

KING'S College LONDON

Same as it ever was?

Significant Properties and the preservation of meaning over time

Decoding the Digital, 27 July 2010

Gareth Knight, King's College London

Overview

1. Introduction to Significant Properties
   - What are they and why are they useful?
2. Rendering digital objects
   - NAA Performance Model
3. The challenges of determining significance
4. Assessment framework
   - InSPECT SP assessment framework
5. Conclusions

Digital preservation challenges

"The fundamental challenge of digital preservation is to preserve the accessibility and authenticity of digital objects over time and domains, and across changing technical environments"

Wilson, 2008, InSPECT Significant Properties Report

"We want to be able to guarantee that for a given object the reformatted version is equivalent to the original version with regards to some specific set of object characteristics"

Clifford Lynch, DLib 1999

Definition

Different terminology:

- Significant Properties, Significant Characteristics, Transformational Information Properties, Essence, and others

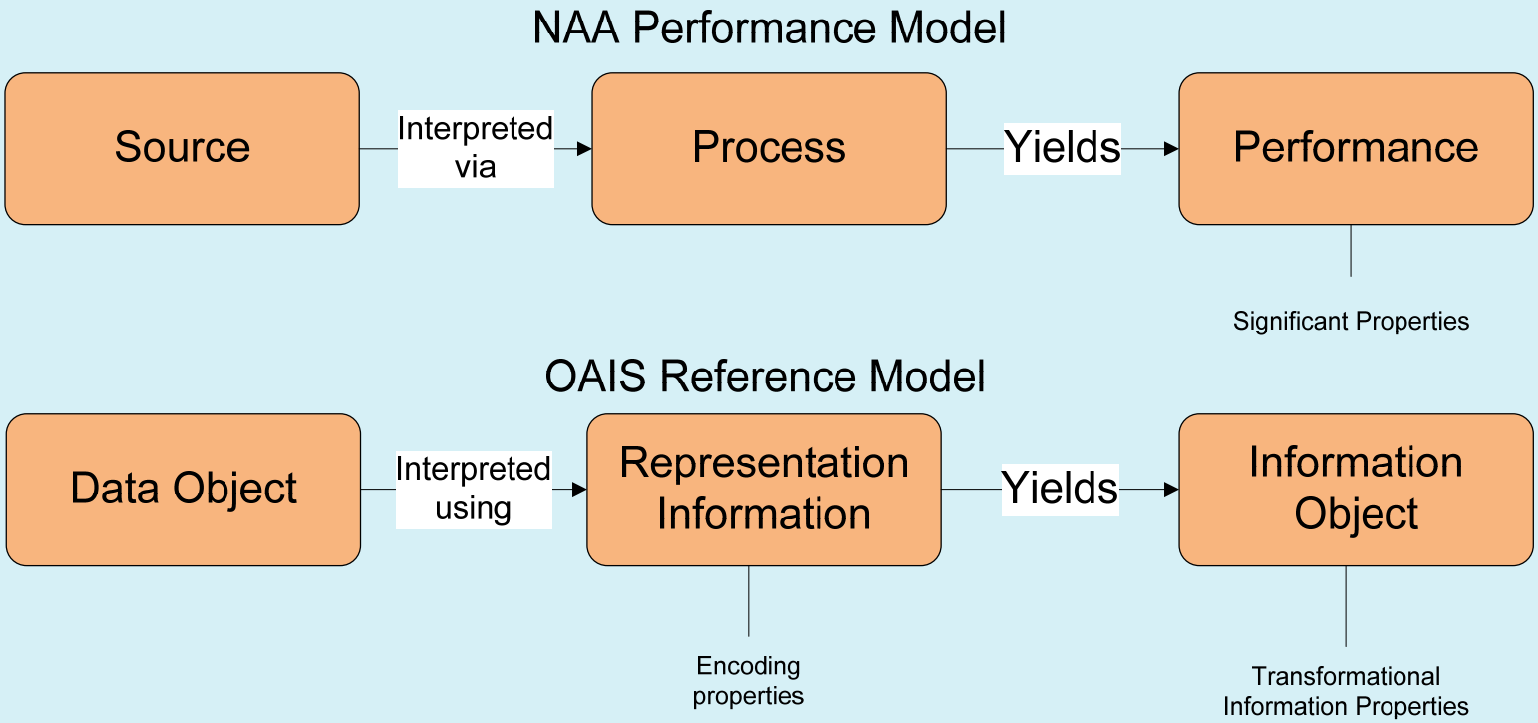
Broad definition:

