

Agentic AI Aspects of Integration within the GIS Ecosystem

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GIS Evolutionary Context

- GIS grew in the 1990's client server expansion
- Esri quickly emerged as the best for polygons
- Multi-participant governments were the first enterprise GIS deployments
- In Utilities:
 - GIS replaced CAD since it was a map e.g., relationship and location
 - Then, GIS topology replaced connectivity models for operations
 - Then, GIS became an asset management system.....

Agentic AI within the GIS Ecosystem

In many organizations, GIS represents a blurred line between a **System of Record** and a **Workflow**

- GIS teams manually collect, interpret, build, validate, and synchronize data
- In the enterprise, multiple systems result in duplicate effort and data creating inconsistent truth
- As a result, effort is spread thin and systems of record (SORs) can underperform

As an **Execution Layer optimizing the System of Record** - agentic AI is an emerging solution for optimizing GIS-intrinsic workflows

- AI - agents orchestrate data collection, interpretation, validation, and synchronization
- As the primary work execution layer, agentic AI reinforces organizational governance and improves data flow within the ecosystem
- People effort shifts from data creation horsepower to optimizing the excellence of the system of record

Key Message: The future of GIS lies in its role as an **optimized System of Record**. Agentic AI can deliver this value through sustained autonomous, rules-driven data generation and maintenance.

Agentic AI can serve as the “Execution Layer” Above the System of Record

GIS systems manage points, lines and polygons. As an execution layer, agentic AI can perform work that had previously been performed manually or through semi-automation.

- **Polygons** include creating accurate closed loop polygons from legal descriptions, creating survey controlled basemaps, placing easements in support of a land management application, etc.
- **Linear work** includes topology management, attribute validation per linear structure, connectivity tracing for business applications, etc.
- **Point** placement includes all work managed at the point feature, e.g., APN, pole, device, valve, etc. This work is varied and we have applied agentic AI in support of pole structural integrity, like-for-like device replacement, etc.

I will demonstrate how **agentic AI will reconstruct parcel boundaries in a lot line adjustment (LLA)** document with its source being the legal description contained with the public record filing.

Short Demonstration

[SurveyPlot Demo_AI_v1.3.mp4](#)

The legal
description
associated with
the LLA
Document

PARCEL "B"

BEING PARCEL 2 TOGETHER WITH A PORTION OF PARCEL 1 AS CONVEYED IN GRANT DEED RECORDED DECEMBER 11, 1991 AS INSTRUMENT NO. 429068, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA DESCRIBED AS FOLLOWS:

BEGINNING AT THE MOST NORTHERLY CORNER OF SAID PARCEL 1 SAID POINT BEING ON THE SOUTHWESTERLY LINE OF THE TEMECULA TOWNSHIP AS SHOWN BY MAP RECORDED IN BOOK 74 PAGE 86 OF RECORDS OF SURVEY, RECORD OF RIVERSIDE COUNTY CALIFORNIA, ALSO BEING THE MOST EASTERLY CORNER OF PARCEL 2 AS SHOWN ON PARCEL MAP NO. 23969 RECORDED IN PARCEL MAP BOOK 169 PAGES 11 THROUGH 13, INCLUSIVE, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;

THENCE, ON THE SOUTHWESTERLY LINE OF SAID TEMECULA TOWNSHIP SOUTH $45^{\circ}32'38''$ EAST, 24.14 FEET TO THE TRUE POINT OF BEGINNING;

THENCE, LEAVING SAID TOWNSHIP LINE, PARALLEL WITH THE SOUTHWESTERLY LINE OF PARCEL 2 OF SAID PARCEL MAP, SOUTH $44^{\circ}22'52''$ WEST (SHOWN AS SOUTH $44^{\circ}24'40''$ WEST ON PARCEL MAP NO. 23969), 77.83 FEET;

THENCE, SOUTH $11^{\circ}03'25''$ WEST, 211.79 FEET;

THENCE, SOUTH $44^{\circ}24'45''$ WEST, 98.45 FEET;

THENCE, SOUTH $45^{\circ}35'15''$ EAST, 115.00 FEET TO A POINT LYING 280.00 FEET NORTHEASTERLY OF THE SOUTHWESTERLY TERMINUS OF THAT CERTAIN COURSE SHOWN AS "NORTH $44^{\circ}25'51''$ EAST 632.66 FEET" ON THE NORTHERLY LINE OF PARCEL 23 AS SHOWN ON PARCEL MAP NO. 18254, RECORDED IN PARCEL MAP BOOK NO. 116 PAGES 69 THROUGH 78, INCLUSIVE, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;

