

ACS-1803

Introduction to Information Systems

Instructor: Kerry Augustine

Introduction to Information Systems

Lecture Outline I

Introduction to Information Systems

▶ Instructor: Kerry Augustine

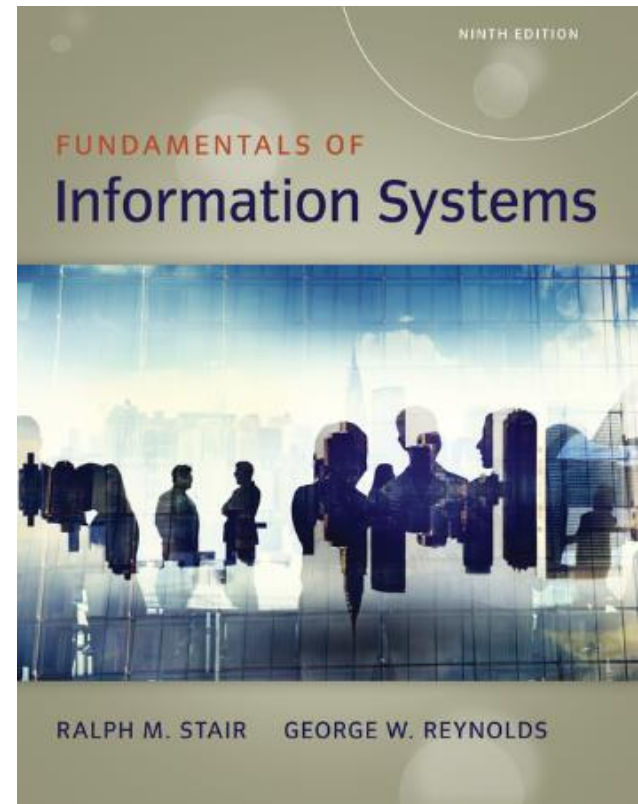
k.augustine@uwinnipeg.ca

▶ Textbook:

▶ Stair, Ralph and Reynolds, George:
*Fundamentals of Information Systems,
Nineth Edition.*

