

THE APPLICATION OF THE MULTIMEDIA TECHNIQUE IN THE ELECTRONIC MAP

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[abstract]: In this paper, the multimedia technique is briefly introduced, and feasibility and necessity of the application of the multimedia technique in the electronic map are discussed on the base of the analysis of the development of the present electronic map. Then, the range and signification of the application of the multimedia technique in the electronic map are researched. Finally, a basic structure of the developing multimedia electronic map is given.

[Keywords]: Multimedia technique; Electronic map; Multimedia map.

1. Introduction .

As a new kind of the modern map based on the support of software and hardware of the computer, electronic map is a new sort of the modern map that is displayed on the screen with the help of the computer power transmitting information .At present, the electronic map have been largely developed, from the dynamic display of single map to the emergence of the electronic atlas, electronic map is gradually becoming its characteristics, namely:

(1). The electronic map is able to instantly and dynamically express information of the geographic objects, it is a new kind of modern method of transmitting spacial information.

(2). The data of the electronic map comes from the database, therefore, it is very convenient to input or output information.

(3). With the help of the higher resolving power and colourful display technique, the graph of the electronic map is more clear, beautiful and nimble.

In a word, the electronic map is regarded as an important aspect of the modern cartography development, its role in the social economy and human living will become more and more important with the development and popularization of the computer.

However, as a new kind of the modern map, electronic map is not perfect yet. In author's opinions, it is still to be improved in the following aspects.

(1). The present electronic map is only of graph or image, not of sound, thus, it looks uninteresting. As we know, sound is an important media of human learning and feeling the objective things, and map without sound is as human of short sight, we can't appreciate colourful universe. For example, if television is not of voice, its entertainment efficiency is sure to be largely reduced. Similarly, if the electronic map is short of sound, it seems to be tedious and tiresome for us. This characteristic greatly reduces its efficiency of the transmitting information.

(2). Although the electronic map is able to instantly and dynamically display graph or image, in fact, this dynamic technique is only limited to rolling movement or whole elements shifting depending on two-dimensional plain. The real animate technique should be described that one object moves in all directions and in the multi-dimensional space. This problem is still to be solved.

(3). The present electronic map is actually displayed on the screen in the form of the two-dimensional . Thus, even if some stereoscopic map can be produced, for

example, three-dimensional geographic map etc. But in fact, only one side on the screen can be viewed, the states of the opposite side can not be watched. In the field of the computer graphy, many scholars always try to find some methods to solve the problems on the hiding line or area. But this has little help on the mobile display of the three-dimensional objects. If we can search for a method that three-dimensional figure can be displayed on the screen, then those problems can be effectively solved.

All those problems can't be solved, main reason is that present electronic map only transmits in the form of the single media. If we can search for some methods and try to put text, graph or image, sound and animate figure together by the aid of the computer software and hardware technique, then the functions of the electronic map can be largely improved, and it can play a more important role in the social economy and human living. The multimedia is one of the best effective techniques in solving those problems. In this paper, the problems on the application of the multimedia technique in the electronic map have been discussed.

2. A brief introduction of the multimedia map.

2.1. The basic meaning of the multimedia technique.

Human being learn and feel the objective things around themselves by the aid of the five sense organs. The five sense organs have the same role during the process of human being learning and feeling objective things. The allusion story of 'blindmen touch the elephant' is full of satirical tone, on the other hand, it shows that the captured information might have certain lopsided views and limitation lacking one among of the five ways of human being learning and feeling objective things. For example, in an exhibiting meeting, only depending on the viewing, which lacking interchange of the language, the whole atmosphere of the meeting is certain of arduous, and a large amount of information would not be transmitted or obtained. On the contrary, if there is an interchange of language, the whole atmosphere of the meeting is more pleasing, and colourful exhibition can be expressed. Such kinds of many examples show that human learning and feeling objective things is not perfect only depending on the transmitting of single media. Under this circumstance, the concept of multimedia has been proposed. In a broad sense, the multimedia can be described as that it can handle text, graph or image, sound and animate at the same time. Correspondingly, the computer multimedia might be described as that it can synthetically handle various information coming from different media, and put text, graph image, video, colour and animate technique together to form an organic system with humanizational operating interface.

