

18 TELECOMMUNICATIONS IN MUSEUMS

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A challenge for museums

What is the challenge rising from the introduction of Telecommunications in museums?

Most museums set up textual databases enabling them to store a great amount of documentary information related to their own art collections. These electronic documentary databases are directed towards dedicated people such as experts in History of Art as far as Fine Arts Museums are concerned, students, academics, teachers, research assistants, etc.

At present, those who wish to consult museum archives have in most cases to go to museums. Creating documentary databases solved one of the problems, that of accessing a great amount of information without having to handle documentary files.

Access to basic museum documents is another problem, whether the documents be texts, pictorial, graphic, photographic or videographic representations, or tridimensional objects such as sculptures or fossils, etc. Access to museum collections is often difficult, for only part of them can be presented at the same time because of a lack of room. Now, specialists as well as museum employees in charge of keeping and presenting the collections, should have permanent access to them. This obstacle could be partly solved by storing electronic copies of these collections in documentary databases, in the form of digital texts, images and audio or video recordings. This has been made possible thanks to an increasing performance of documentary systems which are more rapidly accessible and allow a greater volume of information to be stored and handled.

In a third stage, towards which projects such as RAMA (Remote Access to Museum Archives) are working, telecommunications, which have known a rapid development and already allow isolated access to a few textual documentary databases, will permit simultaneous access to several documentary databases to which will be added digital texts, images and audio and video recordings. The benefit will be a greater flexibility of use both for a more important number of academics, who will no longer have to move to experience an invaluable encounter with art collections and who will be able to locate these collections more reliably, and also for museum employees in charge of preparing the exhibitions.

In the use of telecommunications let us picture numerous other services such as the reproduction of museum collections on demand and at a distance for the press, for publishing houses, etc.

The challenge rising from the introduction of telecommunications in museums is therefore to help museums in their conservation task, as well as to assist them in their duty to

spread culture among a larger amount of specialists in museums, universities, institutes, ... in the first place, and then later on, when telecommunication costs reduce, among a wider part of the population.

What services can be offered to researchers and visitors?

The most urgent service is remote access to museum archives, to which one might, or might not, add an image database. This service being mainly directed towards academics, RAMA called it 'Tele-research'. It will be conceived within RAMA for the researchers' needs.

A service deriving from 'Tele-research' could be pictured for use in schools, universities and other teaching places. It will be named 'Tele-teaching' and will offer remote access to museum archives in a way that suits teaching ends.

Seemingly, other services can be figured out such as 'Tele-publishing' for the press and for publishing houses, 'Tele-shopping' for shops selling reproductions of museum collections, 'Tele-exhibition' for museum employees in charge of setting up exhibitions. All functions performed by museums and all services they offer to visitors could be thought over along the line of telecommunications. However, a number of restraints are imposed by museums themselves in regard of public services.

The proposed services should be very easy to use, but without their informative wealth and performing abilities being altered. One service should be offered both in the museum itself, and at a distance outside the museum. Telecommunications should therefore be clearly understandable to the user, giving him a feeling of closeness with museum archives. There should be a common access interface to all museum's databases which should be accessible through a common set of services, obviously taking into account the specificity of each documentary system. This implies a common screen display and an identical or similar overall presentation of functions, so that the user can be guaranteed a quick adaptation to the system and an easy access to the various documentary databases.

Museums should be able to set their own pricing policy according to target audience. Museum rights on the information they spread should be protected, and access to the information be controlled and made safe. Independence between external services and the museum management system should be secured. Museums should be able to create, modify or suppress their services according to their market.

The existing systems

What existing documentary databases are remotely accessible?

As far as we know, remotely accessible museum archives are rather few.

The Beazley Archive in the Ashmolean Museum, has been remotely accessible via the internet network for a few years. Access to the archived Greek vases is strictly reserved for museums (*curators of Ancient Greek civilisation's collections*) and to universities and specialised institutes (*academics and students in Classical Arts*).

In France, the National Museums archives, managed by the Ministry of Education and Culture, are partly accessible through the Minitel (*Videotex*). The 3614 Joconde Service, dedicated to the National Museums collections of paintings, has been operational since 1992 and is accessible to everyone. The Carrare Service, dedicated to the National Museums collections of sculptures, should be operational by the end of 1993.

