



High Level Course Aim

- The aim of this module is to provide students with knowledge of the purpose, design and context of enterprise architectures and systems within an organisation.

Delivery

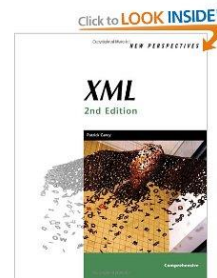
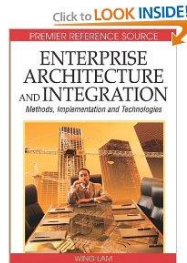
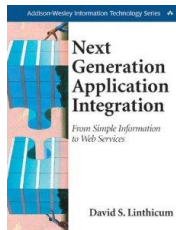
- Classes per week
 - Lectures – 2 x 1hr sessions
 - Lab 2 x 1hr sessions
- Brightspace (Module Id: CMPU4025)
 - “DT228/4 DT282/4 - Enterprise Systems - Ciaran Cawley”
 - Class Slides
 - Information / Announcements
 - Extra Material
 - Assignments

Assessment - TBC

- Exam – 60%
- Continuous Assessment – 40%
 - Lab Test – 15%
 - Written Assignment – 25%

Books

- Linthicum, David S., ***Next Generation Application Integration: From Simple Information to Web Services***. Addison-Wesley Information Technology Series
- Lam, Wand, ***Enterprise Architecture and Integration: Methods, Implementation and Technologies***, Information Science Reference
- O'Brien, ***Management Information Systems***
- Carey, ***New Perspectives on XML***



Content

- Enterprise / Business Computing - Introduction
- XML / XSD / XSL / JSON (Systems Integration)
- Business Strategies & Processes
- Business Systems (ERP, SCM, CRM)
- Enterprise Integration Architectures / Patterns
- Service delivery models

Work Expectation

Module Code	Module Title	ECTS	Weekly Contact Hours			Total Hours			Assessment		
			Lecture	Laboratory	Tutorial	Contact	Self-Study	Total	Exam Weight	Exam Duration	Non-Exam Weight
CMPU4003	Advanced Databases	5	2	2		52	48	100	60%	2 hours	40%
CMPU4009	App Development and Commercialisation	5	2	2		52	48	100	50%	2 hours	50%
CMPU4007	Advanced Security 1	5	2	1		39	61	100	60%	2 hours	40%
CMPU4008	Advanced Security 2	5	2	1		39	61	100	50%	2 hours	50%
CMPU4010	Artificial Intelligence 1	5	2	2		52	48	100	70%	2 hours	30%
CMPU4011	Artificial Intelligence 2	5	2	2		52	48	100	70%	2 hours	30%
CMPU4012	Bioinformatics	5	2	1		39	61	100	70%	2 hours	30%
CMPU4013	Business Systems Intelligence	5	2	1		39	61	100	70%	2 hours	30%
CMPU4016	Compilers and Language Design	5	2	2		52	48	100	70%	2 hours	30%
CMPU4017	Computer Graphics	5	2	2		52	48	100	70%	2 hours	30%
CMPU4019	Designing and Building Semantic Web Applications	5	2	1		39	61	100	50%	2 hours	50%
CMPU4020	Digital Audio	5	2	2		52	48	100	70%	2 hours	30%
CMPU4021	Distributed Systems	5	2	2		52	48	100	70%	2 hours	30%
CMPU4023	Enterprise Application Dev.	5	2	2		52	48	100	70%	2 hours	30%
CMPU4025	Enterprise Systems and Architecture	5	2	2		52	48	100	60%	2 hours	40%
CMPU4028	Forensics	5	2	2		52	48	100	50%	2 hours	50%

Introduction / Fundamentals

Business / Enterprise Computing

1. Business / Enterprise
 2. Information Systems
 3. Information Technology
- Enterprises use Information Technology & Systems to gain **advantage**

Business / Enterprise

- What is an Enterprise?

