Bits and Bobs: Digital Preservation and Costs

Digital Preservation Coalition:
Forum on preservation of e-learning materials
and cost models for digital preservation

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1986 schilling & computer

Now has to be taken to bank for migration (to €1.453457 less charges … cost to you of time, to bank of processing)

All obsolete technologies:
12” Laserdisk, Philips player
BBC Acorn PC, software in BPCL

Original book (Domesday) made in 1086, still in use

Summary

1. Some words about costs
2. Identifying digital preservation costs today
   - Cost drivers and variables
   - Whose cheque book?
3. Some conclusions

What is cost?

- A pressure
- It leads to interference from others
- They then impose (further) limitations

- Costs pay for inputs which produce output
- Cost usually has multiple elements ..
- Which are subject to multiple factors
- Cost has multiple contexts

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The context of costs

- Some words around costs:

The context of costs

- Some words around costs:
  - Price
  - Payback
  - Proportion
  - Financing
  - Unit of measure
  - Charge-back
  - Investment
  - Return
  - Relative cost
  - Replacement cost

Some jargon related to costs

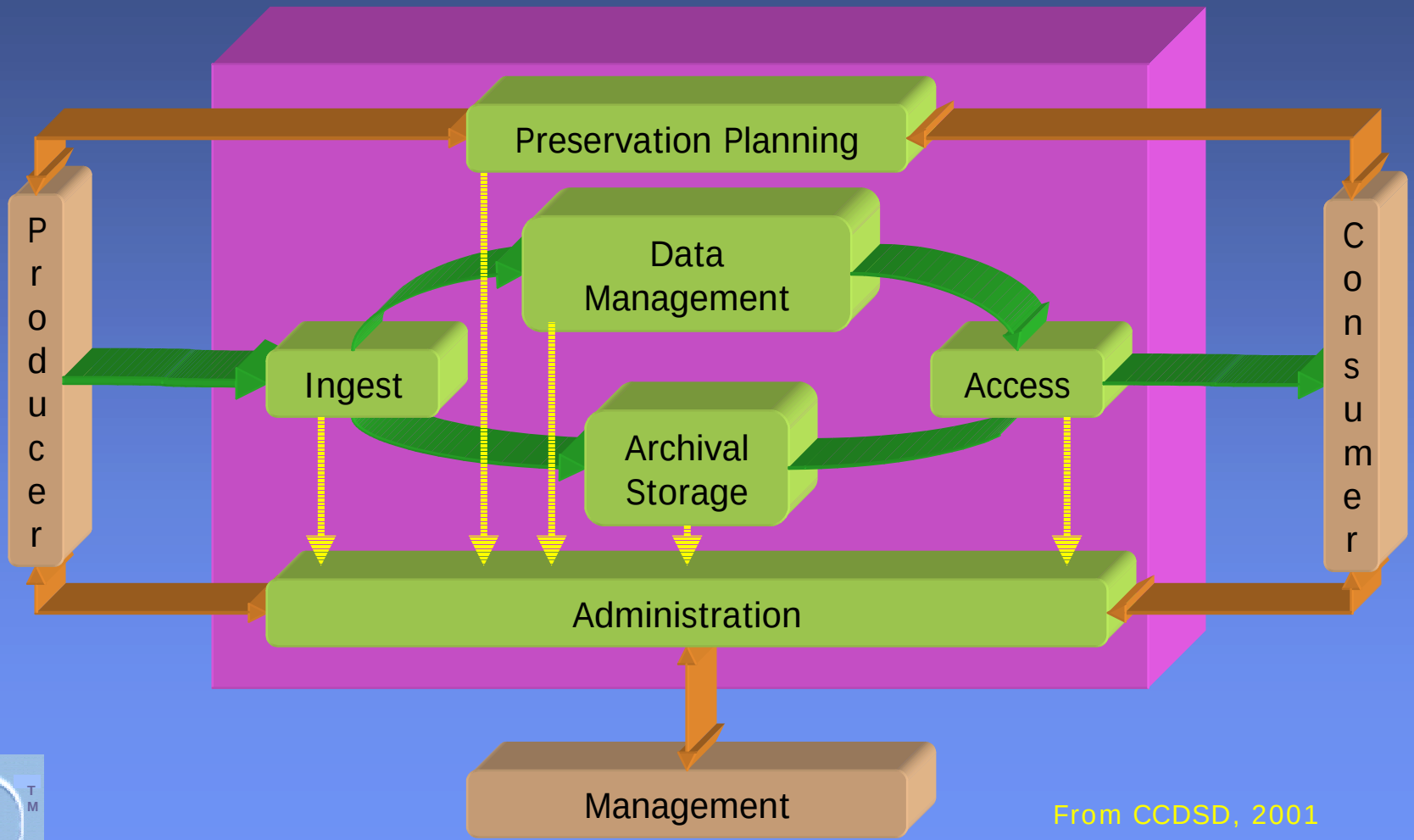
- Budget
- Standard costing
- Target costing
- Value analysis
- Value engineering
- Unit of measure
- Opportunity cost

