

# Virtual technology and that physical consideration

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## 1. *At first*

At first, development that Network, Open System, Downsizing and Multimedia & Multivendor moved so-called electronics to the kernel doesn't know the place where is caught from the technical side and confined. Far from it, no one will be able to deny being even more accelerative development conditions.

Particularly, multiple functionization of the system miniaturize it, and down sizing through the development such as the network that it is specially represented by an INS net 64/1500, and the Internet.

Moreover, it is caught from the society background like side, and it is in the direction of the opening which becomes borderless and which becomes global.

It is said that the soil which reason made use of so-called virtual technology for the society base which technically realized virtual technology from such a social background was organized, and there won't be an exaggeration.

Writers have researched the matter that four technology which was above mentioned is made to follow virtual technology in the base in school and the enterprise in the field of the education for years. It is so-called school automation.

## 2. *The outline of the virtual class room by the virtual technology*

Multimedia are coming to that sight steadily by more maintenance of Network infrastructure that it is represented by B-ISDN, the Internet, CATV, and so on in such cases as the still picture communication, the motion picture communication, the computer text file, the image, the voice and the character.

These are imagined all the more technology network that multiplier effect these information communication base imagination technology progress school and enterprise inside education world. And, as for the class by the virtual class room which transmits and receives a vivid motion picture, a still picture, a text file, a voice, and so on through the communica-

tion lines in the remote place, various experiments are beginning as the way of using it which it made use of the character of four key words which were above mentioned for.

Already, it is actually employed, and a class by the virtual class room has gotten the evaluation of in the enterprise in not only the education but also the cramming school, the school education such as a high school repair class.

But, by this usual research, it is on the television conference system extension line, there are many physical analyses of the image information as a securing of the television camera full time operator personnel, complicated operation of the television conference system, a evaluation point of view, in school of the virtual technology and the enterprise, of view from the point as an application to the education. So writers made use of the character of the virtual technology as an application to the education of the virtual technology, and cleared it about the next item from the point of view that it improved the effect of the class by the virtual class room to the full.

Construction of the virtual class room by both directions communication to transfer handwritten information by the electronic board and virtual technological information.

By infrared rays to substitute for the television camera fulltime operator, instructor, learner, the development of the system that a television camera has the tail of trace automatically. A television camera fulltime operator becomes unnecessary by using this. If it follows what kind of character, the learner of the remote place has a mental change explained like sensitivity for the learner as an influence from the system with the progress of the school hours in the class space of the virtual class room again writers have already researched on whether it is prescribed with what kind of factor<sup>1), 2)</sup>.

### *3. A virtual class room by the virtual technology*

It is the next items recently to employ research and development.

#### 3.1 Management of research and development of the virtual class room by the virtual technology

- ① When Satellite communication was used.
- ② When B-ISDN was used.

#### 3.2 The development of automatic trace tail system in the virtual class room by the virtual technology

### *4. System building of the virtual class room which Satellite communication*

Satellite communication is used, and a receiving station (child office) is connected with the sending office (parents office) classroom such as Tokyo interactively by the image, voice.

