

# Investing in Curation

## A Shared Path to Sustainability

(condensed version)

# 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.*

# Who should be interested?

## Curation Practitioners

Those with direct responsibility for managing digital assets and appropriate knowledge about digital curation processes and techniques.

## Curation Researchers

Those with the remit and the expertise (or the appropriate guidance) to tackle emerging digital curation challenges and to define new methods and processes for the long-term management of digital assets.

## Data Producers/Users (and re-users)

Those who generate the data that will be curated. Those with an interest in using and re-using the curated data. Also known as the ‘designated community’ when it comes to determining why and for whose benefit investment is being considered to curate the digital assets.

## Managers (and financial officers)

Those within organisations or groups that have little or no digital curation expertise themselves but are required to integrate, coordinate, facilitate or manage digital curation activity as an integral part of the business function of the organisation.

## Member Organisations

Those who represent the interests of subscribing member organisations and the wider community to promote and support best practice and policy-making in the domain of digital curation or in related areas.

## Solution Providers

Those with incentives (commercially or community-driven) to develop and disseminate products that will support digital curation activity at either the infrastructure (services) or systems (solutions) level.

## Policy Makers (Resource Providers / Data Owners)

Those with responsibility for dictating the type and quality of digital curation activity that is required; those responsible for making the resources available to support that activity (funding); and those responsible for establishing the framework of ownership around data.

## Who is responsible for this Roadmap?

The Roadmap has been developed by the 4C Project (Collaboration to Clarify the Costs of Curation)—<http://4cproject.eu>  
4C is an ERA-NET project co-funded by the 7<sup>th</sup> Framework Programme of the European Commission.

The 4C participants are:

Jisc

The Royal Library—National Library of Denmark

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Danish National Archives

German National Library

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KEEP SOLUTIONS

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The 4C Advisory Board Members

*Identify the value of  
digital assets and  
make choices*

# I: Identify the value of digital assets and make choices

## Benefits and positive outcomes

- Focusing on the value of digital assets and their likely return on investment will foster a deeper sense of tactical and strategic alignment at all levels within an organisation.
- Questions will usefully arise about whether existing data and digital collections are being used, have potential users, are being adequately exposed or are sufficiently discoverable.
- The effort to automate the identification of value could be combined with improving the overall efficiency of curation systems (see message 2).
- Similarly, the information that must be explicit for automated appraisal will also be valuable when digital repositories seek to validate their procedures.
- Co-operation and collaboration between organisations will become more commonplace as organisations work together to effect 'handoffs' of data and agree long-term archiving arrangements.
- An investment now into research relating to automated selection and appraisal techniques will lay the groundwork for increasingly sophisticated and critical work beyond 2020 when global data volumes dwarf current levels.
- The articulation of demand for automated selection and appraisal products will drive solution provider activity and provoke action within the marketplace to supply that demand.

## Actions

| 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 Producers/ Users  | Content experts to work with technologists to establish value criteria and represent 'designated communities'. Make choices about the level of certification you need and are willing to pay for | ●    | ●    |      |      |      |
| 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   | ●    | ●    | ●    |      |      |

*Demand and choose  
more efficient  
systems*

## 2: Demand and choose more efficient systems

### Benefits and positive outcomes

- Digital curation requires a significant investment of time in order to acquire expertise. The spread and adoption of standardised practices helps to lower the barriers to entry for new practitioners.
- Utilising good practice make the curation dataflow more efficient and lowers costs
- Standardisation supports easier institutional decision making and will add efficiencies to operational environments.
- Standardisation may not be possible or applicable for institutions with unusual or unique digital holdings, but may still provide practical reference points for customisations and extensions.
- For institutions where curation is not their core business best effort approaches are often sufficient to address their needs. Being clear about where local practice deviates from standard practice and documenting the reasons in policies will be helpful in maintaining an effective operating environment and to align understanding (within the organisation) of current capability and the organisational mission.

### Actions

| Who                           | What   | When |      |      |      |      |
|-------------------------------|--|------|------|------|------|------|
|                               |  | 2015 | 2016 | 2017 | 2018 | 2019 |
| <b>Curation Practitioners</b> | Establish a common understanding of curation. Share experiences and empirical evidence about tools & methods to provide institutions with baseline curation requirements   | ●    | ●    |      |      |      |
| <b>Curation Researchers</b>   | Undertake research work to minimise subjectivity and clarify & standardise definitions of benefits. Develop tools that facilitate the implementation of standards  | ●    | ●    |      |      |      |
| <b>Data Producers/ Users</b>  | Demand better and more standardised interfaces to data and metadata making data more usable and thus demonstrating its value. Use good practices when working with data at all stages in the curation lifecycle.                           | ●    | ●    |      |      |      |
| <b>Managers</b>               | Setup agreements between organisations to share infrastructure for more efficient utilisation of available resources   | ●    | ●    | ●    |      |      |
| <b>Member Organisations</b>   | 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 | ●    | ●    | ●    |      |      |
| <b>Policy Makers</b>          | Promote good practice and training so that integrated and standardised digital curation tools and services have a higher profile   |      |      | ●    | ●    | ●    |
| <b>Solution Providers</b>     | 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                  | ●    | ●    |      |      |      |

