

Conference Projector “Collabomate-iP”

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Abstract

The conference projector Collabomate-iP is the world’s first projector to integrate the teleconferencing function of Nippon Avionics’ original projector with the built-in document camera. It features the possibility of holding teleconferences and presentations using paper data and samples in formats that are not readily compiled into PC data. Using a built-in document camera function in addition to conventional TV conferencing methods and presentations it also enables movies, voice broadcasts and PC data transmission, thereby demonstrating its suitability for remote meetings at more routine and practical levels. This paper has been compiled to outline the Collabomate series of projector-integrated teleconferencing systems and to introduce their functions, focusing in particular on the actual sample/data image distribution function.

Keywords

teleconference ,TV conference, projector, document camera, data sharing, application sharing

1. Introduction

As a result of the recent widespread use of broadband networks, teleconferencing systems have recently been undergoing an increased popularity. Changes are taking place in application styles that are aimed at productivity improvements. Group conferences or one-way presentations between remote offices are being replaced by applications of a more routine and practical nature. These include arrangements for design cooperation, access to technologies and quality and production control systems to connect remote workshops etc.

As the need for these arrangements is often urgent, the participants do not always have time to prepare supporting PC data and have to rely on actual products or paper sheet.

As a result, it has become increasingly desirable to develop a system for use in routine and practical-level applications that enables teleconferencing methods that enable actual data including printed matter and samples to be available for anyone, anytime, anywhere.

At Nippon Avionics Co., Ltd., we have been marketing the iP series of projectors with built-in document camera function as a solution for presentations to local conferences and more recently the USBcollabo-20V teleconferencing system that places emphasis on data sharing. On this occasion, we would like to introduce Collabomate-iP, a conference projector that integrates the teleconferencing function that features a projector with a built-in document camera function.

2. Outline of the Collabomate Series Systems

Our Collabomate series products range includes a conference projector Collabomate-iP and the USBcollabo-20V as USB memory-type , these models are currently being marketed for teleconferencing system.

Conference projector Collabomate-iP incorporates a similar teleconferencing function to USBcollabo-20V so that teleconferencing by using both of them simultaneously can be arranged as shown in the system configuration shown in Fig. 1.

Details of the Collabomate series products are as described in the following.

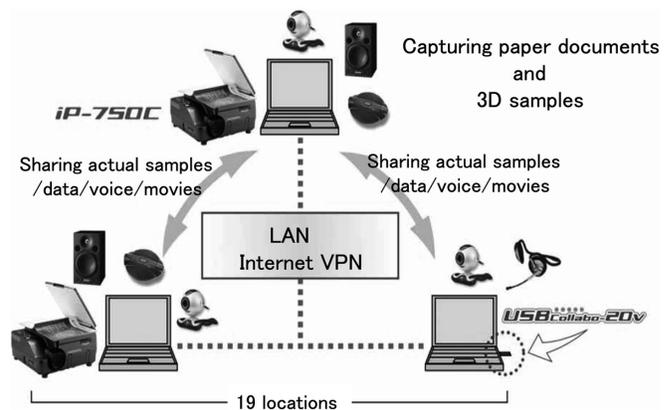


Fig. 1 System configuration of the Collabomate Series.

2.1 Teleconferencing Functions of the Collabomate Series

The Collabomate series products incorporate all of the four elements of teleconferencing, which are the movie transmission, voice transmission, data sharing and communication as shown in Fig. 2, and thus offers the following features.

(1) Auto Startup

When a Collabomate series product is used for the first time, the movie/voice distribution is installed automatically when the USB cable (with Collabomate-iP) or USB memory (with USBcollabo-20V) is connected to the PC, and the teleconferencing software is then launched automatically. The auto start triggered by the USB connection has been adopted because this method makes it unnecessary to install application software in the PCs. The teleconferencing software can be run on the PC by simply connecting Collabomate-iP or a USB memory to its USB port. The software license management and version upgrading management on several PCs can be eliminated thus and the teleconferencing software can be run easily on any PC.

(2) Connection of a Maximum Number of 20 Locations without Using a Server

The Collabomate series products can support a teleconferencing function with a maximum of 20 locations by the host receives the movies, voices and data from the other connected participants location and then distributes them to other participants, like as server.

Nevertheless, the system offers the advantages of the absence of a server including low initial installation costs and no need for server management or maintenance. In addition, the possibility of assigning any location as the host makes it possible to hold several mutually-exclusive teleconferences simulta-

neously in arbitrarily selected combinations across a desired number of locations wherever the Collabomate series products are installed.

