Information Systems for Business and Beyond – Glossary of Key Terms

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Chapter 1 What is an Information System?

Application Software: An application a set of computer program deigned to permit the user to perform a group of coordinated functions, tasks, or activities. It cannot run on itself but is depended on the OS.

Data: A collection of facts, that is intangible.

Hardware: The part of an information system you can touch–the physical components of the technology.

Information System (IS): The study of complementary networks of hardware and software that people and organizations use to collect, filter, and process, create, and distribute data.

Operating System (OS): The program that, after being initially loaded into the computer by a boot program, manages all the other programs in a computer.

Role: The function of information technology components in an organization.

Software: A set of instructions that tells the hardware what to do, it is not tangible.

User: The person who uses and operates a computer or other machine.

Chapter 2 Hardware

Binary: A number expressed in the binary numeral system, or base-2 numeral system, which represents numeric values using two different symbols: typically 0 (zero) and 1 (one).

Bit: The smallest unit of data in a computer represented by one or zero.

Bluetooth: A wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz[4]) from fixed and mobile devices, and building personal area networks.

Bus: The electrical connection between different computer components that is an important determiner of the computer's speed.

Byte: A unit of data that computers use to represent a character such as a letter, number, or typographic symbol with a group of eight bits.

Central Processing Unit (CPU): The "brains" of the device, carries out the commands sent to it by the software and returns results to be acted upon.

Digital Devices: Is an electronic device which uses discrete, numerable data and processes for all its operations.

Electronic Waste: Used electronics which are destined for reuse, resale, salvage, recycling or disposal.

Hard Disk: Where data is stored when the computer is turned off and where it is retrieved from when the computer is turned on.

Hardware: The part of an information system you can touch–the physical components of the technology.

Hertz: A measure of computer processing speed.

Input Devices: Peripheral hardware used to provide data and control signals to a computer. Examples of input devices include keyboards, mice, scanners, digital cameras and joysticks.

Integrated Computing: Integration of computing technology into everyday products to enhancing its capabilities.

Memory: Specifically Computer Memory. Any physical device capable of storing information temporarily or permanently.

Moore's Law: The observation that over the history of computing hardware, the number of transistors in a dense integrated circuit has doubled approximately every two years.

Motherboard: The main circuit board on the computer that connect to the CPU, memory, and storage components, among other things.

Network Connection: Provides connectivity between your computer and the Internet, a network, or another computer.

Read Access Memory (RAM): The working memory that begins to load information from the hard disk as the computer starts up.

Output Devices: An output device sends data from a computer to another **device** or user. This includes audio and video output. Other examples are monitors, projectors, speakers, headphones and printers.

Removable Media: Fixed storage components. Removable storage media that is portable.

Storage: The retention of retrievable data on a computer or other electronic system.

Storage Devices: Is any device used to store digital data or information through input or output operations.

Solid State Drive (SSD): Performs the same function as a hard disk: long-term storage that uses spinning disks, flash memory, which is much faster.

Chapter 3 Software

Android: A mobile operating system (OS) based on the Linux kernel and currently developed by Google.

Application Software: An application is a set of computer program designed to permit the user to perform a group of coordinated functions, tasks, or activities. It cannot run on itself but is dependent on the OS.

Cloud Computing: The practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer.

Customer Relationship Management (CRM): An approach to managing a company's interactions with current and future customers. It often involves using technology to organize, automate, and synchronize sales, marketing, customer service, and technical support.

Enterprise Resources Planning (ERP): A software application utilizing a central database that is implemented throughout the entire organization.

LINUX/UNIX: Linux is a version of the Unix operating system that runs on the personal computer. Unix is an operating system used primarily by scientists and engineers on larger minicomputers.

iOS(iPhone OS): An operating system used for mobile devices manufactured by Apple Inc.

"Killer" App: An application viewed as so desirable by consumers that it can influence them to purchase devices or applications that include it.

Mobile Applications: Programs that run on tablet computers and smartphones.

Open Source: Software that can be freely used, changed, and shared (in modified or unmodified form) by anyone.

Operating Systems: The program that, after being initially loaded into the computer by a boot program, manages all the other programs in a computer.

Private Cloud: A particular model of cloud computing that involves a distinct and secure cloud based environment in which only the specified client can operate.

