Overview to Information Situation

Current geographic information situation at different levels

GIS technology

- Employed in many different areas
- Computer hardware and GIS software applications provide
  - improved capabilities at reduced cost
- Overall cost of developing geospatial data
  - relatively high compared with the hardware and software required for GIS.
    - Why ?

Institutions and spatial data

- Producers of spatial data
- Users of spatial data
- Users/producers of spatial data

User groups

- Have similar / different requirements for related information
- Use existing information:
  - as input for further analysis (with other data to derive new information)
  - as it is (with minimal changes)

Problems with spatial data

- The information situation in most developing countries can be considered as weak and poor.
- Problems with spatial data:
  - User related
  - Data related

Problems with spatial data

- Users may **not know available existing data sets** that could be appropriately used for their applications
- **Access to existing data sets** is difficult
- Users are **not used to sharing data sets** with other sectors and/or organizations
- Existing geospatial data sets stored in a certain **GIS system** may not be easily exported to another system.

Problems with spatial data

- Existing geospatial data sets have been **poorly documented** in a standardized manner.
- **Duplication** efforts in geospatial data development
- **Limitations in further dissemination of GIS** applications in local, national, regional and global circumstances.
- **Interoperability**
- **Spatial coverage completeness**

Need for SDI

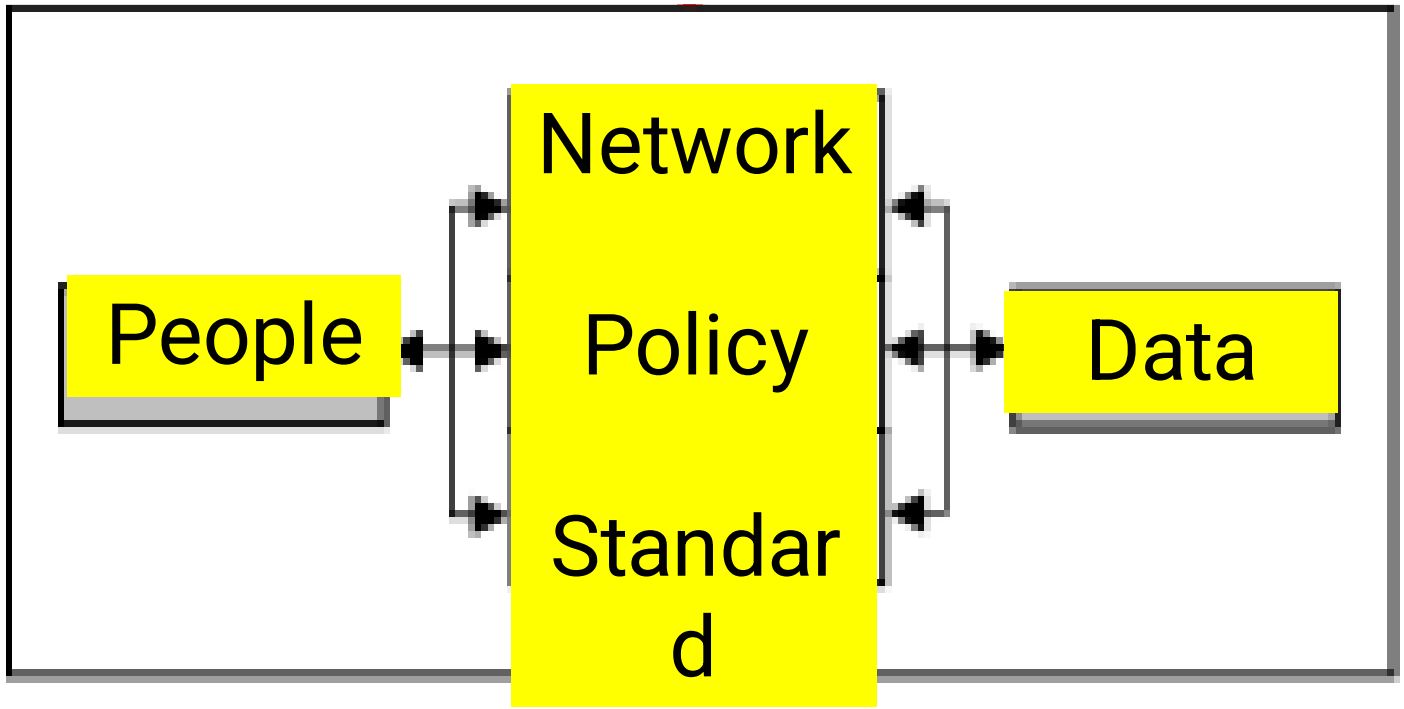
The need for SDI: Benefits of sharing spatial data