(3) Movie/Voice Distribution Function

1) Movie/Voice Distribution

The Collabomate series can distributes up to 4 movies and up to 10 voices to the participant locations via MPEG4 streaming.

2) High-Quality Voice Distribution

If the low quality of the voices used in teleconferences, it makes the participants realize distances from other parties and, if the conversation lasts long, the consequent stress may hinder smooth communication. To deal with this problem, the Collabomate series employs a similar voice sampling rate to CD audio of 44kHz, ensuring a high feeling of presence that lets the participants forget the remote distances and a high quality that frees them from stress even after long hours of conversations.

(4) Data Manipulation Function

1) Data capturing

The Collabomate series handles JPEG, png and WMF format data in teleconferencing and can convert PowerPoint files automatically into JPEG format. They also incorporate a function for capturing the desktop images of other applications and converting them into JPEG format images.

2) Data editing

Data converted into the JPEG format can be edited by page ordering, page deletion, etc. according to need, provided that this process is performed before transmitting the data.

3) Data distribution

The data is distributed at the moment a presenter (described later) begins presentation. But the explanation can be started at the moment the first page of data is distributed to and displayed at other locations, so that the conference can be started speedily, without waiting for the entire data distribution to complete.

4) Data page feeding

While the explanation of the first page is being given, the second and later pages of data are distributed in the background. Consequently, the subsequent data pages can be fed simply by sending the page specification command so that the pages can be switched quickly.

5) Pointer display

The mouse pointer display used in explanation is also sent to other locations to assist a smooth explanation process.

6) Data magnification, rotation and scrolling

When the teleconferencing locations is in a large hall or when the prepared data is too small to provide an explanation by displaying detailed images, an adequate explanation

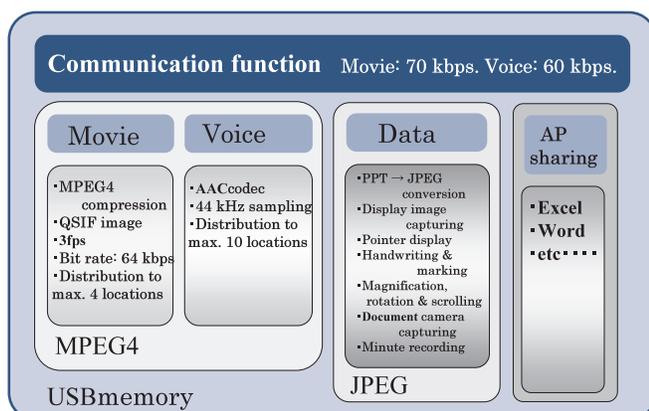


Fig. 2 Functional configuration of the Collabomate Series.

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becomes impossible in such a case. Also, documents that are printed vertically are generally hard to view when the entire page is displayed.

The Collabomate series is capable of magnifying, rotating and scrolling the images of data that have already been distributed to other locations so that skillful presentations can be given according to the varying situations.

7) Additional data write

The Collabomate series also has a function that allows any location to write characters and text in the explanation data as shown in **Photo 1**. This function enables supplementary explanations and exchange of opinions in the course of explanations or discussions and the written characters and text can be recorded in the minutes, as described later.

8) Whiteboard

A whiteboard can be inserted as part of the presentation data. The whiteboard can be used to write text for concluding discussions or adding supplementary explanations.

9) List displays

A list of explanation data pages can be displayed so that skipping to and the display of any page becomes possible by specifying the desired page. Since the explanation data is already distributed to other locations at this time, this function switches the data pages to other locations as quickly as normal page feeding.

10) Minute recording

The data displayed during teleconferencing can be recorded at conclusion in the minutes. The text and image written using the additional data function is also recorded in the minutes.

(5) Application Sharing Function

Teleconferencing at the routine and practical level often involves mutual correction operations using special application software or discussions by varying values in the spreadsheet. USBcollabo-20V incorporates an application sharing function for use in such circumstances. This function allows an application running in any location to be displayed on other locations and also allows another location issuing an exclusive request to the application to control the application or enter data in it using the local keyboard.

(6) Conference Management Functions

1) Conference room lock

The Collabomate series can lock the conference room before starting the teleconference in order to prevent unexpected penetration of the conference room by a third-party location.

