# Long-term Digital Preservation in E-government – a Case of Slovenia

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The use of information and communication technology and its widespread presence cause a vast amount of data to be created in the public and private sectors every day. The widespread presence of e-government sites, services and communication in the developed world add even more data. This digital data does not only represent the accountability and reliability of the processes, steps and decisions taken by organisations, but also a source of information for future generations. This paper discusses the issue of long-term digital preservation with a special focus on long-term digital preservation in public administration. It analyses problematic issues, current development trends in this area, and principles and solutions that can be found around the world. The paper focuses on Slovenia as one of the EU countries that has most effectively developed its e-government during the last decade. It analyses the situation in Slovenia through legal, organisational and other changes that have appeared over the last few years, and considers this as a model for possible long-term digital preservation. To describe the situation for digital preservation in Slovenian public administration, the results of empirical research made in 2007 are used. The paper uses theoretical background from the field of digital preservation and empirical results to show the important link between e-business, e-government, e-governance and digital preservation. It demonstrates that since Slovenian public administration has strictly specified business processes, the task of implementing digital preservation is much easier. The same concepts can be transferred to the private sector in Slovenia or anywhere else in the world.

**Keywords:** digital preservation, e-government, e-governance, archiving, long-term

## 1 Introduction

Currently, data, documents, records as well as informational and cultural artefacts of different types are often transferred to a digital form or, even more often, are created and born in it. The information society uses information and communication technology (ICT) every second in a multitude of different ways, each segment of society in its own way with its own specific goals. Web 2.0 technologies have caused a small ICT revolution in a past few years. The advantages of ICT usage are easier, faster and cheaper creation of data, higher mobility, easier searching, editing, analysing and usage, although alongside these more problems in the area of authenticity, accessibility, reliability and preservation can arise.

From the preservation point of view, many questions crop up when dealing with digital preservation, some closely related to the environment of the public sector. This paper focuses on the influence that long-term digital preservation can have on the processes within the modern public sector. By discussing the terms of e-government and e-governance in the second chapter, it tries to emphasise the importance of digital preservation in this. The third chapter focuses on digital preservation itself, along with issues that arise in this that are important for e-governance and e-government. The fourth chapter presents the case of Slovenia, which recently adopted a range of legal acts covering this area, and the current situation in this field. Conclusions from empirical research substantiate theoretical and practical research results from other parts of the world, and emphasise the importance of digital preservation in the modern processes of e-governance.

## 2 E-government and e-governance

E-government is defined by Sheridan and Riley (2006) as the use of ICT to apply public administration principles and conduct the business of government with the purpose of improving delivery of new services, enhancing delivery of existing services and making public administration more efficient. The difference compared with more familiar (offline) government is the significant use of ICT. If we forget about the "e-", government (as an institutional approach to political operations) is a narrower discipline then governance (as a procedural approach). Governance covers a broader topic of processes, relationships and networks within the government. As stated by Bhatnagar (2004:21), governance is a broader concept that encompasses the state's institutional agreements, decision-making processes, implementation capacity and the relationship between government officials and the public. Governance trends include a larger variety of involved actors, more policy

instruments, while international and sub-national policy-making is gaining ground compared to the national policy level (Jakob, 2004). Good governance demands accountability, transparency, effectiveness, efficiency, citizen satisfaction and trust, participation and much more. It is assumed to follow steps of defining objectives, scope, concepts and models, key problems, methods and solutions with definitions of performance and quality assurance (Costake, 2004). ICT can help to achieve these demands. The advantages of e-governance therefore include:

- Better service delivery: using ICT to achieve better efficiency, ease-of-use, etc.;
- Transparency: availability of information using web portals with public information about government policies and programmes, newsgroups, RSS (Really Simple Syndication), e-mail notifications, etc.;
- Collaboration and participation: e-surveys, e-forums, e-chat rooms, e-voting, e-communication (e-mail, e-chat);
- Cross-government participation and co-operation: using ICT to achieve faster processes, better co-ordination, lower paper consumption, implementation of efficient horizontal virtual organisations instead of rigid bureaucratic structures, etc.
- As described by Nath (2008), ICT can influence governance through three roles:
- Technical role: where automation of repetitive tasks improves efficiency (e.g. pre-filled tax-forms);
- Supportive role: where ICT supports processes to improve governance (e.g. using e-mail for cross-communication while preparing legislation or policies);
- Innovative role: where new services or mechanisms are available because of ICT (e.g. SMS delivery of application status, paperless form submission using digital signatures).

