Chapter One

Information System(BIS)

Outline

- System concept
  - Data and Information
  - Information System
  - Business Information System
- Components of Information System
- Dimensions of Information Systems
  - Organization
  - Management and
  - Technology

System Concepts

- **Data**:- it is a raw fact and can take the form of a number or statement such as a ***date*** or a *measurement*.
- Data relates to transactions, events and facts.
- On its own - it is not very useful. Think of the data that is created when you buy a product from a retailer.
- This includes:
  - Time and date of Transaction(e.g. 10:05 Tuesday 16 September 2019)
  - Transaction Value(e.g. 55.00 Birr)
  - Facts about what was bout(e.g. hairdryer, cosmetics pack, saving foam) and how much was bought(quantities)
  - How payment was made(e.g. credit card, credit card number and code)
  - Which employee recorded the sale
  - Whether any promotion discount applied

Con't

- It is necessary for businesses to put in place procedures to ensure data are recorded.
  - For example, to ensure a call center operator includes the postcode of every customer this can be written into their script and a validation check performed to check these data have been entered into the system.
- **Information**: it is data that have been processed so that they are meaningful.
  - This requires a process that is used to produce information which involves collecting data and then subjecting them to a transformation process in order to create information.
  - Some examples of information include a sales forecast or a financial statement.
- **Note**:- the - "processed" and "meaningful": It is not enough for data simply to be processed; it has to be of use to someone - otherwise why bother?!

Data Processing Functions

- **aggregating** which summarizes data by such means as taking an average value of a group of numbers.
- **Classification** places data into categories such as on-time and late deliveries.
- **Sorting** organizes data so that items are placed in a particular order, for example listing orders by delivery date.
- **Calculations** can be made on data such as calculating an employee's pay by multiplying the number of hours worked by the hourly rate of pay.
- Finally data can be chosen based on a set of selection criteria, such as the geographical location of customers.

Attributes of Information

- Characteristics of good information are as follows:

- ***Usability***
  - ✔ Relevant
  - ✔ Simple
  - ✔ Flexible
  - ✔ Economical

- ***Delivery***
  - ✔ Timely
  - ✔ Accessible
  - ✔ Secure

- ***Quality***
  - ✔ Accurate
  - ✔ Verifiable
  - ✔ Complete
  - ✔ Reliable

Information Spectrum

- **Data □ *processing* □ Information**
- **Information □ *intelligence* □ Knowledge**
- **Knowledge □ *experience* □ Wisdom**

Why Do People Need Information in Business?

- Businesses and other organizations need information for many purposes: Some of them are listed below

Planning:

- ✔ To plan properly, a business needs to know what resources it has (e.g. cash, people, machinery and equipment, property, customers).
- ✔ It also needs information about the markets in which it operates and the actions of competitors.
- ✔ At the planning stage, information is important as a key ingredient in decision-making.

Recording:

- ✔ Information about each transaction or event is needed.
- ✔ Much of this is required to be collected by law - e.g. details of financial transactions.
- ✔ Just as importantly, information needs to be recorded so that the business can be properly managed.

Con't

- ***Controlling:***
  - ✔ Once a business has produced its plan it needs to monitor progress against the plan - and control resources to do so.
  - ✔ So information is needed to help identify whether things are going better or worse than expected, and to spot ways in which corrective action can be taken
- ***Measuring:***
  - ✔ Performance must be measured for a business to be successful.
  - ✔ Information is used as the main way of measuring performance.
  - ✔ For example, this can be done by collecting and analyzing information on sales, costs and profits

Con't

- ***Decision-making:***
  - ✔ Information used for decision-making is often categorized into three types:
  - i. **Strategic information**: used to help plan the objectives of the business as a whole and to measure how well those objectives are being achieved. Examples of strategic information include:
    - Profitability of each part of the business
    - Size, growth and competitive structure of the markets in which a business operates
    - Investments made by the business and the returns (e.g. profits, cash inflows) from those investments

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ii. **Tactical Information:** this is used to decide how the resources of the business should be employed. Examples include:

- Information about business productivity (e.g. units produced per employee; staff turnover)
- Profit and cash flow forecasts in the short term
- Pricing information from the market

iii. **Operational Information:** this information is used to make sure that specific operational tasks are carried out as planned/intended (i.e. things are done properly).

