

# The SCAPE Policy Framework, maturity levels and the need for realistic preservation policies

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## ABSTRACT

A digital preservation policy is an essential document in which an organization summarizes its approaches to achieve the goals and objectives for the long term preservation of the collections in its digital archive. In this paper the reference to preservation policies in various standards is compared with a set of publicly available preservation policies, showing that there is a big gap between theory and practice. Recent work done in the European project SCAPE (<http://www.scape-project.eu/>) in building a Catalogue of Policy Elements could contribute to bridging this gap. The paper concludes with suggestions to further develop the practical use of preservation policies by aligning them to the maturity level of the organization.

## General Terms

strategic environment, preservation strategies and workflows, theory of digital preservation, case studies and best practice

## Keywords

Preservation Policies, OAIS, TDR, TRAC, SCAPE Policy Framework

## 1. INTRODUCTION

A Digital Preservation Policy is an essential document in which an organization summarizes its approaches to achieve the goals and objectives for the long term preservation of the collections in the digital archive. Phrases like "*Without a policy framework a digital library is little more than a container for content*" [8], p. 68] and "*A policy forms the pillar of a programme for digital preservation*" [17], p.3] are underpinning this notion and show that the importance of preservation policies is a generally accepted one in the digital preservation community. A growing number of organizations in various disciplines see themselves faced with a mandate to preserve digital collections for the long term. This task of keeping large digital collections accessible over time is no longer restricted to libraries and archives.

Preservation policies, together with the explicitly formulated strategy of an organization, play various roles. One of them is informing the stakeholders of the digital archives about the activities. Stakeholders include the staff, the depositors and the

users of the digital archives as well as the general public and the designated communities for which these organizations preserve their collections for the long term. Every stakeholder has a (different) interest in transparency and openness about the approaches an archive is choosing. This is very much related to the "trustworthiness" of the digital archive, for which such transparency is a key element. In practice, digital archives will base their daily activities on organizational policies and procedures. Making these preservation policies publicly available will better inform the stakeholders. Depositors will be able to compare digital repositories, the users will know what they can expect and staff will know how to organize their work. With a growing group of long term digital archives, one would expect that there is an abundance of published preservation policies out there. This however is not the case. For various reasons, this is a lost opportunity. Often these organizations, like libraries, archives and data centers are publicly funded and there is a growing awareness that therefore not only the directly involved stakeholders should be informed about the achievements of the organizations. Because digital preservation implies a long term financial commitment, there is a pressure on these organizations to show the value and benefits of their activities and how tax payers' money is spent. This stresses the importance of the digital preservation community to be transparent and realistic in stating the preservation policies.

But what is a good preservation policy, and what should be described in it? Are there rules and guidelines? In an attempt to answer these questions the requirements for preservation policies, as defined in the two most important standards for the digital preservation community are analyzed. One standard is the Open Archival Information System (OAIS) [34]. The other is the ISO 16363 standard for Audit and Certification of Trustworthy Digital Repositories (TDR)[2]. These two standards were input for work on policies recently done in the European SCAPE project. The Catalogue of Policy Elements that was created in this project, will be explained as well as the results of an analysis done on a set of publicly available preservation policies. Finally some suggestions are offered to improve the practical value of preservation policies by aligning them to the preservation maturity levels as developed by Dollar and Ashley [18].

## 2. GUIDANCE ON PRESERVATION POLICIES

### 2.1 Preservation standards about policies

In order to get an answer on the question: "what is a good preservation policy?" two standards are relevant for the preservation community. The OAIS model and the TDR standard.

The OAIS standard is a widely accepted standard in this community and offers a shared language for all practitioners. Although the exact phrase "preservation policy" is not mentioned in the OAIS standard, frequent references are made to "a policy" that an organization needs to formulate, related to several topics. These topics include a "pricing policy", a policy covering the deletion of objects and "access policies". In the OAIS standard, there are no prescriptions given for the elements that should be part of such a policy. It is left to the digital archive to decide what to include in which kind of policy. The entity "Management", as described in the OAIS functional model, is supposed to manage these policies, in relation to the broader policy domain in which the organization operates.

After the first publication of the OAIS model in 2002, the rather abstract concepts were further explained and described in "Trustworthy Repositories Audit & Certification (TRAC): Criteria and Checklist", published in 2007 [48]. TRAC states that an organization "has publicly accessible definitions and policies in place to dictate how its preservation service requirements will be met"[48], metric A3.1]. But no list of topics that should be included in policies was given.

This document was updated and augmented, and fairly recently resulted in the ISO standard 16363: Audit and Certification of Trustworthy Digital Repositories (TDR), finalized in 2012. This standard describes the criteria on which a certification of a digital archive will be based, explained in "metrics". As part of the "Policy Framework" the term "Preservation Policy" was introduced. The context for the Preservation Policy is explained as follows:

*A repository is assumed to have an overall Repository Mission Statement, part of which will be concerned with preservation. The Preservation Strategic Plan states how the mission will be achieved, in general terms with goals and objectives. The Preservation Policy then declares the range of approaches that the repository will employ to ensure preservation (that is, to implement the Preservation Strategic Plan), and finally the Preservation Implementation Plan translates those into services that the repository must carry out [48], p. 1-4).*

This policy framework is an abstract model and not prescriptive, in practice it might result in different documents under different names. Nevertheless a requirement of the Preservation Policy is that

