

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



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MIS

Management Information System



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Module I

Foundation Concept



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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**
- One system can be made up of other systems or can be part of a bigger system



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Business as a System

- A business can be viewed as a system. This system does not operate in a vacuum rather it functions in an environment containing other systems.
- A business is an **open system** in that it interacts with other systems in the environment.
- It is also an **adaptive system** in that it can change itself or its environment in order to survive.



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Data Vs. 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**
- Example:
 - Sales data is names, quantities and dollar amounts
 - Sales information is amount of sales by product type, sales territory or salesperson



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Information Technology

Information Technology refers to the various hardware and software components necessary for the information system to operate



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What is an Information System?

An organized combination of **people** , **hardware**, **software**, **communications networks**, **data resources**, **policies and procedures** that **stores**, **retrieves**, **transforms**, and **disseminates** information in an organization



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Information System (IS) Vs. Information Technology (IT)

- **IS** is all the components and resources necessary to deliver information and functions to the organization
- **IT** is hardware, software, networking and data management
- In theory, IS could be paper based
- But we will focus on Computer-Based Information Systems (**CBIS**), which is also known as Management Information System (**MIS**)



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Objective of MIS

Right Information to the

Right Person at the

Right Time



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History of IS

Year	Main activities
1970s	• Mainframe computers were used • Computers and data were centralized • Systems were tied to a few business functions: transaction processing, record keeping etc.



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History of IS

Year	Main activities
1980s	• PCs and LANs are installed • Departments set up own computer systems • End-user computing with Word Processors and Spreadsheets makes departments less dependent on the IT department



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History of IS

Year	Main activities
1990s	• Wide Area Networks (WANs) become corporate standards • Senior management looks for system integration and data integration. No more stand-alone systems.



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History of IS

Year	Main activities
2000s	• Wide Area Networks expand via the Internet to include global enterprises and business partners • Senior management looks for data sharing across systems.



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Technologies Used

- Computer Hardware Technologies
- Computer Software Technologies
- Telecommunications Network Technologies
- Data Resource Management Technologies



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Why study IS & IT

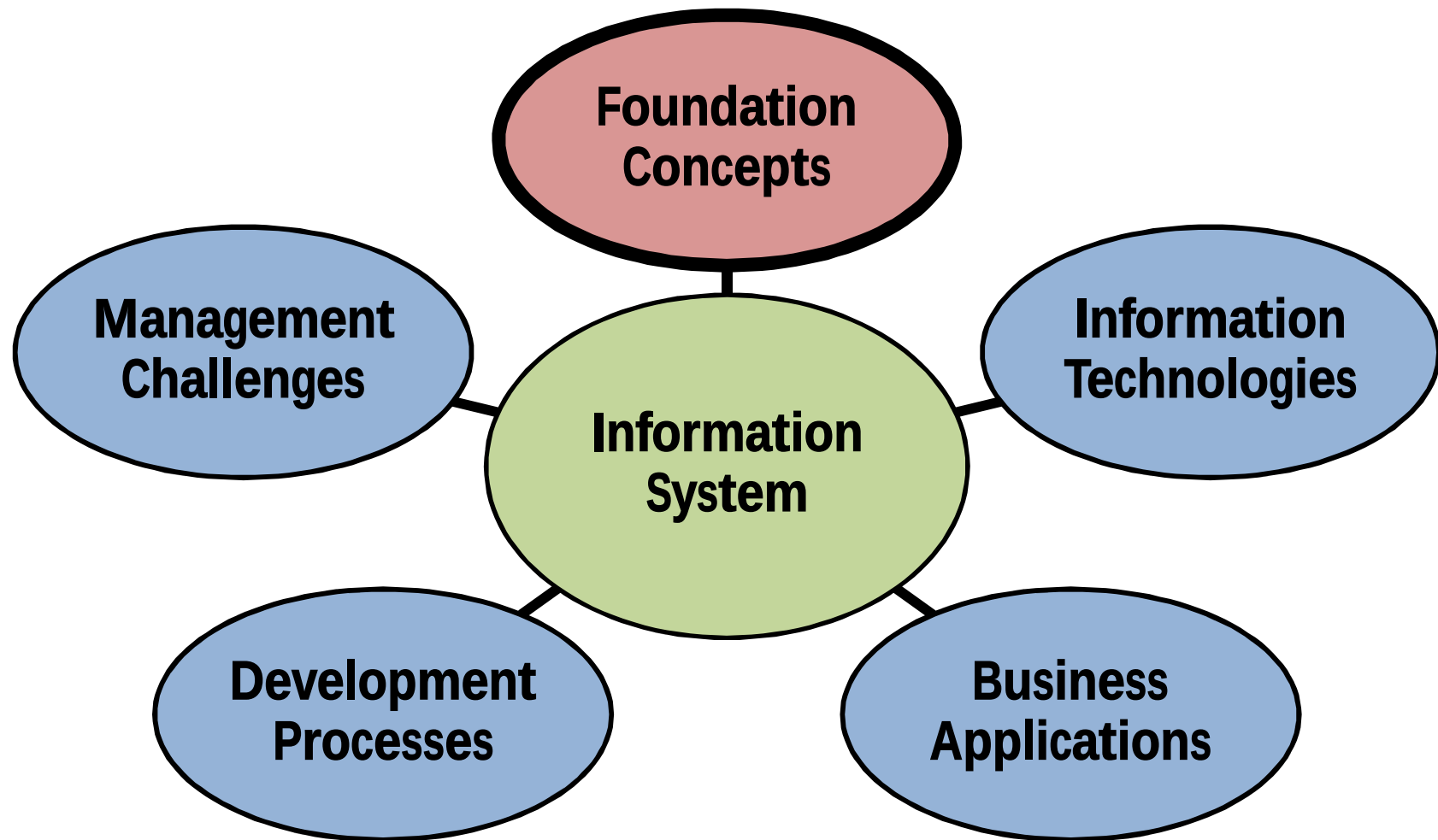
- Vital component of successful businesses
- Helps businesses expand and compete
- Businesses use IS and IT
 - To **improve efficiency** and **effectiveness** of business processes
 - For managerial **decision making**
 - For workgroup **collaboration**



