

***The Value  
of Metadata As A  
Data Management & Project  
Management Tool***

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# **Federal Geographic Data Committee Funded Project**

- **Metadata Outreach and Training**
  - **Basic Metadata Training**
  - **Metadata Assistance with LakeRim Update**
  - **Outreach to GIS Professionals familiar with standards**

# A Component of Data

*Metadata describes*

*Characteristics  
of the data*

**CONTENT  
CONDITION  
QUALITY**

**Metadata has tremendous value to  
Individuals within your organization, as well  
as to individuals outside of your organization**

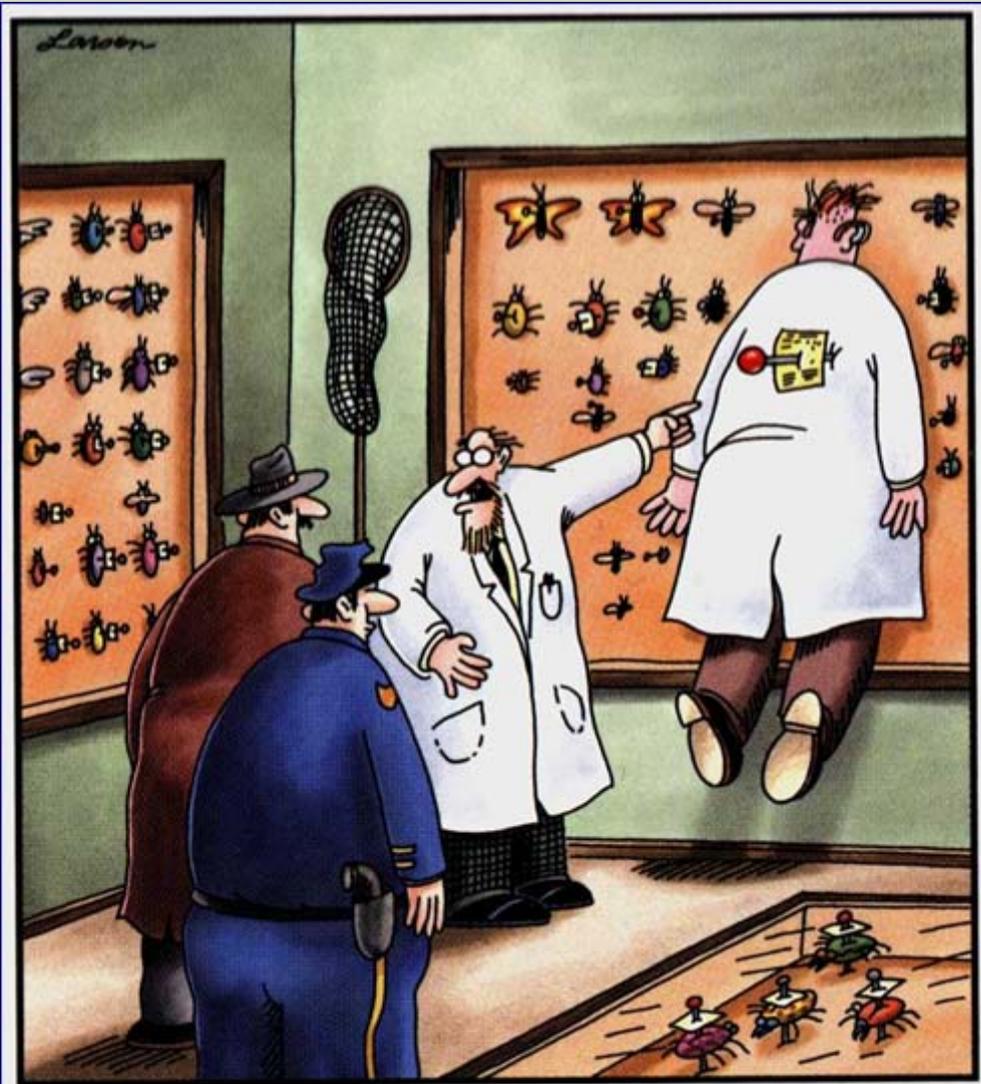
## What is Metadata?

**Simply put,  
metadata is  
information  
about your data.**

Note: Metadata is not your actual spatial data...however, it serves as a reference for your spatial data

# A Component of Data

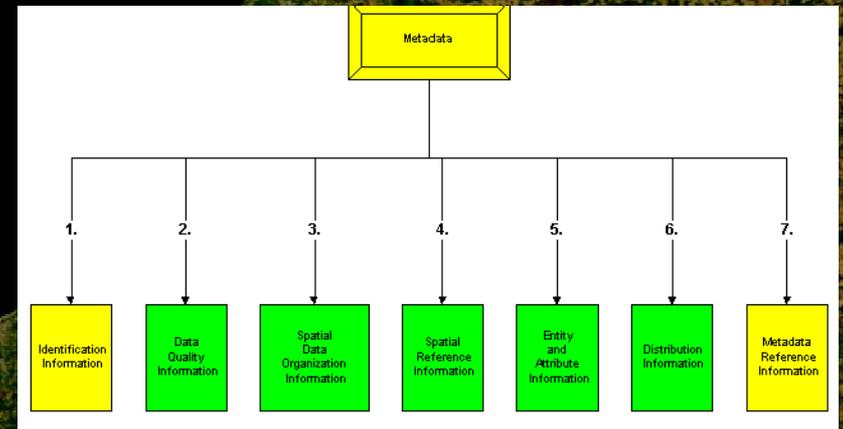
***Properly documented data provides vital information to interested parties.***



“Professor LaVonne had many enemies in the entomological world, detective, but if you examine that data label, you’ll find exactly when and where he was—shall we say—‘collected.’”

# Don't Forget About the Standards

- **FGDC - CSDGM**
- **ISO**
- **NAP**
- **Indiana Profile**

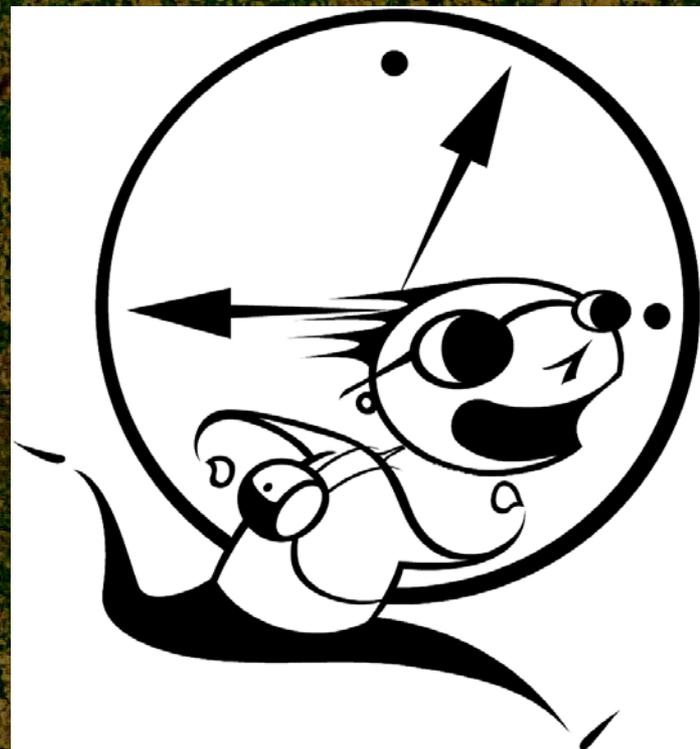


## The Current Concept

### *Primary internal value*

- Critical data asset protection  
(Data insurance policy)
- “Inheritance”
- Cataloging
- Sharing
- Limiting liability

