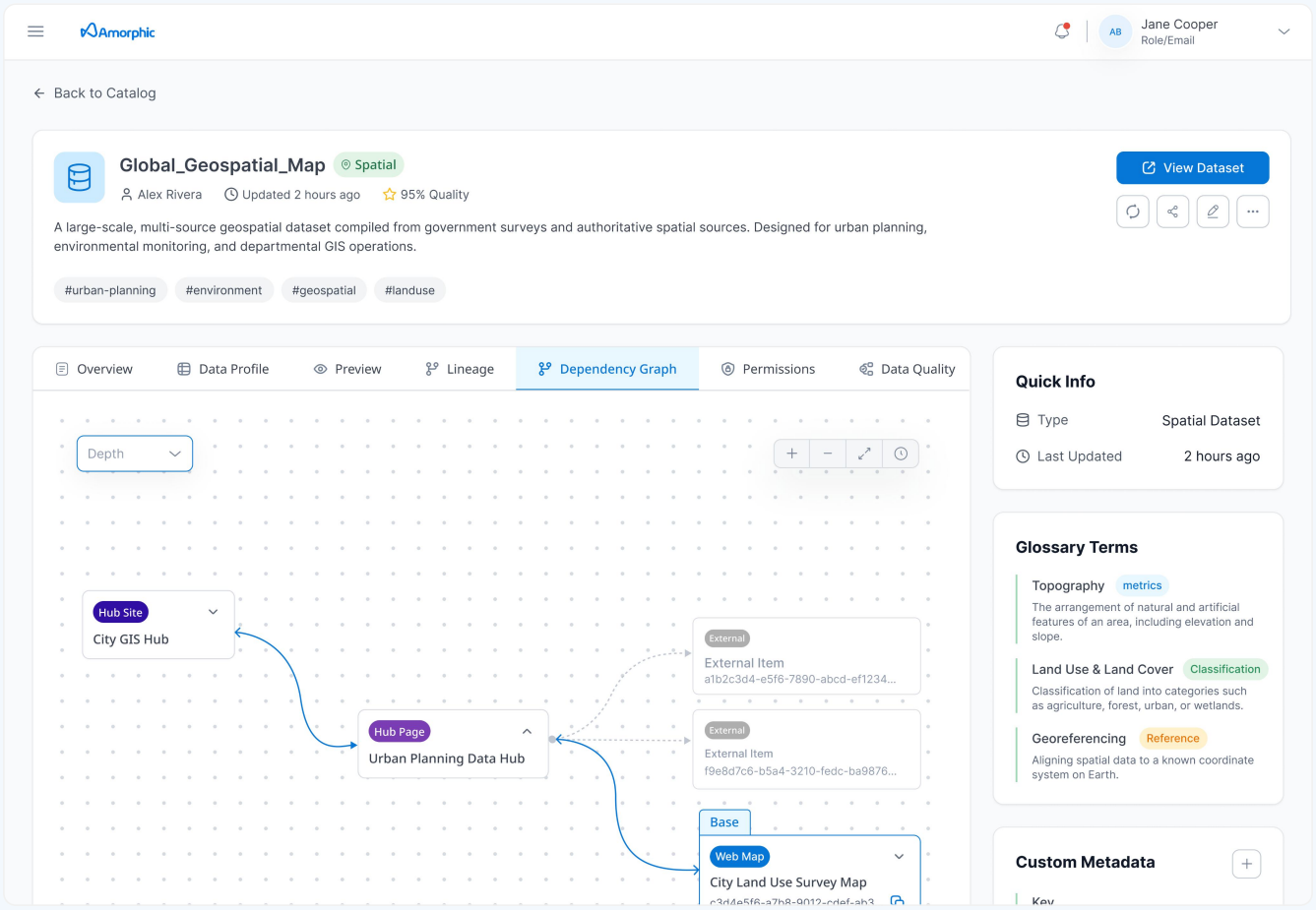
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AUTOMATED DATA LINEAGE AND DEPENDENCY GRAPH

