KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY

TIRUCHENGODE -637 215.

DEPARTMENT OF INFORMATION TECHNOLOGY

VOLUME 2
ISSUE 2

February 2015

DIGITIMES

Information Systems and Technologies

KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY

Vision

To become a globally recognized Institution in Engineering Education, Research and Entrepreneurship.

Mission

M1	Accomplish quality education through improved teaching learning process
M2	Enrich technical skills with state of the art laboratories and facilities
M3	Enhance research and entrepreneurship activities to meet the industrial and societal needs

DEPARTMENT OF INFORMATION TECHNOLOGY

Vision

To produce competent Information Technology Professionals and Entrepreneurs with ethical values to meet the global challenges.

Mission

MD1	Impart quality education with ethical values in Information Technology through improved teaching learning process
MD2	Provide an ambient learning environment using state of the art laboratories and facilities
MD3	Encourage research and entrepreneurship activities to meet the dynamic needs of Information Technology industry and society

Program Educational Objectives (PEOs)

PEO	Key Words	Description
PEO 1	**Core Competency**	Graduates will be successful professionals in career by applying the knowledge of mathematics, science and engineering with appropriate techniques and modern tools.
PEO 2	**Professionalism**	Graduate will exhibit soft skills, professional and ethical values and thrust for continuous learning to maintain professionalism in the IT industries.
PEO 3	**Higher Studies and Entrepreneurship**	Graduates will engage in higher studies and outshine as entrepreneurs through life-long learning which leads to societal benefits.

DIGITIMES

Editorial

We would like to wholeheartedly thank our honorable Chairman, **Lion.Dr.K.S.Rangasamy** and vice chairman **Mr.R.Srinivasan**, and Principal **Dr.M.Venkatesan** for their continuous encouragement and constant support for bringing out the magazine. We profoundly thank our Head of the Department **Dr.P.MeenakshiDevi** for encouraging and motivating us to lead the magazine a successful one right from the beginning. DIGITIMES serves as a platform for updating and enhancing upcoming technologies in Information Technology. We are also grateful to all the contributors and faculty coordinator to bring this magazine.

By,

Editorial Board

CONTENTS

S. No.	Topics	Page No.
1.	Information system & Information Technology	4
2.	Computer based information system	6
3.	Types of information system from Functional perspective	9
4.	Current trends in information system & Technologies	15
5.	Information systems & technologies in Banking Sector	20
6.	Information system & technology-Future Trends	25
7.	Jobs for Information System & Technologies	30
8.	Pros & Cons of Information system	31
9.	Issues & challenges in Information Technology for Implementing Information System	32
10	Components of Information Systems	33
11	Types of Information Systems	

INFORMATION SYSTEMS & INFORMATION TECHNOLOGY

Information systems is an umbrella term for the systems, people and processes designed to create, store, manipulate, distribute and disseminate information. The field of information systems bridges business and computer science. One of the reasons people may not distinguish between IS and IT is that they assume all information systems are computer-based systems. An information system, however, can be as simple as a pencil and a piece of paper. Separate, the objects are just tools. Used together, they create a system for recording information. Although information systems are heavily reliant on computers and other technology-based tools, the term predates computers and can include non-technological systems.

A degree in information systems often includes courses in:

- Information Theory
- Foundations of Management
- Social Science
- Information Technology

Careers in information systems can include a variety of fields, such as actuarial sciences, analytics and programming, communications, computer security and auditing.

Information technology falls under the IS umbrella but deals with the technology involved in the systems themselves. Information technology can be defined as the study, design, implementation, support or management of computer-based information systems.

IT typically includes hardware, software, databases and networks. Information technology often governs the acquisition, processing, storage and dissemination of digitized information, or data, generated through the disciplines of computing and telecommunications. Information technology focuses on managing technology and improving its utilization to advance the overall business goals.

A career in information technology often requires a degree in computer or information science and can offer several career paths, such as cybersecurity, network or database administration, infrastructure management, business intelligence or enterprise resource planning, computer programming and software development.

Degree programs in information technology typically include courses in:

Mathematics

Database Design

Computer Science and Forensics

Programming Languages

Information systems and information technology are growing fields that offer a variety of job options and long-term professional growth. Although these fields are related, individuals who are interested in a technology-related career should understand the differences in order to select educational programs that will prepare them for a career that best matches their skills, interests and goals.

Information Systems vs. Information Technology

Information systems (IS) and information technology (IT) are often considered synonymous. In reality, information technology is a subset of information systems. The perception that these terms can be used interchangeably can cause confusion for individuals interested in pursuing a technology-related career. Although both these fields deal with computers, they have distinct characteristics and specific career paths that require different education and training.

BY

MANICKAVEL V II Year/IT

COMPUTER BASED INFORMATION SYSTEM

Computer (-Based) Information System is essentially an IS using computer technology to carry out some or all of its planned tasks. The basic components of computer based information system are:

Hardware– these are the devices like the monitor, processor, printer and keyboard, all of which work together to accept, process, show data and information, hardware and software

Software– are the programs that allow the hardware to process the data.

Databases– are the gathering of associated files or tables containing related data.

Networks– are a connecting system that allows diverse computers to distribute resources.