It would appear that ICT can make a big and positive impact on governance by reducing political apathy in citizens, increasing citizens' participation, increasing efficiency and effectiveness, including those that were previously excluded, etc. But it may also mean more control, power and monopoly over information by politicians, the exclusion of specific groups because of the digital divide, it may also cause users to drown in a huge amount of information. Some research results even show that, although e-government services are well developed, the negative view of ICT held by citizens and a lack of trust hinders e-governance (Kunstelj et al., 2007). Across the world, news reports show citizens' fears about disclosure of personal data, their negative opinion on the centralisation of data in registries and databases, and other security and privacy concerns. The empirical research from Slovenia showed that trust in e-government was one of the lowest of the indicators measured among users of e-government services in Slovenia (Kunstelj et al., 2007).

## 3 Digital preservation

Although the term "electronic preservation" was used in the past because of the focus on electronic journals, the term "digital preservation" today embraces a wider range of material represented in bits and bytes. A similar change was made in the world of ICT considering the term "archiving" and "preservation". While archiving is focused on maintenance and disaster-recovery steps for securing media and content (backup and recovery), digital preservation also includes demands for accessibility, authenticity and trustworthiness. The term "archiving" was closely identified with record-management storage. An "archive" is generally a repository with no inherent responsibility for long-term preservation (Hodge, 2004). Another issue considering the term archiving is the fact that archiving institutions rely heavily upon archival description, adding a historical and scientific aspect to the storage of material. In contrast, preservation's main goal is to "preserve and keep accessible and retrievable".

Through the course of the development of digital preservation, the question of changing archival principles arose. Archival principles were developed over centuries, such as the principle of funds, provenance, hierarchical order and others. According to some researchers, a redefinition for the field of digital preservation is needed (Delmas, 2001), while others think that minor changes would be enough (Hofman, 1996). Digital preservation and digital repositories are not limited to long-term preservation only, but also include methods for collection and input, management, preservation, and mechanisms for access and retrieval. Among the most important functions of a digital repository are assurances of authenticity and integrity, which guarantee the trust of users and the trustworthiness of preserved records. In terms of digital preservation, authentic records are what they purport to be, while integrity focuses on non-repudiation of a record and its completeness. This is important since the digital form itself does not guarantee any protection from changes of content, in contrast to paper records, where the medium and the content are inseparably connected.

The digital approach brings many advantages in the field of preservation. Among positive impacts, we can mention the possibility of higher quality and transparency of preservation operations, higher accessibility (24/7, remote access, various clients) and faster and better search possibilities using adequate search tools. Among negative impacts, there is a need for sophisticated ICT equipment, experts with adequate ICT and preservation knowledge, and higher costs of preservation in general, since preservation of digital data is additional to preservation of classical forms of data. The main problem of digital preservation is the low durability of digital forms. The process of archiving paper records includes eliminating paper acid, putting paper in boxes, and putting these in dry, water- and fire-proof vaults or rooms for decades or centuries. A similar process with electronic data on some media is a "sure death" for the data. No one will be able to read and represent the data after 100 years, sometimes not even after 10 years. The problem of media, hardware and software obsolescence is serious. So the "once-and-for-all" archiving principle for paper documents no longer holds for digital data. We now talk about the "non-stop-job" principle. Digital archiving is therefore not an easy process of keeping the bits sequence of an object but of preserving the possibilities of searching, accessing, interpreting, using and copying an object. Along with those issues, problems of security, authenticity and accessibility arise. Because of the "non-stop-job" principle, economic failure is

also much more threatening than with paper archives. There are ongoing costs of system administration, communication bandwidth, IT upgrading, human resources, etc. The National Archives of Sweden calculated that preservation of around 300 pages of paper records costs 20 times less then preservation of the same record in digitised digital form (Palm, 2006).

