Duke
NICHOLAS SCHOOL OF THE ENVIRONMENT

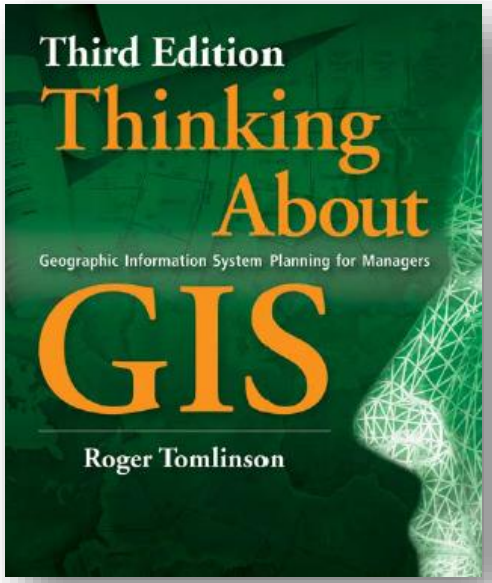
Project Based GIS

ENVIRON 761

Geospatial Applications for Conservation & Land Management

The need to plan… …and adapt!

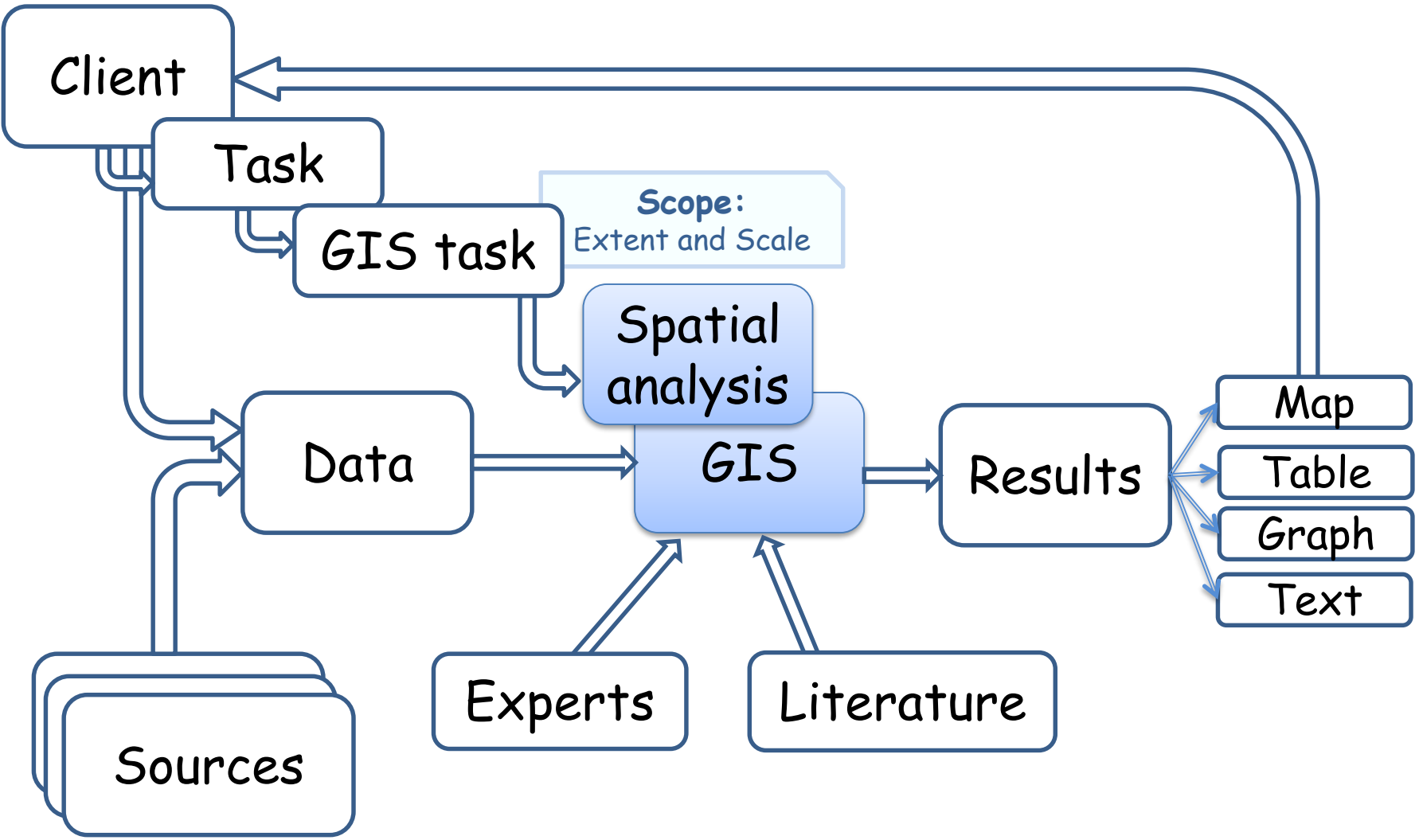
Lack of planning → Wasted time and $$



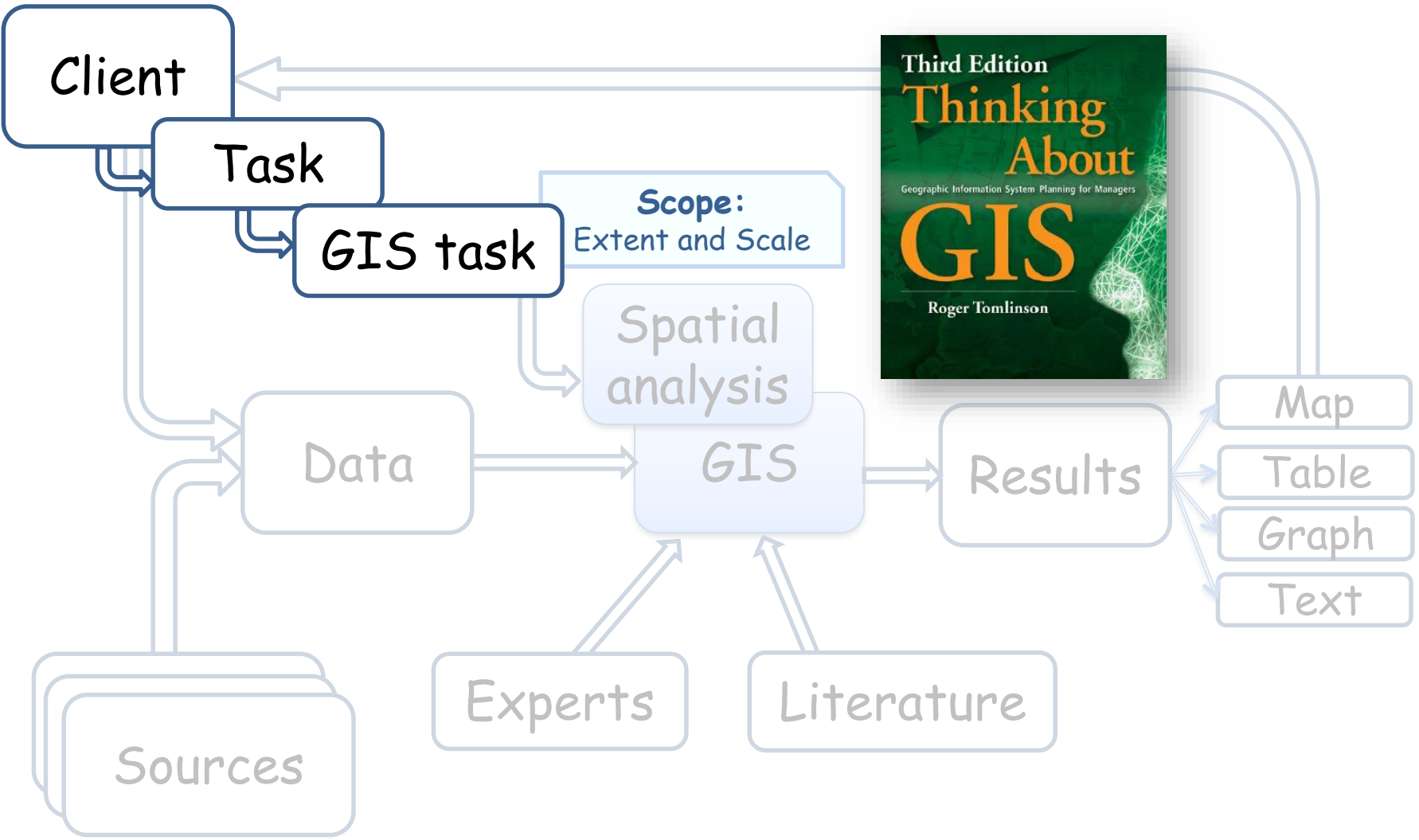
Keep your eye on the prize (i.e., information products)

Be adaptable; technology changes

Project based GIS



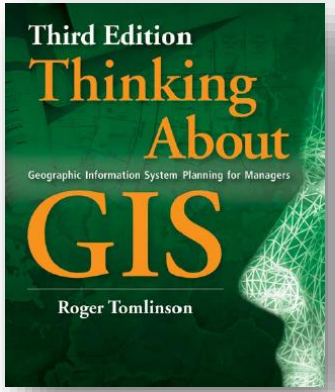
Before taking action: planning