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IS Knowledge Framework for Business Professionals



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IS Knowledge Framework for Business Professionals

Foundation Concepts:

- fundamental behavioral, technical, business and managerial concepts

Information Technology:

- Hardware, software, networks, data management and Internet-based technology

Business Applications:

- Major uses of the IS in the organization



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IS Knowledge Framework for Business Professionals

Development Processes:

- How to plan, develop and implement IS to meet business opportunities

Management Challenges:

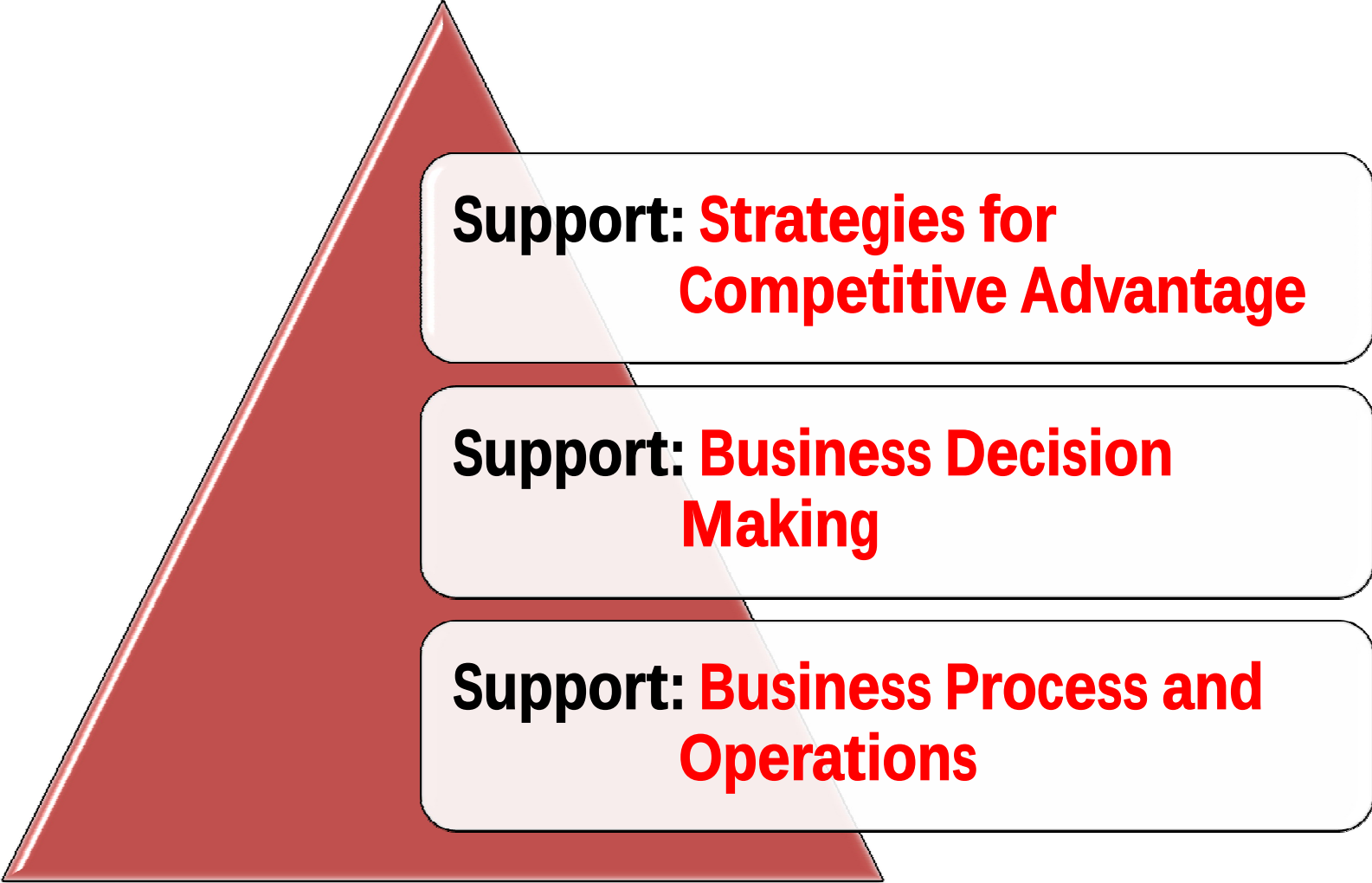
- The challenges of effectively and ethically managing IT