2) Presenter change

The presenter in the Collabomate series system is assigned the leadership role in each presentation with the authority of locking the conference room, starting the presentation, feeding pages and changing the presenter.

3) Speaker request

This function is used when a location other than the presenter wants to speak during a presentation or a question-and-answer session.

4) Automatic data distribution for late arrival participants

When a location joins the teleconference while it is in session or after having been temporarily absent from it, the system distributes the data accrued during the absence period automatically by beginning from the page being displayed on the location. This ensures the smooth progress of the teleconference even when there are late arrival participants.

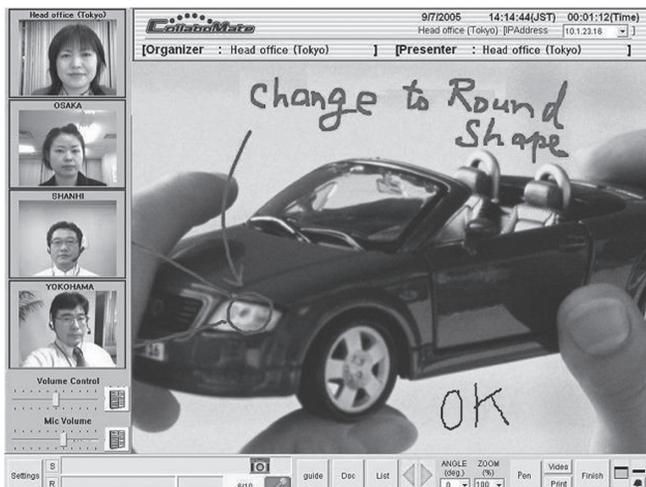


Photo 1 Additional data write display.

3. Outline of Collabomate-iP

Conference projector Collabomate-iP is an integrated product of our IP-750 Projector and the teleconferencing functions as described above. It features the addition of the actual new sample/data image distribution using the document camera of the IP-750. Even when this product is not used in teleconferencing, it can be used as a projector equipped with a document camera in any local conference, thereby making possible an effective use of the equipment. It is also useful for local conferences in which the carrying of notebook PCs is inhibited as an information leak prevention measure, because it enables presentations using paper sheets without using a PC.

3.1 Specifications of Collabomate-iP

Collabomate-iP is based on a projector equipped with a 3-LCD document camera featuring a high brightness level of 4,500 lumens and also incorporates the teleconferencing functions of the Collabomate series products, which makes this product capable of giving highly persuasive remote presentations using clear images even when a big hall is used. **Photo 2** shows the external view of this product and **Table** shows its specifications.

3.2 Actual Image Distribution Function

The document camera function of Collabomate-iP employs a



Photo 2 External view of Collabomate-iP.

Table Specifications of Collabomate-iP's projector block.

Model		IP-750C
Type		RGB LCD shutter projection
LCD panel	Size	Poly-silicon TFT with 1.3" micro-lens x 3
	Pixels	786,432 pixels (1,024 x 768) x 3, total 2,359,296 pixels
Projector lens		Manual zooming (1x - 1.3x)
Image size (Projection distance)		32" to 300" (1.4 to 13 meters)
Brightness *1		4,500 lumens
Actual Item	Read device	2 million pixel color CCD camera
	Projector	Read size 28.8 mm x 216 mm
Keystone correction		H ±10°, V ±15°
Operating environment		Temperature 0 to 35°C, humidity 20% to 80% (without condensation)
Power supply		AC100V±10% 50/60Hz
Power consumption		450W
Dimensions		390(W)X380(D)X190(H) mm (excluding projections, including cover)
Weight		Approx. 8.5 kg

2-million pixel color CCD camera to capture and project A4-size paper sheets and actual sample images, and also stores up to 32 captured images in an internal memory. The images stored in the memory can be transferred to a PC connected through the USB by using a button and they may also be distributed to other locations by using the teleconferencing software. This allows persons who are not familiar with PC operation to capture the image of a paper sheet or actual product sample with a simple operation. They may also use it in teleconferencing whenever an explanation using a paper sheet or sample is required, provided that such data is available. This is a powerful feature that enables teleconferencing for anyone, anytime and anywhere that is a suitable support system for the approaching Ubiquitous Society.

4. Conclusion

In this paper, we have introduced the features of one of our presentation solutions, Collabomate-iP, which consists of a conference projector with an actual image distribution function, by describing its utility for the approaching Ubiquitous Society. In the future, we intend to offer a wider range of products that can meet the increasingly diversified needs of presentation solutions.

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