Procedures– are the commands for combining the components above to process information and produce the preferred output.

The first four components (hardware, software, database and network) make up what are components of computer based information system (CBIS) known as the information technology platform. Information technology workers could then use these components to create information systems that watch over safety measures, risk and the management of data. These actions are known as information technology services.

BY

GOWTHAM T II Year/IT

TYPES OF INFORMATION SYSTEMS FROM FUNCTIONAL PERSPECTIVE

1. Sales and Marketing Systems

2. Manufacturing and Production System

3. Finance and Accounting Systems

4. Human Resources Systems

Sales and Marketing Systems

The sales and marketing function is responsible for selling the organization's product or service. Marketing is concerned with identifying the customers for the firm's products or services, determining what they need or want, planning and developing products and services to meet their needs and wants. Systems that help the firm identify customers for the firm's products or services, develop products and services to meet customers' needs and wants.

Information systems are used in sales and marketing in a number of ways.

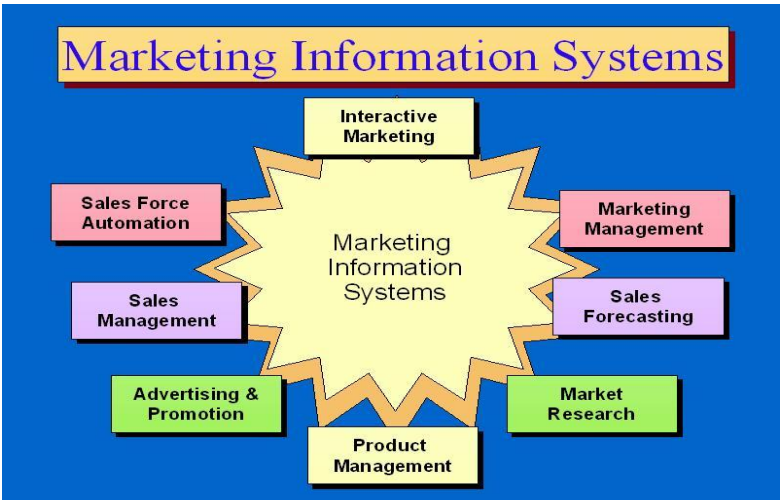
STRATEGIC LEVEL : Sales and marketing systems monitor trends affecting new products and sales opportunities, support planning for

new products and services, and monitor the performance of competitors.

MANAGEMENT LEVEL : sales and marketing systems support market research, advertising and promotional campaigns, and pricing decisions. They analyze sales performance and the performance of the sales staff.

KNOWLEDGE-LEVEL : At this, sales and marketing systems support marketing analysis workstations.

OPERATIONAL LEVEL : Sales and marketing systems assist in locating and contacting prospective customers, tracking sales, processing orders, and providing customer service support.



Manufacturing and Production Systems

The manufacturing and production function is responsible for actually producing the firm's goods and services. Manufacturing and production systems deal with the planning, development, and maintenance of production facilities Systems that deal with the planning, development, and production of products and services, and with controlling the flow of production

STRATEGIC-LEVEL : manufacturing systems deal with the firm's long-term manufacturing goals, such as where to locate new plants or whether to invest in new manufacturing technology MANAGEMENT LEVEL : manufacturing and production systems analyze and monitor manufacturing and production costs and resources.

KNOWLEDGE LEVEL : manufacturing and production systems create and distribute design knowledge or expertise to drive the production process.

OPERATIONAL LEVEL : manufacturing and production systems deal with the status of production tasks.

Finance and Accounting Systems

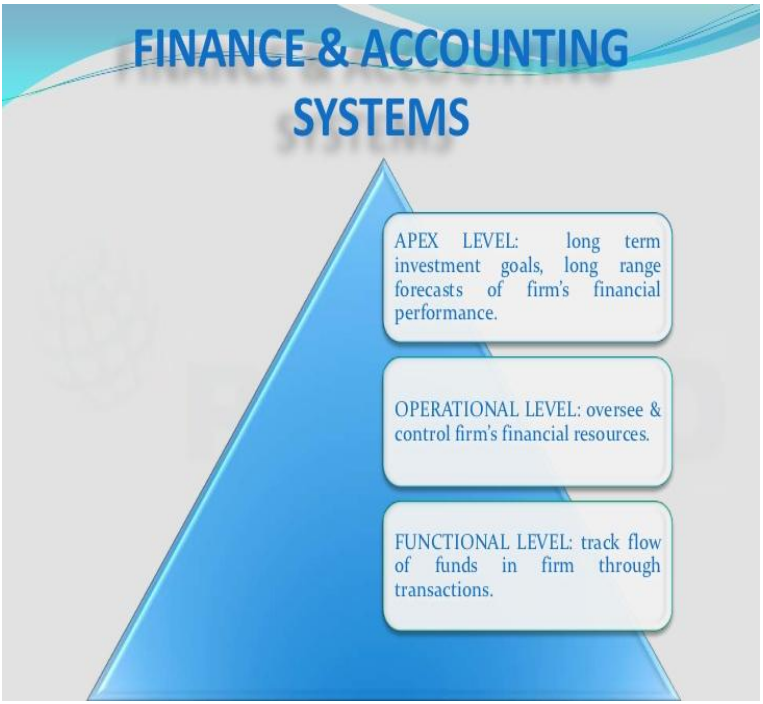
The finance function is responsible for managing the firm's financial assets, such as cash, stocks, bonds, and other investments in order to maximize the return on these financial assets. The accounting function is responsible for maintaining and managing the firm's financial records— receipts, disbursements, depreciation, payroll—to account for the flow of funds in a firm The accounting function is responsible for maintaining and managing the firm's financial records— receipts, disbursements, depreciation, payroll—to account for the flow of funds in a firm

STRATEGIC-LEVEL : Systems for the finance and accounting function establish long-term investment goals for the firm.