Part 2

Identifying digital preservation costs today

Do we know what digital preservation involves?
Does the finance department have a cost centre for it? Should it?

Digital preservation: OAIS model



From CCDSD, 2001

Digital preservation a sub-activity

- Digital preservation implies purpose behind retention
- Digital preservation also implies awareness
- Economies of scale imply one or more real or virtual repositories

= archive(s)

Digital preservation is complex

Need to preserve:

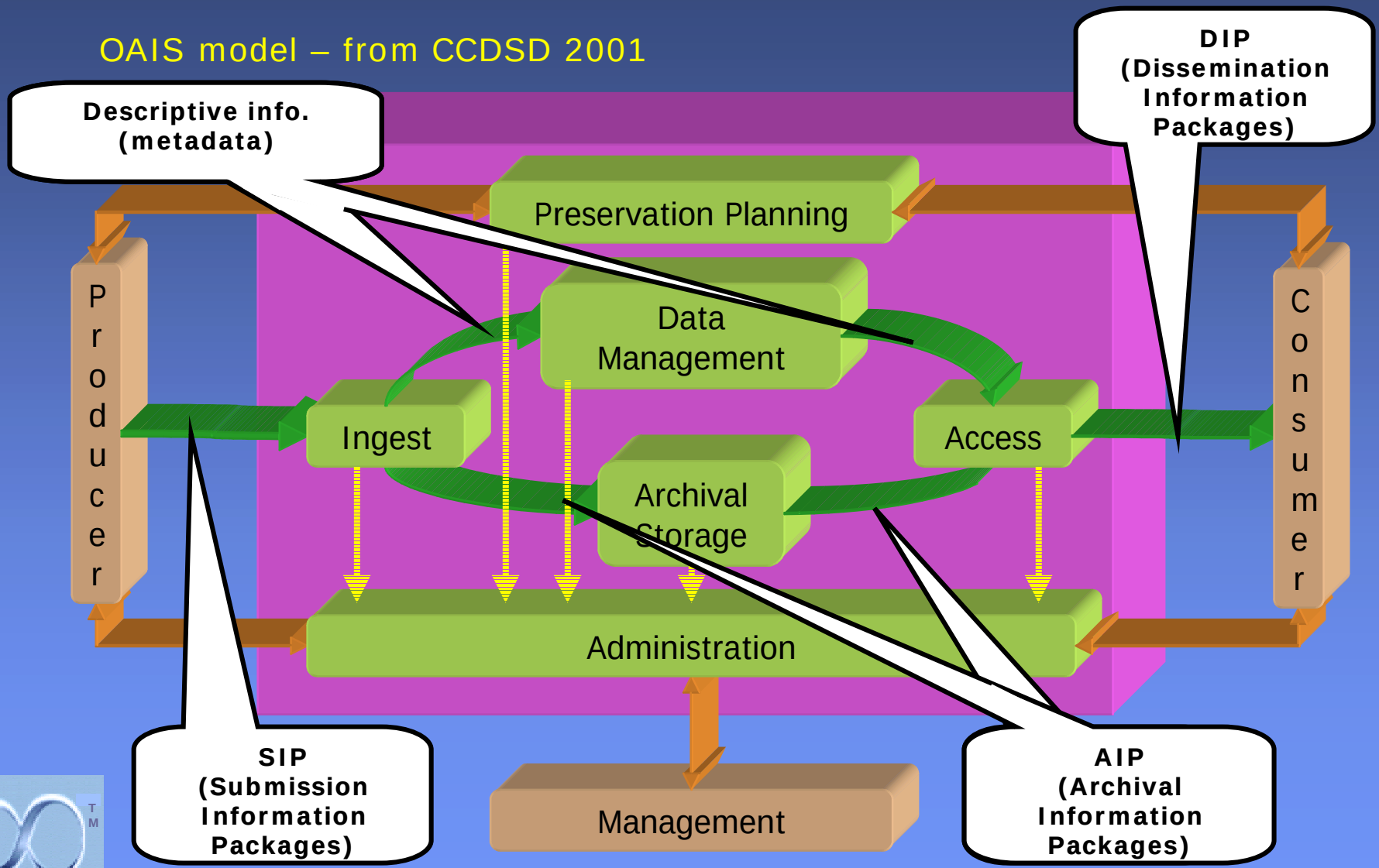
- Accessibility
- Retrievability
- Interpretability
- Meaningfulness
- Integrity
- Authenticity
- Security

