MONASH University

Information Technology

FIT3138 Real-Time Enterprise Systems

Lecture 1

Introduction to Real-Time Enterprise Systems

Learning Objectives

After completing this lecture, you will be able to:

- Explain terminology specific to Enterprise Systems
- Identify Enterprise system drivers
- Explain Enterprise system benefits
- Discuss how technological advancement forge the way for real-time enterprise systems
- Describe characteristics of real-time Enterprise systems

Unit Outline

Week	W/C	Topic	Deadline:
1	25/07	Introduction to FIT3138; Introduction to Enterprise Systems	
2	01/08	Systems Integration - Role of ERP in Business Functions and Processes	Assignment 1 handed out
3	08/08	The Development of ERP Systems	
4	15/08	ERP in Sales and Marketing & CRM	
5	22/08	ERP in Production and Supply Chain Management	
6	29/08	Accounting in ERP Systems	
7	05/09	Process Modelling & Improvement	Assignment 1 due Assignment 2 handed out
8	12/09	ERP Implementation – Risk Management	
9	19/09	ERP Implementation – Data and System Integration and Configuration	
Mid-semester Break (26 Sep – 30 Sep 2022)			
10	03/10	ERP Implementation Issues: Managing Change	
11	10/10	Technologies supporting real-time enterprise	
12	17/10	Exam Review	Assignment 2 due

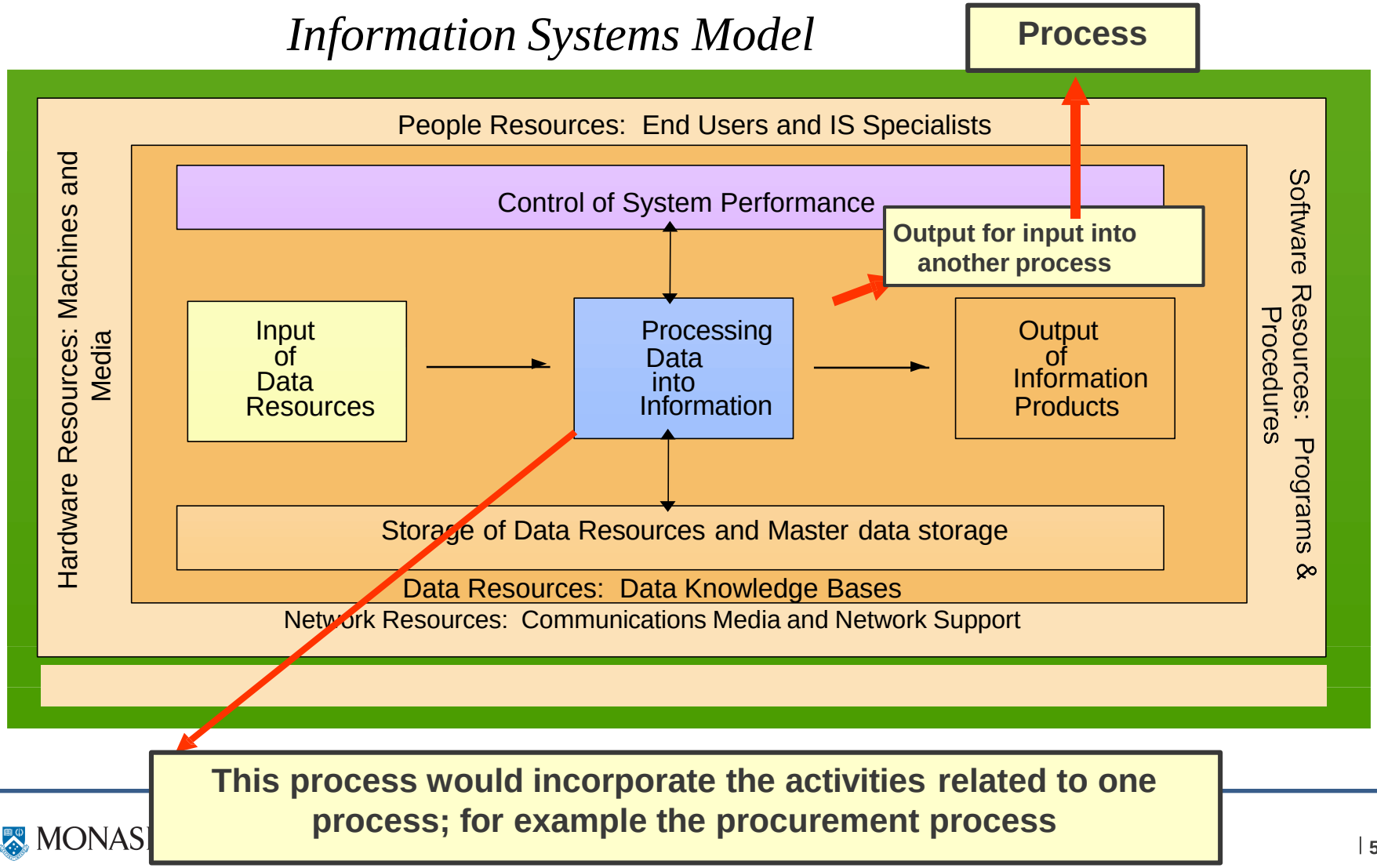
WHY Study Enterprise Systems:

Well because they have …

- Affected most major corporations
- Affected competitor behaviour
- Affected business partners' requirements
- Changed the nature of consulting firms
- A tool for reengineering

- Diffused many "***best practices***"
- Changed the nature of information systems functionality
- Changed the nature of jobs in all functional areas
- Basis for eBusiness
- Caused some serious cost blow outs
- Costly to implement
- Poor benefit realisation after go live

What is a System



What is an Enterprise System?

- An Enterprise System can be defined as “an enterprise-wide, modular, integrated, real time information system responsible for transaction processing across all business areas of the organisation”
- It is made up of a series of “modules”, or applications that are seamlessly linked together through a common database, an ERP system enables various departments or operating units such as Accounting and Finance, Human Resources, Production, and sales and Distribution to coordinate activities, share information, and collaborate with customers, vendors etc

Also known as Enterprise Wide Systems and Enterprise Resource Planning Systems (ERPS).

Refer : Davenport (1998). Putting the enterprise into the enterprise system. Harvard Business Review. July-August 1998

What is “Real-time Enterprise”?

Definition of a Real Time Information System:

“A business computer system that responds to transactions by immediately updating the appropriate databases. Real-time information systems generate a response fast enough to prevent human operators from waiting very long.

Decades ago, when computers were considerably slower than they are today, "real-time" was occasionally indicated in a request for proposal (RFP) for a business application to highlight fast response times”

Key Enterprise System Characteristics

- **Links all business processes automatically**
- **Utilises best business process practices**
- **Reduces inter-processing time**
  - transactions occur one time at the source
- **Maintains an audit trail of all transactions**
- **Utilises a common database for**
  - Master data
  - Transactional data
  - Enabling BI
- **Performs internal conversions automatically (tax, foreign currency, legal rules for payroll)**
- **Uses current technology**

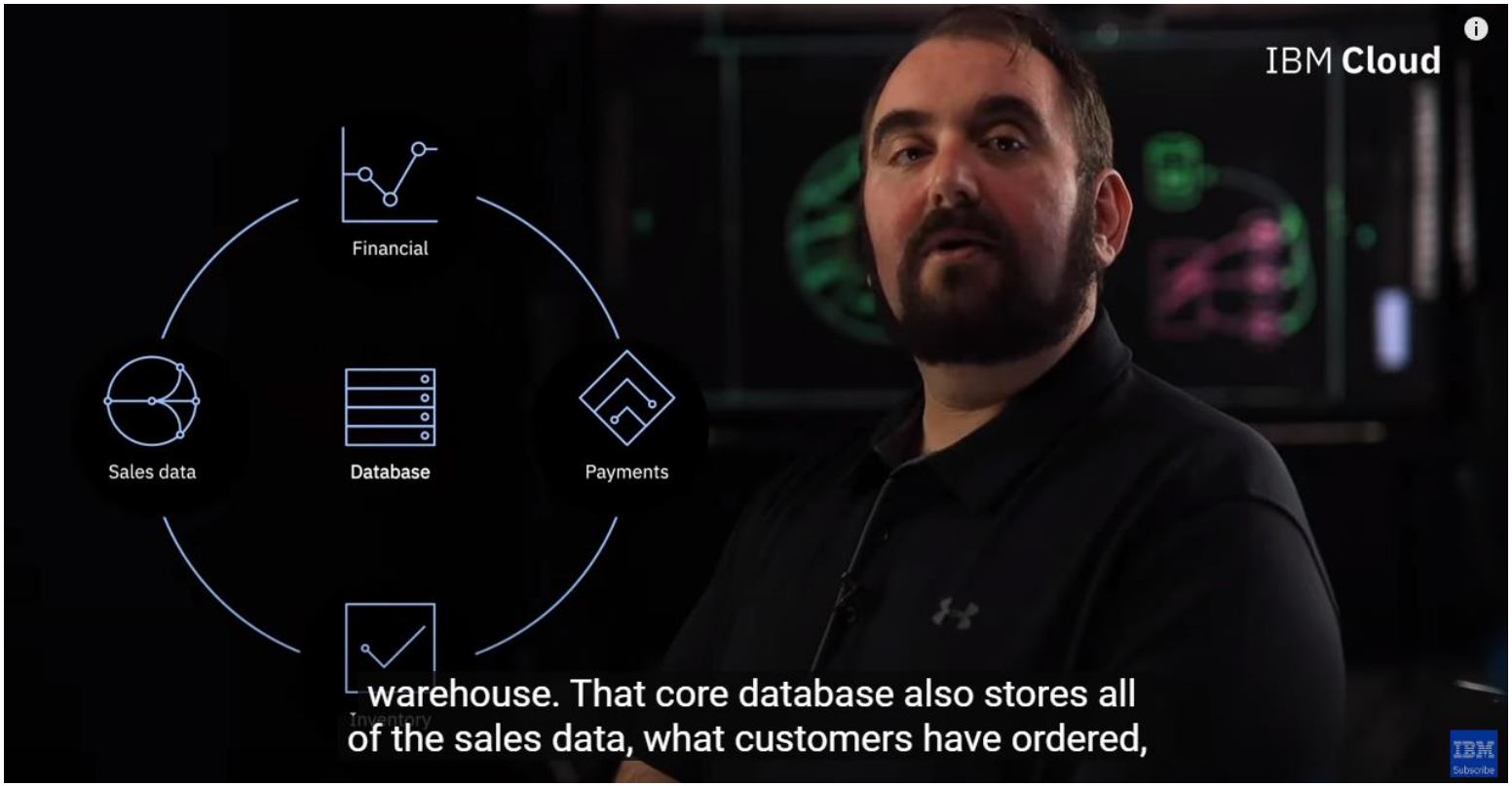
So what does an enterprise system do?