MANAGEMENT LEVEL : Information systems help managers oversee and control the firm's financial resource

KNOWLEDGE LEVEL : Systems support finance and accounting by providing analytical tools and workstations for designing the right mix of investments to maximize returns for the firm.

OPERATIONAL LEVEL : Systems in finance and accounting track the flow of funds in the firm through transactions such as paycheques, payments to vendors, securities reports, and receipts.



Human Resources Systems

The human resources function is responsible for attracting, developing, and maintaining the firm's work force. Human resources

information systems support activities such as identifying potential employees, maintaining complete records on existing employees, and creating programs to develop employees' talents and skills. Systems that maintain employee records; track employee skills, job performance, and training; and support planning for employee compensation and career development.

STRATEGIC-LEVEL : Human resources systems identify the manpower requirements (skills, educational level, types of positions, number of positions, and cost) for meeting the firm's long-term business plans

MANAGEMENT LEVEL : Human resources systems help managers monitor and analyze the recruitment, allocation, and compensation of employees.

KNOWLEDGE LEVEL : Systems for human resources support analysis activities related to job design, training, and the modelling of employee career paths and reporting relationships.

OPERATIONAL LEVEL : The recruitment and placement of the firm's employees.

BY

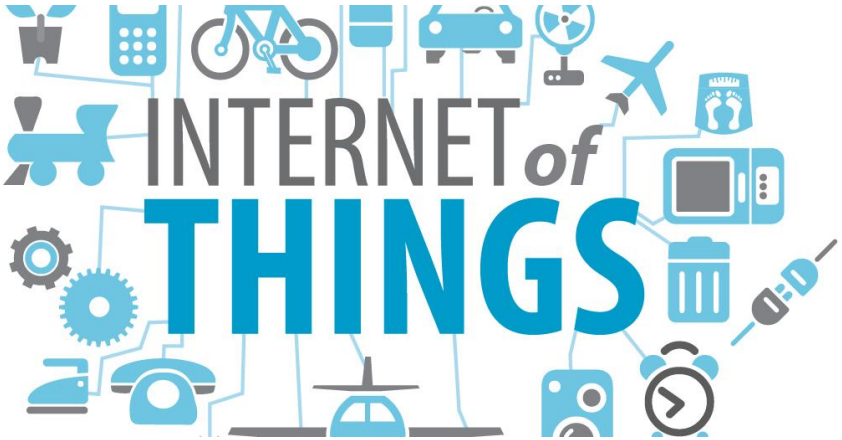
MONICA N III Year/IT

CURRENTTRENDS IN INFORMATION SYSTEMS & TECHNOLOGIES

In the recent years, the development of information systems and practices has brought new emergent paradigms to the scene, mainly in intelligent and social informatics. Cloud computing, internet of things (IoTs) and big data are recent trends in this domain and gaining greater attention equally from academics and industrialists.

Cloud

Cloud computing focus on distributed information systems based on service models to provide IT services, applications, platforms, storage toward anything in a Pay-as-you-go manner service. No



limit to what you can buy/rent on the cloud, it is scalable, configurable and easy to use and deploy compared with the old IT paradigms.

IoT

IoTs is an idea focus on machine-to-machine communication toward connecting "everything" to internet for both continuous and discrete connection; the important here is to have a footprint for "everything" on the internet.

Later the footprints can be analysed and fed back as a new insight to serve particular purposes. With the increasing number of social network sites on the internet where people started to enrich the internet content, in 2012, people have created 2.5 quintillion bytes of data every day.

Most of these data which were generated by both machines and human characterized as unstructured, heterogeneous and distributed. Thus, have enriched research in the area of big data analysis, institutes intent to know how they can make the maximum benefits of the available big data.

Relevant applications can be widely spread in any domain area (finance, security, government, social studies, marketing, product development and manufacturing, etc.). However, the real picture of

technology advancement is not that flashing as commercial technologies providers try to describe, where I believe there are still lots have to be done. In the following I will list a number of fruitful research directions of these paradigms which yet not have been widely investigated and of interest to me:

– Big data and ontology: how to bridge the gap between machine and human is an old question, which I believe the answer becomes more visible nowadays. Ontology can ensure interoperability, while big data are there and stored in many ways, ontology can enhance the query of this data by providing semantic, improve integrity between systems and generate meaning from data.

Integrating ontology to heterogeneous data sets will be a next step challenge.

– Designing for big data: big data especially the data come from machines/sensors need to be planned and designed carefully. Collecting data from multiple sources and sensors in the real time is a challenging mission; careful design of data semantic, synchronization and labelling is needed for both technical and methodological development.

