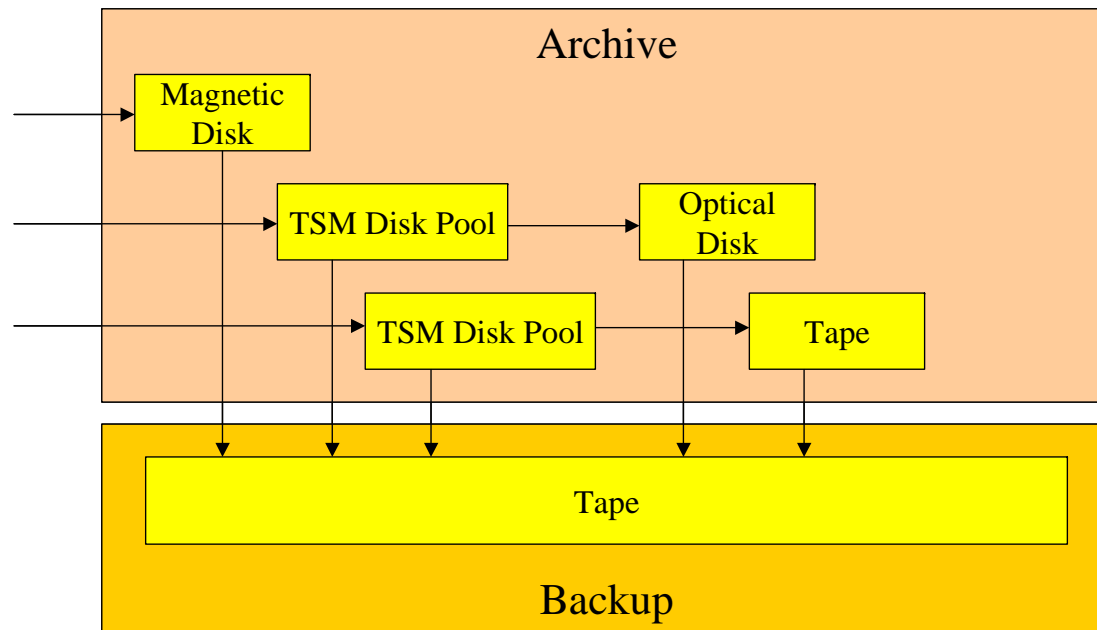


# General Introduction: Technological Issues

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# Complex storage systems



# Binary Code

1101110111001111001101001010101110101110010  
10101110001101010101010001101010101010101  
01000101010101010101010101010101000101010  
101010101010011100000101111100110111011100  
1111001101001010101110101110010101011100011  
01010101010001101010101010101010001010101  
01010101010101010101010001010101010101010  
011100000101111100110111011100111100110100  
1010101110101110010101011100011010101010100  
01101010101010101010100010101010101010101  
01

# Archiving the bit stream

- Digital information is stored as a bit stream on physical media
  - Storage media types change quickly and are subject to obsolescence
  - Storage media are unstable and can degrade quickly

# Substantial preservation I

Starting point for all following activities, depends from

- Stability of the data-carrier
- Copying (refreshing)
- Migration of the data carrier  
e.g. magnetic --> optical
- Risk management

## Substantial preservation II

### Factors of disturbance

- the mass of data
  - ➔ automation
- unexpected material behavior
  - ➔ current material observation (in general: technology watch)
- failures in copy procedures
  - ➔ strictly control of the processes
- copy protection, DRM
  - ➔ no solution until today ...

