



**Solvay Brussels School**  
Economics & Management

**GEST-H510**





## | Guest speaker – AMEYE Nicolas

### Current Career Summary

- Information Security consultant / researcher @ Innoviris
- Data Scientist / IS Consultant @ Eura Nova
- Academic researcher and Teaching Assistant @ iCite

### Expertise Summary

- Information Security Management
- Privacy and Data Protection
- Enterprise and IT Risk Management
- Project Management
- Cloud Computing Security
- Big Data Management

### Education / Certification

- PhD in Applied Economics
- Advanced Master in Innovation and Strategic Management
- Master in Business Engineering
- Master in Business Administration
- Prince2 Certification



## | Guest speaker – AMEYE Nicolas

### E-mail

- [nicolas.ameye@solvaypostgrad.net](mailto:nicolas.ameye@solvaypostgrad.net)



## | Agenda of the day

### **Information Systems in global business today**

- How are information systems transforming business ?
- Why are information systems so essential for running and managing a business today ?
- What is an information system? What are its management, organization, and technology components ?
- What are complementary assets and why are they essential for ensuring that information systems provide genuine value for organizations ?

### **Global e-Business and Collaboration**

- What are business processes? How are they related to information systems?
- How do systems serve the different management groups in a business and how do systems that link the enterprise improve organizational performance?
- Why are systems for collaboration and social business so important and what technologies do they use?
- What is the role of the information systems function in a business?







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# Information Systems in global business today



## | Agenda of the day

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## | The Role of Information Systems in Business Today

- **How information systems are transforming business ?**
  - Emerging mobile digital platform
  - Growing business use of “big data”
  - Growth in cloud computing
- **Globalization opportunities**
  - Internet has drastically reduces costs of operating on global scale
  - Increases in foreign trade, outsourcing
  - Present both challenges and opportunities



## | The Emerging Digital Firm

- **Digital Firm**

- Significant business relationships are digitally enabled and mediated.
  - Core business processes are accomplished through digital networks.
  - Key corporate assets are managed digitally.
- Digital firms **offer greater flexibility** in organization and management.
    - Time shifting, space shifting

*Organizations that have enabled core business relationships with employees, customers, suppliers, and other external partners through **digital** networks*





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### **Global e-Business and Collaboration**

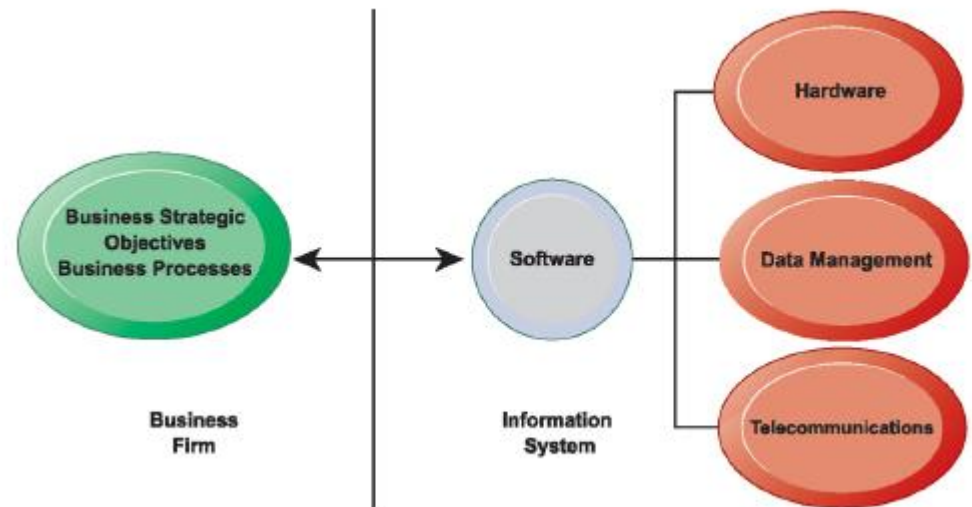
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## | Interdependence between Organizations and Information Systems

- **Strategic business objectives of information systems**

1. Operational Excellence
2. New products, services, and business models
3. Customer and supplier intimacy
4. Improved decision making
5. Competitive advantage
6. Survival



## | Interdependence between Organizations and Information Systems

- **Strategic business objectives of information systems**





## Operational Excellence

- Improvement of efficiency to attain higher profitability
- Information systems, technology an important tool in achieving **greater efficiency and productivity**
- Walmart's Retail Link system links suppliers to stores for superior replenishment system



## | Interdependence between Organizations and Information Systems

- **Strategic business objectives of information systems**





## New products, services, and businessmodels

- **Business model**

- describes how company produces, delivers, and sells product or service to create wealth
- Information systems and technology as major **enabling tool for new products, services and business models**



## | Interdependence between Organizations and Information Systems

- **Strategic business objectives of information systems**





## Customer and Supplier Intimacy

- **Serving customers well** leads to customers returning, which raises revenues and profits.
  - Example: High-end hotels that use computers to track customer preferences and used to monitor and customize environment
- **Intimacy with suppliers** allows them to provide vital inputs, which lowers costs.
  - Example: Tamago's information system which links sales forecast records to contract manufacturer



## | Interdependence between Organizations and Information Systems

- **Strategic business objectives of information systems**





## Improved Decision Making

- Without accurate information:
  - Managers must use forecasts, best guesses, luck
  - Results in:
    - Overproduction, underproduction
    - Misallocation of resources
    - Poor response times
  - Poor outcomes raise costs, lose customers
- Example: Verizon's Web-based **digital dashboard** to provide managers with real-time data on customer complaints, network performance, line outages, and so on





## | Interdependence between Organizations and Information Systems

- **Strategic business objectives of information systems**





## Competitive Advantage

- Delivering better performance
- Charging less for superior products
- Responding to customers and suppliers in real time
- Examples: Apple, Walmart, UPS



## | Interdependence between Organizations and Information Systems

- **Strategic business objectives of information systems**





## Survival

- Information technologies as necessity of business
- Industry-level changes
  - Example: Citibank's introduction of ATMs
- Governmental regulations requiring record-keeping
  - Example: Pharmaceutical sector



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## | What is an Information System

- **Information System :**
- <https://www.youtube.com/watch?v=Qujsd4vkqFI>



## | What is an Information System

- **Information System :**

- Set of interrelated components
- Collect, process, store, and distribute information
- Support decision making, coordination, and control

- **Information vs. data**

- Data are streams of raw facts.
- Information is data shaped into meaningful form.

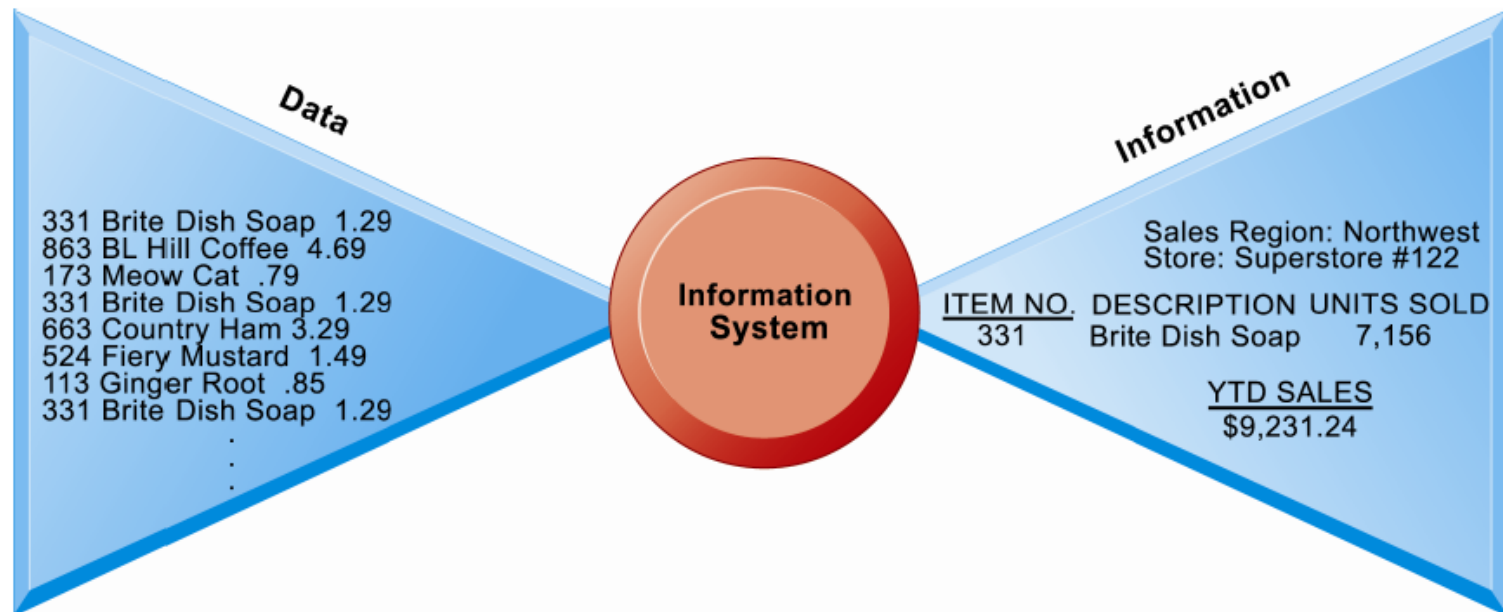
Company ▼	Stock Price
Activision Blizzard Inc (ATVI)	34.31
Alibaba Group Holding Ltd (BABA)	75.74
Amazon (AMZN)	671.14
Apple (AAPL)	94.21
ARM Holdings PLC (ARMH)	40.33
AT&T (T)	38.88
Baidu (BIDU)	177.19

