Collaboration to Clarify the Costs of Curation

http://4cproject.eu/

IDCC14 Workshop:

Costing Curation: are we on the right track?

Presented by: Neil Grindley, Katarina Haage, Joy Davidson, José Borbinha, Rachel Bruce

PROGRAMME

Timings	Duration	Activity
		Section 1:
09:00 - 09:30	30 mins	Introduction to the 4C project and the costs of curation (presentation)
09:30 – 10:00	30 mins	What is your organisation interested in? (Presentation and Q&A using the 4C Indirect Economic Determinants and the more broadly defined benefits of curation)
10:00 – 10:30	30 mins	How do different organisations count the cost of curation? (Exemplars & participants invited to briefly share experiences)
10:30 – 11:00	30 mins	*Break*

Project Summary

The Collaboration to Clarify the Costs of Curation (4C) project will help organisations across Europe (and beyond) to more effectively invest in digital curation and preservation.

Vision

The 4C vision is to create a better understanding of digital curation costs through collaboration.

Mission

Our mission is to provide useful, useable resources which support the process of cost management in digital curation.

4C

Collaboration to Clarify the Costs of Curation

Engagement

Tasks

- Engage stakeholders
- Raise awareness
- Organise meetings
- Promote Research & Innovation
- Build community network

Assessment

Tasks

- Assess cost models & strategies
- Examine good practice
- Analyse requirements
- Integrate components
- Produce guidance & briefing materials
- Setup costs exchange

Events, Workshops, Meetings & Reports

Networking & Coordination

Affiliate Partners & Stakeholders

Outputs

Reports for General Dissemination

Curation Costs Exchange

Reports for European Commission

Submission of Roadmap to the EC

Enhancement

Tasks

Examine and refine related concepts

- Value
- Risk
- Benefits
- Sustainability
- Economic Reference Model

Jisc

Project Coordination

Tasks

Project meetings
Project reporting
EC liaison
Budget oversight
Outputs QA

Collaboration to Clarify the Costs of Curation

TIMELINE

May 2011 Nov2011 Apr 2012 Feb 2013

Preparation

Project Kickoff

Who we are & what we do

Summer 2013

Contact Stakeholders

Aligning National Approaches to Digital Preservation

iPRES2013

Participation, debate, emerging findings

Archiving

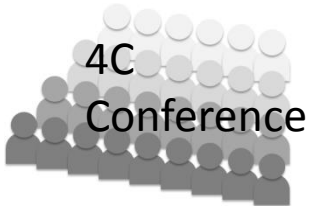
DCC

Summer 2014

Emerging Resources

Dissemination, legacy, recommendations

Oct 2014



4C Conference

Jan 2015

Project Close

Economics of Digital Curation Roadmap

Curation Costs Exchange

Why should we concern ourselves about the cost of curation? (What are the stakeholders saying ...)

- Understanding the cost of preservation may mean we can offer realistic and cost effective curation services to others.
- Understanding costs can support strategic planning.
- Understanding costs can support tactical decision-making.
- Understanding costs can provide evidence of cost-effectiveness and value.
- Clarifying and publishing the cost of digital curation can be used to enhance our organisation's credibility. But this must be done along with the context of how the costs were calculated
- Understanding economic drivers can help to strategically align an organisation

How is 4C going to help?

By carefully analysing all of the information we assemble and making sure that it is passed onto our stakeholders through ...

- A series of state of the art reports
  - Cost model evaluation and a needs & gap analysis
  - Trust and quality (in relation to the cost of curation)
  - Risk, benefit, impact and value (in relation to the cost of curation)
  - From cost models to business models
  - A roadmap for future economic considerations in relation to digital curation
- New frameworks and models to assist with designing new approaches and building future tools
  - Indirect economic determinants
  - An economic sustainability reference model
  - A gateway specification for future cost models
  - A cost concept model for digital curation
- A Curation Costs Exchange

- Engagement
  - Make sure all outputs are available for public
  - Get involved and build partnerships with individuals, groups and institutions that are active or interested in the topic of curation costs
  - Build a community network
  - Organise webinars, focus groups and other events to connect people
  - Provide a platform for exchange, interaction and discussion (CCEx)

What is your organisation interested in?

The 4C Indirect Economic Determinants (IED)

- 15 indirect economic determinants that are significant for digital curation
- Generic management tools to help ensure sustainable digital curation

Goals?

-> Indicators
-> Support
-> Feature within the ESRM

What the consultation showed:

-> Risk, trustworthiness and benefits are ranked with high importance
-> If grouped: 1) Risk/trustworthiness, 2) Sustainability, 3) Data protection issues

… and the more broadly defined benefits of curation

- direct
- indirect
- near term
- long-term
- private
- public

When it comes to digital curation: what are the three most basic needs the German National Library would choose?

- Access
- Integrity
- Authenticity

Access

- Infinite
- At any time
- Also: preserving the interpretability of the digital data
- Challenged by: constant changes in hard- and software

Integrity and authenticity

“The digital repository ensures the **integrity** of the digital objects during all processing stages.” (p.19f)

Integrity here refers firstly to the completeness of the digital objects and secondly to their intactness. The yardsticks for integrity are the characteristics of a digital object defined as worthy of preservation (cf. 9.2.).

“The digital repository ensures the **authenticity** of the digital objects during all stages of processing.” (p. 21f)

Authenticity here means that the object is genuine, i.e. that it represents, what it claims to represent. It also includes full documentation of all transformations to the objects carried out for the purpose of preservation.

http://files.d-nb.de/nestor/materialien/nestor_mat_08_eng.pdf

Exercise - Indirect Economic Determinants

To what extent would your organisation regard the following 15 outcomes as an investment priority?

IED	High	Medium	Low	Notes
Authenticity				
Benefit				
Efficiency				
Impact				
Innovation				
Interoperability				
Quality				
Reputation				
Risk				
Sensitivity				
Skills				
Sustainability				
Transparency				
Trustworthiness				
Value				

Neil ...

How do different organisations count the cost of curation?

(Exemplars & participants invited to briefly share experiences)

We need to think carefully about what exactly *is* the problem that we are trying to solve ...

If they want to, organisations can work out how much it costs them to manage their digital assets

4C Data Gathering Exercise
Organisation A

Curation Categories

- Pre-Ingest
- Ingest
- Preservation Planning
- Data Management
- Archival Storage
- Access
- Administration

Accounting Principles

Labour Direct	Labour Indirect	Capital Direct	Capital Indirect	Note
0	0.2	0.1	0.0	0.7	0.6	1.3			€ 5,000	€ 5,000
0	0.2	0.1	0.0	0.7	0.6	1.3			€ 5,000	€ 5,000
0	0	0.1	0.0	0.0	0.3	0.3			€ 1,000	€ 1,000
0	0	0.1	0.0	0.0	0.3	0.3			€ 1,000	€ 1,000

Time Period
2012

Total Cost
€252,000

4C Data Gathering Exercise
Organisation B

Curation Categories

Ingest

Curation

Access

Cost Categories

Accounting Principles

Time Period
2012

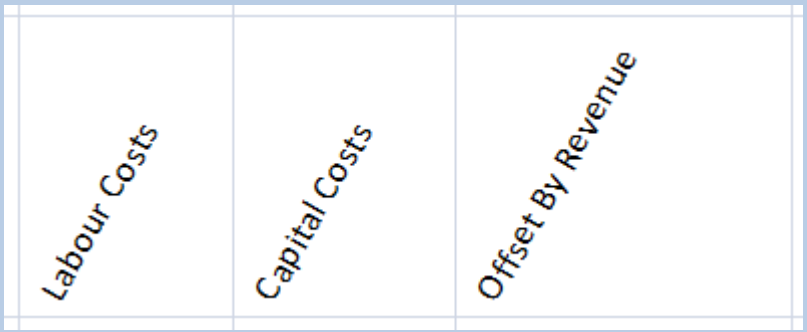
Total Cost
€645,683.26

4C Data Gathering Exercise
Organisation C

Curation Categories

- Ingest
- Data Management
- Archival Storage
- Preservation Planning
- Access
- Administration
- Common Services

Accounting Principles



Size of Collection

393 TB

Time Period

2012

Total Cost

€15,800,000

4C Data Gathering Exercise
Organisation D

Curation Categories

- Ingest
- Archival Storage
- Metadata Management
- Access
- Administration

Cost Categories
Product/Service

Requirements	Customisation	Integration	Installation	Training	Support

Cost Categories
Hardware

Time Period
?

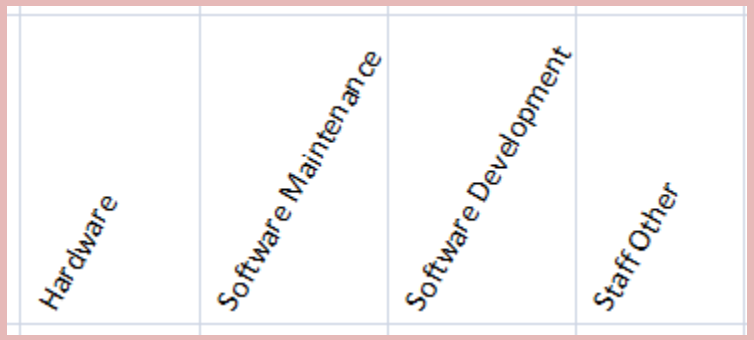
Total Cost
€349,665

4C Data Gathering Exercise
Organisation E

Curation Categories

Digital Archiving

Cost Categories



Time Period
2007

Total Cost
123,000

Time Period
2012

Total Cost
348,500

4C Data Gathering Exercise
Organisation F

Accounting Principles
Development & Improvement
Operation

Curation Categories
Long term Digital Preservation

Staff
Development, Technical Support
Training, Communications, Public Relations
Expenses
Software Design
Software Licenses
Support
External Development
Hardware Purchase
Hardware Operating costs
Graphic Design

Size of Collection
2 TB

Assumption
€8k per TB per year for Storage Costs

Time Period
2007-2012

Total Cost
€205,000

4C Data Gathering Exercise
Organisation G

Curation Categories

Digital Archiving

Content Management

Data Development
Hardware
Production
Systems Development

Delivery

User Support

Overhead

Operations
Management

Time Period
2012-13

Total Cost

€ 3,130,110

So ... What exactly are the problems we need to tackle?

- The random numbers problem - How can we meaningfully compare the numbers that we end up with? *[cost data]*
- Activity based costing versus financial accounting methods
- Describing what the organisation does *[cost metadata]*
- Describing the amount and type of data that is being looked after *[cost metadata]*
- Sensitivity around data – Many organisations are not particularly happy to broadcast what it costs them to manage their data. How can we effectively anonymise the sharing of data?
- Complexity - The detail builds up very quickly across different organisations and it doesn't map together easily
- And we somehow have to make sure that the benefits are presented alongside the costs

Discussion ...

PROGRAMME

Section 2:		
11:00 – 11:30	30 mins	Introduction to the 4C draft Cost Concept Model (Presentation)
11:30 – 12:30	1 hour	How would you break down the cost of curation? (Exercise in small groups supported by 4C team member)
12:30 – 13:30	1 hour	*Lunch*

It starts with the ....

4C Stakeholder Consultation

http://4cproject.eu/community-resources/outputs-and-deliverables/d2-1-baseline-study-of-stakeholder-stakeholder-initiatives

Which informs the ...

D3.1—Evaluation of Cost Models and Needs & Gaps Analysis (MS12 Draft)

Deliverable Lead:	Det Kongelige Bibliotek (KBDK)
Related Work package:	WP3—Assessment
Author(s):	Ulla Bøgvad Kejser (KBDK) Kathrine Hougaard Edsen Johansen (DNA) Alex Thirifays (DNA) Anders Bo Nielsen (DNA) David Wang (SBA) Stephan Strodl (SBA) Tomasz Miksa (SBA) Joy Davidson (HATII-DCC) Patrick McCann (HATII-DCC) Jaan Krupp (NLE)
Dissemination level:	Public

URL ...

Which will be further elucidated, enhanced and expanded with the ...

The 4C Cost Concept Model

... & Gateway Requirement Specification

The goal of this task is not to create a single unified functional implementable cost modelling application; rather it is to design a common model based on common concepts and a generic specification (a gateway specification) that can be used in follow-up R&D projects. [*4C Description of Work*]

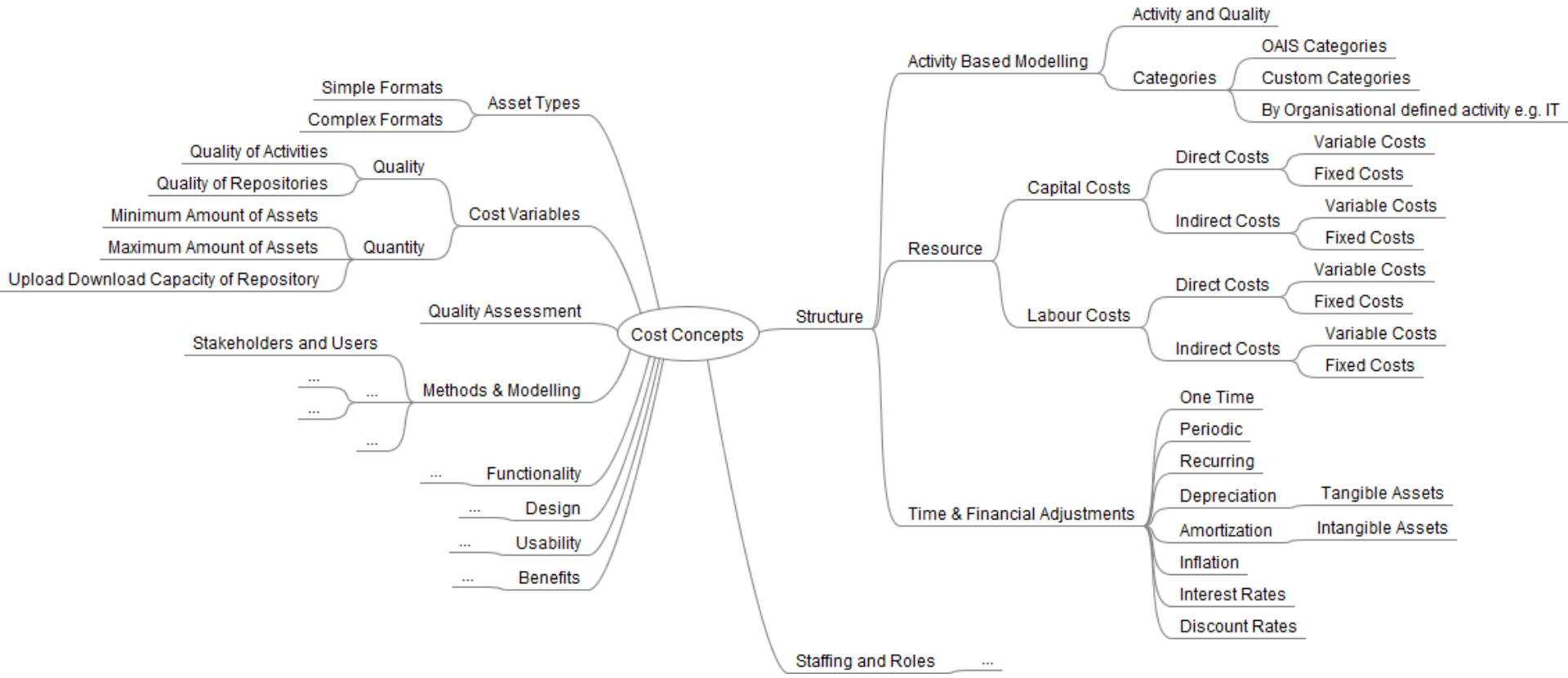
Digital Preservation Cost Modelling: Where did it all go wrong?

By paul on 29 June 2012 - 2:08pm

I recently spoke at a workshop on digital preservation costing organised by the lovely people at Knowledge Exchange and Nordbib. After briefly covering some of the work I was previously involved in as part of the LIFE Projects, I talked about why I think that

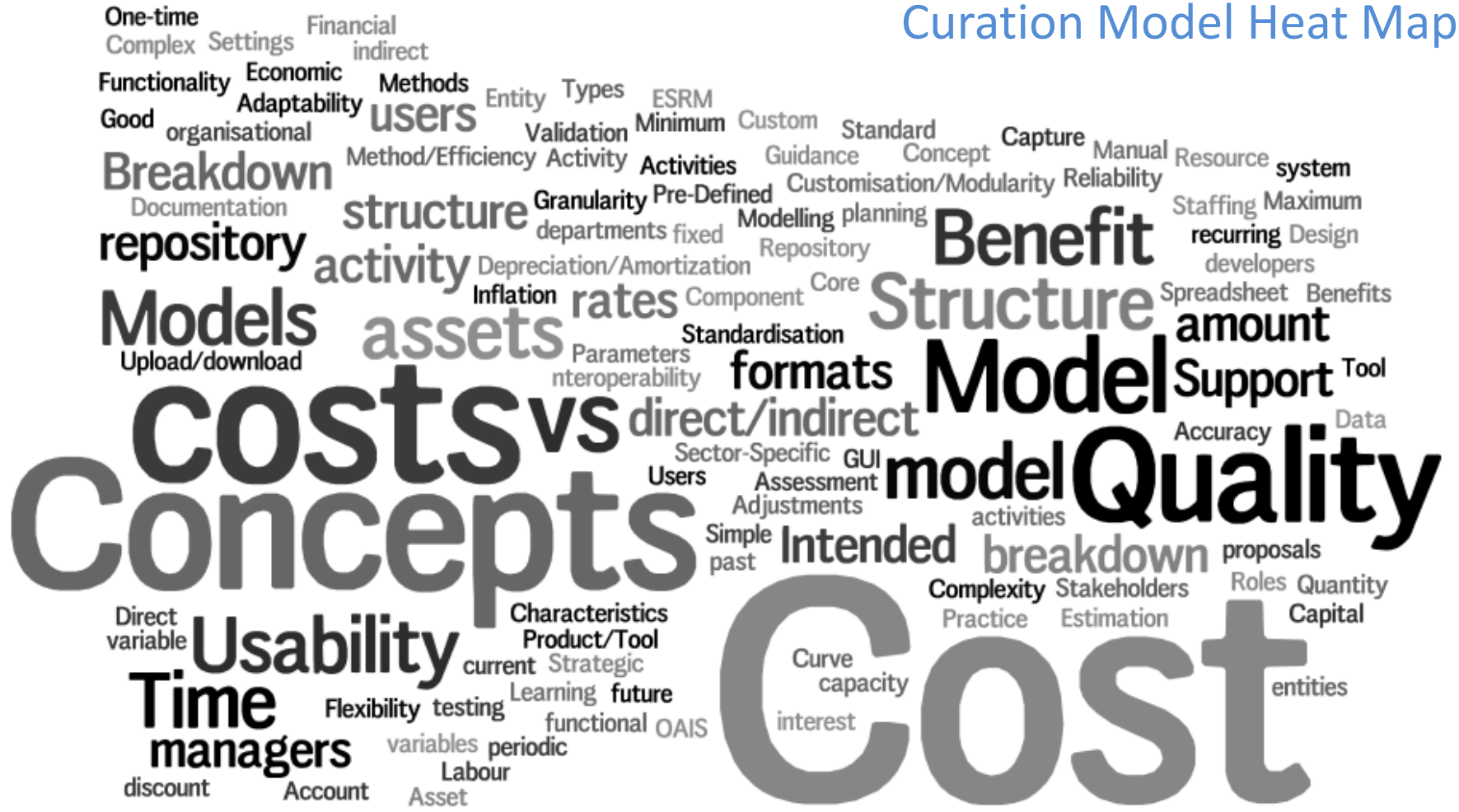
http://openplanetsfoundation.org/blogs/2012-06-29-digital-preservation-cost-modelling-where-did-it-all-go-wrong

We will create a Cost Concept Model (CCM) but we don't know what it looks like at the moment ... The Gateway Requirement Specification(GRS) will contain the detail – the CCM will need to be more schematic / accessible ...