*“Properly documenting a data set is the key to preserving its usefulness through time.”*



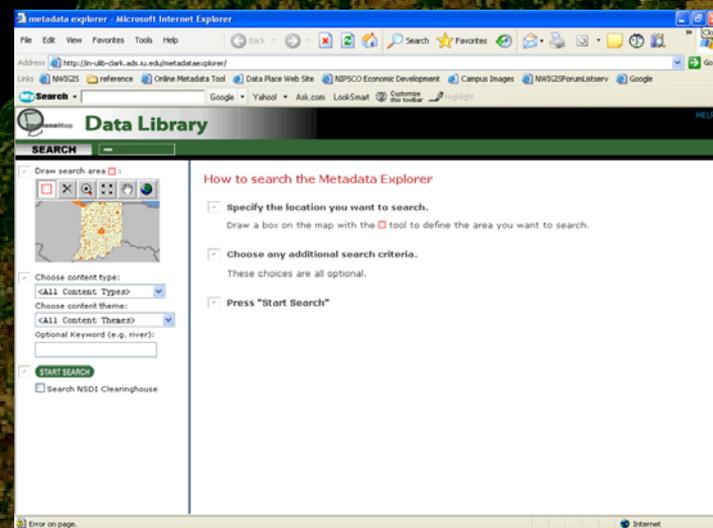
# The Value of Metadata

## The Current Concept

*Using metadata within your organization adds value to your data to users outside of your organization...*

### Primary external value

- Discovery
- Assessment
- Access
- Use



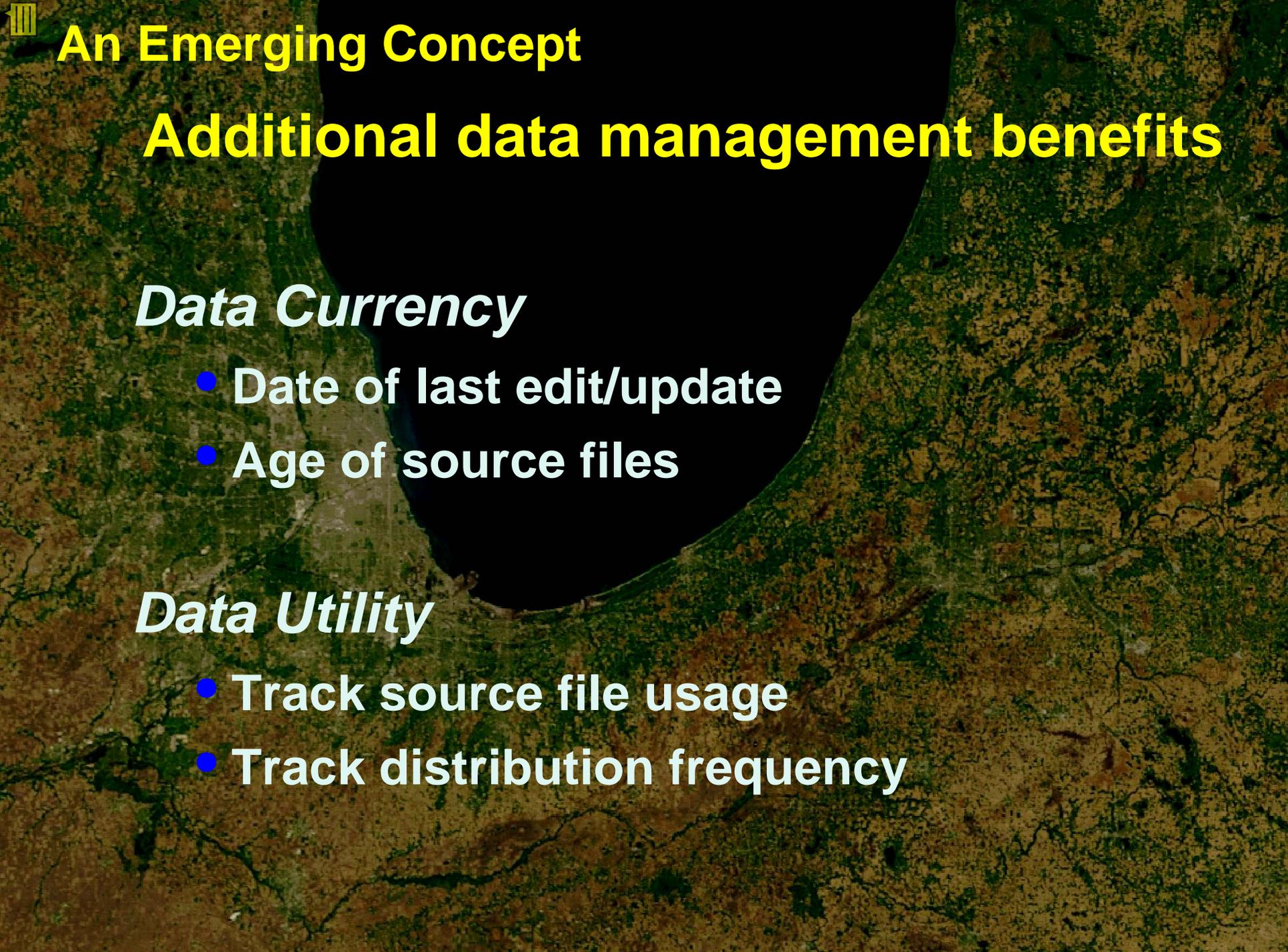


# An Emerging Concept

An aid to data management

*Internal value*

- Discovery
- Assessment
- Access
- Use

An aerial photograph of a coastline, likely a bay or inlet, with a dark, irregularly shaped area highlighted in the center. The surrounding land is a mix of green and brown, suggesting vegetation and bare earth. The water is dark and occupies the central highlighted area.