Raw data



## | What is an Information System

- Transforming data to Information



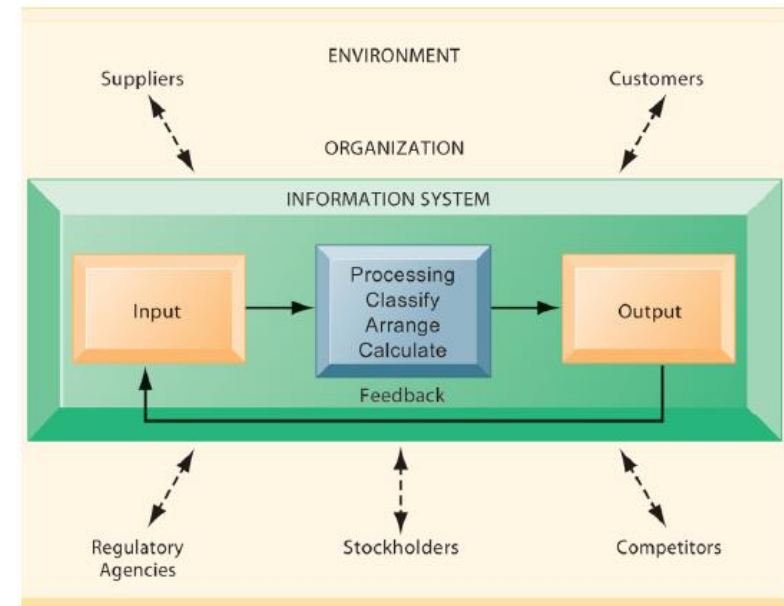
## | Functions of an Information System

- <https://www.youtube.com/watch?v=G7eKpCon1og>



## | Functions of an Information System

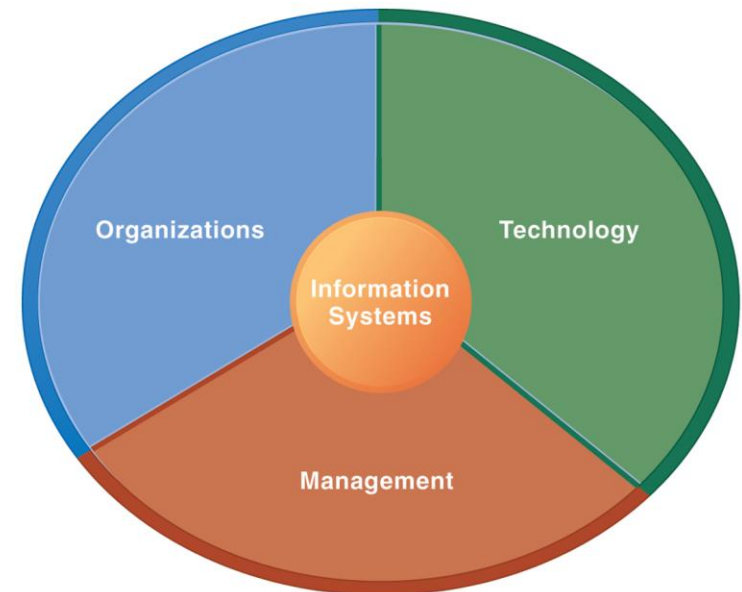
- An information system contains information about an organization and its surrounding environment.
- Three basic activities—**input**, **processing**, and **output**—produce the information organizations need.
- **Feedback** is output returned to appropriate people or activities in the organization to evaluate and refine the input.
- **Environmental actors**, such as customers, suppliers, competitors, stockholders, and regulatory agencies, interact with the organization and its information systems.





## | Dimensions of an Information System

- **Organizations**
  - Separation of business functions
  - Unique business processes
  - Unique business culture
- **Management**
  - Respond to business challenge
  - Re-create the organization from time to time
- **Technology**
  - Hardware – Software
  - Data management technology
  - Networking and telecommunication technology



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## | Business perspective on Information Systems

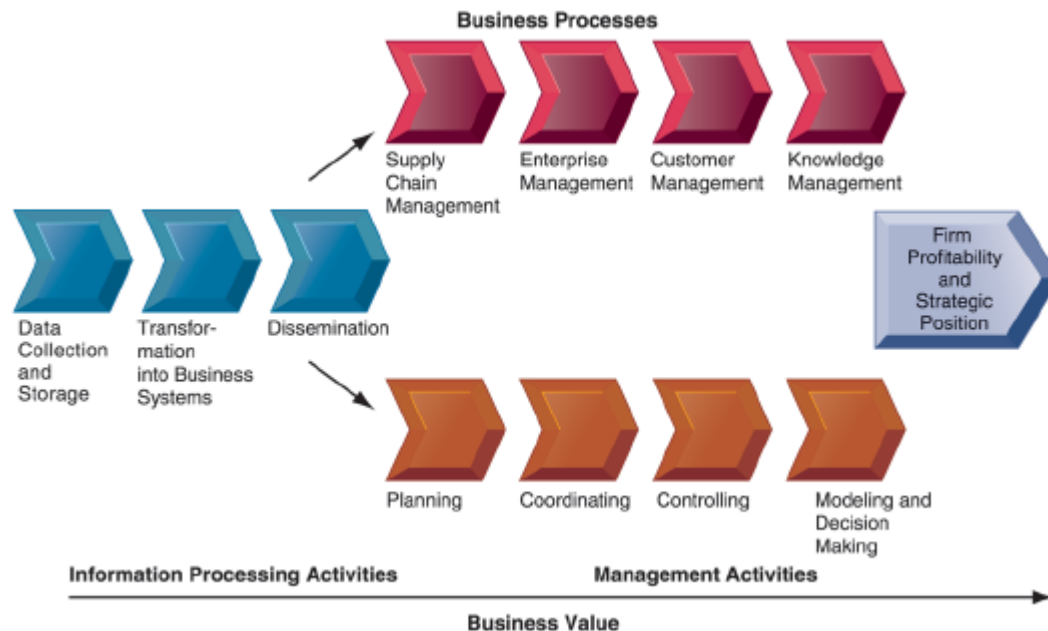
- **Information system is an instrument for creating value**
- Investments in information technology will result in superior returns:
  - Productivity increases
  - Revenue increases
  - Superior long-term strategic positioning
- **Business information value chain**
  - Raw data acquired and transformed 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 on Information Systems

### • Business information value chain

- From a business perspective, information systems are part of a series of value-adding activities for acquiring, transforming, and distributing information that managers can use to improve decision making, enhance organizational performance, and, ultimately, increase firm profitability.



