

## Chapter 1:

# Introduction to Information Systems

## Agenda

- ▶ **Why Should I Study Information Systems?**
- ▶ **Overview of Computer-Based Information Systems**
  - **Data**
  - **Information**
  - **Business Intelligence**
  - **Knowledge**
- ▶ **IT Impact on Organizations**
- ▶ **Importance of Information Systems to Society**



1. Identify the reasons why **being an informed user of information systems is important** in today's world.
2. Describe the various **types** of computer-based information systems in an organization.
3. Discuss ways in which information technology **can affect** managers and non-managerial workers.
4. Identify **positive and negative societal effects** of the increased use of information technology.





## IDENTIFYING THE PROBLEM

### The facts:

1. The Ministry of Community and Social Services in Ontario was having “ease of use” difficulties with its software.
2. Problems such as generation of errors and missing information occurred.
3. Audits of the ministry by the Office of the Auditor General of Ontario in 2002, 2004 and 2009 found numerous problems.
4. The ministry was not able to explain why these things happened.....





## PROPOSED IT SOLUTION

1. The ministry decided in **2009** to **purchase and modify** the Case Management System from Curam Software, with an overall estimated **cost of \$164.9 million**.
2. The ministry **followed a structured process to develop business requirements** for the new system that it called SAMS (Social Assistance Management System).
3. Programming was completed using the business requirements, and **testing performed**.
4. Conversion programs were written to transfer the data to the new system, and **SAMS went live November 2014, about 1.5 years late and \$40 million over budget**.





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Social Assistance

About the Ontario Disability Support Program


## Progress Report on Social Assistance Management System (SAMS)

[https://www.mcsc.gov.on.ca/en/mcsc/programs/social/pwc\\_report.aspx](https://www.mcsc.gov.on.ca/en/mcsc/programs/social/pwc_report.aspx)

## REASONING

1. Itemize the tasks that were likely underestimated by the Ministry.
2. Why might these tasks have been underestimated?
3. Is it possible for the ministry to do its work without using computer systems? Why or why not?





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## CONCLUSION

1. **Poor internal communication and the decision** to skip testing can result in systems that generate many errors, causing extra costs such as employee overtime and system re-programming.
2. This is an example of the far-reaching effects of IT on individuals and organizations.
3. It illustrates the significant impacts of IT on individuals and societies.





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## RESULTS

1. The **December 2015** Office of the Auditor General of Ontario report revealed that there had been **inadequate testing** during many phases of the SAMS project, and that **errors found were not completely reported** to the executive committee.
2. The result was that systems were **implemented too soon**, leading to over **100,000 client files with errors** of over or under payments for a variety of reasons.
3. As of December 2015, the total cost of the SAMS system was projected to be **\$290 million**, almost double its original quoted cost.



Steve Wozniak



The Lisa Mouse (Model A9M0050) 1983



Steve Jobs



- Created on April 1, 1976, incorporated on January 3, 1977;
- Job ousted from the company in 1985;
- Apple faces **low market share in the 1990**;
  - **Macintosh** has **20%** of the market,
  - **Microsoft 80%** (MS-DOS)
- Job returns in 1996, permanent CEO since 1997;

1977

1983

1990





- Job returns in 1996, permanent CEO since 1997:

**Action:** Review the company's product line.

**Findings:** multiple versions of the **same product** in production.

**Outcome:** **reducing** the number of products **by 70%**

**Moving forward strategy:**

- focus on **quality and innovation**;
- to produce **only 4 products**:

iMac G3 (PowerPC-based) 1998

**For professionals:**

- Power Macintosh G3 desktop
- PowerBook G3 portable computer

**For consumers:**

- iMac desktop
- iBook portable computer

### AFTERMATH:

- in September 1997 Apple lost \$1.04 bln, "90 days away from being insolvent" (Steve Job);
- In September 1998 it turned a \$309 mln profit.



- Company's **focus** remains **personal computers and innovation...**
- Unibody Intel-based **iMac** in 1998 (**rediscovered originality**)
- Recent **company focus** shifted to **consumer electronics (iPhone, iPad, iPod)**





First Wal-Mart opened in 1962:

**Action:** Production lane = 0.

Uses **strategic supply chain management** (distributor).

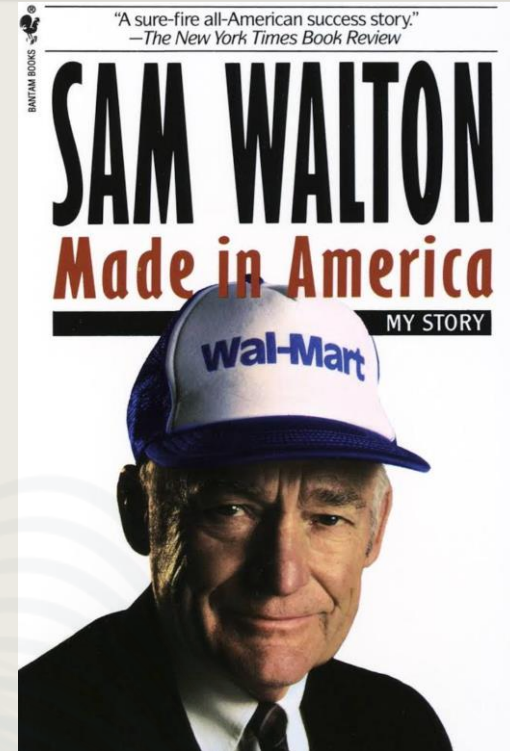
**Management:** treats his 40,000 employees as equal associates;

**Outcome:** in 1967 net worth of \$176 mil;

**Generic strategy:** low cost provider;

**Greatest invention as a CEO:** “he never changed”;

**Greatest contribution:** experimentation!



“Experiment on a small basis. If the idea worked, roll it out. If it failed, try something else.”  
(Sam Walton)

### AFTERMATH:

- In 1985 net worth of **\$2.8 bln**;
- in 2010 the world's largest company;
- Current holdings net worth **\$28 bln**.





