Project Based GIS

ENVIRON 761
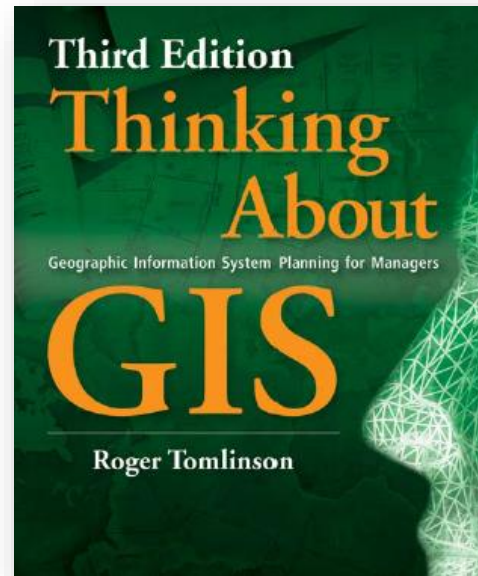## Geospatial Applications for Conservation & Land Management

Instructor: John Fay

The need to plan…   …and adapt!
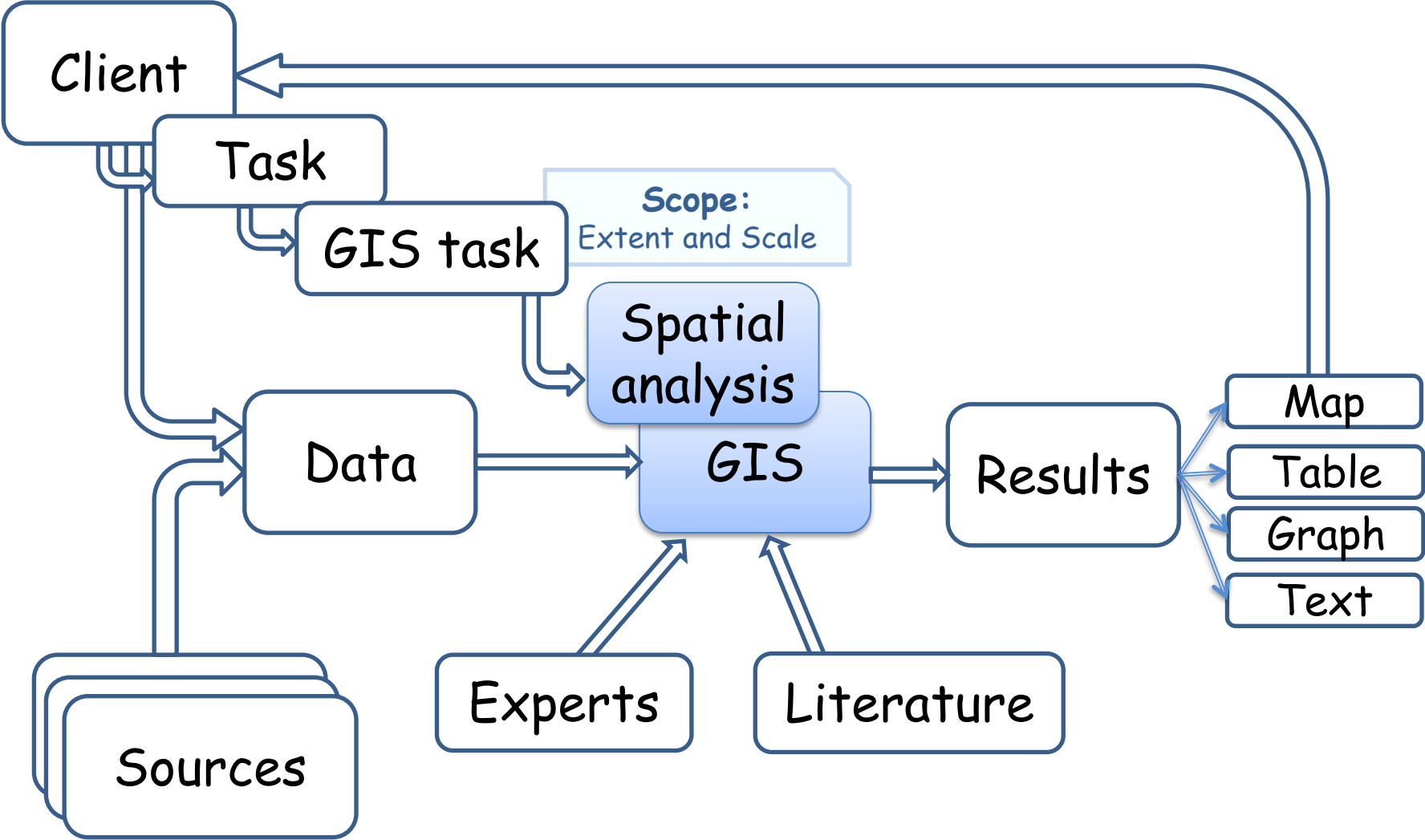
Lack of planning → Wasted time and $$