- Brings together previously *isolated information systems* with the goal of providing a more whole or complete information resource
- This integration includes bringing together:
  - People
  - Processes
  - Information
  - Systems
- To achieve a common strategic business goal

ERP Systems

An Enterprise Resource Planning System (ERP) is one type of enterprise system. Other good examples are CRM (customer relationship management) and SCM applications (supply chain management).

What is Enterprise Resource Planning Software ?



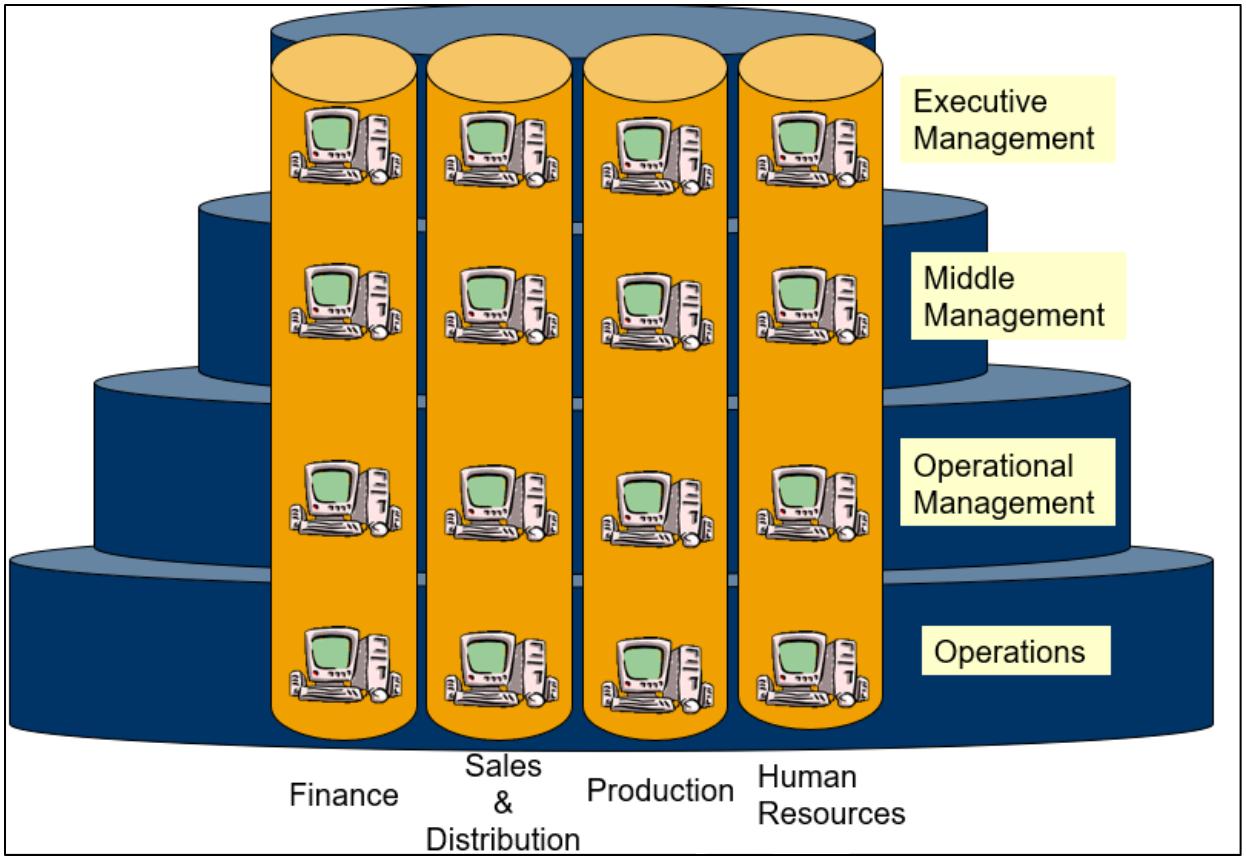
https://youtu.be/Da1hUqzoiAo

The case for enterprise integration

- Integrated enterprise systems are often achieved using ERP software