Model type	T-CMDP	NASA-CET	LIFE3	KRDS	CMDA	CMDP	DP4lib	PP-CMDS	CDL-TPC	EMLTS

Curation Model Heat Map



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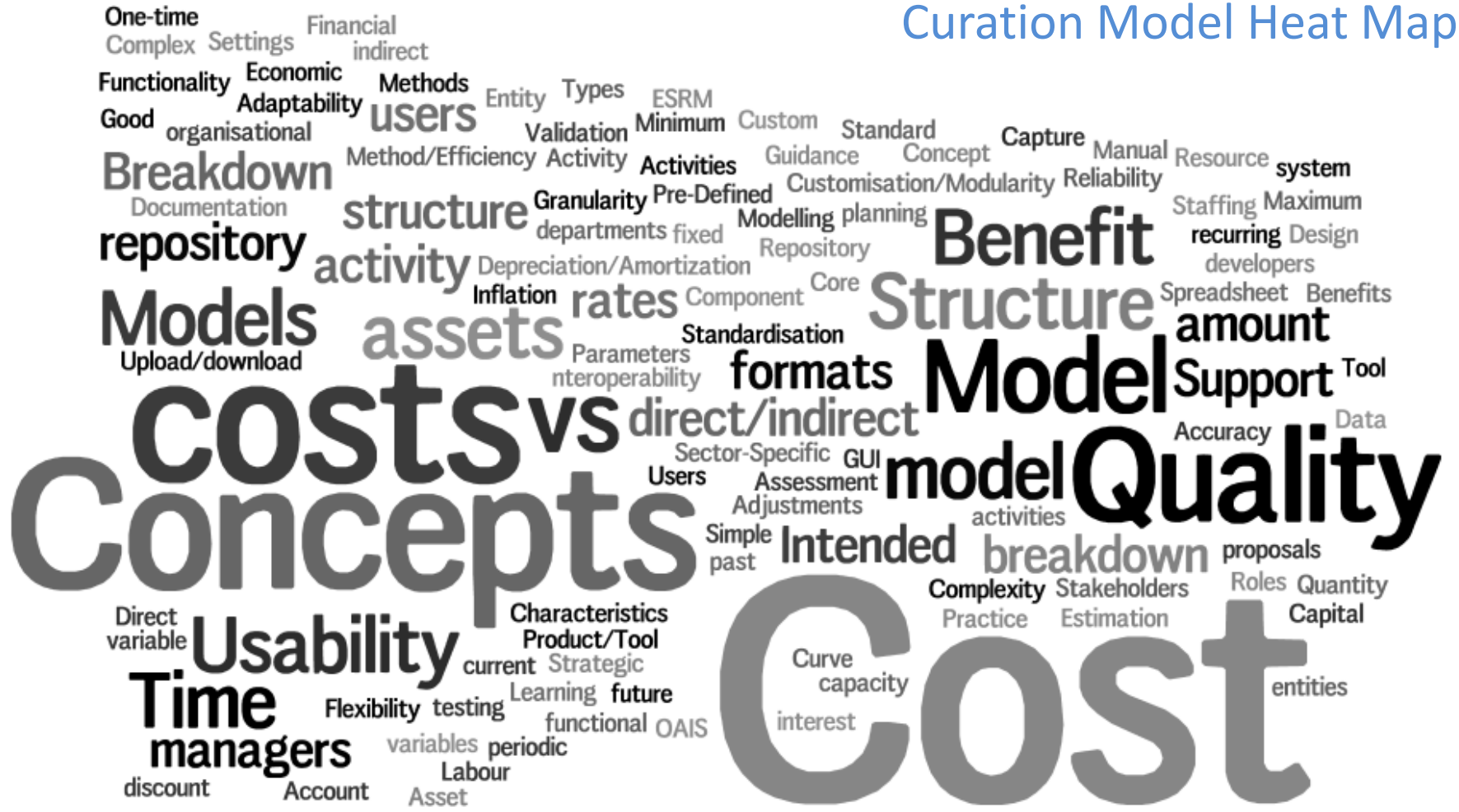
Curation Model Heat Map



Only 15% of people in the stakeholder consultation indicated that they had tried to use a cost model

What can be done to ensure that models are developed in line with users' needs?

15 drivers for development are listed in the Needs & Gaps report along with 11 recommendations

Draft good practice proposals for model developers from GRS/CCM Framework:

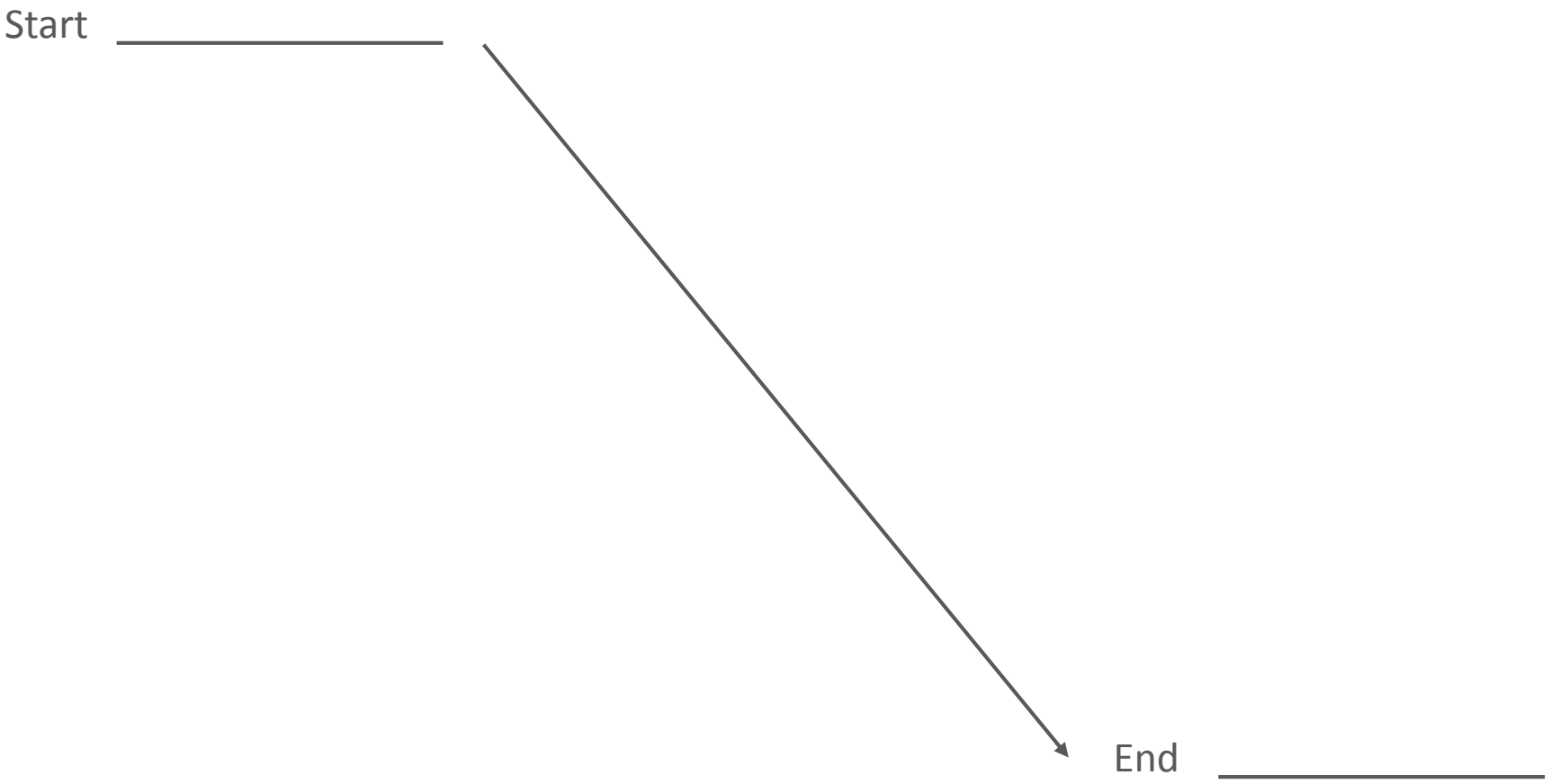
1. Use a standardised definition of digital curation
2. Limit the purpose of the model and define clearly the expected users of the model and its scaling capacity
3. Start out and continue to prioritise simplicity; be explicit about limitations on accuracy
4. Limit the time scope
5. Use simple formulae
6. Implement the model in a simple and widespread tool

So the CCM and GRS should help in various ways ...

- It builds on and raises awareness of the 4C stakeholder engagement and Needs & Gaps work
- It provides a detailed analytical foundation for the Curation Costs Exchange approach
- It will be a one-stop shop for thinking about the components of cost models
- It will enable comparisons of various existing cost models
- It will help people to design their own modelling approaches
- It will help to build consensus around definitions and terminology
- It will be an accommodating structure to showcase and raise awareness of future cost modelling work
- It will feed into the 4C Roadmap work which will recommend future activity in relation to further clarifying the economics of curation

Exercise

A journey that you are familiar with ...



Exercise

A journey that you are familiar with ...

What strikes you about your journey?

Start _____

1 _____

2 _____

3 _____

4 _____

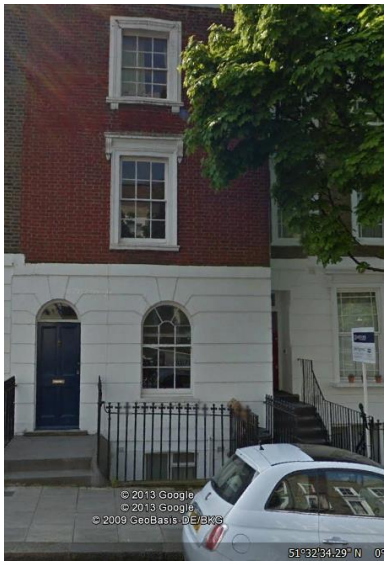
5 _____

End _____

Exercise 1

A journey that you are familiar with ...

Start HOME



End GYMNASIUM

Exercise 1

A journey that you are familiar with ...

Start HOME

1 THE CAR

2 _____

3 _____

4 _____

5 _____

End _____

Exercise 1

A journey that you are familiar with ...

Start HOME

1 THE CAR

2 THE BRIDGE

3 _____

4 _____

5 _____

End _____

Exercise 1

A journey that you are familiar with ...

Start HOME

1 THE CAR

2 THE BRIDGE

3 THE BAKERY

4 _____

5 _____

End _____

Exercise 1

A journey that you are familiar with ...

Start HOME

1 THE CAR

2 THE BRIDGE

3 THE BAKERY

4 THE TURNING

5 _____

End _____

Exercise 1

A journey that you are familiar with ...

Start HOME

1 THE CAR

2 THE BRIDGE

3 THE BAKERY

4 THE TURNING

5 THE SWIMMING POOL

End

Exercise 1

A journey that you are familiar with ...

Start HOME

1 THE CAR

2 THE BRIDGE

3 THE BAKERY

4 THE TURNING

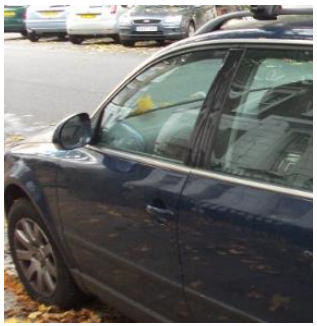
5 THE SWIMMING POOL

End THE GYMNASIUM

Exercise 2

In relation to that activity ... what are the associated cost categories?

The outfits



The car

Petrol

Parking

Gym Fees

Tea and cake

Competition Fees

Exercise 1

A journey that you are familiar with ...

What strikes you about your journey?

Start _____

1 _____

2 _____

3 _____

4 _____

5 _____

End _____

Exercise 2

In relation to your activity ... what are the associated cost categories?

Exercise 3

How might you describe the sequencing of a digital asset in your organisation?

Start _____

1 _____

2 _____

3 _____

4 _____

5 _____

End _____

Exercise 4

In relation to your digital asset ... what are the associated cost categories?

PROGRAMME

Section 3:		
13:30 – 14:15	45 mins	The CCEx and sharing costs (Presentation and Q&A)
14:15 – 15:00	45 mins	From costs to business models via risk (Presentation and Q&A)
15:00 – 15:15	15 mins	*Break*

Introduction to the Curation Costs Exchange (CCEx)

The 4C Project

- Our vision is to create a better understanding of digital curation costs through collaboration.
- Our mission is to provide useful, useable resources which support the process of cost management in digital curation.

The CCEx is one of these resources.

What is the CCEx?

- An online, virtual community platform for the exchange of curation cost information.
- Used to gather cost information from partner organisations and stakeholders
- Submission Form/Template to capture calculation processes, metrics, effort statistics, value calculations, from stakeholders in order to underpin future activity with empirical knowledge.

What is the CCEx?

CCEx will provide a means through which interested parties will be able to access information on the costs of curation, in exchange for a little information about the cost of their own digital curation activities.

http://www.digitalbevaring.dk/

How will it work?

1. Submission/Input

Submission Template will determine what information the CCEx will collect about our users:

- User type: lurker, registered user, member, partner, administrator
  - Which will enable access to different information
- Stakeholder type: funder, data collector, SME…
  - Based on various use cases
- Cost type: any/activity based/ financial reporting
- How the data is to be shared: all, nothing, anonymous

http://wiki.dpconline.org/index.php?title=SPRUCE_Digital_Preservation_Illustrations

How does it work?

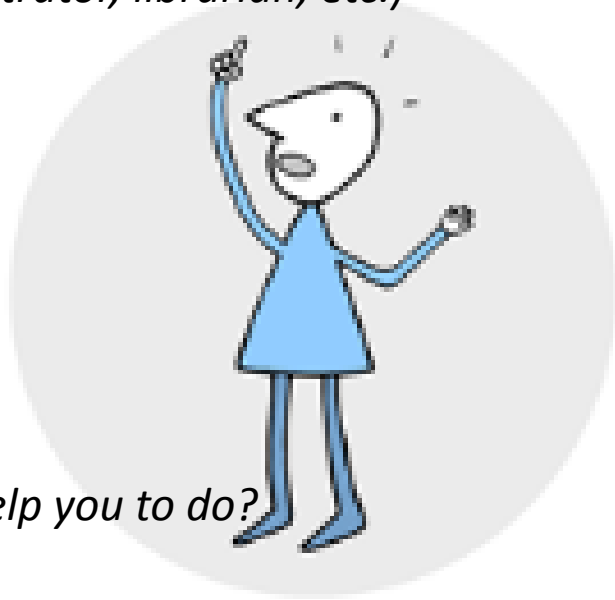
2. Output

- Cost information based on user profiles and use cases
  - Cost models and user guidance
  - User reviews
  - Related articles, blogs, fora
- Cost data
  - Normalised/aggregated cost data based on profiles and bands of similar size/type organisations and volumes of data
  - Confidential
  - Anonymous

What does CCEx mean to you?

As a …
Please indicate your professional area (researchers, administrator, librarian, etc.)

I would expect to find …
What information would you expect to see here?



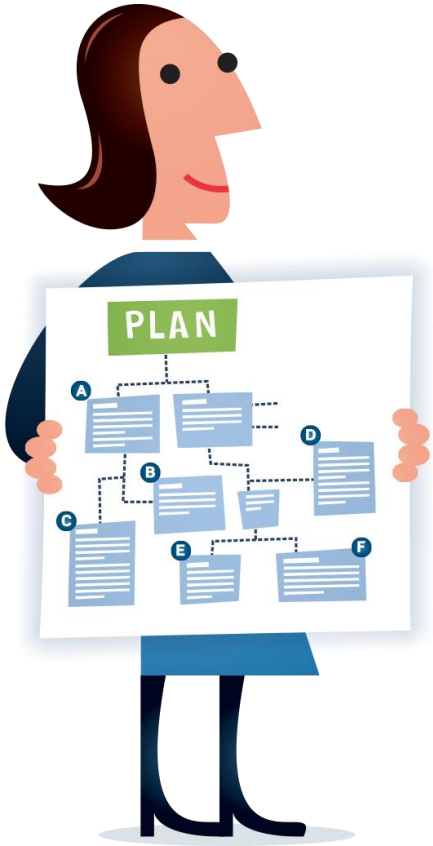
I'd like to …
What functionality would you like to see in CCEx?

So I can …
What could the information you'd aim to get out of CCEx help you to do?

I'd be prepared to share…
What data would you be willing to share with others via CCEx? Under what conditions (anonymity?)

http://wiki.dpconline.org/index.php?title=SPRUCE_Digital_Preservation_Illustrations

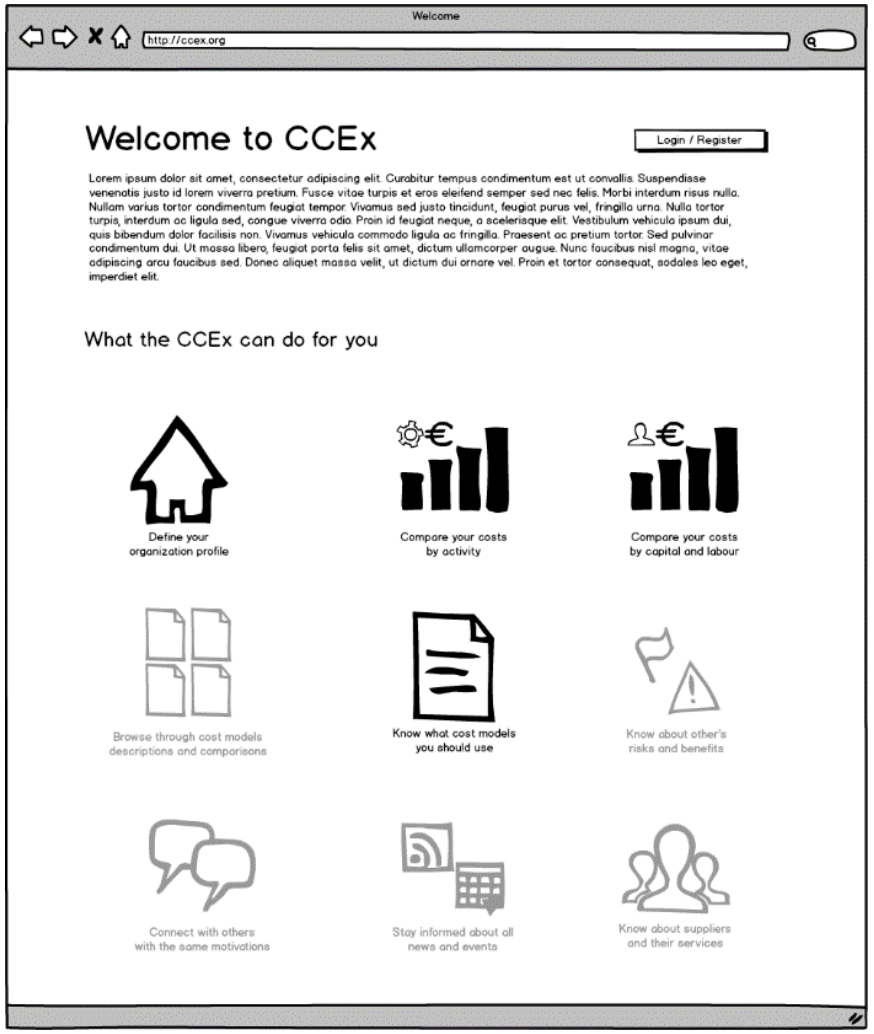
So what does it look like…at the moment?



