Servicing of Paperless Meetings and Matching the Global Pace of ICT Deployment in University Administration: The Roles of Public Administrators

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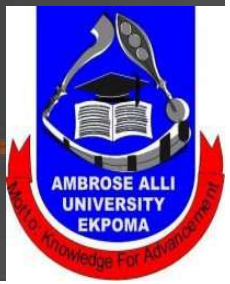
Data vs. Information

Data

- raw facts
- no context
- just numbers and text

Information

- data with context
- processed data
- value-added to data
  - summarized
  - organized
  - analyzed



DEFINITION OF TERMINOLOGIES

Data

Information derived/ or obtained from raw data (e.g. a reported analytical result)

Raw Data

Original records and documentation, retained in the format in which they were originally generated (i.e. paper or electronic), or as a 'true copy'. Raw data must be contemporaneously and accurately recorded by permanent means. In the case of basic electronic equipment which does not store electronic data, or provides only a printed data output (e.g. balance or pH meter), the printout constitutes the raw data.

Source Data

Includes all information in original records and certified copies of original records used for reconstructing and evaluating the investigation.

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DEFINITION OF TERMINOLOGIES

Meta Data

Metadata is data, that describes the attributes of other data, and provide context and meaning. Typically, these are data that describe the structure, data elements, interrelationships and other characteristics of data. It also permits data to be attributable to an individual.

Electronic Record

FDA regulations define an electronic record as any combination of text, graphics, data, audio, pictorial, or other information represented in digital form that is created, modified, maintained, archived, retrieved, or distributed by a computer system.

Hybrid System

A 'Hybrid System' is defined as an environment consisting of both Electronic and Paper-based Records (Frequently Characterized by Handwritten Signatures Executed on Paper).

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DEFINITION OF TERMINOLOGIES

Term	EXPECTATION/GUIDANCE REQUIREMENT
Data/Source Data	*Data must be:* A -- Attributable to the person generating the data L -- Legible and permanent C -- Contemporaneous O -- Original record (or 'true copy') A -- Accurate
Raw Data	*Raw data must:* Be legible and accessible throughout the data lifecycle. Permit the full reconstruction of the activities resulting in the generation of the data.
Electronic record	Must maintain authenticity, integrity and confidentiality of electronic records which shall be trustworthy, reliable and equivalent to paper records and handwritten signatures.

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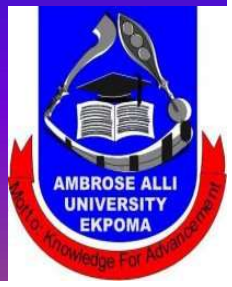
Types of Data

Quantitative Data

- Measurable
- Collected through measuring things that have a fixed reality
- Close ended

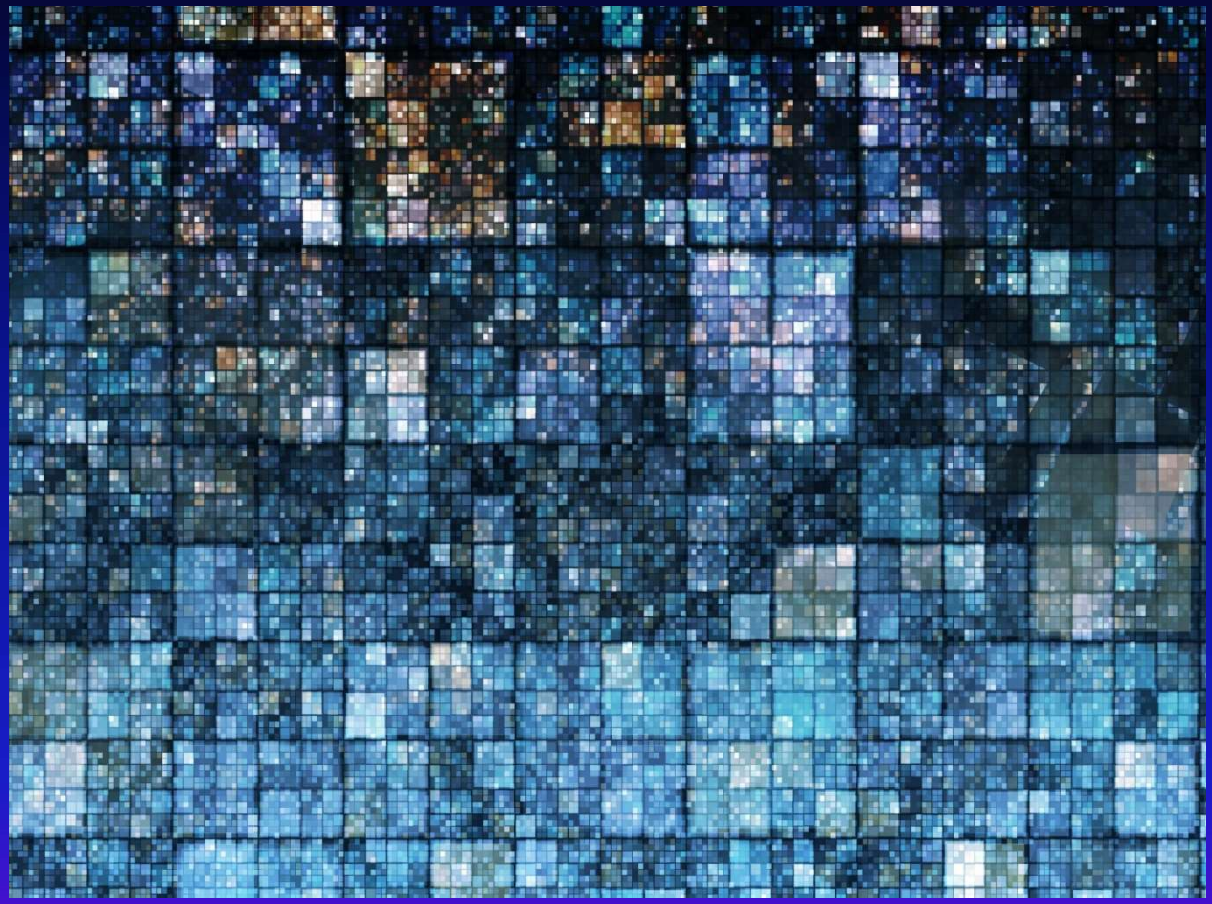
Qualitative Data

- Descriptive
- Collected through observation, field work, focus groups, interviews, recording or filming conversations
- Open ended



Big Data

- Data that is too large or too complex to be managed using traditional data processing, analysis, and storage techniques.



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The 4 V's of Big Data

Volume
The amount of data

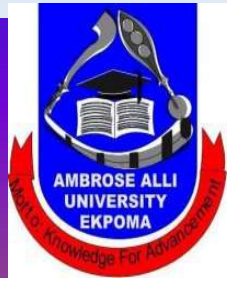
Variety
The types of data

Velocity
The frequency of data

Veracity
The quality of data

Volume: scale of data

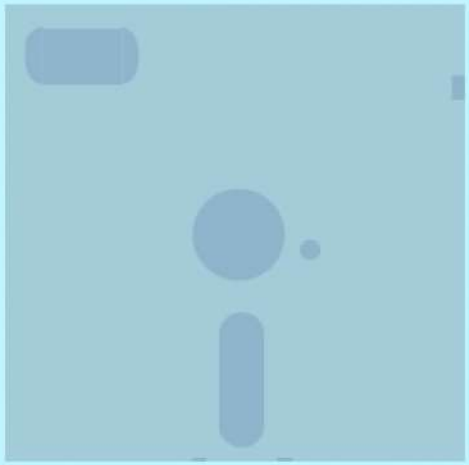
Unit	Value	Size
bit (b)	0 or 1	1/8 of a byte
byte (B)	8 bits	1 byte
kilobyte (KB)	1000^1 bytes	1,000 bytes
megabyte (MB)	1000^2 bytes	1,000,000 bytes
gigabyte (GB)	1000^3 bytes	1,000,000.000 bytes
terabyte (TB)	1000^4 bytes	1,000,000,000,000 bytes
petabyte (PB)	1000^5 bytes	1,000,000,000,000,000 bytes
exabyte (EB)	1000^6 bytes	1,000,000,000,000,000,000 bytes
zettabyte (ZB)	1000^7 bytes	1,000,000,000,000,000,000,000 bytes
yottabyte (YB)	1000^8 bytes	1,000,000,000,000,000,000,000,000 bytes