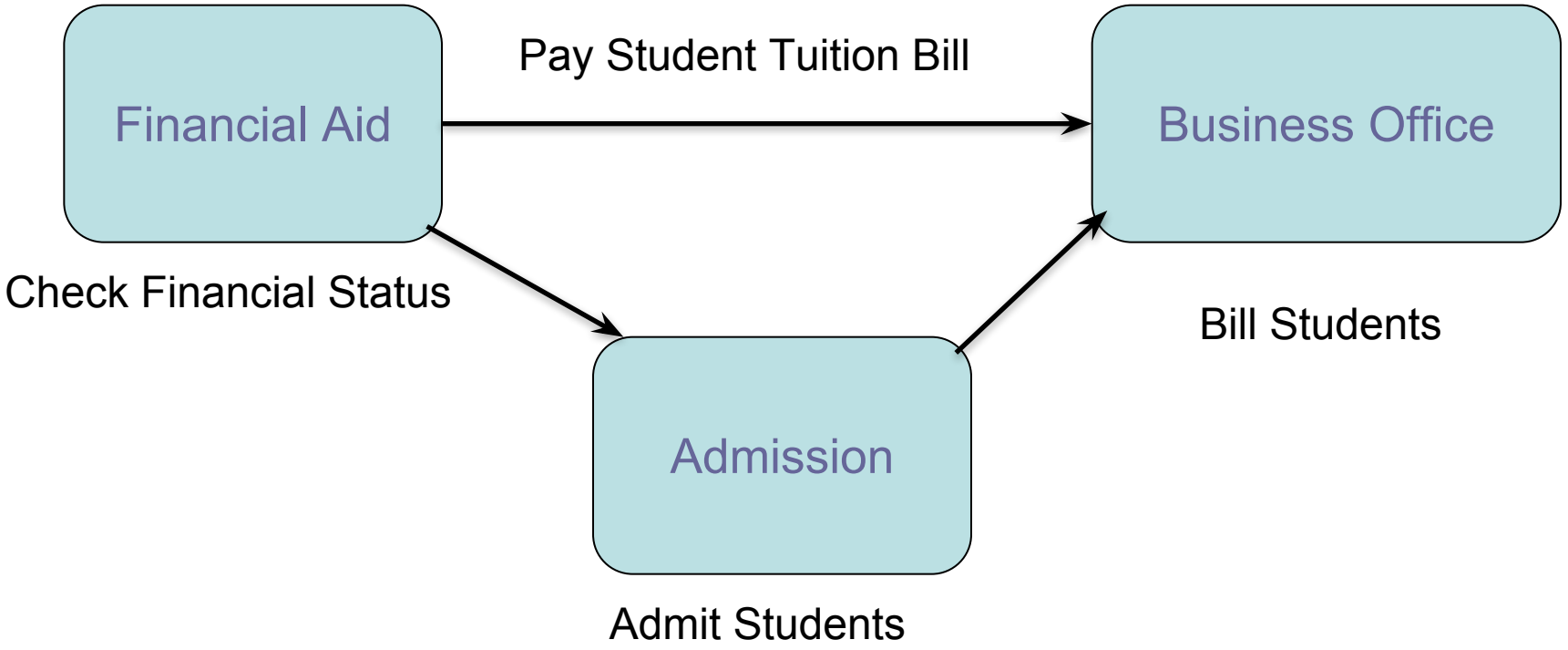
- For example, a production manager will want information about the extent and results of quality control checks that are being carried out in the manufacturing process.