http://www.digitalbevaring.dk/

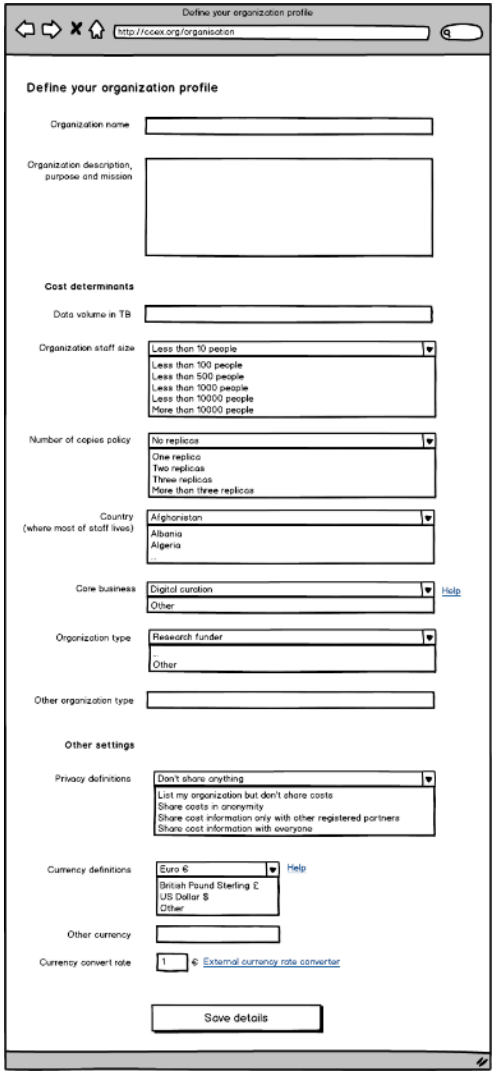
Landing page options

- Define your organisation
- Compare costs by activity
- Compare costs by capital expenditure and labour
- Browse through cost model descriptions and comparisons
- Know what cost models to use
- Learn about others' risks and benefits
- Connect with others with the same motivations
- Stay informed about news and events
- Learn about suppliers and services



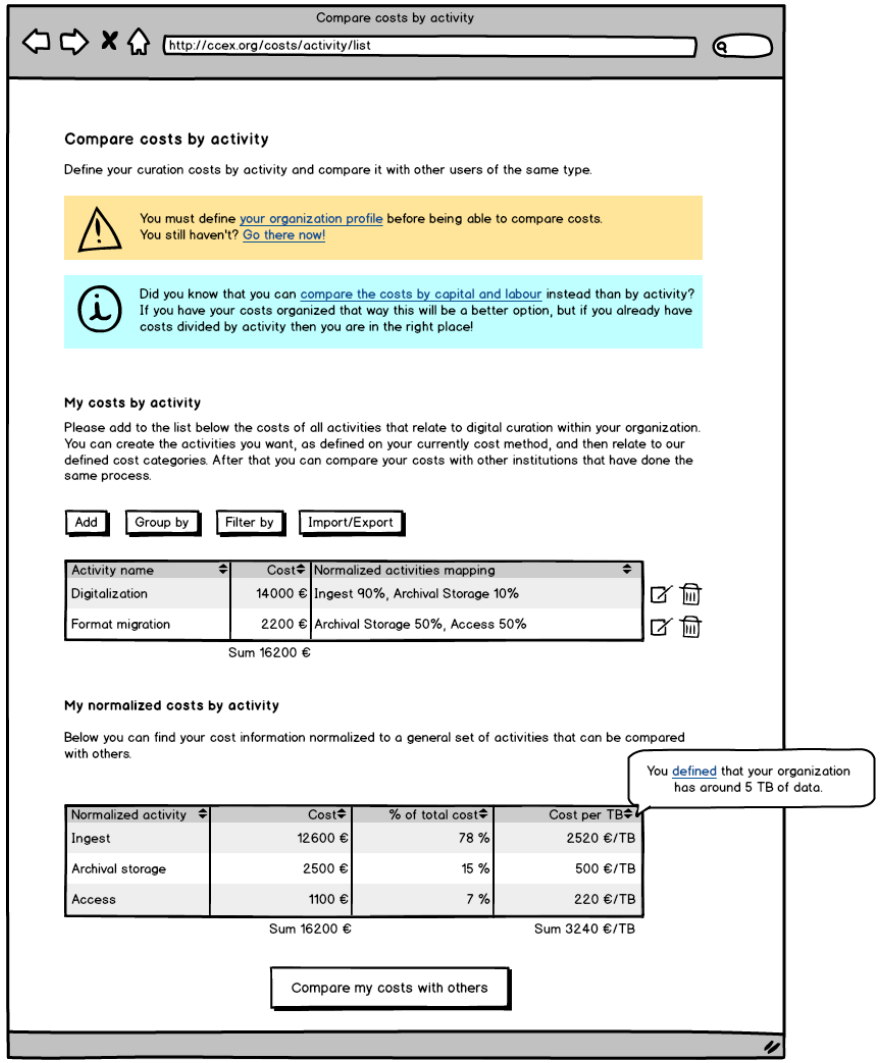
Organisation profile

- Name
- Description
- Cost determinants
  - Data volumes
  - Staff size
  - Duplicate policy
  - Country
  - Core business
  - Organisation type
- Privacy definitions
- Currency

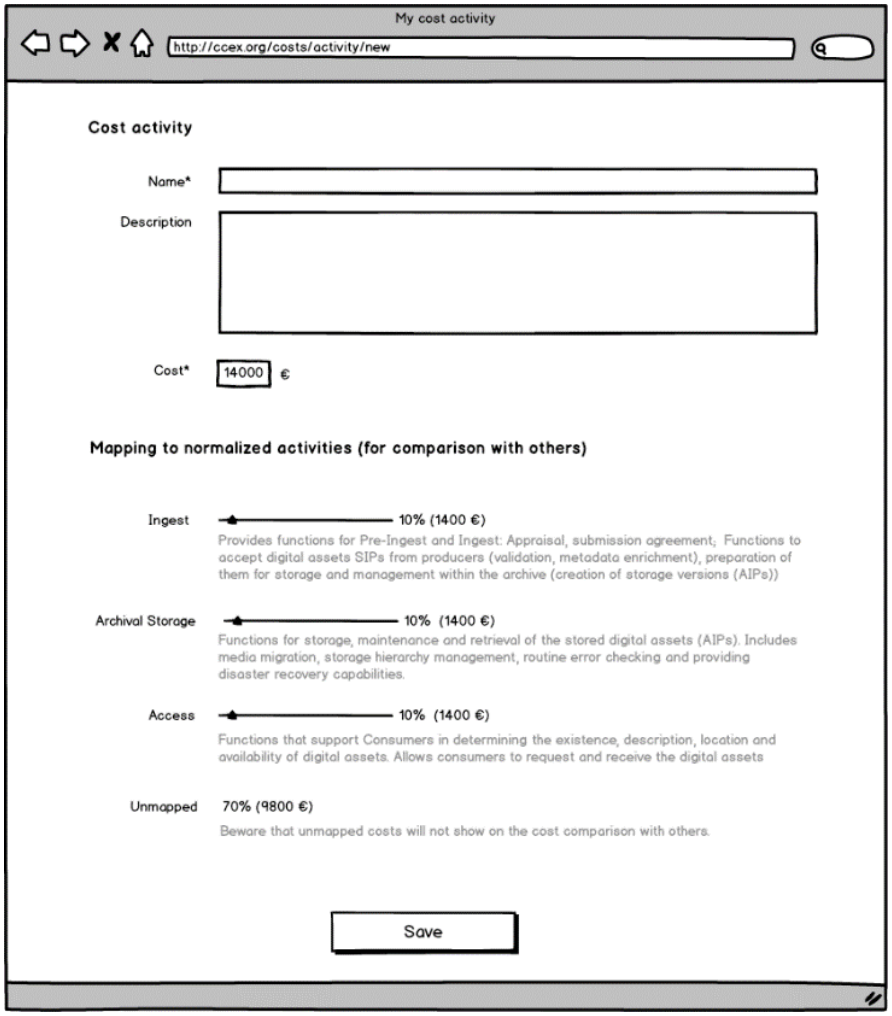


Comparison of costs by activity

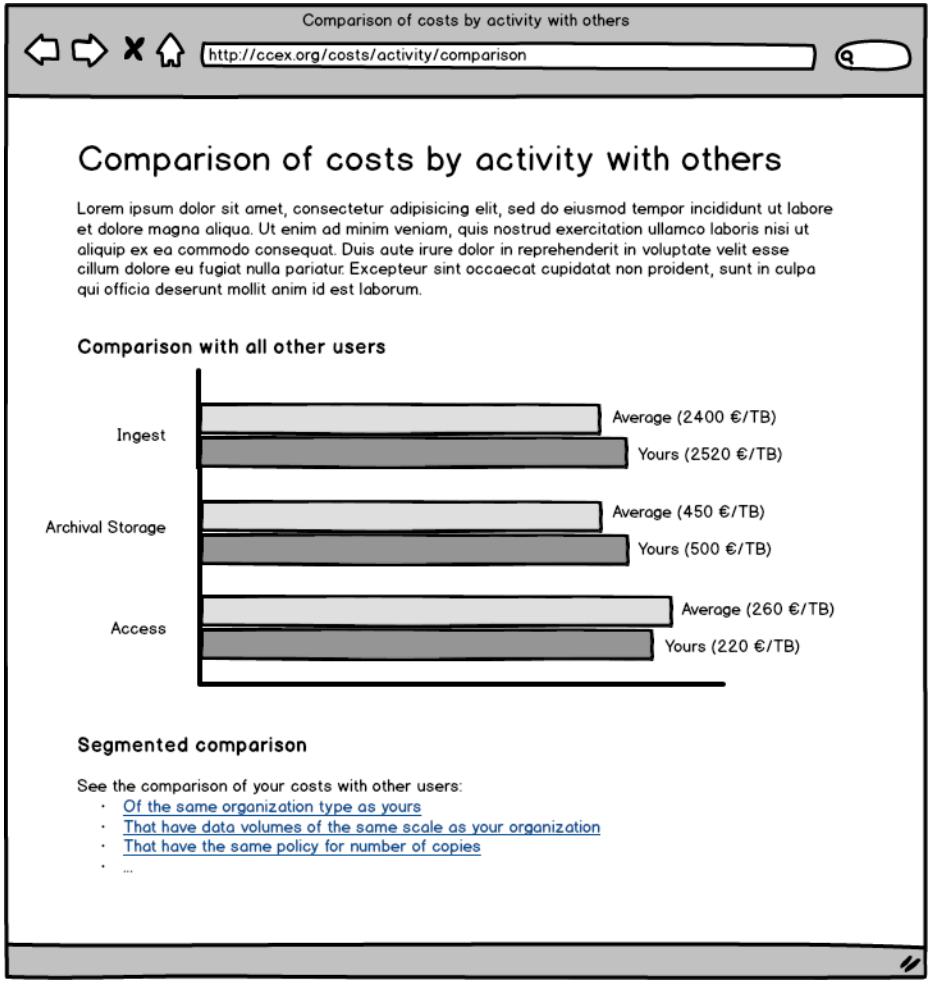
- Based on common terminology
- E.g. digitization, format migration, ingest, archival storage, access



Mapping of costs for comparison

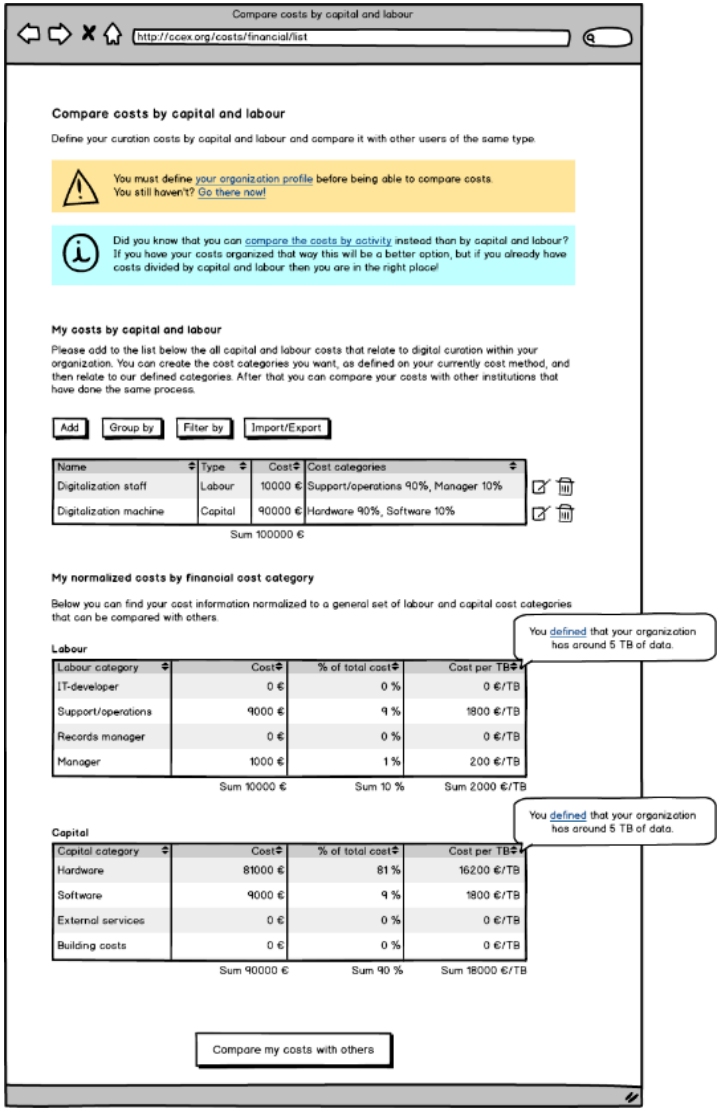


An at a glance comparison of costs broken down by activity

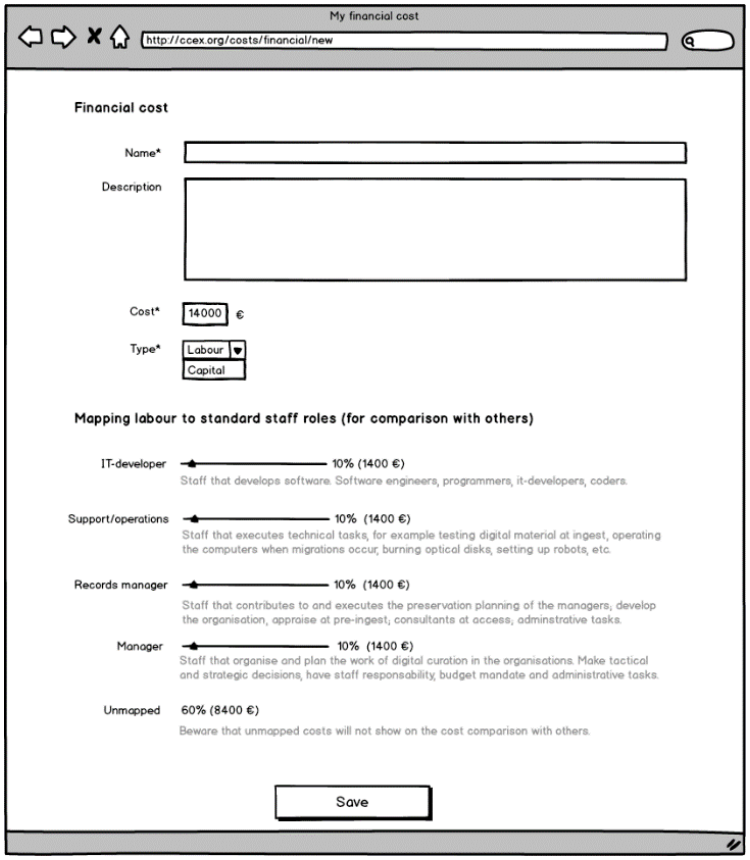


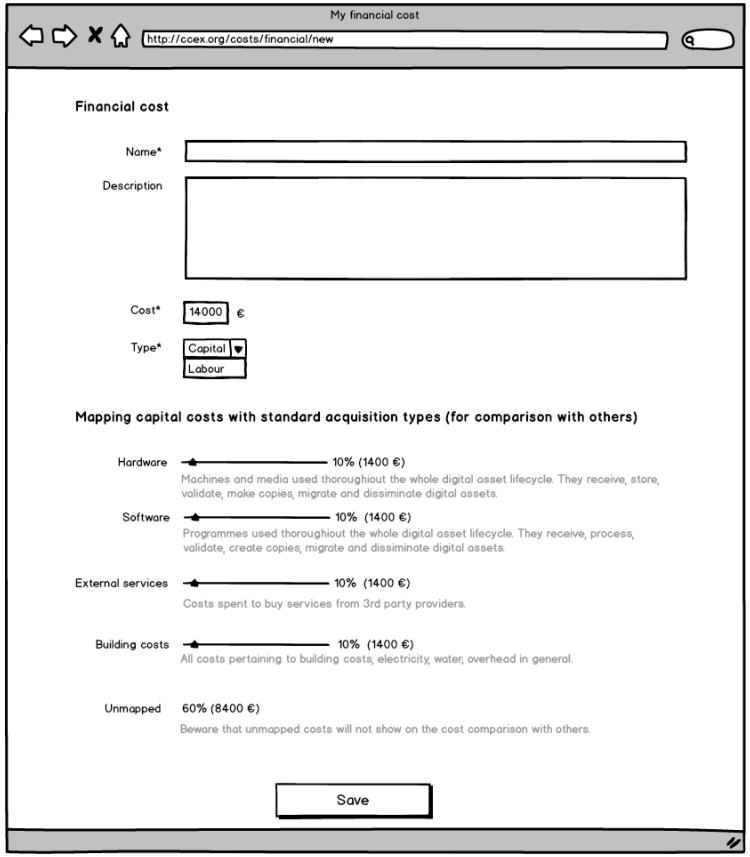
Comparison of costs broken down by capital expenditure and labour

- E.g. hardware costs, software costs, development and building costs
- E.g. IT developers, operations/support staff, records management staff, other management