*The policies should be understandable by the repository staff in order for them to carry out their work. Preservation Policies and procedures must be demonstrated to be understandable and implementable. [48], p. 1-4*

So in order to be useful for staff, preservation policies should be realistic, otherwise they are not "understandable", let alone "implementable". The TDR standard does not give an overview of elements that should be covered in the Preservation Policy. However, in several 'metrics' that are outlined in the standard, references are made to preservation policies that should be in place, in order to show evidence of meeting the requirements mentioned in the metric. From this we can derive that preservation policies should be formulated addressing (at least) the following areas:

The existence of policies (3.3.2), periodic review of the policies (3.3.2.1), handling of liabilities, ownership and rights (3.5.1.4.), information integrity measures (3.3.5), a description of the collection that an organization "will preserve, retain, manage and

provide access to" (3.1.3), the intellectual property rights (3.5.2), verification of the SIP on completeness and correctness (4.1.5), specifying the treatment of AIPs and the circumstances under which AIPs will be deleted (4.4.1.1), the properties to preserve (4.1.1.1, 4.1.1.2), preservation strategy and triggers to activate the strategy (4.3.1), changes in the preservation plan as a result of monitoring activities (4.3.3.), monitoring and acting upon hardware and software changes (5.1.1.1, 5.1.1.2, 5.1.2).

While both OAIS as well as TDR emphasize the importance of policies and TDR gives a clear definition of the need for such a policy, there is no overview of the elements that should be part of a preservation policy. This lack of guidance will not make it easy for organizations to develop a preservation policy. Lack of a shared understanding of the ingredients of a preservation policy will also make it difficult to judge, for example in an audit and certification procedure, whether a preservation policy is meeting the requirements or to compare archives.

## 2.2 Sources and guidance

In several published preservation policies, which will be discussed later, references were made to literature that supported and inspired the creation of these preservation policies. Taking policies of peer organizations is one way to get inspired in writing your own policies and several times the policies of the National Library of Australia [26] were used. Other sources included the JISC publication of Digital Preservation Policies Study by Neil Beagrie et al [4], and the Erpanet Tool [17]. What are these sources telling us about preservation policies?

The National Library of Australia, according to their website, created their first preservation policy in 2001 and in combination with their reputation in digital preservation, this might be a good reason why other organizations referred to these policies (the current version of their preservation policy is 0.4 and the 2001 version is available via their Pandora web archive [27]).

The Erpanet Digital Preservation Policy Tool (2003) starts with giving a set of general principles [17], p.3] for creating a policy, which "needs to convey the very philosophy of an organization concerning digital preservation". Another principle being: "every policy should be practicable, not definitive, capable of being put into practice by institutions with varying resources and needs, and, especially, flexible to adapt itself to changing administrative and technological circumstances". The Policy Tool further lists benefits of a preservation policy and offers an overview of elements that should be described in the preservation policy.

The motivation for the JISC publication lies in the evolving world of e-infrastructure and electronic services in universities and colleges in the UK, being dependent for future benefits on "digital preservation strategies being in place and underpinned by relevant policy and procedures" [4], p.5]. The JISC Digital Preservation Policies Study, published in 2008 provides a model for "Institutional Digital Preservation Policies" and is a practical guide with a set of policy clauses, further explained with examples in the implementation section. In Part 2 of this study several real life strategies of UK universities were analyzed. Areas where preservation policies could contribute to the mission and strategies of the universities were identified, thus demonstrating the need for consistency in preservation policies.

These sources offer guidance in creating a preservation policy and the topics that should be covered, at a time where OAIS and TRAC were fairly recently published and TDR was not yet a formal standard. These documents, together with the

mentioned standards were input for the creation of the SCAPE Catalogue of Policy Elements.

### 3. THE SCAPE PROJECT

#### 3.1 The SCAPE Policy Framework

The European SCAPE project (running from 2010-2014) is dedicated to the digital preservation challenges of large scale, heterogeneous collections of complex digital objects. The project focuses on digital objects held in the collections of various participating content holders, with a focus on libraries, web archives and data centers. The scale of these digital collections limits the possibility of manual involvement when performing preservation activities. Instead, such large scale collections will require more automation through the use of workflows and high-performance systems. As preservation activities need to be guided by preservation policies, these policies will need to be formulated in such a way that they are machine readable (e.g. right level of granularity), in order to be usable in such automated processes. The focus of the policy work in the SCAPE project was on the activities for Preservation Watch and Preservation Planning. Starting point here was the Planets Functional View [37], where in addition to the OAIS model, the Preservation Watch function was added to the OAIS Functional Model, combining several monitoring functions. A Preservation Watch Function will need preservation policies in order to monitor the relevant areas and to determine these areas. In addition, the Preservation Planning will need these preservation policies to make a relevant plan.

The SCAPE Policy Framework (see Figure 1) was developed during the project, consisting of three levels:

1. Guidance Policies, a high level representation that describes in a broad sense the goals of the organization in relation to long term preservation of their collections. These Guidance policies can be derived from a strategy document or the mission of an organization.
2. Preservation Procedure Policies in which the approach to be taken to achieve the high level goals is described.
3. Control policies. On this level the policies formulate the requirements for a specific collection, a specific preservation action and/or for a specific designated community. This level can be human readable, but should also be machine readable and thus can be used in automated planning and watch tools to ensure that the chosen preservation actions and workflows meet the specific requirements identified for that digital collection. These are likely to be kept internally within the organization.

