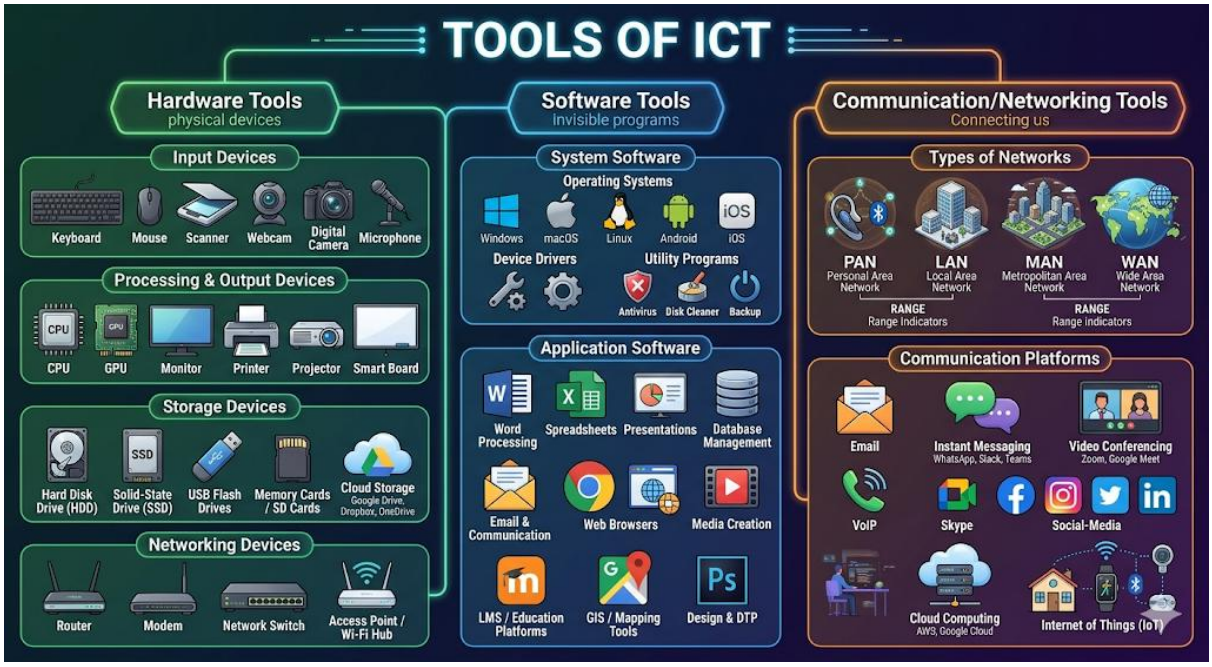
Tools of ICT

Information and Communication Technology (ICT) is a vast ecosystem. To make it easier to digest, we can break it down into three main pillars.

- Hardware (physical devices)
- Software (programs)
- Communication/networking tools.



Hardware Tools

Hardware tools are the physical devices you can see and touch, and are classified by their use.

Input Devices — Getting information into the system

- **Keyboard:** The primary way to type text and commands into a computer.
- **Mouse / Touchpad:** Lets you click, scroll, and navigate graphical interfaces.
- **Scanner:** Converts a physical paper document or photo into a digital file.

- **Webcam / Digital Camera:** Captures photos and video for digital use — essential for video calls and content creation.
- **Microphone:** Converts your voice or other sounds into digital audio.

Processing & Output Devices — Handling and displaying information

- **CPU (Central Processing Unit):** The 'brain' of the computer — it performs calculations and runs programs.
- **GPU (Graphics Processing Unit):** Handles graphics and visual rendering. Modern GPUs are also used for AI tasks.
- **Monitor / Display:** Your primary window into the digital world — it shows everything the computer processes.
- **Printer:** Produces physical (paper) copies of digital documents.
- **Projector / Smart Board:** Projects digital content for a group — widely used in classrooms, boardrooms, and conference halls.