Definition :

1. An undertaking, especially one of some scope, complication, and risk.
2. A business organization.
3. Industrious, systematic activity, especially when directed toward profit: Private enterprise is basic to capitalism.
4. Willingness to undertake new ventures; initiative

<https://www.youtube.com/watch?v=ANdUwsKkB6I>

<http://www.thefreedictionary.com/enterprise>

Business / Enterprise

Our definition:

an enterprise is an organization that uses computers

- *That could mean big, small or complex organizations: small businesses, SME, multi-national corporations.*
- *Note: Enterprise Systems in the computing industry —generally— refers to large corporations.*

Information System

- *What is a System*
 - A set of interrelated components
 - With a clearly defined boundary
 - Working together
 - To achieve a common set of objectives

Information Systems (IS)

- What is an *Information System*
- An organized combination of...
 - People
 - Hardware and software
 - Communication networks
 - Data resources
 - Policies and procedures
- This system...
 - *Stores, retrieves, transforms, and disseminates information in an organization*

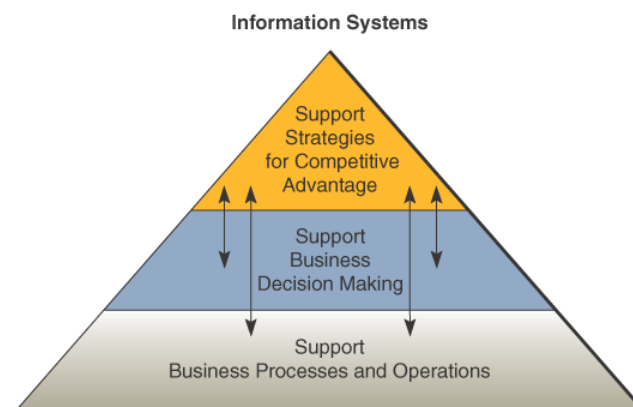
Information Technologies

- Information Systems
 - All the components and resources necessary to deliver information and functions to the organization
 - Could be paper based...
- Information Technologies
 - Hardware, software, networking, data management

Foundation Concepts

- Why study information systems and information technology?
 - Vital component of successful businesses
 - Helps businesses expand and compete
 - Improves efficiency and effectiveness of business processes
 - Facilitates managerial decision making and workgroup collaboration

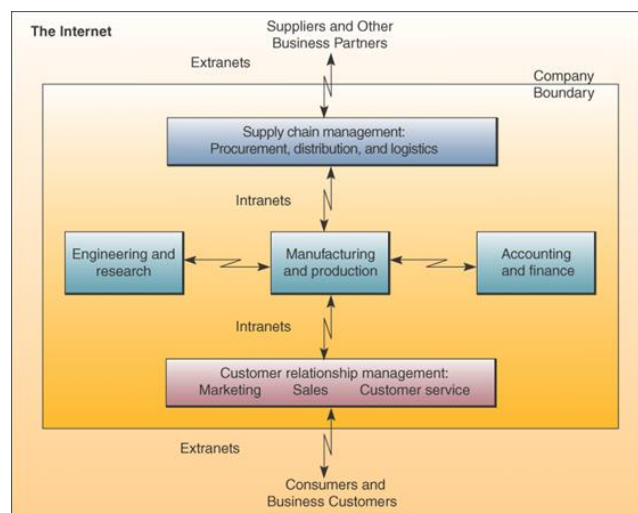
Fundamental Roles of IS in Business



What is E-Business?