Besides the continuous increase of digital data and the problem of long-term digital preservation, there is a question of the experiences and principles that have been developed over the centuries. Throughout history, preservation and archiving have demanded the assurance of an unchanged form for different artefacts. This principle is very different in the digital world. If we keep the digital data in the unchanged original form, access and readability will be increasingly difficult or even impossible over time in contrast to classical forms such as paper, stone, parchment, etc. A statement by one of the pioneers of digital preservation says a great deal on this issue: "Digital records last forever, or five years, whichever comes first." (Rothenberg, 1998). Think of the data, stored years ago, on the first, 8-inch floppy disks. Not only are most of these media probably unreadable today, but there are also no drives in today's computers to read them. In the UK, the BBC's "Domesday Project" from 1986 reached exactly this kind of end (Digital Preservation Coalition, 2006). Even if we were able to invent digital media capable of keeping data readable for hundreds or thousands of years, there would still be one problem left. And that is that the form of data keeps changing all the time with ever-advancing software. The two most suggested solutions for this problem are migration and emulation. The first uses a concept of constant reformatting i.e. changing an electronic record from one, usually obsolete, form to a new, more up-to-date, form (e.g. Microsoft Word 2000 .doc to Microsoft Word 2007 .docx). Borghoff stresses that the destination form should always be standardised, open and widely used (Borghoff et al., 2007). Migration can be carried out at the moment of capturing the record into preservation, periodically or on demand. The first option is used by the National Archives of Australia, where each record is migrated into the standardized XML form. Migration on demand is, for example, used in LOCKSS (Lots of Copies Keep Stuff Safe), where preserved documents are migrated to an adequate form at the time of access of a record by the user (Reich in Rosenthal, 2009). Emulation, in contrast, always uses the original form of the record, but emulates the environment in which the record was created using emulators (software or hardware). This can mean emulating the original hardware environment, operation system, application, etc. The problem is that for development of such an emulator, significant financial and human resources are needed, and no one can tell if emulation is possible at all. Bergman described emulation as potentially dangerous optimistic thinking (Bergman, 1999) and the Digital Preservation Coalition research from 2006 found out that only 3% of questioned organisations used emulation (Digital Preservation Coalition, 2006). On the other hand, emulation is strongly supported by Koninklijke Bibliotheek in Netherlands, which developed the Universal Virtual Computer (UVC). This virtual computer would run on any future hardware and emulate any existing operation system, and would therefore allow applications to run and open any record preserved from the past (van der Hoeven et al., 2005). All of these options have their pros and cons, but it may be that the "internet generation" of today will have completely new and different answers and solutions in the near future. So, it may be that this problem is not "solved" once for the next 1,000 years, but that we instead try to keep digital data and records for as long as possible in the best possible condition.

When we talk about long-term digital preservation, the complexity of the problem does not hold only for records that need to be archived forever. Records that have to be preserved for five or ten years need almost equally good, demanding and expensive preservation solutions as archival records. Digital preservation must therefore be an aspect that is present all the time and that must be considered at the creation of the record, since the elements and properties that a record gains at its creation must be kept throughout the whole record's life-cycle. These findings were also stressed in the results of the Mind the Gap research, carried out in 2006 in the UK (Digital Preservation Coalition, 2006).

Although we can define digital preservation as the last phase of the record's life-cycle, we may also claim that it is one of the more important parts of this life-cycle. According to results from a huge international survey by Cohasset in 2009, most organisations still have to do a lot to achieve credibility and consistency in the life-cycle management of their electronic records (Cohasset, 2009).

# 4    Case of Slovenia

The Slovenian population of about two million citizens is well on its way to the information society. According to measurements and research carried out at the end of 2008, 59% of Slovenian households[1] (50% with broadband access[2]) have Internet access (Eurostat, 2008) in comparison to 60% of EU households. According to the latest report by the Statistical Office of the Republic of Slovenia in 2009, 96% of businesses in Slovenia have internet access, 85% had broadband access and 88% use e-government services. Focusing on e-government, according to the e-Europe benchmarking system results from 2007, Slovenia achieved second place among 27 countries (Capgemini and European Commission Directorate General for Information Society and Media, 2007). This means that electronic services in public administration are amongst the most developed in Europe.

## 4.1   Legal view of digital preservation

Legislation in the developed world is adapting to the new situation by taking into account the universal presence of ICT. The same goes for legislation covering document management and digital preservation and archiving, where laws are now

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[1] In 2009, the percentage increased to 64%. At the same time, 64% of people between 17 and 74 years of age regularly use the internet.
[2] 56% in 2009.

trying to take these technologies into consideration. On the other hand, laws attempt to be as technology neutral as possible, not limiting legal acts to the use of any existing technologies and allowing new technologies to develop and be used.

The area of digital preservation in Slovenia is covered by three legal acts: the main Protection of Documents and Archives and Archival Institutions Act (PDAAIA, 2006), the Decree on documentary and archival material custody (DDAMC, 2006) and the Uniform Technological Requirements 1.0 (UTR, 2006), which were supplemented by a Control checklist for reconciliation of internal rules with Protection of Documents and Archives and Archival Institutions Act in 2007. In 2009, preparation for the renewal of the Uniform Technological Requirements 1.0, which are based on the MoReq Specification model (European Commission, 2001), took place, and new Uniform Technological Requirements 2.0 will be developed in accordance with the new MoReq 2 specification (European Commission, 2008), and will be published in 2010. Slovenia decided to use legislation as a first step towards the development of trustworthy digital preservation since practical solutions were not commonly used in practice and most organisations in Slovenia did not have any solutions or strategies for long-term digital preservation. So to take advantage of this blank slate, legislation was a good framework for all future development, with opportunities to consider existing development and standards in the world.

