Conservation and Transportation
Colorado Pilot Workshop 2006

Tools and Approaches
with CDOT Environmental Geodatabase
and Data Initiative

Who and What:

Intro Concepts: Kimberly Majerus, FHWA-Resource Center near Chgo

CDOT: Roland Wostl, CDOT, Env Progr Brch, Env Planning Section

Handout: other references and web sites (see folder)

Topics: Tools and Approaches

- Factors for Decision-Making, Uses of Tools

- Examples: Conservation with Transportation

- Colorado Example of Tools & Approaches:
  Speaker: Roland Wostl
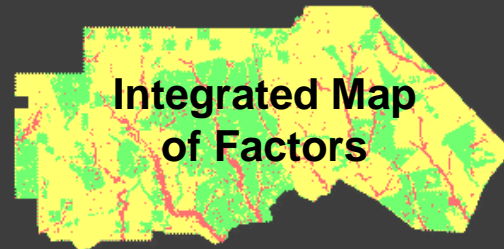 Topic: CDOT Environmental Geodatabase and
    Data Initiative

Integrate Information, People, and Decisions

Support for Transportation Decisions

Wildlife, Fish, Ecology, Wetlands, Water

Integrated Map of Factors

Map composite of environmental sensitivity
1) Least Sensitive
2) Potentially Sensitive
3) Moderately Sensitive
4) Most Sensitive
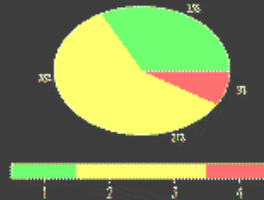
Community Values and Public Involvement

