fotospring
copyright agency

i2010 DIGITAL LIBRARIES

Visions, Experience, and Advice
of the Fotospring MultiMedia Stock ltd Company

Maribor, Slovenia, January2006

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1 INTRODUCTION OF THE FOTOSPRING MULTIMEDIA STOCK COMPANY

1.1 History of the Fotospring Company

Fotospring MultiMedia Stock (Fotospring MMS) company is an agency that markets various audiovisual media contents and sells copyrights. The company that works under a shortened name of Fotospring, was founded on May 25th 1995, with the headquarters in Maribor, Slovenia. During the first years of our business we were active only inside Slovenia, however, we soon started spreading across numerous markets in European countries (Croatia, Serbia, Bosnia and Herzegovina, Macedonia, Check Republic, Poland, Hungary, Italy, Germany, France, Austria, Switzerland, Russia, Greece, Turkey, etc.). After the year 2000 we spread over to the American market and to the other continents (mostly Japan, South Korea, Israel, Australia, etc).

1.2 Company Activity

The Fotospring company already has 5 well established digital archives of various contents:

- Photography;
- Animation;
- Illustration;
- Film & video;
- Music & sounds;
- MMS.[1]

All contents are accessible in Managed (RM) and Royalty Free (RF) format. The customers buy copyrights and by that they gain all rights to legally use the bought content for marketing, commercial, and other purposes without any risk of

[1] MMS = Multimedia Massaging Service

being pursued by the author or his legal representatives.

The Fotospring company is the owner of two web portals;

www.fotospring.com and www.illuworld.com

On those two portals potential customers can see the digital contents of archives and also purchase them. Contests can be searched through an English, Slovenian, or Croatian browser.

TABEL 1: THE CONTENT OF THE FOTOSPRING ARCHIVE

	Photography	*Illustration*	*Animation*	*Film & video*	*Music & sounds*	*MMS (multimedia content for cellular phones, web, etc.)*
Archive includes	1.400.000 photos	More than 10.000 state of the art illustrations of professional and amateur illustrators	More than 500 animations of top professional animators	100.000 footages of various themes of film & video material	More than 10.000 music clips and sound effects on 80 CDs	- 200.000 photos - 4.000 illustrations - 500 animations - 20.000 film&video footages - 10.000 music clips and sound effects
Access	www.fotospring.com www.illuworld.com					

Fotospring is willing to adapt to all the needs of our users – customers. Our customers are divided in sectors and are grouped into following categories:

- marketing agencies;
- design agencies;
- free-lance designers;
- newspapers, magazines;
- televisions;
- publishers;
- pharmacy, cosmetics;
- record companies;
- tourist agencies;
- banks;
- insurance companies;
- large and medium companies;
- printing offices;,
- fair traders;
- web page developers;
- multimedia developers;
- natural persons.

The advantages of the Fotospring company in comparison to other companies is a 3 hour service (from ordering to provisioning), business flexibility, and price competition. Another advantage is also our high quality material.

1.3 Fotospring Identity Card

Name of the Company: Fotospring MultiMedia Stock

Company Logo: 

CEO: Mario Pušič

Founded: 25. 05. 1995

Company registered as marketing, agency, and services company

Headquarters: Kersnikova 5, 2001 Maribor, Slovenia

Phone Number: + 386 (0) 2 2505550
+ 386 (0) 2 2505555

e-mail: info@fotospring.com

Internet Address : www.fotospring.com

Number of Employees: 5 full-time employees + 2 external workers

Activity Areas : photography, illustrations, animations, film&video, music&sounds, MMS

Market: European and global markets

Annual revenue: 500.000 EUR [250.000 EUR on global markets and 250.000 EUR on the Slovenian market]

Competition: Copyright agencies in Slovenia and EU

2 CONTENT DIGITIZATION

Fotospring has an idea of how to create and obtain audiovisual[2] material – to reuse the legacy and make it available to wide audience on the Internet, how to change historical and cultural heritage into digital content, make it useful for students, for those who need this kind of information for their work, and for innovators, artists and commercial companies.
Our goal is to establish and run a center for digitization of audiovisual material (film, video, music, sounds) for SE Europe.

