

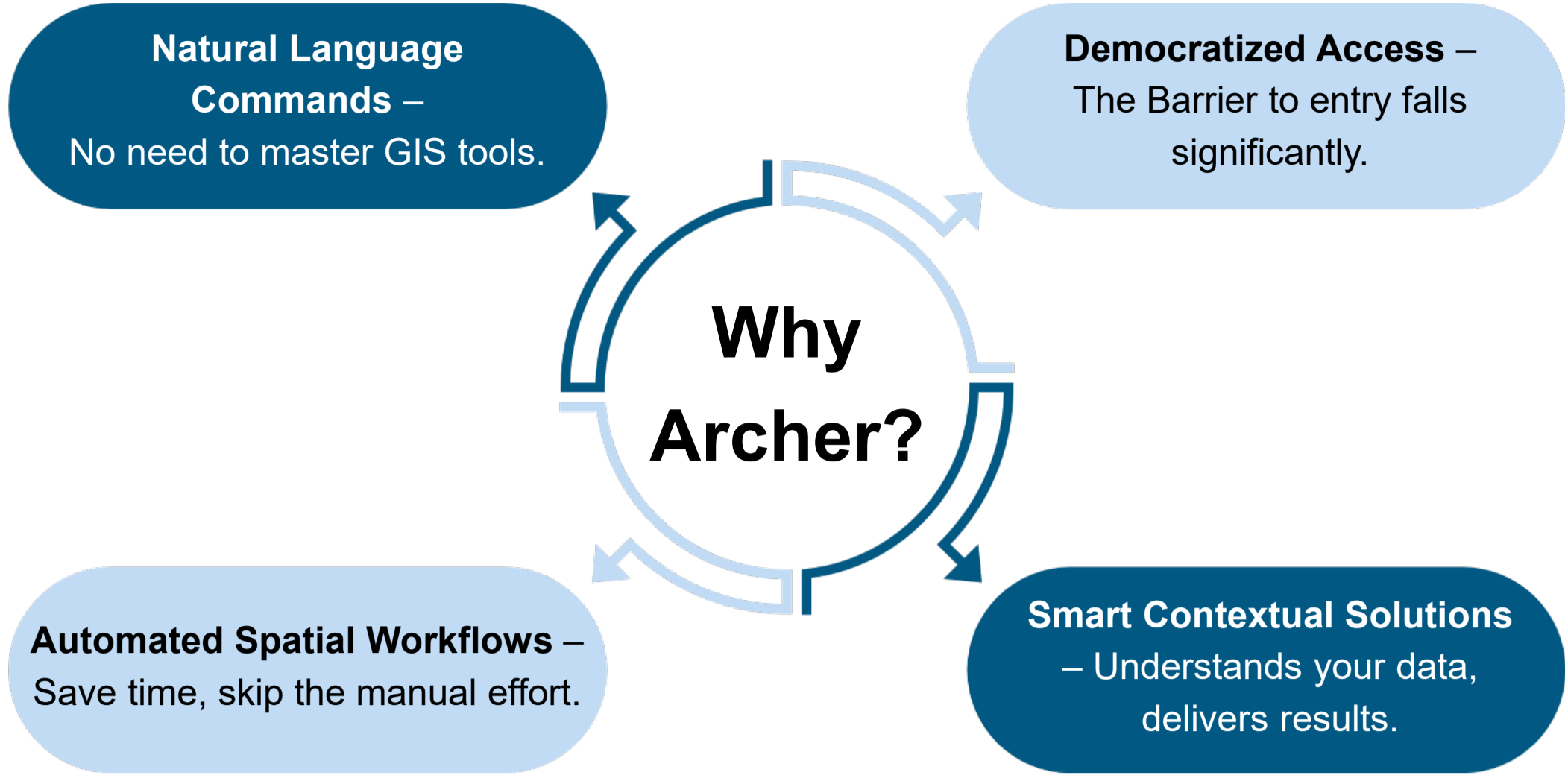


Archer: An Open-Source GIS AI Assistant For ArcGIS Pro