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



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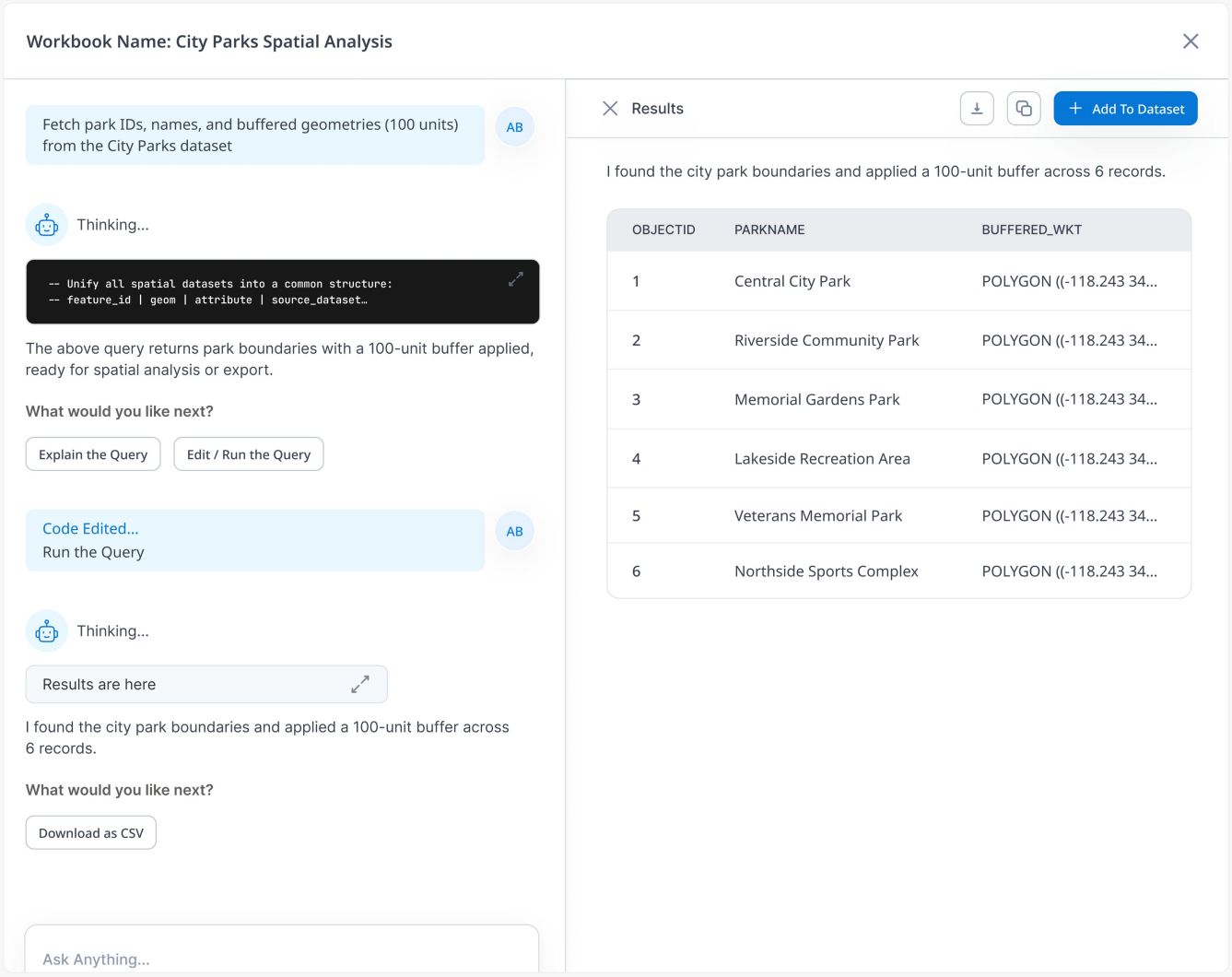
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SPATIAL SQL AI

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



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.

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- **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

ROLE-BASED ACCESS CONTROLS | HUMAN JUDGMENT IN EVERY DECISION | ENCRYPTION AT REST AND IN TRANSIT | CUSTOMER-CONTROLLED AWS DEPLOYMENT | FULL AUDIT TRAILS | COMPLIANCE-ALIGNED CONTROLS

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.

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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