Overcoming:

- Technology churn
  - Hardware, software, media
- Knowledge, semantic loss
- Infrastructure loss (incl. funding continuity)
- New problem areas

Metadata = the engine of preservation

OAIS model – from CCDSD 2001



Digital preservation: cost elements (1)

- Sub-activity of archive (in this example)
  - Set-up & infrastructure
  - Running costs: overheads, labour, materials
- Preservation actions as required
  - Materials and staff as required
  - Lots of knowledge required – almost certainly more than available in-house
  - Timing of these actions dependent on external factors

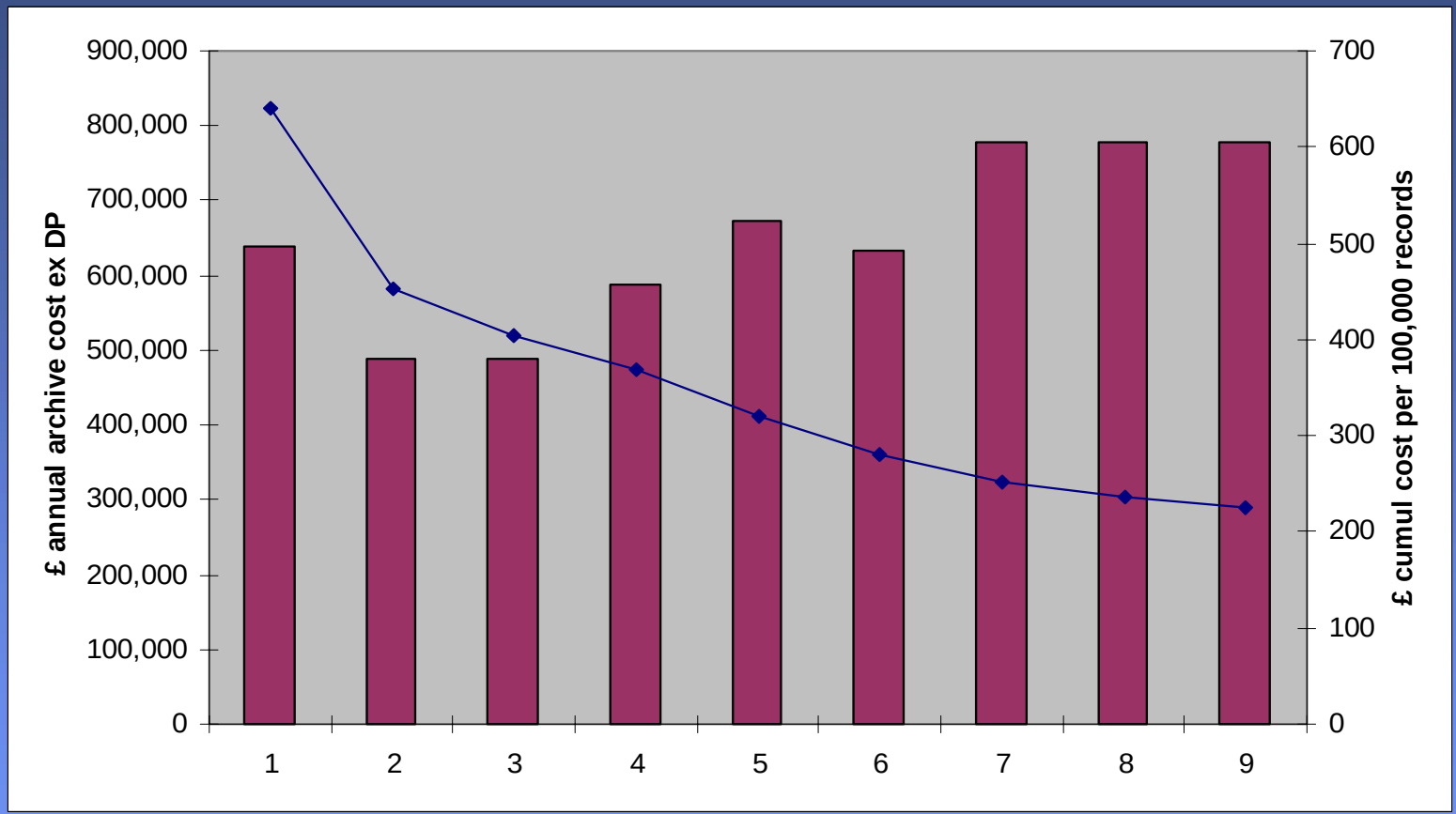
Digital preservation: cost elements (2)

