

Management Information Systems

Lecture 1: Concepts & Terminologies I

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LEARNING OUTCOMES

At the end of this interactive session, you should be able to:

Discuss and compare the following terms and concepts:

- Effectiveness vs. Efficiency
- Data, Information and Knowledge.
- IT vs. IS
- Internet vs. World Wide Web
- E-business vs. E-commerce

Effectiveness vs. Efficiency

- **Effectiveness**: meeting process objectives, delivering the required output and outcomes ... ‘*doing the right thing*’
- **Efficiency**: *minimising* resources or time needed to complete a process... ‘*doing the thing right*’

Effectiveness / Efficiency

Effectiveness

is about doing *the right task*, completing activities and *achieving goals*.

Source: [http://www.diffen.com/difference/Effectiveness vs Efficiency](http://www.diffen.com/difference/Effectiveness_vs_Efficiency)

In the workplace it is the *level of results* from the actions of employees. For example, *an effective sales employee will make sales consistently*

Source: <http://smallbusiness.chron.com/difference-between-efficiency-effectiveness-business-26009.html>

Efficiency

is about doing things in an *optimal way*, for example doing it the *fastest* or in the *least expensive* way

Efficient employees complete tasks in the *least amount of time* possible with the *least amount of resources* possible

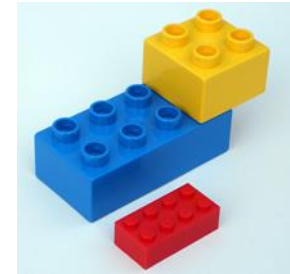
Data & Information

Data are **raw facts** (*where facts are the confirmation or validation of an event or object*); these raw facts, in their current form, are not in a useful format or meaning

Information is data that have been processed into a useful, **meaningful form**.



- **Data** – cells/ bits of raw facts (eg Order Data)

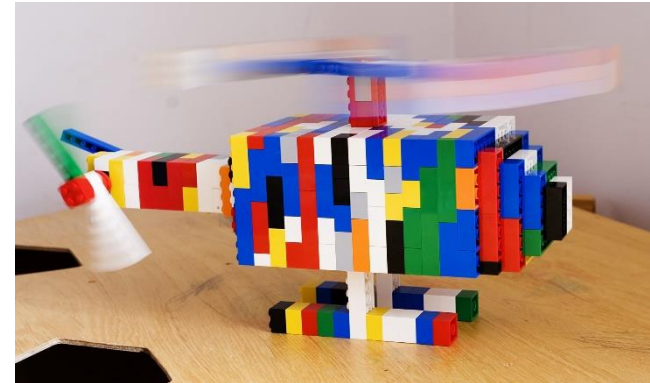


Order Date	Customer	Sales Representative	Product	Qty	Unit Price	Total Sales	Unit Cost	Total Cost	Profit
4-Jan	Walmart	PJ Helgoth	Doritos	41	\$24	\$ 984	\$18	\$738	\$246
4-Jan	Walmart	Roberta Cross	Ruffles	90	\$15	\$1,350	\$10	\$900	\$450
5-Jan	Safeway	Craig Schultz	Ruffles	27	\$15	\$ 405	\$10	\$270	\$135
6-Jan	Walmart	Roberta Cross	Ruffles	67	\$15	\$1,005	\$10	\$670	\$335
7-Jan	7-Eleven	Craig Schultz	Pringles	79	\$12	\$ 948	\$ 6	\$474	\$474
7-Jan	Walmart	Roberta Cross	Ruffles	52	\$15	\$ 780	\$10	\$520	\$260
8-Jan	Kroger	Craig Schultz	Ruffles	39	\$15	\$ 585	\$10	\$390	\$195
9-Jan	Walmart	Craig Schultz	Ruffles	66	\$15	\$ 990	\$10	\$660	\$330
10-Jan	Target	Craig Schultz	Ruffles	40	\$15	\$ 600	\$10	\$400	\$200
11-Jan	Walmart	Craig Schultz	Ruffles	71	\$15	\$1,065	\$10	\$710	\$355

Source: Baltzan (2016)

- **Information** – data processed/ put in a meaningful and useful form/ report/ context (eg. Best Selling Product)

Tony's Business Information	Name	Total Profit
Who is Tony's best customer by total sales?	Walmart	\$ 560,789
Who is Tony's least-valuable customer by total sales?	Walgreens	\$45,673
Who is Tony's best customer by profit?	7-Eleven	\$ 324,550
Who is Tony's least-valuable customer by profit?	King Soopers	\$ 23,908
What is Tony's best-selling product by total sales?	Ruffles	\$ 232,500
What is Tony's weakest-selling product by total sales?	Pringles	\$ 54,890
What is Tony's best-selling product by profit?	Tostitos	\$ 13,050
What is Tony's weakest-selling product by profit?	Pringles	\$ 23,000
Who is Tony's best sales representative by profit?	R. Cross	\$1,230,980



Source: Baltzan (2016)

Business intelligence

- **Information** collected from *multiple sources* (such as suppliers, customers, competitors, partners, and industries) that *analyzes* patterns, trends, and relationships for *strategic decision making*



Knowledge

- **Knowledge** is “*actionable information*” – information *put to work* to improve performance- *Body* of information.
- *Knowledge acquisition* involves complex cognitive processes: perception, learning, communication, association, and reasoning.
- The term *knowledge* is also used to mean the confident understanding of a subject, potentially with *the ability to use it* for a specific purpose

