Glossary

Business intelligence (BI)
provides historical, current, and predictive views of business operations and environments and gives organizations a competitive advantage in the marketplace.

Computer literacy
is skill in using productivity software, such as word processors, spreadsheets, database management systems, and presentation software, as well as having a basic knowledge of hardware and software, the Internet, and collaboration tools and technologies.

Data
consists of raw facts and is a component of an information system.

database
is a collection of all relevant data organized in a series of integrated files.

Five Forces Model
analyzes an organization, its position in the marketplace, and how information systems could be used to make it more competitive. The five forces include buyer power, supplier power, threat of substitute products or services, threat of new entrants, and rivalry among existing competitors.

Information
consists of facts that have been analyzed by the process component and is an output of an information system.

Information literacy
is understanding the role of information in generating and using business intelligence.

Information technologies
support information systems and use the Internet, computer networks, database systems, POS systems, and radio-frequency-identification (RFID) tags.

management information system (MIS
is an organized integration of hardware and software technologies, data, processes, and human elements designed to produce timely, integrated, relevant, accurate, and useful information for decision-making purposes.

process
component of an information system generates the most useful type of information for decision making, including transaction-processing reports and models for decision analysis.

Transaction-processing systems (TPS)
focus on data collection and processing; the major reason for using them is cost reduction.

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Application software
can be commercial software or software developed in house and is used to perform a variety of tasks on a personal computer.

arithmetic logic unit (ALU)
performs arithmetic operations (+, , *, /) as well as comparison or relational operations (<, >, =); the latter are used to compare numbers.

Assembly language
the second generation of computer languages, is a higher-level language than machine language but is also machine dependent. It uses a series of short codes, or mnemonics, to represent data or instructions.

bus
a link between devices connected to the computer. It can be parallel or serial, internal (local) or external.

Cache RAM
resides on the processor. Because memory access from main RAM storage takes several clock cycles (a few nanoseconds), cache RAM stores recently accessed memory so the processor is not waiting for the memory transfer.

central processing unit (CPU)
the heart of a computer. It is divided into two components: the arithmetic logic unit (ALU) and the control unit.

computer
a machine that accepts data as input, processes data without human intervention by using stored instructions, and outputs information.

control unit
tells the computer what to do, such as instructing the computer which device to read or send output to

CPU case
also known as a computer chassis or tower. It is the enclosure containing the computer's main components

disk drive
a peripheral device for recording, storing, and retrieving information

Fifth-generation languages (5GLs)
use some of the artificial intelligence technologies, such as knowledge-based systems, natural language processing (NLP), visual programming, and a graphical approach to programming. These languages are designed to facilitate natural conversations between you and the computer.

Fourth-generation languages (4GLs)
use macro codes that can take the place of several lines of programming. The commands are powerful and easy to learn, even for people with little computer training.

High-level languages
machine independent and part of the third-generation of computer languages. Many languages are available, and each is designed for a specific purpose.

Input devices
send data and information to the computer. Examples include keyboards and mouses.

Machine language
the first generation of computer languages, consists of a series of 0s and 1s representing data or instructions. It is dependent on the machine, so code written for one type of computer does not work on another type of computer.

magnetic disk
made of Mylar or metal, is used for random-access processing. In other words, data can be accessed in any order, regardless of its order on the surface.

Magnetic tape
made of a plastic material, resembles a cassette tape and stores data sequentially.

Main memory

stores data and information and is usually volatile; its contents are lost when electrical power is turned off. It plays a major role in a computer's performance.

motherboard

the main circuit board containing connectors for attaching additional boards. It usually contains the CPU, Basic Input/Output System (BIOS), memory, storage, interfaces, serial and parallel ports, expansion slots, and all the controllers for standard peripheral devices, such as the display monitor, disk drive, and keyboard.

Network attached storage (NAS)

a network-connected computer dedicated to providing file-based data storage services to other network devices.

operating system (OS)

a set of programs for controlling and managing computer hardware and software. It provides an interface between a computer and the user and increases computer efficiency by helping users share computer resources and by performing repetitive tasks for users.

Optical discs

use laser beams to access and store data. Examples include CD-ROMs, WORM discs, and DVDs.

output device

capable of representing information from a computer. The form of this output might be visual, audio, or digital; examples include printers, display monitors, and plotters.

Random access memory (RAM)

volatile memory, in which data can be read from and written to; it is also called read-write memory

Read-only memory (ROM)

is nonvolatile; data can not be written to ROM

redundant array of independent disks (RAID)

a collection of disk drives used for fault tolerance and improved performance, typically in large network systems.

Secondary memory

holds data when the computer is off or during the course of a program's operation. It also serves as archival storage.

server

a computer and all the software for managing network resources and offering services to a network

storage area network (SAN)

a dedicated high-speed network consisting of both hardware and software used to connect and manage shared storage devices, such as disk arrays, tape libraries, and optical storage devices

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allocation
approach to a distributed DBMS combines fragmentation and replication, with each site storing the data it uses most often

Business analytics (BA)
uses data and statistical methods to gain insight into the data and provide decision makers with information they can act on.

