

# **Introduction to Geographic Information Systems**

## **PART A**

*NPS Introduction to GIS: Lecture 1*

*Based on NIMC and Other Sources*

# Lesson Objectives

- Understand what a GIS is
- Understand how a GIS functions
- Understand how spatial data is represented in a GIS
- Look at some GIS applications

# Data vs. Information

- Data, by itself, generally differs from information.
- Data is of little use unless it is transformed into information.
- Information is an answer to a question based on raw data.
- We transform data into information through the use of an Information System.

# **INFORMATION SYSTEM OVERVIEW**

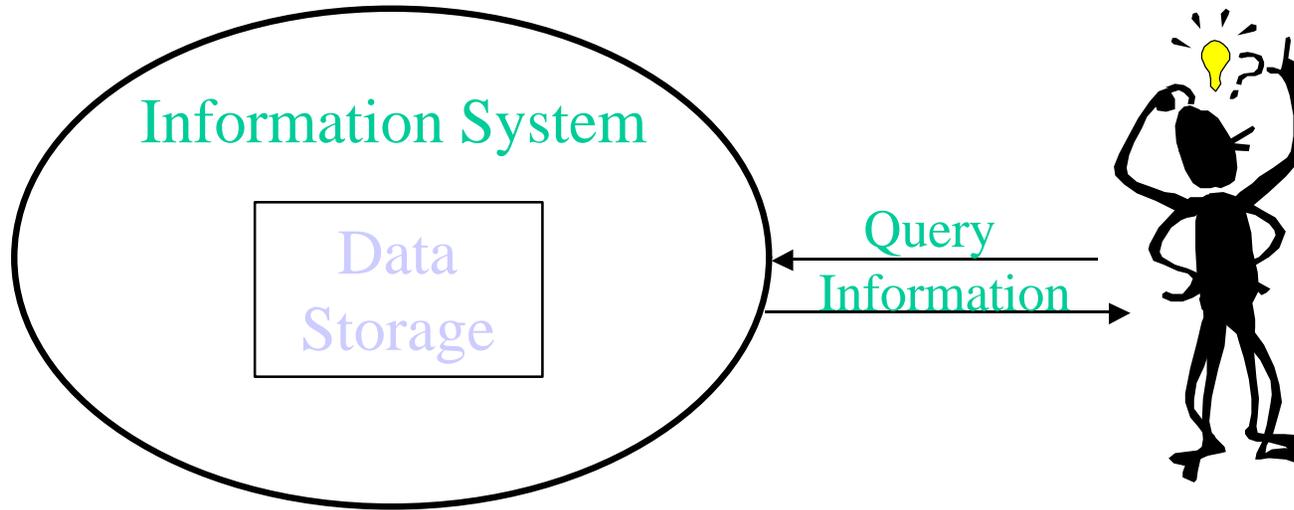
# What is an Information System?

**SYSTEM USED FOR:**

**capturing  
storing  
updating  
manipulating  
analyzing**

**DATA**

# What is an Information System?



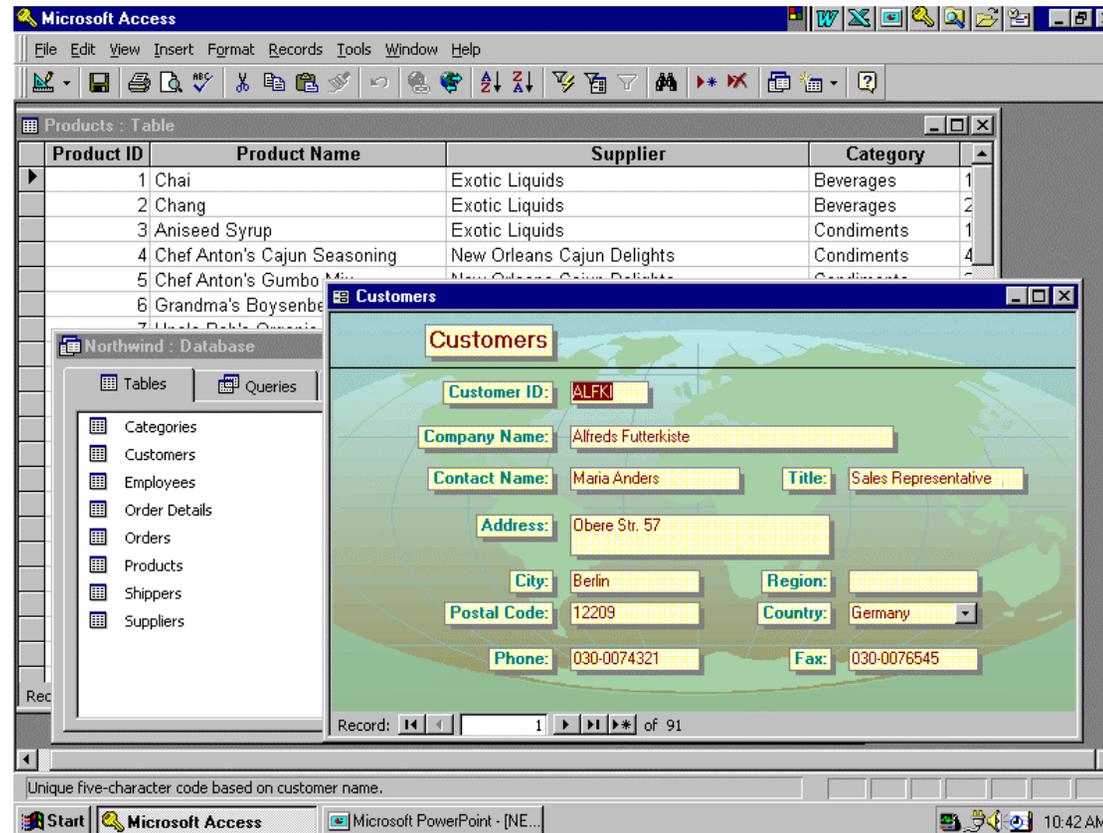
Information systems can be very simple, such as a telephone directory.



