PADHO TO AISE

UGC NET PAPER-1

FREE MATERIALS

CHAPTER-8

Information & Communication Technology

33. Information and Communication Technology (ICT)

ICT is an umbrella term that includes any communication device or application, encompassing radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning.

ICT often finds application in education, health care, library and many other fields contexts.

GENERAL ABBREVIATIONS RELATED TO ICT

ASCII	American Standard Code for Information Interchange
AI	Artificial Intelligence
ALU	Arithmetic and Logic Unit
ALGOL	Algorithmic Language
ASCII	American Standard Code for Information Interchange
ATX	Advanced Technology Extended
BASIC	Beginner All Purpose Symbolic Instruction Code
BCC	Blind Carbon Copy
BIOS	Basic Input and Output System
BINAC	Binary Automatic Computer
CAN	Campus Area Network

CAD	Computer Aid Design
CC	Carbon Copy (on emails)
CCNP	Cisco Certified Network Professionals
CD	Compact Disk
CDROM	Compact Disc Read Only Memory
CEH	Certified Ethical Hacking
CISCO	Computer Information System Company
CMD	Command
COBOL	Common Basic Oriented Language
CSS	Cascading Style Sheet
CPU	Central Processing Unit
CMOS	Complimentary Metaoxide Semi-Conductor
CCNA	Cisco Certified Network Associate
DBA	Database Admin
DBMS	Database Management System

DDOS	Distribution Denial Of Service
DIMMs	Dual In-line Memory Module
DOC	Document
DNS	Domain Name System
DVD	Digital Versatile Disc
EBCDIC	Extended Binary Coded Decimal Interchange Code
EDSAC	Electronic Dialog Storage Automatic Computer
e-Commerce	Electronic Commerce

EEPROM/EAPROM	Electrical Erasable/Alterable Programmable Read Only Memory
ENIAC	Electronic Number Integrator and Calculator
EPROM	Erasable Programmable Read only Memory
EXE	Executable
FAX	Far Away Xerox
FORTRAN	Formular Translator
FS	File System
FTP	File Transfer Protocols
GB	Gigabyte
GIF	Graphics Interchange Format
GSM	Global System for Mobile Communication
GIGO	Gabbage In Gabbage Out
GUI	Graphic User Interface
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
HDD	Hard Disk Drive
GHZ	Gigahertz
ICT	Information Communication Technology
IC	Integrated Circuit
IP	Internet Protocol
IDE	Integrated Drive Electronics
ISP	Internet Service Provider
IMAP	Internet Message Access Protocol
JPEG	Joint Photographic Experts Group
KB	Kilobyte
LED	Light Emitting Diode

LAN	Local Area Network
LSIC	Large Scale Integrated Circuit
MAC	Media Access Control
MAN	Metropolitan Area Network
MB	Megabyte
MMS	Multimedia Message Service
MHZ	Megahertz
MOS	Metaoxide Semi Conductor
MPEG	Moving Picture Experts Group
MIPS	Million Instructions Per Second
MICR	Magnetic Ink Character Read
NOS	Network Operating System
OS	Operating System
PAN	Personal Area Network
PC	Personal Computer
PCI	Peripheral Component Interconnect
PROM	Programmable Read Only Memory
PDA	Personal Digital Assistant
PDF	Portable Document Format
PDT	Parallel Data Transmission
PHP	PHP Hypertext Preprocessor
PPP	Point to Point Protocols
PING	Packet Internet Gopher
RAM	Random Access Memory
RDBMS	Relational Data Base Management System
RAM	Random Access Memory
RW	Re-Writeable

ROM	Read Only Memory
RIP	Routing Information Protocol
RFI	Remote File Inclusion
SDT	Serial Data Transmission
SEO	Search Engine Optimization
SIM	Subscriber Identification Module
SIMMs	Single In-line Memory Module
SQL	Structured Query Language
SRAM	Static Random Access Memory
SMTP	Simple Mail Transfer Protocol
TB	Terabytes
TCP	Transmission Control Protocol
TCPIP	Transmission Control Protocol Internet Protocol
UNIVAC	Universal Automatic Computer
USSD	Unstructured Supplementary Service Data
URL	Uniform Resource Locator
URI	Uniform Resource Identifier
USB	Universal Serial Bus
VDU	Visual Display Unit
VGA	Visual Graphic Adaptor/ Video Graphics Array
VPN	Virtual Private Network
WAN	Wide Area Network
Wifi	Wireless Fidelity
WPA	Wi-Fi Protected Access
WORM	Write Once Read Many
WLAN	Wireless Local Area Network
WWW	World Wide Web

XML	Extensible Mark-up Language
XXS	Cross Site Scripting
ZB	Zettabyte

TERMINOLOGY RELATED TO ICT

CMS	• 'Content Management System' is the collection of procedures used to manage work flow in a collaborative environment. • In a CMS, data can be defined as nearly anything: documents, movies, pictures, phone numbers, scientific data, and so forth. • CMSs are frequently used for storing, controlling, revising, semantically enriching, and publishing documentation. • Serving as a central repository, the CMS increases the version level of new updates to an already existing file. • Version control is one of the primary advantages of a CMS
Cookie	• A small piece of information you may be asked to accept when connecting to certain servers via a web browser. • It is used throughout your session as a means of identifying you. • A cookie is specific to, and sent only to the server that generated it.

Cyberspace	• A term describing the world of computers and the society that uses them
Data as a Service (DaaS)	• Data as a Service (DaaS) is defined as any service offered wherein users can access vendor provided databases or host their own databases on vendor managed systems.
	• DaaS is expected to grow significantly in the near future due to a few dominant themes including cloud-based infrastructure/services, enterprise data syndication, and the consumer services trend towards everything as a Service (XaaS). • In addition, vendor managed systems provide necessary scalability and security for sustainable services execution. • The DaaS market is expected to continue to expand alongside the Cloud Computing services model over the next decade. Telecom Data as a Service (TDaaS) is one of those new models in which CSPs offer DaaS to various third-party businesses on an anonymized basis. • IoT Data as a Service (IoTDaaS) offers convenient and cost effective solutions to enterprises of various sizes and domain. • IoT DaaS constitutes retrieving, storing and analyzing information and provide customer either of the three or integrated service

	package depending on the budget and the requirement.
Database	• A collection of information organized so that a computer application can quickly access selected information; it can be thought of as an electronic filing system. Traditional databases are organized by fields, records (a complete set of fields), and files (a collection of records). • Alternatively, in a Hypertext database, any object (e.g., text, a picture, or a film) can be linked to any other object.
Data center	• A data center is a facility used to house computer systems and associated components, such as telecommunications and storage systems. • It generally includes redundant or backup power supplies, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and security devices.
Data Management	• Managing ICT data takes many shapes and forms. Specialized technologies, tools, and techniques (referred to collectively as Big Data Analytics) are utilized to deal with unstructured data (e.g. data that is non-correlated and/or of sufficient size and scope to be unwieldy to manage with conventional data management tools).