Productivity Software: Software applications have become standard tools for the workplace. For example, Excel or spreadsheet software.

SAP: Systems, Applications & Products in Data Processing. A German multinational software corporation that makes enterprise software to manage business operations and customer relations.

Software: A set of instructions that tells the hardware what to do.

Supply Chain Management (SCM): The management of the flow of goods and services.

Virtualization: Refers to the act of creating a virtual (rather than actual) version of something, including (but not limited to) a virtual computer hardware platform, operating system (OS), storage device, or computer network resources.

Windows: Microsoft's operating system.

Chapter 4 Data and Databases

Big Data: A broad term for data sets so large or complex that traditional data processing applications are inadequate

Business Analytics: Refers to the skills, technologies, practices for continuous iterative exploration and investigation of past business performance to gain insight and drive business planning.

Business Intelligence: The set of techniques and tools for the transformation of raw data into meaningful and useful information for business analysis purposes.

Data, Information & Knowledge: Data are the raw bits and pieces of information with no context. By adding the context – the raw bits and pieces become information. the data is put into context, aggregated and analyzed, it can be used to make decisions for an organization. The consumption of information produces knowledge.

Database: An organized collection of related information.

Database Management Systems (DBMS): Programs that provide user-friendly, interfaces to view and change a database, create queries, and develop reports.

Data Mining: An analytic process designed to explore large amounts of data.

Data Types: Text, Number, Yes/No, Date/Time, Currency, Paragraph Text and Object are amongst the most common data types to be stored.

Data Warehouse: Extract data from one or more of the organization's databases and load it into the data warehouse (which is itself another database) for storage and analysis.

Field(s): Database tables contain fields(columns) and records (rows). Example fields are firstname, lastname, studentID, GPA. It is possible to connect all the tables in the database through the field(s) they have in common.

Knowledge Management: The process of capturing, developing, sharing, and effectively using organizational knowledge.

MetaData: Data that describes other data.

Normalization: To normalize a database means to design it in a way that: reduces duplication of data between tables and gives the table as much flexibility as possible.

NoSQL Databases: Not Only SQL Database. A type of database that operates using means other than relational tables. NoSQL became popular with the growth of Web 2.0 and the need for faster data retrieval.

Primary Key: The unique identifier for each record in a table. For example, social security number or student ID.

Record(row): Records as the rows of the table.

Relational Database: One in which data is organized into one or more related tables.

Structured Query Language (SQL): A computer language that lets people, database developers and others extract information from the database.

Table: Each table has a set of fields, which define the nature of the data stored in the table. Database tables contain fields(columns) and records (rows).

Chapter 5 Networking and Communication

ARPANET (Advanced Research Projects Agency Network): An early packet switching network and the first network to implement the protocol suite TCP/IP. Both technologies became the technical foundation of the Internet. Originally developed by the US Department of Defense.

Bluetooth: A standard for the short-range wireless interconnection of cellular phones, computers, and other electronic devices.

Bridge: A network device that connects two networks together and only allows packets through that are needed.

Broadband: a high capacity transmission technique using a wide range of frequencies, which enables a large number of messages to be communicated simultaneously.

Cloud Computing: The practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer.

DNS: Domain Name System which acts as a directory on the Internet when a request to access a device with a domain name is given.

Domain Name: A descriptive text followed by the top level domain that is human friendly name for a device on the internet. For example cpp.edu or coke.com.

Domain Name Extension: The extension at the end of the domain name that indicates type of organization, such as .com, .org, .net, .edu…etc.

Extranet: An intranet that can be partially accessed by authorized outside users, enabling businesses to exchange information over the Internet securely.

Hub: A simple network device that connects other devices to the network and sends packets to all the devices that connected.

Internet: An electronic communications network that connects computer networks and organizational computer facilities around the world.

Intranet: A local or restricted communications network, especially a private network created using World Wide Web software.

IP Address: A unique identifying number assigned to every device that communicates on the internet.

IPV4 and IPV6: Internet Protocol address standard used has been IPv4(version 4) which has the format of four numbers between 0 and 255 separated by a period. IPv6 (version 6) is formatted as eight groups of four hexadecimal digits.

LAN: Local Area Network. A local network that connects computers and other devices in a relatively small area, typically a single building or a group of buildings.