## | Business perspective on Information Systems

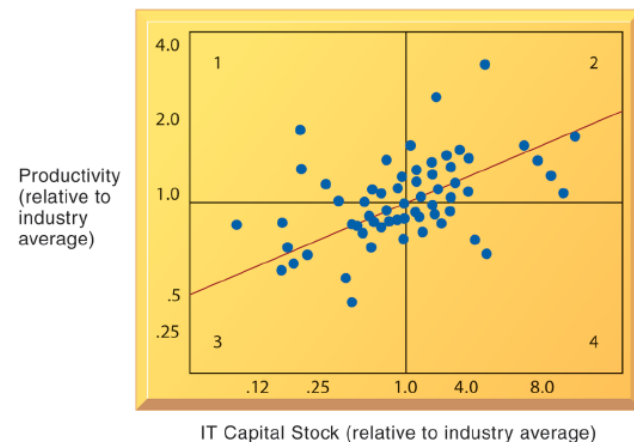
- **There are some challenges**

- 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 (organizational and management capital)

- **Variations in Returns on Information Technology Investments**



## | Complementary Assets

- Includes
  - Organizational assets, for example:
    - Appropriate business model
    - Efficient business processes
  - Managerial assets, for example:
    - Incentives for management innovation
    - Teamwork and collaborative work environments
  - Social assets, for example:
    - The Internet and telecommunications infrastructure
    - Technology standards







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# Global e-Business and Collaboration



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## | Business Processes and Information Systems

- Business processes:
  - <https://www.youtube.com/watch?v=NXbGlIFidA>
  - <https://www.youtube.com/watch?v=3iAp9me4P1c>



## | Business Processes and Information Systems

- Business processes:
  - Flows of material, information, knowledge
  - Sets of activities, steps
  - May be tied to functional area or be cross-functional
- Businesses: Can be seen as collection of business processes
- Business processes may be assets or liabilities



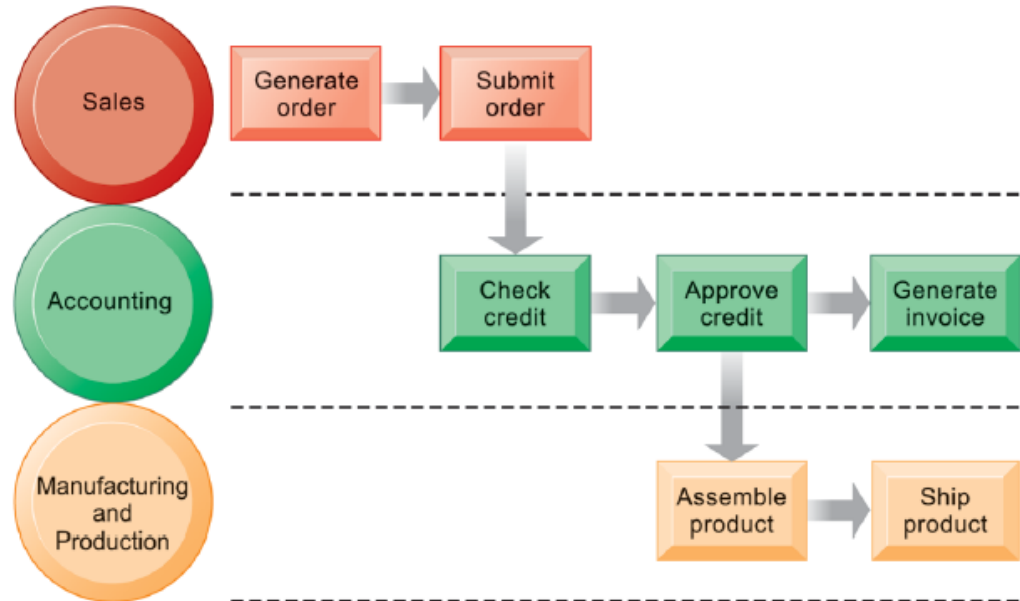
## | Business Processes and Information Systems

- Examples of functional business processes
  - Manufacturing and production
  - Assembling the product
  - Sales and marketing
  - Identifying customers
  - Finance and accounting
  - Creating financial statements
  - Human resources
  - Hiring employees



## | Business Processes and Information Systems

- Example : The Order Fulfillment Process



### | How Information Technology improves Business Processes

- Information technology enhances business processes in two main ways:
  1. Increasing efficiency of existing processes
    - Automating steps that were manual
  2. Enabling entirely new processes
    - Change flow of information
    - Replace sequential steps with parallel steps
    - Eliminate delays in decision making
    - Support new business models



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## | Types of Information Systems

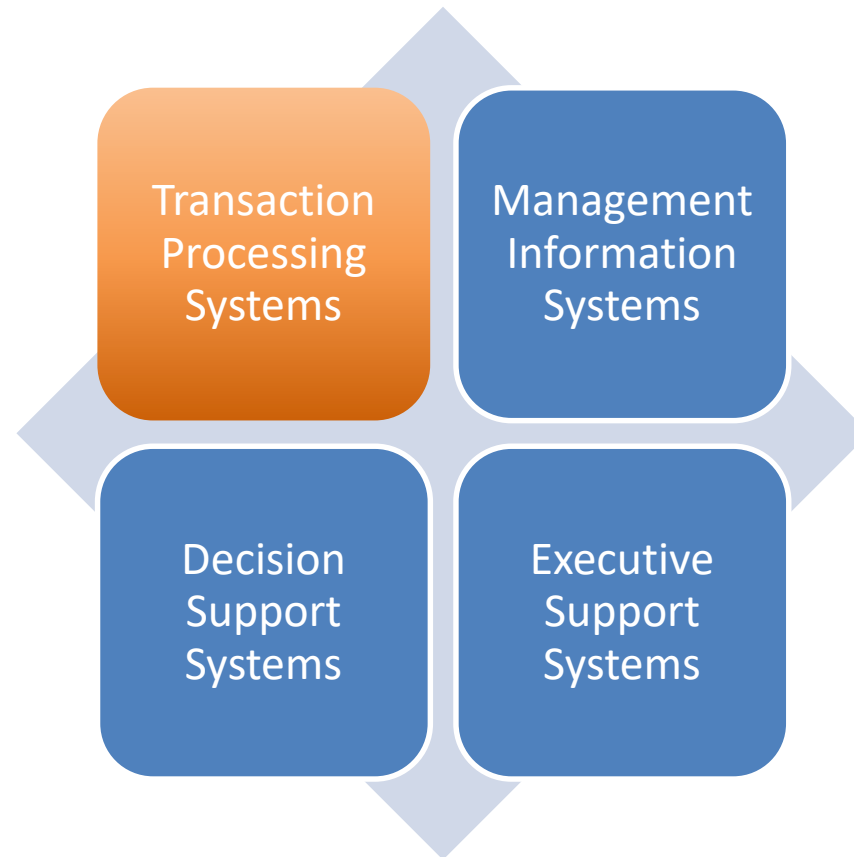
### **Four major Types of Systems :**

1. Transaction Processing Systems (TPS)
2. Management Information Systems (MIS)
3. Decision Support Systems (DSS)
4. Executive Support Systems (ESS)



## | Types of Information Systems

**Four major Types of Systems :**





## | Types of Information Systems

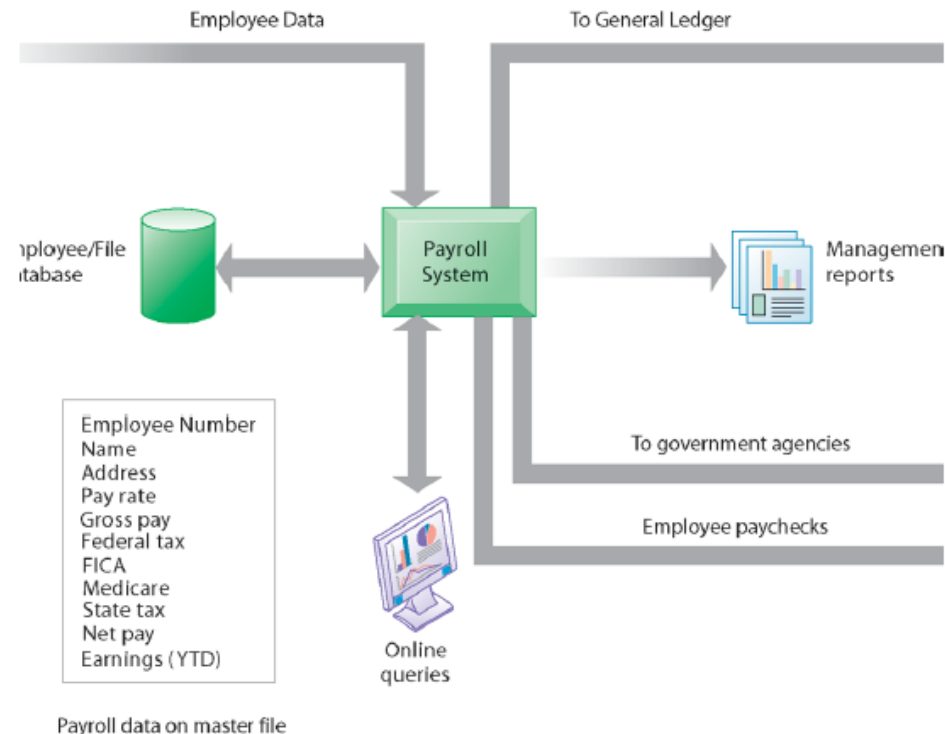
- **Transaction processing systems**

- Serve operational managers and staff
  - **Perform and record daily routine transactions** necessary to conduct business
    - Examples: sales order entry, payroll, shipping
  - Allow managers to monitor status of operations and relations with external environment
  - Serve predefined, structured goals and decision making
- 
- Transaction processing systems: **supporting operational level employees**