Volume: scale of data

- 90% of today's data has been created in just the last 2 years
- Every day we create 2.5 quintillion bytes of data or enough to fill 10 million Blu-ray discs
- 40 zettabytes (4o trillion gigabytes) of data will be created by 2020, an increase of 300 times from 2005, and the equivalent of 5,200 gigabytes of data for every man, woman and child on Earth
- Most companies in the US have over 100 terabytes (100,000 gigabytes) of data stored

The Evolution of Data Storage



8 Inch Floppy DIsk

5 1/2 Inch Floppy DIsk

USB Drive

SD

Micro SD

Cloud

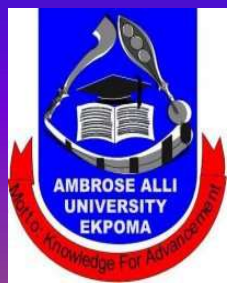
Commercially available	1971	1976	2000	2010	2010	2009
Maximum capacity	1.2 mb	1.2 mb	2 tb	256 gb	128 gb	~5zb
Cost per gb	£1000	£800	£0.5	£0.8	£0.5	<50g

@vowlesyy @pixelpelican pixelpelican.co.uk samuelv

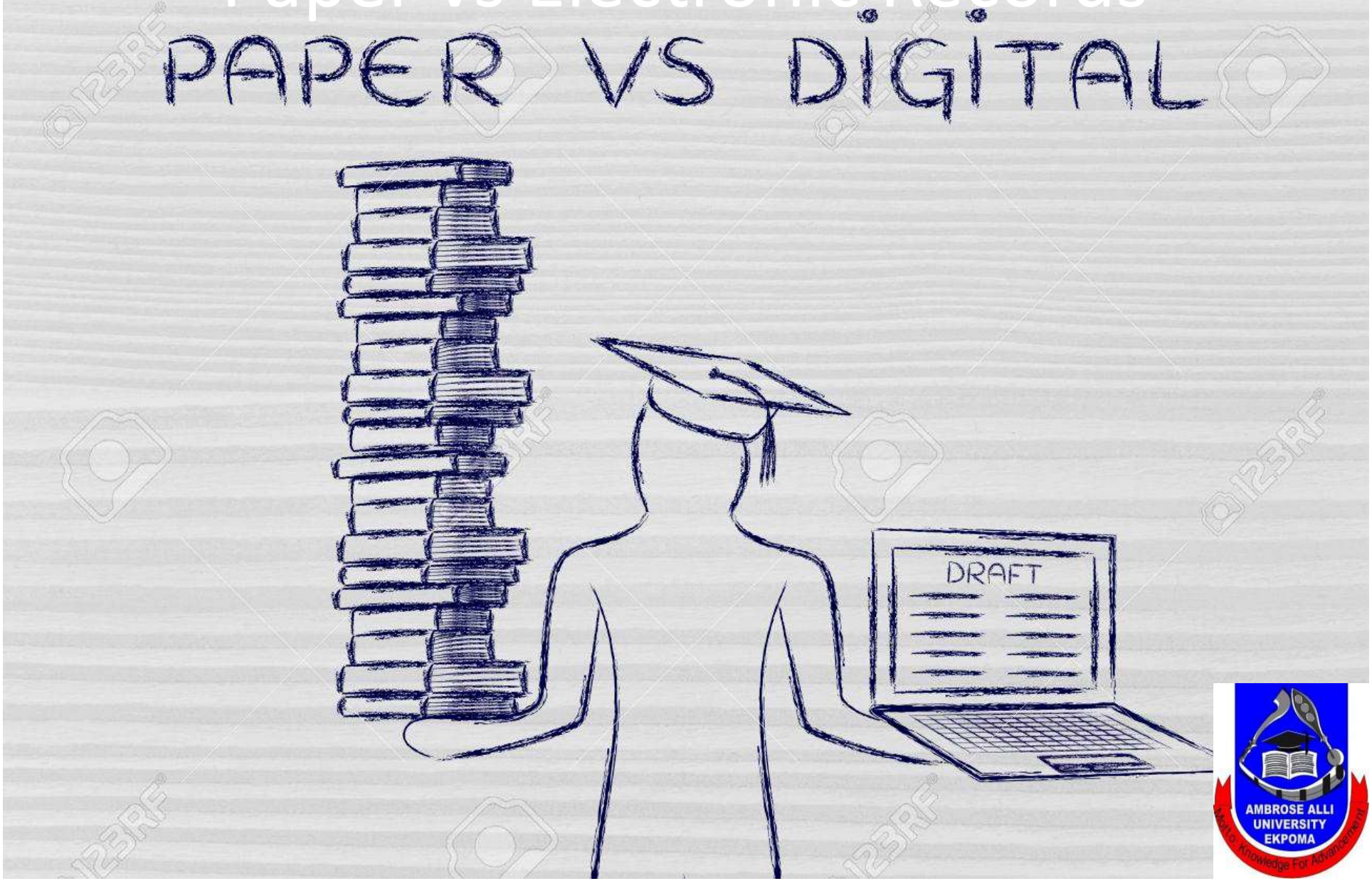
sources: Wikipedia, An

Classes of Records

(1)Management records
(2)Administrative record
(3)Students Record



Paper vs Electronic Records



Paper vs Electronic Records

Paper records continue to survive, why?

✓Some industries, particularly those highly regulated such as legal, financial, manufacturing, and life sciences, may have to comply with legal and regulatory rules mandating paper records in certain circumstances, such as when a so-called "wet signature" (versus a digital one) is required.

Paper vs Electronic Records

Paper records continue to survive, why?

✓Some contracts with outside parties may include provisions for hard copies. Similarly, a key client may expect an organization to keep paper records, even if it's not contractually required.