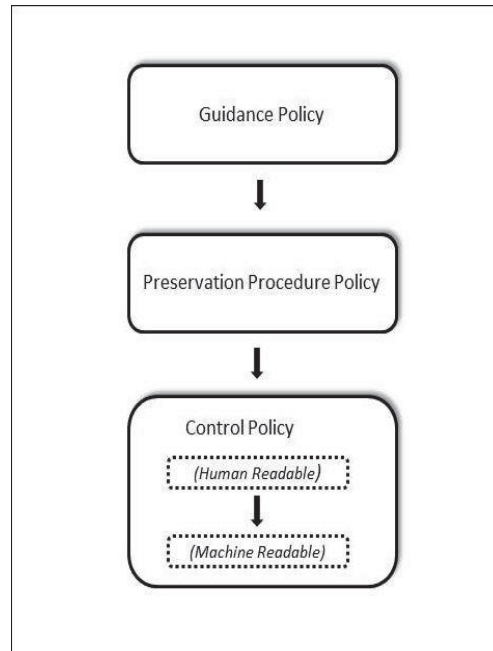


Figure 1 The SCAPE Policy Framework

Based on this framework, organizations should be able to create a set of policies that is consistent. This concept is described in [39] and presented during iPRES 2013.

The SCAPE framework can be mapped to the concepts described in the TDR standard. The Preservation Strategic Plan can be compared with the concept of Guidance Policies. The Preservation Policy has similarities with as the Preservation Procedure Policies and the Preservation Implementation Plan will result in the Control Policies.

#### 3.2 The SCAPE Catalogue of Policy Elements

The previously mentioned standards and guidelines on preservation policies, as well as several other sources, were input for a set of topics that should be described on a strategic level. These topics were the basis for the Guidance Policy. Examples of these topics are: the use of a reference model for digital preservation, the concept of authenticity, whether the organization will preserve the digital material on bit preservation level or functional preservation level, whether access to the digital collection will be given, a view on the use of standards, the handling of various rights, etc.

This set of high level topics was input for the development of the SCAPE Catalogue of Policy Elements [9] in which the second level, the Preservation Procedure Policies, are described. Each policy element is described on the basis of a template. In this template the details of each policy element will give information about the need for the specific policy element and the risk of not having such a policy, the relationship with the strategic level, as well as the relationship with the lowest level, the Control Policy. A suggestion is made for the stage in the DCC Preservation Life Cycle [43] in which the policy will be created and who in the organization could be responsible for the description of the policy. These suggestions intend to connect the policy to the daily environment in which it should operate. Whenever relevant, elements are illustrated with an example of a real life policy.

This SCAPE Catalogue of Policy Elements is publicly available, both as a report as well as a wiki.

### 3.3 Published Preservation Policies

In several surveys [7], [44] organizations indicate that they have preservation policies in place. Some of them have published these policies on their website. To support the policy work in the SCAPE project a collection of published preservation policies was created and made publicly available on the website of the Open Planets Foundation [35]. In March, 2014 this set contained around 50 policies of libraries, archives, data centers and other organizations. The collection is created using a range of sources, including literature references, Internet search findings, direct contacts, responses to a blog post [38] that did an appeal on the digital preservation community to send references to publicly available preservation policies, suggestions from network partners and last but not least the incorporation of sources mentioned in the report published by Sheldon [36] in 2013, who did a similar exercise in collecting preservation policies.

The result is a highly heterogeneous set of preservation policies, from a large variety of organizations. When available, both the strategy as well as the policy are included in the collection. The boundaries between a preservation strategy and a preservation policy are not always clear, for example in [6]. In this example, many detailed approaches about the implementation of the strategy are described in the strategy, which other organizations are likely to describe under the heading "policy".

This initial collection of preservation policies cannot be seen as representative. Several organizations that are active in digital preservation are missing, either because they did not make their preservation policy publicly available, or because we did not find it — but that does not imply that they have no policy. As said before, all organizations with a preservation mandate will take decisions about their digital collections that are implicitly based on policies, whether they are written down or not. Each activity, whether it is the design or the selection of a preservation system, the operation of it, the planning of ingest procedures, or staff training, has its foundation in a vision on how to preserve the digital material.

By putting this overview of preservation policies on the Open Planets Foundation website, a central place is created where every organization, planning to develop or updating its preservation policies, can have a look at the policies of their colleagues and add their policies as well.

### 3.4 Analysis and observations

As already mentioned, this collection of preservation policies was originally created to validate the elements in the Catalogue of Preservation Policies. To support this validation a subset of around 40 published preservation policies was created. This selection was based on categories libraries, archives and data centers, as these organizations corresponded to the organizations that were the focus domains in the SCAPE project (web archives, digital repositories and data centers). All included policies were either in English or German.