# **An Emerging Concept**

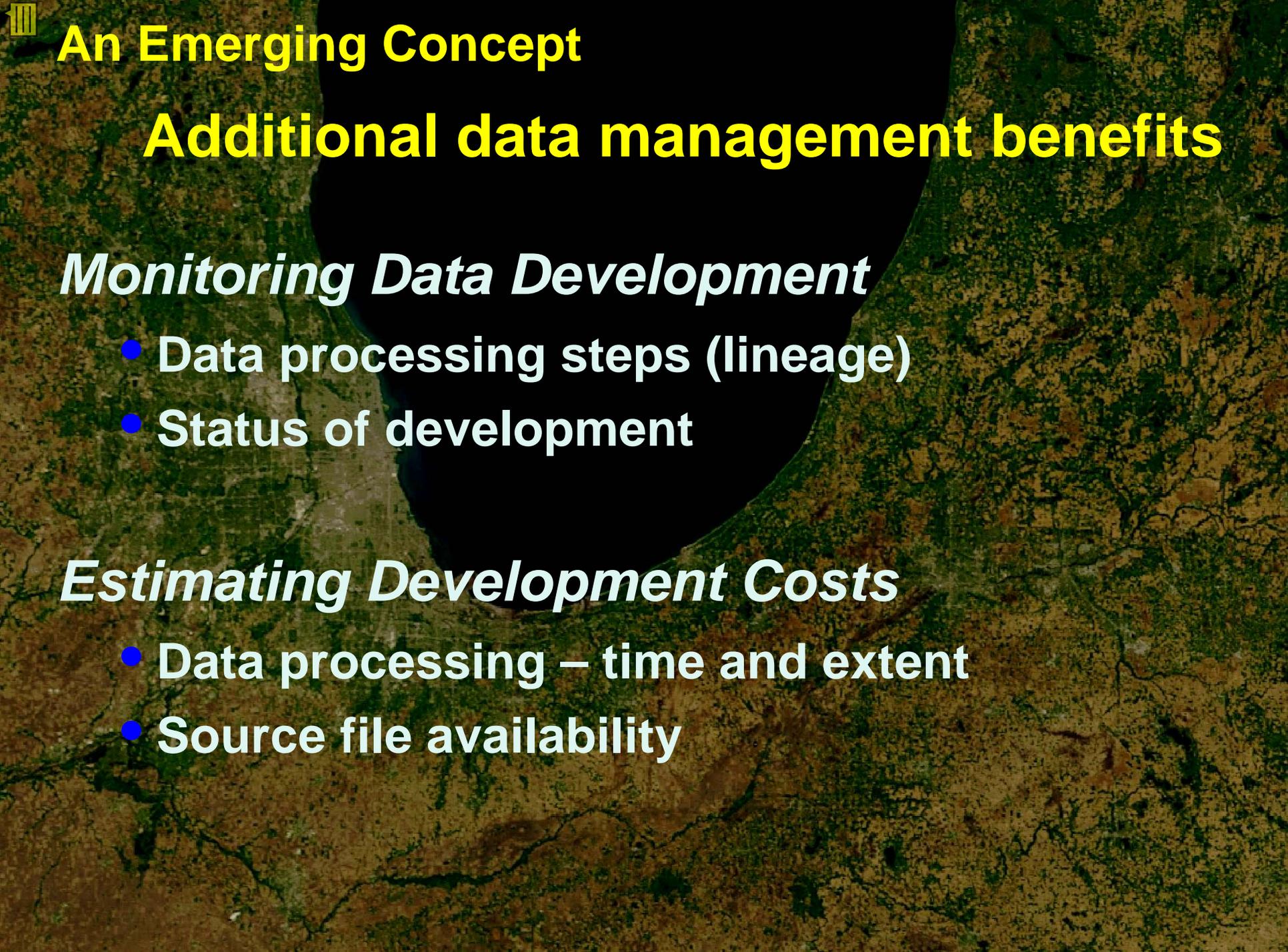
## **Additional data management benefits**

### ***Data Currency***

- **Date of last edit/update**
- **Age of source files**

### ***Data Utility***

- **Track source file usage**
- **Track distribution frequency**



## **An Emerging Concept**

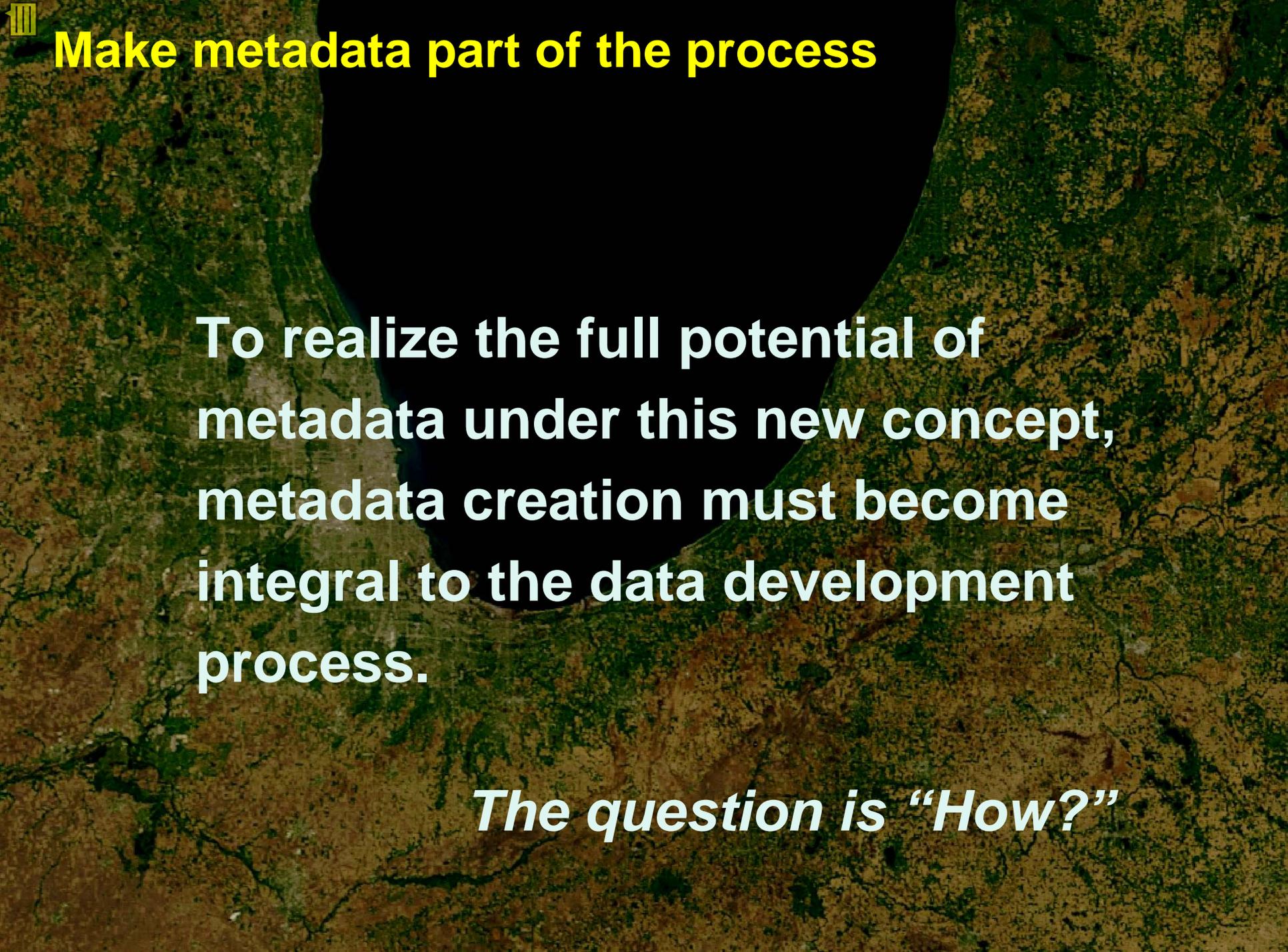
# **Additional data management benefits**