Defining Systems

- What is System?
  - **System:** A set of components that work together to achieve a common goal.
  - **Subsystem:** One part of a system where the products of more than one system are combined to reach an ultimate goal.
  - **Closed system:** Stand-alone system that has no contact with other systems.
  - **Open system:** System that interfaces with other systems

Example

Simplified Enrollment System for Aviation College



Defining Information System

- An **information system** is defined as the software that helps organize and analyze data.
  - The purpose of an information system is to turn raw data into useful information that can be used for decision making in an organization.
  - The role of the Information systems to provide information to management which will enable them to make decisions which ensure that the organization is controlled.
  - The organization will be in control if it is meeting the needs of the environment.

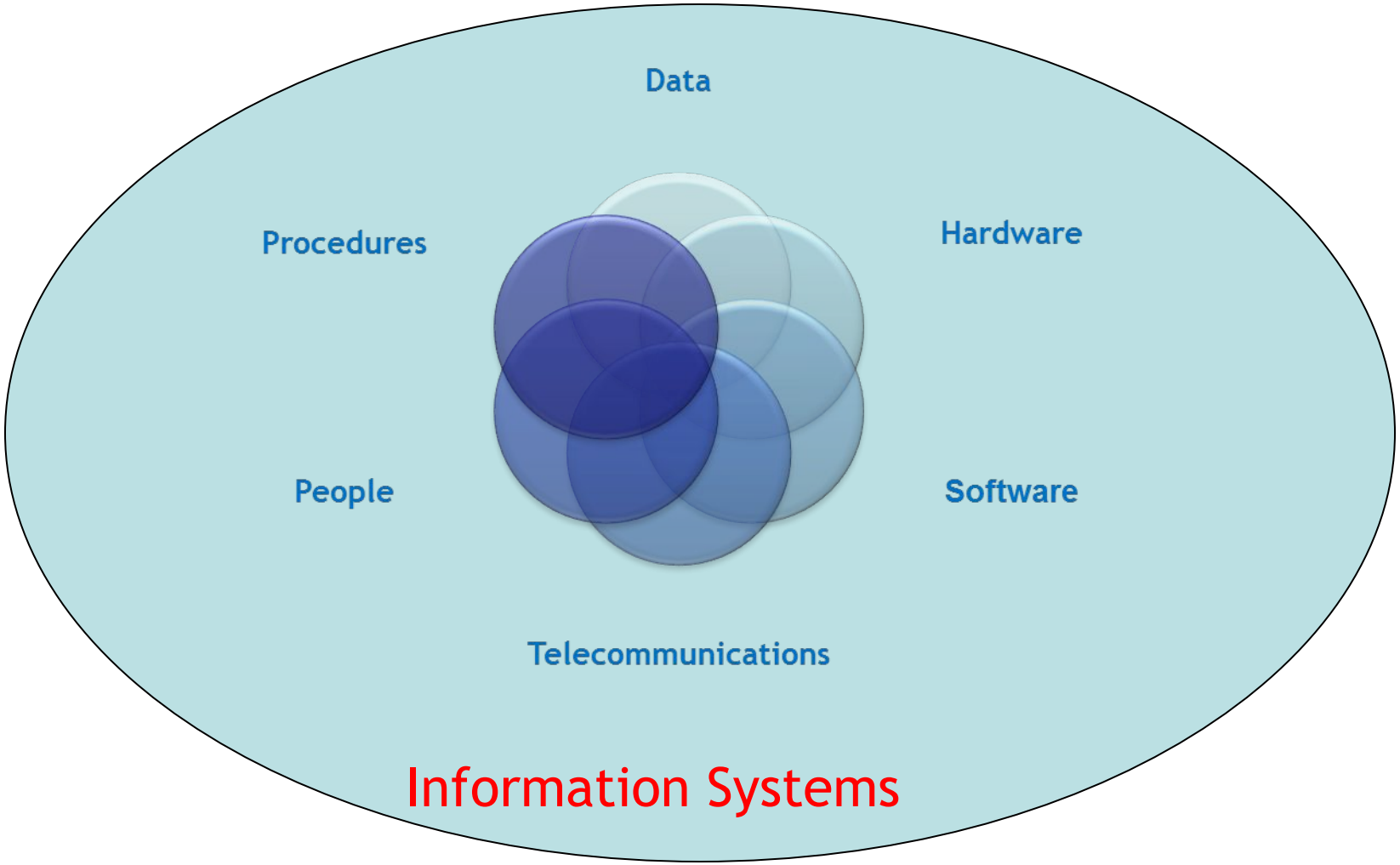
Components of information System

- In an organization, an information systems consists of:
  - People
  - Hardware
  - Software
  - Communication
  - Data
  - Procedure