**Table 1: overview of analyzed preservation policies**

Libraries	Archives	Data Centers
[3], [5], [6], [12], [15], [16], [22], [23], [26], [28], [29], [31], [33], [40], [41], [46], [47], [50], [53], [54], [55], [56], [58]	[11], [13], [21], [24], [25], [30], [42], [32], [45], [57]	[10], [14], [19], [20], [49], [51], [52]

[numbers referring to references]

The main finding from the analysis was that almost all elements in the SCAPE catalogue were mentioned in the various policies, sometimes briefly and sometimes more extensively. Although the coverage of the SCAPE Catalogue of Policy Elements is broad, based on this analysis some elements seemed to be missing in the Catalogue. One reason for this, was that these elements were often not related to Preservation Watch and Preservation Planning (the focus areas), but to general aspects of policies. In a few cases there were elements in the policies that were also advised to include by the JISC report or the Erpanet Tool. Some examples of these elements are:

- A description of the review schema for the policies
- The explicit intention of the organization to collaborate with members from the digital preservation community, be it on the basis of knowledge exchange, contributing to standards, advising producers of digital material (especially in the policies of archives) or to be part of a network of digital archives
- A description of challenges that the organization is facing. Often a list of threats is given that the organization is facing with this mandate of digital preservation, like the rapid growth of digital material, the technical developments, sustainability, content provider partnerships, the needed flexibility, etc.
- Two preservation policies had a statement on the explicit intention to do research on digital preservation [30],[45]
- As a preservation policy often has connections with other policies that are used in the organization, references are made to other relevant policies.

A general observation is that the 40 preservation policies differ greatly from one another. While sharing the same heading of "Preservation Policy", a highly heterogeneous set of documents was published. Although many of the elements from the SCAPE Catalogue were present in the policies, the level of detail used to describe these elements differs significantly. To give an indication of these different levels of detail: the length of the preservation policies ranges between 2 to 20 pages. While some were published in 2007 and have not been updated since, others were published as recently as 2014 [14]. In some cases, the policy is more or less a description of how digital preservation in general "should be" done, while others have very detailed descriptions of how this organization implemented various aspects of digital preservation [21]. A few try to combine their preservation policy for both analogue and digital material in one document [28],[56] but these are exceptions. Almost all of them focus only on the digital collection, as often also mentioned in the title of the document (e.g. "Digital preservation policy"). The content of the digital archive and the kind of collections that will be preserved, is

often described in broad terms, as to explain which material will be affected by the policies described, using phrases like "digital born" material, digitized material (sometimes called "surrogates" [45]) and digital material on physical carriers. Subscriptions or licensed materials are often excluded from digital preservation [54]. In a few cases the preservation policy also contained the digitization policy, with sometimes detailed descriptions. [45] This was perhaps included because the digitization policy could lead to more digital material from their current analogue collections. The appendices have a variety of material, ranging from a list of supported formats, to a digital preservation decision flowchart [55] on the basis of which it is decided whether the digital object will be bit preserved or will get a full preservation treatment or not archived at all.

As mentioned before, the boundaries between a "policy" and a "strategy" are not entirely clear. For example, one organization wrote "This policy outlines the Record Office's approach to digital preservation, whilst the aim of the strategy is to describe this approach in more detail, including technical specifications where appropriate" [21], while others describe their approach in detail in the policies [31].

Although the standards mentioned earlier in this paper are clear about the need for a preservation policy, a set of criteria of what makes a good preservation policy is lacking. Several of the policies were written before TDR became a standard. This lack of criteria obviously lead to the heterogeneity in the set of existing preservation policies we found and one could wonder whether these preservation policies are playing the role they are intended to play. According to TDR the purpose of a preservation policy can be seen as "*declares the range of approaches that the repository will employ to ensure preservation*". Staff will use the information in the preservation policy to shape their daily work in preserving digital material. Preservation policies should be clear enough to support this role. If we agree on the need for transparency, not only to staff but also to a broader range of stakeholders, the preservation policies have a role informing this - not specifically mentioned- audience, namely the audience that is interested in the trustworthiness of the repository. This does not imply that all policies should be publicly available, one could expect that different versions will exist to inform different stakeholders.

In order to fulfill these two roles, it should be clear what should be the essential elements in a preservation policy. On top of that, the need for clear criteria to assess the Policy Framework, including the Preservation Policies of an organization, will be necessary for the certification process based on TDR.

Looking at the heterogeneity in the current set of preservation policies, one could doubt very much whether all preservation policies are playing the role they were intended to do. And whether both the external stakeholders as well as the internal staff do see them as informing them adequately about the preservation approaches of the organization. In several cases this is debatable, for example if a policy promised a regular 2 year update and has not been updated for several years. As the digital preservation environment is changing, does not this show that the published document has not been adapted to this changing environment? And if not adapted to changes, what role does this policy play for the daily activities of the staff ?

But perhaps the current policies did not have these purposes and roles in mind when they were written? Why were they written and published anyway and for whom were they written, who are the

stakeholders that needed to be informed? Depending on audience ("who") and purpose ("why"), different elements might have been described. What are the published preservation policies telling us about the "who" and "why"?

In general the "why" is more often addressed than the "for whom". Several reasons are given for why these policies are published, including "to state and communicate the principles" [24], "to describe the need and strategies for preserving (...) resources" [15], "[to] be an external statement of the current understanding and vision of digital preservation" [1], "[for] transparency" [31], "[to] define the principles" [40], "to formalize its commitment" [54], "to provide a comprehensive statement on the preservation and conservation of the Library's collections" [56] or "to outline what we can hope to achieve in the way of preserving digital material" [11]. In some cases this reason is related to the intended audience, but more often the audience is not mentioned at all. If it is mentioned, it is sometimes related to staff, but more often to what we can see as producers, consumers and funders. Two cases explicitly mention "peers (for general international evaluation of policies in this special area)" [46] and "the interested public as well as expert circles in the digital archiving /community" [42]. Based on these statements, it seems that the role of these policies are more focused on telling the intended public about their commitment in general. They seem to be less intended as guiding the daily practices in digital preservation, and staff activities. This could explain why in some policies firm commitments are phrased, while it is general knowledge in the digital preservation community that these commitments cannot be met yet. For example, a statement that all content will be validated on ingest is not a realistic one, as there are no tools for all file formats to do this. Similarly, a statement saying that a preservation strategy like emulation will be chosen is somewhat unrealistic if it is not really implemented and the current situation is that very few organizations have done so.

