Bringing Museums On Line

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In most European countries an important effort has been done, often during centuries, to preserve, describe and index the cultural inheritage. More recently, many public authorities or private entities have undertaken to digitalise a more or less important part of this heritage. Digitalisation means creating databases containing images, reference documents, factual data, sounds, describing as precisely as possible the items constituing the cultural heritage. Paintings, sculptures, monuments, ancient manuscript, music instruments, historical furniture, art photograph, etc. can be described by digital information, thus offering potentially to a large population of users an **easy access to our cultural heritage**.

At that point, it is necessary to stress that **there is a major risk of impoverishment** in doing so. If we deal with culture as a product market driven, what will be the interest of a private entitie in digitalising little-known, not popular or difficult to apprehend works of art ? I am personally convinced that the risk of pauperization is there, and that there is a need for state intervention in the cultural field. I know many people do not agree with that non-liberal statement, but I fear that a lowering induced by the "global village" concept is possible. That is one of the reason why France raised the "cultural exception" issue during the General Agreement on Trade and Tariffs discussions, and why we have quota on TV emission, a law to defend the French language, and a ministry of culture ! (One of the role of this administration is to describe and make known to the world France's cultural inheritage.)

If we take the analogy of multimedia on-line or off-line cultural products with the movie industry, it is clear that if France is still producing quality movies sucessfully, it is because producers are helped by the state, with a system known as "avance sur recettes", where the film maker receives money from the state (which comes from a tax on every ticket you buy in a film theater) and pay back the state if the film is succesfull. We are setting-up a similar mechanism for multimedia products. For the cultural off-line products, there is a special state funding.We do so because we want to **launch a French Industry of cultural multimedia** products which will have the know-how to use France's cultural inheritage to make value added multimedia product. Culture is one of our wealth, and we would like to exploit it by ourself.

Nevertheless, the best remedy against fear being attack, this digitalisation effort must be carried-on and will take several years to reach some completeness. One example: we have 22 millions of photographies at the ministry of culture in France. Digitalisation means nothing if indexation is not done prior, or at the same time. **Digitalisation is an add-on to indexation**. We are working on seeting up a long term effort for digitalisation, effort which must not focus only on the well-known works of art, but on the little-known too.

So we are going to be faced with the creation of very large information bases containing millions of images and documents. Users will need a transparent and easy access to this information wherever it will be located. It is therefore important to design information system that will make possible effective management of these huge information banks, easy retrieval of the relevant information, that will address the needs of the professional users and that will facilitate the realisation of interactive presentations for the general public.

To achieve these goals, we are working hard since many years, and the coming of the multimedia technology stimulate many of us. **Since 1970**, that's a quarter of century ago, the **cultural inheritage in France is indexed by professionals**, and we now have important textual databases. Clearly, the fact that there is a state administration dealing with cultural issues, helped a lot on this processus of indexation, particularly in creating very rich (from a scientific point of view) and common thesaurus for the differents fields. We have many databases, but three are very important:

the **Joconde** database describes more than 120 000 paintings, drawings and sculptures located in France's national museums

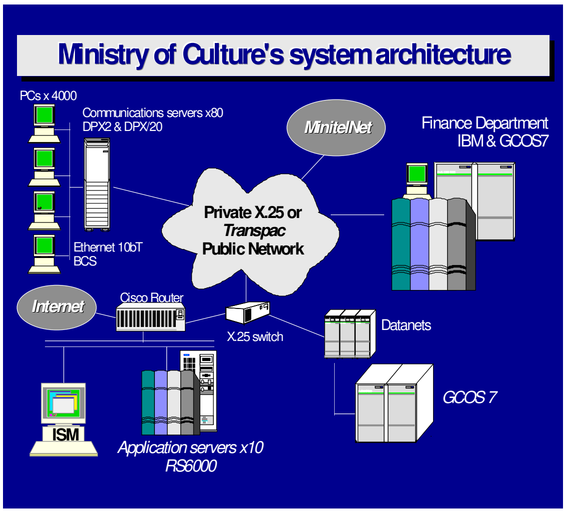
the **Merimée** database describes more than 100 000 monuments studied by scientific researchers all over France

and the **Palissy** database describe also more than 100 000 objects all over France

