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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/121,919	02/22/2022	11258676	21063.0029USWO	2764

52835 7590 02/02/2022

HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 South Seventh Street
Suite 2700
Minneapolis, MN 55402-1683

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site http://pair.uspto.gov for additional inventors):

Koen Simon Herman BEEL, Eke, BELGIUM;
Yoav NIR, Komen, BELGIUM;
Filip Josephine Johan LOUWET, Knesselare, BELGIUM;
Guy COEN, Aalst, BELGIUM;

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

BARCO N.V., Kortrijk, BELGIUM;

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Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

52835 7590 10/15/2021

HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 South Seventh Street
Suite 2700
Minneapolis, MN 55402-1683

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Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

Yanling Cottle	(Typed or printed name)
/yanling cottle/	(Signature)
January 14, 2022	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/121,919	12/15/2020	Koen Simon Herman BEEL	21063.0029USWO	2764

TITLE OF INVENTION: ELECTRONIC TOOL AND METHODS FOR MEETINGS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	01/18/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
SUN, SCOTT C	2181	715-753000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: BARCO N.V.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): KORTRIJK, BELGIUM

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 503478

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Thomas Lee/ Date January 14, 2022

Typed or printed name THOMAS LEE Registration No. 66396

Electronic Patent Application Fee Transmittal

Application Number:	17121919
Filing Date:	15-Dec-2020
Title of Invention:	ELECTRONIC TOOL AND METHODS FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman BEEL
Filer:	Thomas Lee/Yanling Cottle
Attorney Docket Number:	21063.0029USWO

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	1200	1200

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1200**

Electronic Acknowledgement Receipt

EFS ID:	44752487
Application Number:	17121919
International Application Number:	
Confirmation Number:	2764
Title of Invention:	ELECTRONIC TOOL AND METHODS FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman BEEL
Customer Number:	52835
Filer:	Thomas Lee/Yanling Cottle
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	21063.0029USWO
Receipt Date:	14-JAN-2022
Filing Date:	15-DEC-2020
Time Stamp:	15:52:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1200
RAM confirmation Number	E20221DF52543635
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	IF_0029_.pdf	1821498 ebe739933b9468149c5e27007d60aafb763f9cdf	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37875 83862f904d328e41c0b12d0573b64cafced145db	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1859373		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17121919
Filing Date	2020-12-15
First Named Inventor	BEEL
Art Unit	2181
Examiner Name	SUN
Attorney Docket Number	21063.0029USWO

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17121919
	Filing Date	2020-12-15
	First Named Inventor	BEEL
	Art Unit	2181
	Examiner Name	SUN
	Attorney Docket Number	21063.0029USWO

	1	Office Action issued in Corresponding Chinese Application No. 201810229467.1, dated September 24, 2021, with English translation	X

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/SCOTT C SUN/	Date Considered	11/16/2021

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2020-12-15
	First Named Inventor	BEEL
	Art Unit	2181
	Examiner Name	SUN
	Attorney Docket Number	21063.0029USWO

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2021-11-08
Name/Print	Thomas Lee	Registration Number	66396

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.C.S/

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17121919
Filing Date	2020-12-15
First Named Inventor	BEEL
Art Unit	2181
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Attorney Docket Number	21063.0029USWO

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17121919
	Filing Date	2020-12-15
	First Named Inventor	BEEL
	Art Unit	2181
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If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2021-11-08
Name/Print	Thomas Lee	Registration Number	66396

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

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8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	17121919
Filing Date:	15-Dec-2020
Title of Invention:	ELECTRONIC TOOL AND METHODS FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman BEEL
Filer:	Thomas Lee/Yanling Cottle
Attorney Docket Number:	21063.0029USWO

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	260	260
		Total in USD ($)		**260**

Electronic Acknowledgement Receipt

EFS ID:	44230578
Application Number:	17121919
International Application Number:	
Confirmation Number:	2764
Title of Invention:	ELECTRONIC TOOL AND METHODS FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman BEEL
Customer Number:	52835
Filer:	Thomas Lee/Yanling Cottle
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	21063.0029USWO
Receipt Date:	08-NOV-2021
Filing Date:	15-DEC-2020
Time Stamp:	17:06:17
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$260
RAM confirmation Number	E2021A8H06424002
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	IDS_0029.pdf	1034319 0ef189c2fb4c2a7255c4a8605e1a35d3431b4b2e	no	4
Warnings:					
Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
2	Other Reference-Patent/App/Search documents	OA_CN.pdf	11984795 d492756bc29f846a015136ea6e6c8003794bdbb2	no	13
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	38046 d914b3a22108db5833117bec8b406fb700ef7b77	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	13057160		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/121,919	12/15/2020	Koen Simon Herman BEEL	21063.0029USWO

CONFIRMATION NO. 2764

PUBLICATION NOTICE

52835
HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 South Seventh Street
Suite 2700
Minneapolis, MN 55402-1683

OC000000129432566

Title:ELECTRONIC TOOL AND METHODS FOR MEETINGS

Publication No.US-2021-0336859-A1
Publication Date:10/28/2021

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE
COMMISSIONER FOR PATENTS
P.O.BOX 1450
ALEXANDRIA VA 22313-1451

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HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 South Seventh Street
Suite 2700
Minneapolis, MN 55402-1683

Courtesy Reminder for
Application Serial No: 17/121,919

Attorney Docket No: 21063.0029USWO
Customer Number: 52835
Date of Electronic Notification: 10/15/2021

This is a courtesy reminder that new correspondence is available for this application. If you have not done so already, please review the correspondence. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

An email notification regarding the correspondence was sent to the following email address(es) associated with your customer number:
PTOMail@hsml.com

To view your correspondence online or update your email addresses, please visit us anytime at **https://ppair-my.uspto.gov/pair/PrivatePair.**
If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov or call 1-866-217-9197.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

52835 7590 10/15/2021

HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 South Seventh Street
Suite 2700
Minneapolis, MN 55402-1683

EXAMINER	
SUN, SCOTT C	
ART UNIT	**PAPER NUMBER**
2181	

DATE MAILED: 10/15/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/121,919	12/15/2020	Koen Simon Herman BEEL	21063.0029USWO	2764

TITLE OF INVENTION: ELECTRONIC TOOL AND METHODS FOR MEETINGS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	01/18/2022

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

52835 7590 10/15/2021

HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 South Seventh Street
Suite 2700
Minneapolis, MN 55402-1683

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/121,919	12/15/2020	Koen Simon Herman BEEL	21063.0029USWO	2764

TITLE OF INVENTION: ELECTRONIC TOOL AND METHODS FOR MEETINGS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	01/18/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
SUN, SCOTT C	2181	715-753000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (08-18) Approved for use through 01/31/2020 OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/121,919	12/15/2020	Koen Simon Herman BEEL	21063.0029USWO	2764

52835 7590 10/15/2021

HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 South Seventh Street
Suite 2700
Minneapolis, MN 55402-1683

EXAMINER	
SUN, SCOTT C	

ART UNIT	PAPER NUMBER
2181	

DATE MAILED: 10/15/2021

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 17/121,919	Applicant(s) BEEL et al.	
	Examiner SCOTT C SUN	Art Unit 2181	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to 12/15/2020.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-20 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date See Continuation Sheet.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/SCOTT C SUN/
Primary Examiner, Art Unit 2181

Continuation of Attachment(s) 2. Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date: 1/28 /21, 3/17/21, 4/7/21, 4/22/21, 5/21/21, 5/28/21, 7/14/21

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Allowable Subject Matter

2. Claims 1-20 are allowed.

The following is an examiner's statement of reasons for allowance: prior art of record disclose online meeting systems, including cameras, participant computer systems, and displaying meeting information to each of the participants. However, prior art of record do not teach or suggest, inter alia, rules for the meeting system that includes a forcing rule that displays new screen information by only one participant of the meeting, without requiring the agreement of other participants, that overrides or replaces the displays of one or more of other participants.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SCOTT C SUN whose telephone number is (571)272-2675. The examiner can normally be reached on Monday - Friday, 12-8:30 PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Idriss Alrobaye can be reached on (571) 270-1023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see https://ppair-my.uspto.gov/pair/PrivatePair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SCOTT C SUN/
Primary Examiner, Art Unit 2181

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/121,919	BEEL et al.
	Examiner	**Art Unit**
	SCOTT C SUN	2181

CPC						
Symbol					**Type**	**Version**
H04L	/	41	/	22	F	2013-01-01
G06F	/	13	/	14	I	2013-01-01
H04L	/	12	/	1813	I	2013-01-01
H04L	/	51	/	00	I	2013-01-01
H04L	/	65	/	00	I	2013-01-01
H04L	/	65	/	4023	I	2013-01-01
H04L	/	65	/	4038	I	2013-01-01
H04M	/	3	/	567	I	2013-01-01
H04N	/	5	/	00	I	2013-01-01
G06F	/	3	/	04842	I	2013-01-01
G06F	/	9	/	00	I	2013-01-01
G06F	/	13	/	102	I	2013-01-01
G06F	/	13	/	385	I	2013-01-01
H04L	/	12	/	1822	I	2013-01-01
H04L	/	65	/	403	I	2013-01-01
H04N	/	7	/	142	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/SCOTT C SUN/ Primary Examiner, Art Unit 2181	29 September 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1a

U.S. Patent and Trademark Office — Part of Paper No.: 20210929

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	SCOTT C SUN	2181

INTERNATIONAL CLASSIFICATION				
CLAIMED				
G06F	/	13	/	14

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/SCOTT C SUN/ Primary Examiner, Art Unit 2181	29 September 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1a

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	17/121,919	BEEL et al.
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☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/SCOTT C SUN/ Primary Examiner, Art Unit 2181	29 September 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1a

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CPC - Searched*		
Symbol	Date	Examiner
Limited class search: G06F3/00, 5/00, 12/00, 13/00	09/28/2021	SS

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
EAST(see strategies attached)	09/28/2021	SS
PALM (inventor)	09/28/2021	SS
Google (online conference/meeting system, user settings, priorities)	09/28/2021	SS
Limited class search: G06F3/00, 5/00, 12/00, 13/00	09/28/2021	SS

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
G06F	3/00, 5/00, 12/00, 13/00	09/28/2021	SS

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First Named Inventor	Koen Simon Herman BEEL
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	BEEL3002CIPC2/TL

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20100079783	A1	2010-04-01	Naganuma et al.	
	2	20050036509	A1	2005-02-17	Acharya et al.	
	3	20060010116	A1	2006-01-12	Yaguchi et al.	
	4	20070168481	A1	2007-07-19	Lambert et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

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	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	TBD
	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TL

	1	1187480	EP	A1	2002-03-13	TeleSuite Corporation		
	2	1462998	EP	A2	2004-09-29	Microsoft Corporation		

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	European Search Report in corresponding European Application No. 20212054.9, dated April 7, 2021.	
	2	European Office Action in corresponding European Application No. 16207123.7, dated November 23, 2020.	
	3	U.S. Office Action in corresponding U.S. Application No. 16/852,790, dated October 08, 2020.	

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Examiner Signature	/SCOTT C SUN/	Date Considered	09/29/2021

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	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	TBD
	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TL

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2021-04-07
Name/Print	THOMAS LEE	Registration Number	66396

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17121919
Filing Date	2020-12-15
First Named Inventor	Koen Simon Herman BEEL
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	BEEL3002CIPC2/TL

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7853535	B2	2010-12-14	Colella	
	2	7908401	B2	2011-03-15	Chang	

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	1	20060080707	A1	2006-04-13	Laksono	
	2	20100149206	A1	2010-06-17	Shigehisa et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1525300	CN	A	2004-09-01	Microsoft Corp.	Abstract.	X

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	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	TBD
	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TL

	2	1555197	CN	A	2004-12-15	Shenzhen Postgraduate Inst Tsi	Abstract.	☒
	3	101046952	CN	A	2007-10-03	Kei Nakayama	Abstract.	☒
	4	101075896	CN	A	2007-11-21	Polycom Inc.	Abstract.	☒
	5	102025774	CN	A	2011-04-20	TPV Display Technology Xiamen	Abstract.	☒
	6	102088593	CN	A	2011-06-08			☒
	7	2007148904	JP	A	2007-06-14	Toshiba Corp	Abstract.	☒
	8	201012222	TW	A	2010-03-16	Primax Electronics Ltd	Abstract.	☒

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Chinese Office Action in corresponding Chinese Application No. 201810229467.1, dated April 7, 2020.	☓
	2	Chinese Office Action in corresponding Chinese Application No. 201811092577.4, dated April 7, 2020.	☒

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	Attorney Docket Number	BEEL3002CIPC2/TL

EXAMINER SIGNATURE			
Examiner Signature	/SCOTT C SUN/	Date Considered	09/29/2021

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2021-05-21
Name/Print	THOMAS LEE	Registration Number	66396

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First Named Inventor	Koen Simon Herman BEEL
Art Unit	
Examiner Name	
Attorney Docket Number	21044.0039USC3

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	1	20070206088		2007-09-06	Mizunashi et al.	
	2	20040012669		2004-01-22	Drell et al.	

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	1	101572794	CN		2009-11-04	SHENZHEN HUAWEI COMM TECH CO	English Abstract	☒
	2	101917402	CN		2010-12-15	CHINA ELECTRIC POWER RES INST	With English translation	☒

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	Art Unit	
	Examiner Name	
	Attorney Docket Number	21044.0039USC3

	3	1317112	CN		2001-10-10	SEIKO EPSON CORP	With English translation	☒
	4	102065267	CN		2011-05-18	LG ELECTRONICS INC	English Abstract	☒
	5	1609780	CN		2005-04-27	MICROSOFT CORP	English Abstract	☒

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	1	Office Action in related Chinese Office application 202010418842.4 dated May 28, 2021, with English translation (17 pages).	☒
	2	Office Action in related Chinese Office application 202010418639.7 dated May 28, 2021, with English translation (22 pages).	☒
	3	Office Action in related Chinese Office application 202010418675.3 dated May 28, 2021, with English translation (17 pages).	☒

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Examiner Signature	/SCOTT C SUN/	Date Considered	09/29/2021

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17121919
	Filing Date	2020-12-15
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	
	Examiner Name	
	Attorney Docket Number	21044.0039USC3

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2021-07-14
Name/Print	THOMAS LEE	Registration Number	66396

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17121919
Filing Date	2020-12-15
First Named Inventor	Koen Simon Herman BEEL
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	BEEL3002CIPC2/TJM

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17121919
	Filing Date	2020-12-15
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	TBD
	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TJM

	1	Summons To Attend Oral Proceedings in corresponding European Application No. 12762258.7, dated May 20, 2021.	

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Examiner Signature	/SCOTT C SUN/	Date Considered	09/29/2021

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TJM

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See attached certification statement.

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A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Thomas J. Moore/	Date (YYYY-MM-DD)	2021-05-28
Name/Print	THOMAS J. MOORE	Registration Number	28974

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S312	21	(media multimedia video picture) NEAR2 (data content packet frame) SAME (network remote) NEAR4 (display monitor) AND (zero "no") NEAR2 ("foot print" footprint) AND (@ad<"20111011" @rlad<"20111011")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S313	409	(media multimedia video picture) NEAR2 (data content packet frame) SAME (network remote) NEAR4 (display monitor) AND ("foot print" footprint) AND (@ad<"20111011" @rlad<"20111011")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S314	387	(media multimedia video picture) NEAR2 (data content packet frame) SAME (network remote) NEAR4 (display monitor) AND ("foot print" footprint) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S315	14,573	(base peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) AND (LED GUI display) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S316	6,322	(base peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED GUI display) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S317	474	(base peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S318	13	("docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31

S319	462	(base peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S320	285	(base peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S321	189	(peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S322	189	(peripheral "docking station") SAME (USB Firewire) SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S323	189	(peripheral "docking station") SAME (USB Firewire) SAME (memory ROM flash) SAME (cpu processor PLA) SAME (LED) AND (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S324	33	(peripheral "docking station") SAME (USB Firewire) SAME (memory ROM flash) SAME (cpu processor PLA) SAME (LED) SAME (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S325	340	(webcam) SAME (USB) SAME (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S326	7,305	(webcam camera) SAME (USB) SAME (video multimedia) SAME (network	US-PGPUB; USPAT; EPO; JPO;	OR	ON	2021/09/28 21:31

		internet) AND (@ad<"20110914" @rlad<"20110914")	DERWENT; IBM_TDB			
S327	8	(webcam) SAME (USB) SAME (video multimedia) SAME (network internet) SAME (meeting)AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S328	29	(webcam camera) SAME (USB) SAME (video multimedia) SAME (network internet) SAME (meeting) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S329	19	(webcam camera) SAME (USB) SAME (video multimedia) SAME (network internet) SAME (on off) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S330	19	(webcam camera) SAME (USB) SAME (network internet) SAME (on off) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S331	46	(webcam camera) SAME (USB) SAME (on off) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S332	165	(webcam camera) SAME (USB) SAME (on off power) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S333	120	(webcam camera) SAME (USB) SAME (power) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S334	2	(webcam) WITH (power) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S335	11	(webcam) WITH (on off power) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31

S336	18	(webcam) WITH (on off power) ADJ (button switch) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S337	7	(webcam) WITH (on off power) ADJ (switch) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S338	21	(media multimedia video picture) NEAR2 (data content packet frame) SAME (network remote) NEAR4 (display monitor) AND (zero "no") NEAR2 ("foot print" footprint) AND (@ad<"20111011" @rlad<"20111011")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S339	409	(media multimedia video picture) NEAR2 (data content packet frame) SAME (network remote) NEAR4 (display monitor) AND ("foot print" footprint) AND (@ad<"20111011" @rlad<"20111011")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S340	387	(media multimedia video picture) NEAR2 (data content packet frame) SAME (network remote) NEAR4 (display monitor) AND ("foot print" footprint) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S341	474	(base peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S342	13	("docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31
S343	462	(base peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:31

S344	285	(base peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S345	189	(peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S346	189	(peripheral "docking station") SAME (USB Firewire) SAME (memory ROM flash) SAME (cpu processor) SAME (LED) AND (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S347	189	(peripheral "docking station") SAME (USB Firewire) SAME (memory ROM flash) SAME (cpu processor PLA) SAME (LED) AND (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S348	33	(peripheral "docking station") SAME (USB Firewire) SAME (memory ROM flash) SAME (cpu processor PLA) SAME (LED) SAME (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S349	340	(webcam) SAME (USB) SAME (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S350	8	(webcam) SAME (USB) SAME (video multimedia) SAME (network internet) SAME (meeting)AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S351	29	(webcam camera) SAME (USB) SAME (video multimedia) SAME (network internet) SAME (meeting) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32