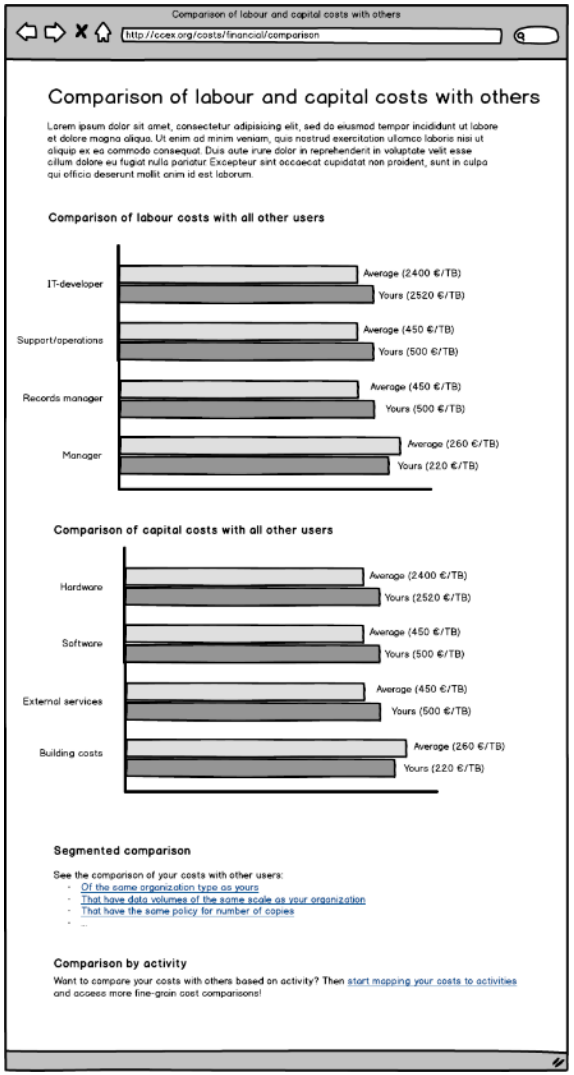


Mapping of costs for comparison



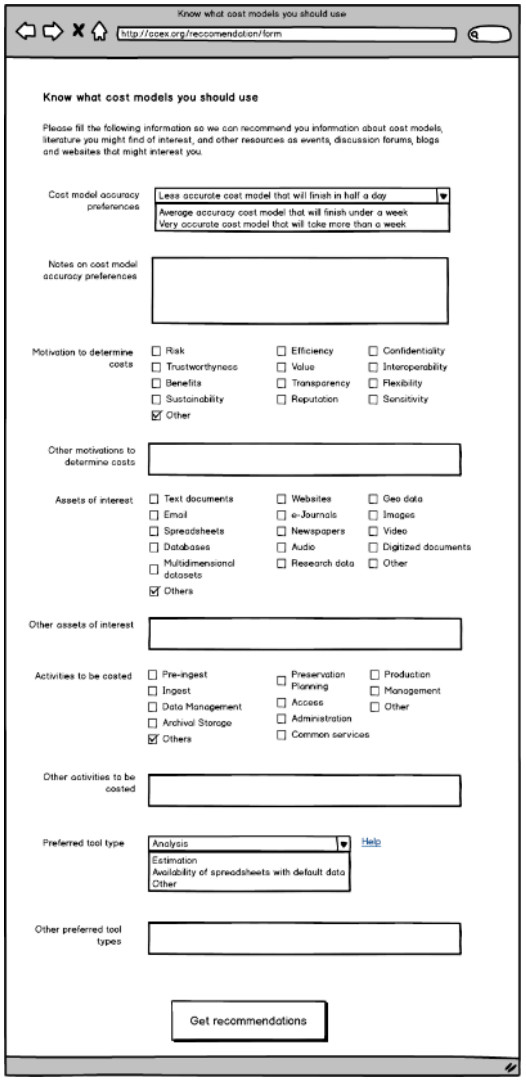


An at a glance comparison of costs broken down by expenditure and labour

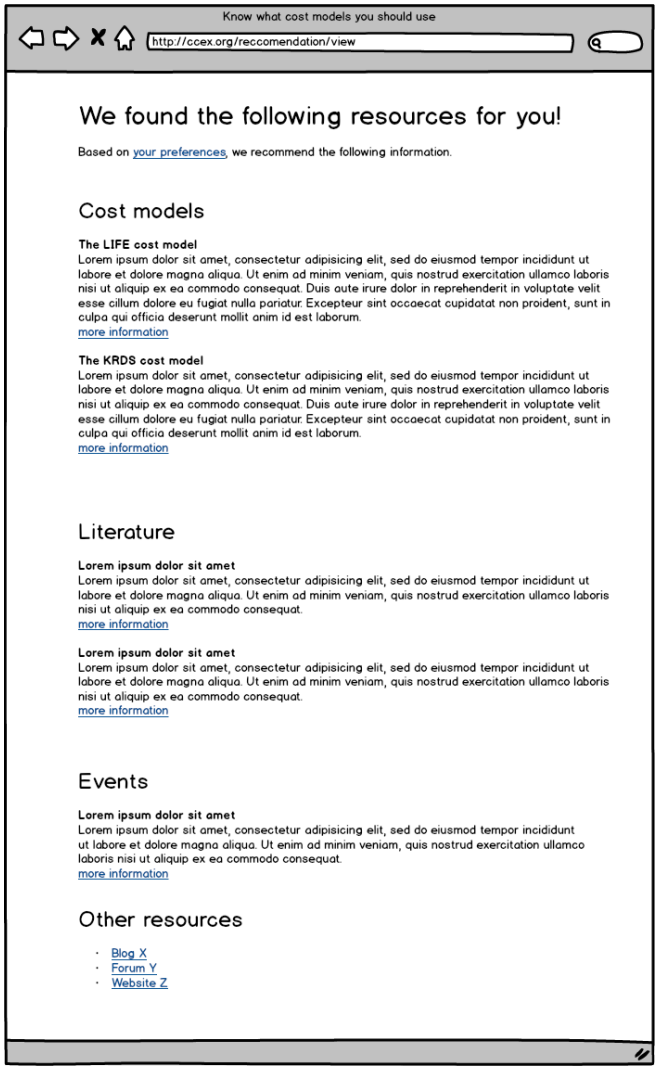


Cost model recommendations

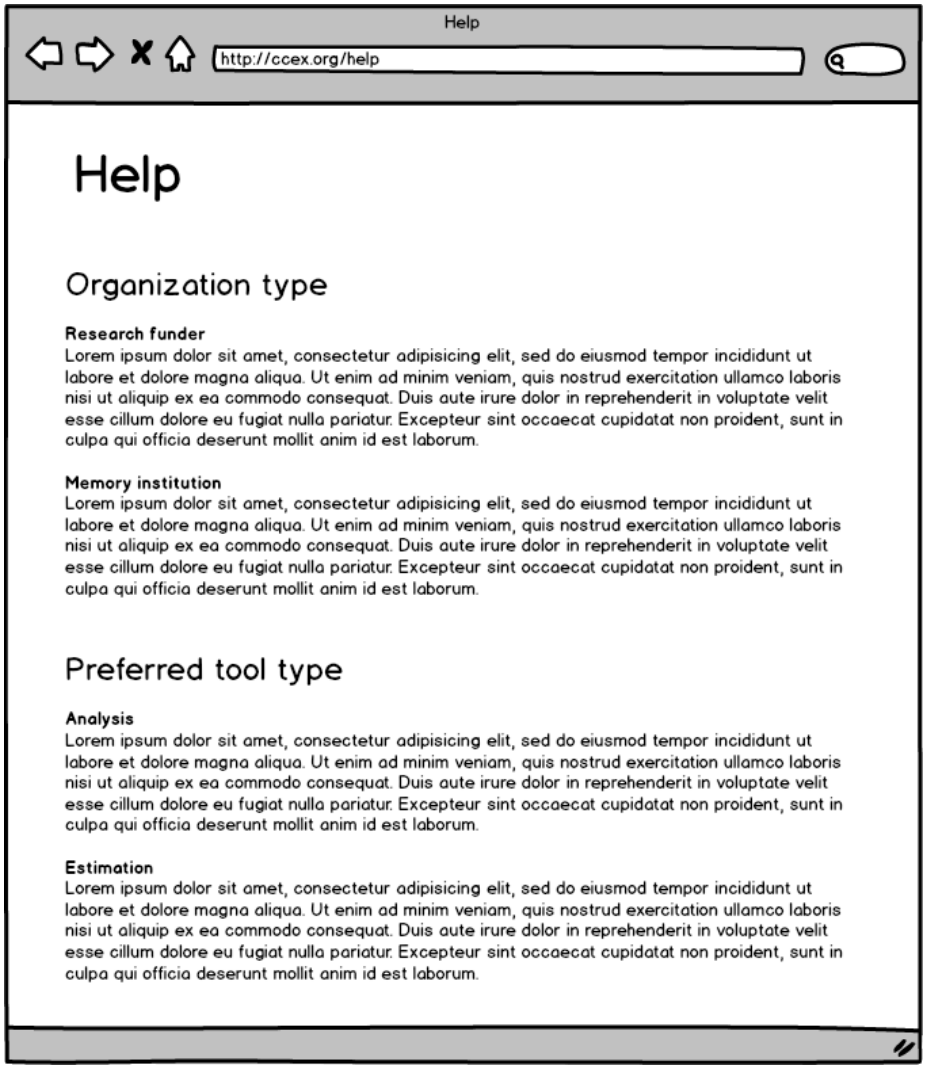
- Accuracy preferences
- Motivation to determine costs
- Assets of interest
- Activity to be costed
- Preferred tool type



Cost model recommendations



More help and suggestions



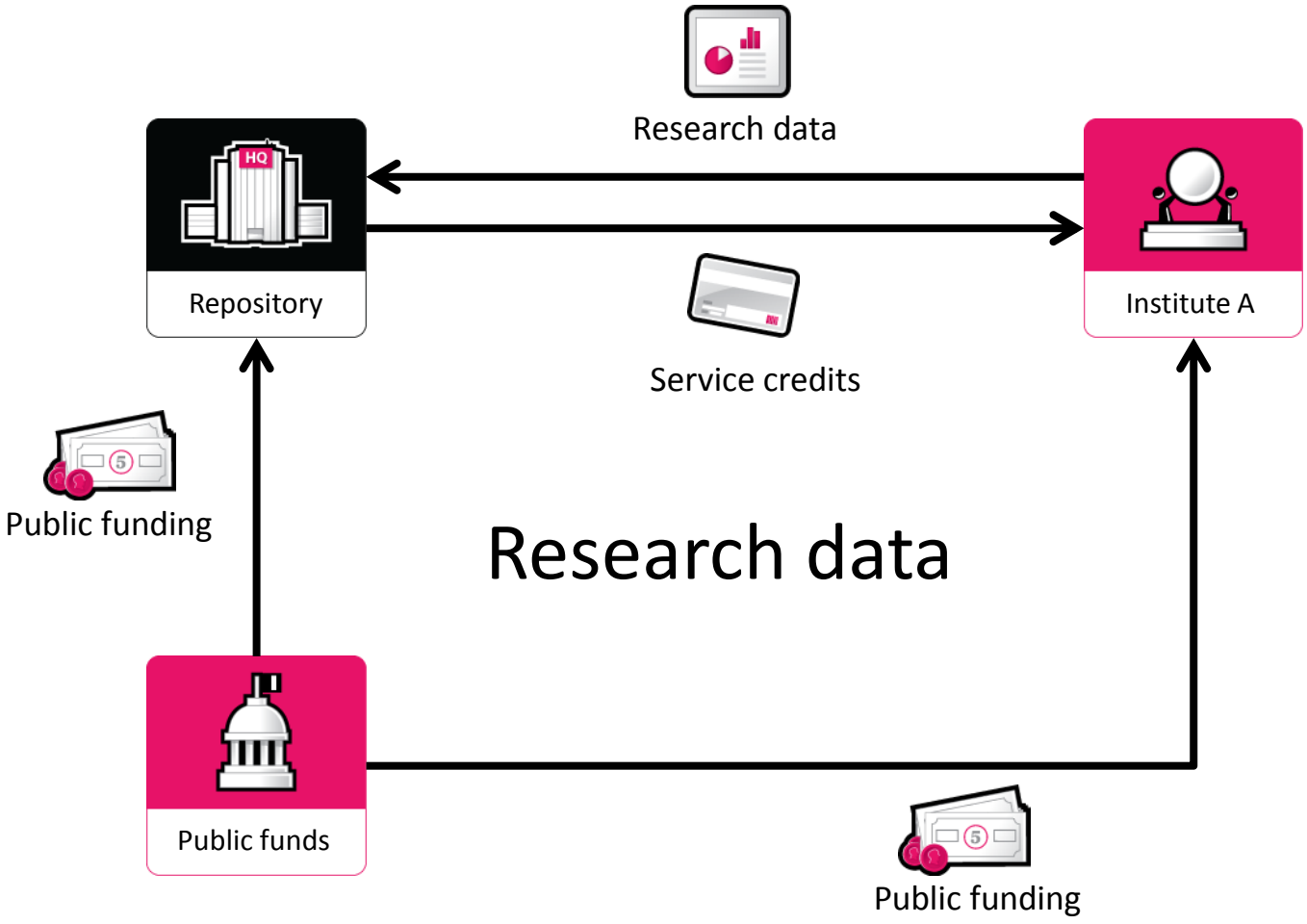
Your thoughts please…

http://wiki.dpconline.org/index.php?title=SPRUCE_Digital_Preservation_Illustrations

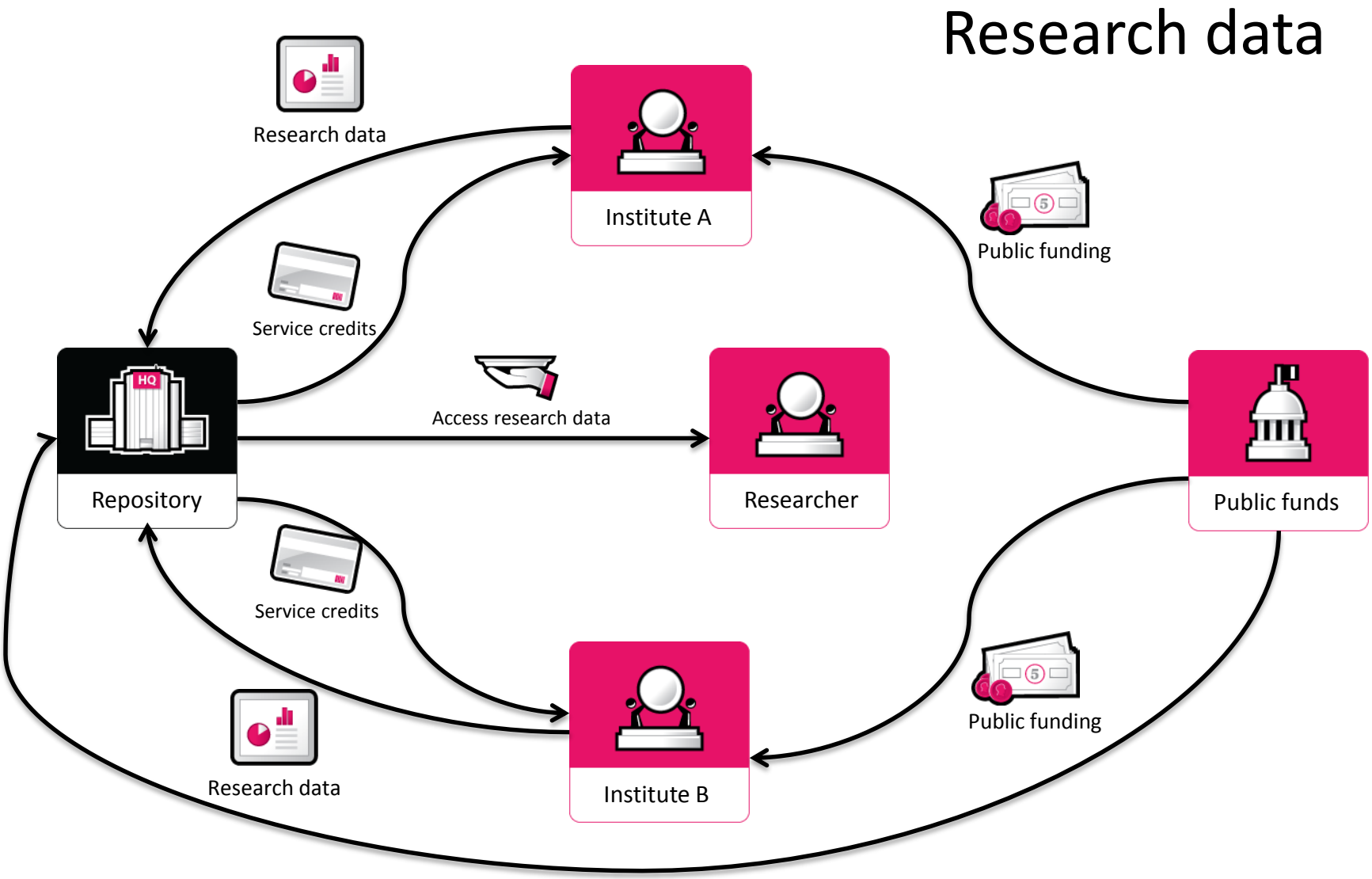
From Costs to Business Models

Many institutions would be interested in outsourcing their curation requirements if there was a viable, diverse and competitive market in which solution and service providers were operating. This task will take a look at potential business models and analyse the types of services needed, ways that these can be provided, and options for fee structures. *[4C Description of Work]*

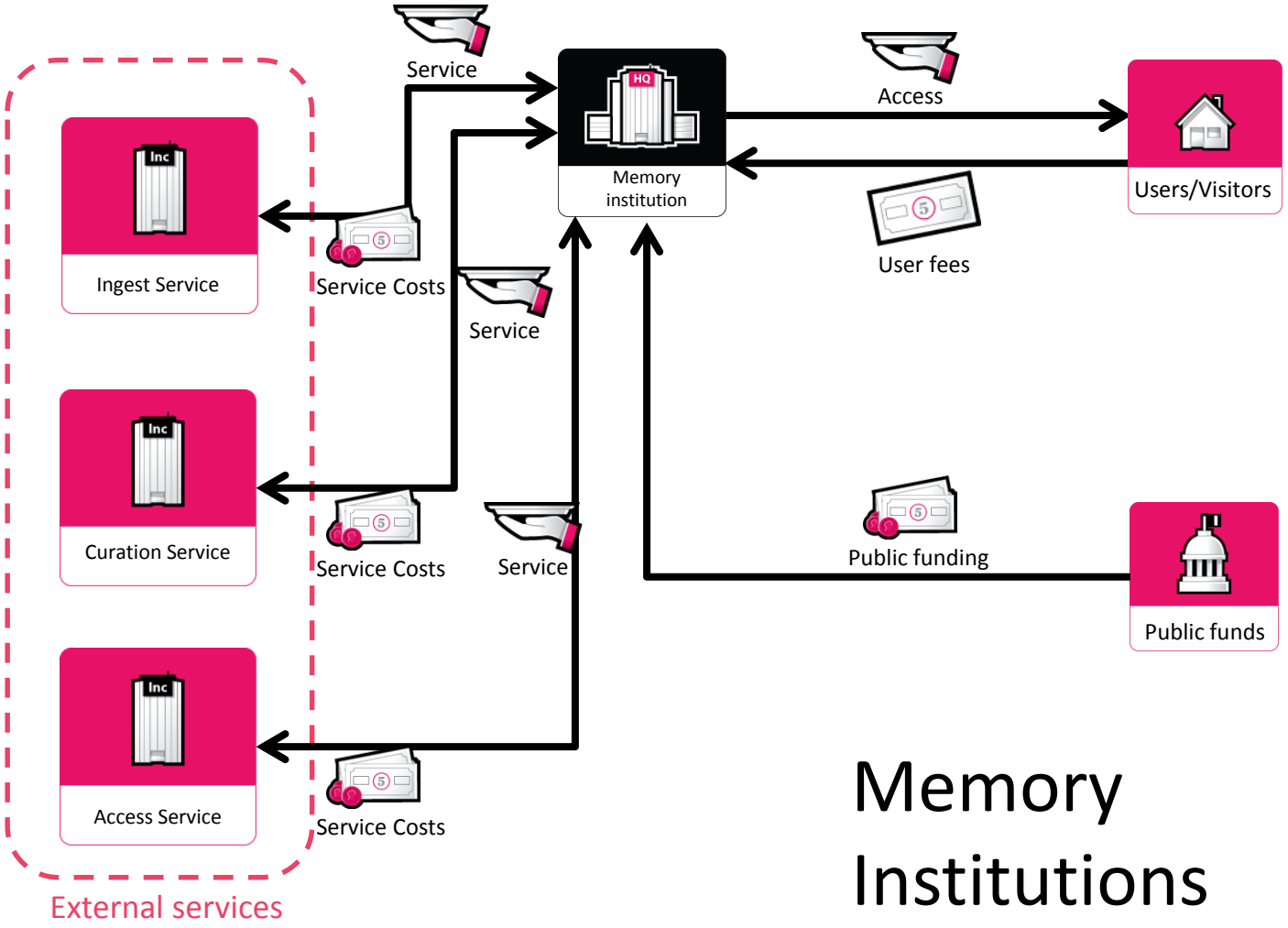
Potential Business Models ...