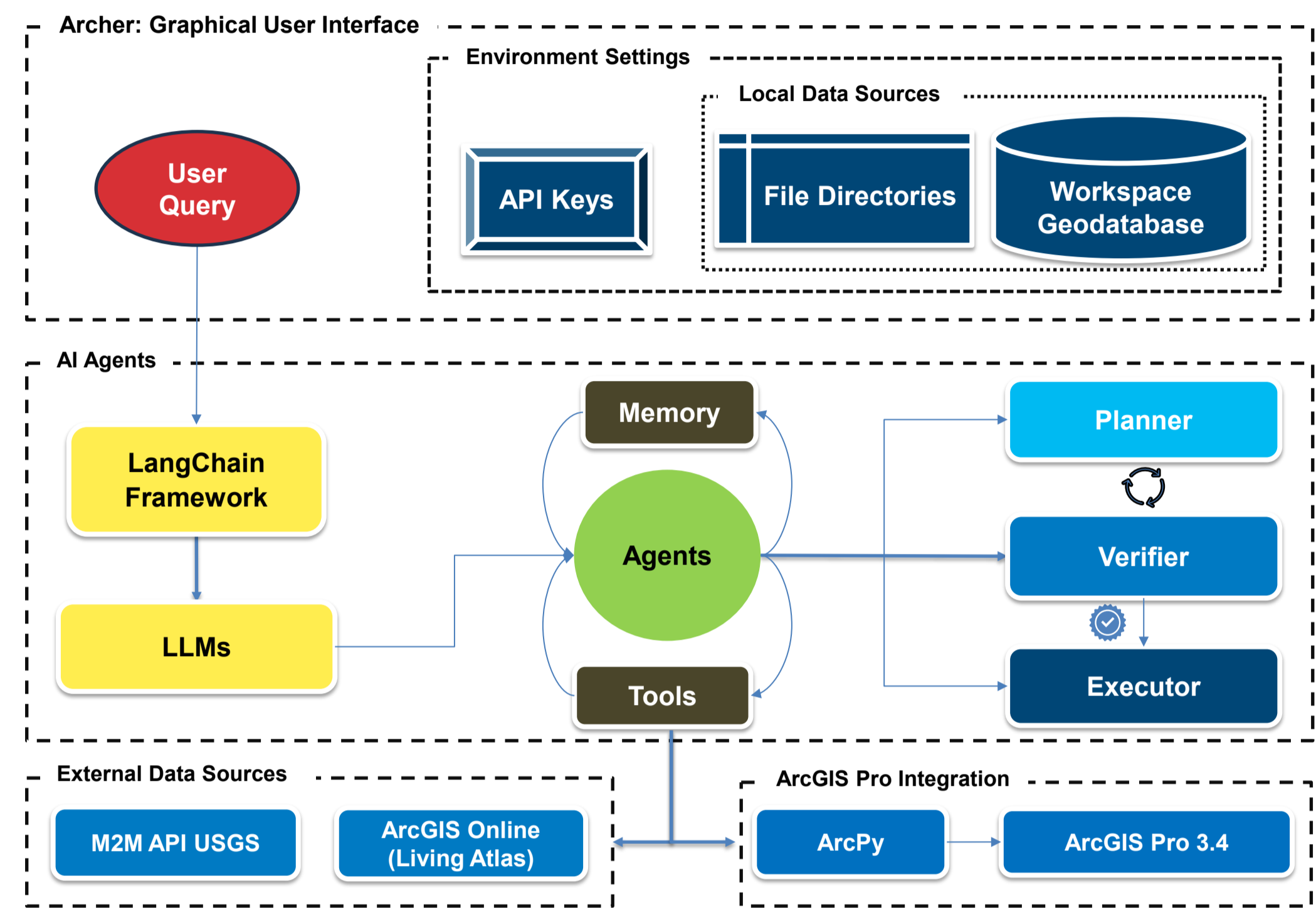
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