- Originally systems very often worked in silos
  - No connection with other systems in the organisation (isolated)
  - No sharing of data (isolated data)
  - Management had difficulty obtaining accurate data in a timely and efficient manner
  - Too many legacy systems –getting too old to function effectively and not economically viable to maintain
  - Not able to keep up with their competitors/rivals in the market place
  - Not agile enough to change direction
  - Economic downturn

Decentralized Systems (Legacy Systems)

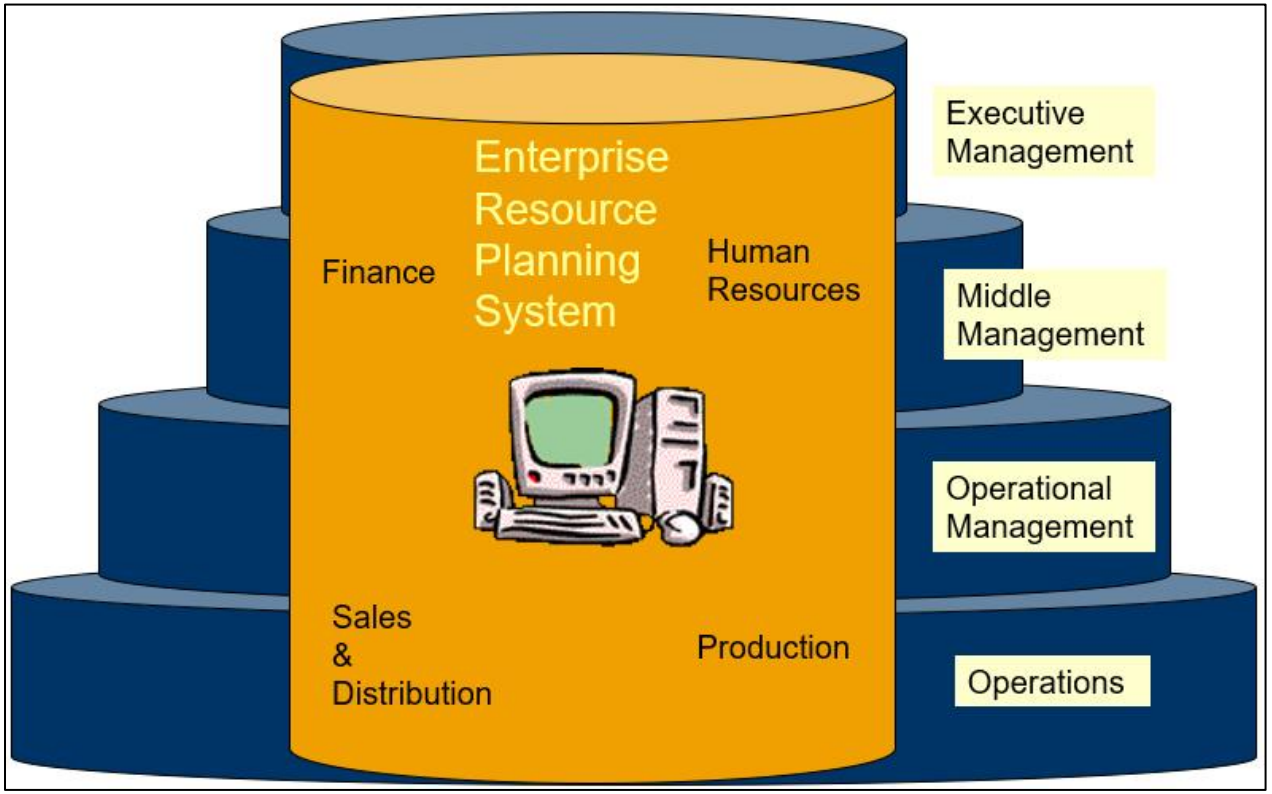
Data is maintained locally at the individual departments (**Silos**)
Departments do not have access to the data of other departments.