Tomlinson: 10-stage GIS planning

The ten-stage GIS planning methodology

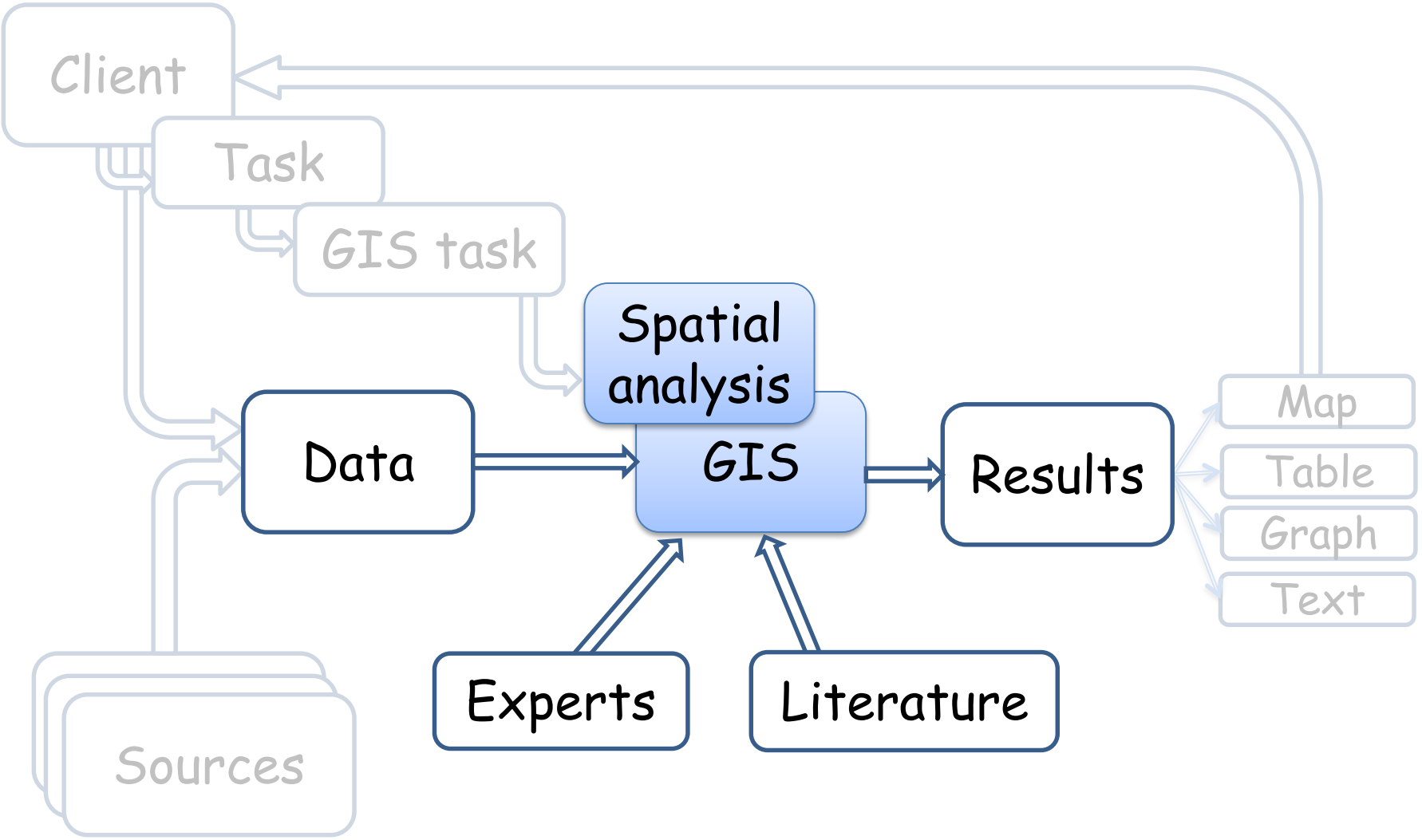
Stage 1: Consider the strategic purpose
Stage 2: Plan for the planning
Stage 3: Conduct a technology seminar
Stage 4: Describe the information products
Stage 5: Define the system scope
Stage 6: Create a data design
Stage 7: Choose a logical data model
Stage 8: Determine system requirements
Stage 9: Consider benefit–cost, migration, and risk analysis
Stage 10: Plan the implementation