S352	19	(webcam camera) SAME (USB) SAME (video multimedia) SAME (network internet) SAME (on off) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S353	19	(webcam camera) SAME (USB) SAME (network internet) SAME (on off) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S354	46	(webcam camera) SAME (USB) SAME (on off) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S355	165	(webcam camera) SAME (USB) SAME (on off power) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S356	120	(webcam camera) SAME (USB) SAME (power) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S357	2	(webcam) WITH (power) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S358	11	(webcam) WITH (on off power) ADJ (button) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S359	18	(webcam) WITH (on off power) ADJ (button switch) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S360	7	(webcam) WITH (on off power) ADJ (switch) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S361	8	(webcam) SAME (USB) SAME (video multimedia) SAME (network internet) SAME (meeting) AND	US-PGPUB; USPAT; EPO; JPO;	OR	ON	2021/09/28 21:32

		(@ad<"20110914" @rlad<"20110914")	DERWENT; IBM_TDB			
S362	1,006	(G06F3/$ G06F5/$ G06F12/$ G06F13/$) AND (media multimedia video picture) NEAR2 (data content packet frame) SAME (network) NEAR4 (display monitor) AND (@ad<"20111011" @rlad<"20111011")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S363	1,006	(G06F3/$ G06F5/$ G06F12/$ G06F13/$) AND (media multimedia video picture) NEAR2 (data content packet frame) SAME (network) NEAR4 (display monitor) AND (@ad<"20111011" @rlad<"20111011")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S364	0	(G06F3/$ G06F5/$ G06F12/$ G06F13/$) AND (media multimedia video picture) NEAR2 (data content packet frame) SAME (network) NEAR4 (display monitor) AND ("foot print") AND (@ad<"20111011" @rlad<"20111011")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S365	48	(G06F3/$ G06F5/$ G06F12/$ G06F13/$) AND (media multimedia video picture) NEAR2 (data content packet frame) SAME (network) NEAR4 (display monitor) AND ("foot print" footprint) AND (@ad<"20111011" @rlad<"20111011")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S366	79	(G06F3/$ G06F5/$ G06F12/$ G06F13/$) AND (media multimedia video picture) NEAR2 (data content packet frame) SAME (network remote) NEAR4 (display monitor) AND ("foot print" footprint) AND (@ad<"20111011" @rlad<"20111011")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S367	2,589	(G06F3/$ G06F5/$ G06F12/$ G06F13/$) AND (base peripheral "docking station") SAME (USB Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) AND (LED GUI display) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S368	1,044	(G06F3/$ G06F5/$ G06F12/$ G06F13/$) AND (base peripheral "docking station") SAME (USB	US-PGPUB; USPAT; EPO; JPO;	OR	ON	2021/09/28 21:32

		Firewire "plug and play") SAME (memory ROM flash) SAME (cpu processor) SAME (LED GUI display) AND (@ad<"20110914" @rlad<"20110914")	DERWENT; IBM_TDB			
S369	691	(G06F3/$ G06F5/$ G06F12/$ G06F13/$) AND (webcam camera) SAME (USB) SAME (video multimedia) SAME (network internet) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S370	79	(G06F3/$ G06F5/$ G06F12/$ G06F13/$) AND (media multimedia video picture) NEAR2 (data content packet frame) SAME (network remote) NEAR4 (display monitor) AND ("foot print" footprint) AND (@ad<"20111011" @rlad<"20111011")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S371	60	(G06F3/$ G06F5/$ G06F12/$ G06F13/$) AND (media multimedia video picture) NEAR2 (data content packet frame) SAME (network remote) NEAR4 (display monitor) AND ("foot print" footprint) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:32
S372	134	(BEEL Inventor2 Inventor3).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/28 21:32
S373	27	(BEEL Inventor2 Inventor3).INV. AND (IBM)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/28 21:32
S374	23	(BEEL Inventor2 Inventor3).INV. AND (IBM) AND ("generic driver")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/28 21:32
S375	18	(BEEL Inventor2 Inventor3).INV. AND (IBM) AND ("generic driver").CLM.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/09/28 21:32

			DERWENT; IBM_TDB			
S376	2	"14725401"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/28 21:33
S377	7,298	(online internet) NEAR2 (meeting conference) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S378	949	(online internet) NEAR2 (meeting conference) AND (record$3 sav$3 stor$3) NEAR2 (meeting conference) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S379	646	(online internet) NEAR2 (meeting conference) AND (record$3) NEAR2 (meeting conference) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S380	27	(online internet) NEAR2 (meeting conference) AND (record$3) NEAR2 (meeting conference) AND (webcam) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S381	244	(online internet) NEAR2 (meeting conference) AND (record$3) NEAR2 (meeting conference) AND (webcam camera) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S382	34	(online internet) NEAR2 (meeting conference) SAME (webcam camera) AND (record$3) NEAR2 (meeting conference) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S383	49	(online internet) NEAR2 (meeting conference) SAME2 (webcam camera) AND (record$3) NEAR2 (meeting conference) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S384	9	(online internet) NEAR2 (meeting conference) SAME2 (webcam camera) AND (aspect) NEAR2 (ratio proportion$2) AND	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33

		(@ad<"20110914" @rlad<"20110914")				
S385	9	(online internet) NEAR2 (meeting conference) SAME2 (webcam camera) AND (aspect) NEAR2 (ratio proportion) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S386	4,535	(maintain$3 keep$3 constant) NEAR2 (aspect) NEAR2 (ratio proportion) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S387	4,532	(maintain$3 keep$3 constant) NEAR2 (aspect) NEAR2 (ratio) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S388	496	(maintain$3 keep$3 constant) NEAR2 (aspect) NEAR2 (ratio) SAME (webcam video)AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S389	277	(maintain$3 keep$3 constant) NEAR2 (aspect) NEAR2 (ratio) WITH (webcam video) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S390	287	(maintain$3 keep$3 constant) NEAR2 (aspect) NEAR2 (ratio) WITH (webcam video meeting conference) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 21:33
S391	16,794	(media multimedia video picture meeting conference) SAME (network remote server) SAME (screen display monitor) WITH (rule priority parameter setting) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 22:30
S392	7,208	(media multimedia video picture meeting conference) SAME (network remote server) SAME (screen display monitor) NEAR4 (rule priority parameter setting) AND (@ad<"20110914" @rlad<"20110914")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2021/09/28 22:31
S393	534	(meeting conference) SAME (online network remote server) SAME (screen display monitor) NEAR4 (rule	US-PGPUB; USPAT; EPO; JPO;	OR	ON	2021/09/28 22:31

		priority parameter setting) AND (@ad<"20110914" @rlad<"20110914")	DERWENT; IBM_TDB			

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17121919
Filing Date	2020-12-15
First Named Inventor	Koen Simon Herman BEEL
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	BEEL3002CIPC2/TL

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	1	20090064302		2009-03-05	Colella	
	2	20110078716		2011-03-31	MacWan	

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	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	TBD
	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TL

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Non-Final Office Action in related U.S. application 16/812,755 dated February 19, 2021.	

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Examiner Signature	/SCOTT C SUN/	Date Considered	09/29/2021

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	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TL

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2021-03-17
Name/Print	THOMAS LEE	Registration Number	66396

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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	1	6601087		2003-07-29	Zhu et al.	
	2	7584313		2009-09-01	Hay et al.	
	3	7762470		2010-07-27	Finn et al.	
	4	8069465		2011-11-29	Bartholomay et al.	
	5	8327410		2012-12-04	Andersen et al.	
	6	8521926		2013-08-27	Hsueh et al.	
	7	8601470		2013-12-03	Yue et al.	
	8	8717599		2014-05-06	Ochiai et al.	

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	Attorney Docket Number	BEEL3002CIPC2/TL

	9	8896656		2014-11-25	Epstein et al.	

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	1	20030120849		2003-06-26	Roslak et al.	
	2	20060233191		2006-10-19	Pirzada et al.	
	3	20070162661		2007-07-12	Fu et al.	
	4	20080088634		2008-04-17	Thompson et al.	
	5	20080182518		2008-07-31	Lo	
	6	20090023475		2009-01-22	Chang et al.	
	7	20090029647		2009-01-29	Wei et al.	
	8	20090251621		2009-10-08	Ichieda	

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	6	1329055	EP		2003-07-23	SONY CORP	cited in EP Search Report, corresponds to WO 01/089156	
	7	1476242	CN		2004-02-18	SEIKO EPSON CORP	English abstract of corresponding EP 1385336, cited in CN OA	

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	9	102045864	CN		2011-05-04	NEC CASIO MOBILE COMM LTD	English abstract (Corresponds U.S. 2011/0092198), cited in CN OA	
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	1	"Universal Serial Bus 3.0 Specification", Revision 1.0 Nov. 12, 2008.	
	2	"Wireless Universal Serial Bus Specification 1.1", Revision 1.1 September 9, 2010.	
	3	AUSTIN et al., "Determinants and Patterns of Control over Technology in a Computerized Meeting Room," CSCW 90 Proceedings, pp. 39-51 (Oct. 1990).	
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	5	GRAY, et al., "The User Interface in Group Decision Support Systems," Group Support Systems: New Perspectives, Ch. 10, Macmillan Publishing Company, New York (1993).	
	6	Products, components, systems, and methods in public use and/or sale related to the Epson Quick Wireless Connection USB key and Quick Wireless Connection , developed by Epson (accessed July 7, 2017)	
	7	Products, components, systems, and methods in public use and/or sale related to the IOGEAR GUW2015VKIT Wireless USB to VGA Adapter Kit, developed by IOGEAR (accessed July 17, 2017).	
	8	Products, components, systems, and methods in public use and/or sale related to the ActionTec MyWirelessTV HDMI Transmitter, developed by ActionTec and Cavium (accessed Feb. 3, 2020).	

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	19	European Office Action in corresponding European Application No. 12759440.6-1204, dated May 28, 2019.	☐

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	46	U.S. Office Action in corresponding Application No. 16/034,846, dated June 25, 2020.	☐

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

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Name/Print	THOMAS LEE	Registration Number	66396

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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	2	8316138	B2	2012-11-20	Chang	
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	1	20100087139	A1	2010-04-08	Glass	Cited in Specification and German Search Report
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	4	20110115689	A1	2011-05-19	Sugiyama et al.	Cited in Specification
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	11	101022529	CN	A	2007-08-22	LIXING INTERNAT SCIENCE & TECH	cited in CN OA, English abstract	☒

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17121919
	Filing Date	2020-12-15
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	TBD
	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TL

	12	101106469	CN	A	2008-01-16	AWIND INC	cited in CN OA, English abstract	☒
	13	101442500	CN	A	2009-05-27	XIAOTAO YIN	cited in CN OA, English abstract	☒
	14	101828392	CN	A	2010-09-08	CREATIVE TECH LTD	cited in CN OA, English abstract	☒
	15	102023852	CN	A	2011-04-20	JULONG EDUCATIONAL TECHNOLOGY CO LTD	cited in CN OA, English abstract	☒
	16	1689275	CN	A	2005-10-26	SONY CORP	English abstract, corresponds to US 20020174254	☒
	17	2007/137415	WO	A1	2007-12-06	SMART TECH INC	cited in EP Office Communication	☐

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	1	International Search Report (ISR) dated March 6, 2013, for PCT/EP2012/068166.	
	2	International Search Report (ISR) dated March 19, 2013, for PCT/EP2012/068167.	
	3	International Search Report (ISR) dated March 4, 2013, for PCT/EP2012/068168.	

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	Attorney Docket Number	BEEL3002CIPC2/TL

	4	International Search Report (ISR) dated January 28, 2013, for PCT/EP2012/068169.	
	5	British Search Report dated August 28, 2012, for GB 1206841.7.	
	6	German Search Report dated November 17, 2011, for DE 102011055443.2.	
	7	Jiang et al., "A Novel Wireless Approach for Conference Projecting and Cooperating", Lecture Notes in Computer Science, Vol. 4159, pp. 688-697, 2006. (cited in GB 1206841.7 Search Report)	
	8	Martin Trautschold, iPhone 4 Made Simple, 2010, Apress, Pages 1-819.	
	9	Office Action in related U.S. Application Number 15/449,048, dated February 16, 2018.	
	10	US Office Action dated March 29, 2016, for 14/395,364.	
	11	Marc AL-HAMES et al., Audio-Visual Processing in Meetings: Seven Questions and Current AMI Answers, 2006.	
	12	Mood indicators on electronic meeting tools" IBM, IP.com number: IPCOMOOOO1171D, Publication Date: March 12, 2003.	
	13	Final Office Action in related U.S. Application No. 14/278,442, dated June 8, 2018.	
	14	Office Action in related Chinese Application Number 201280055744.2, dated March 30, 2018.	X

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	15	Office Action in related U.S. Application Number 14/344,836, dated February 28, 2018.	☐
	16	U.S. Office Action dated October 20, 2017, for U.S. Application No. 14/344,836.	☐
	17	European Notice of Opposition dated September 27, 2017 for EP 2756668.	☐
	18	StarTech.com: USB to DVI External Dual Monitor Video Adapter/USS to VGA External Dual Monitor Video Adapter, User Manual dated May 19, 2011.	☐
	19	Microsoft Community, conversation on August 30, 2011 about USB2VGA Adapter, retrieved on September 7, 2017.	☐
	20	Webopedia Definition of Peripheral Device, retrieved on September 7, 2017.	☐
	21	Trulink Wireless USB2VGA Adapter, Quick Start Guide, retrieved from www.c2g.com.	☐
	22	HWebPage on Availability of Trulink, retrieved on September 7, 2017.	☐
	23	Chinese Office Action dated October 31, 2017, for CN 201280001542.X, and English translation thereof.	☐
	24	European Office Communication dated June 15, 2015, for EP 12762258.7.	☐
	25	European Office Action dated August 1, 2016, for EP 12762258.7.	☐

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	26	U.S. Office Action dated June 17, 2016, for 14/278,442.	☐
	27	U.S. Office Action dated June 17, 2016, for 14/725,401.	☐
	28	Chinese Office Action dated April 5, 2017, for CN 201280055744.2, and English translation thereof.	☐
	29	U.S. Office Action dated May 3, 2017, for U.S. Application No. 14/344,836.	☐
	30	Chinese Office Action dated September 26, 2017, for CN 201280055744.2, and English translation thereof.	☒
	31	U.S. Office Action dated September 28, 2017, for U.S. Application No. 14/278,442.	☐
	32	"Quick Connect Wireless with Epson Projectors", retrieved from https://www.youtube.com/watch?v=9POz4-HyDXY, November 3, 2009.	☐
	33	"Remote Framebuffer Protocol (RFB)", Internet standard IETF RFC 6143 , March 2011.	☐
	34	Richardson & Wood, "The RFB Protocol", Cambridge: ORL, 1998.	☐
	35	"Manual of the Epson projectors", retrieved from http://esupport.epsoneurope.com/ViewArticle.aspx?lng=sv-SE&kbid=328038&data=bOU002FRIftu7YFtMOBp2mpSKntPq1A26Wyw&cl=1, February 14, 2011.	☐
	36	Chinese Office Action dated December 27, 2016, for CN 201280074077.2, and English translation thereof.	☐

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	37	Final Office Action in corresponding U.S. App. 14/725,401 dated January 26, 2017.	☐
	38	Final Office Action in corresponding U.S. App. 14/278,442 dated January 26, 2017.	☐
	39	Chinese Office Action in Chinese Application Number 201280074077.2, dated January 4, 2018.	☒
	40	International Preliminary Report on Patentability (IPRP) dated March 27, 2014, for PCT/EP2012/068166.	☐
	41	International Preliminary Report on Patentability (IPRP) dated March 27, 2014, for PCT/EP2012/068167.	☐
	42	International Preliminary Report on Patentability (IPRP) dated March 27, 2014, for PCT/EP2012/068168.	☐
	43	Request for Reexamination of Patent No. 8,756,348, dated February 9, 2018.	☐
	44	Request for Reexamination of Patent No. 9,083,769, dated February 9, 2018.	☐
	45	Intervention according to Art. 105 EPC in corresponding European patent 2756668, dated May 3, 2018.	☐
	46	Chinese Office Action dated November 4, 2016, for CN 201280001542.X, and English translation thereof.	☐
	47	European Office Communication dated December 21, 2015, for EP 12762258.7.	☐

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	48	Chinese Office Action dated June 28, 2017, for CN 201280074077.2, and English translation thereof.	☒
	49	Chinese Office Action dated July 4, 2017, for CN 201280055667.0, and English translation thereof.	☒
	50	Chinese Office Action dated July 21, 2017, for CN 20128001542.X, and English translation thereof.	☒

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	Art Unit	TBD
	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TL

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☒ A certification statement is not submitted herewith.

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2021-05-21
Name/Print	THOMAS LEE	Registration Number	66396

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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Bibliographic Data

Application No: 17/121,919

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /SCOTT C SUN/ Examiner's Signature | Initials

Title: ELECTRONIC TOOL AND METHODS FOR MEETINGS

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/15/2020	715	2181	21063.0029USWO
RULE			

APPLICANTS

BARCO N.V., Kortrijk, BELGIUM

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Koen Simon Herman BEEL, Eke, BELGIUM

Yoav NIR, Komen, BELGIUM

Filip Josephine Johan LOUWET, Knesselare, BELGIUM

Guy COEN, Aalst, BELGIUM

CONTINUING DATA

This application is a CON of 14725401 05/29/2015 PAT 10904103

14725401 is a CON of 14212170 03/14/2014 PAT 9083769

14212170 is a CIP of PCT/EP2012/068166 09/14/2012

PCT/EP2012/068166 has PRO of 61635219 04/18/2012

PCT/EP2012/068166 is a CON of 13270659 10/11/2011 PAT 8756348

14212170 is a CIP of 13270659 10/11/2011 PAT 8756348

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	1	Chinese Office Action in corresponding Chinese Application No. 201810229467.1, dated January 8, 2021.	X
	2	U.S. Office Action in corresponding U.S. Application No. 16/852,790, dated January 14, 2021.	☐

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Name/Print	THOMAS LEE	Registration Number	66396

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	1	20040263636	A1	2004-12-30	Cutler et al.	
	2	20070033289	A1	2007-02-08	Nuyttens et al.	
	3	20110222556	A1	2011-09-15	Shefler et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2010135894	WO	A1	2010-12-02	ZTE Corporation	Abstract.	X

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.C.S/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17121919
	Filing Date	2020-12-15
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	TBD
	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TL

If you wish to add additional Foreign Patent Document citation information please click the Add button [Add]

NON-PATENT LITERATURE DOCUMENTS [Remove]

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	European Office Action in corresponding European Application No. 12775162.6, dated April 19, 2021.	