Founded in **1994** as a **bookstore**.  
Goes online in **1995**.

## Business plan:

- incorporate the company;
- creates a list of 20 products to sell online;
- narrows the list to 5 products:  
compact discs, hardware, software, videos, books

**Strategy:** Production lane = 0.

Did **not expect** to make a profit for 4 to 5 years.

First profit of **\$5 mln** in 2001.

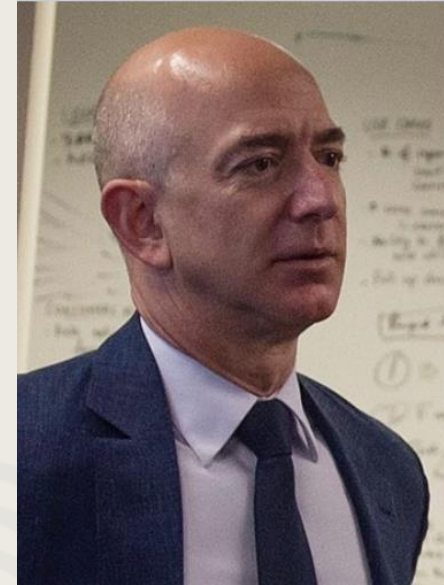
Walmart sued Amazon on October 16, 1998, alleging that Amazon had **stolen Walmart's trade secrets** by hiring former Walmart executives.

**Current status:** **The largest internet retailer in the world.**

**“Amazon Is Worth More Than Walmart, Costco, and Target Combined. That’s almost \$440 bln.” (FORTUNE, 2017)**

## Greatest invention:

**” Brand names are more important online than they are in the physical world” (Jeff Bezos)**



Jeff Bezos, Amazon Founder





Founded in 1927.

**Business plan:** changed since 2011:

- integrate IT and IS;
- warehouse management system;
- forecast and replenish systems;
- inventory control system;
- online inventory search system (“LCBO on the Go” app)
- intranet for internal communications (LCBO 2.0)

**Strategic plan:**

- internal and external assessment;
- assessment of strategic progress.

**Revenue:** \$5.57 bln CAD (2015)

**Net income:** \$1.818 bln CAD

**Current status:** one of the world's largest purchasers of alcoholic beverages.

**Key strategy:** support from top executives is a requirement for all projects to succeed.



**Information technology (IT):** is any computer-based tool that people use to work with information and to support the information and information-processing needs of an organization.

**Information system (IS):** collects, processes, stores, analyzes, and disseminates information for a specific purpose.

**The purpose of an IS:** to get the right information to the right people at the right time in the right amount and in the right format to support business processes and decision making.



# WHY?

## Business undertake IT initiatives to:

- Lower Costs
- Improve Productivity
- Generate Growth

# WHAT?

## IT provides:

- Communication
- Data
- Information Analysis

# HOW?

## Departmental Structure:



## Departmental Structure of a Typical Organization

IS managers DO NOT only work with the IT dept. IS will be part of your job in other business functions such as Marketing, Operations, HR, Finance, Accounting etc.



- ACCT** ACCOUNTING Forecast revenues
- FIN** FINANCE Determine the best sources for funds
- MKT** MARKETING Develop new goods and services

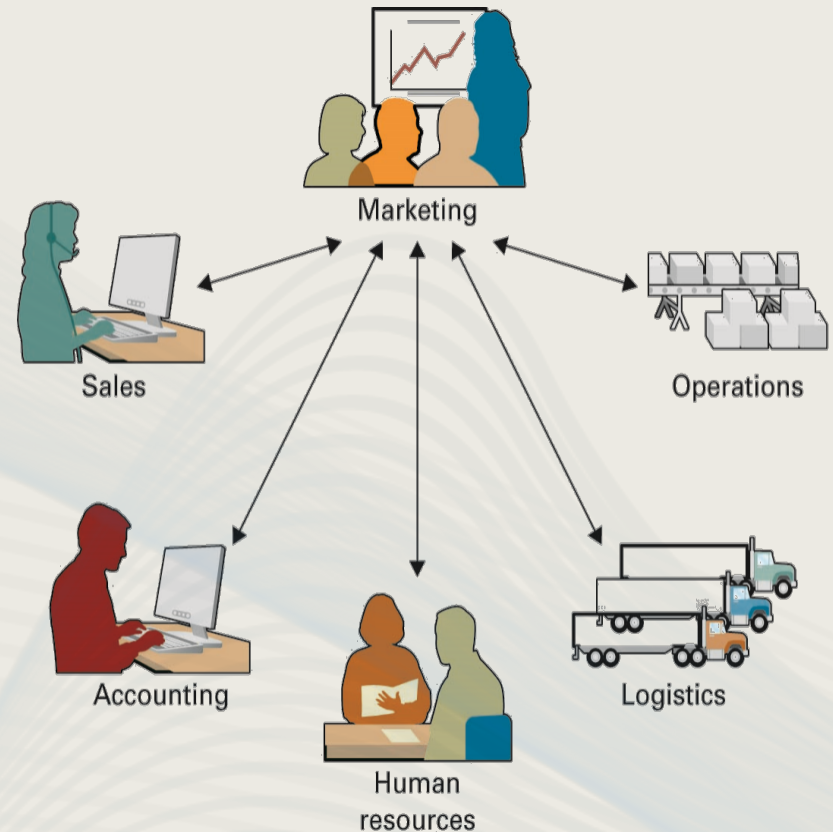
- POM** PRODUCTION OPERATIONS MANAGEMENT Process customer orders
- HRM** HUMAN RESOURCES MANAGEMENT Hire new employees
- MIS** MIS Directly support all functional areas