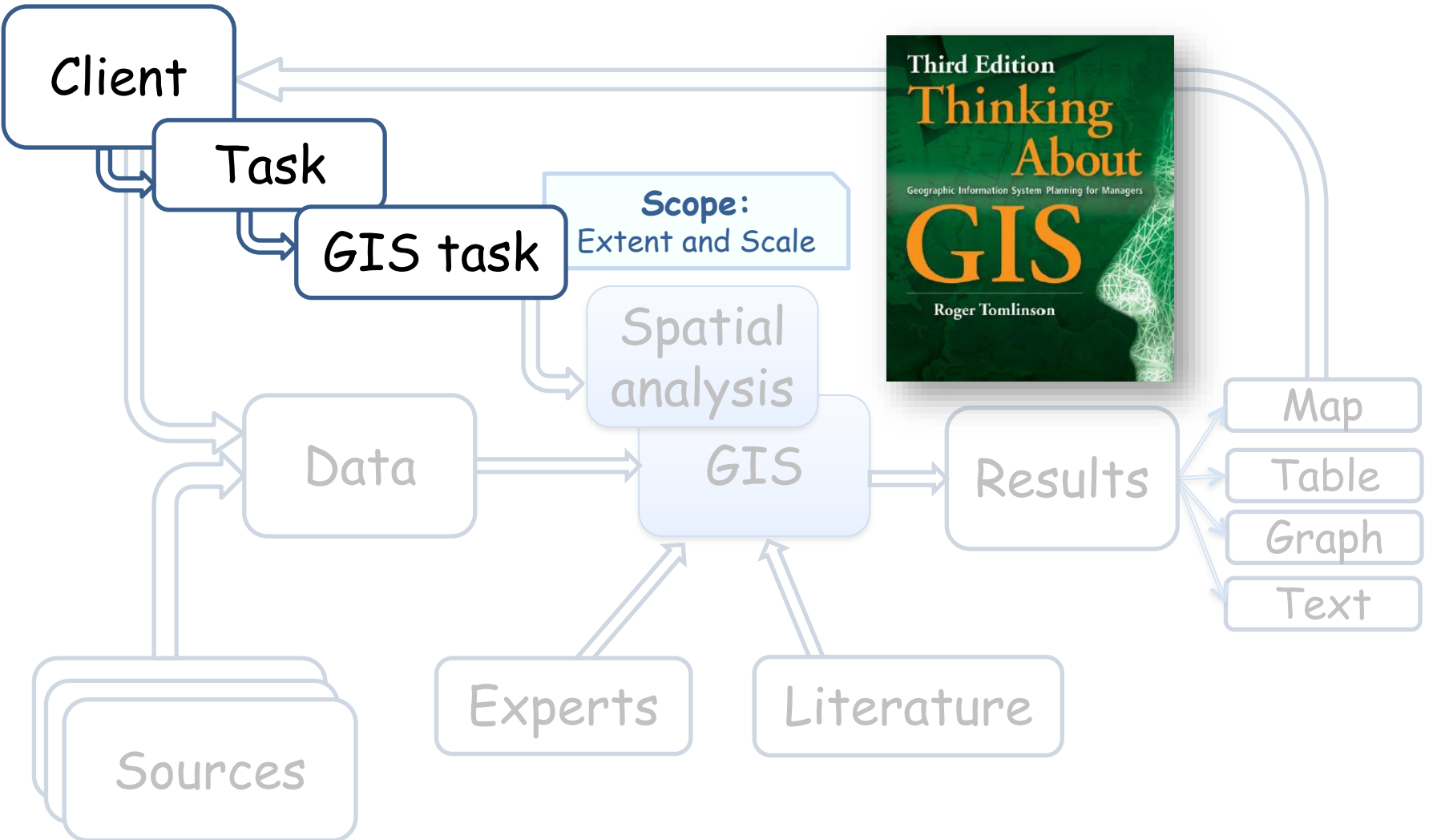*Keep your eye on the prize
(i.e., information products)*

*Be adaptable;
technology changes*

Project based GIS

Before taking action: planning

Client

Task

GIS task

Scope:
Extent and Scale

Spatial analysis

GIS

Data

Results

Map

Table

Graph

Text

Experts

Literature

Sources

Third Edition
Thinking About GIS
Geographic Information System Planning for Managers
Roger Tomlinson

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
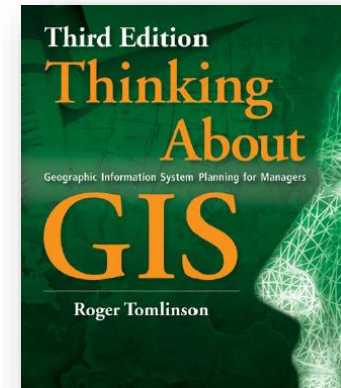
Stage 5: Define the system scope