– Cloud of IoTs as a complex adaptive system: cloud of IoTs can be seen as a complex adaptive system (CAS), these types of systems characterised by uncertainty, nonlinearity, dynamics, self-organization and evolvable, how we can benefits from theory to understand/predict the nature and future of cloud of IoTs systems` network.

– The right analysis for the right purpose: Analysts facing challenges in knowing how they can better analyse and extract insight out of big data, enormous number of analysis tools and mechanisms are available and the question here is how we can choose the right type of analysis mechanism or algorithm to each particular big data analysis purpose. Also, how we can select and blend big data from multiple sources for effective analysis.

– Business-IT alignment: business process modelling is widely regarded technique to model and align business activities. Also, it is considered a great technique for requirements and business-IT alignment.

Further improvement is possible in order to align context, business and technology, we need to consider domain ontology development integrated to business processes, this will make business process models more "context aware", while business process models can be easily aligned to IT (e.g.: BPMN → BPEL → software services → Software applications), it seems quite challenging to integrate it to ontology. I am sure development in this direction will insure full vertical and horizontal alignment of the enterprise activities

BY

VINITH.R IV Year/IT

The number one benefit of information technology is that it empowers people to do what they want to do. It lets people be creative. It lets people be productive. It lets people learn things they didn't think they could learn before, and so in a sense it is all about potential.

Steve Ballmer

INFORMATION SYSTEMS & TECHNOLOGIES IN BANKING SECTOR

Computers are getting more sophisticated. They have given banks a potential they could only dream about and have given bank customers high expectations. The changes that new technologies have brought to banking are enormous in their

impact on officers, employees, and customers of banks. Advances in technology are allowing for delivery of banking products and services more conveniently and effectively than ever before - thus creating new bases of competition. Rapid access to critical information and the ability to act quickly and effectively will distinguish the successful banks of the future. The bank gains a vital competitive advantage by having a direct

marketing and accountable customer service environment and new, streamlined business processes. Consistent management and decision support systems provide the bank that competitive edge to forge ahead in the banking marketplace.

Major applications. The advantages accruing from computerization are three-directional - to the customer, to the bank and to the employee.

For the customer. Banks are aware of customer's need for new services and plan to make them available. IT has increased the level of competition and forced them to integrate the new technologies in order to satisfy their customers. They have already developed and implemented a certain number of solutions among them:

Self-inquiry facility: Facility for logging into specified self-inquiry terminals at the branch to inquire and view the transactions in the account.

Remote banking: Remote terminals at the customer site connected to the respective branch through a modem,

enabling the customer to make inquiries regarding his accounts, on-line, without having to move from his office.

Anytime banking- Anywhere banking: Installation of ATMs which offer non-stop cash withdrawal, remittances and inquiry facilities. Networking of computerized branches inter-city and intra-city, will permit customers of these branches, when interconnected, to transact from any of these branches.

Telebanking: A 24-hour service through which inquiries regarding balances and transactions in the account can be made over the phone.

Electronic Banking: This enables the bank to provide corporate or high value customers with a Graphical User Interface (GUI) software on a PC, to inquire about their financial transactions and accounts, cash

transfers, cheque book issue and inquiry on rates without visiting the bank. Moreover, LC text and details on bills can be sent by the customer, and the bank can download the same. The technology used to provide this service is called electronic data interchange (EDI). It is used to transmit business transactions in computer-readble form between organizations and individuals in a standard format.

As information is centralized and updates are available simultaneously at all places, single-window service becomes possible, leading to effective reduction in waiting time.

For the bank. During the last decade, banks applied IT to a wide range of back and front office tasks in addition to a great number of new products. The major advantages for the bank to implement IT are:

Availability of a wide range of inquiry facilities, assisting the bank in business development and follow-up.

Immediate replies to customer queries without reference to ledger-keeper as terminals are provided to Managers and Chief Managers.

Automatic and prompt carrying out of standing instructions on due date and generation of reports.

Generation of various MIS reports and periodical returns on due dates.

Fast and up-to-date information transfer enabling speedier decisions, by interconnecting computerized branches and controlling offices.

For the employees. IT has increased their productivity through the followings:

Accurate computing of cumbersome and time-consuming jobs such as balancing and interest calculations on due dates.

Automatic printing of covering schedules, deposit receipts, pass book / pass sheet, freeing the staff from performing these time-consuming jobs, and enabling them to give more attention to the needs of the customer.

Signature retrieval facility, assisting in verification of transactions, sitting at their own terminal.

Avoidance of duplication of entries due to existence of single-point data entry.

BY

DHINESH P II YEAR/IT

INFORMATION SYSTEMS & TECHNOLOGY FUTURE TRENDS

Platform Architecture

One of the most significant trends identified in the report finds that the age of "viewing everything through an application lens is coming to an end." Instead, platform architectures will be selected primarily to cope with soaring volumes of data and the complexity of data management, not for their ability to support applications.

The tried and true relational database will not go away, but it will soon start to make way for other types of databases – streaming databases, for instance – that mark a significant departure from what IT departments and business users have relied on for decades.

