



1. Brief introduction

Shanghai Theatre Academy is an advanced art institution dedicated to the education of theatre professionals in China. It has experienced a history of 60 years on professional education since the first president Mr. Xiong Foxi, and has formed the comprehensive art education system, including literature of film and TV, directing, acting, stage design, lighting, costume, make-up design, TV art, dancing, traditional opera, and creative studies.

In order to promote the further development of Shanghai Theatre Academy, the academy has proposed the objectives to establish an advanced art institution which is one the best in China and well-known in the world. The academy takes the theatre and traditional opera as the basis and puts the emphasis on stage practices to develop the university education in the coordination of multiple disciplines while inputting certain high-tech elements.

2. Virtual Simulation Laboratory

In the response to strategy of Shanghai government to promote the development of Shanghai through science and education, the Virtual Simulation Laboratory for Multimedia Performance was established in December 2004 by Shanghai Theatre Academy, with the emphasis on the integration of technology and art based on the traditional educational advantages of the academy. It is the first key laboratory that combines technology and art in Shanghai, approved by the Shanghai Municipal Science Commission.

The laboratory covers an area of 700m², including the performance creation center, the art production center, the software R&D center, the motion capture center, the blue screen real-time imaging center, the 3D digital scanning studio, with the integrated functions of production, study and research. Meanwhile, it is equipped with advanced hardware, such as the real-time rendering server, the advanced graphic workstation, the large storage and capacity memory server, the 3D printer, the rendering farm, the surrounding screen, the motion capture system, the 3D scanning system, which provide a solid foundation for the high-end technology R&D and project application.

The laboratory also has a comprehensive team for scientific research and technical application, with many good professionals on virtual reality interactive technology. It also invited the famous experts on virtual reality interaction from China and other countries as the long-term consultants and technical supervisors. Such a capable work team is able to provide better technical support to the World Expo 2010.

3. Advantages

1) The Shanghai Theatre Academy has the resource of artistic creation, which can provide consultation service on creative design.

The academy has a professional team for artistic creation and creative design, such as



the “Shanghai Theatre Academy team” who have come back from the 2008 Beijing Olympic Games with success, and the “theme performance team” that attended the design of theme pavilions for the Shanghai Expo together with Shanghai Media Group. As a recommended information service provider in Shanghai 2010 World Expo, we can make good use of these human resources to support the participants on the design and planning of the virtual exhibition halls, making it more brilliant and creative.

2) The laboratory has a creativity technical work team in the field of virtual reality interaction, and has independently developed the virtual reality interactive system with the intellectual property rights. Besides, it has abundant experiences on the projects of 3D modeling of scenes and characters, as well as the virtual reality interactive design, becoming a strong technical support for the exhibition participants.

3) Shanghai Theatre Academy is a nation-owned institution with full government budget allocation. The objective of participating in the Shanghai 2010 World Expo is to join the Expo and make more contribution for it, while improving the laboratory’s capacity on scientific research and technology application by undertaking the projects in the Expo. Therefore, the laboratory can participate in the projects with lower cost, which demonstrates the spirit of “holding the Expo economically”.

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5. Cases

For these years, the laboratory has been working on many national projects, and has accumulated rich experiences on virtual reality interactive demonstration. Some successful cases are listed below:

1) Virtual reality interactive project “China Pavilion in Expo Site”



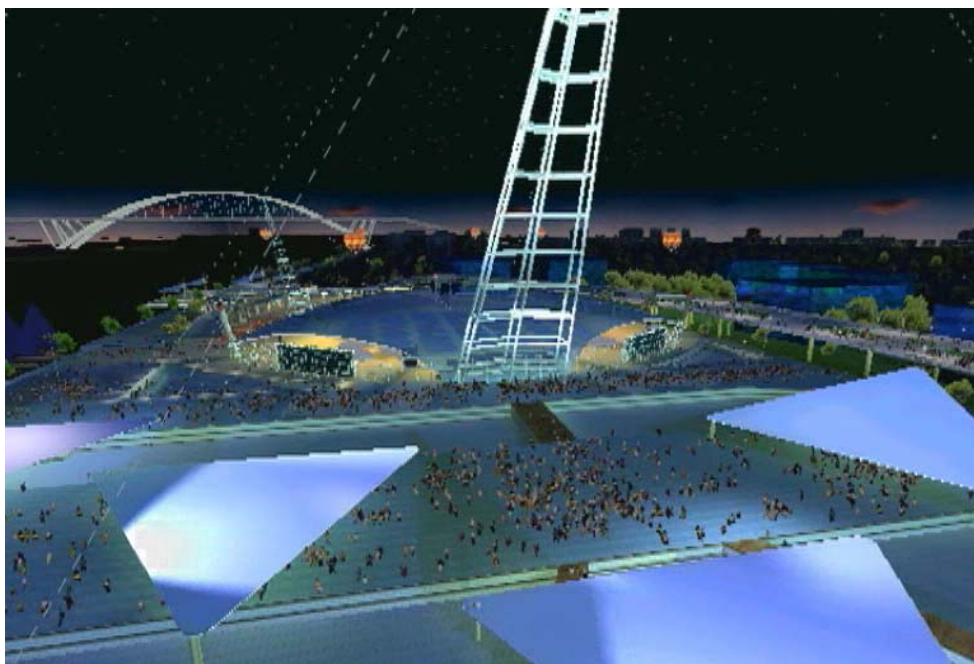
The China Pavilion is located in the center of the Expo Site, at the cross of the South-North and East-West axis. It has the important task to show the hospitality and the country style by the Huangpu River.

