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To cite this article: Hu Deqiang 2018 *IOP Conf. Ser.: Mater. Sci. Eng.* **317** 012049

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# Research on Visualization Design Method in the Field of New Media Software Engineering

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**Abstract.** In the new period of increasingly developed science and technology, with the increasingly fierce competition in the market and the increasing demand of the masses, new design and application methods have emerged in the field of new media software engineering, that is, the visualization design method. Applying the visualization design method to the field of new media software engineering can not only improve the actual operation efficiency of new media software engineering but more importantly the quality of software development can be enhanced by means of certain media of communication and transformation; on this basis, the progress and development of new media software engineering in China are also continuously promoted. Therefore, the application of visualization design method in the field of new media software engineering is analysed concretely in this article from the perspective of the overview of visualization design methods and on the basis of systematic analysis of the basic technology.

## 1. Introduction

Under the guidance of scientific outlook (thinking) on development, the development of our country is increasingly moving towards the bond of direction of science and technology; we often say that science and technology are the primary productive forces, and productive forces determine the relation of production. That is to say, in the context of socialist modernization, great importance ought to be attached to science and technology, and only in this way can the effect of "half the work with double results" be achieved in the right direction. In recent years, the visualization design methods are gradually applied to various trades and professions with great promoting efficacy, especially in the field of new media software engineering. Therefore, in the development process, the positive role of visualization technology should be paid full attention to and it should be applied and practiced scientifically and reasonably.

## 2. An overview of visualization design methods

To better explore the relation between the field of new media software engineering and visualization design methods, the first thing to do is have a clear grasp of the related concepts of visualization design methods. Knowing what a special method that visualization design method is can impose a huge influence on the software development of new media, etc.

### 2.1. The meaning of visualization design method

Visualization is a technical method, in simple terms, understanding of it can start from the literal internal basic concepts. That is, present the data, information and materials analyzed by computer to users in need in the form of images, helping the professional technical personnel complete some other observations and operations. Therefore, in certain sense, visualization is not only a technical method



that help people complete their work, but also one that promote their orderly work, and it plays an irreplaceable positive role in the field of computer information.

### *2.2. Conceptual analysis of visualization design methods*

Visualization method refers to the fact that after the initial data is converted to visualization elements, complex resource content is indicated in vivid and intuitionistic manifestation so that the user understanding can be deepened. Normally there are scatter diagram, histogram, time axis and tree graph, etc [1].

Visualization design method is a technical assistance involving various fields; to be more specific, it concerns various fields including computer graphics, image processing, computer vision, CAD, etc.; in actual work, it is a comprehensive technical means which can not only provide accurate basis for the analysis of data representation and data processing but it can influence the analysis of a series of important decisions to the largest extent. Visualization technology was first used in computational science, and formed an important branch of visualization technology -- visualization of scientific computing. Visualization in scientific computing can transform scientific data, including measurements, images, or digital information involved in calculations into physical phenomenon or physical quantity that is represented by graphic information and changes with time and space in front of the researchers and enable them to observe, simulate and calculate. Visualization in scientific computing was discovered and formally put forward in 1987, since its publication, it has been widely used and developed in various fields of engineering and computation.

### *2.3. Classification of visualization design methods*

There are many ways to implement visualization, which need to be chosen according to different types of tasks. Firstly, the visualization methods can be preliminarily screened according to whether the original data is consecutive or not. For example, scatter diagrams are suitable for displaying discrete data such as resource topics, and time axes are suitable for displaying continuous data like the time of resource release. In the next place, as the key of visualization is mapping operation, controllable or uncontrollable factors in mapping often fail to achieve complete conversion from data to visualization elements. Therefore, information loss is bound to occur. The loss of information can be classified into unintentional and intentional loss. Unintentional information loss occurs due to the technical limitations of the visualization system and the cognitive limitations of the users and intentional information loss is the information selection conducted for the overall structure of resources rather than specific details. There are two typical categories in distinguishing visualization methods: direct conversion method and abstract conversion method.

*2.3.1. Direct conversion method in visualization design methods.* Direct conversion methods only involve simple data processing, and the visualization results presented to users are closer to the original features of data. In the case of unintentional loss of information, linear mapping of discrete data is the most direct method of conversion. For instance, in the design and development of new media software, collection and arrangement of information on the consumption types and consumption habits of different groups before developing ordering software for users; the information is relatively clear and easy to organize, and direct conversion method can be adopted to process the visualization computer image so as to complete the follow-up design and development work.

