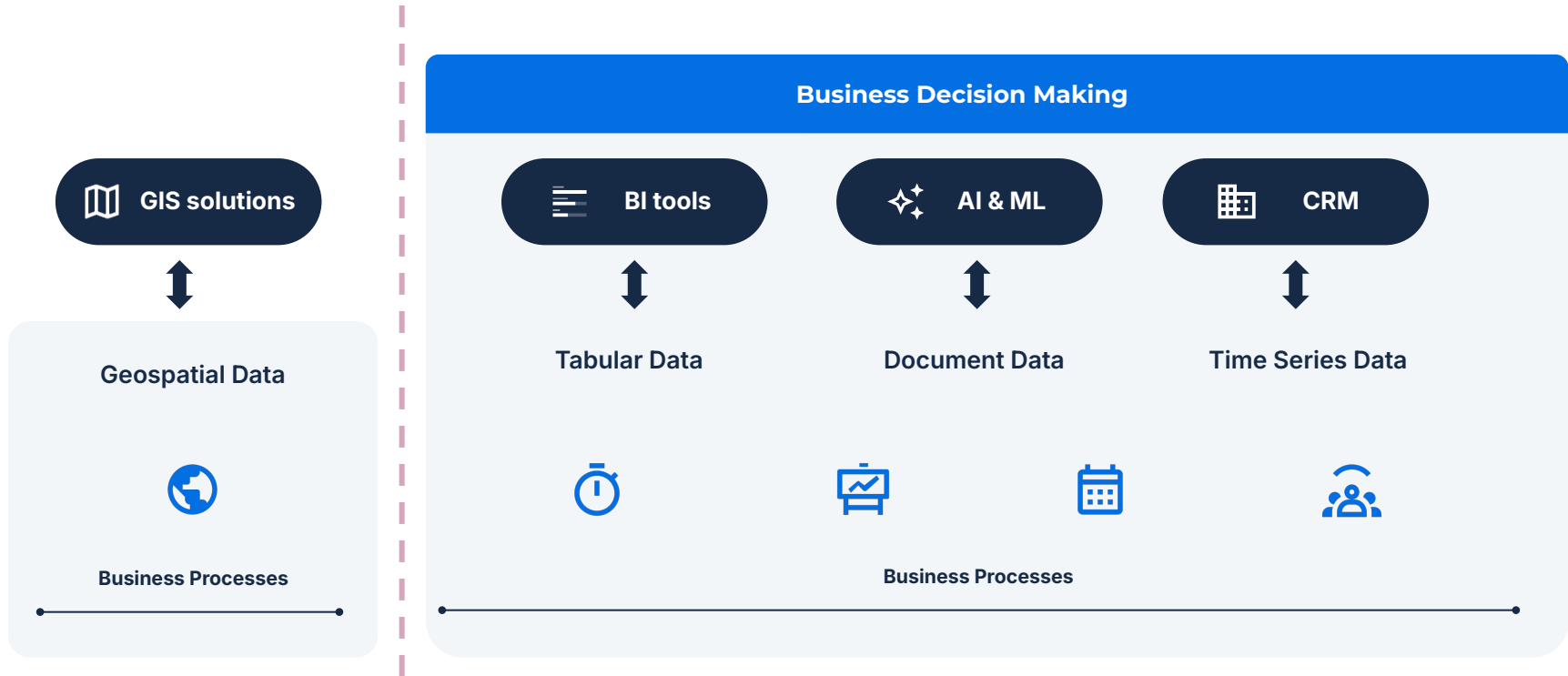


CART ●

# Agentic GIS: Spatial Intelligence for Everyone

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# Spatial data is rich. Access is broken.



# The Agentic GIS era is here

Agentic GIS transforms spatial analysis from a specialist-only resource into a company-wide decision-making engine — making Location Intelligence accessible to everyone, while keeping your data inside your warehouse.

- AI Agents that understand natural language and reason with spatial data
- Automated geospatial workflows deployed as MCP tools
- Enterprise-grade governance: your data never leaves your warehouse

**CARTO Workflows / Optimizing Out of Home Campaigns in NYC**

**NYC Collisions**

Number of collisions: 72,282

Vehicle Involved: 26.78% SEDAN

Top contributing factors:

- Unspecified: 20.5k
- Driver Inattention/Distracted: 16.3k
- Failure to Yield Right-of-Way: 4.56k
- Following Too Closely: 4.01k
- Passing or Lane Usage Impr...: 2.45k

**AI Agent**

How can I help you?

