Workshop
Monday October 6th 2014
9am – 1pm

Defining a Roadmap for Economically Efficient Digital Curation

a 4C Project Workshop

Neil Grindley – Jisc, UK

Luis Faria – Keep Solutions, Portugal

Katarina Haage – German National Library

Ulla Bøgvad Kejser – Royal Danish Library

A [4C] perspective on the economics of digital curation

The purpose of the 4C Roadmap

The aims of the workshop

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.
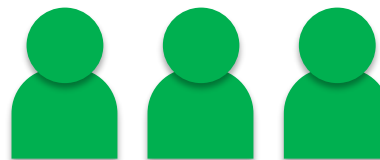
Mission

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

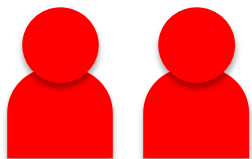Events, Workshops, Meetings & Reports

Networking & Coordination

Affiliate Partners & Stakeholders

Enhancement

Tasks
Examine and refine related concepts
- Value
- Risk
- Benefits
- Sustainability
- Economic Reference Model

Project Coordination

Tasks
Project meetings
Project reporting
EC liaison
Budget oversight
Outputs QA

Outputs

Reports for General Dissemination

Curation Costs Exchange

Reports for European Commission

Submission of Roadmap to the EC

TIMELINE

May 2011   Nov2011   Apr 2012   Feb 2013

Preparation

Project Kickoff

Who we are & what we do

Summer 2013
Contact Stakeholders

Participation, debate, emerging findings

Summer 2014
Emerging Resources

Dissemination, legacy, recommendations

Investing in Curation Roadmap

Jan 2015

Nov 2014
4C Conference

Oct 2014

Project Close

Curation Costs Exchange

Why did we choose the 'cost' of digital curation as the starting point?

- Understanding costs can support strategic planning.

- Understanding costs can support tactical decision-making.

- Understanding costs can provide evidence of cost-effectiveness and value.

- Understanding the cost of curation may mean we can offer realistic and cost effective curation services to others.

- 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

But what *exactly* needs clarifying …?

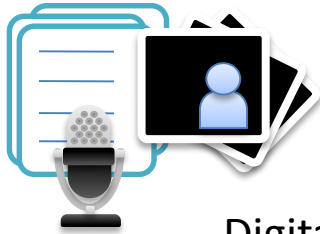If they _really want to_, organisations can work out how much it costs them to manage their digital assets

So ... what are the issues?

- The random numbers problem - how do 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]*

- Complexity - the detail builds up very quickly across different organisations and it doesn't map together easily

- Sensitivity around data – many (most?) organisations are not comfortable broadcasting what it costs them to manage their data. How do we effectively anonymise costs data?

- We somehow have to make sure that the benefits are presented alongside the costs

ECONOMIC MODEL
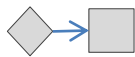
Maintaining stakeholder incentives and the flow of resources to sustain assets

COSTS MODEL

Digital Assets

Activity and Process

Time and Effort

BENEFITS MODEL

Value & Benefits

Risk

Curation as Black Box

The purpose of the 4C Roadmap & the aims of the workshop

How can organisations working in a variety of different domains more cost-effectively look after and account for the digital assets in their care?

The (Draft) Roadmap tries to address that question by outlining the steps that should be taken over the next five years in order to maximise the efficiency of digital curation and to ensure sustainability.

We want to check whether the community agrees with our proposals .

We want to try and ensure that the Roadmap is a convincing, practical and plausible document and that its recommendations hit the right targets.

But first, we'll give you a bit more detail about the 4C work ...

Descriptions of:

- Outreach and engagement

- 4C Needs & Gap Analysis

- The Cost Concept Model (CCM)

- The Curation Costs Exchange (CCEx)

- Indirect Economic Determinants (IED's)

- The Economic Sustainability Reference Model (ESRM)

Quick introduction to the 4C work on cost-related concepts

- Indirect Economic Determinants
- Trust & certification
- Risk

- Sustainability
- Business Models

http://www.4cproject.eu

Institutional objectives will not usually focus on digital curation *per se*. (Digital curation is a 'derived demand').

But achieving those objectives will require investment and some proportion of it will support digital curation.

These variables are difficult to quantify but may be very significant when an institution tries to clarify or explain its costs. 4C refers to them as *'indirect economic determinants.'*

They can also be regarded as conceptual controls to support discussions at a higher stakeholder or organisational management level.

4C

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				

Indirect Economic Determinants (IED's)

Business Drivers
Organisational Objectives
Management Tools
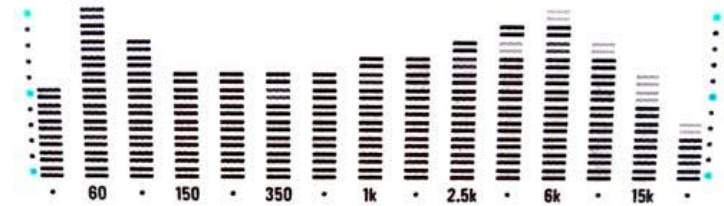
They are controls that can be used to adjust outcomes within the organisation and they correlate with raised or lowered costs depending on whether you wish to turn them up or down.

Risk

Trustworthiness   Skills   Efficiency   Sustainability

€€'s

Difficult to Quantify

A desire for a good **reputation**, **flexibility,** and **innovation** might be common senior management, policy or funder level goals but may require definition and interpretation before they can be integrated into curation costing calculations

Measurable with some additional context

Authenticity with use of checksums and provenance data. **Impact** might be citations or downloads. **Quality** can be understood at various levels (inc. integrity of retained transformational properties)

Subject to standardised audit and certification

- The ISO9000 series for **quality**
- The ISO31000 for **risk** governance
- ISO27000 for Information Security addresses **authenticity**, **confidentiality** and **risk**

Understanding Benefits to Underpin Sustainability

If an organisation can clarify and understand its IED's, (the organisational context in which digital curation takes place) it will be in a better position to communicate the costs and benefits of curation (the curation service) to its stakeholders.

The curation service must sustain a 'series of actions' over time to enable value to keep on being delivered to relevant stakeholders for as long as the digital assets are capable of realising value.

This requires **sustainability** planning ...