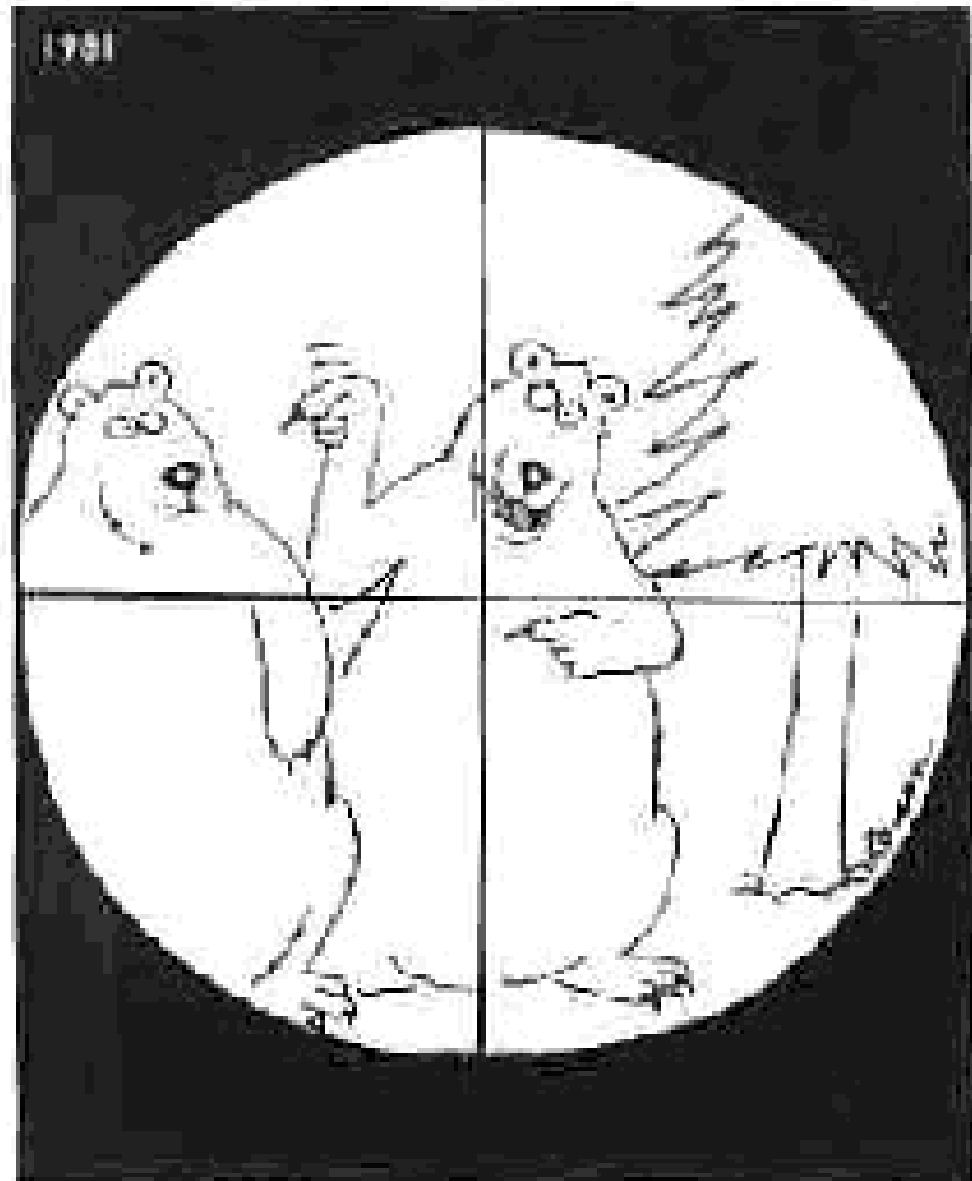**Contaminants/ Haz Waste**

Env Methods, Tools, and GIS

Air Quality and Noise and other Issues

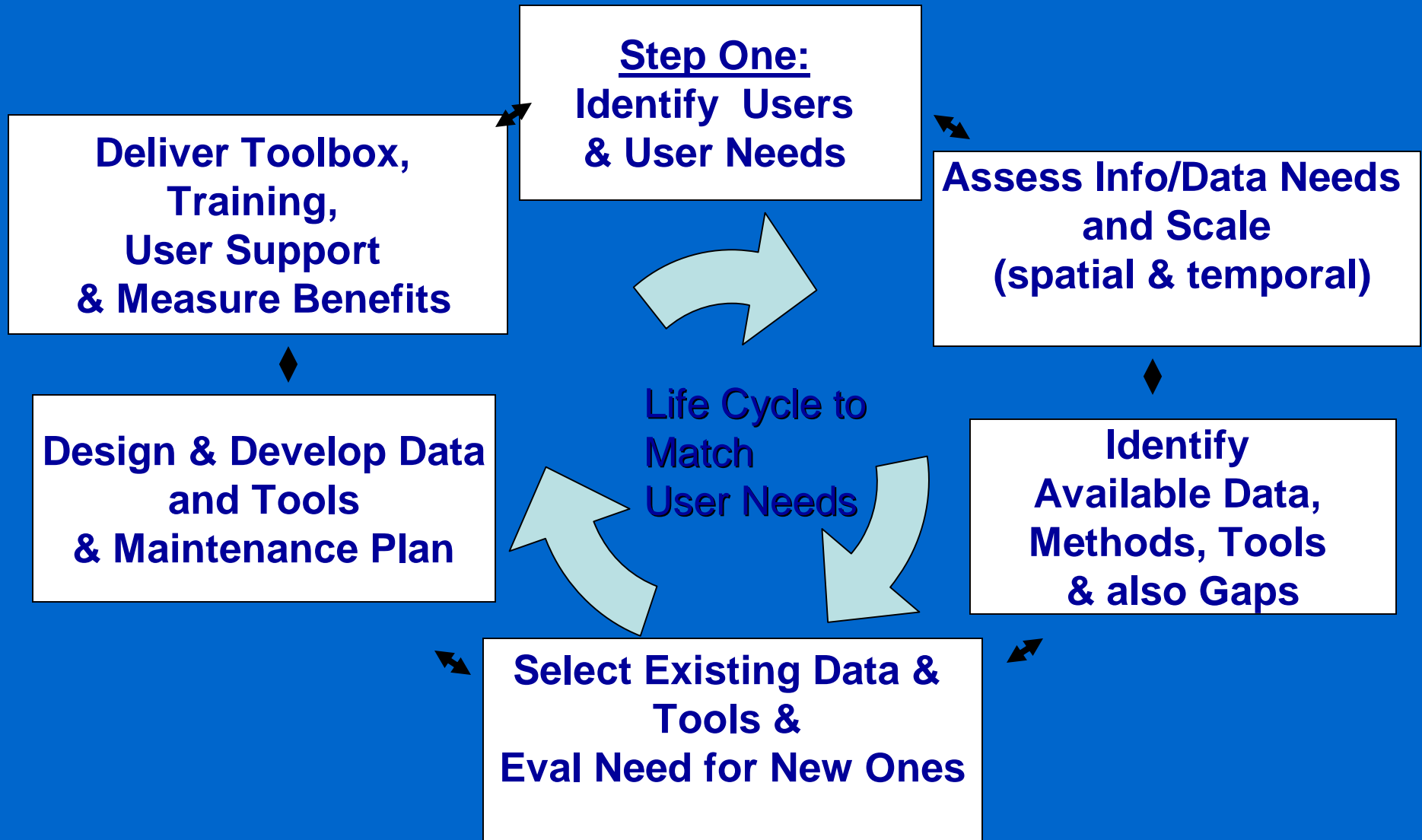**Cultural Resources and Tribal Coordination**

Integration?

a wildlife example

Far Side cartoon by Larson

Use and Integration of Tools – How do we get there?