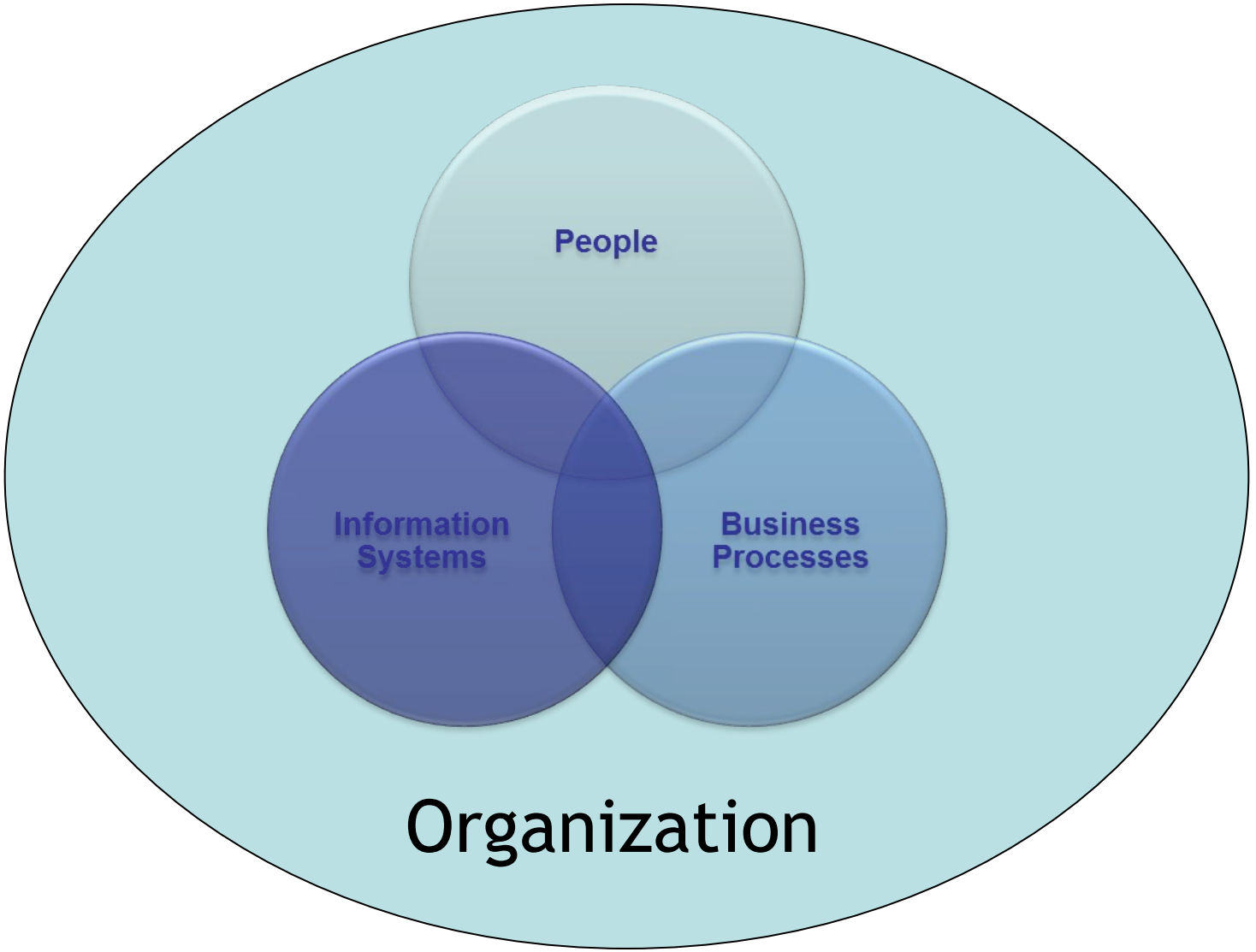
Con't

- **People resources** include the users and developers of an information system and those who help maintain and operate the system such as IS managers and technical support staff.
- **Hardware resources** include computers and other items such as printers.
- **Software resources** refer to computer programs known as software and associated instruction manuals.
- **Communications resources** include networks ,the hardware and software needed to support them.
- **Data resources** cover the data that an organization has access to such as computer databases and paper files.
- **Procedure** rule for achieving optimal and secure operation in data processing. Procedure include priorities in dispensing software applications and security measure

Information Systems in Organizations (IS Components View)



Information Systems in Organizations (Organizational View – another way of viewing IS)



Business Information System

- **Business information system(BIS):**
  - ✔ It can be defined as a group of interrelated components that work collectively to carry out input, processing, output, storage and control actions in order to convert data into information products that can be used to support forecasting, planning, control, coordination, decision making and operational activities in an organization.

Information and Managers

- **Systems thinking**: thinking of an organization in terms of subsystems
  - Powerful management approach that creates a framework for problem solving and decision making
  - Helps keep managers focused on overall goals
- **Information systems** automate exchange of information among subsystems
- **Information map**: description of data and information flow within an organization
  - Shows a network of information subsystems that exchange information with each other and with the outside world
- **Information technology**: technologies that facilitate construction and maintenance of information systems

The Benefits of Human-Computer Synergy

- Humans are relatively slow and make mistakes
- Computers cannot make decisions unless programmed to do so
- **Synergy**: combining resources to produce output that exceeds the sum of outputs of the separate resources by themselves
- Human-computer combination allows human thought to be translated into efficient processing of data

Con't

Humans

Think

Have common sense

Can make decisions

Can instruct the computer what to do

Can learn new methods and techniques

Can accumulate expertise

Computers

Calculate and perform programmed logical operations extremely rapidly

Store and retrieve data and information extremely rapidly

Perform complex logical and arithmetical functions accurately

Execute long, tedious operations

Perform routine tasks less expensively than humans

Are adaptable (can be programmed and reprogrammed)

Information Systems in Organizations

- Information system consists of data, hardware, software, telecommunications, people, and procedures
- **Computer-based Information system**: system with one or more computers at center
- Organizations lag behind and lose competitiveness if they do not use information systems