Fotospring Digitization Vision

Fotospring think that each individual, company, or a state should be aware of the value of memories (printed, audiovisual, etc.). Only with the right digitization and conservation can we achieve reuse of valuable contents for educational, commercial and free time purposes.
We are aware of and using the advantages and high value of the Internet in modern information society, because it is our most powerful and recent tool for archiving and mutual use of information.

We are also aware that the transformation of all available contents in the existing archives into digital format is not an easy task. This is made difficult by the facts such as diversity of materials (photos, 16 and 35 mm tapes, audio tapes, vinyl records, sounds, music, video clips, etc.), diversity of archives (libraries, public sector and company archives, personal collections, etc.), priorities, defining periods, etc.

With our procedures and experience on digitization of audiovisual material Fotospring would like to

[2] Audiovisual material is film&video, music&sounds that need to be digitized.

attribute to the 4 important fields:

- Material digitization
- Online access to previously digitized contents
- Storage of digital content – digitized material needs to be taken care of in order to be reusable for a longer period. We must be aware of the problem of losing digital contents that originate from a digital media with limited life period such as CDs, DVDs, data tapes, etc.
- Maintenance and market of copyrights for digitized material

We would like to point out another important view of digitization of audiovisual material. We cannot ignore commercial-marketing aspect of digitization which results from a procedure of initial investments into digitization process and is then transformed into income of multiple digital content sales.
We believe that with our offer of high-tech digitization processes we can support different actions of preserving and reusing of audiovisual heritage. The company has a lot of experience with digitization, design of digital data databases, multilanguage browsers, adding quality metadata to digitized material, archiving and maintaining large amount of data (currently 10 TB). We have also developed an all-purpose methodology that is needed for execution of those tasks that help us form the existent data into standard format.

The purpose of Fotospring is to gain various types of cultural, historical, and scientific audiovisual sources, and thus wants to collaborate with partners to fulfill and realize the digitization of valuable audiovisual material.

All in all, Fotospring has technological input for realization of different kinds of audiovisual materials digitization and is willing to cooperate with companies, institutes, organizations, etc. who are owners of audiovisual material, intended for digitization.

3 FOTOSPRING'S VISION OF AUDIOVISUAL MATERIAL DIGITIZATION

In the following chapter we describe our experience with realization of digitization activity and our vision of digital library realization.
This experience resulted in form of the company's web portals
www.fotospring.com and www.illuworld.com.

3.1 Our Vision of Questions Asked at the Preparations for the „i2010 Digital libraries" Project

1) *Assumptions*

a) The smaller the state, the lesser the material for digitization. Inside the country its own digitized material is mostly used.

b) The bigger the states the more digitized material, more users, and more requests to access the digital contents.

c) Copyright control can be most easily done on a national level. We would need a copyright department inside all digital centers which would solve the needs for copyright material.

We suggest establishment of a digitization center in each state (local center = LC). Those centers will be the most efficient if they are organized, connected in a network on an international level with main, leading center (GC) that takes care of coordination, introduction of standards and following them, exchange of knowledge, experience, data, and also takes care of LC education.

The role of the LC is to take care of and to lead the exchange of knowledge and information between individual profiles in the phase procedure of digitization (archivist, digitalist, computer

engineer, archivist of the digitized material, etc.).

The role of the GC is to establish digitization conditions in LCs, to set or to authorize (define status) the LC, to coordinate between LCs, educate, and control the materials given into the process of digitization with the purpose of preventing doubling of materials.

In case of a disaster you lose only a part of the network or one LC of the whole EU digital library until the lost part is reconnected to the secondary location or to a location with backup copies. In the worst case scenario there is still access to metadata and to the copies of the lost center.

2) Measures to Stimulate Public-Private Partnerships

Measures to stimulate public-private partnerships are:

- To give private companies the possibility (status of an LC partner) to execute digitization of material with clearly defined copyrights
- To offer private companies a long-term realization of commercial-marketing view of digitized material, so that they can with author's permission (signed contracts) market the material on the sharing-revenue principle.

From our experience we give an example of a Getty Images-GB (www.gettyimages.com) and Corbis-USA (www.corbis.com) companies. We cooperate with both of them by marketing the copyrights of their digital contents.
They both have a digital commercial archive for film&video, music&sounds, photography, illustrations, and animations with a network of 70 agents across the world. Their digital stores contain more than 100 TB of digital photography, film&video, and sounds. The content is accessible online on their web portals.