- Using Internet technologies to empower...
 - Business processes
 - Electronic commerce
 - Collaboration within a company
 - Collaboration with customers, suppliers, and other business stakeholders
- In essence, an online exchange of value

How E-Business is Being Used



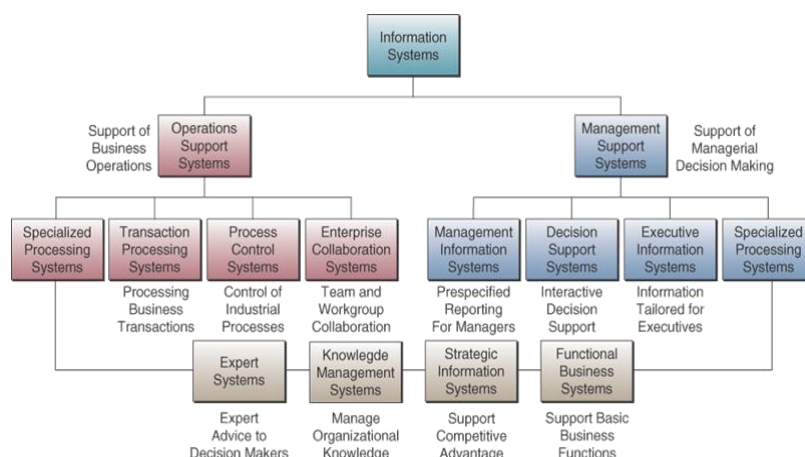
E-Business Use

- Reengineering
 - Internal business processes
- Enterprise collaboration systems
 - Support communications, coordination and coordination among teams and work groups
- Electronic commerce
 - Buying, selling, marketing, and servicing of products and services over networks

Types of Information Systems

- Operations Support Systems
 - Efficiently process business transactions
 - Control industrial processes
 - Support communication and collaboration
 - Update corporate databases
- Management Support Systems
 - Provide information as reports and displays
 - Give direct computer support to managers during decision-making

Purposes of Information Systems



Types of Operations Support Systems

- **Transaction Processing Systems**
 - Record and process business transactions
 - Examples: sales processing, inventory systems, accounting systems
- **Process Control Systems**
 - Monitor and control physical processes
 - Example: using sensors to monitor chemical processes in a petroleum refinery
- **Enterprise Collaboration Systems**
 - Enhance team and workgroup communication
 - Examples: email, video conferencing, IM, networking sites

Management Support Systems

- What do they do?
 - Provide information and support for effective decision making by managers
 - [Management information systems](#)
 - [Decision support systems](#)
 - [Executive information systems](#)

Types of Management Support Systems

- Management Information Systems (MIS)
 - Reports and displays
 - Example: daily sales analysis reports
- Decision Support Systems (DSS)
 - Interactive and ad hoc support
 - Example: a what-if analysis to determine where to spend advertising funds
- Executive Information Systems (EIS)
 - Critical information for executives and managers
 - Example: easy access to actions of competitors

Other Information Systems

- Expert Systems
 - Provide expert advice
 - Example: credit application advisor
- Knowledge Management Systems
 - Support creation, organization, and dissemination of business knowledge throughout company
 - Example: intranet access to best business practices

Other Information Systems

- Strategic Information Systems
 - Help get a strategic advantage over competitor
 - Example: online shipment tracking
- Functional Business Systems
 - Focus on operational and managerial applications of basic business functions
 - Examples: accounting, finance, or marketing

Measuring IT Success

- Efficiency
 - Minimize cost, time, and use of information resources
- Effectiveness
 - Support business strategies
 - Enable business processes
 - Enhance organizational structure and culture
 - Increase customer and business value

Challenges and Ethics of IT

- Application of IT
 - Customer relationship management
 - Human resources management
 - Business intelligence systems
- Potential Harm
 - Infringements on privacy
 - Inaccurate information
 - Collusion

The IS Function

- The IS function is...
 - A major functional area of business
 - An important contributor to operational efficiency, employee productivity, morale, customer service and satisfaction
 - A major source of information and support for decision making
 - A vital ingredient in developing competitive products and services in the global marketplace
 - A dynamic and challenging career opportunity
 - A key component of today's networked business