### ***Monitoring Data Development***

- Data processing steps (lineage)
- Status of development

### ***Estimating Development Costs***

- Data processing – time and extent
- Source file availability

An aerial photograph of a river delta, likely the Nile, with a black silhouette of a person's head in the center. The text is overlaid on the image.

## **Make metadata part of the process**

**To realize the full potential of metadata under this new concept, metadata creation must become integral to the data development process.**

***The question is “How?”***



# **Institutionalizing Metadata in Your Organization**

**Building support within...**

# Build Administrative Support

- **Technical staff members are typically the first to learn of metadata as a means of documenting data resources**
- **Administrators, however, are tasked with allocating resources and instituting policies critical to successful implementation.**
- **Goal: Educate administrators!!!**

# Educate by pitching the key functions of Metadata:

- **Data Archive**
- **Data Assessment**
- **Data Management**
- **Data Discovery**
- **Data Transfer**
- **Data Distribution**



# Pitch the key functions of Metadata:

## 1. Data Archive

- Data are the most expensive components of a GIS. Metadata is a means of preserving the value of the data investments.
- This is of particular significance to agencies / organizations experiencing staff changes.

# Pitch the key functions of Metadata:

## 2.Data Assessment

- **GIS data development has shifted from data producers to data consumers.**
- **From a consumer perspective, metadata is the truth in labeling required to assess available data products**
- **From a producer's perspective, metadata declares limitations, and serves as a form of liability insurance.**

# Pitch the key functions of Metadata:

## 3. Data management

- **Metadata enables organizations to retrieve in-house data resources by specific criteria for global edits and annual updates.**

# Pitch the key functions of Metadata:

## 4. Data Discovery

- Metadata is the primary means of locating available geospatial data resources via the Internet.
- Metadata is a primary public information resource as it is a non-technical means of presenting technical information.

# Pitch the key functions of Metadata:

## 5. Data Transfer

- Metadata is increasingly used by software systems as a means of properly ingesting data and by analysts as a means of properly displaying data.

# Pitch the key functions of Metadata:

## 6. Data Distribution

- By building metadata in compliance with national (and international) standards, you can participate in the Global Spatial Data Clearinghouse.
- Participation promotes your agency and frees staff from answering data inquiries.

# Building Administrative Support is Not Enough!

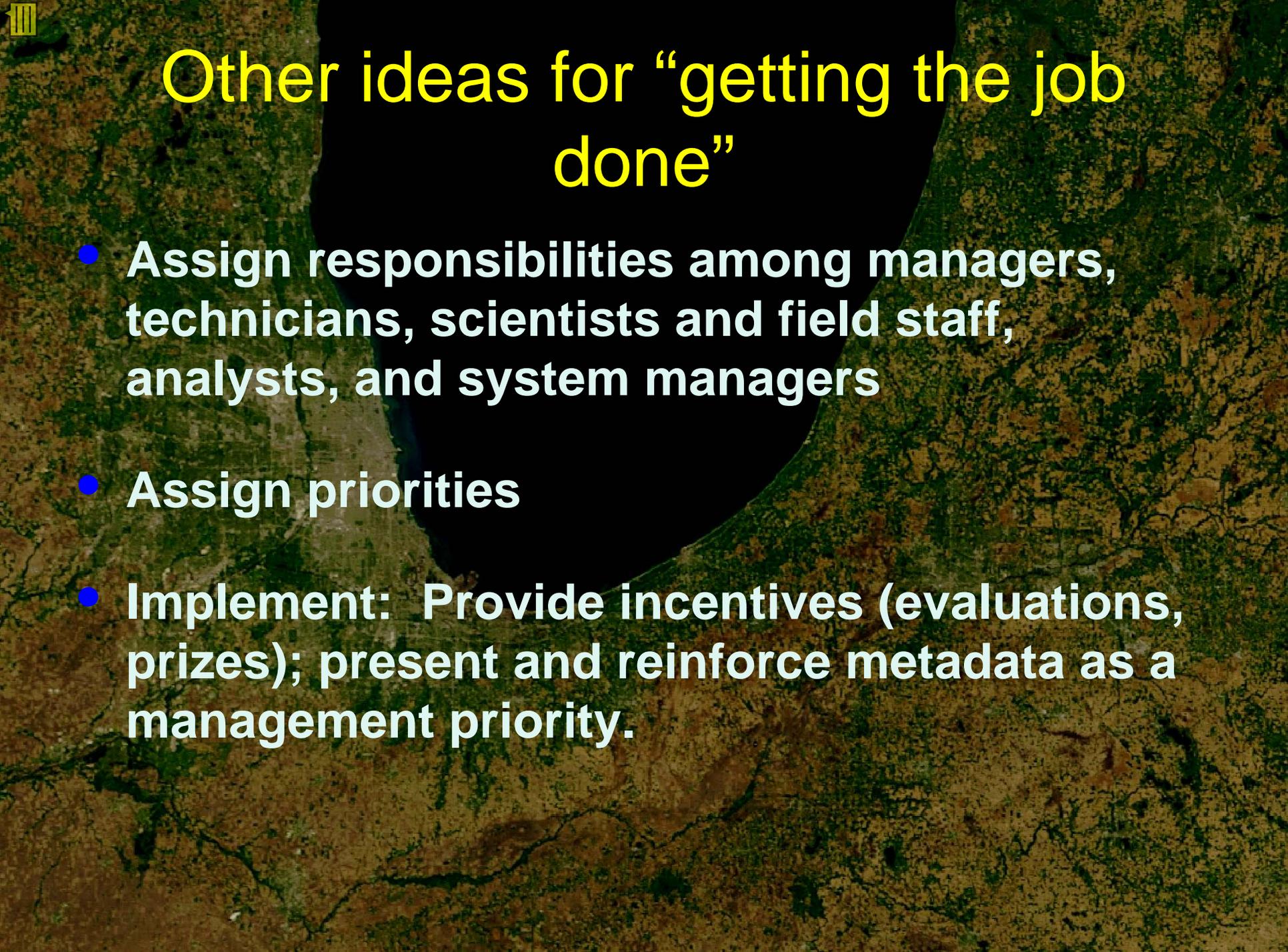
- **The primary responsibility for metadata creation will most likely fall to your technical staff.**
- **It is therefore vital that you are able to stress the individual benefits of metadata creation along with the institutional benefits...**

# To build technical support...stress the benefits of metadata

- Reduces the workload over the long term
- Field fewer data inquiries
- Document individual contributions
- Integrate technical staff in the metadata decision making process from the outset. This will bring important insight into the process, and may foster a spirit of ownership.