Centralized Systems (ERP Systems)

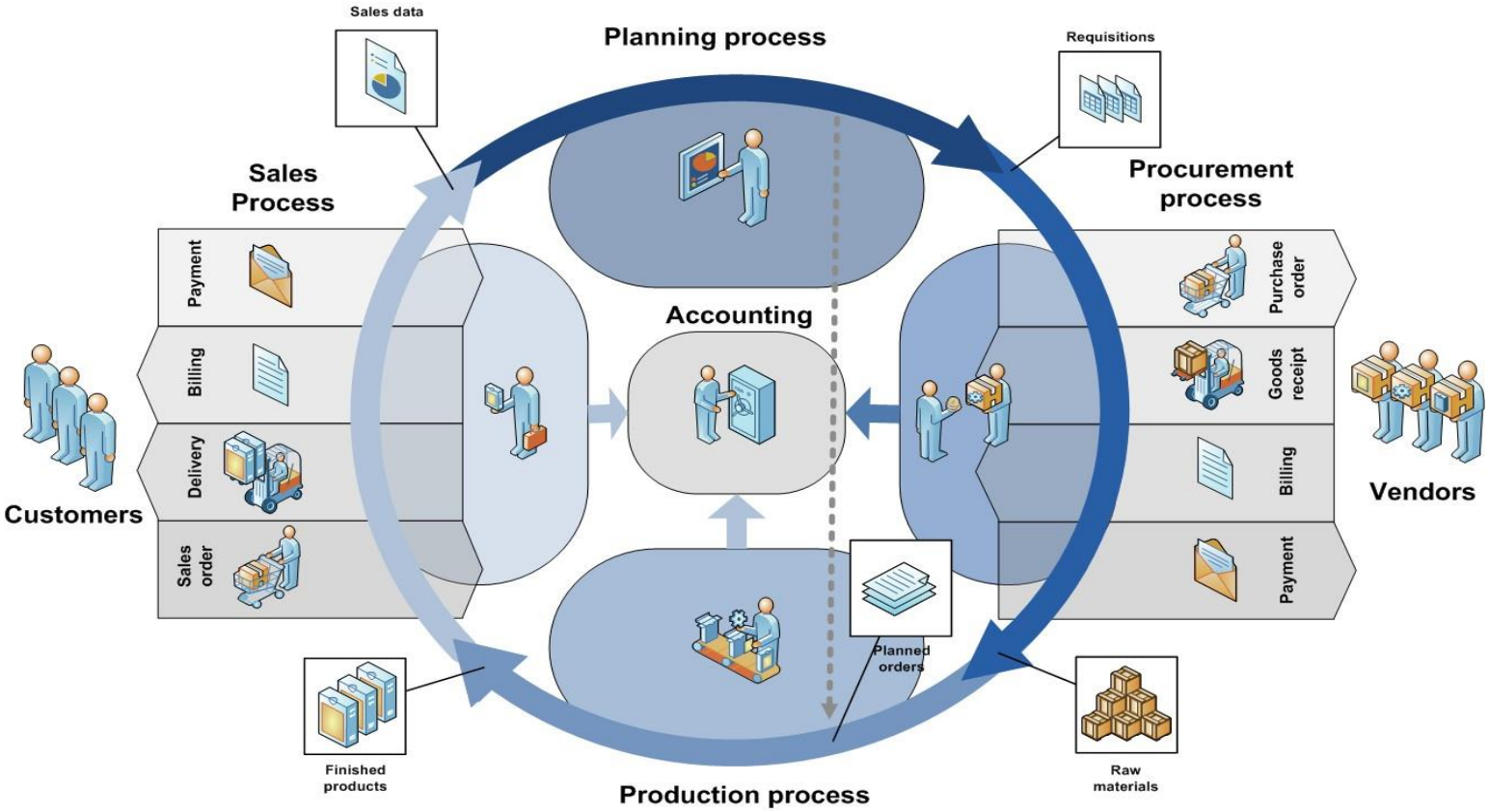
Data is maintained at a central location and is shared with various departments.

