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ICCU

UNIVERSITÀ DEGLI STUDI DI URBINO
ERPANET

Legislation, Rules and Policies for the Preservation of Digital Resources

A SURVEY

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SUMMARY

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[1] For the appendix see the Italian version of the report.

[2] The National Archives of The Netherlands have to be added to the list.

INTRODUCTION

1. Goals and Objectives

This study—which is part of the ERPANET Project and has been promoted by the Italian Ministero per i beni e le attività culturali and by the University of Urbino—aims to analyze the legislation, regulations and policies governing the preservation of digital materials currently implemented in the European countries and in some important international institutions. This analysis presents an overview of digital preservation issues that is only one first step in a relatively new, complex, fragmented and constantly evolving field. The report focuses in particular on some specific aspects of the introduction of regulations aiming to define costs and benefits of a normative multi-level system and of the responsibilities linked to its creation and maintenance, as well as of its related necessary monitoring and revision activities.

Among its overall goals, this study attempts to provide—with the inevitable limitations of a project designed and carried out in just a few months (May-September 2003)—an overview of national, regional and local legislation and regulations, and of the related normative systems developed (or in course of development) in the area of digital preservation. Besides, this study also aims to make available to the interested professional communities an educational tool able to provide support to who intends to regulate in a systematic and coherent way the complex activities related to the preservation of digital materials in the various sectors of cultural production.

An additional goal—which is not possible to thoroughly address here—is to identify and describe the reasons that led a specific country or administration to develop preservation policies and regulations, and also to identify the problems encountered at the development and, even more relevant, at the implementation stage. In regard to this goal, it is important to point out that, although professionally advanced sectors are increasingly becoming more aware of the necessity to regulate digital preservation activities, there exist a series of issues that still are major obstacles to a full and comparable development of procedures and workflow for managing the digital memory preservation function. Among these issues are the lack of consensus at the political and top management levels, the lack of relevant successful implementations, the substantial confusion about the appropriate intervention procedures and methods, the inadequacy of a solid conceptual analysis and the lack of resources and of strong models. The report provides a picture that is still uncertain and contradictory. The study results enable us to point out how complex our journey is going to be, and make us wish, as supported by the detailed data analysis, for an initiative providing guide and orientation in this specific sector, taken by the European Commission in the research projects, financial plans and political resolutions of the European Union representative organs.

2. Participating Institutions

As previously mentioned, the main goal of this study is the review and analysis of the current state of the digital materials preservation regulations at the general and local levels, as well as of the internal policies adopted by single organizations in this field. The

investigative tool identified as the most effective for a study designed and conducted in a very short time was a questionnaire. Although questionnaires have been somehow abused over time, there are no easy alternatives to them in cases like ours, where researchers are pressed for time. The questionnaire was addressed to the people responsible for the most important national European institutions, as well as for the Australian, Canadian and American ones. The respondents were asked to report about their qualified and already implemented digital preservation initiatives. The questionnaire also aimed to gather data that could provide an integrated and relevant picture of the projects under way and, even more important, of the results already achieved. The overall goal was to make possible to compare, at an international level, themes that are still highly undefined.

Due to the short time available to conduct the investigation and in order to achieve relevant results the questionnaire distribution and the data collection have followed multiple parallel itineraries, so to obtain in a timely manner the necessary answers from trusted and qualified respondents within a geographic area as wide and representative as possible, at least of the European territory and of some non European countries that have matured years long relevant experiences in the digital preservation sector. Therefore, in the first place, we administered the questionnaire to the cultural sector European government representatives through Minerva, the proven most reliable network— as once again showed by the results of this study—which revealed itself to be an important "dedicated" communication channel mostly able to reach the entire European cultural system. This first group of contacts was subsequently integrated with more respondents identified on the basis of existing lists prepared by the European Commission for recent (March 2002) preservation experts meetings. Of course, the role and presence of the principal research and cultural heritage preservation national institutions were taken into consideration and the institutions were asked to take part in the study. These contacts were facilitated by the European group created a few months ago specifically for the upcoming Florence, Italy, digital preservation European conference that has provided the input for carrying out the investigation.

The questionnaires returned in the time allowed—most of them received just during the last available week—have been 46[3] total: 9 from Portugal, 7 from Italy, 3 each from Finland, France, Germany and Greece, 2 each from Australia, Canada, Lettonia, Sweden and United States, and 1 each from Austria, Belgium, Denmark, Ireland, The Netherlands, Slovenia, Spain and Switzerland. The complete list of participating institutions and countries that made the study possible is published in Appendix B.

[3] One more questionnaire has arrived too late to be included in the final analysis: from The Netherlands (Nationaal Archief).

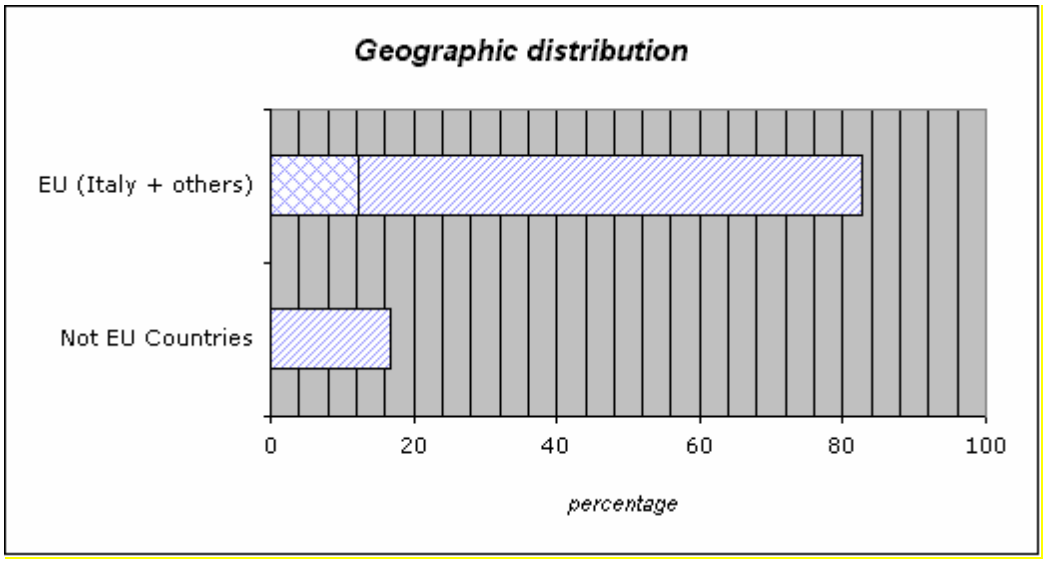

Table 1— Geographical Distribution
(Italy, other European Union countries, non European Union countries)

Portugal stood out for its high percentage of returned questionnaires and, at the same time, gave an essential contribution to the data analysis by providing information on a variety of institution typologies at multiple levels. The Italian responses also made possible a very precise, careful and detailed description of the existing regulations and policies, shedding light on the points of view of entities that are very diverse because they belong to different sectors and have different missions, such as the conservation institutes at the Archivio centrale dello Stato (Italian Central National Archives) and at the Biblioteca Nazionale Marciana ("Marciana" National Library in Venice) as well as some national central research institutes (Centro nazionale per l'informatica nella pubblica amministrazione/National Center for Public Administration Informatics, Centro di fotoriproduzione, legatoria e restauro degli archivi di Stato/State Archives Photo-reproduction, Binding and Restoration Center, Istituto centrale per il catalogo unico/Union Catalog Central Institute, and Cineca-Consorzio Interuniversitario per il Calcolo Automatico dell'Italia Nord Orientale/Northeastern Italy Inter-university Computing Consortium).

France, Sweden and Germany expressed the points of view of archives, libraries and related national administrations; Greece provided information specifically on the university sector. From Finland, responses came from the main institutions preserving cultural heritage in digital form, that is, the country's national library, national archeological museum (Museovirasto) and national archives. Holding a leading position in archival legislation, the Finnish archives provided a detailed picture of relevant national legislation and policy. The Finnish national library presented evolving rules and regulations, paying specific attention to the issue of electronic material legal deposit; the

library also described its relevant internal regulation development, necessary for a conservation institute that is rich in digital resources.

Most institutions that answered the questionnaire, especially Section 2, provided a complete and articulate picture of regulations both at the national level and at the institutional level, except for the Danish Ministry of Culture, which answered only the questions on national regulations, because the actual preservation of digital sources is not one of its tasks.

Among the non-European institutions, the San Diego Supercomputer Center in the United States has pointed out its role as advanced research center within the activities of the National Science Foundation (NSF) and its support function to numerous government and research institutions in the area of digital preservation, sharing results especially in regard to the definition of preservation methods and procedures. The Center has also suggested contacting specific preservation institutions in the United States for an analysis of their policies and has listed the California Digital Library (CDL), the University of California, San Diego (UCSD) Library, the Library of Congress, the National Archives and Records Administration (NARA) and the National Historical Publications and Records Commission (NHPRC).

Australia and Canada have provided very detailed information both about national regulations and internal institutional regulations and policies. Slovenia and Switzerland have both presented the point of view of their national archival administrations. These two countries have been so accurate and detailed in their answers that the picture they provided has made available enough elements to allow a meaningful comparison with the situation in the European Union countries.

Finally, it is important to point out the contribution of Latvia, which provided in a single document answers regarding two different institutions (the Ministry of Culture and the National Library).

As it may be seen in Table 2, the participating institutions have mostly been national public administrations (32%), followed by some local/regional archives (30%), local libraries (22%), museums (4%) and, finally, some special collections (2%); another 10% is represented by other types of coordinating and/or research institutions that cannot be easily grouped and clearly defined by disciplinary sectors: the Portuguese Institute for Library Science Studies, the University of Patras Information Systems Laboratory, the Companhia Nacional de Bailado in Portugal and the San Diego Supercomputer Center in the United States.

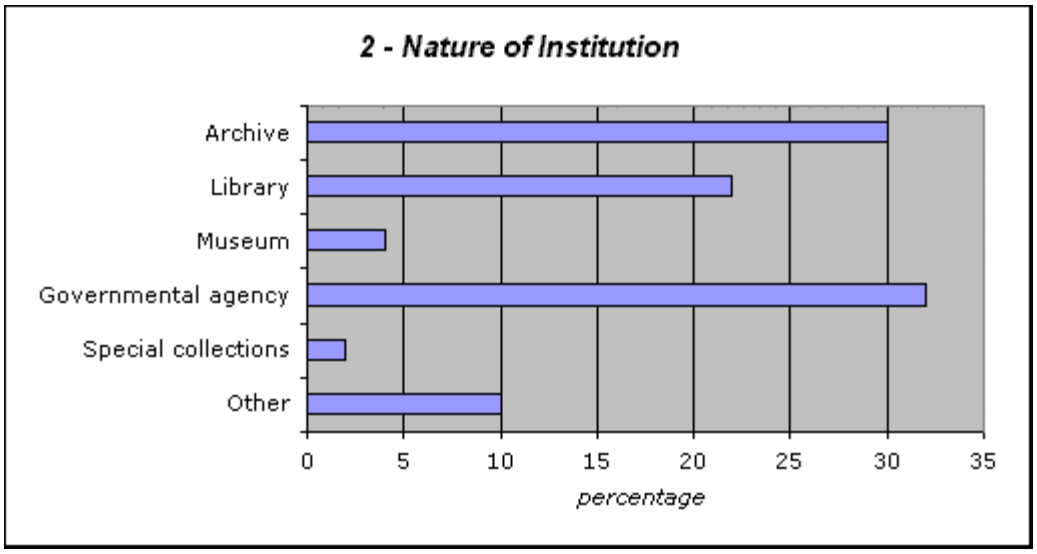

Table 2 —Types of Institutions

The high number of national and state administrations (90%) has provided qualified and trustable information in regard to Section 2 of the questionnaire, which covers national/regional/local regulations and legislation.

3. Research Methodology

The questionnaire (Appendix A) has been designed as an operational tool to gather specific and up-to-date information on the examined topic and it has been sent via e-mail in the months of June and July 2003. The questionnaire has a three-section structure:

1. General Questions
2. National/Local Rules
3. Digital Plan and Policy at Institutional Level

Section 3 is addressed to every institution preserving digital materials and specifically examines some aspects, principles and criteria related to the development of digital preservation regulations and policies: costs, requirements, roles and responsibilities, monitoring and revision activities.

Exceeding the most optimistic initial expectations, 46 responses came in, as mentioned above, representing all European Union countries, as well as Australia, Canada, Latvia, Slovenia, Switzerland and the United States. Such a positive result has also been achieved thanks to the help of the digital preservation working group created with support from the European Commission for the upcoming European Conference in Florence, Italy. The responses underwent an accurate analysis and preliminary

comparative data processing. What emerged from the data analysis, as it will be discussed later in this report, is the difficulty of comparing and evaluating situations that differ greatly among each other, both in their sector typology (library, archival, audiovisual and museum heritage) and in their organizational and juridical contexts. Although detailed and exhaustive, the answers did not always take the same approach when discussing the same themes. This different take on the answers is due to a series of specific critical issues inherent to the investigated topic and also to the investigative tool. Regulatory interventions are fragmented (especially in regard to technical regulations within each sector) and tackle digital preservation recommendations from the standpoint of initiatives that have very diverse goals, as it happens, for example, with the regulations governing e-government and ERMS (Electronic Records Management Systems). In some areas, such as legal deposit and copyright, the regulations apply to more countries at the same time and therefore may be comparatively evaluated more precisely and with less room for misunderstanding. The analysis of the data provided by the third section has been even more complicated, due to the specific links that the data have with the particular organizational and functional structure of each repository and institution. In these cases, the data analysis has been cautious and a description of the quality of regulations has been chosen over a quantitative analysis.

PART I. REGULATIONS AT NATIONAL/REGIONAL/LOCAL LEVEL

Preface

All the legislative and regulatory initiatives currently in place, and specifically aimed at digital preservation, are often based on the will and the intention of each country to develop clear conceptual structures, to outline standards, procedures and responsibilities, and, finally, to support institutions—at the national, regional and local level—in the development of their preservation plans and strategies. The issue of digital preservation, though, is still so new that many countries still do not have legislation and regulations to refer to.

As shown in Table 3, the study results show that digital preservation regulations at the national level exist in 46% of the countries that participated in the study (Australia, Denmark, Finland, France, Germany, Greece, Italy, Latvia, Portugal, Slovenia, Sweden, Switzerland and United States), while regional and local regulations have not yet been developed in 38% of the cases examined.

As a sign of the extent of the preservation problem, it has to be pointed out that not every institution has been able to describe the specific regulations existing at the national level.

It is also important to point out that such difficulty in the inquiry may also arise from the fact that the existing regulations are quite fragmented and unfocused, often included as part of technical dispositions that are unknown even to professionals who are involved in preservation, but not in standardization activities. Furthermore, in this context the meaning of regulations and dispositions is also uncertain, often leading to multiple interpretations. The French ATICA, for example, has listed a "digital preservation guide," which has not been mentioned in any of the responses from the other French institutions that also answered this section of the questionnaire. The Italian institutions, too, have not always mentioned some regulations (the mandatory documentary procedures management manual, including accessioning activities and specification of preservation standard formats) that yet establish obligations and procedures in this context. Another important issue is that regulations are often generic (as mentioned, for example, by the Schweizerisches Bundesarchiv and by the Ministry of Culture of Latvia[4]), or only partially apply to digital materials (Dutch National Library), or make no explicit distinction between digital and non-digital formats (Australian National Archives).