2.2. The basic meaning of the multimedia map.

As a new kind of modern map, the electronic map will play more and more important role in the social economy and human life with the development and popularization of the computer technology. But the present electronic map is only of figure or image, text, and not of sound, it lacks of three-dimensional animate and roaming technology etc. All of these conditions limit the development and popularization of the electronic map. The arising of the multimedia technology supply a new vitality for the study and application of the cartography. The application of the multimedia technology in the field of cartography will make it possible that the cartography steps into a new era, the multimedia cartography. The multimedia map is a new conception. In this paper, a descriptive definition can be given, and authors expect that some suggestions can be offered from colleges and make it become more and more perfect. The multimedia map can be described that it can synthetically handle various media information, for example, text, graph or image, sound, colour, and animate, with the help of the function that the computer technology can handle various media information on the basis of the soft-ware and

hard-ware of the computer, and put them together to constructe a organtic system.

3. The feasibility and necessity of the application of the multimedia technique in the electronic map.

In order to discuss this issue, the basic conditions of the realizing multimedia technique should be analysed. Since that five multimedia techniques demanded the conditions are usually similar, we can discuss the issue merely taking the MPC as an example. In the multimedia extension version 1.0, the basic conditions of the software and hardware might be described as following:

CPU : 80386 or above
RAM with 4MB
the VGA display screen
the floppy disk with 1.2 MB or 1.4 MB
the hard disk above 200
CD-ROM
sound card and MIDI

the windows operating system with the multimedia extension version 1.0

These demanded conditions of the hardware are easy to be satisfied according to the present conditions of the computer technique. In fact, the present PC largely have satisfied with these conditions. Therefore, on the base of the conditions of the hardware, it is completely possible to apply the multimedia technique to the electronic map. In order to develop multimedia electronic map, we can extend the audio card and windows operating system with the multimedia extension version 1.0, and on the base of the present PC, the development of the multimedia electronic map should be carried out.

As for the issue on the necessity of the application of the multimedia technique in the electronic map, we have actually discussed in the introduction. In brief, sound and vision are the main medias of human learning and feeling objective things. The objective things in the world can be promptly and better learned and felt by the aid of the united expression of sound and image. With the popularization of the computer technique and the development of the science and technology, the image information transmitted in the single media of text or graph can't satisfy the demand on the electronic map with human being. Therefore, the combination of the electronic map and the multimedia technique is more necessary. With the help of the computer technique, we can organically combine all single medias and put text, graph or image, sound and animate technique together to process and transmute by the aid of the computer. As the result, the information that is transmitted by the electronic map would be better and audio-visually learned or felt. At the same time, it would usher in a new and extensive future for the application of the electronic map.

4. The application discussion of the multimedia technique in the electronic map.

The multimedia technique has been primarily applied in the fields of entertainment, for example, playing electronic game etc. At present, its application has being come into the professional fields, for example, multimedia technique has been applied to the highway management and education and so forth.

We have accepted the fact that map is one of the best ways to transmit objective information. One map can explain one thousand words, which is the best summary of that fact. As the modern kind of map, electronic map has been applied in many fields and various departments. If we try to enable the image of the electronic map

moving and accompany relevant sound, then the application of the electronic map will be sure to leap a new stage.

The multimedia technique can be applied in various aspects of the electronic map in theory, only a few examples have been given to discuss this issue in this paper.

4.1 The multimedia technique application in the fields of the topographic map and the geographic map

The topographic maps and the geographic maps are the main kinds of maps that express the undulation of surface and the distribution of objective things. In the traditional topographic maps, usually we express the undulation of surface by the aid of contour, it is the best way of expressing the earth's surface at present. But its most weakness is that it lacks in stereoscopic sense. Usually you can't view the undulation of surface unless you are the professional. In order to solve this problem, many scholars have researched three-dimensional figure and try to express the undulation of surface by the aid of the converting the line-symbol on the two-dimensional plane. But in fact only one side of the three-dimensional can be viewed, the opposite features largely has been hidden. With the help of the multimedia technique, the topographic map or the landscape map might be expressed in the form of real three-dimensional, and make it possible that objects roll in all directions. In this way, the opposite features seems to be hidden outwardly, but they will be viewed once they turn to front, this is the real stereoscopic map. If we can make it possible that the blue water of the valley become moving and relevant sound is accompanied, this kind of the electronic map might become the real portrayal of natural world, and it is sure to play a more important role in the human activity.