Create, read, update, and delete (CRUD)
refers to the range of functions that data administrators determine who has permission to perform certain functions

data dictionary
stores definitions, such as data types for fields, default values, and validation rules for data in each field

data hierarchy
the structure and organization of data, which involves fields, records, and files.

data mart
a smaller version of a data warehouse, used by a single department or function

data model
determines how data is created, represented, organized, and maintained. It usually contains data structure, operations, and integrity rules.

data warehouse
a collection of data from a variety of sources used to support decision-making applications and generate business intelligence.

data-driven Web site
acts as an interface to a database, retrieving data for users and allowing users to enter data in the database

Data-mining analysis
used to discover patterns and relationships

Database administrators (DBA)
found in large organizations, design and set up databases, establish security measures, develop recovery procedures, evaluate database performance, and add and fine-tune database functions

database management system (DBMS)
software for creating, storing, maintaining, and accessing database files. A DBMS makes using databases more efficient.

distributed database management system (DDBMS)
stores data on multiple servers throughout an organization

Encapsulation
refers to the grouping into a class of various objects along with their attributes and methodsmeaning, grouping related items into a single unit. This helps handle more complex types of data, such as images and graphs

Extraction, transformation, and loading (ETL)
the processes used in a data warehouse. It includes extracting data from outside sources, transforming it to fit operational needs, and loading it into the end target (database or data warehouse)

foreign key
a field in a relational table that matches the primary key column of another table. It can be used to cross-reference tables

fragmentation
approach to a distributed DBMS addresses how tables are divided among multiple locations. There are three variations: horizontal, vertical, and mixed.

hierarchical model
the relationships between records form a treelike structure (hierarchy). Records are called nodes, and relationships between records are called branches. The node at the top is called the root, and every other node (called a child) has a parent. Nodes with the same parents are called twins or siblings.

indexed sequential access method (ISAM)
records can be accessed sequentially or randomly, depending on the number being accessed. For a small number, random access is used, and for a large number, sequential access is used.

Inheritance
refers to new objects being created faster and more easily by entering new data in attributes

logical view
how information appears to users and how it can be organized and retrieved

network model
similar to the hierarchical model, but records are organized differently. Unlike the hierarchical model, each record in the network model can have multiple parent and child records

Normalization
improves database efficiency by eliminating redundant data and ensuring that only related data is stored in a table

object-oriented databases
both data and their relationships are contained in a single object. An object consists of attributes and methods that can be performed on the object's data.

Online analytical processing (OLAP)
generates business intelligence. It uses multiple sources of information and provides multidimensional analysis, such as viewing data based on time, product, and location

Online transaction processing (OLTP)
used to facilitate and manage transaction-oriented applications, such as point-of-sale, data entry, and retrieval transaction processing. It generally uses internal data and responds in real time

physical view
how data is stored on and retrieved from storage media, such as hard disks, magnetic tapes, or CDs

primary key
uniquely identifies every record in a relational database. Examples include student ID numbers, account numbers, Social Security numbers, and invoice numbers.

query by example (QBE)
you request data from a database by constructing a statement made up of query forms. With current graphical databases, you simply click to select query forms instead of having to remember keywords, as you do with SQL. You can add AND, OR, and NOT operators to the QBE form to fine-tune the query.

random access file structure
records can be accessed in any order, regardless of their physical locations in storage media. This method of access is fast and very effective when a small number of records need to be processed daily or weekly

relational model
uses a two-dimensional table of rows and columns of data. Rows are records (also called tuples), and columns are fields (also referred to as attributes).

replication
approach to a distributed DBMS has each site store a copy of the data in the organization's database

sequential access file structure
records in files are organized and processed in numerical or sequential order, typically the order in which they were entered.

Structured Query Language (SQL)
a standard fourth-generation query language used by many DBMS packages, such as Oracle 11g and Microsoft SQL Server. SQL consists of several keywords specifying actions to take

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acceptable use policy
a set of rules specifying the legal and ethical use of a system and the consequences of noncompliance

Accountability
issues involving both the user's and the organization's responsibilities and liabilities

Cookies
small text files with unique ID tags that are embedded in a Web browser and saved on the user's hard drive

Cybersquatting
registering, selling, or using a domain name to profit from someone else's trademark

digital divide
Information technology and the Internet have created a digital divide. Computers still are not affordable for many people. The digital divide has implications for education

Green computing
the design, manufacture, use, and disposal of computers, servers, and computing devices (such as monitors, printers, storage devices, and networking and communications equipment) in such a way that there is minimal impact on the environment

Intellectual property
a legal umbrella covering protections that involve copyrights, trademarks, trade secrets, and patents for creations of the mind developed by people or businesses.