Knowledge

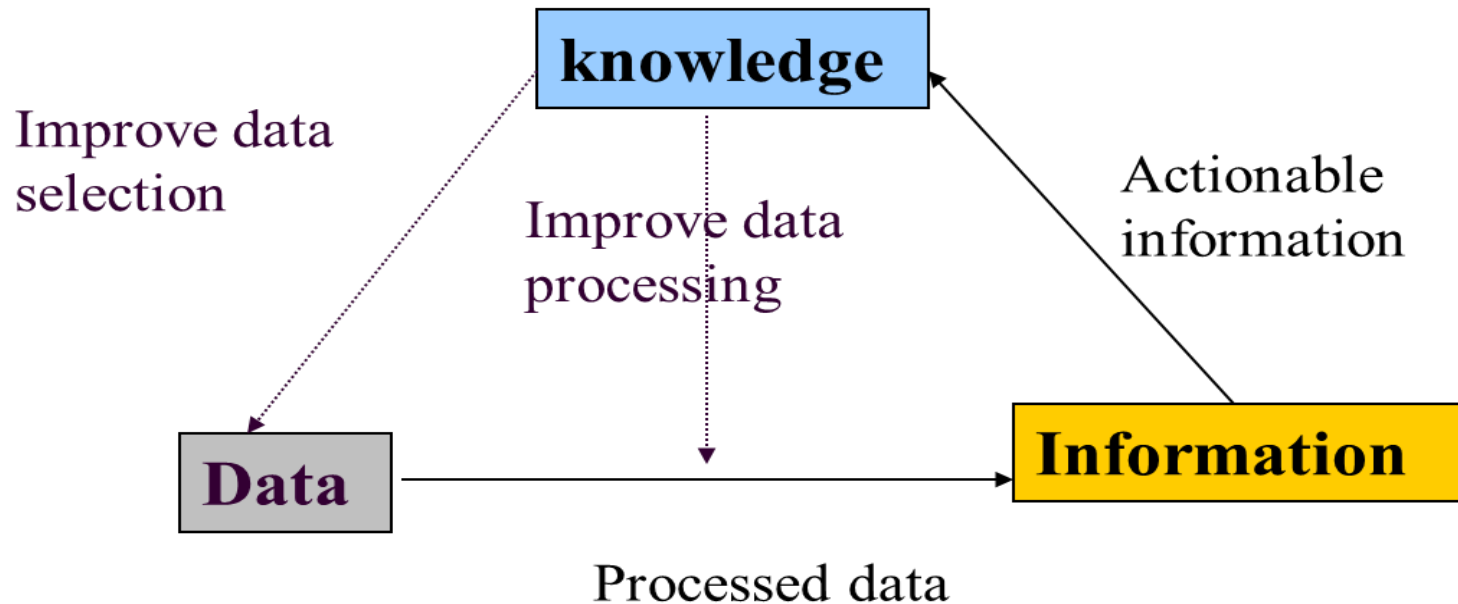
- **Knowledge** - Skills, experience, and expertise *coupled with information and intelligence* that creates a person's intellectual resources (eg. knowing how to solve problems, links between different factors, etc.)
- **Knowledge** – includes *reflection, synthesis, Associations, context,* etc.
- **A Knowledge worker** – Individual valued for their ability to *interpret and analyze information*



Relationships



However, it might require knowledge to either *select the right data* in the first place and turn it into info' or *improving the data processing* to provide more useful information.



Source: Becerra-Fernandez *et al* (2004)