The project is the 3D virtual interactive demonstration of the China Pavilion, and fully shows the design structure of the pavilion, the layout of the main facilities, the surrounding environment and traffic conditions, so as to give people a new and real experience of the building in multiple perspectives and views. Moreover, it provides the visual technology to support the decision-makers on examining the auxiliary design.

2) Virtual demonstration of the Jiangnan Square

The Jiangnan Square is an important place for celebrations and for the watching of the opening performance. It is a part of the huge landscape covering the west, the river and east part of Huangpu River, acting as a beautiful stage background. It is also a show place for large-scale outdoor concerts and fashion shows, while serving the important function of directing the visitors to go across the Huangpu River through the elevated walkway, the dock and the bridge.

By using the 3D virtual technology, we simulate the Jiangnan Square evening show time during the Expo, including the stage design, lighting effect, rehearsals and the monitoring system. The user can watch the scene in many different perspectives of perfect view, such as the “Harmony Tower” in the Jiangnan Square, the opposite side of the Huangpu River and the bridge. It shows the feasibility of the design and stage functions of the square, as well as the following large activities through the simulation rehearsal, so as to hold the overall layout of the project scientifically and provide a visual platform for decision-making.



3) Virtual interactive design for the “aqua-stage in the Shanghai 2010 World Expo”

This project is a scientific research program, and the aqua-stage for the Shanghai 2010 World Expo is a notional design by the creative team from Shanghai Theatre Academy. The project simulates the scene of two sides of the Huangpu River which is 1.2 kilometres in the length, and creates a performance stage in the middle of the Huangpu River. The virtual interaction and the design has received good appraisal from the leaders and experts.

4) Virtual demonstration of the “Yangshan deep-water port”

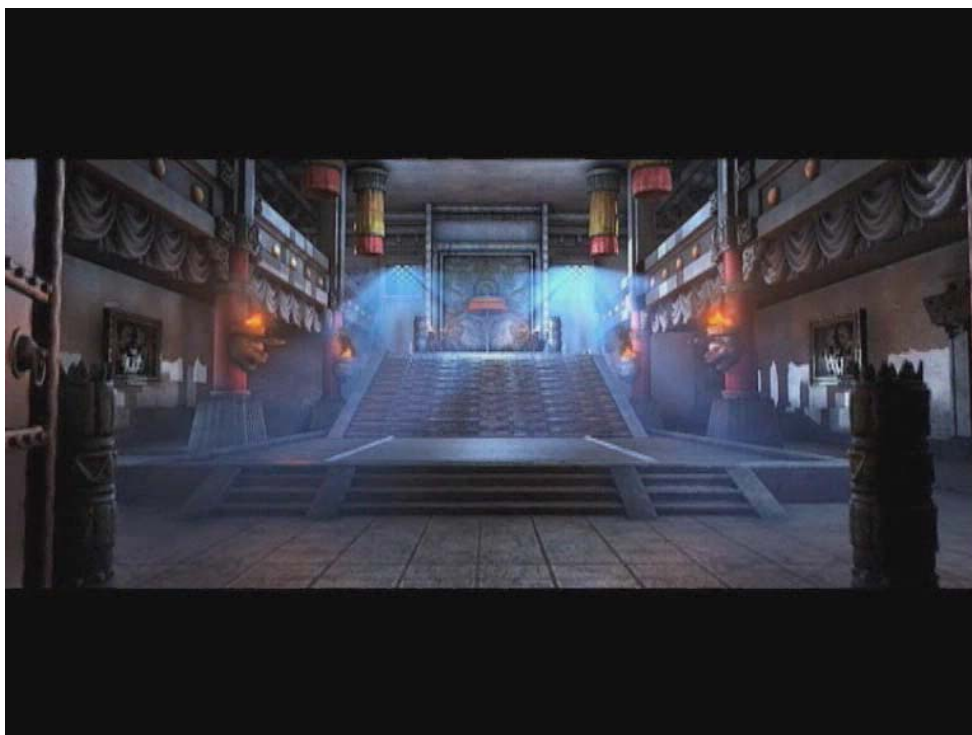
In January 2006, the laboratory produced a virtual interactive demonstration system of the Yangshan deep-water port in the “Yangshan Deep Water Spirit Exhibition” held in the