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Roles of IS in Business



**Support: Strategies for
Competitive Advantage**

**Support: Business Decision
Making**

**Support: Business Process and
Operations**



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Roles of IS in Business

Examples

- **Business Processes:** record purchases, track inventory, pay employees, etc. Business would stop without such IS.
- **Decision Making:** what lines of merchandise need to be added, what kind of investment required.
- **Competitive Advantage:** put kiosk in store to connect to e-commerce website. Help gain advantage over competitor without such a kiosk.



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Measuring Success of an IS

- **Efficiency**

- Minimize cost, time and use of information resources

- **Effectiveness**

- Support business strategies
- Enable business processes
- Enhance organizational structure and culture
- Increase the customer and business value



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Classifications of IS by Scope

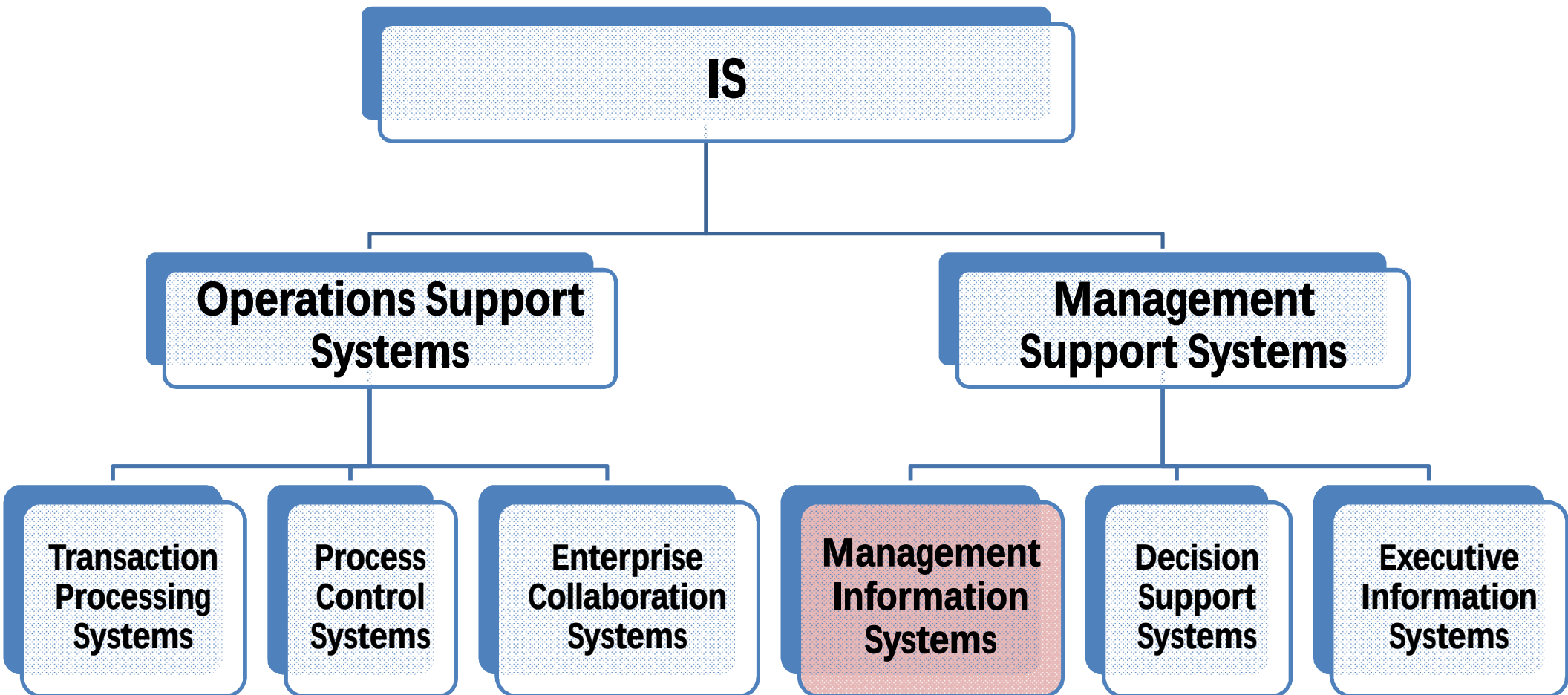
- **Functional Business Systems**
 - Focus on **operational** and **managerial** applications of basic business functions e.g. support accounting, finance or marketing
- **Strategic Information Systems**
 - Help get a **strategic advantage** over its customers e.g. shipment tracking, e-commerce web systems
- **Cross-functional Information Systems**
 - Systems that are **combinations** of several types of **information systems**, provide support for many functions