Departments have access to the data of other departments.



More on the development of ERP systems in Lecture 3

Enterprise resource planning system (ERP)- showing integration points



Why do organisations adopt ERP systems?

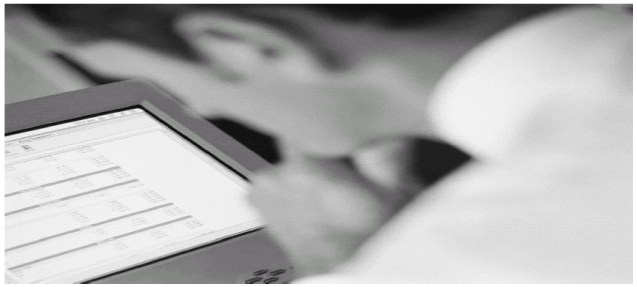
THE MAIN DRIVERS ARE:

- Technology Rationales
  - Year 2000
  - Disparate Systems
  - Poor existing systems
  - Difficult to integrate acquisitions
  - Common platform and data transparency

Business Process Rationales

- Personnel reduction
- IT cost reduction
- Productivity Improvements
- Financial cycle close
- Revenue

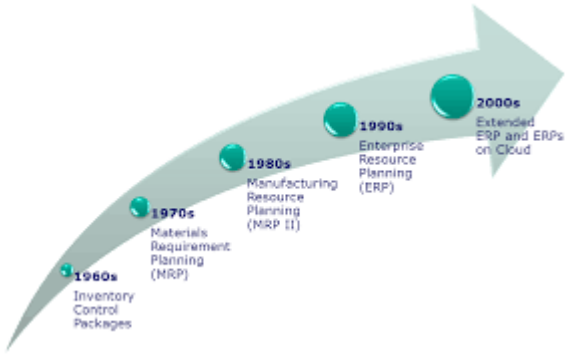
- Strategic Rationales
  - Added functionality
  - eBusiness
  - Response to mergers etc
- Competitive Rationales
  - competitive pressures to become a low cost producer