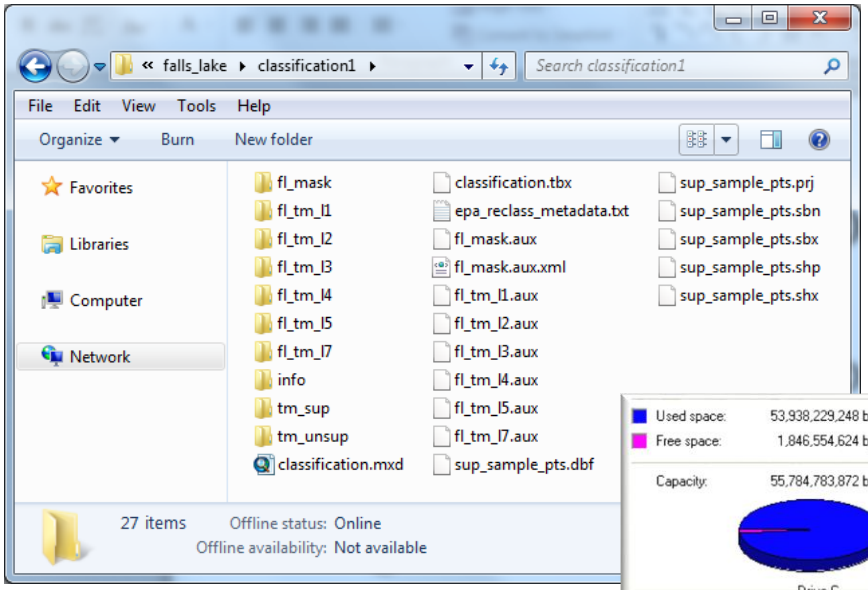
Let each step inform the next

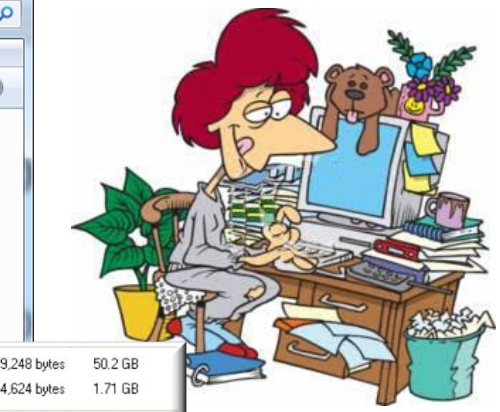
- If you know what information products you need, you can determine what data should go into your GIS.
- If you can determine what data should go into your system, you can also determine what needs to be done to the data to produce your information products.
- If you know what you want to do to your data, you can determine what functions your system needs to be able to perform and begin to design an appropriate technological solution.