- increasing access to data for enhanced decision-making
- leveraging additional benefit out of existing resources (including data and staff)
- addressing redundancies, duplication and inaccuracies in data, and doing it only once
- improving communication between departments and agencies
- recognizing commonalities in problems
- achieving efficiency in practice
- promoting effectiveness in policy

Components of SDI

What is proposed to improve the information situation?

-> introducing SDI



What is SDI

- Spatial data infrastructure (SDI) is the well connected and functional assemblage of the required technology, policies, and people to enable **the sharing and use of geographic information.**
- It should include all levels of organizations and individuals such as government agencies, nonprofit organizations, the academic community, and individuals.

Geospatial partnership – principle

- keeping the objectives clear
- ensuring overall responsibility is agreed by participants
- making available adequate resources from the participating institutions
- keeping the numbers of partners to the minimum possible, consistent with achieving the desired aims.

Who are the actors in SDI development?

- users and producers of data
- data producers
  - detailed data as a product or a service
  - low-resolution, small-scale, limited themes for large areas
- product providers
  - software, hardware, and related systems;
- service providers
  - system development, database development, operations support, and consulting services.
- educational institutions (e.g. WGCF-NR)
  - a variety of geographic data and provide GIS-related services

Spatial data sharing protocols (policies)

- Distributed/autonomous suppliers
- The management of the data should be done as close as possible to source. This ensures the accuracy and quality of the data.
- Non threatening to mandates
- Commercial and government stakeholders need to feel comfortable as active participants in the infrastructure. They should not feel threatened by infrastructure business models or policies.
- Multiple levels of “buy-in”; low barrier to entry
- Sustainable long term business models
- with mirroring the data / database (using different institutions’ servers)

Proposed activities

- Secure high-level commitment from the government
- Bring all relevant agencies to the table
- Create a system to retain institutional memory
- Capacity development

Assignment 1:

- Consider the case of local level administration such as Town or District that you know to discuss the following issues:
  - What institutions exist in the administration area requiring any type of geographic information?
  - What are the major types of geographic information that they need for their activities?
  - Which institutions can be potentially responsible as collector/provider of information?
  - Which institutions can be grouped as user?
  - What are the potential sources of the geographic data?

Assignment (practical) 3

- Create a metadata for three types of data of
  - (1) thematic data with geographic coordinate system (preferably national level - Ethiopia level);
  - (2) local level data with projected coordinate system;
  - (3) imagery/aerial photograph.

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Project work

- Discuss the activities in group
- All database and image processing activities should be done individually.
- Every student's practical exercises are evaluated individually. There is no evaluation of group projects!
- Every week your progress will be evaluated and marked
- A student who skips any practical will not be allowed to take the final exam.

Thematic data with geographic coordinate system (Region level)

- Create a geo-database (Personal geo-database and Enterprise Geo-database) using EPSG 4201
  - Create a road layer - line
  - Lakes layer - polygon
  - Towns layer (Capital, regional, zonal administration) - point

Local level data with projected coordinate system

- Create a geo-database (Personal geo-database and Enterprise Geo-database) for a district; create
  - Road layer
  - Stream layer
  - Land cover layer
  - Institutions

Image pre-processing

- Select satellite image that covers your district. Its temporal coverage should be during the dry period of 2023 and 2024
- Preprocess the image:
  - Layer stacking
  - Clip the image using the district’s boundary
  - Copy the metadata into your directory where the pre-processed the image is saved