# Building Technical Support

- **Training – provide technical staff with training opportunities**
- **Tools – provide staff with the proper metadata tools to encourage efficient and effective metadata creation**
- **Time – metadata creation takes time... especially during the “start-up” period.**

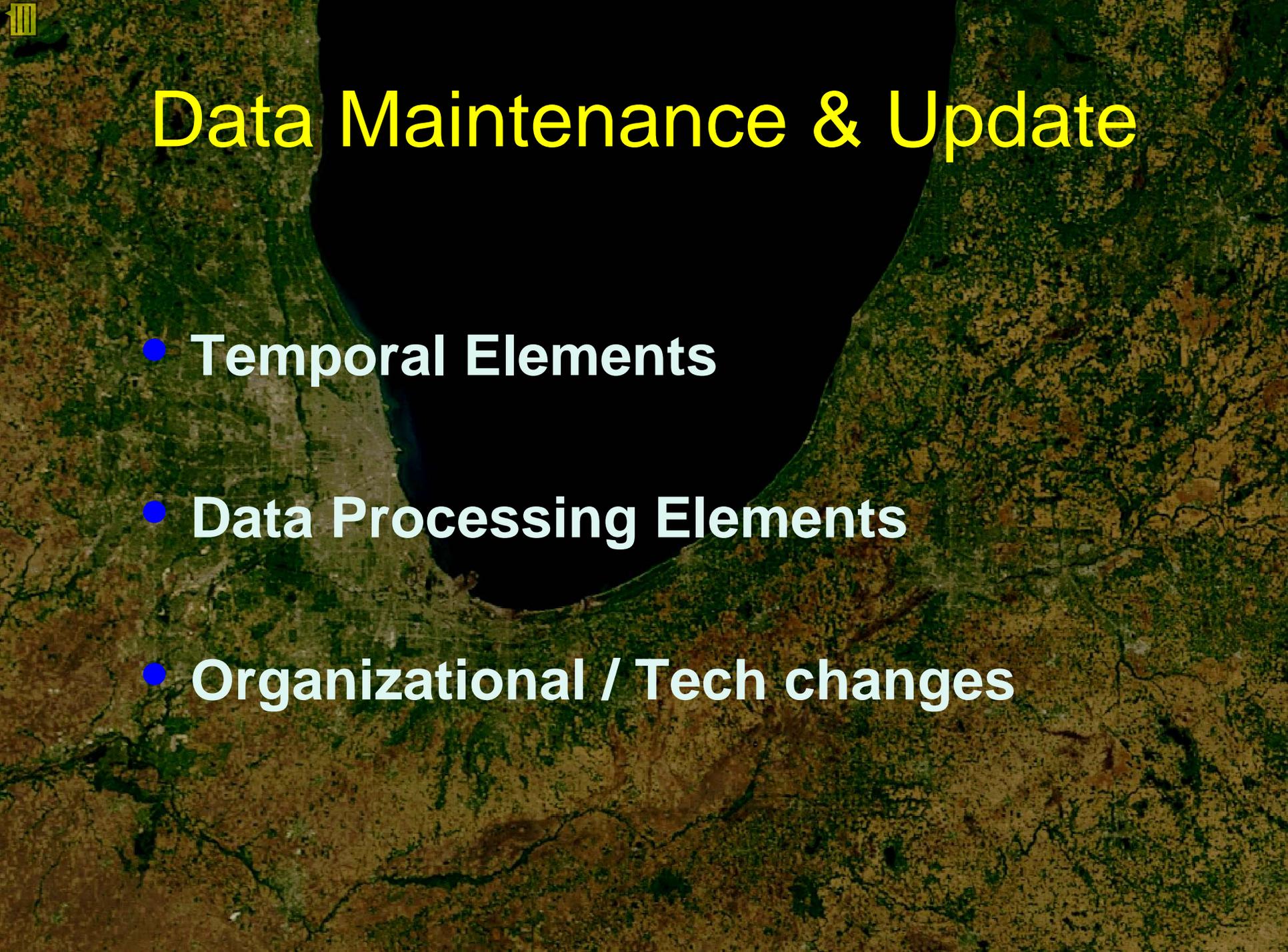


# Other ideas for “getting the job done”

- **Assign responsibilities among managers, technicians, scientists and field staff, analysts, and system managers**
- **Assign priorities**
- **Implement: Provide incentives (evaluations, prizes); present and reinforce metadata as a management priority.**