Introduction to the Economic Sustainability Reference Model (ESRM)
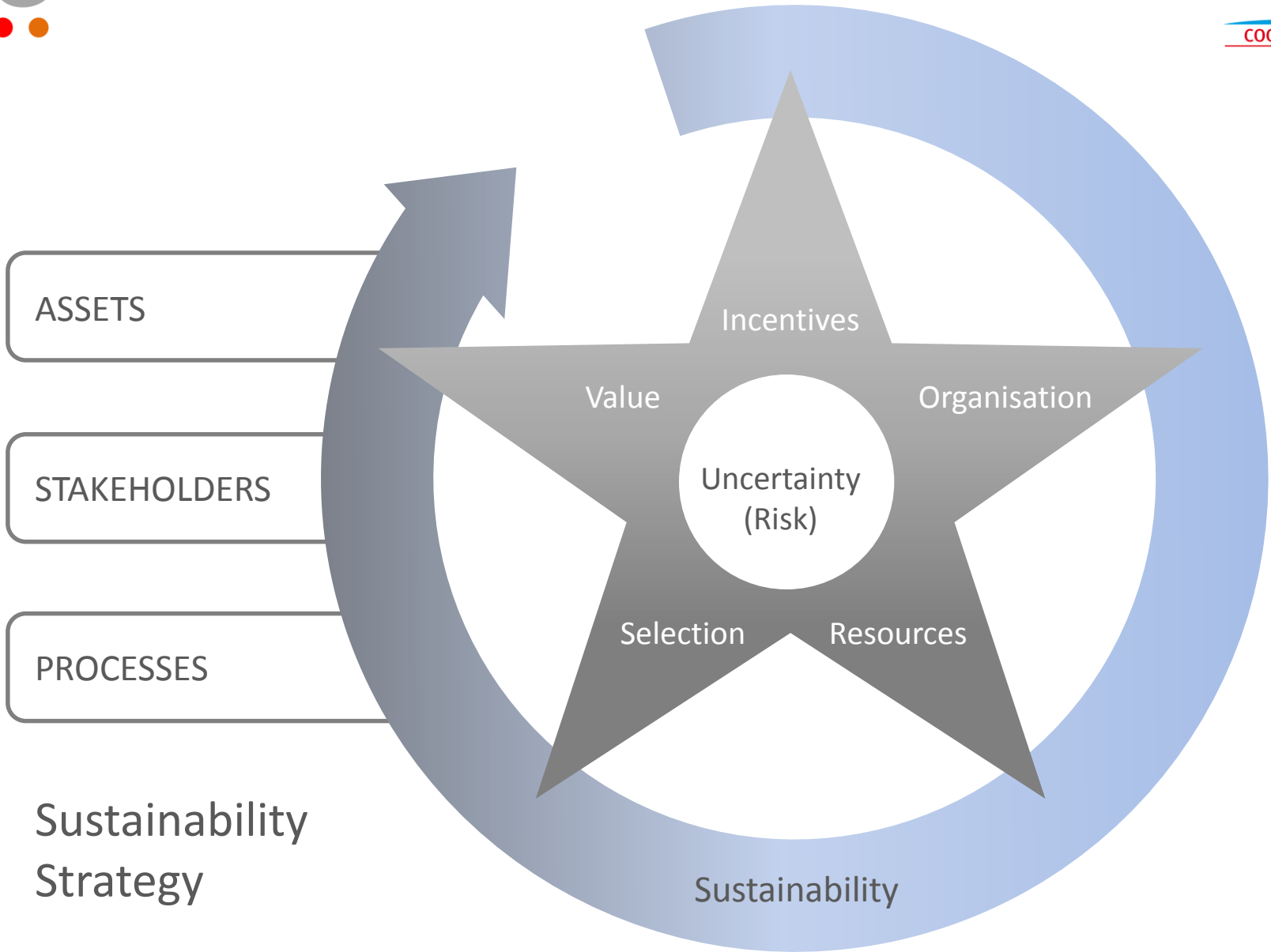
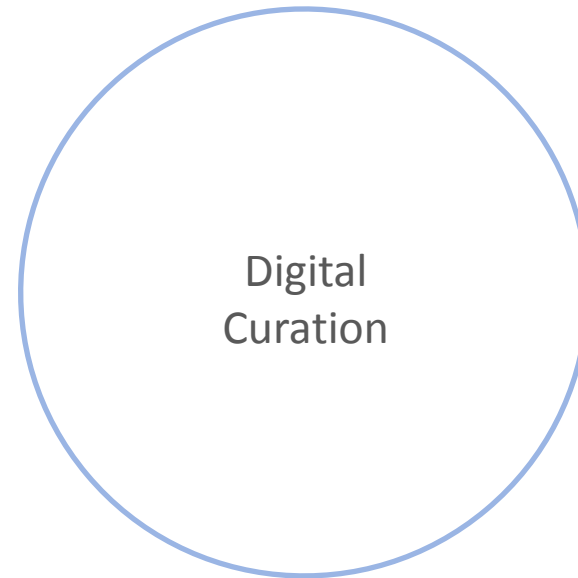Brian Lavoie   Chris Rusbridge

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.

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

- The Economic Lifecycle

- Sustainability Conditions

- Key Entities

- Economic Uncertainties

ASSETS

STAKEHOLDERS

PROCESSES

Sustainability Strategy

Incentives

Value

Organisation

Uncertainty (Risk)

Selection

Resources

Sustainability

COOPERATION

Digital
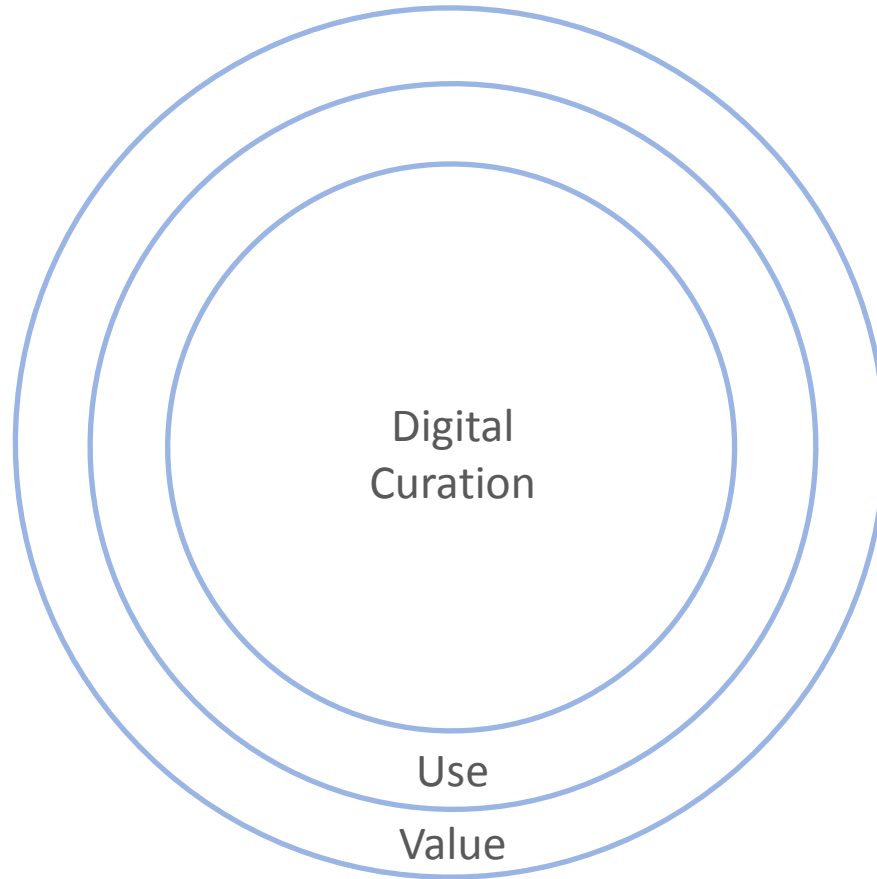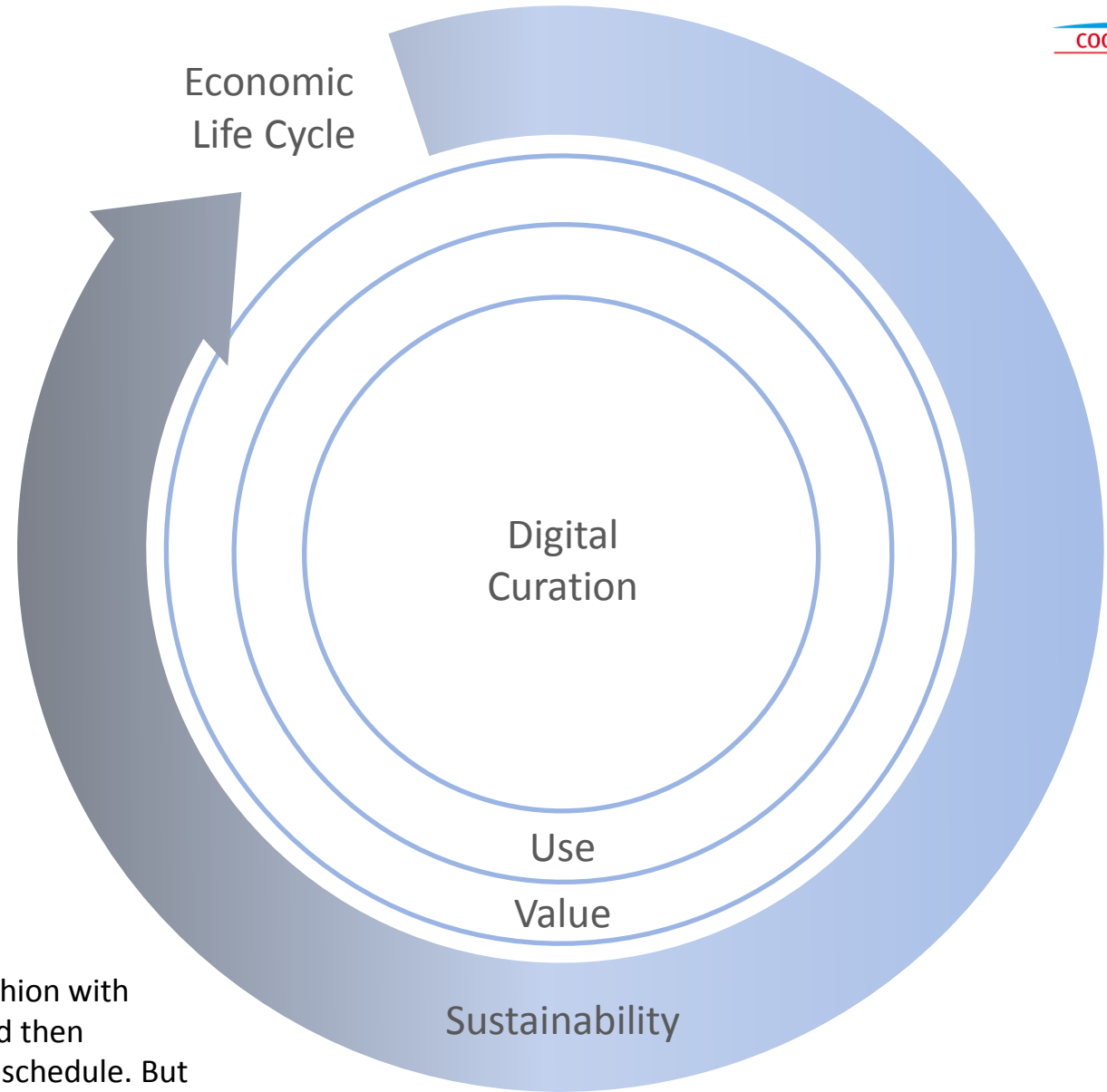Curation