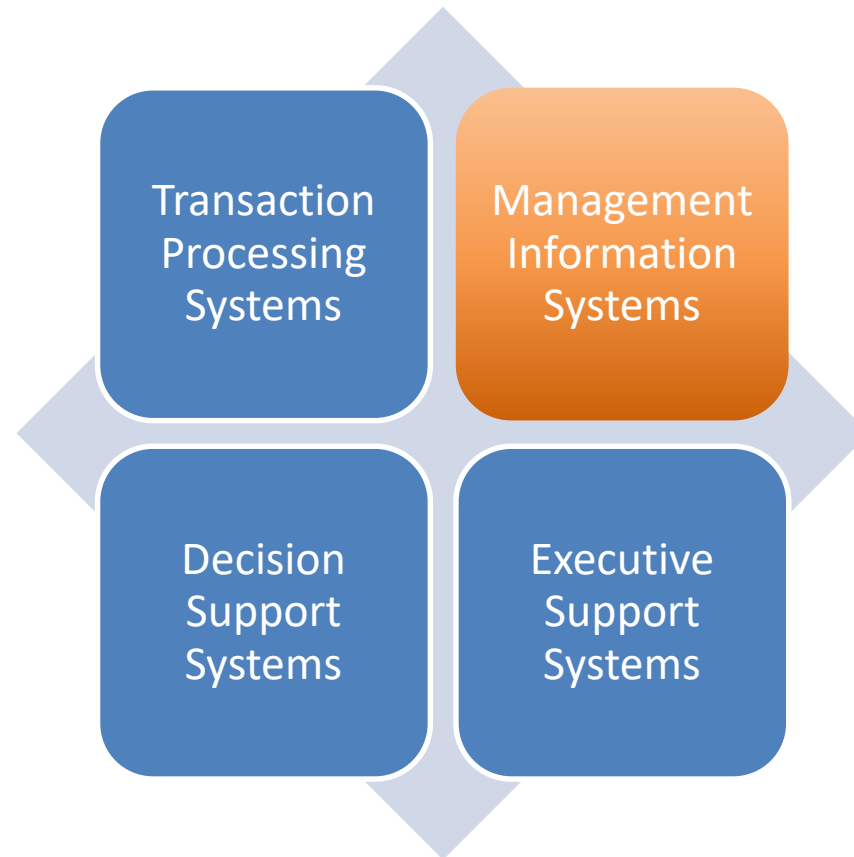
## | Types of Information Systems

- Example of Transaction processing systems
  - A TPS for payroll processing captures employee payment transaction data (such as a time card). System outputs include online and hard-copy reports for management and employee paychecks.



## | Types of Information Systems

**Four major Types of Systems :**



## | Types of Information Systems

- Systems for Business Intelligence
  - Business Intelligence:
    - Data and software tools for organizing and analyzing data
    - Used to help managers and users make improved decisions
  - Business Intelligence Systems:
    - Management information systems
    - Decision support systems
    - Executive support systems



## | Types of Information Systems

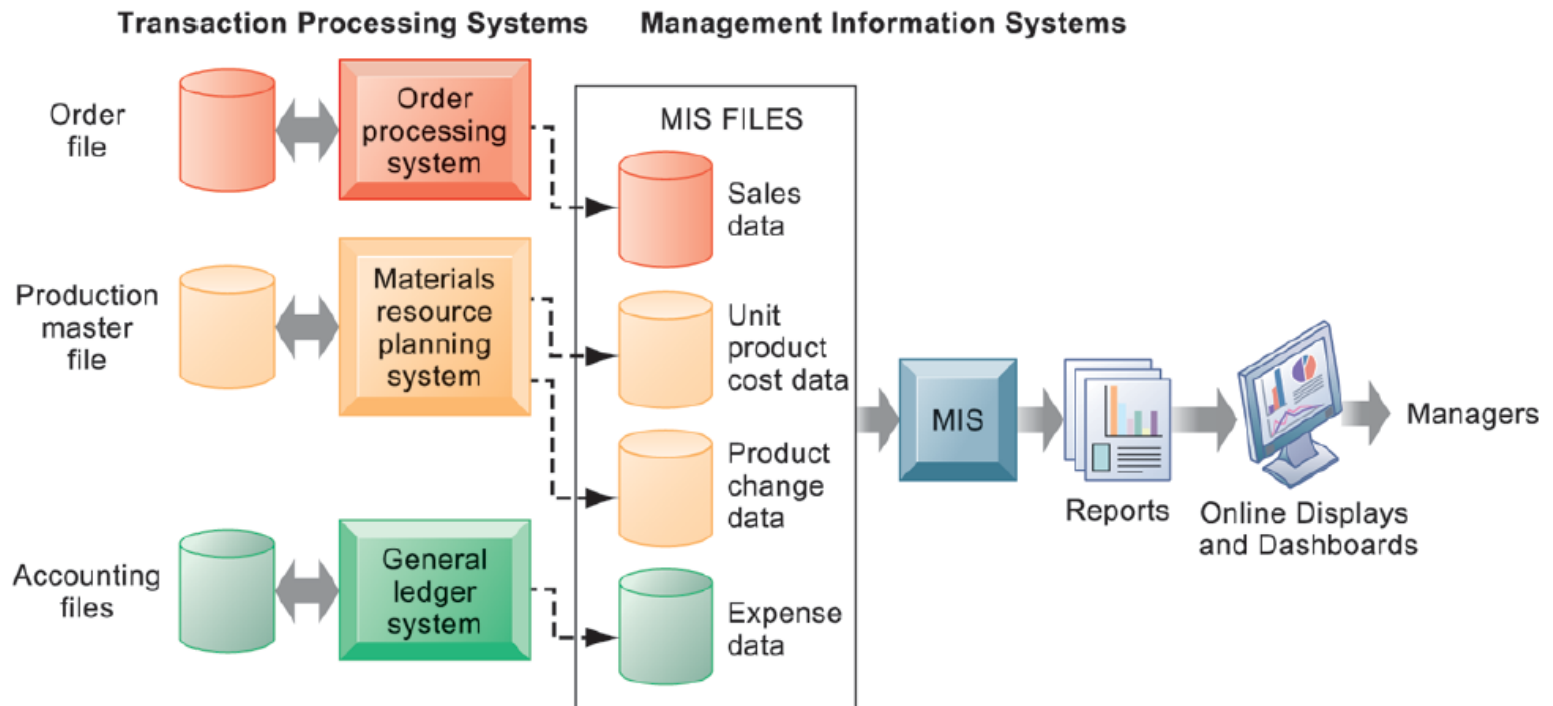
- **Management Information Systems**

- Serve middle management
- Provide reports on firm's current performance, based on data from TPS
- Provide answers to routine questions with predefined procedure for answering them
- Typically have little analytic capability
- Management information systems : **supporting managers**