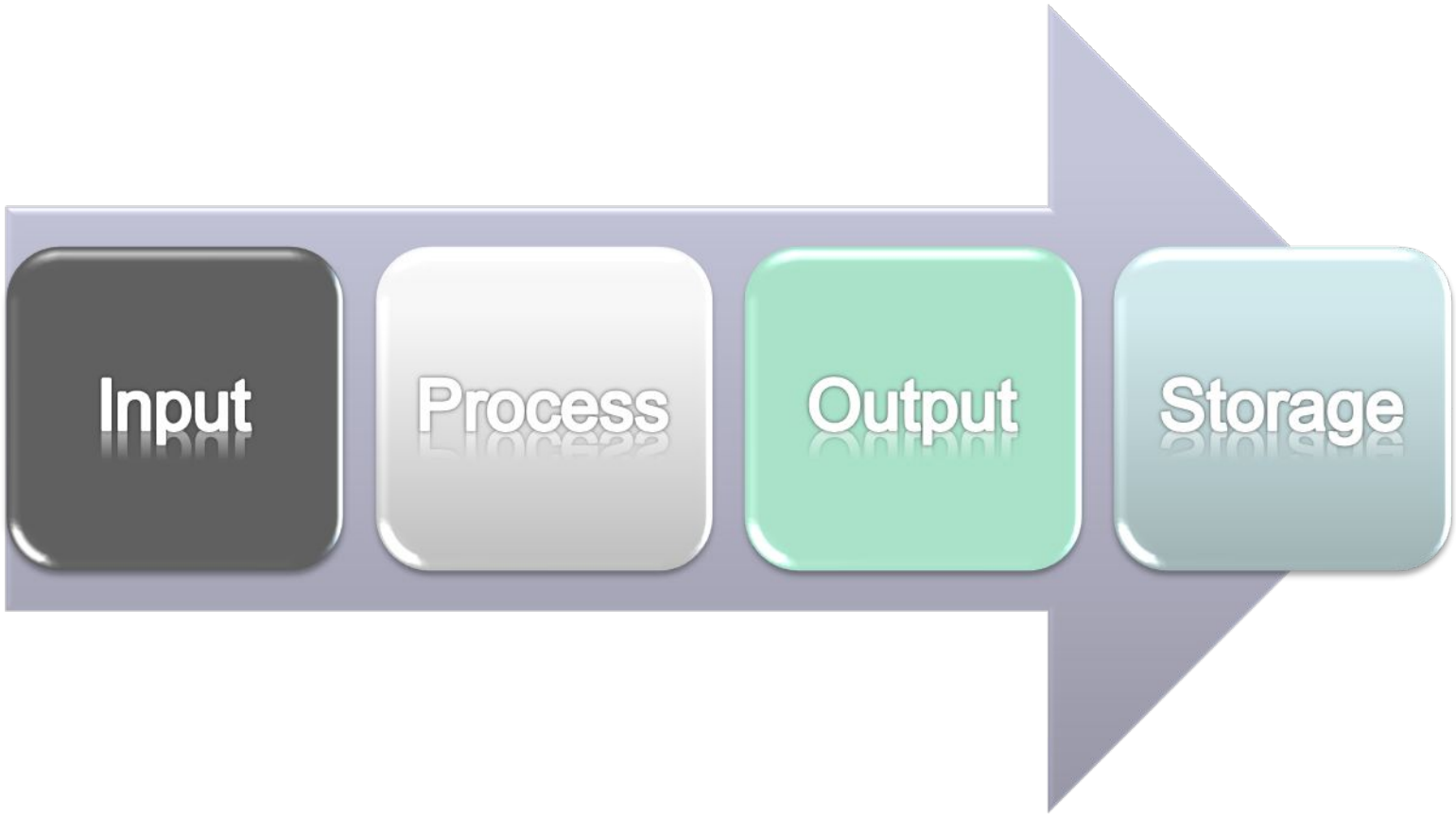
Con't

- Trends that have made information systems important in business:
  - Growing power and decreasing cost of computers
  - Growing capacity and decreasing costs of data storage devices
  - Increasing variety and ingenuity of computer programs
  - Available, reliable, affordable, and fast communications links to the Internet
  - Growth of the Internet
  - Increasing computer literacy of the workforce

The Four Stages of Processing

- **Input:** collect and introduce data to system
  - **Transaction**: a business event, usually entered as input (e.g. deposit or withdraw in a bank)
  - **Transaction processing system (TPS)**: a system that records transactions
  - **Input devices** include keyboards, bar code readers, voice recognition systems, touch screens
- **Data processing**: perform calculations on input
- **Output**: what is produced by the information system
  - Output devices include printers and speakers
- **Storage**: maintaining vast amounts of data
  - Storage devices include optical discs