## Code ...

```

...Ä „; _^, [fÄ Äiðð føy „! L$,jQ T$ j R L$ j Qhp" PÇD$,xV4 ý è° ...Ä „ð <D$ _%ÿÿ ^
[fÄ Ä<
P. ...É „Í < fÆ VyR$÷Ø A_÷Ø%ÿÿ ^Äà [fÄ Äfü „, <
P. ...É „~ <V < RyP(÷Ø A_÷Ø%ÿÿ ^Äà [fÄ Ä=ç ÷ø „3 Pæfü ÷] ý$•~: <
P. ...É „H fø<„€² t „-² Pj j ý l° <ð...ö „$ j j j j Vy Ä° <ø...ÿ „ <
P. W< ýP ...Ä •ÄW^L$öy Ö° Vy ± <D$,_%ÿ ^Äà [fÄ Äfü „l iP. ...Ä „¿ hD² ý |± fÄ
Pe°ä <V fÄ <ØRhD² h@ö Sý ² <F fÄ fø=„€² t <ÄPj j ý l° S<øè ä fÄ ...ÿ „a j j j
j Wy Ä° <Ø...Üu Wy ± _^3Ä[fÄ Ä<V <
P. R<V < SRýP ...Ä •AS^D$öy Ö° Wy ± <D$,_%ÿ ^Äà [fÄ Äfü „ö
føP„€² t „D³ Pj j ý l° <ð...ö „N j j j j Vy Ä° ...Ä „³ <
L. P%ö ý Ö° Vy ± _^, [fÄ Ä<
P. ...É „S < D$,PýR,...Ä „x <D$,_%ÿ ^
[fÄ Äfü „Z <
P. ...É „L ŠF < PyR0÷Ø Ä_÷Ø%ÿÿ ^Äà [fÄ Ä<
P. ...É „ fø^„€² t „ø² Pj j ý l° <ð...ö „ü j j j j Vy Ä° <ø...ÿ „Ü <
P. W< ýR4...Ä •ÄW^D$öy Ö° Vy ± <D$,_%ÿ ^Äà [fÄ Ä<
P. ...É „Ý fø_„€² t „³ Pj j ý l° <ð...ö „{ j j j j Vy Ä° <ø...ÿ „[ <
P. W< ýR8...Ä •ÄW^D$öy Ö° Vy ± <D$,_%ÿ ^Äà [fÄ Äfü „# <
P. ...É „ < D$OP<F PýR<<T$0...Ä •Ä^L$(<D$(%ÿ äÿÿ Äà ^
Ä[fÄ Äfü „Ö <
P. ...É „É <V < R<V RyP@÷Ø Ä_÷Ø%ÿÿ ^Äà [fÄ Ä ü „š <
P. ...É „CE - < R V R<V R<V RyPD÷Ø Ä_÷Ø%ÿÿ ^Äà [fÄ Äfü rZ<
P. <V R< ýPP÷Ø Ä_÷Ø%ÿÿ ^Äà [fÄ Äfü r1<
|. <F j j h€ Q€ . ý T² _^, [fÄ ÄVy ± _^3Ä[fÄ Ä !/ 7/ g/ {/ 0 =0 ]0 ä0 Z1 Ö9
<ÿ 2 &2 s2 3 €5 6 x3 a3 B3 4 I4 §4 Ø6
ü4 Ö9
>7 s7 „7 )8 a8 ÷8 09 w9 €5 6 „7 )8 Ø6
S<|$ Sý (² ...Äu [Ä<L$ <T$ D$ PQRè ÿÿÿfÄ ...Äu [Ä<D$ €Äà <^hð ...Ét 3Ä[Ä<L$ <T$
V<t$ W<|$ %ö°ð %ö„dð %ö^lð <
P. %ö pð %ö~hð <€tð < j PýR <D$ <
P. V< €< Äxð PýR <D$ <
P. W< €< Ä|ð PýR _^, [Ä <L$ <T$ D$ PQRèÿÿÿfÄ ...Äu Ä<D$ €Äà <^hð ...Éu 3ÄÄ<