Log files
generated by Web server software, record a user's actions on a Web site

Nonrepudiation
a method for binding all the parties to a contract

Spam
unsolicited e-mail sent for advertising purposes

Virtual organizations
networks of independent companies, suppliers, customers, and manufacturers connected via information technologies so they can share skills and costs and have access to each other's markets

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Access controls
designed to protect systems from unauthorized access in order to preserve data integrity

Adware
a form of spyware that collects information about the user (without the user's consent) to determine which advertisements to display in the user's Web browser

Asymmetric encryption
uses two keys: a public key known to everyone and a private or secret key known only to the recipient. A message encrypted with a public key can be decrypted only with the same algorithm used by the public key and requires the recipient's private key, too. Anyone intercepting the message can not decrypt it because he or she does not have the private key.

Availability
means that computers and networks are operating, and authorized users can access the information they need. It also means a quick recovery in the event of a system failure or disaster

backdoor
(also called a trapdoor) is a programming routine built into a system by its designer or programmer. It enables the designer or programmer to bypass system security and sneak back into the system later to access programs or files.

Biometric security measures
a physiological element that is unique to a person and can not be stolen, lost, copied, or passed on to others

blended threat
a security threat that combines the characteristics of computer viruses, worms, and other malicious codes with vulnerabilities found on public and private networks

Business continuity planning

outlines procedures for keeping an organization operational in the event of a natural disaster or network attack

callback modem

verifies whether a user's access is valid by logging the user off (after he or she attempts to connect to the network) and then calling the user back at a predetermined number

Computer fraud

the unauthorized use of computer data for personal gain

Confidentiality

a system must prevent disclosing information to anyone who is not authorized to access it

Data encryption

transforms data, called plaintext or cleartext, into a scrambled form called ciphertext that can not be read by others

denial-of-service (DoS) attack

floods a network or server with service requests to prevent legitimate users' access to the system

Fault-tolerant systems

ensure availability in the event of a system failure by using a combination of hardware and software

firewall

a combination of hardware and software that acts as a filter or barrier between a private network and external computers or networks, including the Internet. A network administrator defines rules for access, and all other data transmissions are blocked

Integrity

refers to the accuracy of information resources within an organization

intrusion detection system (IDS)

can protect against both external and internal access. It is usually placed in front of a firewall and can identify attack signatures, trace patterns, generate alarms for the network administrator, and cause routers to terminate connections with suspicious sources

Keystroke loggers

monitor and record keystrokes and can be software or hardware devices

logic bomb

a type of Trojan program used to release a virus, worm, or other destructive code. Logic bombs are triggered at a certain time (sometimes the birthday of a famous person) or by a specific event, such as a user pressing Enter or running a certain program

password

a combination of numbers, characters, and symbols that is entered to allow access to a system

Phishing

sending fraudulent e-mails that seem to come from legitimate sources, such as a bank or university, for the purpose of capturing private information, such as bank account numbers or Social Security numbers

Physical security measures

primarily control access to computers and networks, and they include devices for securing computers and peripherals from theft.

PKI (public key infrastructure)

enables users of a public network such as the Internet to securely and privately exchange data through the use of a pair of keysa public one and a private onethat is obtained from a trusted authority and shared through that authority

Secure Sockets Layer (SSL)

a commonly used encryption protocol that manages transmission security on the Internet

Sniffing

capturing and recording network traffic

Social Engineering
Using "people skills"—such as being a good listener and assuming a friendly, unthreatening air—to trick others into revealing private information. This is an attack that takes advantage of the human element of security systems

Spoofing
an attempt to gain access to a network by posing as an authorized user in order to find sensitive information, such as passwords and credit card information

Spyware
software that secretly gathers information about users while they browse the Web

symmetric encryption
(also called secret key encryption), the same key is used to encrypt and decrypt the message. The sender and receiver must agree on the key and keep it secret

Transport Layer Security (TLS)
a cryptographic protocol that ensures data security and integrity over public networks, such as the Internet

Trojan program
contains code intended to disrupt a computer, network, or Web site, and it is usually hidden inside a popular program. Users run the popular program, unaware that the malicious program is also running in the background

virtual private network (VPN)
provides a secure tunnel through the Internet for transmitting messages and data via a private network

virus
consists of self-propagating program code that is triggered by a specified time or event. When the program or operating system containing the virus is used, the virus attaches itself to other files, and the cycle continues

worm
travels from computer to computer in a network, but it does not usually erase data. Unlike viruses, worms are independent programs that can spread themselves without having to be attached to a host program

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Attenuation
the loss of power in a signal as it travels from the sending device to the receiving device

Bandwidth
the amount of data that can be transferred from one point to another in a certain time period, usually one second

broadband
multiple pieces of data are sent simultaneously to increase the transmission rate

bus topology
(also called linear bus) connects nodes along a network segment, but the ends of the cable are not connected, as they are in a ring topology

centralized processing
all processing is done at one central computer

centralized routing
one node is in charge of selecting the path for all packets. This node, considered the network routing manager, stores the routing table, and any changes to a route must be made at this node

client/server model
software runs on the local computer (the client) and communicates with the remote server to request information or services. A server is a remote computer on the network that provides information or services in response to client requests

Code Division Multiple Access (CDMA)
transmits multiple encoded messages over a wide frequency and then decodes them at the receiving end

Communication media
or channels, connect sender and receiver devices. They can be conducted or radiated

