System Integration for Modern Intelligent Audio and Video Conferencing

Qingming Li

Woyisheng Technology (Beijing) Co., LTD, Beijing, China.

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*Corresponding author: Qingming Li, Woyisheng Technology (Beijing) Co., LTD, Beijing, China.

Abstract

In recent years, with the development of science and technology in China, modern intelligent conferences have been widely used in people's work and life. Select highly intelligent, high-tech products, establish an open architecture of the system, and take standardization and modularization as the design requirements, which are not only convenient for the management and maintenance of the system, but also can maintain the advanced nature of the system for a long time. We will closely focus on the implementation of the above content, in line with the three principles of advanced, reliable stability, economic rationality, in strict accordance with the technical indicators and functional requirements, in accordance with the relevant national standards, for the modern intelligent video conference system composition research and analysis. It is hoped that this research can help people further understand the advanced aspects and technical composition of modern intelligent video conferencing, and promote the continuous development of intelligent technology in China.

Keywords

Intelligence, audio and video conferencing, system integration

Introduction

As an important way for people to live and work, conferences can not only help people solve problems and communicate, but also disseminate and exchange information. And the modern multimedia conference is proposed, through modern information exchange technology, to enable the conference [1]. From the original simple audio conference, it has developed into a multimedia conference system integrating audio, video, intelligent central control, human-computer interaction and other technologies.

With the advent of the network information age, every conference has higher and higher requirements for the equipment it uses. "Practical, beautiful and perfect" conference equipment has become people's favored equipment. Digital conferencing systems replace traditional meeting models with revolutionary digital technologies. With its digital performance and easy-to-operate software control, it meets all the management needs of modern meetings.

TAIDEN digital conference systems include audio conferencing systems, voting systems, IC card check-in systems, and video tracking systems. Well-equipped management software, which can not only simplify the venue equipment, but also expand the functions at will, is a set of conference equipment integrating multiple functions, and also saves engineering costs.

It uses simple system processing and digital signal transmission to manage small meetings or large multilingual international meetings with thousands of people with ease. It not only has the characteristics of multi-function, high-fidelity sound quality, data confidentiality, reliable transmission, etc., but also can fully control the entire conference process. With access to the control PC, the operator can freely monitor the meeting process with the help of the corresponding software modules, including: basic microphone management, voting, IC card sign-in, data management and data display, and simultaneous interpretation in 12 languages [2].

Even when there is no access to the control computer, it is still a complete digital conference system. Each unit has a
microphone with switch, built-in speakers, and speak indicator. Simply connect the units one by one in series, equipped with the corresponding operating software, and can be combined into a complete conference system [3]. It is the same basic principle of all meeting control, and what changes is only the scale of the system. The system can access the corresponding number of units according to the needs of the conference, and more functions can be added by supplementing the software, and the expansion of the system scale is very simple.

1. Background composition of multimedia meetings

In recent years, with the development of science and technology in China, traditional forms of meetings are increasingly unable to meet the needs of people's life and work. The proposal of modern intelligent audio conference can not only carry out multi-faceted communication and discussion, but also enhance the modern microphone, which is convenient for people to communicate more conveniently [4]. The media conference system is based on modern network technology, integrating audio, video, intelligent control and other technologies, which can not only meet people's communication and communication in a unified scene, but also meet people's communication in different places, and form a comprehensive conference system through the integration of communication, computer and multimedia technology.

Modern intelligent video conferencing was formed in the context of the "Intelligent Building Design Standards" promulgated by the state in 2000. The standard classifies the multi-functional conference system into the scope of intelligent buildings, and is divided into three grades according to the nature of intelligent buildings: A, B and C. Among them, the best performance of Grade A intelligent building requires the use of two-way video transmission system, but also equipped with a variety of different language translation system and sound reinforcement system, as well as a large-screen projection system, through the intelligent central control system for intermediate control, to form a complete intelligent multimedia conference system.

2. Audio and video composition requirements for media conferences

2.1 Audio conferencing system

The audio conference system not only has flexibility and order, but also can realize the function of speaking to people at the same time, and its replay language environment is relatively clear, the operation process of the system is relatively stable, and it also has strong voice control ability of sound suppression.

2.2 Combination of audio conferencing and video conferencing

Modern intelligent video conference is the product of the combination of audio conference and video conference, which can not only enable the participants of the conference to have a clearer visual and auditory environment, but also project the text, sound, data, images and the demeanor and image of the participants on the large screen to realize the modernization of the conference.

2.3 Information exchange to meet the needs of remote video

The setting of modern intelligent video conference has high quality requirements for sound system and image processing system, which not only meets the good control and dissemination of remote sound and image of multi-place and remote conference, but also realizes the scenario operation of modern conference [5]. If the requirements cannot be met during the setup process, the corresponding pipelines and interfaces of the system can be reserved for later upgrade operations of the conference system.