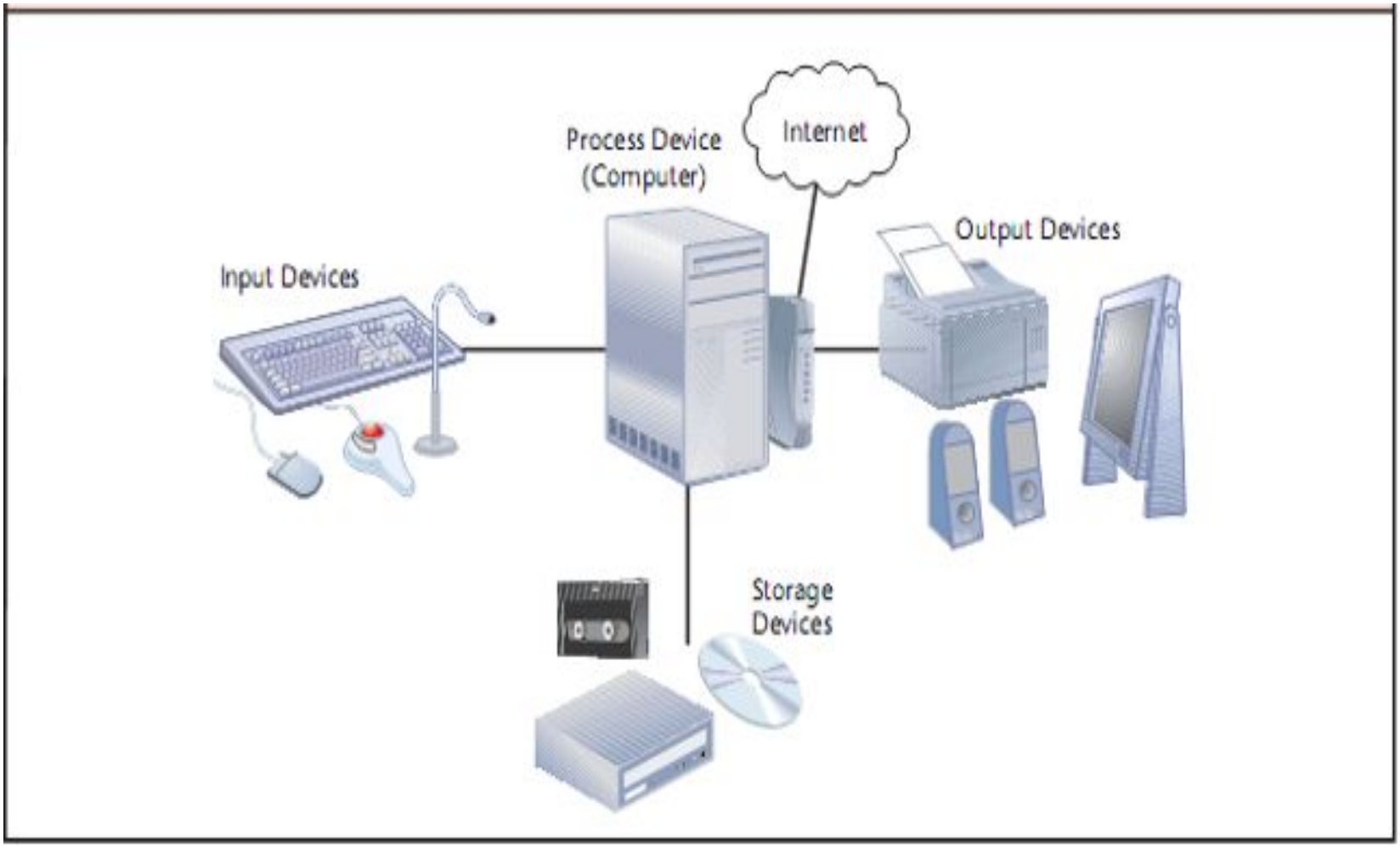
The Four Stages of Processing (Model View)



Computer Equipment for Information Systems

- Different technologies are used to support the four data processing functions:
  - Input devices: receive input
  - Computers: process data
  - Output devices: display information
  - Storage devices: store data
  - Network devices: transfer data
- **Telecommunications**: communication that takes place between computers over great distances

