
Society of American Archivists

August 30, 1997

The Universal Preservation Format



WGBH Educational Foundation

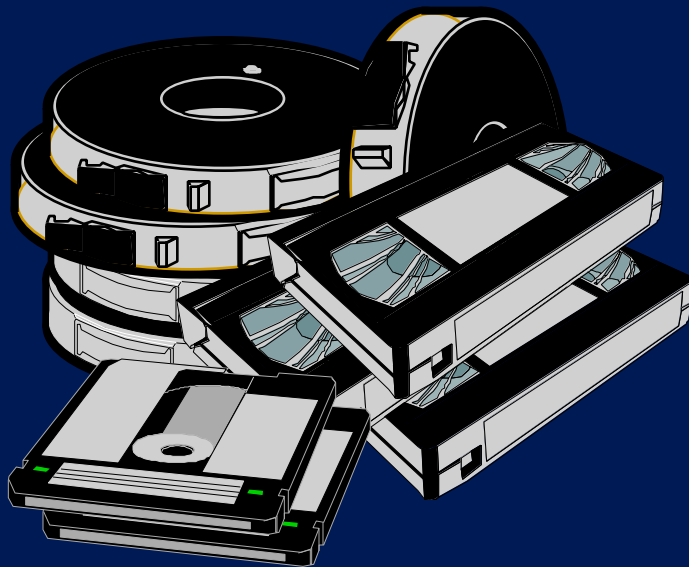
The Wonderful Digital Age

Digital technology has resulted in an explosion of formats.

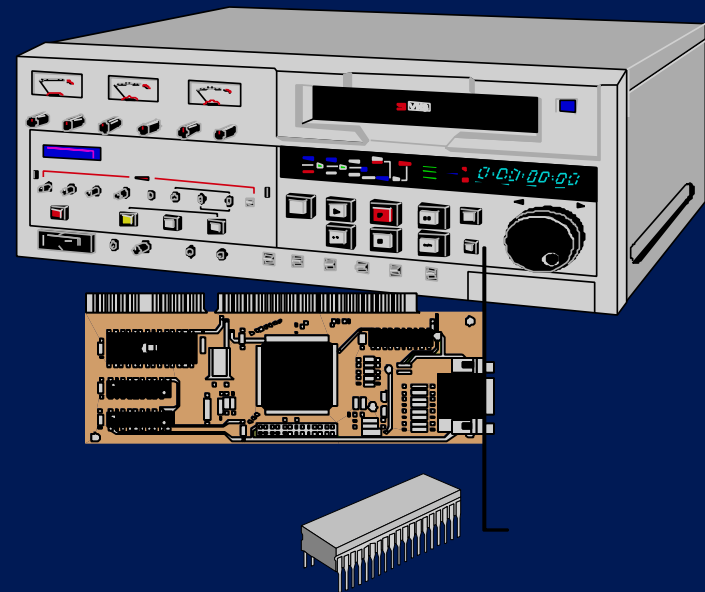
**13 different digital tape formats
with several more in development
for High Definition TV**

For the archivist this is a nightmare.

