Introduction to Information Systems

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What does this have to do with information systems?

- English Premier League is one the world's most popular competitive football tournaments.
- As a business it has strong growth, record profits including from merchandise and tv rights.
- The Premier league has invested heavily in information technologies, websites and mobile apps.

https://youtu.be/SmZSLirtBek

Premier League use of technology

- Invested in data-driven , statistical approaches to coaching and player performance.
- In 2016 Leicester City became Premier League Champions using amongst other things IT analytics.
- Using big data and analytics they accumulated a lot of data for use in coaching and training processes.

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What role does technology play in Leicester City's success as a football team?

Think about the contribution of technology systems to football as a business?

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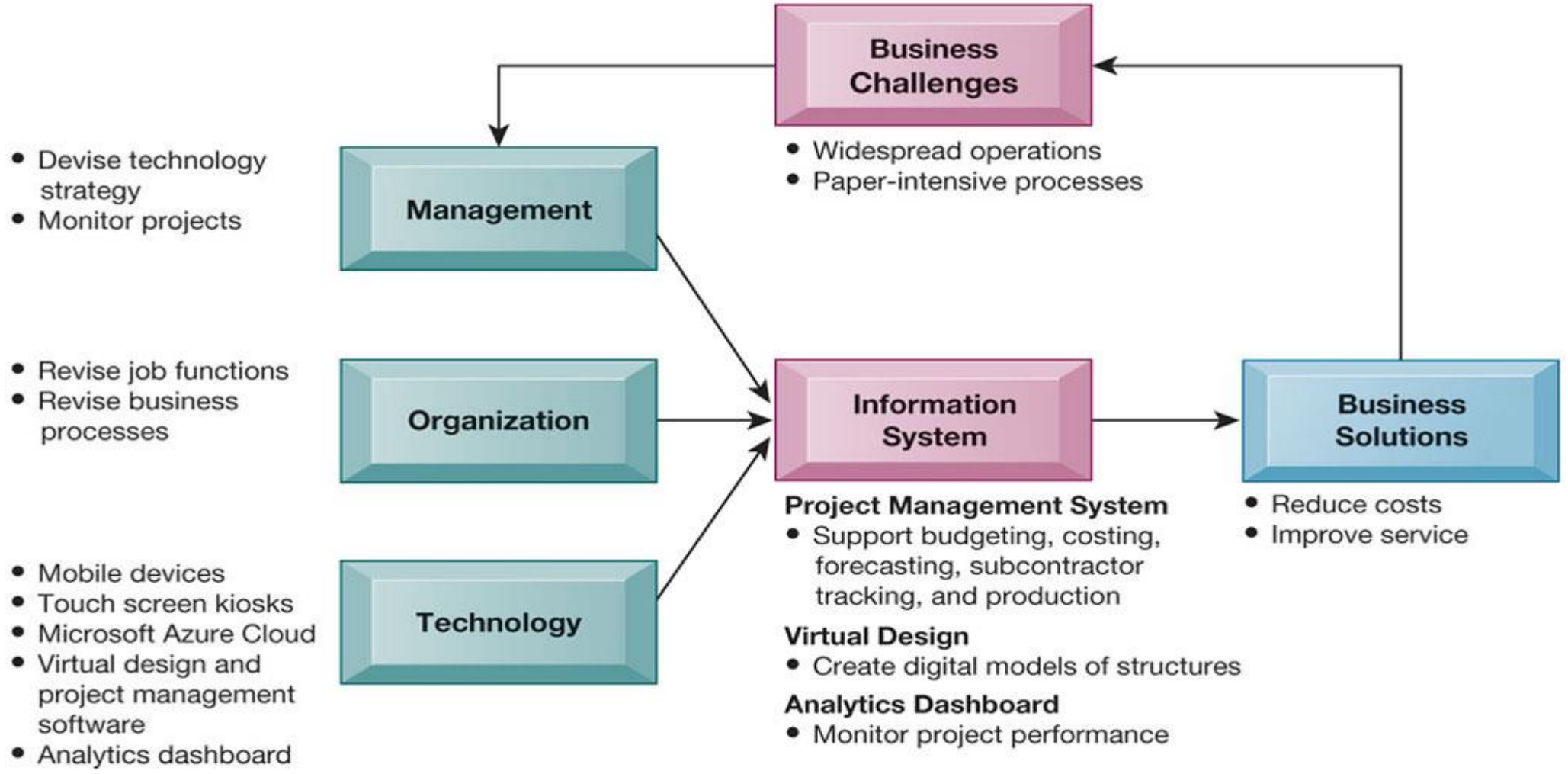

