

Components of Information and Communication Technologies (ICT)

SUBJECT : Introduction to Information and Communication Technologies

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Components of Information and Communication Technologies (ICT)

ICT is made up of several key components that work together to collect, store, process, and share information. Below are the **basic components**:

1) Hardware:

Hardware refers to the **physical devices** used in ICT systems. Hardware refers to the physical components of ICT systems that you can touch and see.

Examples:

- **Input Devices:** Keyboard, mouse, scanner, webcam, microphone
- **Output Devices:** Monitor, printer, speakers
- **Storage Devices:** Hard drives, USB flash drives, memory cards
- **Processing Units:** CPU (Central Processing Unit), GPU (graphics Processing Unit)
- **Networking Devices:** Routers, modems, switches
- **Mobile Device:** Smartphones, tablets, laptops

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2) Software:

Software is a set of **instructions or programs** that tell hardware what to do. It enables users to perform tasks on ICT systems.

Types of Software:

System Software:

- Operating systems (Windows, macOS, Linux) ,
- Utility programs (e.g., antivirus, file management tools)

Application Software:

- Productivity tools (e.g., Microsoft Office, Google Docs) , Word processors, spreadsheets,
- Browsers (e.g., Chrome, Firefox),
- Mobile apps (Communication tools e.g., Zoom, WhatsApp, Teams)

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3) ICT Platforms

ICT platforms are **digital environments** where communication, collaboration, and data exchange take place.

ICT platforms are frameworks or environments that support the development and delivery of ICT services and applications.

Examples:

- **Operating systems** (Windows, Android, iOS)
- **Communication Platforms:** Zoom, Microsoft Teams, Slack
- **Social Media Platforms:** Facebook, Instagram, LinkedIn
- **Learning Platforms:** Google Classroom, Moodle
- **E-commerce Platforms:** Amazon, eBay, Shopify

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4) Networks

Networks allow computers and devices to **connect and share information**. Networks are systems that connect multiple computers and devices to share resources and information.

Types of Networks:

- **LAN (Local Area Network):** connects devices in a Small area like a home or office
- **WAN (Wide Area Network):** Larger areas, like the internet
- **Wi-Fi:** Wireless local area network , uses radio waves instead of cables
- **Bluetooth:** Short-range wireless connection

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Key Networking Devices:

- **Router:** Connects devices to the internet , direct data traffic between networks
- **Switch:** Connects multiple devices on the same network
- **Modem:** Converts signals for internet access
- **Firewalls:** provide security by monitoring and controlling traffic

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5) Data Storage

Data storage is where information is **saved, accessed, and managed**. It can be local or cloud-based.

Types:

- **Local Storage**: Stored on physical devices like
 - Hard Disk Drives (HDD) , Solid State Drives (SSD) , USB flash drives , CDs/ DVDs
- **Cloud Storage**: Data is stored on **remote servers** accessed via the internet, Cloud storage allows users to access data anytime, anywhere via the internet.
 - Google Drive, Dropbox, OneDrive

Advantages:

- Access data from anywhere , Automatic backup

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6) People

People are essential to ICT systems. They use, manage, and maintain ICT tools and platforms.

Roles:

- End users (students, employees, etc.)
- ICT professionals (IT support, software developers, network engineers)

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- **Communication Technologies**

These are tools and systems that **enable the exchange of information**.

Examples:

- **Email systems** (Gmail, Outlook)
- **Instant messaging apps** (WhatsApp, Telegram, Slack)
- **Video conferencing tools** (Zoom, Google Meet)
- **VoIP services** (Skype, Microsoft Teams)
- **Telecommunication networks** (Mobile networks, landlines)

Summary Table

Component	Description	Examples
Hardware	Physical devices	Laptop, router, USB drive
Software	Programs that run on hardware	Windows, MS Word, antivirus
ICT Platforms	Digital environments for communication & work	Zoom, Facebook, Google Classroom
Networks	Systems that connect devices	LAN, Wi-Fi, Bluetooth
Data Storage	Saving and accessing information	HDD, SSD, Google Drive
People	Users and managers of ICT	Students, IT staff, content creators