

# ECS 235B Module 2

## Basic Components

# Basic Components

- Confidentiality
  - Keeping data and resources hidden
- Integrity
  - Data integrity (integrity)
  - Origin integrity (authentication)
- Availability
  - Allowing access to data and resources

# McCumber Cube

## Critical Information Characteristics

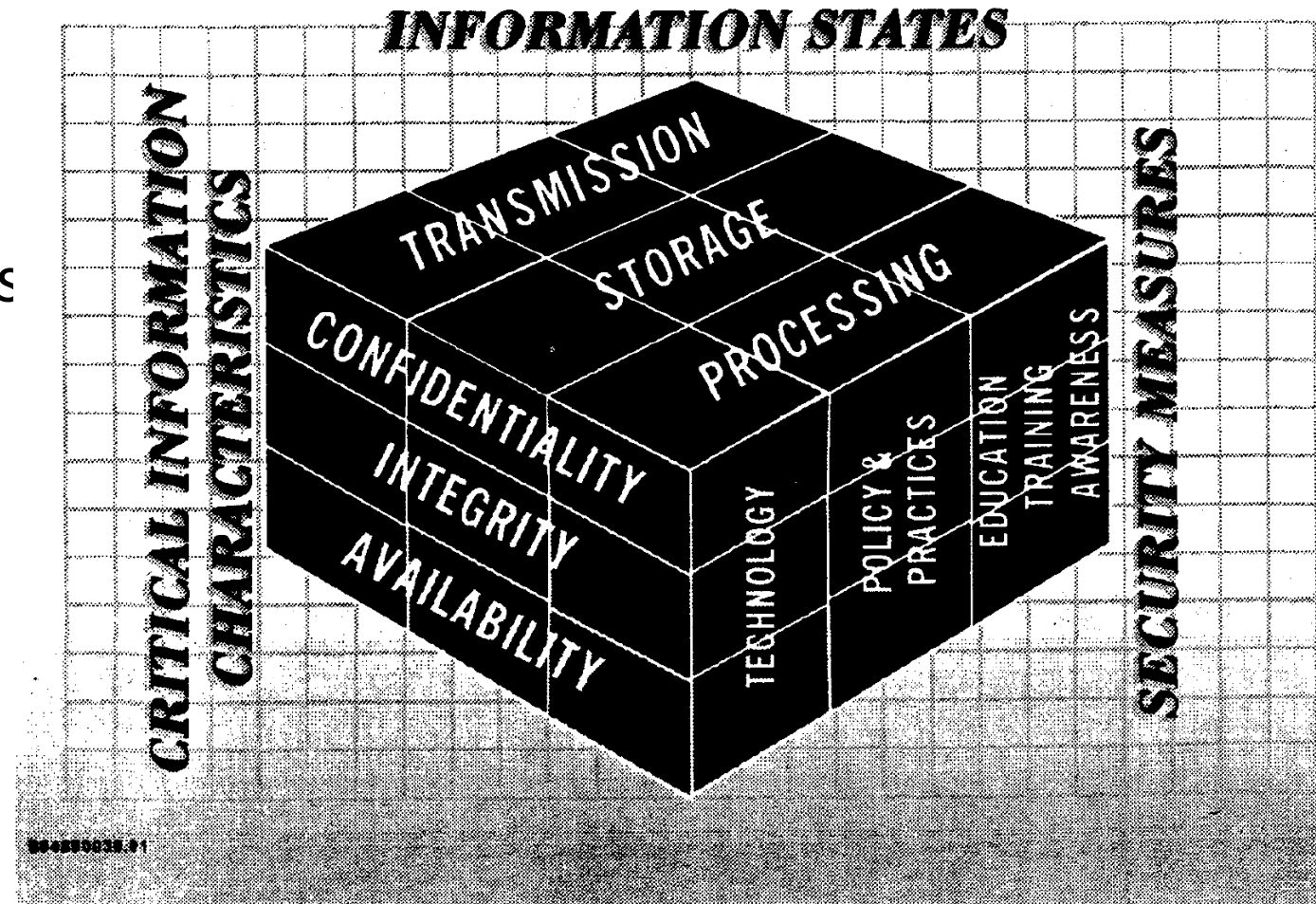
- CIA Triad

## Information States

- Stages in handling information

## Security Measures

- Controls for information access and handling



Picture from McCumber, John. "Information Systems Security: A Comprehensive Model", *Proceedings 14th National Computer Security Conference* p. 328–337 (Oct. 1991), on p.334.

# Information States

- Storage
  - Where data is kept
  - Examples: disks, USB memory sticks
- Transmission
  - How data moves from one place to another
  - Examples: network connections, pipes
- Processing
  - Computations using the information
  - Examples: computing statistics, drawing pictures

# Security Measures

- Technology
  - Something implemented and used to ensure critical information characteristics maintained through information states
  - Example: encryption, access controls
- Policy and Practice
  - Something which says what information can be accessed, by whom, and how; a procedure to enhance security
  - Example: students may not access one another's homework files
- Education, Training, and Awareness
  - Make people understand security at level appropriate for them
  - Example: cybersecurity training UC Davis folks must take

# Assumptions and Trust

- Underlie *all* aspects of security
- Policies
  - Unambiguously partition system states
  - Correctly capture security requirements
- Mechanisms
  - Assumed to enforce policy
  - Support mechanisms work correctly

# Quiz

Which of the following is *not* one of the Basic Components?

- Integrity
- Confidentiality
- Trust
- Availability

Is it part of the McCumber cube?

- Yes
- No