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The Human Face of Digital Preservation: Organizational and Staff Challenges, and Initiatives at the Bibliothèque nationale de France

Emmanuelle Bermès, Louise Fauduet,
Bibliothèque nationale de France

Abstract

The process of setting up a digital preservation repository in compliance with the OAIS model is not only a technical challenge: libraries also need to develop and maintain appropriate skills and organizations. Digital activities, including digital preservation, are nowadays moving into the mainstream activity of the library and are integrated in its workflows.

The Bibliothèque nationale de France (BnF) has been working on the definition of digital preservation activities since 2003. This paper aims to present the organizational and human resources challenges that have been faced by the library in this context, and those that are still awaiting us.

The library has been facing these challenges through a variety of actions at different levels: organizational changes, training sessions, dedicated working group and task forces, analysis of skills and processes, etc. The results of these actions provide insights into how a national library is going digital, and what is needed to reach this longstanding goal.¹

¹ This paper is based on the paper given by the authors at iPRES 2009; received January 2010, published March 2011.

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Introduction

Over the course of a dozen years, libraries have known a major shift in their relationship to digital matters. Following a trend that is not specific to any country nor any domain, digital activities at the Bibliothèque nationale de France have gone from isolation to integration.

If we look back at the picture of digital organizations and human resources within the library about ten years ago, we can state that by then, digital was really considered “different”. Digital activities were led by early adopters or experts, organized in specific teams distinct from the more traditional activities of the library. These experts and dedicated staff mainly acquired their know-how and skills through empirical processes: they were learning by doing.

Today, the library has become digital: processes such as mass digitization, web archiving, and to a smaller extent digital preservation, are no longer isolated but disseminated among relevant production teams within the library. Formal training processes have been set up to make sure that tasks are associated with appropriate skills.

In this paper, we explore the history and process of this shift at Bibliothèque nationale de France, and current and foreseen developments in terms of organizations and human resources.

Dissemination of Skills and Tasks

The Digital Library Department was created within the BnF in 1998, and more or less retained all activities related, in one way or another, to the digital world and the Web:

- Web archiving first experiments;
- Selection, cataloguing and digitization of material for Gallica², BnF’s digital library;
- Development of the digital library system for online access to this material;
- Editorial and technical management of BnF’s institutional website;³
- Editorial and technical management of BnF’s intranet.

Only the infrastructure and storage of the digital material for Gallica wasn’t managed by the Digital Library Department, but by the IT Department.

By then, the approach was to isolate and to preserve digital activities from the traditional workflows of entries, cataloguing, access and reference. Digital definitely meant “different”.

² Gallica, bibliothèque numérique de la Bibliothèque nationale de France: <http://gallica.bnf.fr/>.

³ Bibliothèque nationale de France: www.bnf.fr/.

A First Step Towards Dissemination

It took a decade to shift from this vision to the current situation, where digital activities are closely articulated with traditional library skills. A series of organizational changes were achieved:

- The team in charge of digitization joined the Preservation and Conservation Department, thus facilitating the convergence of reproduction workflows and the shift from analogue (microforms) preservation reproductions to digital ones, and starting to integrate digital preservation as one of the main conservation strategies at BnF;
- The team in charge of the selection and acquisition of books for Gallica was transferred to the Cooperation Department, thus emphasizing the evolution of the digital library towards shared selection workflow and tools at national level;
- The team in charge of managing the digital library's website and architecture joined the IT Department, which created a suitable environment for scalable processes and formal development methods;
- The team in charge of BnF's institutional website joined the Communication Delegation, thus acknowledging the website as a communication channel among others.

Finally, in late 2007, the only activities left in the digital library department were Web archiving on one hand, and digital curation on the other. Digital curation involved innovative projects, research and development, and participation in the design of the digital preservation repository. This activity had a strong link with the digital library, the team having been involved in the design and making of Gallica2, the new version of the digital library. The team was also in charge of the creation of the OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting) repository for digital documents and the conversion of bibliographic data to adapted standards such as Dublin Core