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

Third Edition

Thinking About GIS

Geographic Information System Planning for Managers

Roger Tomlinson

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.
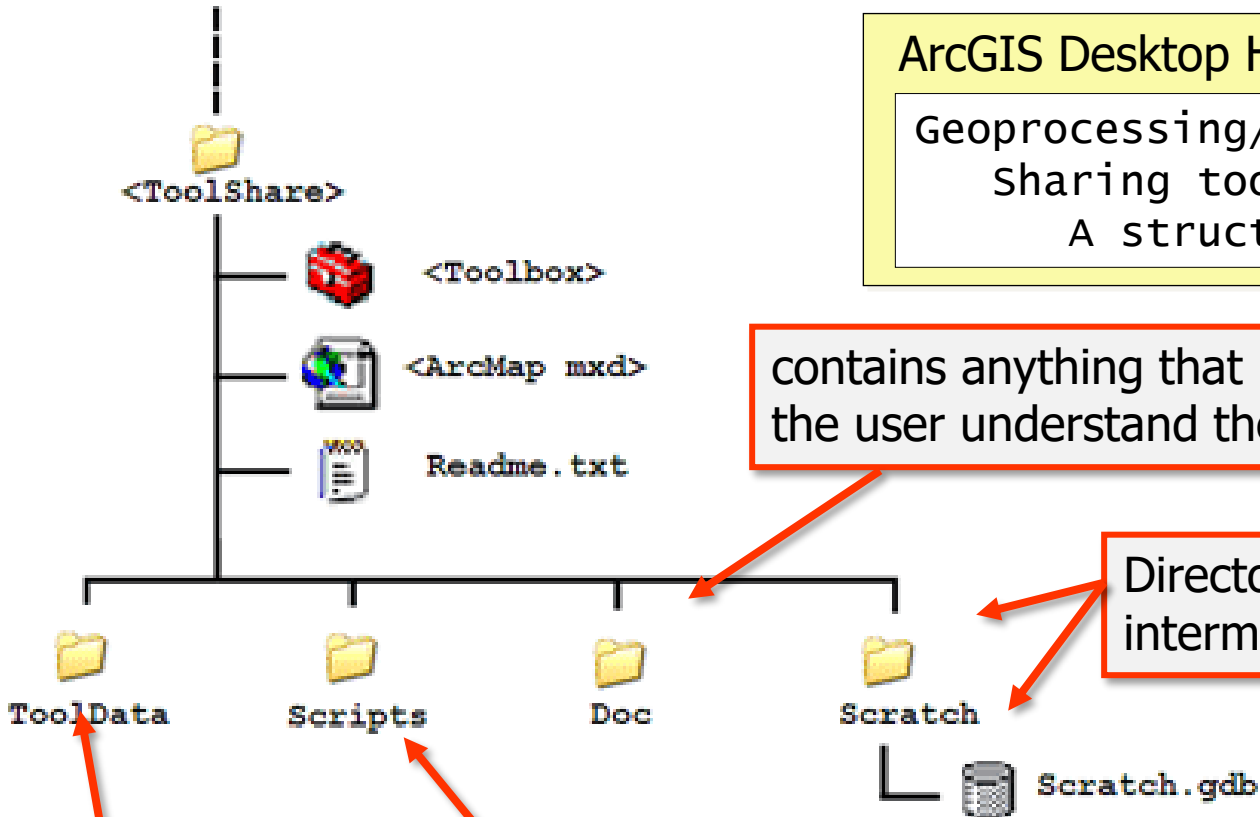
Step 1: Organizing your workspace
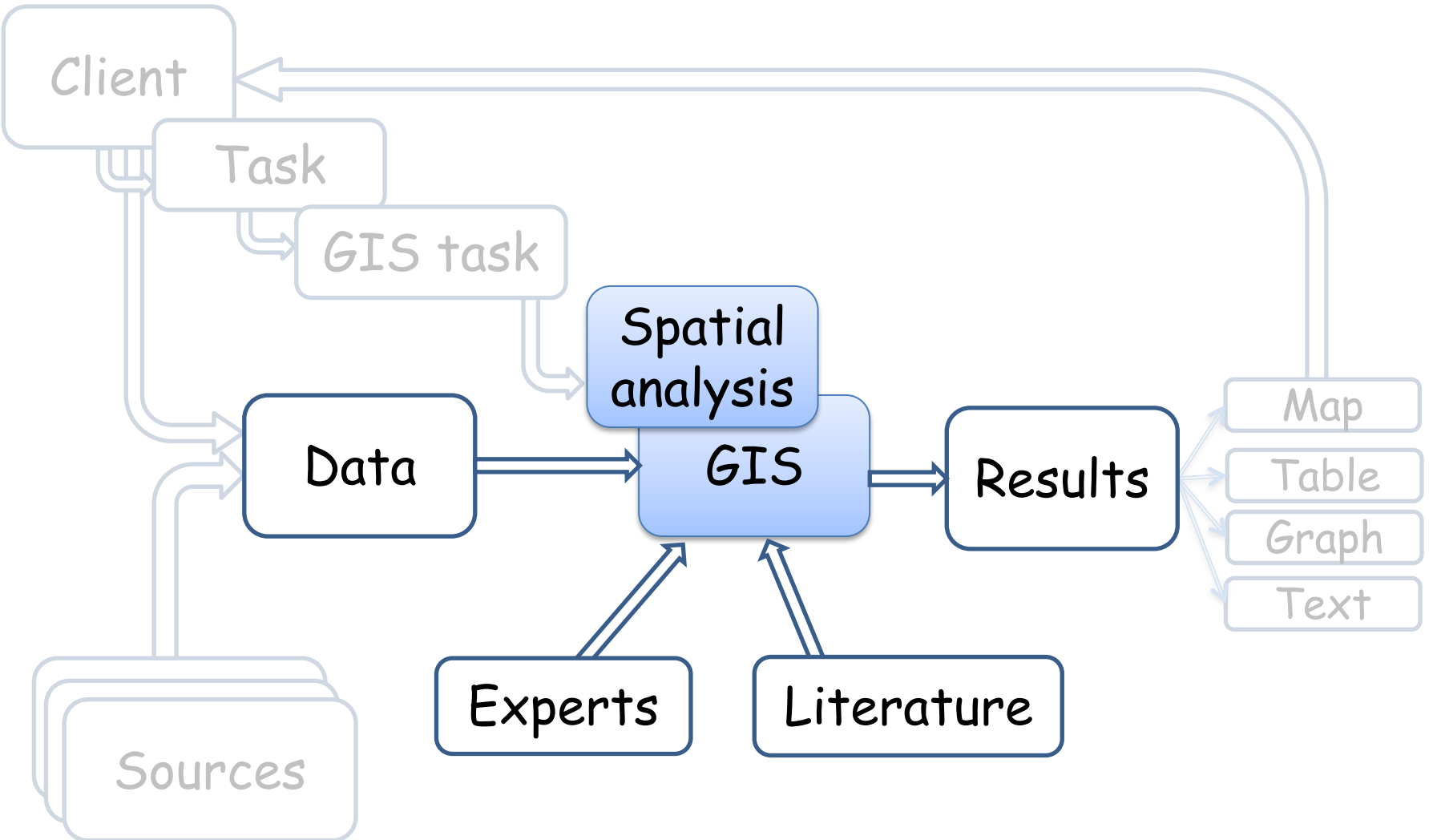
Step 1: Organizing your workspace
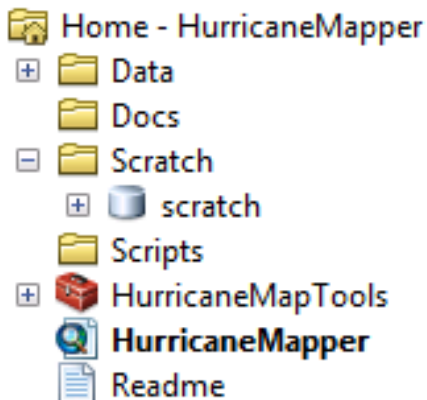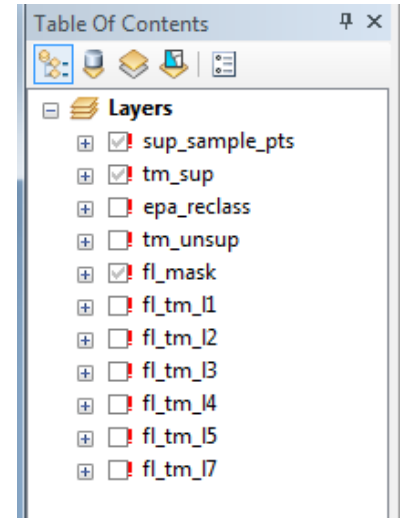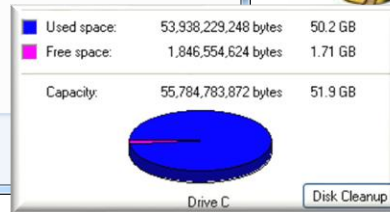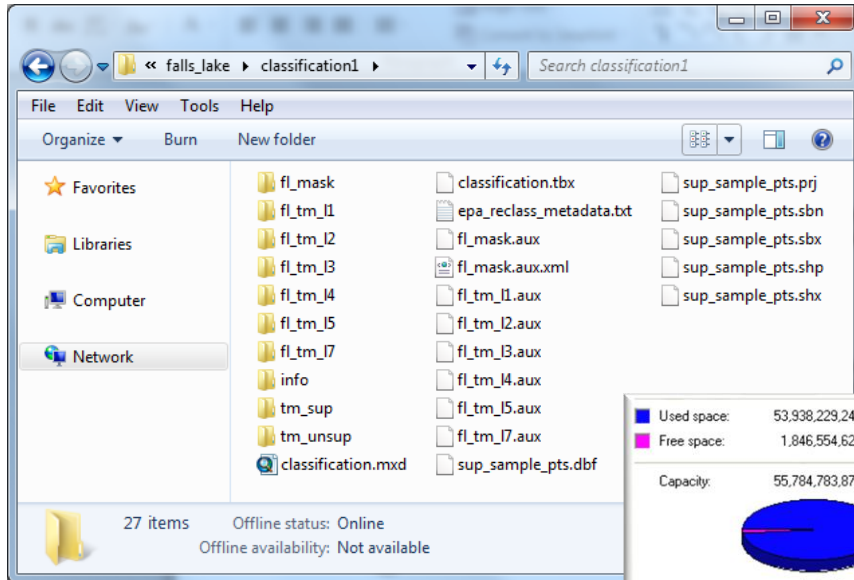
Step 1: Organizing your workspace