Conducted media

provide a physical path along which signals are transmitted, including twisted pair cable, coaxial cable, and fiber optics

controller

a hardware and software device that controls data transfer from a computer to a peripheral device (examples are a monitor, a printer, or a keyboard) and vice versa

convergence

refers to integrating voice, video, and data so multimedia information can be used for decision making

Data communication

the electronic transfer of data from one location to another

decentralized processing

each user, department, or division has its own computer (sometimes called an organizational unit) for performing processing tasks

Digital subscriber line (DSL)

a common carrier service, is a high-speed service that uses ordinary phone lines

Distributed processing

maintains centralized control and decentralizes operations. Processing power is distributed among several locations

Distributed routing

relies on each node to calculate its own best possible route. Each node contains its own routing table with current information on the status of adjacent nodes so packets can follow the best possible route

dynamic router

can build tables that identify addresses on each network

hierarchical topology

(also called a tree topology) combines computers with different processing strengths in different organizational levels

local area network (LAN)
connects workstations and peripheral devices that are in close proximity

mesh topology
(also called plex or interconnected), every node (which can differ in size and configuration from the others) is connected to every other node.

metropolitan area network (MAN)
designed to handle data communication for multiple organizations in a city and sometimes nearby cities as well

mobile network
(also called a cellular network) is a network operating on a radio frequency (RF), consisting of radio cells, each served by a fixed transmitter, known as a cell site or base station

modem
(short for modulator-demodulator) is a device that connects a user to the Internet

multiplexer
a hardware device that allows several nodes to share one communication channel

n-tier architecture
attempts to balance the workload between client and server by removing application processing from both the client and server and placing it on a middle-tier server

Narrowband
a voice-grade transmission channel capable of transmitting a maximum of 56,000 bps, so only a limited amount of information can be transferred in a specific period of time

network interface card (NIC)
a hardware component that enables computers to communicate over a network

network topology
represents a network's physical layout, including the arrangement of computers and cables

Open Systems Interconnection (OSI) model
a seven-layer architecture for defining how data is transmitted from computer to computer in a network, from the physical connection to the network to the applications that users run. It also standardizes interactions between network computers exchanging information.

packet
a collection of binary digitsincluding message data and control characters for formatting and transmittingsent from computer to computer over a network

Protocols
rules that govern data communication, including error detection, message length, and transmission speed

Radiated media
uses an antenna for transmitting data through air or water

ring topology
no host computer is required because each computer manages its own connectivity

router
a network connection device containing software that connects network systems and controls traffic flow between them

Routing
the process of deciding which path to take on a network. This is determined by the type of network and the software used to transmit data

routing table
generated automatically by software, is used to determine the best possible route for the packet

star topology
usually consists of a central computer (host computer, often a server) and a series of nodes (typically, workstations or peripheral devices)

static router

requires the network routing manager to give it information about which addresses are on which network

Throughput

similar to bandwidth. It is the amount of data transferred or processed in a specified time, usually one second

Time Division Multiple Access (TDMA)

divides each channel into six time slots. Each user is allocated two slots: one for transmission and one for reception. This method increases efficiency by 300 percent, as it allows carrying three calls on one channel

Transmission Control Protocol/Internet Protocol (TCP/IP)

an industry-standard suite of communication protocols that enables interoperability

two-tier architecture

(the most common type), a client (tier one) communicates directly with the server (tier two)

wide area network (WAN)

can span several cities, states, or even countries, and it is usually owned by several different parties

wireless network

a network that uses wireless instead of wired technology

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Advanced Research Projects Agency Network (ARPANET)
a project started in 1969 by the U.S. Department of Defense, was the beginning of the Internet.

blog
(short for Weblog) is a journal or newsletter that is updated frequently and intended for the general public. Blogs reflect their authors' personalities and often include philosophical reflections and opinions on social or political issues.

Directories
are indexes of information based on keywords embedded in documents, which makes it possible for search engines to find what you are looking for.

Discussion groups
usually for exchanging opinions and ideas on a specific topic, usually of a technical or scholarly nature. Group members post messages or articles that others in the group can read

Domain Name System (DNS)
When information is transferred from one network to another, domain names are converted to IP addresses by the Domain Name System (DNS) protocol. Servers using this protocol (called DNS servers) maintain lists of computers' and Web sites' addresses and their associated IP addresses

extranet
a secure network that uses the Internet and Web technologies to connect intranets of business partners so communication between organizations or between consumers is possible

gigapop
a local connection point-of-presence that connects a variety of high-performance networks, and its main function is the exchange of I2 traffic with a specified bandwidth

hypermedia
documents include embedded references to audio, text, images, video, and other documents

hypertext
The embedded references in hypermedia documents are called hypertext; they consist of links users can click to follow a particular thread (topic).

