7 MULTIMEDIA IN MUSEUM, MUSEUM IN MULTIMEDIA

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The Multimedia (MM) technologies are fast embedding themselves into all parts of human activity. The term MULTIMEDIA appeared and was being used as a computer technology term, but now, its inner meaning has become very wide ranging including any human communication activities.

I do not think it would be a good idea to enter into terminological discussion, but I should like to mention several properties of MM, which are of great significance in the area we are going to discuss:

- the data is stored and processed in the DIGITAL form, with the application of the COMPUTER
- the data can contain TEXTUAL, SOUND, GRAPHIC and VIDEO components
- the property INTERACTIVITY is inherent for MM in rather high degree.

It is necessary to notice, that the interaction between two phenomena, such as the museum and multimedia, has a rather complex and ambiguous character. I should like to submit two aspects of the problem for discussion: 1) MULTIMEDIA IN THE MUSEUM and 2) THE MUSEUM IN MULTIMEDIA.

However, I will only be able to outline the most general points of the problem.

Multimedia in Museum:

Applications of MM for internal use in museums (registration, building up a collection, treatment of the museum objects, restoration treatment, exhibition activity). The user's team in this sphere will be the museum employees, science staff, restorers.

The main product of MM for use in the registration activity is the Database (DB) on the artefacts of the museum collections, combining text, images, and graphics. The quality of the images must be appropriate at least to current television standards. The application of such technology will allow the display of images and descriptions on any specific artwork or group of artworks, such as is usually necessary for the identification of a subject to users.

The MM technology will also allow the creation and of use working copies on intermediate media, containing some files from DB (for example, when preparing the exhibition, for transfer data to other museum etc). The users can interrogate the computer in interactive mode, where necessary.

MM will play a rather important role for the research, restoration and exhibition activities within the museum. This technology will allow the creation of DB's and the use of them for the execution of various searches, requiring viewing and analysis of the images (for example, viewing some special groups of the images, including images at the various stages of restoration work, X-ray photographs etc). Processing of the images on the computer will be very important for simulation work, for the creation of expert systems in art.

When an exhibition is prepared, it will be possible to create the series of the "virtual exhibition halls " and to choose from the model the most successful use of the exhibition space, hanging etc. In the majority of cases the listed tasks can be realised in the "home" conditions on a personal computer.

The requirements for the quality of the image for such class of tasks can be rather high.

Museum in Multimedia:

Museum DB are the initial material for the creation of the MM-production, intended for the widest distribution. The main question, we shall try to answer, is what is the best way to use the museum (the collection, intellectual potential of the staff, accumulated methodical experience etc.) for the more effective application MM in various spheres: leisure, culture, training etc. This view reflects the "external interests " of the museum. The range of the potential users in this sphere is rather wide, for example:

- leisure. Potential users are usually individual and group visitors and tourists, tourist firms, centres of culture and leisure, bodies of propagation and information (radio, TV, press) creative organisations and unions
- training (common and special). Potential users are schools, special educational establishments and universities, individual students.

It is possible to assume that the use of the museum materials will allow, applying the MM technology, the creation of new educational and entertaining programs and games, computer films, trainers and other diverse forms, in which textual, graphic, video and audio data on the museum collections or monuments of history and culture are used.

- publishing. It is possible, for example, to indicate the following kinds of the information products, which can be manufactured in the conventional (paper) or electronic forms: catalogues (scientific, brief, on museums, on authors, on theme sections, on exhibitions, on galleries and etc), exhibition and museum guides, guides on architectural monuments etc.
- commerce. Potential users are galleries, auctions
- safety. Potential users are Government Security Agencies, Interpol.

The listed examples do not cover all the possible spheres of application of data bases and have illustrative character.

We can also mention one more aspect, separately detached: it considers MM as the means for the creation of the product, which would satisfy the requirements of works of art, put in a claim for a place in a museum collection (I have seen such artefacts at the magnificent exhibition of computer art at the SYSGRAPH conference in Moscow in 1992). However, we do not undertake to discuss this problem in our article and leave it for the art historians.

The opportunity to combine the audio-visual riches of the videodisc with the processing power of the personal computer has resulted in INTERACTIVE VIDEO, a MM hybrid that uses videodisc as a computer peripheral.

The first MM product was made in Russia in 1990. The State Russian museum together with the Leningrad Centre of mathematical simulation by the support of two firms from Great Britain have manufactured interactive video disc " Masterpieces of the Russian museum". The disc incorporated about 1,000 full images and 6,000 detail images of outstanding works of art from the museum collection. It gives the user the opportunity to come into the museum and to make a decision about where to go and what to see. By controlling the cursor positions, the user can select menu items, move level controls etc. Scrolling around an image, the user can choose a detail and display it.

Not long ago, two video discs were manufactured by the St.Petersburg firm "AVANGARD": one of them is about the house, where Alexander Pushkin lived just before his duel and where he died ("House on Moika-river"), another is the first videodisc from the series "Palaces of St.Petersburg", some other videodiscs are soon expected.

Now more than a hundred museums in our country are equipped with IBM-compatible personal computers. The standard hard discs up to 600 Mb and more are now used in museums for creating DB, including text and image data on the museum collections and for applications of MM for internal use in the museum. They are also used as an initial material to make external media (floppy-discs, CD-ROM etc).