Example:

## Marketing Working With Other Organizational Departments

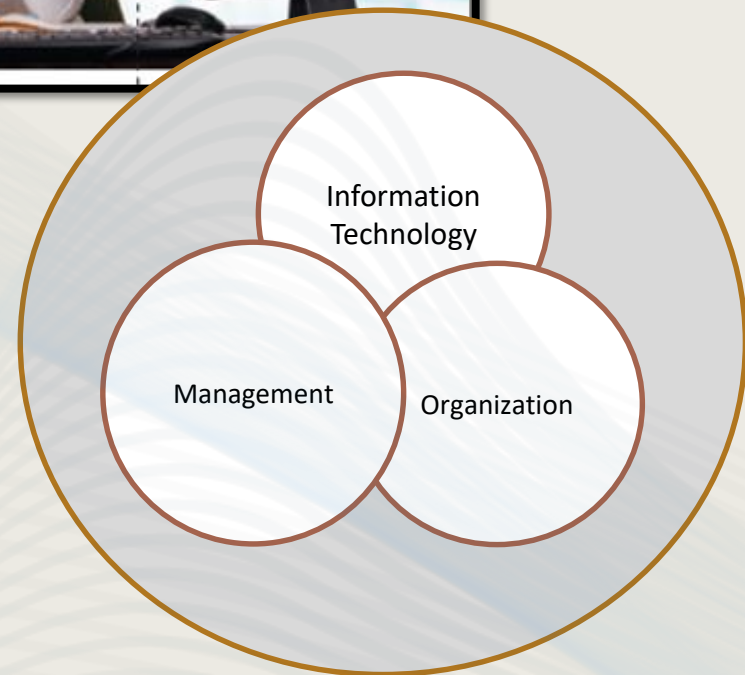
- Organizations typically operate by functional areas or **“silos”**.
- Departments must function **interdependently** to share common information.



**Today:** You are the most connected generation in history and you practice continuous computing, so you are comfortable using IT.



**Tomorrow:** The next step is to become an informed user. An informed user is a person knowledgeable about information systems and information technology.



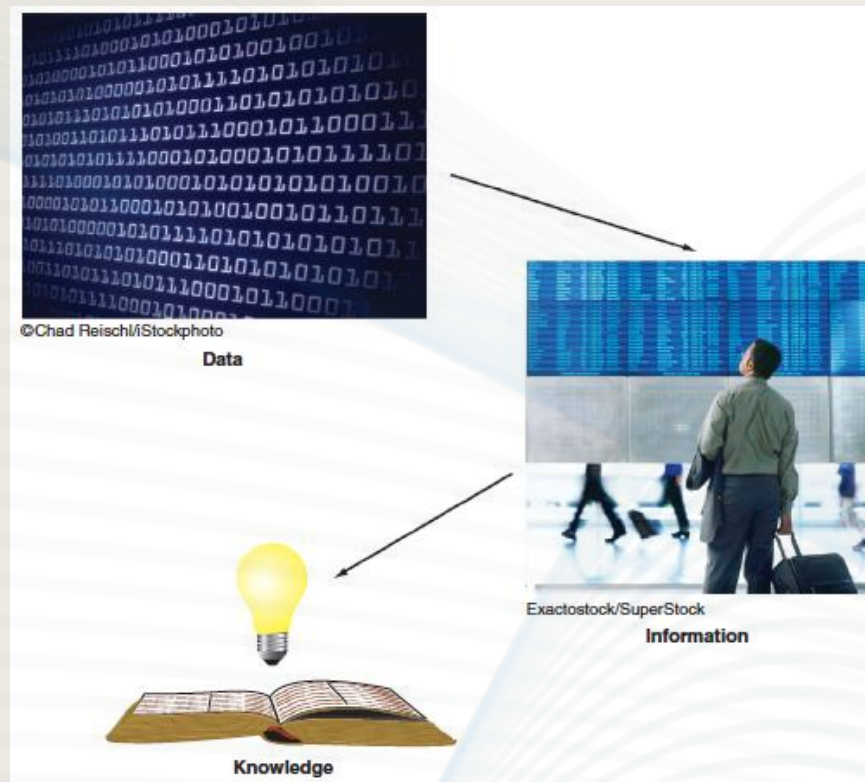
1. You will **benefit more** from your organization's IT applications because you will understand what is "behind" those applications.
2. You will be in a position to **enhance the quality** of your organization's IT applications with your input.
3. Even as a new graduate, you will quickly be in a position to **recommend the IT applications** that your organization will use.
4. Knowledgeable **of both new information technologies** and rapid developments in existing technologies.
5. You will understand how using IT **can improved your organizations** performance and teamwork as well as your own productivity.
6. As an entrepreneur, being an informed user would help you use IT when you **start your own business**.
7. Career **opportunities**: Chief Information Officer (CIO), IS Director, Project Manager, Systems Analyst, Database Administrator, Operations Manager, Webmaster....