Social Platforms

The report also predicts the evolution of social media into social platforms. This means company websites may no longer be the first port of call for customers. This has the potential to disrupt the way companies conduct business, posing new challenges – and opportunities – for IT.

For example, "social identities" – based on the rich history of information that individuals leave in social networks – will become much more valuable to businesses than the traditional and isolated information they get when an individual registers on their corporate website.

Data Security

The fortress mentality, in which all IT has to be architected to be foolproof, is giving way to a security architecture that responds proportionately to threats when and where they happen." As a result, the role of people in data

security will decline, replaced by automated capabilities that detect, assess, and respond immediately.

Data Privacy

Individual privacy will take center stage as a result of increased government regulation and policy enforcement. The report concludes: "We expect that leading players will develop superior levels of understanding, enterprise-wide, about the distinctions between being a data processor – broadly handling the personal data of others – versus being a data controller, thus lowering the risks of unwitting breaches or privacy regulations and perceptions of privacy breakdowns."

Analytics

Companies that continue to view analytics as a simple extension of business intelligence will be "severely underestimating analytics' potential to move the needles on the business." Among other failings, traditional BI does not take advantage of the wealth of unstructured data that is now

available. IT leaders will need to work closely with business leaders to identify where analytics can be leveraged effectively, as well as the proper mix of services required to optimize analytics capabilities across the enterprise.

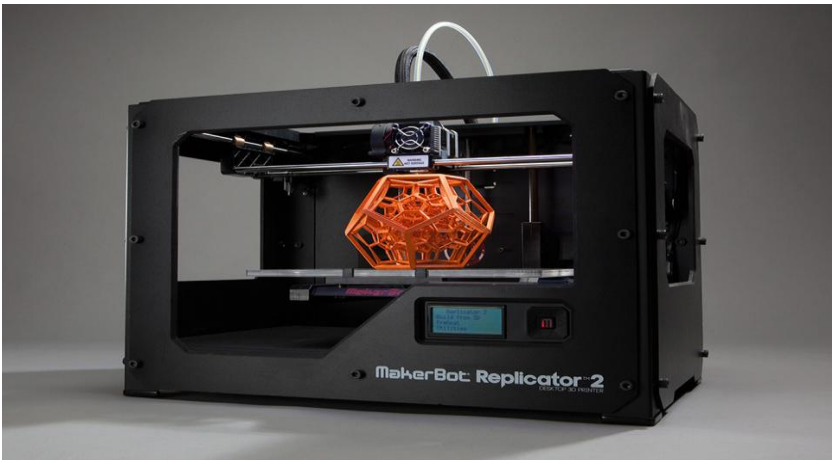
User Experience

Today, business process design is driven by the need for optimization and cost reduction. Tomorrow it will be driven by the need to create superior user experiences that help to boost customer satisfaction. Great user experiences will require more layered approaches than what is typical today. As such, application design will be a multidisciplinary exercise: Typically handled today by IT architects

and business owners, tomorrow it will involve optimization from the perspective of the process actor, with the emphasis on simplicity and on removing inefficiencies.

Printable

One of the most amazing innovations to be developed recently is the 3-D printer. A 3-D printer allows you to print virtually any 3-D object based on a model of that object designed on a computer. 3-D printers work by creating layer upon layer of the model using malleable



materials, such as different types of glass, metals, or even wax.

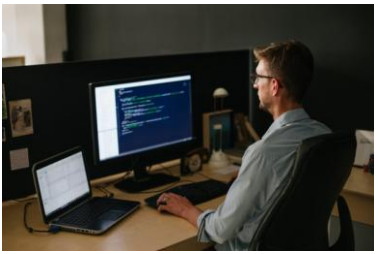
3-D printing is quite useful for prototyping the designs of products to determine their feasibility and marketability. 3-D printing has also been used to create working prosthetic legs, handguns, and even an ear that can hear beyond the range of normal hearing. The US Air Force now uses 3-D printed parts on the F-18 fighter jet.

By

MONISHA III YEAR/IT

JOBS FOR INFORMATION SYSTEMS & TECHNOLOGIES

- Computer Programmers.
- Computer Systems Analysts.
- Computer and Information Systems Managers (IT managers)
- Database Administrators.
- Information Security Analysts,
- Web Developers,
- Computer Network Architects.
- Network and Computer Systems Administrators.



PROS AND CONS OF INFORMATION SYSTEMS

Advantages

- Communication
- Globalization and cultural
- Availability
- Creation of new types of jobs
- Cost effectiveness and productivity

Disadvantages

- Unemployment and lack of job security
- Dominant culture
- Security issues
- Implementation expenses
- Information systems contribute to the efficient running of organizations.

BY

SANGAVI R III Year/IT

ISSUES AND CHALLENGES IN INFORMATION TECHNOLOGY FOR IMPLEMENTING INFORMATION SYSTEMS

As computing systems and capabilities continue expanding worldwide, data overload has become an increasingly critical issue for many IT professionals. Efficiently processing huge amounts of data to produce useful business intelligence requires large amounts of processing power, sophisticated software, and human analytic skills.

Teamwork and communication skills have also become essential for most businesses to manage the complexity of IT systems. Many IT professionals are responsible for providing service to business users who are not trained in computer networking or other information technologies but who are instead interested in simply using IT as a tool to get their work done efficiently.