▶ *Course Syllabus and Website*

<https://courses.acs.uwinnipeg.ca/1803-052/>





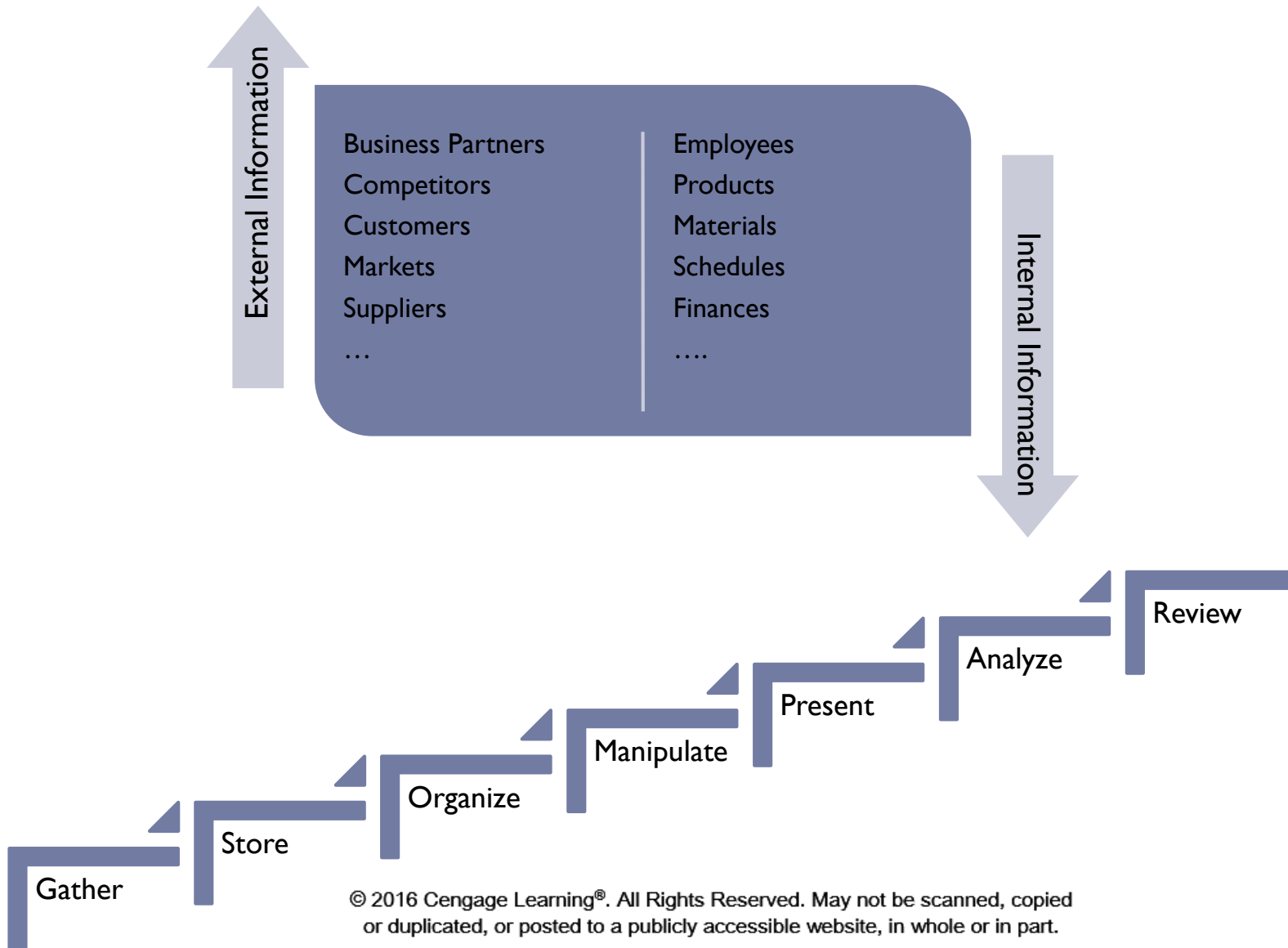
Principles and Learning Objectives

- ▶ The value of information is directly linked to how it helps decision makers achieve the organization's goals
 - ▶ Distinguish data from information and describe the characteristics used to evaluate the quality of data

How do Computers Help Manage Organizations?

- ▶ Expediting tasks
 - ▶ Direct use of common application software (word processing, spread sheets, data management)
- ▶ Streamlining processes
 - ▶ Specifically developed application systems for different business areas (inventory system, library system)
- ▶ Managing Information
 - ▶ Information drives the organization in an information-based society

Managing Information



Information as an Asset

- ▶ Valuable information helps people perform tasks more efficiently and effectively
 - ▶ Inaccurate data can result in loss of potential new customers and reduced customer satisfaction
- ▶ If an organization's information is not accurate or complete:
 - ▶ People can make poor decisions, costing thousands, or even millions, of dollars
 - ▶ Managers use experience, best guesses, luck...
 - ▶ Results in:
 - ▶ Over/under production
 - ▶ Misallocation of resources
 - ▶ Poor response time
 - ▶ End result: Poor outcomes, raise in costs, loss of customers