Shanghai Museum. The system can be operated according to the needs of the user by clicking the keyboard and mouse to see the whole project in different angles. The system integrated the angles of looking down, helicopters, cars, ships, and other methods, and covered the introduction of many places of cultural interests.



5) "Prince of Himalaya"



The stage drama "Prince of Himalaya", co-produced by the Tibet Drama Troupe and Shanghai Theater Academy, is a performance for the celebration of the 100-year history of Chinese dramas. Based on the classic play of Shakespeare - "Hamlet", the drama sets the background as the west plateau in ancient times and shows a splendid history story with profound Tibetan history. The virtual simulation laboratory is responsible for producing the multimedia imaging in the drama, presenting the scenes of the snow-covered west plateau and the horses galloping forward to a small stage. The



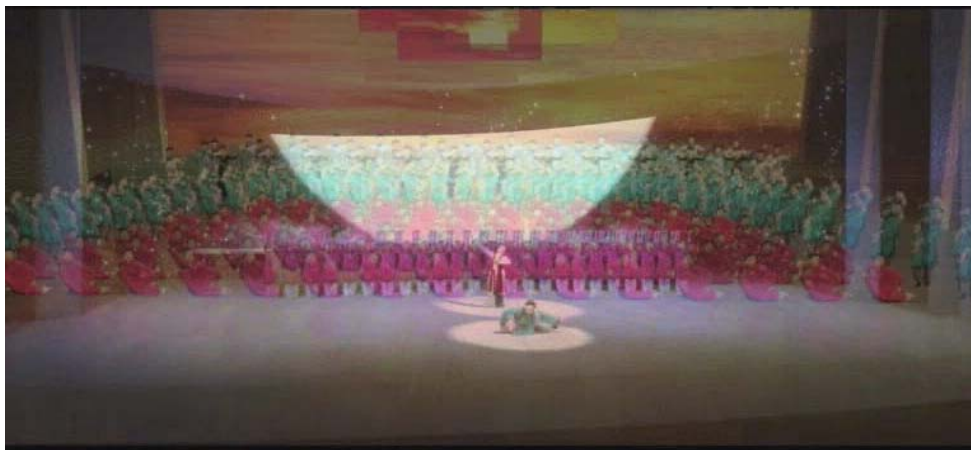
audience fully enjoyed the feeling of real scenes in the drama, and gave applause to it.

6) Virtual Rehearsal of “Tribute to Harmony”



The project is made for the virtual rehearsal of the evening performance “Tribute to Harmony” for the fifth anniversary of the Shanghai Cooperation Organization in the Shanghai Grand Theater on June 15, 2006. The project allows more than 10 countries to make virtual rehearsal of "Tribute to Harmony" through the Internet. This national project is participated by nine countries and two cities - Beijing and Shanghai. The 10 different versions of the digital "Tribute to Harmony" has won the valuable time for the formal rehearsal and stage setup, improving the efficiency and saving a large budget.

7) “The Rising Sun Never Setting on the Grassland”



“The Rising Sun Never Setting on the Grassland” is the evening performance to celebrate the 60 anniversary of the establishment of the Inner Mongolia Autonomous Region, and the laboratory made the virtual interactive multimedia production for it.

8) “2007 FIFA Women’s World Cup”

The virtual simulation of the opening ceremony of 2007 FIFA Women’s World Cup made by the laboratory has saved both time and cost for the creation group of the event.



6. Social appraisal

In August 2007, Mr. Xi Jinping, Party Secretary of Shanghai at that time, went to the laboratory for field research. After the introduction by academy leaders and the laboratory staff, he confirmed the work of the laboratory, and pointed out, “To develop the virtual simulation technology is a perfect combination of art and technology, and also a major breakthrough in the field of art.”





7. Awards

- 1) The laboratory won the second round of Innovation Award by Ministry of Culture, China. 2006
- 2) "Music and Image" was awarded the Shanghai International Science & Art Innovation Award, 2007
- 3) "Civilization-Totem" was awarded Shanghai International Science & Art Innovation Award, 2008