	• Leveraging analytics tools to derive value and the integration between cloud, IoT, and enterprise operational technology are key focus areas for large companies across virtually every industry vertical. • This is important for many industry verticals and market segments. • For example, Smart Cities will rely upon IoT data management and analytics to provide control, automation, and enable better decision making.
Decompress	• Opposite of compressing a file; the process of restoring the file to its original size and format. • The most common programs for decompressing files are Winrar for PC and compatible computers (.zip files) and Stuffit Expander (.sit files) for Macintosh computers.
Defragmentation •	• The process of rewriting parts of a file to contiguous sectors on a hard drive to increase the speed of access and retrieval
DHCP	• Dynamic Host Configuration Protocol; a protocol that lets a server on a local network assign temporary IP addresses to a computer or other network devices.
DIMM	• Dual In-line Memory Module; a small circuit board that can hold a group of memory chips. • A DIMM is capable of transferring 64 bits instead of the 32 bits each SIMM can handle.

DPI	• Dots per inch; a measure of a printer's resolution. The higher the number, the better the print quality. • A minimum of 300 dpi usually is required for professional quality printing.
Edge Computing	• There is an evolution underway in which edge computing is gaining prominence in ICT networks. • Decentralized or distributed (e.g. Fog) cloud computing will become increasingly important as various wireless and Internet of Things (IoT) related applications require massive computing at the edge of networks. • Mobile cellular operators are making plans for Mobile Edge Computing (MEC), which enables cloud computing capabilities and an IT service environment at the edge of the cellular network. • MEC will enable many new and enhanced applications and services including improvements in Augmented Reality, Location-based Services, Enterprise-specific Context Aware Services, Realtime Data as a Service (DaaS), and more.
EGA	• Extended Graphics Adapter; a card (or board) usually found in older PCs that enables the monitor to display 640 pixels horizontally and 350 vertically.

Emulation	• Refers to the ability of a program or device to imitate another program or device; communications software often include terminal emulation drivers to enable you to log on to a mainframe. • There also are programs that enable a Mac to function as a PC.
Encryption	• The manipulation of data to prevent accurate interpretation by all but those for whom the data is intended.
Ethernet	• A popular network technology that enables data to travel at 10 megabits per second. • Campus microcomputers connected to a network have Ethernet cards installed that are attached to Ethernet cabling. • An Ethernet connection is often referred to as a "direct connection" and is capable of providing data transmission speeds over 500 Kbps.
Extension	• A suffix proceeded by a period at the end of a filename; used to describe the file type. Example: On a Windows computer, the extension ".exe" represents an executable file.
File	• A collection of data that has a name (called the filename). • Almost all information on a computer is stored in some type of file. Examples: data file (contains data such as a group of records);

	executable file (contains a program or commands that are executable); text file (contains data that can be read using a standard text editor).
Firewall	• A method of preventing unauthorized access to or from a particular network; firewalls can be implemented in both hardware and software, or both.
Freeware	• Copyrighted software available for downloading without charge; unlimited personal usage is permitted, but you cannot do anything else without express permission of the author.
	• Contrast to shareware; copyrighted software which requires you to register and pay a small fee to the author if you decide to continue using a program you download.
Fragmentation	• The scattering of parts of the same disk file over different areas of a disk; fragmentation occurs as files are deleted and new ones are added.
FTP	• File Transfer Protocol; a method of exchanging files between computers via the Internet. A program like WS_FTP for IBM PC or compatibles or Fetch for Macintosh is required. • Files can contain documents or programs and can be ASCII text or binary data.

GIF	• Graphics Interchange Format; a format for a file that contains a graphic or a picture. • Files of this type usually have the suffix ".gif" as part of their name. Many images seen on web pages are GIF files.
GPS	• Global Positioning System; a collection of Earth-orbiting satellites. • In a more common context, GPS actually refers to a GPS receiver which uses a mathematical principle called "trilateration" that can tell you exactly where you are on Earth at any moment.
Greyware	• Greyware (or grayware) refers to a malicious software or code that is considered to fall in the "grey area" between normal software and a virus. • Greyware is a term for which all other malicious or annoying software such as adware, spyware, trackware, and other malicious code and malicious shareware fall under.
GUI	• Graphical user interface; a mouse-based system that contains icons, drop-down menus, and windows where you point and click to indicate what you want to do.
Haptic Internet	• Most people are familiar with Haptic technology by way of the kinesthetic user interface for smart phones or other consumer

	electronics that recreates a sense of touch by applying forces, vibrations, or motions to the user. • Conversely, haptic devices may incorporate tactile sensors that measure forces exerted by the user on the interface. • Tactile Internet will be based on haptic sense/ touch that will connect humans with unknown environments. • Haptic sense establishes bilateral communication patterns as touch imposes sensed motion on environment that enables environment to create a distortion or reaction and feel.
High-Definition Multimedia Interface (HDMI)	• Short for High-Definition Multimedia Interface, it is the first industry-supported uncompressed, all digital audio/video proprietary interface. • It is a single cable and user-friendly connector that replaces the maze of cabling behind the home entertainment centre.
	• An HDMI cable provides an interface between any audio/video source, such as a set-top box, DVD player, or A/V receiver and an audio and/or video monitor, such as a digital television (DTV), over a single cable. HDMI supports standard, enhanced, or high-

	definition video, plus multi-channel digital audio on a single cable.
Heterogeneous Networks (HetNet)	• Wireless networks need to handle an ever increasing number of devices, consuming high volumes of data, both indoors and outdoors, and in a very unpredictable pattern with seamless coverage and consistent capacity. • A Heterogeneous Network (HetNet) is comprised of a combination of cellular Macro Cells, Small Cells, Carrier WiFi and supporting technologies to meet the coverage and usage demands of both humans and machines (associated with IoT apps and services). • In a HetNet environment, the Macro Cell provides a larger umbrella coverage area while Small Cells are placed in strategically closer locations to the UE to provide required coverage and capacity. • HetNets are critical infrastructure for the success of LTE and for the development of future 5G based networks.
HTML	• HyperText Markup Language; a language used for creating web pages. Various instructions and sets of tags are used to define how the document will look.
Hyperlink	• Connects one piece of information (anchor) to a related piece of information (anchor) in an electronic document. Clicking on a hyperlink