THENCE, ON THE NORTHERLY LINES OF SAID PARCEL 23 AND PARCEL 25, NORTH $44^{\circ}24'45''$ EAST, 353.00 FEET TO THE SOUTHWESTERLY LINE OF SAID TEMECULA TOWNSHIP, ALSO BEING THE MOST NORTHERLY CORNER OF PARCEL 25 AS SHOWN ON SAID PARCEL MAP NO. 18254;

THENCE, ON THE SOUTHWESTERLY LINE OF THE TEMECULA TOWNSHIP, NORTH $45^{\circ}32'38''$ WEST, 231.49 FEET TO THE TRUE POINT OF BEGINNING.

Agentic AI Accelerates Spatial Data Management

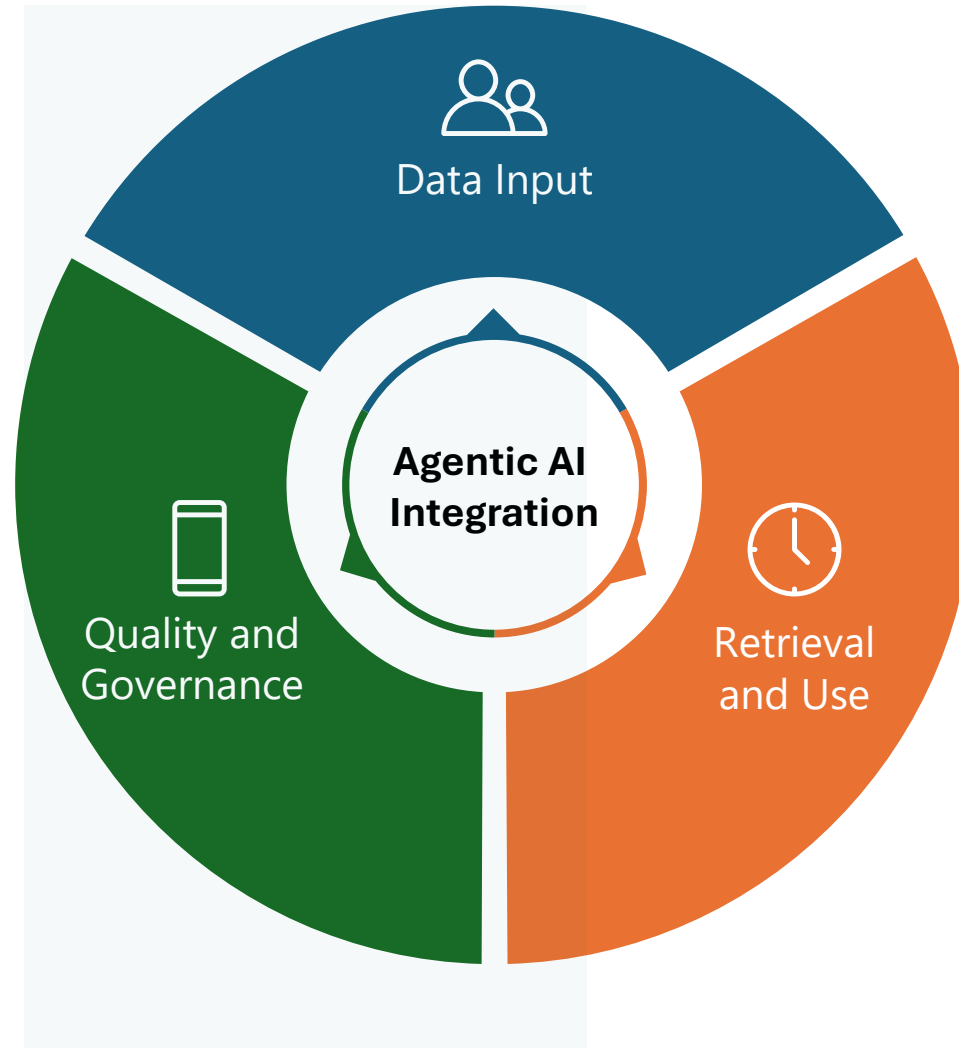
What to do?

Reengineer work using agentic AI to undertake select data tasks.

Develop Geo AI Models through systems of record models, data structure and business rules.