> "The characteristics of digital objects that must be preserved over time in order to ensure the continued accessibility, usability, and meaning of the objects"
>
> Wilson, 2008, InSPECT Significant Properties Report

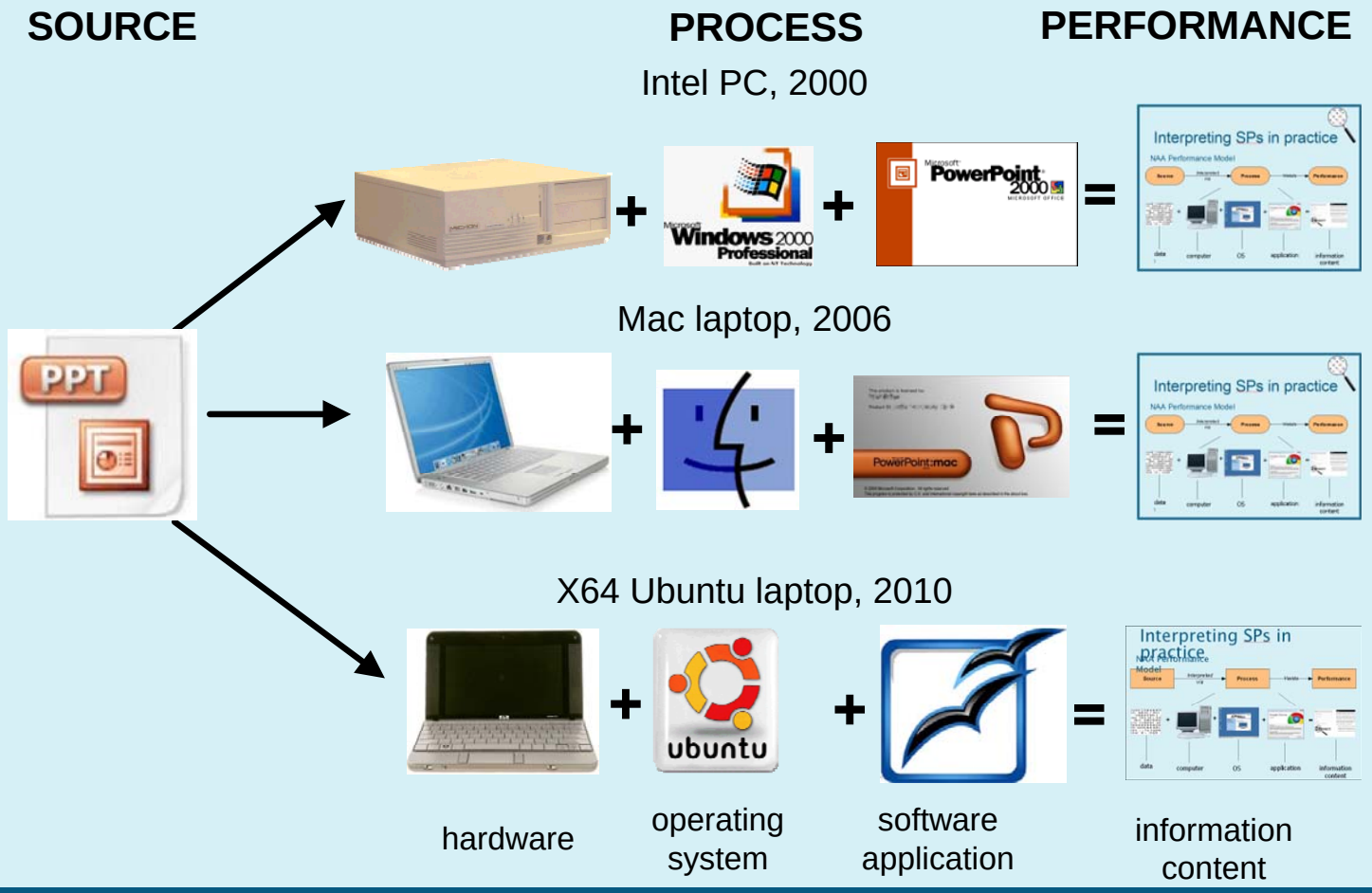
Questions:

- *Authenticity* – is this what it purports to be?
- *Integrity* – is this complete and "unaltered"?
- *Viability* – is this suitable for its audience (the OAIS Designated Community)?

Performance Model

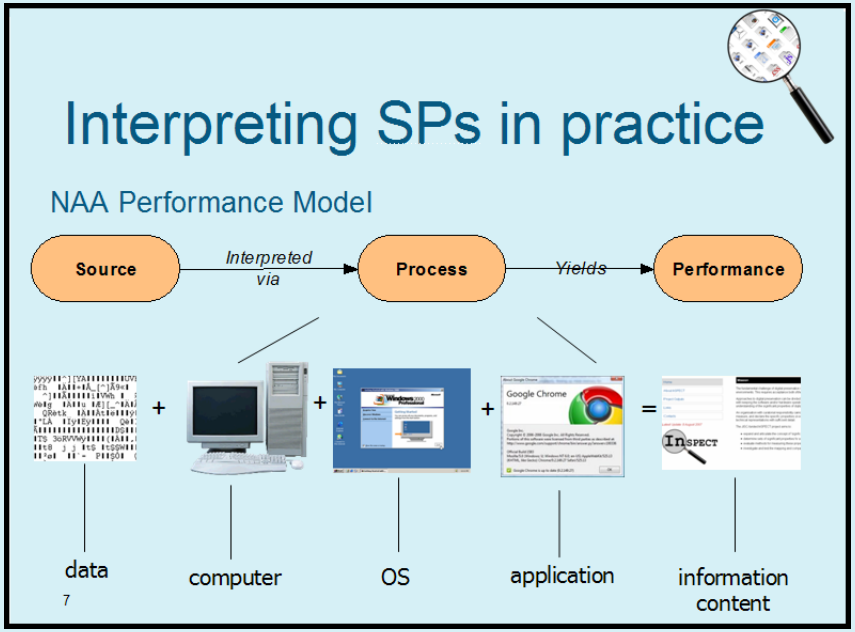


Change in process over time

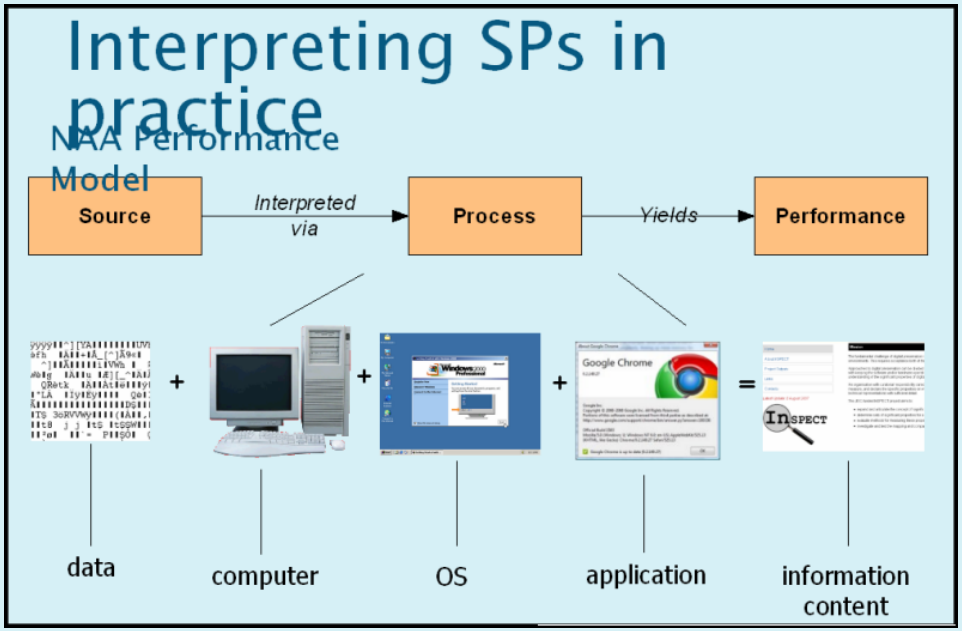


Differences in Performance

Microsoft PowerPoint



OpenOffice Impress 2.0



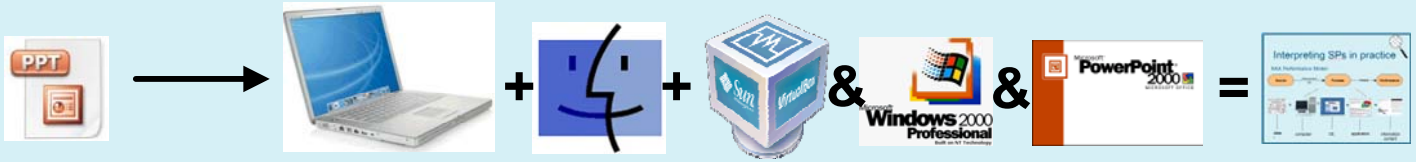
Preservation strategies

Computer Museum

maintaining the Hardware & software that was originally used to render data

Emulation

Recreate the original operating environment on a new platform

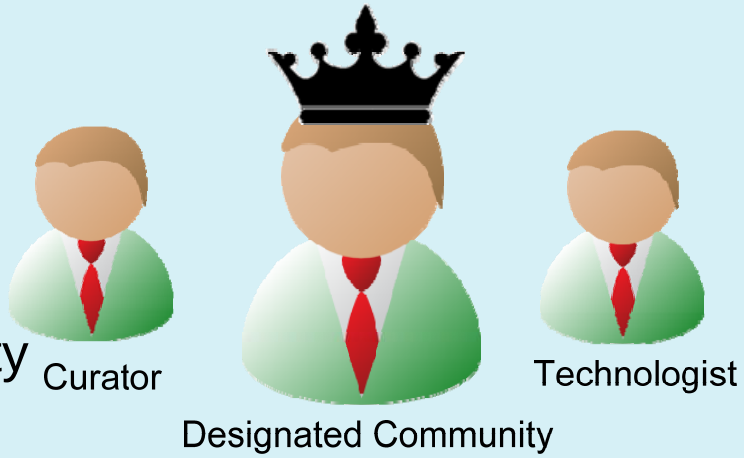


Content conversion

Converting digital information to different encoding format and software applications

SPs in institutional context

- How do you define what is essential, useful, or superfluous?
- Impractical to present a single, definitive interpretation of significance
  - Many stakeholders that change over time
  - Stakeholders have different needs and knowledge
- Institutions serve a Designated Community
- Formal methodology required to guide identification, analysis & recording process
- Should be rational, consistent in its application, while offering sufficient flexibility for widespread applicability



SP assessment framework

- InSPECT project adopted a design methodology that is used to assist engineers & designers to create & re-design artefacts
- Artefact construction is a product of designated function(s)
- Assessment upon two philosophical approaches:

1. *Teleology:* study of design and purpose of object – why was it created?
2. *Epistemology:* Understand meaning and process by which knowledge is acquired

- In combination, these encourage evaluation of context of creation and information needed to communicate intrinsic knowledge to a new audience (designated community)

Assessment framework stages

1. Object analysis

   Identify functions, behaviours to be achieved and properties needed for their performance