```

# Of course code ...

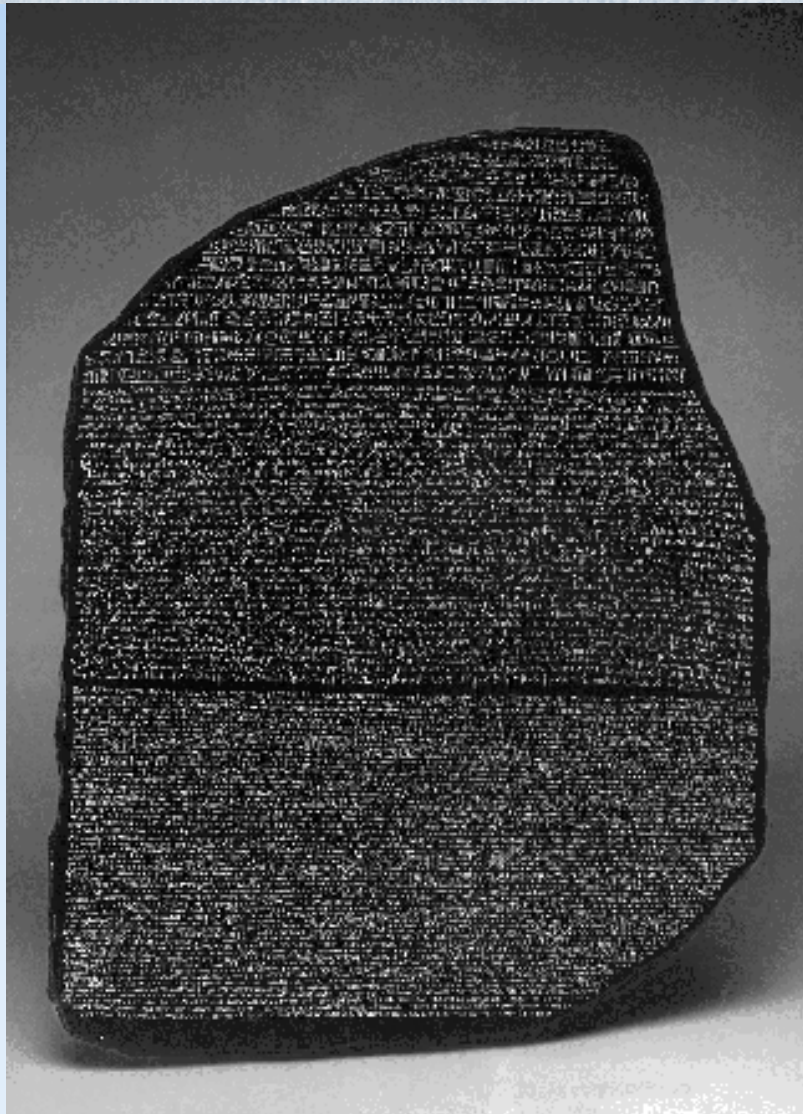
```

</script>
</head>

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  <frameset rows="58,*" border="0" framespacing="0" frameborder="NO">
    <frame src="home/streifen_home.htm" name="Sprachwahl" title="Bilder der drei
Standorte" noresize scrolling="NO">
    <frame src="home/menu.htm" name="Menuepunkte" title="Links" noresize>
  </frameset>
  <frameset rows="58,*" border="0" framespacing="0" frameborder="NO">