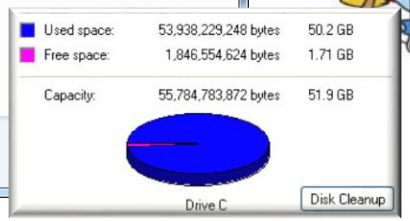
Step 1: Organizing your workspace

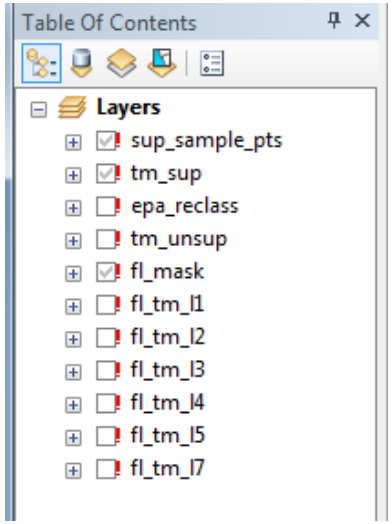


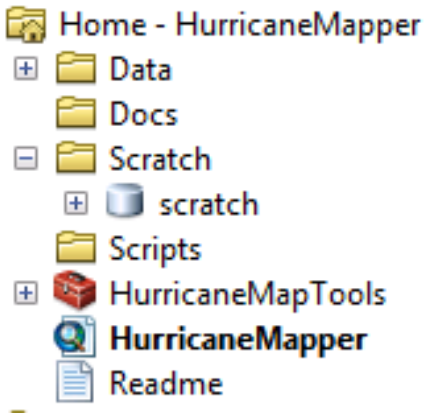
Step 1: Organizing your workspace



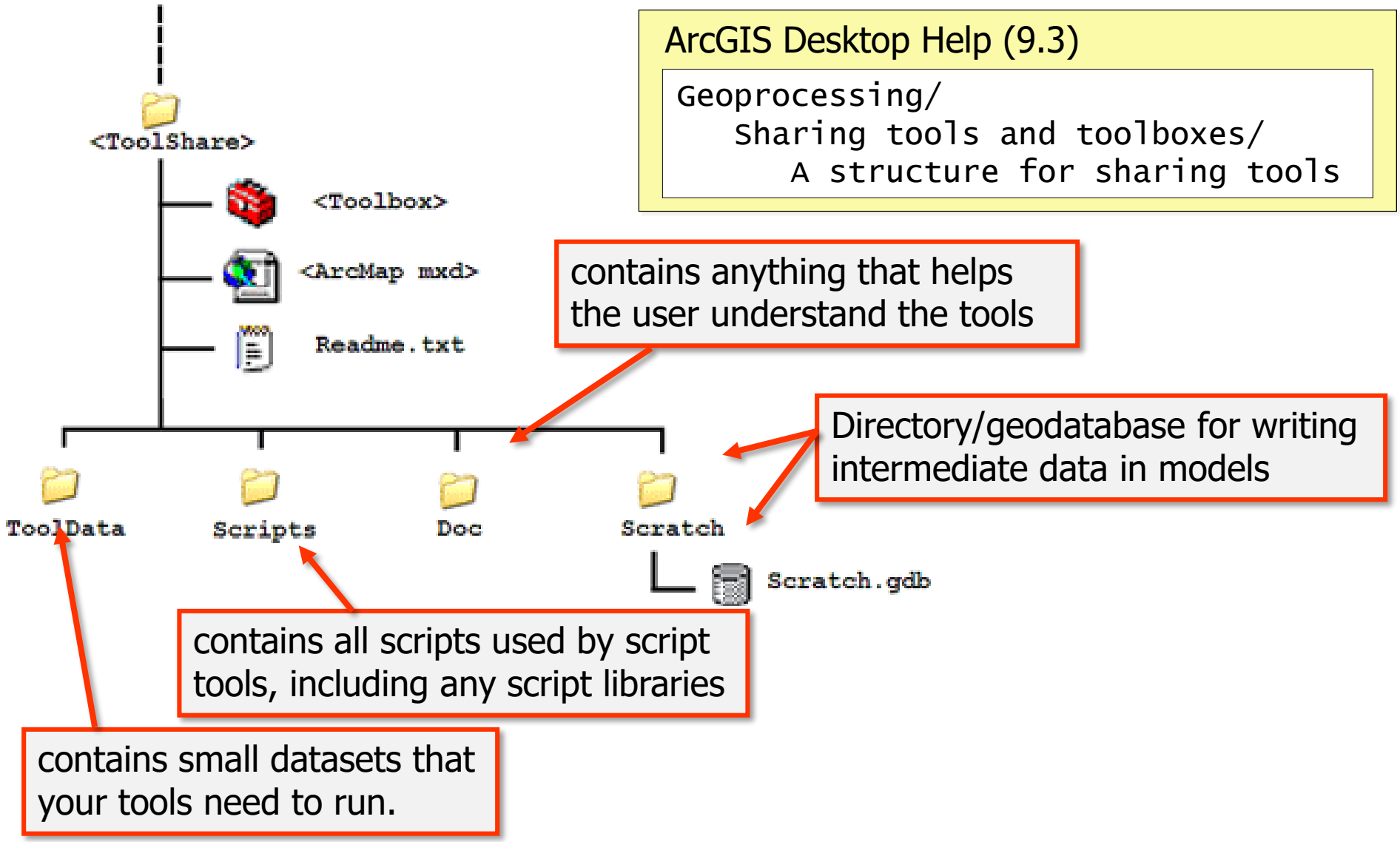








Step 1: Organizing your workspace



ArcGIS Desktop Help (9.3)

```
Geoprocessing/
   Sharing tools and toolboxes/
      A structure for sharing tools
```

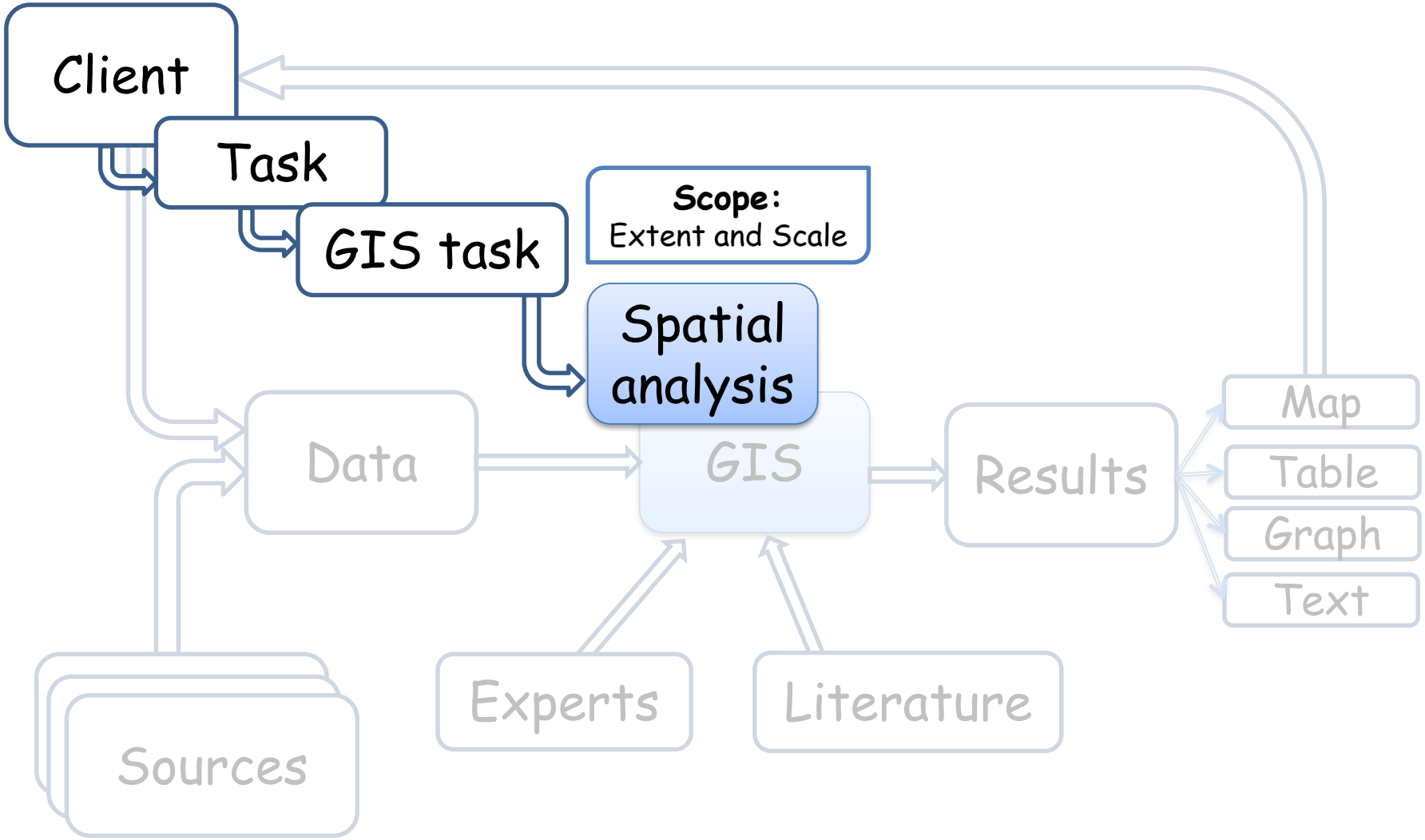
contains anything that helps the user understand the tools