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Types of IS



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Operations Support Systems

- What are they?
 - Efficiently process business transactions
 - Control industrial processes
 - Support communications and collaboration
 - Update corporate databases



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Types of Operations Support Systems

- **Transaction Processing Systems**
 - Record and process data from business transactions
 - Examples: sales processing, inventory systems, accounting systems
- **Process Control Systems**
 - Monitor and control physical processes
 - Example: in a petroleum refinery use sensors to monitor chemical processes
- **Enterprise Collaboration Systems**
 - Enhance team and work group communications
 - Examples: e-mail, videoconferencing



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Ways to Process Transactions

- **Batch Processing:**
 - Accumulate transactions over time and process periodically
 - Example: a bank processes all checks received in a batch at night
- **Online Processing:**
 - Process transactions immediately
 - Example: a bank processes an ATM withdrawal immediately



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Management Support Systems

- What are they?
 - Provide information and support for effective decision making by managers



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Types of Management Support Systems

- **Management Information Systems (MIS)**
 - Provide reports and displays to managers
 - Example: daily sales analysis reports
- **Decision Support Systems (DSS)**
 - Provide interactive ad hoc support for decision making
 - Example: A what-if-analysis to determine where to spend advertising dollars
- **Executive Information Systems (EIS)**
 - Provide critical information for executives and managers
 - Example: easy access to actions of competitors



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Operational or Management 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



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Information Systems Model

- Major components of an information: people, hardware, software, data and networks.
- These components perform input, processing, output, storage, and control activities.



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Components of an IS

- **People**
 - End users: the people who use the IS or the information from the IS
 - IS specialists: the people who develop and operate IS
- **Hardware Resources**
 - All physical devices used in information processing
 - Machines, data media, peripherals
- **Software Resources**
 - All information processing instructions including programs and procedures
 - System software, application software and procedures



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Components of an IS

- **Data Resources**

- Facts about the business transactions
- Processed and organized information
- Databases of organized data

- **Network Resources**

- Communications media
- Network infrastructure: hardware and software
- The Internet, intranets and extranets



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IS Activities

- **Input of Data Resources**
 - Data entry activities
- **Processing of Data into Information**
 - E.g., calculate, compare, sort, classify, summarize
- **Output of Information Products**
 - Messages, reports, forms and graphic images
- **Storage of Data Resources**
 - Data elements and databases
- **Control of System Performance**
 - Monitoring and evaluating feedback



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Competing with Information Technology



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Strategic IT

- Technology is no longer an afterthought in forming business strategy.
- IT can change the way businesses compete.
- A **strategic information system** is
 - Any kind of information system
 - That uses IT to help an organization
 - Gain a competitive advantage
 - Reduce a competitive disadvantage
 - Or meet other strategic enterprise objectives



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Competitive Forces

If a business wants to succeed must develop strategies to counter these forces:

- Rivalry of competitors within its industry
- Threat of new entrants into an industry and its markets
- Threat posed by substitute products which might capture market share
- Bargaining power of customers
- Bargaining power of suppliers



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Five Competitive Strategies

Cost Leadership

- Become low-cost producers
- Help suppliers or customers reduce costs
- Increase cost to competitors
- Example, Priceline uses online seller bidding so buyer sets the price



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Five Competitive Strategies

Differentiation Strategy

- Develop ways to differentiate a firm's products from its competitors
- Can focus on particular segment or niche of market
- Example, Moen uses online customer design



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Five Competitive Strategies

Innovation Strategy

- Find new ways of doing business
 - Unique products or services
 - Or unique markets
 - Radical changes to business processes to alter the fundamental structure of an industry
- Example, Amazon uses online full-service customer systems



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Five Competitive Strategies

Growth Strategy

- Expand company's capacity to produce
- Expand into global markets
- Diversify into new products or services
- Example, Wal-Mart uses merchandise ordering by global satellite tracking



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Five Competitive Strategies

Alliance Strategy

- Establish linkages and alliances with
 - Customers, suppliers, competitors, consultants and other companies
- Includes mergers, acquisitions, joint ventures, virtual companies
- Example, Wal-Mart uses automatic inventory replenishment by supplier



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Basic Strategies in the Business Use of IT

Lower Costs

- Use IT to substantially reduce the cost of business processes
- Use IT to lower the costs of customers or suppliers