    <frame src="home/signet.htm" name="Signetrahmen" title="Rahmen mit Signet"
noresize scrolling="NO">
    <frame src="home/home.htm" name="Textrahmen" title="Textbereich" noresize>
  </frameset>
</frameset>
<noframes>
  <body bgcolor="#f3f0ef">
    <h2>Leider kann diese Seite nicht angezeigt werden, da Ihr Browser keine Frames
unterst&uuml;tzt.</h2>
  </body>
</noframes>
</html>

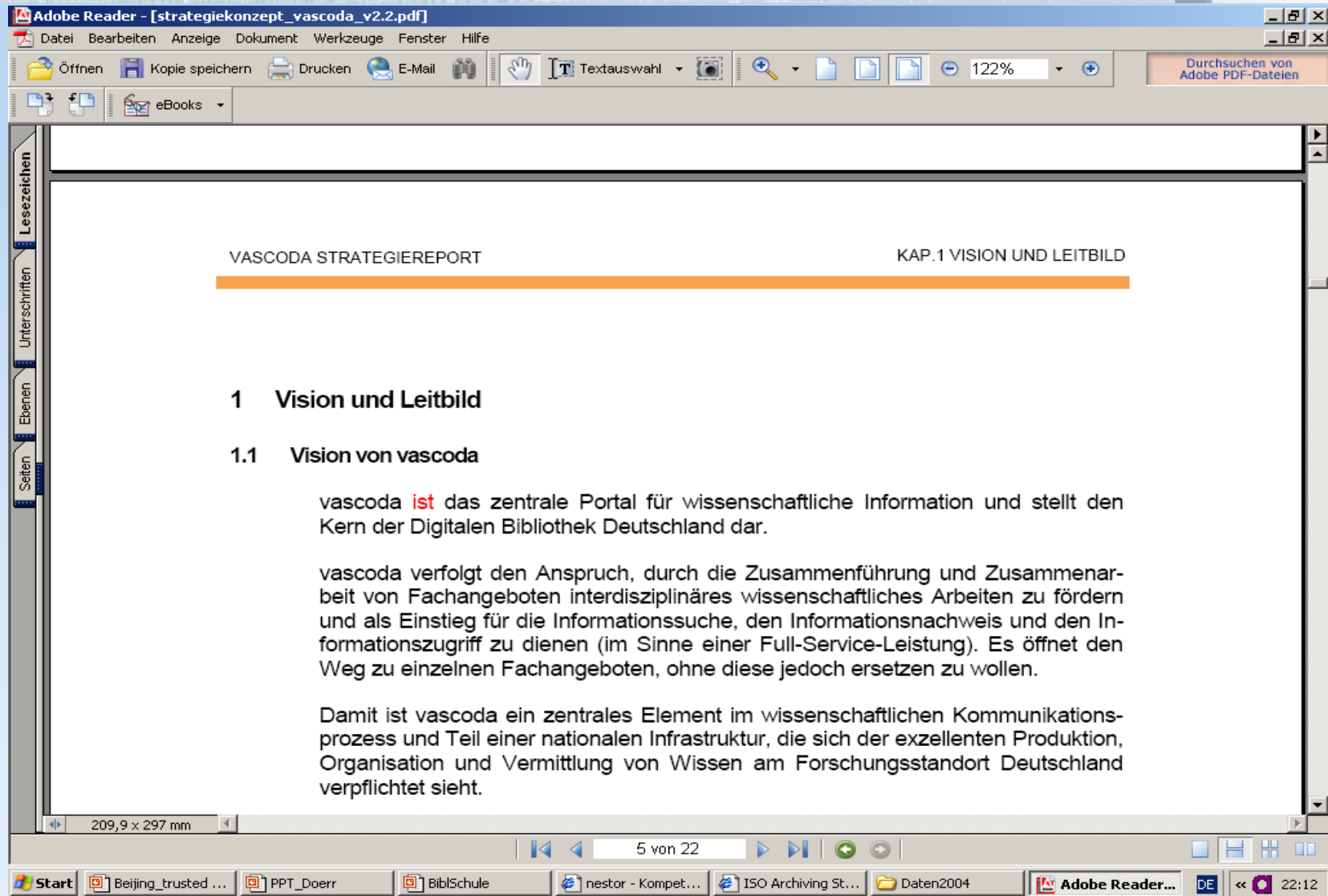
```