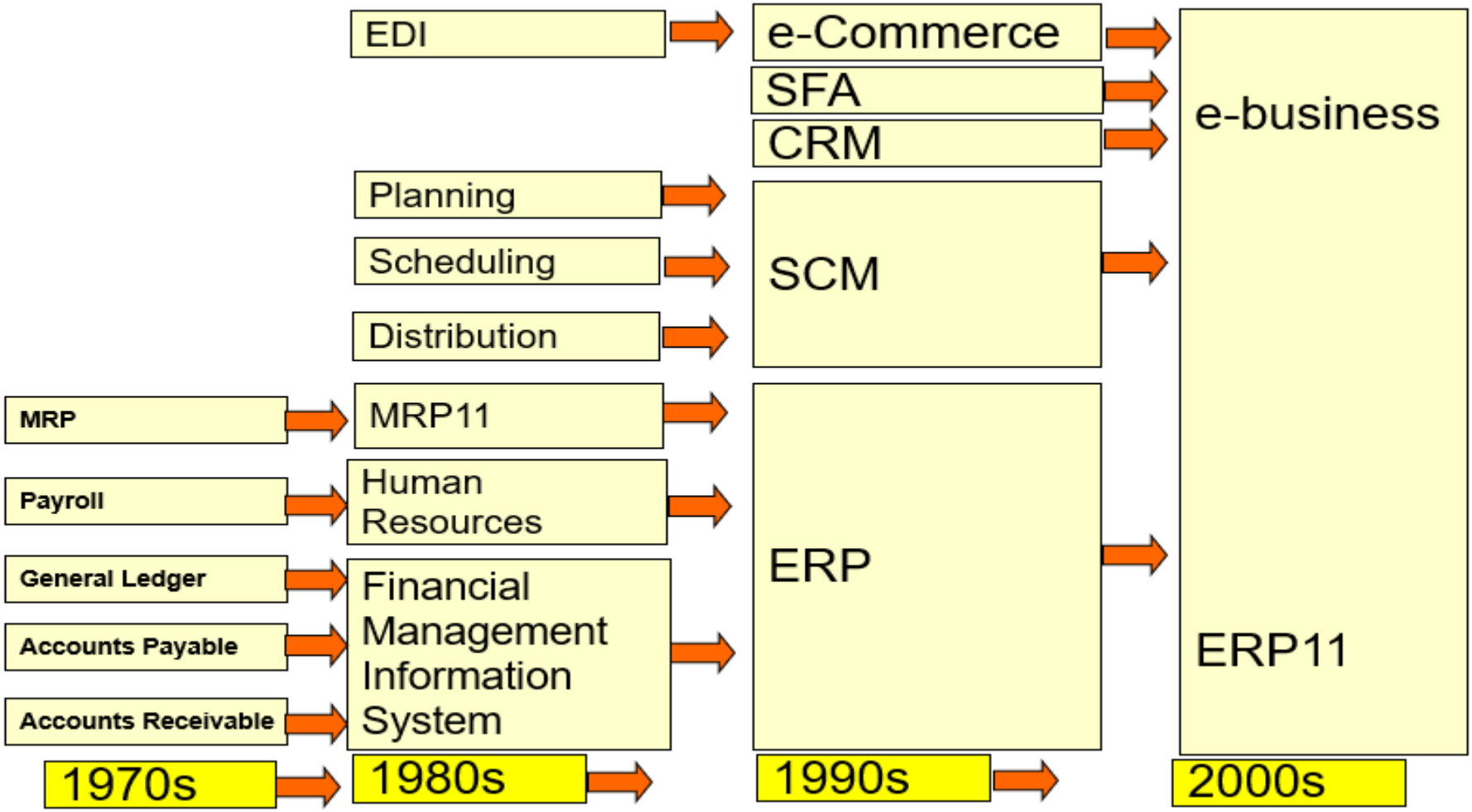
The Evolution of ERP Systems

Several developments in business and technology allowed ERP systems to evolve to their current form:

- The speed and power of computing hardware increased exponentially, while cost and size decreased.
- Early **client-server architecture** provided the conceptual framework for multiple users sharing common data.
- Increasingly sophisticated software facilitated **integration**, especially in two areas: Accounting and Finance and Material Requirements Planning.
- As businesses grew, and the business environment became more complex and competitive, business managers began to demand more efficient and competitive information systems.



The Evolution of ERP Systems



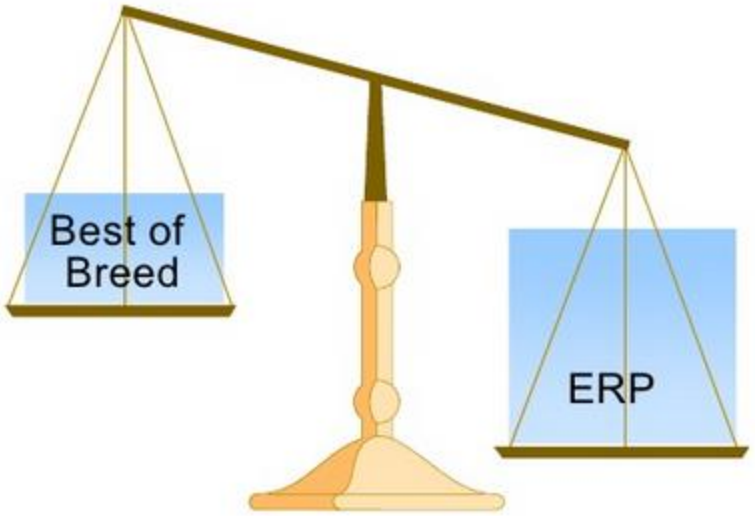
Drivers for adopting ERP Systems

Technology Rationales
– Year 2000
– Disparate Systems
– Poor existing systems
– Difficult to integrate acquisitions

Business Process Rationales
– Personnel reduction
– IT cost reduction
– Productivity Improvements
– Financial cycle close

Strategic Rationales
– Added functionality
– eBusiness
– Response to mergers etc.