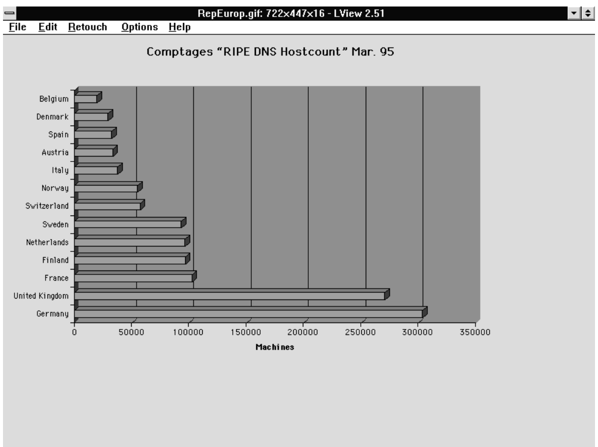
We offer general public access to these databases, except for the Palissy database because there is a risk of stealing the described objects which are often in churches or private home. We are dealing with bringing museums on-line. Well France has been the first country to set-up a large general on-line information system with the minitel. More than 7 millions of minitels are installed in offices and at home, generating a service revenue of more than 8 billions French Francs. Unfortunately we were not able to export the minitel technology, and it did not spread out of France as Internet spreaded out of USA ! In my opinion (it is a personal point of view) the actual minitel is lacking multimedia capabilities and the new version of the minitel called High Speed Teletel came much too late and will not be a success (well I am quite sure it's going to be a failure), but the minitel system is not dead (yet). We do not need multimedia capabilities to query a phone directory or an air-plane time-table. Gateways between Internet and minitel network will be available by September, provided by VTCOM a subsidiary of France Telecom, the national operator.

So since now 3 years, anyone in France can query through the Minitel services the databases on cultural inheritage in France through the 3614 JOCONDE. It cost one telephone tax every three minutes to the caller. That is roughly 20 cents every three minutes which goes in the pocket, not of the ministry of culture, but of France Telecom. We will see if, in 1998, with the derugalation of Telco's in France, local rate gets lower. Anyhow, you must have in mind that the cost of telecommunications in Europe are not the same than in USA. Leased Lines are expensive, local calls are definitely not free, international calls are twice the price they cost here. But we have a very good telephone network now: digital from end to end, with ISDN capabilities everywhere you need in France. We now have a general public usage survey of our databases, which are queried mostly by professionals (editors, and researchers), but also by general public, who mostly try to find out if the little-known painter they have a painting at home has some of his paintings in the museums.

In 1992 we began to set up an internal communication network (luckily based on TCP/IP) **linking together 80 sites and 4.000 micro-computers all over France**. Most of the people working at the ministry of culture are on this network. This year we are in the process of connecting major museums to this network. In the first place the purpose of setting up this network was to facilitate the access to internal computers apllications, but in 1992 we also had an Internet access which was used by the computers professionals at the ministry of culture. From a technical point of view, we set up in every site a Unix box (using power PC architecture), running Lan Manager Unix for sharing ressources, an Ethernet network to connect the PC, and interconnections of all these LANs using TCP/IP over X.25.



When Jacques Toubon became minister of Culture, he set up as his number one priority, to deal with **cultural issues bringued on by the new-technologies** (on-line or off-line). It explains perhaps that when we proposed to his staff to officially connect the culture network to Internet to provide information on France's cultural inheritage to the Internet community, the answer was go on, which was not, when you recall we were in 1993, an obvious decision because there was quite a powerfull lobbying against Internet, this american network, not invented here, and giving no revenue to french industry. The first service that was set-up was electronic mail for the minister. Times have changed, and if in 1992 there was only one Internet provider in France, there are more than 15 now, and France Telecom is now clearly in that market with the RAIN offer (which we use) and the RENATER offer for the Universities and Research Institutes. In January this year more than 100 000 computers where registered on the .fr network.