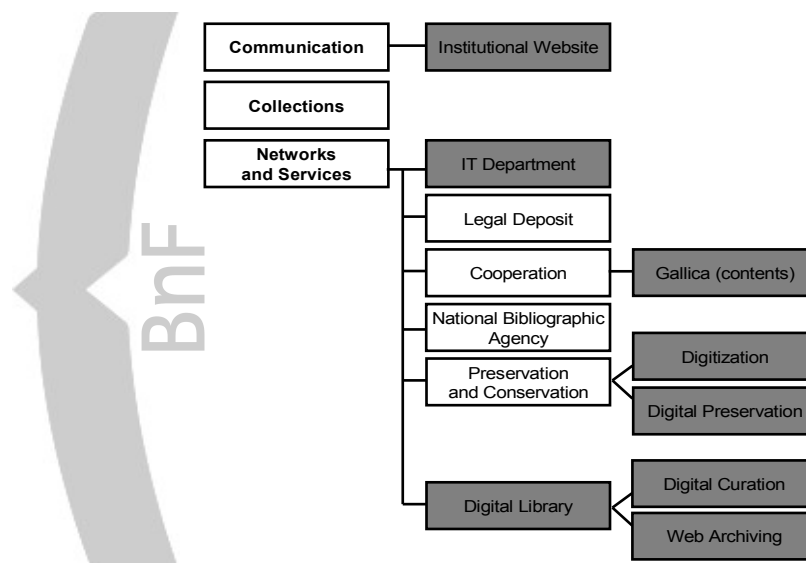


Figure 1. Organization Chart in 2008: First Step Towards Dissemination.

Digital Preservation Activities and Organizations

Digital preservation became a priority for BnF from 2003. Its development was shared between the Conservation and Preservation Department, the IT Department, and the Digital Library Department. The Conservation and Preservation Department was in charge of defining guidelines and standards for digitization and archiving, as well as assessing the needs for the infrastructure together with the IT Department. A tender for the digital preservation and archiving storage infrastructure was issued in 2005. The IT Department also conducted a comparative study into state-of-the-art existing OAIS implementation frameworks. The Digital Library Department got involved when it came to the functional specification and software requirements for BnF's digital preservation repository, SPAR⁴, and its compliancy with the OAIS model.

These leading departments also committed to a mission of dissemination of skills and expertise within all entities of the library, as well as joint efforts with the IT Department for defining the requirements of the system. The digital library team always had the twofold concern of building operational systems while explaining its activities to the library staff: training and accompanying them in these new tasks which need to be, at some point, integrated in the library's workflows.

Activities associated with digital preservation, from 2003 to 2007, thus involved the previously mentioned departments as project leaders, but never without the active contribution of other parts of the library, especially the Audiovisual Department, and corresponding members from several collection departments. The digital preservation activity really started to be a shared process through the regular meetings of dedicated working groups, and the settlement of a project management organization with a steering committee.

Standardization was also a major activity for leveraging collaboration. Staff from the cited departments were involved in the five year revision process for the OAIS model (ISO 14721, [2003](#)) along with the National Bibliographic Agency, who contributed their expertise to the standardization process. Staff from the National Bibliographic Agency had also been involved in the choice of a metadata model for the preservation repository: a combination of METS (Metadata Encoding and Transmission Standard) and PREMIS (Preservation Metadata Maintenance Activity).

Starting in 2008, the development of the software part of the SPAR repository (Bermès, Dussert-Carbone, Ledoux & Lupovici, [2008](#)) required a shift in the methods of change management support within the project. Digital preservation needed to be moved into the mainstream and operational workflows of the library, in order to set up the adequate context for the system to run.

This change followed three main directions:

Structural Changes

It was first decided to do away with the Digital Library Department, and to disseminate associated expertise (and, supposedly, staff) within other existing departments. No digital library department was needed anymore, when the entire library had become digital. This was first envisioned in late 2007 and became officially

⁴ Système de Préservation et d'Archivage Réparti (Scalable Preservation and Archiving Repository).

effective, after in-depth negotiations with staff from both ends as well as BnF management board, in April 2008.

The Web archiving activity was attached as a new service to the Legal Deposit Department.

The Conservation and Preservation Department strengthened its forces dedicated to digital preservation, and fostered preservation expertise tasks. A “Preservation Charter” was issued, dedicated to formalizing good practices and gathering energies around conservation activities, including digital preservation responsibilities.

Regarding the digital curation activity, the suppression of the Digital Library Department also led to a strong reorganization of the National Bibliographic Agency which became, on this occasion, the Bibliographic and Digital Information Department. This new name was associated with a broadening of its functions, now involving digital information management as well as traditional bibliographic expertise, along with a reinforcement of their relationship with the IT Department in the process of designing the information system. These activities include a contribution to digital preservation activities, but rather focus on metadata issues.