*2.3.2. Abstract conversion method in visualization design method.* Data obtained after abstract conversion tend to be abstract compared to the initial data after multi-link and multi-level processing. This method emphasizes the overall readability of data, usually requiring sacrificing individual data in exchange for an understanding of the overall data set. That is to say, in this case of information collection, factors for information to require technology integration increase; in the case of intentional information loss, implementation of nonlinear mapping on continuous data is the most abstract conversion method. Abstract conversion reduces the trivial of data compared with direct conversion and improves the readability. For example, in the development of everyday software such as the development and utilization of online supermarket APP, in the process of its design, it is necessary to

conduct detailed distinguished statistics between offline groups and online groups; in this case, if a simple direct conversion method is adopted, systematic analysis on specific situation cannot be conducted, therefore, the existence and development of abstract conversion method is very necessary.

#### *2.4. Demand analysis of new media engineering field on visualization design methods*

With the development of digital technology, digital resources grow exponentially; faced with large-scale, rich-content, various and multilingual resources, how to effectively obtain the required resources has become a difficult problem. At present, most of the information service institutions tend to conduct resource navigation and display via text-based user interface, but this traditional resource organization and presentation method cannot meet the needs of users for rapid positioning. Users need an intuitive and vivid interface with certain opinions, huge digital resources can be fully displayed effectively navigated in limited interface space. The application of information visualization is a worthwhile solution, and it has made some progress.

### **3. Significance analysis of visualization design method in the field of new media software engineering**

In recent years, with the continuous development and progress of the Internet, new media gradually appear in people's vision [2]. What is the new media? What is the relationship between new media and the traditional old media? In fact, in simple terms, new media means the new media form under the support of advanced science and technology, and it can be said that new media for disseminating information contributes to the emergence of new media, for example Digital TV and computers, etc. in our homes, there is a big difference between new media and the traditional media in terms of propagation medium. In this background, in the software development, it is very necessary to have advanced science and technology as support, as a technical means with great practicability and compatibility, visualization design method plays an important role in the development and design of specific new media software. It not only plays a role in technical assistance in the software development by professional staff but provides an intuitive and understandable data analysis result, promoting the development schedule and design efficiency of the software so as to further promote the progress and development of new media software engineering in China.

### **4. Capacity utilization assessment of visualization design method in the field of new media software engineering**

In an era of APP popularity, various application software come out in an unending flow, in specific new media software development, scientific and rational application of advanced visualization design methods is positive to improvement of the practicability and development rationality of the software. From this point of view, there is a clear understanding of the systematic evaluation of visual design methods in the application of new media software engineering capabilities, and this plays an important role in grasping the advantages and significance of the visualization design methods.

Specifically, the design method of visualization is accompanied with the emergence of graphical user interface, in this process, the proportion of its use in specific software system is increasingly larger, some can be more than 70 percent; the reason for this problem is that the generation of graphical interface elements is very inconvenient and time consuming; in this case, visualization design methods have been applied to the software development of new media. Its specific ability application is mainly embodied in the actual software design and development process: use visualization development tools and some operating interface elements, such as menu bar, dialog box, list box, etc. on the graphical user interface provided and automatically generate application software with visualization development tool system. In fact, the automatically generated APP here is actually driven by a specific event, it will use the basic functions to conduct data analysis by computer and forms of images or videos converted from function analysis so that engineering designers can intuitively grasp the designed software and improve the quality and level of the software.

## **5. Application analysis of visualization design method in the field of new media software engineering**

In the previous section, the design method of visualization is studied and discussed systematically, in this process, not only do we have a more intuitive and clear understanding of visualization design methods, but we also have a new understanding of software design and development in the new media environment [3]. To apply theoretical knowledge to real life, an overall grasp of the application of visualization design methods in the field of new media software engineering is needed, and only by this can promoting function of advanced technology means be given full play in the new period of continuous development of science and technology; the visualization design method is a good manifestation.

### *5.1. Application research based on visualization design methods of information interaction*

Under the support of visualization design methods, software users and software designers can communicate before and after design, the communication here is not a real face-to-face communication, but an exchange of information usage feedback. Before the software development, software designers should make a systematic investigation and research on the practicability and marketability of their software, in this process, the "first communication" between the two is realized, that is, the user's requirements survey results are presented to the software designers in a visualization form, and after the completion of software development, users can give usage feedback to the designers in APP internal program with visualization tools in real use, and this is "the second communication" between the two.

### *5.2. Application research of visualization design methods based on image processing*

As we all know, with the technical support of visualization and in the process of software development, software engineers can use visualization development software to view the needed data in visualization forms, such as images. In this case, the software engineers can grasp the development information accurately, which is helpful to improve the quality and level of the development.

### *5.3. Application research of visualization design methods based on software data information management*

In the process of specific software design and development, data information management in software is also very important; in the actual development process, effective management of the data can be actualized with visualization design methods and management of visualization can be realized and presented in images with its functional advantages given full play, which is conducive to further monitoring on software.

## **6. Conclusion**

In the new era of increasingly developed science and technology, especially in the new media era, the extensive application of advanced visualization technology has positive significance for promoting the development and utilization of software in our country. Therefore, we should attach great importance to the visualization technical means and apply them scientifically and rationally to promote the progress and development of software design and development in the new media era in China.

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