Many things happened in those two last years, technically and politically. On the technical side, I would say that World Wide Web and Mosaic browser technology was the most important. I remember the first time I saw W3 was at the first Interop meeting in Paris, at a conference made by the CERN in december 1992. At that time I was very proud of a gopher service we had set up ... Well **mosaic was a real shock**. We did not know anything about HTML technology at the Ministry so we asked the French research institute in computer Science, INRIA, to help us to set up an imaginary exhibition on the world wide web. We were stimulated by the EXPO virtual exhibits at the library of congress in Washington.

The head of french museums (the managing director was a specialist of the 18th century) choose the subject: the age of enlightenment in the paintings of France's national museums. . The technology used is Kodak CD Photo technology for digitalisation, CERN World Wide Web technology for the http daemon linked to a WAIS research engine to query the database. The service was launched at a meeting on the 26th of September 1994, by Jacques Toubon. You can visit this exposition in French or in English at the followng URLs:

http://www.culture.fr/lumiere/musee_virtuel.html (French)

n http://www.culture.fr/lumiere/files/imaginary_exhibition.html (English)

We took the decision, in that occasion, to set up all the World Wide Web pages in French first, and to translate them in English afterwards.

A panorama of XVIIIth-century French painting is presented in this exhibition through the works of one hundred selected artists. In addition to the pictorial world, the history, music, literature and science of the period are recalled in the background to these occasionally little-known works from eighteen museums all over France. It is really an imaginary exhibition, not a virtual one, because in real-life we would not have been able to put all these paintings in the same place for legal reasons (donation statement) or for bad state of conservation for some of them.

The experience was very conclusive, but questions are still pending on the legal and commercial sides. Nevertheless it has been decided to set up more exhibitions this year, to make them available on the Internet but also on cable TV, and to speed up the numerisation
process in France. A new exhibit on the "Prix de Rome contest" has been set-up at:

http://www.culture.fr/rome/index.html

We learned a lot with this experiment.

First of all on legal issues. Professor Sirinelli, a well known French Jurist, has been charged by Jacques Toubon to study legal issues concerning new technology and culture. His work has been published at the documentation française (Industries Culturelles et Nouvelles Techniques, ISBN: 909717-17-8), and is very interesting. In France, you can go in every state museums take photography of the paintings (you only must not use a flash) which are more than 50 years old, and reproduce them on postcards, tee-shirt, multimedia products without having any fee to pay to the state. Professor Sirinelli suggested that the museums should made multimedia products themselves, because they will then become author of the products and have rights on it.

Nevertheless, we took the decision to put on the network pictures with medium resolution, which is not enough for an art quality publication. We are also working with INRIA on a non-visible signature technology to protect our work.

We learned also on technical issues. The world-wide-web technology as is, is not adequate for important databases. Human creations of links for 100 or 1000 documents is feasible, but is not realistic when you talk of more than 100 000 documents. So we have proposed to the European Union research programs, a joint program with INRIA called AQUARELLE to work on add-on to the existing technology for providing cultural multi-media services in the years to come, adding object oriented database technology jnder the W3 service.

On political issues decisions have been taken too. The French prime minister asked Mr Gerard Thery a report on the information highways (which has been published last year at the documentation francaise), and asked the ministry of industry to set up a call for proposals on experimental services on the future information highways. More than 600 projects have been proposed (in a very short period of time), and 49 have been accepted for immediate begining. One of them is a proposal from the ministry of culture and Groupe Bull, to set up an Information Service on the Cultural Inheritage. You can access an alpha version of this service (for the time being it's in French) at the URL:

http://www.culture.fr/culture/spic.html

The idea is fairly simple ! We have those databases which are running with a product from groupe Bull called Mistral. It is a documentary information retrieval system, wich our conservation professionals like a lot. Unfortunately the ergonomy of the interface is not well suited for a General

Public use on the Internet. So we are incorporating to this product some of the Internet technology, World Wide Web capabilities and Z 39-50 (that is WAIS) compliance. The first step has allready been done and, with a forms-capable W3 browser, you can query our databases, with an up to date ergonomy. Now, we know that the General Public wishes to see an iconography associated with the textual part of the database. We are in the process of digitalizing thousand of documents, which will be incorporated in our database in two formats (the icone format, and the full screen).