The Protection of Documents and Archives and Archival Institutions Act replaced the previous legislation from 1997 that had covered the area of archiving, but did not consider the area of digital preservation. This act filled the gap created in the year 2000 when the Electronic Commerce and Electronic Signature Act was passed, making paper and electronic forms legally equal. At the same time, the equality of paper and electronic signatures was defined, but on digital preservation, only the preservation of digitally born documents was covered. The new PDAAIA act covered preservation of classical and electronic documents that can be preserved in the classical or electronic form. Therefore, documents can be transformed from paper to a digital form, or from one digital form to another (there is a special long-term-preservation form defined by the law for preservation longer than five years) and preserved that way. The main act includes and stresses the "principle of document preservation and usefulness of content", which means that preservation of documents should assure the preservation of the original document or the usefulness of its content. Preservation of captured documents (reproduction) is therefore equal to preservation of the original documents if it guarantees all the effects of the original document. Preservation of the original is therefore no longer needed, and media refreshment or format migration, for example, is therefore allowed and at the same time demanded through the principle of accessibility. This principle demands that records or reproductions of their content (for example migrated records and records copied to a new media) must be protected against loss or integrity breach and accessible to authorised users throughout the entire period of preservation. In this way, the "all-the-time" digital preservation principle is also respected. The act stresses the importance of durability of the record or its reproduction, completeness (integrity and non-repudiation), arrangement, proof of source (provenance)

and accessibility through the entire period of preservation. The act and the decree do not specify any technical details, which are separately defined by the Uniform Technical Requirements, designed to be updated whenever needed. The Uniform Technical Requirements define detailed procedures for input, transformation and preservation records. The innovative aspect of these acts in Slovenia was the introduction of the so-called internal rules that must be defined by every organisation implementing digital preservation. According to the confirmation status of these internal rules by the Archives of the Republic of Slovenia, electronic records that might be legally tested would be treated in different ways. Another innovation in the field of digital preservation introduced by this act is that owners of digital records can outsource the service of input and preservation of digital records, software and hardware equipment for digital preservation, and other additional services. The providers must be registered (there is compulsory registration for every provider), but there is also the option of accreditation of hardware, software and services. Accreditation demands severe requirements in operation, defined and controlled by the Archives of the Republic of Slovenia. Accreditation is also compulsory for all providers that wish to offer services or equipment for digital preservation to public administration bodies. The costs of accreditation for the providers are procedure costs and compensation costs. Compensation costs are expenses of the Archives of the Republic of Slovenia for carrying out procedures and differ according to the product concerned:

- €2,000 for accreditation of a digital preservation service or application software for the complete digital preservation process;
- €500 for accreditation of an accompanying service or hardware equipment unit or application software that only partly covers the digital preservation process;
- €1,000 for accreditation of infrastructural (e.g. relational database) or standard software equipment used during the digital preservation process.

Procedure costs are expenses incurred in the operation of the Archives of the Republic of Slovenia or of an authorised external consultant during the procedure or because of the accreditation (travel expenses of official persons, expenditures for experts or auditors, etc.) and are borne by the organisation being accredited. External consultants are hired by the Archives of the Republic of Slovenia through calls for tenders, and are normally experienced auditors of information systems.

Accreditation is given for one year only and extension is possible after that, but costs are not necessarily the same. The compensation cost for equipment that did not cease to be valid is half the amount of the first accreditation, or a quarter if the extension of accreditation is given for software or hardware that has not changed at all since the previous accreditation. Confirmation of this unchanged situation must be given by the provider.

## 4.2 Review of digital preservation surveys in the world and the case of Slovenia

Empirical research is currently being carried out in the field of digital preservation, since digital preservation is not yet

widespread. Most research has been carried out from the theoretical and technical viewpoints. In the field of application development, where results from theoretical research, and different standards and experiences with classical preservation have been used, several solutions for long-term preservation are now offered on the market . Among the most well-known of the published empirical research, we can mention the Mind the Gap study from the United Kingdom (Digital Preservation Coalition, 2006), which analysed the state of digital preservation in the UK. One of the main findings of this research was that the volume and total value of digital information needed in the "information age" is increasing, that organisations often do not have adequate solutions to long-term preservation of data and that there is considerable confusion about how to address the problem. Another good study, carried out by Cohasset Associates Inc., the AIIM international organisation and ARMA International, focused on document management from a long-term preservation perspective (Cohasset associates Inc., 2005, 2007 and 2009). The results from 2009 show that there is evidence of an evolution from awareness to action – manifesting as continuing improvement of records-management programmes, that for most organisations much remains to be done to achieve credibility and consistency in

the life-cycle management of their electronic records. Another study, by the Planets project in 2009, reveals that more work must be done on policies and budgets, more component-based solutions are required and that best practice is not yet clear (Sinclair et al., 2009). Dorner's research (in New Zealand) warns that insufficient organisational knowledge of electronic record-keeping and insufficient organisational awareness of digital preservation are the greatest threats to effective data control in organisations and in digital material (Dorner, 2009). There are efforts in Slovenia, integrated in the new strategy of e-government, to introduce these topics to education programmes on the higher education level, while training and courses would be prepared for existing employees in the public administration and archives.