Differentiate

- Develop new IT features to differentiate products and services
- Use IT features to reduce the differentiation advantages of competitors
- Use IT features to focus products/services at selected market niches



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Basic Strategies in the Business Use of IT

Innovate

- Create new products/services that include IT components
- Develop unique new markets or market niches with the help of IT

Promote Growth

- Use IT to manage regional and global business expansion
- Use IT to diversify and integrate into other products/services



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Basic Strategies in the Business Use of IT

Develop Alliances

- Use IT to create virtual organizations of business partners
- Develop inter-enterprise information systems linked by the Internet and Extranets that support strategic business relationships with customers, suppliers, subcontractors and others



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Customer Focused Business

- What is the business value in being customer-focused?
 - Keep customers loyal
 - Anticipate their future needs
 - Respond to customer concerns
 - Provide top-quality customer service
- Focus on customer value
 - Quality not price has become primary determinant of value



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How can we Provide Customer Value?

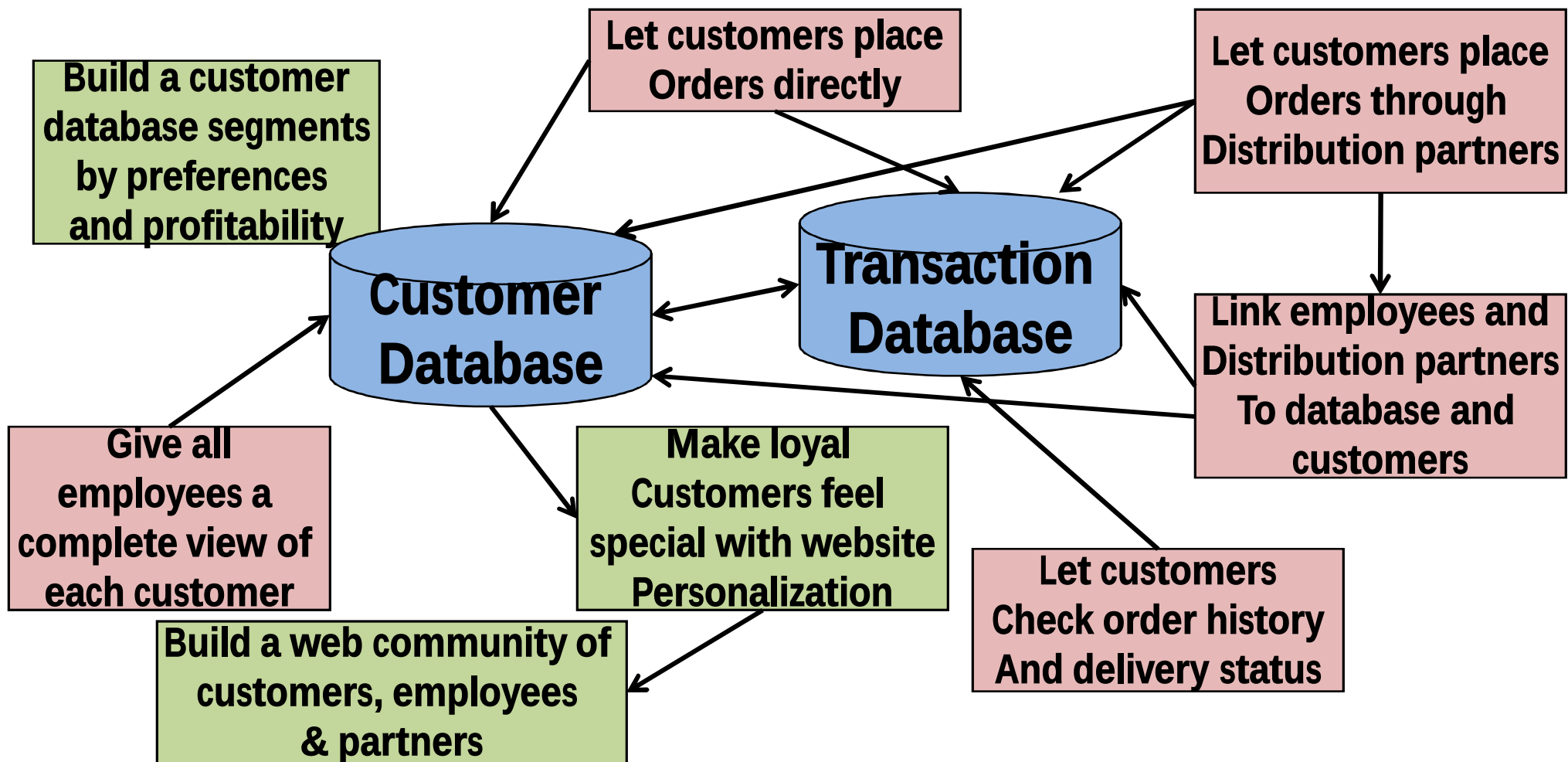
- Track individual preferences
- Keep up with market trends
- Supply products, services and information anytime, anywhere
- Provide customer services tailored to individual needs
- Use Customer Relationship Management (CRM) systems to focus on customer