Technology Life Cycle to Match User Needs

Step One:
Identify Users
& User Needs

**Assess Info/Data Needs
and Scale
(spatial & temporal)**

**Deliver Toolbox,
Training,
User Support
& Measure Benefits**

Life Cycle to
Match
User Needs

**Identify
Available Data,
Methods, Tools
& also Gaps**

**Design & Develop Data
and Tools
& Maintenance Plan**

**Select Existing Data &
Tools &
Eval Need for New Ones**

Based on Information Needs – What Data is Already Available? National Spatial Data Infrastructure (NSDI)

Develop, Access, Use -Data at Various Levels
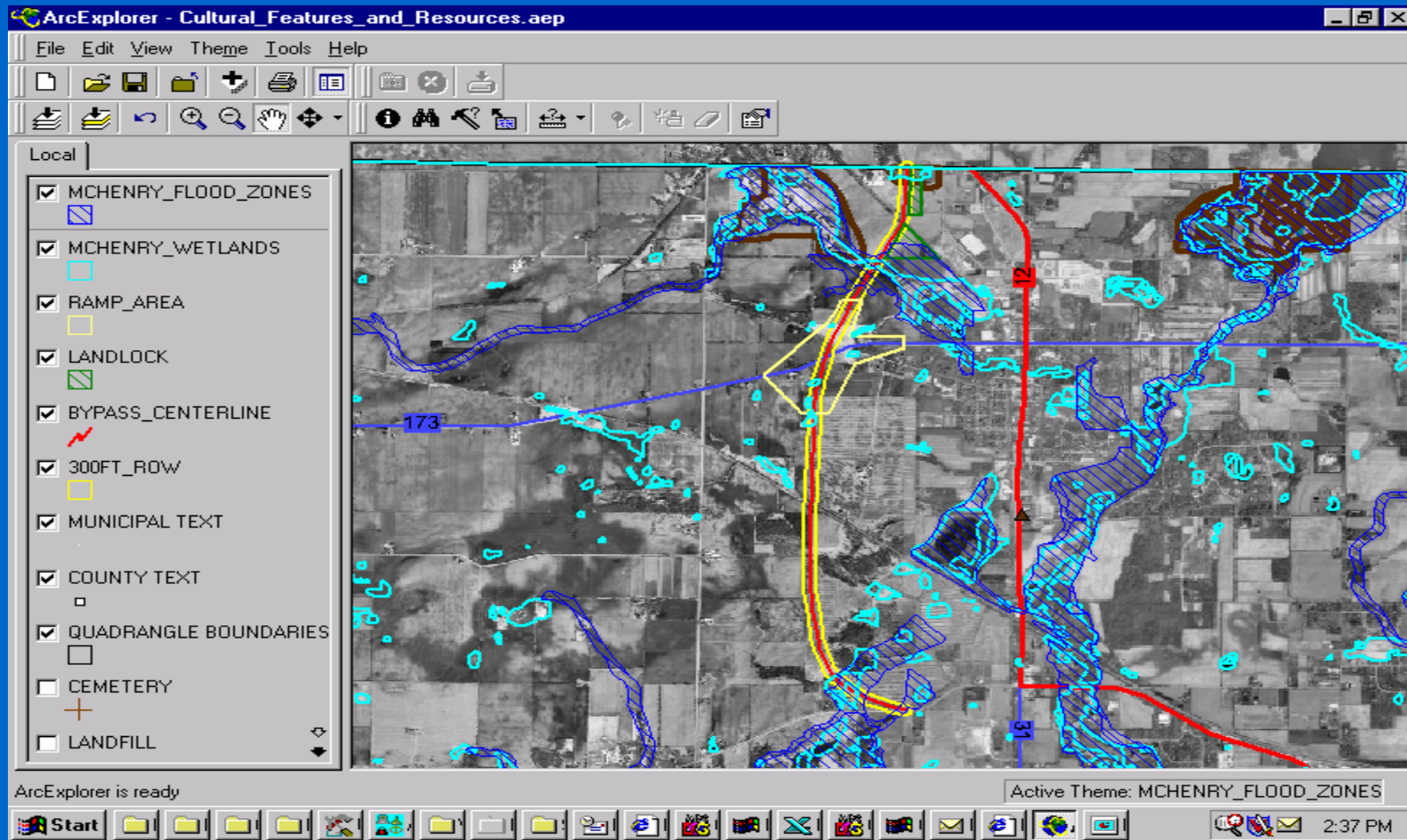
Regional & National