Business Challenges
Widespread operations
Paper-intensive processes
Devise technology strategy
Monitor projects
Management
Revise job functions
Revise business processes
Organization
Mobile devices
Touch screen kiosks
Microsoft Azure Cloud
Virtual design and project management software
Analytics dashboard
Technology
Information System
Project Management System
Support budgeting, costing, forecasting, subcontractor tracking, and production
Virtual Design
Create digital models of structures
Analytics Dashboard
Monitor project performance
Business Solutions
Reduce costs
Improve service

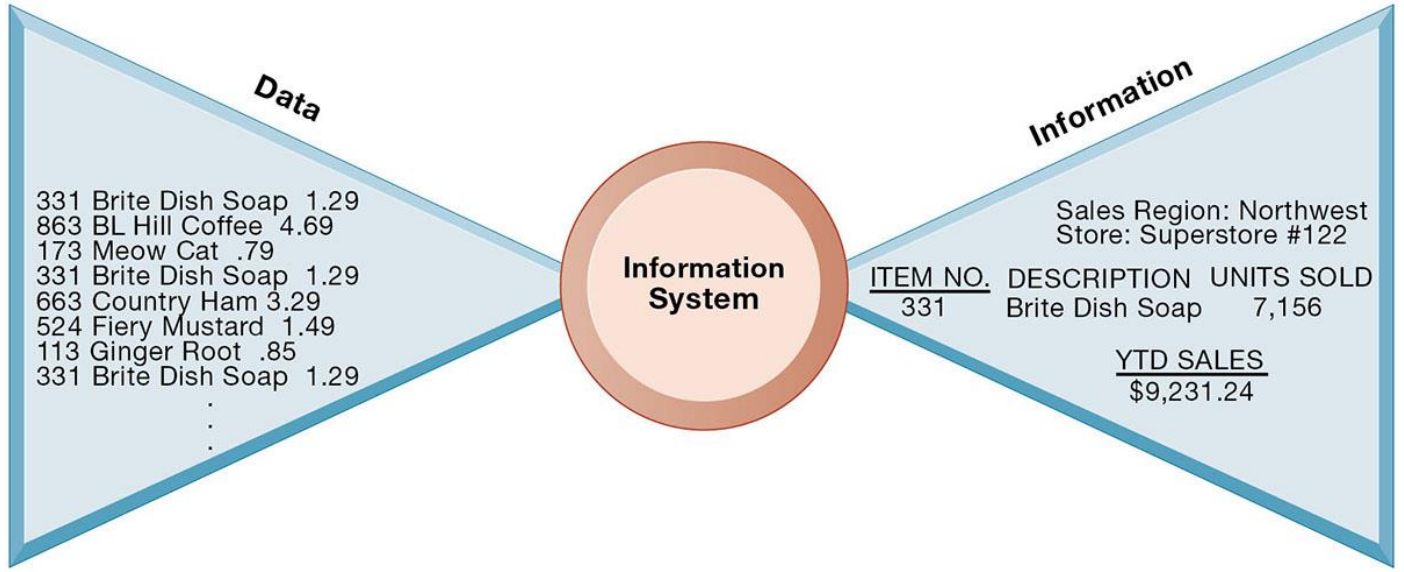
What is an Information System?

- Information technology: the hardware and software a business uses to achieve objectives
- Information system: interrelated components that manage information to:
  - Support decision making and control
  - Help with analysis, visualisation, and product creation
- Data: streams of raw facts
- Information: data shaped into meaningful, useful form

Principles

- The value of information is directly linked to how it helps decision makers achieve the organisation's goals
- Computers and information systems are constantly making it possible for organisations to improve the way they conduct business
- Knowing the potential impact of information systems and having the ability to put this knowledge to work can result in a successful personal career, organisations that reach their goals, and a society with a higher quality of life
- System users, business managers, and information systems professionals must work together to build a successful information system
- Information systems must be applied thoughtfully and carefully so that society, business, and industry can reap their enormous benefits

Data and Information



Raw data from a supermarket checkout counter can be processed and organised 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.

What is information?