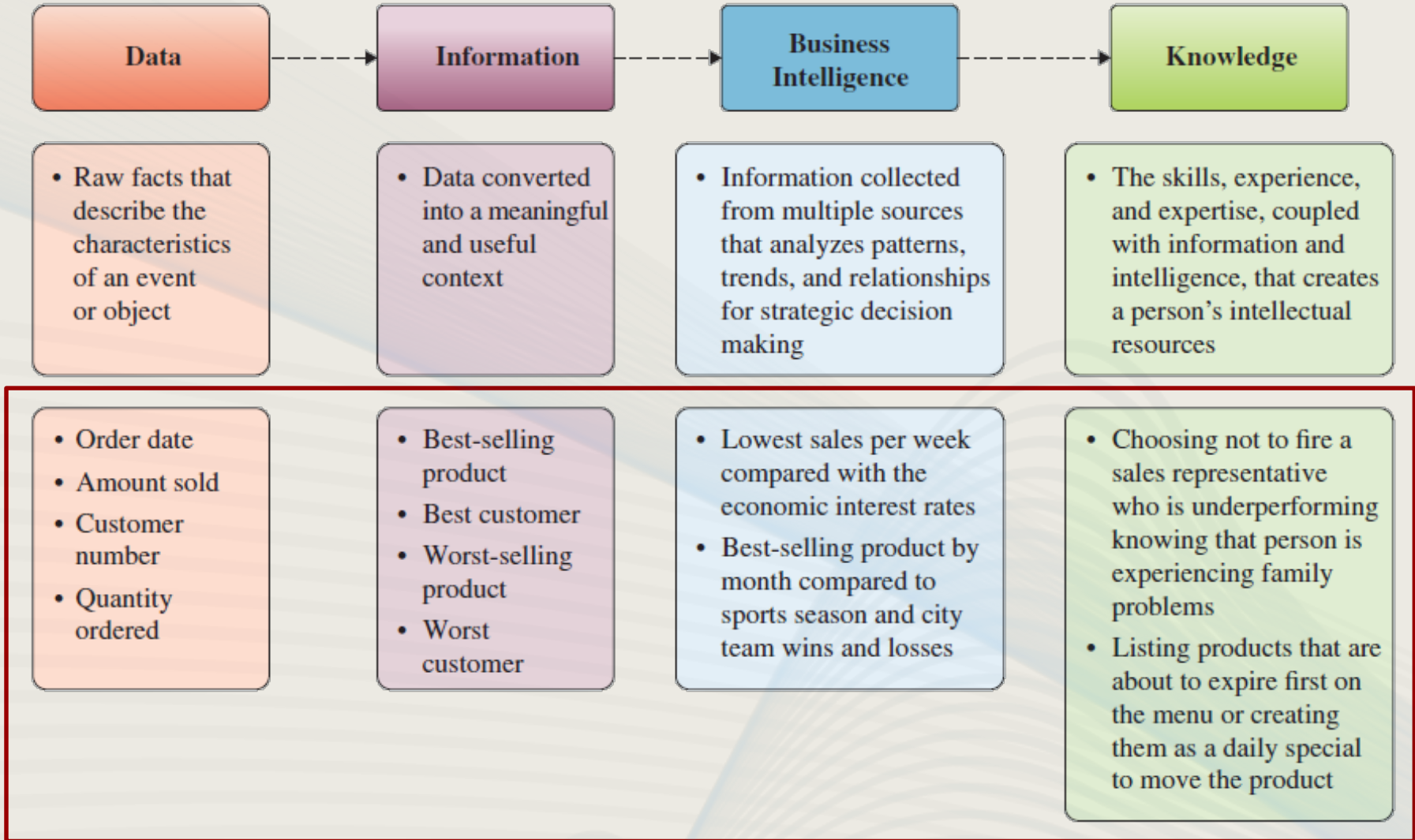


## Data, Information and Knowledge

**Data** is sorted, processed or assembled to create **information**.

When people apply learned criteria or learned expertise to **information** they create **knowledge**.





Order Date	Product Name	Quantity	Unit Price	Total Sales	Unit Cost	Total Cost	Profit	Customer	Sales Rep
04-Jan-10	Mozzarella cheese	41	24	984	18	738	246	The Station	Debbie Fernandez
04-Jan-10	Romaine lettuce	90	15	1,350	14	1,260	90	The Station	Roberta Cross
05-Jan-10	Red onions	27	12	324	8	216	108	Bert's Bistro	Loraine Schultz
06-Jan-10	Romaine lettuce	67	15	1,005	14	938	67	Smoke House	Roberta Cross
07-Jan-10	Black olives	79	12	948	6	474	474	Flagstaff House	Loraine Schultz
07-Jan-10	Romaine lettuce	46	15	690	14	644	46	Two Bitts	Loraine Schultz
07-Jan-10	Romaine lettuce	52	15	780					
08-Jan-10	Red onions	39	12	468					
09-Jan-10	Romaine lettuce	66	15	990					
10-Jan-10	Romaine lettuce	58	15	870					

**Data** ←

**Information** →

Order Date	Product Name	Quantity	Unit Price	Total Sales	Unit Cost	Total Cost	Profit	Customer	Sales Rep
15-Feb-10	Chicken	41	36	1,476	25	1,025	451	Smoke House	Roberta Cross
19-Feb-10	Chicken	50	36	1,800	25	1,250	550	Smoke House	Roberta Cross
03-Mar-10	Chicken	64	36	2,304	25	1,600	704	Pierce Arrow	Roberta Cross
12-Apr-10	Chicken	2	36	72	25	50	22	Laudisio	Roberta Cross
08-Jul-10	Chicken	94	36	3,384	25	2,350	1,034	Pierce Arrow	Roberta Cross
20-Nov-10	Chicken	15	36	540	25	375	165	Two Bitts	Roberta Cross
28-Nov-10	Chicken	6	36	216	25	150	66	Laudisio	Roberta Cross
					25	1,275	561	Pierce Arrow	Roberta Cross

Roberta Cross's chicken sales information.