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Building customer value using the Internet



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Value Chain

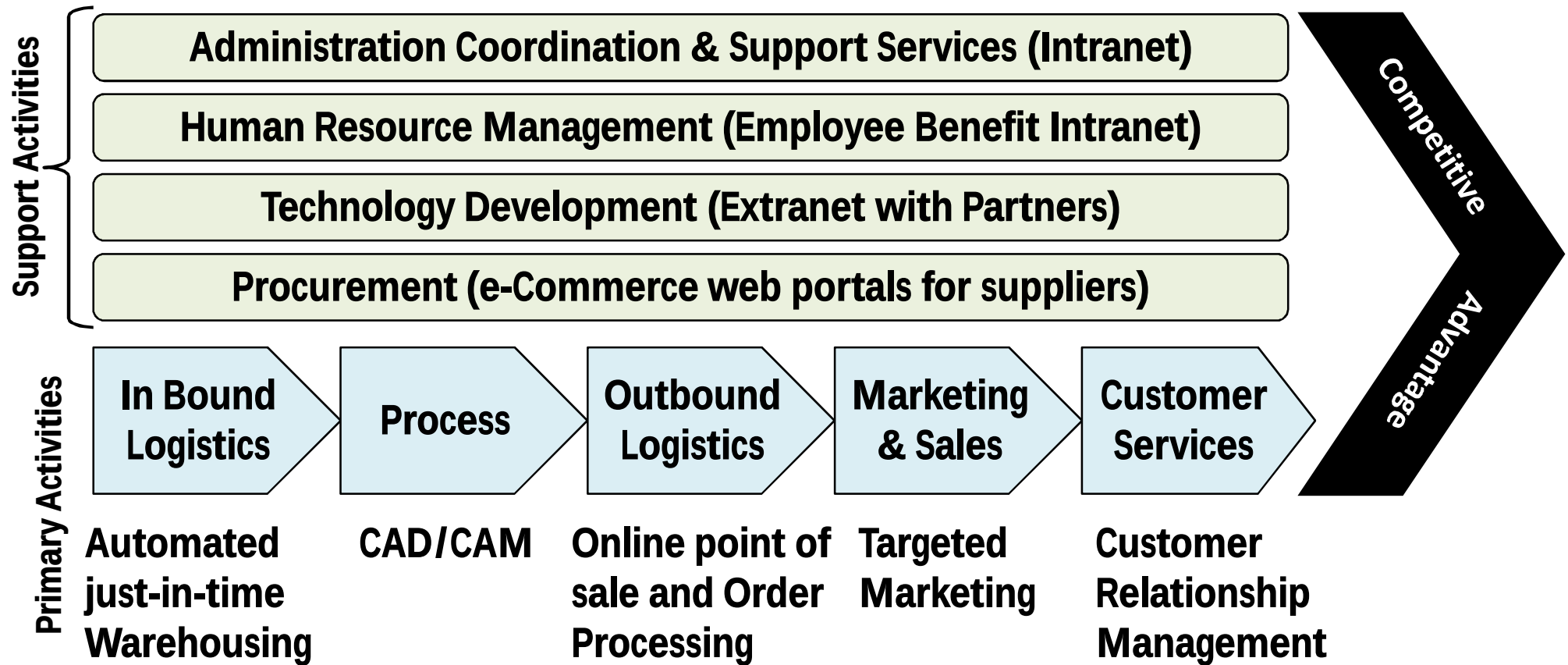
- View the firm as a chain of basic activities that add value to its products and services
- Activities are either Primary processes directly related to manufacturing or delivering products or Support processes help support the day-to-day running of the firm and indirectly contribute to products or services
- Use the value chain to highlight where competitive strategies can best be applied to add the most value



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Value Chain Analysis



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Using Information Technology for Strategic Advantage

- Reengineering Business Processes
- Becoming an agile company
- Creating a Virtual Company
- Building a Knowledge Creating Company



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Business Process Reengineering

- Called BPR or Reengineering
 - Fundamental rethinking and radical redesign of business processes
 - To achieve improvements in cost, quality, speed and service
- Potential payback high
- Risk of failure is also high



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Agility

- Agility is the **ability** of a company **to prosper**
 - In a rapidly changing, continually fragmenting
 - Global market for high-quality, high-performance, customer-configured products and services
- An agile company can make a profit with
 - Broad product ranges
 - Short model lifetimes
 - **Mass customization**
 - Individual products in large volumes



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Four Strategies for Agility

An agile company:

- Provides products as solutions to their customers' individual problems
- Cooperates with customers, suppliers and competitors to bring products to market as quickly and cost-effectively as possible
- Organizes so that it thrives on change and uncertainty
- Leverages the impact of its people and the knowledge they possess



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How IT Helps a Company be Agile

Type of Agility	Description	Role of IT
Customer	Ability to co-opt customers in the exploitation of innovation opportunities -As sources of innovation ideas -As co-creators of innovation -As users in testing ideas or helping other users learn about the idea	Technologies for building and enhancing virtual customer communities for product design, feedback and testing



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How IT Helps a Company be Agile

Type of Agility	Description	Role of IT
Partnering	Ability to leverage assets, knowledge and competencies of suppliers, distributors, contract manufacturers and logistics providers in the exploration and exploitation of innovation opportunities	Technologies facilitating inter-firm collaboration, such as collaborative platforms and portals, supply-chain systems, etc.