IT vs. IS

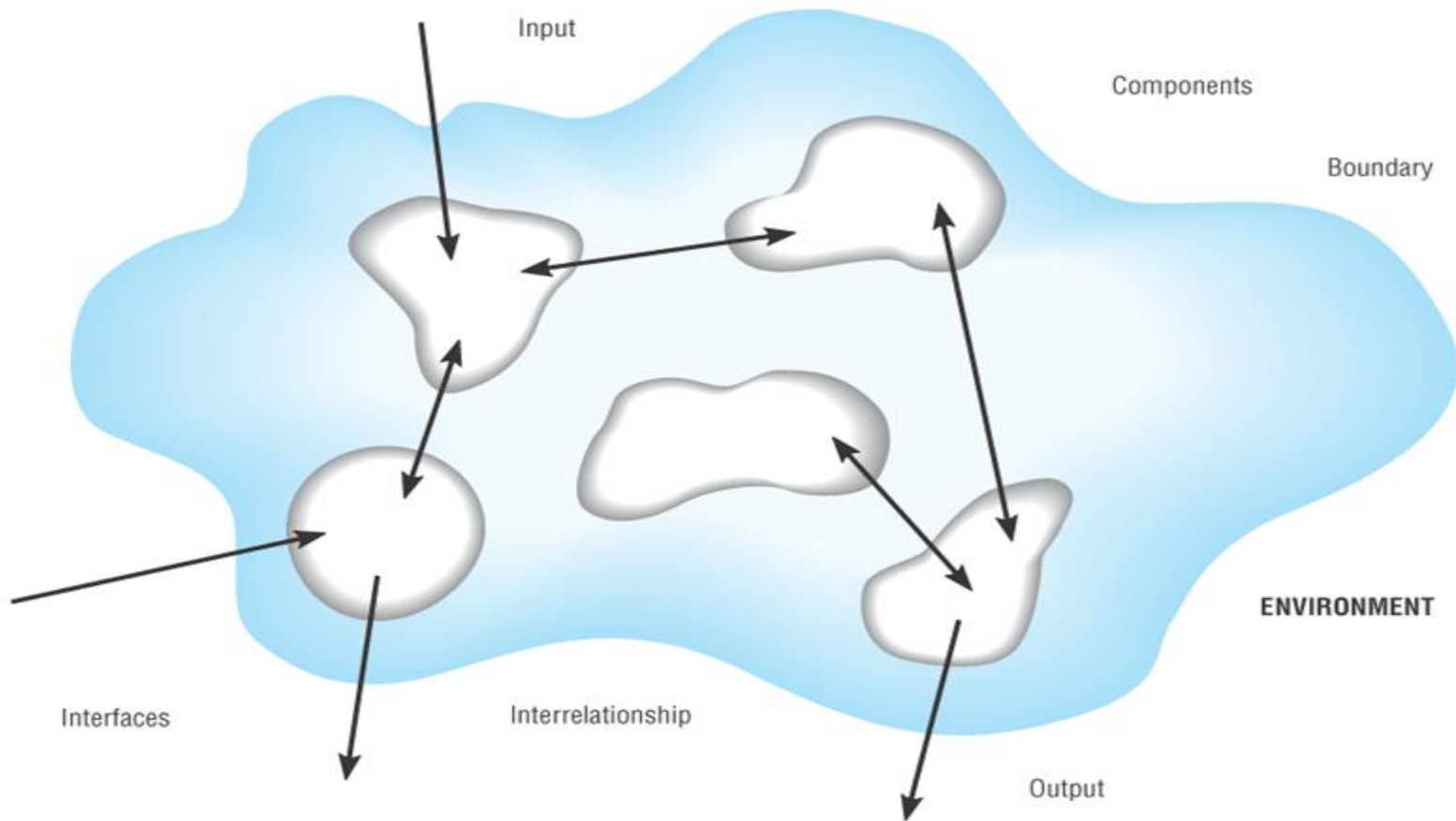
- **Information technology (IT)** consists of all *the hardware and software* that a firm needs to use in order to achieve its business objectives.
- *So, what is an information system (IS)?*
- *But, firstly, we need to know, what is a 'System'?*

A System

- **A system is:** 'An interrelated set of components, with an identifiable boundary, working together for some purpose'

Hoffer *et al* (1999)

Seven Characteristics of a System



Source: George *et al* (2004)

Characteristics of Systems

Boundary – *separates* a system from environment

Inputs – *data from environment* to system

Output – *data from system* to environment

Components – *subparts/subsystem* or an atomic part of the system

Interrelationships – *associations* between components of a system

Interfaces – a point for *interacting with a system-*
where an input or an output crosses the system boundary

Environment - everything *external to a system* that interacts with it

Information system (IS)

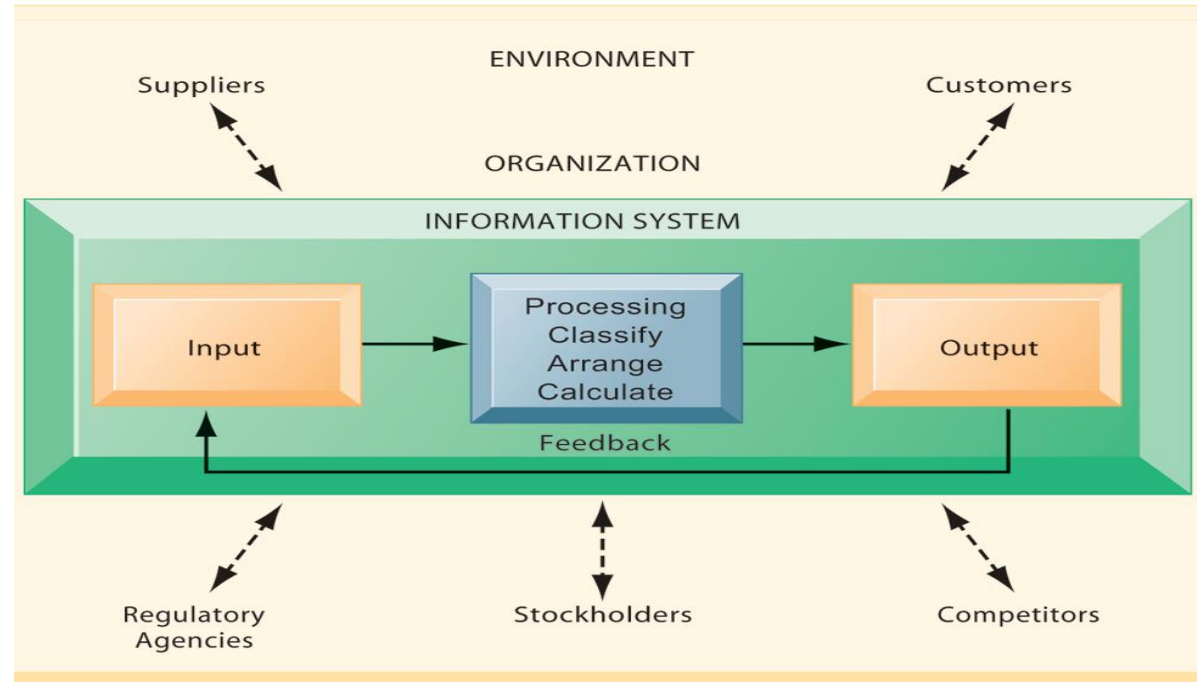
Interrelated components that work together to **collect, process, store, and disseminate information** *to support decision making, coordination, control, analysis, and visualization in an organization.*

Information Systems' Activities

Three basic activities—input, processing, and output—produce the information organizations need.