As far as we know, there is no documentary image database that is permanently and remotely accessible. The Press is more advanced in the field of remote transmission of press images (Press Link Service in the United State, High Definition Image service in the Agence Française de Presse). The European Museum Image Network project offers a multimedia application that can be queried remotely, is directed towards a large population and uses part of various museum archives. The RAMA project is developing a direct access system to documentary image databases in several museums. The Centrox system can usefully be mentioned here. It is a textual database on auction sales, dedicated to paintings (according to Centrox, it represents about 90% of world sales) which has been operational since 1991 and to which are added images drawn from auction sales catalogues. It is based in New York and is accessible from a PC 386 via the Infonet and the phone networks.

Projects on encyclopaedic databases which would include information and images on the collections of the great world museums and which would be remotely accessible, are not directly relevant.

The future of direct and remote access systems to museum archives therefore remains open.

What are the existing Museum documentary databases ?

The Musée d'Orsay was a forerunner in this field, having created a IDM'O digital documentary database that was accessible to the visitors as soon as when the Museum opened in 1987. The Musée d'Orsay system is made of a documentary software (soon relational) working on VAX stations. 5,000 24 bits 1024 x 1024 pixels colour images are stored on ATG 1 GOctets digital optical disks. An application was developed on two screens-workstations (a VGA screen for researching and a High Definition screen for viewing Images).

72 000 autochrome plates, 6 000 sepia drawings, Black and White stereographic printings and 170 000 metres of films from the Albert Khan's collection, have been available and listed on videodisc since the Museum re-opened in 1990.

The National Gallery in Washington developed in 1991 a very handy and friendly Macintosh application on its collections (*Product Art Access*).

The Louvre museum has just worked out a documentary application in the Cabinet of Drawings : visitors will be able to have access, in the Cabinet of Drawings itself, to 130,000 drawings which are being digitised. The next stage of the project is remote access to this database. Access to the Musée d'Orsay's drawings collection which is kept in the Louvre should be possible by the end of the year, from the Musée d'Orsay itself.

Various applications (*Vidéodisque Parthénon in the Louvre, Micro Gallery in the National Gallery*) use the digitised museum archives, but they are of no relevance here.

Projects for creating such Image databases are being carried out, such as the European project NARCISSE led by the Laboratoire de Recherche des Musées de France, which constitute a scientific information base on several museum collections, including X-ray and infra-red images. All these databases, already made or in the process of being made, may therefore be accessible to a chosen public via Telecommunications, as long as projects such as RAMA work at the creation of systems enabling either the access to databases or the interconnection of heterogeneous databases combining Computing and Telecommunications.

The structure of RAMA electronic museum

What is the aim of RAMA ?

The aim of RAMA is to interconnect the Image documentary databases of seven European museums. These are:

- the Ashmolean Museum in Oxford
- the Pergamon Museum in Berlin
- the Goulandris Museum in Athens
- the Museon in la Haye
- the Prado and the Museo Arqueologico Nacional in Madrid
- the Musée d'Orsay in Paris

The above museums art collections cover the *Fine Arts* - the Prado, the Musée d'Orsay which specialises in the 19th century (1848-1914), *Ancient Greek and Latin civilisation* - the National Archeological Museum in Madrid, the Ashmolean Museum and its collection of Greek vases, the Pergamon Museum where the remains of the Pergamos temple are exhibited, the Goulandris foundation and its Cycladic art collection, and *human and natural sciences* - the Museon.

In order to carry out this aim, five museums went into partnership with companies specialising in information and telecommunication technologies (SSII and Consulting Engineers):

- the Ashmolean Museum with Brameur (UK)
- the Pergamon Museum with Brameur (Germany)
- the Goulandris Museum with L-Cube (Greece)
- the Prado and the National Archeological Museum with Telefonica Sistema (Spain)

The project has been coordinated by Télésystèmes, from France Telecom Group, since the beginning of the 1993. Museon has been a leading partner since the project was launched in 1992. The Musée d'Orsay and the Image Processing Group from Madrid University became leading partners in 1993. Eutelis from France Telecom Group became Télésystèmes' associate partner this year.