Paper vs Electronic Records

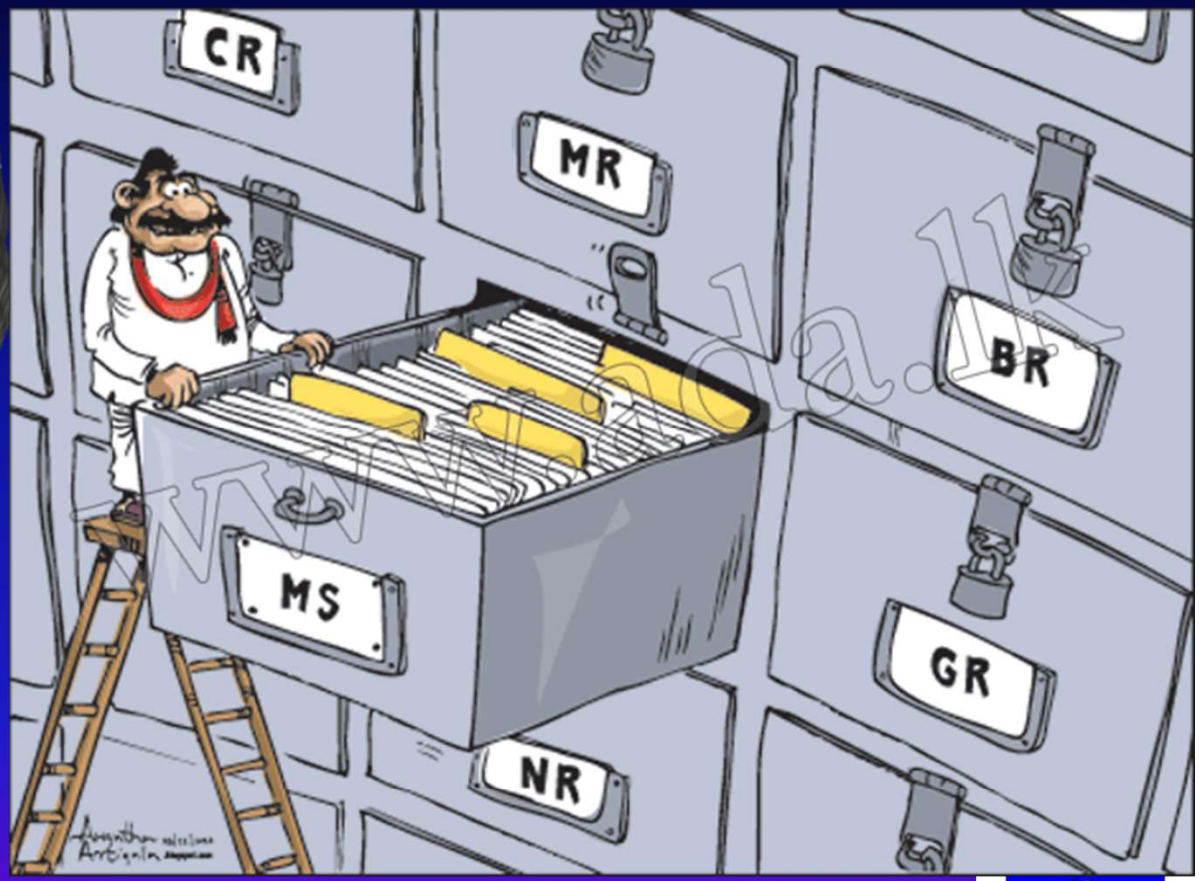
Paper records continue to survive, why?

✓The process of digitizing paper files or adapting to electronic records management may be prohibitively expensive or unworkable. (Because of this, specialized records management partners will offer solutions like scan-on-demand as a cost-effective way of making records readily accessible.)

Paper vs Electronic Records

Paper records continue to survive, why?

- The risk of lost digital records may be determined to be higher than that of hard copies



OFFICE SPACE

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FIRE OUTBREAK

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RODENTS

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OFFICE RELOCATION

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FLOODING

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FLOODING

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FLOODING

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THEFT

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Why manage records?

Paper vs Electronic Records

Advantages of Electronic Records

1. Costs

Although providers may experience some initial costs as they implement a system for storing EMR, the costs of records over time will decrease significantly.

Paper vs Electronic Records

Advantages of Electronic Records

2. Storage

Electronic records, however, can be stored in a private and secure cloud, allowing the use of fewer resources and providing easier access by those who need them.

Paper vs Electronic Records

Advantages of Electronic Records

3. Security

Both paper and electronic storage systems are susceptible to security concerns. If a facility stores records electronically, they are vulnerable to access by unauthorized individuals, when the proper and effective security systems and controls are not in place.

Paper vs Electronic Records

Advantages of Electronic Records

4. Access

the use of electronic records allows the authorized to access the information they need almost instantly, whether through the use of email or a specific application or content management system.

Paper vs Electronic Records

Advantages of Electronic Records

5. Readability and Accuracy

Electronic records are often written with a standardized typeface and terminology that leaves less room for confusion.

Paper vs Electronic Records

Advantages of Electronic Records

6. Portability

No more boxes of records and trucks and semi-trucks to haul records archives

Paper vs Electronic Records

Advantages of Electronic Records

7. Version Tracking

It is easy to see who has made changes to a document, when they made those and what the document looked like before the change.

Paper vs Electronic Records

Disadvantages of Electronic Records

1. Softeware Risk

Paper vs Electronic Records

Disadvantages of Electronic Records

2. Format Risk

Paper vs Electronic Records

Disadvantages of Electronic Records

3. Reliability

Paper vs Electronic Records

Disadvantages of Electronic Records

4. Portability

Paper vs Electronic Records

Disadvantages of Electronic Records

5. Conversion Expense

Paper vs Electronic Records

Disadvantages of Electronic Records

6. Quality Control

A software application for the administration, documentation, tracking, reporting and delivery of educational courses or training programs. The learning management system concept emerged directly from e-Learning.

It is a web based Application for e-learning programs and training contents.

This Application includes

- *Teacher and Student Administration*
  (including parents/guardians)
- *e-learning Programs and Training Contents*
- *Courses and Online Events*

Features

- Managing Courses, Users and Roles
- Online Assessment and Tracking Students' Attendance
- User Feedback

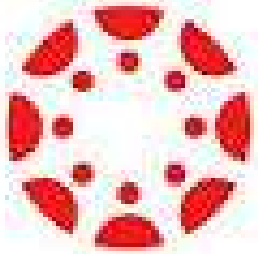
Blackboard

canvas

moodle

brightspace

Sakai



canvas

Blackboard

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canvas
is
HERE

Special Features

- ✓ **Canvas ARC**

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Special Features

- ✓ Outcomes
- ✓ Mastery Path
- ✓ Speedgrader™

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Special Features

- ✓ **Mastery GradeBook**
- ✓ **Canvas Parent**
- ✓ **Canvas Polls**

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Benefits for Teachers

- ✓ Innovation in Teaching
- ✓ Tailor-made and customized delivery
- ✓ Optimized Teacher-Student time in class

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Benefits for Teachers

- ✓ Flexible and convenient course design and delivery
- ✓ Regular feedback from students

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Benefits for Students

- ✓ More engaging and exciting learning
- ✓ 24/7 Interactions
- ✓ User-friendly

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Benefits for Students

- ✓ Canvas Calender Feature
- ✓ Personal Attention from Educators
- ✓ Self-monitoring on real-time basis

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Benefits for Students

- ✓ Real-time feedback from teachers
- ✓ Learning anywhere and anytime
- ✓ Canvas Community

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Benefits for Parents

- ✓ Monitoring of wards' performance
- ✓ Access and Assessment of quality
- ✓ Active participation in ward's education