	takes you to directly to the linked destination which can be within the same document or in an entirely document will look.
Hypertext	• Data that contains one or more links to other data; commonly seen in web pages and in online help files. • Key words usually are underlined or highlighted. • In a hypertext file, you click on a link to go directly to the related information
IMAP	• Internet Message Access Protcol. A method of accessing e-mail messages on a server without downloading them to your local hard drive; it is the main difference between IMAP and POP3 which requires messages to be downloaded to a user's hard drive before the message can be read.
Industrial Internet of Things	• The term Industrial Internet or Industrial Internet of Things (IIoT) is sometimes used in the context of next generation manufacturing, but it may also be referenced in a more general sense to pertain to the broader enterprise market, which includes many different industry verticals such as IoT in Agriculture. • In both cases, IIoT benefits will extend beyond initial cost savings and process improvements to identification of entirely new

	business models and service offerings as traditional products transform to services.
Intelligent Network (IN)	• The term Intelligent Network is typically reserved for reference to telecommunication standards and technologies associated with centralized control application control and services management. • IN standards in cellular networks include Customized Applications for Mobile Enhanced Logic (CAMEL) for GSM networks and Wireless Intelligent Network (WIN) for ANSI networks.
Internet of Things	• The Internet of Things (IoT) refers to uniquely identifiable objects (things) and their virtual representations in an Internet-like structure. • Stated differently, the concept involves the notion that there are many things (assets, objects, etc.) in the world that may be addressed/labeled/cataloged for various purposes.
IP Multimedia Subsystem (IMS)	• The IP Multimedia Subsystem (IMS) is an architecture for delivering Internet Protocol (IP) based multimedia services with quality of service over multiple access networks from a common core. • It was initiated in mobile standards body 3rd Generation Partnership Project (3GPP), as a part of the vision for evolving mobile networks. • The original vision was the delivery of

	internet services over GPRS (General Packet Radio System). • That vision was subsequently updated by 3GPP, 3GPP2, Cable Labs and TISPAN (Telecommunications and Internet Services and Protocols for Advanced Networks) to support multiple access networks.
JPEG	• Joint Photographic Experts Group; a graphics format which compresses an image to save space. • Most images imbedded in web pages are GIFs, but sometimes the JPEG format is used (especially for detailed graphics or photographs). • In some cases, you can click on the image to display a larger version with better resolution.
Kbps	• Kilobits per second; a measure of data transfer speed; one Kbps is 1,000 bits per second. Example: a 28.8 Kbps modem.
Kerning	• The amount of space between characters in a word; in desktop publishing, it is typically performed on pairs of letters or on a short range of text to fine-tune the character spacing.
Learning management system (LMS)	• Software used for developing, using, and storing course content of all types. Information within a learning management system often takes the form of learning objects.

List Processor	• A program that manages electronic mailing lists; OIT is responsible for the List Processor software and also handles requests from the OSU community or new mailing lists.
Machine Learning	• An application of Artificial Intelligence that gives machines the ability to learn and improve without the help of humans or new programming.
MAC	• Media Access Control; The hardware address of a device connected to a shared network
Mainframe	• A very large computer capable of supporting hundreds of users running a variety of different programs simultaneously. • Often the distinction between small mainframes and minicomputers is vague and may depend on how the machine is marketed.
Malware	• Software programs designed to damage or do other unwanted actions on a computer; common examples of malware include viruses, worms, trojan horses, and spyware.
MAPI	• Messaging Application Programming Interface; a system built into Microsoft Windows that enables different e-mail programs to interface to distribute e-mail. • When both programs are MAPI-enabled, they can share messages.
MDM	• Mobile Device Management; Any routine or tool intended to distribute applications, data,

	and configuration settings to mobile communications devices. • The intent of MDM is to optimize the functionality and security of a mobile communications network. MDM must be part of a coherent BYOD strategy
MIME	• Multipurpose Internet Mail Extensions; a protocol that enables you to include various types of files (text, audio, video, images, etc.) as an attachment to an e-mail message
MPEG	• Motion Picture Experts Group; a high quality video format commonly used for files found on the Internet. Usually a special helper application is required to view MPEG files.
MRB	• Managed Remote Back Up; a service that provides users with a system for the backup, storage, and recovery of data using cloud computing.
MSP	• Managed Service Provider; A business model for providing information-technology services
Multimedia	• The delivery of information, usually to a personal computer, in a combination of different formats including text, graphics, animation, audio, and video.
Multitasking	• The ability of a CPU to perform more than one operation at the same time; Windows and Macintosh computers are multitasking in that each program that is running uses the CPU only

	for as long as needed and then control switches to the next task.
NaaS	• Network as a Service; a category of cloud services that provides users with the capability of where the capability provided to the cloud service user is to using network/transport connectivity services and/or inter-cloud network connectivity services.
NAT	• Network Address Translation; a standard that enables a LAN to use a set of IP addresses for internal traffic and a single IP address for communications with the Internet.
NNTP	• Network News Transport Protocol; the protocol used for posting, distributing, and retrieving network news messages.
Network monitoring:	• Dataprise Cloud-based Network Monitoring service, can configure and remotely monitor all of your important network systems (e-mail, servers, routers, available disk space, backup applications, critical virus detection, and more). • If our system detects a problem, it alerts the Dataprise Technical Support Center, so we can take corrective action. • Depending on prearranged instructions from your own network engineers, we'll correct the problem immediately, wait until the next business day or simply notify you of the issue.