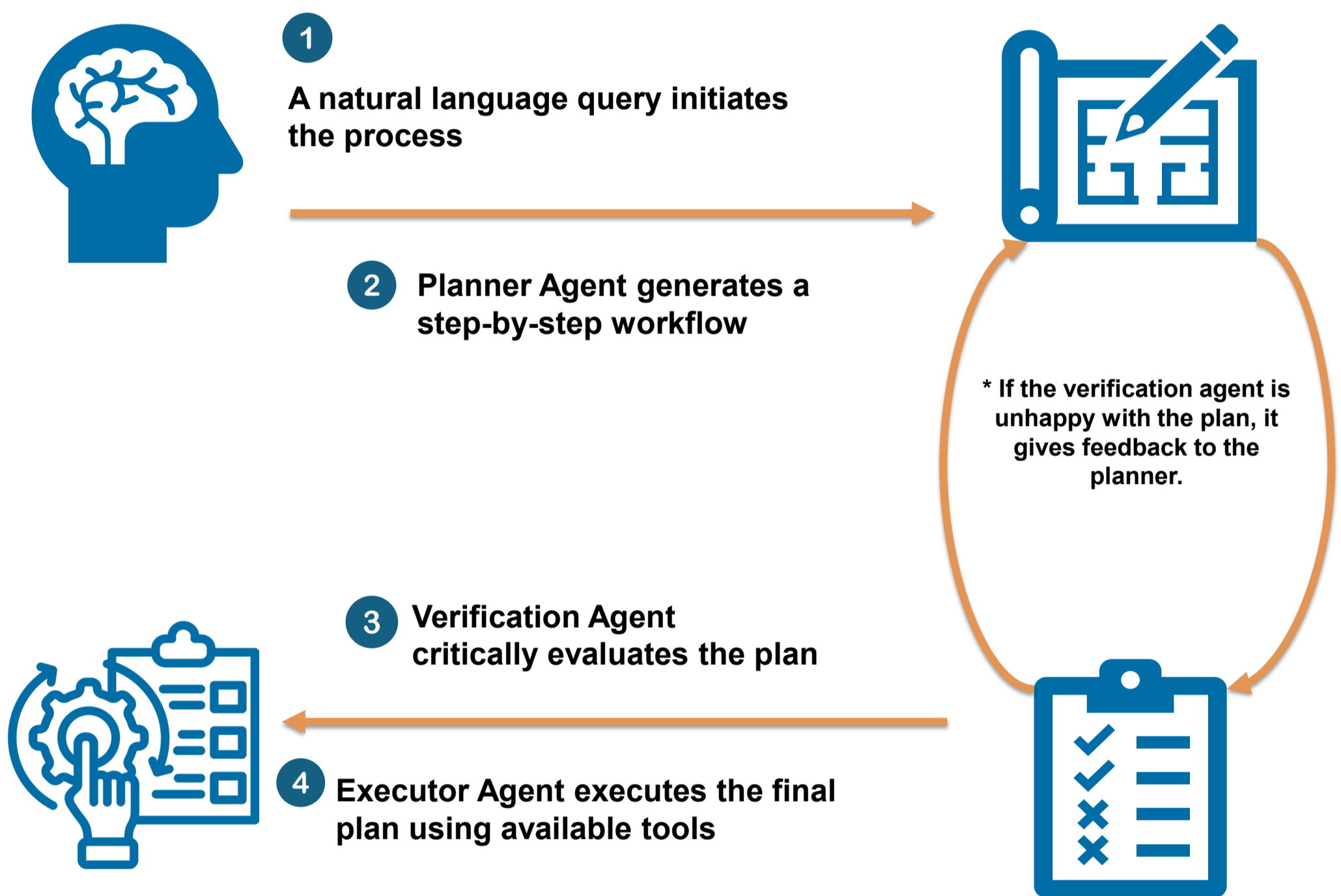
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Framework