System Concepts

- System concepts help us understand...
 - Technology: hardware, software, data management, telecommunications networks
 - Applications: to support inter-connected information systems
 - Development: developing ways to use information technology includes designing the basic components of information systems
 - Management: emphasizes the quality, strategic business value, and security of an organization's information systems

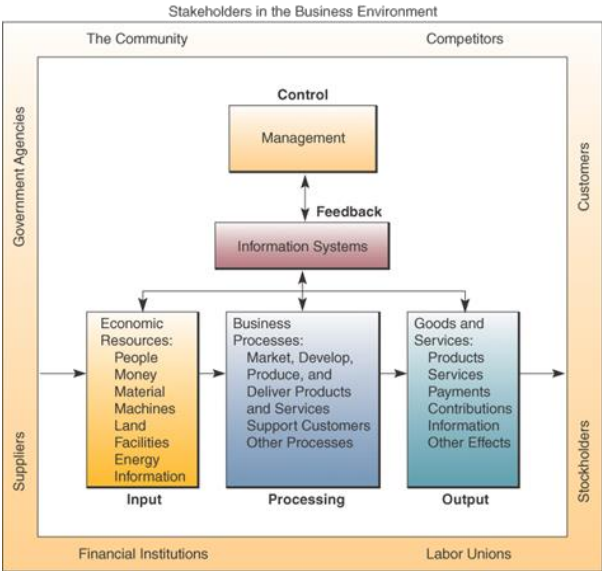
What is a System?

- A system is...
 - A set of interrelated components
 - With a clearly defined boundary
 - Working together
 - To achieve a common set of objectives
 - *By accepting inputs and producing outputs*
 - *In an organized transformation process*

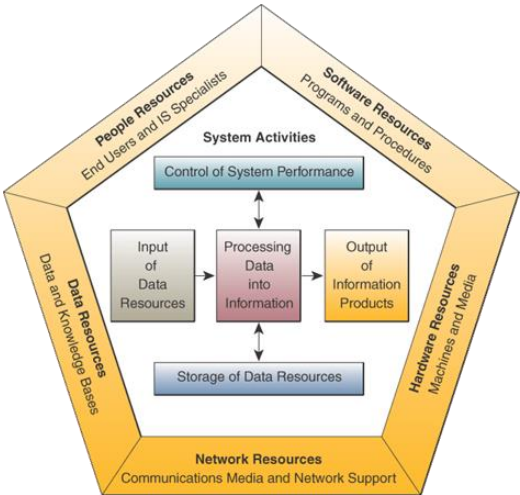
Basic Functions of a System

- Input
 - Capturing and assembling elements that enter the system to be processed
- Processing
 - Transformation process that converts input into output
- Output
 - Transferring transformed elements to their ultimate destination

A Business as a System



Components of an IS



Information System Resources

- People Resources
 - Specialists
 - End users
- Hardware Resources
 - Machines
 - Media
- Software Resources
 - Programs
 - Procedures

Information System Resources

- Data Resources
 - Product descriptions, customer records, employee files, inventory databases
- Network Resources
 - Communications media, communications processors, network access and control software
- Information Resources
 - Management reports and business documents using text and graphics displays, audio responses, and paper forms

Data Versus Information

- **Data** are raw facts about physical phenomena or business transactions
- **Information** is data that has been converted into meaningful and useful context for end users
- Examples:
 - Sales data is names, quantities, and euro amounts
 - Sales information is amount of sales by product type, sales territory, or salesperson

IS Activities

- **Input** of data resources
 - Data entry activities
- **Processing** of data into information
 - Calculations, comparisons, sorting, and so on
- **Output** of information products
 - Messages, reports, forms, graphic images
- **Storage** of data resources
 - Data elements and databases
- **Control** of system performance
 - Monitoring and evaluating feedback

Recognizing Information Systems

- Business professionals should be able to look at an information system and identify...
 - The people, hardware, software, data, and network resources they use
 - The type of information products they produce
 - The way they perform input, processing, output, storage, and control activities