Network security	• Network security consists of the provisions and policies adopted by a network administrator to prevent and monitor unauthorized access, misuse, modification, or denial of the computer network and network accessible resources. • Network Security is the authorization of access to data in a network, which is controlled by a network administrator. • Dataprise uses state-of-the-art network security techniques while providing authorized personnel access to important files and applications. • Every organization's needs are different and hackers are always adapting their techniques, so we are extremely serious about staying up to date with the latest network security tools, threats and industry developments
OCR	• Optical character recognition; the act of using a visual scanning device to read text from hard copy and translate it into a format a computer can access (e.g., an ASCII file). • OCR systems include an optical scanner for reading text and sophisticated software for analyzing images.
PaaS	• Platform as a Service, in the PaaS model, cloud providers deliver a computing platform that typically including an operating system,

	programming language execution environment, database, and web server.
Palette	• The range of colors a computer or an application is able to display. Most new computers can display as many as 16 million colors, but a given program may use only 256 of them. • Also refers to a display box containing a set of related tools within a desktop publishing or graphics design program.
Packet	• A form of switching in which data is transmitted as packets of information that are "bursty" in nature a usually transmitted over diverse routes.
peer-to-peer	• A type of connection between two computers; both perform computations, store data, and make requests from each other (unlike a client-server connection where one computer makes a request and the other computer responds with information).
phishing	• A con that scammers use to electronically collect personal information from unsuspecting users. • Phishers send e-mails that appear to come from legitimate websites such as eBay, PayPal, or other banking institutions asking you to click on a link included in the email and then update or validate your information by entering your

	username and password and often even more information, such as your full name, address, phone number, social security number, and credit card number
PING	• Packet Internet Groper; a utility used to determine whether a particular computer is currently connected to the Internet. • It works by sending a packet to the specified IP address and waiting for a reply.
Pixel	• Stands for one picture element (one dot on a computer monitor); commonly used as a unit of measurement.
plug-in	• A program used for viewing multimedia files that your web browser cannot handle internally; files using a plug-in do not need to be moved to your computer before being shown or played. • Contrast to a helper application which requires the file to first be moved to your computer. Examples of plugins: Adobe Flash Player (for video and animation) and Quicktime (for streamed files over the Internet).
Plug and play	• A set of specifications that allows a computer to automatically detect and configure a device and install the appropriate device drivers
POP	• Post Office Protocol; a method of handling incoming electronic mail. Example: E-mail programs may use this protocol for storing your

	incoming messages on a special cluster of servers called pop. service.
PostScript	• A page description language primarily used for printing documents on laser printers; it is the standard for desktop publishing because it takes advantage of high resolution output devices. Example: A graphic design saved in PostScript format looks much better when printed on a 600 dpi printer than on a 300 dpi printer.
Proxy	• Refers to a special kind of server that functions as an intermediate link between a client application (like a web browser) and a real server. • The proxy server intercepts requests for information from the real server and whenever possible, fills the request. • When it is unable to do so, the request is forwarded to the real server.
Public domain software	• Any non-copyrighted program; this software is free and can be used without restriction. Often confused with "freeware" (free software that is copyrighted by the author).
Plain Old Telephone Service (POTS)	• Often used to refer to the most basic legacy features, such as "dial tone" and the ability to simply initiate and receive calls, POTS is occasionally used to conversely refer to telecommunications services that do not rely

	upon advanced features or technologies such as use of Internet Protocols or next generation ICT infrastructure.
Programmable Telecom	• The term Programmable Telecom (or Programmable Telecoms) is an important one as it pertains to the general notion of leveraging telecommunications capabilities by way of Telecom APIs as well as other tools including SDKs, GUIs, open source platforms, and other methods
Public Switched Telecommunications Network (PSTN)	• Generally referred to as the core telecommunications network relied upon for local wireline communications as well as transport of long distance calls and other traditional services. • In contrast, cellular systems are typically not considered part of the PSTN, but rather interconnect with it so that wire line callers can reach wireless users and vice versa. • Likewise, next generation packet-based networks that utilize Internet Protocol based signaling and data transfer are also not considered part of the PSTN.
RTF	• Rich Text Format; a type of document formatting that enables special characteristics like fonts and margins to be included within an ASCII file.

	• May be used when a document must be shared among users with different kinds of computers (e.g., IBM PC or compatibles and Macintoshes).
SAN	• A storage area network (SAN) is a dedicated storage network that provides access to consolidated, block level storage. • SANs primarily are used to make storage devices (such as disk arrays, tape libraries, and optical jukeboxes) accessible to servers so that the devices appear as locally attached to the operating system. • A SAN typically has its own network of storage devices that are generally not accessible through the regular network by regular devices.
Scroll bar	• In a graphical user interface system, the narrow rectangular bar at the far right of windows or dialog boxes. • Clicking on the up or down arrow enables you to move up and down through a document; a movable square indicates your location in the document. • Certain applications also feature a scroll bar along the bottom of a window that can be used to move from side-to-side.

Self-organizing Networks (SON)	• The concept of Self organizing networks (SON) has picked up only after the transition from 3G to 4G started. This was because of the exponential increase in the data traffic which required a change in the way the network coverage and capacity were planned. • Huge volumes of data traffic clogged up the network while not leading to proportional increase in the revenue. • Self-organizing Networks (SON) provide automation solution for planning, configuration, management, optimization, and healing of mobile RAN functions that emerged out from 4G LTE environment and IMS technology. • SON provides efficient, and in some cases, programmatic means of fine tuning cellular networks. • SON systems are part of next generation OSS/BSS technologies for mobile network operators to automate previously manual network optimization procedures.
Self-extracting file:	• A type of compressed file that you can execute (e.g., double-click on the filename) to begin the decompression process; no other decompression utility is required. Example: on IBM PC or compatibles, certain files with an

	".exe" extension and on Macintoshes, all files with a ".sea" extension.
Session Initiation Protocol (SIP)	• Designed in 1996 and specified by International Engineering Task Force (IETF), Session Initiation Protocol (SIP) is a signaling protocol used for a variety of purposes in IP networks. • SIP is principally a mechanism employed to seamlessly create, modify and terminate sessions involving multiple participants. • Such sessions could be Internet telephone calls, multimedia conferences or multicast sessions. • SIP can work with any type of media content. • SIP is independent of the transport layer and can therefore be used with multiple transport protocols.
Spam	• Email spam, also known as junk email or unsolicited bulk email (UBE), is a subset of spam that involves nearly identical messages sent to numerous recipients by email. Definitions of spam usually include the aspects that email is unsolicited and sent in bulk. Spammers collect email addresses from chatrooms, websites, customer lists, newsgroups, and viruses which harvest users' address books, and are sold to other spammers. They also use a practice known as