ArcGIS Desktop Help (9.3)

```
Geoprocessing/
    Sharing tools and toolboxes/
        A structure for sharing tools
```
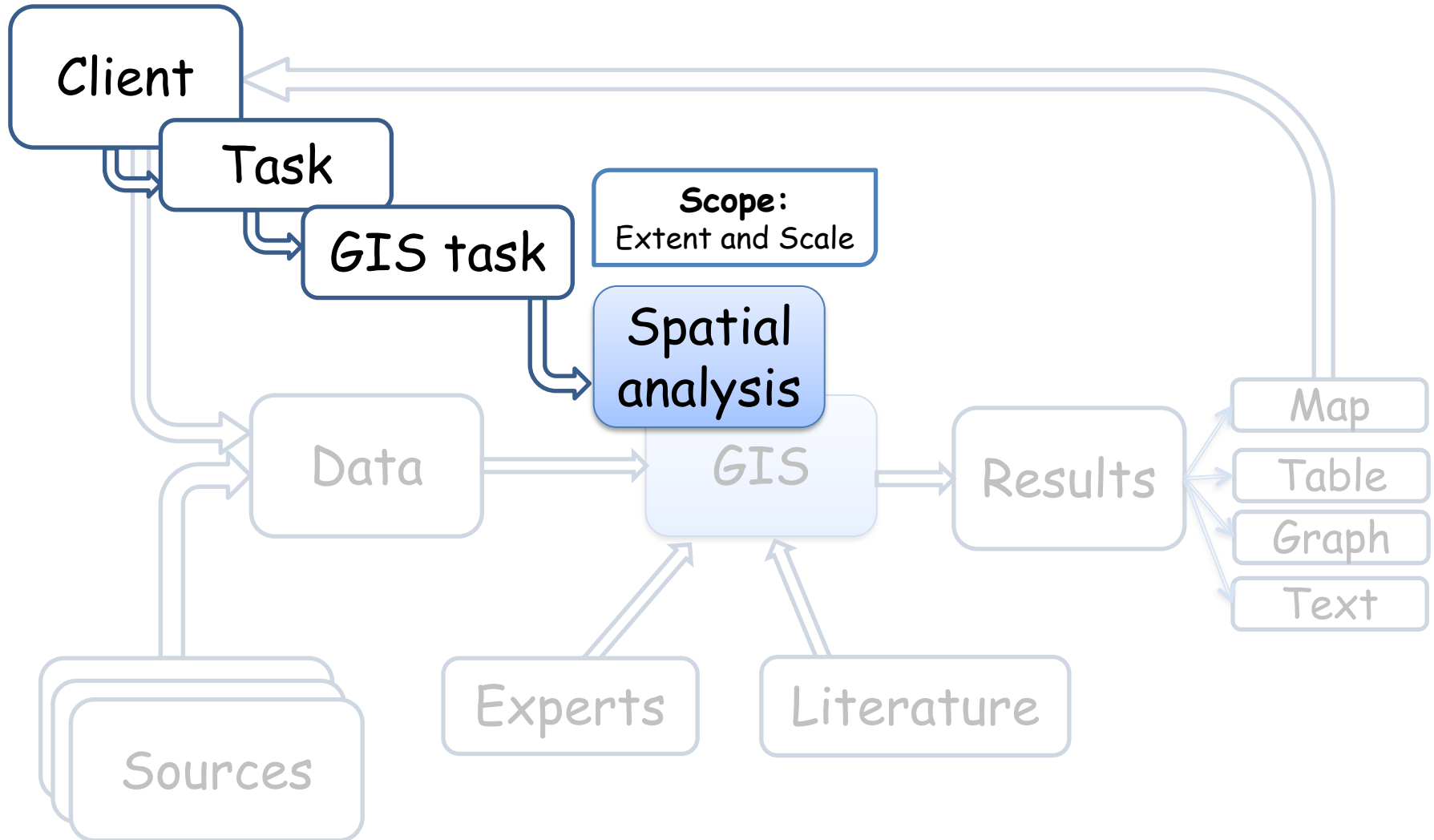
<ToolShare>