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

Digital
Curation

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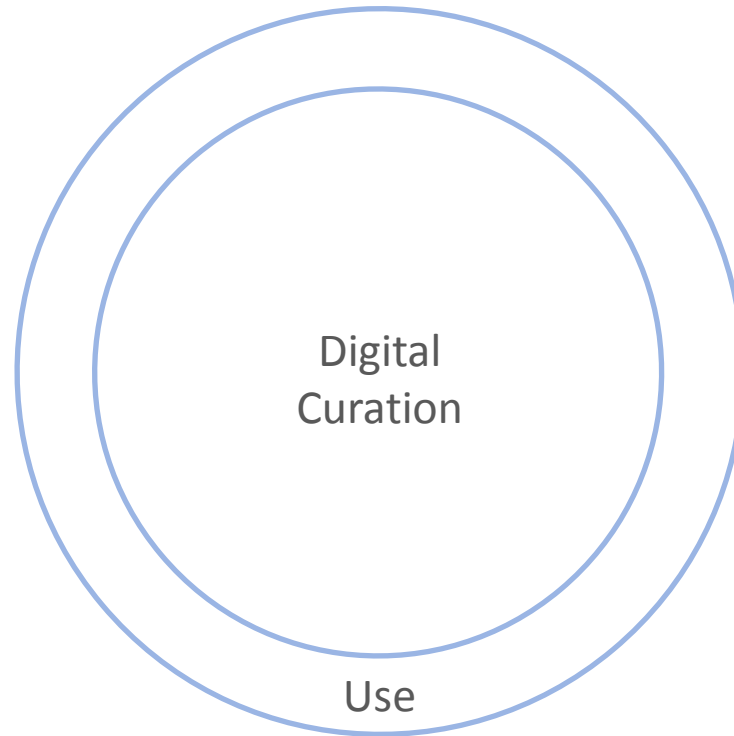
Investment into curation will in turn facilitate
use (or the potential for use)

Digital Curation

Use

Value

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

Economic Life Cycle

Digital Curation

Use

Value

Sustainability

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

Investment Decision Point

Digital Curation

Use

Value
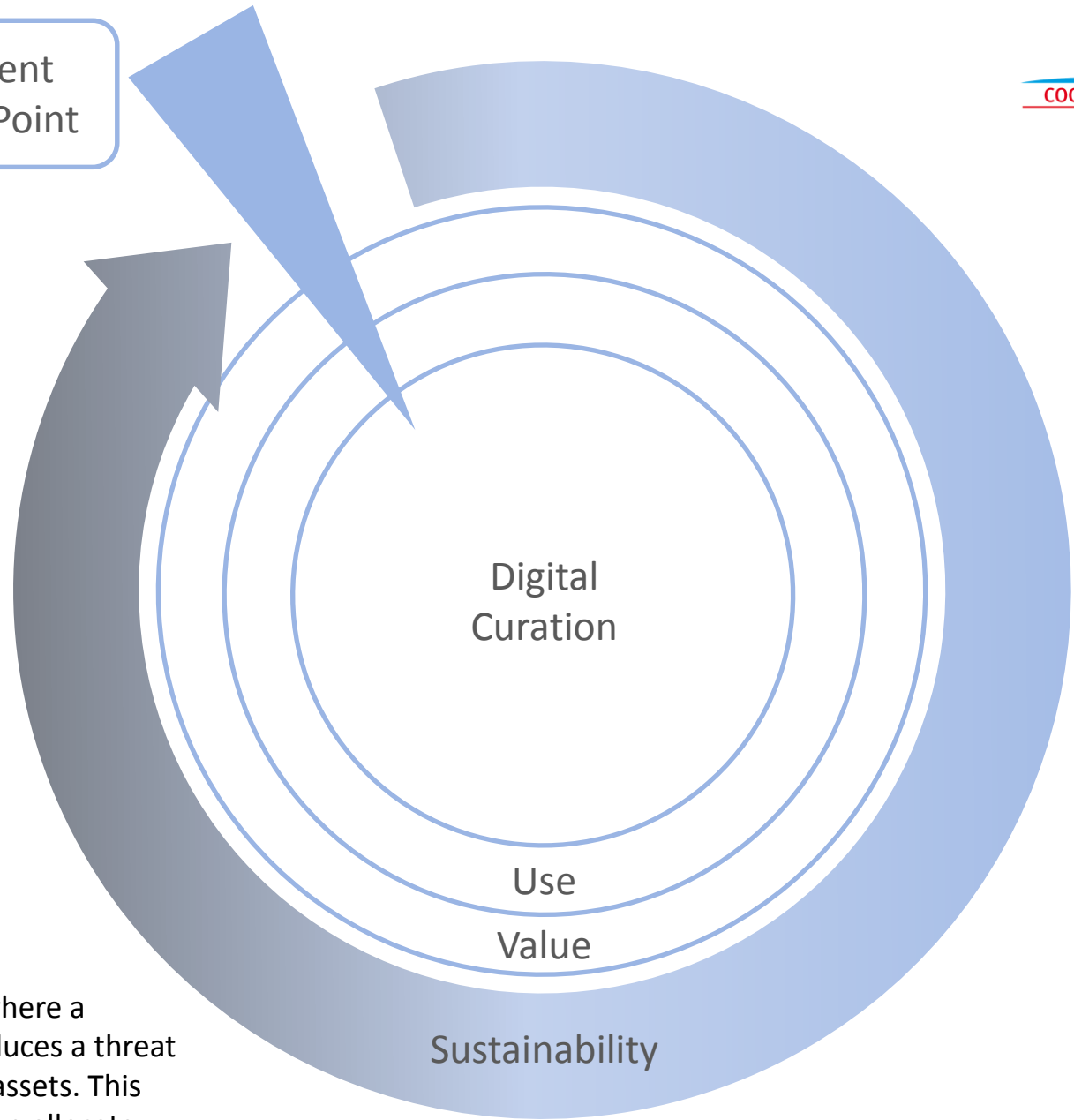
Sustainability

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?