The empirical research in this field in Slovenia was performed in 2007. The stated hypotheses were as follows:

- Organisations in Slovenia are not yet ready for long-term digital preservation;
- Paper and electronic records are not treated equally.

The research population included the following groups: municipalities (N=193), administrative districts (N=58), ministries and their bodies (N=55), universities and faculties (N=43), and other public administration bodies (N=112), com-
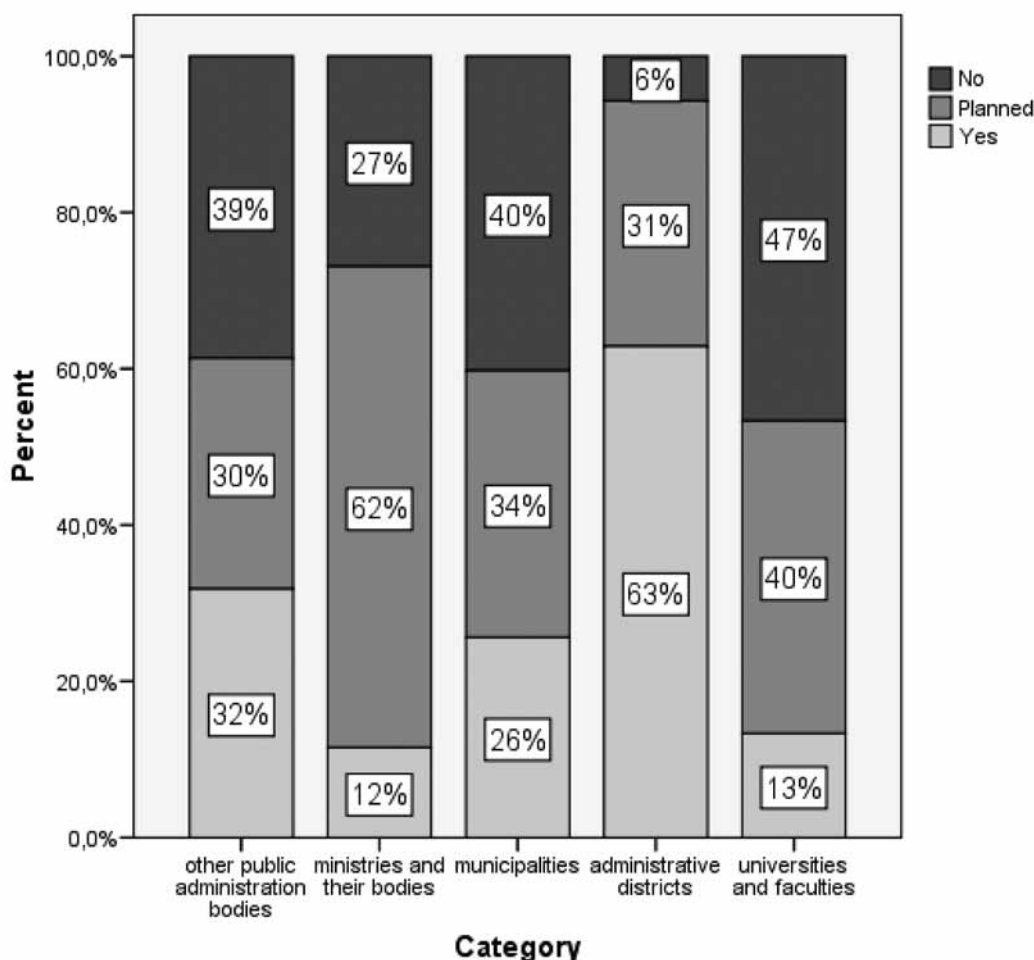