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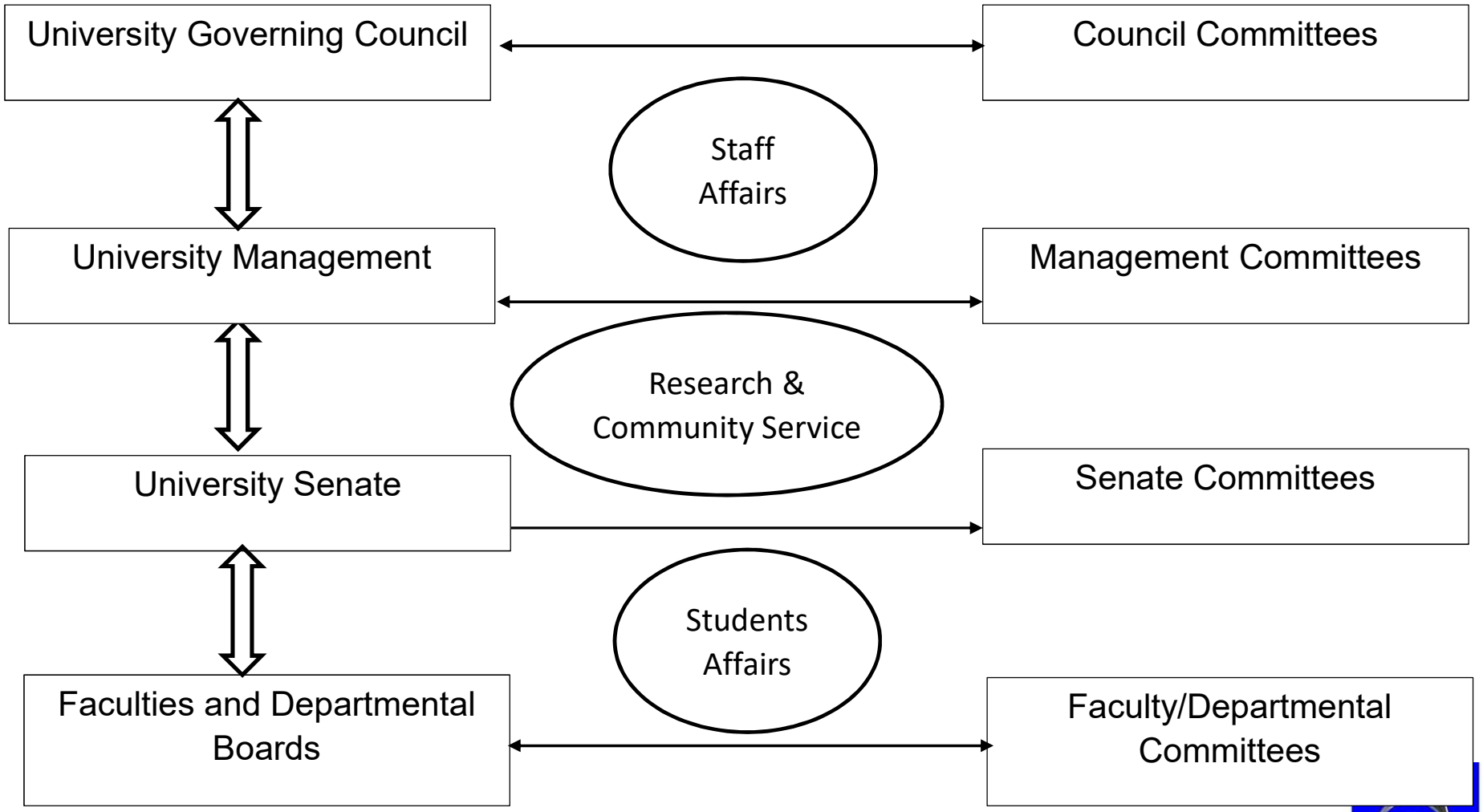
Benefits for University

- ✓ Real-time data
- ✓ Performance Report
- ✓ Informed decision making


University Governing Council
Council Committees
Staff Affairs
University Management
Management Committees
Research & Community Service
University Senate
Senate Committees
Students Affairs
Faculties and Departmental Boards
Faculty/Departmental Committees

Steps to set up a Paperless Meeting

Data Integrity

- "If it isn't written down, it never happened"
- "In God we trust, all others **bring data**"

HENRY FORD

- **Quality Means,**

  "Doing Right When **No One Is Looking**"

Spencer Johnso

- Integrity is telling myself the truth.

  Honesty is telling the truth to other people

Data Integrity

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Integrity (CIA Triangle)

- **Data Integrity** refers to the overall completeness, accuracy and consistency of **data**.
- Integrity has two types physical and logical.
- **Physical integrity:** Physical integrity deals with challenges associated with correctly storing and fetching the data itself.
  - Challenges: electromechanical faults, physical design flaws, natural disasters etc.
- **Logical Integrity: C**oncerned with referential integrity and entity integrity in a relational database
  - Challenges: software bugs, design flaws, and human errors.

Data Integrity

Unknown Causes

Shortage of manpower		Shortage of staff and excessive work pressure can lead to inaccurate and incomplete documentation.
Quantity over Quality		Employees may compromise the acceptable quality levels in order to meet production targets or dispatch timelines.
Lack of awareness		Inadequate training to Employees on cGMP, may lead to inappropriate understanding causing employees to consider activities as a chore rather than understanding their relevance in light of cGMP.
Training Effectiveness		Ineffective / inappropriate training may lead to Operations not adhering to procedures and requirements.

Known Causes

- **Intentional / Fraudulent**

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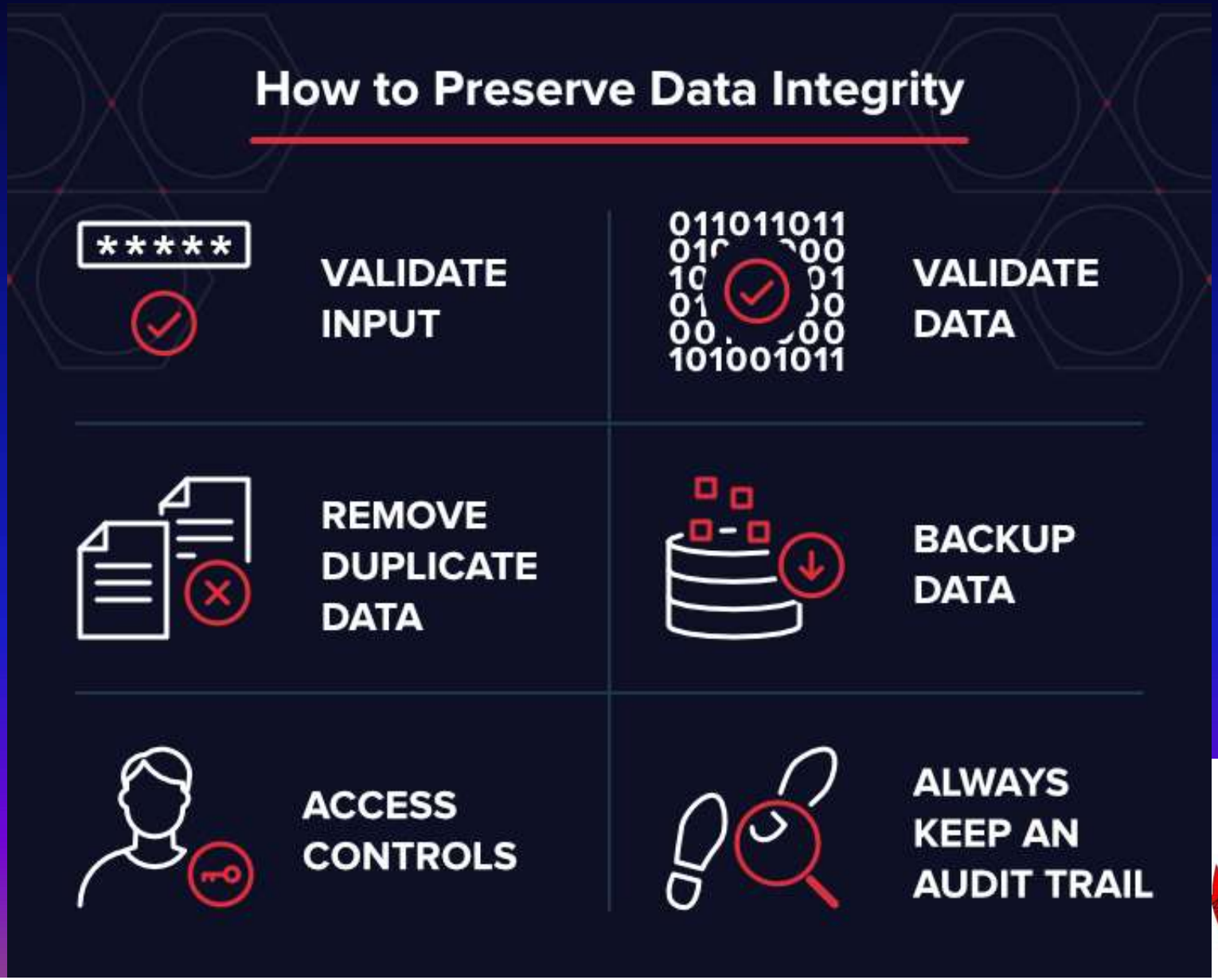
Data Integrity

Challenges of Data Integrity

- ✓ Retaining Competent / Trained technical staff
- ✓ Effective training to new entrants
- ✓ Cultural training, mind-set corrections and moulding of newly recruited staff from other organisations into Quality Culture of company
- ✓ Adherence to procedures and policies in place
- ✓ Awareness and correct interpretation of regulations and cGMP requirements