Directory/geodatabase for writing intermediate data in models

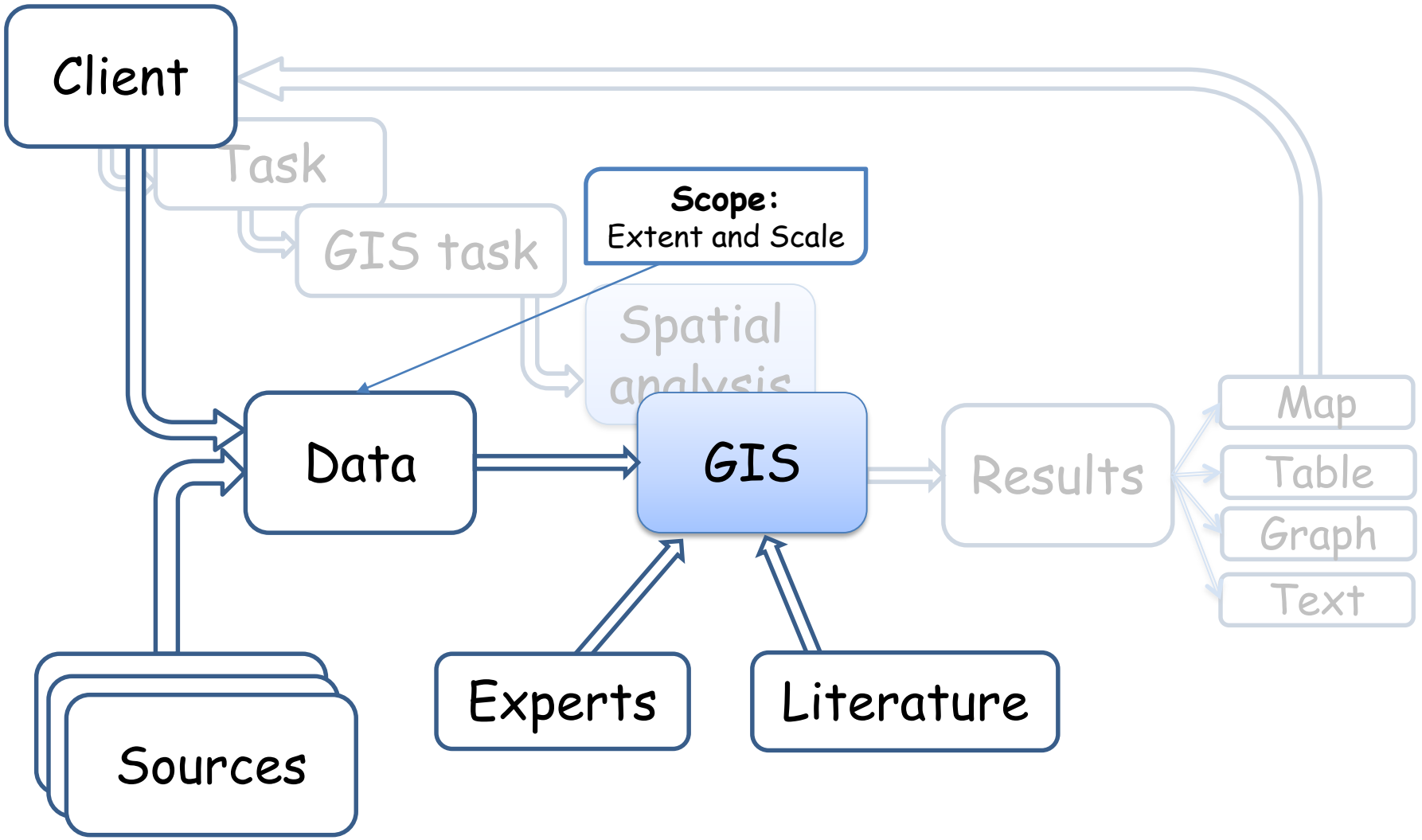
contains all scripts used by script tools, including any script libraries

contains small datasets that your tools need to run.