County/Parish

Local Data & Uses

NSDI Available for:

-Data exchange,

-Aggregation,

-Multi-level, multi-purpose
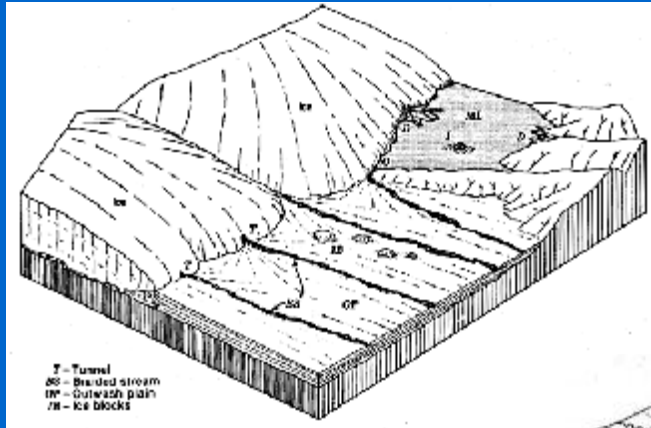
- Analyses

-Metadata use

Illinois DOT example use of
NSDI Free Environmental GIS Data on Web

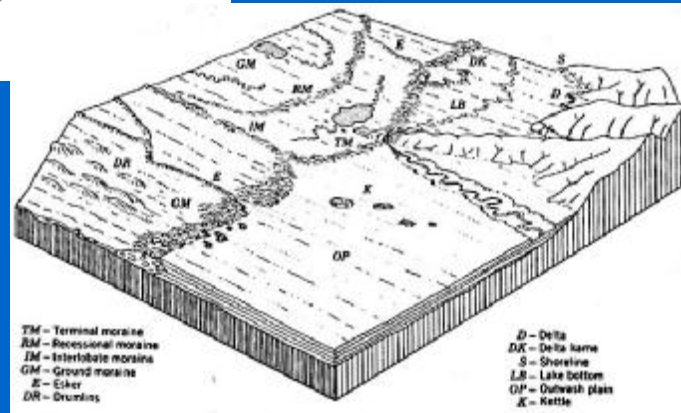*Integrate Avail Data -NWI Wetlands, Hydric Soils, Floodplains, & Orthophotos*

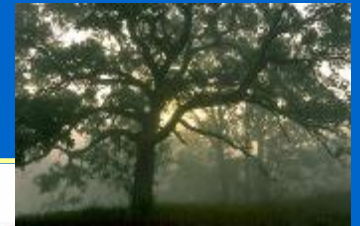# Information for Decisions: Natural Environment, Natural Foundation