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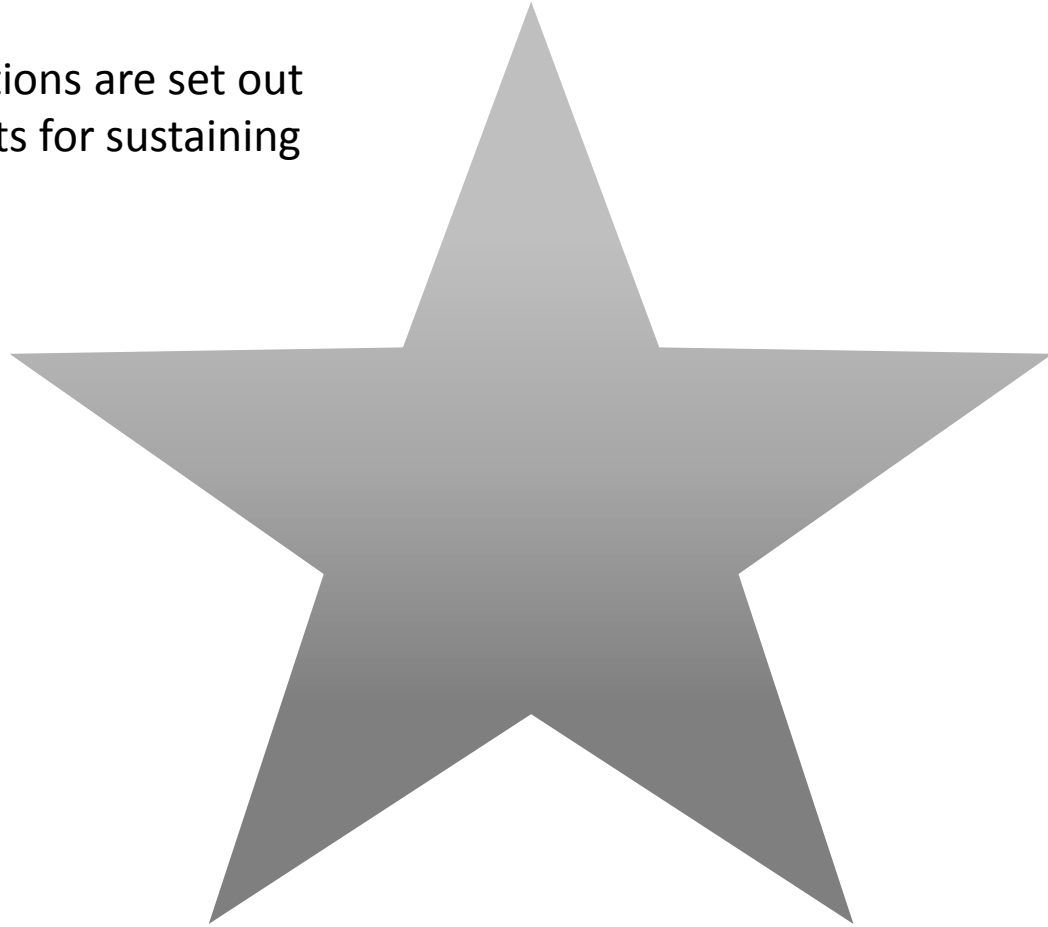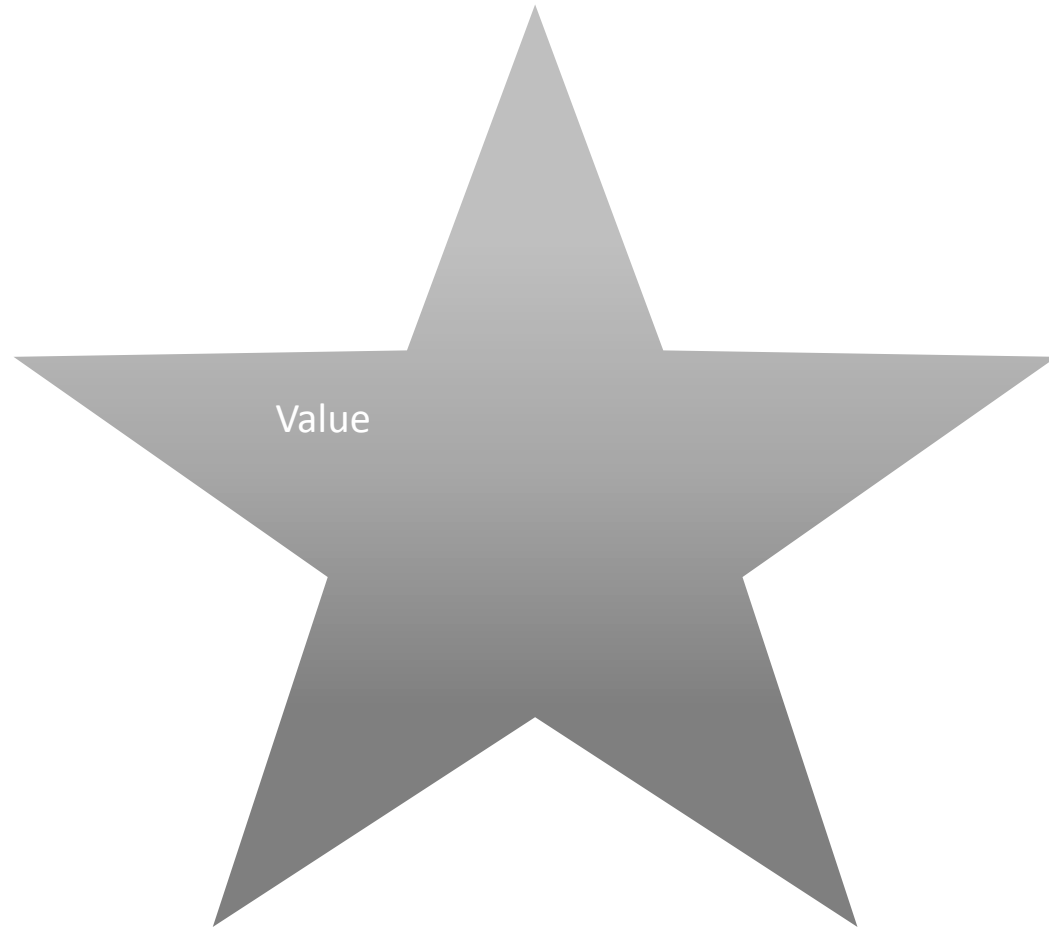
Value