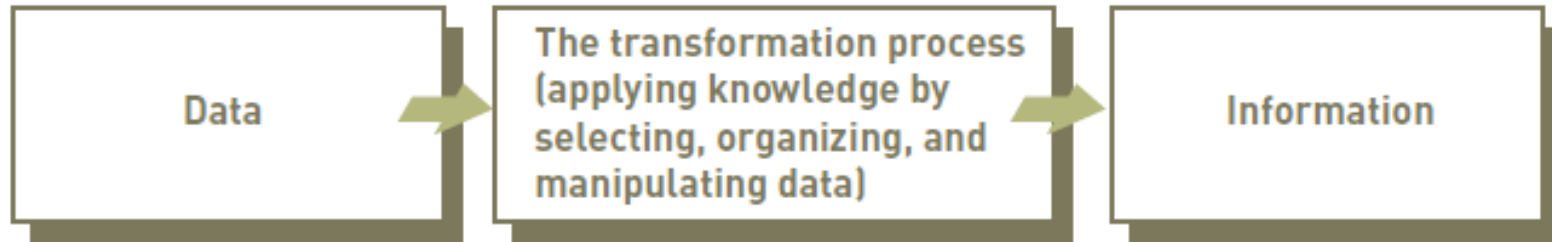
Data, Information, and Knowledge

- ▶ **Data:** raw facts
- ▶ **Information:** collection of data organized in such a way that they have value beyond the facts themselves
- ▶ **Process:** set of logically related tasks performed to achieve a defined outcome
 - ▶ Turning data into information is a process
- ▶ **Knowledge:** awareness and understanding of a set of information and the ways it can be made useful to support a task
 - ▶ The process of defining relationships among data to create useful information requires knowledge

Data, Information, and Knowledge (continued)

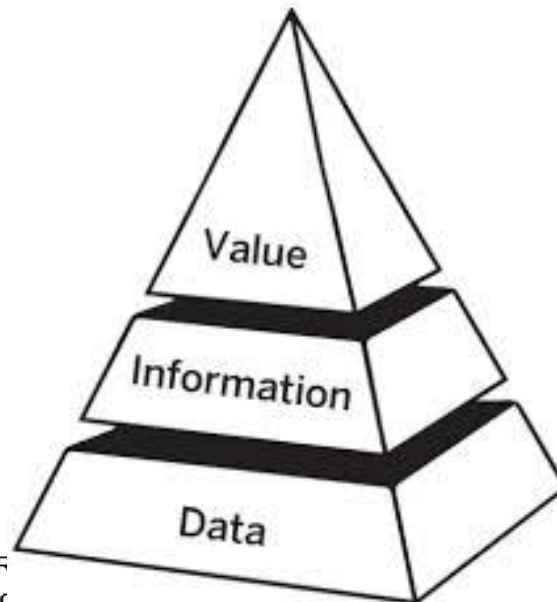
Data	Represented by
Alphanumeric data	Numbers, letters, and other characters
Image data	Graphic images and pictures
Audio data	Sound, noise, or tones
Video data	Moving images or pictures

Data, Information, and Knowledge (continued)



The Value of Information

- ▶ Directly linked to how it helps decision makers achieve their organization's goals
- ▶ Valuable information:
 - ▶ Helps people and their organizations perform tasks more efficiently and effectively



The Characteristics of Valuable Information

Accessible

Accurate

Complete

Economical

Flexible

Relevant

Reliable

Secure

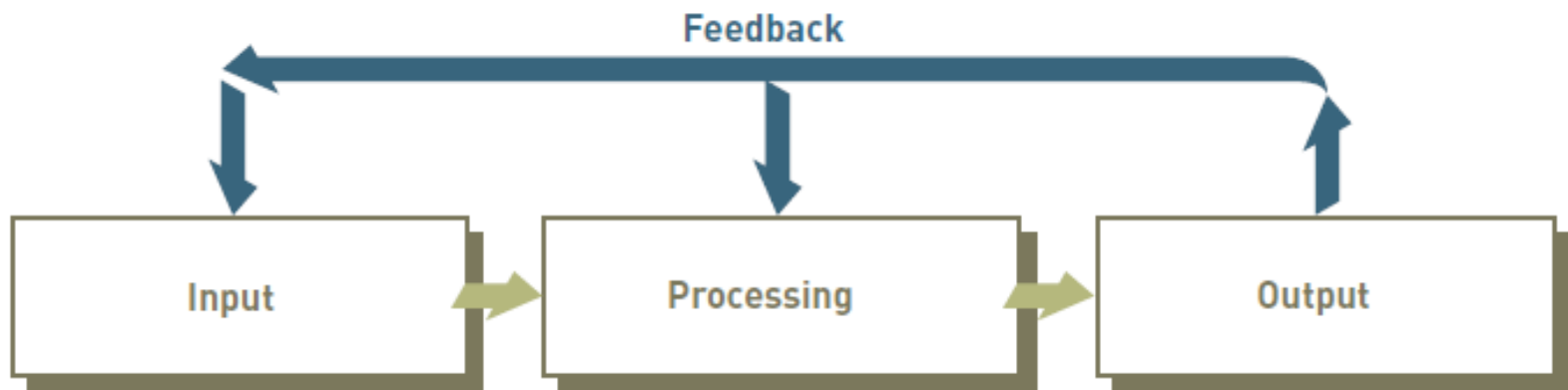
Simple

Timely

Verifiable

Input, Processing, Output, Feedback

- ▶ **Input:** Activity of gathering and capturing raw data
- ▶ **Processing:** Converting data into useful outputs
- ▶ **Output:** Production of useful information, usually in the form of documents and reports
- ▶ **Feedback:** Information from the system that is used to make changes to input or processing activities