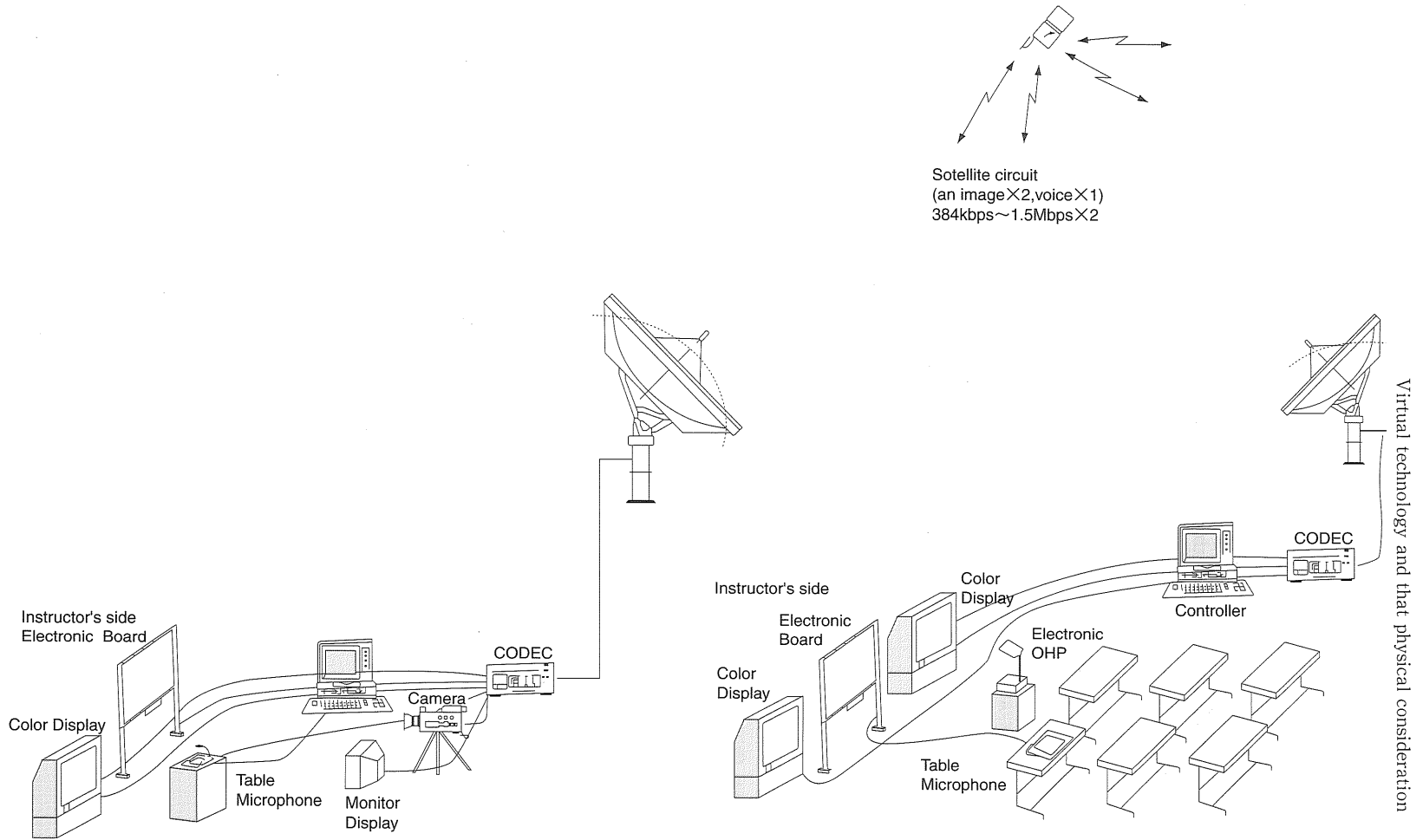


Fig. 1 Structure of the Experimental System for Distance Learning

The system composition of the virtual class room by the virtual technology is shown in the figure 1.

As for the instructor, taking lecture person, mutuality can monitor the conditions of the taking lecture classroom in several places by the image, voice as shown in the figure 1.

The ground lines are used with the satellite circuit 2 circuit of from the quality of output and communication cost side 384Kbps~1.5Mbps and use of 2400bps circuit Ground leased line.

This system is the following composition.

① Image composition: motion picture two scenes

Digital compression transmission by the television CODEC

② Circuit composition: the satellite digital lines of two image, voice circuits:, as a control, circuit ground leased line use of 2400Bps

## 5. *Infrared rays television camera automatic trace tail system*

(1) Purpose

In the remote class, the television conference, and so on, instructor, learner, and so on, the system that a television camera has the tail of trace automatically by the infrared rays. The following trace tail system is said.

