MONTANA STATE LIBRARY

Geospatial Governance: Laying the Foundation for a Reliable and Sustainable GIS

Become Ungovernable... (But Please Don't)

A 60-minute deep dive into GIS data governance, why it matters, what it looks like, and how to actually do it without driving your colleagues insane.

Exhibit A: The Ungovernable

You know who you are.

Talk Structure

Here's Where We're Going

01

Opening Hook

Why ungoverned GIS is everyone's nightmare

02

Big G vs little g

Two flavors of governance, one big difference

03

Why It Matters

The stakes and the chaos without it

04

What Good Looks Like

Signs of a healthy, governed environment

05

Implementation + Case Study

Montana State Library: real work, real lessons

06

AI + The Future

Why governance is your best AI investment right now

Sound Familiar?

🗂️ 14 Parcel Layers

Nobody knows which one is current or authoritative or the consultant's copy.

❓ Unknown Sources

Great data. Zero provenance. "Magic Data."

💀 Broken Public Apps

Still live. Still embarrassing. Still getting phone calls about them.

📄 Final_v3_REAL_final_Map

We've all been there.

Ungoverned GIS isn't freedom. It's confusion.

So, What Is Governance?

A word that gets used a lot: but what does it actually mean?

> **Governance is the system of directing, controlling, and holding organizations or societies accountable.**

Decision-Making & Policy

Setting the rules, making the calls, and managing resources while balancing stakeholder interests.

Accountability & Control

Ensuring the right people are responsible for the right things and that there are mechanisms to enforce it.

Core Principles

Transparency. **Accountability**. **Fairness**. **Inclusiveness**. These aren't buzzwords, they're the foundation.

Big G vs little g

Governance isn't one thing, it operates at two levels, and you need both.

Big G: Formal Governance

- Org-wide policies and standards
- Defined roles and responsibilities
- Enforcement mechanisms
- Steering committees and sign-off

little g: Everyday Governance

- Naming things well
- Writing useful metadata
- Sharing responsibly
- Asking "should I publish this publically?"

> **Big G sets the rules. little g is how people actually behave.**

What Governance Actually Gives You

Trustworthy Data

When it's governed, people use it. When it's not, they make their own.

Predictable Systems

No more midnight surprises when something breaks or goes missing.

Shared Understanding

Everyone knows what data exists, who owns it, and what it's for.

Faster Decisions

Confidence in your data means faster, better decisions at every level.

> **Good governance makes your maps trustworthy, and your organization confident in using them.**

Life Without Geospatial Governance

The Zoning Map Incident

A city publishes an outdated zoning layer. Residents make decisions based on it. The actual updated layer exists, **in someone's personal folder.**

The Invisible Dataset

Staff duplicate three months of data collection. T**he original dataset existed the whole time**, just undocumented and unfindable.

The Cascading Delete

Someone removes a layer that looked "unused." **It was silently powering five public-facing apps.** Chaos ensues on a Friday afternoon.

Lack of governance doesn't create freedom, it creates risk and duplication.

Life Without Geospatial Governance: The User Experience

Freedom without guidance leads to risk, confusion, and inconsistency.

Anyone can be an admin

Uncontrolled access leads to unintended consequences and security risks.

Anyone can publish to the public

Sensitive data or half-finished projects can be exposed without review.

No defined roles or permissions

Confusion reigns when no one knows who is responsible for what.

No process to elevate access

Legitimate needs are delayed, leading to workarounds and frustration.

Users are provisioned... but not trained

Tools are given without the knowledge to use them effectively or safely.

No shared understanding of “what public means”

Interpretations vary, increasing the risk of privacy breaches or miscommunication.

Best practices are optional (or unknown)

Quality and consistency suffer across all outputs.

Questions That Should Never Be Mysteries

If your team is asking these questions regularly, governance isn't optional, it's overdue.

"Which layer is the **correct** one?"

"**Who** owns this dataset?"

"Why is this **public**?"

"Why does this app **still exist**?"

"Why are there **6 versions** of this?"