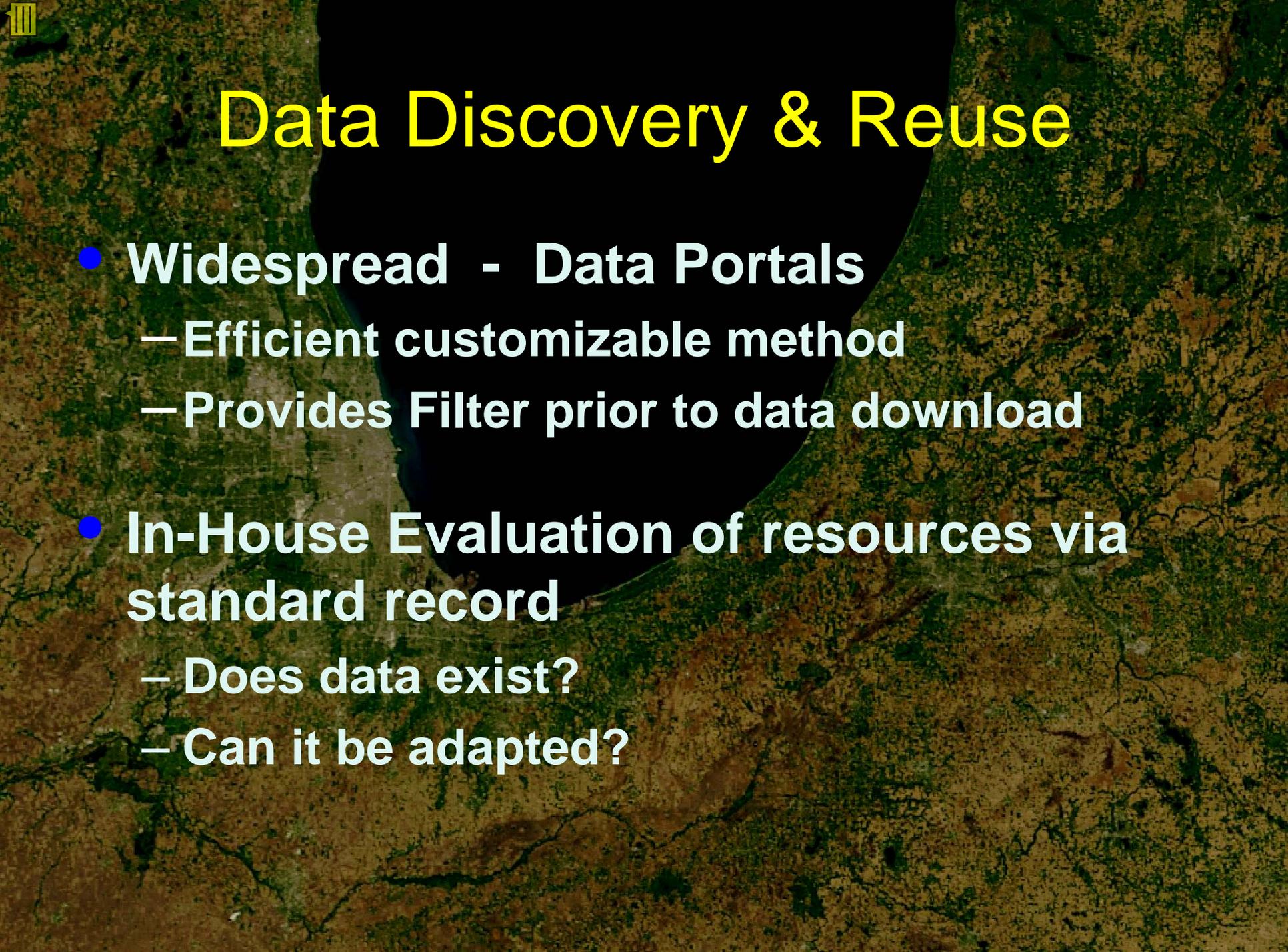
# Metadata in Action

- **Data Management Applications**
  - 1. Data Maintenance & Update**
  - 2. Data Discovery and Reuse**
  - 3. Data Accountability**
  - 4. Data Liability**



# Data Maintenance & Update

- **Temporal Elements**
- **Data Processing Elements**
- **Organizational / Tech changes**

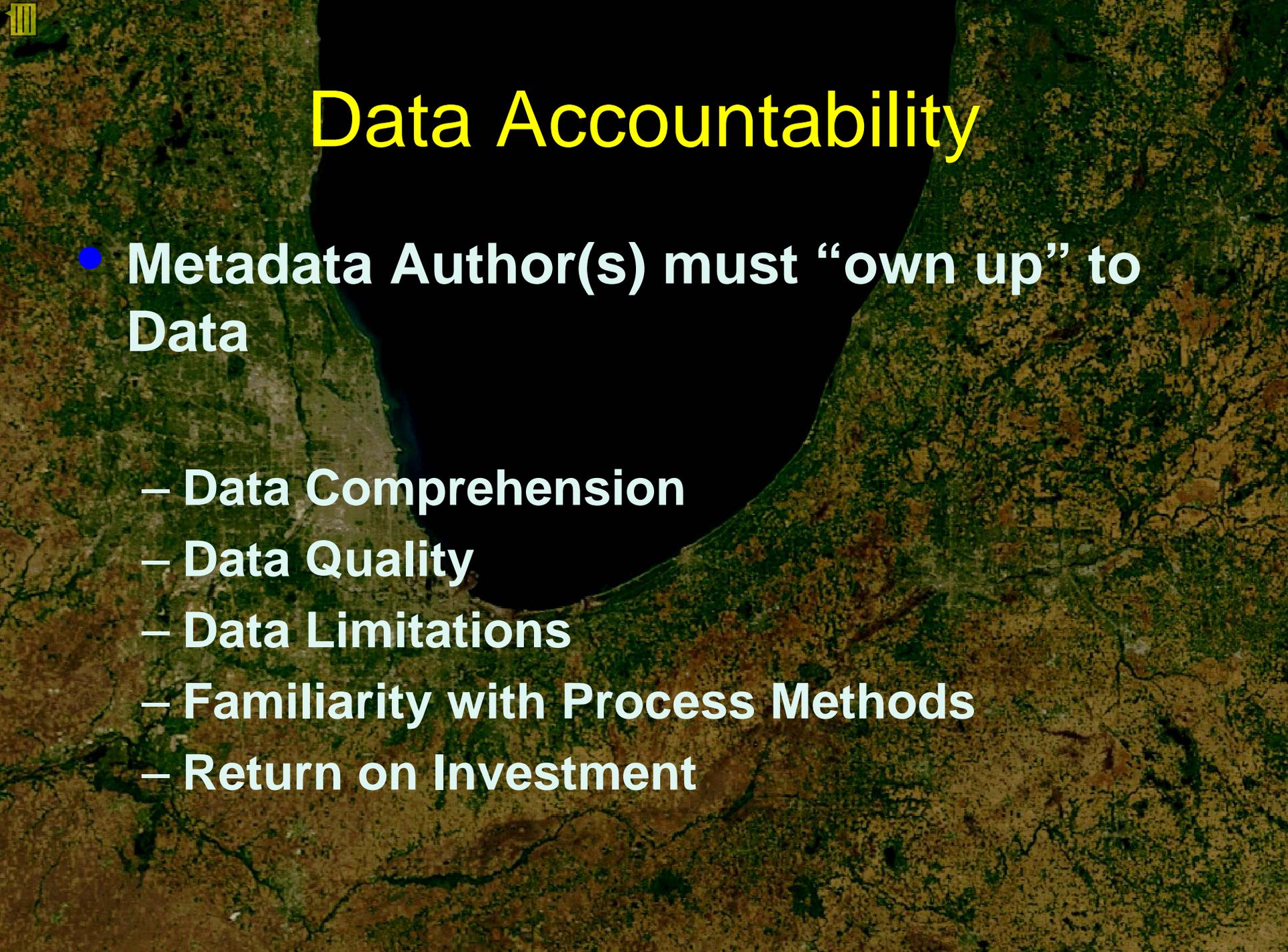


# Data Discovery & Reuse

- **Widespread - Data Portals**
  - Efficient customizable method
  - Provides Filter prior to data download
- **In-House Evaluation of resources via standard record**
  - Does data exist?
  - Can it be adapted?

# Data Retrieval

- **Datasets may be Assessed with Regards to:**
  1. **Themes & Attributes**
  2. **Geographic Extent**
  3. **Temporal Character**
  4. **Data Processing Methods**
  5. **Data Contributors**
  6. **Data Quality**

An aerial photograph of a landscape with a large black silhouette of a person's head in the center. The text is overlaid on this image.