So how realistic are the published policies? In certification terminology: how trustworthy are the policies in giving evidence about what is really going on in an organization? Do they cover the previously given TDR description: "*The policies should be understandable by the repository staff in order for them to carry out their work. Preservation Policies and procedures must be demonstrated to be understandable and implementable.*"? Apart from this TDR description, the problem of unrealistic phrases in preservation policies, is that this could be misleading both staff, the external stakeholders and the general audience. Digital preservation is an evolving field. Promising more in preservation policies then can be realized in practice could be dangerous and could lead to undermining the trustworthiness of the digital preservation community as a whole.

Adapting the preservation policies into documents that better reflect the real situation in an organization, should be a collaborative approach. As there is a variety of organizations with a long term preservation mandate, it might be useful to link a preservation policy to a preservation maturity level. If we could come to a set of criteria for each preservation maturity level, the need to promise more than the organization is capable of in that stage will be less. But these criteria should be based on a shared view in the digital preservation community. As preservation policies need to be updated on a regular basis, the organization can adapt the preservation policies to the next maturity level in a newer version and aligning them to the developments in the digital preservation community. The intentions of the organizations will be described in the Strategy, so it will be clear

to the stakeholders and staff what are the goals and missions for the long term.

### 3.5 Levels of Maturity

Digital Preservation in an organization not seldom follows a long process before it is part of the daily practice. It could start with a project to get acquainted with the challenges and risks, followed by a more formal approach and finally ending up in making digital preservation an integral part of the organizations activities. Each phase will require a different strategy and a different set of preservation policies. Assigning a maturity level to an organization might give more insight in which stage of the process an organization is. One example of maturity levels is the Digital Preservation Maturity Level Model, developed by Dollar and Ashley [18]. This model distinguishes 5 stages. These stages are cited here, where for each stage a suggestion is made of the completeness of the preservation policy.

- Level 0, described as "Most, if not all, electronic records that merit long-term are at risk". In this situation an organisation is still figuring out what to do and a preservation policy is not yet expected.
- Level 1 "Many electronic records that merit long-term preservation are at risk.". The organization is more aware about its digital collection and might have started with approaches to handle these. A preservation policy will be under development, whereby projects done on part of the collections will give input.
- Level 2 "In this environment some electronic records that merit long-term preservation remain at risk". This would imply that the majority of the electronic records are taken care of and that only part of the overall digital collection is at risk. That is the moment a digital preservation policy should be in place and widely disseminated amongst the stakeholders, who should be convinced that the organization is knowing what it is doing. The preservation policy should be detailed enough for staff to develop procedures, related to the selected collections preserved.
- Level 3 "Few electronic records that merit long-term preservation are at risk". The existing preservation policy is regularly reviewed and updated and will be detailed enough for staff to develop procedures for all collections preserved.
- Level 4 "no electronic records that merit long-term preservation are at risk". The preservation policy is continuously reviewed and updated as needed, based on developments.

Although this linking of maturity level and the state of the preservation policy can be a step forward, it does not solve the problem that some organizations will describe approaches in their policies they are not experiencing yet. This could be solved if suggestions for a minimal set of elements per policy on each level would be added to this maturity level model. For example, on level 1 one could expect that organizations are doing bit preservation, so they do not need to cover migration or emulation in their policies (but they might cover this in their strategy), as they most likely will not use these preservation approaches yet. However, they do need to mention metadata and the use of

standards in more detail, as these are elements that influence the design of the AIP. A broadly accepted model in which for every maturity level is explained what should be the essential elements in a preservation policy, will support organizations to come to more realistic preservation policies. But how do we get there?

### 4. FURTHER ACTIONS

The TDR ISO 16363 standard offers a clear description of the role a preservation policy is supposed to play in a digital repository. But an analysis of published preservation policies shows that there is a gap between the expectations in the standards and how the policies are stated in practice. Preservation policies that are promising more than can be realized are a risk for both the trustworthiness of the organization as well as for the preservation community.

Although the work on policies in SCAPE is finished, the further development of the SCAPE Catalogue of Policy Elements will be sustained after September 2014 as a wiki on the website of the Open Planets Foundation, publicly available. Everyone in the digital preservation community can suggest new elements to be added, according to the template that has been created. This Catalogue of Policy Elements offers a good starting point to develop guidelines for creating preservation policies, more adapted to the maturity level of an organization, leading to more realistic preservation policies. These cannot only be used to inform staff and other stakeholders but will be valuable in the audit and certification process to assess the Policy Frameworks of organizations. Such Policy Frameworks will also contribute to the trustworthiness of the digital preservation community in general.

### 5. ACKNOWLEDGMENTS

My thanks to Catherine Jones (Science and Technology Facilities Council, UK), Gry Elstroem (State and University Library Aarhus, Denmark) and Sean Bechhofer (University of Manchester, UK) for the inspiring collaboration on the policy work in the SCAPE project.

This work was partially supported by the SCAPE Project. The SCAPE project is co-funded by the European Union under FP7 ICT-2009.4.1 (Grant Agreement number 270137).

