

Information and Communication Technology

Introduction to ICT

Data and Information

Data

Numbers, words, images, and symbols that do not have meaning when standing alone.

Information

Meaningful data is obtained by arranging and processing data. Information is used to make decisions.

Example: Student Marks

Data:

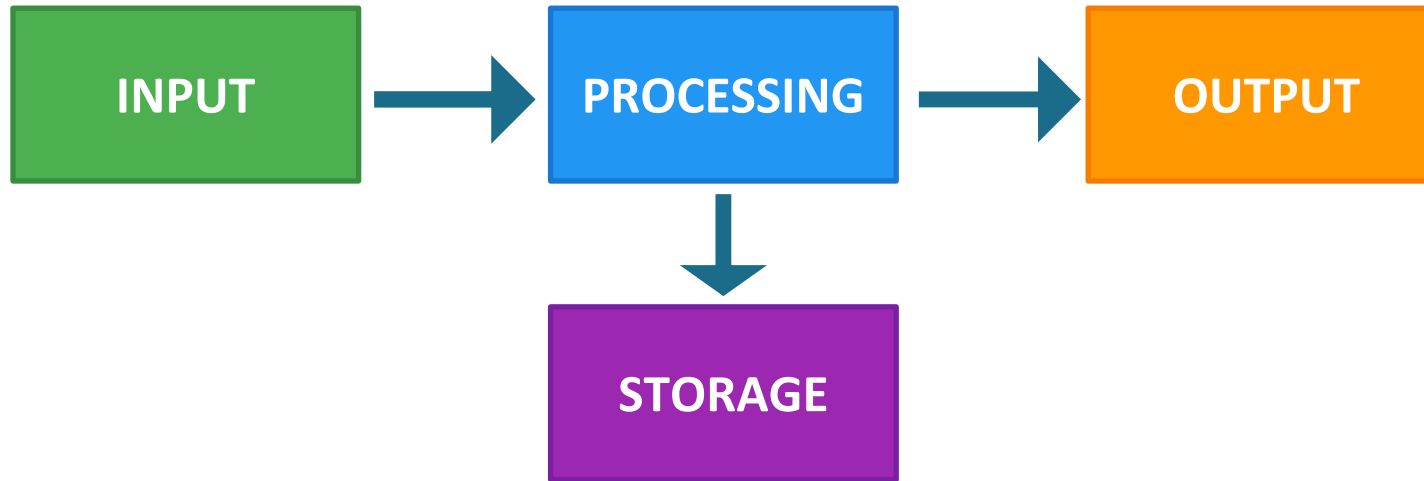
Ravi 78, 90, 79, 67, 76, 98

Information: Organised in a table

Name	Math	Science	English	History	Art	Total	Rank
Ravi	90	79	78	76	67	390	1

Information System

A combination of components that work together to fulfill a task.



Examples:

ATM

Card/PIN → Bank verification → Cash

Fingerprint

Scan → Pattern match → Attendance

QR Code

Code → Decode → Information

Characteristics of Quality Information (ACCURATE)



Accurate

Information should be free from errors

Example:

Medical dosage must be precise to avoid patient harm



Complete

Information should contain all necessary facts

Example:

Collecting data from entire population, not just a sample



Cost-effective

Cost to produce should be reasonable

Example:

Don't spend more than the benefit gained from the info



User-focused

Information should be relevant to the user's needs

Example:

Only highest qualification needed, not all grades



Reliable

Information can be trusted from a dependable source

Example:

Data from a peer-reviewed journal vs. anonymous blog



Authoritative

Source of information should be credible

Example:

Government statistics vs. unverified social media post



Timely

Information should be available when needed

Example:

Today's weather report for today's decisions



Easy-to-Understand

Information should be presented clearly

Example:

Charts and summaries instead of raw data tables

Information and Communication Technology

The use of technology to convert data into information and exchange information between people or systems.

ICT = Information Technology + Communication Technology

(Processing Data)

(Exchanging Information)

Applications of ICT - e-Government

Government communicating with Citizens, Companies, Non-Government Organizations and other Governments using ICT.