Data Integrity



Data Integrity

Key Performance Indicators to have compliance to data integrity

A] Management Support

B] Robust Quality System

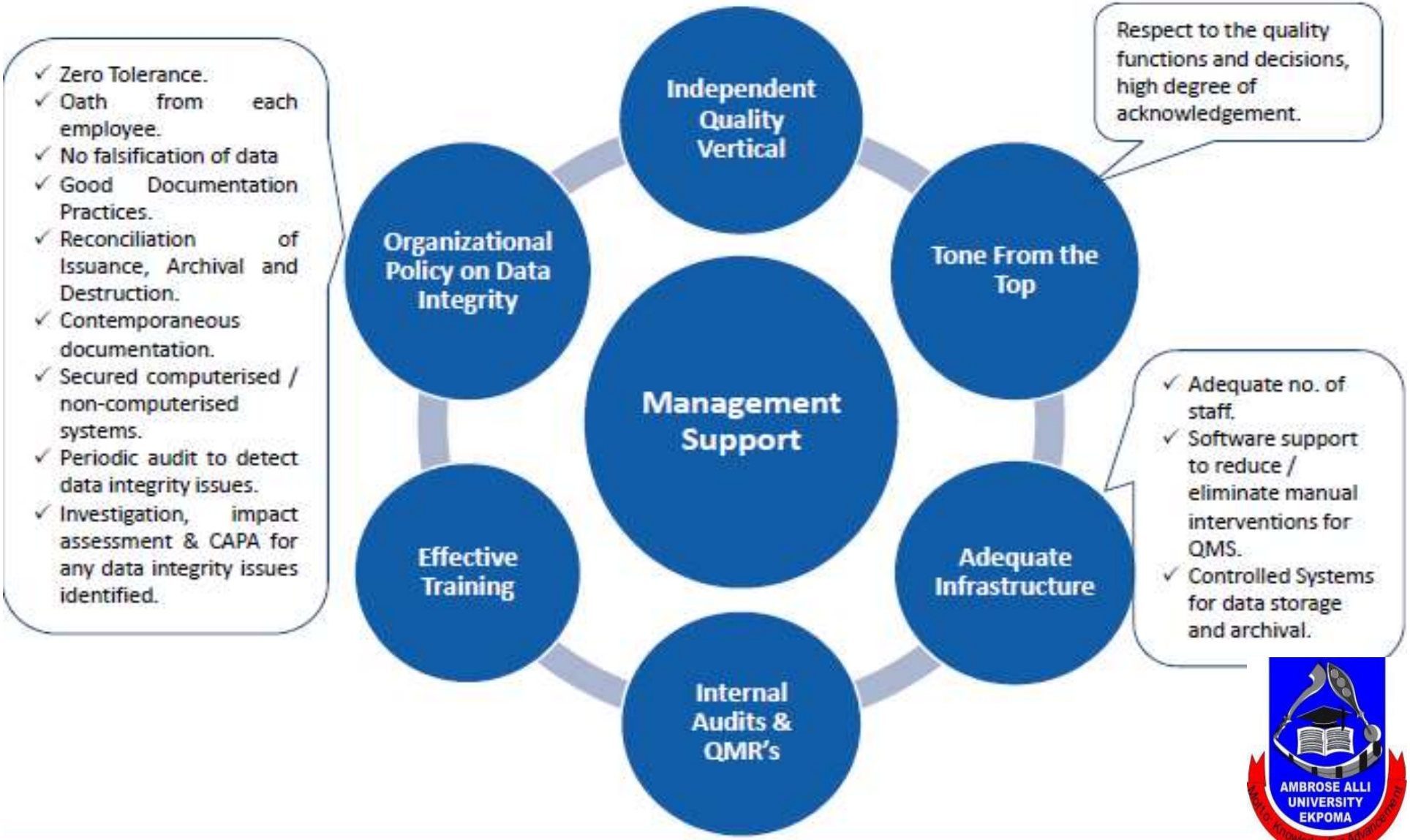
C] Cultural Enrichment

D] Effective Training

These key performance indicators (KPIs) to be embedded in the culture and shall be excelled in each of them for compliance to the data integrity requiremen

Data Integrity

Management Support



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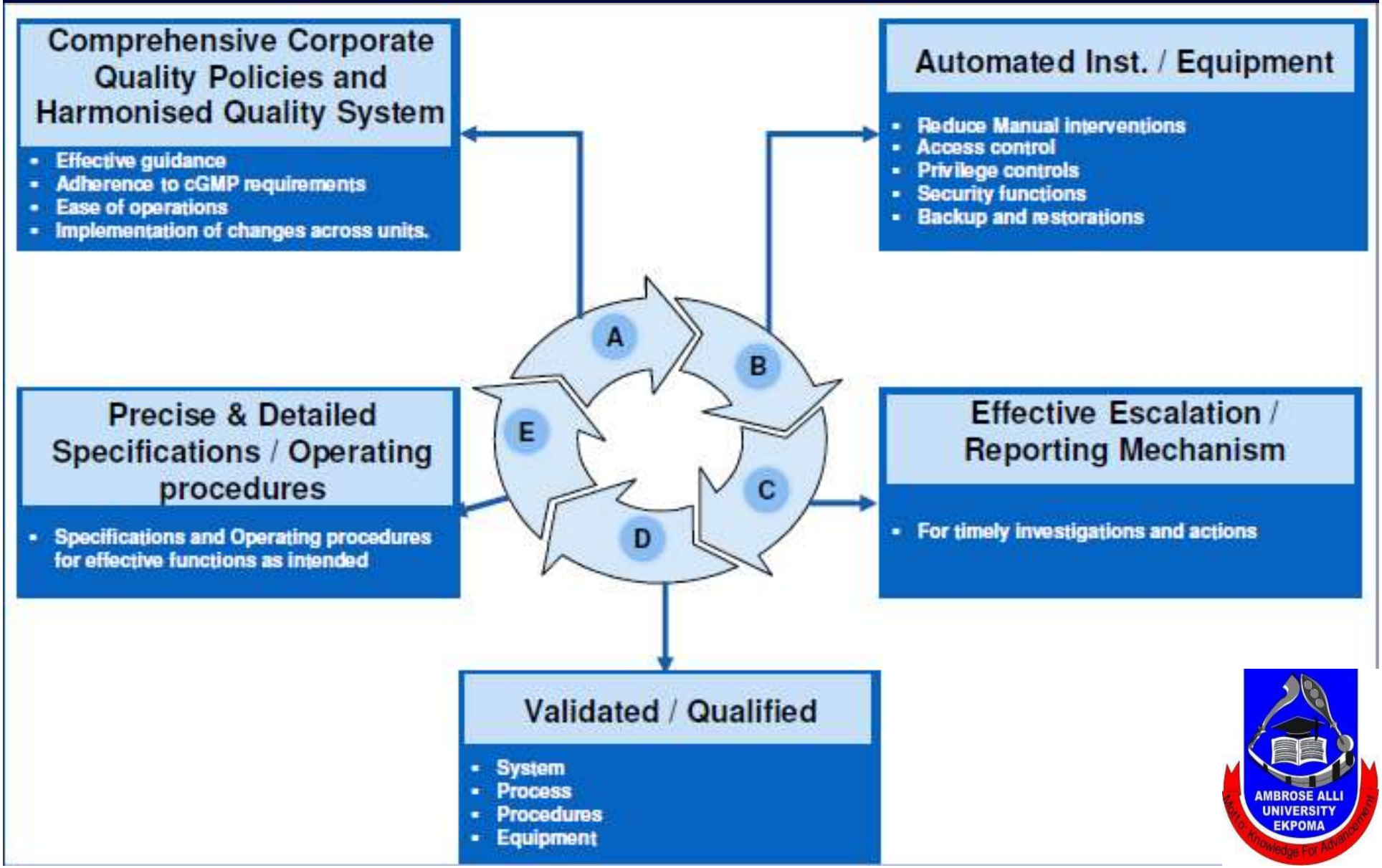
Data Integrity