## Interpretation of Code

- The Rosetta Stone
- \* 196 a. Chr.
- founded 1799
- Today: British Museum, London



Adobe Reader - [strategiekonzept\_vascoda\_v2.2.pdf]

Datei Bearbeiten Anzeige Dokument Werkzeuge Fenster Hilfe

Öffnen Kopie speichern Drucken E-Mail Textauswahl 122% Durchsuchen von Adobe PDF-Dateien

eBooks

**VASCODA STRATEGIEREPORT** **KAP.1 VISION UND LEITBILD**

**1 Vision und Leitbild**

**1.1 Vision von vascoda**

vascoda **ist** das zentrale Portal für wissenschaftliche Information und stellt den Kern der Digitalen Bibliothek Deutschland dar.

vascoda verfolgt den Anspruch, durch die Zusammenführung und Zusammenarbeit von Fachangeboten interdisziplinäres wissenschaftliches Arbeiten zu fördern und als Einstieg für die Informationssuche, den Informationsnachweis und den Informationszugriff zu dienen (im Sinne einer Full-Service-Leistung). Es öffnet den Weg zu einzelnen Fachangeboten, ohne diese jedoch ersetzen zu wollen.

Damit ist vascoda ein zentrales Element im wissenschaftlichen Kommunikationsprozess und Teil einer nationalen Infrastruktur, die sich der exzellenten Produktion, Organisation und Vermittlung von Wissen am Forschungsstandort Deutschland verpflichtet sieht.

209,9 x 297 mm

5 von 22

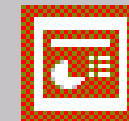
Start Beijing\_trusted ... PPT\_Doerr BiblSchule nestor - Kompet... ISO Archiving St... Daten2004 Adobe Reader... DE 22:12

## Technical key issues

- Migration
- Emulation
- Standardization

## Migration (1)

Diese Präsentation wird aus einer früheren  
PowerPoint-Version aktualisiert.