	"email appending" or "epending" in which they use known information about their target (such as a postal address) to search for the target's email address
Streaming (streaming media)	• A technique for transferring data over the Internet so that a client browser or plug-in can start displaying it before the entire file has been received; used in conjunction with sound and pictures. Example: The Flash Player plug-in from Adobe Systems gives your computer the capability for streaming audio; RealPlayer is used for viewing sound and video.
Spyware	• Any software that covertly gathers user information, usually for advertising purposes, through the user's Internet connection.
Telnet	• A generic term that refers to the process of opening a remote interactive login session regardless of the type of computer you're connecting to.
Turing Test	• In the 1950s Alan Turing created the Turing Test which is used to determine the level of intelligence of a computer.
TIFF	• Tag Image File Format; a popular file format for storing bit-mapped graphic images on desktop computers. • The graphic can be any resolution and can be black and white, gray-scale, or color. Files of

	this type usually have the suffix ".tif" as part of their name.
Time Division Multiplexing (TDM)	• A form of data handling and signaling in which a common channel is used for transmitting and receiving information. • This in contrast to the use of Internet Protocol (IP) and other packet switching methods that do not require use of a dedicated path, but rather instead transmit information as packets of data, often over diverse paths to traverse from data sender to data receiver.
UNIX	• A popular multitasking computer system often used as a server for electronic mail or for a web site. • UNIX also is the leading operating system for workstations, although increasingly there is competition from Windows NT which offers many of the same features while running on PC or compatible computer.
Unstructured Data	• Typically defined as data that does not have a defined data model and not organized in a manner that is conducive to analysis via traditional tools, unstructured data is often voluminous and difficult to manage with traditional data management technologies, tools, and techniques. • Accordingly, Big Data Analytics are often utilized to derive actionable information from

	raw data, which may come from anything from social media networks to sensors that capture machine generated data from industrial processes or machines such as a jet engine.
URL	• Uniform Resource Locator; a means of identifying resources on the Internet. A full URL consists of three parts: the protocol (e.g., FTP, gopher, http, nntp, telnet); the server name and address; and the item's path. • The protocol describes the type of item and is always followed by a colon (:). The server name and address identifies the computer where the information is stored and is preceded by two slashes (//). • The path shows where an item is stored on the server and what the file is called; each segment of the location s preceded by a single slash (/).
Virtual Reality	• Virtual Reality (VR) focuses on virtual experience through realistic interaction with 3D content presented in a digitally generated space. • VR depends upon data from human sensory organs such as stereoscopic Images, sound, and biosignals to enhance the VR experience.
Virus	• A program intended to alter data on a computer in an invisible fashion, usually for mischievous or destructive purposes. Viruses

	are often transferred across the Internet as well as by infected diskettes and can affect almost every type of computer. Special antivirus programs are used to detect and eliminate them.
VoIP	• Voice over Internet Protocol; a means of using the Internet as the transmission medium for phone calls. An advantage is you do not incur any additional surcharges beyond the cost of your Internet access.
WAIS	• Wide Area Information Server; a program for finding documents on the Internet. Usually found on gopher servers to enable searching text-based documents for a particular keyword.
Workstation	• A graphical user interface (GUI) computer with computing power somewhere between a personal computer and a minicomputer (although sometimes the distinction is rather fuzzy). Workstations are useful for development and for applications that require a moderate amount of computing power and relatively high quality graphics capabilities.

34. Basic of Internet

The Internet is simply a series of computers, linked to one another around the world, communicating almost instantaneously with one another. It comprises tens and thousands of computer networks (a single network may link of all the computers of an office; A larger network may be connecting all the computers within a university premises) communicating with each other like a big net or web! It can be termed as a 'network of networks'. Computer networks are physically linked with one another through telephone, radio, cable lines, satellite, or even fiber optic.

TYPES OF COMPUTER NETWORK

Local Area Network (LAN):	• LAN connects two or more communication devices (like computers and printers) over a relatively short distance. • LANs usually work within an office premises, a factory or a campus where communication devices are connected through a cable, within a distance of 2000 feet. • Most LAN networks shared medium networks, where the workstations shares and waits for its turn to use a resource such as printer, plotter etc
Wireless Local Area Network (WLAN)	• Wireless local area network provides LAN connectivity within a small geographic

	area, normally within 150 meters and is typically used where cabling is either not possible or would be very cumbersome, for instance, you may wish to provide LAN connectivity in an open air restaurant.
Bluetooth Technology	Bluetooth technology is a wireless medium for sharing information across computers and other electronic devices like mobile phones, Personal Digital Assistants (PDAs) etc, using low power radio frequency.
Wide Area Network (WAN)	• WAN networks span larger areas than a single building or a campus. They are long-haul networks covering wide geographical areas and often require multiple communication connections like leased lines, satellites, and microwave radio links to interconnect various LANs. LANs are usually measured in feet, while WANs are measured in miles
Metropolitan Area Networks (MAN)	• A group of LANs connected through a high-speed, seamless interconnection, within a 'metropolitan' area, is termed as a Metropolitan Area Network (MAN). • The word 'metropolitan' does not necessarily mean a 'city' but can be any area that is spread out, but is treated as one entity, e.g. a company having its two

	buildings on the opposite sides of the road. • MAN connects users with computer resources in a geographic area that is larger than that covered by a LAN but smaller than the area covered by a WAN.

INTERNET CONNECTIVITY OPTIONS

There are various options available to connect to the Internet. The commonly used ones are explained below.

Dial-Up	• Dial-up provides, connecting a device to a network using modem over the public telephone network. • Dial-up access is really just like a phone connection, except that instead of two individuals on the two ends you have computer devices. • Since the dial-up uses the regular telephone lines, the quality of connection is not always good.
Integrated Services Digital Network (ISDN)	• ISDN, as the name suggests, is a digital communications line. • It allows for transmission of data, voice, video, and graphics, at very high speeds, over standard communication lines. • ISDN lines can carry large amounts of data, while providing a single common

	interface to access digital communication services required for varying devices, while keeping it transparent to the end user. • Owing to these features, ISDN applications have revolutionized the way businesses communicate. • ISDN is not restricted to public telephone networks, but can use packet switched networks, CATV networks, telex etc.
Digital Subscriber Lines (DSL)	• A DSL connection is a very high-speed connection that uses the same wires as a regular telephone line. • Many local companies, in addition to their regular phone services, also provide Internet services (DSLs). DSLs are, therefore, available in some (not all) areas where regular phone services are available. • A DSL connection has a much higher speed of connection, than a regular dial-up connection (56 kbps) and the connection can be left open, while we use our phone line for voice calls. • The reliability and monthly rates for a DSL connection are comparable to that of the cable network service, but the connection speed is slower.
Leased Line	• An alternative way to connect two computers is through a leased line.