## | Types of Information Systems

- Management Information Systems



## | Types of Information Systems

- **Management Information Systems**
  - Sample MIS Report

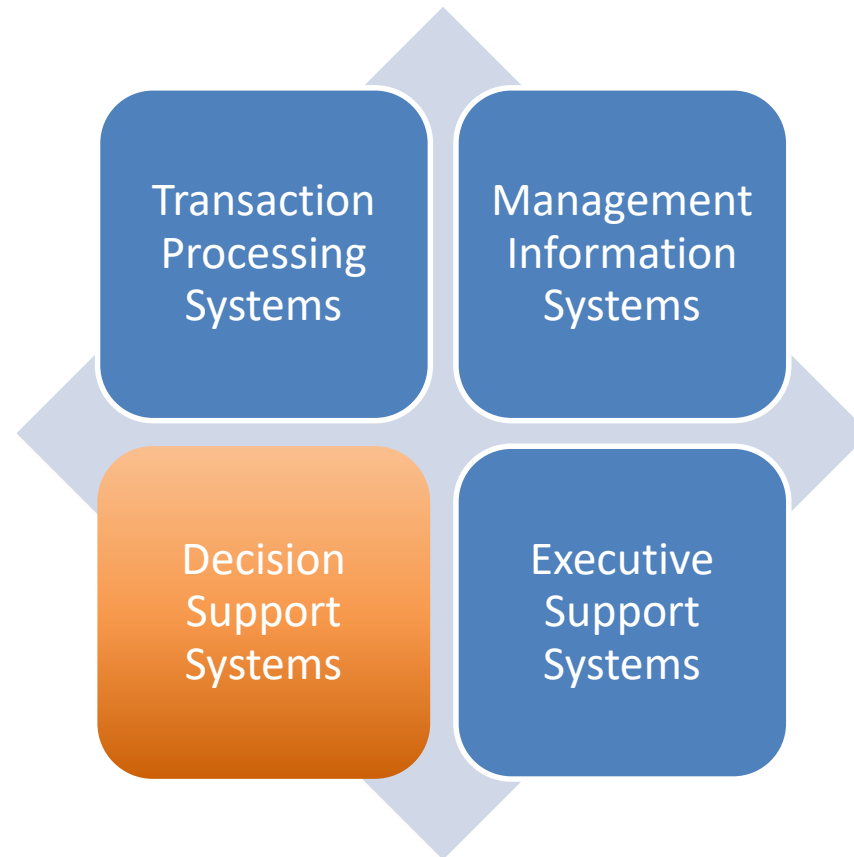
Consolidated Consumer Products Corporation Sales by Product and Sales Region: 2015

PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL versus PLANNED
4469	Carpet Cleaner	Northeast	4,066,700	4,800,000	0.85
		South	3,778,112	3,750,000	1.01
		Midwest	4,867,001	4,600,000	1.06
		West	4,003,440	4,400,000	0.91
		TOTAL	16,715,253	17,550,000	0.95
5674	Room Freshener	Northeast	3,676,700	3,900,000	0.94
		South	5,608,112	4,700,000	1.19
		Midwest	4,711,001	4,200,000	1.12
		West	4,563,440	4,900,000	0.93
		TOTAL	18,559,253	17,700,000	1.05



## | Types of Information Systems

**Four major Types of Systems :**





## | Types of Information Systems

- **Decision Support Systems**

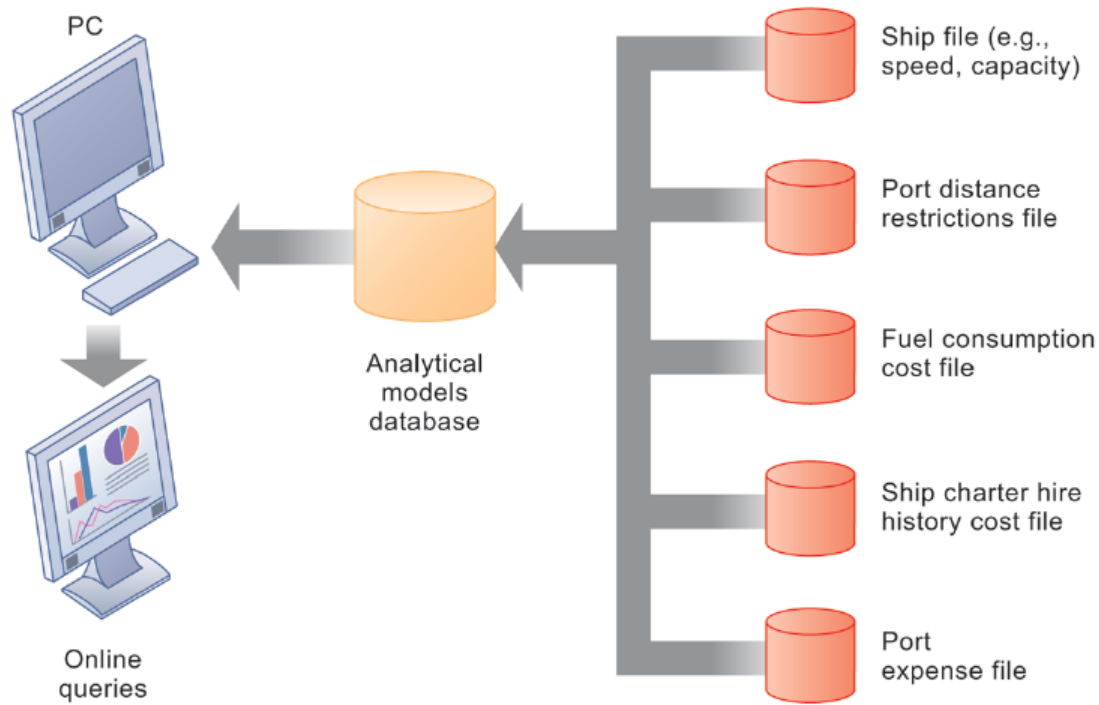
- Serve middle management
- Support non-routine decision making
  - Example: What is impact on production schedule if December sales doubled?
- Often use external information as well from TPS and MIS
- Model driven DSS
  - Voyage-estimating systems - <https://goo.gl/0rtZKy>
- Data driven DSS
- Decision-support systems: **supporting managers**