2. Stakeholder analysis

   Analyse functions a particular user group wish to perform

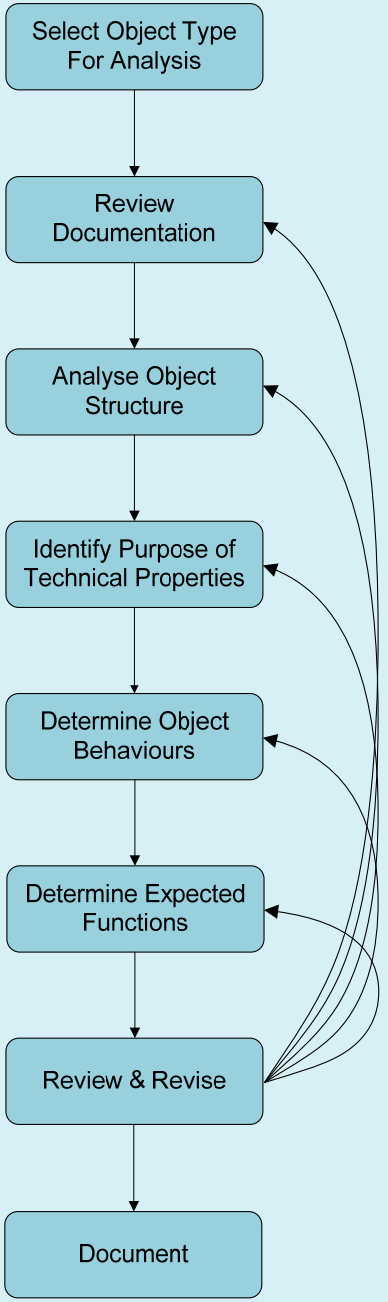
3. Reformulation

   Perform a revised set of functions or different behaviours

1. Object Analysis

Objective:

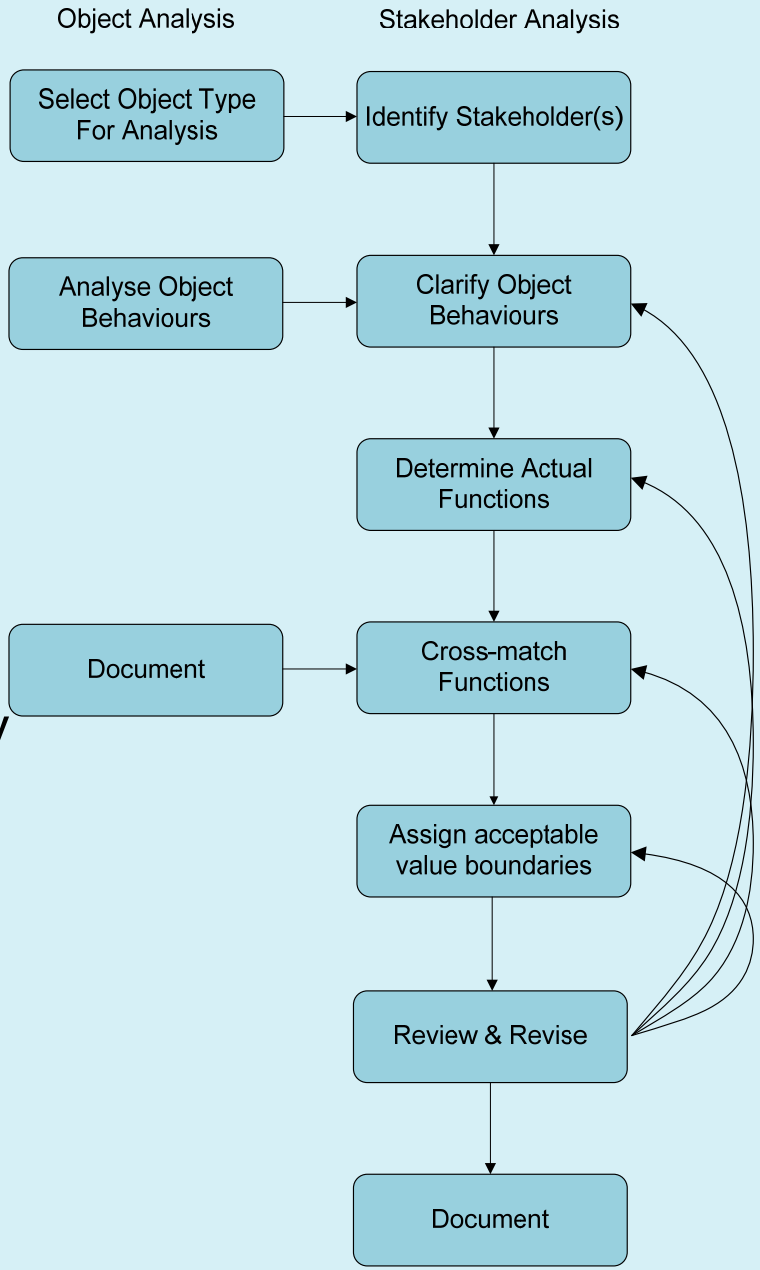
1. Understand the structural composition of an Object Type that must be maintained (e.g. email, video, sound, etc.)
2. Identify functions that a stakeholder in Designated Community may perform when using it.
3. Determine the structural properties necessary to achieve each function