Datei: C:\TEMP\MMB-Präsentation.ppt

Folien fertig konvertiert: 7 von 15

Abbrechen

## Migration (2)

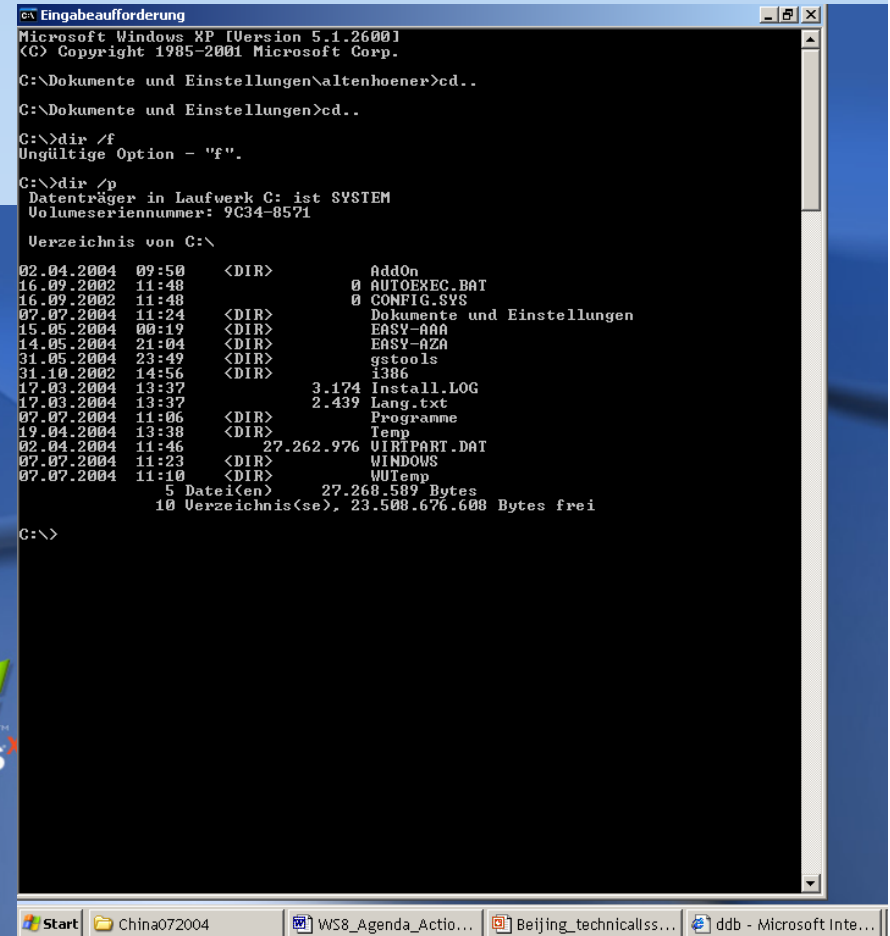
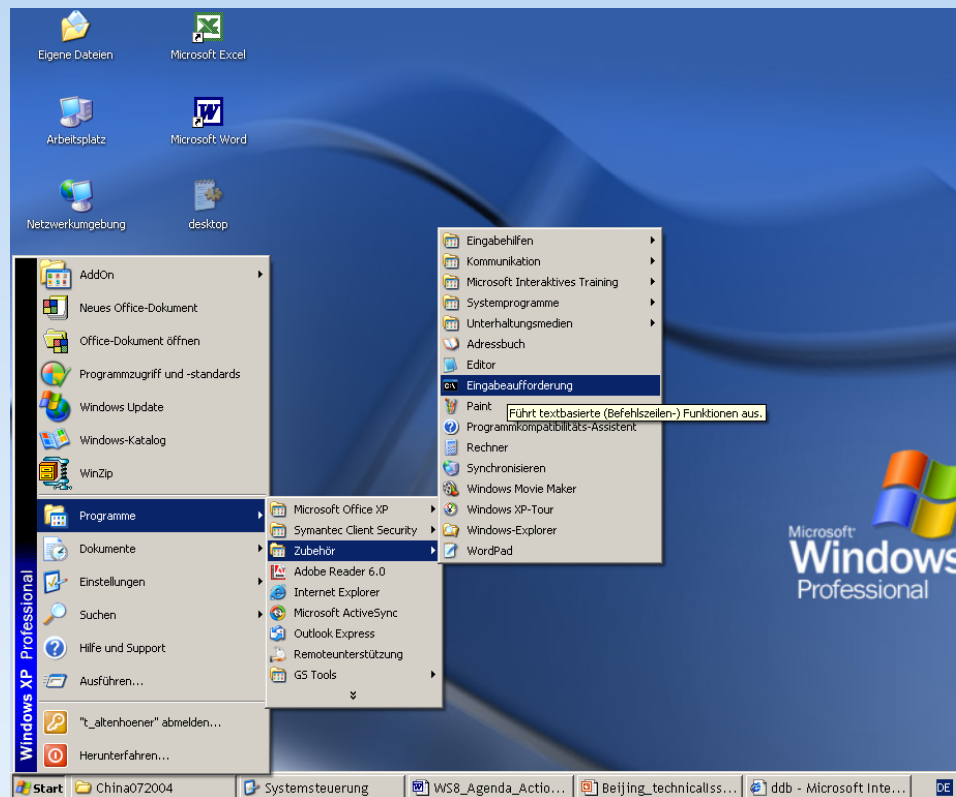
### Advantages:

- Well-trying strategy
- just in case ??!!

### Disadvantages

- No end
- Barriers
- Risk to fake the data
- Risk to lost information

# Emulation (1)



## Emulation (2)

### Advantages:

- Objects are preserved without change
- Calculable amounts
- For all digital objects