Signs of Healthy Geospatial Governance

Find It Fast

Data is discoverable in seconds, not days

Know Who Owns It

Every dataset has a clear, reachable owner

Trust It Enough to Use It

Staff don't re-collect data they already have

Intentional Public Content

Nothing is public by accident or inertia

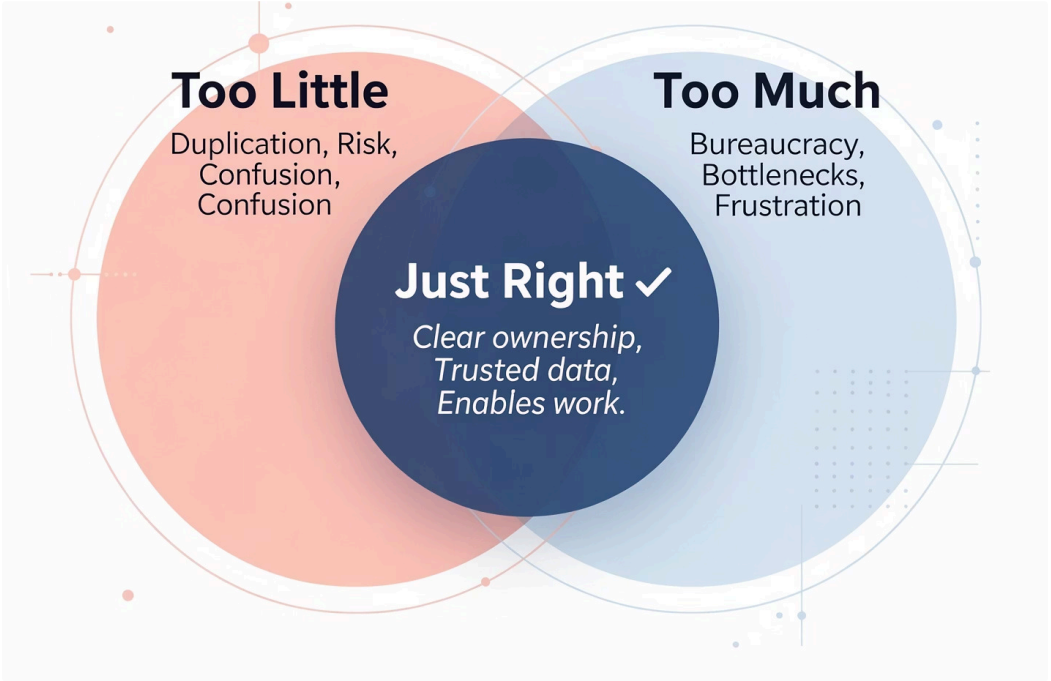
No Nasty Surprises

Systems behave predictably, even on Fridays

> **It's not control, it's clarity.**

How Much Governance Is Too Much?

The sweet spot isn't at either extreme, it's in the middle, where rules enable work rather than obstruct it.



Governance Is Not a Junk Drawer

- Not every policy belongs in governance.
- Bigger ≠ better.
- If it’s too large, no one will use it.
- Governance should be usable, not exhaustive.

> **If no one reads it, it’s not governance—it’s documentation.**

How to Start Geospatial Governance at Any Org

Six Practical Starting Points

1 Define Ownership

Every dataset needs a named human responsible for it

2 Set Sharing Rules

Who can share publicly? With approval? Automatically?

3 Establish Naming Standards

Consistent naming is the cheapest governance win available

4 Require Lightweight Metadata

Title, description, date, owner, that's enough to start

Governance Is a Team Sport

Effective governance thrives when responsibility is shared, not centralized.

> **The people closest to the data should help govern it.**

No Lone Rangers

Governance isn't a solo act; it requires diverse perspectives and shared commitment.

Shared Responsibility

Success hinges on active participation from all GIS stakeholders, not just a single department or person.

Owners = Stewards

Those closest to the data are best equipped to define, maintain, and protect it.

Distributed Review

Leverage collective expertise by spreading the burden of data review and validation.

What This Looks Like in Practice

Data Stewardship in Action

Program staff actively manage and maintain their data, taking ownership of its quality and lifecycle.

Content Approval

Dedicated review groups or peer-review processes approve public content before publication.

Guided Quality

Simple, actionable checklists guide staff through data quality and sharing protocols.