# What is an Information System?

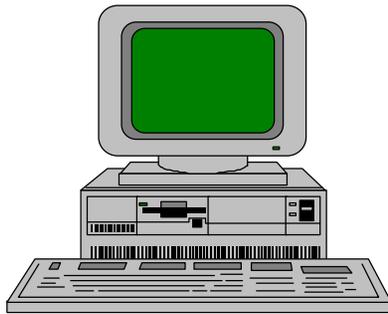
In the digital environment we use software to create complex information systems.

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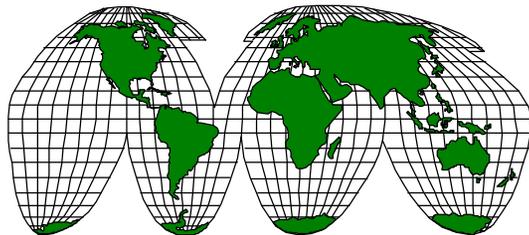
# What is a GIS?

**Information System**



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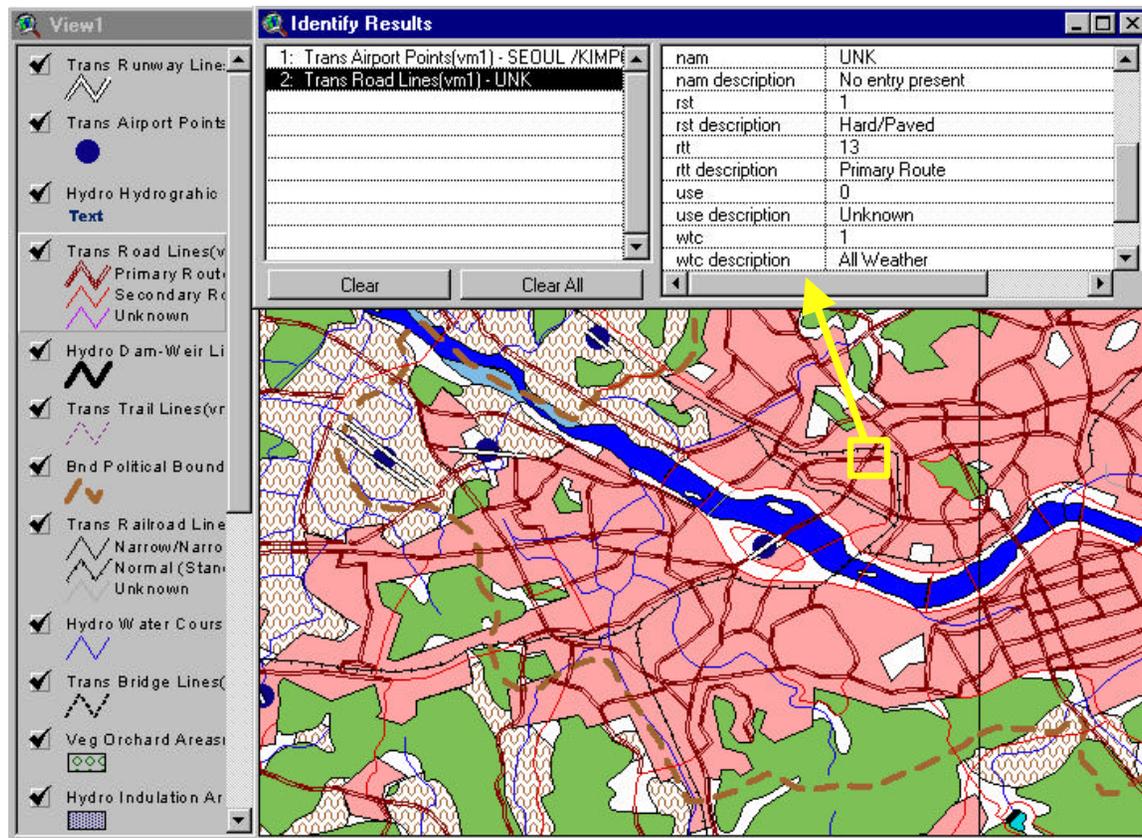
**Geographic Position**



A means of storing,  
retrieving, sorting,  
and comparing  
*spatial data*  
to support some  
analytic process.

# What is a GIS?

## GEOGRAPHIC Information System



GIS links graphical features (**entities**) to tabular data (**attributes**)

# GIS Definition

- A GIS is a system (hardware + database engine) that is designed to efficiently, assemble, store, update, analyze, manipulate, and display **geographically referenced information** (data identified by their locations).
- A GIS also includes the **people** operating the system and the **data** that go into the system.

# Key Functions of a GIS

## Data can be:

- Positioned by its known spatial coordinates.
- Input and organized (generally in layers).
- Stored and retrieved.
- Analyzed (usually via a Relational DBMS).
- Modified and displayed

# Geographic Information Systems

