Information System Overview

2110213 Information System Organization

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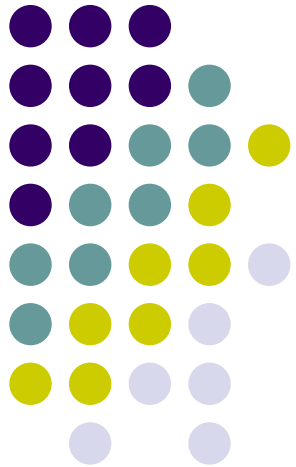
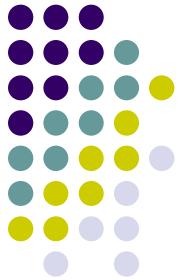


Outline

- Basic Terminologies
  - Data / Information / Knowledge
  - IS & IT
  - Infrastructure
- Case Studies
- IT Infrastructure

Defining the Terms



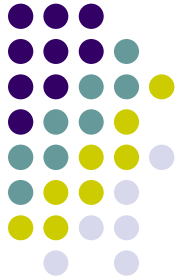
Data: (source: Webster Online Dictionary)

1 : factual information (as measurements or statistics) used as a basis for reasoning, discussion, or calculation

2 : information output by a sensing device or organ that includes both useful and irrelevant or redundant information and must be processed to be meaningful

3 : information in numerical form that can be digitally transmitted or processed

Defining the Terms



Information: (source: Webster Online Dictionary)

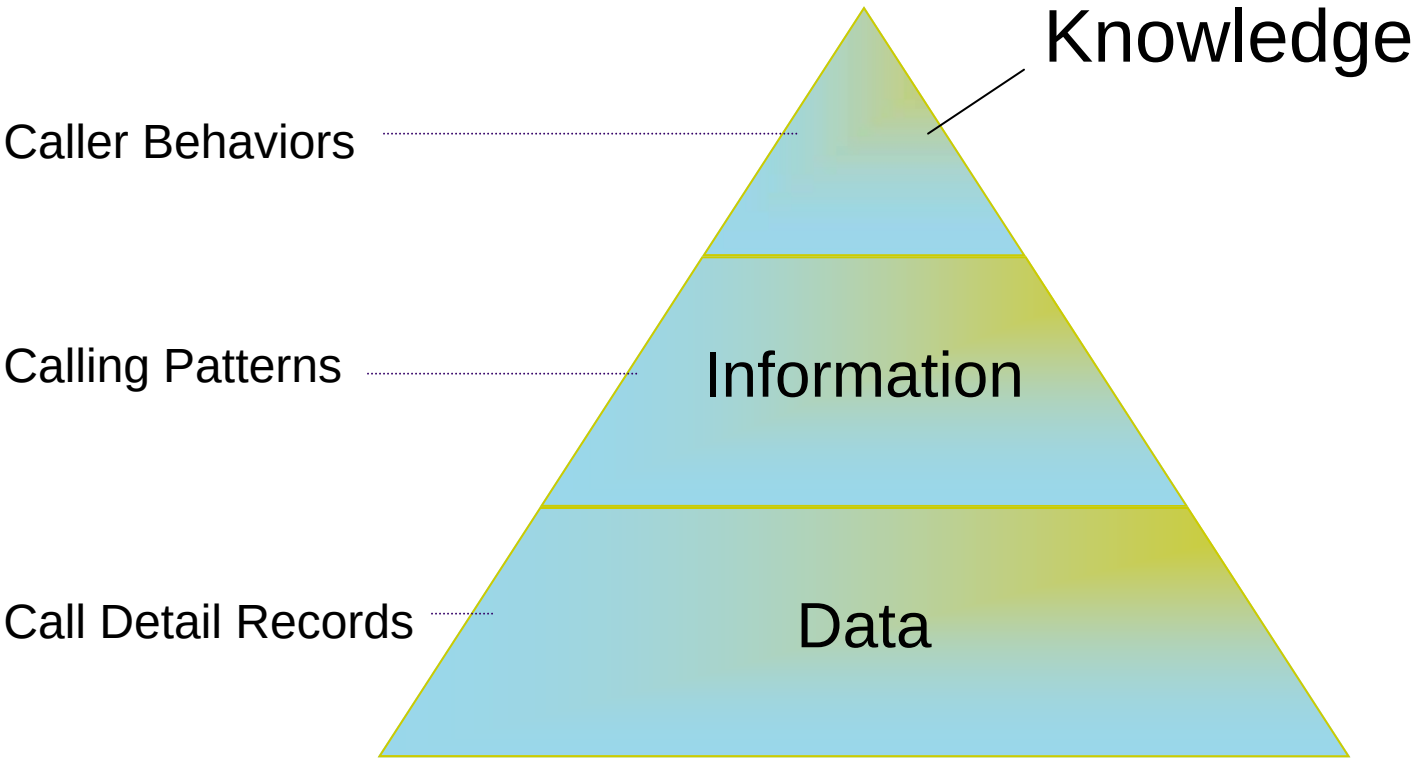
a (1) **:** knowledge obtained from investigation, study, or instruction (2) **:** **INTELLIGENCE, NEWS** (3) **:** FACTS, DATA

