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# Electronic Information Retrieval

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# CD-ROM: An Overview of the Technology and How it is Changing

## I. Introduction

### A. Information packaging

1. Dynamic
2. Changing package
  - a. clay tablets gave way to the papyrus roll
  - b. papyrus roll gave way to the codex
  - c. codex to print works
  - d. printed to electronic

### B. Literacy

1. 16th century--ability to recite
2. 20th century--ability to read
3. 21st century--ability to manipulate the electronic information products
4. Printed word continues to dominate but in electronic form

## II. Why Go Electronic

### A. Ability to search masses of information letter by letter

### B. Based on the paper product

1. Early electronic files
  - a. bibliographic--based on photo-composition tapes
  - b. gave rise to a whole new industry
    1. indexers had to enhance for an electronic file
    2. editors had to edit for an electronic file

3. librarians had to learn to search electronic files

C. Rise of end-user searching

1. home services such as CompuServe, Knowledge Index
2. people began wanting to do it themselves

### III. CD-ROM -- The New Papyrus?

A. Ultimate end-user tool

B. Relatively inexpensive--puts the user in control

C. What is it?

1. Small disk produced by optical (laser) technology
  - a. captures information in electronic form by using a light beam to burn microscopic pits into a photo sensitive disk surface
  - b. recording track is either spiral as on a phono record or in concentric circles sliced into sectors such as a floppy disk
  - c. three general families
    1. read-only-memory (ROM)
    2. write-once (WORM) Overhead (fig. 2)
    3. erasable
  - d. recorded in two formats
    1. analog
      - a. wave like signal used for motion picture
      - b. must be converted to digital for use with a computer system

2. digital
  - a. on/off electrical pulses used in computer technology
  - b. more efficient for text because it can be used in its original form
  - c. less efficient for graphics because it has to be converted to bit-mapped images
3. part of an optical disk family
  1. 12" disk can store 5 million pages of text or 54,000 video frames
  2. audio CD
  3. CD-PROM (Compact Disk--Programmable Read Only Memory)
    - a. writable CD--will allow users to copy
  4. CD-I (Compact Disk--Interactive)
    - a. melding of color, sound and animation simulation
    - b. aimed at the education market
  5. CD-ROM/DVI (Digital video interactive--
    - a. addition of motion pictures and 3-D graphics
  6. WORM (Write-once, read many)
    - a. allows the local computer system to create the disk
  7. Erasable--able to read and write like current magnetic disks

#### IV. Facts About CD-ROM

##### A. Vital Statistics--capacity

1. 800 8" floppy disks
2. 200 books of 1,000 pages
3. 10 computer magnetic tapes      **Overhead (fig. 3)**
4. 1500 5.25" floppy disks
6. 275,000 pages of text

##### B. How does it work

1. pits burned into media sandwiched between a shiney surface
2. data track is almost 3 miles long and each individual track is 1.2 micrometers (about 1/60th of a human hair
3. can combine multi mode programs the use high fidelity audio, graphics and motion
4. Provides on-demand printing i.e. Minnesota disk

#### V. When to Use CD-ROM

##### A. Must be appropriate technology

1. must be convenient to use

##### B. Characteristics

1. static file that should be archived
2. need for only periodic updating
3. economic distribution of large amounts of data
4. you need local availability of information

##### C. Put only that information that lends itself to that media

1. bibliographic databases

## VI. Steps Involved in Mastering a CD-ROM

### A. Getting the data into electronic form

1. keying
2. scanning

### B. Editorial process **Overhead (fig. 4)**

1. edit
2. index
  - a. use descriptors
  - b. go with keywords

### C. Software

- a. user interface
- b. screen displays
- c. retrieval modes
- d. response time
- e. post processing capabilities
  1. displaying -- select formats
  2. printing
  3. downloading

### D. Premaster on a 9 track tape in a WORM drive

### E. Send off for mastering

## VII. How the Editorial Process changes

### A. Decisions

1. Are you going to add descriptors
2. Depend on keywords or full-text
3. what sort of stop list
4. what level of retrievability do you want



## B. Conforming to standards

### 1. disc standards

#### a. physical recording standards

1. how many blocks of data

2. how long the blocks will be

#### b. logical standards Overhead (fig. 6)

1. volume and file structure

### 2. drive standards

a. how the drive interprets the disc formatted information

### 3. Interface standards

a. interconnection between the disc drive and the microcomputer

## B. Quality control

1. what sort of quality control will you have

2. what is the print out put going to look like

3. how are you going to code the document

## C. Other features

1. moving graphics?