Distribution Analysis		
Question	Name	Total
Who is Bob's best customer by total sales?	Pierce Arrow	\$ 56,789
Who is Bob's worst customer by total sales?	Smoke House	\$ 3,456
Who is Bob's best customer by profit?	Laudisio	\$ 45,777
Who is Bob's worst customer by profit?	Carmens	\$ 4,555
What is Bob's best-selling product by total sales?	Chicken	\$ 34,234
What is Bob's worst-selling product by total sales?	Black olives	\$ 567
What is Bob's best-selling product by profit?	Peppers	\$ 22,444
What is Bob's worst-selling product by profit?	Red onions	\$ 2,443
Who is Bob's best sales representative by profit?	Loraine Schultz	\$ 98,989
Who is Bob's worst sales representative by profit?	Roberta Cross	\$ 4,567
What is the best sales representative's best-selling product (by total profit)?	Red onions	\$ 24,343
Who is the best sales representative's best customer (by total profit)?	Flagstaff House	\$ 1,234
What is the best sales representative's worst-selling product (by total profit)?	Romaine lettuce	\$ 45,678
Who is the best sales representative's worst customer (by total profit)?	Bert's Bistro	\$ 5,678

**Knowledge** ←

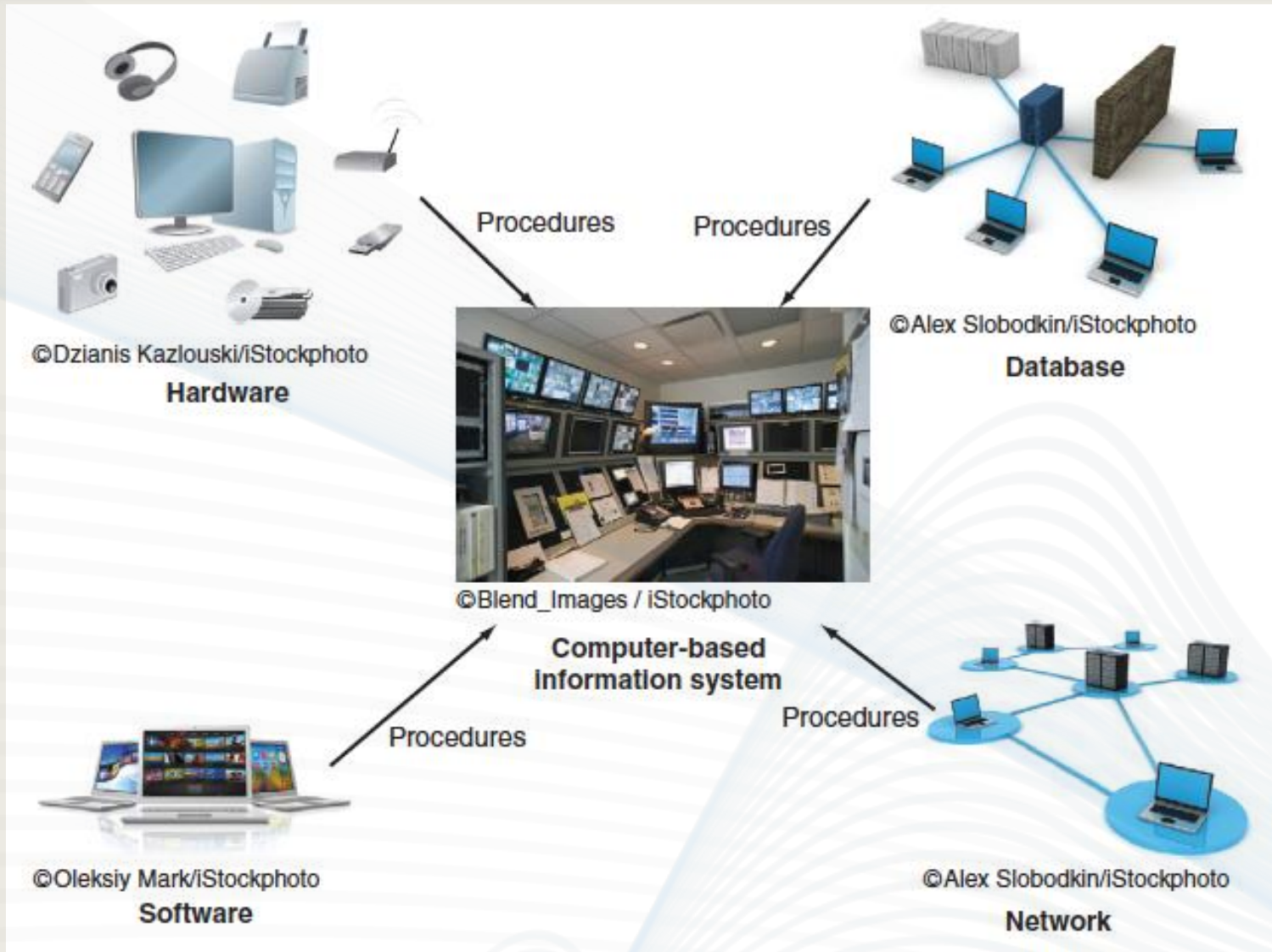


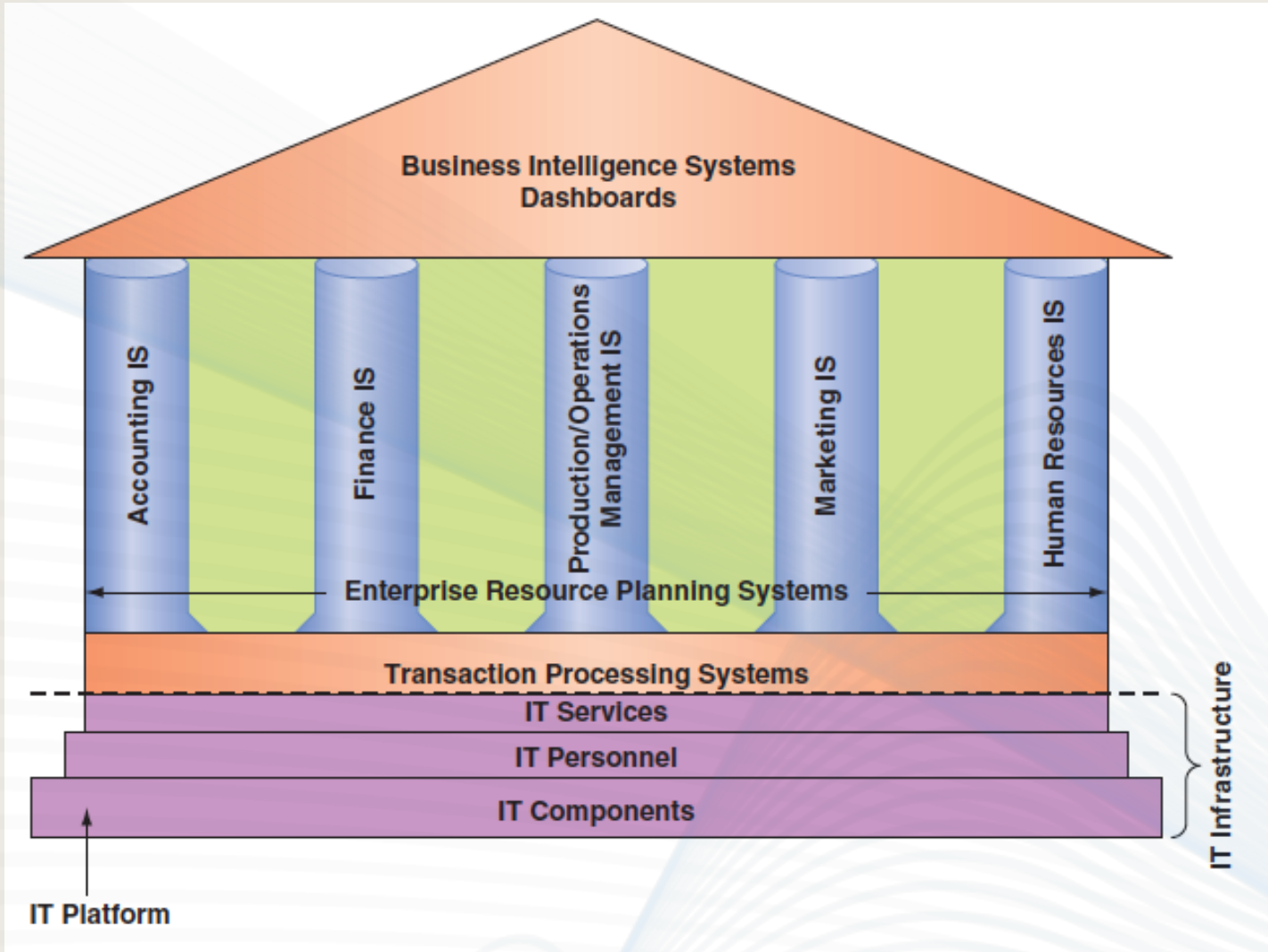
DATA	INFORMATION	KNOWLEDGE
<b>NO CONTEXT</b>	<b>UNIVERSITY CONTEXT</b>	
3.16	3.16 + John Rosenberg = GPA	• Job prospects
2.92	2.92 + Marie Gagnon = GPA	• Graduate school prospects
1.39	1.39 + Kyle Owens = GPA	• Scholarship prospects
3.95	3.95 + Tom Elias = GPA	
<b>NO CONTEXT</b>	<b>PROFESSIONAL BASEBALL PITCHER CONTEXT</b>	
3.16	3.16 + Ken Rice = ERA	
2.92	2.92 + Eduardo Dyas = ERA	• Keep pitcher, trade pitcher, or send pitcher to minor leagues
1.39	1.39 + Hugh Carr = ERA	• Salary/contract negotiations
3.95	3.95 + Nick Ford = ERA	

GPA = grade point average (higher is better).

ERA = earned run average (lower is better); ERA is the number of runs per nine innings that a pitcher surrenders.







## Major Capabilities of Information Systems

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Perform high-speed, high-volume numerical computations.

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Provide fast, accurate communication and collaboration within and among organizations.

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Store huge amounts of information in an easy-to-access, yet small space.

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Allow quick and inexpensive access to vast amounts of information, worldwide.

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Interpret vast amounts of data quickly and efficiently.