**On one side of
the room you
store the tapes.**

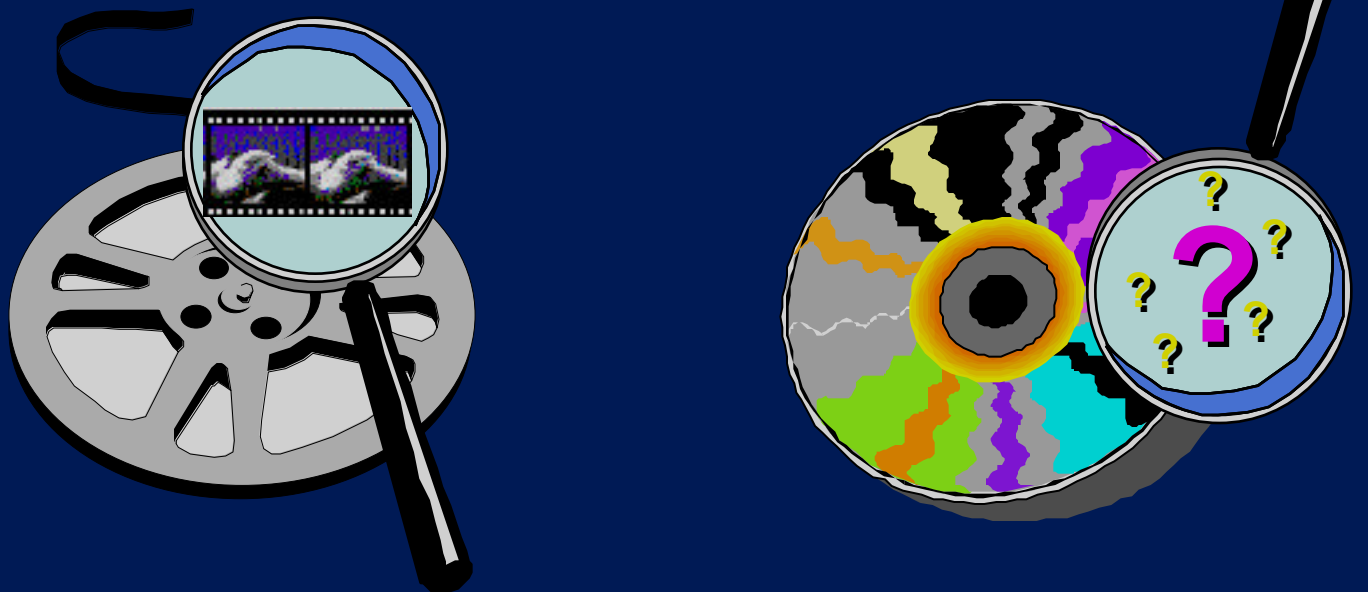


**On the other side,
the tape machines &
spare parts.**



- **Which format is best suited for preservation?**

How to store compound content
(media + information about the media)
for long-term preservation & access?



- There is a significant need for a **Universal Preservation Format**

Universal Preservation Format

What it doesn't do:

The UPF does not solve the problem of storage media becoming obsolete.

In other words, UPF won't advocate using one physical storage media over another.

(one storage manufacturer has created a 50TB near-line storage system using D-3 tape.)

What it does do:

It allows the archivist to choose a format best suited to their needs and one that they feel has the best long term storage potential.

Where to Start?

- Along with the surge of digital formats are technologies designed to handle all types of digital media.
- Among these are:



– 1993: Apple’s “Bento Specification”



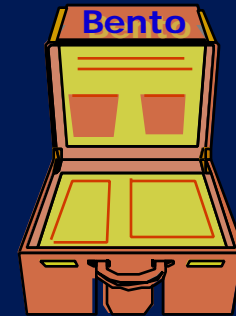
– 1995: Avid’s “Open Media Framework Interchange Specification”



– 1997: SMPTE’s “Harmonized Standards for the Exchange of Program Materials as Bit Streams”

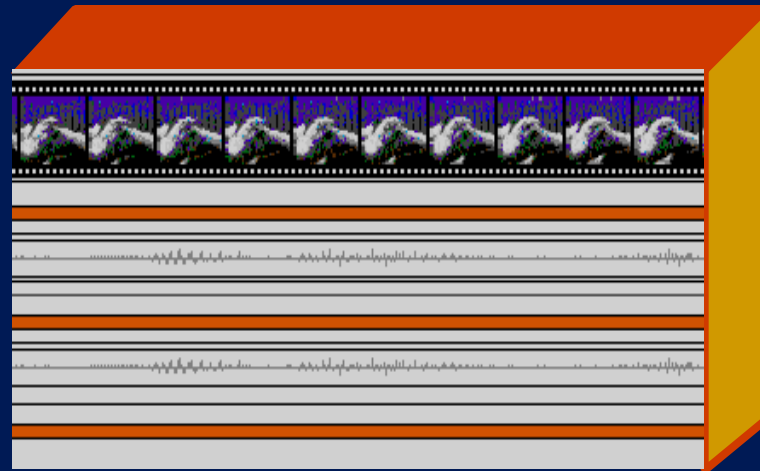
Bento

- **Japanese for “lunch box with many compartments”**
- **Standard format for storing multiple types of objects and an application program interface (API) to access them.**
- **May hold one or more objects and information about these objects.**
- **Objects can be any size or complexity.**
- **Platform /content neutral.**



Think of...