IL– 10,000 yrs ago - Landforms

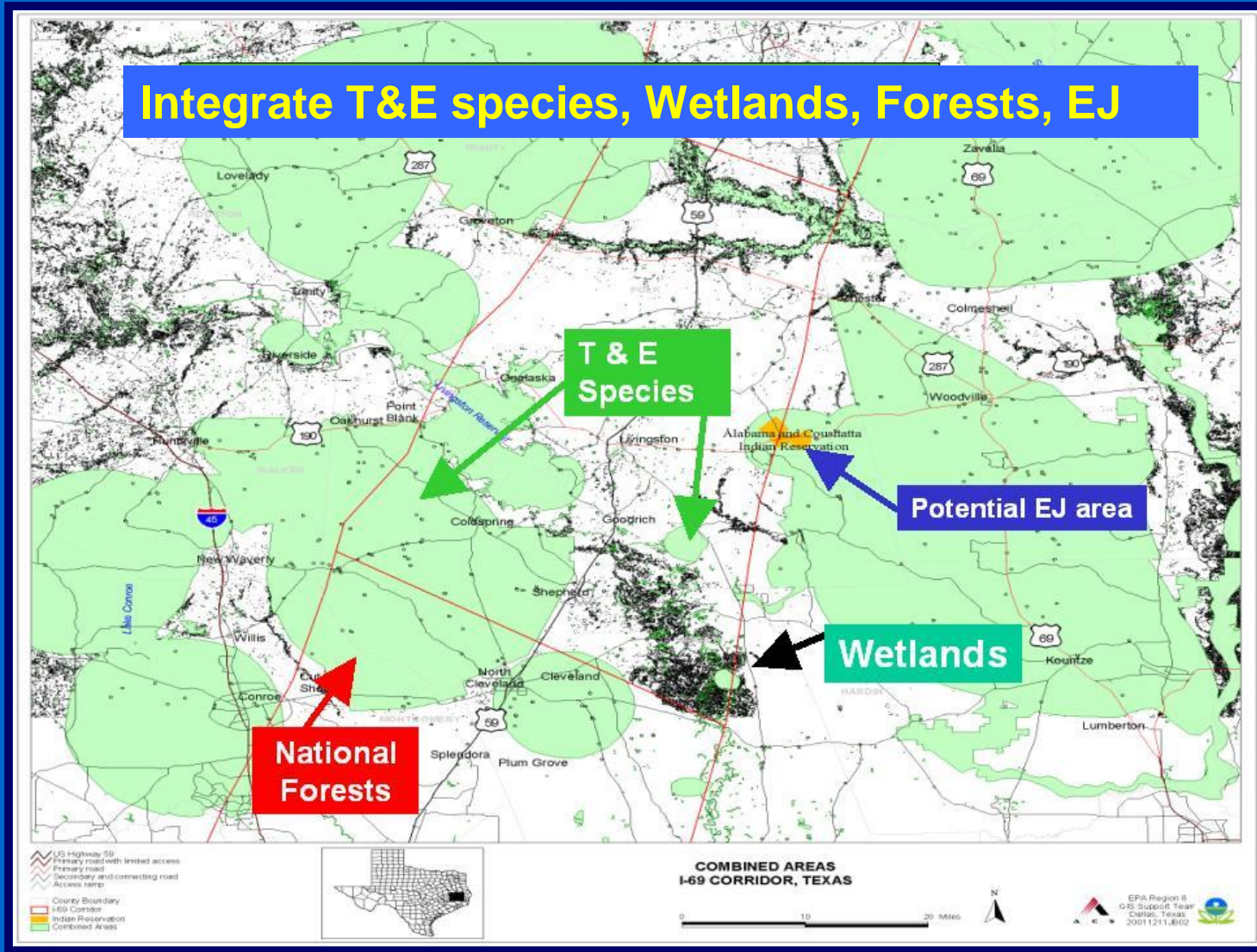**Weathering through time**

Existing: Oak Savanna

Natural Environment

- *Topography*
- *Slope*
- *Soils*
- *Parent Material & Geology*
- *Hydrology & Drainage*
- *Vegetation (example, wetlands)*
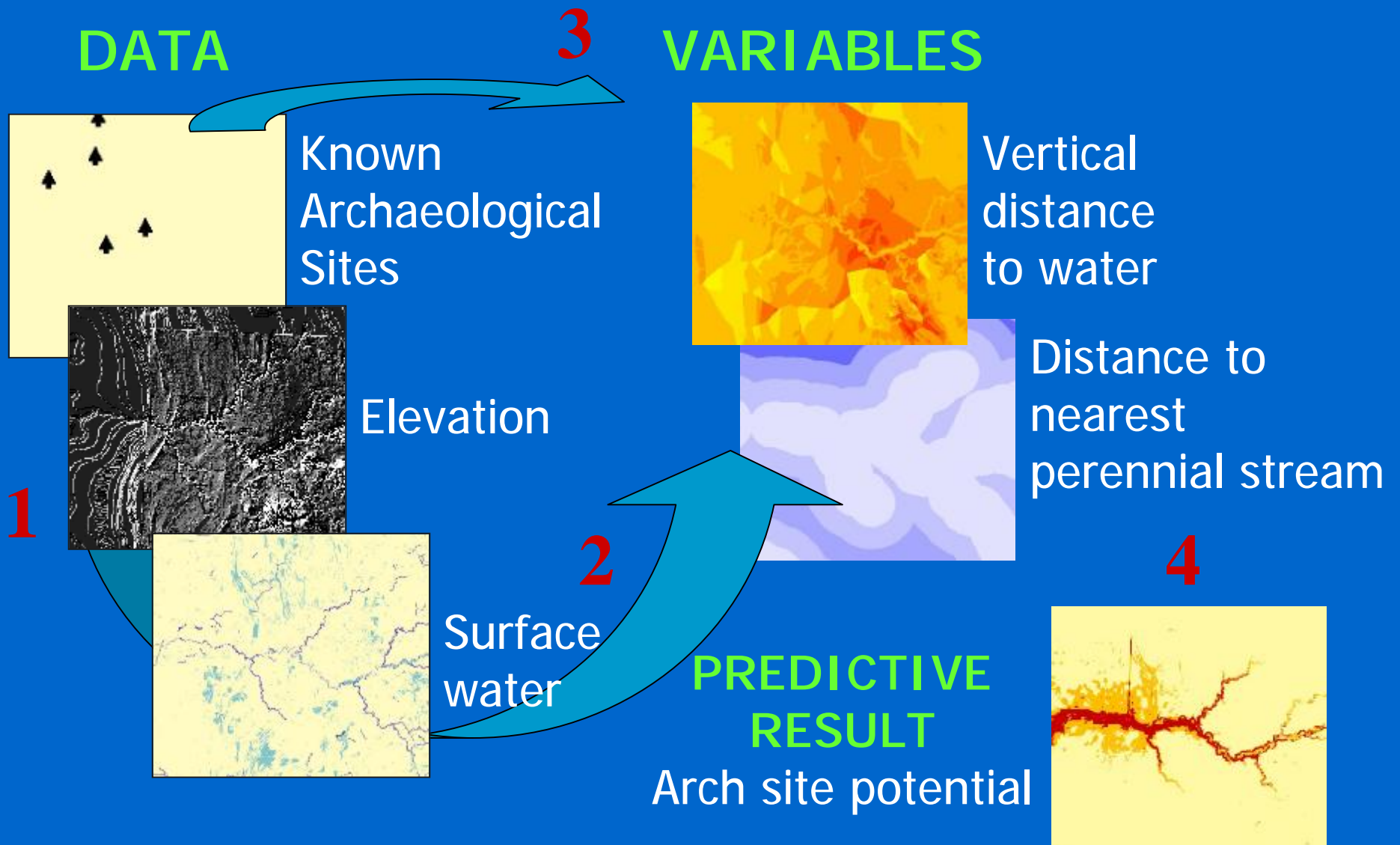
Texas GIS Environ Screening Tool

Integrate T&E species, Wetlands, Forests, EJ

From US EPA's GISST animated demo

Power Tools – GIS Analysis – MN GIS Predictive Modeling