### 6. REFERENCES

- [1] Archives New Zealand and National Library of New Zealand: Digital Preservation Strategy, 2011. Retrieved 22-03-2014 from [http://archives.govt.nz/sites/default/files/Digital\\_Preservation\\_Strategy.pdf](http://archives.govt.nz/sites/default/files/Digital_Preservation_Strategy.pdf)
- [2] Audit and Certification of Trustworthy Digital Repositories, 2012 <http://public.ccsds.org/publications/archive/652x0m1.pdf>
- [3] Bavarian State Library: Digital Preservation Policy, 2012. Retrieved 22-03-2014 from [http://www.babs-muenchen.de/content/dokumente/2012-11-22\\_BSB\\_Preservation\\_Policy.pdf](http://www.babs-muenchen.de/content/dokumente/2012-11-22_BSB_Preservation_Policy.pdf)
- [4] Beagrie, N, Semple, N, Williams, P, Wright, R: Digital Preservation Policies Study, 2008 Retrieved 22-03-2014 from [http://www.jisc.ac.uk/media/documents/programmes/preservation/jiscpolicy\\_p1finalreport.pdf](http://www.jisc.ac.uk/media/documents/programmes/preservation/jiscpolicy_p1finalreport.pdf)
- [5] Boston University Library: Digital Preservation Policy. Retrieved 22-03-2014 from <http://www.bu.edu/dioa/openbu/boston-university-libraries-digital-preservation-policy/>

- [6] British Library: Digital Preservation Strategy 2013-2016. Retrieved 22-03-2014 from [http://www.bl.uk/aboutus/stratpolprog/collectioncare/discovermore/digitalpreservation/strategy/BL\\_DigitalPreservationStrategy\\_2013-16-external.pdf](http://www.bl.uk/aboutus/stratpolprog/collectioncare/discovermore/digitalpreservation/strategy/BL_DigitalPreservationStrategy_2013-16-external.pdf)
- [7] Canadian Heritage Information Network survey 2011 Retrieved 22-03-2014 from: <http://bit.ly/16HS7Cj>
- [8] Candela, L. and A.Nardi (ed.) *Digital Library Technology and Methodology Cookbook* Retrieved 24-04-2013 from <http://www.dlorg.eu/index.php/publications>
- [9] Catalogue of Preservation Policy Elements, SCAPE project [http://www.scape-project.eu/wp-content/uploads/2014/03/SCAPE\\_D13.2\\_KB\\_V1.0.pdf](http://www.scape-project.eu/wp-content/uploads/2014/03/SCAPE_D13.2_KB_V1.0.pdf)
- [10] CenterData: Preservation and Dissemination Policy of the LISS Data Archive. Retrieved 22-03-2014 from [http://www.lissdata.nl/assets/uploaded/reservation%20and%20Dissemination%20Policy%20of%20the%20LISS%20Data%20Archive\\_1\\_0.pdf](http://www.lissdata.nl/assets/uploaded/reservation%20and%20Dissemination%20Policy%20of%20the%20LISS%20Data%20Archive_1_0.pdf)
- [11] Cheshire Archives: Digital Preservation Policy, 2010 Retrieved 22-03-2014 from [http://archives.cheshire.gov.uk/record\\_care/digital\\_preservation/digital\\_preservation\\_policy.aspx](http://archives.cheshire.gov.uk/record_care/digital_preservation/digital_preservation_policy.aspx)
- [12] Cornell University Library: Cornell University Library Digital Preservation Policy Framework. Retrieved 22-03-2014 from <http://ecommons.library.cornell.edu/handle/1813/11230>
- [13] Danish National Archives: *Digital Preservation Policies* Retrieved 22-03-2014 from [http://www.sa.dk/media%284826,1033%29/Strategy\\_for\\_archiving\\_digital\\_records.pdf](http://www.sa.dk/media%284826,1033%29/Strategy_for_archiving_digital_records.pdf)
- [14] DANS (Data Archive and Networked Services), Preservation Policy, 2014. Retrieved 22-03-2014 from [http://dans.knaw.nl/sites/default/files/file/EASY/20140220%20Preservation%20Policy%20v1\\_0.pdf](http://dans.knaw.nl/sites/default/files/file/EASY/20140220%20Preservation%20Policy%20v1_0.pdf)
- [15] Dartmouth College Library: Digital Preservation Policy. Retrieved 22-03-2014 from <http://www.dartmouth.edu/~library/digital/about/policies/preservation.html?mswitch-redir=classic>
- [16] Deutsche National Bibliothek: Langzeitarchivierungs-Policy der Deutschen Nationalbibliothek. Retrieved 22-03-2014 from <http://nbn-resolving.de/urn:nbn:de:101-2013021901>