4.2 The multimedia technique application in the fields of the urban map

The urban map is a kind of the thematic map that develops pretty fast in recent years. With the development of the urban economy, the content, subject and sort of the urban map have been improved. For example, the urban commercial economical map, urban environmental map and urban land price map etc have been produced. At present, the urban maps are mainly printed on the paper and distributed in the form of volume or single page. With the development of the science and technology and the improvement of the human quality, the urban electronic map gradually become more and more important. Therefore, it is inevitable that the multimedia technique apply to the urban map.

The city station and wharf are the most important place where many people are flowing, usually majority travelers reach in city, they at first have to buy a urban communication map of the city, so that they can determine how to reach the certain place. If we can combine the urban map with the multimedia technique and develop the urban introduction system in which the general conditions of the city, including the urban communication, the hotel distribution, the entertaining areas and commerce areas can be expressed by the aid of the multimedia electronic map, and then the service of introduction and consultation can be established in station, wharf or the center of the city. In this way, the information of the city can be instantly expressed on the large screen. With the help of it, the travelers not only know how to reach the determined place, but also know where the position is. For example, somebody wants to search for one hotel, he can give an order, then the names of different rank guesthouses, hotels, and restaurants can be listed. Once the traveler makes a choice, the position, traffic line and the telephone number of the chosen hotel can be displayed on the screen while the sound introduction about the hotel can be accompanied. Apparently this kind of the urban introduction system is more convenient and effective than any kinds of urban traffic maps. Its most important significance is that it develops a new applied field for the urban information system and the urban electronic map.

Similarly, if we can apply the multimedia technique to the urban information system of the management and decisiveness, thus the government officials can learn the information about economy, environment, communication, trade and commerce of the city as watching television, and make it possible to realize the modernization and systematization of the city management.

4.3 The multimedia technique application in the filed of traveling map

With the improvement of the human living, the tourism has been developed and colourful touring maps, for example, scenic area, traveling lines, selling and historic cultural relics etc have coming into the human living. In recent years, some developed countries have researched traveling electronic maps. Although the traditional traveling maps will still play an more important role in the field of the traveling map, with the development of the science and technology, it is inevitable that the multimedia technique is applied to the traveling map. For the sake of discussing this issue, we may give an example. In order to familiarize with the touring state of Beijing, the traveling information management system of Beijing might be established in which all the state about tourism of Beijing (for example, traveling department, scenic spots, touring lines, hotels, traffic lines, selling, natural conditions and social customs etc) can be input in computer by the aid of the ways of digitizing, scanning and recording, and then can be managed and expressed in the form of graph, text, video and animate figure on the base of the multimedia technique. When you want to learn the touring state of Beijing, you can give a relevant order, the touring map of Beijing can be immediately displayed on the screen, and accompany the relevant sound introduction at the same time. When you want to further learn the touring state of Kuanming Lake, give a relevant order, then the touring scenic map of Kuanming Lake is immediately displayed on the screen and certainly accompany the text and sound introduction. Clearly, this kind of touring information management system in which the graph, text, colour, sound and animate figure have been put together is sure to become an advanced way of the touring department for managing and developing tourism.

In addition, we can establish the electronic map of scenery guide and consulting service of traveling can be set at the entrance to the scenery area. In this way, all the scenic spots can be displayed on the screen and the touring line can be animately displayed as well. This kind of touring electronic map is more joyful than any traditional traveling maps. Therefore, it is sure to become an important aspect of the tourism developing.