One of the RAMA museums, the Ashmolean Museum, already has a remote access documentary database: the Beazley Archives. On the Ingres base of the Beazley Archives, the museum is planning to add digitised images out of the Black and White photographic archives. Scanning is already in process. A 2 Mbits Janet - Renater link should be ready by August 1993 to allow access to a sample of documentary information with images which will be stored in the new base.

One of the RAMA museums, the Musée d'Orsay, already has an Image documentary database. Its project on access to its drawing collection kept in the Louvres is under way, and the IDM'0 base will be partly accessible during the course of the year, via a Numeris-type link. One of the RAMA museums, the Museo Arqueologico Nacional, has a textual documentary base which is not remotely accessible. Its documentary data will be transferred to an Oracle database, and images will be added. The database will be accessible from the Prado Museum by September 1993 via a dedicated 2 Mbits link.

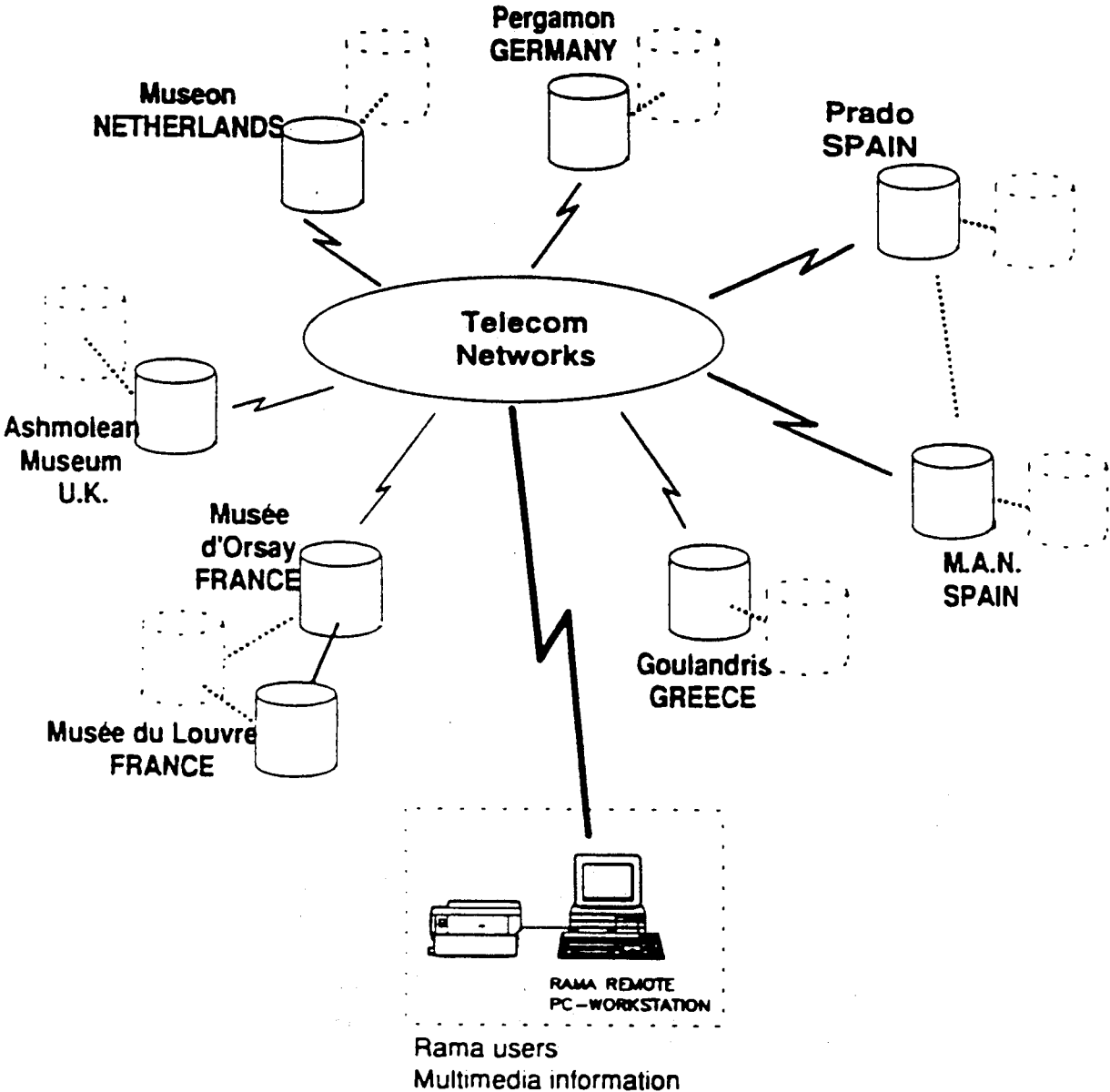
The other RAMA museums have a textual documentary base which is not remotely accessible, or do not have any databases. They will be equipped by the end of the year and