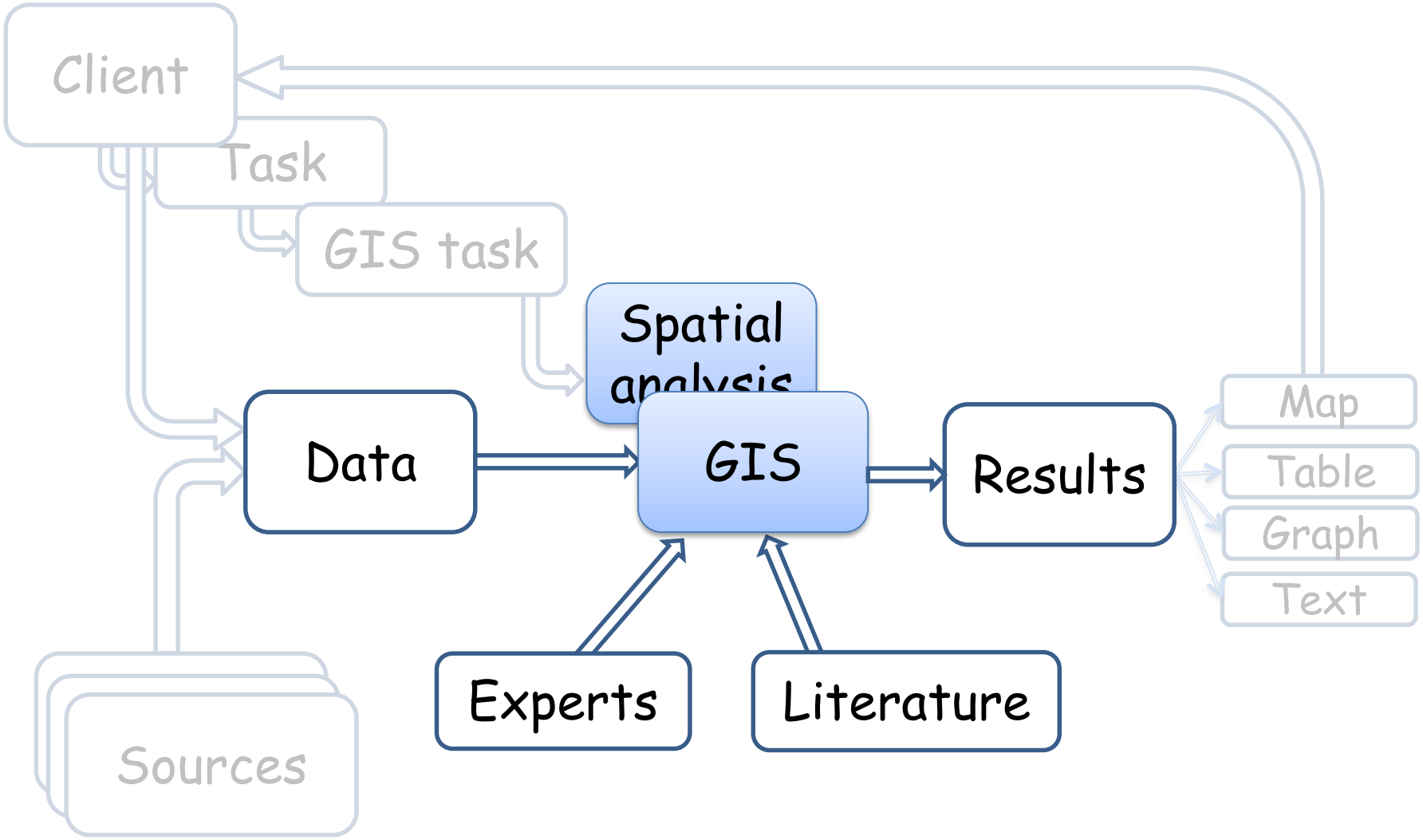
Step 2. Identify your objectives



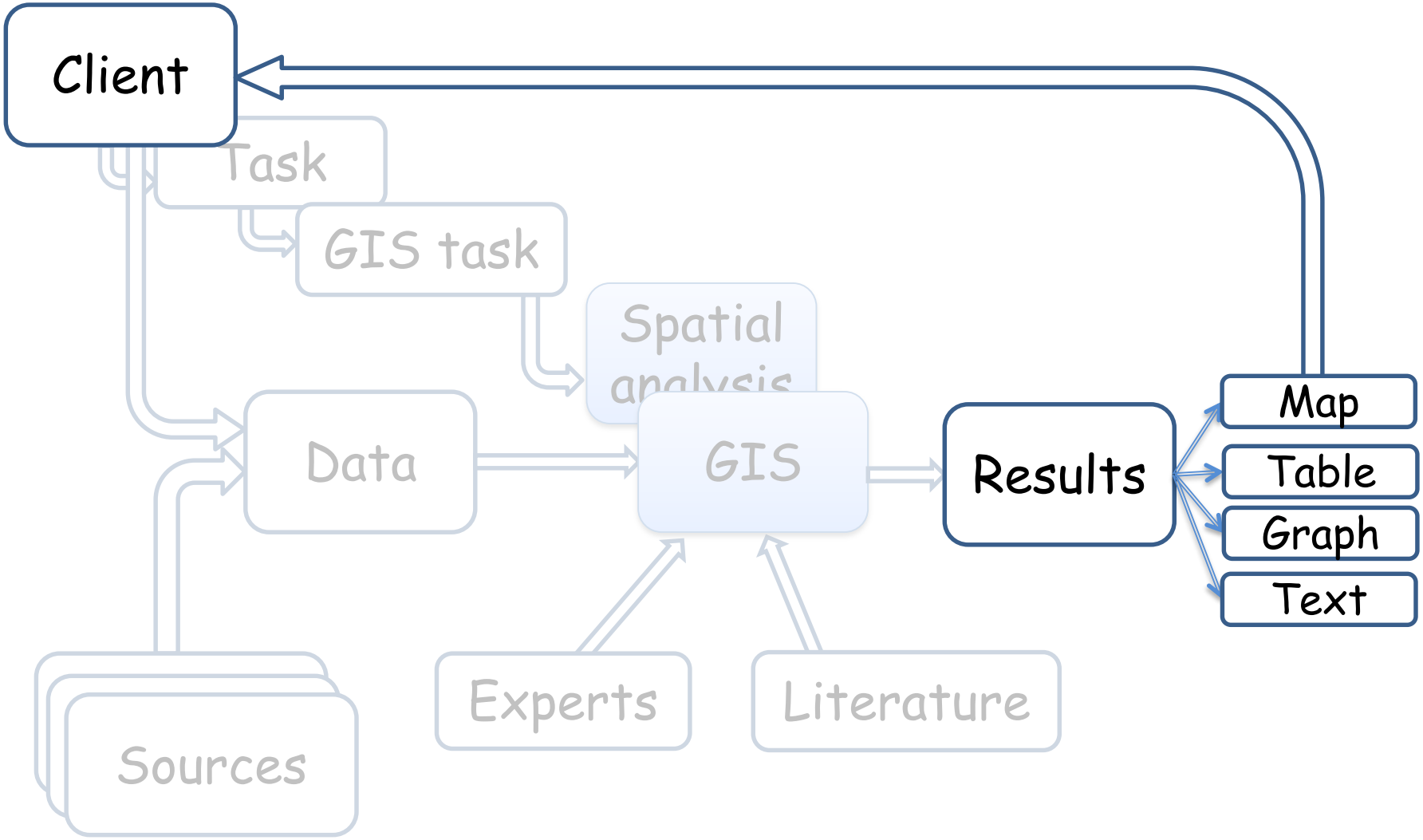
Step 3. Gather data



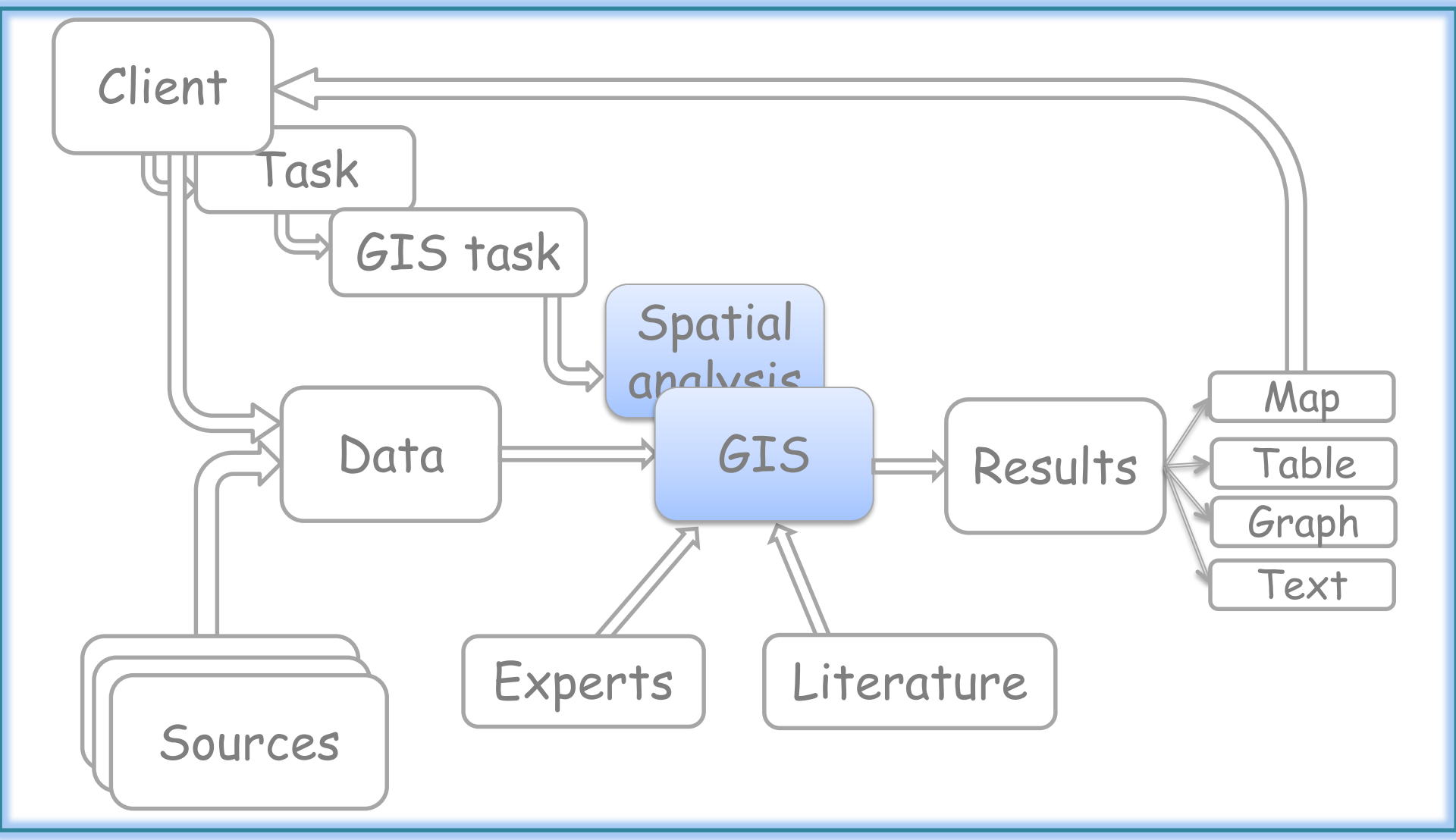
Step 4. Analysis