	• It is like a 'private circuit' between the two machines. • A leased line can best be understood, as a permanent dedicated communication link between two points and is reserved, exclusively for the leased line purchaser. • A leased line can be a twisted pair, coax cable, or (more recently) a fibre optic cable. • Leased lines have varying data transfer rates, going up to a speed of 1.544 Mbps. • Using multiplexing techniques, these transfer rates can be divided between voice and data. • Large companies having high Internet usage, usually go in for leased lines since it is a more cost effective solution than the traditional one like ISDN.
Cable Internet Services	• Today, in addition to the traditional cable services, most of the cable TV companies also provide Internet services. • These services come at reasonable monthly rates, reliable and have high download transmission and upload rates.

Domain Naming System (DNS)

- In a network, computers and devices can be grouped together and can be administered as a unit with common rules and

procedures, sharing a common name. Such a group is referred to as a Domain.

- Domain Naming System (or Service), commonly known as the DNS, is an Internet service that translates domain names to or from IP addresses, which is the actual basis of addressing on the Internet.

- The Domein suffix as the last three letters of the address, provides information about the kind of body to which the address belongs, e.g., .edu for educational .org for organizational, .com for commercial

Communication Protocol

When different computers, peripherals and devices are connected in a network they need to follow a set of standard rules for transmitting and receiving data to avoid data collision. These set of rules and conventions are called Protocols. Transmission Control Protocol (TCP) and Internet Protocol (IP) are two distinct network protocols. They are so commonly used together that TCP/IP has become a standard terminology to refer to either or both of the protocols.

INTRANET

- Unlike the Internet where a page can be accessed globally, an intranet or internal website is a private network for a corporation or organization that only those with permission can access. A computer residing on an intranet is often using

IP addresses in the reserved address space. That computer cannot be accessed outside of the local network unless given permission through the Internet.

- The intranet is essentially a small-scale version of the internet, operating with similar functionality, but existing solely within the firm. Like the internet, the intranet uses network technologies such as Transmission Control Protocol/ Internet Protocol (TCP/IP). It allows for the creation of internal networks with common internet applications that can allow them to communicate with different operating systems.

Table of Comparison Intranet and the Internet:

Parameter	Internet	Intranet
Usage	Public	Private
User Types	Any user having dial up of internet access line.	Organization employees and internal company departments
Usage	Access all kind of information	Internal employee communication table directories etc.
Security	Low security. Configured under 0 security level in firewall	High security. Configured under 100 security level in firewall
Regulated by	Internet Architecture Board (IAB) : Oversees the technical and engineering development of the IETF	It is regulated by an organization

	and IRTF. Internet corporation for Assigned Names and Numbers (ICANN).	
Coverage	Wide Area	Within an organization
Access	Large number of users	Limited number of users
System failure	Unpredictable	System availability is high since system is monitored by authority

EMAIL ADDRESS

An e-mail address normally consists of three parts in a sequence going from the specific to the general:

i. The ID of the User

ii. The "@" Sign

iii. The domain name given by the DNS (Domain Naming System).

 Example: **khurshid.editorial**@aiets.co.in Here, khurshid.editorial is the user id and aiets.co.in is the domain name separated by @

 ANATOMY OF EMAIL MESSAGE

Messages in an electronic mail consist of three major sections.

i. The message header;

ii. The message body; and

iii. The attachment(s)

i. The Header: It contains control information, including, minimally, an originator's email address and one or more recipient addresses. Usually, additional information is added, such as a subject header field structured into fields like summary, sender, receiver, and other information about the e-mail. The message header generally includes at least the following fields:

From:

It includes the e-mail address and, optionally, the name of the sender who sends the email. The field is filled up automatically when a message is sent.

To:

Here the e-mail address/es and, optionally, name/s of the message's recipient/s is/are included. It indicates primary recipient, for secondary recipients Carbon copy (Cc) and Blind Carbon Copy (Bcc) is used to make the data individual to other recipient. The "To:" field is similar to the addressing at the top of a conventional letter which is delivered according to the address on the outer envelope. Many e-mail clients will mark e-mail in the inbox differently depending on whether the addresses are in the "To:" or "Cc:" list.

Subject:

A brief summary of the message

Date:

The local time and date when the message was written. Many email clients fill this in automatically when sending. The recipient's client may then display the time in the format and time zone local to her.

Message-ID

Message-ID is a unique identifier for a digital message, most commonly a globally unique identifier used in email and Usenet newsgroups. It is also an automatically generated field used to prevent multiple deliveries and for reference in "In-ReplyTo". The "In-Reply-To" field is used to link related messages together.

2. **The Body**

The e-mail clients generally allow the use of either plain text or HTML for the message body at the option of the user. HTML e-mail messages often include an automatically-generated plain text copy as well, for reason of compatibility. The body sometimes contains a signature block at the end. This is exactly the same as the body of a regular letter. The header is separated from the body by a blank line.

3. Attachments

The attachments are the files that are sent through the email. Many email systems do not allow the software or the file that contains "setup.exe" to be sent through email as attachments.

Some Email service providers

(1)	AIM Mail	(http://webmail.aol.com)
(2)	Gmail	(http://mail.google.com)
(3)	MSN Hotmail / Windows Live Mail	(http://mail.live.com)
(4)	Rediffmail	(http://www.rediff.com)
(5)	Yahoo! Mail	(https://login.yahoo.com)

AUDIO CONFERENCING

Audio conferencing is the use of voice communications equipments to establish an audio link between geographically dispersed per¬sons, one that allows them to conduct a conference.

Merits and Demerits of Audio Technologies

Merits		Demerits	
1.	Equipment required to setup audio conference is simple and less expensive	2.	Difficult to explain abstract concepts on audio conference due to lack of visual information.
2.	Options for selecting Telephone or speaker phones and a telephone networks are many.	2.	It is difficult to learn through audio information only

3.	Audio conference can be easily recorded by the students themselves for reference.	3.	Scheduling is necessary and coordination between teacher availability and student convenience is needed.
4.	Students can participate in the conference from anywhere.	4.	Since eye contact is not possible it is difficult to retain attention of students.

VIDEO CONFERENCING

Video conferencing is a line virtual connection between people in separate locations for the purpose of communication, usually involving audio and often text as well as video. At its simplest, videoconferencing provides transmission of static images and text between two locations. At its most sophisticated, it provides transmission of full-motion video images and high-quality audio between multiple locations.