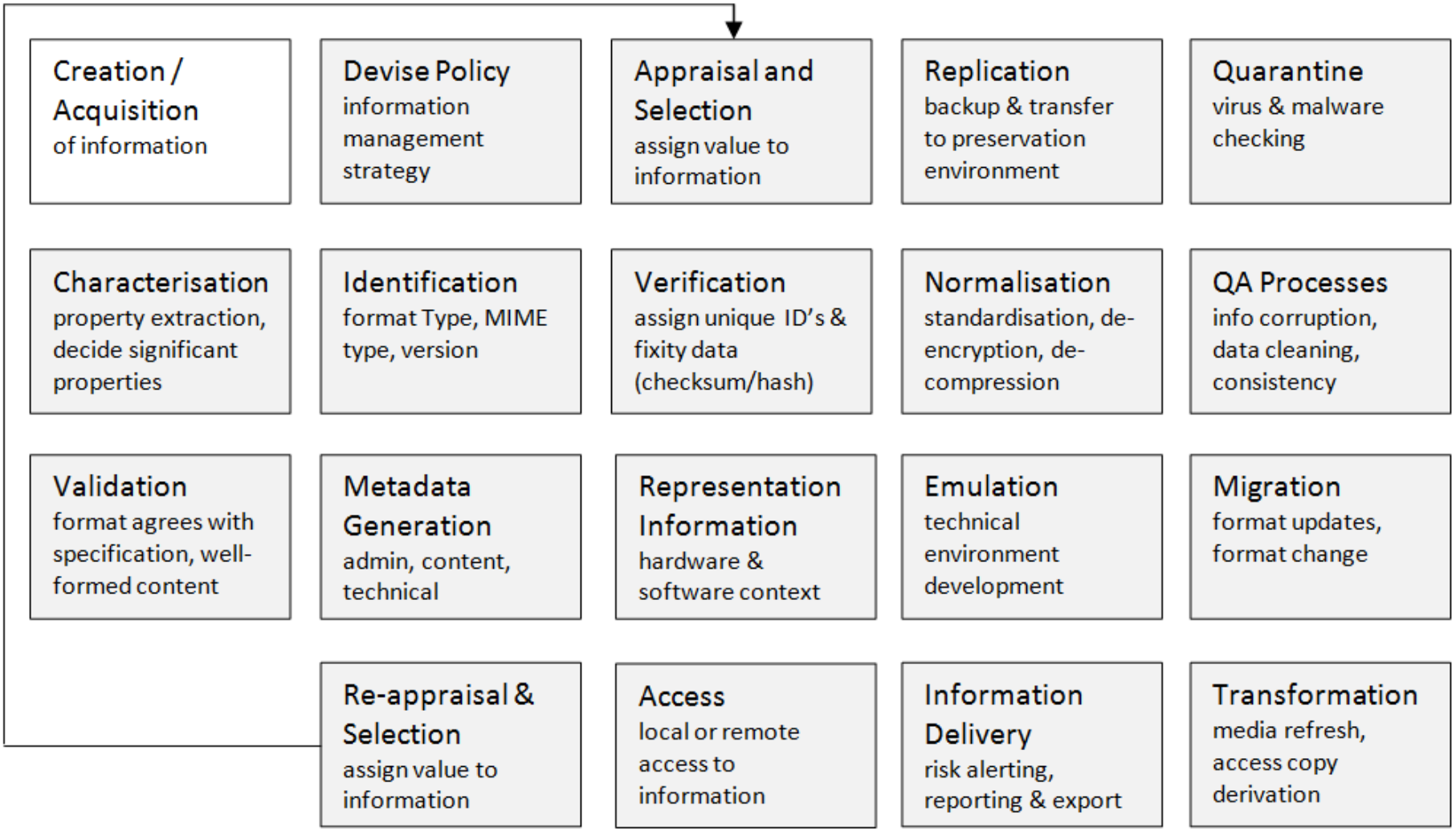
Potential Business Models ...



Potential Business Models ...



Types of Services Needed ...?

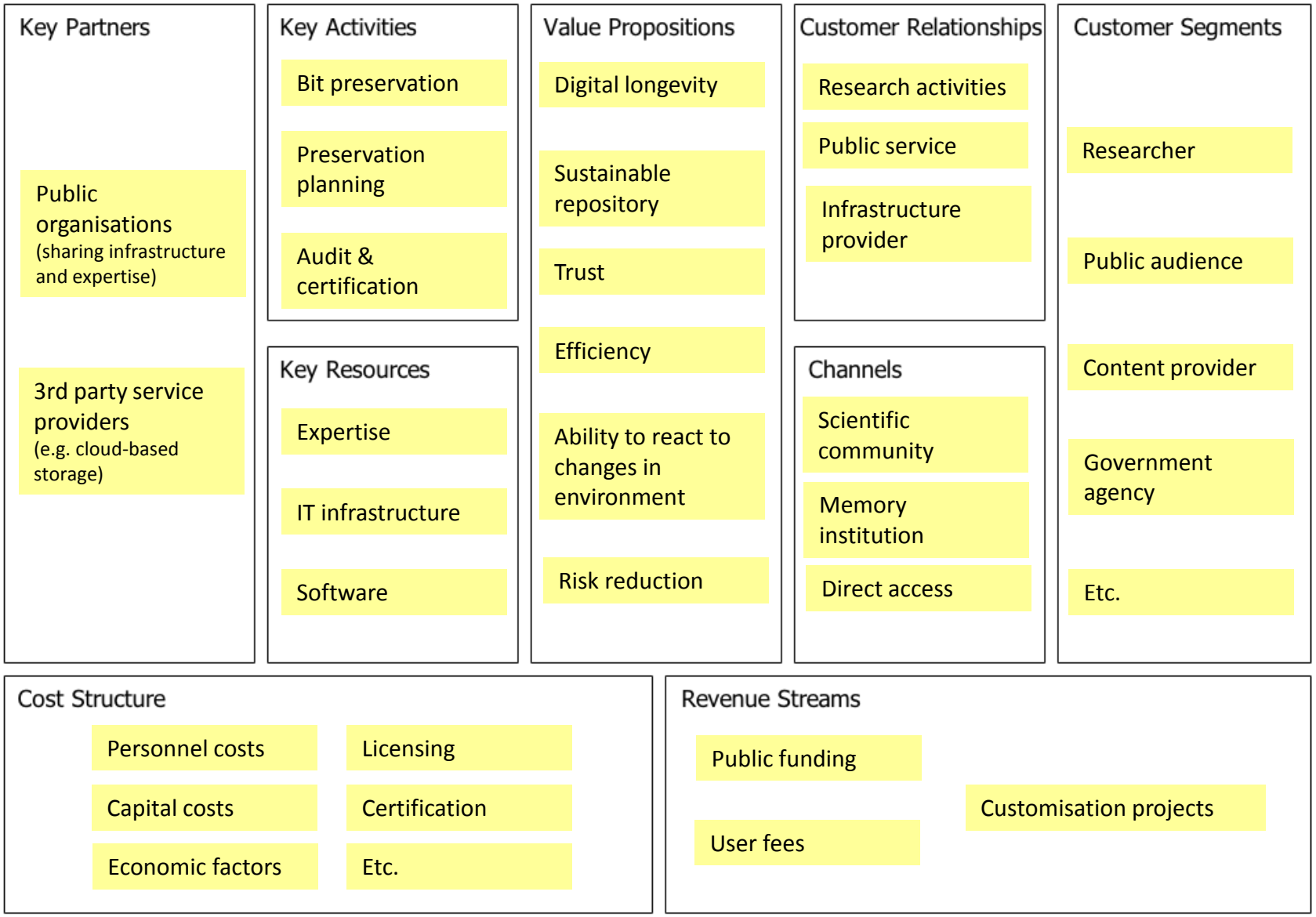


Types of Services Needed ...?

- Ingest
  - Bit level, format, content
  - Metadata extraction and conversion
- Curation
  - Bit storage (tape, disc) (off-line storage)
  - Monitoring and Q&A
  - Preservation Planning (and execution) on demand
- Access
  - Interfaces for access, search (on-line storage)

Ways that services can be provided ...?

The Business Model Canvas



Options for fee structures ...?

This work is in its early stages ...

We'd like to hear ideas about other relevant work and what would be useful to do in this space ...

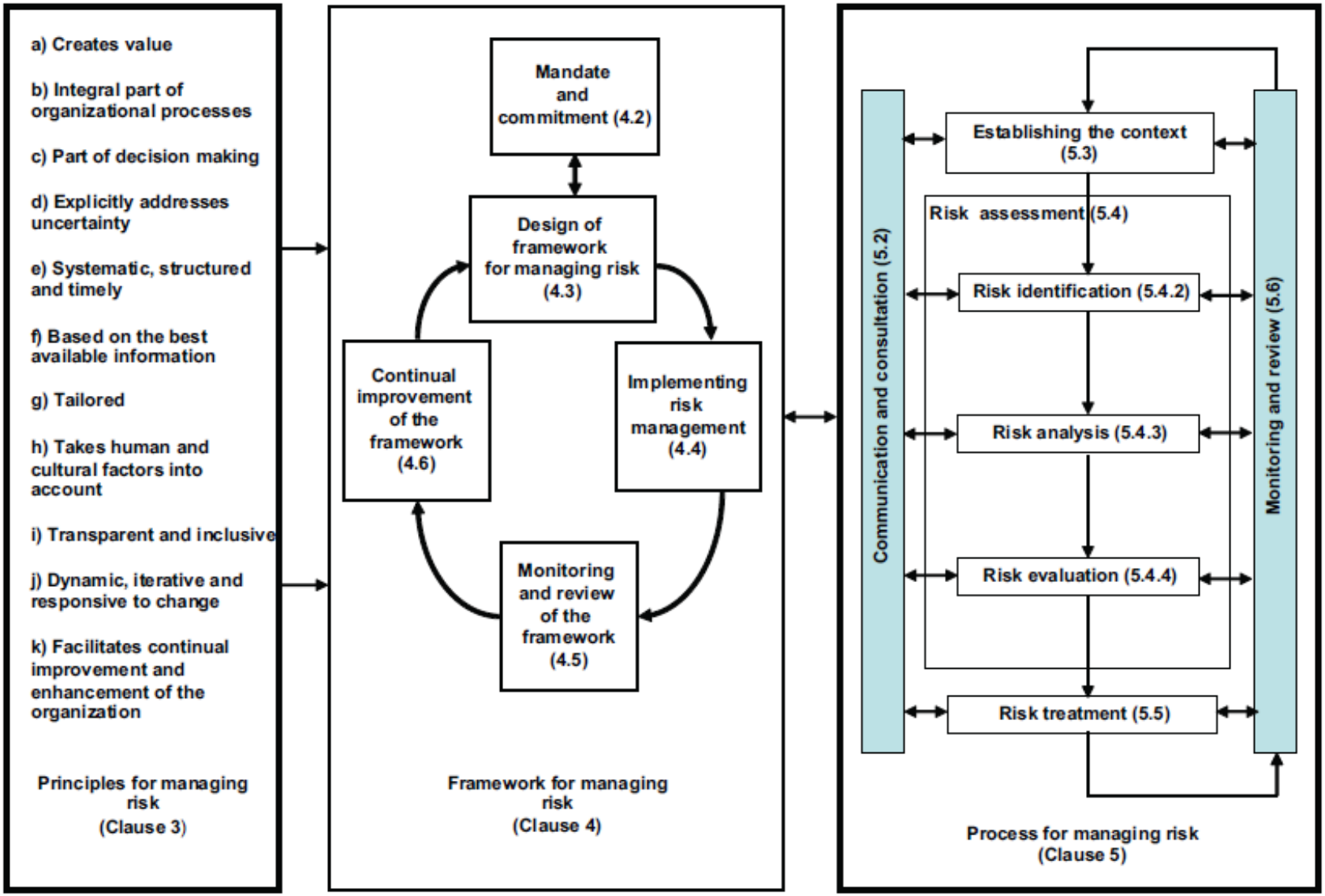
archivematica®

	Free	Basic	Premium
Installation	$0	$27,999	$44,999
free software license (AGPL3)	✓	✓	✓
installation documentation	✓	✓	✓
community forum support	✓	✓	✓
installation technician	✗	on-site plus travel expenses	on-site plus travel expenses
dedicated telephone and email support	✗	3 months plus optional annual maintenance	6 months plus optional annual maintenance
secure remote support	✗	3 months plus optional annual maintenance	6 months plus optional annual maintenance
IT department liaison	✗	✓	✓
storage and network integration	✗	✓	✓
backup procedure review	✗	✓	✓
scalability testing & optimization	✗	✓	✓
administrator and end-user training	✗	✓	✓

On the role of risk, benefit, impact and value as an economic determinant in digital curation…

ISO/FDIS 31000:2009(E) - Risk management — Principles and guidelines

Figure 1 — Relationships between the risk management principles, framework and process



Some relevant concepts with concise definitions (ISO73 and ISO31000 provide more formal definitions):

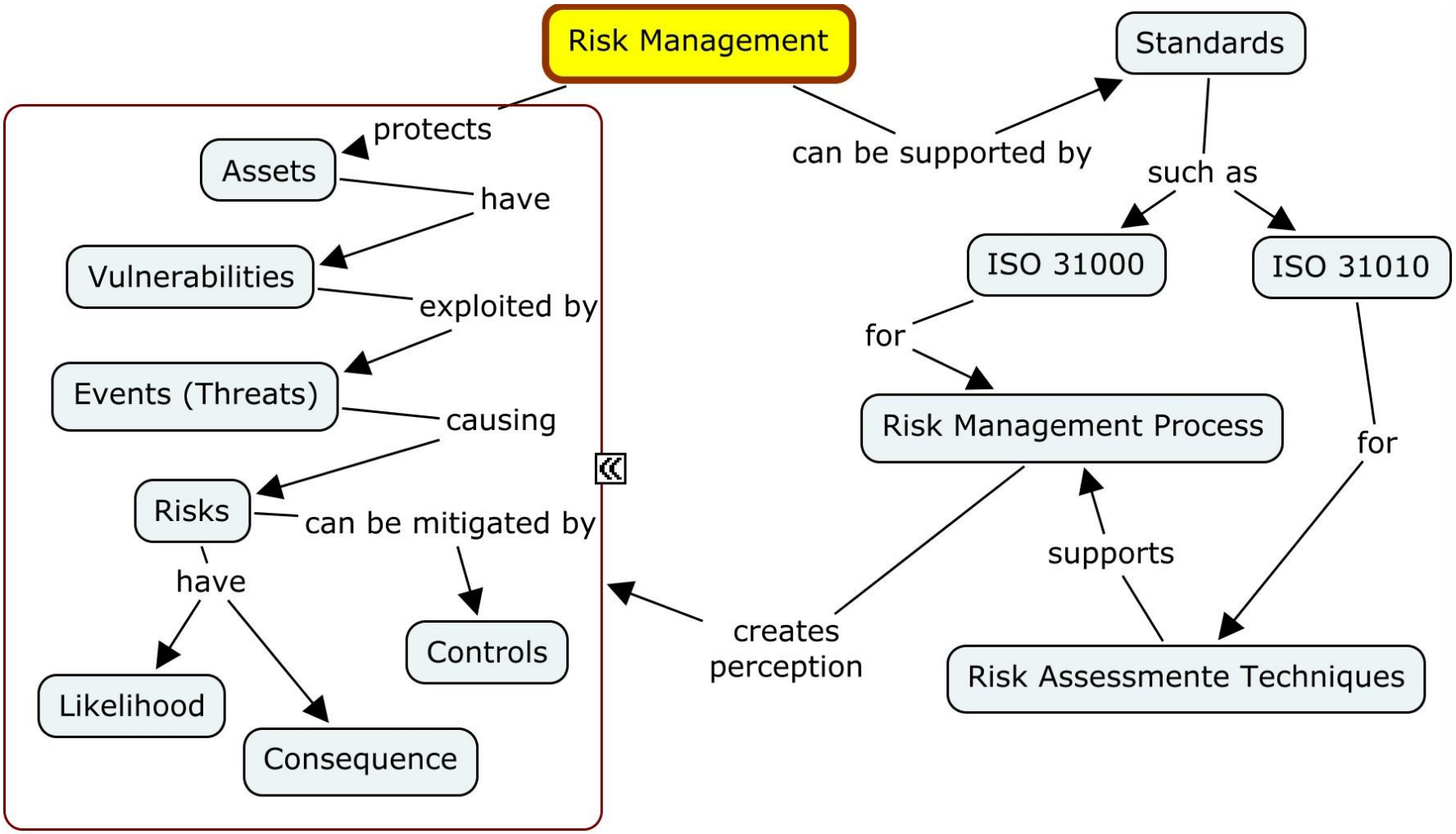
- **Event - occurrence (or not…) of a particular set of circumstances**
  - The event can be certain or **uncertain** (the probability can be estimated for a given period of time…)

- **Risk** – an objective exposed to **uncertainty**
- **Uncertainty** - lack of sufficient relevant knowledge for a particular objective

- **Vulnerability** – an **uncertainty** that could have a negative effect for a particular objective
- **Threat** – the exploitation of a vulnerability

- **Loss** – a negative effect on an objective from a threat
- **Opportunity** - an uncertainty that could have a positive effect for a particular objective
- **Gain** – a positive effect on an objective from the exploitation of an opportunity

- **Control** – measures that is modifying a risk
- **Risk Management** - The systematic process of identifying and analyzing risks and responding by **defining controls**
- **Risk register** - record of information about identified risks

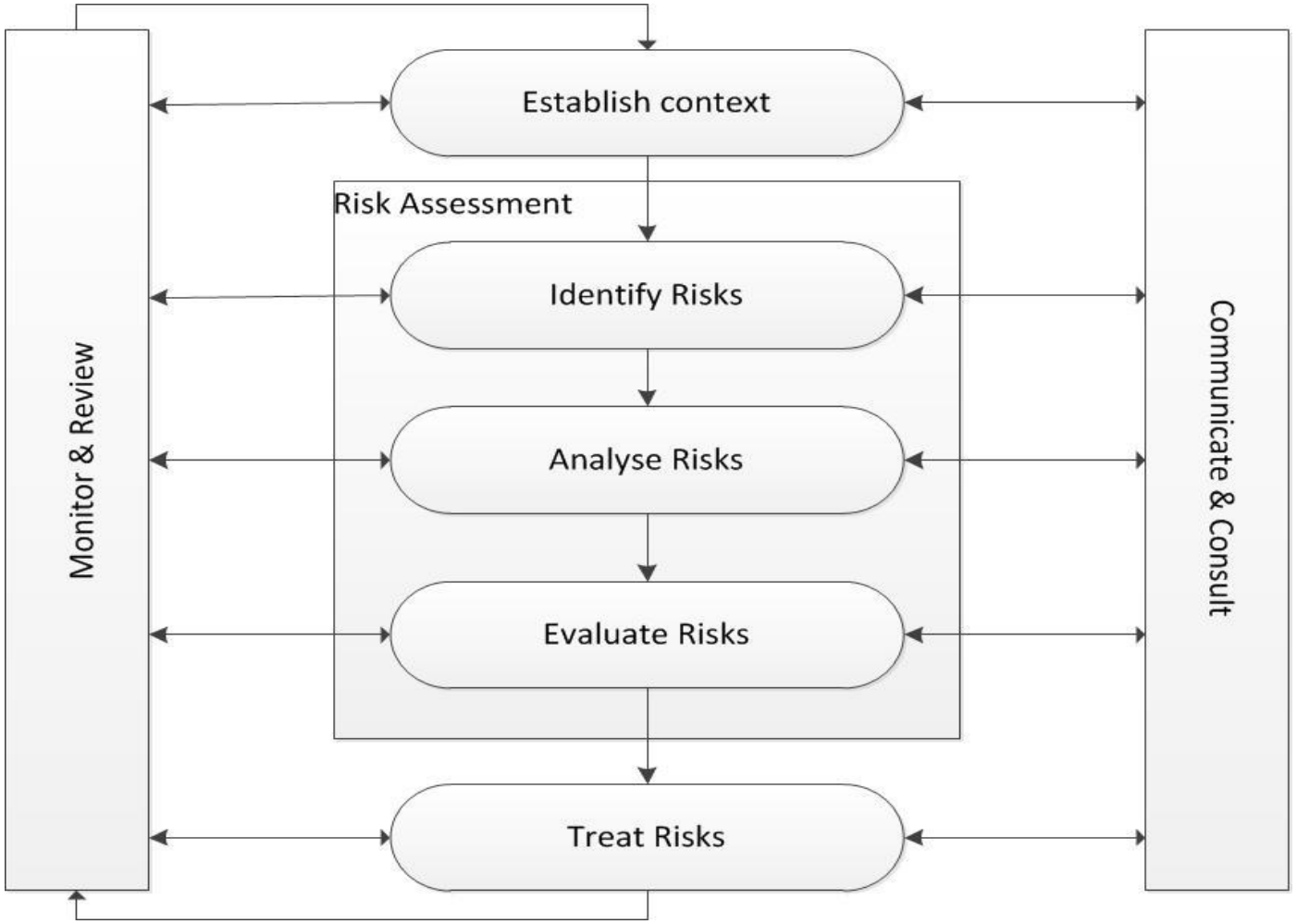

Risk Management
protects
Assets
have
Vulnerabilities
exploited by
Events (Threats)
causing
Risks
can be mitigated by
have
Likelihood
Consequence
Controls
can be supported by
Standards
such as
ISO 31000
ISO 31010
for
Risk Management Process
for
supports
creates perception
Risk Assessmente Techniques

Accordingly, we can propose that:

- **Control** – is a measure that we can put in practice to **minimize loss** (the main concern of digital preservation) or also to **maximize gain** (the maximum concern of digital curation)

- **Costs** – is what we have to give up for the **controls** !!!