Enforce mandatory data fields and placement quality

Establish Enterprise Policies and closed loop feedback



For What Benefit?

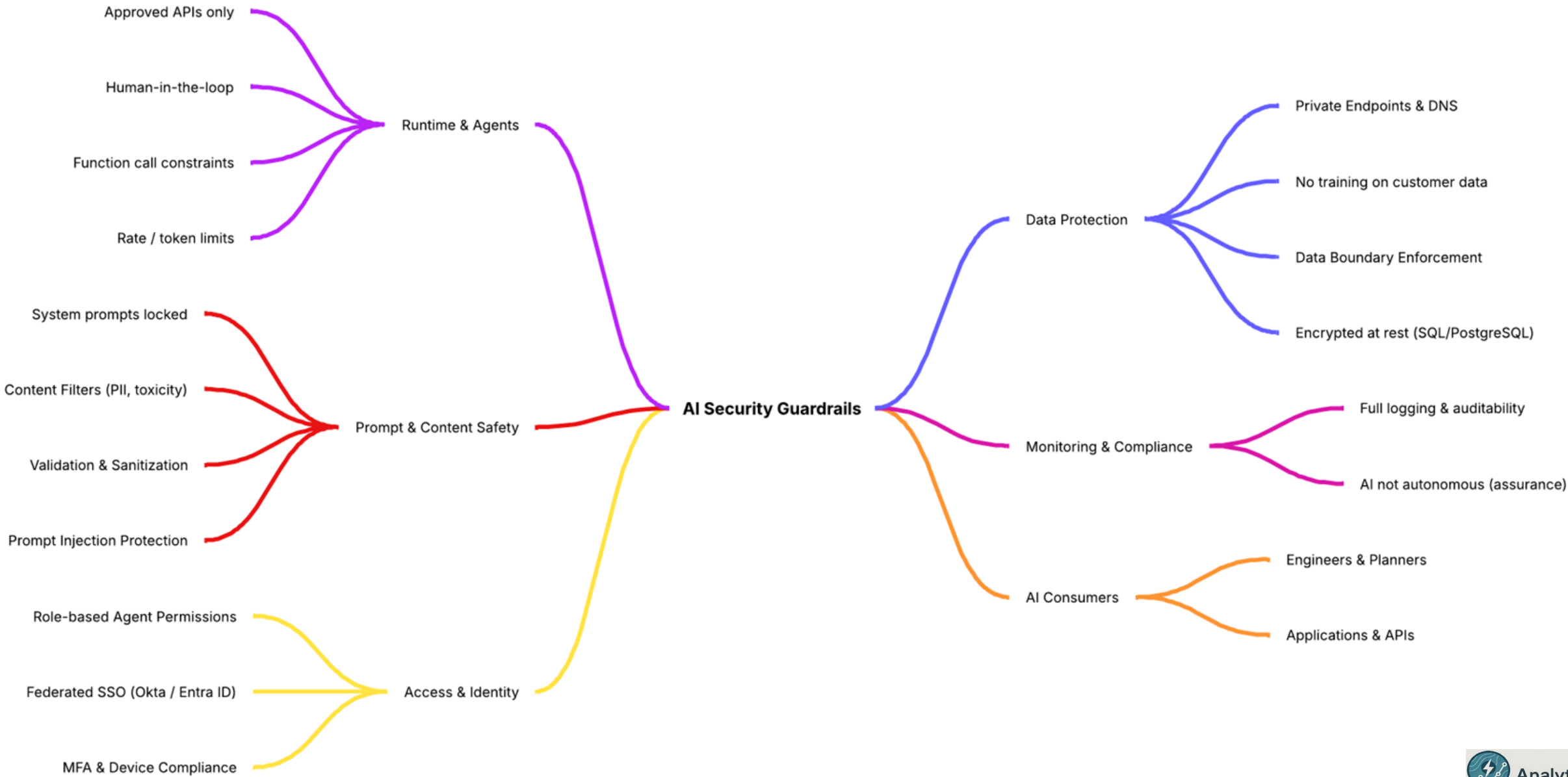
Business workflow activates data availability

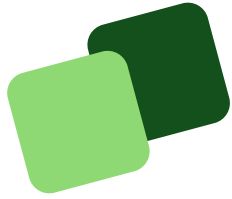
Pulled from and pushed to the proper system of record

Data gaps are incrementally addressed over time with increasing scale

Human in the loop oversees and executes the workflow

Agentic AI Governance and Control





Thank you!

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