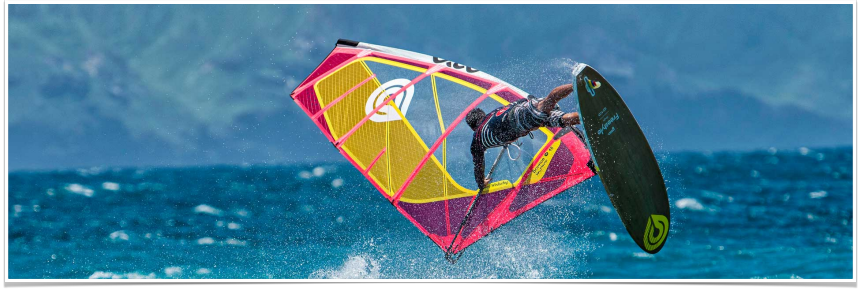


Master of International Business and Entrepreneurship

Ch 2: Information System Foundations

Information Systems for Managers

Learning Objectives

- Be able to define information system (IS) and information technology (IT). Understand the difference between the two.
- Be able to define information system success and information system failure.
- Be able to explain why modern firms create and deploy information systems.
- Be able to discuss the role that the firm's context and the external environment play in shaping organizational information systems.
- Be able to describe the four components that make up an information system. Understand how they interact through systemic effects.
- Be able to discuss how to design successful information systems.
- Be able to troubleshoot problematic information systems implementations.

Information Systems

Information Technology
≠
Information Systems

Information Technology[1] is a fundamental component of modern organizational Information Systems

[1] Information Technology: computer systems (HW/SW) and networking systems (HW/SW)

Failure

- System does not even see the light of day
- System is not used after implementation
- System does not fulfill intended information processing needs

	2013	2014	2015	2016
Average project cost (million)	$2.8	$4.5	$3.8	$1.3
Project Duration (months)	16.3	14.3	21.1	16.9
Late projects	72%	75%	57%	59%
Projects over budget	54%	55%	57%	74%

Adapted from Panorama Consulting 2011, 2015 and 2017 ERP Reports

Table 2.1. Some noteworthy systems failures in the recent history of business computing

Year	Company	Outcome
2013	French Ministry of Defense	Expected to enter service in 2017, Louvois—Logiciel unique à vocation interarmées de la solde—was supposed to simplify and unify the payment system for the French army's 130,000 members. The system was scrapped in November 2013 after consuming €346 million.
2013	NHS Connecting for Health (U.K.)	Originally expected to cost £2.3 billion over three years, in June 2006, the total cost was estimated to be £12.4 billion over 10 years. The system was abandoned in September 2013 despite already costing taxpayers £10 billion.
2012	Royal Bank of Scotland Group (U.K.)	A failed upgrade to the payment processing system left customers without access to their accounts for two weeks and disrupted customers' payments either incoming (i.e., wages) or outgoing (i.e., bills payments). The company was later fined £56 million over the accident.
2011	Allied Irish Banks (AIB)	AIB sued Oracle Financial Services Software for €84 million, plus damages and lost profits, claiming it wasted the money on a failed implementation of a new retail banking system.
2011	U.S. Federal Bureau of Investigation (FBI)	In 2001, the FBI started work on a criminal case management system called Virtual Case File. The project was scrapped four years (and $170 million) later. The project was restarted under the name Sentinel and, as of May 2011, was unfinished after five years in (and $402 million) in development.
2010 (2007)	AXA Rosenberg, a privately owned investment management company (U.S.)	A "coding error" led to underrepresented investing risk factors and resulted in investors losing a total of $217 million.
2010	Electronics retailer Dixons (U.K.)	Reiterated difficulties with its new eCommerce system were blamed for £15 million in lost revenue.
2009	Government of Victoria (Australia)	A smartcard ticketing system (called Myki), contracted in 2005 with AU$500 million budgeted, was rushed into operations (current cost: AU$1.3 billion) with limited functionality and still causes significant operational problems.
2009	Britain's National Health Service (NHS)	NHS scaled down its "Connecting for Health" program, designed to create the national electronics health record system, after investing an estimated £12 billion since the project began in 2002.
2008	Centrica, the largest utility supplier of gas to domestic U.K. customers	Centrica sued Accenture for £182 million in damages stemming from a collapse of customer service levels and loss of more than one million customers attributed to the failure of a "best-of-breed" customer billing system.
2008	J. Crew (U.S.)	Shares of the company fell more than 7% after the announcement of persistent website performance, order fulfillment, and call center performance problems leading to slowing sales trends, lower gross margins, and $3 million in unanticipated costs.
2007	LA Unified School District (LAUSD) (U.S.)	LAUSD discovered that, due to ongoing payroll system problems, it overpaid 36,000 employees by a total of $53 million.