In the meantime, the IT Department also changed some of its processes in order to have a project management-based organization and to merge the development of the bibliographic information system with the development of the digital information system.

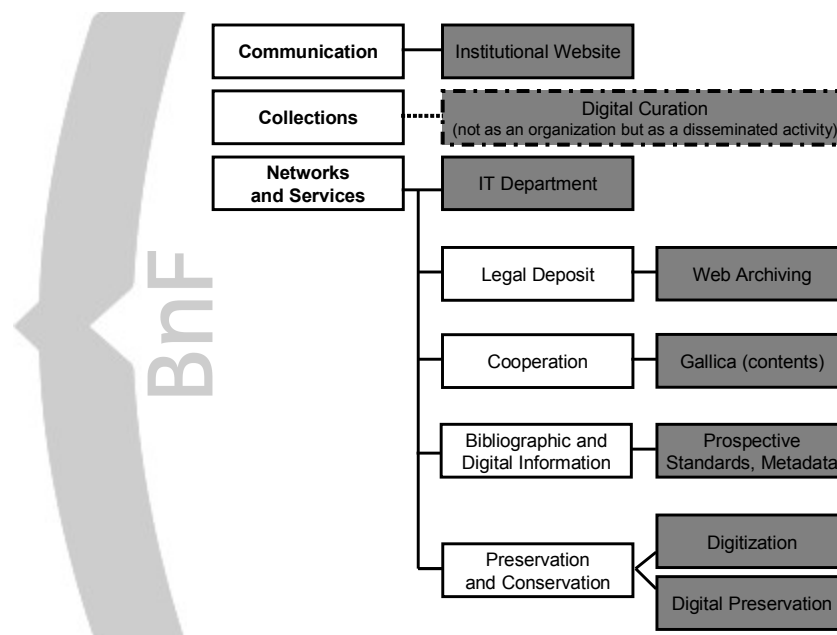


Figure 2. Organization Chart in 2009: Dissemination of Digital Activities.

Skills and Staff Solutions

Secondly, a complete seven-day training session on digital information management was created to disseminate the skills in the library. This training session was first proposed only to the staff from the former National Bibliographic Agency, as a support for the organizational change, and later on as an open session for the whole library staff in 2009.

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This training includes an introduction to digital libraries, digital documents, and digital preservation, and then three optional tutorials: one on metadata and protocols (including semantic web technologies), one on user-oriented design (including usage studies, accessibility and usability, and the Web 2.0), and one on digitization and preservation (including rights management, preservation metadata and persistent identifiers).

1. Digital Information Initiation	2. Data Models for Digital Information	3. Project Management in the Digital Environment	4. From Digitization to Long Term Preservation
<ul style="list-style-type: none"> – Definition of the digital library and user-oriented design – Definition of digital material/digital heritage – Search and retrieval mechanisms, search engines, protocols – An introduction to digital preservation and the OAIS model – An introduction to XML (optional) 	<ul style="list-style-type: none"> – Metadata standards: Dublin Core, MPEG-21 DIDL, MarcXchange – The OAI-PMH protocol – An introduction to Semantic Web technologies – Semantic Web technologies tutorial (RDF and SPARQL) 	<ul style="list-style-type: none"> – Project management methodology – User studies – GUIs usability and accessibility – An introduction to the Web 2.0: use in libraries – Functional requirements for digital libraries, search engines and catalogues 	<ul style="list-style-type: none"> – Presentation of the digitization workflow – File formats for digitization – An introduction to SPAR, the digital preservation repository – Persistent identifiers – Preservation metadata (METS, PREMIS) – Digital rights management

Figure 3. Training Programme for Digital Information Management, as of 2009.

In 2009, 110 staff members took the introductory training, and each one of the other tutorials was attended by more than 30 staff members. These figures may seem low compared to the total staff of the library (around 2500 full-time equivalents) but they are significant when compared with the number of staff actually involved in digital operations. In 2010, the training was proposed again, targeting people who were looking for information on digital activities out of professional curiosity, as well as staff recently arrived at the library. Moreover, the training session was partly open to attendees from other French libraries, thanks to a partnership programme. For staff directly involved in digital activities, a dedicated practical training session will also be organized.