2. Stakeholder Analysis

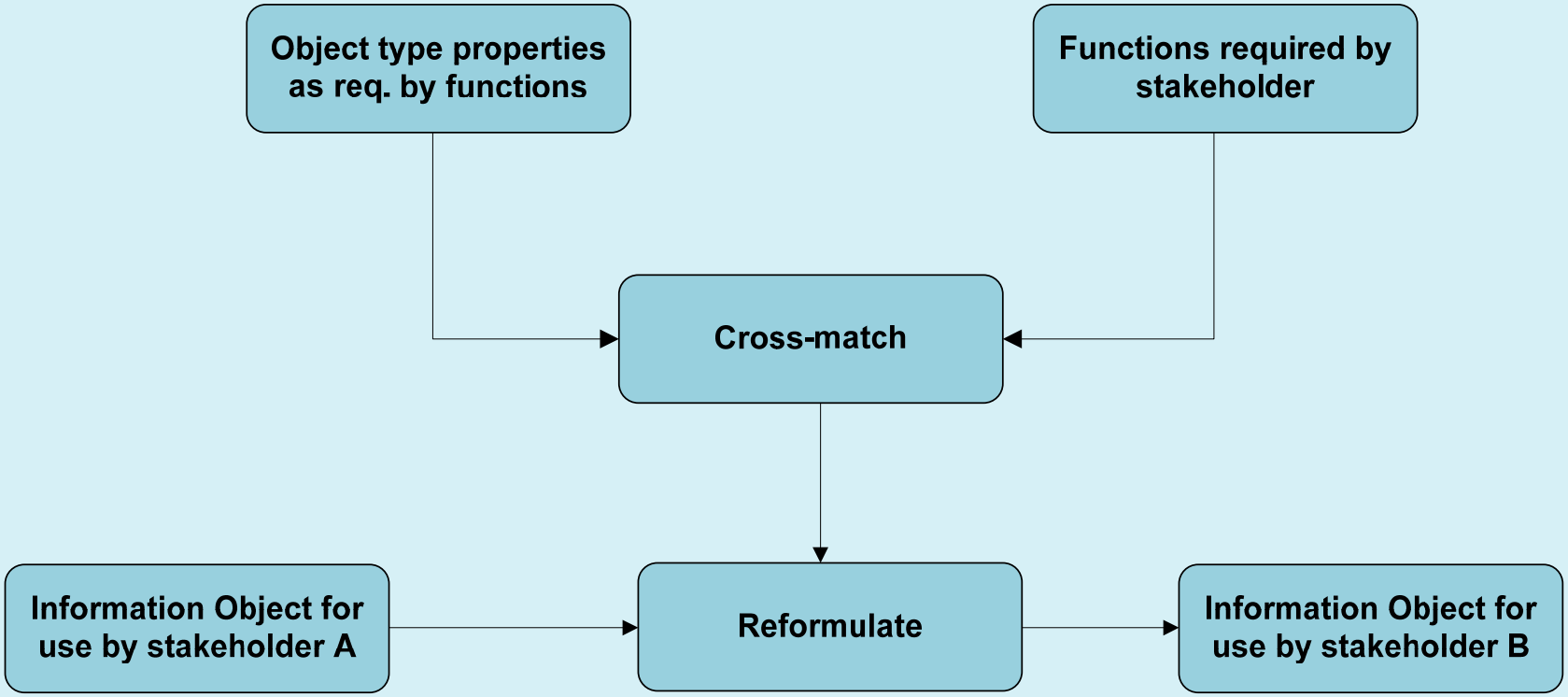
Objective:

1. Identify Stakeholders that use object and analyse the work that they perform
2. Determine set of functions that they perform when using object
3. Specify quality thresholds for each structural property that must be met to allow performance of each function – what is acceptable loss?

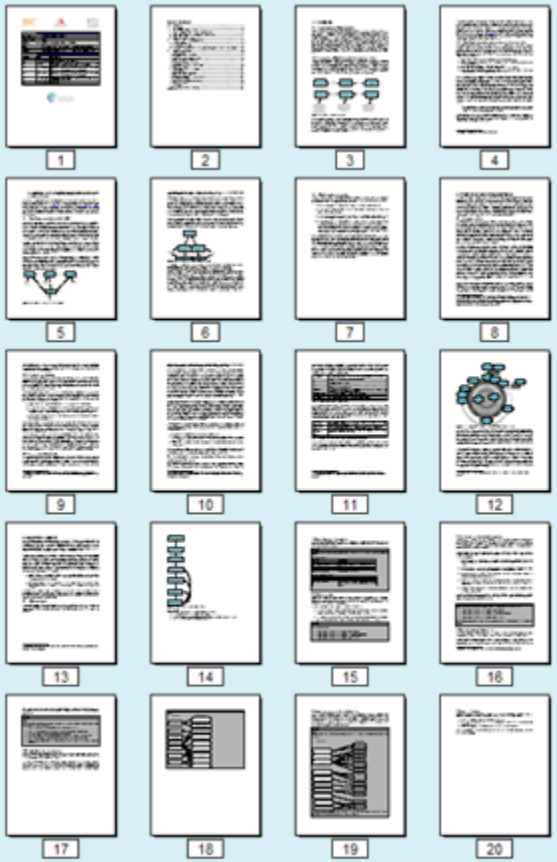


3. Reformulation

Redevelop object to perform set of stakeholder functions – may be a refined or extended list