## | Types of Information Systems

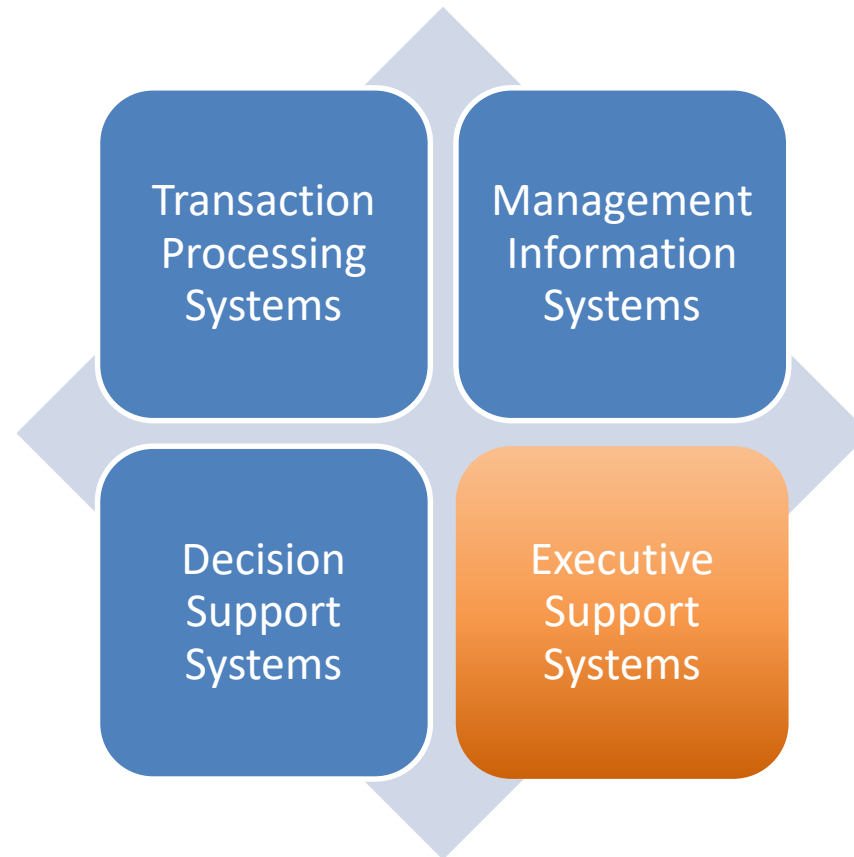
- **Decision Support Systems**

- Voyage-Estimation Decision Support System



## | Types of Information Systems

**Four major Types of Systems :**



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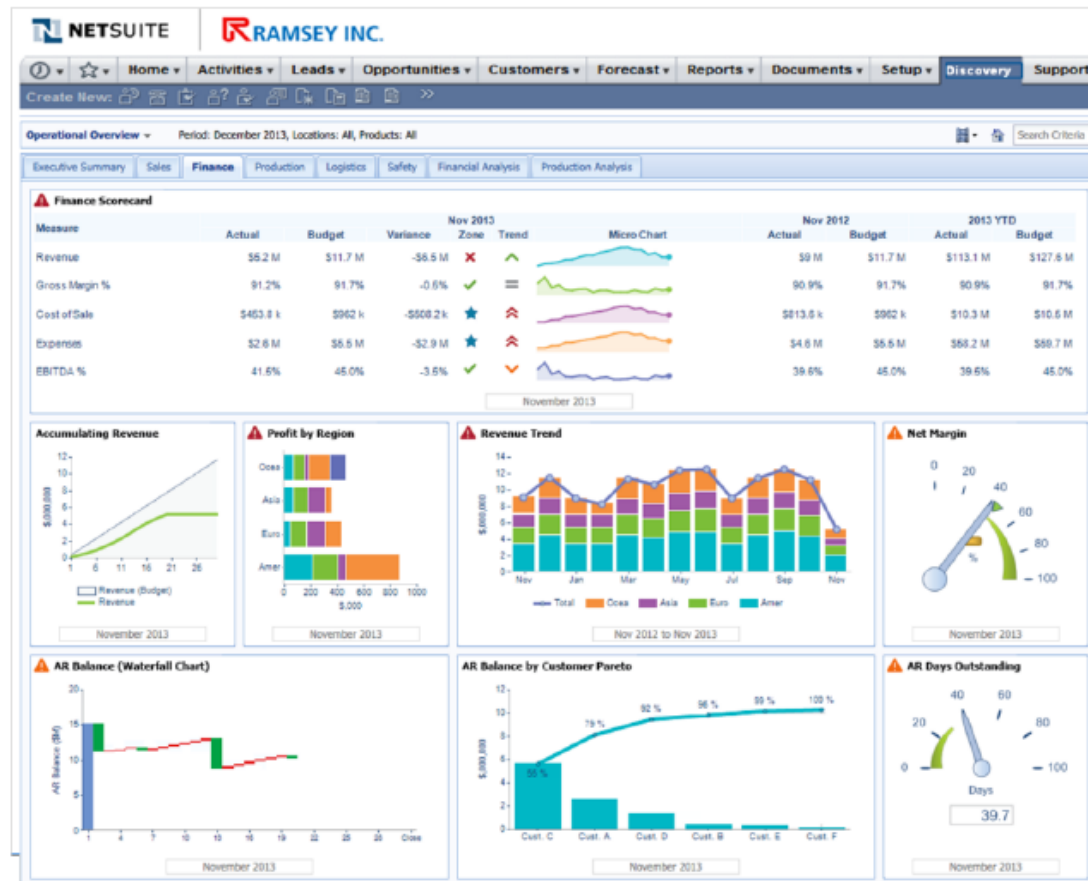
- **Executive Support Systems**

- Support senior management
- Address nonroutine decisions
- Requiring judgment, evaluation, and insight
- Incorporate data about external events (e.g., new tax laws or competitors) as well as summarized information from internal MIS and DSS
- Example: Digital dashboard with real-time view of firm's financial performance: working capital, accounts receivable, accounts payable, cash flow, and inventory
- Executive support systems : **supporting executives**



## | Types of Information Systems

- Executive Support Systems



## | Linking the Enterprise

- **Enterprise applications**

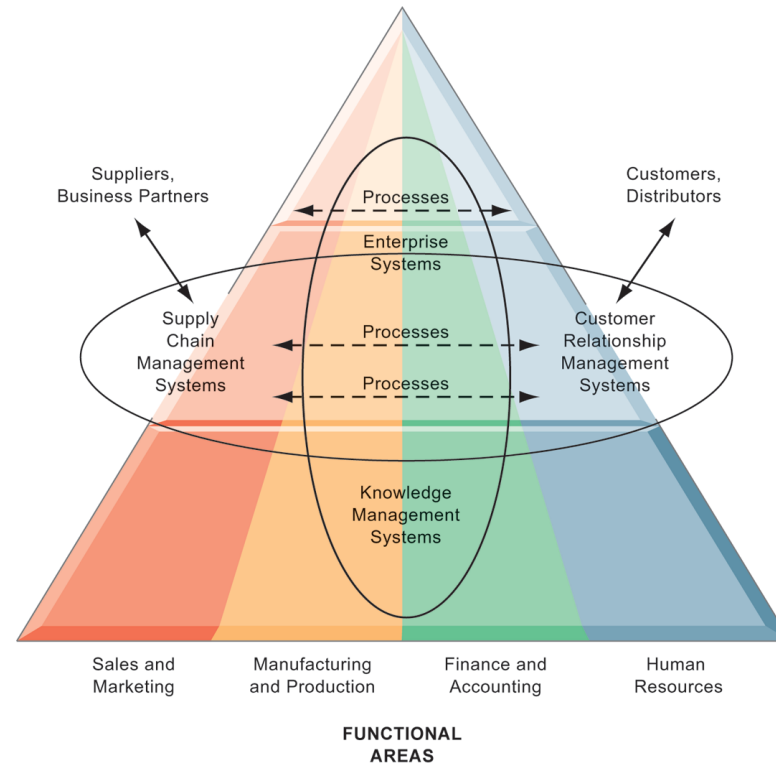
- Systems for linking the enterprise
  - Span functional areas
  - Execute business processes across firm
  - Include all levels of management
- 
- Four major applications:
    1. Enterprise systems
    2. Supply chain management systems
    3. Customer relationship management systems
    4. Knowledge management systems



## | Linking the Enterprise

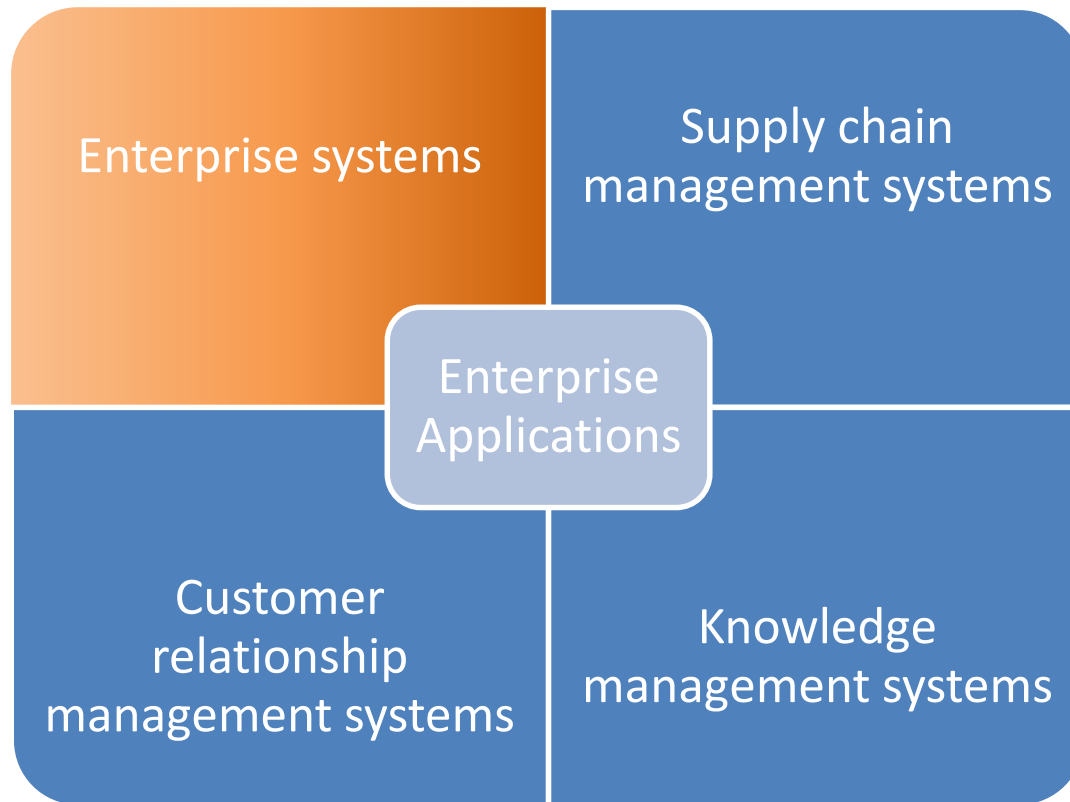
- **Enterprise applications**

- Enterprise applications automate processes that span multiple business functions and organizational levels and may extend outside the organization.
- Architecture :