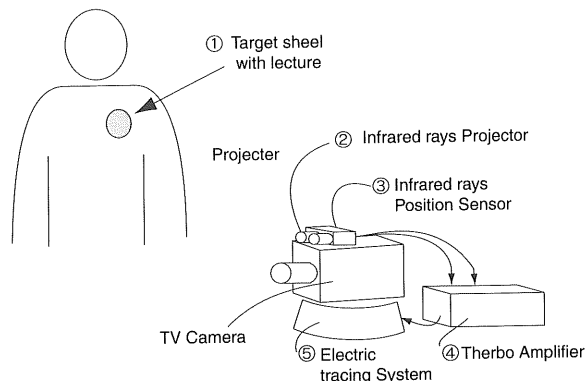
A television camera fulltime operator becomes unnecessary by using this.

(2) The construction of trace tail system

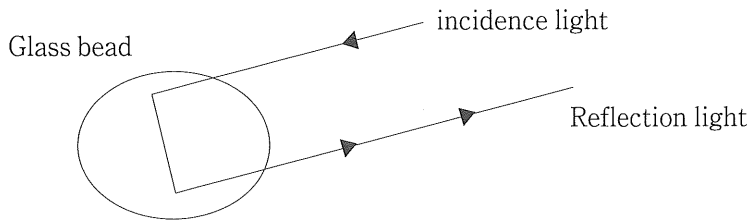
The construction of trace tail system is shown in the figure 2.

(3) The principle of trace tail system

a) Light from the infrared rays a light projector reflects infrared rays by the slight glass bead that is put to the target sticker in a light projector direction so that a figure 3 may show it.



**Fig. 2** Component of Tracing System

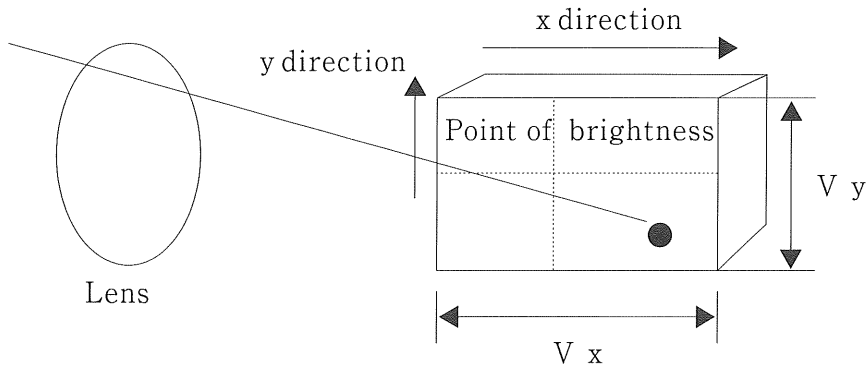


**Fig. 3** Principle of tracing system

b) The light reflected as shown in the figure 4 is a two-dimensional position information voltage by the infrared rays position sensor,

$$\frac{V_x}{\text{The amount of light}}, \quad \frac{V_y}{\text{The amount of light}}$$

It is outputted division because it normalizes so that it may not be based on the amount of light.



**Fig. 4** Principle of tracing system

c) Position voltage

$$\frac{V_x}{\text{The amount of light}}, \quad \frac{V_y}{\text{the amount of light}}$$