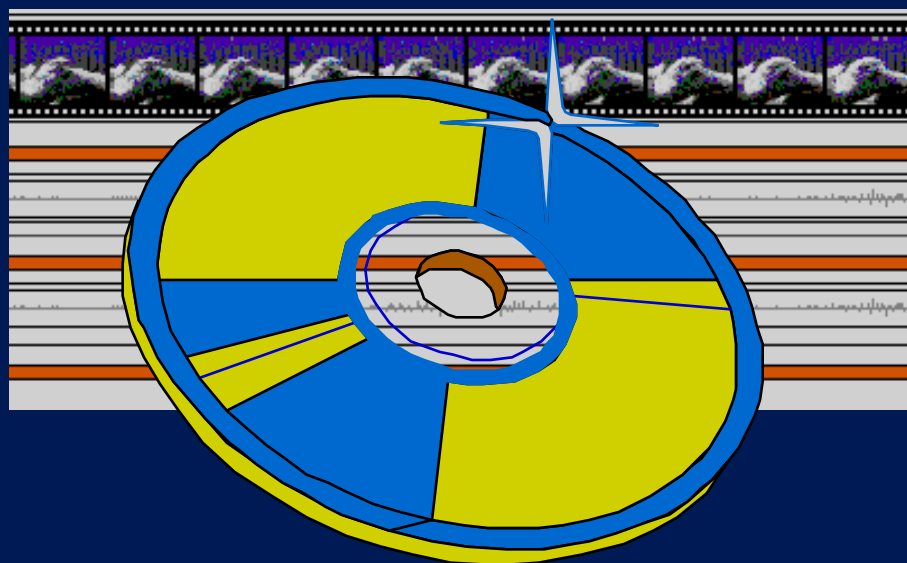
Media as an Object



Object

Think of...

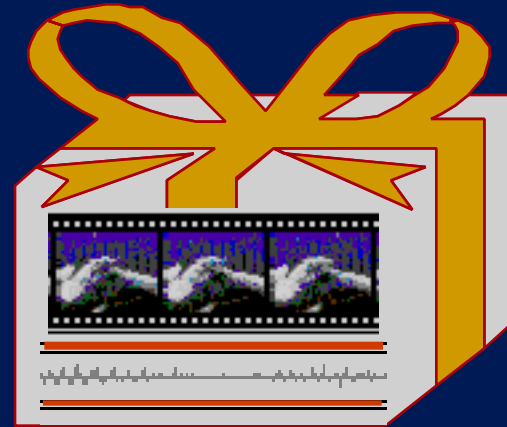
Media as Data



01010111000110011
11001111001010101

Now think of...

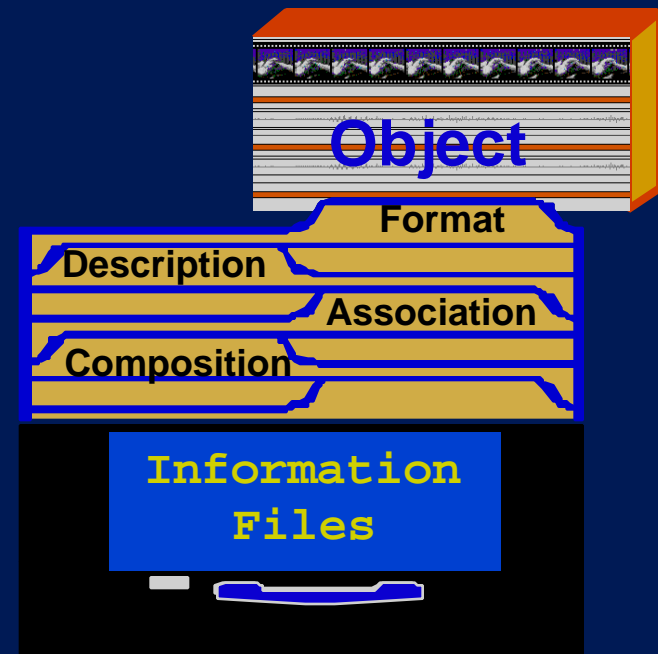
Media as a **package**
composed of
objects
which
consist
of
digital
data.