System and network security issues are a primary concern for many business executives, as any security incident can potentially damage a company's reputation and cost large sums of money.

BY

AADHAVAN II Year/IT

COMPONENTS OF INFORMATION SYSTEMS

The main components of information systems are computer hardware and software, telecommunications, databases and data warehouses, human resources, and procedures.

The hardware, software and telecommunications constitute information technology (IT), which is now ingrained in the operations and management of organizations.

Computer hardware

Individuals may own multiple computers in the form of smart phones, tablets, and other wearable devices. Large organizations typically employ distributed computer systems, from powerful parallel-processing servers located in data centers to widely dispersed personal computers and mobile devices, integrated into the organizational information systems. Sensors are becoming ever more widely distributed throughout the physical and biological environment to gather data and, in many cases, to affect control via devices known as actuators. Together with the peripheral equipment—such as magnetic or solid-state storage disks, input-output devices, and telecommunications gear—these constitute the hardware of information systems. However, hardware's use of electric power and its environmental impact are concerns being addressed by designers. Increasingly, computer and

storage services are delivered from the cloud—from shared facilities accessed over telecommunications networks.

Computer software

Computer software falls into two broad classes:

- System Software and
- Application software.

The principal system software is the operating system. It manages the hardware, data and program files, and other system resources and provides means for the user to control the computer, generally via a graphical user interface (GUI).

Application software is programs designed to handle specific tasks for users. Smartphone apps became a common way for individuals to access information systems.

Larger firms use licensed applications developed and maintained by specialized software companies, customizing them to meet their specific needs, and develop other applications in-house or on an outsourced basis.

Companies may also use applications delivered as software-as-a-service (SaaS) from the cloud over the Web. Proprietary software, available from and supported by its vendors, is being challenged by open-source software available on the Web for free use and modification under a license that protects its future availability.

Telecommunications

Telecommunications are used to connect, or network, computer systems and portable and wearable devices and to transmit information.Connections are established via wired or wireless media. Wired technologies include coaxial cable and fiber.

Pervasive information systems have arisen with the computing devices embedded in many different physical objects sensors such as radio frequency identification devices (RFIDs) can be attached to products moving through the supply chain to enable the tracking of their location and the monitoring of their condition.

Various computer network configurations are possible, depending on the needs of an organization.

Local area networks (LANs) join computers at a particular site, such as an office building or an academic campus. Metropolitan area networks (MANs) cover a limited densely populated area and are the electronic infrastructure of "smart cities." Wide area networks (WANs) connect widely distributed data centers, frequently run by different organizations.

A massive "Internet of things" has emerged, as sensors and actuators have been widely distributed in the physical environment and are supplying data, such as acidity of a square yard of soil, the speed of a driving vehicle, or the blood pressure of an individual. The availability of such information enables a rapid reaction when

necessary as well as sustained decision making based on processing of the massive accumulated data.

Databases and data warehouses

Many information systems are primarily delivery vehicles for data stored in databases. A database is a collection of interrelated data organized so that individual records or groups of records can be retrieved to satisfy various criteria. Typical examples of databases include employee records and product catalogs. Databases support the operations and management functions of an enterprise. Data warehouses contain the archival data, collected over time, that can be mined for information in order to develop and market new products, serve the existing customers better, or reach out to potential new customers. Anyone who has ever purchased something with a credit card—in person, by mail order, or over the Web—is included within such data collections.

Massive collection and processing of the quantitative, or structured, data, as well as of the textual data often gathered on the Web, has developed into a broad initiative known as "big data." Many benefits can arise from decisions based on the facts reflected by big data. Examples include evidence-based medicine, economy of resources as a result of avoiding waste, and recommendations of new products based on a user's interests. Big data enables innovative business models. For example, a commercial firm collects the prices of goods by crowd sourcing via smart phones

around the world. The aggregated data supplies early information on price movements, enabling more responsive decision making than was previously possible.

The processing of textual data—such as reviews and opinions articulated by individuals on social networks, blogs, and discussion boards—permits automated sentiment analysis for marketing, competitive intelligence, new product development, and other decision-making purposes.

Human resources and procedures

Qualified people are a vital component of any information system. Technical personnel include development and operations managers, business analysts, systems analysts and designers, database administrators, programmers, computer security specialists, and computer operators.

Procedures for using, operating, and maintaining an information system are part of its documentation. For example, procedures need to be established to run a payroll program, including when to run it, who is authorized to run it, and who has access to the output. In the autonomous computing initiative, data centers are increasingly run automatically, with the procedures embedded in the software that controls those centers.

BY

BHUVANESWARI II YEAR/IT

TYPES OF INFORMATION SYSTEMS

Information systems support operations, knowledge work, and management in organizations.

Operational support and enterprise systems

Transaction processing systems support the operations through which products are designed, marketed, produced, and delivered. In larger organizations, transaction processing is frequently accomplished with large integrated systems known as enterprise systems. In this case, the information systems that support various functional units—sales and marketing, production, finance, and human resources—are integrated into an enterprise resource planning (ERP) system, the principal kind of enterprise system. ERP systems support the value chain—that is, the entire sequence of activities or processes through which a firm adds value to its products. Financial accounts are updated accordingly, and delivery logistics and billing are initiated.