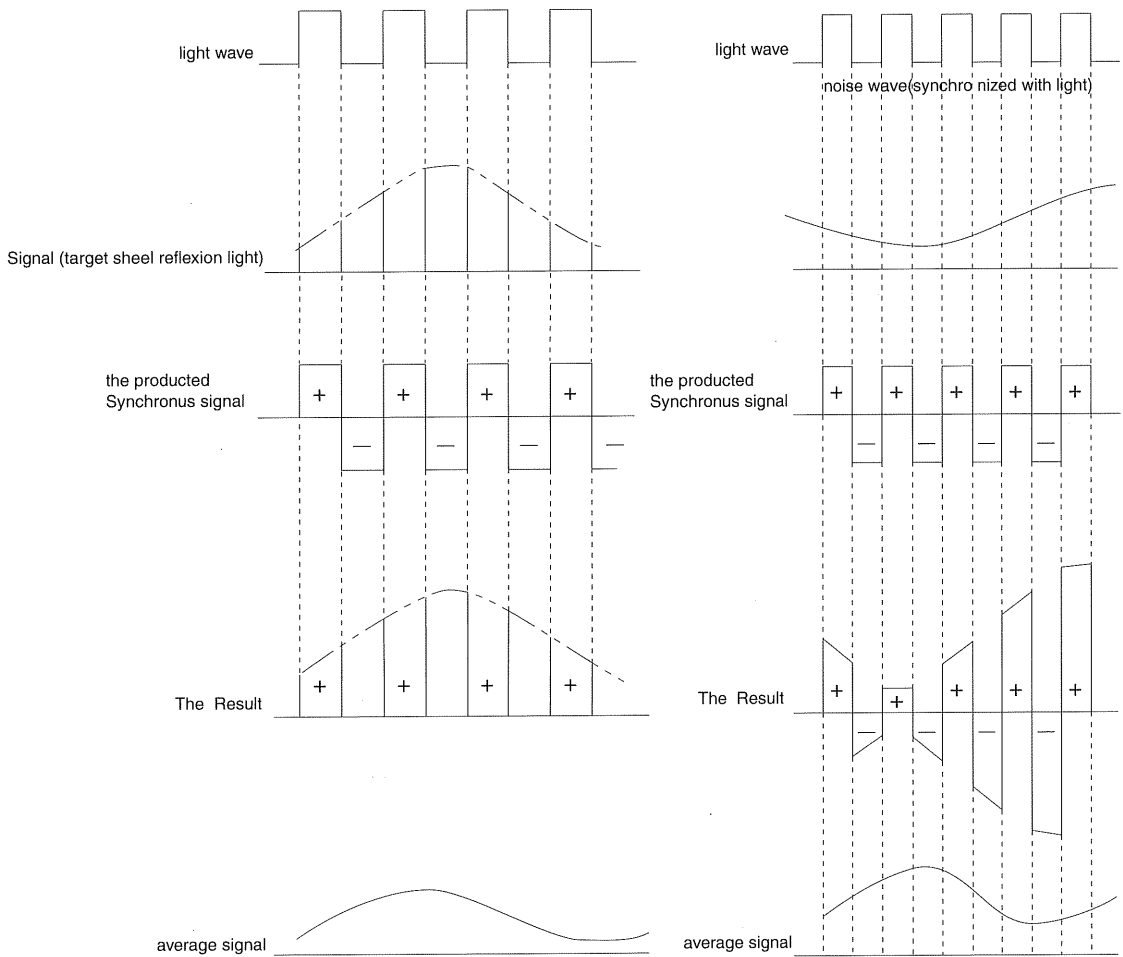
It is inputted to thermo Amplifier, an optical point, always, the center of the sensor trace tail something is driven.

(4) Technical characteristics

a) It should associate, and the countermeasure when strong infrared rays are being sent out as shown in the figure 5 from other illuminants can take out only the reflection of floodlight projector selectively by synchronous detector doing position sensor output the light on floodlight projector.

b) The countermeasure that an instructor becomes the backside is necessary.

## How to eliminate of noise by synchronized detector



**Fig. 5** Detect of reflect light by flood light projector

- \* A sticker is put in a place as well to copy it when a sticker is put on the back as well and so on and it is sideways.
- \* It is the place where it disappeared, and the tail of trace is begun the camera direction if it is held and shown again. A wide range can be covered if a lens on the position sensor side is moved to the corner of wide-angle.

## 6. Conclusion

Comstruction applied the system of the virtual class room in the base, and the matter that it was fully submitted for the utility was cleared by this thesis four key words stated as

an application research to the education in school by the virtual technology.

### *address of Thanks*

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It appreciates the writer of the literature which it let me refer to at the end.

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