- Information is a collection of facts
- It can take many forms – text, numbers, images, audio clips and video clips are all examples
- A closely related term is **data**
- These two terms are often used interchangeably

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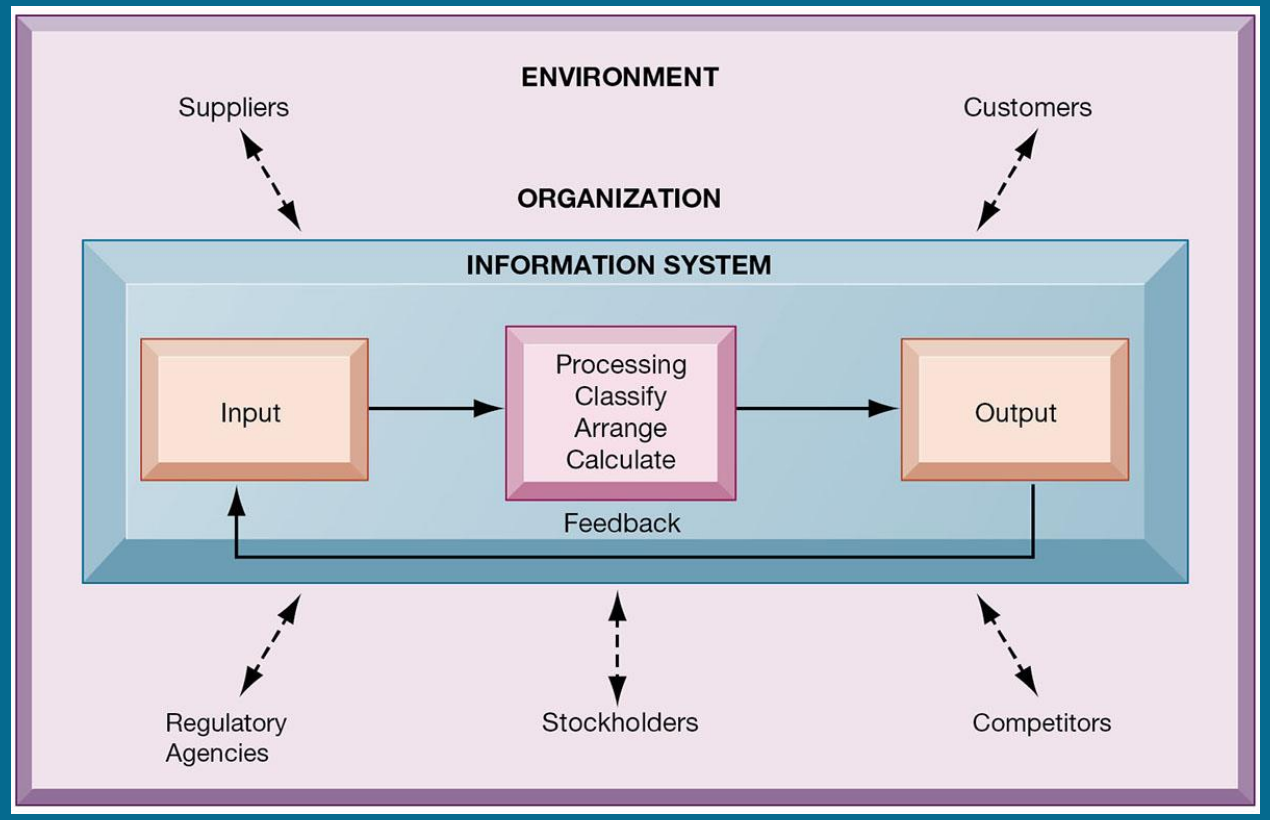
What is a System?



Activities in an information system that produce information:

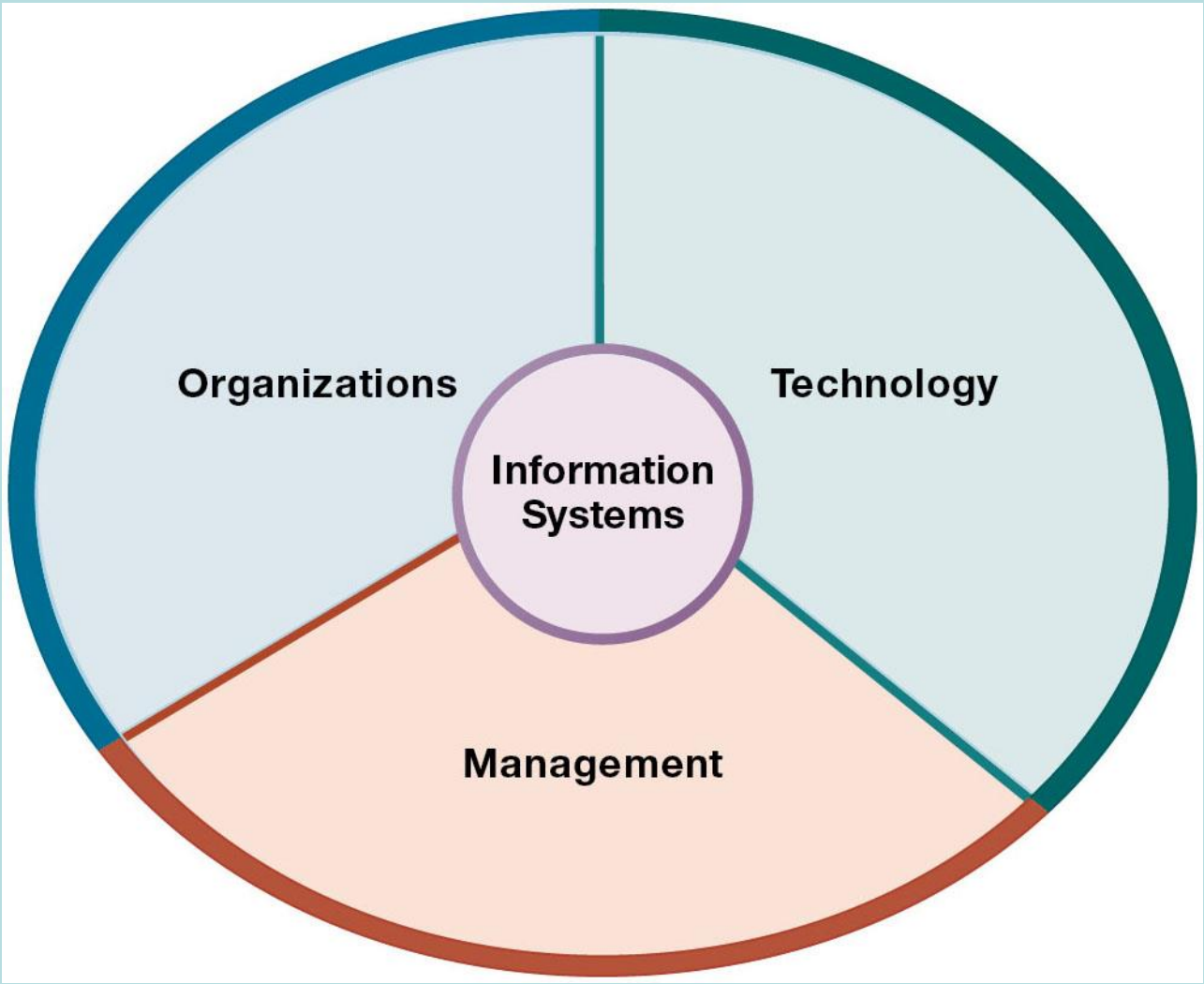
Input
Processing
Output
Feedback

- Feedback
  - Output is returned to appropriate members of organisation to help evaluate or correct input stage
- Computer/computer program vs. information system
  - Computers and software are technical foundation and tools, similar to the material and tools used to build a house

Foundations of system?

- A system is a set of elements or components that interact to accomplish goals
- Systems have inputs, processing mechanisms, outputs, and feedback
- A system processes the input to create the output
- Examples of systems are everywhere – an automatic car wash, the heating in a building, the human body; you should be able to think of many more

Information Systems Are More Than Computers



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Dimensions of Information Systems: Organisations

- Separation of business functions
  - Sales and marketing
  - Human resources
  - Finance and accounting
  - Manufacturing and production
- Unique business processes
- Unique business culture
- Organisational politics

Dimensions of Information Systems: Management

- Managers set organisational strategy for responding to business challenges
- In addition, managers must act creatively
  - Creation of new products and services
  - Occasionally re-creating the organization

People

- People are the most important element in most computer-based information systems
- The people involved include users of the system and information systems personnel, including all the people who manage, run, program, and maintain the system