Mobile Network: A cellular network or mobile network is a communications network where the last link is **wireless**. The network is distributed over land areas called cells, each served by at least one fixed-location transceiver, known as a cell site or **base station**.

Packet: The fundamental unit of data transmitted over the internet. Each packet includes the sender's address, the destination address, a sequence number and piece of the overall message to be sent.

Packet Switching: When a packet is passed from one router to another across the Internet until it reaches its destination.

Protocol: A specific set of communication rules used by computers.

Router: A device that receives and analyzes packets and then routes them towards their destination.

Switch: A network device that connects multiple devices together and filters packets based on their destination within the connected devices.

TCP/IP: Transmission Control Protocol / Internet Protocol. Defines how electronic devices (like computers) should be connected over the Internet, and how data should be transmitted between them.

Tim BernersLee: Inventor of the World Wide Web by developing an easy way to navigate the Internet through the use of linked text (hypertext).

Virtual Private Network: A method employing encryption to provide secure access to a remote computer over the Internet.

VoIP: Voice Over IP. A methodology and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks.

WAN: A Wide Area Network, telecommunications network or computer network that extends over a large geographical area.

Web 2.0: The second stage of development of the World Wide Web, characterized especially by the change from static web pages to dynamic or user generated content and the growth of social media.

Web 3.0: A third phase in the evolution of the World Wide Web, based on the idea that the Internet 'understands' the pieces of information it stores and is able to make logical connections between them.

WiFi: A facility allowing computers, smartphones, or other devices to connect to the Internet or communicate with one another wirelessly within a particular area.

World Wide Web: Simply one piece of the Internet made up of web servers that have HTML pages that are being viewed on devices with web browsers.

Chapter 6 Information Systems Security

Access Control: To ensure that that the user can only access the information resources that are appropriate. It determines which users can authorized to read, modify, add, and/or delete information.

Authentication: Making sure a person is who they say they are. **Three factor identification:** Identifying someone: something they know, something they have, or something they are.

Availability: That information can be accessed and modified by anyone authorized to do so in appropriate timeframe.

Backup: The procedure for making extra copies of data in case the original is lost or damaged.

Biometric Authentication: A type of system that relies on the unique biological characteristics of individuals to verify identity for secure access to electronic systems. Example, a fingerprint scan.

Confidentiality: Protecting information, to be able to restrict access to only those who are allowed to see it.

Encryption: The process of encoding data upon its transmission or storage so that only authorized individuals can read it.

FERPA: Family Educational Rights and Privacy Act. This act restricts who has access to student information.

Firewall: A software program or hardware device that is used to increase security on its network by blocking unwanted messages/data.

HIPPA: Health Insurance Portability and Accountability Act. Health care organizations are obligated to follow several regulations regarding people's medical data, particularly patient privacy.

Integrity: The assurance that the information being accessed has not been altered and truly represents what is intended.

Intrusion Detection System (IDS): Works to provide the functionality to identify if the network is being attacked.

Multifactor authentication: A security system that requires more than one method of authentication from independent categories of credentials to verify the user's identity for a login or other transaction.

Physical Security: The protection of the actual hardware and networking components that store and transmit information resources.

Universal Power Supply (UPS): A device that provides battery backup to critical components of the system, allowing they system to stay online longer and/or allowing the IT Staff to shut them down using proper procedures in order to prevent the data loss that might occur from power failure.

VPN: A virtual private network allows user who are outside of a corporate network to take a detour around the firewall and access the internal network from the outside.

Chapter 7 Does IT Matter?

Collaborative Systems: One where multiple users or agents engage in a shared activity, usually from remote locations.

Competitive Advantage: A company is said to have competitive advantage over its rivals when it is able to sustain profits that exceed average for the industry.

Cost Advantage: Strategic superiority achieved through factors such as access to cheaper inputs, efficient processes , favorable location , skilled workforce , superior technology , and/or waste reduction or elimination.

Decision Support Systems: A computer program application that analyzes business data and presents it so that users can make business decisions more easily.

Differentiation Advantage: Unique benefits or characteristics of a firm, product , or program that set it apart and above its competitors in the customers' viewpoint.

Electronic Data Interchange (EDI): The computer to computer exchange of business documents in a standard electronic format between business partners.