The elementary carriers of the digital information are standard floppy-discs holding up to 1.2 - 1.44 Mb of data. It is quite enough to create a simple MM product for use on the IBM-compatible personal computers (this class of PC holds the overwhelming majority of personal computers in use all over the world). Because of low prices and accessibility this technology has received wide distribution in our country.

The experts from the Moscow Kremlin Museum and the firm "COMINFO" created and issued on floppy-discs the computer film " TRIP on Moscow Kremlin". It is a user-friendly program that guides you through the amazing architectural and historical monuments. This program is controlled by a mouse, using the detailed maps of the Kremlin. There are also short descriptions available.

The firm "INTERSOFT" has introduced into the market two computer films. They are "Troizko-Sergieva Lavra" and "Trip on Hermitage". Both of them on floppy-discs.

The firm "ARAGAST B" from Armenia has issued computer films "Hyperguide to Armenia" and "Virtual museum".

"Hyperguide to Armenia" is a hypertext program that guides you through Armenia with simple "point-and-click" convenience. Hyperguide let you travel in Armenia, using the detailed maps of the country and its capital Yrevan. It accesses and displays available text and graphic information via hypertext capability. Program execution is accompanied with music of the famous Armenian composer Komitas.

Another product of "ARAGAST B" is "Virtual museum". The MM shell uses textual essays, images and audio files to guide the viewer through the magnificent world of visual audio treasures. A thematic series of various aspects of Armenia art have been developed.

The information centre "ART-INFO" has prepared a computer data bank containing textual, graphic and photo data about products of modern art and their authors, such information can be rather useful for galleries and auctions.

Practically all listed programs use interactive mode and present the information in several languages, some of them use sound. The representation of images is realised as a rule in

VGA and SVGA mode. The Russian Museum has had some experience with EGA adaptor, but the results were not successful.

The listed computer films are distributed in our country and abroad.

WORM (Write Once Read Many) permits the creation of a DB of colour images at "home" conditions (such technology was purchased and is being used now in the State Tretiakovskaja Gallery). Using the WORM technology, the museum has prepared and demonstrated the disc, containing the collection of the Russian painter I.K. Aivasovskiy, just now the museum is working on the DB of the collection of Russian icons. Unfortunately, there are some problems with WORM standards, but this technology can be rather useful for internal tasks in the museum.

CD-ROM (Compact Disk-Read Only Memory) is essentially a computer storage media, holding up to 600 Mb of data on a 12 cm disc. The record can be made only in industrial conditions. In our country CD-ROM is still an exotic product. Taking into account the large storage capacity of CD-ROM and its simplicity, we consider it as having prospects in museums.

CD-I (CD-Interactive) will hold up to 650 Mb on a 12 cm disc and can handle data from a variety of the source media (text, graphic, video, audio). It works under the control of the computer program also stored on the disc. We do not use CD-I in our country now, but we hope to use it in the near future.

RWM (Read Write Many) permits to the execution of multiple records of colour digitised images. Such discs combine the advantage of magnetic discs (opportunity of multiple record) and optical discs (huge capacity) and could be an ideal carrier for information on the museum collections.

If we compare magnetic and optical discs, we will find out , that the doubtless advantage of the first is the opportunity to rewrite data, as well as small access times; the advantages of the optical discs are high density of record, large service life and high safety in operation.

The conversion program, now in progress, gives us the hope, that in the near future optical and video discs and the instruments for their use MADE IN RUSSIA will be available for the museum MM programs.

A very important item to discuss is the technology involved in inputting images into the computer storage media.

It is possible to use a videocamera along with some of the special boards to digitise the images (TARGA, ATVista, Screen-Machine Frame Graber or others). The quality of the images is suitable to create the museum DB and to present them on the display, but it does not comply with the requirements for publishing.

For the recording of the images to publishing standards, we should apply the use of scanners. There are some examples intended for creating images of very high quality. They are A4 desktop flatbed colour scanner with resolution 600 dpi, 35 slide scanner with 4,000 dpi; 45 slide scanner with 5,080 dpi.

The cameras might be a very good means to input the images into computer storage, but it is an expensive option for the museum nowadays.

We do not think, that new technology will completely replace the conventional ones. For example, that computer films an compete with videofilms; each of them has some special tasks, features, advantages and area of application. For example, videotape can be made in " home conditions ", but you will waste a lot of time searching for separate images you

may need; it is impossible to realise the interactive mode and the videotape lifetime is limited.

The search of images on videodiscs takes some seconds, with the help of the computer the user can work in interactive mode, the videodiscs lifetime is practically unlimited. But videodiscs can only be made in the industrial conditions and the quality of images is not always good enough. Compared with videodiscs, CD-ROM has the essential quality advantage.

Obviously, in each particular case the analysis of the concrete situation should be conducted before the decision made concerning what kind of technology should be applied.

For making the Image DB the museum needs some kind of the graphic station. Two types of the proposals can be discussed:

- the IBM-compatible computer, equipped with a special board (TARGA, ATVista etc)
- the computers of a class Macintosh, Sun, Next or similar class.

The graphic station is rather expensive, but it is impossible to make an omelet without breaking eggs. So, some the large museums in our country can purchase and set such equipment.

The analysis of mentioned variants leaves far for a framework of the article and is a subject of independent research.