Dimensions of Information Systems: Technology

- Computer hardware and software
- Data management technology
- Networking and telecommunications technology
  - Networks, the Internet, intranets and extranets, World Wide Web
- IT infrastructure: provides platform that system is built on

Hardware

- **Hardware** consists of computer equipment used to perform input, processing, and output activities
- Input devices include keyboards, mice and other pointing devices, automatic scanning devices, and equipment that can read magnetic ink characters
- Processing devices include computer chips that contain the central processing unit and main memory
- Output devices include computer screens and printers

Software

- **Software** consists of the computer programs that govern the operation of the computer
- There are two types of software:
  system software controls basic computer operations, including start-up, input and output. An example is Microsoft Windows
  applications software allows you to accomplish specific tasks, including word processing and drawing charts. An example is Microsoft Excel

Databases

- A **database** is an organised collection of facts and information, typically consisting of two or more related data files
- An organisation's database can contain information on customers, employees, inventory, competitors' sales, online purchases, and much more

Telecommunications, Networks, and the Internet

- **Telecommunication** is the electronic transmission of signals for communications, which enables organizations to carry out their processes and tasks through computer networks
- **Networks** connect computers and equipment in a building, around the country, or around the world to enable electronic communication
- The **Internet** is the world's largest computer network, actually consisting of thousands of interconnected networks, all freely exchanging information

Case Study - UPS

Think about the inputs, processing, and outputs of UPS's package tracking system?
What would happen if UPS's information systems were not available?

Case Study - UPS

Organisational

Procedures for tracking packages and managing inventory and provide information

Management

Monitoring service levels and costs

Technology

Handheld computers, bar-code scanners, networks, desktop computers, and so on

Why is it an excellent example of an information system affected by a firm's business and vice versa?

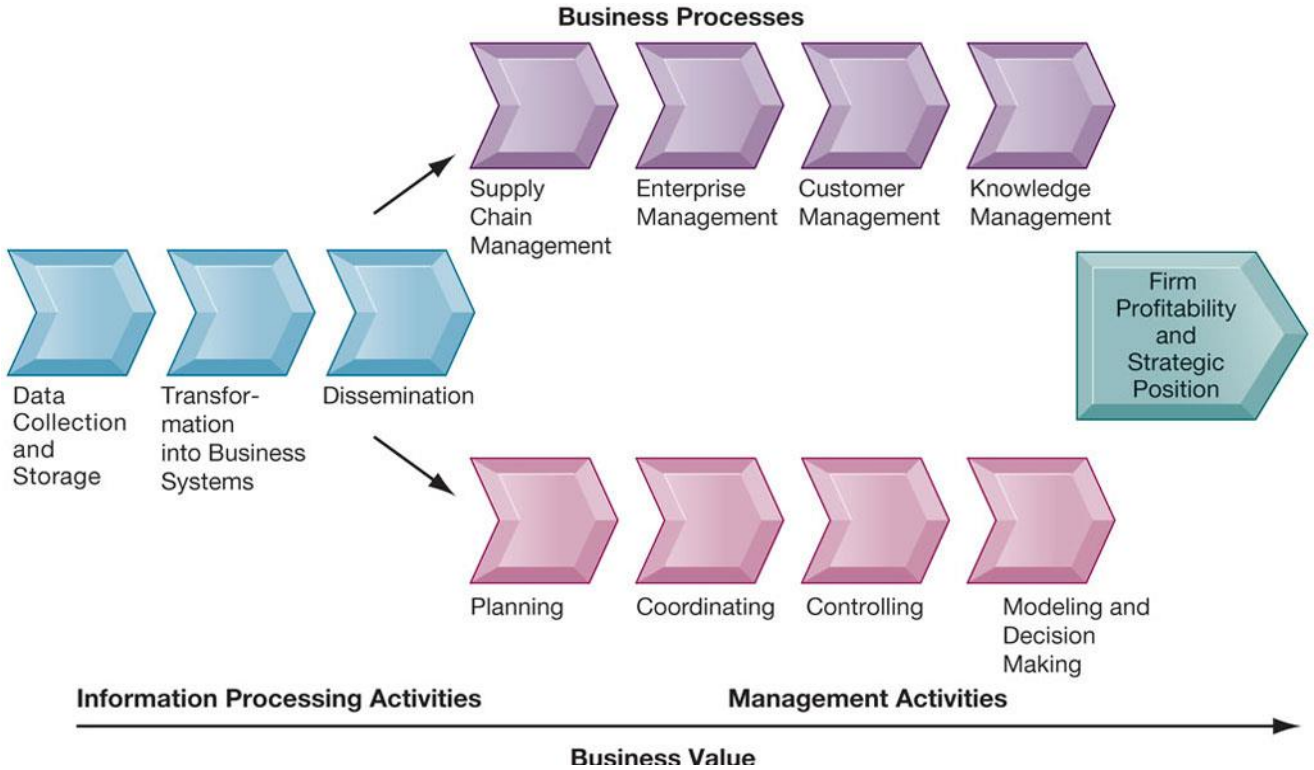
Do you think UPS does a good job with its information systems? What might they improve?