*Develop scalable  
services and  
infrastructure*



### 3: Develop scalable services and infrastructure

#### Benefits and positive outcomes

- Collaborating this way opens a forum for mentoring, knowledge exchange, application of standards and continuous development; reducing the “gap” between organisations seen as more “mature” in the field of digital preservation and those who are relatively new to the practice.
- An assessment of local capability versus outsourcing shines a light on skills gaps within the organisation and should highlight training and staff development opportunities.
- Organisations will be able to identify opportunities for the introduction of cost efficiencies by comparing their own activities with those of similar organisations.
- Shared infrastructure, resources and effort will also enable the realisation of further cost reductions by improving efficiency of the workflows necessary to undertake digital curation.

#### Actions

| Who                           | What   | When |      |      |      |      |
|-------------------------------|--|------|------|------|------|------|
|                               |  | 2015 | 2016 | 2017 | 2018 | 2019 |
| <b>Curation Practitioners</b> | Make realistic assessments of institutional capability to provide scalable services & infrastructure and compare this with the cost effectiveness & suitability of external service provision  |      | ●    | ●    |      |      |
| <b>Curation Researchers</b>   | Optimise workflows and design procedures that will handle large volumes and complex digital objects  | ●    | ●    | ●    |      |      |
| <b>Data Producers/ Users</b>  | 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. Ensure all providers and users of data utilise practices that can reduce cost.     | ●    | ●    | ●    | ●    | ●    |
| <b>Managers</b>               | Setup agreements between organisations to share infrastructure for more efficient utilisation of available resources. Support practitioners to make realistic assessments of local capability  | ●    | ●    | ●    |      |      |
| <b>Member Organisations</b>   | 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. | ●    | ●    |      |      |      |
| <b>Policy Makers</b>          | Provide domain-wide shared infrastructures to exploit economies of scale   | ●    | ●    | ●    |      |      |
| <b>Solution Providers</b>     | 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                                 | ●    | ●    | ●    |      |      |

*Design digital  
curation as a  
sustainable service*

## 4: Design digital curation as a sustainable service

### Benefits and positive outcomes

- By considering curation activity in terms of service provision, organisations will be able to specify more clearly the costs of digital curation and better establish their incentives and the methods they should use to manage their digital assets over time.
- Rather than digital curation happening within the organisation as an ad-hoc activity or an accidental adjunct to other tasks, it will become a strategic business function, underpinned by appropriate cost/benefit analyses.
- The result of those analyses will provide a clearer view and a better understanding of the value of digital assets and will help to refine the mission and objectives of an organisation
- Designing digital curation as a service should help to make activity more comparable across all sectors and should help to align and standardise practice.
- This in turn should promote the market for the provision of solutions and services and should lead to a wider range of competitively priced offerings from a broader range of suppliers.
- Clear demand and support from data users allows solution providers to commit to building new solutions
- Promoting successes and sharing good experience helps increase take-up of services. This drives down costs, prices and risks for everyone

### Actions

| Who                           | What   | When |      |      |      |      |
|-------------------------------|--|------|------|------|------|------|
|                               |  | 2015 | 2016 | 2017 | 2018 | 2019 |
| <b>Curation Practitioners</b> | Work with digital curation service consumers (users) to model the current costs and benefits of digital curation activity  | ●    | ●    |      |      |      |
| <b>Curation Researchers</b>   | Continue research into sustainable business models and examine how to standardise divergent current practices  | ●    | ●    |      |      |      |
| <b>Data Producers/ Users</b>  | Methodically and empirically assert the value of digital assets and work with practitioners, managers and solution providers to undertake cost/benefit analyses and to promote successes                 |      | ●    | ●    | ●    |      |
| <b>Managers</b>               | 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 |      | ●    | ●    |      |      |
| <b>Member Organisations</b>   | Provide practitioner advocacy material to promote activities within organisations. Help solution providers to publicise & promote their offerings to enhance the marketplace for services & solutions    | ●    | ●    | ●    | ●    | ●    |
| <b>Policy Makers</b>          | 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             | ●    | ●    | ●    |      |      |
| <b>Solution Providers</b>     | 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   | ●    | ●    | ●    |      |      |

*Make funding  
dependent on  
costing digital assets  
across the whole  
lifecycle*

## 5: Make funding dependent on costing digital assets across the whole lifecycle

### Benefits and positive outcomes

- With more clarity on the costs associated with each stage of the curation lifecycle, transfers of assets from one managed environment to another are likely to be handled more smoothly.
- The ability to make realistic estimates of future liabilities will integrate digital asset management more firmly into the ordinary planning activities of organisations.
- This in turn will raise awareness of the value and importance of digital assets and may prompt an increased desire to exploit that value creatively.
- Resource Providers will be better placed to identify areas where centralised support may realise greater curation efficiencies, potentially leading to more shared infrastructure becoming available.
- A focus on lifecycle costs may incentivise organisations and resource providers to avoid re-creating data that already exists, or to create data in such a way that the prospects for its sustainability and reusability are optimised from the outset.
- This, in turn, may positively affect the quality of data created allowing re-users to have greater confidence in the data they use and, subsequently, produce more useful results.