If you wish to add additional non-patent literature document citation information please click the Add button [Add]

EXAMINER SIGNATURE

Examiner Signature	/SCOTT C SUN/	Date Considered	09/29/2021

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.C.S/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17121919
	Filing Date	2020-12-15
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	TBD
	Examiner Name	TBD
	Attorney Docket Number	BEEL3002CIPC2/TL

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2021-04-22
Name/Print	THOMAS LEE	Registration Number	66396

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.C.S/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.C.S/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/121,919	12/15/2020	Koen Simon Herman BEEL	BEEL3002CIPC2/TJM

CONFIRMATION NO. 2764

POWER OF ATTORNEY NOTICE

23364
BACON & THOMAS, PLLC
201 N. Union St.
Suite 430
Alexandria, VA 22314-2649

Date Mailed: 07/22/2021

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/17/2021.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/qnguyen/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/121,919	12/15/2020	Koen Simon Herman BEEL	21044.0039USC3

CONFIRMATION NO. 2764

POA ACCEPTANCE LETTER

52835
HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 South Seventh Street
Suite 2700
Minneapolis, MN 55402-1683

OC000000127065887

Date Mailed: 07/22/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/17/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/qnguyen/

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/121,919

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	320
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	700
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 100 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 480 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1820

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/121,919	12/15/2020		1980	21044.0039USC3	20	3

CONFIRMATION NO. 2764

UPDATED FILING RECEIPT

52835
HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 South Seventh Street
Suite 2700
Minneapolis, MN 55402-1683

OC000000127104525

Date Mailed: 07/22/2021

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Koen Simon Herman BEEL, Eke, BELGIUM;
Yoav NIR, Komen, BELGIUM;
Filip Josephine Johan LOUWET, Knesselare, BELGIUM;
Guy COEN, Aalst, BELGIUM;

Applicant(s)

BARCO N.V., Kortrijk, BELGIUM;

Assignment For Published Patent Application

BARCO N.V., Kortrijk, BELGIUM

Power of Attorney: The patent practitioners associated with Customer Number 52835

Domestic Priority data as claimed by applicant

This application is a CON of 14/725,401 05/29/2015 PAT 10904103
which is a CON of 14/212,170 03/14/2014 PAT 9083769
which is a CIP of 13/270,659 10/11/2011 PAT 8756348
and is a CIP of PCT/EP2012/068166 09/14/2012
and said 13/270,659 10/11/2011
claims benefit of 61/534,592 09/14/2011
and said PCT/EP2012/068166 09/14/2012
claims benefit of 61/635,219 04/18/2012
and claims benefit of 61/534,592 09/14/2011
and is a CON of 13/270,659 10/11/2011 PAT 8756348

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 03/17/2021
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/121,919**
Projected Publication Date: 10/28/2021
Non-Publication Request: No
Early Publication Request: No
Title

ELECTRONIC TOOL AND METHODS FOR MEETINGS

Preliminary Class

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign

patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventorship:	BEEL	Examiner:	Unknown
Serial No.:	17/121919	Group Art Unit:	Unknown
Filed:	December 15, 2020	Docket No.:	21044.0039USC3
Title:	ELECTRONIC TOOL AND METHODS FOR MEETINGS		

CERTIFICATE OF TRANSMISSION.
I hereby certify that this paper is being transmitted by EFS Web to the United States Patent & Trademark Office on July 19, 2021.

By: /yanling cottle/
Name: Yanling Cottle

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

SUPPLEMENTAL RESPONSE TO NOTICE TO FILE MISSING PARTS

Dear Commissioner:

In connection with the above-referenced application, further to the Response to Notice to File Missing Parts filed July 16, 2021, the requisite fee of $1,160, for the surcharge, search fee and examination fee set forth in 37 C.F.R 1.16, is being paid herewith. Please charge any underpayment of fees or credit overpayment to Deposit Account No. 50-3478.

Respectfully submitted,

HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 S. 7th St., Suite 2700
Minneapolis, MN 55402
(612) 455-3800

Dated: July 19, 2021

By: /Thomas Lee/
Thomas Lee
Reg. No.: 66,396
TL/ylc

Electronic Patent Application Fee Transmittal

Application Number:	17121919
Filing Date:	15-Dec-2020
Title of Invention:	ELECTRONIC TOOL AND METHODS FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman BEEL
Filer:	Thomas Lee/Yanling Cottle
Attorney Docket Number:	21044.0039USC3

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY SEARCH FEE	1111	1	700	700
UTILITY EXAMINATION FEE	1311	1	800	800
Pages:				
Claims:				
Miscellaneous-Filing:				
LATE FILING FEE FOR OATH OR DECLARATION	1051	1	160	160
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1660**

Electronic Acknowledgement Receipt

EFS ID:	43283143
Application Number:	17121919
International Application Number:	
Confirmation Number:	2764
Title of Invention:	ELECTRONIC TOOL AND METHODS FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman BEEL
Customer Number:	52835
Filer:	Thomas Lee/Yanling Cottle
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	21044.0039USC3
Receipt Date:	19-JUL-2021
Filing Date:	15-DEC-2020
Time Stamp:	13:19:07
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1660
RAM confirmation Number	E20217ID19411087
Deposit Account	503478
Authorized User	Yanling Cottle

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Response to Pre-Exam Reissue Notice	RESPONSE_0039USC3.pdf	142946 420e40c21e4a2a1cc602926cd8cc46a76fd87e2e	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	35381 3632c47f3ada13fa625fa6c4ed5d99ee3a2c391d	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	178327		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventorship:	BEEL et al.	Examiner:	Unknown
Serial No.:	17/121919	Group Art Unit:	Unknown
Filed:	December 15, 2020	Docket No.:	21044.0039USC3
Title:	ELECTRONIC TOOL AND METHODS FOR MEETINGS		

CERTIFICATE OF TRANSMISSION.
I hereby certify that this paper is being transmitted by EFS Web to the United States Patent & Trademark Office on July 16, 2021.

By: /yanling cottle/
Name: Yanling Cottle

RESPONSE TO NOTICE TO FILE MISSING PARTS

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

In connection with the above-identified application, please enter the following preliminary amendment:

Amendments to the Claims are reflected in the listing of claims that begins on page 2 of this paper.

Remarks begin on page 8 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (New) A method for connecting one or more processing devices, each processing device being a user device of one participant in a meeting with a plurality of participants, to a wireless communications network having a base node with one or more first displays, the one or more processing devices each having a memory, a second display and an operating system with at least one pre-installed generic driver providing a generic communications protocol for communication between the processing device and a class of peripheral devices, the method comprising the following steps for each processing device:

a) coupling a peripheral device to the processing device, the peripheral device having a wireless transceiver;

b) setting up, by means of the pre-installed generic driver of the operating system, a means for communication between the peripheral device and the processing device;

c) coupling the processing device to the wireless communications network via the peripheral device; running a client application stored on the peripheral device to obtain screen scraped data;

d) routing the screen scraped data between the processing device and the wireless communications network via the means for communication for display on the one or more first displays of the base node, wherein the generic communication protocol is used for transferring the screen scraped data for display between the processing device and the peripheral device; and

e) obtaining electronic access to the one or more first displays for display of the screen scraped data;

the method further comprising:

displaying the screen scraped data on the one or more first displays in accordance with a set of rules, one of the rules being a forcing rule, wherein the forcing rule is that display on the one or more first displays of new screen scraped data is obtained by the action of only one participant involved in the meeting, without requiring the agreement of another participant, the

new screen scraped data of any participant for display overrides or replaces any data displayed on the one or more first displays from the same or another participant of the meeting.

2. (New) The method of claim 1 further comprising loading a server program onto the base node, the server program receiving screen scraped data from one or a plurality of client processing devices, and displaying the screen scraped data on one or more first displays, the server program allowing display in accordance with one or more rules of which one is a forcing rule, wherein the forcing rule is that the display on the one or more first displays is obtained by the action of only one participant involved in the meeting, without requiring the agreement of another participant, new screen scraped data of any participant for display overrides or replaces any data displayed on the one or more first displays from the same or another participant of the meeting.

3. (New) The method of claim 2, wherein the server program is a portable application adapted to be loaded onto the base node and to be run on an operating system of the base node.

4. (New) The method of claim 1, wherein the peripheral device has an actuator, the method further comprising a user action on the actuator that triggers transfer of the data for display from the processing device to the wireless transceiver and from there to the wireless communications network.

5. (New) The method of claim 1, wherein step b) is selected from:

presenting the peripheral device to the processing device as a human interface device and wherein the pre-installed generic driver is a human interface device driver;

presenting the peripheral device to the processing device as a mass storage device and wherein the pre-installed generic driver is a mass storage device driver; and

presenting the peripheral device to the processing device as a composite device and wherein pre-installed generic drivers drive different device interfaces independently.

6. (New) The method of claim 1, wherein the peripheral device comprises:

a base,

a connector, and

a flexible connection between the base and the connector for transferring data signals and power, and

wherein the actuator is on the base and the base has electronics comprising a processing engine, a transceiver and a visual indicator, the method further comprising:

connecting the connector to a plug and play port of the processing device and actuating a signal with the actuator and transferring the signal to the connector for transfer to the port.

7. (New) The method of claim 6, wherein the peripheral device comprises permanent storage for storing the client application.

8. (New) The method of claim 1, wherein the transferring of the data for display is to a defined network node without user entry of configuration details.

9. (New) The method of claim 8 for use by a plurality of users in a meeting, there being client processing devices each for coupling to a peripheral device for every user in the meeting, a first user action connecting a processing device to the base node, and a second user action comprising activating an actuator located on an input device coupled to the peripheral device which then starts a process of obtaining the data for display by screen scraping data from the processing device and transmitting screen scraped data to the base node, the base node carrying out graphical commands sent from the processing device.

10. (New) The method of claim 8, wherein, when the base node receives the screen scraped data, further comprising the step of providing auto composition of the screen scraped data on the first display connected to the base node.

11. (New) The method of claim 7, further comprising pairing of the peripheral device to the base node before communication starts.

12. (New) The method of claim 7, wherein a daemon is provided that is pre-installed on the

processing device, the daemon providing a permanently running service that continuously monitors if a peripheral device has been offered up for connection to the processing device.

13. (New) The method of claim 7, wherein the pre-installed generic drivers drive different device interfaces independently.

14. (New) A method for providing communication connectivity from a processing device, the processing device being a user device of a participant in a meeting with a plurality of participants, the method comprising the following steps:

setting up a communications network between a base node of the communications network and a peripheral device coupled to the processing device;

transferring media content between the processing device and the peripheral device; the media content being screen scraped data from a screen of the processing device;

transmitting the media content from the peripheral device to the communications network;

receiving media content from the communications network at the base node and displaying the media content on a display in accordance with a set of rules, one of the rules being a forcing rule, whereby the forcing rule determines that the displaying of media content on the display is obtained by a user action on any one of the user devices involved in the meeting, without requiring the agreement of another participant, the media content from the any one of the user devices overriding or replacing any data displayed on the display by the same or another participant of the meeting.

15. (New) The method of claim 14, wherein the base node has one or more displays, further comprising loading a server program onto the base node, the server program receiving screen scraped data from one or a plurality of client processing devices, and displaying the screen scraped data on the one or more displays, the server program allowing display in accordance with one or more rules of which one is the forcing rule, wherein the forcing rule is that the display on the one or more displays is obtained by the action of only one participant involved in the meeting, without requiring the agreement of another participant, new screen scraped data of

any participant for display overrides or replaces any data displayed on the one or more displays from the same or another participant of the meeting.

16. (New) An electronic meeting tool for communicating arbitrary media content, being data for display, from users at a meeting, the tool comprising:

a base unit of a wireless communications network, the base unit being coupled to one or more first displays, the base unit being adapted to receive user selected arbitrary media content from a processing device via the wireless communications network, and to control display of the user selected arbitrary media content on the one or more first displays;

at least one peripheral device adapted to communicate the user selected arbitrary media content from the processing device to the base unit via the wireless communications network;

a program adapted to be loaded onto the processing device and to run on an operating system of the processing device, said program being adapted to obtain user selected arbitrary media content from the processing device;

an input device to allow the user to carry out a user action that triggers transfer of said user selected arbitrary media content from said processing device to a transmitter and to the wireless communications network, the input device being an actuator coupled to the peripheral device and the base unit is adapted to display said user selected arbitrary media content on the first display in accordance with a set of rules, wherein one of the rules is a forcing rule, whereby the forcing rule is that the display on the one or more first displays is obtained by the action of only one participant involved in the meeting, without requiring the agreement of another participant, the data of any participant for display overriding or replacing any data displayed on the one or more first displays by the same or another participant of the meeting.

17. (New) The electronic meeting tool of claim 16 configured for use by a plurality of users in a meeting, there being processing devices each for coupling to a peripheral device for every user in the meeting, whereby the electronic meeting tool is configured to allow a first user action to connect a client processing device to the base unit, and a second user action comprising activating the actuator on the input device which is coupled to the peripheral device which then starts a process of obtaining the user selected arbitrary media content by screen scraping data from the processing device and transmitting screen scraped data for display to the base unit,

whereby the base unit is configured to carry out graphical commands sent from the processing device.

18. (New) The method according to claim 1, wherein running said program does not require installation of the program or configuration of the processing device.

19. (New) The electronic meeting tool according to claim 16, wherein running said program does not require installation of the program or configuration of the processing device.

20. (New) The method according to claim 1, further comprising a program adapted to be loaded onto the processing device and to run on an operating system of the processing device, said program being adapted to obtain the media content from the processing device, running said program on the processing device does not require installation of the program or configuration of the processing device.

REMARKS

The above amendment is made to respond to Notice to File Missing Parts mailed March 18, 2021. No new matter has been added and no issues requiring any substantive consideration have been raised. It is requested that the amendments be entered.

Applicants respectfully request that the preliminary amendment described herein be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record listed as below.

Respectfully submitted,

HAMRE, SCHUMANN, MUELLER & LARSON, P.C.
45 S. 7th St., Suite 2700
Minneapolis, MN 55402
(612) 455-3800

Dated: July 16, 2021

By: /Thomas Lee/
Thomas Lee
Reg. No.: 66,396
TL/ylc

PTO/AIA/22 (10-20)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): 21044.0039USC3

Application Number: 17/121919

Filed: 2020-12-15

For: ELECTRONIC TOOL AND METHODS FOR MEETINGS

Art Unit:

Examiner:

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

		Fee	Small Entity Fee	Micro Entity Fee	
☐	One month (37 CFR 1.17(a)(1))	$220	$110	$55	$
☑	Two months (37 CFR 1.17(a)(2))	$640	$320	$160	$ 640
☐	Three months (37 CFR 1.17(a)(3))	$1,480	$740	$370	$
☐	Four months (37 CFR 1.17(a)(4))	$2,320	$1,160	$580	$
☐	Five months (37 CFR 1.17(a)(5))	$3,160	$1,580	$790	$

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 503478.

☑ Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 66,396.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Thomas Lee/ — Signature

2021-07-16 — Date

Thomas Lee — Typed or printed name

612.455.3844 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	17121919
Filing Date:	15-Dec-2020
Title of Invention:	ELECTRONIC TOOL AND METHODS FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman BEEL
Filer:	Thomas Lee/Yanling Cottle
Attorney Docket Number:	BEEL3002CIPC2/TJM

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 2 months with $0 paid	1252	1	640	640
Miscellaneous:				
			Total in USD ($)	**640**

Electronic Acknowledgement Receipt

EFS ID:	43273637
Application Number:	17121919
International Application Number:	
Confirmation Number:	2764
Title of Invention:	ELECTRONIC TOOL AND METHODS FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman BEEL
Customer Number:	23364
Filer:	Thomas Lee/Yanling Cottle
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	BEEL3002CIPC2/TJM
Receipt Date:	16-JUL-2021
Filing Date:	15-DEC-2020
Time Stamp:	15:36:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$640
RAM confirmation Number	E20217FF36492384
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		RESP_0039.pdf	96593 347afe10956966331c497b228c166601169b4fd4	yes	8
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Applicant Response to Pre-Exam Formalities Notice		1	1	
	Claims		2	7	
	Applicant Arguments/Remarks Made in an Amendment		8	8	
Warnings:					
Information:					
2	Extension of Time	EOT_0039.pdf	165487 680f310db2af34a9a313d5b6cd38a25515307c66	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30833 6e98de5e1e79b90b201f7bad5195aafd01627365	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	292913		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17121919
Filing Date	2020-12-15
First Named Inventor	Koen Simon Herman BEEL
Art Unit	
Examiner Name	
Attorney Docket Number	21044.0039USC3

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070206088		2007-09-06	Mizunashi et al.	
	2	20040012669		2004-01-22	Drell et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	101572794	CN		2009-11-04	SHENZHEN HUAWEI COMM TECH CO	English Abstract	☒
	2	101917402	CN		2010-12-15	CHINA ELECTRIC POWER RES INST	With English translation	☒

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17121919
	Filing Date	2020-12-15
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	
	Examiner Name	
	Attorney Docket Number	21044.0039USC3

	3	1317112	CN		2001-10-10	SEIKO EPSON CORP	With English translation	☒
	4	102065267	CN		2011-05-18	LG ELECTRONICS INC	English Abstract	☒
	5	1609780	CN		2005-04-27	MICROSOFT CORP	English Abstract	☒

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Office Action in related Chinese Office application 202010418842.4 dated May 28, 2021, with English translation (17 pages).	☒
	2	Office Action in related Chinese Office application 202010418639.7 dated May 28, 2021, with English translation (22 pages).	☒
	3	Office Action in related Chinese Office application 202010418675.3 dated May 28, 2021, with English translation (17 pages).	☒

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17121919
	Filing Date	2020-12-15
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	
	Examiner Name	
	Attorney Docket Number	21044.0039USC3

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2021-07-14
Name/Print	THOMAS LEE	Registration Number	66396

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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CN101572794A Conference terminal, conference server, conference system and data processing method

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Conference terminal, conference server, conference system and data processing method

Abstract

The embodiment of the invention provides a conference terminal, a conference server, a conference system and a data processing method, wherein, the conference terminal comprises a mark acquisition module for acquiring a marked data signal; an image acquisition module for acquiring an image data signal; a superposing module for superposing the image data signal and the marked data signal to generate a composite image and data signal; and an output module for outputting the composite image and data signal. The conference terminal, the conference server, the conference system and the data processing method can help improve sense of participation of a video conferencing user and enhance the discussion efficiency.

