Streamlining GIS Workflows: Leveraging ChatGPT for Python Automation in ArcGIS Pro and ArcGIS Enterprise

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Key words: Capacity building; Professional practice

SUMMARY

The rapid evolution of digital transformation in geospatial practices has introduced the need for innovative tools to streamline workflows and support sustainable development. At WaterNSW, ChatGPT has proven instrumental in driving such innovation, particularly during the migration from ArcGIS Enterprise 10.9.1 to 11.3. By leveraging ChatGPT to generate Python scripts, WaterNSW accelerated this transition, ensuring the relationships between feature classes in databases and services were effectively captured and documented.□□A key aspect of the migration was ChatGPT's assistance in generating empty map templates with metadata pre-populated. These templates provided a logical structure, grouping maps of similar themes into the same ArcGIS Pro Project. This structure allowed teams to quickly transfer layers from existing Web Service Definitions, standardizing the organisation of services and enabling a smoother transition to the new system. This automation saved significant time and reduced manual effort, helping WaterNSW switch to the upgraded system faster and with greater confidence in the integrity of their data.□□An iterative process was central to this success. Error messages were reviewed, and detailed feedback was provided to refine the AI-generated code, ensuring continuous improvement and adaptability. This collaborative approach enhanced productivity and empowered team members to deepen their understanding of Python programming and GIS systems. The experience fostered a learning environment where practitioners not only achieved immediate automation benefits but also developed the skills to tackle future challenges independently.□□ChatGPT also supported dynamic updates to metadata, ensuring that all layers and services remained compliant with organisational standards and accessible to users. Metadata updates are often labor-intensive, but with AI-driven automation, WaterNSW streamlined this process while maintaining data integrity and governance.□□Another critical application was tracking feature class usage across GIS maps and services. This capability was essential for managing interdependencies between datasets and minimizing risks during migration. The clarity provided by ChatGPT-generated scripts ensured that

all relationships were documented and understood, enabling better decision-making and reducing errors.□□Throughout the process, data security remained a top priority. No sensitive information was shared with ChatGPT; instead, scripts were designed to allow users to input sensitive details locally if required. This approach ensured compliance with WaterNSW's strict security protocols while still enabling the use of AI to streamline workflows.□□This collaboration with ChatGPT not only facilitated the migration but also established systems to allow users to trace the origin of data and understand how it is being used. These systems improve operational transparency, enabling users to work more confidently and efficiently. By integrating AI into their geospatial workflows, WaterNSW laid a foundation for long-term scalability and innovation.□□This presentation will showcase practical examples of these achievements, including the creation of empty map templates with metadata, automated metadata updates, and tracking feature class usage. Attendees will learn how AI tools like ChatGPT can revolutionize GIS workflows, improve productivity, and foster professional growth through iterative learning processes. Ultimately, this presentation highlights how combining AI with geospatial practices enables organizations to achieve digital transformation while maintaining data security and enhancing operational transparency.