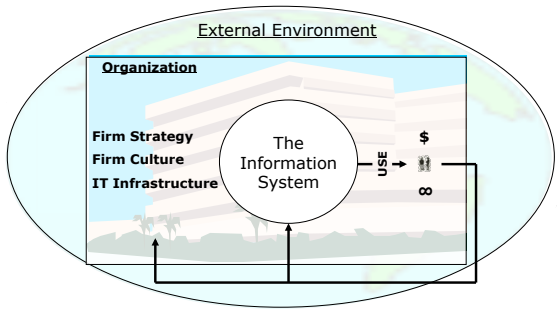
Table 2.1. Some noteworthy systems failures in the recent history of business computing (continued)

Year	Company	Outcome
2007	Palm Beach County (U.S.)	Palm Beach County evaluated scrapping a $13.6 million upgrade to its computer systems that took three-and-a-half years to develop (six months originally budgeted) due to an inability to operate with it.
2006	Child Support Agency (CSA) (U.K.)	The CSA was shut down in part due to the problem-ridden deployment of a £456 million IT system built by EDS.
2005	Hudson Bay Co. (Canada)	Problems with inventory system contributed to a $33.3 million loss.
2005	U.K. Inland Revenue	Software errors contributed to a $3.45 billion tax-credit overpayment.
2004	Avis Europe PLC (U.K.)	An enterprise resource planning (ERP) system was canceled after $54.5 million was spent.
2004	Ford Motor Co. (U.S.)	A purchasing system was abandoned after deployment, costing approximately $400 million.
2004	J Sainsbury PLC (U.K.)	A supply chain management system was abandoned after deployment, costing $527 million.
2004	Hewlett-Packard Co. (U.S.)	Problems with an ERP system contributed to a $160 million loss.
2003–2004	AT&T Wireless (U.S.)	Customer relations management (CRM) upgrade problems led to a revenue loss of $100 million.
2002	McDonald's Corp. (U.S.)	The Innovate information purchasing system was canceled after $170 million was spent.
2002	Sydney Water Corp. (Australia)	A billing system was canceled after $33.2 million was spent.
2002	CIGNA Corp. (U.S.)	Problems with a CRM system contributed to a $445 million loss.
2001	Nike Inc. (U.S.)	Problems with a supply chain management system contributed to a $100 million loss.
2001	Kmart Corp. (U.S.)	A supply chain management system was canceled after $130 million was spent.
2000	Washington, D.C. (U.S.)	A city payroll system was abandoned after deployment, costing $25 million.
1999	United Way (U.S.)	An administrative processing system was canceled after $12 million was spent.
1999	State of Mississippi (U.S.)	A tax system was canceled after $11.2 million was spent; the state received $185 million in damages.
1999	Hershey Foods Corp. (U.S.)	Problems with an ERP system contributed to a $151 million loss.
1998	Snap-on Inc. (U.S.)	Problems with an order-entry system contributed to a revenue loss of $50 million.
1997	U.S. Internal Revenue Service	A tax modernization effort was canceled after $4 billion was spent.
1997	State of Washington (U.S.)	A Department of Motor Vehicle (DMV) system was canceled after $40 million was spent.

Important Considerations

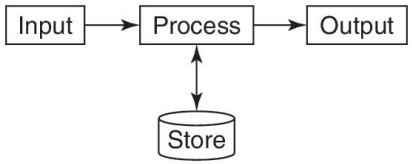
- Every organization is unique
- Even fierce competitors often have different:
  - Firm strategy: The manner in which the organization intends to achieve its objectives.
  - Firm culture: The collection of beliefs, expectations, and values shared by the members of an organization.
  - IT Infrastructure: The technological backbone of the firm. It constrains and enables opportunities for future information systems projects.