<Toolbox>

<ArcMap mxd>

Readme.txt

contains anything that helps the user understand the tools

Directory/geodatabase for writing intermediate data in models

ToolData
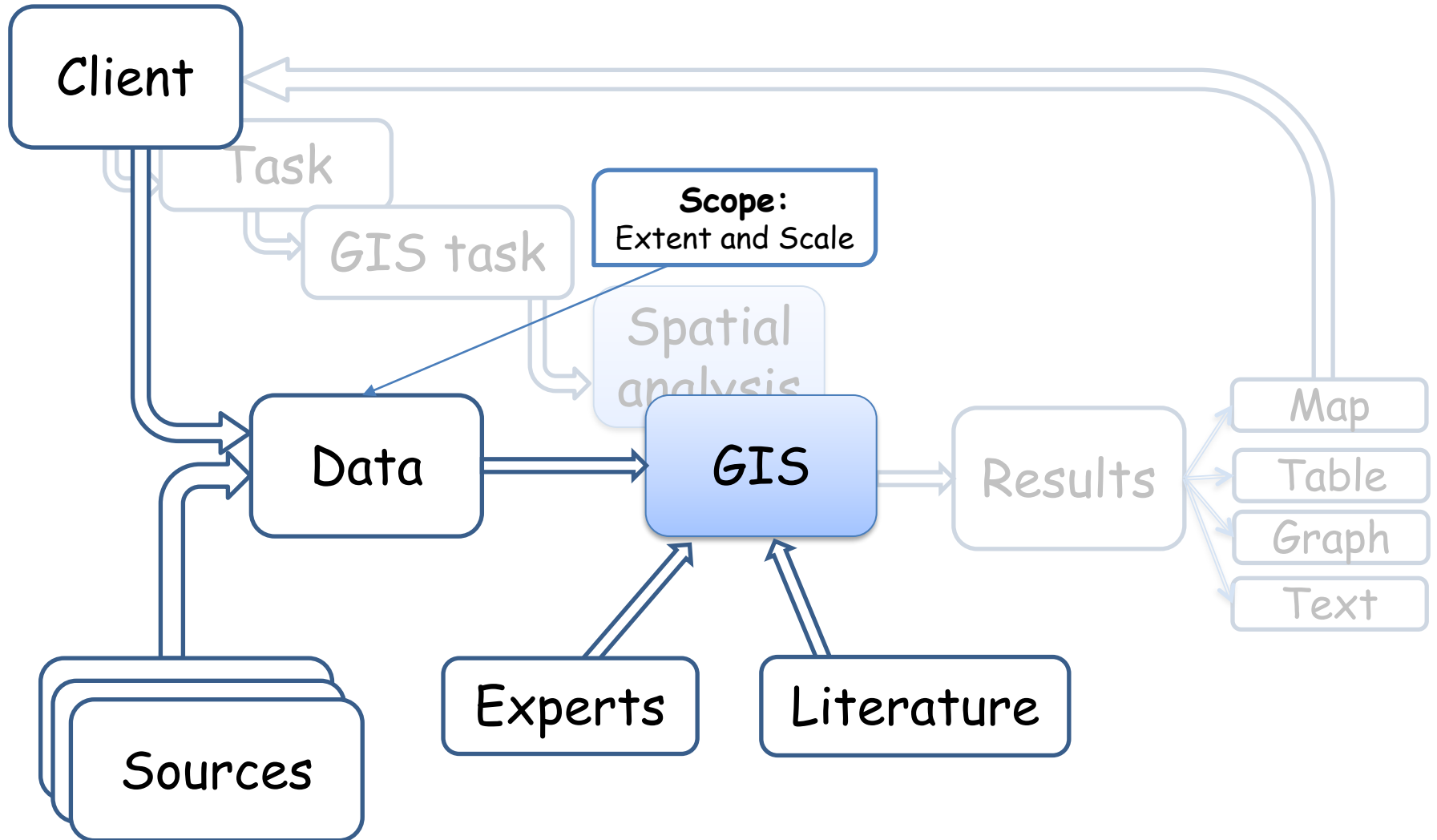
Scripts

Doc

Scratch

Scratch.gdb

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

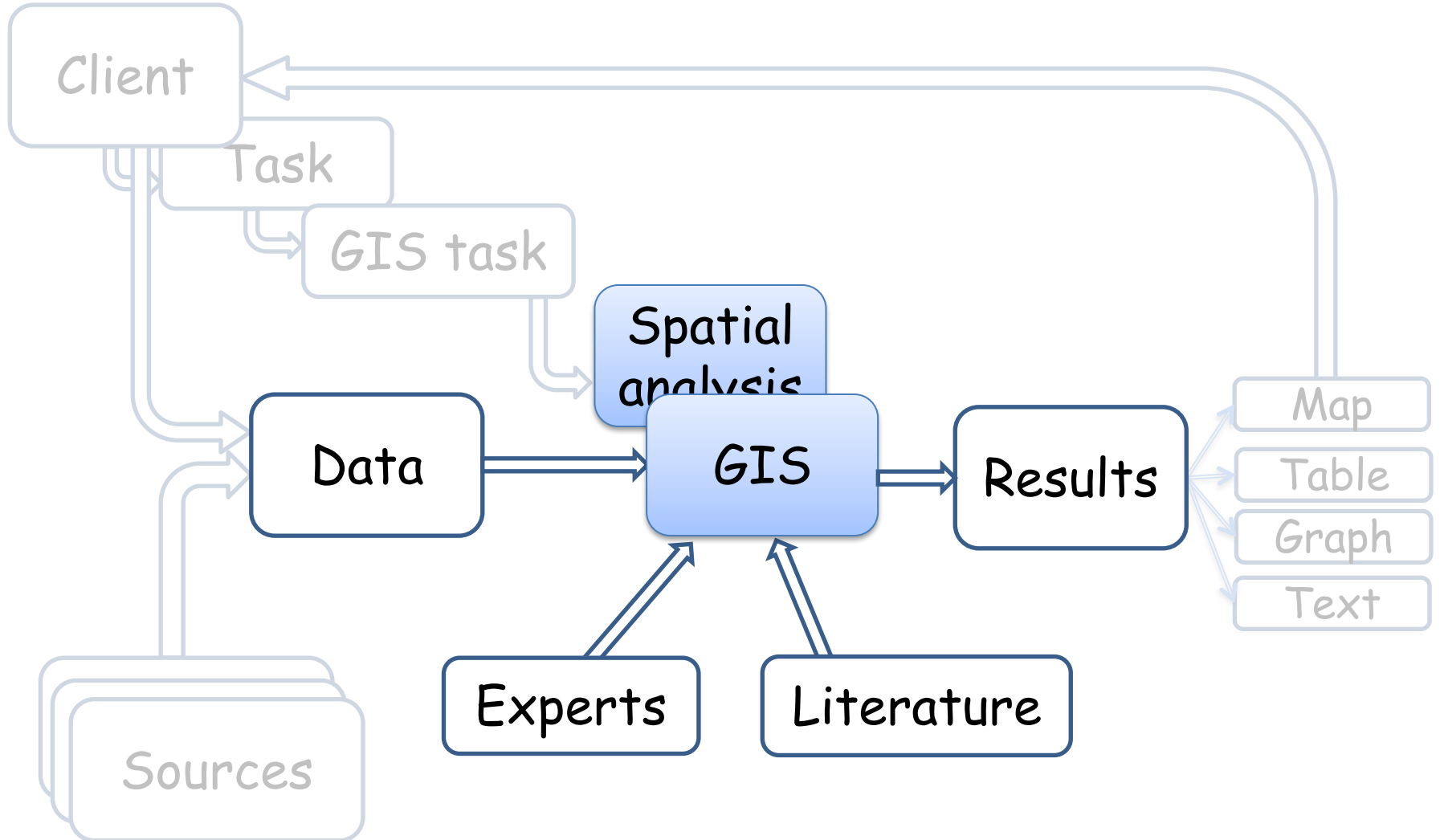contains small datasets that your tools need to run.