### Disadvantages:

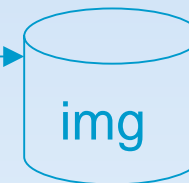
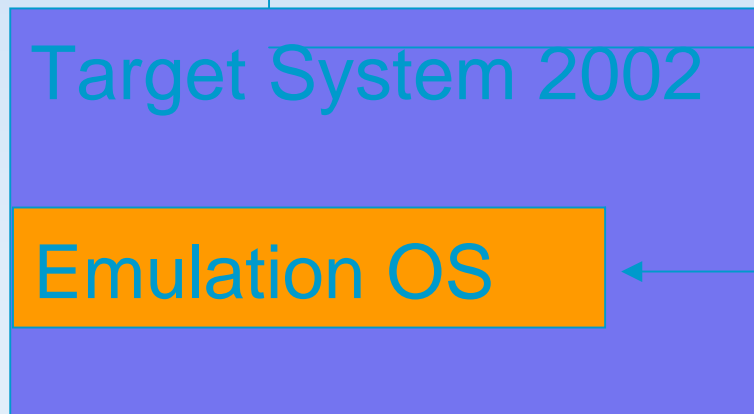
- High investment necessary for R&D
- Business value??!!
- feasibility

# Migration / Emulation in production in DDB

eg. C64 / AMIGA



Migration





# Rendering objects

We need information about the production environment of the given object:

- Software
- Technical context
- Embedded objects
- Metadata (they also have to be considered in the long-term preservation)

National Library of New Zealand

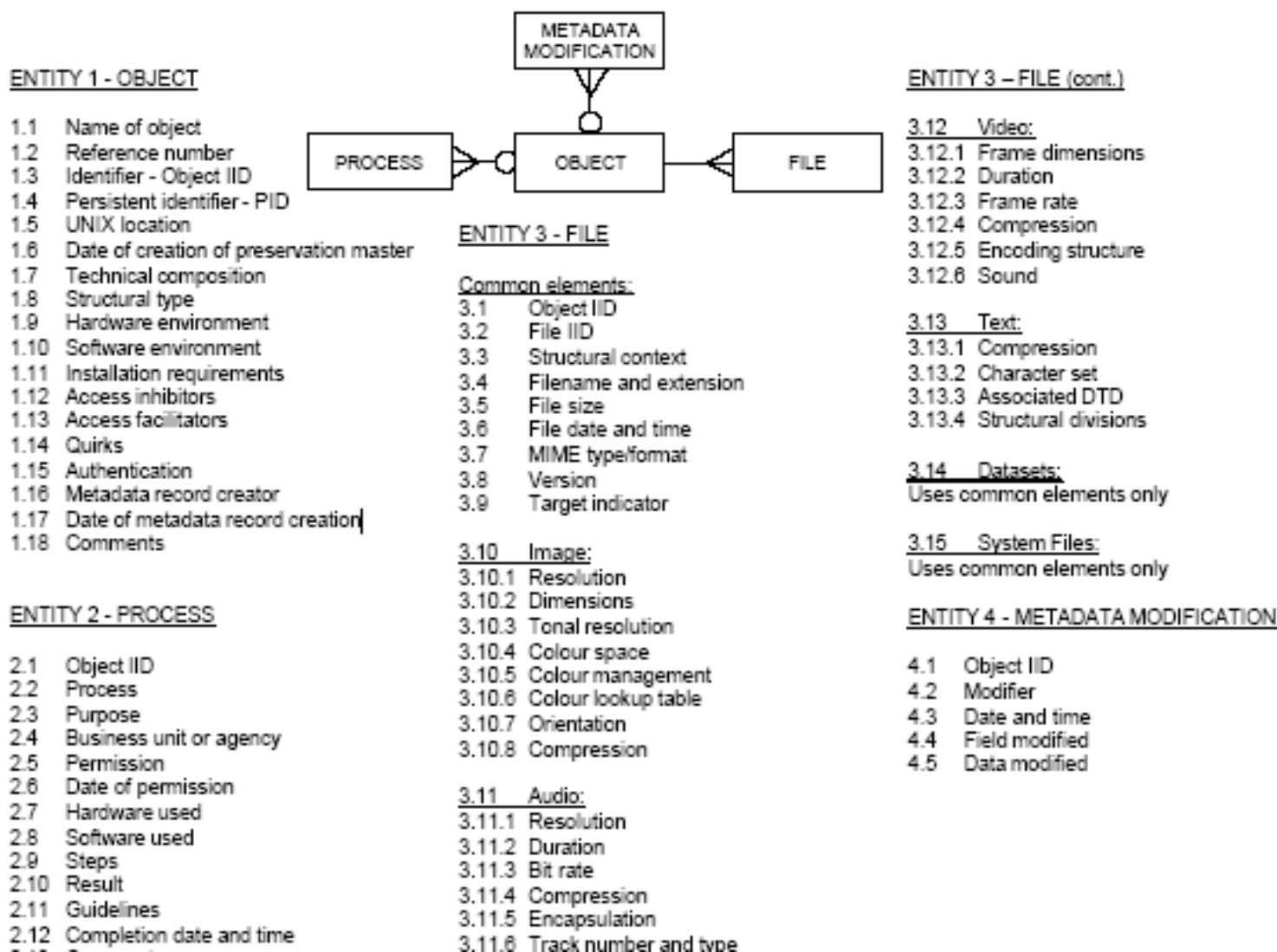
Metadata Standards Framework –  
Preservation Metadata