How Archer Works



Archer's Tech Stack



Let's Take a Look at Archer's Interface

Conversation

What Is Archer Thinking?

All Your API Keys Go Here

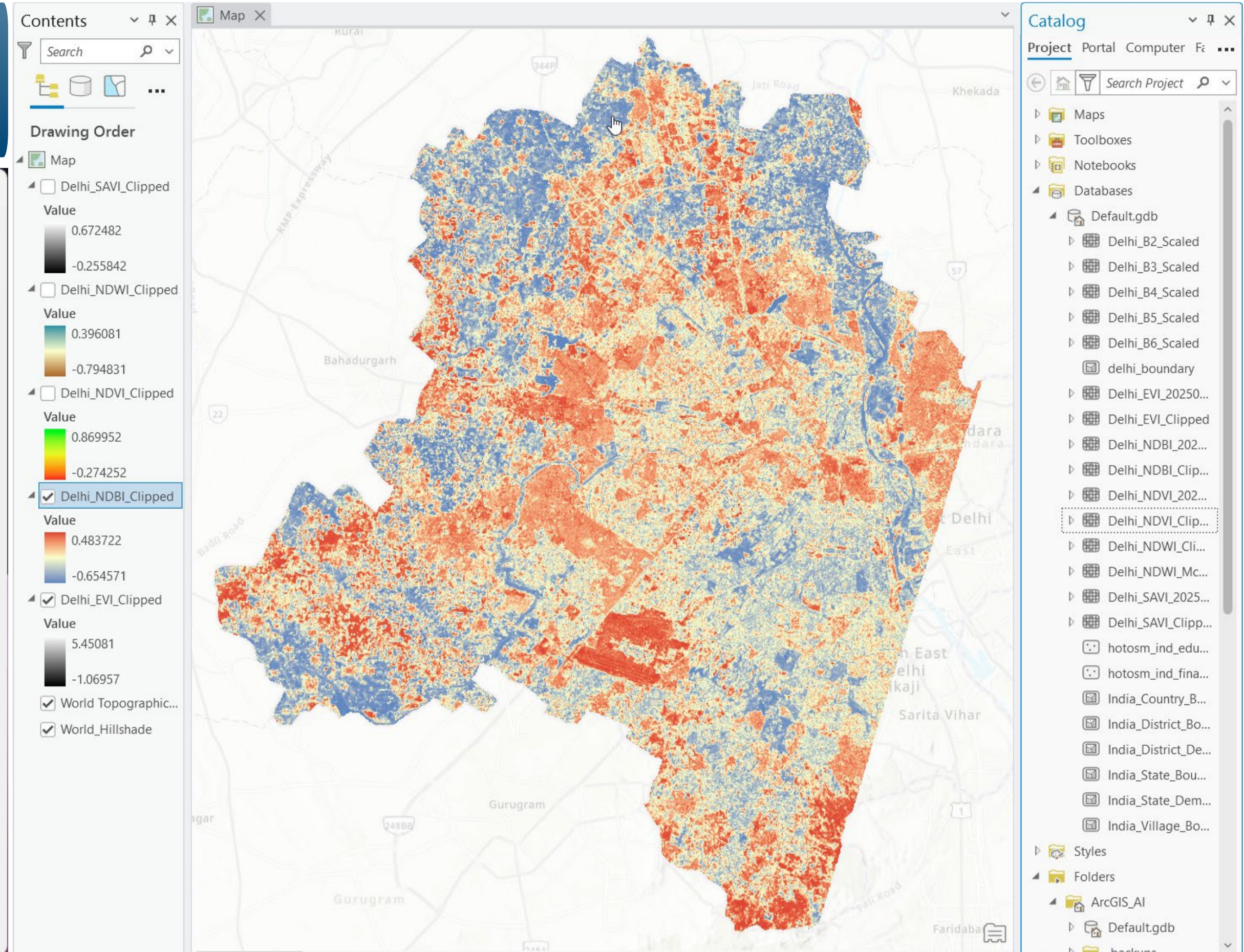
Archer Knows About Your Data

Case Study 1: Multi-Index Analysis for Delhi Using Landsat Imagery

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You: Generate NDVI, SAVI, EVI, NDWI, and NDBI for Delhi for 26th March 2025.

Archer: The plan has been executed successfully. The Landsat data for Delhi around March 26, 2025, was downloaded, and the required bands were scaled to surface reflectance. Subsequently, NDVI, SAVI, EVI, NDWI, and NDBI were calculated and saved as raster datasets in the specified geodatabase.