Admin Support

Administrators act as enablers and educators, providing resources rather than strict gatekeepers.

Automated Enforcement

Automation and system configurations help enforce governance rules consistently and efficiently.

Workflow Tools

Commercial Off-The-Shelf (COTS) tools are leveraged to manage and streamline governance workflows.

Tools That Help You Govern your GIS

Dashboards

Monitor content, users, and credit consumption in one view

Automated Checks

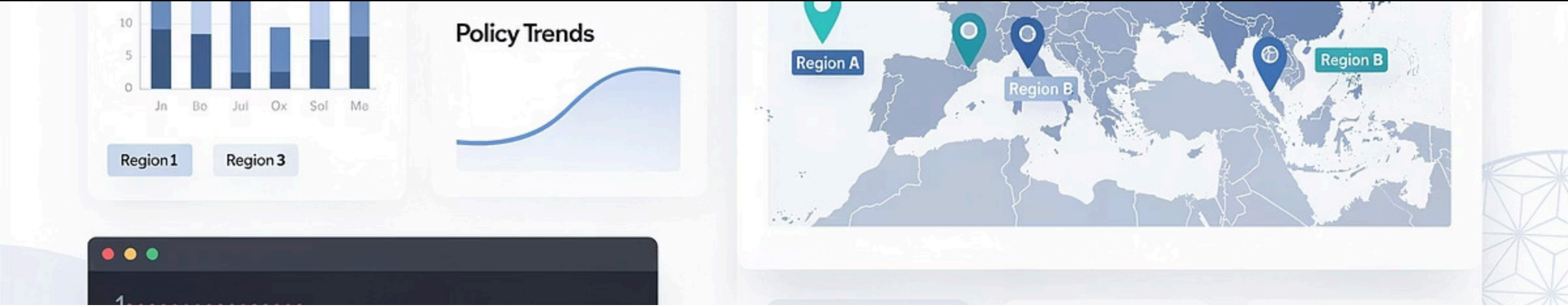
Flag public items, missing metadata, and orphaned content automatically

Groups + Workflows

Use AGOL groups to build lightweight publishing approval flows

Scheduled Reviews

Semi-annual content audits prevent accumulation of data debt



Governance in Action: Live Demo

Now, let's bring these concepts to life. We'll explore practical dashboards and custom scripts that help manage users, enforce data standards, and maintain a healthy geospatial environment.

CASE STUDY

Montana State Library: Geospatial Governance in a Shared AGOL Org

The Challenge

Multiple agencies. One ArcGIS Online organization. Different missions, different risk tolerances, shared infrastructure and shared accountability.

Core Principles

- Shared responsibility across hosted agencies
- Least privilege by default
- Intentional public sharing only
- MSL as steward, not gatekeeper

What MSL Is Implementing

Public Sharing Guidelines

Nothing goes public without a deliberate review step.

Authoritative Accounts

Critical data owned by a role account, not a person.

Credit Allocation Guidance

Agencies know what consumes credits and how to budget.

Semi-Annual Reviews

MSL and agency leads review content, access, and usage regularly.

User Management & Roles

Role-based access by job function, reviewed to prevent privilege creep.

Content Guidelines

Naming, thumbnails, descriptions, and disclaimers required before publishing.

Metadata Requirements

Agreed-upon interagency metadata standards must be met before any item is shared publicly.

Groups for Collaboration

AGOL groups keep sharing intentional, edit access by membership, not individual permissions.

Result: **Prevents accidental exposure, keeps costs predictable, and builds trust across agencies.**

Metadata Is Governance in Action

THESE QUESTIONS APPLY TO ANY STANDARD

What is this?

Title + clear description

Who owns it?

Named contact or role account

When was it updated?

Date + update frequency

Can I trust it?

Source, status, and constraints

Pick a Standard. Any Standard. Just Start.

You don't need to solve metadata perfectly on day one. The important thing is to choose a standard that fits your organization, your workflow, and the organizations you share data with, because interoperability matters.

- FGDC CSDGM is a well-known standard, but it can be heavy, and it isn't the only option.
- Alternatives exist, like Esri's Dublin Core+, which is lighter, modern, and increasingly common.
- The right choice depends on your context **and the organizations you need to exchange data with.**

Don't let the perfect be the enemy of the good. Pick something that works, and start there.