Future Perspectives

Thirdly, targeted actions from the organization and human resources perspective were initiated in collaboration with the Human Resources Direction, aiming at facilitating the definition of needed processes and human support for digital tasks — including digital preservation — and at preparing further change and adoption of digital activities within BnF. This specific challenge will be addressed in-depth in the following section of this paper.



Betting on the Long Term: A Study of Learning Organizations

The Pressing Need for Clarity: Trying Our Hand at Digital Organizational Studies

Changes initiated by the dissemination of specialized staff have been amplified by the growing reach of digital activities, particularly mass digitization and digital preservation. Organizations and workflows in digital preservation always were a concern from the beginning of the SPAR project. However, in 2008, the instruction of a digital preservation related project faced obstacles in such a way as to make conducting an organizational study across BnF, and a long-term project on the impacts of digital changes in the library, unavoidable.


This study was conducted following a two-fold plan.

On the one hand, the working group conducted a pilot survey of processes and existing practices in digital rights management, in order to allow the development of an application named Solon, aimed at managing digital rights in a dynamic way (Martin, 2007). Thirty eight people's testimonies were recorded between March and May 2009. A detailed questionnaire was used, in order to compare answers more easily, but quantitative analysis proved impossible due to the variety of situations. Further analysis of the future integration of Solon into existing workflows is still needed. Nevertheless, the results provided a deeper analysis of users' needs and an increased awareness of intellectual property issues. The pilot study also provided interesting lessons for further studies on BnF's organizational and digital issues. The survey was conducted by librarians, with no specific training in such work: more professional guidance and in-house feedback might be required in the future.

On the other hand, a longer-term study of the impact of the multiplication of all things digital across the library was also launched. The project is called ORHION: Organisation et Ressources Humaines, Impacts Organisationnels du Numérique (Organization and Human Resources under Digital Influence). Its initial mandate, as approved by BnF's management, was to supervise a threefold action over the course of a year: a preliminary study, a detailed enquiry with the help of a consultant, and a first implementation. Speed seemed essential then due to the digital preservation and digital rights management systems schedule; as their starting date was pushed back, the preliminary study did not have to be so rushed, and more time was available to reflect on what the study's ultimate goals should be.

This scoping study was conducted from October 2008 to May 2009, when 17 key players in BnF's digital domain were interviewed on half a dozen themes. Its objective was not to find solutions to whatever organizational problem might appear, but to identify what the problems were, and to learn from the ideas and doubts expressed by the staff working in the digital domain.

Organizing a study on organizations proved to be a challenge on its own. The working group faced issues of legitimacy vs. inertia, innovation vs. "good enough", inside knowledge vs. outside supervision, or pragmatism vs. long-term thinking. It proved a lesson in patience and caution: the bigger the institution, the more coordination is needed, and the harder it is to recruit a large number of participants.



The library world is not as uniform as one would imagine, even on such crossover subjects as intellectual property rights, which have been permeating the library's activities for close to 30 years. There might be hope for faster adoption of digital preservation best practices, provided that efforts in raising awareness in this field are maintained. Last but not least, schedule slips are to be expected, as always. Given the variety of profiles in BnF, and the relative newness of digital preservation challenges, time to make these issues one's own cannot and should not be compressed: speed might be counter-productive.

The strong commitment of the Department of Human Resources was instrumental in bringing the project to fruition: they are a natural ally on these questions, and were able to provide methodological support in this type of study, although they too are discovering some of these new developments in BnF's structures and skills as they unfold.

In the end, in spite of delays in both aspects of the study, the results obtained as of Summer 2009 turned out to be a useful survey of BnF's current situation and a stepping block for the future. Six main wishes emerged, as well as a list of what was expected of ORHION.

Six Wishes

This first couple of wishes reflect concerns about BnF's digital strategic vision and leadership: although the library has always been clear on setting digital as one of its top priorities, more detailed guidelines were needed.

Clarify the Institution's Policy. Digital is a relatively new, fast evolving domain. The foundations of BnF's policy have been stated in several official documents: the library's project for a performance contract with the Government for the years 2009-2011; and its Digital Roadmap, a high-level document charting the library's activities and objectives related to new technologies. These documents have been widely advertised and read across the BnF, and the priority put on BnF's digital activities is clearly identified. However, it does not seem sufficient yet to establish the new array of missions as a permanent part of the library's life: these initiatives are still considered by many agents as temporary experiments, and there is no drive to conduct a thorough exploration of what digital entails for BnF as a whole.