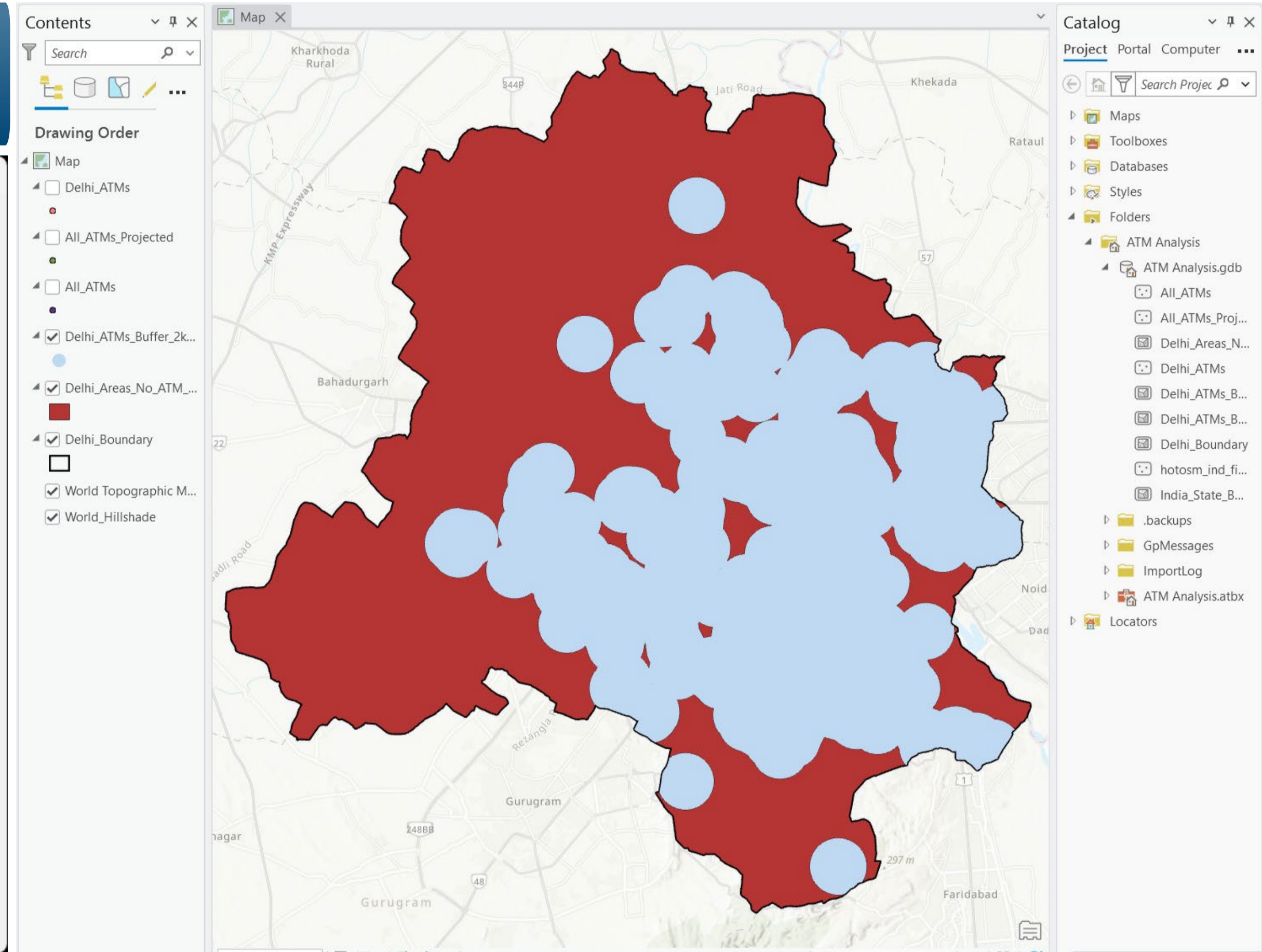


Case Study 2: Delhi ATM Accessibility Analysis

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You: Get Delhi boundary from the state boundary and all the atm from financial services. Find the areas of Delhi which don't have an ATM within 2km.

Archer: The plan has been executed successfully. The following steps were performed: 1. Listed fields of the India_State_Boundary feature class to identify the state name field. 2. Selected the Delhi boundary from the India_State_Boundary feature class to identify the ATM field. 3. Listed fields of the hotosm_ind_financial_services_points_snp feature class to identify the ATM field. 4. Selected all ATMs from the financial services points. 5. Projected the ATM points to WGS 1984 Web Mercator Auxiliary Sphere. 6. Clipped the projected ATMs to the Delhi boundary. 7. Created 2km buffers around the ATMs in Delhi. 8. Erased the buffered ATM areas from the Delhi boundary to find areas not within 2km of an ATM.