1100111001010101
0011011001011000
1110010100101011

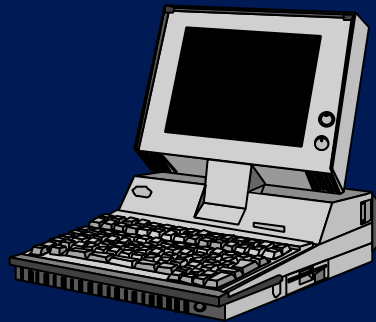
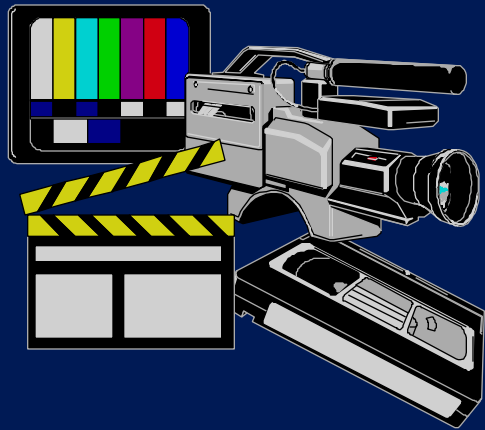
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**Information about
the Media Object
may also be
thought of
as
an Object
and
as
Digital Data ...**

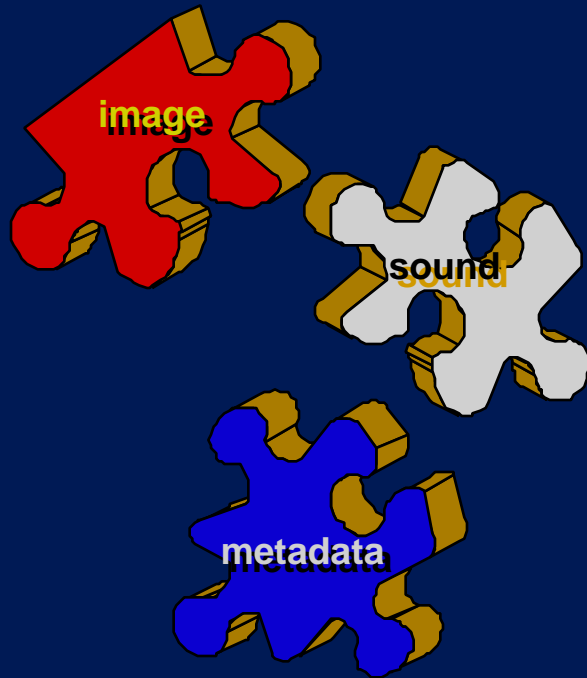


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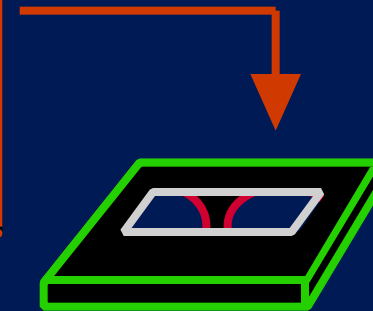
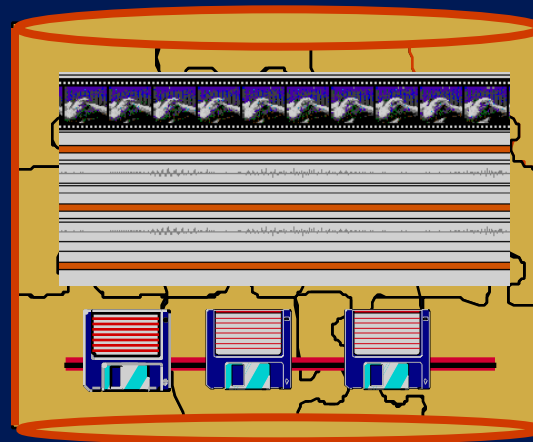
**This information about data
is called Metadata.**



Putting it all
together...