Information Systems in Organizational Context

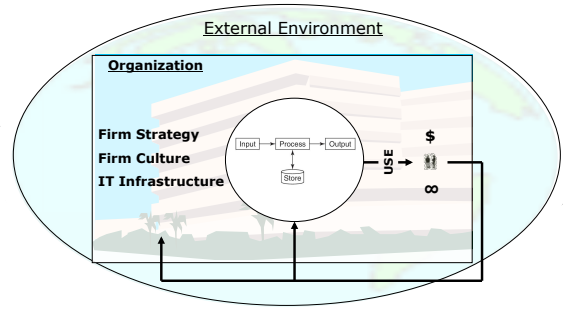


Purpose of Information Systems

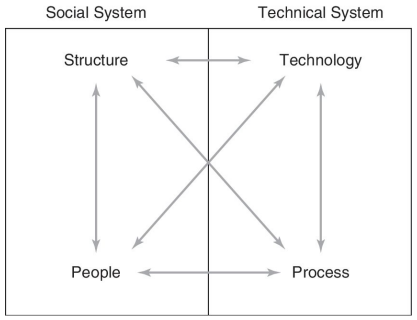
- Information Systems: Collect, process, store and distribute information
- Information Systems goals:
  - Fulfilling (specified) organizational information processing needs
  - Improve efficiency and effectiveness
  - Meet regulatory requirements
- Examples:
  - To increase the speed of customer check-out by using self-check out stations [Grocery store]
  - To improve movie suggestions and selection fo customers by using viewership data [Netflix]



Information Systems in Organizational Context



Socio-Technical Systems

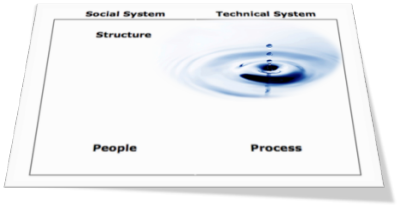


Systemic Effects

Socio-Technical Systems

Information Systems are formal, socio-technical, organizational systems designed to collect, process, store, and distribute information.

Information Technology[1] is a fundamental component of modern organizational Information Systems



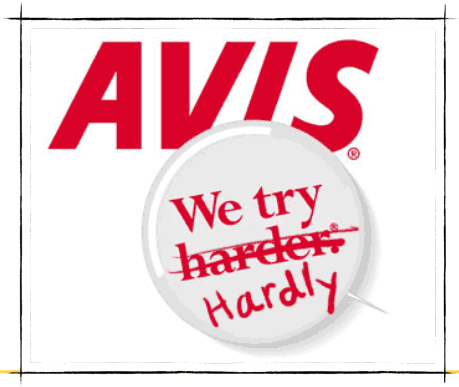
[1] IT is defined as computer systems (HW/SW) and networking systems (HW/SW)

The IT Component

- Hardware
  - Servers, laptops, smartphones
- Software
  - Microsoft Excel, Dropbox, Google search engine
- Telecommunication equipment
  - Internet routers, cellular towers

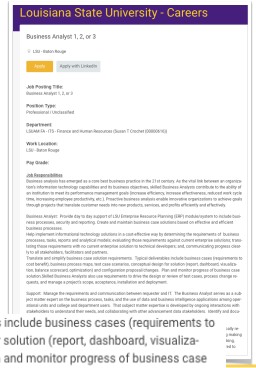
The Process Component

- The series of steps necessary to complete a business activity
- Examples:
  - Check-in at a hotel
  - Mortgage approval at a bank
  - Match-making on dating sites
- There are multiple equifinal ways to perform an activity
- Every process is designed



Business Process Modeling

- The activity of representing a business process so that it can be analyzed or communicated.
- Typically performed by business analysts
- It is necessary when business processes have to be supported by software.
- Example: Studying for a test.



Translate and simplify business case solution requirements. Typical deliverables include business cases (requirements to cost benefit), business process maps, test case scenarios, conceptual design for solution (report, dashboard, visualization, balance scorecard, optimization) and configuration proposal/changes. Plan and monitor progress of business case solution.Skilled Business Analysts also use requirements to drive the design or review of test cases, process change requests, and manage a project's scope, acceptance, installation and deployment.