Step 2. Identify your objectives

Step 3. Gather data
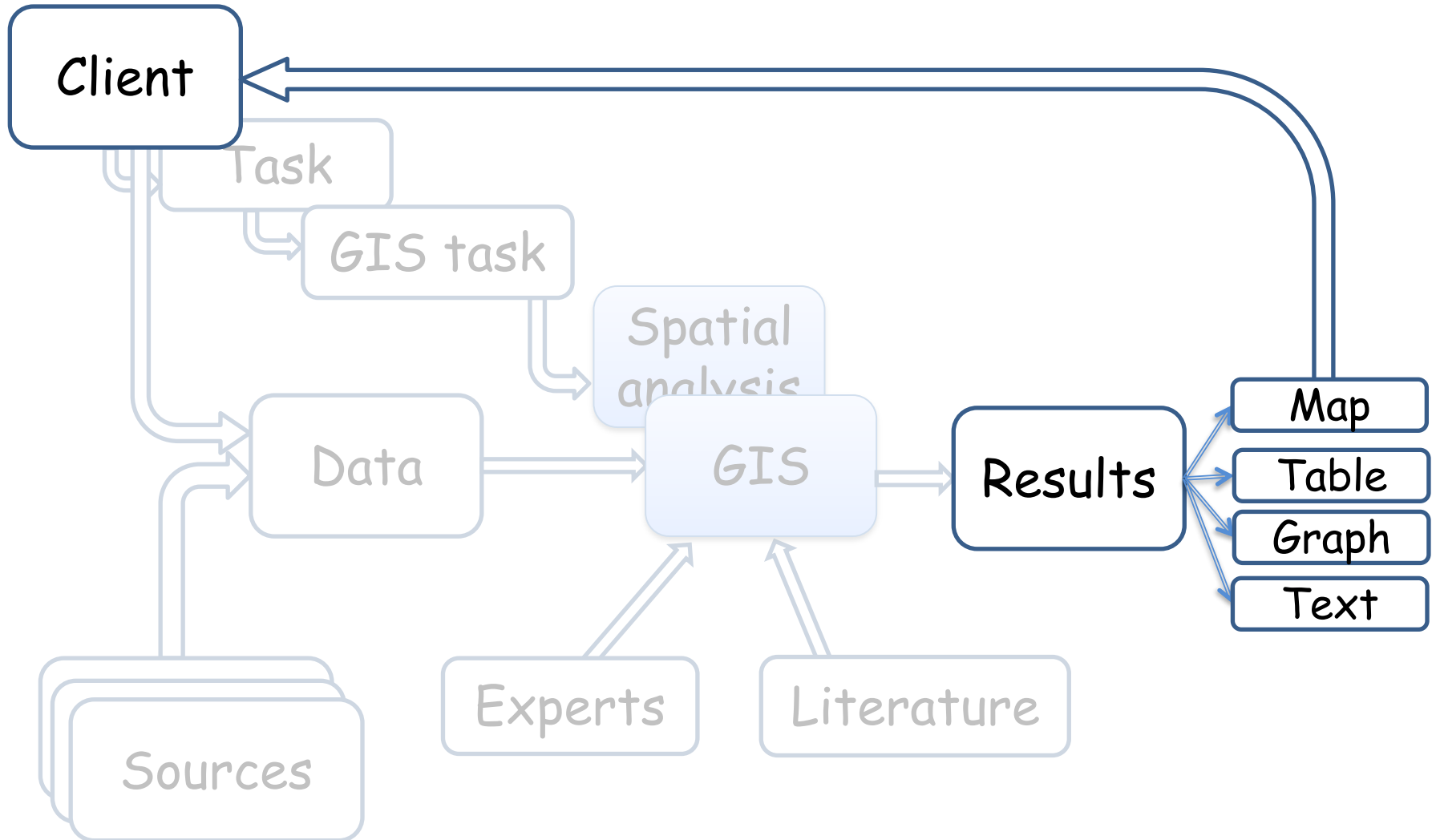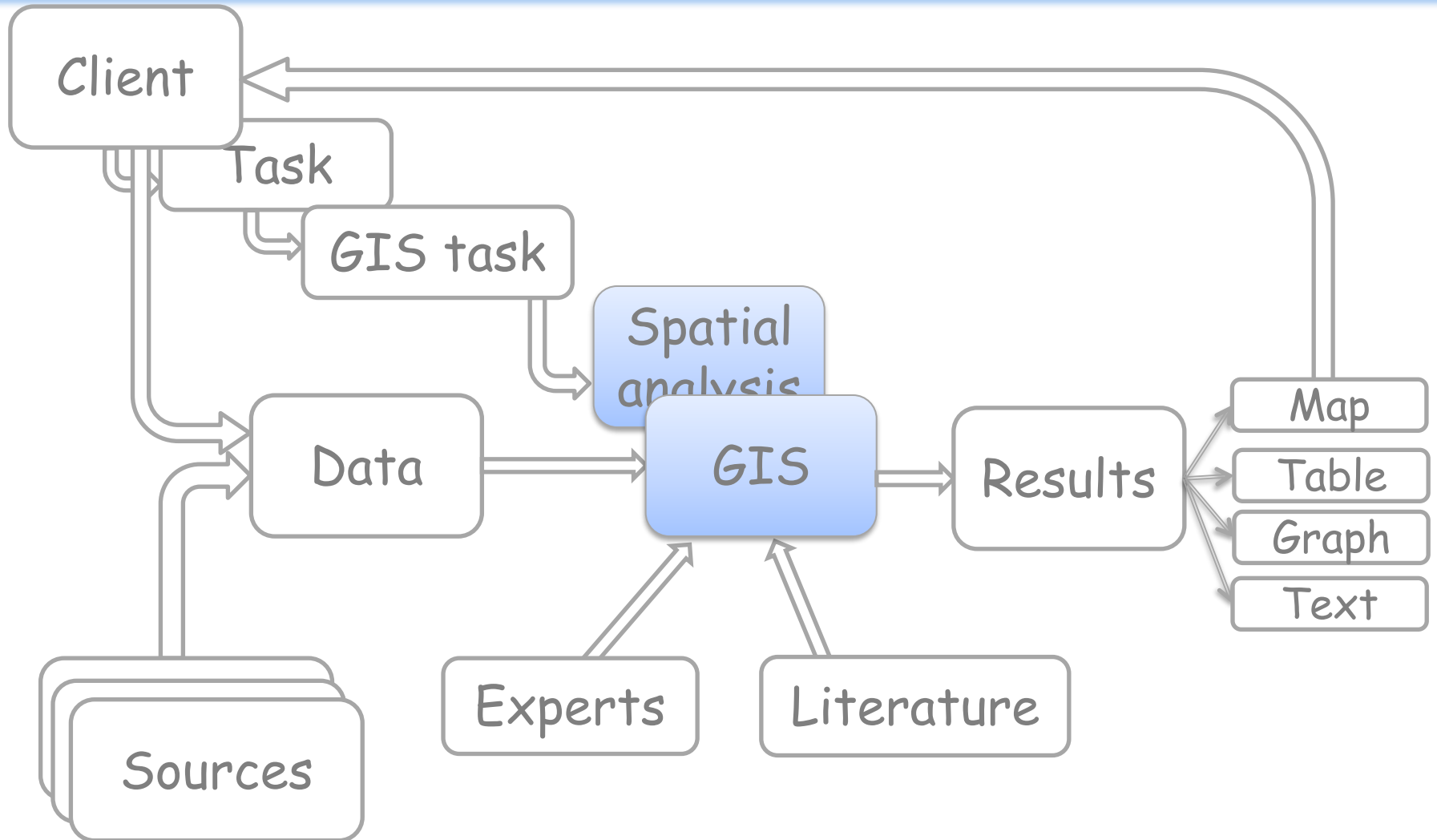
Step 4. Analysis

Step 5. Communicating results

Step 6. Evaluating impact