Storage Devices — Saving information

- **Hard Disk Drive (HDD):** Uses magnetic technology for large, affordable storage. Common in desktop computers and servers.
- **Solid-State Drive (SSD):** Faster and more durable than HDDs — uses flash memory with no moving parts.
- **USB Flash Drives:** Small, portable drives for carrying files between devices. Plug in and go.
- **Memory Cards / SD Cards:** Tiny storage cards used in cameras, phones, and tablets.
- **Cloud Storage:** Online storage you access via the internet — Google Drive, Dropbox, OneDrive. Your files live on remote servers.

Networking Devices

- **Router:** It directs internet traffic between your devices and the wider internet.
- **Modem:** It converts your internet provider's signal into something that home network can use.

- **Network Switch:** It connects multiple devices within a local network (like computers in an office).
- **Access Point / Wi-Fi Hub:** It broadcasts the wireless signal that your devices connect to.

Software Tools

Software is the invisible layer that makes hardware useful. There are two main types:

System Software — The foundation

- **Operating Systems (OS):** The master program that manages all hardware and helps in running other software — Windows, macOS, Linux, Android, iOS.
- **Device Drivers:** These are small programs that let the OS communicate with specific hardware, like printers or graphics cards.
- **Utility Programs:** These are the background tools that keep your system healthy, like antivirus software, disk cleaners, and backup utilities.

Application Software

- **Word Processing:** It includes software like MS Word, Google Docs, for writing, editing, and formatting text documents.
- **Spreadsheets:** Software like MS Excel, Google Sheets for organising numbers, building charts, and running calculations.
- **Presentations:** MS PowerPoint, Google Slides, Canva are used for creating visual slideshows and pitches.
- **Database Management:** MS Access, MySQL, Oracle are used for storing and querying large amounts of structured data.
- **Email & Communication:** Gmail, MS Outlook, Thunderbird are the software used for sending emails, managing calendars, and keeping contacts.
- **Web Browsers:** Chrome, Firefox, Safari, and Edge are the applications used for browsing the internet.
- **Media Creation:** VLC, Audacity, and Adobe Premiere are used for playing, recording, and editing audio and video.

- **LMS / Education Platforms:** Applications like Moodle, Google Classroom, and Blackboard are used for online teaching, assignments, and learning management.
- **GIS / Mapping Tools:** Google Maps, ArcGIS, and QGIS are software used for geographic data, route planning, and spatial analysis.
- **Design & DTP:** Adobe Photoshop, Illustrator, and CorelDRAW are used for graphic design, photo editing, and digital art.

Communication and Networking Tools

These are the tools that connect us to other people, organizations, and information sources.

Types of Networks

- **PAN – Personal Area Network:** Very short range, usually just a few meters. Bluetooth headphones and USB cables are examples.
- **LAN – Local Area Network:** Covers a building or campus. School computer labs and office networks are LANs.
- **MAN – Metropolitan Area Network:** Spans a city or large campus. Used by universities and city governments.
- **WAN – Wide Area Network:** Covers countries and continents. The Internet is the world's largest WAN.

Type	Name	Range/Use
PAN	Personal Area Network	Short range (Bluetooth headphones).
LAN	Local Area Network	A single building or office.
MAN	Metropolitan Area Network	Across a city or large campus.

Type	Name	Range/Use
WAN	Wide Area Network	Countries or continents (The Internet).

Communication Platforms

- **Email:** The digital equivalent of a formal letter, asynchronous, reliable, and widely used in professional settings.
- **Instant Messaging:** Real-time text chat like WhatsApp, Telegram, Slack, Microsoft Teams.
- **Video Conferencing:** Face-to-face meetings over the internet, e.g. Zoom, Google Meet, Cisco Webex.
- **VoIP:** Voice calls made over the internet rather than traditional phone lines, as done on Skype, WhatsApp calls.
- **Social-Media:** Platforms for sharing content and connecting with communities, e.g. Facebook, Instagram, Twitter/X, LinkedIn.
- **Cloud Computing:** Accessing computing power and storage remotely over the internet through applications like AWS, Google Cloud, Microsoft Azure.
- **Internet of Things (IoT):** Everyday objects connected to the internet and to each other as smart sensors, fitness trackers, and smart home devices.