Along with helping to integrate a firm's own value chain, transaction processing systems can also serve to integrate the overall supply chain of which the organization is a part. This includes all firms involved in designing, producing, marketing, and delivering the goods and services—from raw materials to the final delivery of the product. A supply chain management (SCM) system manages the flow of products, data, money, and

information throughout the entire supply chain, which starts with the suppliers of raw materials, runs through the intermediate tiers of the processing companies, and ends with the distributors and retailers.

The third type of enterprise system, customer relationship management (CRM), supports dealing with the company's customers in marketing, sales, service, and new product development. A CRM system gives a business a unified view of each customer and its dealings with that customer, enabling a consistent and proactive relationship. In cocreation initiatives, the customers may be involved in the development of the company's new products.

Many transaction processing systems support electronic commerce over the Internet. Among these are systems for online shopping, banking, and securities trading. Other systems deliver information, educational services, and entertainment on demand. Yet other systems serve to support the search for products with desired attributes, price discovery and delivery of digital products. Social network sites, such as Facebook and LinkedIn, are a powerful tool for supporting customer communities and individuals as they articulate opinions, evolve new ideas, and are exposed to promotional messages.

Transaction processing systems accumulate the data in databases and data warehouses that are necessary for the higher-level

information systems. Enterprise systems also provide software modules needed to perform many of these higher-level functions.

Support of knowledge work

A large proportion of work in an information society involves manipulating abstract information and knowledge rather than directly processing, manufacturing, or delivering tangible materials. Such work is called knowledge work. Three general categories of information systems support such knowledge work: professional support systems, collaboration systems, and knowledge management systems.

Professional support systems

Professional support systems offer the facilities needed to perform tasks specific to a given profession. For example, automotive engineers use computer-aided engineering (CAE) software together with virtual reality systems to design and test new models as electronic prototypes for fuel efficiency, handling, and passenger protection before producing physical prototypes, and later they use CAE in the design and analysis of physical tests. Biochemists use specialized three-dimensional modeling software to visualize the molecular structure and probable effect of new drugs before investing in lengthy clinical tests. Investment bankers often employ financial software to calculate the expected rewards and potential risks of various investment strategies.

Collaboration systems

The main objectives of collaboration systems are to facilitate communication and teamwork among the members of an organization and across organizations. One type of collaboration system, known as a workflow system, is used to route relevant documents automatically to all appropriate individuals for their contributions.

Development, pricing, and approval of a commercial insurance policy is a process that can benefit from such a system. Another category of collaboration systems allows different individuals to work simultaneously on a shared project. Known as groupware, such systems accomplish this by allowing controlled shared access, often over an intranet, to the work objects, such as business proposals, new designs, or digital products in progress.

Other types of collaboration systems include enhanced e-mail and videoconferencing systems, sometimes with telepresence using avatars of the participants. Collaboration systems can also be established on social network platforms or virtual life systems. In the open innovation initiative, members of the public, as well as existing and potential customers can be drawn in, if desired, to enable the correlation of new products or projection of future outcomes.

Knowledge management systems

Knowledge management systems provide a means to assemble and act on the knowledge accumulated throughout an organization. Such knowledge may include the texts and images contained in patents, design methods, best practices, competitor intelligence, and similar sources, with the elaboration and commentary included. Placing the organization's documents and communications in an indexed and cross-referenced form enables rich search capabilities. Numerous application programs, such as Microsoft's SharePoint, exist to facilitate the implementation of such systems. Organizational knowledge is often tacit, rather than explicit, so these systems must also direct users to members of the organization with special expertise.

Management support

A large category of information systems comprises those designed to support the management of an organization. These systems rely on the data obtained by transaction processing systems, as well as on data and information acquired outside the organization and provided by business partners, suppliers, and customers.

Management reporting systems

Information systems support all levels of management, from those in charge of short-term schedules and budgets for small work groups to those concerned with long-term plans and budgets for the entire organization.. Generally, such reports focus on past and

present activities, rather than projecting future performance. To prevent information overload, reports may be automatically sent only under exceptional circumstances or at the specific request of a manager.

Decision support systems and business intelligence

As these systems are increasingly being developed to analyze massive collections of data (known as big data), they are becoming known as business intelligence, or business analytics, applications. The two principal varieties of decision support systems are model-driven and data-driven.

In a **model-driven decision support system**, a preprogrammed model is applied to a relatively limited data set, such as a sales database for the present quarter. During a typical session, an analyst or sales manager will conduct a dialog with this decision support system by specifying a number of what-if scenarios. By supplying different product prices to the model, the manager can compare predicted results and select the most profitable selling price.

The primary objective of data-driven business intelligence systems is to analyze large pools of data, accumulated over long periods of time in data warehouses, in a process known as data mining. Data mining aims to discover significant patterns, such as sequences (buying a new house, followed by a new dinner table), clusters, and correlations, with which decisions can be made. Predictive

analytics attempts to forecast future outcomes based on the discovered trends.