2.4 Simultaneous interpretation system and voting system

The biggest difference between modern intelligent video conferencing and traditional video conferencing is that it can be set up according to the requirements of the unit and the corresponding simultaneous translation system and voting system to ensure that participants can understand the content of the conference more accurately. If there is no configuration of this equipment in the actual operation, the corresponding pipeline reservation and the location of the simultaneous interpreter year should be considered to ensure the maximum function of the modern conference system. It can also realize the intelligence of the conference system through the purchase or rental of equipment. Third, the classification and characteristics of modern intelligent video conferencing. In recent years, modern intelligent video conferencing has developed rapidly, and has been widely used in video conferencing at home and abroad, among which the most widely used is MCU and multimedia conference system is the remote conference of multimedia conference, which adopts the audio control mode of automatic mixing type video conference to realize the cascade of MCU. This system has its own advantages and disadvantages due to the different combinations of microphones [6]. The following is mainly for the composition and advantages and disadvantages of these three systems.
3. MCU and multimedia conferencing system

In recent years, with the development of science and technology, higher requirements have been put forward for the system composition of the conference, not only to synchronize the transmission of images, audio and video in the conference, but also to realize the sharing principle of system programs. MCU and multimedia technologies were born on this basis. MCU and multimedia technology is a kind of monitoring and management of video conferences through multi-point control units. It realizes the separation of video, audio and data information by synchronizing and separating the information of each conference venue, and then uniformly sends the information and instructions of each venue to the corresponding processing module, so as to complete the mutual switching of video and audio [7]. Since there are many data broadcasting and router choices under this system, the intelligent processing of the terminal system can be realized by regularly controlling and managing the conference, and at the same time recombining the information required by each place.

MCU and multimedia technology mainly realize intelligent audio and video conferencing through the control of the following three aspects. The first is the control of the video signal. The control of the video signal by the system is mainly done by the processor of the video. The second is the control of the audio signal, which is mainly done by the audio processor. The third is the processing of data signals [8]. This is done through a data processor. Since the network module in the structure and the processor that controls the signal are an important part of the MCU, it is very important to strengthen the correct selection of the control processor and router, which can not only realize the mixed processing of video, audio and data signals, but also realize the monitoring and management of the conference process, so it is widely used in people's lives and work.

4. Automatic mixing type intelligent conference system

Automatic mixing type intelligent conference system mainly appeared in the 80s of the 20th century, formed by the research and development of automatic mixing equipment by some foreign companies, which can also be called intelligent mixer or automatic mixer. In recent years, with the continuous progress of science and technology, intelligent video conferencing has also been continuously applied and developed in China, and the more famous ones in China are Shure in the United States, Audio-Technica in Japan and Cambridge in South Korea [9]. These devices mix outputs by mixing 8 base 4 inputs. Specifically, through the setting of the system, 8 or 4 microphones are connected at the same time, so that only 1 microphone can be turned on and used normally within the same period of time, and it can be automatically turned off when not in session. Through this setting, not only can the participants be exempted from the process of controlling the switch, but also the cumbersome tuning control system can be replaced, reducing the probability of feedback whistling during the meeting [10].

In the actual operation process, the 8-channel automatic mixing system is more used. Its characteristics can be mainly divided into the following aspects: First, its conference discussion system is twice that of 4 channels, and it can also realize the initiative of setting the microphone, and these initiatives can be divided into 4 levels from high to low, which can meet the requirements of priority control of the rostrum during use. Second, the 8-channel audio system can also freely combine different types of microphones, which can not only control the volume of a single microphone, but also set the automatic mute effect, so that the speaker has the best sound effect. Third, the 8-channel audio system can also realize the integrated connection of high-speed cameras, and realize the projection effect of the impact on the conference by tracking and shooting the participants.

5. Intelligent cascading meetings

The extension type of modern intelligent video conferencing can be mainly divided into the following aspects. 323 meetings with high interdependencies of agreements and meetings can be interdependent. These two systems have different structures and different applications in real life, which can not only save the time and money of the meeting, but also improve the efficiency of the meeting [11]. These two conference systems mainly send and process the audio and video of the conference on a regular basis, and then send it to the receiving end by the control unit after simplifying the complex structure, which can not only correct the time difference in the operating system, but also facilitate the participants' understanding of the conference content, and greatly improve the work efficiency of the conference. The second is the point-to-point video conference system and multi-point video conference system. Point-to-point video conference system can be mainly divided into video phone, desktop conference system, conference room type video conference system. Point-to-point video conference system is mainly through the node control between two communications, to achieve modern intelligent video conference. Multipoint video conferencing refers to a conference conducted by three or more communication terminals, which is a system composed of modern intelligent networks, terminals and MCUs. The networking structure of multi-point video conference system is much more complex than that of point-to-point video conference system, and can be divided into single MCU and multi-MCU mode according to the number of MCUs [12]. The MCU mode can generally be divided into star networking structure and hierarchical networking structure. The
emergence of this system can not only realize multi-place and remote video conferencing, but also send the content of video conferencing to different places at the same time, creating a comprehensive intelligent participation experience for participants.

6. Conclusion

All in all, modern intelligent video conference system is a modern conference system that integrates video, audio, computer and communication. According to the degree of use in China, the multimedia conference system is a remote conference of multimedia conference, which adopts the audio control mode of automatic mixing type video conference to realize the cascade of MCU. However, this system has its own advantages and disadvantages according to its own structure and the way of connecting equipment, so it is suitable for different meeting places. In recent years, with the development of science and technology, modern intelligent conference system is also constantly applied and developed, among which, wireless conference system, digital wireless system and controllable wireless conference system composed of wireless microphone and mixing console gradually appear in the market, with broad application prospects.

References