Feedback is output returned to appropriate people or activities in the organization to evaluate and refine the input.

Environmental actors, such as customers, suppliers, competitors, stockholders, and regulatory agencies, interact with the organization and its information systems.

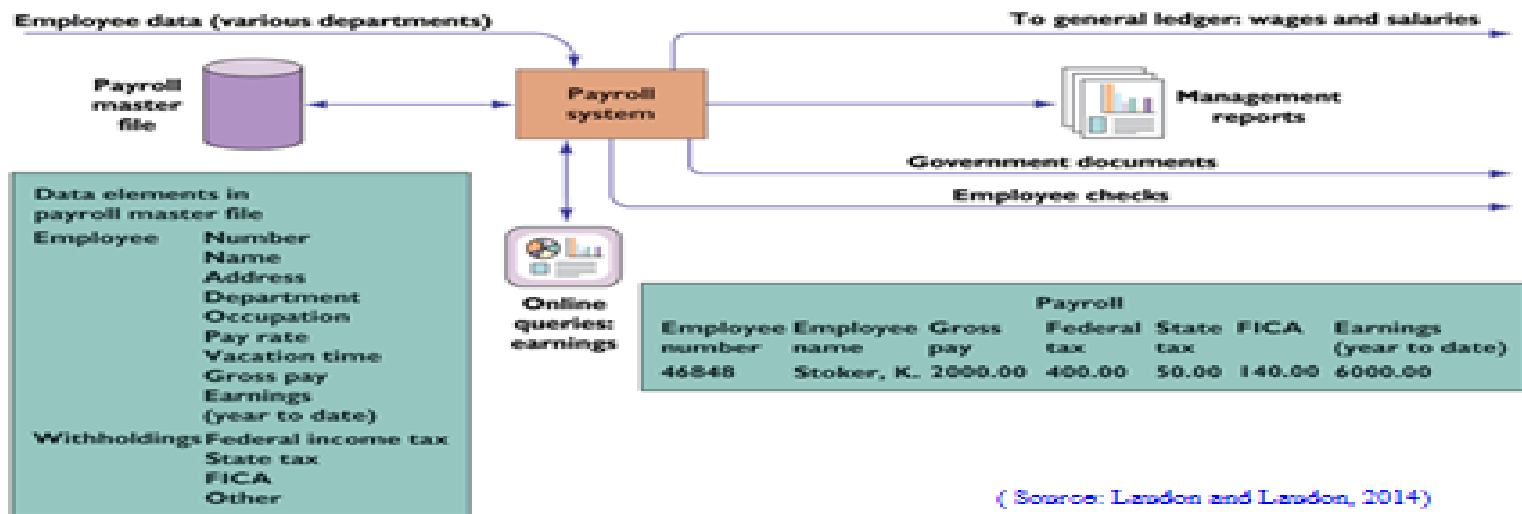


(Source: Laudon and Laudon, 2016)

Give Examples of ISs

An Example of IS

Payroll Payment System



Payroll Payment System:

- Employees (details),
- Raw data (eg. Hours, rates of pay, etc.)
- Output (eg payslips, management reports, etc.)

More Examples ..

- Library system
- Banking System
- Air Traffic Control System
- Airline Reservation Systems
- Etc.
- Etc.

Practical Example of Information Systems UPS Data Processing & Tracking Systems

Watch this Video

- <http://www.youtube.com/watch?v=NGZlKRmmldg>
- <https://www.youtube.com/watch?v=3mDM-F6LZy8>
- <https://www.youtube.com/watch?v=ZHqgpVsUfhI>