Data-driven decision support systems include a variety of statistical models and may rely on various artificial intelligence techniques, such as expert systems, neural networks, and machine learning. In addition to mining numeric data, text mining is conducted on large aggregates of unstructured data, such as the contents of social media that include social networks, wikis, blogs, and microblogs.

Executive information systems

Executive information systems make a variety of critical information readily available in a highly summarized and convenient form, via a graphical digital dashboard. Senior managers characteristically employ many informal sources of information. Nevertheless, this assistance is important for the chief executive officer, senior and executive vice presidents, and the board of directors to monitor the performance of the company, assess the business environment, and develop strategic directions for the future. In particular, these executives need to compare their organization's performance with that of its competitors and investigate general economic trends in regions or countries.

BY

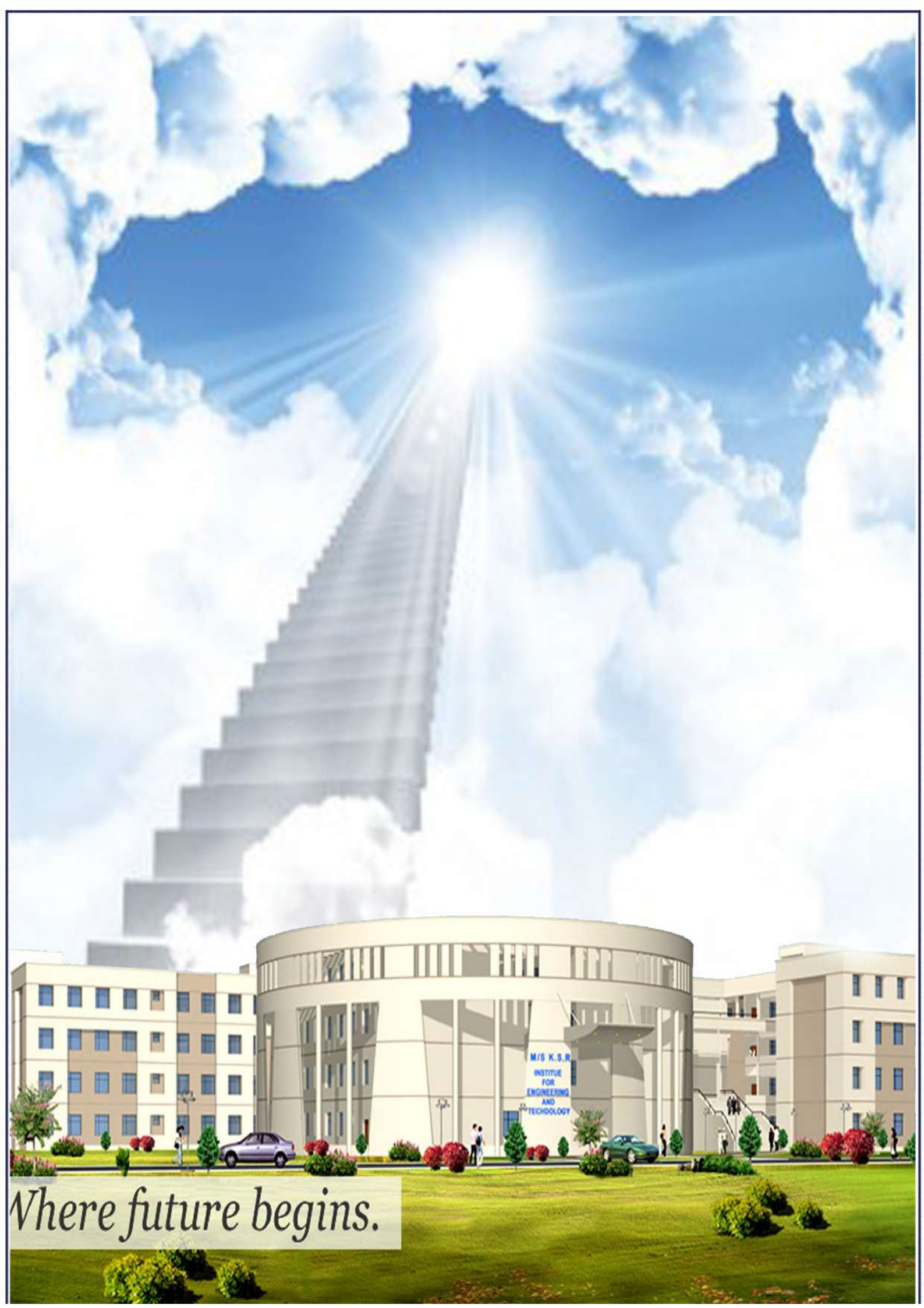
DILSHATH S.G IV YEAR/IT

Program Outcomes (POs)

PO1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the IT enabled solution of complex engineering problems.
PO2	**Problem Analysis:** Identify, analyze and provide solutions to the problems reaching substantiated IT enabled conclusions.
PO3	**Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the desired needs within realistic constraints.
PO4	**Conduct Investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern Tool Usage**: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
PO9	**Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on engineering activities with the engineering community and with society.
PO11	**Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life Long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes(PSOs)

PSO1	**Programming Skill**	Work as Software Engineers for providing solutions to real world problems using programming languages and open source software.
PSO2	**Web Designing Skill**	Ability to use the web designing skill to establish new solutions for the societal needs.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