

Data Governance & Risk Mitigation

Ensuring Engineering Integrity through Geospatial Compliance

The Challenge

In the fast-paced environment of utility-scale infrastructure development, third-party data inputs often arrive with varying levels of quality. For a series of renewable energy projects, our team received critical topography and hydrology datasets that superficially appeared complete but failed to meet geospatial standards. Accepting this data "as is" posed significant risks: inaccurate acreage estimations, engineering rework, and potential liability during the construction phase.

The Strategy

I moved the GIS function from a passive receiver of data to a proactive Geospatial Gatekeeper. We implemented a mandatory "Geospatial Compliance Check" workflow—a rigorous QA/QC barrier that every dataset must pass before entering the engineering environment.

Figure 1: The Compliance Stoplight Workflow



Source: Designed by the author.

Key Interventions

- **Topography Audit:** Detected critical errors in client-provided Digital Elevation Models (DEMs), including missing EPSG codes that caused data to "float" in the wrong geographic state.
 - Action: Rejected non-compliant inputs and substituted them with validated, high-resolution USGS authoritative data to maintain project momentum.
- **Hydrology Validation:** Identified "pseudo-data" where vector files were improperly derived from low-resolution rasters, lacking essential depth and velocity attributes required for flood risk analysis.
 - Action: Issued a formal "Non-Compliance Report," preventing the engineering team from basing decisions on corrupted models.
- **Standardization:** Enforced strict file naming conventions to resolve directory depth issues (e.g., rejection of 88-character file names) that were breaking automated processing scripts.

The Business Impact

- **Risk Avoidance:** Prevented a projected 4-5 day schedule delay by identifying data corruption before the analysis phase began.
- **Liability Protection:** Protected the organization from "inaccurate estimation of acreage" by refusing to validate non-compliant tree-age overlays.
- **Engineering Synergy:** Established a "Technical Memorandum" standard, ensuring that every map delivered to the Engineering Director is backed by a transparent audit trail of data sources and accuracy limitations.

The Takeaway

Effective GIS strategy isn't just about visualizing data; it's about validating it. By establishing clear governance, I ensured that the "map" remained a trusted instrument for multi-million dollar investment decisions.

Is your spatial data a strategic asset or an engineering liability?

A reactive GIS function costs time and money. I partner with infrastructure and technology teams to build proactive geospatial frameworks that ensure data integrity, mitigate risk, and drive strategic value.

If your organization needs to translate complex spatial inputs into verified assets, let's connect to evaluate your current data governance protocols.

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Confidentiality Notice: To comply with Non-Disclosure Agreements (NDA) and protect client assets, this case study presents a sanitized version of the original methodology. Specific geographic coordinates, project identifiers, and proprietary datasets have been abstracted to focus purely on the strategic workflow and business impact.