The Irish National Archives answered that they do not currently have an actual law that specifically applies to digital materials: the "National Archives Act" (1986), in fact, includes all records produced by public administrations, independently from their format, affirming a general principle that is positive in theory, but is potentially counterproductive in practice, because administrators have come to believe that the Act only applies to paper records and therefore has to be ignored when it comes to electronic records. This interpretation creates great risks for digital materials and, instead of expanding legislative protection, it actually ends up limiting it.

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[4] Several national legislative acts have been implemented in Latvia, such as the cultural landmarks protection law, the museum law, the library law, the archives law, the copyright law, the Ministry Cabinet regulations, and more.

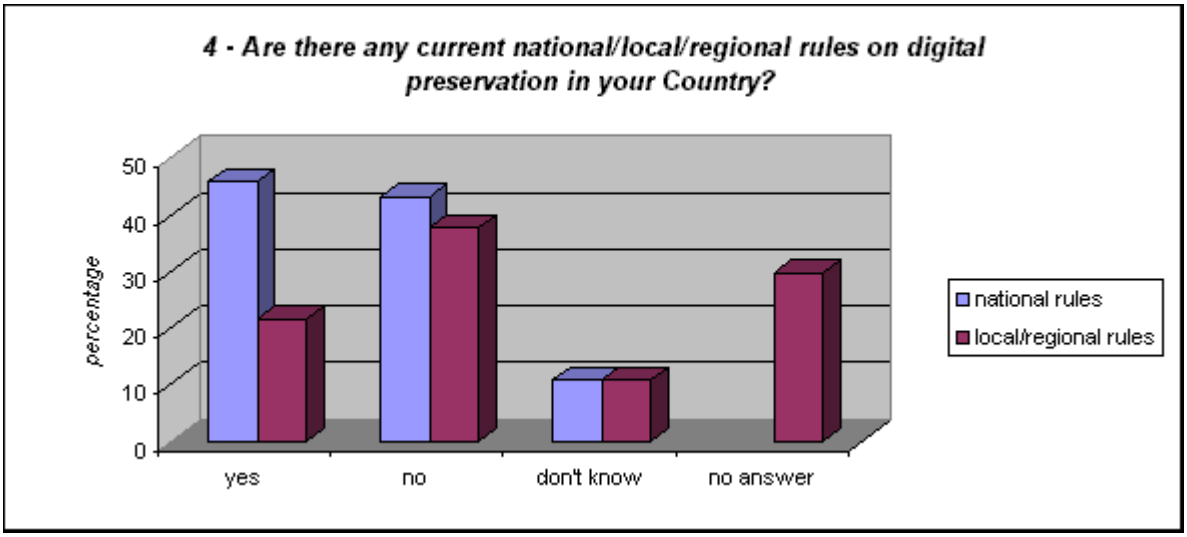


Table 3—Existence of National/Regional/Local Digital Preservation Regulations

The digital preservation regulations currently implemented are, as indicated by 58% of the institutions (see Table 4), insufficient, inadequate, unclear and incomplete. In particular, the regulations are considered insufficiently detailed in their description of the digital materials that need to be preserved (Dutch National Library). Even when digital materials are described, preservation specifications are omitted, formats are not defined, procedures that guarantee readability and long-term access are not detailed (Portuguese Archeology Institute) and not all sectors are always covered. Both the Danish Ministry of Culture and the Public Record Office of Victoria (Australia) have an overall good opinion of their national regulations. On the other hand, the Central State Archives (Italy) say that the specific regulations (Aipa act 42/2001), relying too heavily on technological mechanisms, such as the widespread use of digital signatures to guarantee records integrity and identity, are insufficient in relation to the complexity of the preservation problem. The Archives suggest that there should be further development of the aspects linked to the quality of records creation and management procedures, so to make the records system overall more reliable.[5] The Finnish National Archives and National Library have declared that the Legal Deposit Commission has completed a proposal for

[5] Italian archival records preservation regulations are quite fragmented. The DCPM October 31, 2002, promulgated in order to implement electronic records management dispositions, has established some general principles relevant to preservation: it is mandatory that electronic communication systems ensure readability and accessibility over time of the records sent; for the exchange of records and related electronic files the XML format is required and a specific DTD is defined—a sort of metadata schema for records management in the archival environment. Furthermore, the role of digital preservation officer is created, defining, although with many flaws, a mandatory professional profile assigned—maybe in a redundant manner—to the specific function of electronic records and digitized surrogates preservation in every public administration.

new measures on legal deposit that will abrogate the measures currently implemented—the Legal Deposit Act and the Act on Archiving of Films—and that aims to cover not only traditional paper publications, but also audio and audio-visual recordings and films, as well as all Finnish electronic publications available though open networks and radio and television programs.

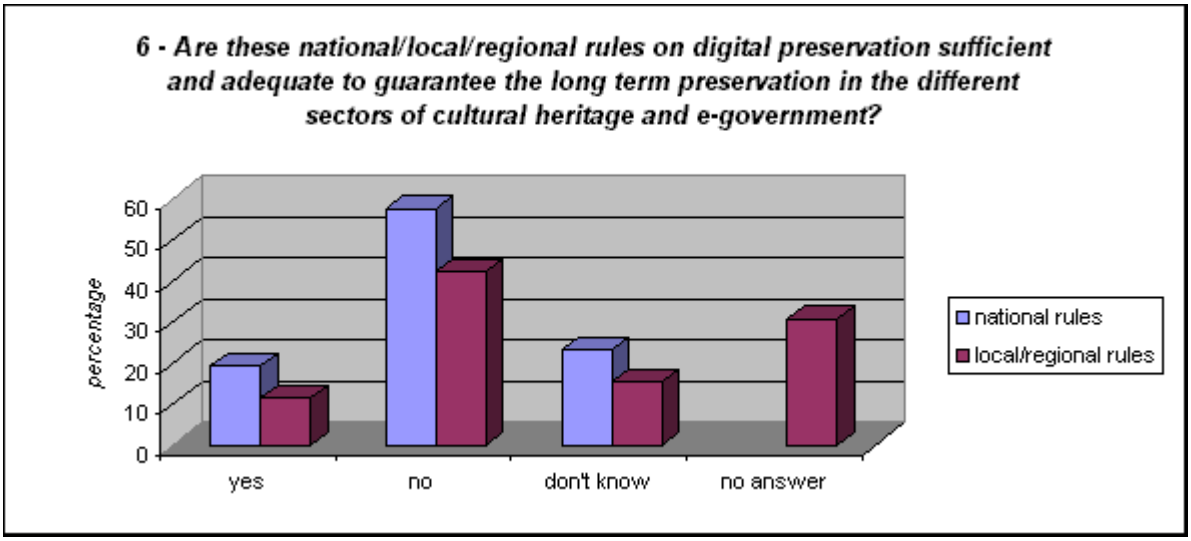


Table 4—Degree of Adequacy of Digital Preservation Regulations

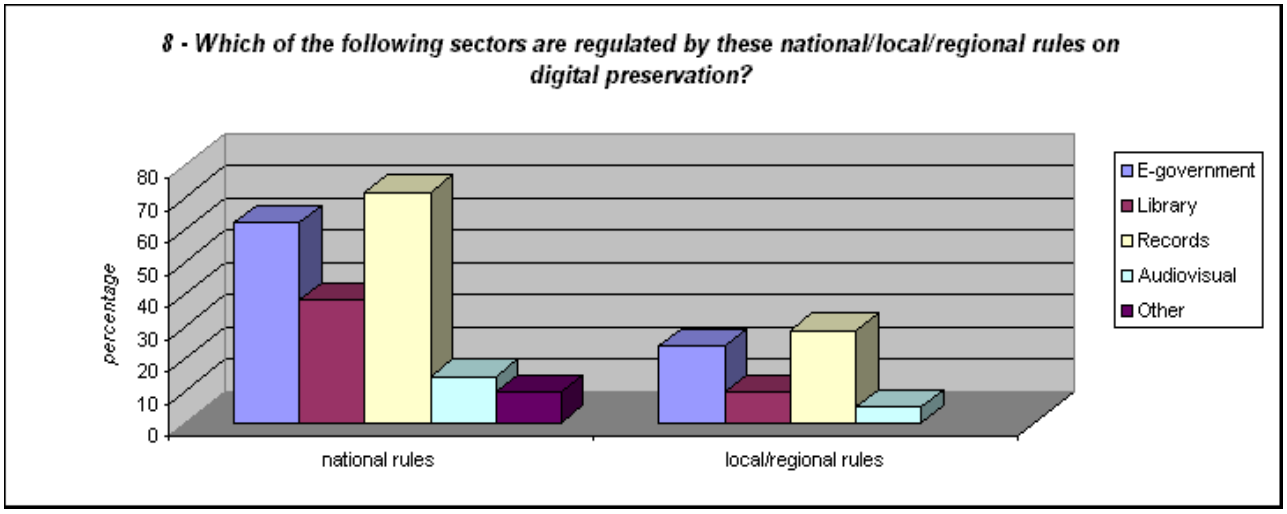


Table 5 – Sectors Ruled Through National Regulations

Currently, considering the insufficient development of digital preservation policies and the constantly increasing amount of digital materials created, 75% of the

participating institutions (Table 6) have explicitly expressed their need for the promulgation, as soon as possible, of coherent and specific regulations at the national level. In particular, the “Marciana” National Library, the Central National Library in Florence, Italy, and the Portuguese National Library have all expressed their pressing need for regulations that discipline both the deposit, in the conservation institutions, of electronic sources published online and offline and the deposit of digitized materials. The Canadian National Library and National Archives take a different position and consider more useful to make available a general reference framework, rather than promulgate regulations. Most of all, they consider important to increase funding and to raise the level of awareness and knowledge of digital preservation and of best practices. They acknowledge, though, that inside the National Library Act there exist regulations governing legal deposit of some electronic publication typologies, for preservation and access purposes.

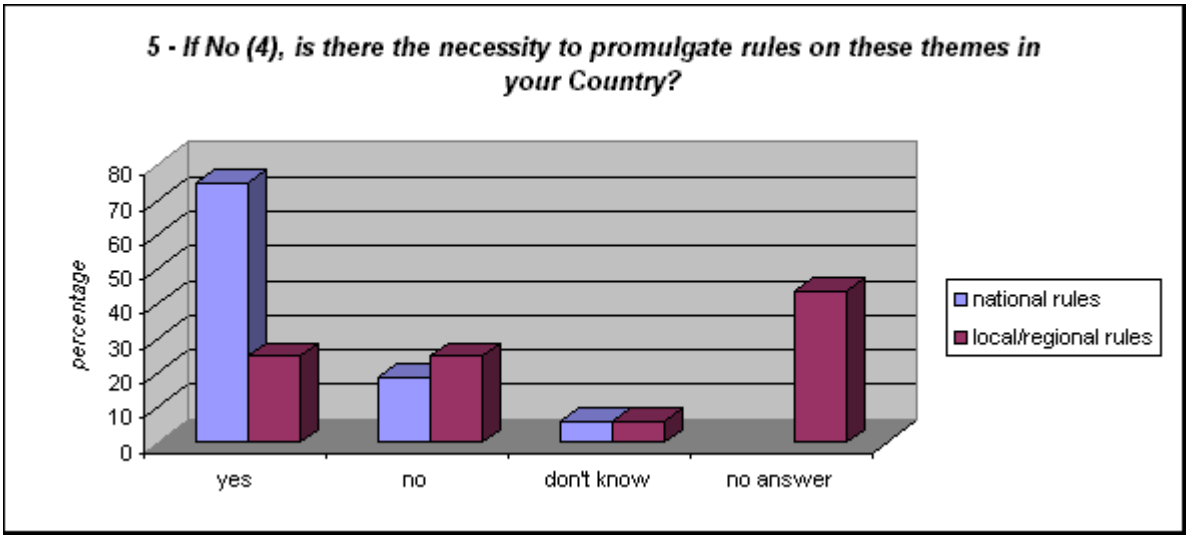


Table 6—Need to Develop Digital Preservation Regulations

Section 1. Roles and Responsibilities

The governing bodies in charge of protecting cultural heritage (representing 75% at the national level and 21% at the local and regional level, as shown in Table 7), as well as the agencies and committees dealing with e-government, are often the ones involved in promulgating digital preservation regulations at both the national and regional and local levels.

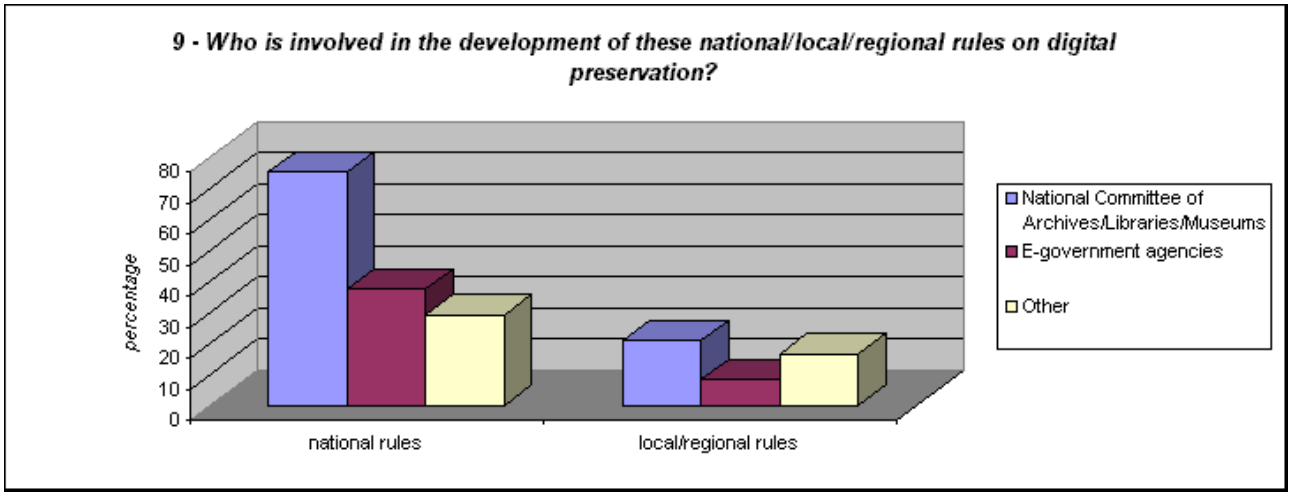


Table 7—Groups Involved in the Development of Digital Preservation Regulations

The information, quite detailed in some cases, provided by the participating institutions in regard to the responsibilities for defining digital preservation regulations, once again shows great variation, which is also determined by the characteristics of the institutions answering the questions. In some cases, technical responsibilities have been identified as part of the tasks assigned to governing bodies and to organizations in charge of cultural heritage, both at the general level and for specific sectors. In other instances, answers have pointed to specific institutions, especially for e-government activities or for scientific research sectors. It is of course not possible, here, to give a detailed account of this area.