Entry Barrier: Are obstacles that make it difficult to enter a given market.

Michael Porter: Wrote the book *Competitive Advantage: Creating and Sustaining Superior Performance*, identifying two primary factors, Cost Advantage and Differentiation Advantage. Developed the 5 force model and the value chain model.

Nicholas Carr: A Harvard professor who wrote his article "IT Doesn't Matter" where he asserts that information technology is so readily available and the software used so easily copied, businesses cannot hope to implement these tools to provide a competitive advantage.

Porter's 5 Force Model: A framework developed by economist Michael E. Porter to determine the profitability and attractiveness of a market or market segment. Includes Industry Rivalry, Bargaining Power of Buyers, Bargaining Power of Suppliers, Threat of New Entrants and Threat of Substitute Products.

Value Chain: A set of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market.

Chapter 8 Business Processes

Business process: A collection of linked tasks which end in the delivery of a service or product to a client.

Business Process Management (BPM): A systematic approach to making an organization's workflow more effective, more efficient and more capable of adapting to an ever changing environment.

Business Process Reengineering (BPR): The analysis and redesign of workflows within and between enterprises in order to optimize end-to-end processes and automate non value-added tasks.

Enterprise Resources Planning (ERP): A business process management program that allows an organization to use a system of integrated applications to manage the business and automate many back office functions related to technology, services and human resources.

ISO 9000: A series of standards, developed and published by the International Organization for Standardization (ISO), that define, establish, and maintain an effective quality assurance system for manufacturing and service industries.

SAP: Systems, Applications & Products in Data Processing. A German multinational software corporation that makes enterprise software to manage business operations and customer relations.

Chapter 9 The People in Information Systems

CIO: Chief Information Officer is the head of the information systems function and aligns the plans and operations of the information systems with the strategic goals of the function.

Computer Engineer: Designs the computing devices that we use every day.

Computer Operator: A person responsible for monitoring and controlling computer systems.

Database Administrator: This person who plans, develops, monitors and maintains databases that are used as part of applications or the data warehouse.

ERP Manager: Individual that makes sure that the ERP system is completely up to date, work to implement any changes to the ERP that are needed, and consult with various user departments on needed reports or data extractions.

Functional Manager: In an IT organization, a functional manager reports to the CIO or other manger, and manages the employees specific to their function. Functional groups might include networking, helpdesk and support services and application development.

HelpDesk: A place or organization that a user of information technology can call to get help with a problem. This can be internal to a company or external to customers outside the company.

InformationSecurity Officer: In charge of setting information system policies for an organization, and then overseeing the implementation of those policies.

Outsourcing: Hiring external labor, usually at lower cost, to accomplish company work. This includes hiring low-cost labor in other countries and cheaper labor in a resident country. Outsourcing can be an effective cost saving strategy when used properly.

Project Managers: Responsible for keeping projects on time and budget and works with other stakeholders of the project to keep the team organized and communicates the statue of the project to management.

Programmer: People who write computer programs to support business functions.

Support Analyst: First line support for computer users in the company.

Systems Analyst: This individual will work with a person, team, or department with business requirements and identify the specific details of a system that needs to be built.

Technology Adoption Curve: One tool that can be used to understand how users will adopt a new technology.

Trainer: A person that conducts classes to teach people specific computer skills.

Users: A person who uses or operates something, especially a computer or other machine.

Chapter 10 Information Systems Development

Agile Methodologies : A group of methodologies that utilize incremental changes with a focus on quality and attention to detail.

Build vs. Buy Decision: When an organization decides that a new software program needs to be developed, they must determine if it makes more sense to build it themselves or to purchase it from an outside company.

Change Management: As new systems are brought online and old systems are phased out, it becomes important to manage the way change is implemented in the organization.

End-User Computing: Refers to systems in which nonprogrammers can create working applications.

Implementation Methodology – Parallel Operation: The old and new system are used simultaneously for a limited period of time.

Implementation Methodology – Direct Cutover : The organization selects a particular date that the old system is not going to be used. On that date, the old system is turned off and the new one is operational.

Implementation Methodology – Phased Implementation: Different functions of the new application are implemented in phases, adding functionality as the phases are implemented.

Implementation Methodology – Pilot Implementation: A subset of the organization starts using the new system before the rest of the organization.