Competitive Rationales
– Competitive pressures to become a low-cost producer



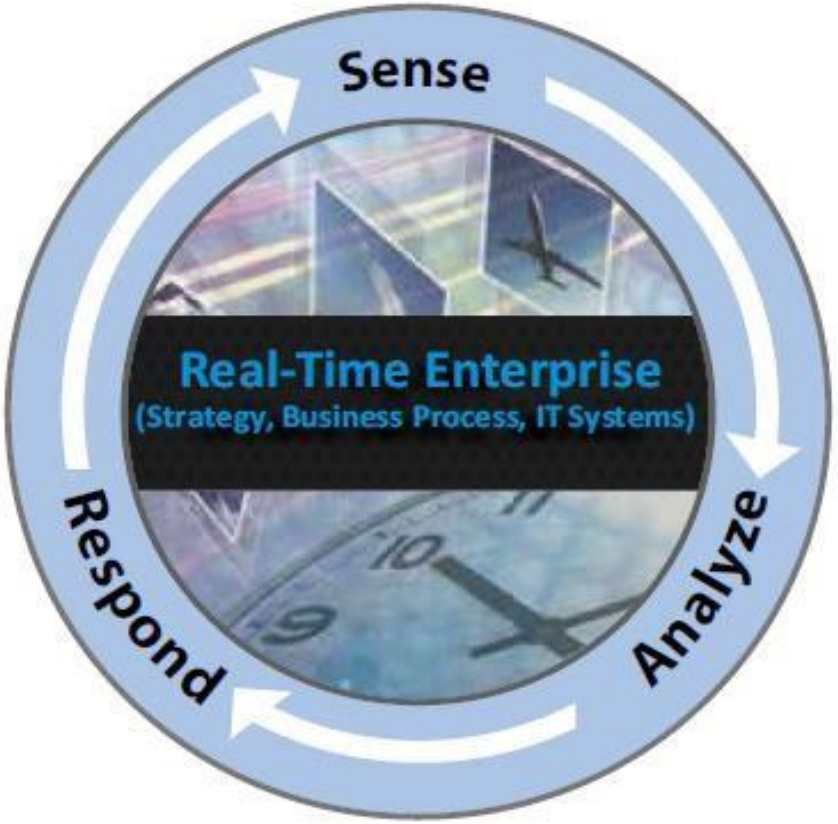
Key Benefits for a company deciding to implement an ERP system?

- Enhance all aspects of key operations across a company's entire back-office –
  - from planning through execution, management, and control.
  - They accomplish this by taking processes and functions that were previously disparate and disjointed, and seamlessly integrating and coordinating them.
- Facilitate more efficient completion of day-to-day tasks.
- Reduce the redundant and overlapping activities that waste time and money by standardizing core procedures.
- Eliminate data silos by creating a single, centralized repository of timely, accurate business data.
- Enable more effective resource allocation and management.

The Real-time Enterprise Framework

Enterprises need to have a 3-step framework:

- "Sense"
- "Analyse"
- "Respond"



http://www.infosys.com/business-application-services/white-papers/Documents/architecting-real-time-enterprise.pdf

What is Sense-Analyse-Response?

- "Sense" component that enables the enterprise to be informed of all external and internal information that is relevant;
- "Analyse" component that helps analyse the information, identify patterns, forecast and predict likely impacts and consequences;
- "Respond" component that determines the best possible response based on the analysis of the relevant information and executes the determined response.
- The business strategy of the enterprise determines what needs to be sensed, what kind of analysis is needed, and what the response needs to be, while the enterprise's business processes, information, and IT systems support the collection and analysis of information and the execution of the response.

Ref: http://www.infosys.com/business-application-services/white-papers/Documents/architecting-real-time-enterprise.pdf

Characteristics of Real-time Enterprise Systems

Real-time enterprise systems exhibit the following characteristics:

- Agility
  - to meet the time- to-market requirements
- Available anywhere anytime
  - business processes need to enable customers, partners and employees to use, participate and be productive from anywhere and anytime.
- Scalable
  - to deal with such large volumes and wide varieties of data.

Ref: Architecting Real-time Enterprise (Infosys, white paper)

Characteristics of Real-time Enterprise Systems (cont'd.)

- Intelligent
  - designed to leverage predictive analytics and machine learning capabilities
- Collaboration Driven
  - designed to leverage the collective wisdom of all the stakeholders and for collaboration
- Low Latency
  - enable near real time processing and responses

Ref: Architecting Real-time Enterprise (Infosys, white paper)

Summary

- Why study enterprise systems?
- What is ‘Real-time’ enterprise systems?
- What are the functions of enterprise systems?
- What are the drivers for enterprise systems?
- What are the benefits of enterprise systems?
- What are the characteristics of real-time enterprise systems?

Readings (for Tutorial 1)

In preparation for Tutorial 1, please read the following industry solution case mentioned in the article “Architecting Real Time Enterprise” (the link to the article is provided on Moodle)

- Telematics Service Delivery (Page 24 – 28)
- Retail Promotion Optimisation (Page 29 – 32)

End of Lecture 1

References:

- Davenport (1998). Putting the enterprise into the enterprise system. Harvard Business Review. July-August 1998
- Chorafas, D.N. (2005). The Real-Time Enterprise. CRC Press
- OATSystems: Real-Time Enabling Enterprise Systems
- Architecting Real-time Enterprise (Infosys, white paper)