It is equally complicated—and maybe not that relevant, also because of the non-uniformity of the responses—to describe the characteristics, the required skills and the role of the people and organizations in charge of preservation. We will therefore only provide some examples of the diverse situation that emerged from the data. In Italy, the types of requirements for the archival sector are technical and documentary,[6] as established by article 61 of the dpr 445/2000, a decree concerning the officer responsible for the Servizio per la gestione informatica dei documenti, degli archivi e dei flussi documentali (Service for records, archives and records-flow electronic management). In Germany, officers in charge of preservation activities for both traditional and digital materials are the ones who manage archival repositories. These professionals are required to have a general knowledge of Information Technology and to hold technical qualifications, such as system administrator. In Canada there are not specific regulations, but a recent policy on Management of Government Information (MGI) has identified precise areas of responsibility for administrations involved in Information Management at

[6] In Italy, according to the information provided by the Centro nazionale per l'informatica nella pubblica amministrazione (CNIPA) (National Center for Public Administration Informatics), in order to increase digital preservation officers' level of knowledge, training courses are periodically organized, although their operational quality is deemed inadequate by the organizers themselves.

the national level (Treasury Board Secretariat, National Archives, National Library, and Statistics Canada) and at the level of single organizations.

Section 2. Types of Regulations

The outcomes of the data analysis carried out for this study have shown (Table 8) that currently 64% of the participating countries have not yet promulgated regulations governing the creation of reliable and secure (trusted) digital repositories, although some institutions (Dutch National Library, San Diego Supercomputer Center in the United States) said that these regulations are in course of development. The Public Record Office of Victoria (Australia) has pointed out that such repositories are subject only to regional and local regulations. Switzerland said that these kinds of regulations are required, in the archival field, only for archival materials preserved at the federal and cantonal level.

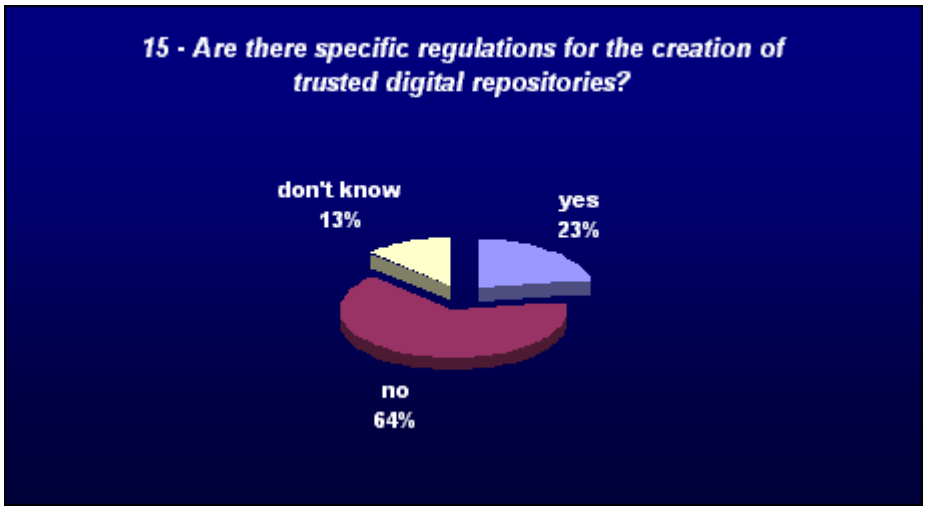


Table 8—Existence of Regulations Governing Digital Repositories Security

In regard to specific regulations promulgated in order to ensure that the preserved digital information be complete, accurate and identifiable, the data (Table 9) have shown that countries have only worked toward this goal at the national level (59%). Canada has specified that it has not yet promulgated these kinds of regulations, although the requirements for completeness, accuracy and identity of materials are currently part of the MGI policy mentioned earlier. Canada has also pointed out that there is an increasing awareness among institutions of the need to prepare shared metadata lists for various administrative sectors, and, furthermore, that the National Archives are expecting administrative structures to move towards the adoption of classification systems based on functions rather than subjects.

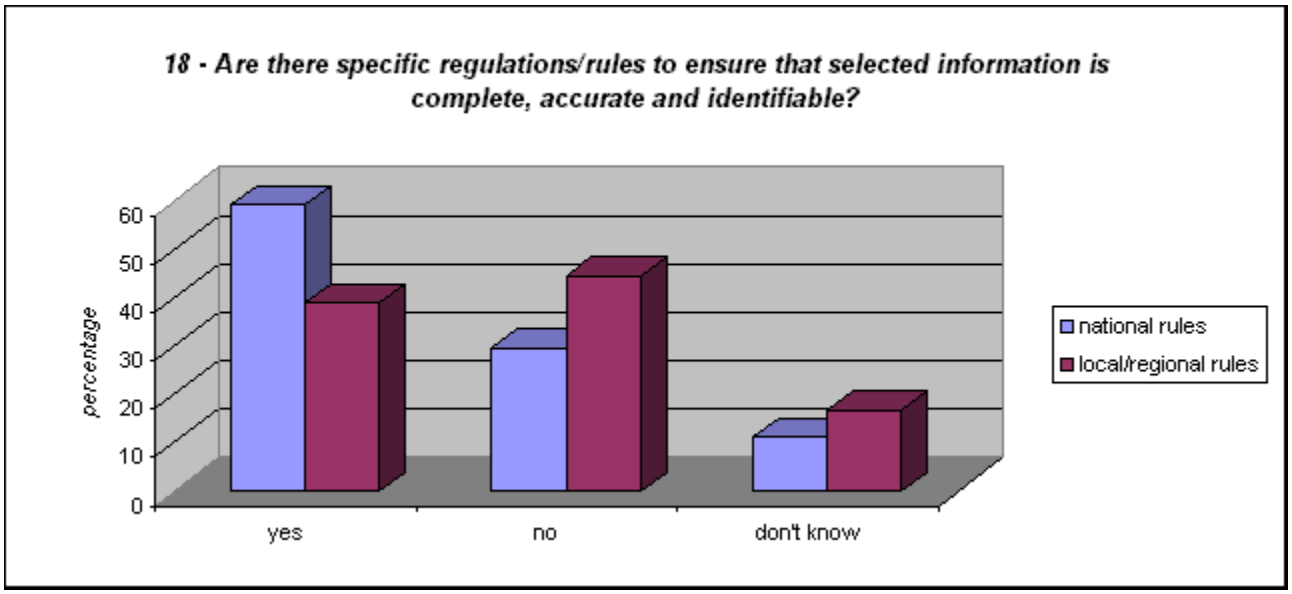


Table 9—Existence of Regulations Ensuring Completeness, Accuracy and Identity of Preserved Information

Currently, both at the national (47%) and local and regional levels (47%), there are not yet—according to the data gathered (Table 10)—rules and regulations mandating that the institutions develop internal policies specific to their plans of action. The Dutch National Library stated that, within its experimental project dedicated to the permanent preservation of digital materials, *Digital Preservation Tested*, specific guidelines are being developed. Canada pointed out that the National Archives provide this type of guidelines for managing the various aspects of archival record-keeping. It also pointed out that the National Library follows international standards (such as the *Anglo American Cataloguing Rules*) and provides appropriate information to the Canadian library community. In Italy, the dcpm October 31, 2000, explicitly mandates the legislative obligation, for all public administrations, to develop an internal management manual. This manual has to carefully regulate the activities of registration, classification and archiving of records and, because of its detailed degree of analysis, is has to be become a first significant step towards quality certification of the administrations' actions in the documentary sector.

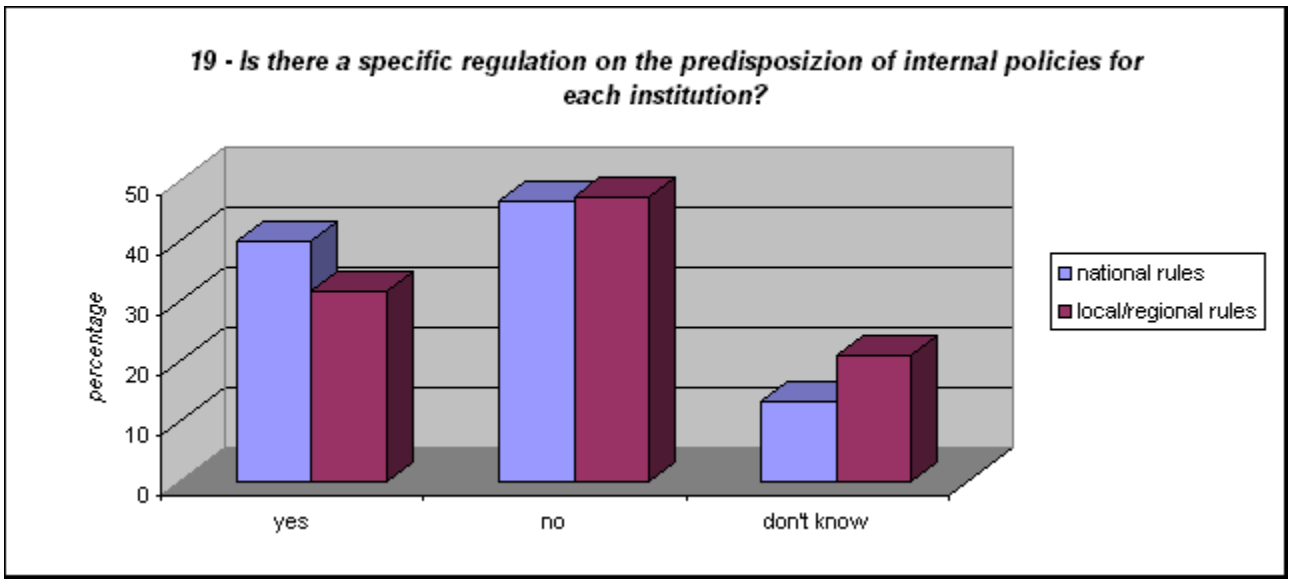


Table 10—
Existence of Regulations Governing Institutions' Internal Guidelines Development

Section 3. Standards

Digital materials preservation regulations should also address adoption and development of standards for electronic media, digital data formats, organizational policies and data exchange. The study has shown that, currently, among the participating countries only 8% (for national regulations) and 4% (for local and regional regulations) have said to have regulations in place that identify general standards or standards specific to each field of application (Table 11). In regard to the field of application, the data analysis showed that, in most countries (88% for national regulations, 50% for local ones), regulations mostly define standards for digital data formats (Table 12), followed by standards for media, policies, and, only in a few cases, for metadata, and for physical and logical formats required for permanent preservation.

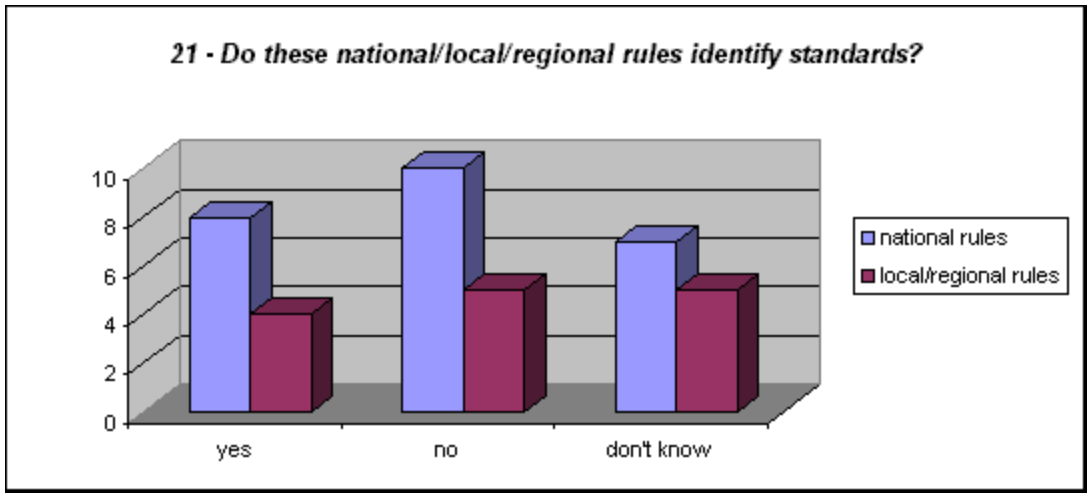


Table 11—Existence of Regulations for Standards Identification

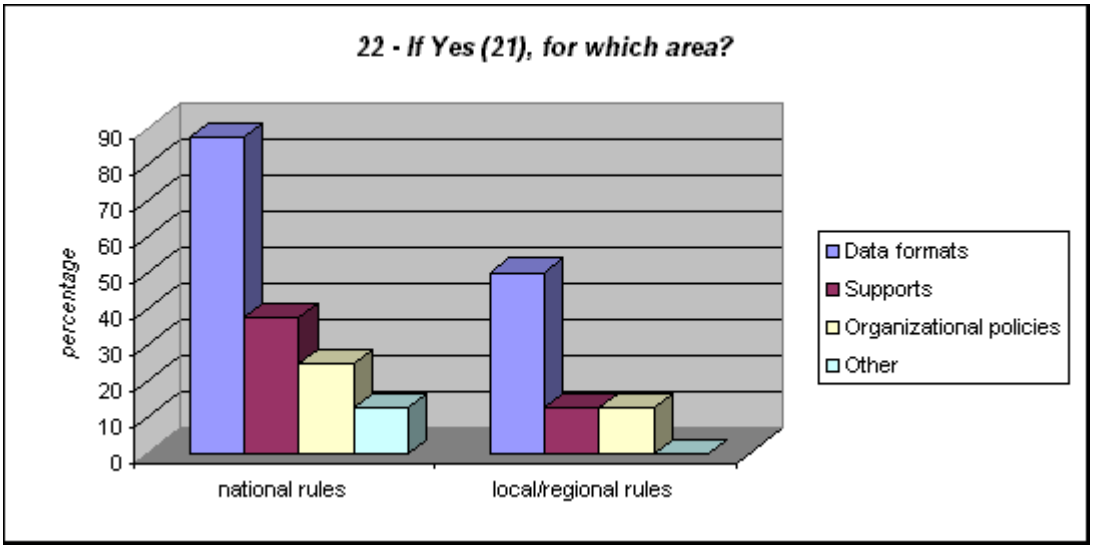


Table 12—Areas of Standards Application

Section 4. Outsourcing

In relation to outsourcing, according, respectively, to 64% and 68% of responses, national and local/regional regulations do not currently address correct digital materials management and preservation (Table 13 and Table 14). It may be observed, within these percentages, that at the national level only 12% of countries—including United States, Greece, Australia, Germany and Ireland—forecast the development of such regulations in the upcoming future, while values tend to increase at the local/regional level.