3) Online Access of Digitized Material

We suggest online access to all digitized material of poor quality, marked with watermark and a copyright sign ©.

Non-commercial use for educational purposes, public use, etc., would be free of charge (with the watermark and copyright sign when in use) and the state would pay minimum lump sum for transfer and mediation of digitized content for this kind of use to the author's representative. Copyright for educational purposes and personal use is free of charge – Sweden is a good example.

The lump sum is divided according to sharing-revenue principle between the author of previously non-digitized material and the author's representative – LC. The ratio of commercially recognized sharing-revenue is from 70%:30% in favor of the author/owner of the material and up to 50%:50%.

We should also lean on and get in touch with commercial sector (Corbis-USA, Getty-GB, BBC-GB, Oxford Film Library-GB, Framepool-D, Bodlian Library-GB, etc.). Commercial sector already has digital archives set up, but only with particular, commercially oriented content and high prices. Commercial price for the use of a 10 second movie or video clip is from 300 to 800 EUR. From this income the costs of digitization of the material with expired copyright and of the material with marketing contract with the author could be constantly and to some extent paid for.

Re-use recommendation: it is sensible to use digitized content as many times as necessary and by that realizing the marketing-commercial result.

Phases of digitization process:

1. Digitization
2. Preservation
3. Web access

4. Back to the film, video, or audio tape (DVD, CD, Beta,16 mm film, 35 mm film)

We need to define the 0 point (years/limits). From this point on we digitally archive all material. Then we need to set up the priorities, what should be and is sensible to be digitized first and what second. Some materials could be digitized on request.

4) Orphan Material

"Orphan material" is used in practice in the same way as copyright material and has an economic value because it can be marketed. For this kind of material the same digitization and preservation procedure and equipment as described above is used with the difference that the % of the sharing-revenue goes to the material owner not the author.

5) Multilanguage Web Portal

For the digitized material a Multilanguage general web portal should be set up where digitized material marked with metadata would be categorized. LC would be taking care of individual segments by providing digitized and according to standards equipped material to the portal.

6) Legal Issues

A new law for archiving procedures and terms of electronic material of legal and private persons should be written and it should contain issues such as electronic business, electronic signature, directives for formats to be used for digitization in individual fields (film, video, music, etc.), how to describe content, etc. First we need to accept the legal definitions and apply them in LCs.

Film material needs to be digitized in the highest possible quality (2k or 4k) to prevent another digitization in a few years time. We suggest open-source formats and standards to avoid buying the licenses.

We believe that it is necessary to create a digital master of the material, which is the same as the original that is being digitized, and then create copies from the master if necessary. From all portable media the CDs and backup copies are the least reliable and appropriate because their life span is only up to 5 years and they need to be recopied. A better solution would be CD-RW and DVD-RW because they have a different structure of recordings, longer lifespan and higher reliability. Currently – in the year 2006 – the best portable media for permanent archiving are DVD-RAM and hologram disk.

According to our experience it is the best to build a digital data repository with redundants. The data is spread across hard disks and connected into Raid fields. When a disk fails it is replaced and the Raid field is restored in few hours. The most recognized solutions at this point come from IBM and Apple.

There is a primary location and additional secondary location with the same equipment and digital storage as the primary location. Data on the secondary location is mirrored. Primary and secondary locations are remote and totally independent. In case of a disaster (e.g. fire, flood) the switch from primary to secondary or even tertial location – location with backup copies of data – is possible.

When creating a storage we need to follow an example and learn from commercial sectors and storages of large international corporations in EU and USA which already have large amounts of digital contents in their digital storages and have to maintain their long-term preservation and protection (e.g. Corbis, Getty, banks, Google).