An other project, which will began in September, and to which we will participate has been set-up by La Lyonnaise Communication which owns the tv-cable network in Paris and suburbs. The project is called multicable, and the idea is again fairly simple. 45% of the TV-cable subscribers in Paris have a micro-computer. So we are going to propose services on the TV-Cable network which will run on those micro-computers using the TCP/IP technology. There will be for example juke-boxes with cultural CD-ROMS, but also an Internet access available, so that we will be able to conduct a study on the usage the general public make of our services.

Politically, at the international level, things have moved also. The G7 meeting in Brussels this year, dedicated to the Information Society was a success, and many services were demonstrated there to high level decisions makers. It is now clear that European Union funded projects can refer to the Internet technology ! As you all know, eleven projects were launched by the G7 meeting, two of them involving France and cultural inheritage:

electronic world library (France and Japan)

electronic art galleries and electronic museums (France and Italy)

Here again the ideas are fairly simple. To provide through a unique interface an access to all the cultural databases, hiding to the end user any technical difficulties.

So we see something happening which is very fortunate. It is not that difficult to include to the proprietary documentary research sytem existing all over the word multi-media capabilities using the Internet technology. We do not have to trough away these systems, we protect our investments, and we can enhance them at low-cost.

We are now facing two challenges. One is the huge digitalisation process, and the hardware that will be needed for servicing hundred of thousands of images, the second one is the add-on mandatory to the actual technology to be able to navigate efficiently. To me now, Internet is like a library, a huge library, with no catalog capabilities. We will need something as ISBN for the books for our ressources on the Net, and we will **probably need link servers**, as we discovered in an unexpected way.

As you probably know, an important archeolgical discovery of a 20.000 years old cave, with paintings, has been made in France and announced in January this year. As this cave will not be open to public we decided to put some of the drawings on our World Wide Web server (http://www.culture.fr/culture/gvpda-en.htm). The next day our Internet traffic was multiplied by 22, we had to change our 64k leased line to a half megabit leased line and our Internet provider had to upgrade his router and his access to the E-bone network. We had also to move our W3 server to a more powerful hardware. And that was a pain. Not for us, but for the people who had hard-coded in their servers links to our server. So we must find a way to have something dynamic here, not just hard-code. Links servers seems an interesting concept to achieve that goal.

By the way we were amazed of the publicity we have had just by placing four pictures on the Network, articles in the Washington Post, News Week, International Herald Tribune ! Arcaeology seems very popular and we have now set up a virtual exhibition on under-water archeology which is also very interesting (http://www.culture.fr/culture/archeosm.htm).

An other issue also will be the capability to provide reliable paying services on the Net. I strongly believe that the kiosk structure which has been setup in France by France Telecom for the minitel, was a reason for the succes of the minitel. The subscriber pays the acess to a service to France Telecom, on his usual phone bill, and France Telecom pays back the service provider. I do not know how things will evolved in the years to come, but this is an important issue, of course.

I would like to raise two last questions.

First, it seems that DES encryption capabilities will be incorporated on the Network in the year to come. That raise the cryptography issue. First for export of DES capable software outside of the US, and some local laws. In France, for the time being, cryptography is forbidden and considered as a war weapon. You must ask a national agencie the authorisation to do cryptography. This can discourage commercial services network in France.

The second point is about diacritical characters. I believe that it is an ethical necessity to respect the national languages on the Network, those accentuated characters being a part of our culture. It is clear that no governement will push a network which impoverish the use of national language. So we must remember when we design products or services that most of Europeans countries needs an 8 bit encoding, needs sendmail 8 bits clean, have to patch WAIS for indexing diacritical characters, and I am not talking of Asia who needs Unicode and 32 bits. This is not an anecdotical issue if we think of the general public.

To conclude, it is clear to us that these new tools will help us in achieving one of our goals: make known France's cultural inheritage. But the setting up of that kind of service should also help industry in producing value-added multimedia products, publishers of touristic guides, make people choose France as a travel destination. We are facing many challenges on the technical, legal and political side, and also some risks, but the promotion of cultural inheritage is worth it.

All the services here described are available through:

http://www.culture.fr

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