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

Incentives

Value
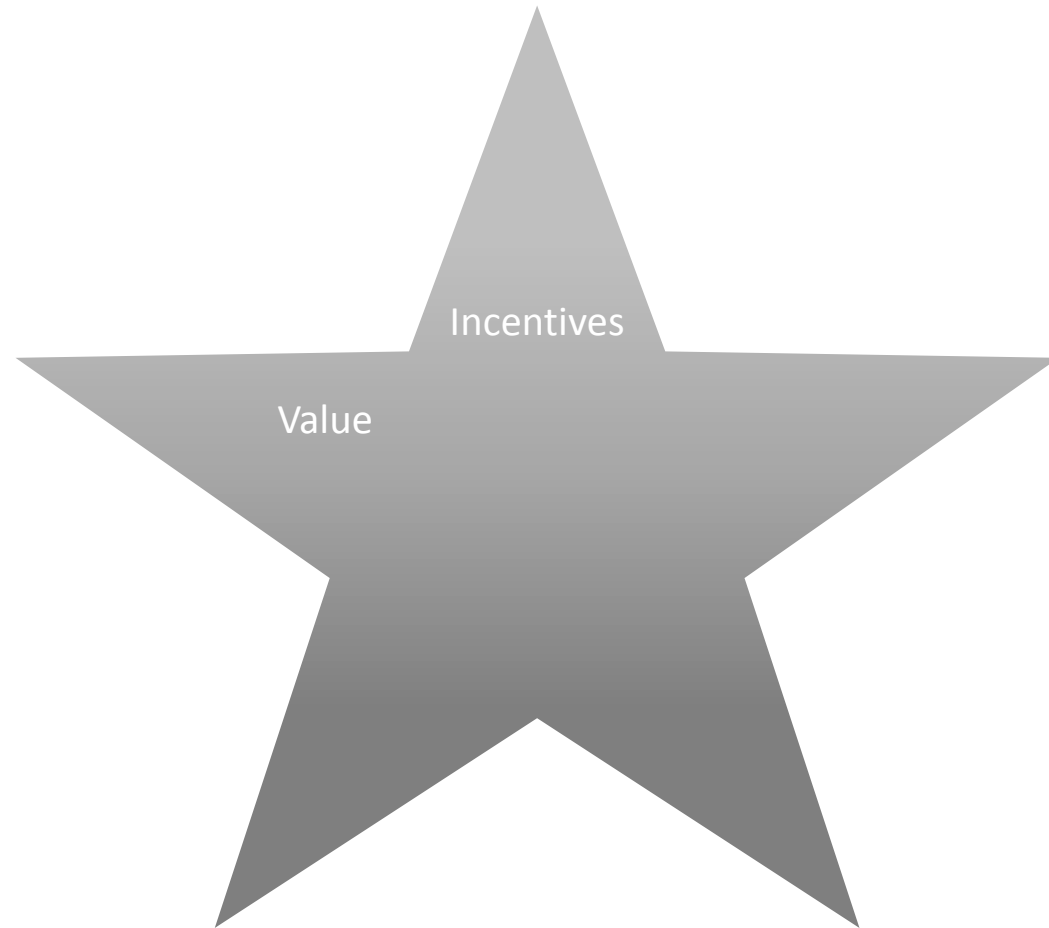
Relevant stakeholders must be sufficiently motivated to support curation
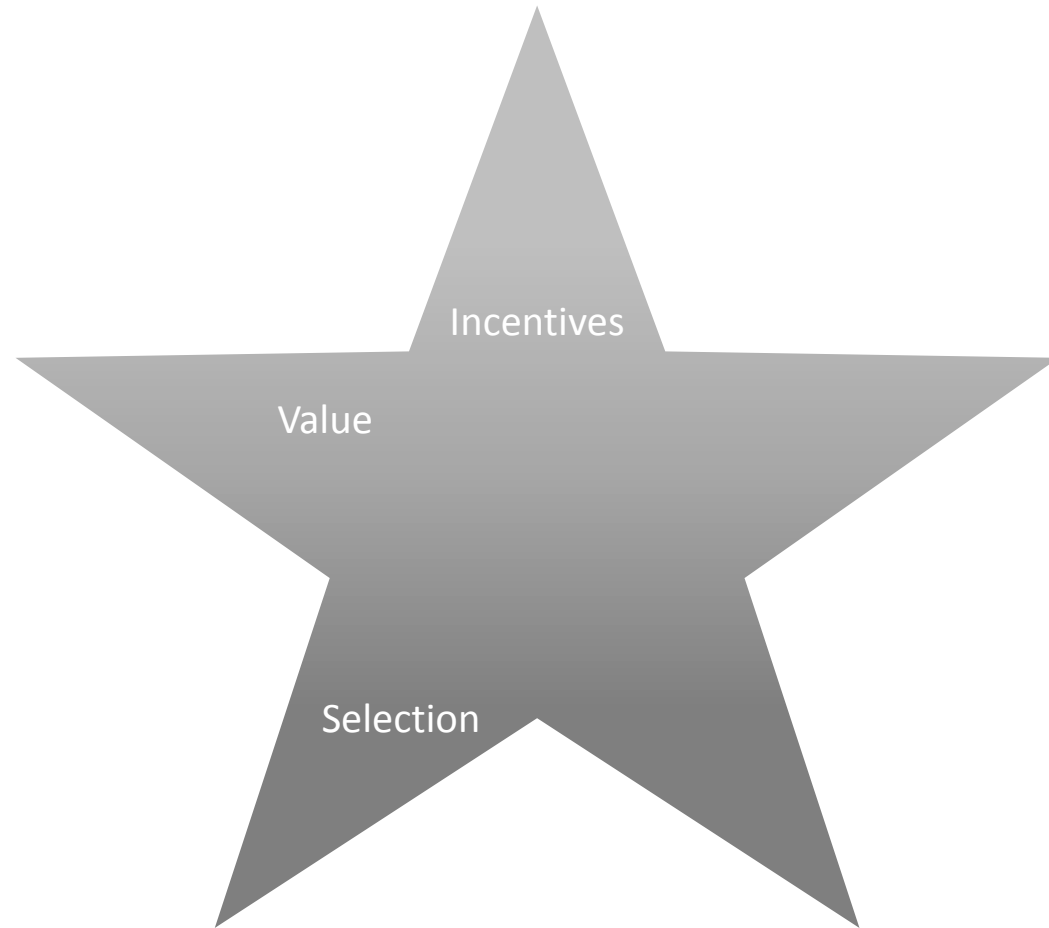
Where resources are scarce then discretion must be used to prioritise curation of the most valuable assets
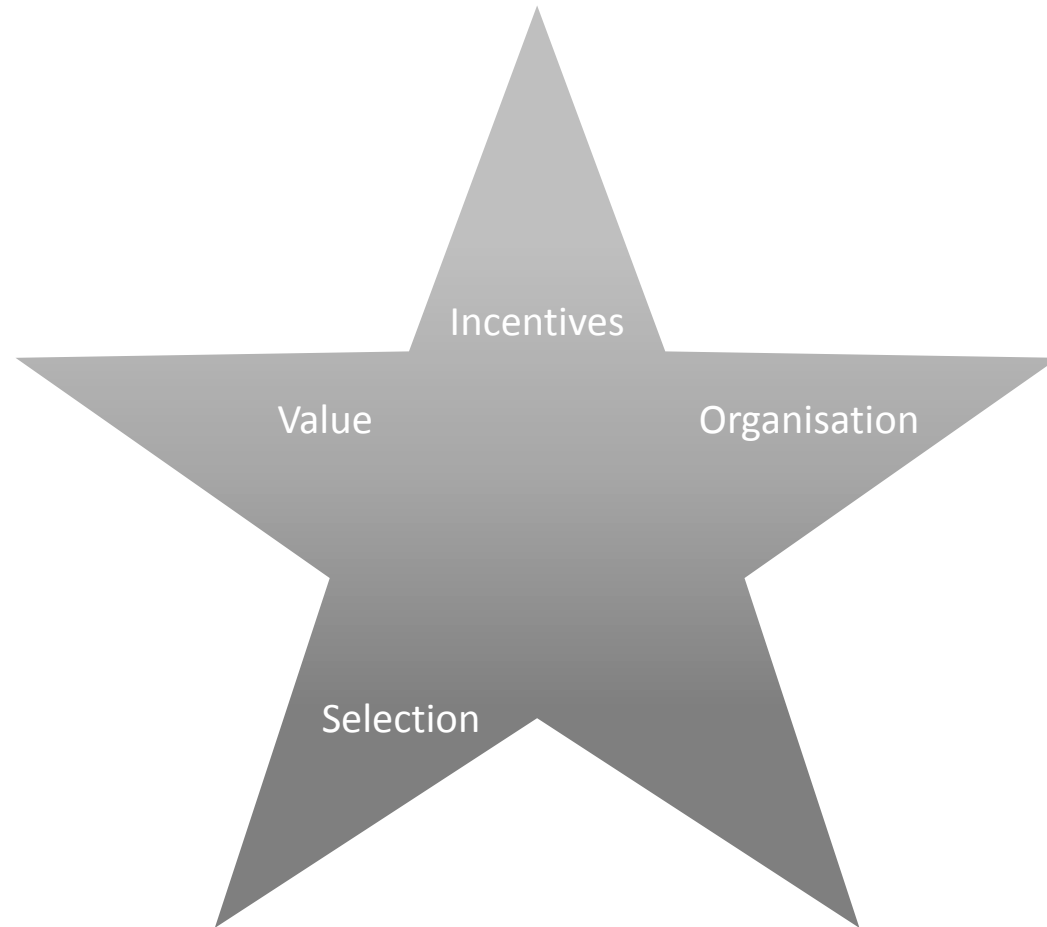
The organisation should have an appropriate mandate; a supportive governance structure; and be optimally configured to sustain the assets
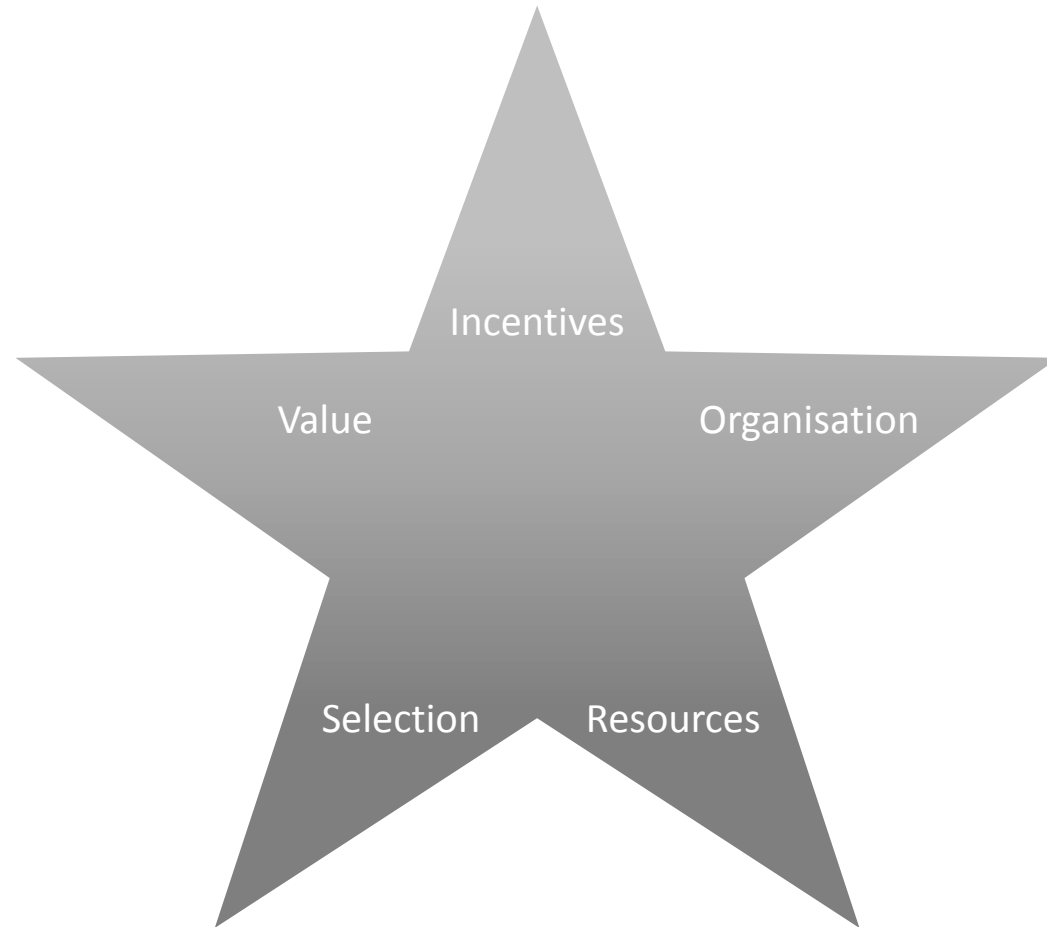
There must be a sufficient flow of ongoing resources (including financial and human capital) to achieve long-term goals