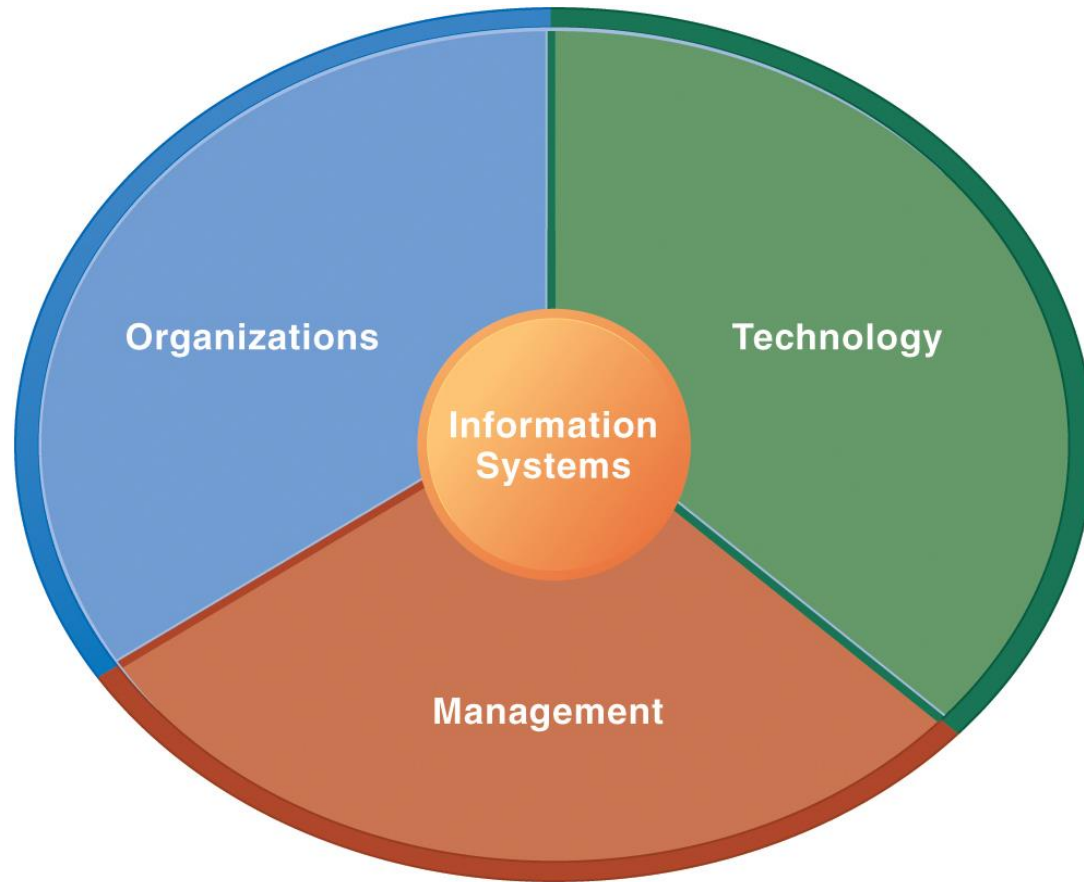
Now, distinguish between a computer, a computer program, and an Information System.

Differences ...

A computer is the **physical equipment** used for input, processing, and output activities in an information system.

Computer programs provide the computer with necessary **instructions** on how to **process the data** into information.

IS are more than just IT



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(Source: Laudon and Laudon, 2016)

Organization: involves issues such as the *organization's hierarchy, functional specialties, business processes, culture, and political interest groups.*

Management: involves *monitoring performance, setting organizational strategies, allocating human and financial resources, creating new products and services and re-creating the organization if necessary.*

Technology: consists of computer *hardware, software, data management technology, and networking/telecommunications technology, etc.*



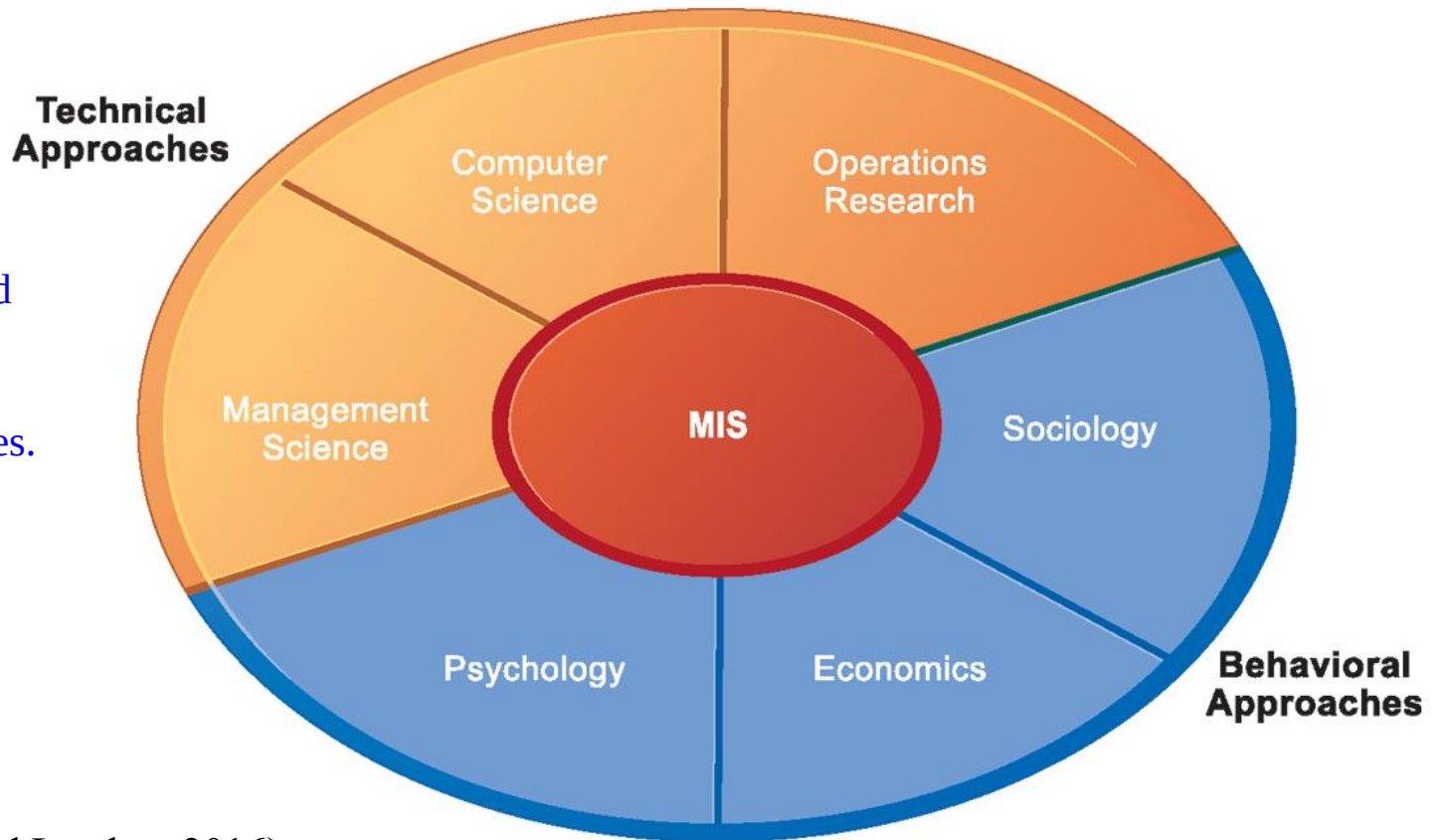
Explore UPS Website, related websites, articles and textbook:

Discuss the following:

-3 Dimensions of the UPS's Tracking Information System

The study of information systems

The study of information systems deals with issues and insights contributed from technical and behavioral disciplines.



(Source: Laudon and Laudon, 2016)

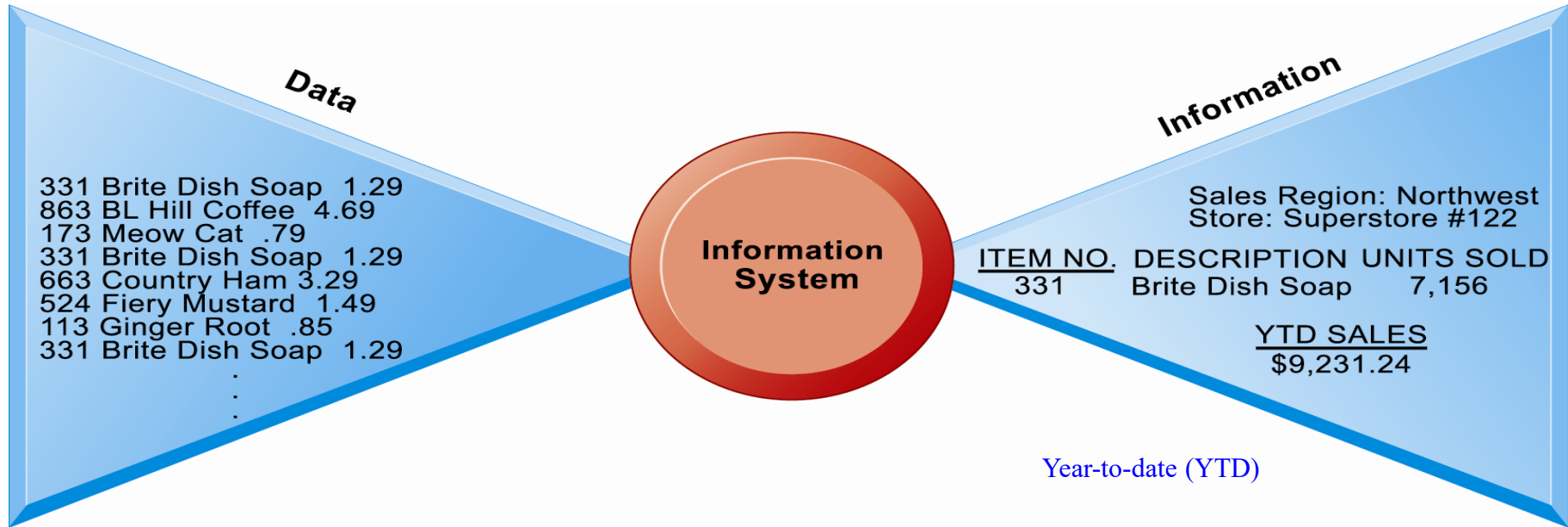
What activities convert raw data to usable information in information systems? What is their relationship to feedback?

Activities ...

Input captures raw data, **processing** converts the data into a more meaningful form, and **output** transfers the processed information to people or activities where it will be used.

Some of the **output** will be used to correct any problems found, and also to provide **feedback** that will then be used to evaluate the data.

Information System



Raw data from a supermarket checkout counter can be processed and organized to produce meaningful information, such as *the total unit sales of dish detergent* or *the total sales revenue from dish detergent for a specific store* or sales territory.

(Source: Laudon and Laudon, 2016)



Explore UPS Website, related websites, articles and textbook:

Discuss the following:

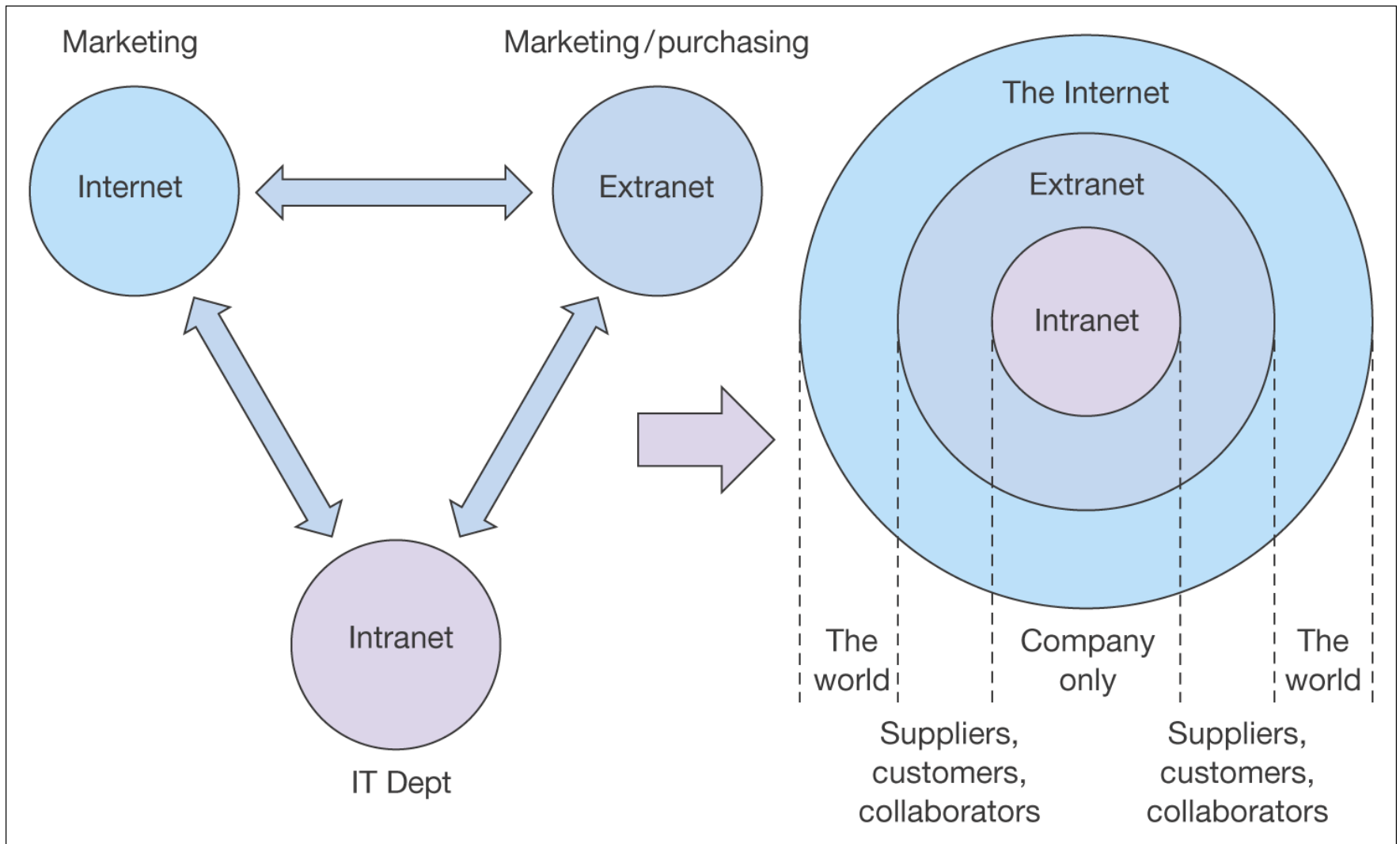
-Input, Processing, Output of the UPS's Tracking Information System

The Internet vs. World Wide Web

The Internet

One of the biggest forces changing business is the **Internet** – *A massive network* that connects computers *all over the world* and allows them to communicate with one another

It is an *international network* of hundreds of thousands of **public** and **private networks** with over 500 million people connected in over 200 countries working in science, education, government, and business.



Source: Chaffey (2011)

- **Internet:** *international network of networks*
(public & Private)
- **Intranet:** *private, secure business network*
based on Internet technology
- **Extranet:** *extension of intranet to authorized*
external users

The World Wide Web (WWW)

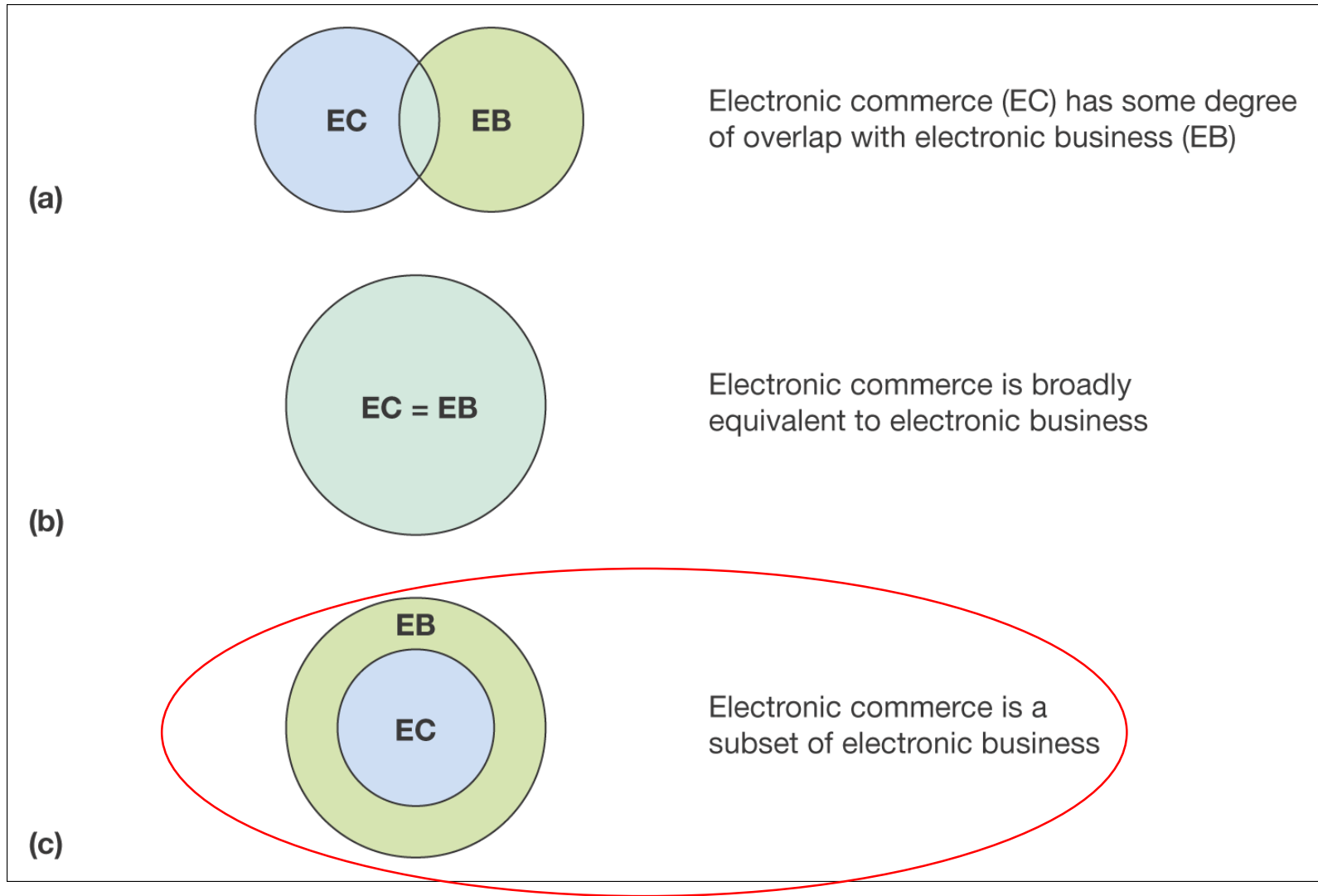
- The **World Wide Web (WWW)** is *a system* with universally accepted standards for storing, retrieving, formatting, and displaying information in a networked environment.
- The Web provides a *graphically-based system* of pages for storing information on the Internet.