# Data Accountability

- **Metadata Author(s) must “own up” to Data**
  - **Data Comprehension**
  - **Data Quality**
  - **Data Limitations**
  - **Familiarity with Process Methods**
  - **Return on Investment**

# Example

- **2 Similar Datasets**

**#1 – Documents only spatial locations**

**#2 – Documents spatial locations & attributes**

**Improper Documentation = Misuse?**

# Metadata & Project Management

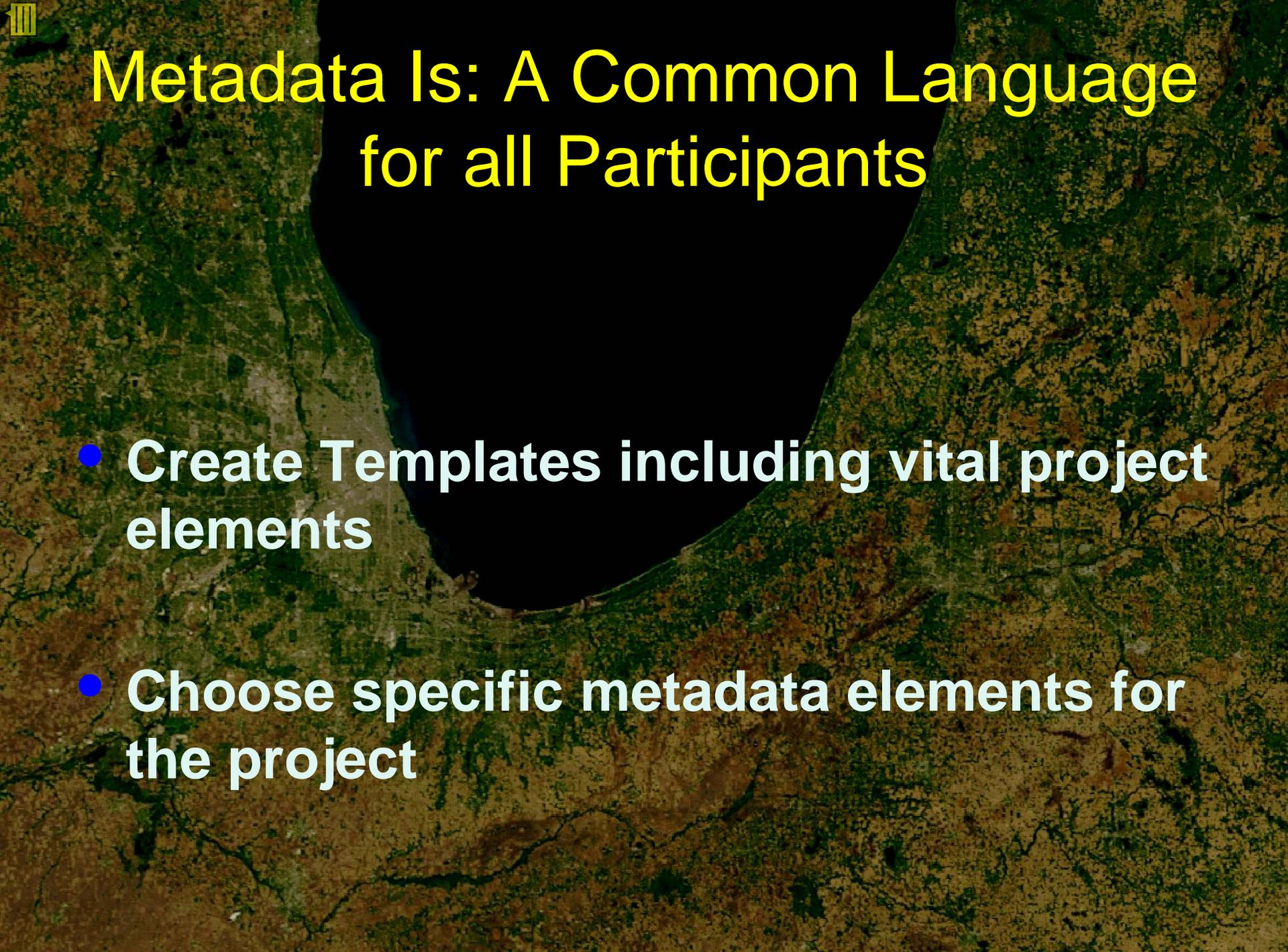
- 1. Project Planning**
- 2. Project Monitoring**
- 3. Common Language for Multiple Participants**
- 4. Contract Deliverables**

# Metadata's Role in Project Planning

- **Serves as Outline**
  - Purpose
  - Project Extent
  - Time Period of Content
  - Process Steps
  - Data Dictionary
- **Benefits**
  - Good Communication Vehicle
  - Planning
  - Medium for Project Logging/Changes