b : the attribute inherent in and communicated by one of two or more alternative sequences or arrangements of something (as nucleotides in DNA or binary digits in a computer program) that produce specific effects

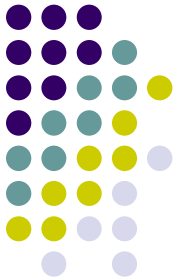
c (1) **:** a signal or character (as in a communication system) representing data (2) **:** something (as a message, experimental data, or a picture) which justifies change in a construct (as a plan or theory) that represents physical or mental experience or another construct

d : a quantitative measure of the content of information; *specifically* **:** a numerical quantity that measures the uncertainty in the outcome of an experiment to be performed

Information Abstraction

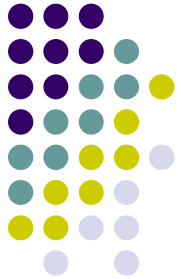


Size of Information



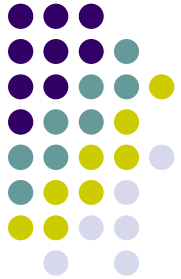
- How much computer storage is needed?
  - Bits, bytes, kilobytes, megabyte, terabyte, petabytes
- Examples:
  - Library of Congress: 3 PB
    - 20 TB for Books (20M books)
    - 13 TB for Photographs (13M photographs)
    - 200 TB for Maps (4M maps)
    - 500 TB for Movies (500K Movies)
    - 2,000 TB for CDs (3.5M sound recordings)
  - NASA Satellite Image DL: collection of 2 TB/day

Most common information today?



- Data records
  - Structured data
- Text, web pages, documents
  - Unstructured, or semi-structured data
- Images, video, music, voice,….
  - Multimedia data, multimedia documents
- Spatial/geographic data
  - Maps, spatial analysis data, census data, etc.

What is Information System ?