should be remotely accessible in 1994. In 1994, all RAMA museums should have their own image/video documentary base and each base should be connected to the others.

What would be the ideal structure of the "electronic museum"?

The concept of an electronic museum is achieved through a workstation which can have access to various bases or databanks, linked to the others by gateways (Fig.1).

Fig.1 Concept of an electronic museum



In the RAMA system, the solution to the problem of interconnecting image documentary bases rests upon 3 axioms. The created system must be open, because databases are heterogeneous when both software (*SGBD Basis +, Oracle, Sybase, Ingres, ...*) and equipment (*DEC, HP, SUN, Apple and PC*) are concerned. The system must use Broadband telecommunication networks so as to transmit High Definition and Video images in a performing way. It is essential to use different telecommunication networks so that a service can be operated in countries where the development of networks is more or less advanced. Eventually in Europe, ATM networks might bring a single solution.

The structure RAMA chosen as an answer to the above axioms is the interconnection of systems with a user-client structure, using a common platform, a common request language and a common presentation protocol. Link control procedures depend on the networks used. (Fig.2)

Fig. 2 How the technical structure of the RAMA system was broken down into sub-systems

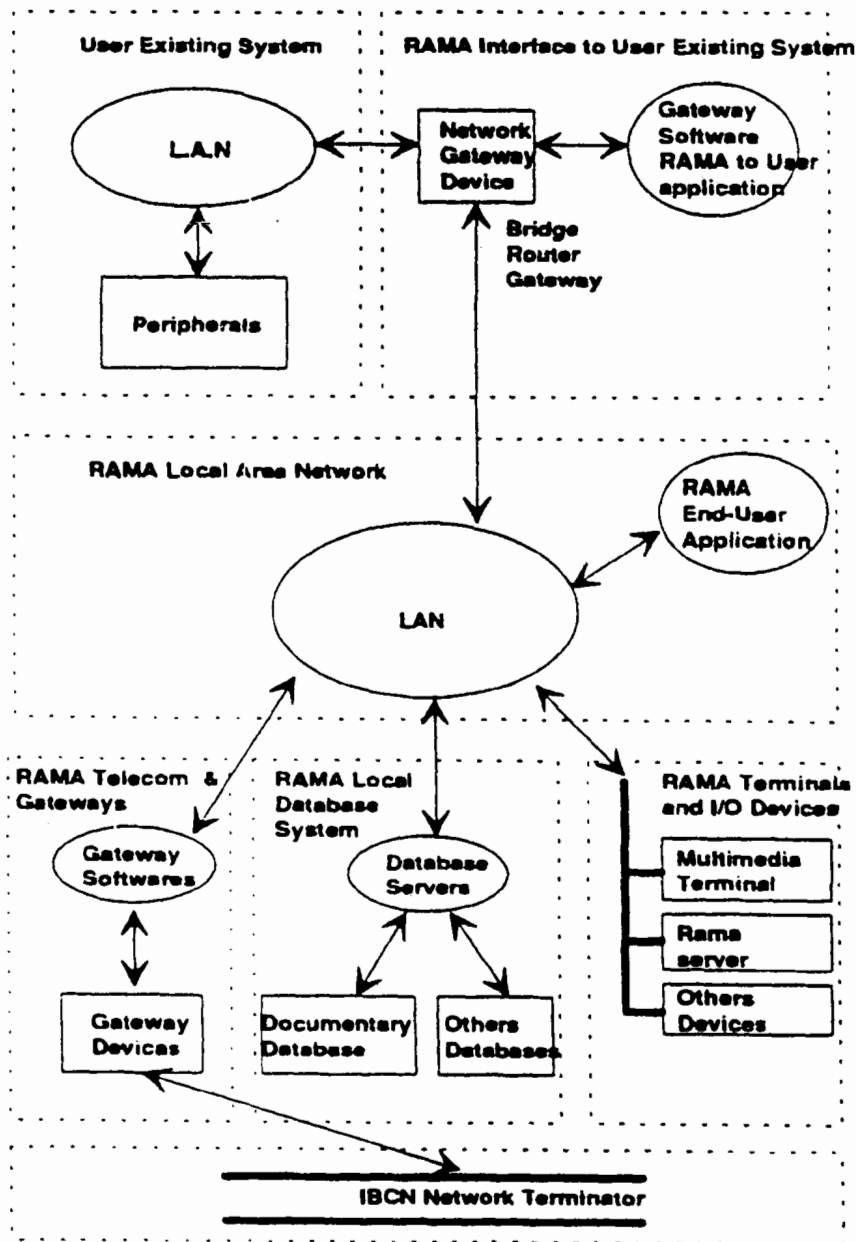
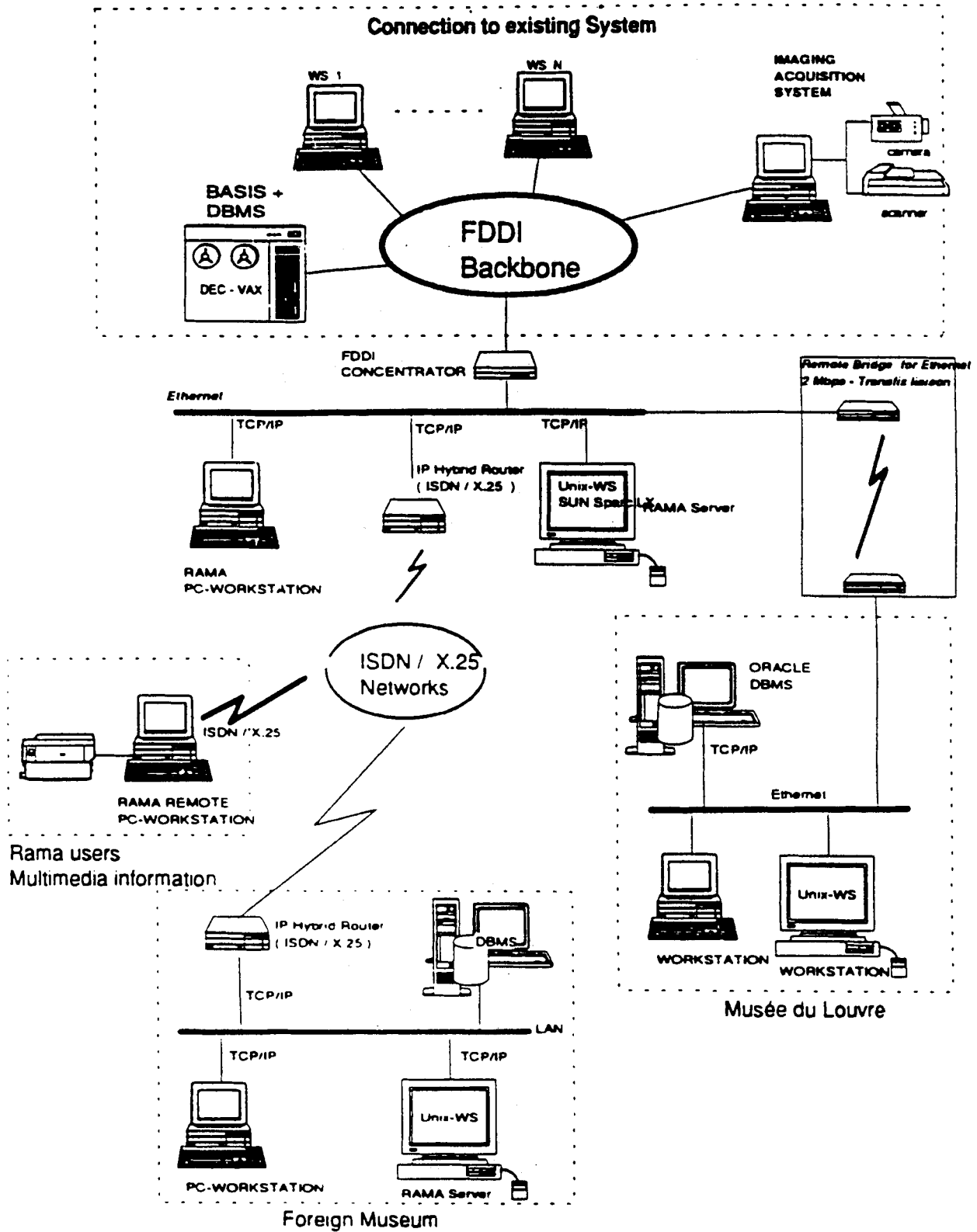