Concept of the Container

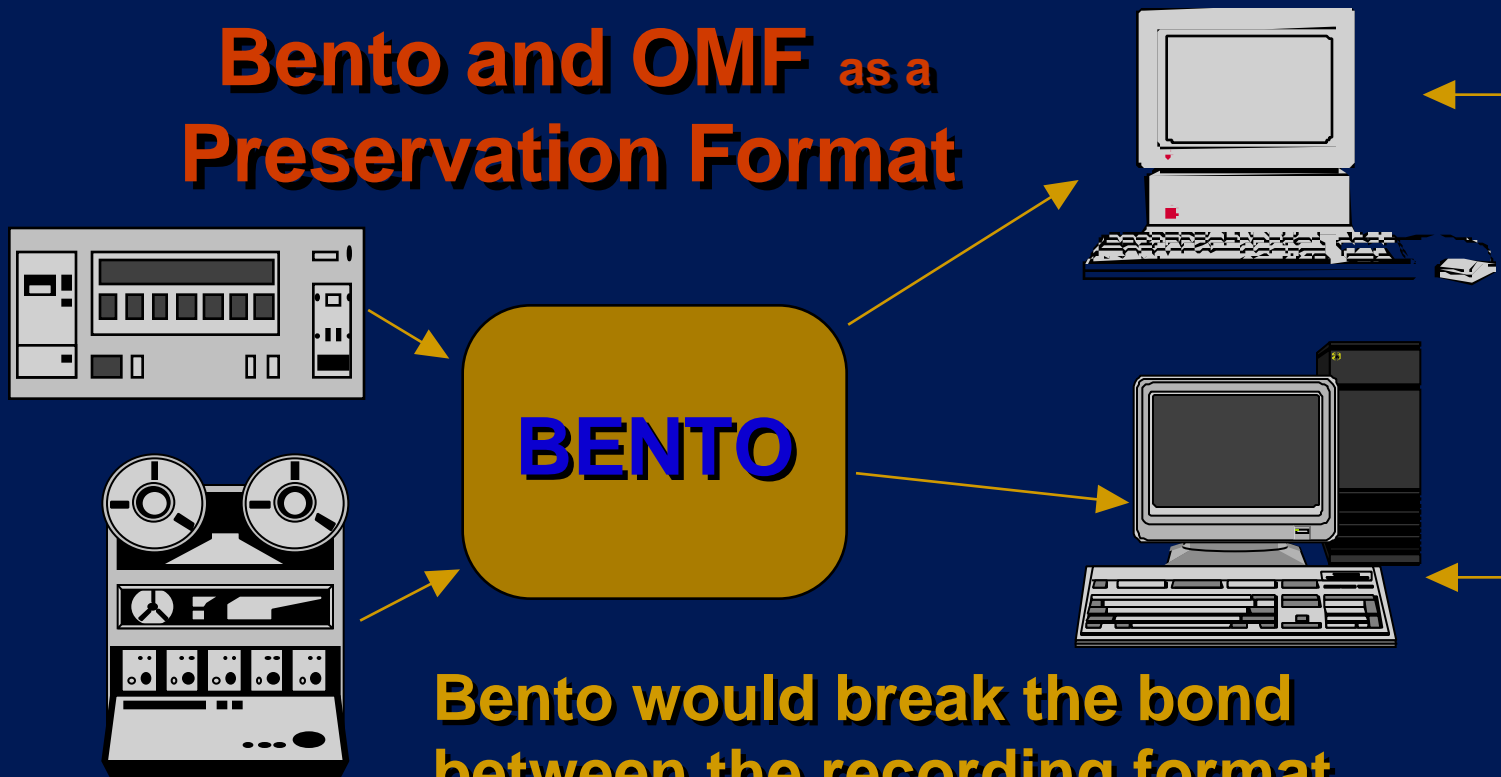


Storage

Open Media Framework (OMF) Interchange

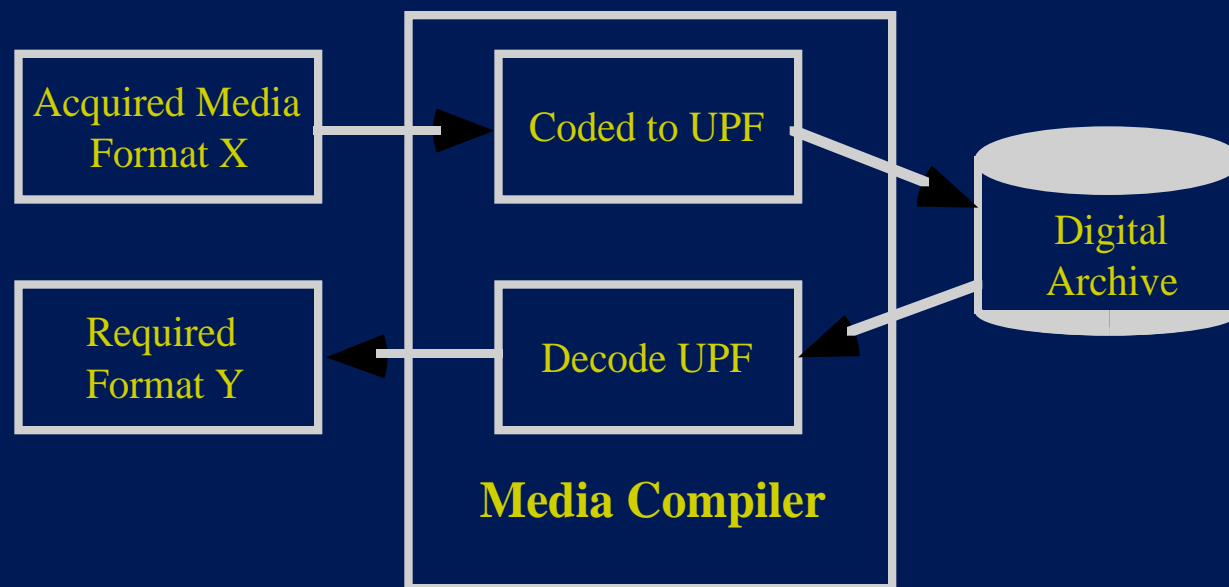
- **Format for the interchange of digital media data among different platforms**
 - **Uses Bento containers.**
- **Encapsulates all information required to transport digital media, as well as rules to combine and present the media.**
- **Supports existing digital media types and the ability to support future types.**
- **Includes rules to identify the original sources of the digital media data.**