2. audio?

## D. Success

1. depend on the up front intellectual effort

2. depend on the quality control

## VIII. Costs Involved

### A. Upfront costs

1. tremendous in time and people to do retrospective

2. retraining for a new product
  3. intellectual effort not only in the creation of the product but in the access of the product
    - a. move from graphic presentation to retrieval and graphic presentation
    - b. retraining and computer skills will be important along with multi media skills
- B. Production costs
1. Minimal in the grand scheme of things
    - a. search engine
      1. software to run the product
      2. can be expensive
      3. will determine the usefulness of the product
  2. Mastering costs
    - a. dropped and will continue to drop
    - b. 8 years ago only one place and six digits to master
    - c. today \$1500 to master and about \$10 per disk
    - d. JVC announced WORM drive for less than \$2000
    - e. becoming a do it yourself proposition
- C. Intellectual effort remains the greatest cost

## IX. Where Do We Go From Here?

- A. Production costs and convenience will continue to *dominate*
- B. Technology will continue to make this *more* attractive
- C. Multitude of products will cause a demand for more
  1. bibliographic products



- a. books -- i.e. the *Bible* or the complete works of Sherlock Holmes
- 2. catalogs of products
- 3. fact books, encyclopedias and reference tools
- 4. large databases that only a small portion is required
- D. Home CD-ROMs common place
- E. Developments make wrist CD-ROM drive possible--now available in Japan
- F. Do not know where we are going
- G. Cd-ROM may Give way to some other media
- F. Key to survival
  - 1. well constructed data file
  - 2. one that allows flexibility in its presentation
- G. Must continue to be concerned about the quality of the information and less concerned about what holds that information

**Figure 2: Optical Media by Categories**

	ANALOG	DIGITAL
READ ONLY	Digital videodisc	CD-Audio CD-ROM OROM CD-I CD-ROM/DVI
WRITE ONCE		WORM DRAW ODDD CD-PROM Lasercard
ERASABLE		CD-EPROM DataRom

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**Figure 3: CD-ROM, Digital Videodisc, and WORM Discs**

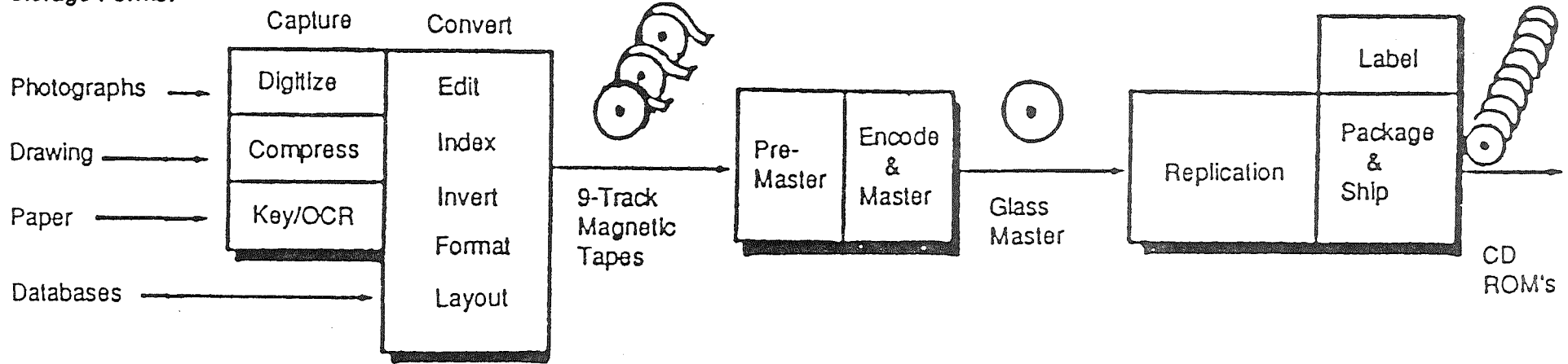
FEATURE	CD-ROM	VIDEODISC	WORM
SIZE	4.75"	12"	12", 8", 5.25"
CAPACITY (1 megabyte = 3 floppies = 500 pages)	550 megabytes	1 gigabyte	12" = 1.2 gigabytes 5.25" = up to 800 mb
MEDIA	Limited (no motion)	Mixed (including motion video)	Limited (no motion)
# OF USERS	Single	Multiple	
STANDARDIZATION	Hardware only (not file format or interface)	None	None
ERROR CORRECTION	Yes	No	No
APPLICATIONS/ EXAMPLES	Bibliographic/Text SilverPlatter Library systems BiblioFile Hybrids DIALOG On-Disc	Bibliographic/Text InfoTrac  Training  Entertainment	Office automation  Desktop publishing  Archival storage