Hypertext Markup Language (HTML)
the language used to create Web pages. It defines a page's layout and appearance by using tags and attributes. A tag delineates a section of the page, such as the header or body; an attribute specifies a value, such as a font color, for a page component

Instant messaging (IM)
a service for communicating with others via a private chat room on the Internet

Internet
a worldwide collection of millions of computers and networks of all sizes. It is a network of networks

Internet backbone
a foundation network linked with fiber-optic cables that can support very high bandwidth. It is made up of many interconnected government, academic, commercial, and other high-capacity data routers

Internet Relay Chat (IRC)
enables users in chat rooms to exchange text messages with people in other locations in real time

Internet telephony
using the Internet rather than the telephone network to exchange spoken conversations

Internet2 (I2)
a collaborative effort involving more than 200 U.S. universities and corporations to develop advanced Internet technologies and applications for higher education and academic research

intranet
a network within an organization that uses Internet protocols and technologies (e.g., TCP/IP, which includes File Transfer Protocol [FTP], SMTP, and others) for collecting, storing, and disseminating useful information that supports business activities, such as sales, customer service, human resources, and marketing.

Navigational tools
used to travel from Web site to Web sitei.e., surf the Internet

Newsgroups
typically more general in nature and can cover any topic; they allow people to get together for fun or for business purposes

podcast
an electronic audio file, such as an MP3 file, that is posted on the Web for users to download to their mobile devicesiPhones, iPods, and iPads, for exampleor even their computers

RSS (Really Simple Syndication) feeds
a fast, easy way to distribute Web content in Extensible Markup Language (XML) format. It is a subscription service, and new content from Web sites you have selected is delivered via a feed reader to one convenient spot

search engine
Google.com or Ask.com, is an information system that enables users to retrieve data from the Web by using search terms

Social networking
a broad class of Web sites and services that allows users to connect with friends, family, and colleagues online as well as meet people with similar interests or hobbies

Uniform resource locators (URLs)
also called universal resource locators, identify a Web page. A URL is the address of a document or site on the Internet.

Voice over Internet Protocol (VoIP)
the protocol used for Internet telephony

Web 2.0
the trend toward Web applications that are more interactive than traditional Web applications. Collaboration or e-collaboration is one of its key components

wiki
a type of Web site that allows users to add, delete, and sometimes modify content.

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advertising model
an extension of traditional advertising media, such as radio and television. Directories such as Yahoo! provide content (similar to radio and TV) to users for free. By creating more traffic with this free content, they can charge companies for placing banner ads or leasing spots on their sites.

brokerage model
brings sellers and buyers together on the Web and collects commissions on transactions between these parties

Business-to-business (B2B)
e-commerce involves electronic transactions between businesses

Business-to-consumer (B2C)
companies sell directly to consumers

buyer-side marketplace
model, a buyer, or a group of buyers, opens an electronic marketplace and invites sellers to bid on announced products or make a request for quotation (RFQ). Using this model, buyers can manage the procurement process more efficiently, lower administrative costs, and implement uniform pricing

Click-and-brick e-commerce
mixes traditional commerce and e-commerce. It capitalizes on the advantages of online interaction with customers yet retains the benefits of having a physical store location.

Consumer-to-business (C2B)
e-commerce involves people selling products or services to businesses, such as when a consumer creates online surveys for a company to use.

Consumer-to-consumer (C2C)
e-commerce involves business transactions between users, such as consumers selling to other consumers via the Internet.

E-business

encompasses all the activities a company performs in selling and buying products and services using computers and communication technologies

E-cash

a secure and convenient alternative to bills and coins, complements credit, debit, and charge cards and adds convenience and control to everyday cash transactions

e-check

the electronic version of a paper check, offers security, speed, and convenience for online transactions

E-commerce

buying and selling goods and services over the Internet

E-government

applications can include government-to-citizen, government-to-business, government-to-government, and government-to-employee transactions. Services include tax filing, online voter registration, disaster assistance, and e-training for government employees

E-procurement

enables employees in an organization to order and receive supplies and services directly from suppliers

E-wallets

available for most handheld devices, offer a secure, convenient, and portable tool for online shopping. They store personal and financial information, such as credit card numbers, passwords, and PINs

Electronic payment

refers to money or script that is exchanged electronically. It usually involves use of the Internet, other computer networks, and digitally stored value systems. It includes credit cards, debit cards, charge cards, and smart cards.

horizontal market
concentrates on a specific function or business process and automates this function or process for different industries

informediary model
e-commerce sites collect information on consumers and businesses and then sell this information to other companies for marketing purposes

merchant model
transfers the old retail model to the e-commerce world by using the medium of the Internet

Micropayments
transactions on the Web involving very small amounts of money. They began as a method for advertisers to pay for cost per view or cost per click

mixed model
to generating revenue from more than one source

Organizational or intrabusiness e-commerce
involves e-commerce activities that take place inside an organization, typically via the organization's intranet. These activities can include the exchange of goods, services, or information among employees.

PayPal
a popular online payment system used for many online transactions. Users with valid e-mail addresses can set up accounts and make secure payments for online transactions using their credit cards or bank accounts.