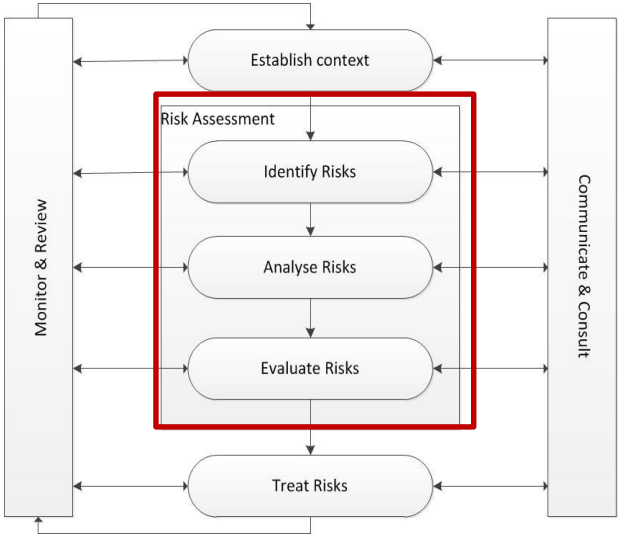
The generic Risk Management process (ISO31000)



IEC/FDIS 31010:2009(E) - Risk assessment techniques

Table A.1 – Applicability of tools used for risk assessment

1) SA - Strongly applicable.
2) NA - Applicable.
3) A - Applicable.



Tools and techniques	Risk assessment process					
	Risk identification	Risk analysis				
		Consequence	Probability	Level of risk		
Brainstorming	SA[1)]	NA[2)]	NA	NA		
Structured or semi-structured interviews	SA	NA	NA	NA	NA	B 02
Delphi	SA	NA	NA	NA	NA	B 03
Check-lists	SA	NA	NA	NA	NA	B 04
Primary hazard analysis	SA	NA	NA	NA	NA	B 05
Hazard and operability studies (HAZOP)	SA	SA	A[3)]	A	A	B 06
Hazard Analysis and Critical Control Points (HACCP)	SA	SA	NA	NA	SA	B 07
Environmental risk assessment	SA	SA	SA	SA	SA	B 08
Structure « What if? » (SWIFT)	SA	SA	SA	SA	SA	B 09
Scenario analysis	SA	SA	A	A	A	B 10
Business impact analysis	A	SA	A	A	A	B 11
Root cause analysis	NA	SA	SA	SA	SA	B 12
Failure mode effect analysis	SA	SA	SA	SA	SA	B 13
Fault tree analysis	A	NA	SA	A	A	B 14
Event tree analysis	A	SA	A	A	NA	B 15
Cause and consequence analysis	A	SA	SA	A	A	B 16
Cause-and-effect analysis	SA	SA	NA	NA	NA	B 17
Layer protection analysis (LOPA)	A	SA	A	A	NA	B 18
Decision tree	NA	SA	SA	A	A	B 19
Human reliability analysis	SA	SA	SA	SA	A	B 20
Bow tie analysis	NA	A	SA	SA	A	B 21
Reliability centred maintenance	SA	SA	SA	SA	SA	B 22
Sneak circuit analysis	A	NA	NA	NA	NA	B 23
Markov analysis	A	SA	NA	NA	NA	B 24
Monte Carlo simulation	NA	NA	NA	NA	SA	B 25
Bayesian statistics and Bayes Nets	NA	SA	NA	NA	SA	B 26
FN curves	A	SA	SA	A	SA	B 27
Risk indices	A	SA	SA	A	SA	B 28
Consequence/probability matrix	SA	SA	SA	SA	A	B 29
Cost/benefit analysis	A	SA	A	A	A	B 30
Multi-criteria decision analysis (MCDA)	A	SA	A	SA	A	B 31

IEC/FDIS 31010:2009(E) - Risk management — Risk assessment techniques

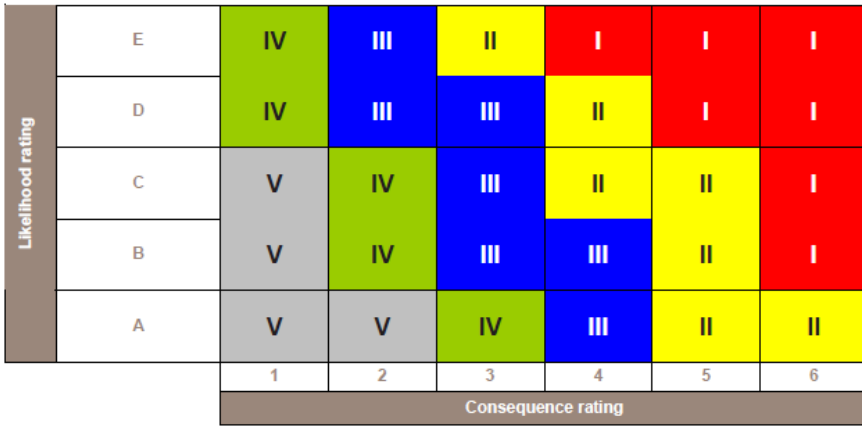


Figure B.15 – Part example of a probability criteria matrix

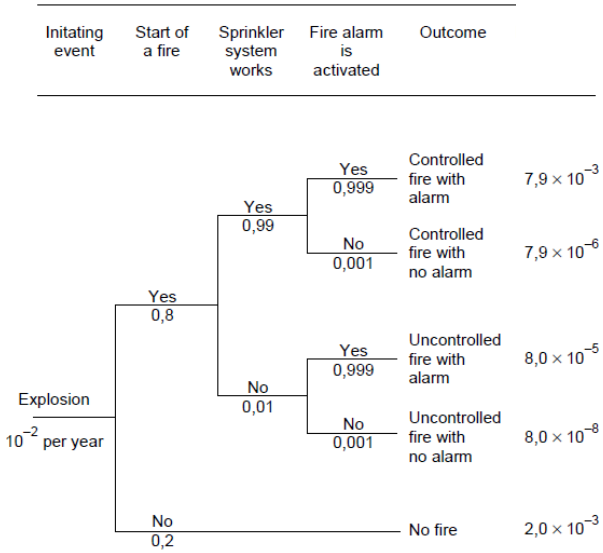


Figure B.3 – Example of an event tree

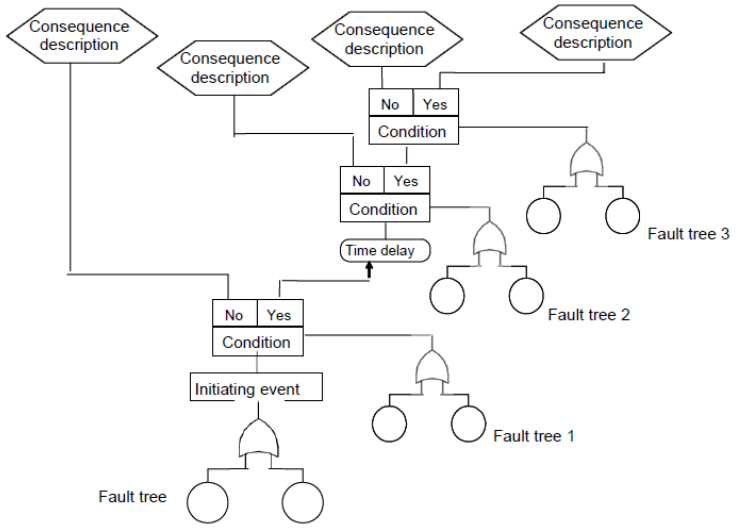
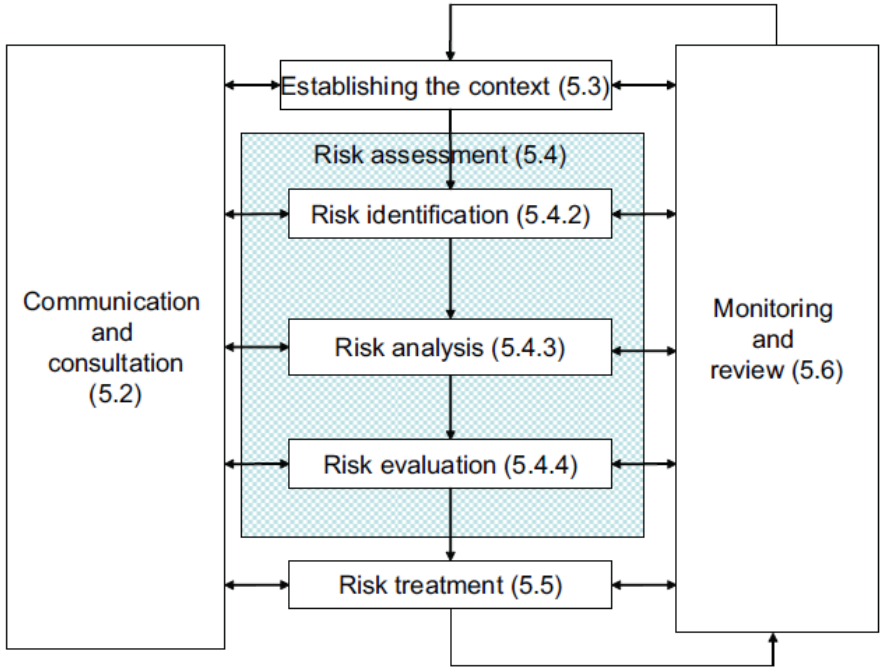


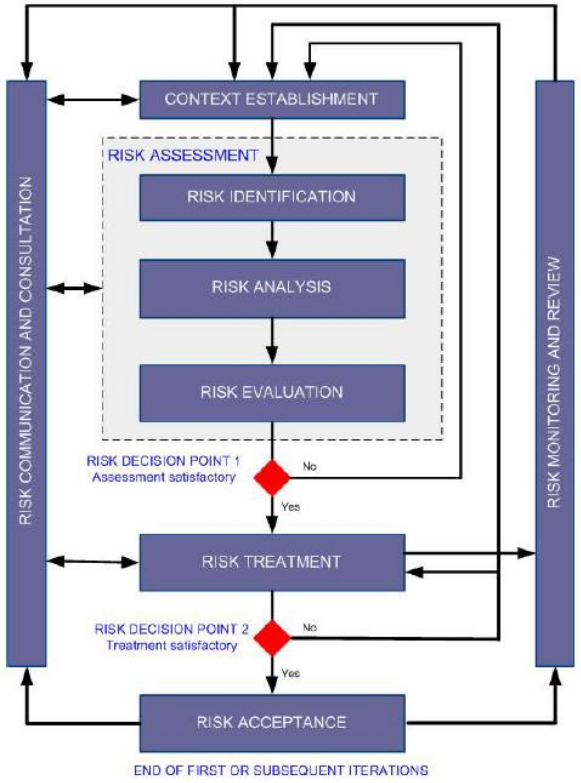
Figure B.4 – Example of cause-consequence analysis

ISO/FDIS 31000:2009(E) - Risk management — Principles and guidelines

Figure 3 — Risk management process



ISO/IEC 27005:2011(E) - Information technology — Security techniques — Information security risk management



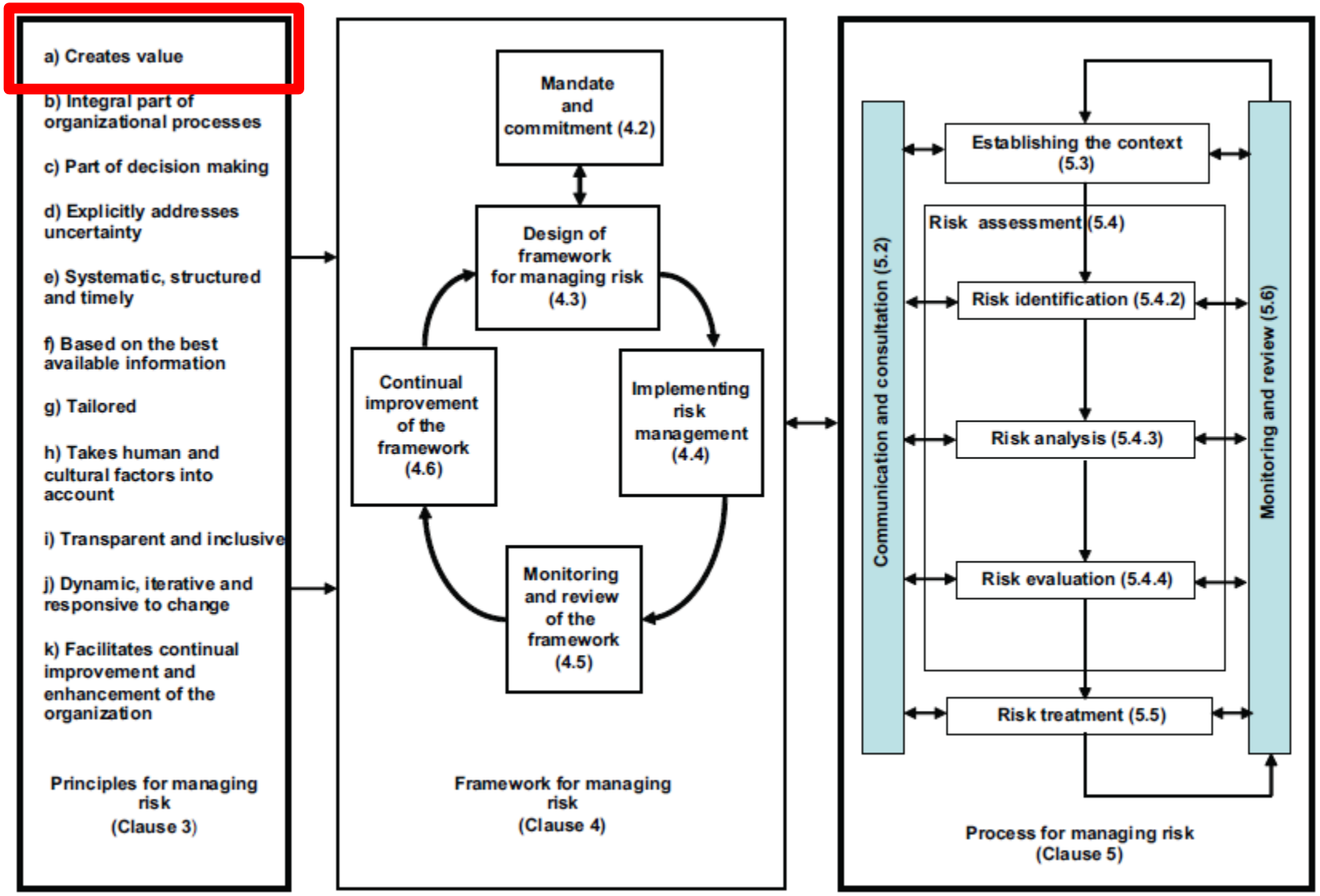
ISO/IEC 27005:2011(E) - Information technology — Security techniques — Information security risk management

Examples of vulnerabilities (2 pages of them in the standard…)

Types	Examples of vulnerabilities	Examples of threats
Hardware	Insufficient maintenance/faulty installation of storage media	Breach of information system maintainability
	Lack of periodic replacement schemes	Destruction of equipment or media
	Susceptibility to humidity, dust, soiling	Dust, corrosion, freezing
	Sensitivity to electromagnetic radiation	Electromagnetic radiation
	Lack of efficient configuration change control	Error in use
	Susceptibility to voltage variations	Loss of power supply
	Susceptibility to temperature variations	Meteorological phenomenon
	Unprotected storage	Theft of media or documents
	Lack of care at disposal	Theft of media or documents
	Uncontrolled copying	Theft of media or documents
Software	No or insufficient software testing	Abuse of rights
	Well-known flaws in the software	Abuse of rights
	No 'logout' when leaving the workstation	Abuse of rights
	Disposal or reuse of storage media without proper erasure	Abuse of rights
	Lack of audit trail	Abuse of rights
	Wrong allocation of access rights	Abuse of rights
	Widely-distributed software	Corruption of data
	Applying application programs to the wrong data in terms of time	Corruption of data
	Complicated user interface	Error in use
	Lack of documentation	Error in use
	Incorrect parameter set up	Error in use
	Incorrect dates	Error in use

ISO/FDIS 31000:2009(E) - Risk management — Principles and guidelines

Figure 1 — Relationships between the risk management principles, framework and process



On “Value”:

Considering:

- **Costs** – is what we have to give up for the **controls**
- **Control** – is a measure that we can put in practice to **minimize loss** (the main concern of digital preservation) or also to **maximize gain** (the maximum concern of digital curation)

We can propose these concepts:

- **Relative value** – …ranking or weight of a set of assets for what we do not have their absolute value (this can be often the case of assets in the cultural heritage sector).
- **Added value** – … the value that results from a control that can be applied to explore an opportunity. If that value can be measured, than we can claim we can quantify an added value for the related asset as a result of that action (this is **curation!!!**).

- **Step 1 – Definition of the Method (…)**
  - **1.1 – Principles and Guidelines**: Based on ISO 31000 ..
  - **1.2 – Assessment techniques**: Based on ISO 31010, on previous work (such as DRAMBORA) …
  - **1.3 - Risk Register**: Propose the structure of a risk register for the domain, and demonstrate it populated with the results of existing sources.
- **Step 2 – Validation of the Method** (Iterate to Step 1 if necessary)
  - **2.1 – Internal Conceptual Review** (**…**)
  - **2.2 – Internal Validation** (**…end March…**)
  - **2.3 – External Closed Validation:** Ask external stakeholders as experts (**…end April…**)
  - **2.4 – External Open Validation:** Disseminate the method and ask for volunteers for external validation (**…end May…**)
- **Step 3 – Revise and publish** (**…end June!!!)**

Discussion...?

PROGRAMME

	Section 4:	
15:15 – 16:15	1 hour	Sustaining solutions and services using the ESRM (Exercise)
16:15 – 16:30	15 mins	Recap, summing up and feedback
16.30		Finish

Introduction to the Economic Sustainability Reference Model (ESRM)

The ESRM maps out the key elements of the problem space planners face when designing a sustainability strategy for their digital curation activities.