- Digital preservation cost components:
  - Media refresh, software elements
  - Labour (internal, external)
  - Knowledge bank (internal, external?)

- Archive cost components:
  - Infrastructure
  - Hardware, media
  - Software
  - Telecommunications
  - Staff (archivists, IT, management)

= Uneven costs:

Annual archive cost **ex digital preservation** and average cumulative cost per 100,000 records



Variables - what to preserve in a record?

- The original functionality?
  - To what extent?
    - Accuracy of numerical results
    - Links – original targets
    - Environmental dependencies
    - Etc.
- The original look and feel?
  - To what extent?
    - Colour fidelity?
    - Screen resolution
    - Screen layout
    - Fonts
    - etc
- Just the file / bit sequence?
- Audit trail, annotations?

Digital preservation: variables (2)

- Preservation actions as required
  - But which method?
    * Migration
    * Emulation
    * Archaeology
    * Museum
    * Other (eg Rosetta Stones)
  - But each of these have quite different cost characteristics,
  - And different implications about management
- Choice affects the value of the record

Digital preservation: cost drivers (1)

- Cost of materials (hardware, software, media)
- Hardware technology changes
- Availability of expert staff

Digital preservation: cost drivers (2)

- Heterogeneity of data types (today and tomorrow)
- Specialization of data
- Complexity of record structures
- Number of user communities
- Technology churn – software and communications
- Quality of the original data
- Indexing:
  - Ease of metadata creation
  - Depth and breadth of metadata
- Volumes (types, accumulation, annotations, audit trail)
- Frequency & regulation of access (ie, near-line, off-line)