This AI Agent is your assistant for network planning and deployment. Use it to analyze vast geospatial data, optimize network coverage, and identify the most cost-effective deployment sites. Try a starter prompt or use your own.

- Show competitor coverage
- Suggest new tower locations
- Show 5G gaps
- Final optimal fiber routes

Message AI Agent...

Responses are AI-generated. Please verify key information.

# Spatial insights for everyone

No GIS expertise required. No desktop installs. No data movement.



## Cloud-native & warehouse-native

CARTO sits directly on top of BigQuery, Snowflake, Oracle, Redshift or Databricks. Your data never moves — the analysis comes to where your data already lives.



## AI Agents & self-service maps

Business users get answers through natural language — no map-building skills needed. GIS experts build and deploy AI Agents that bring spatial insights directly to the people who need them.



## Workflows, Analytics Toolbox & MCP tools

Low-code geospatial analysis with 100+ spatial functions. Build automated pipelines in Workflows and expose them as MCP tools — so any AI assistant, CLI or enterprise copilot can invoke spatial analysis directly.



## Enterprise governance & security

Role-based access, your own vetted AI models and endpoints, full compliance. Spatial intelligence at enterprise scale without compromising control.

# Automating spatial reasoning

From natural language to spatial insight — without writing a line of code



## Natural language to spatial query

Users describe what they need in plain language. The agent translates intent into spatial SQL, selects the right algorithms, runs the analysis and returns a result — end to end, without human-in-the-loop prompting.



## Multi-step agent workflows

Agents chain complex spatial operations autonomously: enrich → aggregate → cluster → visualise → summarise. Analyses that took a specialist hours become a single conversational exchange.



## CARTO as an MCP tool server

CARTO Workflows are exposed as MCP tools, making spatial analysis callable by any LLM agent. Spatial intelligence plugs directly into your existing AI ecosystem.

# Geospatial Foundation Models & Embeddings

Teaching machines the latent structure of places



## A new spatial prior

Large models pre-trained on satellite imagery, mobility traces, land-use and population data. They develop a generalised understanding of how places relate to each other — fine-tunable for specific tasks with very few examples.



## Native in CARTO Workflows

Run PDFM embeddings directly inside your data warehouse as a native Workflows component. No data export, no separate ML platform. The output is a vector representation of every location — ready for downstream analysis.



## Similarity, clustering & change detection

Find locations that match a reference site. Segment areas by latent spatial character. Detect where patterns have shifted over time. All running inside your warehouse, without manual feature engineering.

All components work natively inside CARTO Workflows and run directly within your data warehouse

# From data portals to spatial intelligence platforms

The role of SDIs and geospatial portals is evolving — not disappearing

## TODAY

- Users search and browse data catalogues
- Data is downloaded or accessed via WFS / OGC APIs
- Analysis happens externally, in desktop GIS or BI tools
- Insight generation requires specialist skills
- Portals optimised for data provision, not reasoning

## THE AGENTIC FUTURE

- Users ask questions in natural language
- Agents discover, join and reason across datasets autonomously
- Analysis and narrative delivered in the same interaction
- Accessible to planners, policymakers and citizens — not just GIS teams
- Portals become the knowledge base that agents reason over

# Geospatial sovereignty: a layered approach

Sovereignty is not about isolation — it's about choice at every layer



## Data

Open formats as the bedrock. GeoParquet and Apache Iceberg decouple storage from compute — store once, process anywhere. Your spatial data becomes a first-class citizen in the modern analytics stack, free from proprietary lock-in.



## Compute

Freedom to choose where and how analysis runs. The same GeoParquet data can be processed by BigQuery at national scale, DuckDB locally, or PostgreSQL on-premise. Architect for resilience, not dependency on a single provider.



## AI

Sovereign AI means using the models you choose, deployed where you control them. Your own LLMs, your own geospatial foundation models, your own agent logic — running in your governed environment, not a third-party black box.



## Semantics & IDs

How you organise, identify and share spatial data with others. Open standards, common identifiers and shared ontologies are what allow sovereign systems to interoperate — without sacrificing independence.

Based on: "Geospatial Sovereignty in the Age of AI" — Javier de la Torre, CARTO

Spatial intelligence for everyone — not just GIS experts

# The future of GIS is agentic

- › Agentic GIS makes spatial insight accessible to every user in your organisation
- › Geospatial Foundation Models and embeddings unlock a new kind of spatial reasoning
- › SDIs and portals evolve from data access layers to sovereign spatial intelligence platforms
- › Sovereignty means choice — at the Data, Compute, AI and Semantics layers