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## Figure 4: Data Preparation and Disc Production

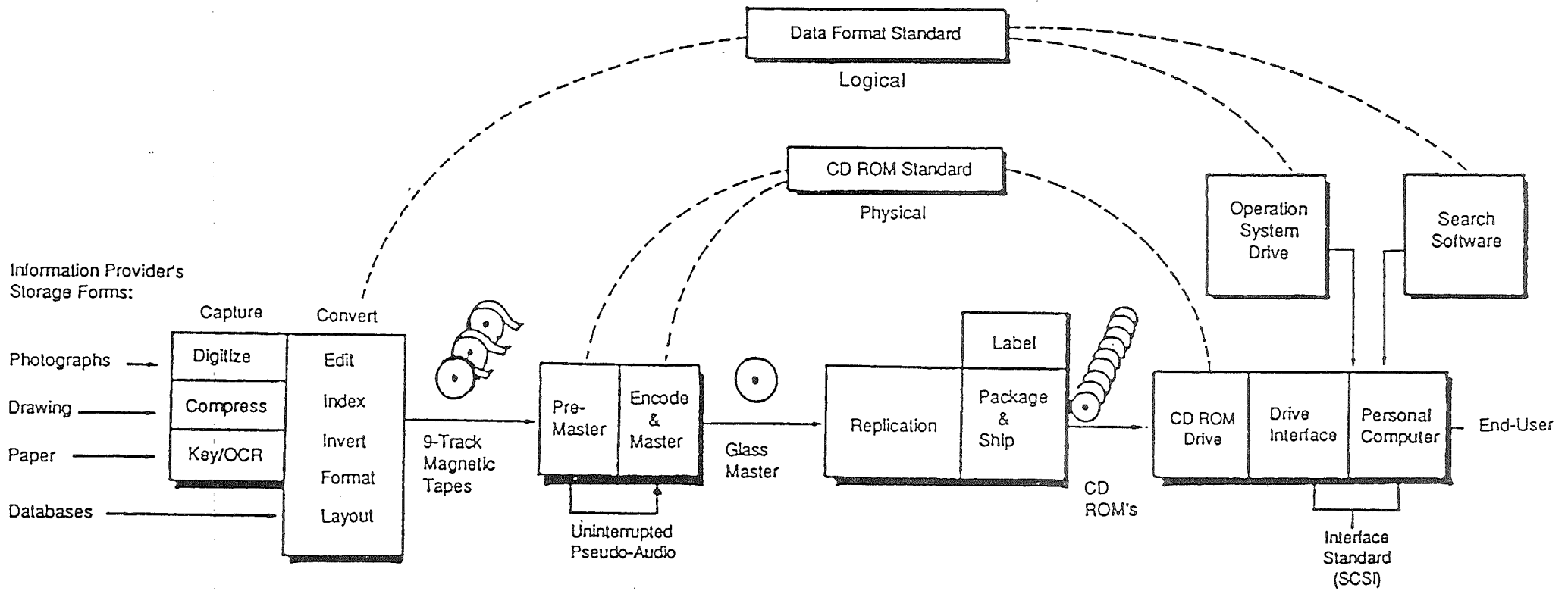
Information Provider's  
Storage Forms:



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**Figure 6: Relationships between Standards**



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## BASIC TEXTS ON CD-ROM

Lambert, Steve and Ropiequet, Suzanne, eds. *The New Papyrus, CD-ROM*. Bellevue, WA: Microsoft Press, 1986. 619 p.

Eaton, Nancy; MacDonald, Linda B.; and Saule, Mara R. *Cd-ROM and Other Optical Information Systems*. Phoenix, AZ: Oryx Press, 1989. 153 p.

Roth, Judith Paris. *Essential Guide to CD-ROM*. Westport, CT: Meckler Publishing, 1985. 189.