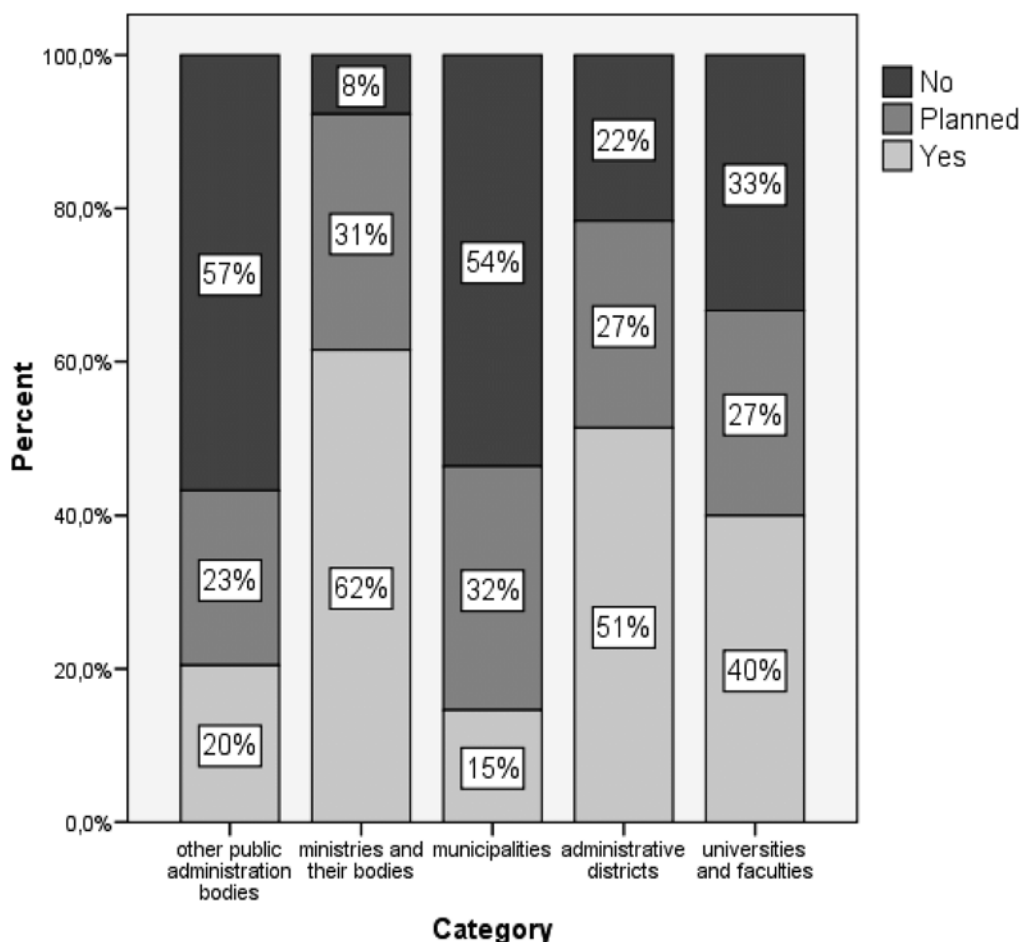*Figure 1: Equality of paper and digital record management*

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*Figure 2: Use of scanning*

posed of the highest governmental bodies (N=5), government services (N=16), other institutions, agencies, commissions and institutes (N=21), the Health Insurance Institute of Slovenia and its units (N=7) and Centres for Social Work and their units (N=63). Altogether, from 461 questionnaires sent, 206 were returned (response rate was 44.7%). The confidence level of the results is 95% with a 4–7% margin of error for each group (the universities and faculties group excluded).

E-business in Slovenian public administration is well defined and supported by a number of legal acts as mentioned above. The results of the research showed that alongside the existing legal acts, around 47% of the organisations surveyed have additional organisational rules and regulations for document and record management. These organisations also define retention schedules for the majority of documents (85% of organisations) and use classification schemes (89% of organisations). More than 70% of the organisations surveyed use electronic systems for evidence of paper and electronic records management, and 80% of these even use electronic record-management systems (ERMS), where records are managed and controlled in these systems (stored in the system itself). This shows that in public administration organisations, processes

and adequate records must be and generally are managed correctly and according to laws and regulations.

While 47% of the organisations questioned use additional internal regulations for record management in addition to the valid legal acts that cover this topic, only 46% of these organisations specifically describe management of digital records in them. While classic or electronic records can be created when performing the same processes, 70% of the organisations questioned admitted that the regulation of paper and electronic records management is not equal (Figure 1). The results show that these organisations do not treat digital and paper records equally, giving precedence to paper management and forgetting about digital. In addition, only 38% of the organisations questioned have e-mail management policies. This figures match the findings of the Cohasset research, where a persistent accountability gap for establishing retention policy as well as day-to-day management of all types of electronic records is emphasised.