Advantage /Disadvantages of Video Technologies

Advantages	Disadvantages
They allow both audio and video communications. Hence are suitable for teaching that involves demonstrations.	Are expensive and the infrastructure at each site may be unaffordable for many institutions
Video medium supports visuals related to lab experiments and	Requires teachers trained to teach through this technology

animations and thus explains abstract topics.	and requires a crew with camera men and other technical experts. Effective programmes require rehearsals with teachers and technical team.
They encourage interactive learning.	The programmes are scheduled, and learners need to be present at the time of transmission.

35. Digital Initiatives in Higher Education

Digital revolution is bringing in sweeping changes in the Higher Education landscape. Every institute is taking various initiatives in promoting digital education. The technology of online education and all the digital initiatives have the possibility to revolutionize higher education scenario in the near future.

Department of Higher Education, Ministry of Human Resource Development is administering a programme 'National Mission on Education through Information and Communication Technology' (NMEICT) to leverage the potential of ICT to make the best quality content accessible to all learners in the country, free of cost. The various initiatives under this programme are as under:

1. SWAYAM -STUDY WEBS OF ACTIVE LEARNING FOR YOUNG ASPIRING MINDS

The 'Study Webs of Active Learning for Young Aspiring Minds' (SWAYAM) is an integrated platform for offering online courses covering school (9th to 12th) to Post Graduate Level. SWAYAM is a programme initiated by Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital

revolution and have not been able to join the mainstream of the knowledge economy.

2. SWAYAM PRABHA: THE 32 EDUCATIONAL DTH CHANNELS

The SWAYAM PRABHA has been conceived as the project for telecasting high quality educational programmes through 32 DTH channels on 24×7 basis.

3. NATIONAL DIGITAL LIBRARY (NDL)

National Digital Library in India aims to collect, preserve and disseminate entire intellectual output of our country and provide online access from school level to post graduate level, including technical education.

4. NATIONAL ACADEMIC DEPOSITORY (NAD)

• National Academic Depository (NAD) facilitates digital issuance, storage, access and verification of Academic Awards issued by Academic Institutions.

5. e-SHODH SINDHU

Based on the recommendation of an Expert Committee, the MHRD has formed e-Shodh Sindhu merging three consortia initiatives, namely UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium. The e-Shodh Sindhu will continue to provide current as well as archival access to more than 15,000 core and peer-reviewed journals and a number of bibliographic, citation and factual databases in different disciplines from a large number

of publishers and aggregators to its member institutions including centrally-funded technical institutions, universities and colleges that are covered under 12(B) and 2(f) Sections of the UGC Act. This allows access to be best education resources in the world using digital mode. The INFLIBNET, Gandhinagar, Gujarat is implementing the Scheme.

6. VIRTUAL LABS Internet-based experimentation further permits use of resources – knowledge, software, and data available on the web, apart from encouraging skillful experiments being simultaneously performed at points separated in space (and possibly, time).

7. e-YANTRA

• An MHRD initiative under NMEICT Programme, named "e-Yantra" is implemented to incorporate Robotics into engineering education with the objective of engaging students through exciting hands-on application of mathematics, computer science, and engineering principles.

8. CAMPUS CONNECTIVITY

• Establishment of GBPS Connectivity to universities and 20 512 Kbps broadband connectivity to colleges have been provisioned under NMEICT.

9. E-KALPA

For creating Digital-Learning Environment for Design in India.

10. THE FREE AND OPEN SOURCE SOFTWARE FOR EDUCATION (FOSSEE)

Promotes use of open source software in educational institutions (http://fossee.in). It does through instructional material, such as spoken tutorials, documentation, such as textbook companions, awareness programmes, such as conferences, training workshops, and Internships.

11. e-VIDWAN

• Collects and provides academic and research profiles of scientists, faculty and research scientists working in leading academic and R&D organizations in India and abroad;

12. CENTRAL CLOUD INFRASTRUCTURE

Of the IIT Delhi cloud is hosting e-content and video content of e-Acharya.

13. GLOBAL INITIATIVE FOR ACADEMIC NETWORK (GIAN)

• Connects the Indian academia with the international talent pool of scientists and entrepreneurs by inviting them to teach and participate in research in Indian HEIs.

14. SCHEME FOR ACADEMIC RESEARCH AND PROMOTION BY COLLABORATION (SPARC)

• Facilitates academic and research collaborations between Indian academia and best institutions in the world.

15. DIGITAL INDIA-e-LEARNING

• The main objective of this virtual classroom initiative is to enable millions of youth outside the university campus to access best quality teachers and teaching courses in an easy paced manner without having to pay large admission/ tuition fees or even qualify through JEE or other entrance examinations.

• MOOCs will allow limited interaction with faculty, take examinations and even earn certificates that may help in getting employment.

16. IMPRINT

The Government of India, in order to promote the culture of innovation in India, particularly in the technology institutions like IITs, NITs and all other HEIs, recently formulated a new and unique scheme called Impacting Research Innovation and Technology (IMPRINT), primarily with the goal of translation of knowledge from research into viable technology (product or process).

17. SAKSHAT: A ONE STOP EDUCATION PORTAL

• The educational content portal, developed by eGyanKosh of IGNOU, was launched by the then President of India Dr. APJ Abdul Kalam on 30 October 2006, to facilitate lifelong learning for students, teachers and those in employment or in pursuit of knowledge free of cost to them.

18. ATAL RANKING OF INSTITUTIONS ON INNOVATION ACHIEVEMENTS (ARIIA)

• systematically ranks all major higher educational institutions and universities in India on indicators related to "Innovation and Entrepreneurship Development" amongst students and faculties.

19. OSCAR (OPEN SOURCE COURSEWARE ANIMATIONS REPOSITORY)

Provides a repository of web-based interactive animations and simulations that we refer to as learning objects (LOs). These learning objects span topics in science and engineering at the college level, and math and science at the school level.

20. SHODH GANGOTRI

• Under the initiative called "Shodh Gangotri", research scholars / research supervisors in universities are requested to deposit electronic version of approved synopsis submitted by research scholars to the universities for registering themselves for the Ph.D programme.

21. SOS TOOLS

Software and simulation (SOS)packages are useful tools for the analysis of systems and solving problems by the students of Science, Social Science, Engineering, Management and related disciplines. Many commercial software packages are available for the above. But many of these software packages are quite costly and require yearly license fee for updates and maintenance. Many open source software are available which can perform similar functions but are not user friendly and do not have proper

documentation. Beside these, adequate manpower to teach students to use these packages are not available. The objective of this project is to develop software tools for analysis of systems and computations, create adequate manpower to teach students to use open source software and to develop simulation tools. The developed software should be user friendly and properly documented. Such packages, tailored to suit the needs of our students will be ported on Sakshat for making freely available to any student, teacher or institution willing to use them.