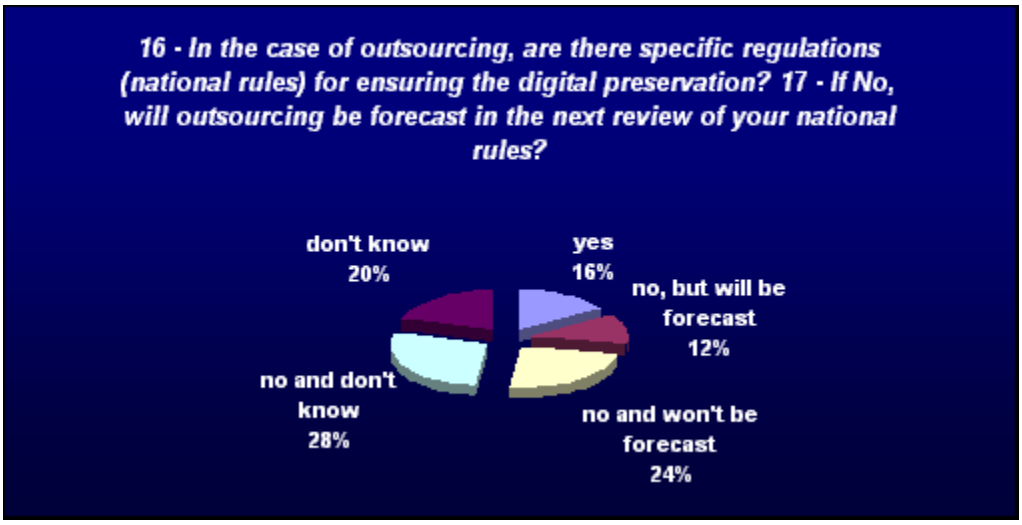


Table 13—Existence of National Digital Preservation Regulations in Case of Outsourcing

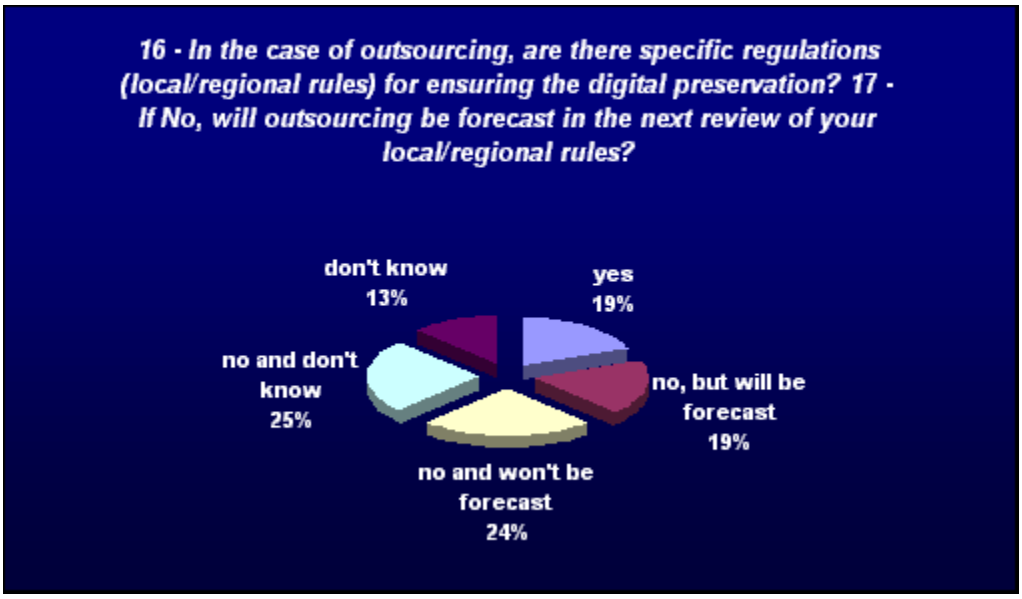
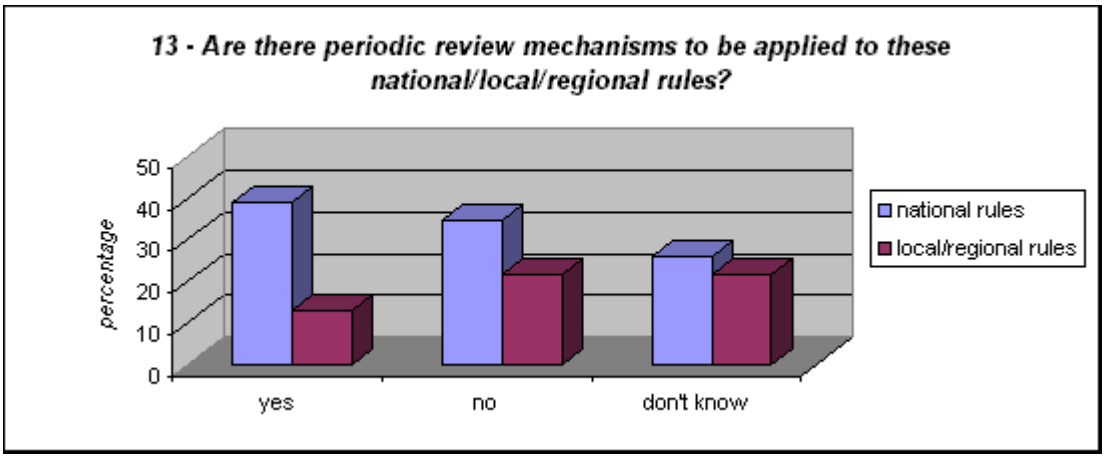


Table 14—Existence of Local/Regional Digital Preservation Regulations in Case of Outsourcing

Section 5. Review of Regulations

The responses show a high degree of uncertainty about the existence of review mechanisms to be applied to digital preservation regulations. Some contradictions have been found within the responses of single countries, presumably caused by the different points of view and sectors of the respondents. What clearly emerges from the data is that, in this area, the national and local regulations of each country are destined to lose their

validity in a short time, due to the ongoing technological changes and to the organizational transformations that often occur as a consequence. Switzerland pointed out that regulation review procedures are part of the more general updating process of the activities of the Federal Archives and National Library. Italian regulations governing electronic records management (dpr 445/2000 on administrative records, dpcm October 31, 2000, approving the related application rules, and Aipa technical regulations on replacement reproduction and digital preservation) have already been repeatedly modified in the last few years and include a specific rule requiring updates at least every three years.



As shown in Table 15, at the national level periodic review of regulations is carried out in 39% of countries, while at the regional and local level it only occurs in 13% of cases. In Australia, for example, review mechanisms are in place only for local and regional regulations, which are rarely updated, though. In France there are national regulations, reviewed every year. In relation to review frequency (Table 16), it may be observed that the countries that update their regulations often are still only a few and therefore not enough to provide a sufficient amount of information to evaluate. The countries that intervene in this area only from time to time are in fact 60% for regulations at the national level, and 20% for regulations at the local/regional level.

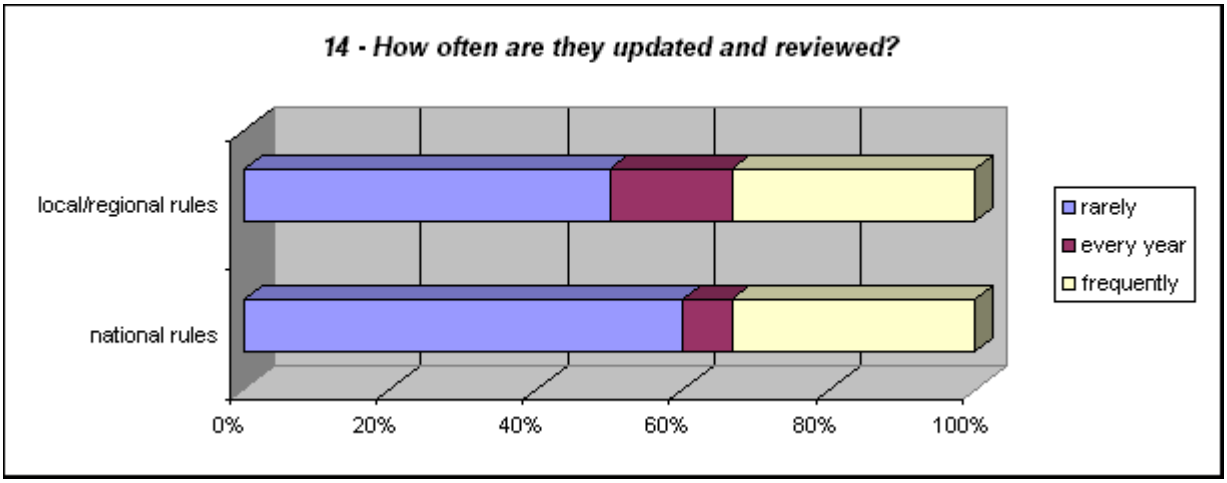


Table 16—Frequency of Regulations Review and Update

PART I. INTERNAL POLICIES AND PRESERVATION PLANS

Preface

For reasons that have already been discussed in the introductory chapters of this study, it is not simple to unambiguously define the characteristics and functions of organizations' internal regulatory tools, such as policy guidelines that identify procedures and workflow aimed at governing the institutional digital heritage preservation.

In order to better define the field of inquiry and to shed light on the margin of error in the interpretation of the data gathered through the investigation, it is important to clarify that the expression "policy for digital heritage preservation" is used here to include in its meaning: a preservation plan and a set of internal guidelines of the preservation institution, which allow to tackle with different degrees of detail the activities, tools and resources used to secure the digital materials preservation.

The main goal of such a plan is, overall, to guarantee the materials' authenticity, reliability and long-term access, and to provide, at the same time, an internal authoritative guide to the institution in all the activities and tools required to achieve satisfactory results within the institution's mission.

In particular, a policy document, besides pointing out the positive role of the preservation function within the institution's needs, should be able to answer a set of basic questions:

4. What to preserve
5. Why preserve (in accordance with both the general and specific goals of the institution)
6. For how long
7. How

On the characteristics and specific content of preservation policy documents—a topic for which only a limited amount of literature and some examples exist—ERPANET[7] has compiled an orientation tool, published here as an appendix, that describes the typical structure and the function of each main component of a policy document, and summarizes writing guidelines and main characteristics.

A policy document, at least according to what has been experienced so far in this developing field, should follow a basic model that makes it:

- self-explanatory, persuasive in the way it presents its effectiveness and validity, and clear in illustrating the advantages it promises,
- feasible, operational and easy to update,
- flexible in response to the need of addressing, in an adequate and timely manner, the rapid and frequent organizational and technological changes,

[7] See also the materials used in the ERPANET Digital Preservation Policies Seminar, held in Fontainebleau (January 30th – February 1st, 2003): www.erpanet.org (*erpaseminars*). Some of the seminar presentations have been expanded and published in *Archivi e Computer* 1-2 (2003).

- clear and rational in presenting its specific content,
- easy to understand, yet conforming to high quality standards,
- verifiable and verified through a constant monitoring activity defined according to planned interventions that take into account the organizational, juridical and technological changes.

The questionnaire section about policy has applied to 19 institutions, representative of an extended geographical area and of a variety of organizational functions:

1. Australia: National Archives of Australia
2. Australia: Public Record Office of Victoria
3. Belgium: City Archives of Antwerp
4. Finland: National Archives
5. France: Centre des archives
6. France: French Space Agency (CNES)
7. Germany: Ulm Municipal Archives
8. Germany: National Library
9. Germany: Federal Archives
10. Ireland: National Archives (under development)
11. Italy: Cineca
12. Latvia: National Library
13. The Netherlands: National Library
14. Portugal: Centro Português de Fotografia
15. Portugal: Companhia Nacional de Bailado
16. Sweden: Riksarkivet
17. United States: National Archives and Records Administration
18. United States: San Diego Supercomputer Center
19. Switzerland: Schweizerisches Bundesarchiv

The available sample is clearly too small to allow a comparative analysis and to identify the most relevant characteristics of tools that are emerging from a new tradition and have only recently been implemented. The available information, though, has made possible a preliminary analysis and the development of some general considerations that might be useful for future initiatives.

Overall (see Table 17), 49% of the responses sent by institutions that are directly in charge of preservation, has, for example, shown the total absence of the organizations' internal regulatory tools. This is a quite relevant—although negative—outcome, especially if we look at it in light of the increasing and constant growth of digital materials housed at the institutions. We could speculate that the negative answers to the section on "Digital Preservation Policy" might have arisen from the fact that the term used (policy) is ambiguous and that the questionnaire was not accompanied by a glossary unambiguously explaining some terms and components that may be too idiosyncratic and linked to very specific sectoral and juridical elements. In this regard, other difficulties have also arisen from some specific questions. However, the overall outcome remains significant and should be reflected upon for future European Union initiatives. During

this preliminary phase of analysis we may attempt to identify reasons and relevance of the outcome.

What emerges in the first place is that even the institutions that are mandated to manage and preserve the community's cultural and scientific heritage do not always view as an essential requisite the need to design and systematically apply clear and well defined guidelines and procedures aimed at preservation. The fact that there is not an explicit obligation, at the regulatory level, mandating to draft a policy on digital materials preservation, makes the policy tool entirely optional and therefore scarcely used. Finally, we can point out that the technical and organizational aspects of the problem are highly undefined and this fact does neither promote nor make easy a systematic and well-structured intervention, inevitably too rigid in relation to a constantly evolving practice, such as the type of intervention that would be required if internal management guidelines and procedures were approved, monitored, verified and advertised.

Even when internal policy tools exist, the users degree of satisfaction appears to be quite low: only a 17% says that the tools fully meet the institutional needs, a 6% defines the tools as inadequate, while the remaining 28% considers them just adequate. It is useful to point out here the answer of the Dutch National Library, which has defined its plan as the best possible in the given conditions, since, in particular, it considers the state of the technologies available for digital preservation projects still largely insufficient. This institution has also remarked—taking an appropriate pragmatic approach—that in this context the expression "current needs of the institution" should be exclusively applied to the need of safeguarding the preserved heritage, therefore employing all available procedures and techniques.

The European Union countries satisfied with their policy are Belgium (City Archives of Antwerp) and Germany (Federal Archives), while Portugal (Centro Português de Fotografia) and Sweden (National Archives) have expressed a negative opinion on its actual usefulness, validity and effectiveness. Overall, most of the institutions fit within the 28% of answers expressing a moderately satisfactory opinion on their available policy; in particular:

- Finland: National Archives
- France: Centre des archives, CNES
- Germany: National Library, Ulm Municipal Archives
- Italy: Cineca
- Portugal: Companhia Nacional de Bailado

The data provided by non European Union countries show that, with the exception of the National Archives and Records Administration in the United States, every institution has expressed a positive opinion of its internal policy.

Sweden (Riksarkivet) has explained that the reason why its policy does not entirely meet the current needs of the institution is the lack of funding allocated for this function; on the other end, the San Diego Supercomputer Center in the United States has pointed out that it is not directly part of its mission to manage digital materials: its main function is to manage the technological growth, with specific attention to migration issues.