Why Learn about Information Systems

- ▶ **Organizations** are the essence of economic, social, and political development in any society
- ▶ Information is one of an organization's most valuable resources
- ▶ Information helps decision makers achieve an organization's goals
- ▶ Information Systems change organizations and the way we live
 - ▶ Technology used for innovation (processes, products), Decision-making
- ▶ Professionals in technology and management require Information systems knowledge to participate in and lead organizational work
- ▶ To Consider:
 - ▶ What are examples of information do organizations require?
 - ▶ How is information managed?

Information Systems

- ▶ A set of interrelated components that collect, manipulate, and disseminate data and information and provide feedback to meet an objective



What is an information System

An Information System (IS) is a set of interrelated elements that:

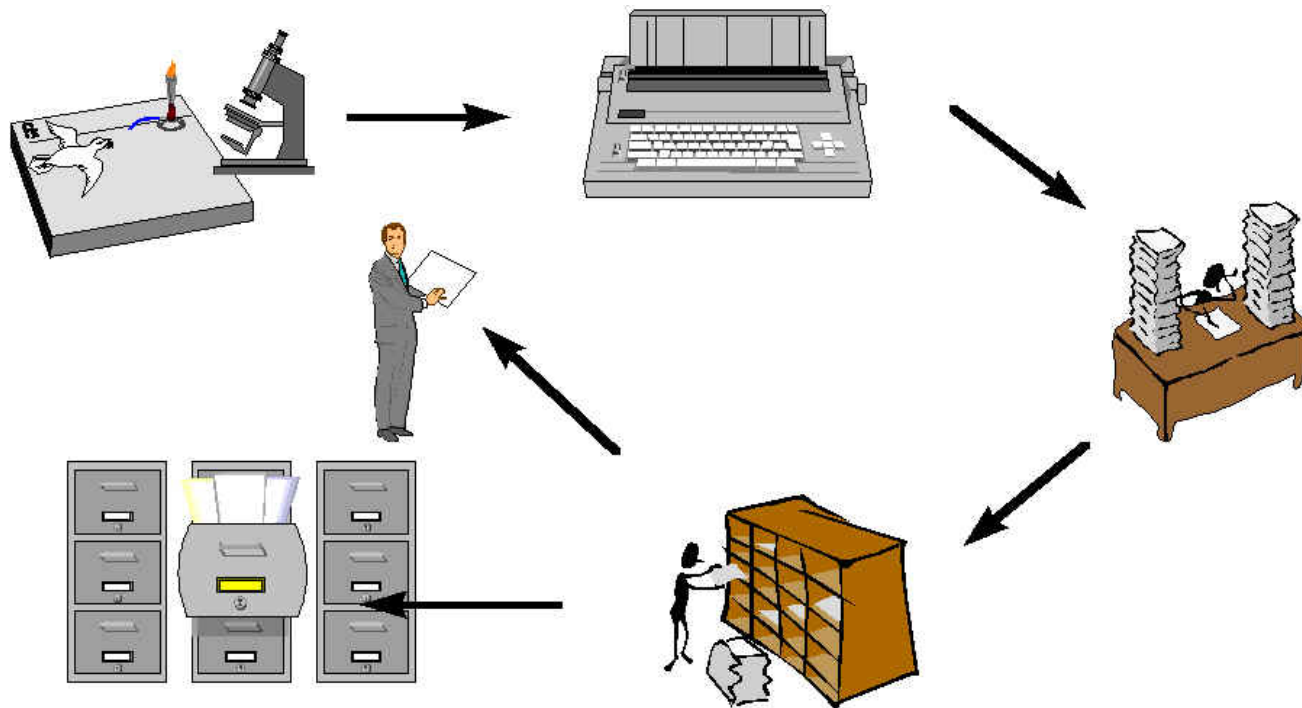
- ▶ Collect (input)
- ▶ Manipulate (process)
- ▶ Store
- ▶ Disseminate (output) data and information
- ▶ Provide a corrective reaction (feedback mechanism) to meet an objective