Joint Application Development : A methodology that involves the client or end user in the design and development of an application, through a succession of collaborative workshops called JAD sessions.

Lean Methodology: A methodology that focuses on taking an initial idea and developing a minimum viable product (MVP).

Maintenance: Making changes, corrections and improvement to a system already in use by a company.

Minimum Viable Product (MVP): A working software application with just enough functionality to demonstrate the idea behind the project.

Quality Triangle: A model that illustrates the constraints of project management: time,cost, and quality. A manager cannot change one of the constraints without impacting the others.

Rapid Application Development: A development methodology that focuses on quickly building a working model of the software, getting feedback from users, and then using that feedback to update the working model.

Systems Development Life Cycle : This methodology developed in the 1960s to manage the large software projects associated with corporate systems running on mainframes. Phases are Preliminary Analysis, Systems Analysis, Systems Design, Programming, Testing, Implementation and Maintenance.

Web Services: When companies have the options to license functions provided by other companies instead of writing the code themselves.

Chapter 11 Globalization and the Digital Divide

Digital Divide: The gap between demographics and regions that have access to modern information and communications technology, and those that don't or have restricted access. Newly defined stages of the digital divide defined by Jakob Nielsen include the economic divide, the usability divide and the empowerment divide.

Globalization: The integration of goods, services, and culture among the nations of the world.

Chapter 12 The Ethical and Legal Implications of Information Systems

Acceptable Use Policies (AUP): An acceptable usage policy or fair use policy, is a set of rules applied by the owner, creator or administrator of a network, website, or service, that restrict the ways in which the network, website or system may be used and sets guidelines as to how it should be used.

Children's Online Privacy Protection Act (COPPA): Regulates collecting information from children under the age of thirteen. Enforced by the Federal Trade Commission.

Code of Ethics or Professional Conduct: Is a document that outlines a set of acceptable behaviors for a professional or social group; generally, it is agreed to by all members of the group.

Copyright: The protection given to songs, computer programs, books, and other creative works. Any work that has an "author" can be copyrighted.

Creative Commons: A nonprofit organization that provides legal tools for artists and authors. The tools offered make it simple to license artistic or literary work for others to use or distribute in a manner consistent with the author's intentions. Creative Commons copyrights allow for less restrictive rules than traditional copyright.

Digital Millennium Copyright Act (DMCA): extended copyright law to take into consideration digital technologies. Two of the best known provisions from the DMCA are the anti-circumvention provision and the "safe harbor" provision.

Digital Rights Management (DRM): A systematic approach to copyright protection for digital media. The purpose of DRM is to prevent unauthorized redistribution of digital media and restrict the ways consumers can copy content they've purchased.

Electronic Frontier Foundation (EFF): A nonprofit organization that seeks to increase the understanding of civil liberties and other legal issues in cyberspace, or what it called the electronic frontier.

Ethical System: A set of moral principles" or "the principles of conduct governing an individual or a group.

Fair Use: A limitation on copyright law that allows for the use of protected works without prior authorization in specific cases.

Family Educational Rights and Privacy Act (FERPA): Restricts access to student records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education.

Intellectual Property (IP): A n idea, invention, or process that derives from the work of the mind or intellect is assigned to designated owners by law.

NonObvious Relationship Awareness (NORA): A process of collecting large quantities of a variety of information and then combining it to create profiles of individuals.

Patent: Set of exclusive rights granted by a sovereign state to an inventor or assignee for a limited period of time in exchange for detailed public disclosure of an invention.

Privacy: The ability to control information about oneself.

Trademark: A word, phrase, logo, shape or sound that identifies a source of goods or services.

Chapter 13 Future Trends in Information Systems

Wearable Technology: A category of technology devices that can be worn by a consumer and often include tracking information related to health and fitness.

Collaborative Technology: To share data with each other for mutual benefit. Some of this sharing can be done passively and other data can be reported actively.

3D Printing: To print any 3D object based on a model of that object designed on a computer. 3D printers work by creating layer upon layer of the model using malleable materials, such as different types of glass, metals, or even wax.

Internet of Things: The idea of physical objects being connected to the Internet, embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data.

Autonomous Technologies: Autonomous robots and vehicles that work by combining software, sensors, and location technologies. Devices that can operate themselves.