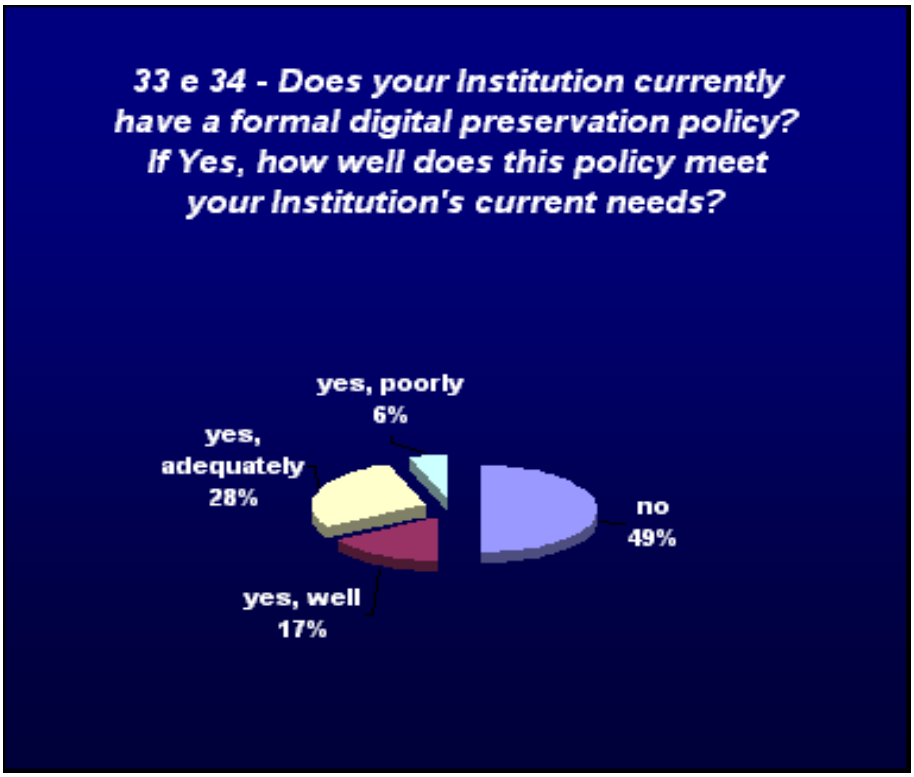


Table 17—
Existence of Digital Heritage Preservation Policies and Adequacy to Institutional Needs

The Australian archival administration (National Archives of Australia) has pointed out that it does not want to make a distinction between internal policies on digital materials and internal policies on materials in other formats: “Another major factor is that our preservation policies, and our policies in general, are format neutral. In our policies we don’t differentiate between digital and non-digital records. It’s in the actual procedures that we make distinction, and there only if there is a need.”

Section 1. Advantages

The correct definition and design of internal digital materials preservation guidelines requires the institutions to do an accurate study of their current situation and to make a remarkable effort, especially in relation to the human resources and funding that from time to time have to be adequately organized and employed. Nevertheless, it provides a series of advantages that contribute to further demonstrate the efficiency and effectiveness of the policy guidelines right from their first implementation.

The main advantage sought, through the drafting of specific policies, by almost every institution responding to the questionnaire (90%), is basically to make sure that its digital materials remain always available and accessible—readable and understandable—

in every circumstance, non just in the immediate present, ma also in the long-term future. The institutions' approach and goals reveal awareness of the fact that a policy tool cannot be conceived as an isolated, independent and definitive entity (even for a limited time). A policy should be a strategic document that—right from the moment of its drafting and approval—may open the way to new interventions and initiatives and may almost always imply—but not necessarily—the planning and development of coherent and valid programs, strategies and operational measures for the protection of the digital resources to be preserved. The policy should also positively and dynamically interact with the many management activities of the institution. The specific outcome of the inquiry on the expected benefits has confirmed what has just been said and has shown that most participating institutions consider the development of a policy document—specifically the document internal to each institution—as a most important action that goes beyond the particular goals declared. This action, in fact, offers the opportunity to systematically and coherently define specific technical guidelines, in relation to the organization and regulation of the activities and processes linked to digital preservation and to the identification, in each category of materials, of the properties and significant attributes that need to be preserved, and of the related responsibilities.

During the data analysis it emerged that for almost 50% of the institutions the approval of a policy mostly means taking responsibility for the digital materials to be preserved, while for a 40% policy adoption represented, within each institution, the chance to implement the idea—too often discussed, but too rarely put into practice—that to invest with awareness and responsibility in the digital future means, in the first place—if not exclusively—to secure, in the current phase, a solid foundation for the memory of the present.

The Public Record Office of Victoria (Australia) has specified, beyond the choices given in the questionnaire, that an additional advantage is securing that always and in any circumstance the interoperability of the preserved digital materials be protected. The Canadian National Archives and the Canadian National Library among the further options chose the one indicating the need to have available a tool allowing to effectively and continually communicate their commitment in this area ("communication of commitment"). The Riksarkivet (Sweden) clarified that its policy is defined within a detailed set of regulations that gives autonomy to the single organizations to choose the modalities that they consider appropriate for achieving the specific goals of the policy tool, the limitations of which are defined elsewhere.

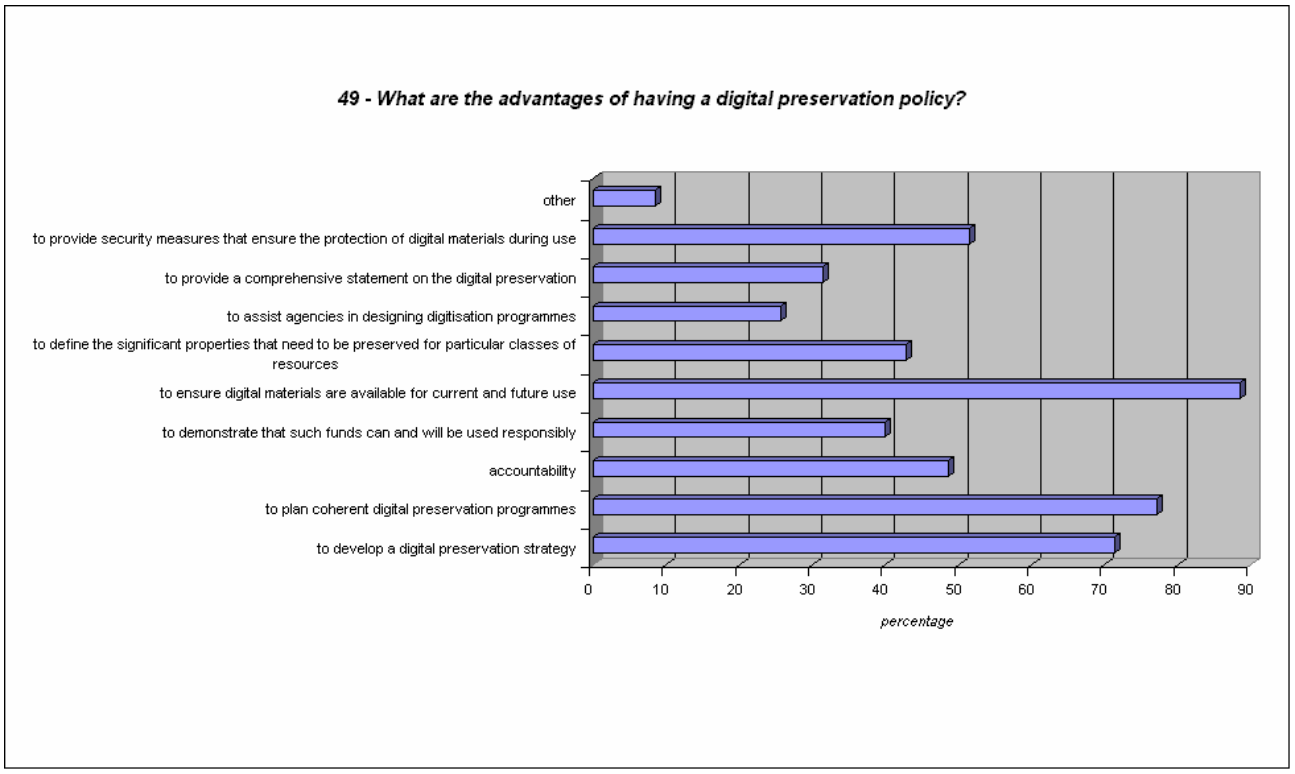


Table 18—Advantages of a Digital Preservation Policy

Section 4. Contextual Influence

A digital materials preservation policy should, in the first place, mirror—has it has been repeatedly pointed out in this report—the way in which the organization operates, specifically in relation to its basic requirements and needs. From the inquiry (see Table 19) it came out that, in 25% of the participating institutions, institutional needs are at the foreground and greatly influence the content and design of each internal policy.

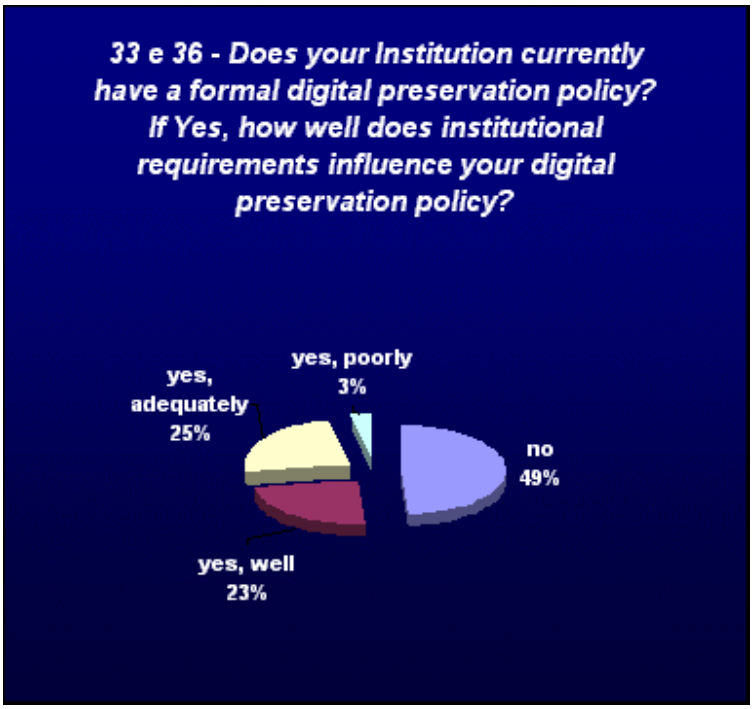


Table 19—Influence of Institutional Needs on Policy Development

The reasons determining policy development (Table 20) may therefore be mostly traced back to institutional needs, which, based on the data analysis, are in most cases identified with the need to secure, for historical purposes, the heritage integrity and accessibility (78%), respectively followed by juridical requirements (50%), administrative requirements (33%) and financial requirements (17%). Specifically about the juridical requirements, the Riksarkivet (Sweden) has referred to what the public sector national legislation has established, also in relation to technical regulations and guidelines. Further specifications (17%) differ among each other: the San Diego Supercomputer Center in the United States and the French Space Agency (CNES) respectively indicate researchers' access needs and value of scientific heritage.

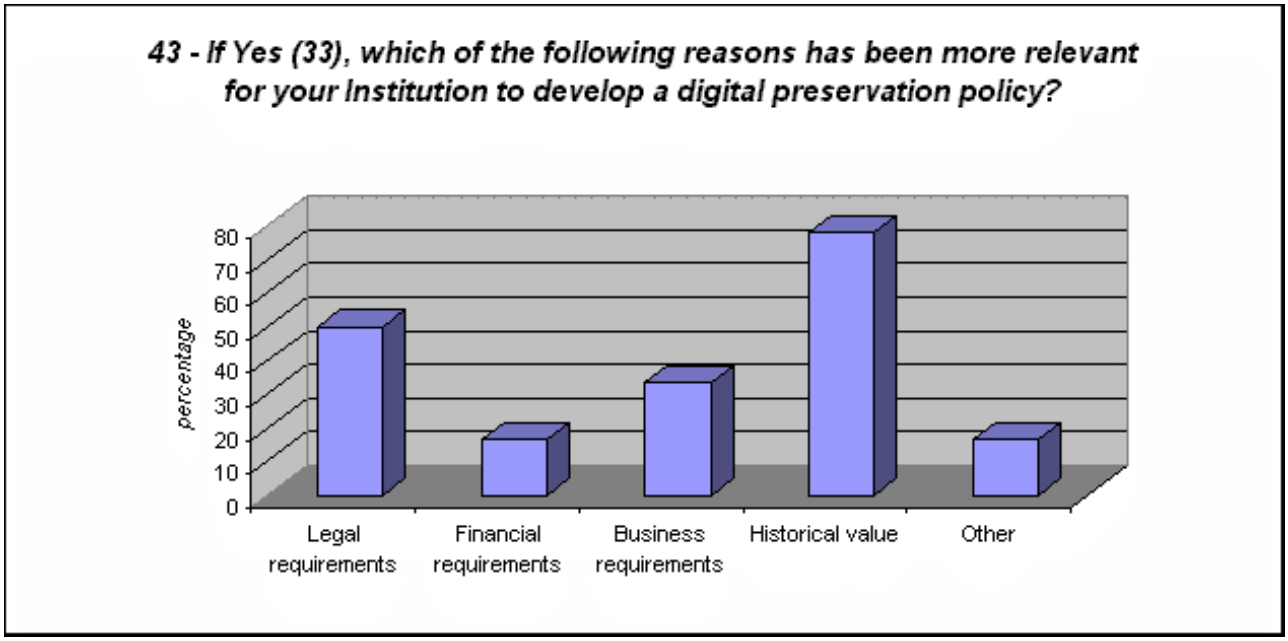


Table 20—Reasons for Policy Development

The specific administrative context of each institution greatly influences policies in this sector. In some cases (as for the Dutch National Library) policy is considered an essential part of the organization's institutional mission. In regard to the importance of national regulations, the situation is strictly linked to the specific nationally legislated state organization, in the relationship between central organs and local and peripheral structures of the country. Some institutions (for example, the Ethnomusicology Institute of the Slovenian Research Center, and the Portuguese Archaeology Institute and Institute for Library Heritage) do not have to be rigid or act in an automatic way when applying in their policies the regulatory principles expressed at the national level. On the other hand, these principles heavily influence the content design of other institutions' plans (for example, in Italy, where a detailed structure for the documentary procedures manual and very precise digital preservation technical rules are required, and in also France, in relation to digital formats regulations). The Australian National Archives have explained that no specific digital materials preservation rules exist and that the existing rules applicable to records management have a strong influence, in indirect form, also on long-term preservation. The Portuguese National Library and the City Archives of Antwerp (Belgium) pointed out that their policies adhere to some specific regulations, such as copyright, security and privacy, more than to general rules.

It is important to point out the approach of the Canadian institutions, which emphasized their opportunity to use regulatory frameworks and guidelines rather than detailed regulations. A diversified situation is also present in the United States, as exemplified by the answers of the National Archives, which evoke the specificity of a situation that does not have a unified national legislation, but allows each Federal Agency to regulate its particular sector**.**

Section 3. Policy Contents

According to the specific needs of every institution, each digital materials preservation policy should include as part of its content a more or less in-depth and exhaustive discussion of a series of issues mostly related to:

- definition of standards and procedures to adopt, and of the responsibilities and criteria for quality control implementation,
- description of procedures for acquisition, selection and deposit of the materials to be preserved long-term,
- rules for conversion, migration and reformatting.