Step 5. Communicating results



Step 6. Evaluating impact



Section 1: Project-based GIS

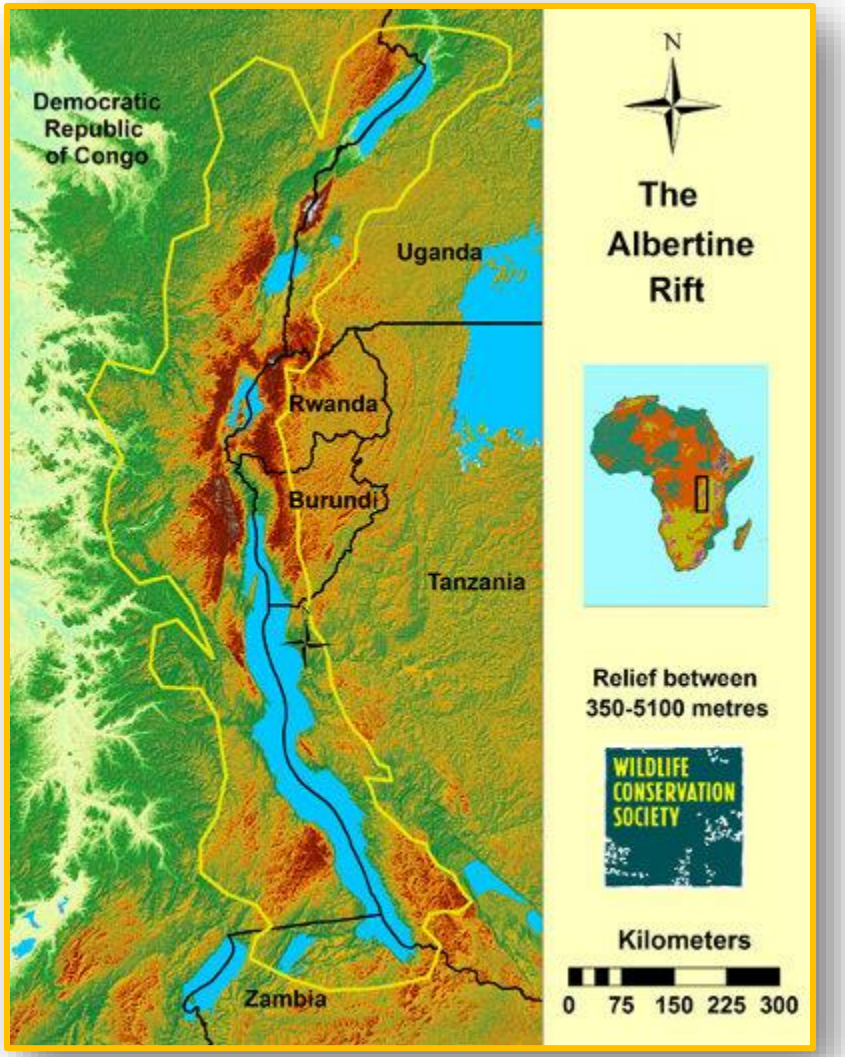
Impact analysis of two proposed oil pipelines in the Albertine rift