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How IT helps a Company be Agile

Type of Agility	Description	Role of IT
Operational	Ability to accomplish speed, accuracy and cost economy in the exploitation of innovation opportunities	Technologies for modularization and integration of business processes



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Virtual Company

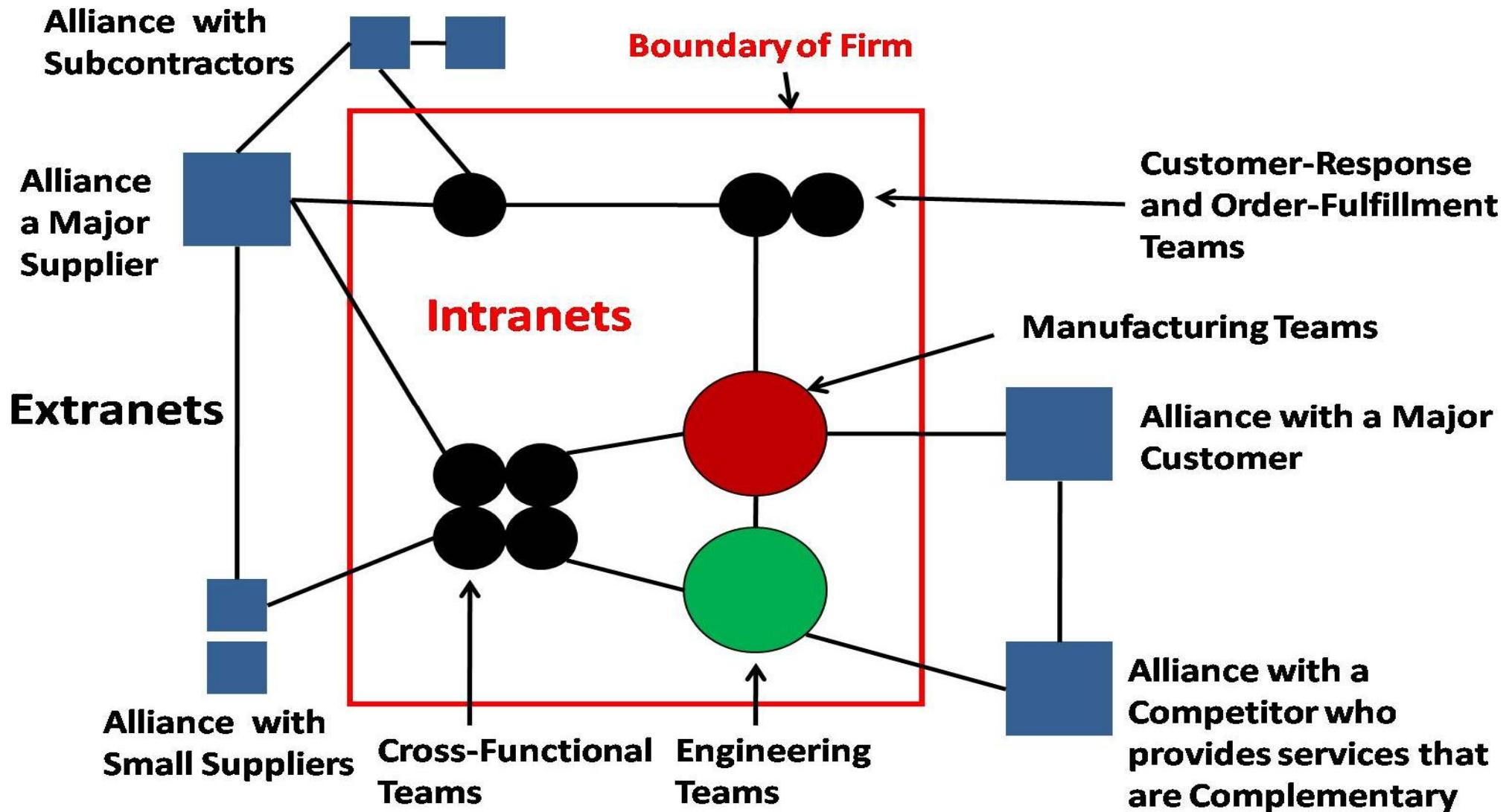
- A virtual company uses IT to **link People, Organizations, Assets** and **Ideas**
- Creates **Inter Enterprise Information Systems** to link **customers, suppliers, subcontractors** and **competitors**