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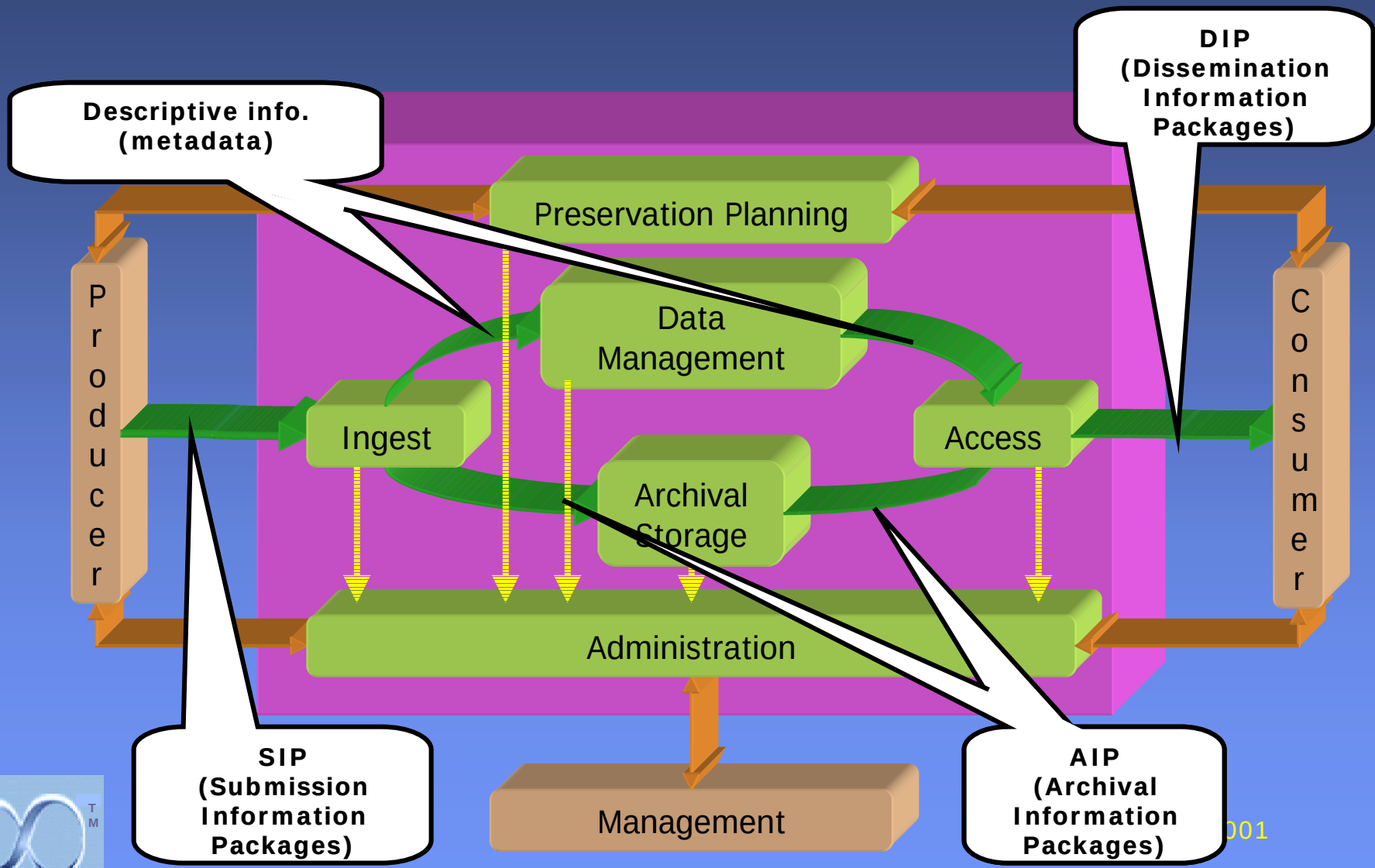
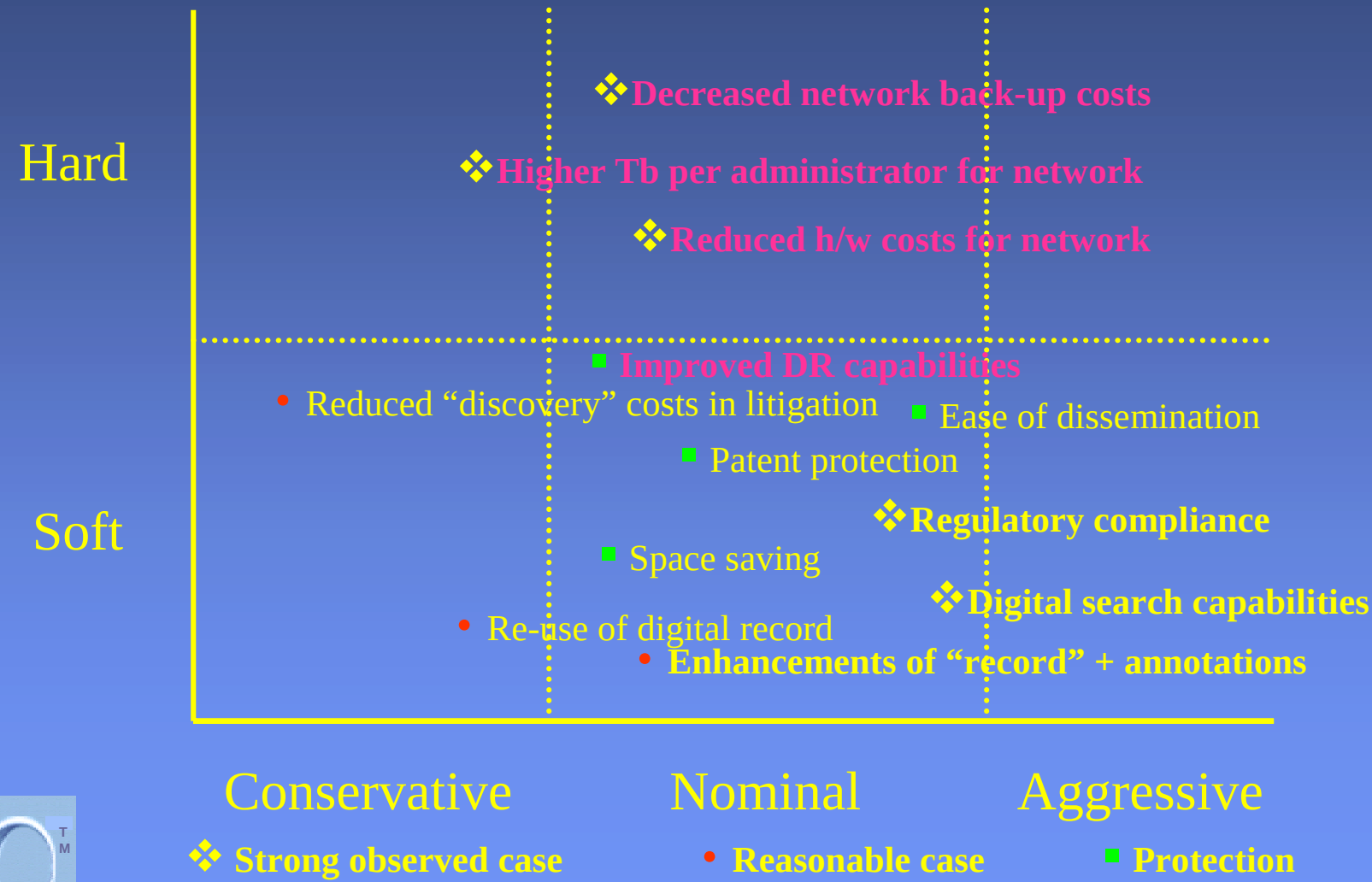
OAIS : metadata the engine – but how many, and where do the costs fall?



Where do the costs fall?

- Who bears (or shares) which costs when?
  - Original funders
  - Data originators
  - Curator(s)
  - Other business units (eg IT departments)
  - Data owners
  - Current users, future users
  - Future funders
- What accounting problems are involved?
  - Different archive models imply different problems

Hard costs, soft benefits (mostly): **HYPOTHETICAL** MAP



The other side of the coin: securing the budget

- Justifying the costs in terms of the benefits
- These are likely to be indirect
- Are the benefits measurable?
- Some archives may have income streams
- Balancing costs and benefits
- The risk of waste (several kinds)
- Staying within budget

Cost words again

- Reviewing those words around costs:
  - Price
  - Payback
  - Proportion
  - Financing
  - Unit of measure
  - Charge-back
  - Investment
  - Return
  - Relative cost
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Concluding questions and answers

- Is cost a risk in digital preservation?
- Is it possible to budget for digital preservation?
- Which cost elements can we predict with any degree of accuracy?
- Should the finance department have a cost centre for digital preservation?
- What are the implications of the cost choices identifiable today?

An understanding of costs in digital preservation is an important factor in maintaining maximum funding for digital archives.