Benefits:



Easy Access

Easy access to government information and services



Online Services

Birth certificates, vehicle registration online



Time Saving

Saves time and reduces paperwork significantly



Transparency

Transparent government processes and decisions

Examples: www.gov.lk, ICTA website, Government Information Center

Applications of ICT - Education

In the Classroom

- Presentations and videos
- Educational games (Edutainment)
- CD-ROM learning materials

Web-Based Training (WBT)

- Learn from home
- No travel costs
- Saves time
- Contact teachers via internet

Learning Management System (LMS)

- Access materials anytime
- Upload assignments from home
- Submit queries through forums
- Video participation

Online Distance Learning

- Connect with universities worldwide
- Flexible time frame
- Digital library access
- Low cost education

Applications of ICT - Health Sector

Medical Diagnosis Equipment

- **CAT Scan:** X-rays for 3D body images



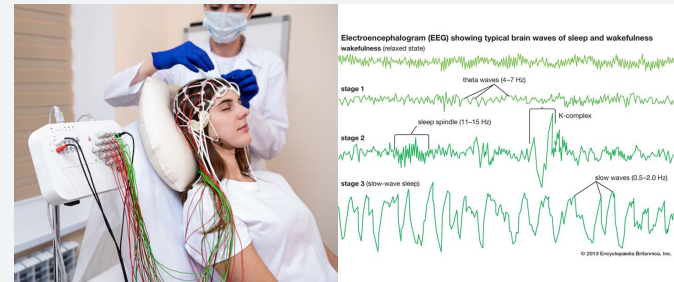
- **MRI:** Magnetic fields for organ images



- **ECG:** Monitor heartbeat



- **EEG:** Record brain activities



Applications of ICT - Agriculture

Farming Devices

- Meteorological Devices
- Automated Insect Control
- Field Condition Sensors
- Drip Irrigation
- Robotic Planters
- Harvesting Robots

Greenhouse Technology

- Control light and moisture
- Control air quality
- Protect from disasters
- Produce rare crops

Farm Management

- RFID (Animal tracking)
- Automated Milking
- CCTV Security
- Farm Management Software



Applications of ICT - Manufacturing and Business

Benefits of Robots:

- 24-hour service without rest
- Never get tired
- High efficiency and accuracy
- Maintains hygiene
- Reduces production cost
- High-quality products



Business Applications:



Video Conferencing

Face-to-face meetings from different locations



HR Management

Fingerprint attendance, salary calculation



e-Banking

ATM, online transactions, mobile payments



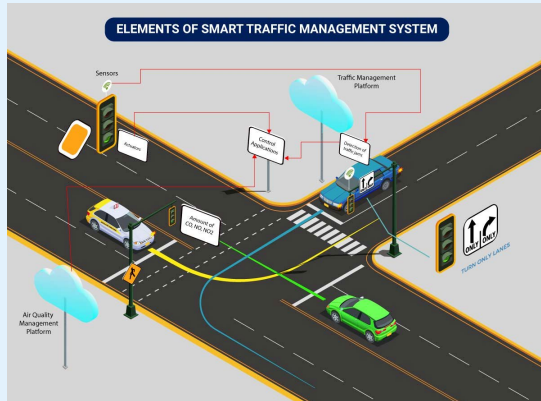
e-Commerce

Online shopping, 24/7 access, home delivery

Applications of ICT

Transport

- CCTV: Monitor traffic and accidents
- Traffic Light Control: Automated signals
- Parking Systems: Automated gate control



Entertainment

- Social networking platforms
- Music and video streaming
- Online TV programs
- Digital photography
- Video games and e-Sports
- e-Books and e-News
- High-definition streaming

Demerits of ICT

Negative Impacts of ICT

Addiction

Excessive computer/internet use is affecting education and daily life

Health Issues

Eye strain, back pain, headaches, obesity from prolonged use

Wrong Connections

Unsuitable friendships via social media platforms

Computer Viruses

System damage due to improper internet usage

Mental Disorders

Visiting inappropriate websites and content

Privacy Violation


Publishing distorted photos and videos of others

Social Isolation

Less physical human interaction and communication

Copyright Issues

Illegal use and distribution of copyrighted content

 **Important: ICT is not harmful by itself. It is our responsibility to use ICT in a responsible and ethical manner.**