It Isn't Just Technology

- Information system is an instrument for creating value
- Investments in information technology will result in superior returns
  - Productivity increases
  - Revenue increases
  - Superior long-term strategic positioning

- Business information value chain
  - Raw data acquired and transformed through stages that add value to that information
  - Value of information system determined in part by extent to which it leads to better decisions, greater efficiency, and higher profits
- Business perspective
  - Calls attention to organisational and managerial nature of information systems

The Business Information Value Chain



It Isn't Just Technology

- Investing in information technology does not guarantee good returns
- There is considerable variation in the returns firms receive from systems investments
- Factors
  - Adopting the right business model
  - Investing in complementary assets (organisational and management capital)

Complementary Assets: Organisational Capital and the Right Business Model

- Assets required to derive value from a primary investment
- Firms supporting technology investments with investment in complementary assets receive superior returns
- Example: Invest in technology and the people to make it work properly

- Complementary assets
  - Examples of organizational assets
    - Appropriate business model
    - Efficient business processes
  - Examples of managerial assets
    - Incentives for management innovation
    - Teamwork and collaborative work environments
  - Examples of social assets
    - The Internet and telecommunications infrastructure
    - Technology standards

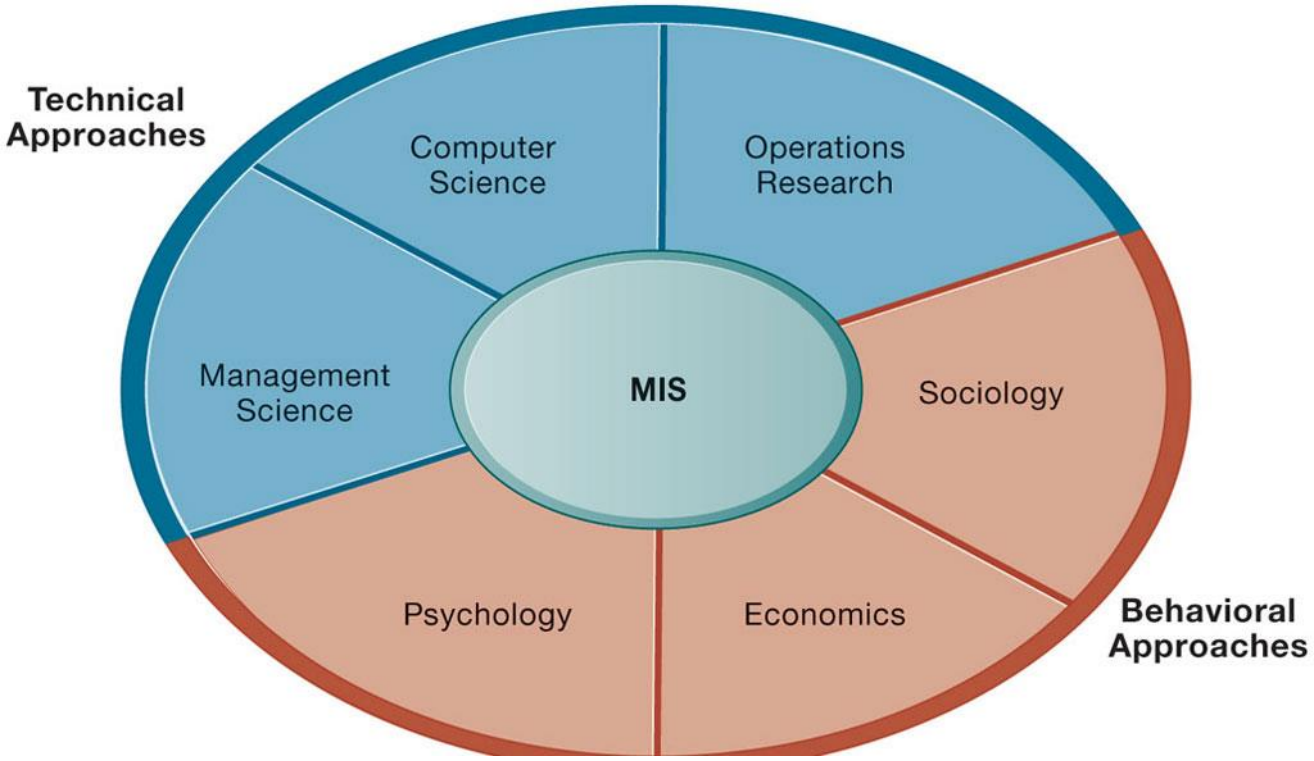
Contemporary Approaches to Information Systems