The People Component

- Those individuals or groups directly involved in the information system
- They may contribute to collect, process and distribute the information
- They may be the recipients and intended users of the information
- Examples:
  - End-users
  - Customers
  - Managers

The Structure Component

- The organizational structure component encompasses:
  - The organizational design
    - Hierarchical or decentralized
  - The reporting configuration
    - Functional, divisional, matrix
  - Formal and informal organizational relationships
    - Lines of communication
    - Reward mechanisms
  - Culture and values

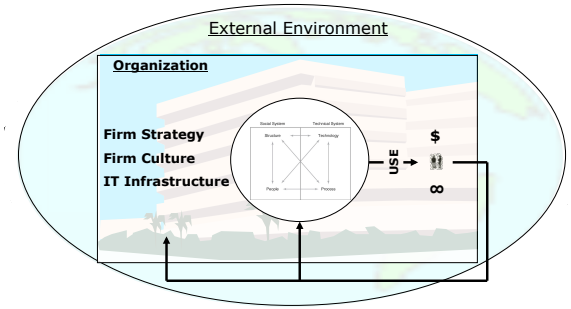
http://fortune.com/2011/08/29/rethinking-apples-org-chart/

Systemic Effects

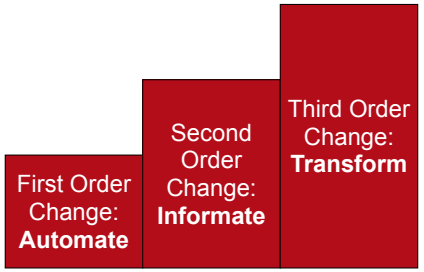
"Many companies rush out, buy software solutions, install them quickly, and then can't understand why the system failed. We look at what business issues exist, what people and processes pertain to that business issue, what those people do. Technology won't solve by itself – other components have to be part of the solution."

***Mark Hedley**, Former CIO, Wyndham International*

Information Systems

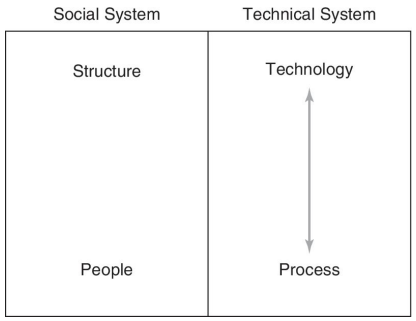


Information Systems and Organizational Change



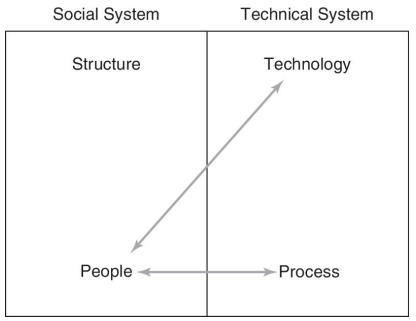
First Order Change: Automate

- First order change only affects the technical subsystem:
  - Easiest to envision
  - Easiest to justify
  - Easiest to manage



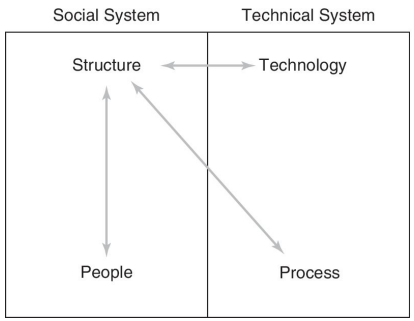
Second Order Change: Informate

- Second order change affects the people component
  - Employees
  - Customers
- It creates a greater implementation challenge



Third Order Change: Transform

- Third order change affects organizational structures
- It seeks to transform how the organization operates
- It requires significant managerial and executive involvement



Implications

- IT should NOT be the start of your Information System design process
  - Strategy may be inspired, not driven, by IT
  - IT selection is a point of arrival not departure
- Never forget Systemic Effects
  - Components of an IS mutually influence one another
- Anticipate the "ripples"
  - You must anticipate and proactively manage systemic effects

Implications

- IS evolve over time
  - Evaluate individual IS components regularly
- Optimize the Information System as a whole, not the components individually
- Organizations are dynamic
  - Re-evaluate often information systems fit

What We Learned

- Be able to define information system (IS) and information technology (IT). Understand the difference between the two.
- Be able to define information system success and information system failure.
- Be able to explain why modern firms create and deploy information systems.
- Be able to discuss the role that the firm's context and the external environment play in shaping organizational information systems.
- Be able to describe the four components that make up an information system. Understand how they interact through systemic effects.
- Be able to discuss how to design successful information systems.
- Be able to troubleshoot problematic information systems implementations.