The study results (Table 21) show that currently the 19 institutions with a policy in place have been mostly interested in discussing and tackling the section on digital materials deposit (88%), while the section that is absent in most cases and that requires the filling of substantial gaps is the one on policy access and diffusion (59%).

Some institutions, as, for example, the Bundesarchiv (Germany), the Riksarkivet (Sweden), the Dutch National Library and the Schweizerisches Bundesarchiv have complete policies covering all the issues here listed so far. The Riksarkivet pointed out that the only issue that is not covered by its policy (but that should be covered) is the one concerning the description of digital materials acquisition and selection procedures.

The Dutch National Library pointed out that the lack of adequate technologies has prompted it to actively participate in the major international initiatives taken in this field, with the specific goal of identifying, in a short period of time, technologies that may enable long-term access to digital materials. In relation to the technical solutions adopted so far, the institution has pointed out that deposit is managed separately from access functions, although materials are preserved in operational formats and online access is allowed for newspapers only. The Australian National Archives made a different choice in regard to this issue: records are kept in preservation format in an offline repository. Access is ensured by making available, in the reading rooms, the materials in a standard format, together with the necessary reading tools—similarly to what happens with traditional records. The data show that 2/3 of the participating institutions currently provide direct access to their digital materials. Institutions in this category include: the Riksarkivet (Sweden), the National Library, the Federal Archives and the Ulm Municipal Archives in Germany, the Companhia Nacional de Bailado and the Portuguese Center for Photography in Portugal, the City Archives of Antwerp in Belgium, the Finnish National Archives, the National Library of Latvia, the San Diego Supercomputer Center in the United States and the Public Record Office of Victoria in Australia.

As it may be seen in Table 21, the data from the participating institutions show a quite positive situation in regard to the degree of in-depth and focused discussion of the issues included in the policy. Percentages, in fact, are always above 50%.

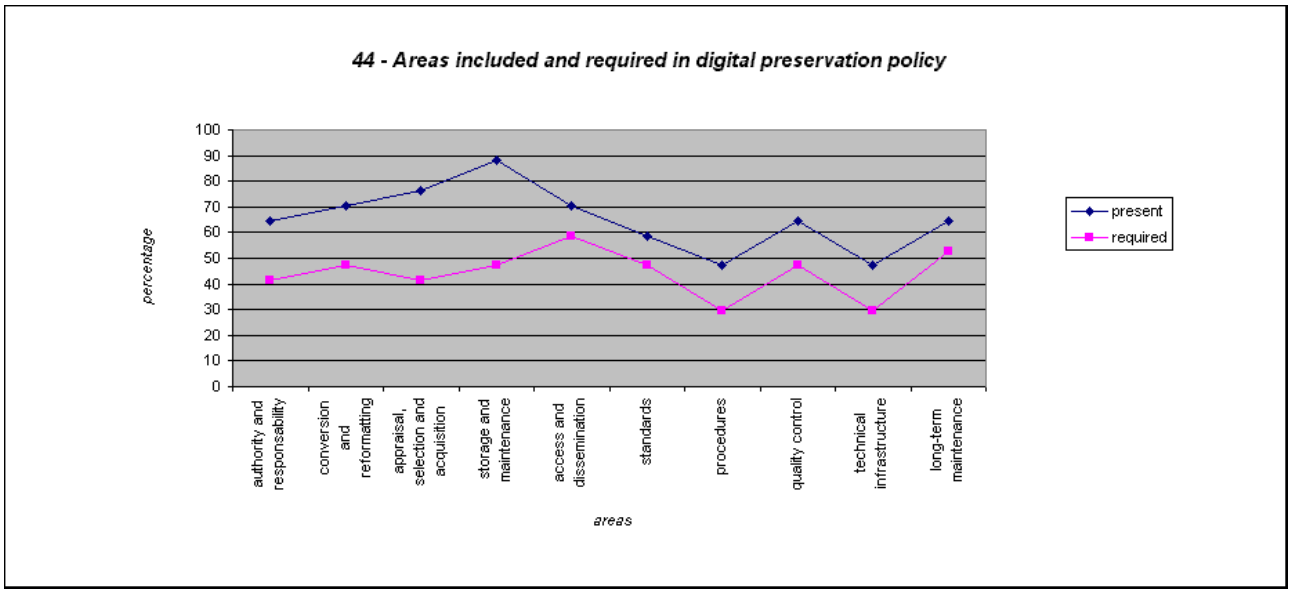


Table 21— Issues Included and Required in a Digital Preservation Policy

As mentioned earlier, guidelines and plans should include a specific section on the definition and regulation of conversion, migration and reformatting procedures. In particular, in regard to the choice of the most appropriate preservation methodology or strategy, the study results have shown that all administrations that answered the questionnaire, with the exception of Greece (Aristotle University of Thessaloniki), always conduct a preliminary study and analysis of the impact that these methods/strategies might have on the digital materials in relation to: intellectual integrity (authenticity and reliability), access, security, readability and interoperability. In regard to the adoption of preservation strategies (reformatting, refreshing, migration, emulation, bundling), the participating institutions said that they mostly use migration (88%), refreshing (76%) and reformatting (71%). The Dutch National Library stated that its policy includes all of the strategies and methods discussed, but that each actual choice depends on specific needs and technical requirements. The Australian National Archives have specified that digital records conversion uses the XML format and that a specific presentation program is subsequently used. In this case, electronic records are destined to undergo migration through different hardware platforms, while software migration happens only once.

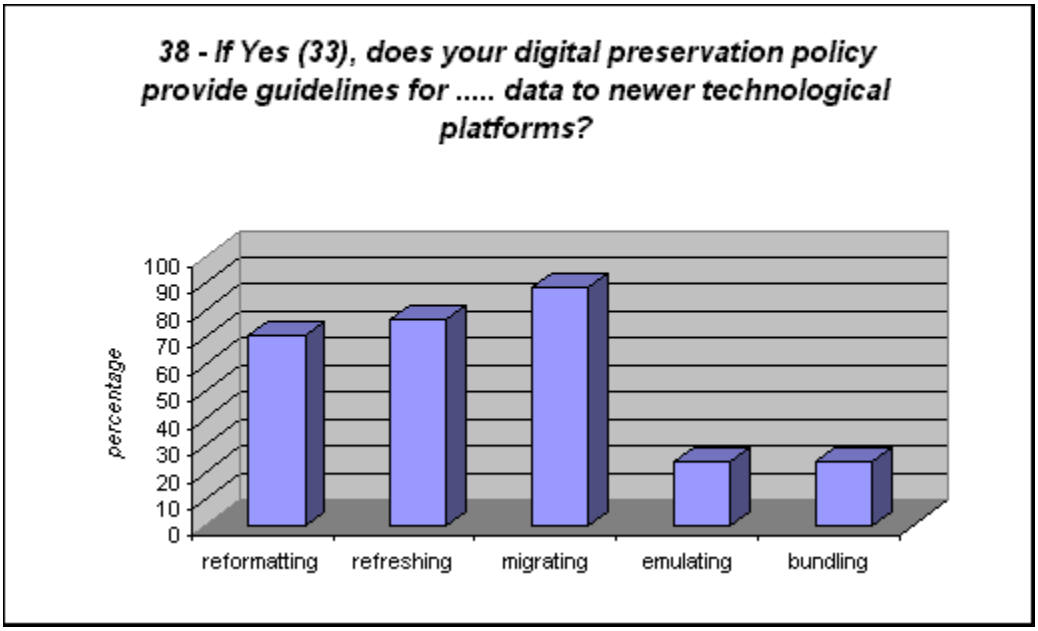


Table 22—Digital Materials Preservation Strategies

Section 4. Roles and Responsibilities

The development of digital materials preservation guidelines requires that the institutions identify specific responsibilities for both maintenance and revision, as well as for monitoring of policy documents. As shown in Table 23, the administrations identified as main responsibilities the ones concerning: the presence of focused internal task forces (12%), external resources for consulting and support (10%), management responsibilities (11%), and human resources for ordinary activities (10%). From the examined cases (Table 24) it emerges that, when developing their plans, experienced professionals often act alone in developing appropriate organizational and technical solutions. The ones who have a lower degree of expertise mostly rely on the review of external literature. Finally, the ones who only have average knowledge still develop internal solutions, but, at the same time, rely on external information, consulting, and models.

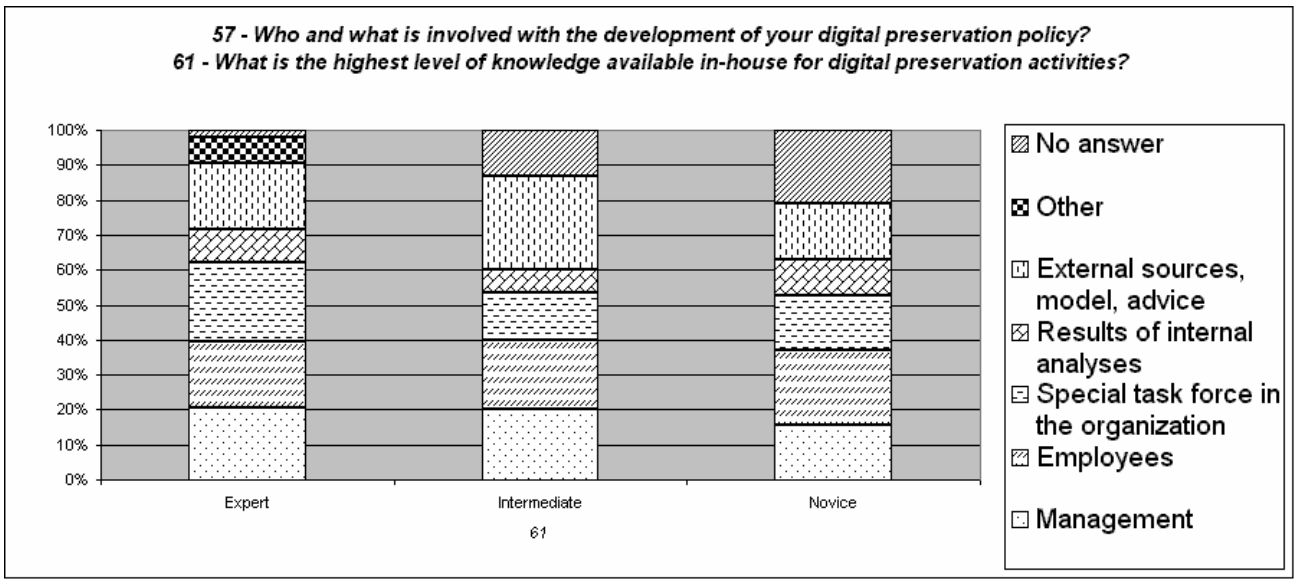


Table 23—Responsibilities for Digital Preservation Policy Development/In-house Knowledge for Digital Preservation Activities

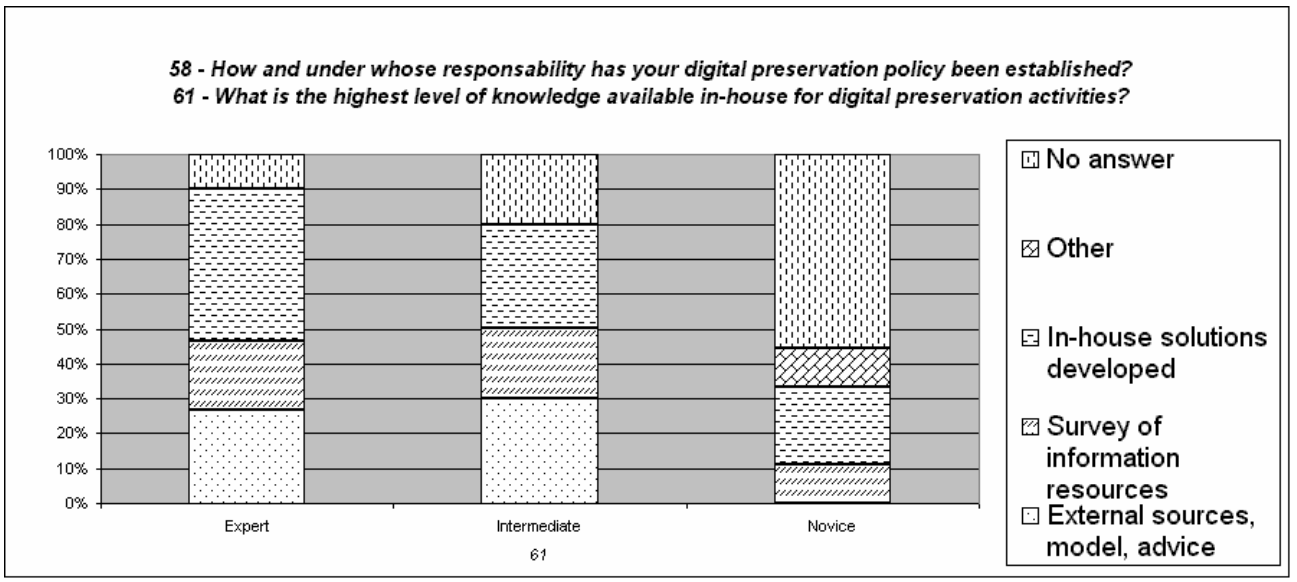


Table 24—Responsibilities and Modalities for Establishing Digital Preservation Policies/In-house Knowledge for Digital Preservation Activities

The study has shown that, currently, 53% of the institutions use external consultants. The Schweizerisches Bundesarchiv has specified that it relies on these procedure for development activities only, while the San Diego Supercomputer Center

considers this option has an actual chance to cooperate with other national institutions, such as the National Archives and Records Administration (NARA), universities and companies. Furthermore, the data (Table 25) show that institutions want to increase the level of expertise of their staff/working group in regard to digital preservation, through specific training in the digital field or general courses taught by external consultants. Other ways to enhance expertise include taking part in international workshops, working groups and conferences (as in the cases of the Dutch and of the Australian National Libraries) and cooperation with other institutions (according to the France Space Agency). The Australian National Archives have specifically pointed out the increase of staff's technical expertise obtained by rotating personnel from section to section, including the digital preservation and internal research development sections.