DATA

3

VARIABLES

Known Archaeological Sites

Vertical distance to water

Elevation

Distance to nearest perennial stream

1

2

Surface water

4

PREDICTIVE RESULT

Arch site potential

Power Tools: GIS Analysis
IL GIS Simulation, Predictive Modeling for Impact Assessment, Mitigation, and Monitoring

GIS Model Simulations:
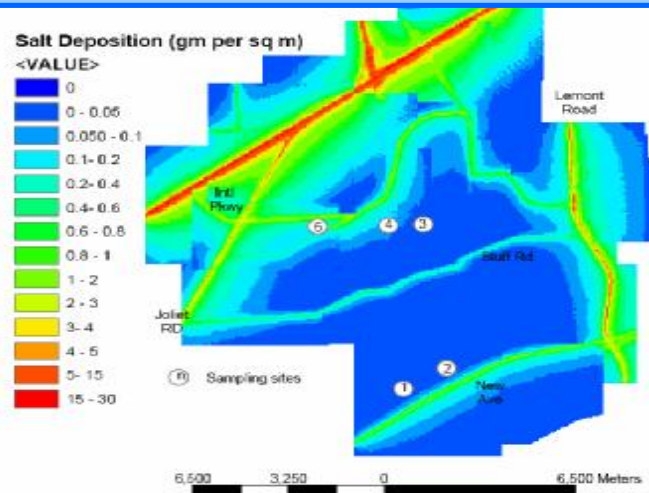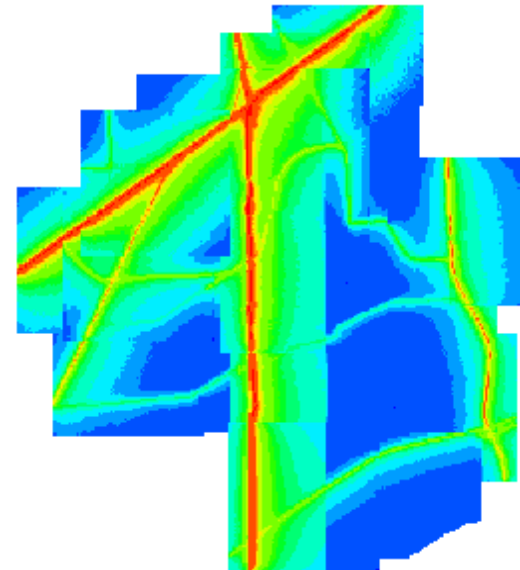
Baseline before construction