Section 1: Project-based GIS

Impact analysis of two proposed oil pipelines in the Albertine rift

http://www.albertinerift.org
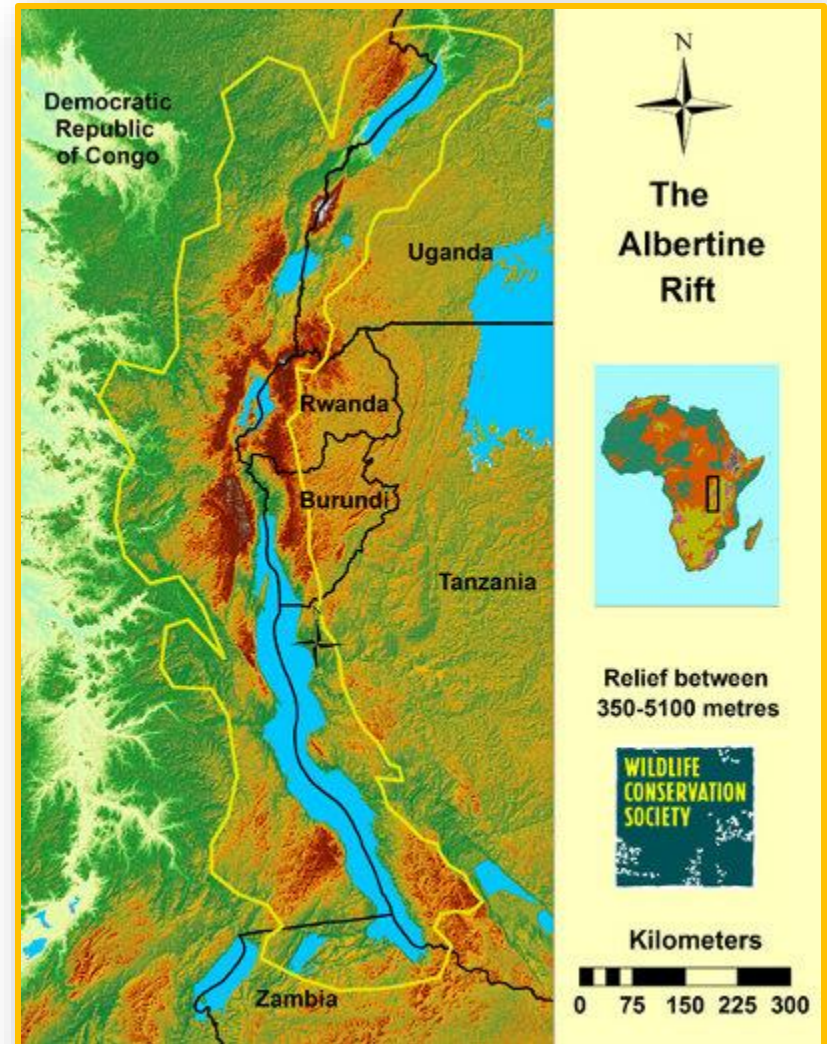
Albertine Rift Pipeline Project