Search engine optimization (SEO)
a method for improving the volume or quality of traffic to a Web site. A higher ranking in search results should generate more revenue for a Web site

seller-side marketplace
model occurs most often. In this model, sellers who cater to specialized markets, such as chemicals, electronics, and auto components, come together to create a common marketplace for buyerssort of a one-stop shopping model

smart card
about the size of a credit card and contains an embedded microprocessor chip for storing important financial and personal information. The chip can be loaded with information and updated periodically

subscription model
e-commerce sites sell digital products or services to customers

third-party exchange marketplace
model is not controlled by sellers or buyers. Instead, it is controlled by a third party, and the marketplace generates revenue from the fees charged for matching buyers and sellers

Trading partner agreements
automate negotiating processes and enforce contracts between participating businesses

value chain
a series of activities designed to meet business needs by adding value (or cost) in each phase of the e-commerce process

vertical market
concentrates on a specific industry or market. The utilities industry, the beef and dairy industries, and the sale of medical products are examples of vertical markets

Voice-based e-commerce
relies on voice recognition and text-to-speech technologies

Web marketing
uses the Web and its supporting technologies to promote goods and services

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Agile methodology

similar to XP in focusing on an incremental development process and timely delivery of working software. However, there is less emphasis on team coding and more emphasis on limiting the project's scope.

Computer-aided systems engineering (CASE)

Tools automate parts of the application development process. These tools are particularly helpful for investigation and analysis in large-scale projects because they automate parts of the design phase

Crowdsourcing

the process of outsourcing tasks that are traditionally performed by employees or contractors to a large group of people (a crowd) through an open call.

design phase

analysts choose the solution that is the most realistic and offers the highest payoff for the organization. Details of the proposed solution are outlined, and the output of this phase is a document with exact specifications for implementing the system, including files and databases, forms and reports, documentation, procedures, hardware and software, networking components, and general system specifications

Economic feasibility

assesses a system's costs and benefits

External users

not employees but do use the system; they include customers, contractors, suppliers, and other business partners. Although they are not normally part of the task force, their input is essential

Extreme programming (XP)

a method for developing software applications and information system projects in which the project is divided into smaller functions and developers can not go on to the next phase until the current phase is finished. Each function of the overall project is developed in a step-by-step fashion.

feasibility study

analyzes a proposed solution's feasibility and determines how best to present the solution to management. It usually has five major dimensions: economic, technical, operational, scheduling, and legal

implementation phase

the solution is transferred from paper to action, and the team configures the system and procures components for it.

Insourcing

happens when an organization's team develops the system internally

Internal users

employees who will use the system regularly, and they can offer important feedback on the system's strengths and weaknesses

Joint application design (JAD)

a collective activity involving users, top management, and IT professionals. It centers on a structured workshop (called a JAD session) where users and system professionals come together to develop an application

Legal feasibility

legal issues, including political repercussions and meeting the requirements of the Information Privacy Act

maintenance phase

the information system is operating, enhancements and modifications to the system have been developed and tested, and hardware and software components have been added or replaced

Operational feasibility

the measure of how well the proposed solution will work in the organization and how internal and external customers will react to it.

outsourcing

an organization hires an external vendor or consultant who specializes in providing development services

Pair programming
where two programmers participate in one development effort at one workstation. Each programmer performs the action the other is not currently doing.

parallel conversion
The old and new systems run simultaneously for a short time to ensure the new system works correctly.

phased-in-phased-out conversion
as each module of the new system is converted, the corresponding part of the old system is retired. This process continues until the entire system is operational

pilot conversion
the analyst introduces the system in only a limited area of the organization, such as a division or department. If the system works correctly, it is implemented in the rest of the organization in stages or all at once

planning phase
which is one of the most crucial phases of the SDLC model, the systems designer must define the problem the organization faces, taking care not to define symptoms rather than the underlying problem.

plunge (direct cutover) conversion
the old system is stopped and the new system is implemented

proof-of-concept prototype
shows users how a particular task that was not technically feasible can be done

prototyping
a small-scale version of the system is developed, but one that is large enough to illustrate the system's benefits and allow users to offer feedback.

Rapid application development (RAD)
concentrates on user involvement and continuous interaction between users and designers. It combines the planning and analysis phases into one phase and develops a prototype of the system. It uses an iterative process (also called incremental development) that repeats the design, development, and testing steps as needed, based on feedback from users.

request for information (RFI)
a screening document for gathering vendor information and narrowing the list of potential vendors. It can help manage the selection of vendors by focusing on the project requirements that are crucial to selecting vendors

request for proposal (RFP)
a written document with detailed specifications that is used to request bids for equipment, supplies, or services from vendors.

requirements-gathering and analysis phase
analysts define the problem and generate alternatives for solving it

Scheduling feasibility
whether the new system can be completed on time

Self-sourcing
when end users develop their own information systems, with little or no formal assistance from the information systems team. These users might not know how to write programming code, but they are typically skilled enough to use off-the-shelf software, such as spreadsheet and database packages, to produce custom-built applications.

selling prototype
used to sell a proposed system to users or management by showing some of its features

Service-oriented architecture (SOA)
a philosophy and a software and system development methodology that focuses on the development, use, and reuse of small, self-contained blocks of codes (called services) to meet the software needs of an organization

Systems development life cycle (SDLC)
also known as the waterfall model, is a series of well-defined phases performed in sequence that serves as a framework for developing a system or project

Technical feasibility
the technology to be used in the system. The team needs to assess whether the technology to support the new system is available or feasible to implement.