Fig.3 The Musée d'Orsay structure might be, for instance, as shown below

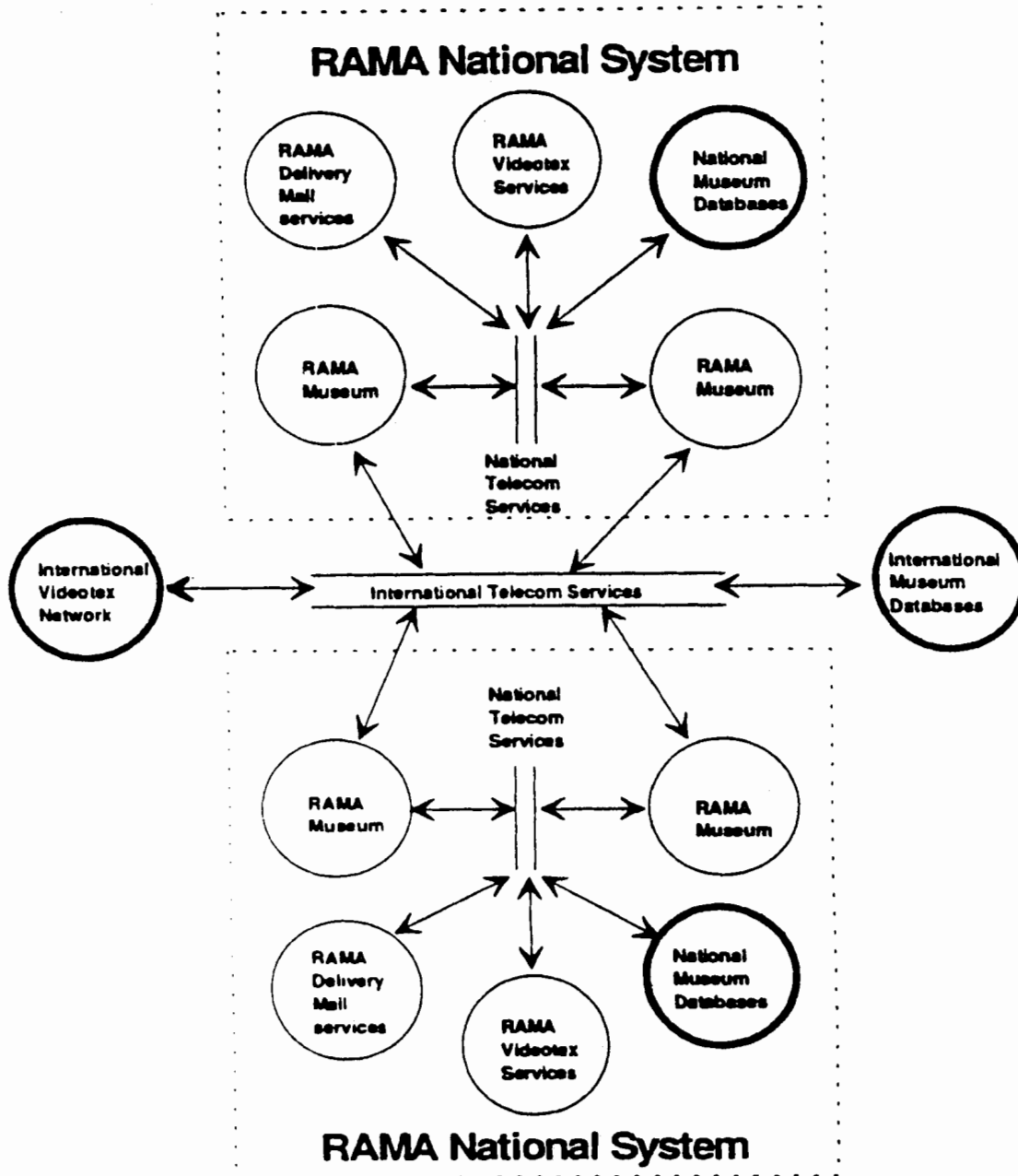


What is the outlook for museums

What is the outlook for the 'electronic museum'?

The needs expressed by the users as well as the 'electronic museum' structure as worked out by RAMA, allow us to picture a Value Added Service in European museums, that is an operational system which will offer several services to various specialists.

Fig. 4



So that such a service sees the light, it is necessary that a market exists. This is why within RAMA, a market study on a museum Value Added Service (VAS) was undertaken. This study is led by Eutelis, a subsidiary company of both France Telecom and Deutsche Bundespost Telekom which specialises in feasibility studies and in the setting up of VAS. Such a service will have to overcome a few critical aspects in regard of museums. Compliance with property rights on Images and of other related rights such as copyrights, is the most important aspect, these rights differing from one country to the other. Compliance with museum pricing policies on services is another essential point, RAMA museums having policies that may vary from free service to cost price service.

These last two points show that two essential aspects of the VAS will turn out to be crucial. The financial rentability of the service will have to be determined according to the policies of the museums which are likely to take part. It will be necessary to work out a technical structure capable of managing the various pricing policies, ensuring compliance with property rights, securing the safety of museum documentary databases, collecting the various access and copy fees, invoicing and paying back the due sums of money...

As far as the organisation is concerned, the Service should allow new museums to join, to create, to modify or to suppress services and should ensure interconnection with other services such as tourist information and booking systems.

Fig.5 & 6 show an example of an organisation able to back up such a Service.