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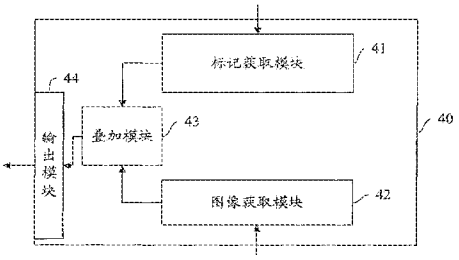
权利要求书 11 页 说明书 32 页 附图 13 页

[54] 发明名称

会议终端、会议服务器、会议系统及数据处理方法

[57] 摘要

本发明实施例提供一种会议终端、会议服务器、会议系统及数据处理方法，其中，会议终端包括：标记获取模块，用于获取标记数据信号；图像获取模块，用于获取图像数据信号；叠加模块，用于将所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据信号；输出模块，用于输出所述混合图像数据信号。 通过采用本发明的实施例，可以提高视频会议用户的参与感，提高讨论效率。



1. 一种会议终端，其特征在于，包括：

标记获取模块，用于获取标记数据信号；

图像获取模块，用于获取图像数据信号；

叠加模块，用于将所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据信号；

输出模块，用于输出所述混合图像数据信号。

2. 根据权利要求 1 所述的会议终端，其特征在于，还包括：

第一定时器，用于产生第一时间间隔值；

第二定时器，用于产生第二时间间隔值；

所述标记获取模块具体包括：

第一标记获取模块，用于获取所述标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；

第二标记获取模块，用于获取所述标记数据信号，并按照所述第二时间间隔值输出所述标记数据信号，产生第二标记数据信号。

3. 根据权利要求 2 所述的会议终端，其特征在于，

所述第一标记获取模块具体为：

第一内部标记获取模块，用于获取本地会议终端发送的标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；

所述第二标记获取模块具体为：

第二内部标记获取模块，用于获取本地会议终端发送的标记数据信号，并按照所述第二时间间隔值输出所述标记数据信号，产生第二标记数据信号。

4. 根据权利要求 3 所述的会议终端，其特征在于，还包括：

标记编码模块，用于将所述第二标记数据信号进行编码，产生第三标记数据信号；

标记发送模块，用于通过辅流通道或者自定义通道向会议服务器发送所述第三标记数据信号。

5. 根据权利要求 4 所述的会议终端，其特征在于，还包括：

第一令牌控制模块，用于在所述辅流通道中申请会场令牌，申请成功并得到一会场令牌后，产生第一控制信号；

所述标记发送模块根据所述第一控制信号通过所述辅流通道向所述会议服务器发送所述第三标记数据信号。

6. 根据权利要求 2 所述的会议终端，其特征在于，

所述第一标记获取模块具体为：

第一外部标记获取模块，用于获取会议服务器发送的除本地会议终端外的至少一个其他会议终端的标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号。

7. 根据权利要求 6 所述的会议终端，其特征在于，

所述第一外部标记获取模块包括：

第一外部标记获取子模块，用于获取所述会议服务器发送的至少一个所述其他会议终端的标记数据信号；

至少一个解码器，用于对所述至少一个所述其他会议终端的标记数据信号分别进行解码，生成一标记数据信号队列；

标记输出模块，用于按照所述标记数据信号队列的顺序输出所述标记数据信号，生成至少一个第一标记数据信号。

8. 根据权利要求 7 所述的会议终端，其特征在于，

所述叠加模块具体为：

第一叠加模块，用于将所述图像数据信号和所述第一标记数据信号进行叠加，生成第一混合图像数据信号；

所述输出模块具体为：

第一发送模块，用于向本地会议终端的显示屏幕上发送所述第一混合图像数据。

9. 根据权利要求 3 所述的会议终端，其特征在于，还包括：

第二令牌控制模块，用于在辅流通道中申请会场令牌，申请成功并得到一会场令牌后，产生第二控制信号。

10. 根据权利要求 9 所述的会议终端，其特征在于，

所述叠加模块具体为：

第二叠加模块，用于根据所述第二控制信号将所述图像数据信号和所述第一标记数据信号进行叠加，生成第二混合图像数据；

所述输出模块具体为：

第二发送模块，用于向所述本地会议终端的显示屏幕上发送所述第一混合图像数据，或者通过所述辅流通道向会议服务器发送所述第二混合图像数据。

11. 根据权利要求 3 所述的会议终端，其特征在于，还包括：

令牌管理模块，用于接收本地会议终端所在会场中的一输入设备的子令牌申请，确认所述子令牌申请成功后，分配一子令牌给所述输入设备；

所述第一内部标记获取模块根据所述子令牌，获取所述本地会议终端所在会场中的所述输入设备的标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；

所述第二内部标记获取模块根据所述子令牌，获取所述本地会议终端所在会场中的所述输入设备的标记数据信号，并按照所述第二时间间隔值输出所述标记数据信号，产生第二标记数据信号。

12. 根据权利要求 1 所述的会议终端，其特征在于，

所述标记获取模块具体为：

实时标记获取模块，用于实时获取标记数据信号；

所述图像获取模块具体为：

实时图像获取模块，用于实时获取图像数据信号。

13. 根据权利要求 1 所述的会议终端，其特征在于，

所述标记获取模块具体为：

手动标记获取模块，用于提供手动接收选项，所述手动接收选项被选择时，获取标记数据信号；

所述图像获取模块具体为：

手动图像获取模块，用于提供手动接收选项，所述手动接收选项被选择时，获取图像数据信号。

14. 根据权利要求 1 - 13 任一项所述的会议终端，其特征在于，还包括：

私密令牌控制模块，用于接收本地会议终端所在会场中的一输入设备发起的与一目标输入设备进行私密会议的私密令牌申请，确认所述私密令牌申请成功后，启用一辅流通道或者自定义通道，并分配一私密令牌给所述输入设备。

15. 一种会议服务器，其特征在于，包括：

图像数据接收模块，用于接收会议终端发送的图像数据信号；

标记接收模块，用于接收会议终端发送的标记数据信号；

叠加模块，用于对所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据；

发送模块，用于发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号。

16. 根据权利要求 15 所述的会议服务器，其特征在于，所述叠加模块包括：

填充模块，用于为所述标记数据信号分配填充颜色或者透明颜色，并利用所述填充颜色或者透明颜色对所述标记数据信号进行处理，产生颜色标记数据信号；

处理模块，用于将所述图像数据信号和所述颜色标记数据信号进行叠加，生成混合图像数据。

17. 根据权利要求 15 或 16 所述的会议服务器，其特征在于，还包括：

发送控制模块，用于选择辅流通道，控制所述发送模块通过所述辅流通道向会议终端或者其他会议服务器发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号。

18. 根据权利要求 17 所述的会议服务器，其特征在于，还包括：

令牌管理模块，用于接收会议终端发起的会场令牌申请，确认所述会场令牌申请成功后，向所述会议终端返回一会场令牌；

所述发送控制模块根据所述会场令牌，选择辅流通道，控制所述发送模块通过所述辅流通道向其它会议终端或者其他会议服务器发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号。

19. 一种会议系统，其特征在于，包括：第一会议终端，会议服务器和至少一个第二会议终端；其中，

所述第一会议终端包括：

图像获取模块，用于获取所述会议服务器转发的图像数据信号；

标记发送模块，用于获取标记数据信号，并向所述会议服务器发送标记数据信号；

所述会议服务器包括：

图像数据接收模块，用于接收系统中任一会议终端发送的图像数据信号；

标记接收模块，用于接收所述标记数据信号；

叠加模块，用于对所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据；

发送模块，用于向所述第一会议终端和所述至少一个第二会议终端发送所述混合图像数据；

所述至少一个第二会议终端，用于接收并显示所述混合图像数据。

20. 根据权利要求 19 所述的系统，其特征在于，所述会议服务器为至少两个级联的会议服务器。

21. 根据权利要求 20 所述的系统，其特征在于，所述至少两个会议服务器包括：一主会议服务器和至少一个从会议服务器；

所述主会议服务器，向所述至少一个从会议服务器和与所述主会议服务器连接的会议终端发送所述混合图像数据；

所述从会议服务器，将其接收到的所述混合图像数据向与所述从会议服务器连接的会议终端发送。

22. 根据权利要求 20 所述的系统，其特征在于，所述至少两个会议服务器均为主会议服务器，所述系统还包括：

控制单元，用于获取所述标记数据信号的发送时间，按照所述标记数据信号的发送时间的先后顺序，产生一控制信号；

所述至少两个主会议服务器中的所述叠加模块，根据所述控制信号对所述图像数据信号和所述标记数据信号进行叠加，生成所述混合图像数据。

23. 根据权利要求 22 所述的系统，其特征在于，所述至少两个主会议服务器根据所述控制信号，获取一控制令牌，所述叠加模块根据所述控制令牌对所述图像数据信号和所述标记数据信号进行叠加，生成所述混合图像数据。

24. 一种会议系统，其特征在于，包括：第一会议终端，会议服务器和至少一个第二会议终端；其中，

所述第一会议终端包括：

图像获取模块，用于获取所述会议服务器发送图像数据信号；

标记发送模块，用于获取标记数据信号，并向所述会议服务器发送所述标记数据信号；

所述会议服务器用于接收所述图像数据信号和所述标记数据信号，并转发；

所述至少一个第二会议终端包括：

第一定时器，用于产生第一时间间隔值；

图像获取模块，用于获取所述会议服务器转发的图像数据信号；

第一外部标记获取模块，用于获取所述会议服务器转发的标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；

第一叠加模块，用于将所述图像数据信号和所述第一标记数据信号进行叠加，生成第一混合图像数据信号；

显示模块，用于显示所述第一混合图像数据信号。

25. 根据权利要求 24 所述的系统，其特征在于，所述第一外部标记获取模块包括：

第一外部标记获取子模块，用于获取所述会议服务器转发的至少一个其他会议终端的标记数据信号；

至少一个解码器，用于对所述至少一个其他会议终端的标记数据信号分别进行解码，生成一标记数据信号队列；

标记输出模块，用于按照所述第一时间间隔值和所述标记数据信号队列的顺序输出所述标记数据信号，生成至少一个第一标记数据信号。

26. 根据权利要求 24 或 25 所述的系统，其特征在于，所述会议服务器为

至少两个级联的会议服务器。

27. 根据权利要求 26 所述的系统，其特征在于，所述至少两个会议服务器包括：一主会议服务器和至少一个从会议服务器；

所述主会议服务器，向所述至少一个从会议服务器和与所述主会议服务器连接的会议终端发送所述图像数据信号和所述标记数据信号；

所述从会议服务器，将其接收到的所述图像数据信号或所述标记数据信号向与所述从会议服务器连接的会议终端发送。

28. 根据权利要求 26 所述的系统，其特征在于，所述至少两个会议服务器均为主会议服务器，所述系统还包括：

控制单元，用于获取所述标记数据信号的发送时间，按照所述标记数据信号的发送时间的先后顺序，产生一控制信号；

所述至少两个主会议服务器根据所述控制信号转发所述图像数据信号和所述标记数据信号。

29. 根据权利要求 28 所述的系统，其特征在于，所述至少两个主会议服务器根据所述控制信号，获取一控制令牌，并根据所述控制令牌对所述图像数据信号和所述标记数据信号进行转发。

30. 一种会议系统，其特征在于，包括：第一会议终端，会议服务器和至少一个第二会议终端；其中，

所述第一会议终端包括：

第一定时器，用于产生第一时间间隔值；

第二定时器，用于产生第二时间间隔值；

第一内部标记获取模块，用于获取本地会议终端发送的标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；

第二内部标记获取模块，用于获取本地会议终端发送的标记数据信号，并按照所述第二时间间隔值输出所述标记数据信号，产生第二标记数据信号；

第二叠加模块，用于将所述图像数据信号和所述第一标记数据信号进行叠加，生成第二混合图像数据；

第二发送模块，用于向所述本地会议终端的显示屏幕上发送所述第一混合

图像数据，或者通过辅流通道向所述会议服务器发送所述第二混合图像数据；

所述会议服务器，用于接收所述第二混合图像数据，并转发；

所述至少一个第二会议终端，用于接收所述第二混合图像数据并显示。

31. 根据权利要求 30 所述的系统，其特征在于，所述第一会议终端还包括：

第二令牌控制模块，用于在另一个辅流通道中申请会场令牌，申请成功并得到一会场令牌后，产生第二控制信号；

所述第二叠加模块根据所述第二控制信号将所述图像数据信号和所述第一标记数据信号进行叠加，生成第二混合图像数据。

32. 根据权利要求 30 或 31 所述的系统，其特征在于，所述会议服务器为至少两个级联的会议服务器。

33. 根据权利要求 32 所述的系统，其特征在于，所述至少两个会议服务器包括：一主会议服务器和至少一个从会议服务器；

所述主会议服务器，向所述至少一个从会议服务器和与所述主会议服务器连接的会议终端发送所述第二混合图像数据；

所述从会议服务器，将其接收到的所述第二混合图像数据向与所述从会议服务器连接的会议终端发送。

34. 一种数据处理方法，其特征在于，包括：

获取图像数据信号；

获取标记数据信号；

将所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据信号；

输出所述混合图像数据信号。

35. 根据权利要求 34 所述的方法，其特征在于，所述获取标记数据信号的步骤之后还包括：

产生第一时间间隔值；

产生第二时间间隔值；

按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信

号；

按照所述第二时间间隔值输出所述标记数据信号，产生第二标记数据信号。

36. 根据权利要求 35 所述的方法，其特征在于，所述获取标记数据信号的步骤具体为：

获取本地会议终端发送的标记数据信号。

37. 根据权利要求 36 所述的方法，其特征在于，所述按照所述第二时间间隔值输出所述标记数据信号，产生第二标记数据信号的步骤之后还包括：

将所述第二标记数据信号进行编码，产生第三标记数据信号；

通过辅流通道向会议服务器发送所述第三标记数据信号。

38. 根据权利要求 37 所述的方法，其特征在于，所述通过辅流通道向会议服务器发送所述第三标记数据信号的步骤具体为：

在所述辅流通道中申请令牌，申请成功并得到一令牌后，产生第一控制信号；

根据所述第一控制信号通过所述辅流通道向所述会议服务器发送所述第三标记数据信号。

39. 根据权利要求 35 所述的方法，其特征在于，所述获取标记数据信号的步骤具体为：

获取会议服务器发送的除本地会议终端之外的至少一个其他会议终端的标记数据信号。

40. 根据权利要求 39 所述的方法，其特征在于，所述获取会议服务器发送的除本地会议终端之外的至少一个其他会议终端的标记数据信号的步骤之后还包括：

对所述至少一个其他会议终端的标记数据信号分别进行解码，生成一标记数据信号队列；

按照所述第一时间间隔值，根据所述标记数据信号队列的顺序输出所述标记数据信号，生成至少一个第一标记数据信号。

41. 根据权利要求 40 所述的方法，其特征在于，所述将所述图像数据信

号和所述标记数据信号进行叠加，生成混合图像数据信号的步骤具体为：

将所述图像数据信号和所述至少一个第一标记数据信号进行叠加，生成第一混合图像数据信号；

所述输出所述混合图像数据信号的步骤具体为：

向本地会议终端的显示屏幕上发送所述第一混合图像数据。

42. 根据权利要求 36 所述的方法，其特征在于，按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号的步骤后还包括：

在辅流通道中申请令牌，申请成功并得到一令牌后，产生第二控制信号；

所述将所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据信号的步骤具体为：

根据所述第二控制信号将所述图像数据信号和所述第一标记数据信号进行叠加，生成第二混合图像数据；

所述输出所述混合图像数据信号的步骤具体为：

向所述本地会议终端的显示屏幕上发送所述第二混合图像数据，或者通过辅流通道向会议服务器发送所述第二混合图像数据。

43. 根据权利要求 36 所述的方法，其特征在于，所述获取本地会议终端发送的标记数据信号之前还包括：

接收本地会议终端所在会场中的一输入设备的子令牌申请，确认所述子令牌申请成功后，分配一子令牌给所述输入设备；

所述获取本地会议终端发送的标记数据信号的步骤具体为：

根据所述子令牌，获取所述本地会议终端所在会场中的所述输入设备的标记数据信号。

44. 根据权利要求 39 所述的方法，其特征在于，所述获取会议服务器发送的除本地会议终端之外的至少一个其他会议终端的标记数据信号的步骤具体为：

实时或者手动接收所述会议服务器发送来的，除所述本地会议终端之外的至少一个其他会议终端的标记数据信号。

45. 一种数据处理方法，其特征在于，包括：

接收会议终端发送的图像数据信号和标记数据信号；

对所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据；

向会议终端发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号。

46. 根据权利要求 45 所述的方法，其特征在于，所述对所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据的步骤包括：

为所述标记数据信号分配填充颜色或者透明颜色，并利用所述填充颜色或者透明颜色对所述标记数据信号进行处理，产生颜色标记数据信号；

将所述图像数据信号和所述颜色标记数据信号进行叠加，生成混合图像数据。

47. 根据权利要求 45 或 46 所述的方法，其特征在于，所述向会议终端发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号的步骤具体为：

选择一辅流通道，通过所述辅流通道向会议终端发送所述混合图像数据或者所述标记数据信号。

48. 根据权利要求 47 所述的方法，其特征在于，所述向会议终端发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号的步骤之前还包括：

接收所述会议终端发起的会场令牌申请，确认所述会场令牌申请成功后，向所述会议终端返回一会场令牌；

所述向会议终端发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号的步骤具体为：

根据所述会场令牌，将所述混合图像数据或者所述图像数据信号或者所述标记数据信号发送给其它会场的会议终端。

会议终端、会议服务器、会议系统及数据处理方法

技术领域

本发明涉及视频会议系统，特别是指一种会议终端、会议服务器、会议系统及数据处理方法。

背景技术

在最早的视频会议中，人们只能通过图像和声音进行交互，后来 H.261 协议允许视频会议的参与者通过活动视频通道传递 4CIF 大小的静止图文，以便参与者之间分享胶片，但是这种分享是通过抢占活动视频通道来实现的，一方面胶片分辨率不高，另一方面传输胶片时会引起活动视频出现停顿。

后来，H.239 标准协议的出现，参与者可以创建一个辅流通道单独传输胶片，而用主流通道来传输活动视频，使得活动视频和胶片传送互不影响。一种典型的应用场景如图 1 所示，会议终端 12 同时接收到摄像机 11 摄入的会议图像和计算机 10 的文件（如 PPT 或 Word 文档），并对摄像机 11 摄入的会议图像和计算机 10 的文件经过视频编码（通常采用 H.263 或者 H.264 等编码标准）后，通过 H.239 协议标准提供的通道将两路视频流同时发送给 MCU（多点控制单元）13，MCU 13 再转发给其他的与会终端 14，终端 14 在接收到两路视频流后，进行解码，即可得出两路不同的视频图像，并在投影仪 16 或者电视机 15 上进行显示。通过这种方式，任意一个与会者都可以向所有人共享自己的文档，实现了一个简单的数据交互。然而，H.239 的这种胶片共享的方式最大缺点是：参与者不能交互，主讲者在对胶片进行阐述时，其它的参与者只能看胶片，不能在胶片上作标记，因此降低了讨论效率，讨论者参与感不强。

针对这种现象，在现有技术中，出现了一种利用在电子白板上做标记，以达到视频会议的参与者相互交互的目的，如图 2 所示，在会议服务器侧放置一台电子白板服务器 20，每一个视频会议终端放置一台电子白板客户端，如客户端 21，客户端 22，客户端 23，客户端 24 和客户端 25 等，这些客户端通常