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

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

Uncertainty (Risk)
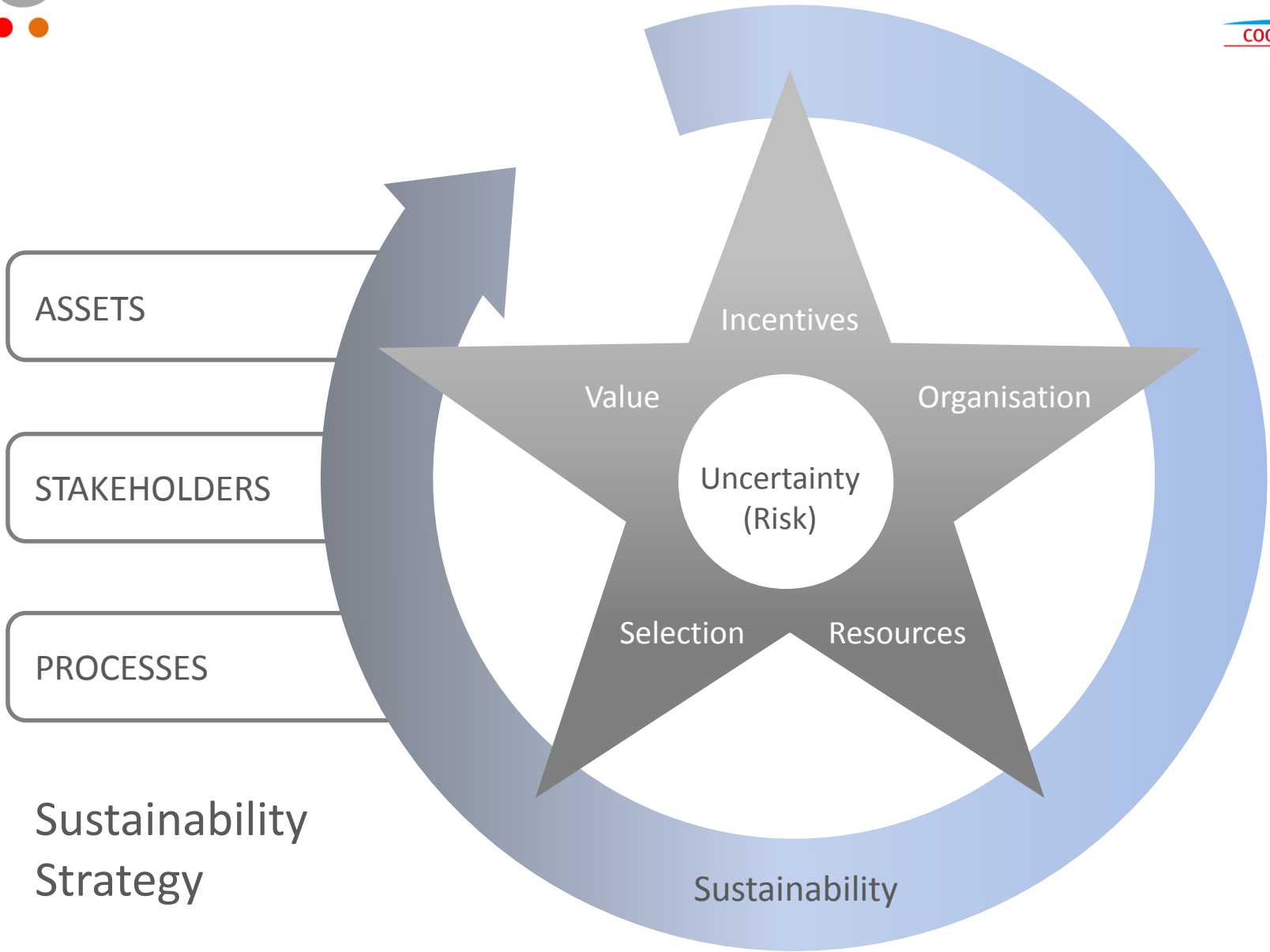
After the break, we'll get into groups for some general discussion about the economic issues around digital curation

Questions

- What are your main digital curation challenges?

- What or who could most influentially help to tackle those challenges?

- What current economic inefficiencies do we need to eliminate?

- Is it possible and economically desirable to try and align digital curation practice?

- How can we most effectively invest in digital curation at the institutional, national and international level?

The Draft 4C Roadmap

The vision, its intentions, the key messages and challenges ...

What is a Roadmap? Why do we need one?

A Roadmap is a strategic document for a community of people that are all engaged in a shared undertaking and who want to map a path towards achieving a shared set of goals.

Map - Helps us to understand what the landscape looks like so that we can navigate our way through it and make progress towards shared objectives

Road - Allows us to make quick progress through the landscape and get to our chosen destination

Where do we start?

What question are we trying to answer?