It focuses on the general concept of a sustainability strategy, breaks it down into its key components, and draws planners' attention to the properties of those components most relevant for economic sustainability.

Blue Ribbon Task Force on Sustainable Digital Preservation and Access

…?

OCLC

Jisc

An Economic Sustainability Reference Model

4C Sustainability Self-Assessment Tool

PUBLIC DOMAIN

ISO

…?

4C Roadmap

Some questions to consider as we go through the session ...

Does it serve a useful purpose?

Who would use it?

Why would they use it?

When would they use it?

How would they use it?

What's missing?

How could it be more effective?

Some points to bear in mind as we assess the ESRM + Tool ...

They are works in progress ...

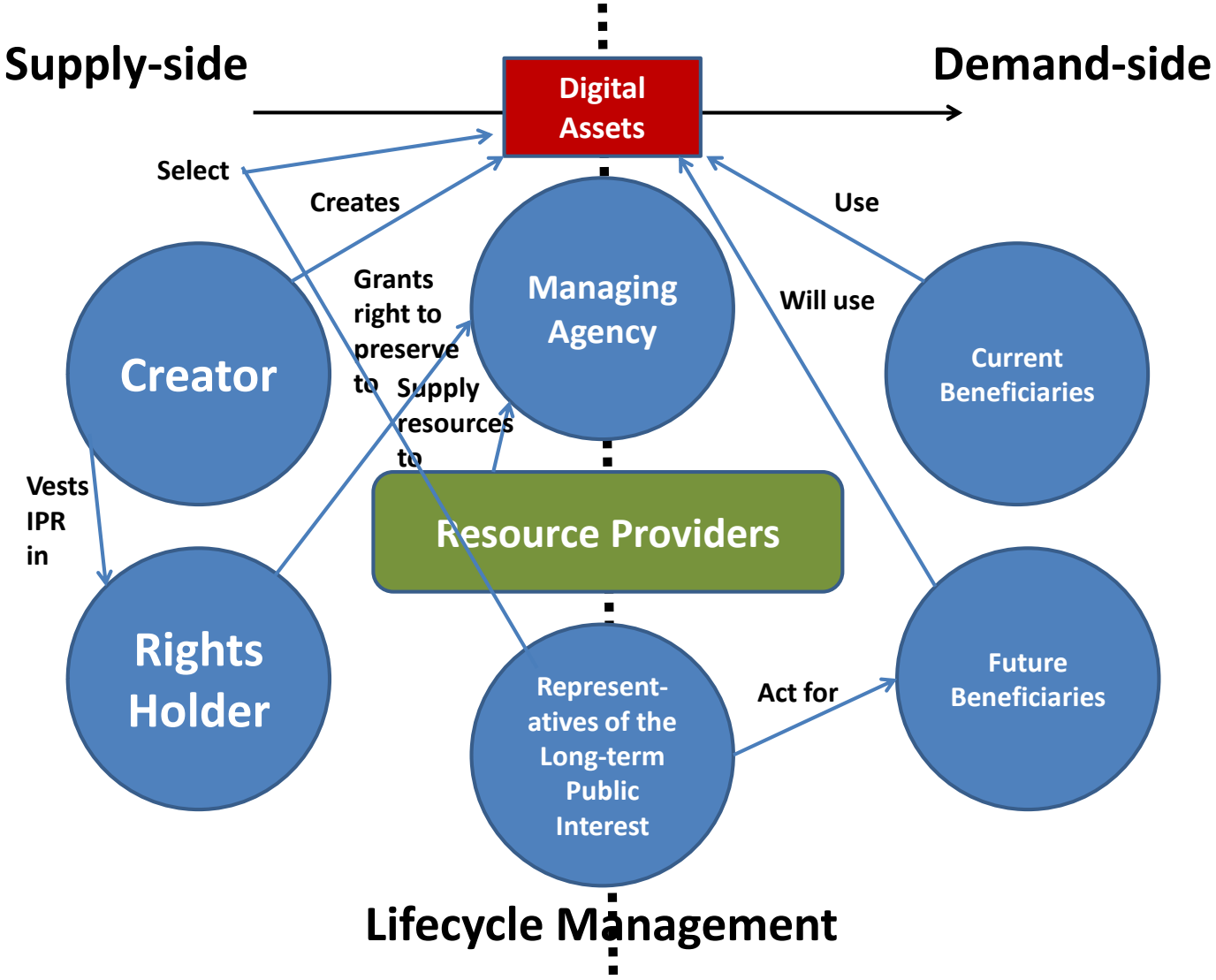
They need quite a lot more work done on (both) of them to streamline them and make them efficient and usable

Both resources are an attempt to generalise and/or simplify.

It's tempting (and possible) to jump straight away to the Self-Assessment Tool and try to just fill it in with no reference to the ESRM text. But the concepts in the tool are taken from the text and the text gives more context and meaning to the questions in the tool.

For instance ...

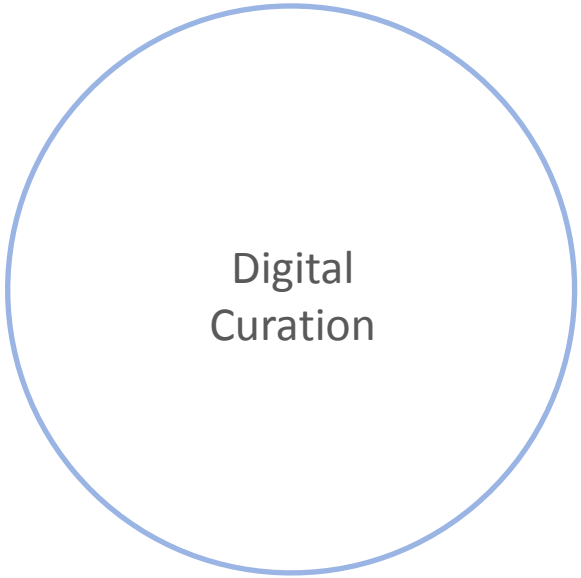
Q6 – Has the stakeholder ecosystem been surveyed or mapped?



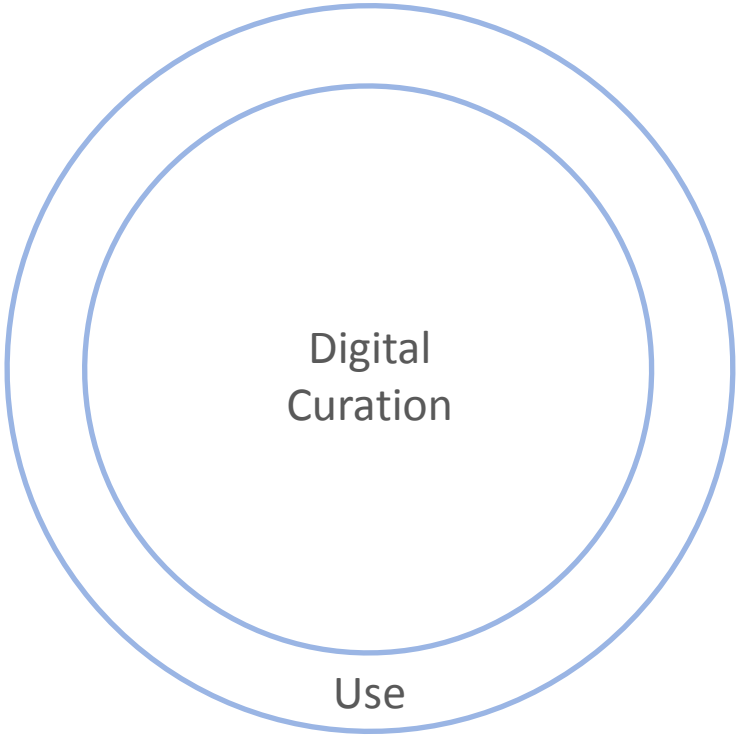
The ESRM proposes that a sustainability strategy requires consideration of four categories of issues:

- The Economic Lifecycle
- Sustainability Conditions
- Key Entities
- Economic Uncertainties

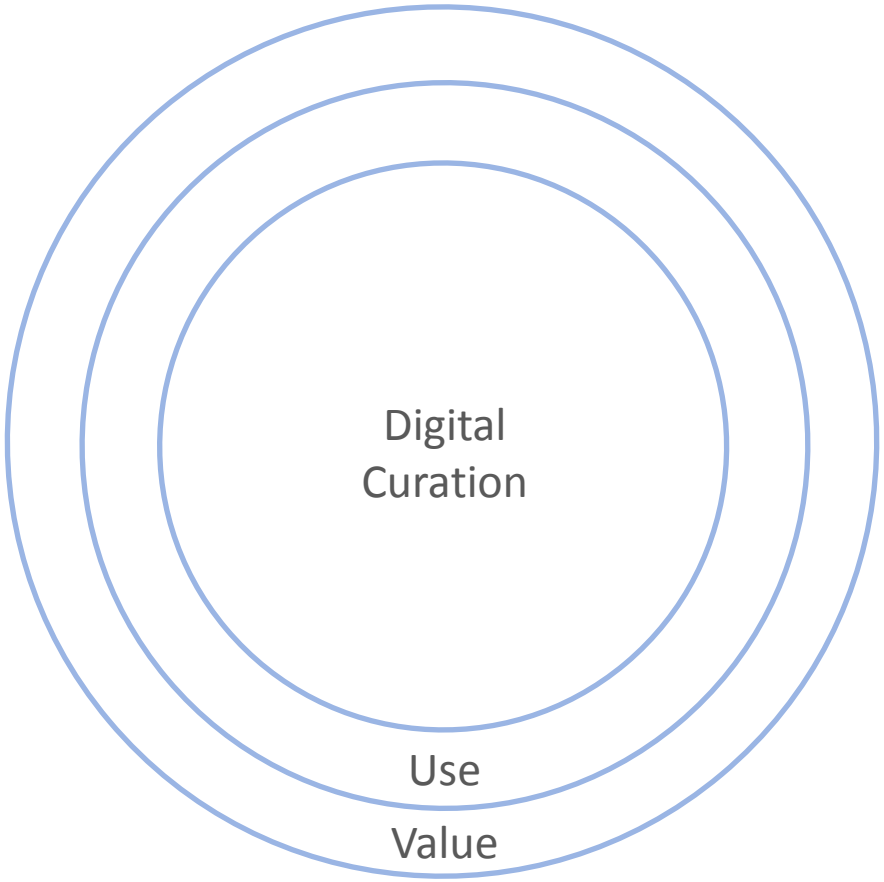
The Economic Lifecycle



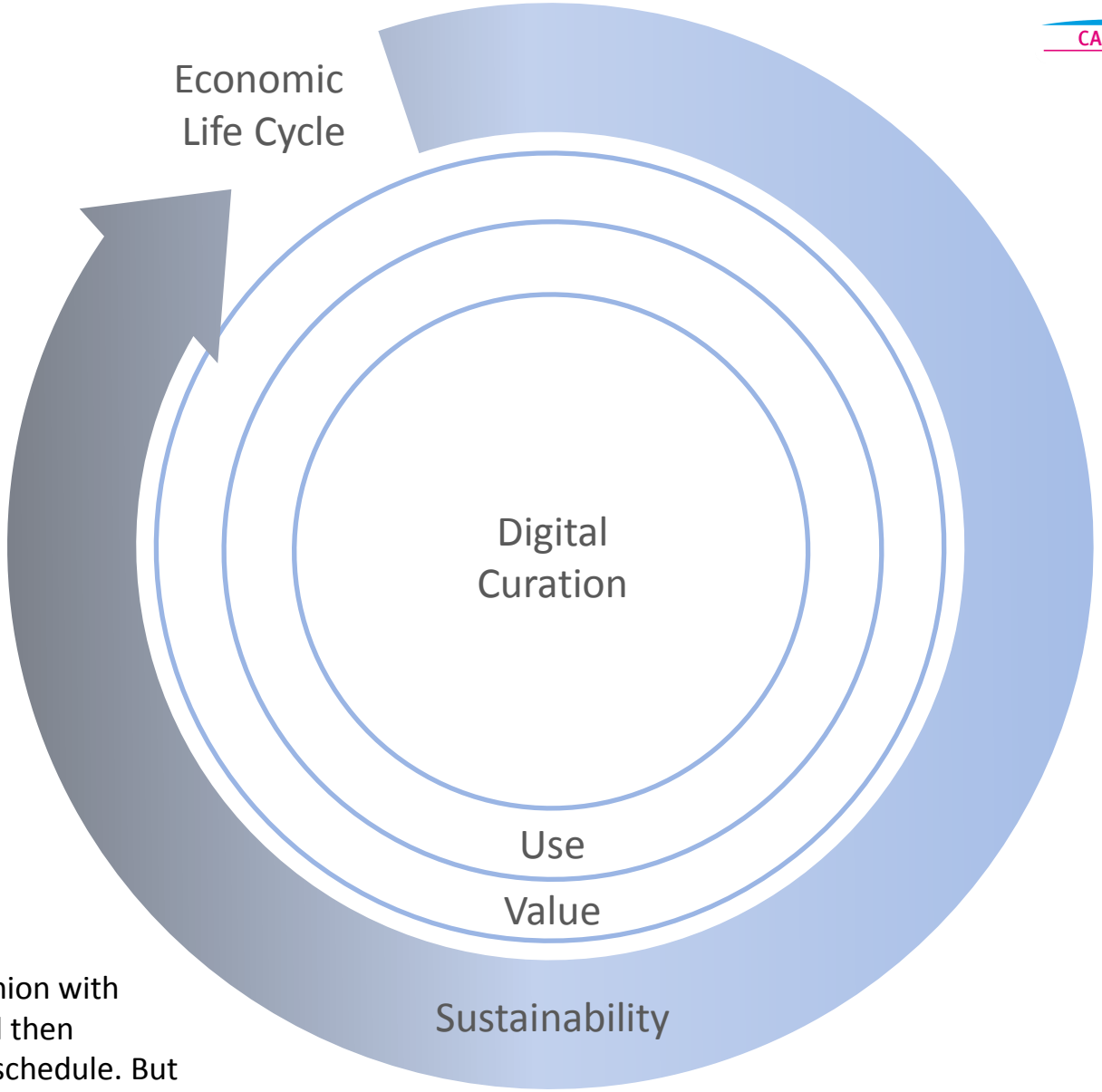
The activity of digital curation is assumed to be the central active component and the engine that will ensure the sustainability of digital assets



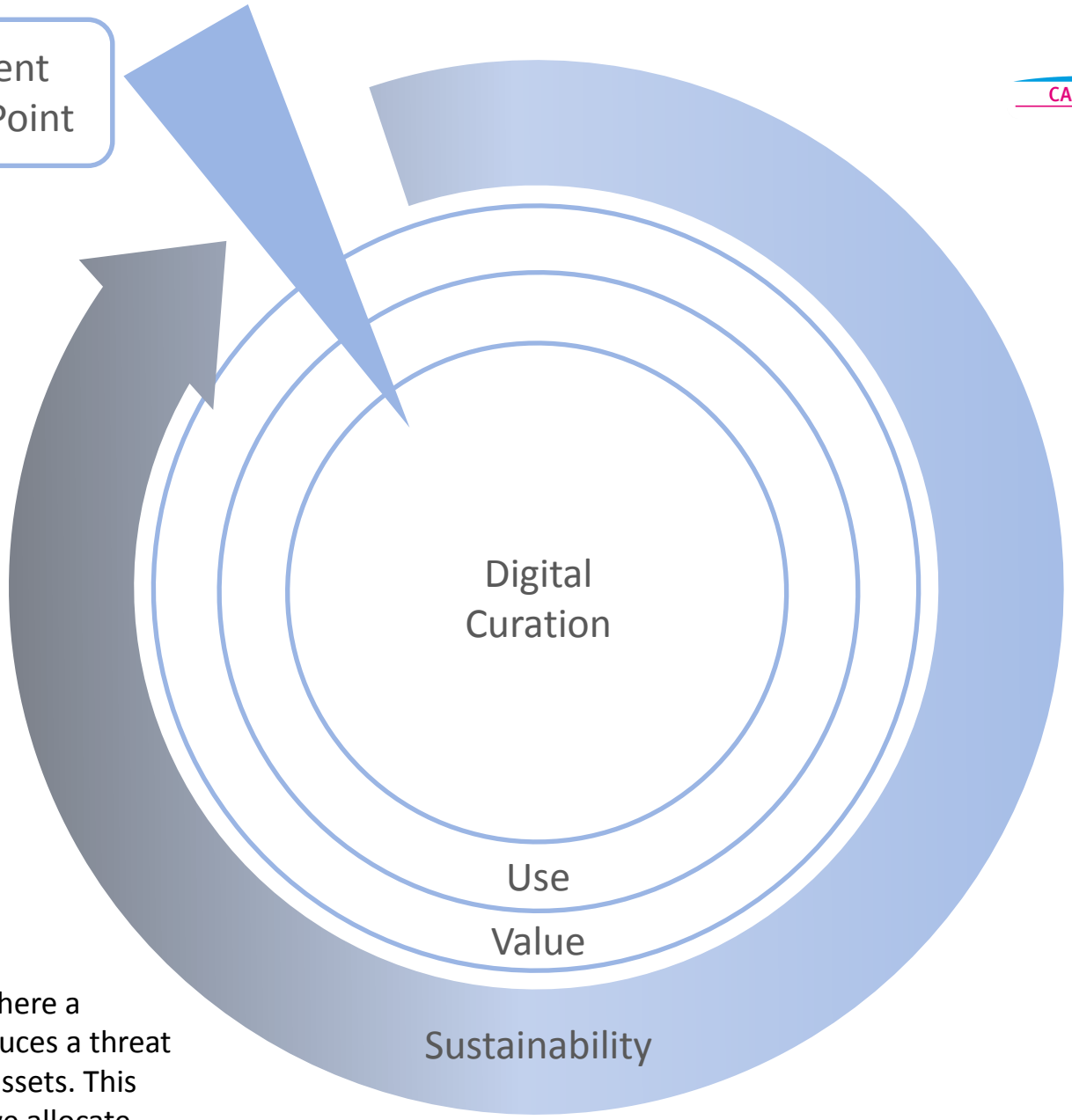
Investment into curation will in turn facilitate use (or the potential for use)



And use (or the potential for use) will realise value, thereby delivering a return on the investment



This could play out in a linear fashion with assets being created, curated and then deleted according to a retention schedule. But in the context of sustainability, it is more likely to be a cyclical process

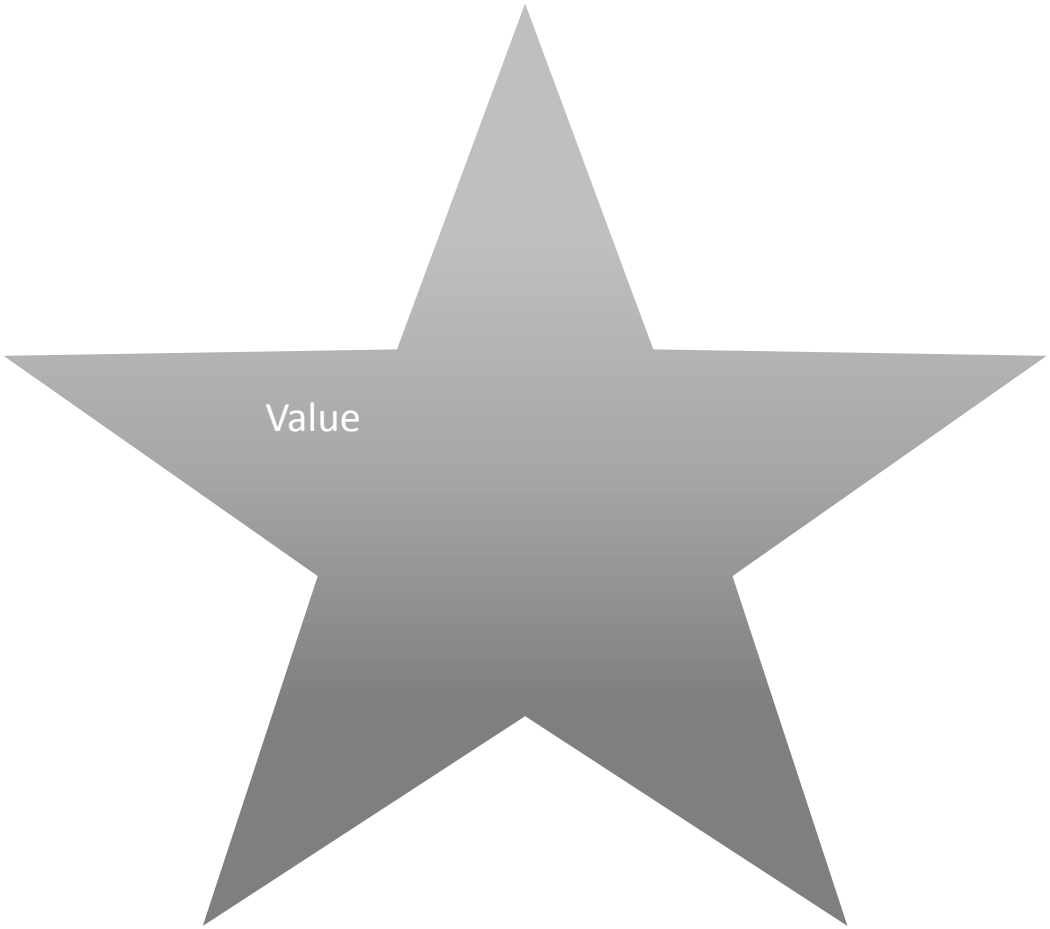


There will be a gap in the cycle where a technical or business issue introduces a threat to the continued viability of the assets. This becomes a decision point ... Do we allocate more resources to tackling the problem?