Con’t


Process Device
(Computer)
Internet
Output Devices
Input Devices
Storage
Devices

Information Systems in Business Functions

- **Functional business area:** services within a company that support main business
  - Includes accounting, finance, marketing, and human resources
  - Part of a larger enterprise system

Accounting

- Accounting information systems:
  - Help record transactions
  - Produce periodic statements
  - Create required reports for law
  - Create supplemental reports for managers
  - Contain controls to guarantee adherence to standards

Finance

- Finance systems:
  - Facilitate financial planning and business transactions
- Tasks include organizing budgets, managing cash flow, analyzing investments, and making decisions

Marketing

- Marketing's purpose is to pinpoint likely customers and promote products
- Marketing information systems:
  - Analyze demand for products in regions and demographic groups
  - Identify trends in demand for products/services
  - Help analyze how advertising campaigns affect profit
- Web provides opportunity to collect marketing data as well as promote products and services

Human Resources

- Human resource management systems aid record-keeping
  - Must keep accurate records
  - Aids recruiting, selection, placement, benefits analysis, requirement projections
- Performance evaluation systems provide grading utilities

Manufacturing

- Control Inventory,process customer orders, prepare production schedules,perform quality assurance and prepare shipping documents.

Government

- Tax authorities, national insurance and welfare agencies, defence departments, economic organizations, immigration and authorities

Services

- IS are often the backbone of service organizations

Retail

- Some retil stores(e.g. Wal-Mart,Kmart) are now linked to communication networks by satellite.
- Management can determine which items move quickly and which do not.

New Business

- IS have made new products and services possible such as credit reports and shipment tracking.

Web-Empowered Enterprises

- **E-commerce**: buying and selling goods and services through Internet
- Internet is a vast network of computers connected globally
- Web has a profound impact on information systems
  - An emerging advertising medium
  - A place to conduct e-commerce

Dimensions of Information Systems

- Information System consists of three dimensions, organization, management and Technology.
- Using information systems effectively requires an understanding of the organization, management, and information technology shaping the systems.
- An information system creates value for the firm as an organizational and management solution to challenges posed by the environment.

Organizations

- Information systems are an integral part of organizations.
- Indeed, for some companies, such as credit reporting firms, there would be no business without an information system.
- The key elements of an organization are its people, structure, business processes, politics, and culture.

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- Parts of an organization's culture can always be found embedded in its information systems.
  - For instance, XYZ's company first priority is customer service, which is an aspect of its organizational culture that can be found in the company's package tracking systems.
  - Different levels and specialties in an organization create different interests and points of view.
  - These views often conflict over how the company should be run and how resources and rewards should be distributed.

Con't

- Conflict is the basis for organizational politics.
- Information systems come out of this cauldron of differing perspectives, conflicts, compromises, and agreements that are a natural part of all organizations.

Management

- Management's job is to make sense out of the many situations faced by organizations, make decisions, and formulate action plans to solve organizational problems.
- Managers perceive business challenges in the environment; they set the organizational strategy for responding to those challenges; and they allocate the human and financial resources to coordinate the work and achieve success.
- Throughout, they must exercise responsible leadership.

Con't

- But managers must do more than manage what already exists.
- They must also create new products and services and even re-create the organization from time to time.
- A substantial part of management responsibility is creative work driven by new knowledge and information.
- Information technology can play a powerful role in helping managers design and deliver new products and services and redirecting and redesigning their organizations.

Information Technology

- Information technology is one of many tools managers use to cope with change.
- **Computer hardware** is the physical equipment used for input, processing, and output activities in an information system.
  - It consists of the following: computers of various sizes and shapes (including mobile handheld devices); various input, output, and storage devices; and telecommunications devices that link computers together.
- **Computer software** consists of the detailed, preprogrammed instructions that control and coordinate the computer hardware components in an information system.

Thank you !!!!