> **"The best metadata standard is the one you'll actually use."**

Metadata Evolution in ArcGIS

FGDC CSDGM (Legacy Approach)

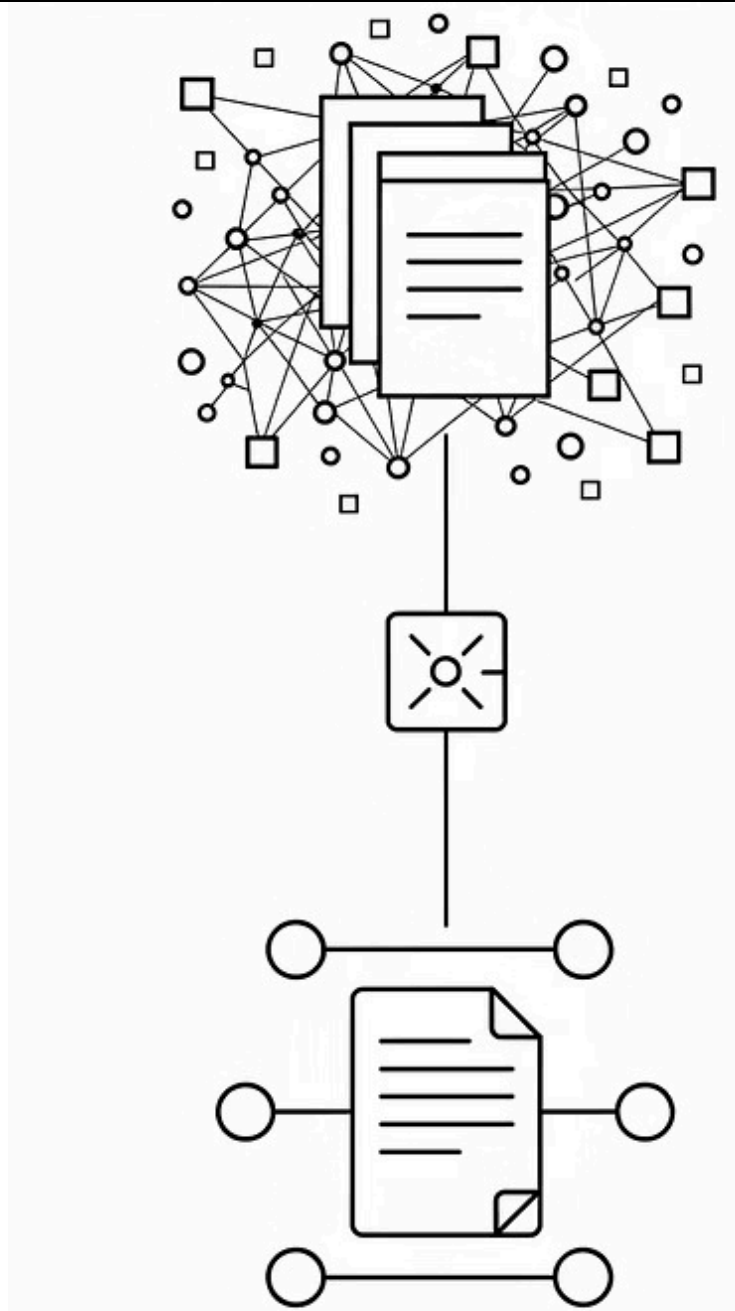
A highly structured and detailed standard built for comprehensive documentation of geospatial data.

- Focus on: Data quality, lineage, and technical completeness
- Requires significant effort to create and maintain
- Primarily used for authoritative datasets and archival purposes

Dublin Core+ (Modern ArcGIS Default)

A simpler, more flexible structure designed for efficient data discovery and usability.

- Focus on: Clear title, summary, relevant tags, and contextual information
- Metadata automatically populated from item details, reducing manual effort
- Lowers the barrier for all users to contribute valuable metadata



FORWARD-LOOKING

Geospatial Governance in the Age of AI

AI doesn't fix bad data, it amplifies it. What you put in determines everything that comes out.