为一台 PC，有的客户端还可以是会议子系统中的会议服务器或者会议客户机等，所有的客户端都通过网络连接在到该电子白板服务器 20 上，该电子白板服务器 20 启动一个电子白板，该电子白板可以是空白背景，也可以以图片或者胶片作为背景；电子白板服务器 20 将电子白板上的内容以图片的方式发送给所有客户端，因此，每个客户端都可以看到相同的内容；与会者通过客户端在电子白板上做一些标记：如画线、画圆、输入文字等操作，这些操作都被传到电子白板服务器 20 上；电子白板服务器 20 接收客户端的操作后，更新电子白板的内容，再把更新后的电子白板内容发送给所有客户端，因此实现了所有的参与者共享白板进行讨论的目的。但这种方式在使用范围上受到限制，如用户不能在胶片上进行做标记，即该系统无法实现共享作标记的胶片，另外，该系统需要再建一套电子白板系统，每个会场至少配备一台计算机，增加了系统复杂度和建设成本。

现有技术中，与上述在电子白板上做标记的方式相似的还有一种远程协作的方法，如图 3 所示，该系统中包括一个远程协作服务器 30，每一个视频会场配备一台计算机，如计算机 31，计算机 32，计算机 33，计算机 34 等，这些计算机通过网络与远程协作服务器 30 连接，需要共享自己桌面的会场开启一个远程协作服务，将自己的计算机桌面图像（如 PPT，Word 文档等）共享给所有与会者；其他会场的与会者可通过本地计算机连接到远程协作服务器 30 后，就可看到远程协作服务器 30 共享的计算机桌面，并且通过本地的鼠标、键盘等操作也会传给远程协作服务器 30，因此所有的与会者可以共同操作同一个应用程序，如 PPT、Word 等。但这种系统同样需要再建一套远程协作的系统，每个会场至少配备一台计算机，增加系统的复杂度和成本；更重要的是，需要为每个会场的每台计算机中配置特殊的远程协作参数，且使用者需要操作两套系统，如一个共享的远程系统，一个本地的系统，并且要共享 PPT、Word 等文档需要事先拷贝到会场的计算机中，不能实现笔记本电脑这样的计算机即插即用的特性，操作不方便。

综上，发明人在实现本发明的过程中，发现现有技术至少存在如下问题：

在视频会议系统中，与会者进行数据交互时，现有的视频会议系统为与会者提供的交互数据受到限制，如在电子白板的系统中，为胶片做标记就不能实

现，且电子白板等视频会议系统复杂，成本高。

发明内容

本发明要解决的技术问题是提供一种会议终端、会议服务器、会议系统及数据处理方法，在不增加会议系统复杂度的情况下，允许任意会议终端之间进行数据交互，提高会议用户的讨论效率。

为解决上述技术问题，本发明的实施例提供技术方案如下：

一方面，提供一种会议终端，包括：

标记获取模块，用于获取标记数据信号；

图像获取模块，用于获取图像数据信号；

叠加模块，用于将所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据信号；

输出模块，用于输出所述混合图像数据信号。

另一方面，提供一种会议服务器，包括：

图像数据接收模块，用于接收会议终端发送的图像数据信号；

标记接收模块，用于接收会议终端发送的标记数据信号；

叠加模块，用于对所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据；

发送模块，用于发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号。

再一方面，提供一种会议系统，包括：第一会议终端，会议服务器和至少一个第二会议终端；其中，

所述第一会议终端包括：

图像获取模块，用于获取所述会议服务器发送图像数据信号；

标记发送模块，用于获取标记数据信号，并向所述会议服务器发送标记数据信号；

所述会议服务器包括：

图像数据接收模块，用于接收所述图像数据信号；

标记接收模块，用于接收所述标记数据信号；

叠加模块，用于对所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据；

发送模块，用于向所述第一会议终端和所述至少一个第二会议终端发送所述混合图像数据。

所述至少一个第二会议终端，用于接收并显示所述混合图像数据。

还提供一种会议系统，包括：第一会议终端，会议服务器和至少一个第二会议终端；其中，所述第一会议终端包括：

图像获取模块，用于获取所述会议服务器发送图像数据信号；

标记发送模块，用于获取标记数据信号，并向所述会议服务器发送所述标记数据信号；

所述会议服务器用于接收所述图像数据信号和所述标记数据信号，并转发；

所述至少一个第二会议终端包括：

第一定时器，用于产生第一时间间隔值；

图像获取模块，用于获取所述会议服务器转发的图像数据信号；

第一外部标记获取模块，用于获取所述会议服务器转发的标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；

第一叠加模块，用于将所述图像数据信号和所述第一标记数据信号进行叠加，生成第一混合图像数据信号；

显示模块，用于显示所述第一混合图像数据信号。

还提供一种会议系统，包括：第一会议终端，会议服务器和至少一个第二会议终端；其中，所述第一会议终端包括：

第一定时器，用于产生第一时间间隔值；

第二定时器，用于产生第二时间间隔值；

第一内部标记获取模块，用于获取本地会议终端发送的标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；

第二内部标记获取模块，用于获取本地会议终端发送的标记数据信号，并

按照所述第二时间间隔值输出所述标记数据信号，产生第二标记数据信号；

第二叠加模块，用于将所述图像数据信号和所述第一标记数据信号进行叠加，生成第二混合图像数据；

第二发送模块，用于向所述本地会议终端的显示屏幕上发送所述第一混合图像数据，或者通过辅流通道向所述会议服务器发送所述第二混合图像数据；

所述会议服务器，用于接收所述第二混合图像数据，并转发；

所述第二会议终端，用于接收所述第二混合图像数据并显示。

本发明的实施例还提供一种数据处理方法，包括：

获取图像数据信号；

获取标记数据信号；

将所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据信号；

输出所述混合图像数据信号。

本发明的实施例还提供一种数据处理方法，包括：

接收会议终端发送的图像数据信号和标记数据信号；

对所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据；

向会议终端发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号。

本发明的实施例具有以下有益效果：

上述技术方案中，会议终端将其获取的图像数据信号和标记数据信号进行叠加，生成混合图像数据信号，如该混合图像数据信号为添加了标记的胶片，在不增加会议系统复杂度的情况下，该会议终端允许与会者在观看胶片的时候，同时在胶片上画上自己的标记，提高视频会议用户的参与感，提高讨论效率。

附图说明

图 1 为现有技术中会议系统的应用场景结构示意图；

图 2 为现有技术中会议系统中，利用电子白板进行交互的应用场景结构示

意图；

图 3 为现有技术中的会议系统，利用远程协作服务器进行交互的应用场景结构示意图；

图 4 为本发明的实施例会议终端的整体结构示意图；

图 5 为图 4 所示的会议终端的一具体结构示意图；

图 6 为图 5 所示的会议终端接收本地标记数据信号，并在本地叠加，形成混合图像数据的一具体结构示意图；

图 7 为图 5 所示的会议终端在发送本地的标记数据信号时，第一令牌控制模块从 H.239 的辅流通道中先申请令牌，得到令牌后再开始记录和发送标记数据信号的结构示意图；

图 8 为图 5 所示的会议终端接收外部标记数据信号，并在本地叠加，形成混合图像数据的一具体结构示意图；

图 9 为图 8 中的第一外部标记获取模块的具体结构示意图；

图 10 为图 5 所示的会议终端在进行本地叠加时，第二令牌控制模块从 H.239 的辅流通道中先申请令牌，得到令牌后再进行叠加，形成混合图像数据的结构示意图；

图 11 为图 1 所示会议终端的另一具体结构示意图；

图 12 为会议终端的一具体结构示意图；

图 13 为会议终端的一具体应用场景示意图；

图 14 为会议终端的另一具体应用场景示意图；

图 15 为会议终端的又一具体应用场景示意图；

图 16 为本发明的实施例会议服务器的结构示意图；

图 17 为图 16 所示会议服务器的一具体实施例结构示意图；

图 18 为本发明的实施例的一种会议系统结构示意图；

图 19 为图 18 所示会议系统的多 MCU 级联的应用场景示意图；

图 20 为本发明的实施例的另一种会议系统结构示意图；

图 21 为图 20 所示会议系统的多 MCU 级联的应用场景示意图；

图 22 为本发明的实施例的又一种会议系统结构示意图；

图 23 为图 22 所示会议系统的多 MCU 级联的应用场景示意图；

图 24 为本发明的实施例的数据处理方法的流程示意图；

图 25 为本发明的实施例的另一数据处理方法流程示意图。

具体实施方式

为使本发明的实施例要解决的技术问题、技术方案和优点更加清楚，下面将结合附图及具体实施例进行详细描述。

本发明的实施例针对现有技术中不能将 H.239 标准的双流功能和类似电子白板任意添加标记的功能结合起来，使用户的参与感不强的问题，提供一种会议终端，会议服务器，会议系统及会议系统中数据处理的方法。

会议终端的实施例一：

如图 4 所示，为会议终端的实施例结构示意图，本发明的实施例会议终端 40 包括：

标记获取模块 41，用于获取标记数据信号；

图像获取模块 42，用于获取图像数据信号；

叠加模块 43，用于将所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据信号；

输出模块 44，用于输出所述混合图像数据信号，该混合图像数据信号既可以输出到本地会议终端的显示屏上进行显示，也可以输出到会议服务器，如 MCU，再由 MCU 转发给其他的会议终端。

这里的会议终端 40 可以为视频会议中的某一会场的终端，具体来讲，可以为一个会议终端服务器，负责对会场中多个输入设备的信号进行管理，该输入设备可以是一个音频输入设备、视频输入设备、电子白板或者书写屏等，当然该会场中，还可以包括：用于视频信号输出的图像显示设备（如普通显示器）、用于音频信号输出的音箱等；图像数据信号可以为胶片或者类似胶片的文件等，标记数据信号为圆圈，批注等，该会议终端 40 将其接收的图像数据信号和标记数据信号进行叠加，生成混合图像数据信号，如该混合图像数据信号为添加了标记的胶片，在不增加会议系统复杂度的情况下，该会议终端允许与会者在观看胶片的时候，同时在胶片上画上自己的标记，提高视频会议用户的参

与感，提高讨论效率。

会议终端实施例二：

如图 5 所示，在会议终端实施例一的基础上，该会议终端 40 还可以包括：第一定时器 45，用于产生第一时间间隔值；第二定时器 46，用于产生第二时间间隔值；这两个定时器在具体实现时，也可以为同一定时器，该定时器可以输出两个时间间隔值；

相应的，上述标记获取模块 41 包括：第一标记获取模块 411，用于接收所述标记数据信号，并按照该第一时间间隔值输出上述标记数据信号，产生第一标记数据信号；该第一时间间隔值是用来控制标记数据信号在本地会议终端的显示屏幕上显示的，保证了本地显示屏的实时显示效果，该第一时间间隔值一般设得比较短，如果该会议终端 40 的显示屏幕为一电视机，则该第一时间间隔值的最佳间隔是与该电视机的帧间隔相同。

第二标记获取模块 412，用于获取上述标记数据信号，并按照该第二时间间隔值输出上述标记数据信号，产生第二标记数据信号；由于该标记数据信号发送到远端的会议终端时，需要在 H.239 辅流通道中进行传输，因此该第二时间间隔值不宜设定的太短，为了降低传输的数据量，可以将该第二时间间隔值设定的大一些，如 1 秒一次。

会议终端实施例三：

如图 6 所示，上述会议终端实施例二中的第一标记接收模块 411 可以具体为：第一内部标记获取模块 4110，用于获取本地会议终端发送的标记数据信号，并按照该第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；如用户通过本地会议终端的触摸屏幕在图像获取模块 42 所接收的图像数据信号（如胶片，该胶片可以是本地的胶片，也可以是接收到远端会议终端发送的胶片）上，添加了圆圈标记，该第一内部标记获取模块 4110 就会按照第一时间间隔值输出该圆圈标记，产生第一标记数据信号。

另外，上述第二标记获取模块 412 也可以具体为：第二内部标记获取模块 4120，用于接收本地会议终端发送的标记数据信号，并按照上述第二时间间隔值输出该标记数据信号，产生第二标记数据信号。

该会议终端还包括一标记编码模块 47 和标记发送模块 48，其中上述第二内部标记获取模块 4110 所产生的第二标记数据信号传输至该标记编码模块 47，该标记编码模块 47 将该第二标记数据信号进行编码，产生第三标记数据信号；该第三标记数据信号传输至该标记发送模块 48，该标记发送模块 48 通过 H.239 协议的辅流通道向会议系统中的会议服务器发送该第三标记数据信号，再由该会议服务器转发给其他的会议终端。

会议终端的实施例四：

如图 7 所示，在上述会议终端的实施例中，会议终端在与会议服务器和其他会议终端进行传输数据的过程中，采用 H.239 协议的辅流通道或者自定义通道进行传输，而 H.239 的主流用于传输活动视频，这样，使静态图像数据的传输和活动视频的传输不冲突。而采用 H.239 的辅流通道进行传输上述本地会议终端产生的标记数据信号或者混合图像数据时，为了保证会议系统中各个会议终端之间的传输不混乱，采用令牌互斥的方式进行，先判断该 H.239 的辅流通道是否支持标记辅流，如果支持，则该会议终端 40 还可包括：

第一令牌控制模块 49，用于在所述 H.239 协议的辅流通道中申请会场令牌，申请成功并得到一会场令牌后，产生第一控制信号；

上述标记发送模块 48 根据该第一控制信号通过 H.239 协议的一个辅流通道向会议服务器发送该第三标记数据信号。

也就是说，当前会议终端 T1 在发送自己的标记数据信号前，先申请一令牌后，自己的标记数据信号才允许在本地显示和发送到远端会议服务器，再由会议服务器转发给其他的会议终端；而系统中的其它会议终端 T2 要想发送自己的标记数据信号，也必须先申请令牌后，才可以发送自己的标记数据信号，当前的令牌拥有者由会议终端 T1 变成了会议终端 T2，这样可以保证多个会议终端发送标记数据信号不被打乱。

会议终端的实施例五：

如图 8 所示，上述所有会议终端的实施例中，该会议终端还应当具有接收功能，具体来讲，上述第一标记获取模块 411 具体为：

第一外部标记获取模块 4111，用于接收会议服务器发送的除本地会议终

端外的至少一个其他会议终端的标记数据信号，并按照上述第一定时器 45 产生的第一时间间隔值输出该标记数据信号，产生第一标记数据信号。

该叠加模块 43 具体为：第一叠加模块 430，用于将所述图像数据信号和所述第一标记数据信号进行叠加，生成第一混合图像数据信号；

上述输出模块 44 具体为：第一发送模块 440，用于向本地会议终端的显示屏幕上发送该第一混合图像数据，并显示。

会议终端实施例六：

如图 9 所示，在一个讨论过程中，可能会有多个会场的会议终端需要同时作标记，为了保证不同会场的标记数据信号的顺序不被打乱，需要进行互斥处理，在上述会议终端实施例五的基础上，当该第一标记获取模块 411 接收到多个会议终端发送的标记数据信号时，该第一外部标记获取模块 4111 包括：

第一外部标记获取子模块 41110，用于接收会议服务器发送的除本地会议终端外的至少一个其他会议终端的标记数据信号；

至少一个解码器，如解码器 1，解码器 2，解码器 3 等，这里的每一个解码器对应一个会场，也就是说，一个会场（即一个其他会议终端）发送来的标记数据信号均进入一个解码器进行解码，各个解码器对接收到的标记数据信号解码后，生成一标记数据信号队列；

标记输出模块 41111，用于按照上述第一时间间隔值和该标记数据信号队列的顺序输出所述标记数据信号，生成至少一个第一标记数据信号。之后再将这些第一标记数据信号顺序送入第一叠加模块 430 中进行叠加，为了保证在叠加时，能够区分出是那个会议终端发送的标记数据信号，每个会议终端在发送自己的标记数据信号时，要包括自己的会议号，终端号和相应的标记数据信号的内容，这些标记数据信号的内容可以用矢量图、二值位图、YUV 或者 RGB 等彩色位图；在使用矢量图或二值位图的时候，可以由会议服务器 MCU 随机给每个会议终端分配一种填充颜色，会议终端的叠加模块在叠加不同会场轨迹的时候使用会议服务器分配的颜色进行填充；在使用 YUV、RGB 等彩色位图表示轨迹的时候，系统中必须统一指定一种透明颜色，以便接收端能正确识别出轨迹的位置与胶片叠加，这样可以保证标记数据信号和图像数据信号叠加

后，每一个会场的混合图像数据的完整性。

在一会议终端接收到其他的会议终端发送的标记数据信号时，同时该会议终端又收到了一个图像数据信号，此时该会议终端就会将其接收到的图像数据信号和标记数据信号进行叠加，形成完整的混合图像数据，这样该会议终端也就知道对方对当前的图像数据作了那些标记。

会议终端的实施例七：

如图 10 所示，当会议系统不支持标记辅流时，此时会议终端只能向其他终端发送混合图像数据，而该混合图像数据是在本地会议终端上叠加生成的，为了保证各个终端发送的混合图像数据的顺序，上述会议终端 40 还可包括：

第二令牌控制模块 50，用于在 H.239 协议的另一个辅流通道中申请会场令牌，申请成功并得到一会场令牌后，产生第二控制信号，叠加模块 43 在得到该第二控制信号时，就可以开始记录标记数据信号和图像数据信号，并对图像数据信号和标记数据信号进行叠加，生成混合图像数据信号。

也就是说，会议终端 T1 在其接收到的胶片上添加标记之前，先申请 H.239 辅流通道控制令牌，在得到令牌后，开始记录用户添加的标记数据信号，并将该标记数据信号叠加到胶片上，形成一混合图像数据，将编码后的混合图像数据通过辅流通道发送给会议服务器，再由会议服务器转发给其他的会议终端。其他会议中的会议终端如果想添加自己的标记数据信号，也进行同样的动作，这样通过不断的切换 H.239 辅流通道发送令牌，各个会场的会议终端都可以将自己的标记添加到该胶片上。

相应的，上述叠加模块 43 具体为：第二叠加模块 431，用于根据上述第二令牌控制模块 50 产生的第二控制信号，将上述图像数据信号和该第一标记数据信号进行叠加，生成第二混合图像数据，如添加了标记的胶片；

上述输出模块 44 具体为：第二发送模块 441，用于向该本地会议终端的显示屏幕上发送该第二混合图像数据，或者通过 H.239 协议的辅流通道向会议服务器发送所述第二混合图像数据。这样，该第二混合图像数据可以本地会议终端上显示，用户在触摸屏上添加标记之后，就会及时地看到自己绘制的标记轨迹，也同样可以通过 H.239 协议的辅流通道向会议服务器发送该第二混合图