We believe that electronic archiving comprises of the following procedures:

- Gathering of different kinds (audiovisual) of

records and their conversion into standard digital format
- Parallel storage of archive material in physical form
- Procedures of recording digital records for long-term electronic preservation
- Migration of digital records to new standard media for electronic records and formats
- Consistent implementation of standards for secure and reliable archiving with preservation of proof or legal value of digitized material, including electronic signatures
- Enabling accessing, copying, and sending of electronic data and documents and terms of use
- Standardization of information technology, hardware and software for electronic archiving
- Supervision, authorization, and control over public and private services, i.e. providers of equipment and services for electronic archiving
- Protection (preservation and conservation) of electronic archive material as historic monument and the state's professional supervision of electronic archiving.

All in all, Fotospring is aware of the necessary and constant control, mapping, and migration of digitized data and documents and that we have to ensure their connectivity and transferability with ever changing information technology. However, we are also aware that a universal permanent media for digital records is still to be invented.

Digital content is for long-term preservation recorded in a digital format on a media that ensure long-term preservation. This is a kind of record that ensures all conditions for preservation of digital content for more than 5 years and after that period enables migration into a new digital form of record that will ensure all conditions of safe preservations at that time. We must also be aware of the fact that such material not only must be quickly found but also be authentic and readable.

We must not forget the importance of metadata, because they carry information about digital data, their management, and about people, procedures and systems that have created the record and rules of management.

The goal and the purpose of metadata creation are:

- Long-term preservation of digital content
- Enabling understanding of digital content
- Supporting and preserving basic values of digital content
- Assuring originality, reliability, and completeness of digital content
- Reactivation support
- Supporting of multiple and successful migration of digital content

7) The Risk

The answer to this question is of course, that the risk exists and is in reality possible. European legislation can solve that problem with contracts and clauses by which LCs commit themselves not to do business with or perform digitization for states/companies/institutes outside the EU in the same extent as they do in frame of *Digital Library* project, that is with methods financed from the EU funds.

8) Preservation

Formats and preservation procedures should be standardized. Research enables determination of pros, cons, and dangers of particular formats, methods, procedures, types of digitization and preservation, and of online access.

Author: Mario Pušič (mario@fotospring.com), January 2006

4 PROBLEMS OF FILM DIGITIZING, LONG-TERM STORAGE AND ACCESSIBILITY OF DIGITIZED MATERIAL

Digitizing of film material, i.e. a process of transforming visual information from film tapes to computer form as well as later processing and general accessibility present a cluster of obstacles in different areas which must be solved individually but still in the same perspective.

4.1 Technical aspects of film digitizing

Digitization of film material must cover several usage requirements. It is required to have:

a) A digital 4k master, from which we can produce a duplicate film of equal quality
b) Form, appropriate for broadcast on TV, DVD, HD TV/DVD and 2k postproduction
c) Preview reference form for internet and personal use

Based on this requirements we recommend that the film material is digitized at least in 4K quality and stored in Cineon/DPX format which is widely accepted by majority of »data-to-film« service providers. From this format lower resolution formats are produced, needed for b) and c). Furthermore we recommend the following scheme:

a) Single frame files in 4K Cineon/DPX format
b) Motion files encoded in H.264 or MPEG-4 coded with frame sizes equivalent to 2K (2048 pixels horizontally)
c) Motion files encoded in H.264 or MPEG-4 coded with frame sizes equivalent to PAL (768x576)
d) Motion files encoded in H.264 or MPEG-4 coded with frame sizes suitable for internet and personal use (QVGA 320x240)

4.2 Technical aspect of long-term storage of digital representation of film

Using a digital master to produce film duplicates is a big help with ever growing problems of film deterioration. A similar if not worse problem exists in obsoleteness of file formats, that is why there

has to exist a simple way to recreate motion files that use updated technology (formats, codecs) from digital master. Therefore the file format of digital master must be described in detail in form of a standard using plain text files which must be stored together with media files on the storage media.

4.3 Technical aspect of distribution and accessibility of digitized film material

Member states have in their cultural-artistic and documentary heritage a lot of film material. A natural solution would be storage of all material in one, pan-European center from which all individuals or organizations would get information via the World Wide Web. The major obstacle in this scenario are high costs of establishing and maintaining such a center and it also presents its greatest vulnerability because even a minor outage or maintenance creates a blackout of the entire system during the outage. In the past gathering and storing information in one place didn't prove successful as many of the great libraries were destroyed in natural disasters, wars or inner political turmoils with the destruction of everything that was related to former ideals.