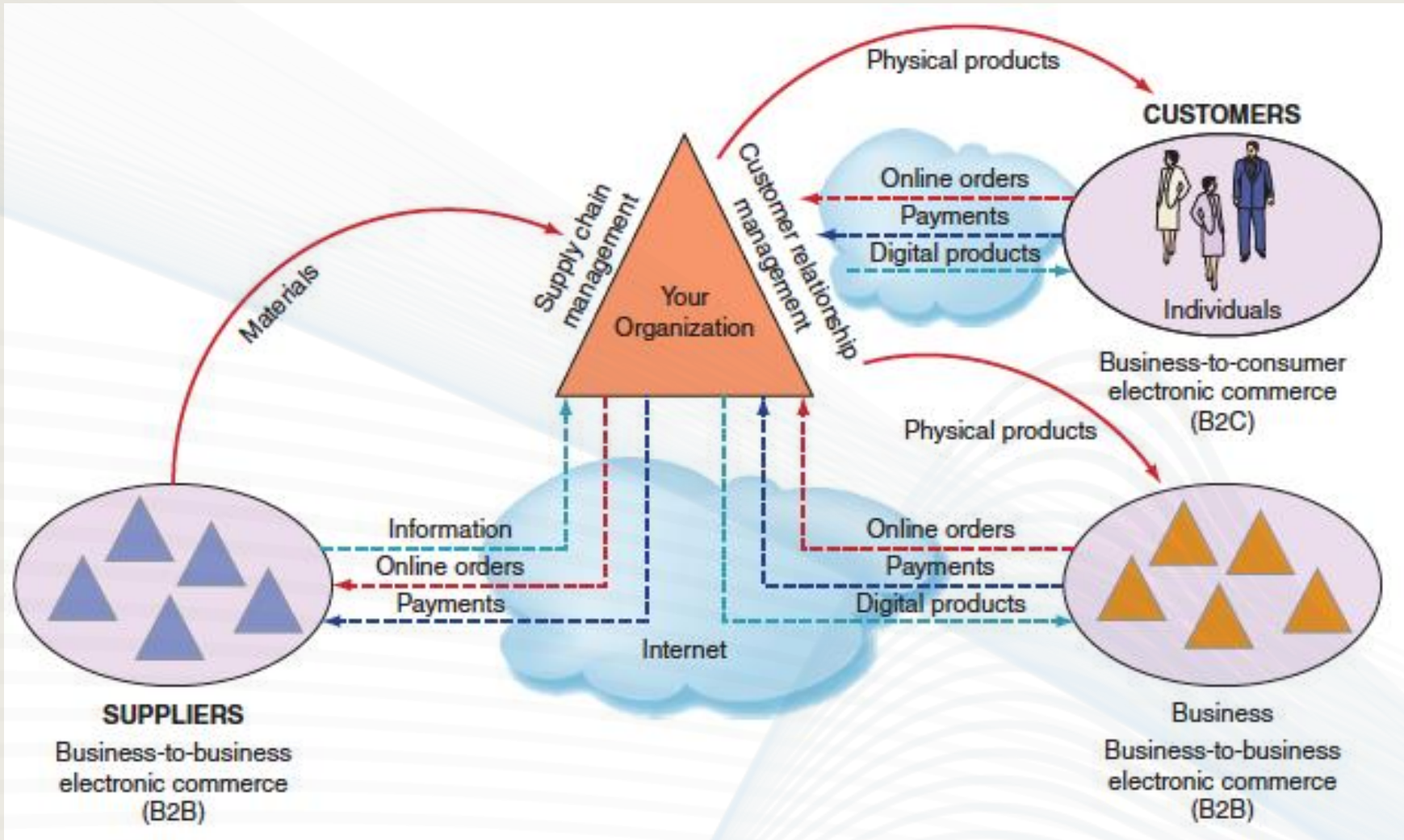
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Automate both semiautomatic business processes and manual tasks.

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# INFORMATION SYSTEMS THAT FUNCTION AMONG MULTIPLE ORGANIZATIONS



## IMPACT ON ORGANIZATIONS

- Industries disappear or are transformed, new ones appear;
- IT changes the way managers work and reduces their numbers
- Employees are affected numerous ways

## IMPACT ON MANAGERS

- Makes managers more productive.
- Reduces the number of middle managers.
- Changes the manager's job by changing the way the manager makes decisions
  - Less time to make decisions
  - New IT tools to analyze high volumes and complex data
- More remote supervision of employees due to telecommuting



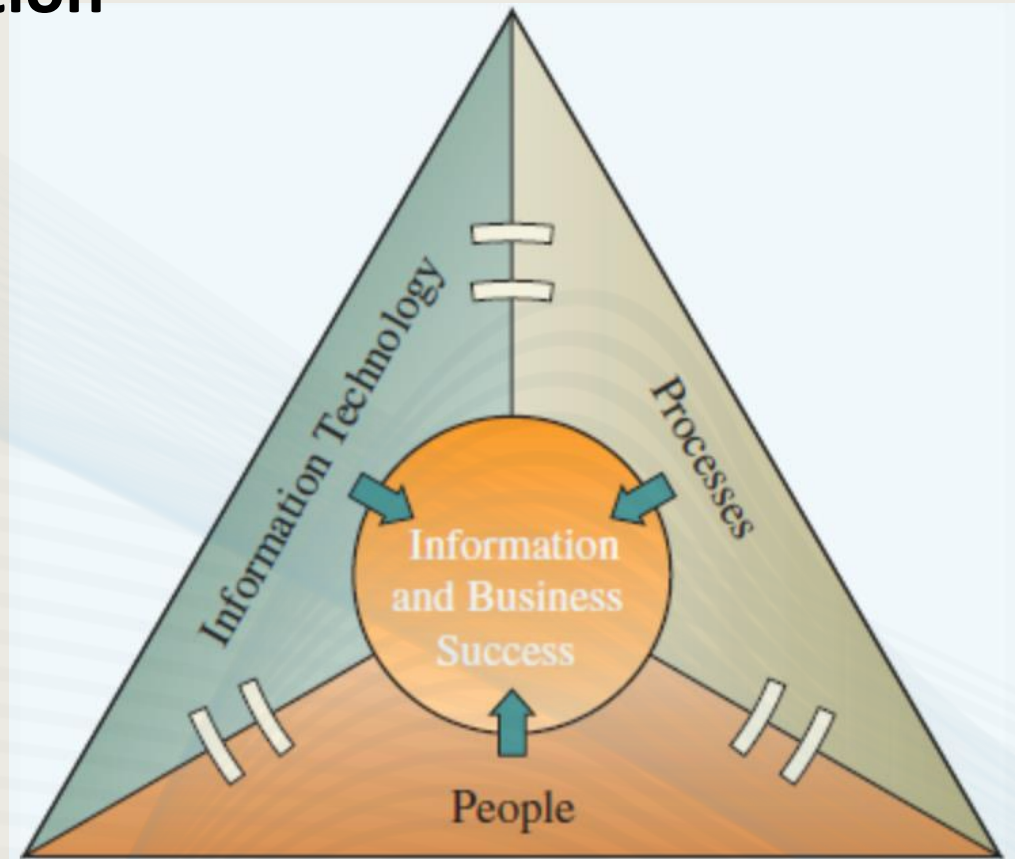
## IMPACT ON EMPLOYEES

- May eliminate jobs
- Potential loss of identity and alienation
- Potential repetitive strain injury (RSI) or vision issues
- Provides opportunities for people with disabilities by using assistive technologies