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Virtual Company



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Knowledge Creation

- Knowledge-creating company or **learning organization**
 - Consistently **creates new business knowledge**
 - **Disseminates** it throughout the company
 - And **builds in** the new knowledge **into** its **products/services**



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Two Kinds of Knowledge

- **Explicit knowledge**
 - Data, documents and things written down or stored on computers
- **Tacit knowledge**
 - The “how-to” knowledge which reside in workers’ minds
 - A knowledge-creating company makes such tacit knowledge available to others



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Knowledge Issues

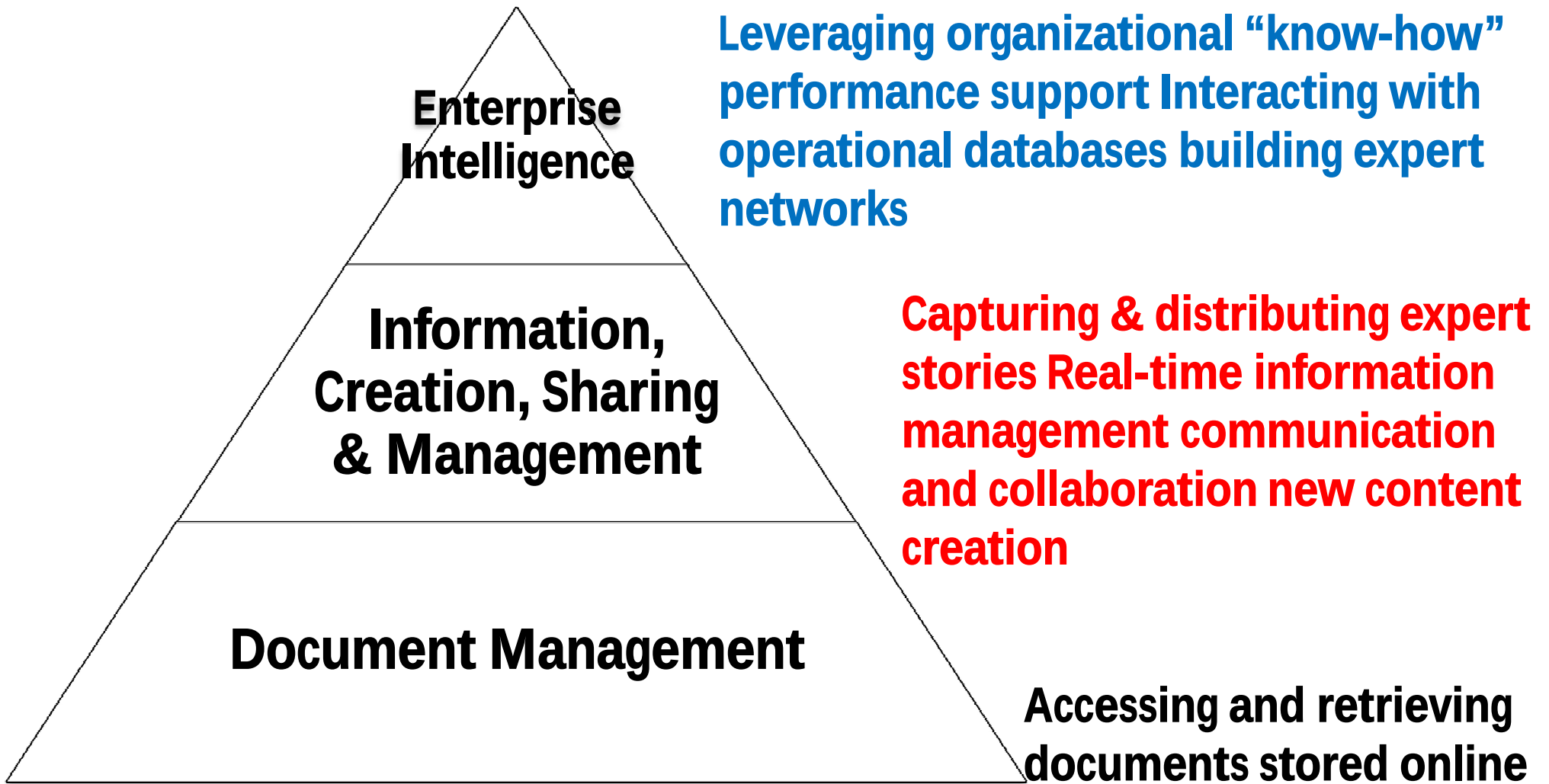
- What is the problem with organizational knowledge being tacit?
- Why are incentives to share this knowledge needed?



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Knowledge Management Techniques



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Knowledge Management Systems (KMS)

- KMS **manage organizational learning** and **business know-how**
- Goal:
 - Help knowledge workers to create, organize, and make available knowledge
 - Whenever and wherever it's needed in an organization



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