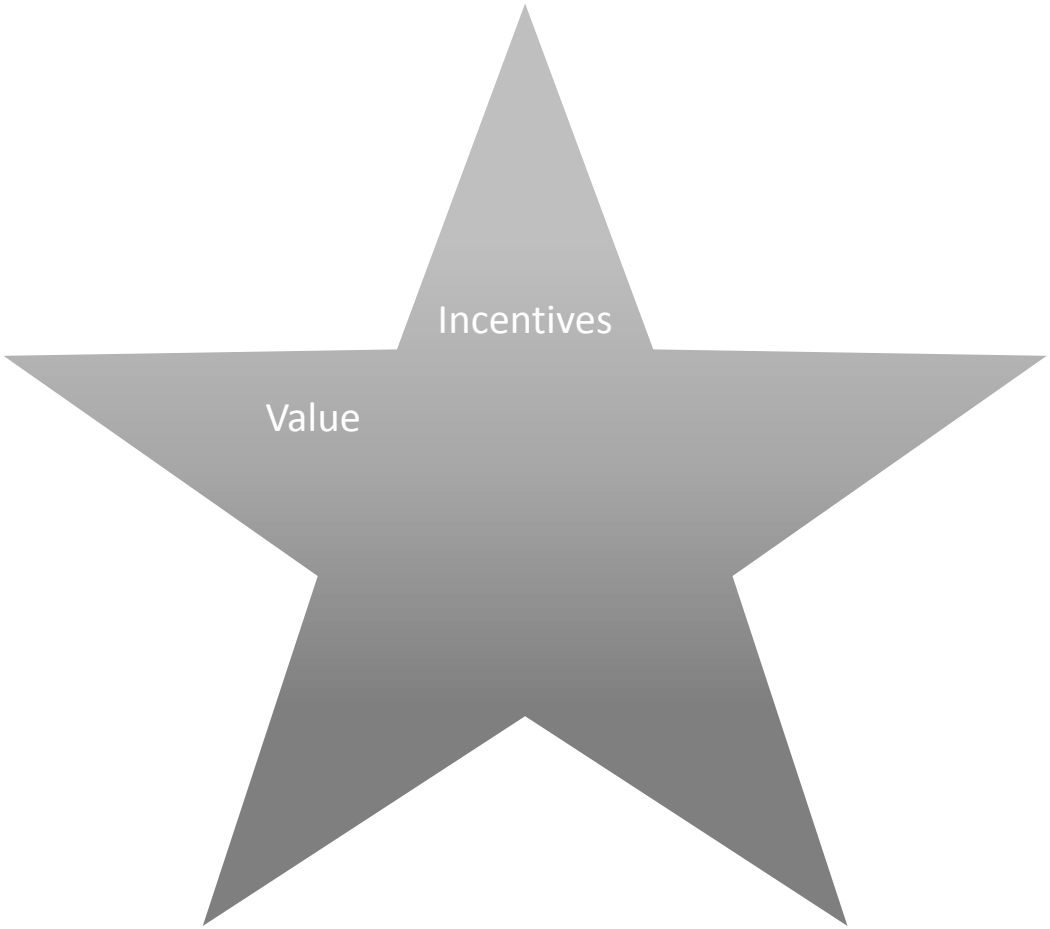
Sustainability Conditions

Five Sustainability Conditions are set out to maximise the prospects for sustaining assets

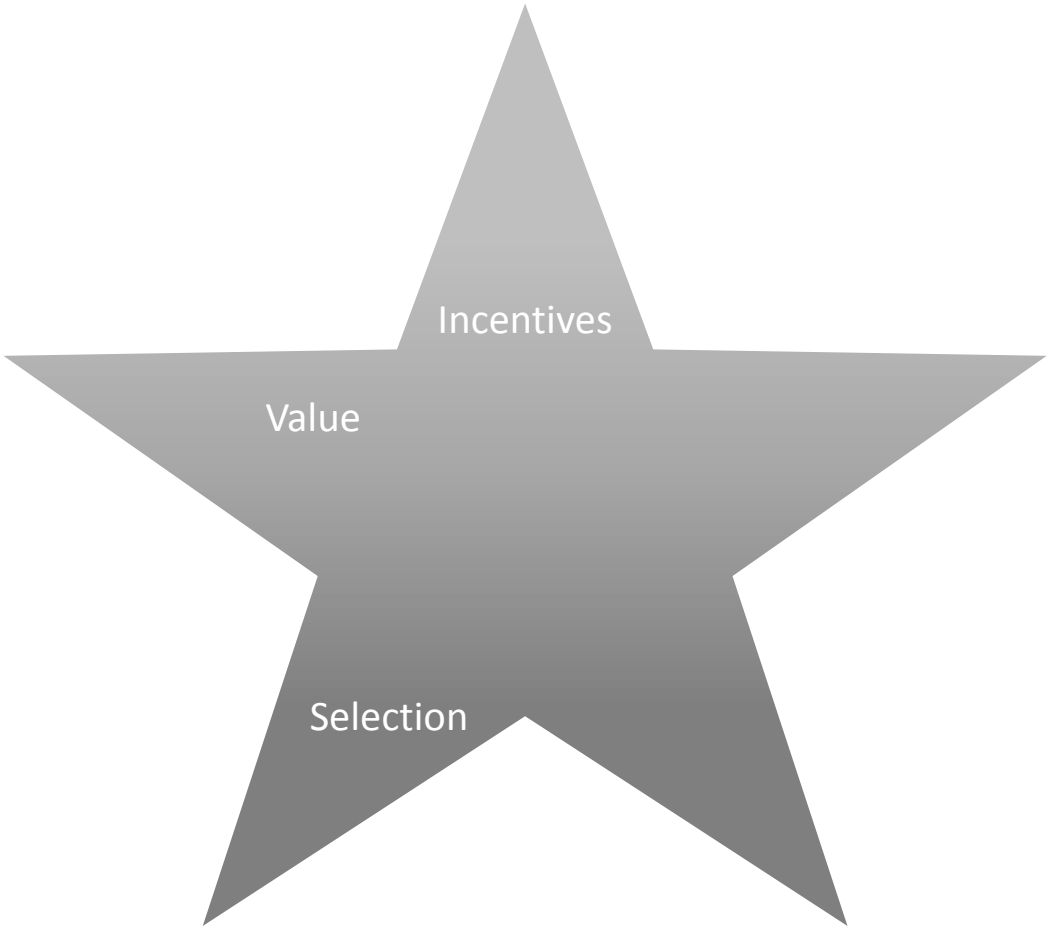
Sustainability Conditions



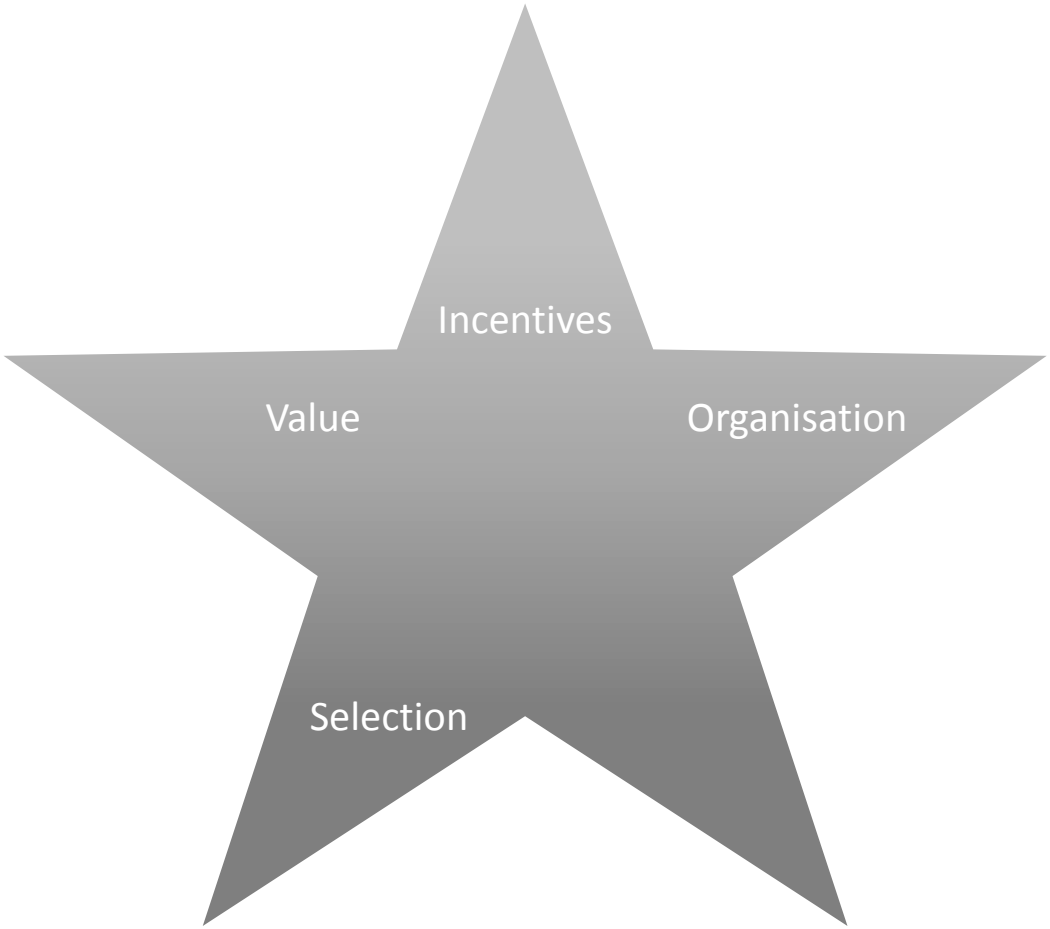
The assets must be understood (or perceived) to have tangible or intangible value



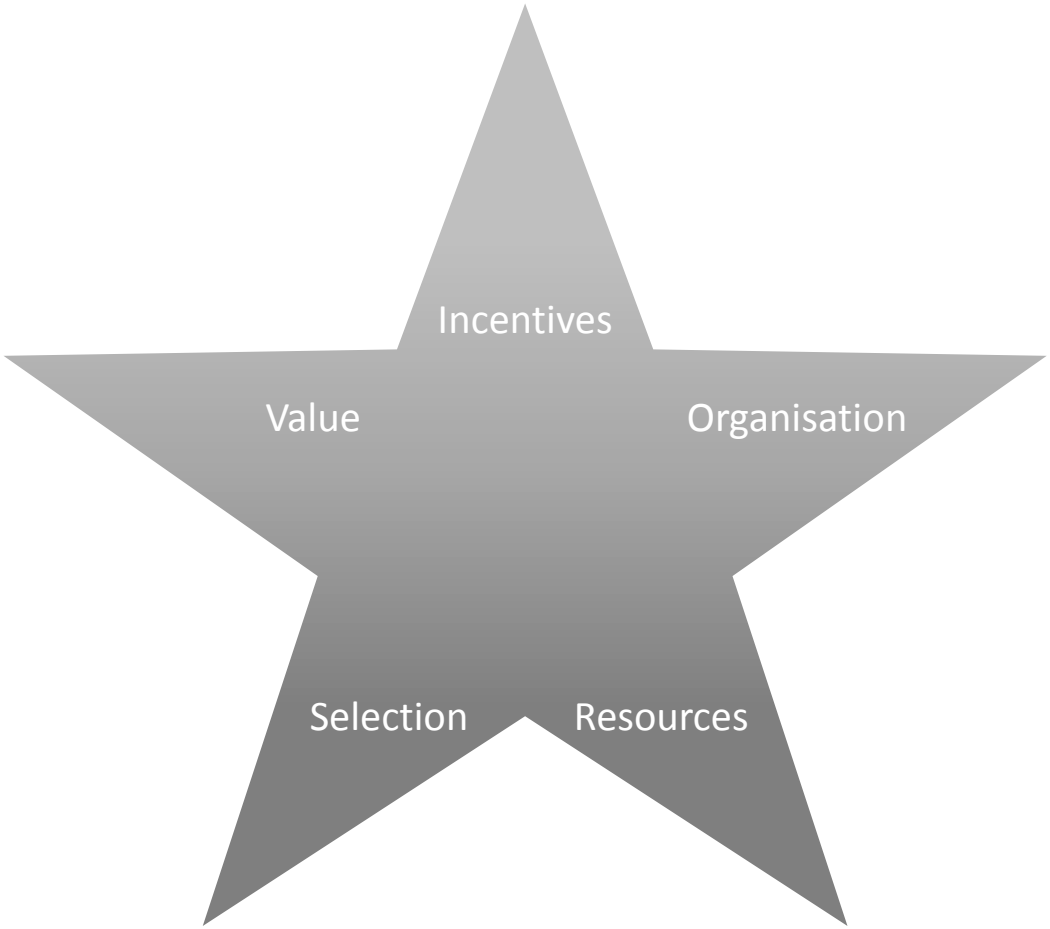
Relevant stakeholders must be sufficiently motivated to support curation



Where resources are scarce then discretion must be used to prioritise curation of the most valuable assets



The organisation should have an appropriate mandate; a supportive governance structure; and be optimally configured to sustain the assets



There must be a sufficient flow of ongoing resources (including financial and human capital) to achieve long-term goals

Key Entities

Three Key Entities are set out which are found in all digital curation contexts. Sustainability requires the nature of these entities to be understood

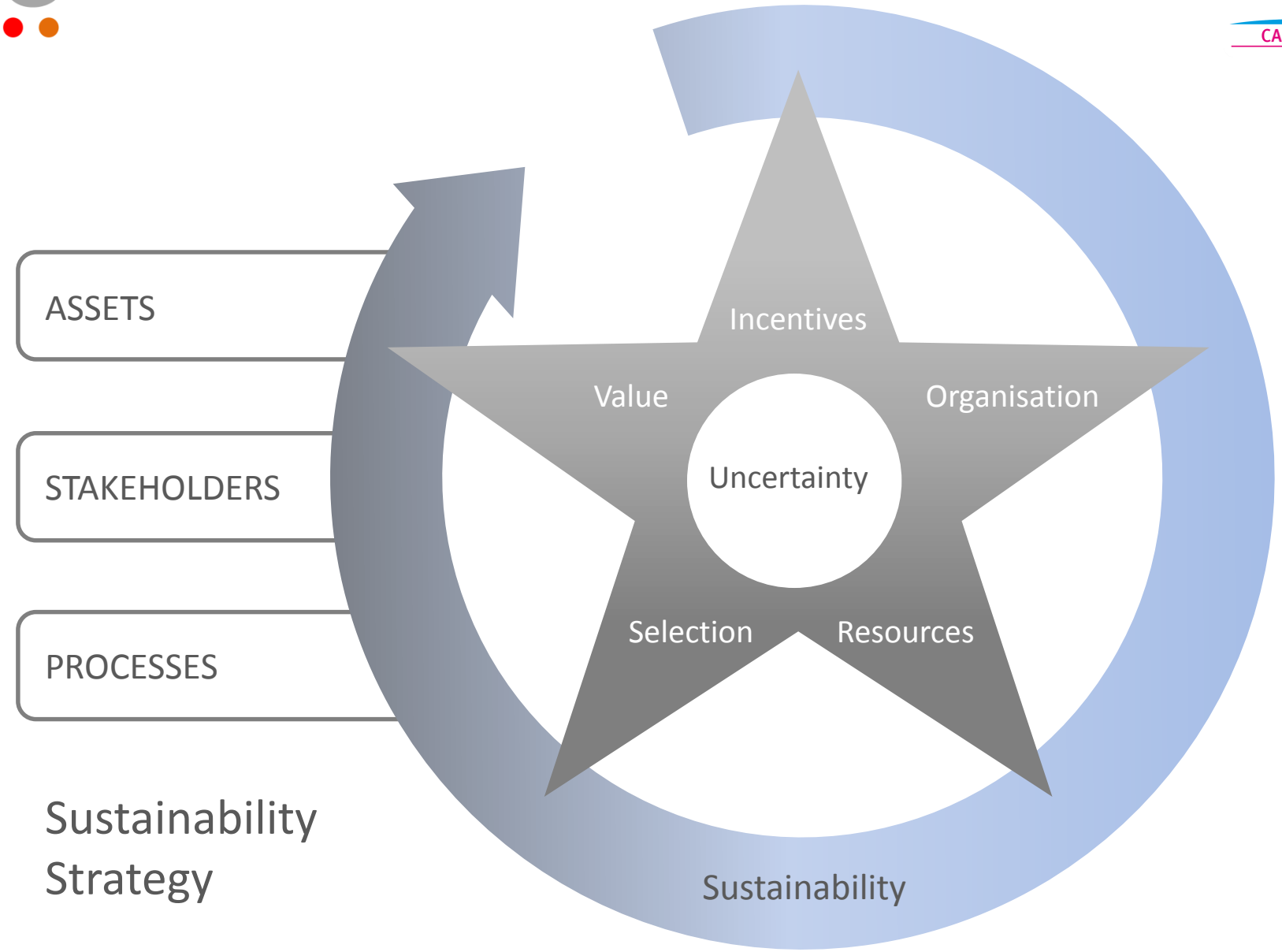
Key Entities

Three Key Entities are set out which are found in all digital curation contexts. Sustainability requires the nature of these entities to be understood

ASSETS	Every type of digital asset exhibits various attributes or properties that to a greater or lesser extent may affect the how they are curated
STAKEHOLDERS	The stakeholder ecosystem for digital assets can be complex and the supply side and demand side should be understood in relation to who is undertaking the curation for the benefit of whom
PROCESSES	The processes involved must be capable of (and optimised for) efficiently enhancing the value of the assets

Economic Uncertainties

The inclusion of Economic Uncertainties is an acknowledgement that even the best sustainability strategy cannot accurately predict the future and that some expectation or mitigation of uncertainty (both threats and opportunities) should be built into the strategy where possible


ASSETS
STAKEHOLDERS
PROCESSES
Incentives
Value
Organisation
Uncertainty
Selection
Resources
Sustainability
Sustainability
Strategy