There seems to be a wish for a more precise delineation of the library's policies, in order to consolidate the staff's adhesion to them, and to make them more readily applicable at an operational level. The survey also identified a desire for the BnF to maintain or develop a strategic role outside the library, especially in international programs and partnerships.

Define Priorities. Moreover, many worry about digital activities as additional work, while financial and human resources remain constant. Many feel more budget and staff are needed, but most of the executives, believing an increase in resources to be unlikely, wonder rather what they should focus their agents' efforts on. None want to go as far as to give up on certain activities; a few of them have taken matters into their own hands and reorganized their teams according to their evaluation of which activities had to take precedence. They mostly look forward to the definition of a more thoughtful approach to balancing the workload across the library, and expect decision

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making processes designed to determine whether an activity should be reduced or phased out, while keeping in line with BnF's missions.

While the first two needs expressed in the study involved BnF's policy and top level decisions, other concerns were expressed about the operational level of digital developments at the library.

Define What a Digital Collection Is. First and foremost is the quasi philosophical question of what exactly a "digital collection" is. The phrase is bandied about by agents working on digital documents, in training sessions on digital preservation, or in discussions on the library's evolution, particularly in the context of digital "collection management" or "curation". This notion emerged as part of the work on the OAIS functional model and the ways to implement Preservation Planning in BnF's preservation system, in what looks like an organic, natural way. The shift that occurred in the past years, when the "digital" attribute went from qualifying techniques and processes to defining the documents they help to aggregate, was almost imperceptible, but it is truly far-reaching in its implications.

The definition of what the digital collection is, and what it actually means to curate it, is manifold: what is it? Who is responsible for it? Is the creation of a digital collection a recognized goal of the library? What tools and skills are required to curate it? The answer to these questions can only be found in relation to the library's collections as a whole and to the diversity of users' practices. It will require clarification both at a functional and at a strategic level.

Facilitate Transverse Workflows. It has already become quite clear that digital projects require more collaboration between services than most of the library's former tasks. What the preliminary study confirmed is the tight integration of all activities that revolve around digital preservation, from the selection of digital documents to create or collect, up to the delivery to the end user. BnF's current structure is quite hierarchical, with entities focusing on certain types of collections, or certain technical workflows; this is perceived as a serious obstacle to digital activities, by fostering heterogeneity in processes and habits. Transverse committees do exist, but they are perceived as lacking decisional power; moreover, digital knowledge is not yet spread enough to ensure the competence and legitimacy of every one of their participants. Most interviewees felt work was needed to develop workflows that span easily across organizational borders, as has been tentatively done with the introduction of project and product managers for digitization campaigns or BnF's digital library.

These last two wishes fall more closely in the traditional realm of human resources: revisiting job requirements and updating staff skills in order to meet them.

Develop Skills. Up to now, the skills needed to cope with BnF's projects in the digital domain have been acquired mostly on the fly, with a small community of experts at the lead. The agents have maintained the required level of knowledge so far and such formerly daunting challenges, such as mass digitization, seem to have been met with the necessary developing competence in the involved staff. Yet they worry about their ability to continue to do so in the long run as digital missions become more and more complex and permeating, and about the capacities of others outside this core group to step up to the challenge.

There seems to be a wish for guidance in skills management, through an offer tailored to the variety of staff in contact with all things digital, from the IT engineers who run the storage facilities to the electronic resources acquisition librarians who must be able to evaluate the persistence of the material they gather. Due to this diversity of situations, and to the informal ways of gathering knowledge that have found their place in the library so far, the preliminary study's results point to a wide-ranging training plan, including formal lectures as well as tutoring or self training.

Analyze the Evolutions of Job Qualifications. This need for a comprehensive and flexible training plan is further challenged by the blurring borders between previously well separated jobs. A vast majority of the interviewees consider that the growth of all things digital has not created new professions, but merely made part of these trades expand into new profiles.

A strong theme in some of the interviews was the evolving relationships between the functional experts, developers and systems administrators of the Information Systems Department, and the librarian majority. In the past few years, a bigger part of BnF's staff that was originally trained exclusively in library science has taken an interest in IT matters, through individual inclination and necessity, in order to participate more actively in BnF's digital projects. It is not yet clear whether this hybridization of skills is bound to develop on a large scale, or whether BnF needs to recruit people with a different record than the homogeneous majority of librarians, or both, in the current absence of a dedicated digital preservation curriculum in French schools and universities. The question of the right hierarchical level at which certain skills should be acquired is also unresolved. The library will have to update its job descriptions accordingly, by observing and mirroring ongoing developments.