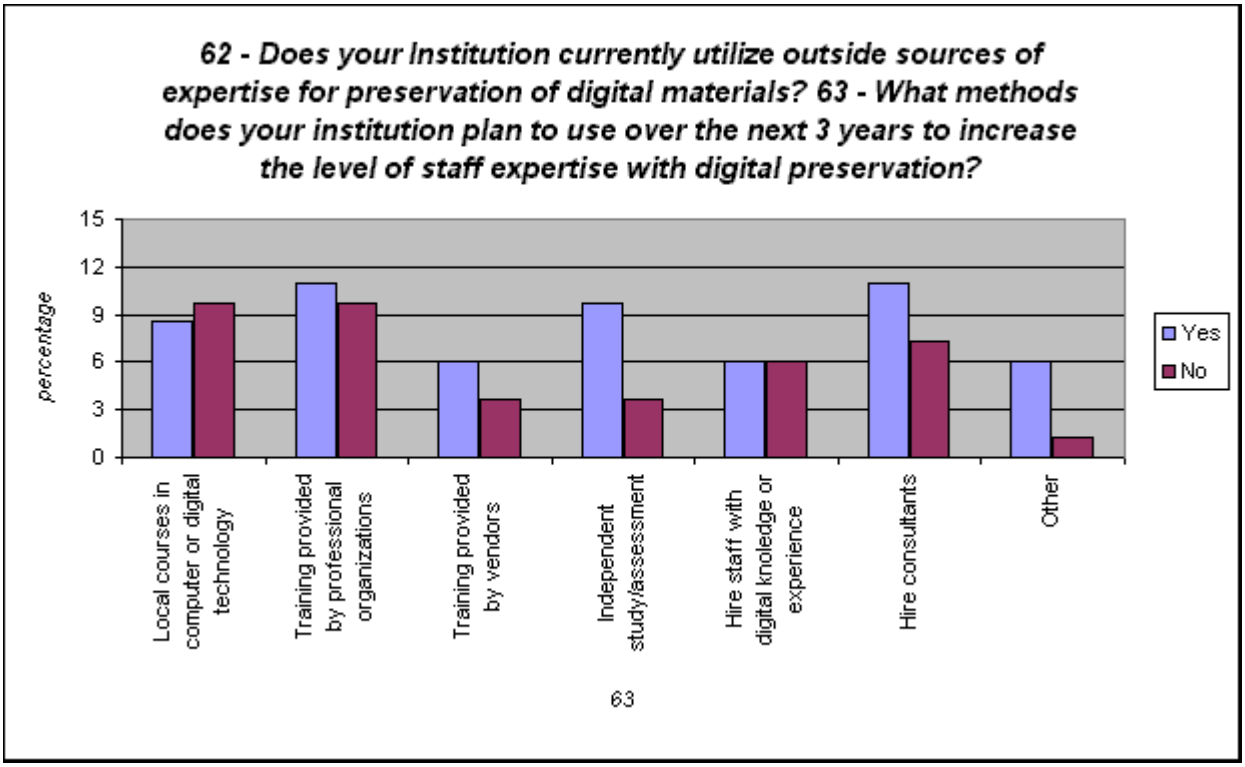


Table 25—Acquisition of Technical Expertise and Ways for Updating It

Section 5. Cooperation and Collaboration

Most institutions—both European and international—often engage in collaborations to develop guidelines, principles, criteria and research projects that may support various countries in the development of standards and of national, international and organizational strategies. Almost all participating institutions (80%), have said to have worked with other organizations to develop policies. In particular, the Archivio centrale dello Stato (Italy), and the National Library and the Museovirasto in Finland

have specified that, although they do not have their own internal policies, they have participated in several national and international research projects. Belgium (City Archives of Antwerp) and Australia (National Archives) have pointed out that the cooperation has provided them with an opportunity to compare expertise and experiences. The Central National Library in Florence, Italy, has explicitly pointed out its positive participation in European (NEDLIB) and international (Consortium on Web Archiving) projects, in order to subsequently develop, at the national level, guidelines for the preservation of Italian cultural heritage. As shown in Table 26, each institution cooperates in different ways with several other organizations and, significantly, not only with organizations within its sector. For example, archival institutions do not only cooperate with other archives but also—as shown by the high percentages—with libraries museums and, most of all, with the wider public sector in its different areas of activity For example, the Finnish National Archives collaborated with the Ministry of Culture and the Finances Ministry, while France and Greece engaged in collaborations with statistics institutes. Significant cooperation also takes place with scientific research institutions, universities, and organizations involved with standards and technical regulations, such as the ATICA (Agence pour les technologies de l'information et de la communication dans l'administration) in France, and the Autorità per l'informatica (Informatics Authority), now Centro nazionale per l'innovazione nella pubblica amministrazione (National Center for Innovation in Public Administration), in Italy. There also exist collaborations with the private sector—which has been repeatedly mentioned in the responses—especially with publishers and software and hardware producers. The San Diego Supercomputer Center in the United States has specified that its cooperation with archives and libraries mostly aims at making available to such institutions its technology and the solutions identified through research projects. The study shows that cooperation mostly occurs at the national and international level and that the workload is shared among institutions also according to the specific research projects undertaken. For example, this has happened for the many European libraries that participated in the European NEDLIB project, and for the Dutch National Library's participation in the IBM promoted "e-Depot," aimed at developing IBM's digital repository.

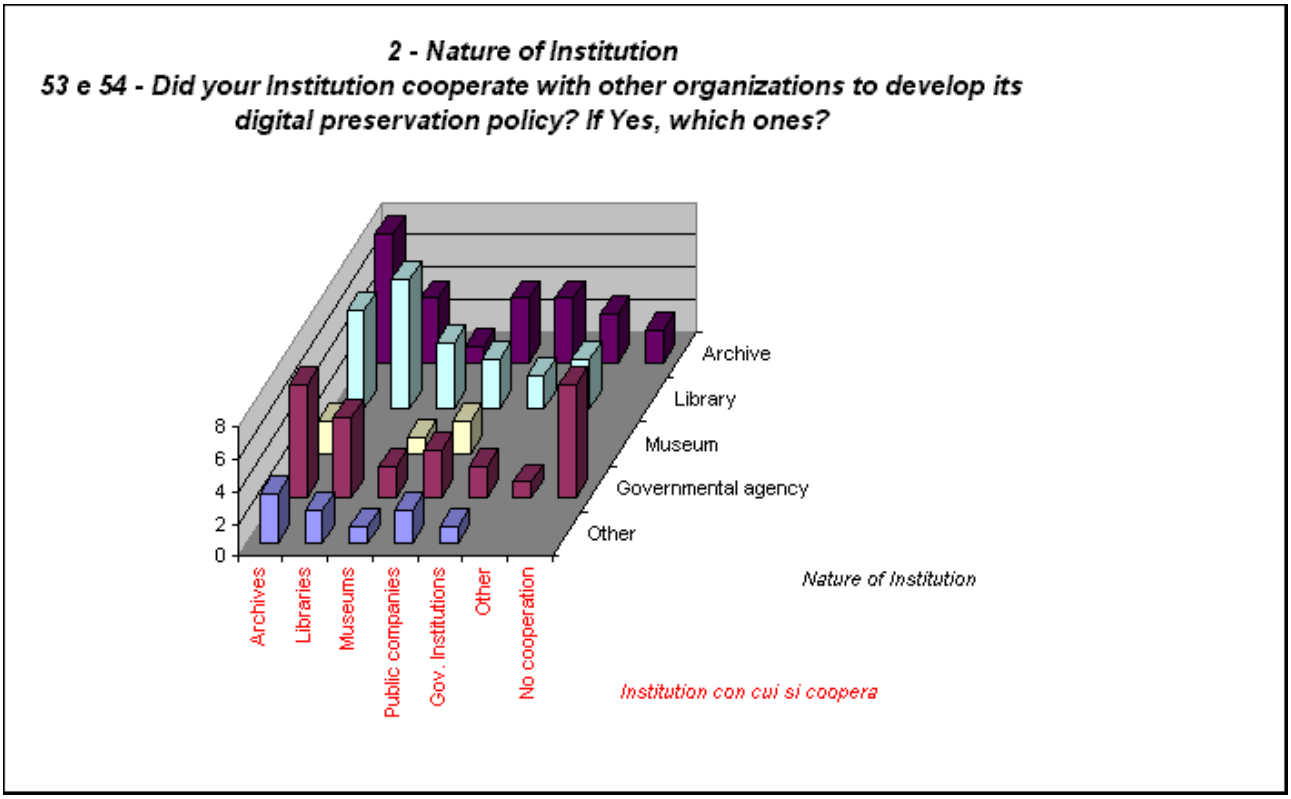


Table 26—Cooperation for Policy Development

Section 6. Costs

The costs of digital materials preservation activities and of their specific supporting tools (in this case, policies and guidelines) are a critical issue that has made the communities involved embark on a long quest for an answer, which so far has not provided any sufficiently detailed results, also due to the fact that up to now there are very few experiences to compare. The drafting and subsequent revision of a digital preservation policy require the institution to seek and make available sufficient resources, both financial and human, to be employed in various activities, although such resources are not usually applied exclusively to this task. In fact, the study results show (Table 27) that only in 13% of the institutions costs for policy development are a significant entry in the budget, while in most cases (34%) the funds allocated are more limited. The Public Record Office of Victoria (Australia) and the National Archives and Records Administration (United States) pointed out, in particular, that the most significant cost component applies to the implementation and initial development of a policy system, while they consider less relevant (although different) all the subsequent activities of revision and monitoring.

Specifically in regard to the costs of policy monitoring and updating, as shown in Table 27, the data have shed light on a decreasing value scale in which the lowest cost factor corresponds to the highest percentage of institutions participating in this study (33%).

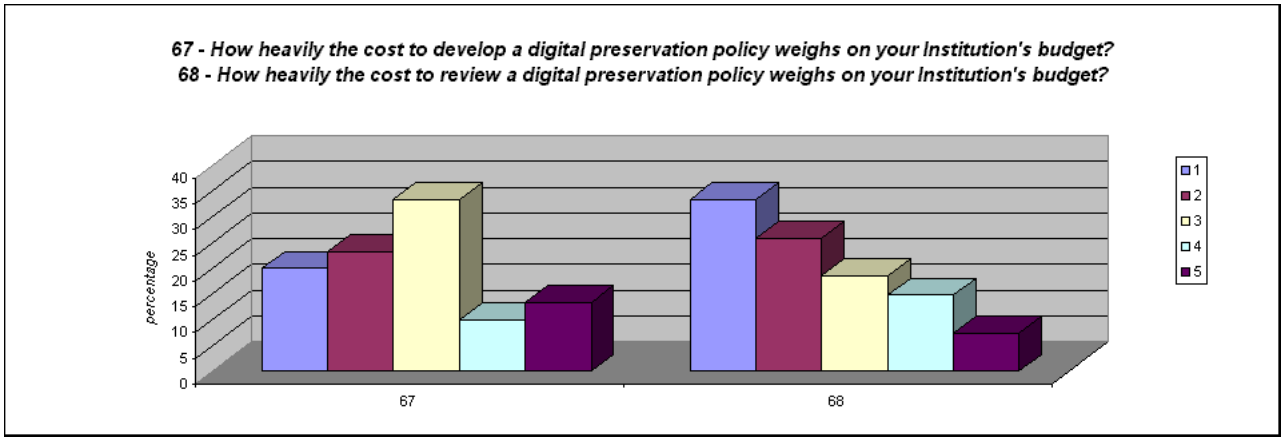


Table 27—Costs of Policy Development and Update

Another theme is funding availability in the participating institutions that are engaged in identifying the materials specifically intended for digital preservation. The data show that in most cases (53%) it is difficult for the institutions to find internal available resources, although they consider identifying materials for digital preservation an essential part of their preservation function. The data analysis also reveals that only half of the participating institutions have internal availability of specific resources for the preservation of their digital materials (47%). Some institutions (for example the City Archives of Antwerp and the Dutch National Library) have pointed out that funding from the European Union is limited and that, in general, all funds provided from the outside, both at the international level and on the part of the private sector, are also limited. One of the outcomes of this lack of resources is the almost complete impossibility to hire external consultants. Another outcome, that is, the common decision not to outsource services (outsourcing tends to be very costly) might arise not from budget constraints, but from the need—in organizations largely dedicated to heritage preservation and aware of the cultural value of digital materials—to directly manage a fundamental function, which is rightly considered “core business” within the institutional mission. It may be noted here that, currently, relevant and widespread experiences of outsourcing in the digital preservation field do not seem to exist (Table 28).

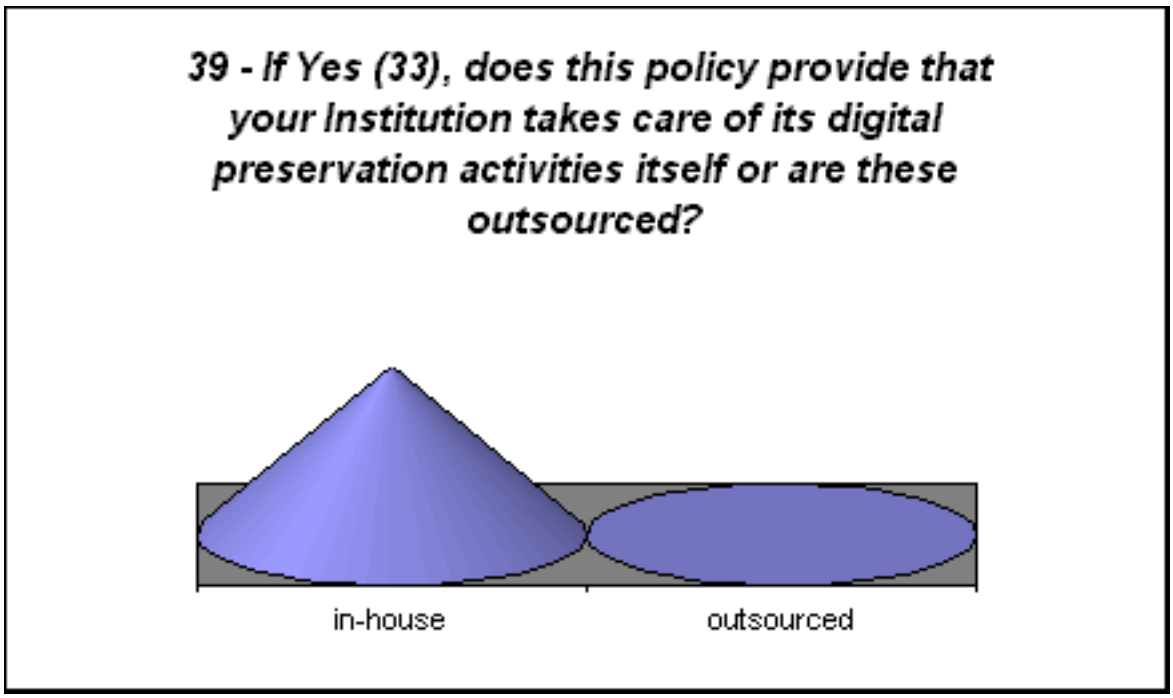


Table 28—Outsourcing

Answering to the question asking what services would the institutions use if available at a lower cost, institutions have generally presented some options (although varied according to the institutional functions), while the National Archives of Australia have explicitly denied that they would use any of these services. In particular, as shown in Table 29, training (78%) and definition of standards and best practices (78%) are the services that the institutions currently seem more favorable to seek outside, contrary to the services identified, for example, as “consultant services” (47%).