How can organisations working in a variety of different domains more cost-effectively look after and account for the digital assets in their care?
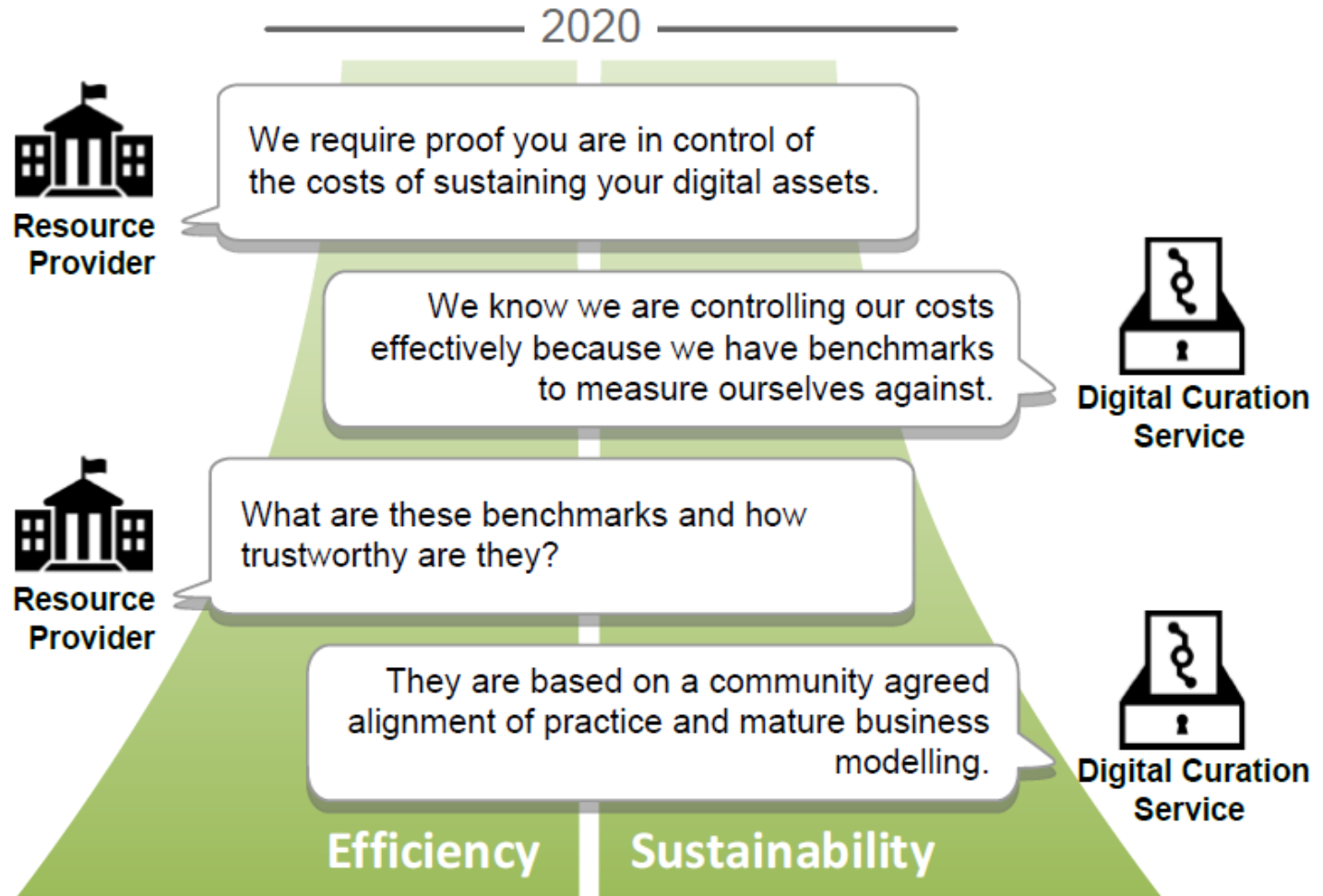
Situating the Roadmap in time
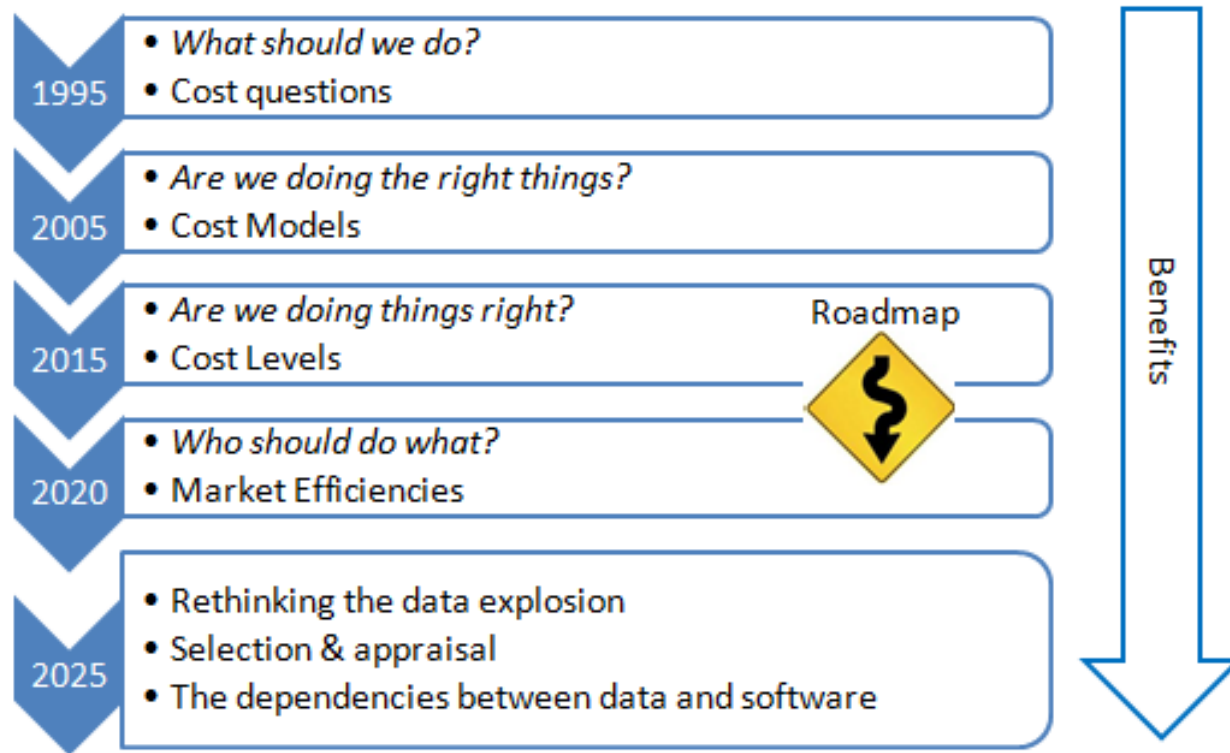
The Vision

In five years time (2020) it will be easier to design or procure more cost effective and efficient digital curation services because the costs, benefits and the business cases for doing so will be more widely understood across the curation lifecycle and by all relevant stakeholders. Cost modelling will be part of the planning and management activities of all digital repositories.

Stakeholder groups

- Curation Practitioners

- Curation Researchers

- Data Users (and Re-users)

- Managers (and Financial Officers)

- Member Organisations

- Policy Makers (Resource Providers / Data Owners)

Message 1

Identify the value of digital assets and make choices

2 difficult and related problems are referenced here

- How do we go about quantifying or realising the value of our digital assets?

- How do we go about assigning value to each data object (or dataset, data stream, series, collection) when confronted with massive amounts of data?

Lots of different ways to approach all of the messages …

Collaboration to Clarify the Costs of Curation

Who	What	When 2015	2016	2017	2018	2019
Curation Practitioners	Lobby management into proper resourcing of selection and appraisal practice and focus on cost-effective digital curation activity	●	●			
Curation Researchers	Conduct research into automatic appraisal and selection techniques based on codified value criteria	●	●	●		
Data Users	Content experts to work with technologists to establish value criteria and represent 'designated communities'	●	●			
Managers	Incorporate the concept of 'value' into strategic and tactical decision-making		●	●	●	
Member Organisations	Help establish relationships between organisations to facilitate the transfer or 'handoff' of digital assets	●	●	●	●	●
Policy Makers	Establish requirements for digital asset value assessment as part of data management and curation planning			●	●	●
Solution Providers	Build on existing tools (e.g. file format registries) to provide automated selection & appraisal tools		●	●	●	

3 Conversation Starters

If we try and preserve everything, we will end up with assets that are hard to find, difficult to understand and complicated to re-use

If we are resolved and are willing to devote resources to it, it should be possible to design effective semi-automated selection and appraisal methods that will help us cope with large volumes of digital content

The managers (and policy makers) perhaps have the most difficult job here. To understand that an investment needs to be made to understand the investment they have already made!