WILDLIFE CONSERVATION SOCIETY

WCS ALBERTINE RIFT

A programmatic site

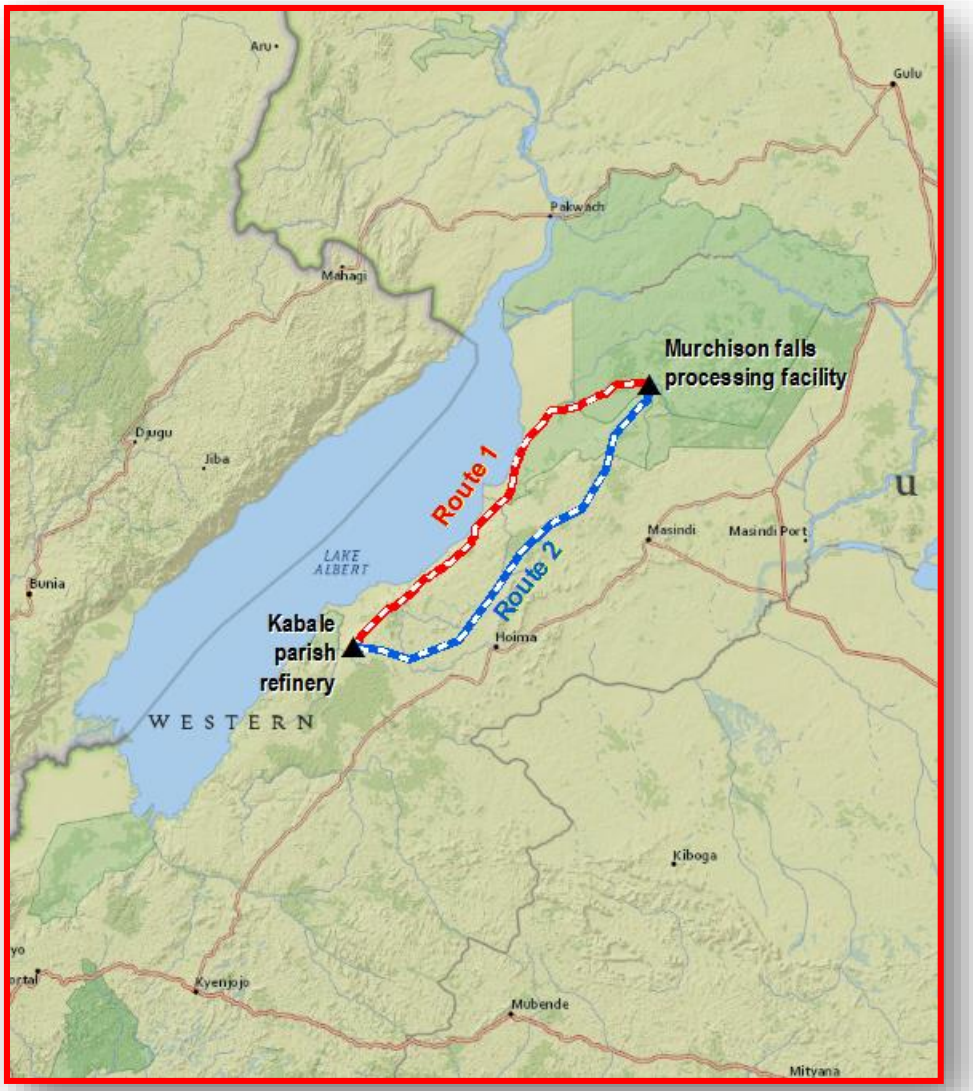
http://www.albertinerift.org



Albertine Rift Pipeline Project

Objective:

Evaluate the potential impacts of two proposed oil pipelines on people, wetlands, and ecologically sensitive areas...



Albertine Rift Pipeline Project

<u>Clarified</u> objectives:

For each route, estimate:

1. The number of people with 2.5km of the pipeline
2. The area of wetlands within 2.5km of the pipeline
3. The length of pipeline falling within a protected area

Albertine Rift Pipeline Project

Data needs:

- Proposed pipeline routes (provided, but poorly documented).
- Population data
- Wetland areas
- Protected areas

Need to find…

Albertine Rift Pipeline Project

Analysis:

- Create a 2.5km buffer around each proposed route.
- Tabulate total number of people within buffer
- Tabulate total area of wetlands within buffer

- Clip route segments found within protected area
- Calculate total length of these segments

Albertine Rift Pipeline Project

Deliverables:

- *Answer the questions asked…*

How best to do this?

What's next…

Today:

- Lecture 1.1: Geospatial data, part 1
- Lab: Using ArcGIS Online *[Short Lab 1, submit by Friday@5pm]*

Wed, Jan 16:

- Lecture 1.2: Geospatial data, part 2
- Lab: Assemble data for pipeline project *[Project 1]*

Wed, Jan 23:

- Lecture 1.3: *Guest Speaker* – Liz Kailes, TNC – North Carolina
- Lab: Pipeline data analysis, submit results

Mon, Jan 28:

- Lecture 1.4: Communicating results
- Lab: Evaluate update, revise report

Project 1 memo due Friday Jan 28 (end of day)