Technical Approach

- Emphasises mathematically based models
- Computer science, management science, operations research

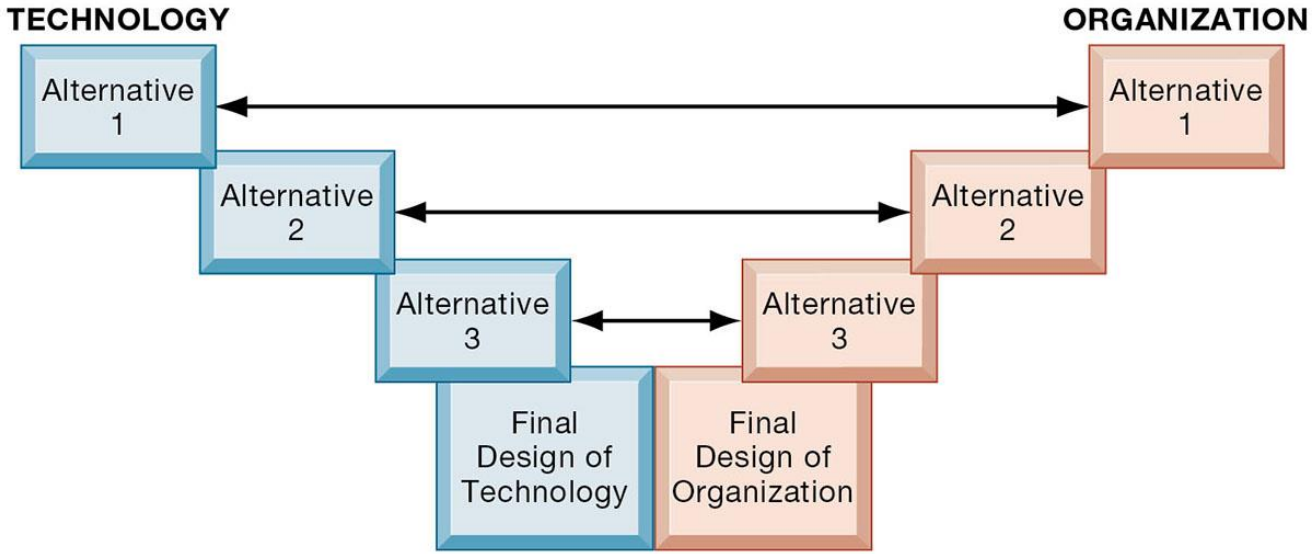
Behavioral Approach

- Behavioral issues (strategic business integration, implementation, etc.)
- Psychology, economics, sociology



Sociotechnical Systems

- Management information systems
  - Combine computer science, management science, operations research, and practical orientation with behavioral issues
- Four main actors
  - Suppliers of hardware and software
  - Business firms
  - Managers and employees
  - Firm's environment (legal, social, cultural context)
- Sociotechnical view
  - Optimal organizational performance achieved by jointly optimizing both social and technical systems used in production
  - Helps avoid purely technological approach



Discussion

- Information Systems are too important to be left to computer specialists. Do you agree? Why or why not?

Post Class Activity

Visit a job-posting website such as irishjobs.ie. Spend some time at the site examining jobs for accounting, finance, sales, marketing and human resources. Find one or two descriptions of jobs that require some information systems knowledge? What information systems knowledge do these jobs require?