A second and contrast solution would be establishing of national centers, one per each member state that would take care of digitizing its own material as well as mirroring everything that is stored in each of the national centers of other member states. Unacceptability of this solution lies in the fact that film material has very high storage demands (e.g. for 1.000 hours approx. 7.500 TB of storage is needed). Therefore it is unreasonable to expect that all member states (especially smaller ones) are able to build and maintain such large facilities as to mirror everything from other states.

4.4 Hybrid-dispersed organizational scheme

We recommend an organizational-technical scheme that would enable »survival through information dispersion« but at the same time offer an

economically feasible way of establishing and maintaining data logistics.
We recommend establishment of a national center in each member state that would store its own part of digitized material, e.g. a center in Slovenia will store all material of Slovenian heritage. At the same time this national center will serve as an entry point for Slovenian users, individuals and organizations, which would need to acquire material from the pan-European pool of digitized film material. Digitized film material consists of two parts: media files and metadata of which the latter mean only a fraction of the required storage space. A national center would, apart of storing its own media files and metadata, store also the entire material of national centers of other member states but not in its entirety. In the system of a national center only the metadata of material from other centers would be stored but not media files. This enables all national centers to search through the entire common database without the need to mirror huge amounts of media files.

4.5 Accessing digitized film material in hybrid-dispersed scheme, detailed

As previously noted each national center has all metadata from centers of all member states stored locally which enables exact referencing, search and research throughout the pan-European database. In case a material that resides on center of another member state is addressed, the server sends a request to fetch media files from the center of the corresponding member state. The media files are transferred from one center via fast international intraserver connections and are stored in the cache of the server for faster response in case the same material is referenced multiple times. That way the amount of traffic between centers of member states is greatly reduced as well as the need for international bandwidth of the customer's internet connection.

4.6 Access to digitized film material, outlined

- a user triggers a search on web portal of a national center
- the system executes a query in the metadata database (metadata from centers of all member states)
- the system shows all search results but replaces the actual references of those hits that are stored in centers of other member states with »faults« i.e. references to not yet acquired data
- based on displayed metadata the user selects the material, enters exact purpose of use and triggers a request for acquiring of material
- in case there are some handling costs or additional clearance of copyright is needed the appropriate procedures are taken
- national center forwards locally stored material to the user
- for material stored in centers of other member states the server first checks its own cache if the requested files are temporarily stored there and forwards them in such case
- for material stored in centers of other member states and no cached copy exists the server contacts the appropriate center of the member state where the material is stored, fetches it in its entirety to local cache and sends a

notification of temporary cache storage to centers of all member states, together with the time and validity of cache storage

- in case that the corresponding national center of another member state for technical or other reason does not respond, the server contacts national centers of all member states to ask if a temporary copy exists in their caches and fetches it from there if available
- server forwards the fetched material to the user and displays error messages for material that was not successfully fetched

*** See Appendix 1**

This way the highest level of availability is achieved with minimum needs for data storage in each national center. Those can be sized according to the quantity of material stored locally and the number of users using this service and can expand independently according to both criteria. More of its own material – more storage capacity; more users – larger cache. Furthermore the scheme makes it fully possible that in case of total failure of national center of one member state the load is evenly distributed across centers of other member states completely preserving the functionality. This is achieved by intentional and longer-lasting caching of material in their caches or with manual copying of backup data of failed center to their caches.

4.7 Technical aspect of metadata entry and its logistics

When metadata is assigned to individual units of film material we are inevitably confronted with descriptions in natural (and national) language. These must be translated in other European

language(s) so that users from any member state can search and find material regardless of the origin of the material. National centers should make sure that the material submitted for inclusion is translated to all 21 European languages, some with human translation others with automatic translation mechanisms.

4.8 Organizational aspect of managing national centers

The form of establishment and leading of a national center is totally in the hands of individual member state. Member states can decide to grant concessions to a single organization to perform all functions of a national center or they can keep the control over center activities in public companies and set out public competitions for services like film digitization, trans-coding of video records, translation of descriptions, treatment of additional approvals before the actual use, etc. The most important issue of all is that the national centers work together and on the outside in a unique way and according to predefined protocols and by that ensure perfect network operation.