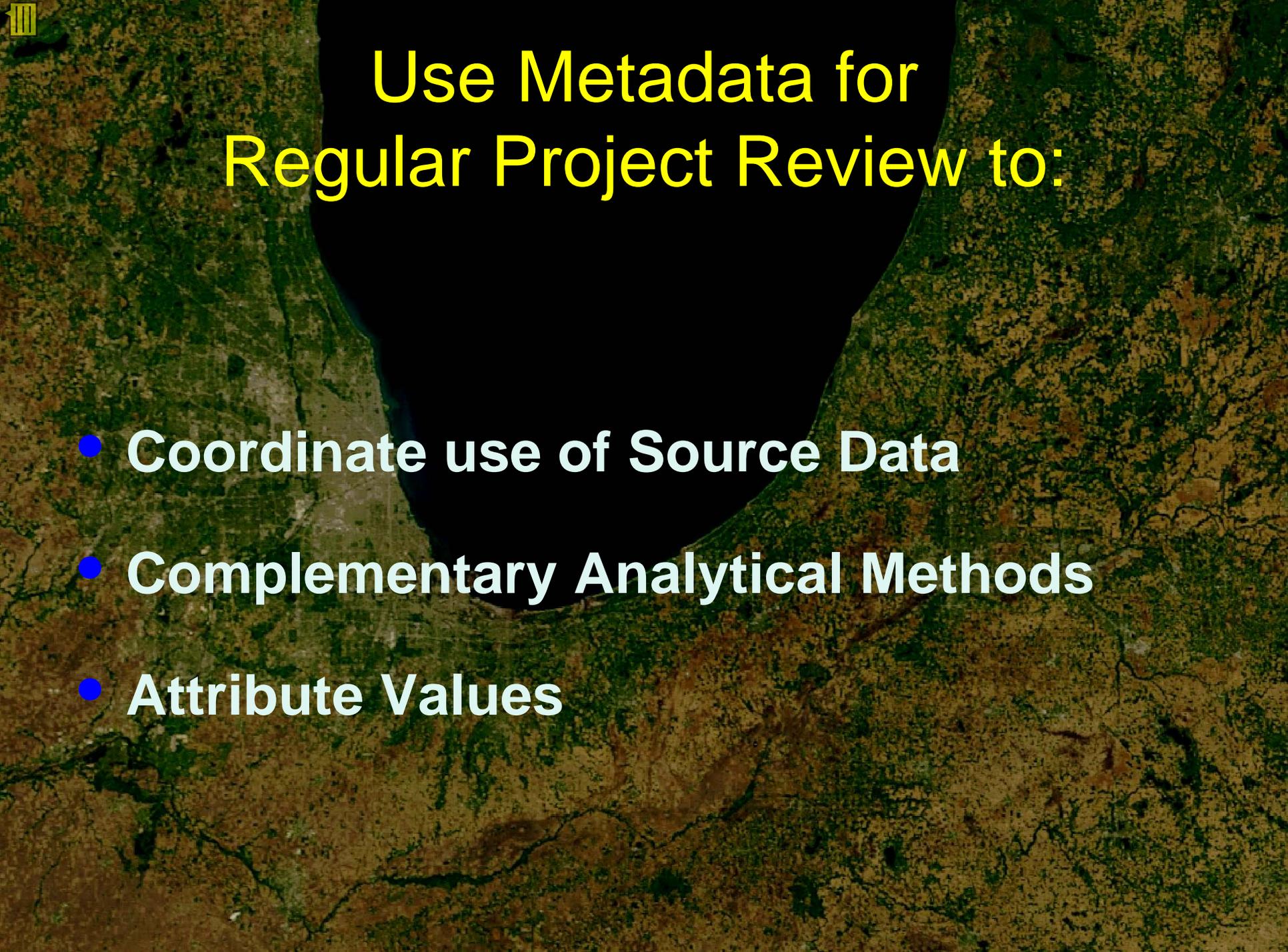
# Metadata's Role in Project Monitoring

- **Keep Track of Status**
- **Project Development Monitor**
- **Monitor QA/QC**



# Metadata Is: A Common Language for all Participants

- **Create Templates including vital project elements**
- **Choose specific metadata elements for the project**



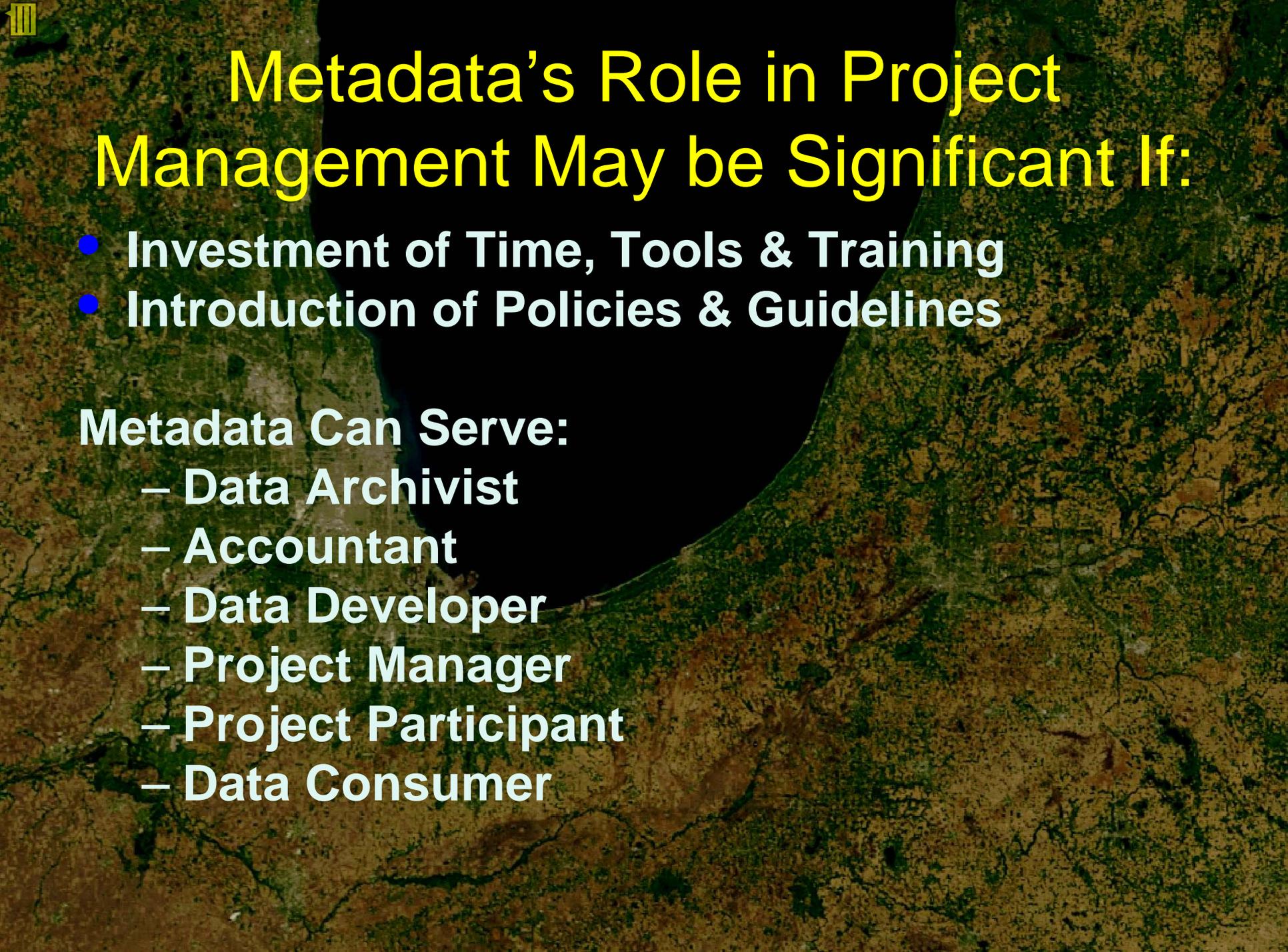
# Use Metadata for Regular Project Review to:

- **Coordinate use of Source Data**
- **Complementary Analytical Methods**
- **Attribute Values**



# Make Sure to Include Metadata as Part of a Contract Deliverable

- **Communicate the quality of metadata expected**
- **Require a Project Metadata Template that includes specific elements of interest**
- **Request Contractor's SOP for Creating Metadata**



# Metadata's Role in Project Management May be Significant If:

- Investment of Time, Tools & Training
- Introduction of Policies & Guidelines

## Metadata Can Serve:

- Data Archivist
- Accountant
- Data Developer
- Project Manager
- Project Participant
- Data Consumer

# Metadata Demonstration

## Data Management

- **Updating Contact information in ArcCatalog**