Message 2

Demand and choose more efficient systems

3 Conversation Starters

We are asserting that the marketplace for digital curation solutions is not yet fully functional and that it is desirable that it should become so.

From a supply and demand perspective, it is the 'demand' side that we can and should focus on.

More alignment and adoption of standards is a big part of the answer but pursuing certification is only appropriate for some organisations. Self-assessment and peer review and other mechanisms are valuable.

4C

Who	What	When				
		2015	2016	2017	2018	2019
Curation Practitioners	Establish a common understanding of curation. Share experiences and empirical evidence about tools & methods to provide institutions with baseline curation requirements	●	●			
Curation Researchers	Undertake research work to minimise subjectivity and clarify & standardise definitions of benefits. Develop tools that facilitate the implementation of standards	●	●			
Data Users	Demand better and more standardised interfaces to data and metadata making data more usable and thus demonstrating its value	●	●			
Managers	Setup agreements between organisations to share infrastructure for more efficient utilisation of available resources	●	●	●		
Member Organisations	Evangelise for the standardisation of practice across domains and produce advice & guidance that will help organisations to act upon this message. Work with solution providers & customers to translate and improve system specifications	●	●	●		
Policy Makers	Promote good practice and training so that integrated and standardised digital curation tools and services have a higher profile			●	●	●
Solution Providers	Work with customers and the community to develop, explain and simplify standard practices. Meet customers half-way in specifying solutions and by making pricing models and implementation options clear & understandable	●	●	●		

COOPERATION

Message 3

Develop scalable services and infrastructure

3 Conversations

Choosing the most efficient and effective curation infrastructure must be based on shared knowledge and expertise.

The assumption is that organisations should aspire towards mature curation services and that this will often result in shared infrastructures and require working in partnership with other organisations and service providers

Effective collaboration requires investment. It takes time and effort and managerial understanding to collaborate effectively and the motivations to do so must be understood by all parties.

Collaboration to Clarify the Costs of Curation

Who	What	When 2015	2016	2017	2018	2019
Curation Practitioners	Make realistic assessments of institutional capability to provide scalable services & infrastructure and compare this with the cost effectiveness & suitability of external service provision		●	●		
Curation Researchers	Optimise workflows and design procedures that will handle large volumes and complex digital objects	●	●	●		
Data Users	Demand delivery of assets and access to resources that suit the needs of users rather than fit within the constraints of current services and infrastructure	●	●	●	●	●
Managers	Setup agreements between organisations to share infrastructure for more efficient utilisation of available resources. Support practitioners to make realistic assessments of local capability	●	●	●		
Member Organisations	Identify and share lessons learnt relating to the economic benefits of using shared infrastructures and the value of planning for scalability over time. Provide a neutral environment to build trust for the negotiation of sharing agreements.	●	●			
Policy Makers	Provide domain-wide shared infrastructures to exploit economies of scale	●	●	●		
Solution Providers	Pay close attention to the need to build scalability into services. Offer solutions that are vigorously tested and provide transparent, benchmarked performance in response to more sophisticated specifications	●	●	●	●	

Message 4

Design digital curation as a sustainable service

3 Conversations

All organisations should be seeking to mature their digital curation activities. It should be designated as a service that delivers a business function

As a service, there will be a supply-side and a demand-side and it is important (even if both are internal to an organisation) that the participants in this 'transaction' are clear about their roles and responsibilities

When it is clear who is curating what for whom, it will be easier to declare the business case for curation and to support the arguments for continued investment

Collaboration to Clarify the Costs of Curation

Who	What	When 2015	2016	2017	2018	2019
Curation Practitioners	Work with digital curation service consumers (users) to model the current costs and benefits of digital curation activity	●	●			
Curation Researchers	Continue research into sustainable business models and examine how to standardise divergent current practices	●	●			
Data Users	Methodically and empirically assert the value of digital assets and work with practitioners and managers to undertake cost/benefit analyses		●	●	●	
Managers	Seek proof that digital curation activity within the organisation is: optimally & sustainably resourced; works within a defined supply & demand framework; is providing an efficient & effective service		●	●		
Member Organisations	Provide practitioner advocacy material to promote activities within organisations. Help solution providers to publicise & promote their offerings to enhance the marketplace for services & solutions	●	●	●	●	●
Policy Makers	Provide domain-wide shared infrastructures to exploit economies of scale. Design funding constraints to ensure that sustainable digital curation is underpinned by proven cost-effectiveness	●	●	●		
Solution Providers	Participate in setting standards and focus on long-term interoperability of design in software & infrastructure. Focus on openness & collaboration and building a sustainable & inclusive market place	●	●	●	●	

Message 5

3 Conversations

If we make funding contingent on being able to declare plausible cost estimates, this effectively means that organisations will have to engage in cost modelling activity at some level

This clearer and more insistent focus on the cost of curation may result in some organisations rethinking their current digital asset stewardship arrangements. It could mean that affording long-term preservation doesn't actually align with their business objectives.

The question of trust is critical to underpin an effective ownership chain where digital assets can be passed over to organisations that are better placed to curate assets into the future.

4C

COOPERATION

Who	What	When				
		2015	2016	2017	2018	2019
Curation Practitioners	Collaborate with peer organisations and engage with tools to establish the cost and benefits of digital curation. Be prepared to clarify whole lifecycle costs for managing digital assets	●	●	●	●	
Curation Researchers	Further develop resources that will simplify cost modelling & comparison for digital curation. Engage in additional pathfinder research to refine methods & decrease costs	●	●			
Data Users	Work with practitioners, researchers & policy makers to establish a better understanding of the variable asset value across the digital lifecycle & the impact of digital curation on that value		●	●	●	●
Managers	Establish clarity within organisations about roles & responsibilities for costing curation & resource it appropriately. Provide additional training for finance & accounting staff to understand digital asset management budgeting issues	●				
Member Organisations	Help establish relationships between organisations to facilitate the transfer or 'handoff' of digital assets. Promote tools & methods for whole lifecycle costing and disseminate good practice	●	●	●	●	●
Policy Makers	Identify where the maintenance of digital assets is a priority & design clauses in support agreements that require an estimation of the whole lifecycle costs of sustaining the assets for as long as they may be needed			●	●	●
Solution Providers	Work with practitioners and researchers to build accounting and budgeting modules into curation systems		●	●		

Message 6

Be collaborative and transparent to drive down costs

3 Conversations

Comparing operational costs and effort with peers is essential for identifying where efficiencies and savings can be made. This comparison can only happen if people are prepared to share.

The Curation Costs Exchange provides this mechanism but will need support from the community, not only in the first instance to populate the Exchange with data, but ongoing support to keep it valid as a community resource

If those who provide digital curation services can be contextually descriptive about their products and transparent about their pricing structures, this will enhance possible comparisons, drive competitiveness and lead the market to maturity.

Who	What	When				
		2015	2016	2017	2018	2019
Curation Practitioners	Devote resources to clarifying the costs & benefits of curation and then share the findings with the wider community. Ask for reciprocal information from others	●	●	●		
Curation Researchers	Examine, evaluate, assess and report on the impact of being collaborative and transparent about costs and benefits information		●	●		
Data Users	Understand the role and purpose of the 'designated community' for curation and ensure that managers & policy makers include users in consultation and steering groups for digital curation initiatives	●	●			
Managers	Ensure that curation activity within organisations is aligned with organisational objectives and that curation practitioners are correctly identifying & emphasising curation benefits when they are outlining curation costs	●	●			
Member Organisations	Synthesise & disseminate the data on costs & benefits and adopt a neutral & universal approach to help all organisations drive down the costs of curation. Foster a culture of trust among members	●	●	●	●	●
Policy Makers	Foster a culture of collaboration to understand the costs and benefits of digital curation	●	●	●		
Solution Providers	Come up with good descriptions of the benefits frameworks and the curation objectives that systems & solutions support to complement clear pricing & costs information	●	●			

Breakout Groups to Discuss the Roadmap

Do you share the vision outlined in the Roadmap?

For each message ...

- Is the message meaningful to you?

- Do you agree with the message?

- If the message applies to you, are you prepared to act on it?

- Is this message aimed at the right audiences?