Conclusions

The main lesson from the ORHION experiment could be that there is no ready-made solution to BnF's organizational challenges, and that this is particularly true in the digital domain, since digital preservation and related activities are relatively new at the library and best practices are still being defined at the international level. Digital activities retain some of their previous character as being somewhat independent of the rest of the library's missions. They are still subject to short-term changes in focus and resources, making mapping and planning organizational changes a test in reactivity and creativity.

In this context, if the stated goal is the dissemination of digital activities and tasks, one of the keys to success lies in the human factor, that is, the people. Individuals play a major role when disseminating skills in an informal way. It is a necessity to build a project where digital experts will have opportunities to work with a wider array of staff and share skills and methodologies. Existing know-how and job positions should also be able to bring their added value to digital activities, so that these activities aren't cut from traditional knowledge and structures of librarianship.

It should also be no surprise that analyzing organizations in innovative domains such as digital preservation takes time — the first phase of ORHION, which was estimated as a trimester's work, actually took a year to complete. As long as digital has not become an ordinary task in the library, it might be necessary to adjust to the



measured rhythm of these learning organizations. Taking one's time is necessary in order not to leave people behind.

That being said, all the work accomplished on BnF's digital organizations so far shows that there is, among the agents involved in these matters as well as BnF's management, interest in a closer investigation of the changes in the library's structures and skills. Digital projects often require quick decision and action, preventing us from looking back upon efforts and challenges. It is important to commit to writing down what we have done and learn from it. In order to reconcile the need to reflect on organizations and job requirements, and the prospective nature of most things digital at BnF, we are looking into traditional as well as unconventional solutions.

BnF's digital strategy has already been further refined during the year 2009 through its work on a national and an institutional "digital framework": the library was commissioned in 2008 by the Department of Culture and Communication to coordinate a working group on a blueprint for digital actions in libraries regarding digitization, acquisitions, preservation and evaluation. BnF has been working in parallel on its own blueprint for the smooth integration of the digital components of its activities into its traditional missions. The comprehensive accompanying document that will detail each of these activities is a first effort towards clarifying BnF's policies and priorities — wishes one and two. More policy decisions are to be expected in 2010 as the French government launches an ambitious digitization and preservation program for the country's cultural heritage.

As to the study's fifth and sixth wishes, the Department of Human Resources is planning to review BnF's job descriptions guide while paying special attention to the requirements of digital projects.

Questions three and four – what a digital collection is, and how to facilitate transverse workflows – find no clear-cut satisfying answers in BnF's existing array of structures and actions so far. An innovative solution is envisioned, relying on the library's existing pool of digital-savvy experts at a functional level: the creation of an Observatory for Organization and Human Resources under Digital Influence⁵. Its aim would be to monitor the impact of new technologies on its organizations, create a knowledge base from observations inside and outside the library, facilitate experience sharing among staff and foster library-wide participation in mapping BnF's changes. It might both lead targeted case studies of organizational challenges and their solutions, and set up informal events where a wide array of staff could exchange on a particular topic. Above all, it would have to be reactive to any digital changes in the future by sifting relevant information in the past and the present.

How such goals could be met, and what means would be required to do so, is next on ORHION's agenda.

⁵ Observatoire des Ressources Humaines Impliquées dans l'Organisation du Numérique.



References

- Bermès, E., Dussert-Carbone, I., Ledoux, T. & Lupovici, C. (2008). Digital preservation at the National Library of France: A technical and organizational overview. In *Proceedings of the 74th IFLA General Conference and Council, meeting 84, Digital preservation*. Retrieved September 17, 2009, from http://www.ifla.org/IV/ifla74/papers/084-Bermes_Carbone_Ledoux_Lupovici-en.pdf.
- ISO 14721. (2003). *Space data and information transfer systems – Open archival information system – Reference model*.
- Martin, F. (2007). Dynamic management of digital rights for long-term preservation: the expert system approach. In *Proceedings of iPRES 2007*. Retrieved September 15, 2009, from http://ipres.las.ac.cn/pdf/Martin_presentation_Martin.pdf.