Reformulation in practice:
Paged document to hypertext document



InSPECT
INVESTIGATING SIGNIFICANT PROPERTIES OF ELECTRONIC CONTENT

KING'S College LONDON
The National Archives

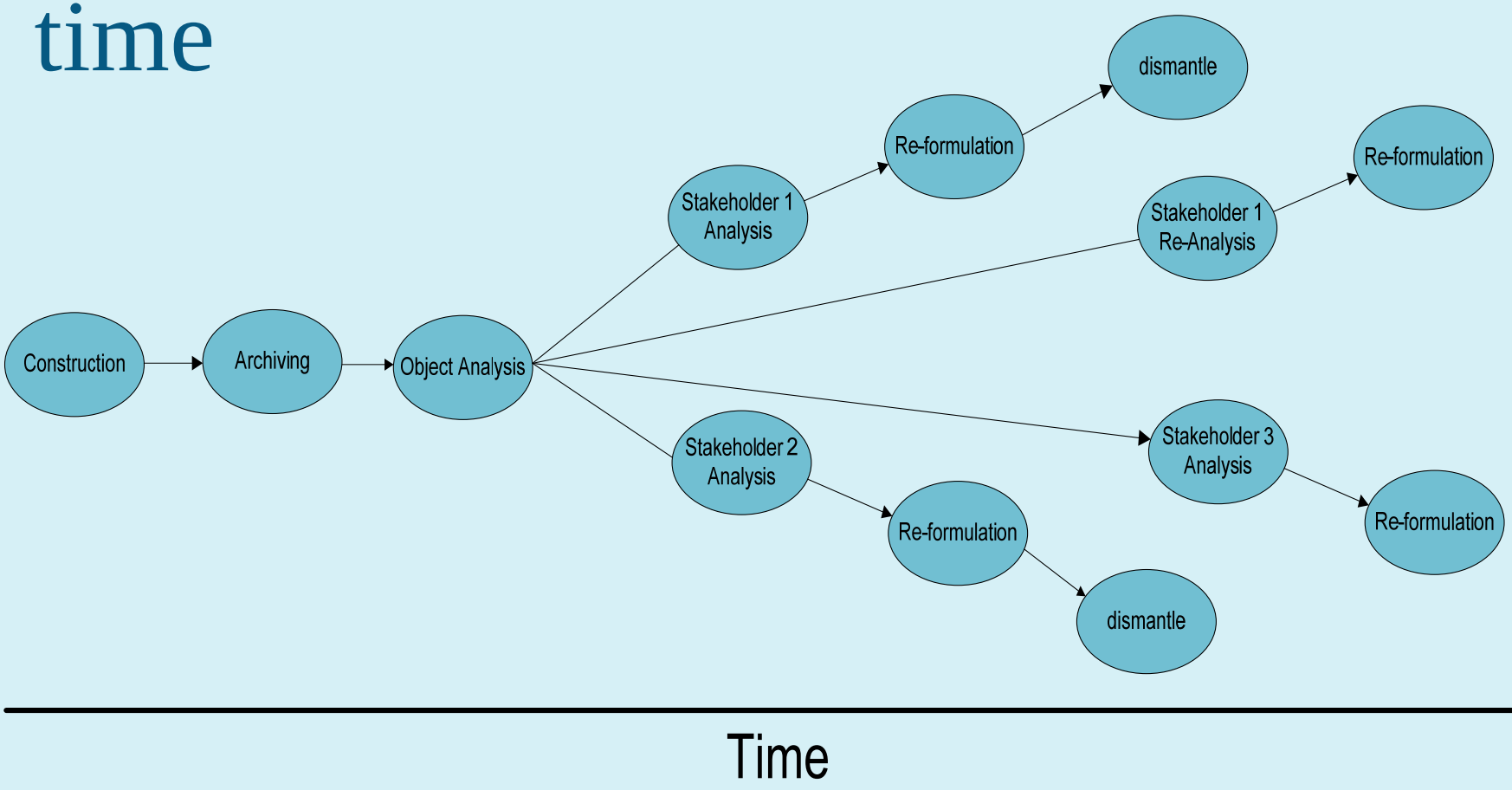
About | Methodology | Testing Reports | Papers and presentations | People | Web Links

InSPECT Framework Report

Work Package	3.3
Author(s) & project role	Gareth Knight, Digital Curation Specialist
Date	13 October 2009

Table of Contents

Analysis & reformulation over time



SPs in digital preservation

- Always relate to institutional mission
  - Whose needs are being served?
- Significance is fluid
  - Variable between different communities and subject to change
- Appraisal process required to identify aspects of digital object that are essential
  - Functional analysis is a pragmatic method for determining requirements, as well as including acceptable loss

Future of SPs

- Measure the success of recreation
  - Choices, outcomes, relation to original
- Availability and adequacy of characterisation tools
  - (Partly) manual activity for the foreseeable future
- Encoding for machine processing
  - Requires a metadata schema e.g. PREMIS extension
- Possibility of standard ‘profiles’ over time
  - Sharing results and best practice

In conclusion

Significant Properties can act as a bridge across time to ensure the persistence of what is important in digital objects through any required transformations

Grace, Knight and Montague 2009

InSPECT Final Report

Contact

Gareth Knight

Centre for e-Research

King's College London

gareth.knight@kcl.ac.uk

020 7848 1979

http://www.significantproperties.org.uk