Fig. 5

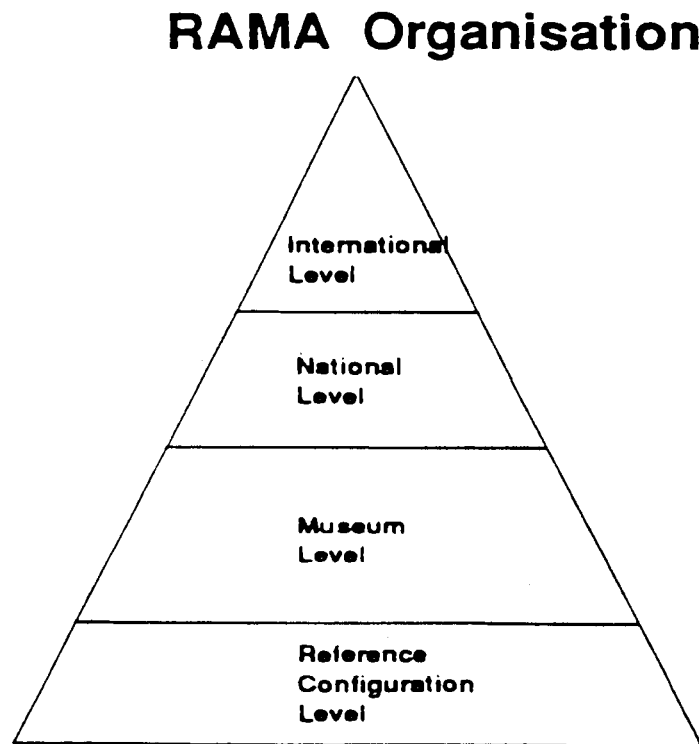
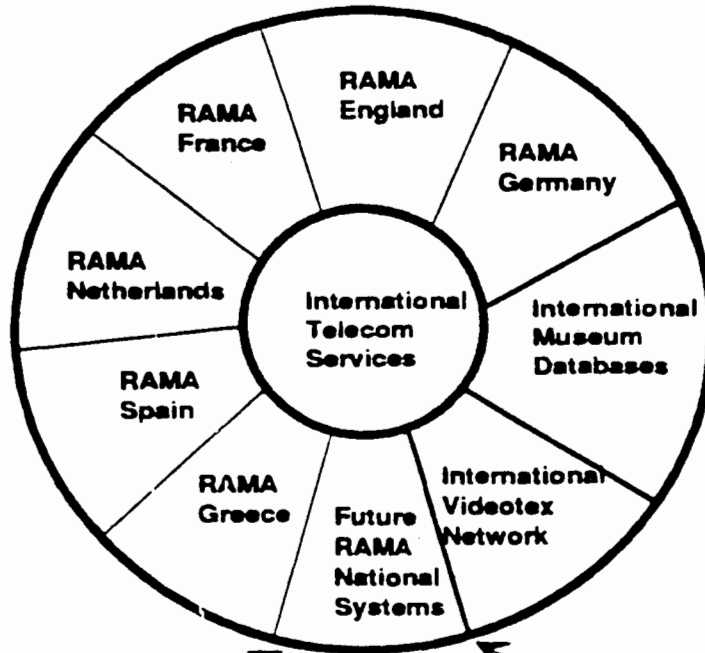
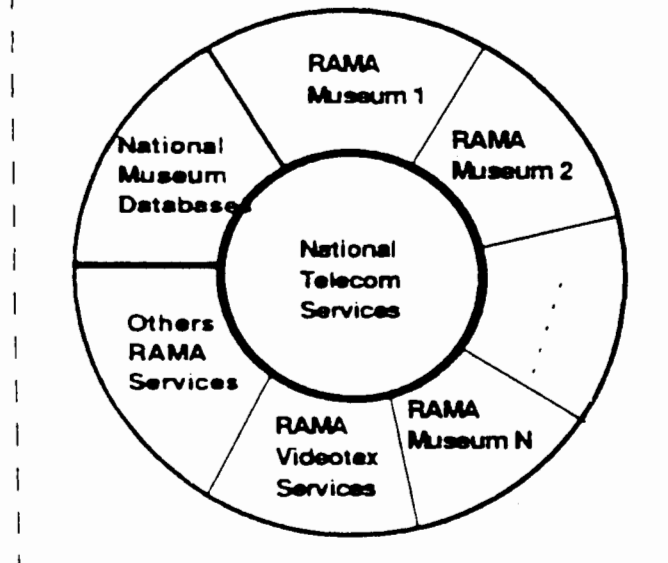


Fig. 6

RAMA International System



RAMA National System



Is the 'virtual museum' conceivable?

The future shall decide whether the virtual museum can be achieved and whether it is to be wished for. The virtual museum is a system whereby all museum collections can be viewed in the same way, just as if a single database were viewed.

So that such an electronic museum can be achieved, it is necessary to have an access system to distributed and heterogeneous databases. And, in order to realise such distributed and heterogeneous databases, it is necessary to find performing technical solutions, which is not the case at present. Standardising documentary systems is another important challenge. Heavy efforts have to be made to find a standard set of criteria for the description of art collections. At present, there seems to be a long way to go.

Can one hope for the 'virtual museum'? Yes, if one holds a universalist view of the world where different contents could be moulded into identical forms. No, if one thinks that each system of representation should keep its own characteristics regarding form as well as contents.

In any case, the museum each of us picture will remain fictitious, multiform, and each of us will be free to wander through it, whether it be electronic or real. The wealth of such museum is in the diversity of both its form and contents.