22. E-PG PATHSHALA

High quality, curriculum-based, interactive e-content in 70 subjects across all disciplines of social sciences, arts, fine arts and humanities, natural & mathematical sciences, linguistics and languages developed by the subject experts working in Indian universities and other R & D institutes across the country.

36. ICT and Governance

Governance has been defined to refer to structures and processes that are designed to ensure accountability, transparency, responsiveness, rule of law, stability, equity and inclusiveness, empowerment, and broad-based participation. Governance also represents the norms, values and rules of the game through which public affairs are managed in a manner that is transparent, participatory, inclusive and responsive.

Good Governance

Good governance has 8 major characteristics.

e-Governance

Through Technology

The guiding principles for reforming Government through technology are:

• Form simplification and field reduction – Forms should be made simple and user friendly and only minimum and necessary information should be collected.

• Online applications and tracking - Online applications and tracking of their status should be provided.

• Online repositories - Use of online repositories e.g. for certificates, educational degrees, identity documents, etc. should be mandated so that citizens are not required to submit these documents in physical form.

• Integration of services and platforms – Integration of services and platforms e.g. Aadhaar platform of Unique Identity Authority of India (UIDAI), payment gateway, Mobile Seva platform, sharing of data through open Application Programming Interfaces (API) and middleware such as National and State Service Delivery Gateways (NSDG/SSDG) should be mandated to facilitate integrated and interoperable service delivery to citizens and businesses.

OBJECTIVES/ADVANTAGES OF

E-GOVERNANCE

(i) To build an informed society by providing access to every piece of information of the Government and of public importance.

ii) To increase Government and Citizen Interaction through a feedback framework, to know people's problems and to find solutions with their active involvement.

(iii) To encourage democracy participation in the Governing process, through feedback, access to information and citizens participation in decision making.

(iv) To bring transparency in the governing process by making all the information, decisions, and policies of the Government accessible to people.

(v) To make the Government accountable through transparency in governance help the Government to be more

(vi) To reduce the cost of Governance by cutting down expenditure on physical delivery of information and services, particularly stationary,

(vii) To reduce the reaction time of the Government as redtapism of physical files gets eliminated.

(viii) To speed up delivery of services as technology (Internet, smart phones) make communication speedier.

EMERGING AREAS FOR

e-GOVERNANCE

Technology for Education – e-Education	This refers to broadband and wi-fi connectivity to Schools, digital literacy program at the national level and leveraging Massive Online Open Courses (MOOCs).
Technology for Health – e-Healthcare	This refers to use of technology for better healthcare service delivery that includes online medical consultation, online medical records, online medicine supply, pan-India exchange for patient information, etc
Technology for Farmers	This would facilitate farmers to get real time price information, online ordering of inputs

	and online cash, loan, and relief payment with mobile banking.
Technology for Security	This refers to provisioning off Mobile based emergency services and disaster related services to citizens on real time basis so that they can take precautionary measures well in time and minimize loss of lives and properties.
Technology for Justice	Interoperable Criminal Justice System shall be strengthened by leveraging several related applications, i.e. e-Courts, e-Police, e-Jails and e-Prosecution.
Technology for Financial Inclusion	Financial inclusion shall be strengthened using mobile banking, Micro-ATM program and CSCs/ Post Offices
Technology for Cyber Security	National Cyber Security Co-ordination Centre would be set up to ensure safe and secure cyber-space within the country.

THE FOUR PILLARS OF

e-GOVERNANCE

1. Government to Citizen (G2C)

2. Citizen to Government (C2G)

3. Government to Government (G2G)

4. Government to Business (G2B)

1. Government to Citizen

E-Citizenship: facilitation of Government Services relating to citizenship of an individual.

E-transportation: services of Government, relating to Transport by Road, Rail, Water or Air.

E-Health: health services of the Government, interconnection of all hospitals.

E-Education: Distant as well as classroom education. E-Help: facilitation of disaster and crisis management using ICT.

E-Taxation: tax due alerts and online payment of taxes. 2. Citizen to Government

E-Democracy: The ICT can help to enable the true democratic process including voting, public opinion, feedback and Government accountability.

E-Feedback: ICT enabled online feedback to the Government, online debates on Government services.

3. Government to Government

E-Administration
E-Police
E-Courts

4. Government to Business

E-Taxation
E-Licensing

E-Tendering

THE NATIONAL e-GOVERNANCE PLAN (NeGP)

The National e-Governance Plan (NeGP) as the enabler of Digital India programme was conceptualized to focus on e-Governance initiatives at the national level its aim was to "Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realise the basic needs of the common man". The strategy adopted was centralized planning and decentralized planning. The Government initially approved the National e-Governance Plan (NeGP), comprising of 27 Mission Mode Projects (MMPs) and 8 components, on May 18, 2006. 4 more mission mode projects namely 'Education', 'Health', 'Posts' and 'Public Distribution System' were added to NeGP portfolio in 2011. As part of NeGP, core ICT infrastructure has been created by MeitY. (Ministry of Electronics and Information Technology)

E-KRANTI : NeGP 2.0

It has the vision and mission of electronic delivery of all services in the best manner possible.

The Key Principles of e-Kranti

1. Transformation and not Translation
2. Integrated Services and not Individual Services

3. Government Process Reengineering (GPR) to be mandatory in every MMP
4. ICT Infrastructure on Demand
5. Cloud by Default 6. Mobile First
7. Fast Tracking Approvals
8. Mandating Standards and Protocols
9. Language Localization
10. National GIS (Geo-Spatial Information System)
11. Security and Electronic Data Preservation

DIGITAL INDIA INITIATIVE

Enabled by National e-Governance Plan (NeGP) and e-Krantis NeG P 2.0, the Digital India Initiative aims to completely digitise all aspects of governance as well as citizens lives.

The vision areas of Digital India

> **I. Infrastructure as Utility to Every Citizen**
> **II. Governance and Services on Demand**
> **III. Digital Empowerment of Citizens**

Nine Pillars of Digital India

> **1. Broadband Highway**
> **2. Universal access to mobile**
> **3. Public Internet Access Programme (PIAP)**
> **4. E-governance**
> **5. E-kranti**

6. Information for all
7. Electronics manufacturing
8. IT for jobs
9. Early harvest programmes