1

AI Needs

Good metadata, clear descriptions, structured fields, consistent naming

2

Poor Governance Gives It

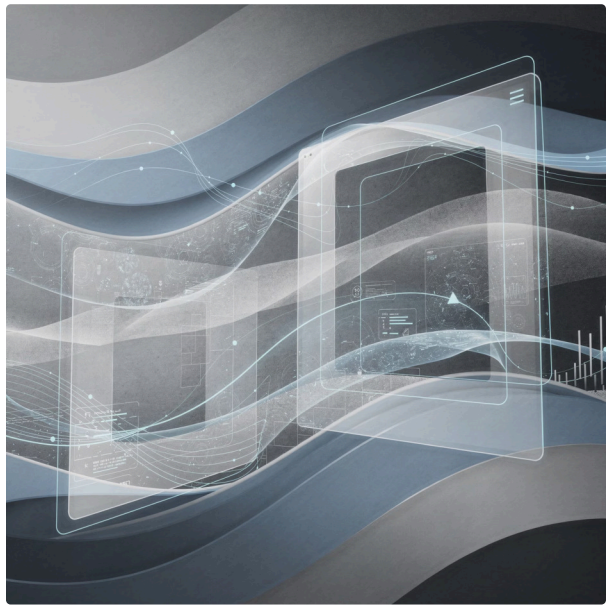
Ambiguous titles, blank descriptions, 6 versions of the same layer

3

The Result

Confidently wrong AI outputs at scale, faster than ever

Agentic AI Will Use Your Portal



This Is Already Happening

Agentic AI systems are being built to search geospatial portals, read metadata, and act on what they find, autonomously.

If your metadata is incomplete, your naming is inconsistent, and your authoritative layers are indistinguishable from drafts, the AI won't know either.

> **"AI won't fix bad governance, it will amplify it."**

Geospatial Governance Isn't Just for Government

Every organization that manages spatial data, public or private, faces the same underlying challenges.

Data Consistency

Private companies need one source of truth just as much as agencies do

Risk Management

Accidental public exposure or data loss has real legal and financial consequences

Decision Confidence

Executives making location-based decisions need to trust the data underneath them

The principles are universal. The implementation details change. The need doesn't.

Three Anchor Ideas to Take Home

Trust. Clarity. Balance.

Trust

Governance exists so that people trust the data enough to actually use it, and so the public trusts the maps you share with them.

Clarity

Good governance isn't about control: it's about making sure everyone knows what exists, who owns it, and whether they can use it.

Balance

Too little governance creates chaos. Too much creates workarounds. The goal is the sweet spot where governance enables rather than obstructs.

Let's Talk

Before we open Q&A, take a moment to think about your own organization.

1

Where are you on the spectrum?

Chaos → Just Right → Bureaucracy. Be honest.

2

What's one rule people ignore?

If they're ignoring it, that's signal, not just defiance.

3

What would help immediately?

One thing you could do Monday morning, no committee required.

4

What does "too much" look like for you?

Every org has a governance ceiling. Knowing yours is useful.

Matt Trebesch

GIS Analyst, Montana State Library

mtrebesch@mt.gov

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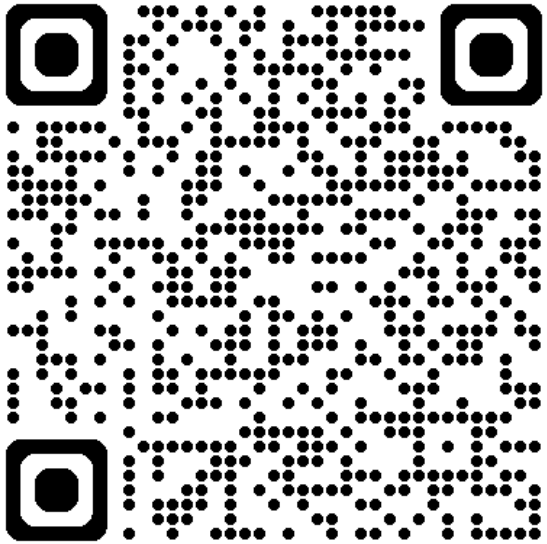

Resources