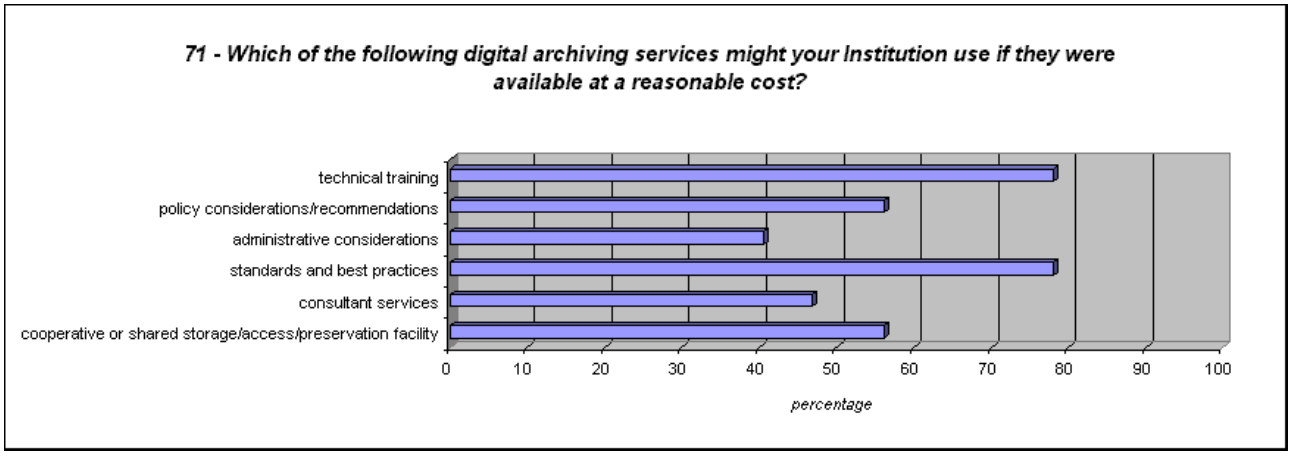


Table 29—Services that Might be Outsourced if Available at Limited Costs

Section 7. Monitoring and Revision

The monitoring and revision activities that a digital preservation policy should periodically undergo, mostly aim to reach higher and higher levels of efficiency and effectiveness and also have the goal to evaluate to what degree the principles expressed in the policy itself meet the current needs of the institution, which should always be ready to adapt itself to the constant change that affects the organizational structure and workflow activities, as well as the technology and media sector.

How often each institution decides to update and revise its policy depends on several factors, such as the type of organization, the speed of the technological changes—as the Dutch National Library appropriately pointed out, the level of activities, both the current one and the required one—according to the response of the National Archives and Records Administration (United States), and also the speed of standards change—as specified by the San Diego Supercomputer Center (United States).

The data analysis shows a contradictory situation in relation to revision times, when comparing general recommendations to the actual operational choices made by the institutions that have a policy in place. At the general level, all institutions think that policies should be revised on an annual basis, except for the Australian National Archives and the Finnish National Library, which expressly supported a different choice, believing that a well designed policy should not require ongoing updates. In contradiction with what stated at the general level, the specific analysis of institutions' behaviors reveals that in 33% of cases policies are updated "rarely," while annual updating occurs in 17% of cases and "frequent" updating occurs for a 50% (see Table 30).

In regard to actual operational models, it is interesting to point out that while the Australian institutions (Public Record Office of Victoria, National Archives) require a non-continuing revision activity, American institutions (San Diego Supercomputer Center and National Archives and Records Administration) require a high frequency of updates.

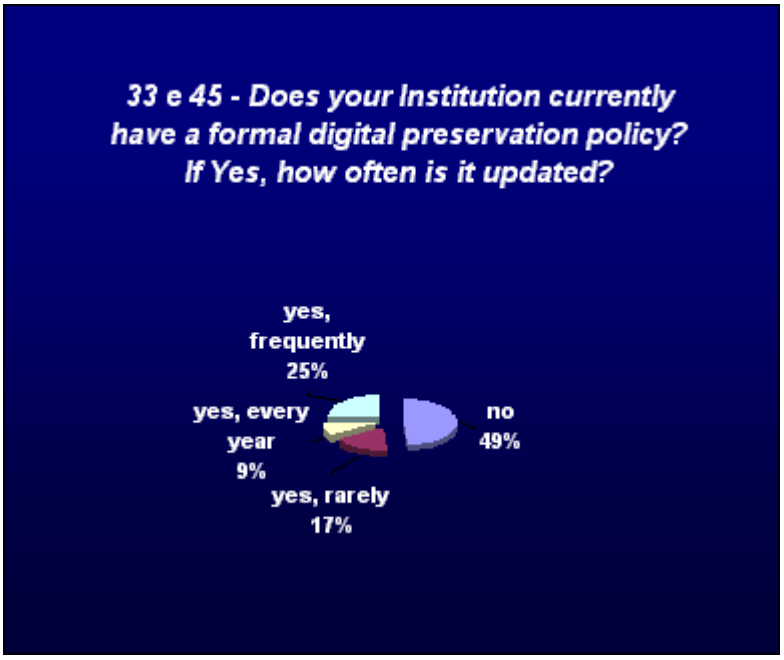


Table 30—Frequency of Digital Preservation Policy Updates

Furthermore, the study results have indicated that currently digital preservation policies are basically able to meet the real needs of an institution only for a period of time between 2 and 5 years. This limited time frame appears to be highly determined—as the specific comments also point out—by technological constraints, which seem to heavily influence internal institutional policies and guidelines. Financial constraints, as well as the organizational structure and level of knowledge and experience also play an important role. The San Diego Supercomputer Center in the United States has pointed out that the next generation of technologies based on dynamic consistency constraint management systems is currently in phase of development. These new technologies will allow the automatic implementation of some policy functions that require upgrading.

Measures and activities on which institutions base their policy revision and improvement interventions mostly concern development plan analysis, auditing and preservation function monitoring activities, with a particular focus—as specified by the Canadian National Archives and National Library—on the state of technologies and on the amounts and types of records that need to be preserved (see Table 31). Other measures that may be listed—on the basis of the information provided, respectively, by the San Diego Supercomputer Center, the National Archives in Washington, D.C., and the Dutch National Library—are a recurring function of independent evaluation, the study of the new technological solutions available, and continuing updates on international research developments.

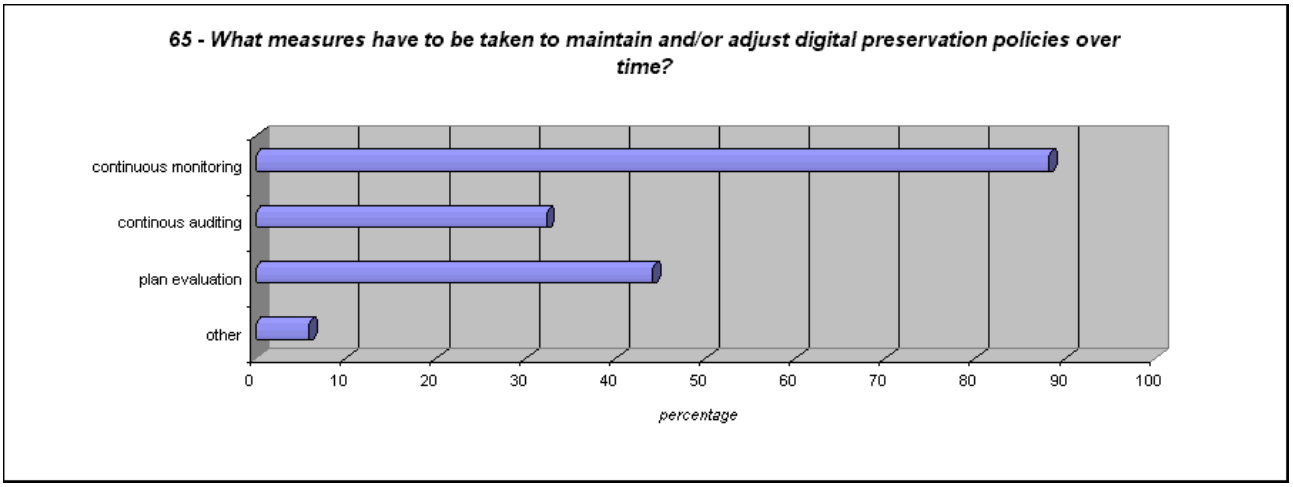


Table 31—Measures to Maintain and/or Improve Digital Preservation Policies

In order to correctly implement a policy, in a way adequate to the specific context to which it applies, and in order to make it operational each institution should conduct preparatory focused investigations and then, which is even more important, design a plan for monitoring activities to be carried out at regular time intervals. When required, the institution should also make the necessary changes to its organizational structure and should update the staff's level of knowledge of digital preservation.

Section 8. Policy Implementation and Impact on the Organization

In order to correctly implement a policy, in a way adequate to the specific context to which it applies, and in order to make it operational each institution should conduct preparatory focused investigations and then, which is even more important, design a plan for monitoring activities to be carried out at regular time intervals. When required, the institution should also make the necessary changes to its organizational structure and should update the staff's level of knowledge of digital preservation.

As shown in Table 32, in most of the cases examined, the higher number of changes takes place in the training sector, to acquire specific technical knowledge (83%). Other changes take place at the level of regulations and procedures (60%), followed by changes at the organizational structure definition level (57%) and staff level (51%). A good percentage (29%) shows other possible areas for change: technology (Portuguese National Library and Dutch National Library), definition of early planning of the documentary and information system (Australian National Archives and Public Record Office of Victoria), records creators participation (Riksarkivet), and financial aspects (Schweizerisches Bundesarchiv).

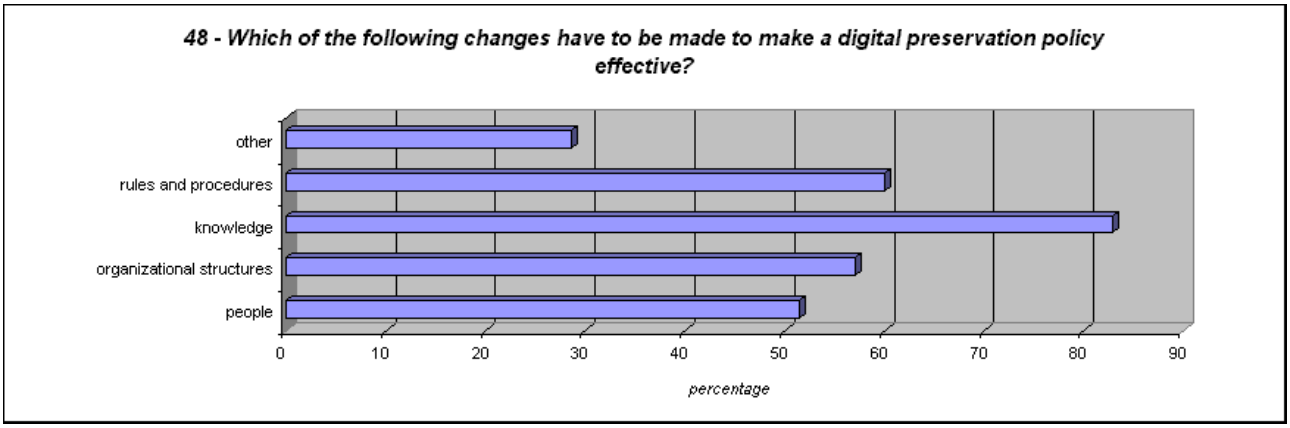


Table 32—Changes to Implement in Order to Design Effective Policies

Among the most interesting observations emerging from the data analysis, particularly relevant is the information that many institutions provided about the pre-requisites and activities necessary to successfully implement a digital preservation policy in relation to its specific context. Listed below are the most relevant suggestions on which conditions increase the effectiveness of digital materials preservation policies:

- National Library (The Netherlands): knowledge of potentials and technical requirements, international standardizing activities, use of tried procedures;
- National Library (Australia): sufficient resources, institutional internal knowledge, expert staff;
- National Archives (Ireland): coherent regulations;
- National Archives (Sweden): national standards;
- National Library (Latvia): availability of information on best practices, standards and experiences of other countries;
- City Archives of Antwerp (Belgium): adequate media management, technical-scientific knowledge, users awareness, training;
- National Archives (Finland): human resources and funding sufficient to meet the organization's mission;
- Book and Library Portuguese Institute: widespread awareness of policies and adopted strategies, in relation both to the goals and to the need for human and financial resources;
- Portuguese Museum Institute: specific national regulations;
- National Library (Finland): adequate resources and cooperation with other sectors, such as publishing, research community and Information Technology community;
- Museovirasto (Finland): well-defined processes and detailed policies, plan for professional continuing education, a clear vision of one's own mission and strong support for change;

- Central State Archives (Italy): correct management of the entire documentary system, with an emphasis on the design of an adequate preservation plan, properly authorized and periodically updated, analysis of the typologies of the electronic archival records present in the system and of the elements that guarantee their authenticity across time and space;
- Ulm Municipal Archives (Germany): design of policies based on administrative activities analysis, collocated at the intersection of an overall electronic records strategy and based on the current technological situation, definition of specific responsibilities (for example, for digital preservation and its related functions), policy diffusion, guidelines for policy application, preparation of specific training courses, monitoring and audit-trail supporting policy implementation, continuing revisions of the policy and of the strategy adopted for electronic records management based on the current technological development;
- Federal Archives (Germany): openness to all possible formats;
- Schweizerisches Bundesarchiv: expert personnel and sufficient resources;
- National Archives and National Library (Canada): support from expert personnel that has practical more than theoretical knowledge, advocacy and defense of institutional mission, increasing awareness, partnership development;
- Public Record Office of Victoria (Australia): strategic vision, adoption and publication of open standards, support to users and providers for standards adoption, continuing updating of adopted standards, also through research activities that may secure practical and efficient methods for digital materials acquisition, management and use, adoption of software that fits in with the adopted standards;
- "Marciana" National Library (Italy): financial resources, expert personnel availability, continuing training, guidelines and technical standards;
- Centre des Archives (France): strong support from top management and government authority, professional training for the personnel, strategic vision and work plan;
- National Library (Portugal): diffusion, at a social level, of adequate awareness of the issue and of how to manage it with skill and promptness, strong political and institutional support, adequate levels of technical know-how and strategic knowledge, actual investment of energy at the local level, in the organizations and institutions involved in practically solving the problem;
- University of Patras (Greece): existence of a national agreement and of an official awareness (at the government, ministry, level) that may prevent unfocused and uncoordinated activities;
- Portuguese Archeology Institute: regulations, procedures and organizational structures;
- Portuguese Center of Photography: adequate hardware and software equipment, training and financial resources;
- National Library (Spain): staff, professional training and equipment;

- Aristotle University of Thessaloniki (Greece): resources, organization's decision-making ability, knowledge of preservation standards;
- National Archives (Australia): planning, adequate resources and technical skills;
- National Library (Germany): clear vision of the task and of the central role played by collaborative initiatives;
- National Archives and Records Administration (United States): organizational commitment, clear definition of requirements, multidisciplinary skills, financial resources, availability of adequate technology, capability of adapting to constantly evolving technologies.

From this information it comes out that the highest requirements for internal policy guidelines development and implementation are: human and financial resources assigned to digital preservation and training courses to increase the knowledge and experience level of the preservation personnel. In relation to the preliminary activities that should be carried out in order to make policy adoption efficient, the investigation's outcomes show that, in almost every institution, these activities are:

1. study the typology of the materials that need to be preserved;
2. create a safe place for the materials;
3. make decisions about the most appropriate preservation strategies;
4. secure access to the preserved materials;
5. gather sufficient human and financial resources;
6. develop guidelines and pilot projects and activities programs tackling key policy elements;
7. study and monitor existing standards.

From the data collected, it currently emerges that 78% of the participating institutions apply their policies to all their sectors.