The application of the multimedia technique in the electronic map includes many fields. It is sure to gradually come into popularization with the development and popularization of the computer technique.

5. The structure of the multimedia cartographic system.

The application of the multimedia technology in the cartography has the widely area and perspective. In this paper, the research and the development of the multimedia cartography can be divided into the manufacture and the application based on the multimedia cartography. The manufacture of the multimedia cartography mainly study the theory and the technology of the mapping on the basis of the multimedia technology, and it is the further development of the computer cartography. The application of the multimedia mainly study the applicational method and its technology of the cartography in the work and daily life. Thus, the multimedia cartographic system can be given (view figure 1.).

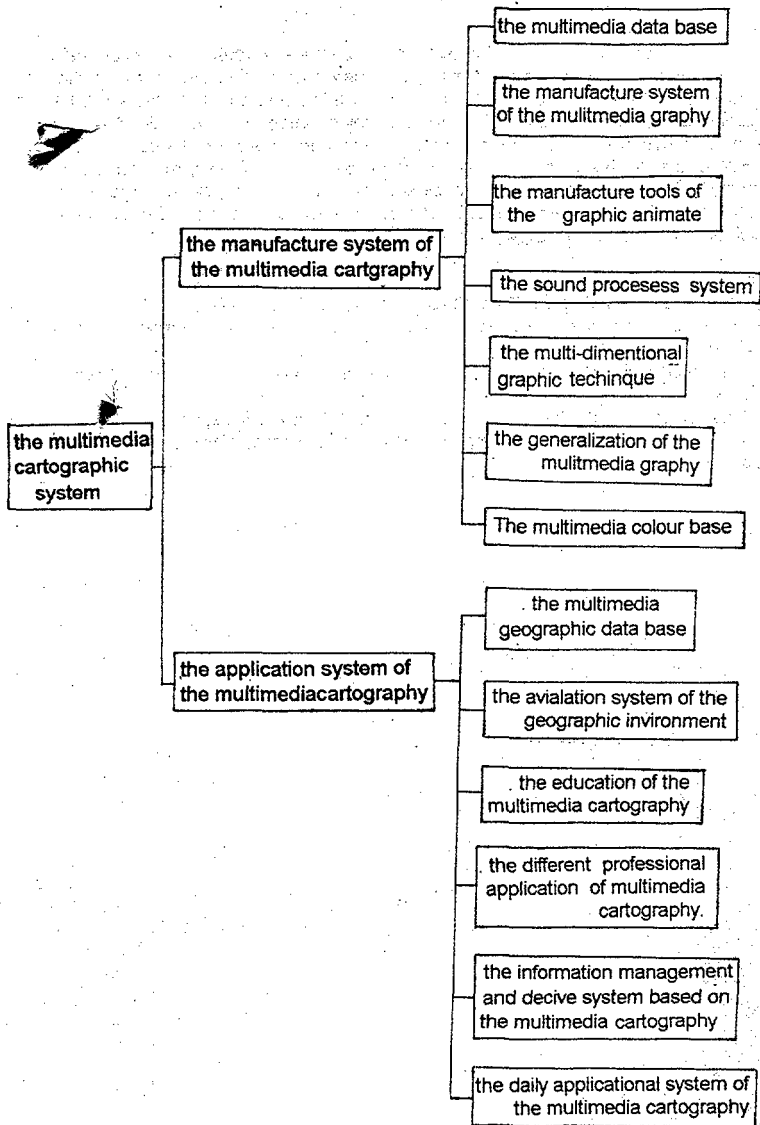


figure 1. the structure of the multimedia cartography

6. Conclusion

The multimedia technique put the text ,graph or image,sound,colour and animate figure together to merge into an organic, and usher new fields and vasts for the application of the electronic map.Many scholars think that the multimedia will be regarded as the high and new technique, and play an important role in all fields from the end of this centure to the beginning of next centure.Author thinks that it inevitable to apply the multimedia technique in the fields of geographic information system(GIS).The application of the multimedia technique in the electronic map not only proposes new problems on GIS,but also provides new methods for GIS and developsvast vistas for the application of GIS.

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