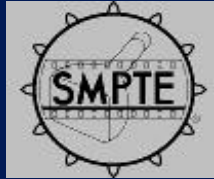
Bento and OMF as a Preservation Format



Bento would break the bond between the recording format and the machine or platform through which the format is accessed.

The storage and retrieval of media could be handled by a so called “**media compiler.**”





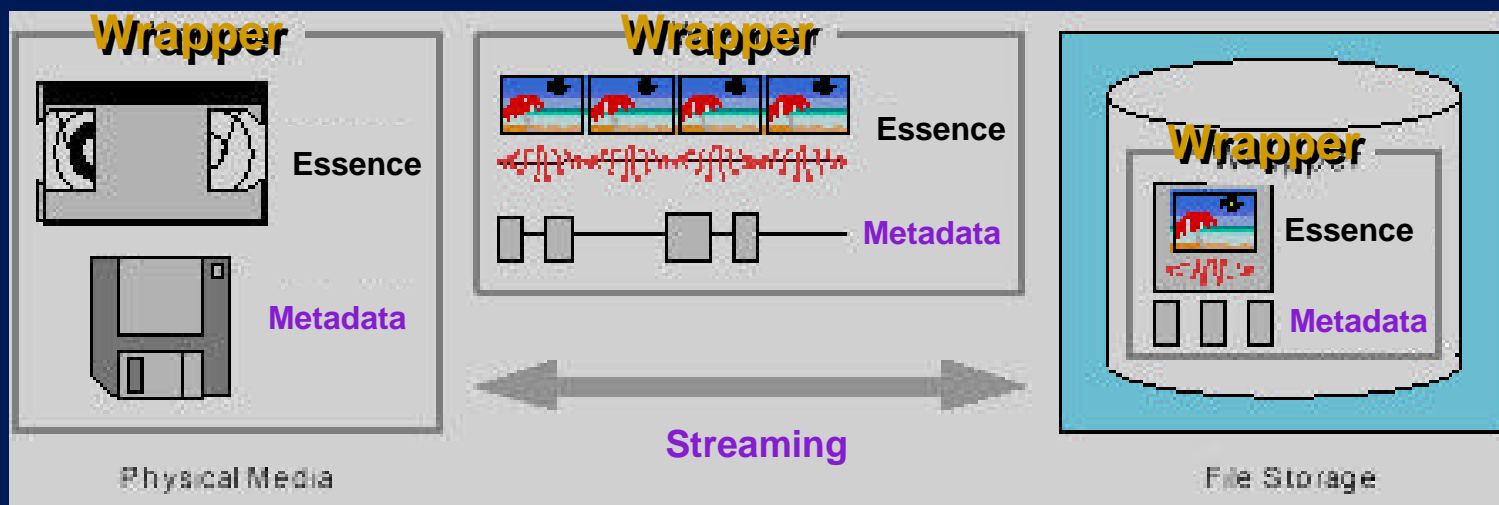
**SMPTE/EBU's Task Force for
Harmonized Standards for the
Exchange of Program Material as
Bit Streams (scope)**



- **Compression Issues**
 - the digital encoding format
- **Wrappers and Metadata**
 - methods for collecting and describing program content and other elements
- **File Management, Transfer Protocols, Physical Connections**
 - combination of data transport mechanism and interfaces

**SMPTE/EBU's Task Force for Harmonized
Standards for the Exchange of Program
Material as Bit Streams**

**Bento = Containers = Wrappers
Media Objects = MOBs = Essence**



Storage Format

There will always be a format that media has to be stored on and this format will always become obsolete at some time.