像数据，再由该会议服务器转发给其他的会议终端，这样其他的会议终端就能看到当前该用户添加标记后的胶片了。

会议终端的实施例八：

如图 11 所示，上述各图中所示实施例的会议终端 40 中，还可包括：

图像数据保存模块 51，用于在本地会议终端上保存所述混合图像数据。在会议进行过程中，每一个添加过标记的胶片都可以在本地会议终端上保存，以便记录会议的过程。

标记擦除模块 52，用于将所述混合图像中的标记数据信号进行擦除；用户在添加标记数据信号的过程中，可以将其已经添加的标记数据信号擦除，在令牌控制模式下，令牌所有者可以发一条指令让叠加模块 43 擦除已经添加的标记；

图像发送模块 53，用于将内部图像获取模块 420 所接收的本地会议终端的图像数据信号向会议服务器发送，再由会议服务器转发给其他的会议终端，这样其他的会议终端均可以观看到本地会议终端的图像数据。

另外，上述图像获取模块 42 包括：内部图像获取模块 420，用于获取本地会议终端发送的图像数据信号；外部图像获取模块 421，用于获取会议服务器发送的其他会议终端的图像数据信号；

在上述的所有实施例中，图像获取模块 42 所接收的图像数据信号除了可以为胶片，还可以为一白色背景，该白色背景由会议终端的输入设备产生，如通过触摸屏绘制标记后系统自动生成一白色背景，所有用户标记数据信号都会叠加在该白色背景上，这样用户使用起来更加方便和随意。

会议终端的实施例九：

如图 12 所示，在上述所有实施例中，会议终端 40 所在会场中，可包括多个输入设备，这些输入设备可以为：音频输入设备、视频输入设备、电子白板或者书写屏等，这些输入设备可以直接与该会议终端连接，也可以间接与该会议终端连接：为了使该会议终端 40 所在会场中的多个输入设备之间相互切换，则该会议终端 40 可以通过令牌互斥方式控制该会场中的多个输入设备，因此，该会议终端还可包括：

令牌管理模块 54，用于接收本地会议终端所在会场中的一输入设备的子令牌申请，确认所述子令牌申请成功后，分配一子令牌给所述输入设备；

则上述第一内部标记获取模块 4110，根据所述子令牌，获取所述本地会议终端所在会场中的所述输入设备的标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；

上述第二内部标记获取模块 4112，根据所述子令牌，获取所述本地会议终端所在会场中的所述输入设备的标记数据信号，并按照所述第二时间间隔值输出所述标记数据信号，产生第二标记数据信号。

也就是说，会场中，与该会议终端 40 连接的多个输入设备，谁得到了令牌，该会议终端就接收谁的标记数据信号；当然，对于视/音频信号，该会议终端也可以采用该令牌互斥控制方式进行控制。

另外，该会议终端 40 所在会场中的一个输入设备需要与一目标输入设备进行私密会话时，该会议终端 40 还可包括：

一私密令牌控制模块 55，用于接收本地会议终端所在会场中的一个输入设备发起的与一目标输入设备进行私密会议的私密令牌申请，确认所述私密令牌申请成功后，启用一辅流通道或者自定义通道，分配一私密令牌给该输入设备。这样，该输入设备就可以通过该辅流通道或者自定义通道与目标输入设备进行私密会话。

这里的目标输入设备即可以是除该会议终端 40 所在会场外的其它会场中的一输入设备，也可以是该会议终端 40 所在会场中的一个输入设备。

另外，上述会议终端 40 中的标记获取模块 41 可以具体为一实时标记获取模块，可以实时获取标记数据信号；也可以具体为一手动标记获取模块，可以提供手动接收选项，所述手动接收选项被选择时，获取标记数据信号；

上述会议终端 40 中的图像获取模块 42 可以具体为一实时图像获取模块，可以实时获取图像数据信号；也可以具体为一手动图像获取模块，可以提供手动接收选项，所述手动接收选项被选择时，获取图像数据信号。

会议终端实施例十：

下面结合图 13 说明，该会议终端 40 所在会场的一具体应用场景，如图所

示：会议终端 40 与多点控制单元（MCU）130 连接，该会议终端经网络向多点控制单元 130 传送本会场中的视音频信号和数据信号（包括传统数据信号和互动电子白板产生的互动数据信号）；并接收多点控制单元 130 发送过来的其它会场的视音频信号和数据信号，以传送给本会场输出设备进行显示。

本会场中，还包括：至少一个输入设备，这些输入设备包括：

对于视音频信号：

音频输入设备 131，通常为麦克风，捕捉本会场中的声音信号并传送给会议终端 40；

视频输入设备 132，通常为一个或者多个摄像头，捕捉本会场中的视频信号并传送给会议终端 40；

会议终端 40 将接收到的视音频信号进行编码后通过网络发送给多点控制单元（MCU）130，再由多点控制单元 130 将会场中的编码后信号发送给其它会场进行显示。

对于数据信号：

在会场中布置一数据服务器 135 与会议终端 40 相连；作为发送端，会场中的用户在电子白板 133 和书写屏 134 上的操作数据，如添加标记数据信号等，通过一数据服务器 135，发送到会议终端 40；再由会议终端 40 发送给多点控制单元 130 的同时，并由多点控制单元 130 同时分发给其它会场中的会议终端 40。

作为接收端，会议终端 40 将从多点控制单元（MCU）130 接收到的数据信号传送给会场中的数据服务器 135，数据服务器 135 再把数据信号传递给会场中的电子白板 133 和会场中的一个或者多个书写屏 134；

该会场中，还包括一些信号输出设备，对于视音频信号，作为接收端，其中音频输出设备 136 通常为立体声扬声器，将会议终端设备 40 传送出来的声音信号呈现给会场中的与会者；而视频输出设备（图中未示出），通常为一个或者多个显示屏或投影仪，将会议终端 40 传送过来的视频信号呈现给会场中的与会者。

在需要协作的会议中，需要与会者不断的变化角色，有可能从演讲者转变

为非演讲者，也可能从非演讲者转变为演讲者。考虑现实中的真实的会议场景，演讲人通常是一个人操作完毕后，才能切换为另一个人。因此，作为优选的方案，本发明给出了如何使用控制令牌进行角色切换的操作方法：

a）整个会议系统设置一个控制总令牌，该会议系统包括至少两个会场，每个会场中设置有会议终端 40，各个会场的会议终端 40 通过 MCU130 连接，并传输信号，该控制总令牌相当于上述会场令牌，一个会场中的演讲者申请得到了该会场令牌，意味着该会场目前是可以发表演讲的会场，如下述应用场景：

当前会场 1 中的第一演讲人已经获得了会场令牌，并在演讲当中；此时会场 2 中的第二演讲人请求获得会场令牌，其获得会场令牌后，第二演讲人切换为主演讲人，其所演讲的内容发送到本会场的其它终端和其它会场中的会议终端。

对应此情况，每一个人机交互设备（电子白板或者书写屏）都可以发出控制令牌申请。除主动申请令牌外，也可主动将控制令牌转移给本会场和其它会场的交互会议终端。

b）设置分级控制令牌，一个用于会议系统级的总控制令牌（相当于上述的会场令牌），每一个会场内的与会者对应一个子令牌，此方法考虑到存有如下的应用场景：

首先在本地会场产生一个方案，获得会场内一致同意后，再将最终形成的方案分发给其它会场，此时分两种情况：

第一种情况，第一演讲人和第二演讲人在同一个会场中，第一演讲人正在演讲，在此情况下，第二演讲人申请到本会场的子令牌后，即可切换为主演讲人；第一演讲人也可主动将子令牌转交给本地会场中的第二演讲人。

第二种情况，第一演讲人和第二演讲人不在同一个会场当中，第一演讲人正在演讲，在此情况下，第二演讲人发出令牌申请后，先申请该第二演讲人所在会场的会场令牌，申请成功后；再申请会场内的子令牌，获得子令牌后，开始切换为主演讲人；第一演讲人也可主动将会场令牌转给第二演讲人所在的会场，第二演讲人所在的会场再把本地子令牌分发给第二演讲者。

特殊的，对于如下的应用场景：首先在本地会场产生一个方案，获得会场

内一致同意后，再将最终形成的方案分发给其它会场，在没有在本会场取得一致意见，并启动传送功能以前，本会场中的数据服务器 135 并不把未完成的标记信息发送给会议终端 40，而是仅仅发送给本会场中的其它与会者。在启动传送功能后，会议终端 40 就将获得的标记信号传递给多点控制单元 130，再由多点控制单元 130 传递给其它会场。

该实施例中，会议终端 40 与多点控制单元 130 之间传输数据时，需要采用 H.239 协议，H.239 协议给出了控制信道、主流通道和辅流通道，其中，主流通道用来传送会场之间的视频信号，而辅流通道则可以用于传送 PPT、Word 或者标记等数据信号，在传送这些数据信号时，其传输方法如上述会议终端 40 的实施例一至十中所述的方法，在此不再赘述，如：

a)将 PPT 和标注信息叠加后一起编码，在同一个信道中进行传送。

b)将 PPT 数据和标注信息分别编码，并在不同的信道中传送。但也可以给编码后的 PPT 数据和标注信息加上不同的标志，在同一个信道中进行传送。

c)演讲者为了更准确的描述展示思想，往往需要多种工具，例如不同的颜色，不同的在电子白板上的操作会实时的反映到其它会场中的显示设备上。

每一个会场中的会议终端 40，接收 MCU130 传送来的视音频信号或者数据信号时，实时或者手动接收的应用场景如下：

1）作为发送端的会场，对应书写屏 134，实时或者手动操作传送批注等数据信号：使用书写屏 134 的人作为演讲人，讲解 PPT 的同时，并在上面进行标记，例如画了一条直线，每隔固定间隔的时间就将该演讲人动作所产生的图像发送给数据服务器 135 或者由演讲人手动启动传输功能，数据服务器 135 再将此图像发送给本地会场中的电子白板 133 和其它的书写屏，以及会议终端 40，会议终端 40 再发送给多点控制单元 130，再由多点控制单元 130 转发给其它会场中的会议终端 40；

作为接收端的会场，该其它会场的该会议终端 40 可以实时或者手动接收该多点控制单元 130 转发来的数据信号。

2）对应使用电子白板，并实时或者手动传送传送批注：使用电子白板 133 的人作为演讲人，讲解 PPT 的同时，并在上面进行标记，例如画了一条直线，

每隔固定间隔的时间就将该演讲人动作所产生的图像发送给数据服务器 135 或者由演讲人手动启动传输功能，数据服务器 135 再将此图像发送给本地会场中的书写屏 134，以及会议终端 40，会议终端 40 再发送给多点控制单元 130，再由多点控制单元 130 转发给其它会场中的会议终端 40;

作为接收端的会场，该其它会场的该会议终端 40 可以实时或者手动接收该多点控制单元 130 转发来的数据信号。

3）在上述场景中，非演讲人所使用的电子白板、书写屏所对应的其它与会者可能需要对讲演做批注，其它与会者在接收到的屏幕上进行自己的批注。

考虑演讲人演讲和本会场和其它与会者进行批注的速度不可能时刻保持一致，此时有可能发生如下两种情况:

其它与会者在批注的第一页面和演讲者正在讲演的第二页面是同一页面。

其它与会者在批注的第一页面和演讲者正在讲演的第二页面不是同一页面。

作为一解决方案，此时需要给其它与会者的接收终端提供模态切换开关，如果仅是希望被动的接受，则可以将运行模态切换到即时更新模式，在即时更新模式下，接收终端所显示的内容随演讲者的变化而变化，此时其它与会者不能进行批注操作；如果希望进行批注，则将模式切换到批注保持模式，此时该终端的内容不随演讲者的内容进行更新，其它与会者可以进行批注。待批注完成后，将状态切换到更新模式即可。

4）在场景 1～2 中，批注者可能希望随时将自己的批注或者传送过来的页面进行保存，已备会议后进行总结或者回顾。简单的方法，批注者所操作的电子白板或者书写屏在启用保存功能后，将当前的批注保存到本地会场中的数据服务器 135 中。

5）考虑到出于保密或私下交谈的需要，可能会议当中的某两个与会者需要进行私密的交流，在此应用场景下，需要给需要进行私密交流的与会者之间启动一路辅流，在该辅流中建立一个私密令牌，两个私密交流者获得该私密令牌后，首先私密交流者 1 发送批注给私密交流者 2；私密交流者 2 收到私密交流者 1 发送过来的批注后，再发送自己的批注信息给私密交流者 1，以进行私

密的交流。

如图 14，作为对图 13 的一种变形，电子白板 133 和书写屏 134 直接和会场中的会议终端 40 相连，数据服务器 135 仅用来存储要演讲的 PPT 等传统数据或者批注信息。

如图 15，作为对图 13 的另一种变形，以会议终端 40 为中心，电子白板 133 和书写屏 134 仅和会场中的会议终端 40 相连，数据服务器 135 和会议终端 40 相连，数据服务器 135 仅作为电子白板 133 中演示的数据或者演讲的 PPT 等传统数据或者批注信息等的存储设备。

当然该会议终端 40 也可以具有一存储模块，代替该数据服务器 135，对数据信号进行保存；特别的，电子白板 133 这样的输入设备也可以具有存储功能，存储自己产生的数据信号或者其接收的会议终端转发来的其它与会者的数据信号。

上述的各个会议终端的实施例，无需增加其他的设备，在现有的 H.239 双流的基础上实现与会者之间的数据协作，实现会场中多个输入源，如电子白板、书写屏，与其它会场中的输入源之间的动态交互，提高用户的参与感，提高讨论效率。

会议服务器的实施例一：

如图 16 所示，本发明的实施例还提供一种会议服务器 60，该会议服务器通常为一 MCU（多点控制单元），用在视频会议中，为视频会议中的各个会议终端提供数据的转发和服务。该会议服务器 60 包括：

图像数据接收模块 61，用于接收会议终端发送的图像数据信号；

标记接收模块 62，用于接收会议终端发送的标记数据信号；

叠加模块 63，用于对所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据；

发送模块 64，用于向会议终端发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号。

会议服务器的实施例二：

如图 17 所示，上述叠加模块 63 在对图像数据信号和标记数据信号进行叠

加时，可能会收到多个会议终端发送的标记数据信号，该叠加模块 63 需要对每个会议终端发送的标记数据信号进行区分，该叠加模块 63 具体包括：

填充模块 631，用于为所述标记数据信号分配填充颜色或者透明颜色，并利用所述填充颜色或者透明颜色对所述标记数据信号进行处理，产生颜色标记数据信号；标记数据信号的内容可以用矢量图、二值位图、YUV 或者 RGB 等彩色位图表示；在使用矢量图或二值位图的时候，可以随机给每个会议终端的标记数据信号分配一种填充颜色，叠加模块 63 在叠加不同会场轨迹的时候使用上述填充颜色进行填充；在使用 YUV、RGB 等彩色位图表示标记数据信号的时候，MCU 须指定一种透明颜色，以便接收会议终端能正确识别出轨迹的位置，这样可以保证标记数据信号和图像数据信号叠加后，每一个会场的混合图像数据的完整性。

处理模块 632，用于将所述图像数据信号和所述颜色标记数据信号进行叠加，生成混合图像数据。

该会议服务器 60 在向会议终端发送混合图像数据或者标记数据信号时，还可包括：发送控制模块 65，用于选择 H.239 协议的一辅流通道，控制所述发送模块 64 通过所述辅流通道向会议终端发送所述混合图像数据或者所述标记数据信号；

具体实现时，该会议服务器 60 还可包括：一令牌管理模块 66，用于接收会议终端发送的会场令牌申请，确认所述会场令牌申请成功后，向该会议终端返回一会场令牌；该发送控制模块 65 根据该会场令牌，选择 H.239 协议的一辅流通道，控制所述发送模块 64 通过所述辅流通道向会议终端发送所述混合图像数据或者所述标记数据信号；

当系统中有多个会议服务器的情况下，该会议服务器还可将其叠加的混合图像数据或者会议终端发送过来的标记数据信号或者会议终端发送过来的图像数据信号转发给其他的会议服务器，再由其他的会议服务器发送给与该其他的会议服务器连接的会议终端。

该会议服务器 60 在会议终端不具有叠加功能时，将各个会议终端发送的图像数据信号（如胶片）和标记数据信号进行叠加，然后再转发给其他的会议

终端，使会议系统中的各个会议终端都能够看到其他会议终端添加的标记，实现与会者之间的协作，提高用户的参与感，提高用户的讨论效率。

会议系统的实施例：

下面将上述的会议终端和会议服务器组成的会议系统进行介绍：

上述的会议终端和会议服务器主要可以组成以下三种应用场景：

一，会议终端 1 将共享的图像数据信号发送给会议服务器，会议终端 2 将本地的标记数据信号也发送给会议服务器，由会议服务器对图像数据信号和标记数据信号叠加后，形成一混合图像数据，再发送给所有的会议终端，会议终端接收到会议服务器发送的混合图像数据时，对该混合图像数据进行解码并显示；

二，会议终端 1 将共享的图像数据信号发送给会议服务器，会议终端 2 将本地的标记数据信号发送给会议服务器，再由会议服务器转发给所有的会议终端，会议终端在接收到图像数据信号和标记数据信号时，对图像数据信号和标记数据信号进行叠加，并显示；

三，会议终端 1 将共享的图像数据信号（该图像数据信号可为本地的图像数据，也可为接收到的远端的图像数据）和本地的标记数据信号在本地叠加后，生成一混合图像数据，再将混合图像数据通过 H.239 辅流通道发送给会议服务器，再由会议服务器转发给其他的会议终端 2，其他的会议终端 2 接收到混合图像数据时，对该混合图像数据进行解码并显示。

上述各种应用场景中，各会议终端都是对等的，会议终端 1 具有在本地叠加的能力，会议终端 2 也具有在本地叠加的能力，会议终端 1 具有发送本地图像数据和标记数据信号的能力，会议终端 2 也具有发送本地图像数据和标记数据信号的能力。

会议系统的实施例一：

如图 18 所示，为上述第一种应用场景的会议系统结构示意图，该会议系统包括：会议终端 71，与该会议终端 71 连接的一笔记本电脑 72；会议服务器 73；会议终端 74，与会议终端 74 连接的带触摸屏的显示器 75；会议终端 76，与会议终端 76 连接的普通显示器 77，该会议终端的个数不作限制，这里的每

一个会议终端都代表一个会场；其中，上述会议终端 71 包括：

图像发送模块 53，用于向会议服务器 73 发送图像数据信号；

上述会议终端 74 包括：

标记发送模块 48，用于向会议服务器 73 发送标记数据信号；

会议服务器 73 如上述会议服务器 60，包括：

图像数据接收模块 61，用于接收图像发送模块 53 发送的图像数据信号；

标记接收模块 62，用于接收所述标记发送模块 48 发送的标记数据信号；

叠加模块 63，用于对所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据；

发送模块 64，用于向会议终端 71，会议终端 74，会议终端 76 发送所述混合图像数据。

会议终端 71 和会议终端 76，用于接收并显示所述混合图像数据。

具体来讲，该应用场景主要包括以下流程：

1）会议终端 71 是需要和其他与会者共享胶片的会场，使用者只需要将笔记本电脑通过普通的 VGA 电缆连接到会议终端 71，再通过 H.239 辅流通道将自己的胶片发送给会议服务器 73，再由会议服务器 73 将该胶片发送给会议终端 74 和会议终端 76；