Robust Quality System



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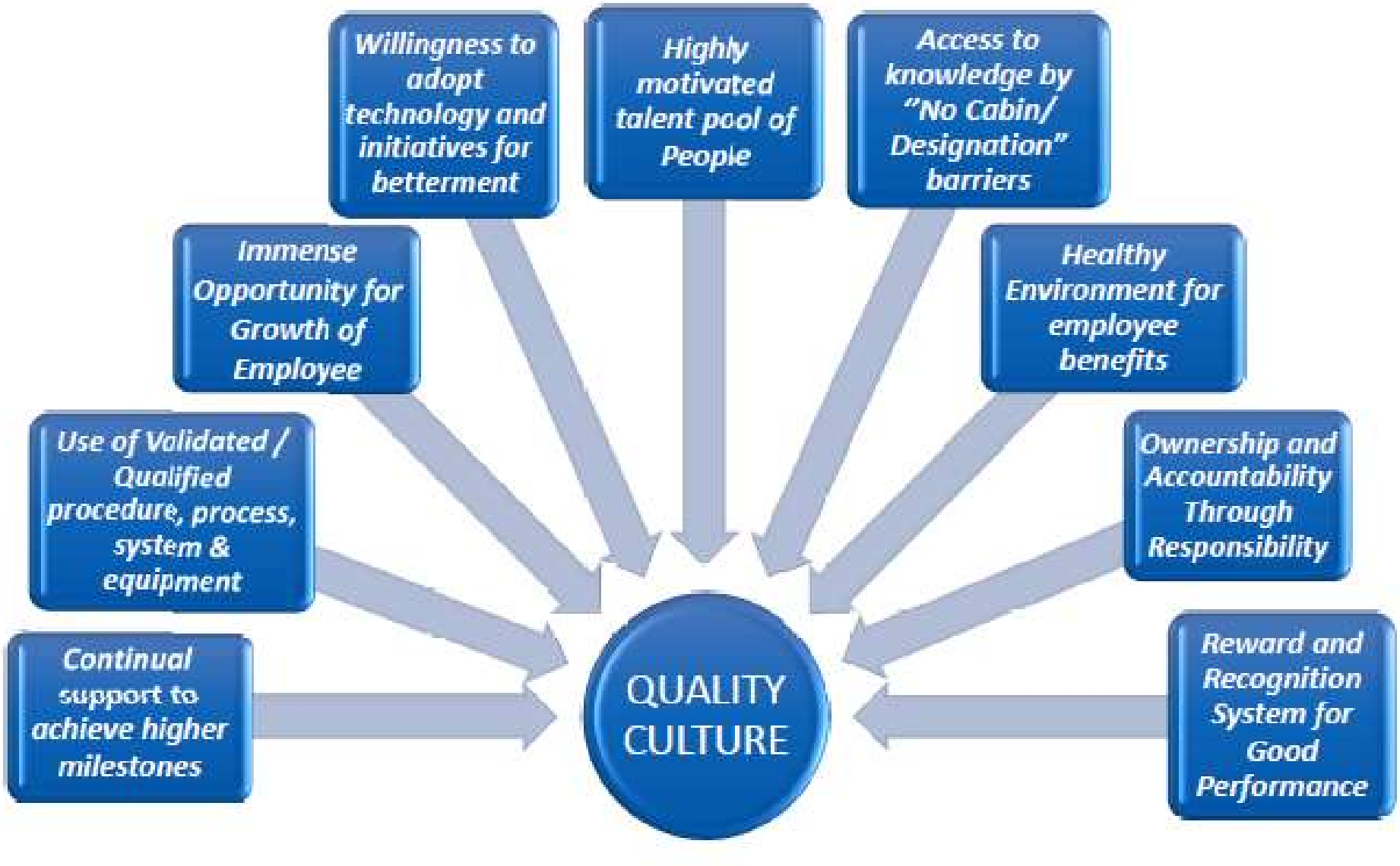
Data Integrity

Cultural Enrichment



Data Integrity

Effective Training

Data Integrity

Regulatory Agencies

Regulatory authorities across the Globe have imparted lot of learning to the organisations-

- **Objective of regulatory investigators is to provide assurance of acceptable output quality, purity, safety, identity and effectiveness for intended application by,**

✓**assessing Best Practices**
✓**ensuring data accuracy and**
✓**reliability of results**

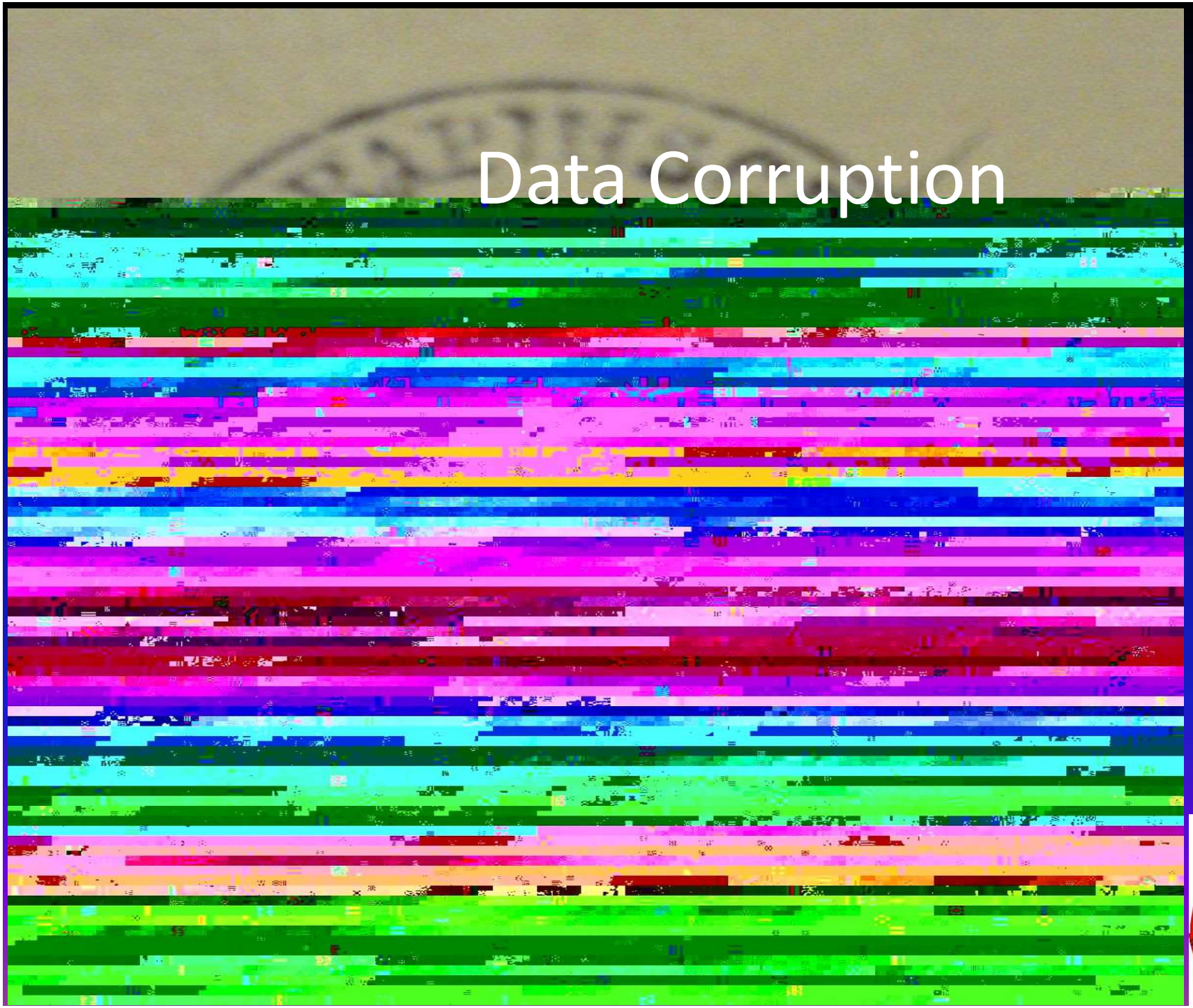
Data Integrity

Regulatory Agencies

Regulatory authorities expect the use of compliant instruments / application/sofewares, with security functions for traceability and accountability of operations.