## | Linking the Enterprise

- Enterprise applications





## | Enterprise Applications

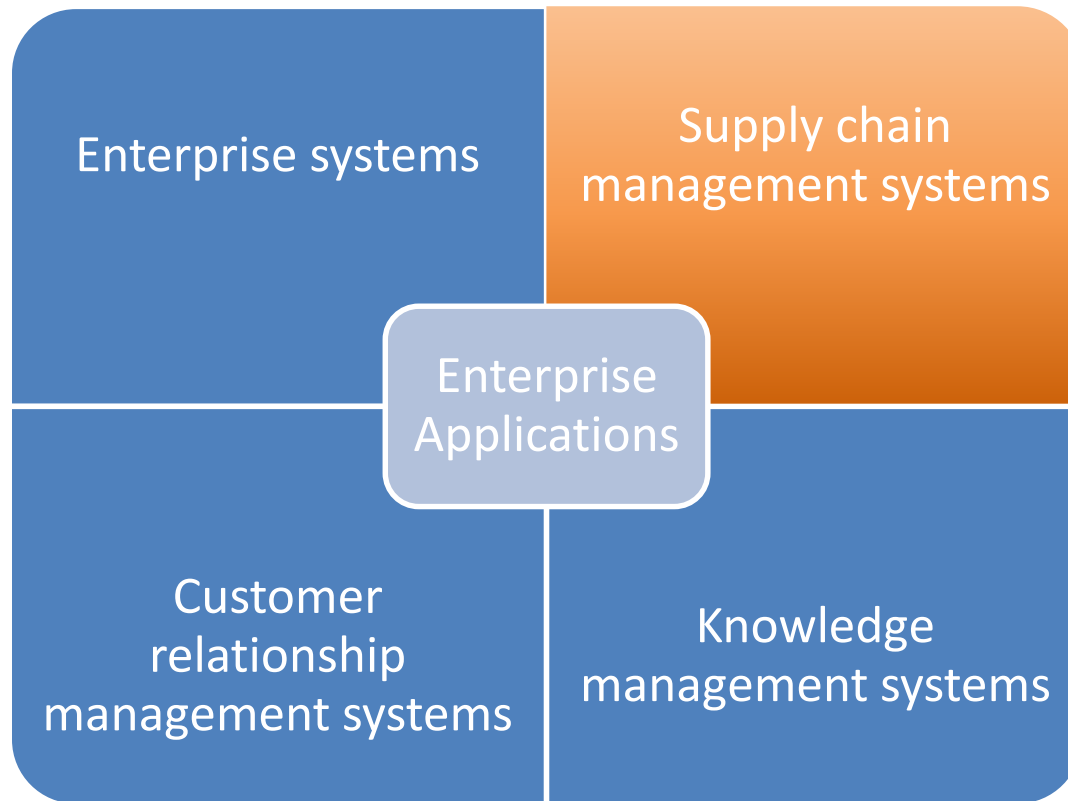
### Enterprise Systems

- Collects data from different firm functions and stores data in single central data repository
- Resolves problem of fragmented data
- Enable:
  - Coordination of daily activities
  - Efficient response to customer orders (production, inventory)
  - Help managers make decisions about daily operations and longer-term planning



## | Linking the Enterprise

- Enterprise applications



## | Enterprise Applications



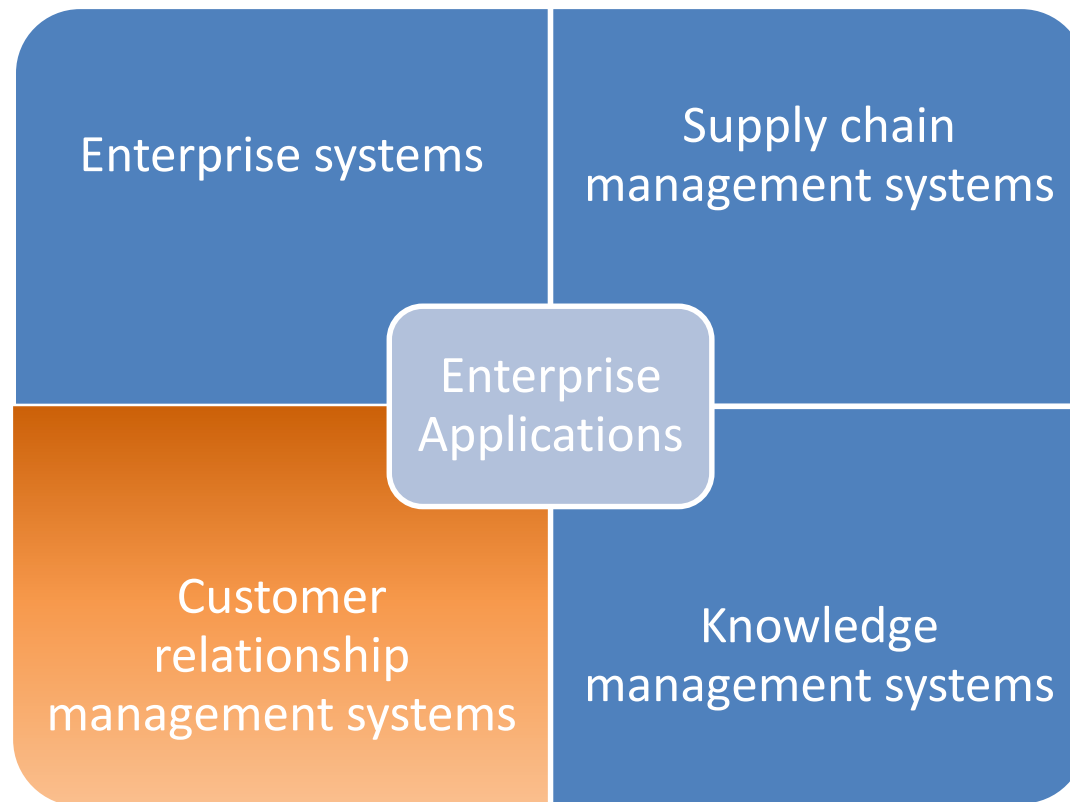
### Supply Chain Management (SCM) Systems

- Manage firm's relationships with suppliers
- Share information about:
  - Orders, production, inventory levels, delivery of products and services
- Goal:
  - Right amount of products to destination with least amount of time and lowest cost



## | Linking the Enterprise

- Enterprise applications



## | Enterprise Applications

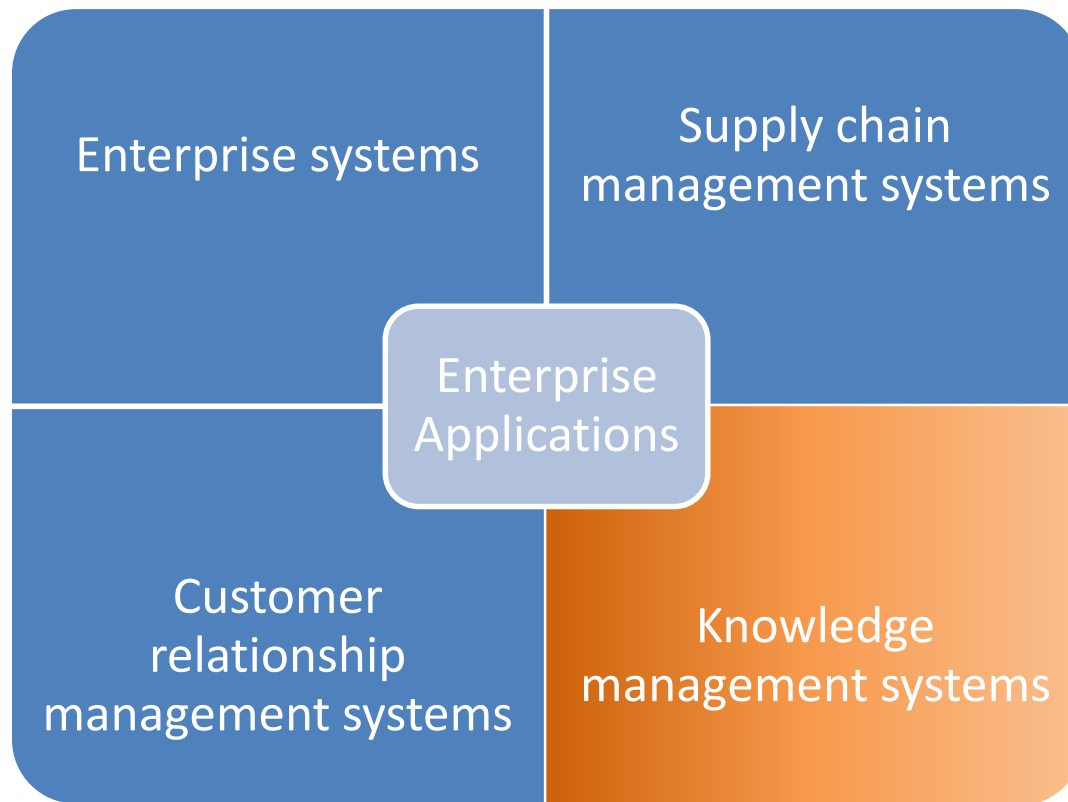
### Customer Relationship Management (SCM) Systems