The Internet and WWW

- The **Internet and World Wide Web** have had a *tremendous impact* on the role information systems play in organizations. They are responsible for the *increased connectivity and collaboration* within and outside the organization.
- The Internet, World Wide Web, and other technologies have led to the *redesign and reshaping of organizations*. They have helped *transform the organization's structure, scope of operations, reporting and control mechanisms, work practices, work flows, and products and services*.

E-business vs. E-commerce

- **Electronic Commerce (e-commerce):** *buying and selling goods and services electronically*
- **Electronic Business (e-business)** also called **Digital Business:** *executing all the firm's business processes electronically (with Internet technology).* **Includes e-commerce along with all activities related to internal and external business operations**



Definitions of e-commerce and e-business- (c) is the definition adopted in this course

EBUSINESS/ECOMMERCE MODELS

- **E-business model** – A plan that details how a company *creates, delivers, and generates revenues* on the internet

	Business	Consumer
Business	B2B	B2C
Consumer	C2B	C2C

– eg. C2B priceline.com

EBUSINESS/ECOMMERCE MODELS

E-Business Term	Definition
<i>Business-to-business (B2B)</i>	Applies to businesses buying from and selling to each other over the Internet.
<i>Business-to-consumer (B2C)</i>	Applies to any business that sells its products or services to consumers over the Internet.
<i>Consumer-to-business (C2B)</i>	Applies to any consumer that sells a product or service to a business over the Internet.
<i>Consumer-to-consumer (C2C)</i>	Applies to sites primarily offering goods and services to assist consumers interacting with each other over the Internet.

Mobile commerce (m-commerce)

E-commerce transactions and activities *conducted in a wireless environment*

Based on Turban et al. (2008)

Business-to-Consumer (B2C)



Brick-and-Mortar Business



Click-and-Mortar Business



Pure-Play (Virtual) Business

Common B2C Ebusiness Models

Pure versus Partial EC

EC can take **several forms** depending on the ***degree of digitization***

1. the ***product*** (service) sold
2. the ***process*** (e.g., ordering, payment, fulfillment)
3. the ***delivery method***

Source: Turban *et al.* (2008)

Pure versus Partial EC (contnd.)

- **brick-and-mortar** (*old economy*) organizations

Old-economy organizations (corporations) that perform their primary business *off-line*, selling physical products by means of physical agents

- **virtual (pure-play)** organizations

Organizations that conduct their business activities *solely online*

Source: Turban *et al.* (2008)

Pure versus Partial EC (contnd.)

- **click-and-mortar (click-and-brick) organizations**

Organizations that conduct *some* e-commerce activities, usually as an additional marketing channel

Source: Turban *et al.* (2008)

References

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- Becerra-Fernandez, I., Gonzalez A. & Sabherwal R.(2004) *Knowledge Management: Challenges, Solutions, Technologies* , Prentice Hall, NJ
- Chaffey, D. (2011) *E-Business and E-Commerce Management: Strategy, Implementation and Practice*, 5/E. Financial Times.
- George j, Batra D, Valacich J and Hoffer J (2004) *Object-Oriented Systems Analysis and Design*. Prentice Hall

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- Hoffer et. al. (1999) *Modern Systems Analysis and Design*, 2nd ed, Prentice Hall Business Publishing
- Laudon K.C. and Laudon J.P. (2014) *Management Information Systems*, Global Edition, 13th ed. Prentice Hall.
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Reading

- Textbook chapter 1