Therefore, vendors should be enforced to distribute instruments / applications that are compliant, at **affordable cost, which will help in global compliance to data** integrity requirements.

Data Corruption



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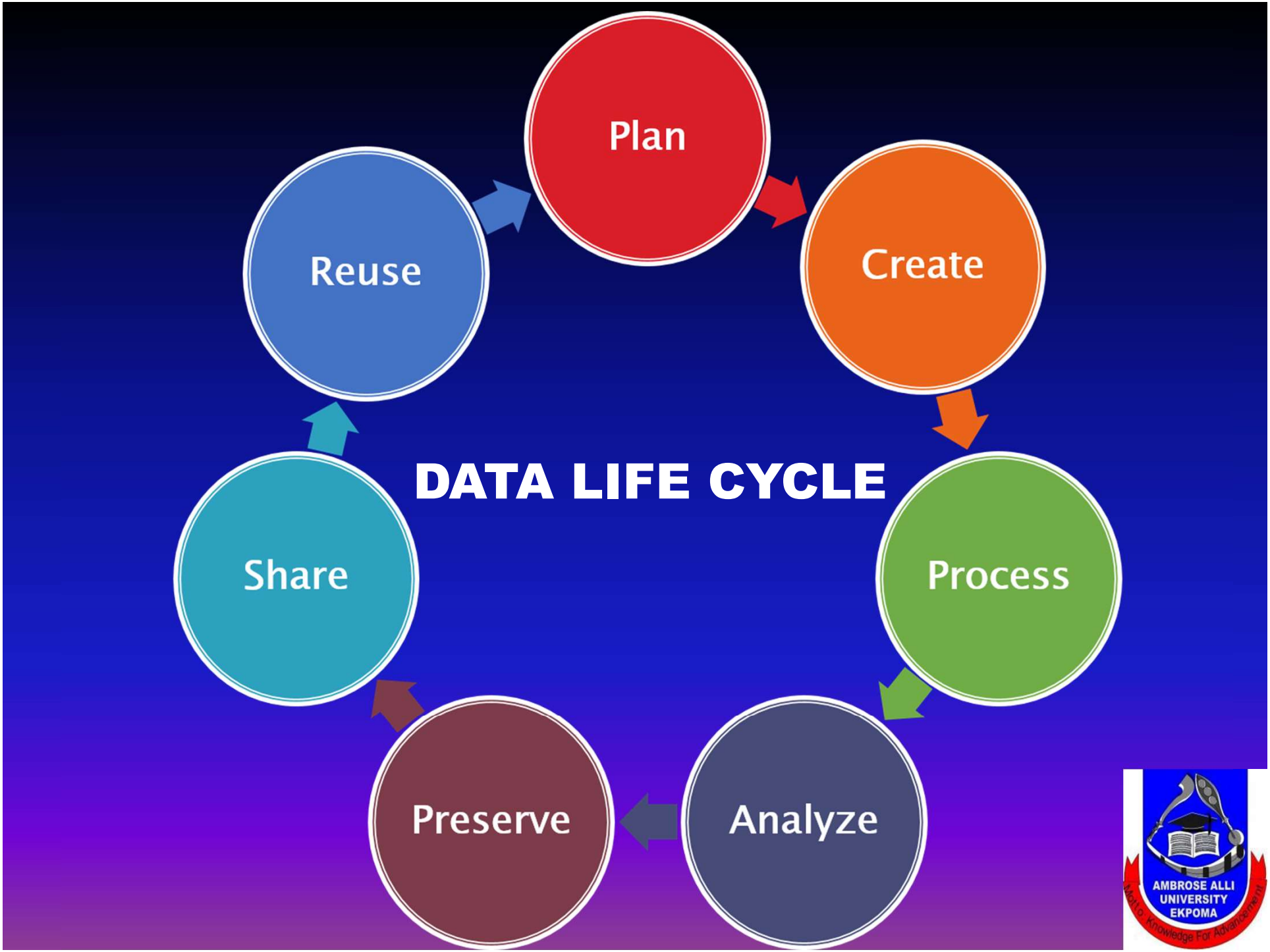
WHAT IS DATA CORRUPTION?

Data corruption occurs when a bit or a set of bits is changed unintentionally due to variety of reasons:

- Hardware errors
- Data transfer noise
- Software bugs
- Many more …

Silent Data Corruption (SDC)

SDC is defined as incorrect data being generated in hardware and the incorrect data being communicated to the application layer without being detected for a period of time (it might get detected eventually).


DATA LIFE CYCLE
Plan
Create
Process
Analyze
Preserve
Share
Reuse
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Motto: Knowledge For Advancement

Data Corruption

CAUSES

Environmental Factors
Hardware and Software Failure
Background Radiation
Head Crashes
Aging

Data Compromise

It can arise either from:

1. **poor systematic control of the data management systems due to a lack of knowledge,**

2. **human error**

3. **from intentionally hidden, falsified or misleading data.**

Data Recovery

Data Recovery

Scenarios

- **Operating system failure**
- **Malfunction of a storage device,**
- **Logical failure of storage devices,**
- **Accidental damage or deletion, etc**

Data Recovery

Scenarios

- Drive-level failure
  - compromised file system
  - drive partition
  - hard disk drive failure

Data Recovery

Scenarios

- **Accidental File(s) Deletion**

IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

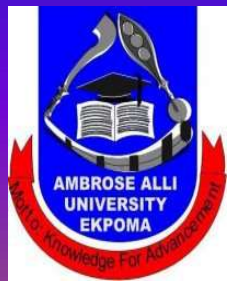
IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

Why is recordkeeping important?

Good recordkeeping:

- improves operational efficiency
- supports public accountability
- contributes to corporate memory

Good recordkeeping is essential for good government.



IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

What is a record?

Records:

- provide evidence of activity
- document what we do as State and Local government employees
- can be in any format

IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

What is a recordkeeping system?

Recordkeeping systems:

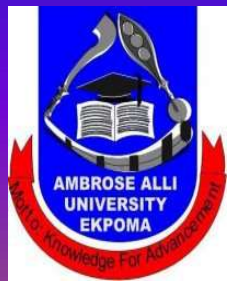
- capture records
- enable access to records over time
- secure records against tampering or unlawful deletion

IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

Your recordkeeping responsibilities

You should:

- make records of what you do
- put your records in the recordkeeping system
- give your records a meaningful title
- maintain business records

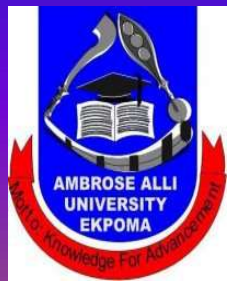


IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

Your recordkeeping responsibilities

You must not:

- destroy, delete or alter records without authority
- remove business records without permission
- lose records that are in your care

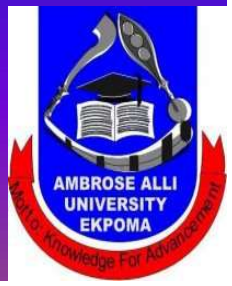


IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

When should you make a record?

Make a record if you need to show:

- what happened
- what was decided or recommended
- what advice or instruction was given
- when it happened
- who was involved
- the order of events and/or decisions



IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

Ask yourself these questions

Does it relate to my work?