- Provide information to coordinate all of the business processes that deal with customers
  - Sales
  - Marketing
  - Customer service
- Helps firms identify, attract, and retain most profitable customers
- <https://goo.gl/rJn1dV>



## | Linking the Enterprise

- Enterprise applications



## | Enterprise Applications

### Knowledge Management (KMS) Systems

- Support processes for capturing and applying knowledge and expertise
  - How to create, produce, deliver products and services
- Collect internal knowledge and experience within firm and make it available to employees
- Link to external sources of knowledge



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## | Systems for collaboration

- Collaboration:
  - Short lived or long term
  - Informal or formal (teams)
- Growing importance of collaboration:
  - Changing nature of work
  - Growth of professional work—“interaction jobs”
  - Changing organization of the firm
  - Changing scope of the firm
  - Emphasis on innovation
  - Changing culture of work



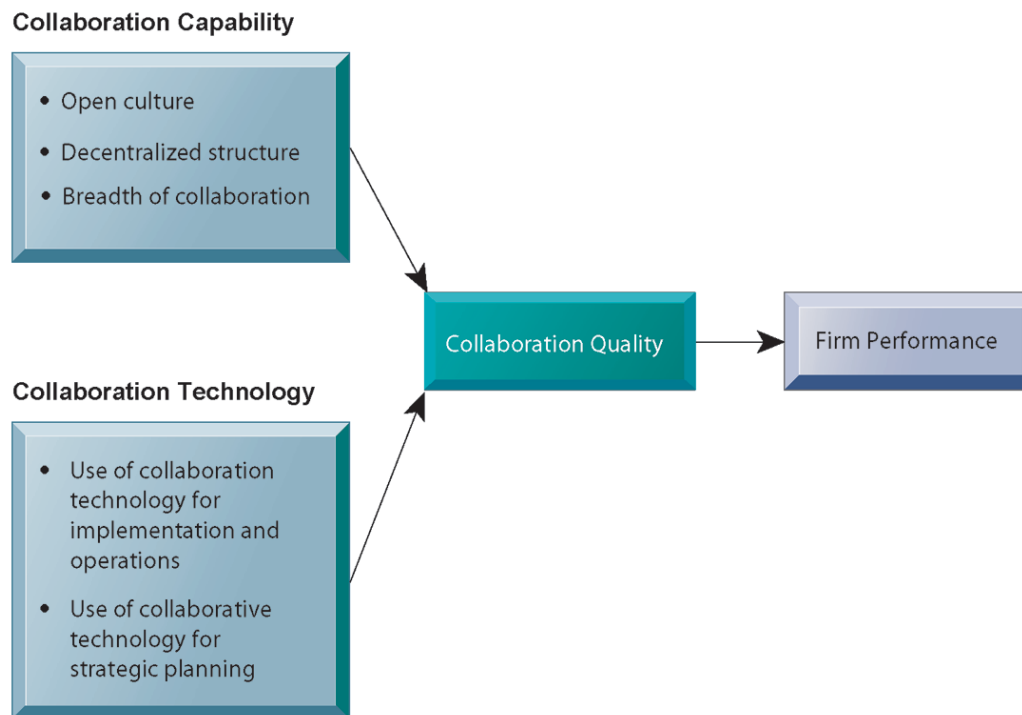
## | Systems for collaboration

- Benefits of collaboration and teamwork
  - Investments in collaboration technology can bring organization improvements, returning high ROI
  - Benefits:
    - Productivity
    - Quality
    - Innovation
    - Customer service
    - Financial performance
      - Profitability, sales, sales growth



## | Systems for collaboration

- Requirements for collaboration
  - Successful collaboration requires an appropriate organizational structure and culture, along with appropriate collaboration technology.



## | Systems for collaboration

- Tools for collaboration
  - E-mail and instant messaging
  - Wikis
  - Virtual worlds
  - Collaboration and social business platforms
  - Virtual meeting systems (telepresence)
  - Cloud collaboration services (Google Tools, cyberlockers)
  - Microsoft SharePoint
- Learn how Hitachi Uses Social Business
  - <https://goo.gl/DnSXhm>



## | Systems for collaboration

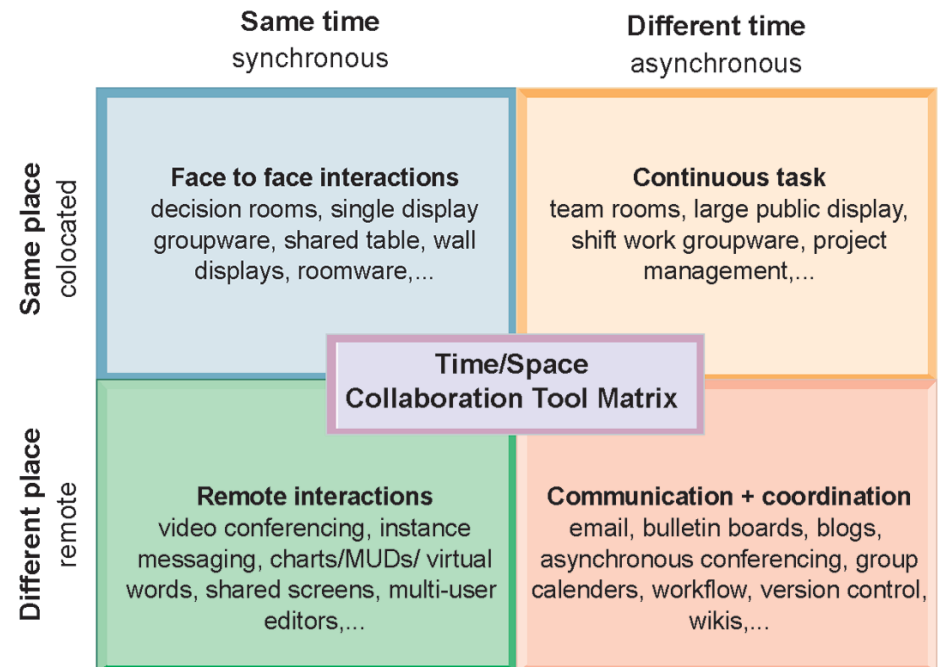
- Two dimensions of collaboration technologies
  - Space (or location)—remote or co-located
  - Time—synchronous or asynchronous
- Six steps in evaluating software tools
  - What are your firm's collaboration challenges?
  - What kinds of solutions are available?
  - Analyze available products' cost and benefits.
  - Evaluate security risks.
  - Consult users for implementation and training issues.
  - Evaluate product vendors.



## | Systems for collaboration

- The Time/Space Collaboration Tool Matrix

Collaboration technologies can be classified in terms of whether they support interactions at the same or different time or place or whether these interactions are remote or co-located.



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## | Role of Information Systems Function in a Business

- The Information Systems Department is the formal Organizational Unit responsible for IT services
- The IS department is responsible for maintaining the ...
  - Computer Hardware
  - Software
  - Data Storage
  - Network... that comprises the firm's IT infrastructure







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