Objective:

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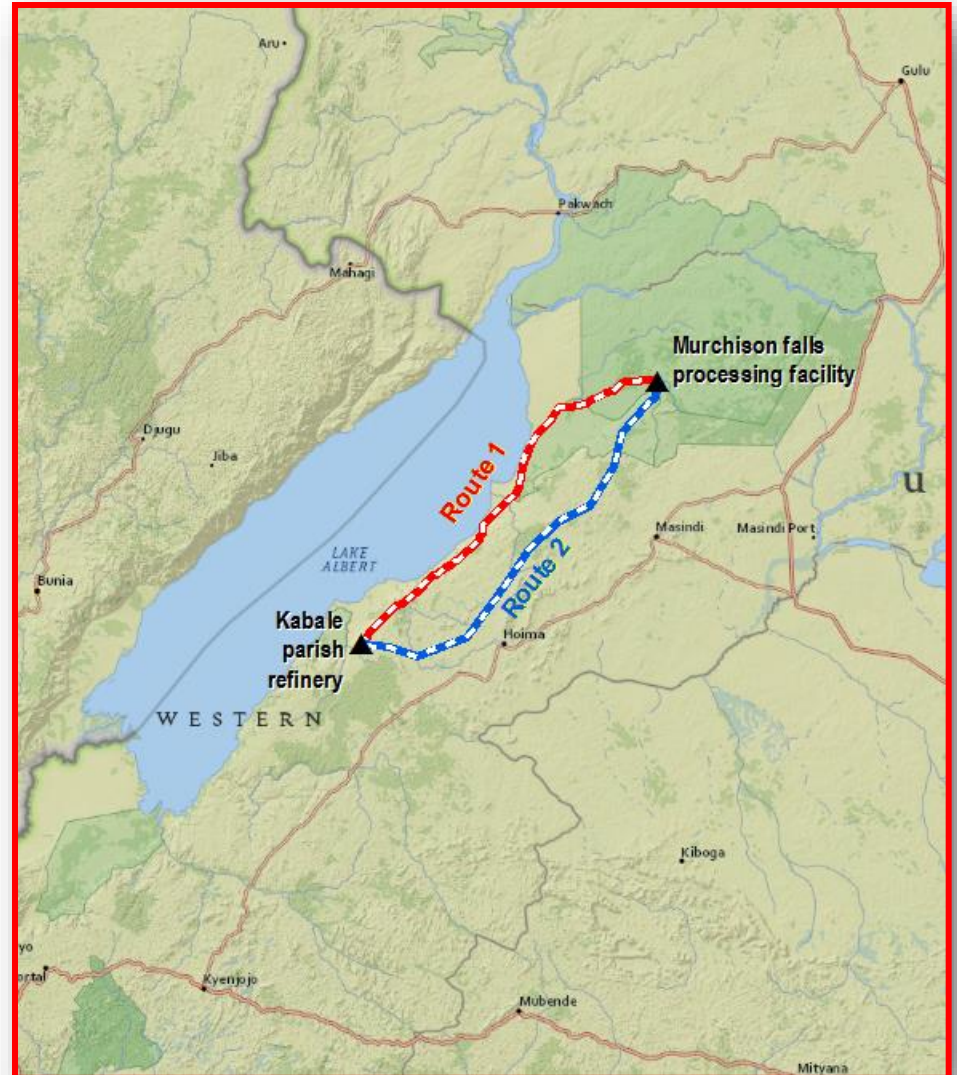
Albertine Rift Pipeline Project

Clarified 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...

For Jan 16:
- <u>To Watch</u>: §1.1-Geospatial data; Short Lab 1 Overview
- <u>To Do</u>: Complete class set up & workspace lab [ungraded]
- <u>Synchronous</u>: Q&A on §1.1, Course set up & workspace project

For Jan 18:
- <u>To Watch</u>: §1.2-ESRI's Living Atlas; Lab 1 Intro
- <u>To Do</u>: Using ArcGIS Online *[Short Lab 1, submit by 1/23]*
- <u>Synchronous</u>: Discussion on Living Atlas; Q&A on Lab 1

For Jan 23:
- <u>To Watch</u>: Project 1 – Part 1: Getting Data & Running Analyses
- <u>To Do</u>: Project 1 – Part 1a (Getting Data)
- <u>Synchronous</u>: *Guest Speaker* – Katie Warnell NIEPS

For Jan 25:
- <u>To Watch</u>: §1.3-Communicating Results
- <u>To Do</u>: Project 1 – Part 1b (Analysis) *[Have draft results ready by 1/25]*
- <u>Synchronous</u>: Map critiques

For Jan 30:
- <u>To Watch</u>: §1.4-How Maps Work (ESRI video); Project 1 - Part 2: Generating Results
- <u>To Do</u>: Project 1 – Part 2 (Final submission) *[Due 2/2]*
- <u>Synchronous</u>: Q&A on Project 1

Project 1 memo due Friday Feb 2 (end of day)