- [17] Digital Preservation Policy Tool <http://www.erpanet.org/guidance/docs/ERPANETPolicyTool.pdf>
- [18] Dollar, C. & Ashley, L.: Assessing Digital Preservation Capability using a Maturity Model Process Improvement Approach. 2013 Retrieved on 20-03-2014 from <https://docs.google.com/file/d/0BwbqtwrwvKHokR3g0RVR4bmNIWjg/edit?usp=sharing>
- [19] Florida Digital Archive. FDA Policy and Procedures (2011) . Retrieved 22-03-2014 from <https://fclaweb.fcla.edu/uploads/FDAPolicyGuideversion3.0.pdf>
- [20] GESIS Data Archive for the Social Sciences. *Digital Preservation Policy (2014)*. Retrieved 22-03-2014 from [http://www.gesis.org/fileadmin/upload/institut/wiss\\_arbeitsbereiche/datenarchiv\\_analyse/DAS\\_Preservation\\_Policy\\_eng.pdf](http://www.gesis.org/fileadmin/upload/institut/wiss_arbeitsbereiche/datenarchiv_analyse/DAS_Preservation_Policy_eng.pdf)
- [21] Hampshire Archives at Hampshire Record Office : Digital Preservation Policy, 2010. Retrieved 22-03-2014 from <http://www3.hants.gov.uk/archives/hro-policies/hro-digital-preservation-policy.htm>
- [22] Hathi Trust Digital Library: Digital Preservation Policy. Retrieved 22-03-2014 from <http://www.hathitrust.org/preservation>
- [23] John Hopkins Sheridan Libraries: Digital Preservation Policy. Retrieved 22-03-2014 from <http://old.library.jhu.edu/collections/institutionalrepository/ir-preservationpolicy.html>
- [24] London Metropolitan Archives: Interim Digital Preservation Policy. 2010. Retrieved 22-03-2014 from <http://217.154.230.218/NR/rdonlyres/6466F6FA-2F04-4E3E-8D8D-9158FD303425/0/DigitalPreservationPolicyJun2010.pdf>
- [25] National Archives of Australia. *Digital Preservation Policy. 2011*. Retrieved 22-03-2014 from <http://www.naa.gov.au/about-us/organisation/accountability/operations-and-preservation/digital-preservation-policy.aspx>
- [26] National Library of Australia Digital Preservation Policy 4th Edition. Retrieved on 20-03-2014 from <http://www.nla.gov.au/policy-and-planning/digital-preservation-policy>
- [27] National Library of Australia: A Digital Preservation Policy for the National Library of Australia, 2001. Retrieved 21-03-2014 at <http://nla.gov.au/nla.arc-36099>
- [28] National Library of Finland: Preservation Policy Retrieved 22-03-2014 from [http://www.kansalliskirjasto.fi/attachments/5v5daJ8e3/5pzFQo6pJ/Files/CurrentFile/NLF\\_Preservation\\_Policy.pdf](http://www.kansalliskirjasto.fi/attachments/5v5daJ8e3/5pzFQo6pJ/Files/CurrentFile/NLF_Preservation_Policy.pdf)
- [29] National Library of Wales: Digital Preservation Policy and Strategy. Retrieved 22-03-2014 from [http://www.llgc.org.uk/fileadmin/documents/pdf/2008\\_digipres.pdf](http://www.llgc.org.uk/fileadmin/documents/pdf/2008_digipres.pdf)
- [30] Parliamentary Archives: A digital preservation policy for Parliament. 2009 Retrieved 22-03-2014 from <http://www.nationalarchives.gov.uk/documents/tna-corporate-preservation-policy-2009-website-version.pdf>
- [31] Portico, Portico Preservation Policies, 2013 Retrieved 22-03-2014 from <http://www.portico.org/digital-preservation/about-us/portico-resource>
- [32] Public Record Office of Northern Ireland: Digital Preservation Strategy. 2013 Retrieved 22-03-2014 from [http://www.proni.gov.uk/digital\\_preservation\\_strategy.pdf](http://www.proni.gov.uk/digital_preservation_strategy.pdf)
- [33] Purdue University Research Repository: Digital Preservation Policy. Retrieved 22-03-2014 from <https://purr.purdue.edu/legal/digitalpreservation>
- [34] Reference Model for an Open Archival Information System, 2012 CCSDS retrieved on 20-03-2014 from <http://public.ccsds.org/publications/archive/650x0m2.pdf>
- [35] SCAPE Published Preservation Policies. Retrieved on 22-03-2014 from <http://wiki.opf-labs.org/display/SP/Preservation+Policies>
- [36] Sheldon, M Analysis of current digital preservation policies archives, libraries, and museums. 2013 Retrieved on 20-03-2014 from