November 2002

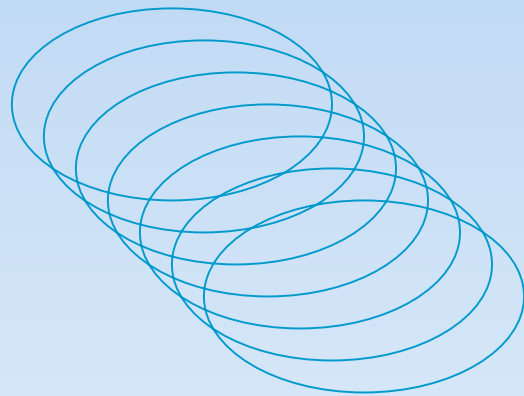
Preservation Metadata

Standardization

**Appendix 1 – Preservation Metadata Model**

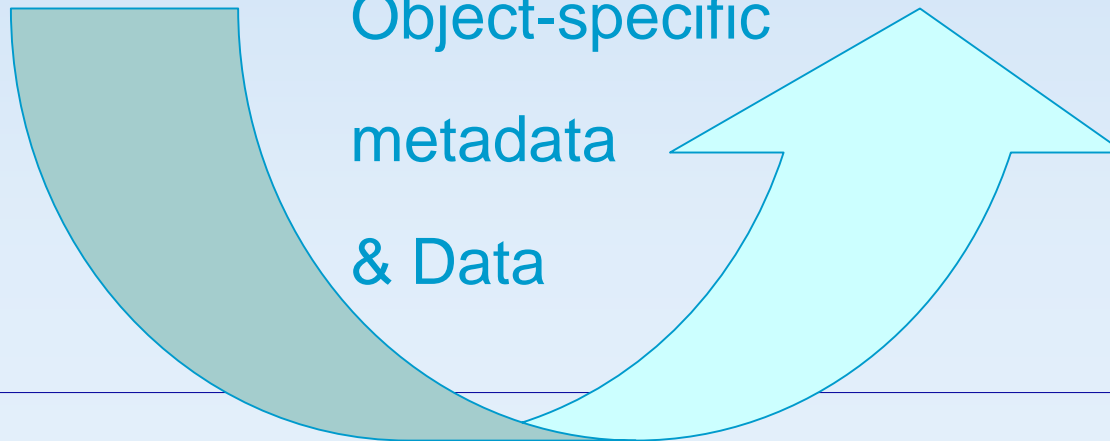


# Archiving of net-publications



DEPOSIT-  
SYSTEM

Object-specific  
metadata  
& Data



# Metadata

- Specific Preservation Metadata are necessary to ensure that information can be rendered in the future
  - Metadata about:
- Provenance
- Structure
- File Format(s)
- Technical Environment
- Rights

How much metadata can be extracted automatically during ingest process?

→ Tools needed!

## Additional remarks

- Migration of the metadata
- Digital information can be easily changed
  - Threats to the authenticity and integrity of the resources
- Long-term preservation of metadata