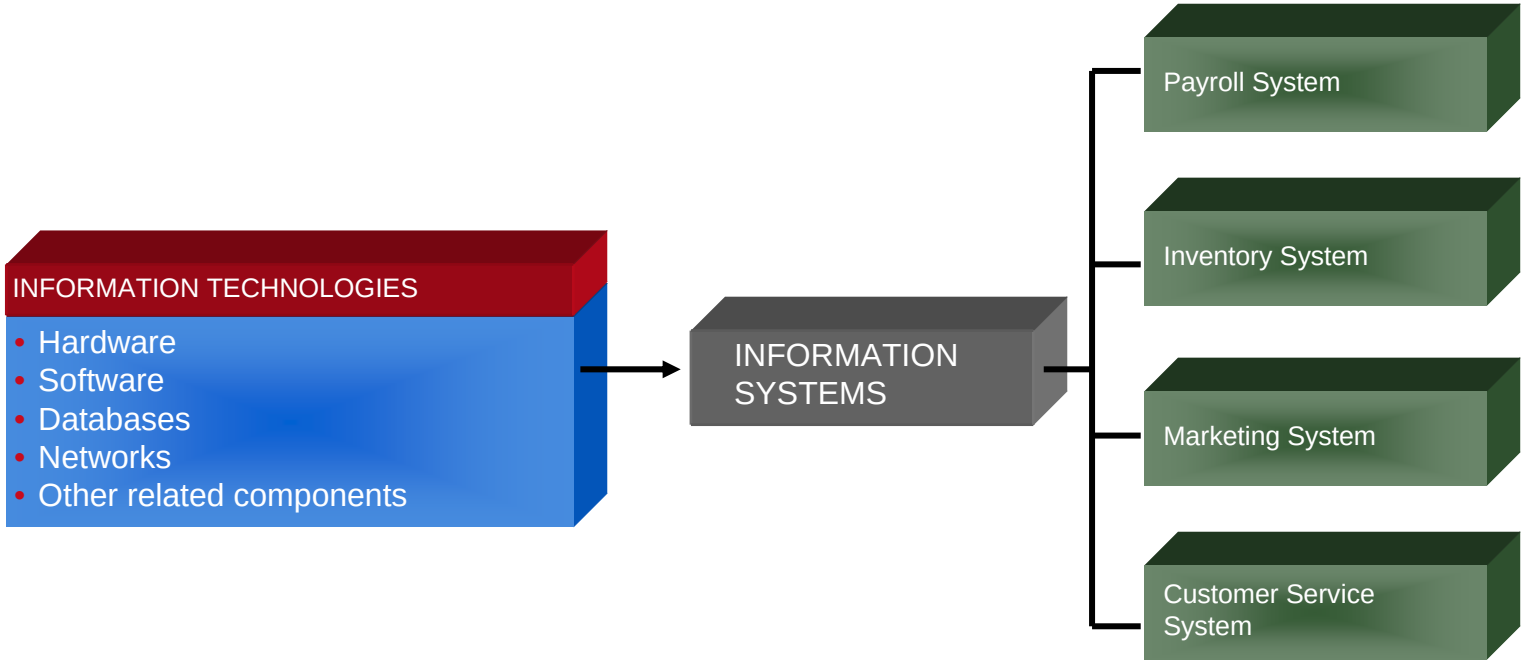


"Application or system that provides information to aid organizational decision making."

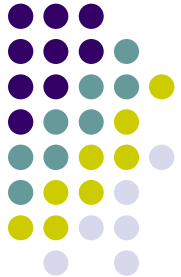
Example:

- Student registration system.
- Classroom reservation system.
- Gamer logging and reporting system.

IS vs. IT

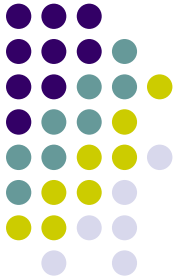

INFORMATION TECHNOLOGIES
Hardware
Software
Databases
Networks
Other related components
INFORMATION SYSTEMS
Payroll System
Inventory System
Marketing System
Customer Service System

Types of Information System



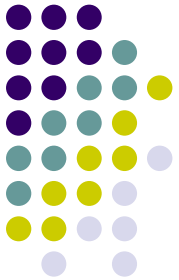
- By coverage
  - Personal, work-group, enterprise-wide
- By types of decision
  - Operational, tactical, strategic
- By business functions
  - Marketing, operation, accounting, HR

Case Study #1



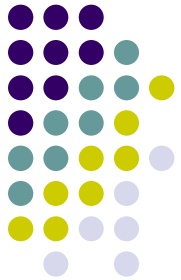
- Personal Information System
- Information
  - Address book
  - Calendar
  - Bank accounts, bills
  - Class schedule
  - Email
  - Homework, labs
  - Travel booking system, maps, places
  - Friends, photos, music
- Computer infrastructure
  - Home and lab computers, PDA, mobile phone, camera, backup, ipod

Case Study #2



- WWW-based E-commerce system: (Think Amazon!)
- Massive amounts of products
  - Search, update, pricing
  - Internal ordering and supply chain management
- Integration of third party sellers
- Customer database system
- Ordering system, deliver systems
- Recommendation system
- Scalability, and availability

Case Study #3



- NASA Earth Science Data Enterprise
  - Several satellites, each with several remote sensing instruments collecting raw data (2 TB/day)
  - Data storage and post-processing at NASA Distributed Active Archive Centers (DAAC)
  - Data Analysis and Feature Extraction by scientists
  - Integration with other geographical and environmental data
  - Usage for precision agriculture