# Relationship among People, Processes, Information Technology and Information

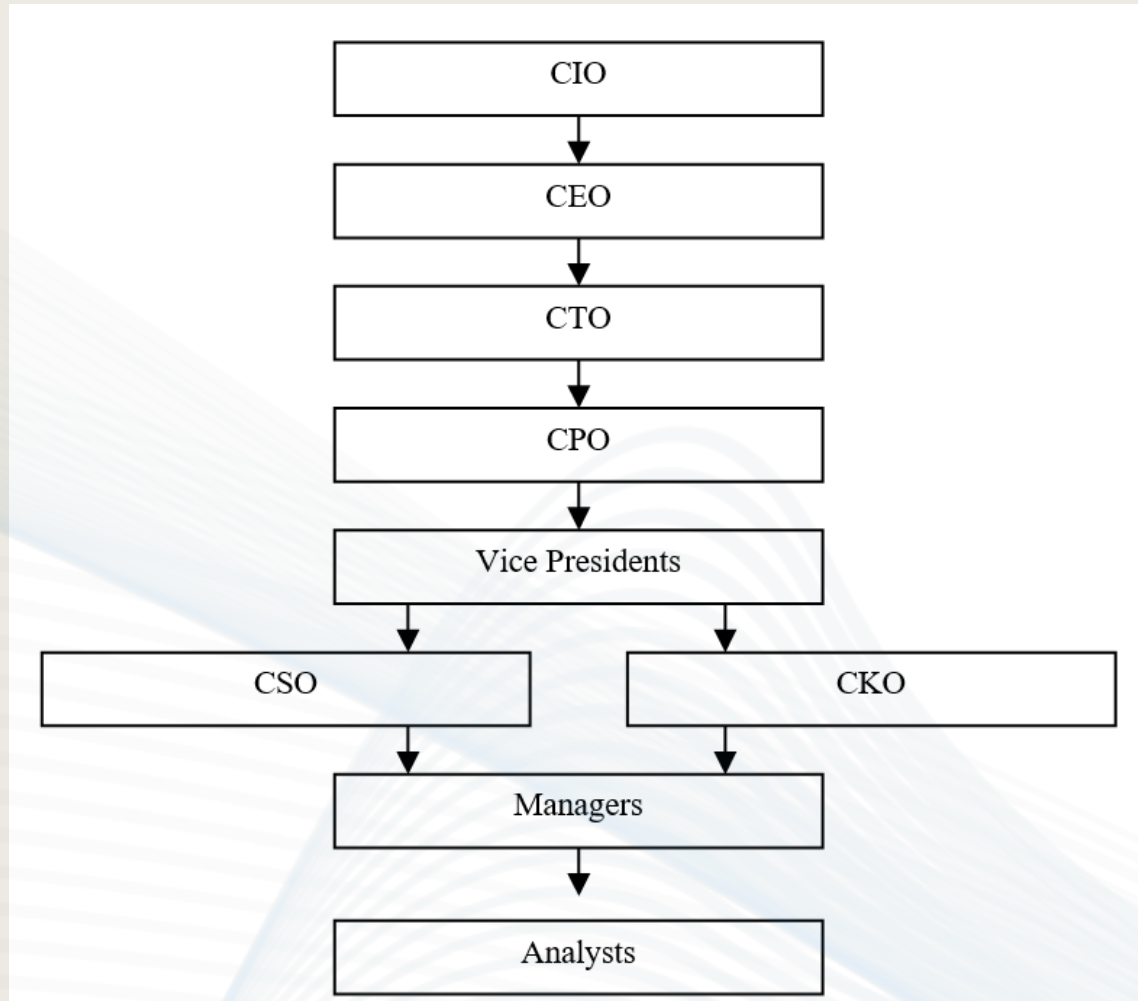
- **People** use
- **processes** to work with
- **Information Systems** to produce
- **Information.**



- **Chief Information Officer (CIO):** Oversees all **uses of IT** and ensures the **strategic alignment of IT** with business goals and objectives. The broad roles of a CIO are:
  - Manager (*delivery of IS projects on time*),
  - Leader (*assures alignment between IS and organization*),
  - Communicator (*communicates IS strategies*).
- **Chief Knowledge Officer (CKO):** responsible for collecting, maintaining and distributing the **organization's knowledge**.
- **Chief Privacy Officer (CPO):** assures **ethical and legal use** of information.
- **Chief Security (CSO):** assures the **safety of IT** resources (data, hardware, software) and **people**.
- **Chief Technology Officer (CTO):** assures **speed, accuracy, availability and reliability** of IT.



The AAA Management Company specializes in the management of rental properties and generates over \$20 million in revenues each year. It has over 2,000 employees throughout the United States, Canada, and Mexico. The company has just hired a new CEO, David Paul. David is planning to reorganize the company so that it operates more efficiently and effectively. This is the new organizational structure that he plans to present to the board of directors on Monday. Is his organizational structure correct?



## ▶ To Do List:

- Read through the Course Outline;
- Purchase your Textbook;
- Check Brightspace Access;
- Form Teams.



## ▶ Start Reading:

- Chapter 1, Sections 1.1-1.4, p.1-28

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