Around 27% of the organisations questioned receive and send more than a quarter of all records in electronic form. If we consider alongside this the 78% of the organisations questioned with electronic document management and the 30% of the organisations questioned using scanning of paper documents
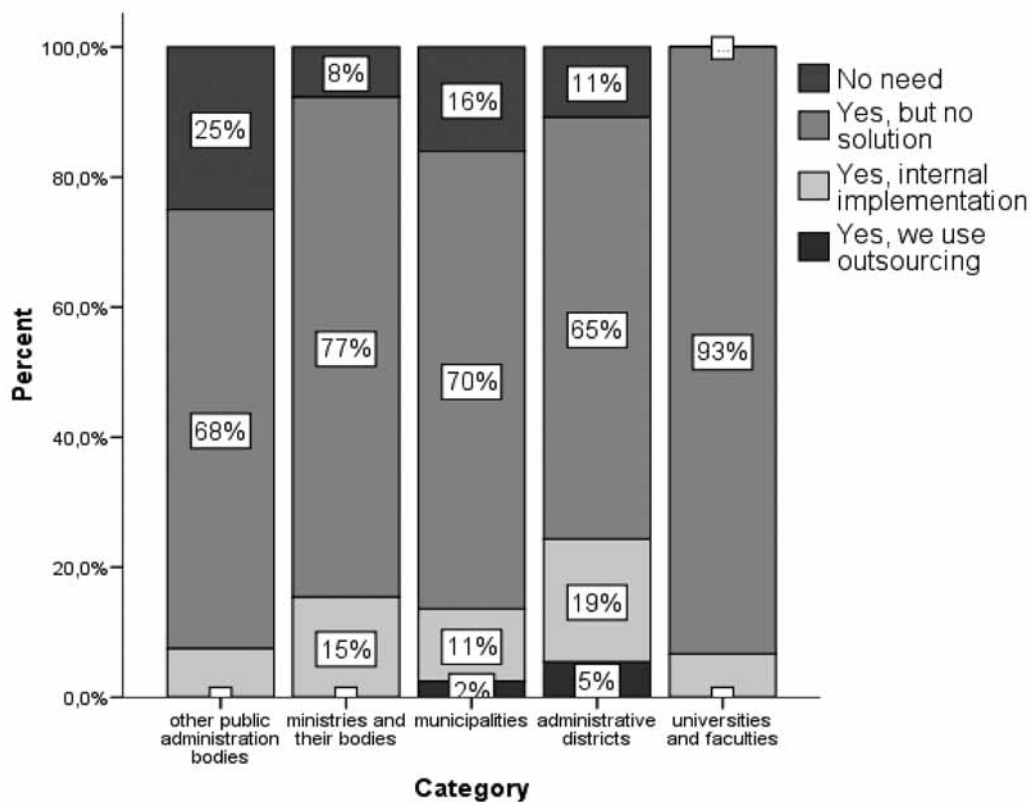
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*Figure 3: The existence of need for digital preservation*

(Figure 2), we end up with a huge amount of digital records. We should also not forget that much of the data gathered by Slovenian public organisations must also be published on their websites, in accordance with the Access to Public Information Act 2005 (as is the case in many other countries with this kind of act). Another regulation, a government ordinance from the end of 2007, demands that all communication between governmental organisations be conducted through e-mail. It is true, though, that most of this data does not require long-term storage in accordance with the retention schedules defined by legal acts or organisations. But we can see that the amount of data in digital form is large and increasing every day, as was also found in the UK-based Mind the Gap research.

If we focus on the aspects of e-governance, where citizens demand trust, transparency and government accountability, many of these records must be managed properly, preserved and kept available to them. Considering this fact and the result that 85% of the organisations questioned admit that there is a need for digital preservation (Figure 3), the following results are far from perfect. Around 89% of the organisations questioned do not have a strategy for digital preservation (Figure 4), 51% of them do not cover digital preservation in any internal act and 61% do not use any of the international standards that cover digital preservation.

The organisations questioned also described their current situation in the following terms (these results could even be interpreted as optimistic with regards to the true situation since survey respondents typically under-report faults or mistakes):

- 15% admit that they hold digital media that are unreadable or in an unknown data format;
- 37% admit that they have already been faced with a situation where digital data have been lost forever;
- 31% admit that they hold data in digital form that will become unreadable if not treated properly;
- 23% admit that they would find it very hard to quickly search and retrieve a digitally preserved record in case of litigation as a proof for a court of justice.

These results show that, despite unwanted events in the past with digital data, and despite the current existence of the same danger, there is still not enough action, will and other resources for effective measures to be taken.