Computer Information Systems – Component Groups

- ▶ Application components:
 - ▶ Screens, menus, databases
- ▶ Technological components:
 - ▶ computer and telecommunication technology (ICT – information and communication technology) – this is the backbone
 - ▶ Hardware, software, telecommunications
- ▶ Organizational Components:
 - ▶ Users, procedures

Manual and Computer-based Information Systems

- ▶ An information system can be Manual or Computerized



Information Systems - Elements

▶ Hardware:

- ▶ Consists of computer equipment used to perform input, processing, and output activities

▶ Software:

- ▶ Consists of the computer programs that govern the operation of the computer

▶ Database:

- ▶ Organized collection of facts and information, typically consisting of two or more related data files

Information Systems - Elements

- ▶ **Telecommunications, Networks, and the Internet:**
 - ▶ The electronic transmission of signals for communications
 - ▶ Networks: Connect computers and equipment to enable electronic communication
- ▶ **People:**
 - ▶ The most important element in most management information systems
- ▶ **Procedures:**
 - ▶ Include strategies, policies, methods, and rules for using the MIS
 - ▶ Procedure defines the steps to follow to achieve a specific end result
 - ▶ Such as enter a customer order, pay a supplier invoice, or request a current inventory report
 - ▶ Using a CBIS involves setting and following many procedures, including those for the
 - ▶ Operation, maintenance, and security of the system

Components of a Computer-based Information System (CBIS)



Hardware



Software



Telecommunications



People



Procedures

© D.Jules/Shutterstock.com, © noolwee/Shutterstock.com, © Andras/Shutterstock.com, © Sashin/Shutterstock.com, © MasonWeasley/Shutterstock.com, © Dusi/Shutterstock.com

Three Fundamental Types of Information Systems

- ▶ Information systems can be divided into three types:
 - ▶ **Personal IS** – includes information systems that improve the productivity of individual users
 - ▶ **Group IS** – includes information systems that improve communications and support collaboration among members of a workgroup
 - ▶ **Enterprise IS** – includes information systems that organizations use to define structured interactions among their own employees and/or external customers, suppliers, government agencies, etc...

Three Fundamental Types of Information Systems

- ▶ For each type of IS, certain key organizational complements must be in place:
 - ▶ Well-trained workers
 - ▶ System support
 - ▶ Better teamwork
 - ▶ Redesigned processes
 - ▶ New decision rights

Three Fundamental Types of Information Systems

TABLE 1.3 Examples and characteristics of each type of information system

	Personal IS	Group IS	Enterprise IS
Examples	Personal productivity software, decision-support system	Email, instant messaging, project management software	Transaction processing systems, enterprise systems, interorganizational systems
Benefits	Improved productivity	Increased collaboration	Increased standardization and ability to monitor work
Organizational complements (including well-trained workers, better teamwork, redesigned processes, and new decision rights)	<ul style="list-style-type: none"> Does not bring complements with it Partial benefits can be achieved without all complements being in place 	<ul style="list-style-type: none"> At least some complements must be in place when IS “goes live” Allows users to implement and modify complements over time 	<ul style="list-style-type: none"> Full complements must be in place when IS “goes live”
Manager’s role	<ul style="list-style-type: none"> Ensure that employees understand and connect to the change Encourage use Challenge workers to find new uses 	<ul style="list-style-type: none"> Demonstrate how technology can be used Set norms for participation 	<ul style="list-style-type: none"> Identify and put into place the full set of organizational complements prior to adoption Intervene forcefully and continually to ensure adoption

The Role of Information Systems in Business

- ▶ Operational excellence:
 - ▶ Improvement of efficiency to attain higher profitability
 - ▶ Information systems, technology an important tool in achieving greater efficiency and productivity
 - ▶ Walmart's Retail Link system links suppliers to stores for superior replenishment system



Alamy