Glossary

Collaborative filtering (CF)
a search for specific information or patterns, using input from multiple business partners and data sources. It identifies groups of people based on common interests and recommends products or services based on what members of the group purchased or did not purchase.

Collaborative planning, forecasting, and replenishment (CPFR)
used to coordinate supply chain members through point-of-sale (POS) data sharing and joint planning.

Customer relationship management (CRM)
consists of the processes a company uses to track and organize its contacts with customers. It improves services offered to customers and uses customer contact information for targeted marketing

Customization
allows customers to modify the standard offering, such as selecting a different home page to be displayed each time you open your Web browser.

e-marketplace
a third-party exchange (B2B model) that provides a platform for buyers and sellers to interact with each other and trade more efficiently online.

Electronic data interchange (EDI)
enables business partners to send and receive information on business transactions

Enterprise resource planning (ERP)
an integrated system that collects and processes data and manages and coordinates resources, information, and functions throughout an organization.

enterprise system
an application used in all the functions of a business that supports decision making throughout the organization

Knowledge management (KM)
draws on concepts of organizational learning, organizational culture, and best practices to convert tacit knowledge into explicit knowledge, create a knowledge-sharing culture in an organization, and eliminate obstacles to sharing knowledge

online auction
Uses the Internet to bring traditional auctions to customers around the globe and makes it possible to sell far more goods and services than at a traditional auction.

Personalization
the process of satisfying customers' needs, building customer relationships, and increasing profits by designing goods and services that meet customers' preferences better. It involves not only customers' requests, but also the interaction between customers and the company

reverse auction
invites sellers to submit bids for products and services. In other words, there is one buyer and many sellers: a one-to-many relationship. The buyer can choose the seller that offers the service or product at the lowest price.

supply chain
an integrated network consisting of an organization, its suppliers, transportation companies, and brokers used to deliver goods and services to customers

Supply chain management (SCM)
the process of working with suppliers and other partners in the supply chain to improve procedures for delivering products and services

Glossary

choice phase
the best and most effective course of action is chosen

decision support system (DSS)
an interactive information system consisting of hardware, software, data, and models (mathematical and statistical) designed to assist decision makers in an organization. Its three major components are a database, a model base, and a user interface.

design phase
the objective is to define criteria for the decision, generate alternatives for meeting the criteria, and define associations between the criteria and the alternatives

digital dashboard
integrates information from multiple sources and presents it in a unified, understandable format, often charts and graphs. It offers up-to-the minute snapshots of information and assists decision makers in identifying trends and potential problems.

Electronic meeting systems
enable decision makers in different locations to participate in a group decision-making process

Executive information systems (EISs)
branches of DSSs, are interactive information systems that give executives easy access to internal and external data and typically include drill-down features and a digital dashboard for examining and analyzing information

geographic information system (GIS)
captures, stores, processes, and displays geographic information or information in a geographic context, such as showing the location of all city streetlights on a map

Group support systems (GSSs)

assist decision makers working in groups. These systems use computer and communication technologies to formulate, process, and implement a decision-making task and can be considered a kind of intervention technology that helps overcome the limitations of group interactions.

Groupware

assists groups in communicating, collaborating, and coordinating their activities. It is a collection of applications that supports decision makers by providing access to a shared environment and information

implementation phase

the organization devises a plan for carrying out the alternative selected in the choice phase and obtains the resources to implement the plan.

intelligence phase

a decision maker examines the organization's environment for conditions that need decisions. Data is collected from a variety of sources (internal and external) and processed. From this information, the decision maker can discover ways to approach the problem

Management support systems (MSSs)

the different types of information systems that have been developed to support certain aspects and types of decisions. Each type of MSS is designed with unique goals and objectives

managerial designer

defines the management issues in designing and using a DSS. These issues do not involve the technological aspects of the system; they are related to management's goals and needs

model base

component includes mathematical and statistical models that, along with the database, enable a DSS to analyze information

model builder
the liaison between users and designers. He or she is responsible for supplying information on what the model does, what data inputs it accepts, how the model's output should be interpreted, and what assumptions go into creating and using the model

Semistructured decisions
include a structured aspect that benefits from information retrieval, analytical models, and information systems technology.

Structured decisions
or programmable tasks, can be automated because a well-defined standard operating procedure exists for these types of decisions.

technical designer
focuses on how the DSS is implemented and usually addresses questions about data storage, file structure, user access, response time, and security measures

Unstructured decisions
typically one-time decisions, with no standard operating procedure pertaining to them

Glossary

Artificial intelligence (AI)
consists of related technologies that try to simulate and reproduce human thought behavior, including thinking, speaking, feeling, and reasoning. AI technologies apply computers to areas that require knowledge, perception, reasoning, understanding, and cognitive abilities.