2）会议终端 74 是一个接有带触摸屏显示器 75 的会场，该会场用户在观看胶片的过程中发现有一个地方有疑问需要与其他人讨论，因此，他在显示器 75 上需要讨论的地方画了一个圆圈，该圆圈被显示器上的触摸屏记录下来，并且通过会议终端 74 传递给会议服务器 73；当然，在会议服务器 73 没有该会议终端 74 的用户所观看的胶片时，该会议终端 74 还需要将该胶片也发送给会议服务器 73。

3）会议服务器 73 接收到会议终端 74 发送过来的圆圈标记后，先将胶片视频流进行解码，得到胶片图像；再将会议终端 72 发送的圆形标记叠加到胶片图像上；将叠加圆形标记的混合图像进行编码；把编码后的混合图像码流通过 H.239 辅流通道发送给所有会场；

4）会议终端 76 是一个普通会场，该会议终端 76 连接一普通的显示器 77，

该会场通过 H.239 辅流通道接收到会议服务器 73 发送的混合图像视频码流，进行解码后即可看到叠加了会议终端 74 会场发送的圆形标记的胶片图像。

同样，会议终端 71 和其他所有会场也会接收到和会议终端 76 一样的胶片图像。如果有其他会场具备会议终端 74 一样的标记输入设备，其他会场也可以发送自己的标记并且被所有的会场看到。

会议系统的实施例二：

如图 19 所示，在上述会议系统的实施例一的基础上，描述会议系统中多会议服务器级联的应用场景，该图中的双箭头表示混合图像数据流的传输：

当系统中的会议服务器为多个时，这多个会议服务器之间采用级联的方式连接，每一个会议服务器下都可连接一个或者多个会议终端，其中一个会议服务器为主会议服务器，而其他的会议服务器为从会议服务器，会议终端发送的共享图像数据信号和添加的标记数据信号的叠加由主会议服务器进行；

该实施例中，以两个 MCU（会议服务器）级联的实例进行说明，其中包括：MCU1，MCU2，会议终端 T1，会议终端 T2，会议终端 T3；MCU1 为主 MCU，MCU2 为从 MCU，多于 2 个 MCU 级联的情况，也是如此，其中一个 MCU 为主 MCU，其他 MCU 为从 MCU；

会议中，会议终端 T1 将共享图像数据信号发送给与其相连的 MCU2，会议终端 T2 也将它的标记数据信号发送给与其相连的 MCU2 上，从 MCU2 将 T1 的共享图像数据信号和 T2 的标记数据信号，转发给会议系统中的主 MCU，即 MCU1，由会议系统中主 MCU（MCU1）完成对图像数据信号和标记数据信号的叠加，压缩形成混合图像数据，然后再转发给会议系统中的各个会议终端，对于连接在从 MCU（MCU1）上的会议终端，混合图像数据由主 MCU 先发送给会议中的各个从 MCU，然后由从 MCU 进行转发。会议系统中的各个终端收到混合图像数据时，对其进行解码并显示。

对于更多级的 MCU 级联，与上面类似，会议中图像数据信号和标记数据信号的叠加工作，是由级联会议系统中的主 MCU 完成。

上述描述的是系统中多 MCU 级联时一个可以为主 MCU，其他的均为从 MCU 的情况，当然，系统中的多个 MCU 也可均为主 MCU。即每个 MCU 均

可以进行叠加和转发的工作，为了使多个 MCU 能够协调的工作，系统中还可以包括：控制单元，用于获取所述标记数据信号的发送时间，按照所述标记数据信号的发送时间的先后顺序，产生一控制信号；

所述至少两个主会议服务器中的所述叠加模块，根据所述控制信号对所述图像数据信号和所述标记数据信号进行叠加，生成所述混合图像数据，并将混合图像数据信号发送给系统中的各会议终端。上述的控制单元可以通过系统中的 GATEKEEPER（网守，是一种采用软交换方式的交换服务器，负责 VoIP 网路上的讯号交换及控制功能）来实现，当然采用其他类似功能的控制模块也可以实现。

当然，除了上述 GATEKEEPER 来控制各个会议服务器之间进行协调工作外，还可以采用令牌控制的方式，系统中，将各个会议终端发送标记数据信号的时间通知各个主会议服务器，主会议服务器根据该标记信号的发送时间主动获取一控制令牌，当该主会议服务器完成叠加工作之后，按照各个会议终端发送的标记数据信号的时间先后顺序，下一个主会议服务器获取该控制令牌，继续进行叠加工作，直到最后一个主会议服务器完成叠加，将最终的混合图像数据信号发送给系统中的各个会议终端；上述控制令牌是各个主会议服务器主动获取的，当然也可以由 GATEKEEPER 主动将控制令牌分配给各个主会议服务器使用。

会议系统的实施例三：

如图 20 所示，为上述第二种应用场景的会议系统结构示意图，该会议系统包括：会议终端 81，与该会议终端 81 连接的一笔记本电脑 82 和一普通显示器 83；会议服务器 84；会议终端 85，与会议终端 85 连接的带触摸屏的显示器 86；会议终端 87，与会议终端 87 连接的普通显示器 88；这里的每一个会议终端都代表一个会场；该会议终端的个数不作限制，其中，上述会议终端 81 包括：

图像发送模块 53，用于向会议服务器 83 发送图像数据信号；

会议终端 85 包括：

标记发送模块 48，用于向会议服务器 83 发送标记数据信号；

会议服务器83将接收图像数据信号和标记数据信号转发会议终端87和会议终端81;

会议终端87和会议终端81均包括:

第一定时器45，用于产生第一时间间隔值;

图像获取模块42，用于接收所述会议服务器转发的图像数据信号;

第一外部标记获取模块4111，用于接收所述会议服务器83转发的标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号;

第二叠加模块431，用于将所述图像数据信号和所述第一标记数据信号进行叠加，生成第二混合图像数据信号;

显示模块，如显示器88，用于显示所述第二混合图像数据信号。

会议终端87在接收到多个会议终端的标记数据信号时，为了保证接收方在叠加时，能够区分出是哪个会议终端发送的标记数据信号，每个会议终端在发送自己的标记数据信号时，要包括自己的会议号，终端号和相应的标记数据信号的内容，这些标记数据信号的内容可以用矢量图、二值位图、YUV或者RGB等彩色位图；在使用矢量图或二值位图的时候，可以由会议服务器随机给每个会议终端分配一种颜色，会议终端的叠加模块在叠加不同会场轨迹的时候使用会议服务器分配的颜色进行填充；在使用YUV、RGB等彩色位图表示轨迹的时候，系统中必须统一指定一种透明颜色，以便接收端能正确识别出标记轨迹的位置与胶片叠加。具体讲上述第一外部标记获取模块4111包括:

第一外部标记获取子模块41110，用于接收所述会议服务器发送的除本地会议终端外的至少一个其他会议终端的标记数据信号，根据上述标记数据信号中会议号，终端号等信息找到相应的解码器，并发送属于该解码器的标记数据信号;

至少一个解码器，用于对所述至少一个其他会议终端的标记数据信号分别进行解码，生成一标记数据信号队列;

标记输出模块41111，用于按照所述第一时间间隔值和所述标记数据信号队列的顺序输出所述标记数据信号，生成至少一个第一标记数据信号。

该应用场景主要包括以下流程:

1）会议终端 81 是需要跟其他与会者共享胶片的会场，使用者只需将笔记本电脑（目前一般是通过 VGA 线缆）连接到第一会议终端 81，再通过 H.239 辅流通道将自己的胶片发送给所有与会者;

2）会议终端 85 是一个接有带触摸屏显示器 86 的会场，该会场的用户在观看胶片的过程中发现有一个地方有疑问需要与其他人讨论，因此他在显示器上需要讨论的地方画了一个圆圈，该圆圈被显示器上的触摸屏记录下来，并且通过会议终端 85 传递给会议服务器 84;

3)会议服务器 84 将会议终端 85 发送的圆形标记发送给会议终端 87 和会议终端 81。

4）会议终端 87 是一个普通会场，该会场同时收到会议终端 81 发送的胶片码流和会议终端 85 发送的圆形标记，会议终端 87 对胶片码流进行解码后得到胶片图像，再将圆形标记叠加到该胶片图像上即可看到叠加了圆形标记的胶片图像。

如果有其他会场具备会议终端 85 一样的标记输入设备，其他会场也可以发送自己的标记并且被所有的会场看到。

会议系统实施例四:

如图 21 所示，在上述会议系统的实施例三的基础上，描述会议系统中多会议服务器级联的应用场景，该图中的双箭头表示混合图像数据流的传输:

假设，系统中有两个 MCU 进行级联，其中 MCU1 为主 MCU，MCU2 为从 MCU，多于 2 个 MCU 级联的情况，与此类似，其中一个 MCU 为主 MCU，其他 MCU 为从 MCU;

会议系统中，会议终端 T1 将共享的图像数据信号发送给会议系统中与其相连的 MCU2,会议终端 T2 将本地的标记数据信号发送给与其相连的 MCU2，从 MCU2 将 T1 的共享图像数据信号和 T2 的标记数据信号，转发给会议系统中的主 MCU，即 MCU1，由会议系统中主 MCU 直接将接收到的共享图像数据信号和标记数据信号转发给会议系统中的各个会议终端，对于连接在从 MCU 上的会议终端，共享图像数据信号和标记数据信号由主 MCU 先发送给

会议系统中的各个从 MCU，然后由从 MCU 进行转发。会议系统中的各个会议终端收到共享图像数据信号和标记数据信号后，对其进行叠加，然后显示。

对于更多级的 MCU 级联，操作与上面类似，发送给会议系统中各个会议终端的共享图像数据信号和标记数据信号，是由级联会议中的主 MCU 来统一收集、转发来完成的。

该实施例中，若多个 MCU 均为主 MCU 时，同样 MCU 会按照标记数据信号的添加时间先后顺序，产生一控制信号，各主 MCU 根据该控制信号将其接收到的标记数据信号顺序转发给接收端的会议终端，由接收端的会议终端进行叠加，并显示。当然也可以按照各标记数据信号的添加时间先后顺序获取一控制令牌，该控制令牌即可以是主 MCU 主动获取，也可以是系统的中的控制单元进行下发，各主 MCU 根据该控制令牌对其接收到的标记数据信号进行转发，由各个接收端会议终端接收并进行叠加。

会议系统的实施例五：

如图 22 所示，为上述第三种应用场景的会议系统结构示意图，该会议系统包括：会议终端 91，与该会议终端 91 连接的一笔记本电脑 92；会议服务器 93；会议终端 94，与会议终端 94 连接的带触摸屏的显示器 95；会议终端 96，与会议终端 96 连接的普通显示器 97；这里的每一个会议终端都代表一个会场，该会议终端的个数不作限制，其中，上述会议终端 91 包括：

第二定时器 46，用于产生第二时间间隔值；

第一内部标记接收模块 4110，用于接收本地会议终端发送的标记数据信号，并按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；

第二内部标记接收模块 4120，用于接收本地会议终端发送的标记数据信号，并按照所述第二时间间隔值输出所述标记数据信号，产生第二标记数据信号。

第一叠加模块 430，用于将所述图像数据信号和所述第一标记数据信号进行叠加，生成第一混合图像数据；

第一发送模块 440，用于向所述本地会议终端的显示屏幕上发送所述第一

混合图像数据，或者通过 H.239 协议的辅流通道向所述会议服务器发送所述第一混合图像数据；

所述会议服务器 93，用于接收所述至少一个会议终端 94 发送的所述第一混合图像数据，并转发；

所述会议终端 96 和会议终端 91，用于接收所述第一混合图像数据，对所述第一混合图像数据进行解码，并显示。

具体来讲，该应用场景主要包括以下流程：

1）在初始状态下，会议终端 91 连接笔记本电脑，并且申请到 H.239 辅流令牌，通过辅流通道向其他会场共享胶片（相当于把共享胶片通过辅流通道发送其他终端），因此会议终端 94 和会议终端 96 都看到会议终端 91 的胶片。

2）当观看到某个胶片时，会议终端 94 的用户想在胶片上做一个标记，为了能将自己的标记传给其他人，会议终端 94 的操作过程如下

2.1）申请 H.239 辅流通道控制令牌；

2.2）判断会议控制者（当前令牌拥有者）是否同意申请，若是，得到令牌，开始记录会议终端 94 的触摸屏 95 的标记数据信号，并将该标记数据信号叠加到该会议终端 94 所观看的胶片图像上；

2.3）将叠加标记数据信号后的胶片进行编码；

2.4）将编码后的胶片码流通过 H.239 辅流通道发送会议服务器 93。

此时会议终端 94 为 H.239 辅流的发送者，其他会场如果想添加自己的标记，也做同样操作，这样通过不断切换 H.239 辅流发送令牌，各个会场都可以将自己的标记添加到该胶片上。

当然，在该种系统中，会议终端 94 也可以采用令牌控制的方式单独发送通过触摸屏 95 所添加的标记，将标记作为 H.239 的第二路辅流（胶片传输为第一路辅流），在会议召开时能力交换需要增加两个参数：1.是否支持第二路辅流；2.第二路辅流是否是标记信息；

如果第二路辅流是标记信息，则默认使用令牌的方式进行控制。也就是说，发送标记时，也采用申请令牌的方式进行，本方案中所说“第二路”仅表明一个序号，区别胶片辅流，实际上可以是任意一个辅流。

采用令牌控制方式发送标记的流程如下：

3.1）申请标记辅流控制令牌；

3.2）申请成功，则得到一令牌，开始记录通过触摸屏 95 所添加的标记数据信号；

3.3）将用户的标记数据信号（标记轨迹）作为单独辅流发送给会议服务器 93，再由会议服务器 93 转发给其他的会议终端。

当然在实际的使用过程中，可以将上述令牌控制标记数据信号发送的方式和令牌控制混合胶片的方式结合起来。

会议系统的实施例六：

如图 23 所示，在上述会议系统的实施例五的基础上，描述会议系统中多会议服务器级联的应用场景，该图中的双箭头表示混合图像数据流的传输：

假设，系统有两个 MCU 进行级联，其中 MCU1 为主 MCU，MCU2 为从 MCU，多于 2 个 MCU 级联的情况，与此类似，其中一个 MCU 必定为主 MCU，其他 MCU 为从 MCU；

会议终端 T1 将共享的图像数据信号和本地的标记数据信号在本地叠加之后生成一混合图像数据，在将混合图像数据通过 H.239 辅流通道发送给 MCU2，MCU2 将其转发给会议中的主 MCU（MCU1），会议中主 MCU（MCU1）将收到的混合图像数据发送给会议系统中的各个从 MCU，连接在会议系统中从 MCU 上的会议终端，通过从 MCU 接收该从 MCU 转发的混合图像数据。

对于更多的 MCU 级联，操作与上面类似，发送给会议系统中各个会议终端的混合图像数据，是由级联会议中的主 MCU 来统一转发来完成的，当然系统中的各个 MCU 也都可以为主 MCU，为了保证系统中网络不被拥塞，各个 MCU 之间需要以一定的顺序进行转发，并选择其中一个 MCU 将混合图像数据进行最后的转发。

在上述会议系统的所有实施例中，会议终端与会议服务器之间进行数据传输时，当网络出现拥塞或者是丢包的时候，可以采用如下方法解决网络拥塞或者丢包的问题，使会议系统中的用户有更好的参与体验：

1）采用可靠的传输，如：图像数据信号、混合图像数据信号等数据量较

大的数据采用 UDP 协议进行传输，不致出现网络的拥塞；

2）采用抗丢包技术，使用一些丢包恢复技术，进行冗余数据传输，当出现小丢包时，如标记数据信号，因为其数据量较小，接收端通过冗余数据及收到的数据一同恢复出被丢失的数据，可以使用可靠的传输协议 TCP 协议来进行传输，以确保标记数据信号能够安全地在各个设备间传输；当然，标记数据信号，也可以使用可靠的传输，如使用 UDP 协议进行传输。

所有的现有系统上的抗丢包技术，都可以应用到本交互应用上来，以改善丢包或是网络拥塞情况下的应用体验。

在标记数据信号由会议终端发送给会议服务器，再由会议服务器转发给其他的会议终端时，可以通过如上述 IP 网的 TCP 协议、UDP 协议，当然也可以采用如 H.320 系统的 HMLP 协议进行传输，为了保证实时性，在 IP 网络中通常使用 UDP 协议进行传输。

当然，在 MCU 侧或者接收侧的会议终端侧，也可以通过记录接收到数据的时间，并按照接收时间的先后顺序对接收到的图像数据信号和标记数据信号进行叠加，以保证各个会议终端添加的标记数据信号能够被正确的叠加，提高用户的体验；或者会议终端在发送图像数据信号、标记数据信号时，添加一时间戳，记录发送的时间，MCU 接收到该图像数据信号或者标记数据信号时，可以获取该时间戳，尤其是对于标记数据信号，按照标记数据信号的发送时间对图像数据进行叠加，使各个会议终端的标记数据信号与图像数据信号能够被正确的叠加，提高用户的体验和参与感。

在上述的几种会议系统，在实现用户相互协作交互的过程中，无需另外构造数据会议系统和设备，在现有的 H.239 双流的基础上实现与会者之间的数据协作，提高用户的参与感和讨论效率。

方法的实施例：

如图 24，本发明的实施例还提供一种数据处理方法，包括：

步骤 S160，获取图像数据信号；

步骤 S161，获取标记数据信号；

步骤 S162，将所述图像数据信号和所述标记数据信号进行叠加，生成混

合图像数据信号；

步骤 S163，输出所述混合图像数据信号，该混合图像数据即可以输出到本地会议终端上进行显示，也可以输出到会议服务器，再由会议服务器转发给其他的会议终端。

该方法通过将获取的图像数据信号和标记数据信号进行叠加，生成混合图像数据信号，如该混合图像数据信号为添加了标记的胶片，该允许与会者在观看胶片的时候，同时在胶片上画上自己的标记，提高视频会议用户的参与感，提高讨论效率。

下面为上述图 24 所示的方法的一具体实现过程：

步骤 S170，获取图像数据信号；

步骤 S171，获取本地会议终端输入的标记数据信号；

步骤 S172，产生第一时间间隔值；

步骤 S173，产生第二时间间隔值；

步骤 S174，按照所述第一时间间隔值输出所述标记数据信号，产生第一标记数据信号；

步骤 S175，按照所述第二时间间隔值输出所述标记数据信号，产生第二标记数据信号，并对该第二标记数据信号进行编码，生成第三标记数据信号；

步骤 S176，判断是否支持标记辅流，若支持，执行步骤 S177，若不支持执行步骤 S178 或者通过自定义通道发送所述第三标记数据信号；

步骤 S177，在 H.239 协议的辅流通道中申请会场令牌，申请成功并得到一会场令牌后，产生第一控制信号，根据所述第一控制信号通过 H.239 协议的一个辅流通道向会议服务器发送所述第三标记数据信号；