- Did I write or send it in the course of my work?
- Am I required to act on it?
- Is it official correspondence I have received?
- Is it something I have used to do my work or

to reach a decision?

IF YES – MAKE A RECORD!

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IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

Meetings

Make a record of meetings where business decisions are made, irrespective of how the meeting is conducted.

- agenda (if any)
- minutes and/or notes of the meeting
- any records presented at the meeting

Steps to set up a Paperless Meeting

Step 1: Setup OneNote

OneNote is the centre of all meeting universe. It is the holder and organizer of my critical meeting information. I create a OneNote notebook for the organization, then create tab called *Board Meetings,* and then create a new page with the meeting name and date.

Steps to set up a Paperless Meeting

Step 2: Get my Agenda Organized

Typically, each meeting agenda is distributed electronically. I find that most of them arrive as a Word or PDF document.

Steps to set up a Paperless Meeting

Step 3: Prepare my Notes

Once my agenda is pasted into my meeting note, I pull out my Microsoft Surface and start making notes in preparation for the meeting.

Steps to set up a Paperless Meeting

Step 3: Prepare my Notes

Once my agenda is pasted into my meeting note, I pull out my Microsoft Surface and start making notes in preparation for the meeting.

Steps to set up a Paperless Meeting

Step 4 Create a To-Do Area for Post-Meeting Tasks
Almost every meeting seems to generate a few follow up tasks. I set aside some space on my OneNote page to capture those things that others or I need to follow up on after the meeting.

Steps to set up a Paperless Meeting

Step 5: Create A Folder for Supporting Documents

My larger meetings tend to have a great deal of supporting material. I have one Board meeting coming up this month that has over 200 pages of supporting material scattered over 18 documents.

Steps to set up a Paperless Meeting

Step 6: Markup Documents

With paper meeting materials, I tended to review the material using a pen and a highlighter. In the paperless world, I use the same sort of tools in digital form. I review all documents using my Microsoft Surface and a digital pen

Steps to set up a Paperless Meeting

Step 7: Prepare the Meeting Room

I always work with my meeting hosts to prepare the room for the paperless meeting. Two things are critical: network connectivity and power. I attended a meeting a few weeks ago which featured about 80% of the attendees using paperless tools at the meeting.

Steps to set up a Paperless Meeting

Step 8: Run an Awesome Meeting

Unfortunately, at the end of all of that preparation, I still have to run the actual meeting. I am organized and I have access to all of the critical information I need to run the meeting.

IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

Oral communications

Make a record of work-related discussions where business decisions are made or directions are given, including:

- phone calls
- voice mail messages
- conversations with your supervisor

IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

Correspondence

Make a record of any internal or external correspondence you send or receive that relates to your work, or is referred to you for action.

IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

Where should you keep records?

Keep OFFICIAL records in the recordkeeping system, ***NOT***:

- in your private store
- on external devices
- your computer hard drive
- in networked folders!

IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

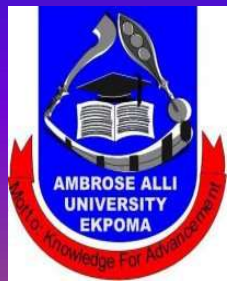
Rules for recordkeeping - revision

- Recordkeeping is your responsibility
- Make a record of any significant business activities you undertake. If in doubt, make a record and put it in the recordkeeping system
- Give your records a meaningful title

IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

Rules for recordkeeping – revision

- Records are assets belonging to your agency
- Do not hoard them
- Put records in the recordkeeping system
- Do not destroy, alter or delete records unless authorised to do so



IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

One goal is tell system designers what types of functionality need to be created or designed into the system.

The goal is not necessarily to tell system designers how to translate these requirements into automated solutions.

However, our requirements must eventually include enough specificity to achieved desired results.

IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

Requirements are not much different than what we would like to see in an ideal paper recordkeeping system

Differences: 1) Requires in many cases that the requirements be automated and executable by the system; 2) Reflects the fact we can do a better job documenting recordkeeping in an automated environment

IMPLEMENTING AN ELECTRONIC RECORDS MANAGEMENT PROGRAM

The system must manage and control electronic records according to the standards for compliance and the requirements for legal admissibility and security, and must be capable of demonstrating this compliance.

Benefits of Going Paperless

Benefits of Going Paperless

- **Increased accessibility:** File sharing with clients and employees is easy. Electronic searches allow you to locate documents quickly from anywhere you have an internet connection.

Benefits of Going Paperless

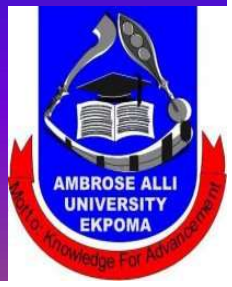
- **Increased security:** Digital documents are stored on secure off-site servers and are only accessible by authorized users.

Benefits of Going Paperless

- **Better service: A quick electronic document search brings up all relevant staff/students/agenda data, including applications and request, allowing you to provide more effective service in a timely manner.**

Benefits of Going Paperless

- **Improved productivity:** Employees spend less time handling and printing documents, allowing them to focus on important tasks

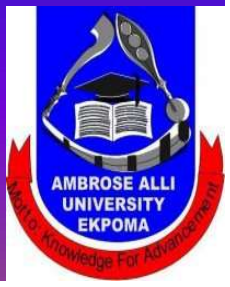


Benefits of Going Paperless

- **Employee flexibility:** As employees access needed documents through the cloud, telecommuting and virtual work become a possibility.

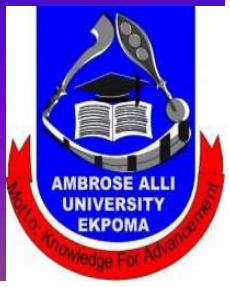
Benefits of Going Paperless

- **Space savings:** Medical offices and other businesses that must comply with strict regulations have to keep records for many years, which presents storage challenges



Benefits of Going Paperless

- **Protection from disasters:** Going paperless positively affects your business disaster plan. As virtual documents are stored off-site in secure locations, they are safe from fire, theft and any other disasters that might strike your office.



CHALLENGES FACING ICT EDUCATION IN NIGERIAN SCHOOLS

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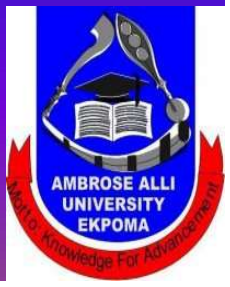

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CHALLENGES FACING ICT EDUCATION IN NIGERIAN SCHOOLS

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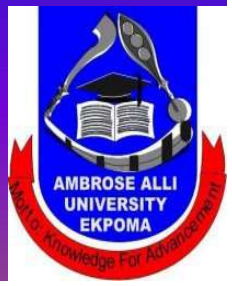
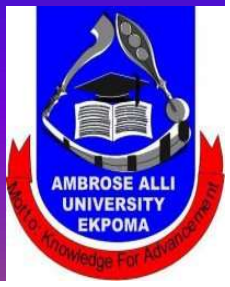
5. Broken Down Computers



CHALLENGES FACING ICT EDUCATION IN NIGERIAN SCHOOLS

6. Burglary



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7. Lack of Internet or Slow Connectivity

CHALLENGES FACING ICT EDUCATION IN NIGERIAN SCHOOLS

6. Burglary
7. Lack of Internet or Slow Connectivity
8. Increased Moral Degradation

NO MATTER THE CHALLENGES, ICT IS THE WAY TO GO


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GRACIAS
MERCI
K SALAMAT
OBRIGADO
GRAZIE
THANK YOU
DZIĘKUJĘ
감사합니다
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DANKIE
TƏŞƏKKÜR
DĚKUJI
DANKE
ありがとう
СПАСИБО
MULȚUMESC
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ÞAKKA ÞÉR

You can wake up your now