Artificial neural networks (ANNs)
networks that learn and are capable of performing tasks that are difficult with conventional computers, such as playing chess, recognizing patterns in faces and objects, and filtering spam e-mail

backward chaining
the expert system starts with the goalthe then partand backtracks to find the right solution

Case-based reasoning (CBR)
a problem-solving technique that matches a new case (problem) with a previously solved case and its solution, both stored in a database. After searching for a match, the CBR system offers a solution; if no match is found, even after supplying more information, the human expert must solve the problem.

Data-mining agents
work with a data warehouse, detecting trends and discovering new information and relationships among data items that were not readily apparent.

Expert systems
mimic human expertise in a particular field to solve a problem in a well-defined area

explanation facility
performs tasks similar to what a human expert does by explaining to end users how recommendations are derived

forward chaining
a series of if-then-else condition pairs is performed

Fuzzy logic
allows a smooth, gradual transition between human and computer vocabularies and deals with variations in linguistic terms by using a degree of membership

Genetic algorithms (GAs)
search algorithms that mimic the process of natural evolution. They are used to generate solutions to optimization and search problems using such techniques as mutation, selection, and crossover

inference engine
similar to the model base component of a decision support system. By using different techniques, such as forward and backward chaining, it manipulates a series of rules

Intelligent agents
software capable of reasoning and following rule-based processes; they are becoming more popular, especially in e-commerce

knowledge acquisition facility
a software package with manual or automated methods for acquiring and incorporating new rules and facts so the expert system is capable of growth

knowledge base
similar to a database, but in addition to storing facts and figures it keeps track of rules and explanations associated with facts

knowledge base management system (KBMS)
similar to a DBMS, is used to keep the knowledge base updated, with changes to facts, figures, and rules.

Monitoring and surveillance agents
usually track and report on computer equipment and network systems to predict when a system crash or failure might occur

Natural-language processing (NLP)
developed so users could communicate with computers in human language

Personal agents
perform specific tasks for a user, such as remembering information for filling out Web forms or completing e-mail addresses after the first few characters are typed

Robots
one of the most successful applications of AI. They perform well at simple, repetitive tasks and can be used to free workers from tedious or hazardous jobs.

Shopping and information agents
help users navigate through the vast resources available on the Web and provide better results in finding information. These agents can navigate the Web much faster than humans and gather more consistent, detailed information. They can serve as search engines, site reminders, or personal surfing assistants

Glossary

Application service providers (ASPs)
provide access to software or services for a fee

avatar
a 2D or 3D graphical representation of a person in the virtual world, used in chat rooms and online games

Bluetooth
can be used to create a personal area network (PAN), it is a wireless technology for transferring data over short distances (usually within 30 feet) for fixed and mobile devices.

cave automatic virtual environment (CAVE)
a virtual environment consisting of a cube-shaped room in which the walls are rear-projection screens. CAVEs are holographic devices that create, capture, and display images in true 3D form

Cloud computing
incorporates, under one platform, many recent technologies, including the SaaS model, Web 2.0, grid computing, and utility computing; hence, a variety of resources can be provided to users over the Internet. Business applications are accessed via a Web browser, and data is stored on the providers' servers

egocentric environment
the user is totally immersed in the VR world.

exocentric environment
the user is given a window view. Data is still rendered in 3D, but users can only view it on screen. They can not interact with objects, as in an egocentric environment

Grid computing

involves combining the processing powers of various computers. With this configuration, users can make use of other computers' resources to solve problems involving large-scale, complex calculations, such as circuit analysis or mechanical designproblems that a single computer is not capable of solving in a timely manner

Nanotechnology

incorporates techniques that involve the structure and composition of materials on a nanoscale

pull technology

a user states a need before getting information, as when a URL is entered in a Web browser so the user can go to a certain Web site

push technology

also known as webcasting, a Web server delivers information to users (who have signed up for this service) instead of waiting for users to request the information be sent to them

QR (quick response) code

a matrix barcode consisting of black modules arranged in a square pattern on a white background

radio frequency identification (RFID)

a small electronic device consisting of a small chip and an antenna. This device provides a unique identification for the card or the object carrying the tag

Software as a service (SaaS)

also known as on-demand software, is a model for ASPs to deliver software to users for a fee; the software is for temporary or long-term use

Utility (on-demand) computing

the provision of IT services on demand. Users pay for computing or storage resources on an as-needed basis, similar to the way one pays for utilities such as heat and water

Virtual reality (VR)

uses computer-generated, three-dimensional images to create the illusion of interaction in a real-world environment

virtual world

a simulated environment designed for users to interact with one another via avatars

Wireless Fidelity (Wi-Fi)

a broadband wireless technology. Information can be transmitted over short distancestypically 120 feet indoors and 300 feet outdoorsin the form of radio waves

Worldwide Interoperability for Microwave Access (WiMAX)

a broadband wireless technology based on the IEEE 802.16 standards. It is designed for wireless metropolitan area networks and usually has a range of about 30 miles for fixed stations and 310 miles for mobile stations