- <http://www.digitalpreservation.gov/documents/Analysis%20of%20Current%20Digital%20Preservation%20Policies.pdf?l=oclr=blogsig>
- [37] Sierman, B. and Wheatly, P: Evaluation of Preservation Planning within OAIS, based on the Planets Functional Model. Planets Project 2010 Retrieved 22-4-2013 from [http://www.planets-project.eu/docs/reports/Planets\\_PP7-D6\\_EvaluationOfPPWithinOAIS.pdf](http://www.planets-project.eu/docs/reports/Planets_PP7-D6_EvaluationOfPPWithinOAIS.pdf)
- [38] Sierman, B: Published Preservation Policies. 7-10-2013 Blogpost on Open Planets Foundation, retrieved 22-03-2014 <http://www.openplanetsfoundation.org/blogs/2013-10-07-published-preservation-policies>
- [39] Sierman, B Jones, C Elstroem, G, Bechhofer S: Preservation Policy Levels in SCAPE. Ipres 2013 retrieved 20-03-2014 from [http://purl.pt/24107/1/iPres2013\\_PDF/Preservation%20Policy%20Levels%20in%20SCAPE.pdf](http://purl.pt/24107/1/iPres2013_PDF/Preservation%20Policy%20Levels%20in%20SCAPE.pdf)
- [40] State Library of Queensland: Digital Preservation Policy, 2008. Retrieved 22-03-2014 from [http://www.slq.qld.gov.au/\\_\\_data/assets/pdf\\_file/0020/109550/SLQ\\_-\\_Digital\\_Preservation\\_Policy\\_v0.05\\_-\\_Oct\\_2008.pdf](http://www.slq.qld.gov.au/__data/assets/pdf_file/0020/109550/SLQ_-_Digital_Preservation_Policy_v0.05_-_Oct_2008.pdf)
- [41] Statsbiblioteket State and University Library, Denmark Digital Preservation Policy for State and University Library Denmark, version 2.0, 2012 Retrieved 22-03-2014 from <http://en.statsbiblioteket.dk/about-the-library/ddpolicy>
- [42] Swiss Federal Archive: Digital Archiving policy, 2009. Retrieved 22-03-2014 from [http://www.bar.admin.ch/themen/00876/index.html?lang=en&download=NHZLpZeg7t,Inp6I0NTU04212Z6ln1ad1IZn4Z2qZpnO2YUq2Z6gpJCDdYB,fmym162epYbg2c\\_JjKbNoKSn6A--](http://www.bar.admin.ch/themen/00876/index.html?lang=en&download=NHZLpZeg7t,Inp6I0NTU04212Z6ln1ad1IZn4Z2qZpnO2YUq2Z6gpJCDdYB,fmym162epYbg2c_JjKbNoKSn6A--)
- [43] The DCC Curation Life cycle model. Retrieved 22-03-2014 from <http://www.dcc.ac.uk/sites/default/files/documents/publications/DCCLifecycle.pdf>
- [44] The Digital Divide. Assessing Organisations' Preparations for Digital Preservation. Retrieved 22-03-2014 at <http://www.planets-project.eu/docs/reports/planets-market-survey-white-paper.pdf>
- [45] The National Archives: Preservation Policy. 2009. Retrieved 22-03-2014 from <http://www.nationalarchives.gov.uk/documents/tna-corporate-preservation-policy-2009-website-version.pdf>
- [46] The Royal Library: The National Library of Denmark and Copenhagen University Library: Policy for long term preservation of digital materials at the Royal Library, 2010. Retrieved 22-03-2014 from [http://www.kb.dk/export/sites/kb\\_dk/da/kb/downloadfiler/PreservationPolicyDigitalMaterials\\_21092012.pdf](http://www.kb.dk/export/sites/kb_dk/da/kb/downloadfiler/PreservationPolicyDigitalMaterials_21092012.pdf)
- [47] The University of Manchester Library: Digital Preservation Strategy (2012). Retrieved 22-03-2014 from [http://www.library.manchester.ac.uk/aboutus/strategy/\\_files2/Digital-Preservation-Strategy.pdf](http://www.library.manchester.ac.uk/aboutus/strategy/_files2/Digital-Preservation-Strategy.pdf)
- [48] Trustworthy Repositories Audit & Certification: Criteria and Checklist, 2007 [http://www.crl.edu/sites/default/files/attachments/pages/trac\\_0.pdf](http://www.crl.edu/sites/default/files/attachments/pages/trac_0.pdf)
- [49] UK Data Service: Preservation Policy (2012). Retrieved 22-03-2014 from <http://data-archive.ac.uk/media/54776/ukda062-dps-preservationpolicy.pdf>
- [50] University of Massachusetts Amherst Libraries: Digital Preservation Policy. 2011 Retrieved 22-03-2014 from <http://www.library.umass.edu/assets/aboutus/attachments/University-of-Massachusetts-Amherst-Libraries-Digital-Preservation-Policy3-18-2011-templated.pdf>
- [51] University of Illinois at Urbana-Champaign: IDEALS Digital Preservation Policy, 2009 Retrieved 22-03-2014 from [https://www.ideals.illinois.edu/bitstream/handle/2142/2383/1/IDEALS\\_PreservationPolicy\\_Nov2009.pdf?sequence=4](https://www.ideals.illinois.edu/bitstream/handle/2142/2383/1/IDEALS_PreservationPolicy_Nov2009.pdf?sequence=4)
- [52] University of Michigan: ICPSR Digital Preservation Policy Framework. Retrieved 22-03-2014 from <http://www.icpsr.umich.edu/icpsrweb/content/datamanagement/preservation/policies/dpp-framework.html>
- [53] University of Minnesota: University Digital Conservancy Preservation Policy. Retrieved 22-03-2014 from <http://conservancy.umn.edu/pol-preservation.jsp>
- [54] University of South Carolina Libraries: Digital Preservation Policy Framework. 2010. Retrieved 22-03-2014 from [http://library.sc.edu/digital/USC\\_Libraries\\_Digital\\_Preservation.pdf](http://library.sc.edu/digital/USC_Libraries_Digital_Preservation.pdf)
- [55] University of Utah J. Willard Marriott Library: Digital Preservation Policy, 2012. Retrieved 22-03-2014 from <http://www.lib.utah.edu/collections/digital/DigitalPreservationPolicy2012.docx>
- [56] Wellcome Library: Preservation Policy for Materials held in Collections. Retrieved 22-03-2014 from <http://wellcomelibrary.org/content/documents/policy-documents/preservation-policy>
- [57] West Yorkshire Archive Services. Digital Archives Policy. 2007 Retrieved 22-03-2014 from <http://www.archives.wyjs.org.uk/documents/archives/WYAS%20Digital%20Archives%20Policy.pdf>
- [58] Yale University Library. Digital Preservation Policy. Retrieved 22-03-2014 from <http://www.library.yale.edu/iac/DPC/revpolicy2-19-07.pdf>