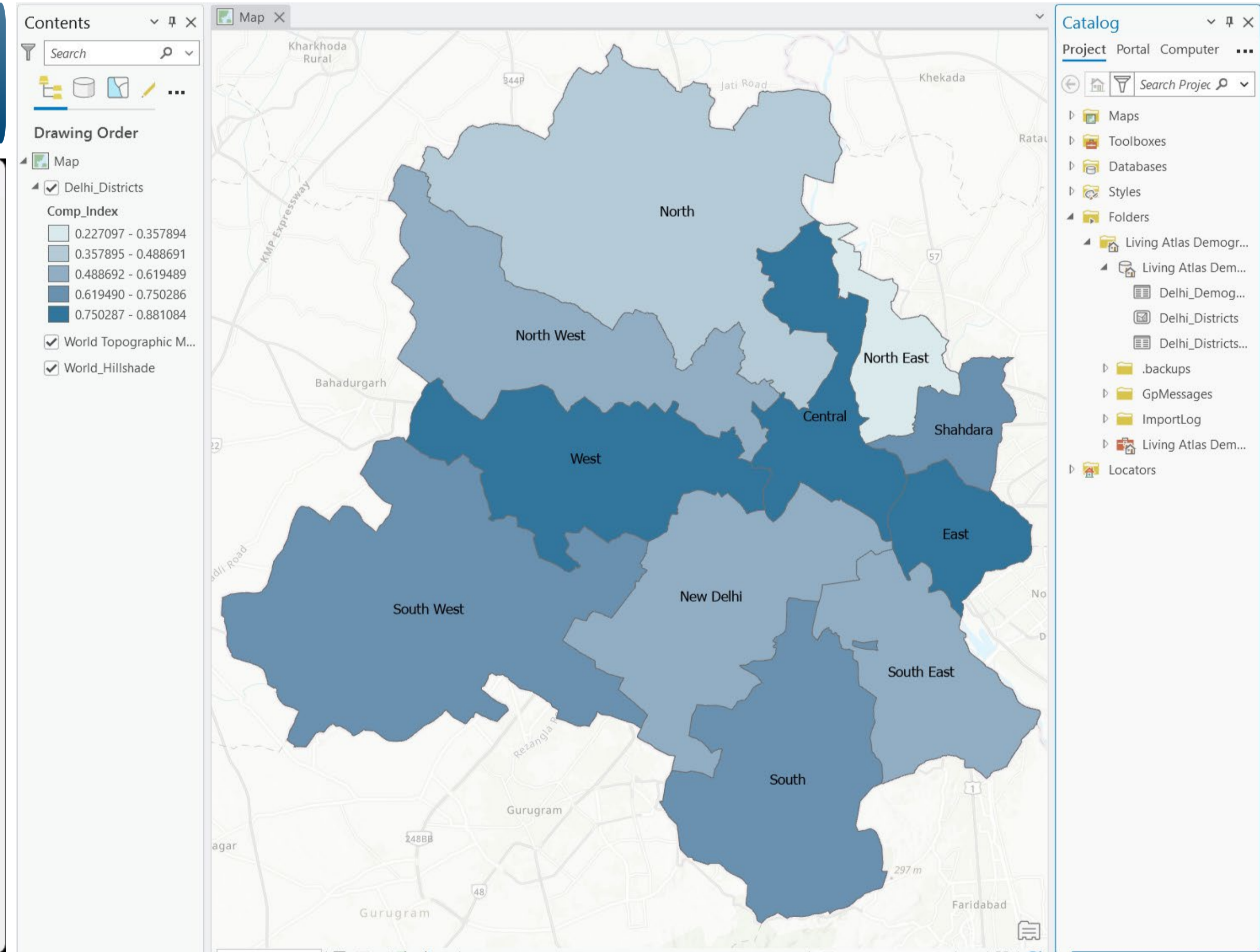


Case Study 3: Women Empowerment Index Using Data From The Living Atlas

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You: Find the "India District Demographics" dataset and extract the districts of Delhi from it.

Archer: I have completed all the steps in the plan. First, I scanned the workspace directory to check for the existence of the dataset. Then, I searched ArcGIS Online for the "India District Demographics" feature service. After finding the service, I listed its fields to identify the field containing state names. Finally, I selected features where the state name is "Delhi" and saved them to a new feature class named "Delhi_Districts" in the specified geodatabase.



Future Directions

API Integrations – Connect to more data sources for real-time spatial analysis.

Modular Growth – Expand with new geoprocessing tools and functionalities.

Specialized Agents – Explore the development of specialized agents for domain-specific applications.

Multi-model Agents – Agents with vision and voice capabilities to help with data analysis and automated report generation

Acknowledgement

I sincerely thank my mentor, Dr. Nilanchal Patel, for his invaluable support and trust in this project. His encouragement allowed me to explore the intersection of GIS and AI. This work has been enriched by insights from LangChain's official resources and the broader YouTube AI community, including channels like Prompt Engineering, Two Minute Papers, Adam Lucek, and others, which provided valuable knowledge on LLMs, prompt engineering, and AI advancements. I also acknowledge the role of AI tools, including Cursor AI for coding assistance. I thank Google for free access to Gemini API, which played a crucial role in development. Additionally, prior research in Natural Language GIS, Agentic AI Frameworks, and Geospatial Automation has significantly informed this project. I am grateful to my friends and family for their unwavering encouragement throughout this project.

Connect & Contribute!

Archer is an open-source initiative designed to make GIS automation more accessible and intelligent. Scan the QR code to explore the GitHub repository, try out Archer, and contribute to its growth!

Link: <https://github.com/korporalk/Archer-GIS-AI-Assitant>



For questions, collaborations, or more information on Archer, please email me at raihanahmadkhan@gmail.com Or, Scan the QR code to connect on LinkedIn.