The UPF allows for systems that can resolve this problem.

Next Steps

- **Our goal: to produce, publish and promote a Recommended Practice.**
- **We wish to bring together technology manufacturers, archivists and standards organizations to advance the creation of a Universal Preservation Format.**

Next Steps

- **Advocacy of the Universal Preservation Format is funded by the NHPRC with a two year grant.**
- **Looking for additional assistance.**
- **Soliciting your input!**
 - **Web site**
 - **Listserv**
 - **Online user survey**
 - **Conferences**

Latest Development

**SMPTE Engineering Meeting
Study Group ST13.14/03
“Requirements for UPF”**

Princeton, N.J.

September, 23 5:30 pm

<http://www.smpete.org/engr/schedule.html>

**This study group will be
established to discuss the
Universal Preservation Format.**

Possible questions to be addressed:

- **Where should the metadata be physically placed on the storage medium?**
- **Is there an established metadata format or standard robust enough to serve as a framework for others?**
- **What are the immediate needs of those involved with digital preservation?**
- **Should the same standards established for compound documents or multimedia also include text documents?**

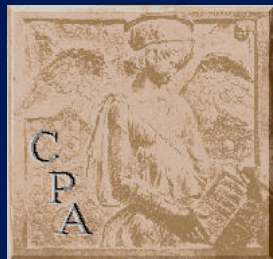
In conclusion...



The UPF will benefit a broad range of managers and users of archival records.



Accessing media will become efficient, cost-effective and relatively simple.



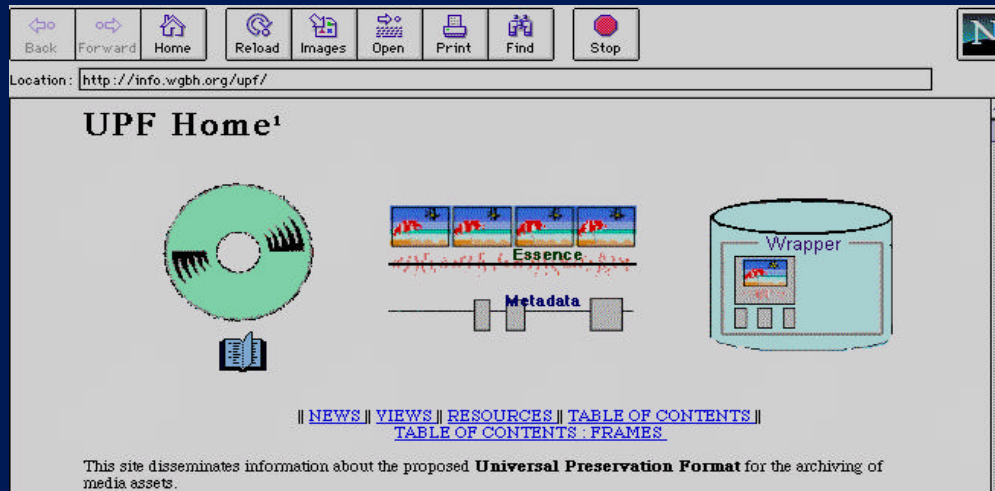
References

- **Bento Specification, Copyright © 1993, Apple Computer, Inc.**
 - <http://www.acl.lanl.gov/sunrise/DistComp/Bento/Bento.html>
- **Open Doc underlying technologies**
 - <http://www.acl.lanl.gov/sunrise/DistComp/OpenDoc/overview.html>
- **Open Media Framework Interchange Specification, Copyright © 1995 Avid Technology, Inc.**
 - <http://www.omfi.org>

References

- **IMA Technical Working group, data exchange, IMA 950701.1, p. 2.ii.**
 - <http://www.ima.org/cparch/de/>
- **SMPTE/EBU Task Force for Harmonized Standards for the Exchange of Program Material as Bit Streams, Copyright (c) 1997 SMPTE/EBU**
 - http://www.smpte.org/engr/tfhs_out.pdf

UPF Sites



- **Web:** <http://info.wgbh.org/upf/>
- **Listserv:** UPF@info.wgbh.org
 - “Subscribe UPF your name” to listserv@info.wgbh.org