In summary, the Slovenian regulation covering the area of electronic record management and preservation is well defined and thorough. Its demands are strict for public administration organisations, guaranteeing that the evidence that these organisations produce in electronic form is accountable and reliable. Even if the organisations plan to outsource record-management or preservation services (hardware or software), the outsourcers and their solutions are held to account by the Archives of the Republic of Slovenia through accreditation. The private sector is not bound to these rules, but for long-term preservation or archival records they may choose to comply with the same strict rules for security in case of the need to prove the trustworthiness of their preserved records, for example in court. And since these rules cover record-management and preservation processes from the creation of the record on, the whole life-cycle and its correctness is guaranteed.
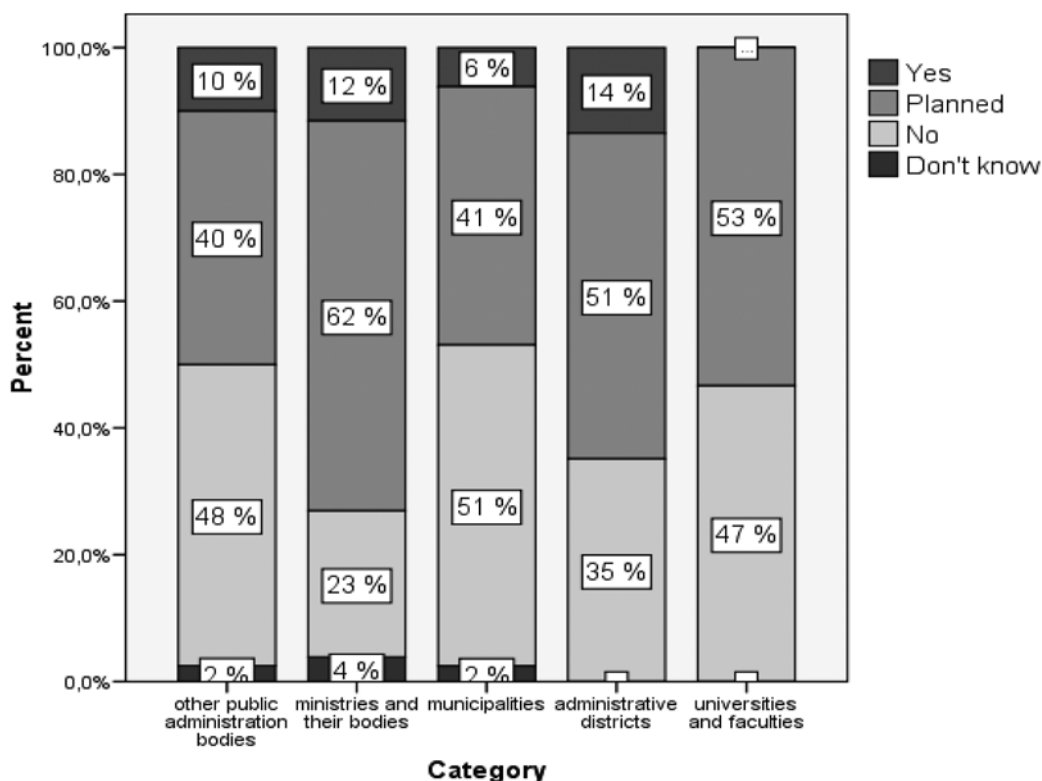
*Figure 4: Existence of a digital preservation strategy*

The results of the empirical research demonstrate that the first hypothesis (that organisations in Slovenia are not yet ready for long-term digital preservation) can be confirmed. Most organisations also lack a solution and a strategy for long-term digital preservation. We can also confirm the second hypothesis (that paper and electronic records are not treated equally) since, although electronic evidence for record management is used in the majority of organisations, they do not treat electronic records and paper records equally. In more than half of the organisations questioned, their internal regulations for record management do not deal with digital forms of records. So it is time to take action, to use regulation and standards and use the advantages of long-term digital preservation, firstly in situations where the benefits are most certain. Benefits of digital preservation in e-governance

Since governance in a democratic society is »of the people, by the people and for the people« (and their money), government is responsible to the public and replaceable by the public. Therefore, government processes and actions should be transparent and well documented, and publicly accessible. And since governance is a long-term process (with changing actors), documentation should be kept for a long time. In the ICT world, the importance of digital preservation has therefore never been greater.

Preservation is just the last step of a record's life-cycle, and therefore the whole life-cycle has an influence on it. If we manage records well, through well-managed processes, this will have a positive influence on effective digital preservation. Therefore, proper electronic record management is a key ele-

ment to good digital preservation. When focusing on digital preservation, this is even more important, since bad digital-record management can reduce or even destroy the possibility of good digital preservation.

But since digital preservation is a new field in public administration, there is a lack of experience. Some concepts of digital preservation are completely new and unknown in the classical approach of paper preservation. More threats arise from the digital form itself, causing new obstacles that were not present in the paper world.

If we focus on e-government, digital preservation does not have an immediate effect on the delivery of e-services. On the other hand, many services are bonded by processes that might continue for a long time or by data that had already existed years ago. In this case, good digital preservation is of significance. Using a good digital-preservation repository with adequate search capabilities and fast retrieval of information can speed up processes and improve services. Government in Slovenia is aware of these issues and has chosen a path of regulation first, implementation later. The regulation is strict and thorough, and demands correct steps in processes, organisation structures and record management in public bodies, laying the foundation for self-implemented or outsourced but accredited solutions. Although development in recent years has been slow, it appears that the time has now come for action. With help from the National Archives and responsible ministries, public bodies may benefit from digital preservation to achieve regulatory compliance, savings and to keep digital records safe. Lastly, there is much current discussion of eco-

logy, global warming, deforestation and other issues of this kind. With the need for reliable records and data in these fields, digital preservation can play an important role.

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