Predicted Model Results: After construction

Salt Deposition (gm per sq m)
<VALUE>

	0
	0 - 0.05
	0.050 - 0.1
	0.1 - 0.2
	0.2 - 0.4
	0.4 - 0.6
	0.6 - 0.8
	0.8 - 1
	1 - 2
	2 - 3
	3 - 4
	4 - 5
	5 - 15
	15 - 30

Sampling sites

6,500   3,250   0   6,500 Meters

Figure 13.   Model Simulations of Salt Deposition Near the Sampling Sites

Proposed

Trans

Use & Integration of Tools –How do we get there?

Technology Life Cycle to Match User Needs

Step One:
Identify Users
& User Needs

Assess Info/Data Needs and Scale
(spatial & temporal)

**Deliver Toolbox,
Training,
User Support
& Measure Benefits**

Life Cycle to
Match
User Needs

**Identify
Available Data,
Methods, Tools
& also Gaps**

**Design & Develop Data
and Tools
& Maintenance Plan**

**Select Existing Data &
Tools &
Eval Need for New Ones**
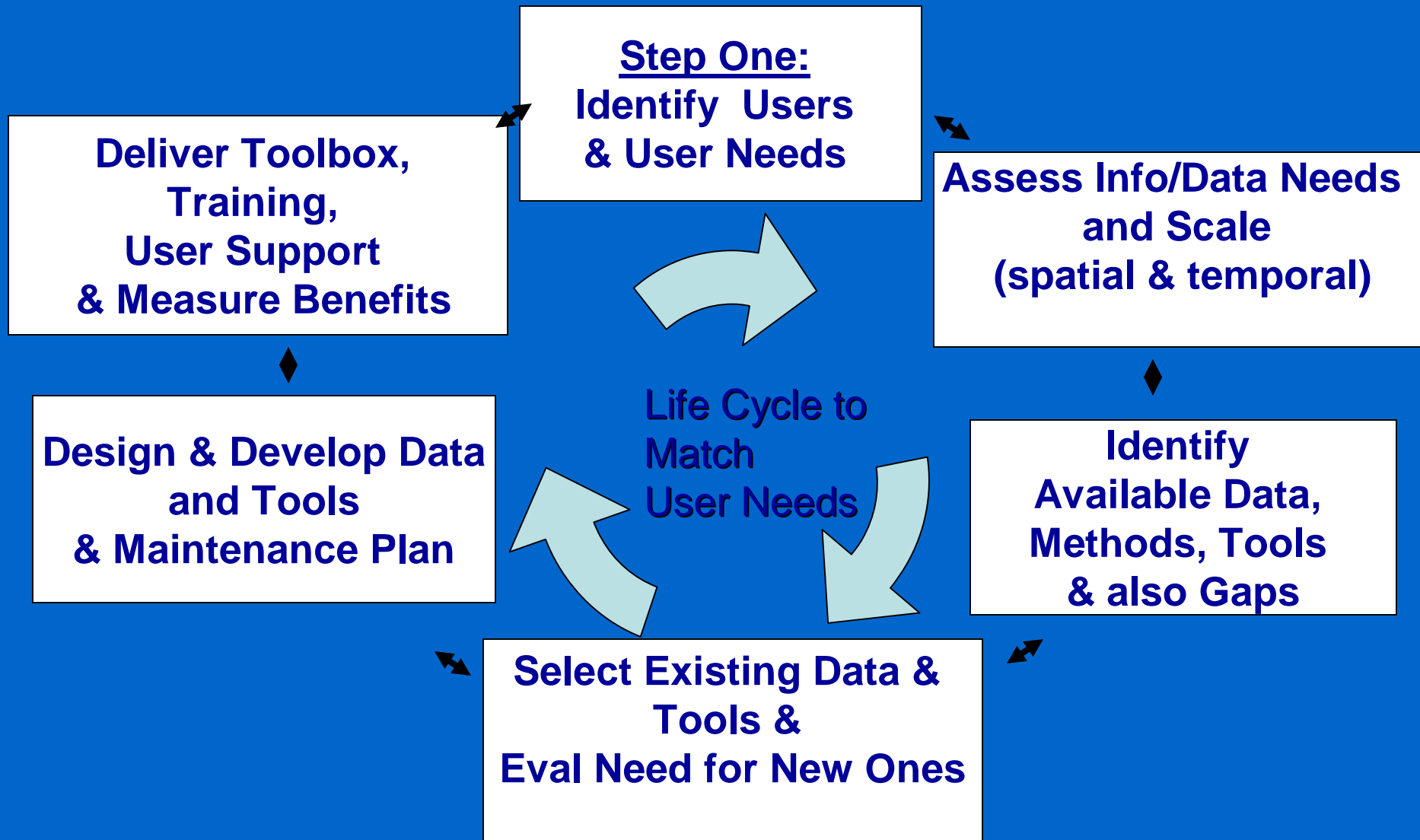
Based on User Needs -

What tools are available? Identify Gaps?

Example: Framework for tool evaluation

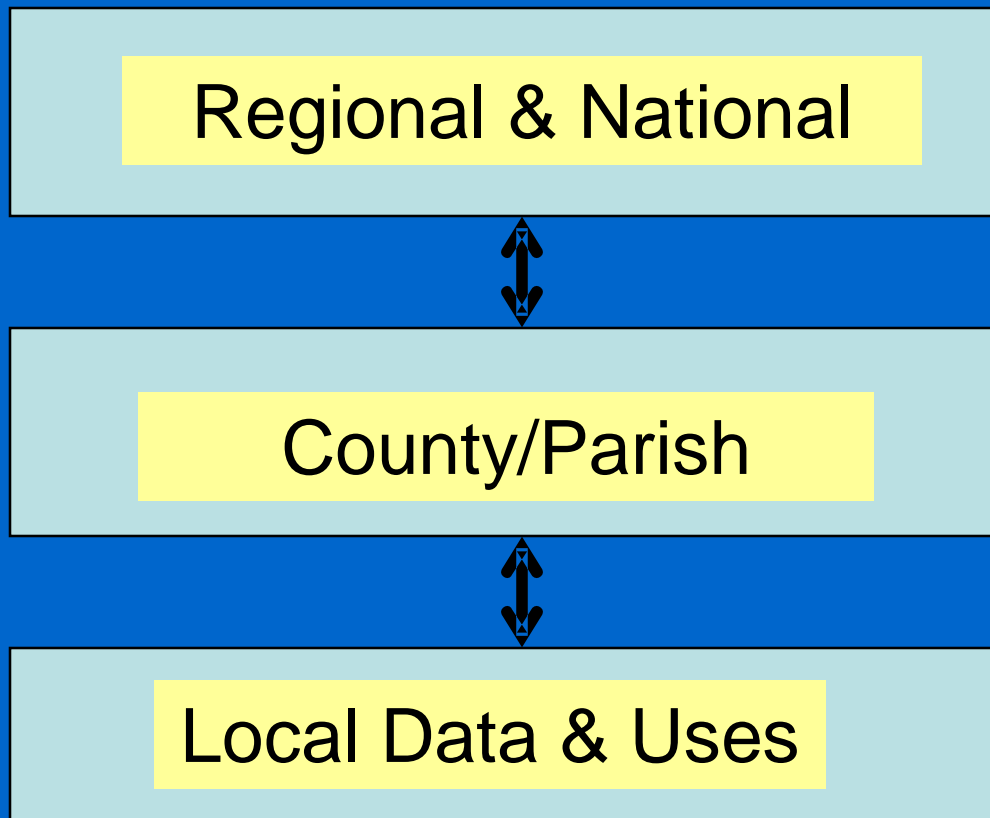# For **information needs & uses–** for CO

What info/data is available?

Ways to make data avail/share?

Regional & National

$\updownarrow$

County/Parish

$\updownarrow$

Local Data & Uses

- NSDI (www.geo-one-stop.gov)
- Other offices
- Other agencies
- Other sources
- Data Collection Needed?

NEXT – Colorado Highlight of
Tools and Approaches

Roland Wostl, CDOT, Environ Programs Branch, Environ Planning Sections

Topic: CDOT Environmental Geodatabase and Data Initiative