### Actions

| Who                           | What   | When |      |      |      |      |
|-------------------------------|--|------|------|------|------|------|
|                               |  | 2015 | 2016 | 2017 | 2018 | 2019 |
| <b>Curation Practitioners</b> | 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   | ●    | ●    | ●    | ●    |      |
| <b>Curation Researchers</b>   | Further develop resources that will simplify cost modelling & comparison for digital curation. Engage in additional pathfinder research to refine methods & decrease costs   | ●    | ●    |      |      |      |
| <b>Data Producers/ Users</b>  | 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   |      | ●    | ●    | ●    | ●    |
| <b>Managers</b>               | 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 | ●    |      |      |      |      |
| <b>Member Organisations</b>   | 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  | ●    | ●    | ●    | ●    | ●    |
| <b>Policy Makers</b>          | 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                   |      |      | ●    | ●    | ●    |
| <b>Solution Providers</b>     | Work with practitioners and researchers to build accounting and budgeting modules into curation systems  | ●    | ●    |      |      |      |

*Be collaborative and  
transparent to drive  
down costs*

## 6: Be collaborative and transparent to drive down costs

### Benefits and positive outcomes

- Being transparent about costs is a short-cut for organisations and content holders to obtain reciprocal information from their peers.
- The analysis of this information should afford opportunities to optimise curation strategies and practices, identify efficiencies, create networks, and enhance communication with peers, designated communities and other stakeholders.
- Better business cases, scenario planning and calculation of different scenarios will be easier to perform for all parties that are involved with and active in digital curation.
- Better informed investments in digital curation will create value and trust.
- A demonstrable increase in organisational transparency could have important positive reputational implications and could be used as an instrument for changing public perceptions.
- Having accurate and comprehensive data on which to base decisions will benefit all types of organisation and should universally provide advantage. Businesses and other types of organisations where there are sensitivities around openly revealing the economic basis of their activities can still contribute with carefully contextualised and anonymised data.

### Actions

| 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 Producers/ Users  | Understand the role and purpose of the 'designated community' for curation and ensure that managers & policy makers include users and solution providers 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  | ●    |      |      |      |      |

# Resources

## The Curation Costs Exchange

<http://curationexchange.org>

## A Cost Concept Model and Gateway Specification

<http://4cproject.eu/d3-2-ccm>

## A Summary of Current Cost Models

<http://4cproject.eu/summary-of-cost-models>

## A Report on the Indirect Economic Determinants of Digital Curation

<http://4cproject.eu/d4-1-ied>

## A report on Risk as an Indirect Economic Determinant

<http://4cproject.eu/d4-4-report-on-risk-benefit-impact-and-value>

## An Evaluation of Costs Models and a Needs & Gap Analysis

<http://4cproject.eu/d3-1>

## An Economic Sustainability Reference Model, & Digital Curation Sustainability Model

<http://4cproject.eu/d4-2-esrm-2>

## From Costs to Business Models for Digital Curation

<http://4cproject.eu/d4-5-from-costs-to-business-models>

## A Report on Quality & Trustworthiness as an Indirect Economic Determinant

<http://4cproject.eu/d4-3-quality-and-trustworthiness>

## Baseline Study of Stakeholders & Stakeholder Initiatives

<http://4cproject.eu/d2-1-stakeholders>

## Roadmap report

<http://4cproject.eu/d5-2-roadmap-report>

## Please comment

<http://4cproject.eu/roadmap-discussion>

Eventually, discussion will be moved to the projects sustainable platform, the curation costs exchange, so please keep an eye on <http://curationexchange.org> for updates.

## Pass it on

Please do. If you know of someone who you think might be interested then please do send them a copy. Alternatively you can point them at the web-site—<http://4cproject.eu/roadmap>—where they can download their own copy. Other formats—actions postcards, a longer version of this document and an on-line interactive version—can also be found there.

Digital curation is important and this roadmap represents an opportunity to raise awareness of that fact across the board.

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## Contact

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*Be collaborative and transparent to drive down costs*

*Identify the value of digital assets and make choices*

*Make funding dependent on costing digital assets across the whole lifecycle*

#### **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.*

*Demand and choose more efficient systems*

*Design digital curation as a sustainable service*

*Develop scalable services and infrastructure*