步骤 S178，在 H.239 协议的另一个辅流通道中申请会场令牌，申请成功并得到一会场令牌后，产生第二控制信号，根据所述第二控制信号将所述图像数据信号和所述第一标记数据信号进行叠加，生成第一混合图像数据；

步骤 S179，向所述本地会议终端的显示屏幕上发送所述第一混合图像数据，或者通过 H.239 协议的辅流通道向会议服务器发送所述第一混合图像数据，再由会议服务器转发给其他的会议终端。

该实现过程中，步骤 S171 之前还可包括：接收本地会议终端所在会场中的一输入设备的子令牌申请，确认所述子令牌申请成功后，分配一子令牌给该输入设备；则步骤 S171 可具体为：根据该子令牌，获取本地会议终端所在会场中的所述输入设备的标记数据信号。

另外，若接收的标记数据信号为其他终端发送的标记数据信号时，上述图 24 所示的方法的另一具体实现过程：

步骤 S180，获取图像数据信号；

步骤 S181，获取会议服务器发送的除本地会议终端外的至少一个其他会议终端的标记数据信号；具体来讲，可以实时或者手动接收，会议服务器发送的除本地会议终端外的至少一个其他会议终端的标记数据信号；

步骤 S182，产生第一时间间隔值；

步骤 S183，对所述至少一个其他会议终端的标记数据信号分别进行解码，生成一标记数据信号队列；

步骤 S184，按照所述第一时间间隔值，根据所述标记数据信号队列的顺序输出所述标记数据信号，生成至少一个第一标记数据信号；

步骤 S185，将所述图像数据信号和所述第一标记数据信号进行叠加，生成第二混合图像数据信号；

步骤 S186，向本地会议终端的显示屏幕上发送所述第二混合图像数据。

其中上述标记数据信号包括：会议标号，会议终端标号和标记数据信号内容；其中，会议标号，会议终端标号主要为了保证接收方在叠加时，能够区分出是那个会议终端发送的标记数据信号；而标记数据信号内容用矢量图、二值位图、YUV 色彩位图或者 RGB 色彩位图来表示，在使用矢量图或二值位图的时候，可以由会议服务器随机给每个会议终端分配一种颜色，会议终端的叠加模块在叠加不同会场轨迹的时候使用会议服务器分配的颜色进行填充；在使用 YUV、RGB 等彩色位图表示轨迹的时候，系统中必须统一指定一种透明颜色，以便接收端能正确识别出标记数据信号的位置与胶片叠加。

另一方法的实施例：

如图 25 所示，本发明的实施例还提供一种数据处理方法，包括：

步骤 S190，接收会议终端发送的图像数据信号和标记数据信号；

步骤 S191，对所述图像数据信号和所述标记数据信号进行叠加，生成混合图像数据；

步骤 S192，向会议终端发送所述混合图像数据或者所述图像数据信号或者所述标记数据信号。

步骤 S191 包括：为所述标记数据信号分配填充颜色或者透明颜色，并利用所述填充颜色或者透明颜色对所述标记数据信号进行处理，产生颜色标记数据信号；标记数据信号的内容可以用矢量图、二值位图、YUV 或者 RGB 等彩色位图表示；

将所述图像数据信号和所述颜色标记数据信号进行叠加，生成混合图像数据。在使用矢量图或二值位图的时候，可以随机给每个会议终端的标记数据信号分配一种填充颜色，在叠加不同会场轨迹的时候使用上述填充颜色进行填充；在使用 YUV、RGB 等彩色位图表示标记数据信号的时候，MCU 须指定一种透明颜色，以便接收会议终端能正确识别出轨迹的位置，这样可以保证标记数据信号和图像数据信号叠加后，每一个会场的混合图像数据的完整性。

步骤 S192 之前还可包括：接收会议终端发起的会场令牌申请，确认所述会场令牌申请成功后，向该会议终端返回一会场令牌；则步骤 S192 中，根据该会场令牌，向会议终端发送所述混合图像数据或者所述标记数据信号时，该会议服务器可选择 H.239 协议的一辅流通道，通过所述辅流通道向会议终端发送所述混合图像数据或者所述标记数据信号。支持 H.239 协议，系统结构简单，且使会议系统中的各个会议终端都能够看到其他会议终端添加的标记，实现与会者之间的协作，提高用户的参与感，提高用户的讨论效率。

本领域普通技术人员可以理解实现上述实施例方法中的全部或部分步骤是可以通过程序来指令相关的硬件来完成，所述的程序可以存储于一可读取存储介质中，该程序在执行时，包括如上述方法实施例的步骤。

以上所述是本发明的优选实施方式，应当指出，对于本技术领域的普通技术人员来说，在不脱离本发明所述原理的前提下，还可以作出若干改进和润饰，这些改进和润饰也应视为本发明的保护范围。

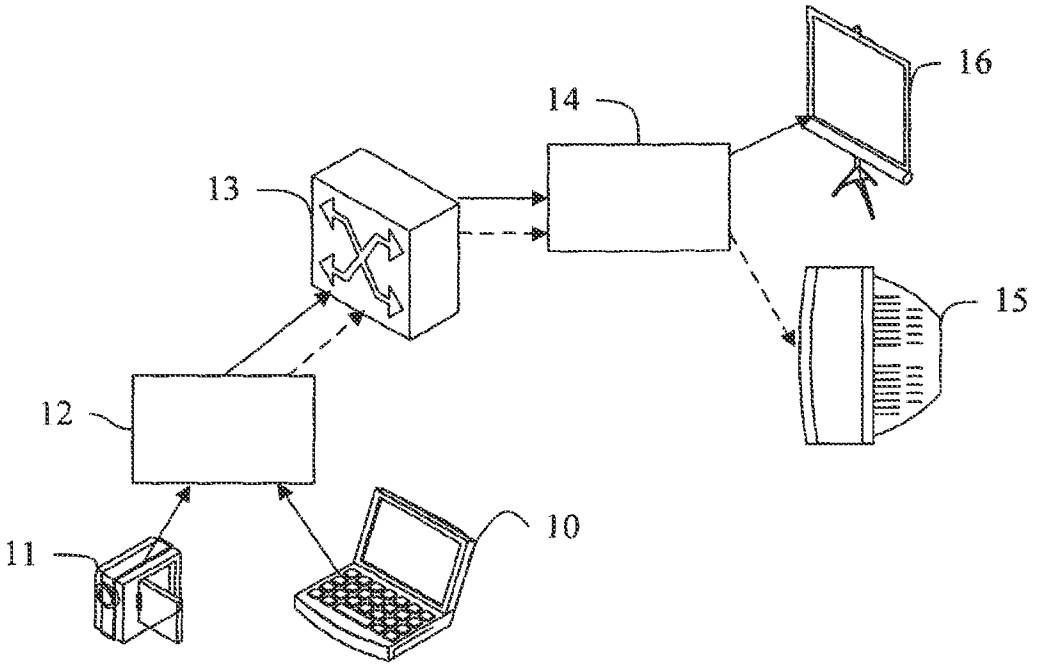


图 1

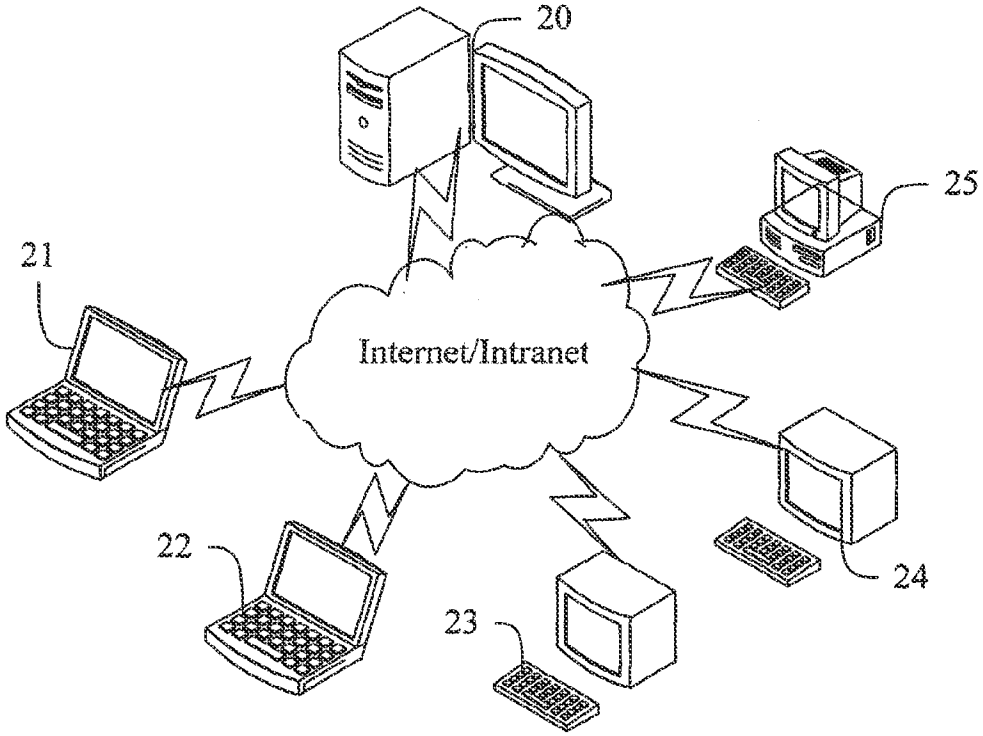


图 2

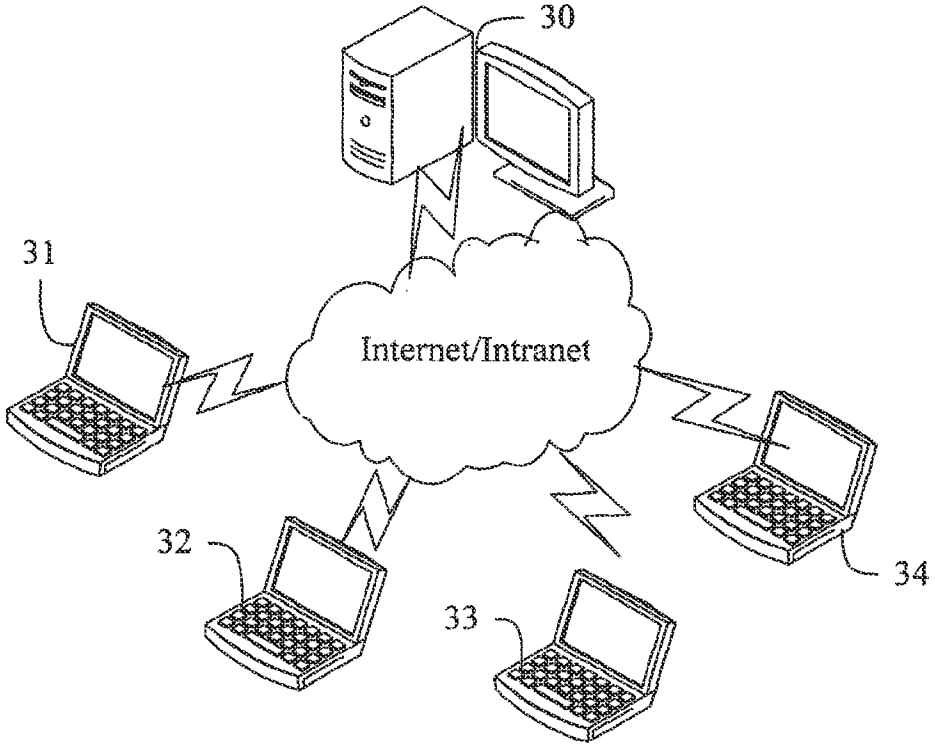

30
31
Internet/Intranet
32
33
34

图 3

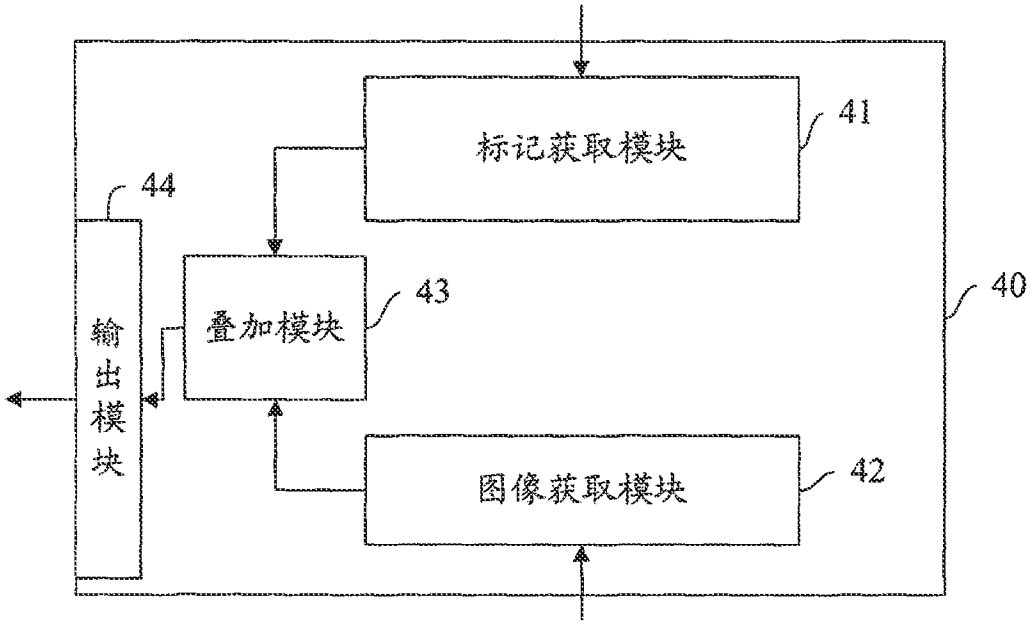

标记获取模块
41
44
输出模块
叠加模块
43
40
图像获取模块
42

图 4

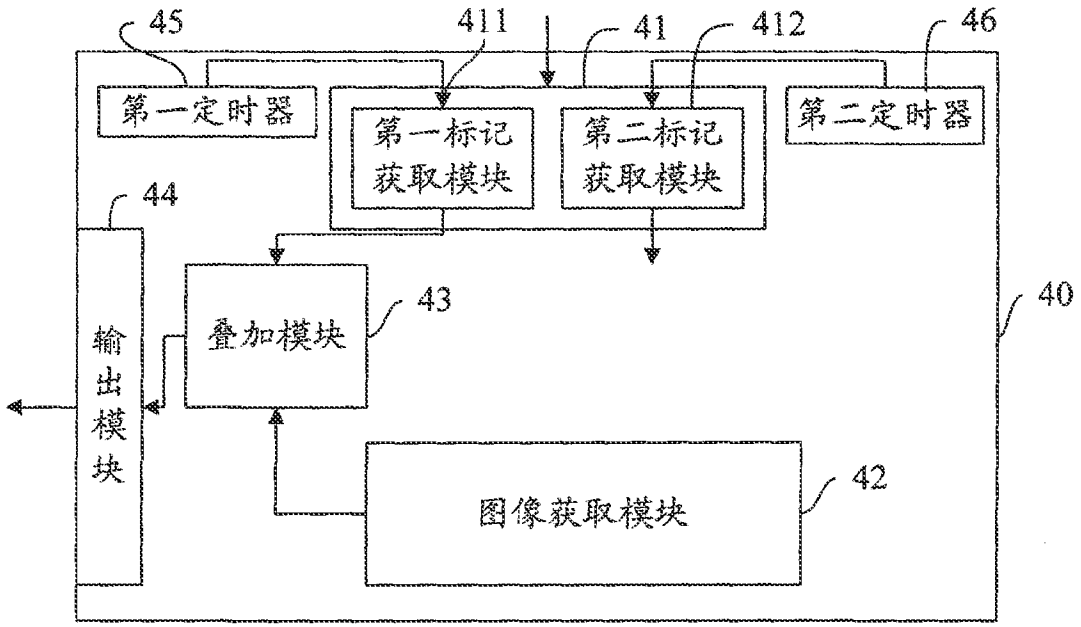

45
411
41
412
46
第一定时器
第一标记获取模块
第二标记获取模块
第二定时器
44
输出模块
叠加模块
43
40
图像获取模块
42

图 5

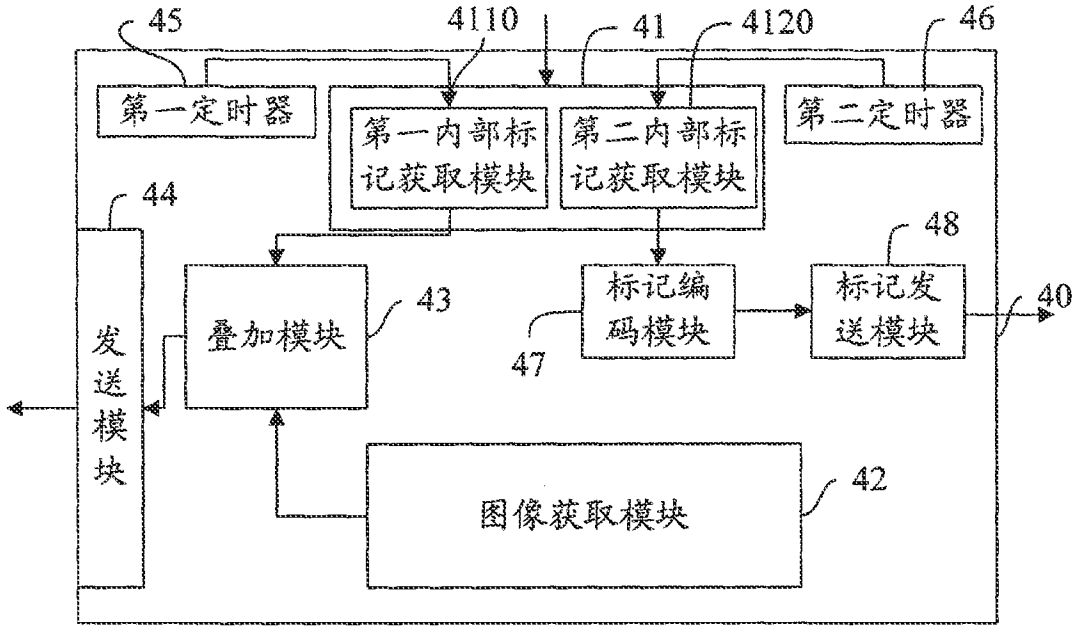

45
4110
41
4120
46
第一定时器
第一内部标记获取模块
第二内部标记获取模块
第二定时器
44
48
发送模块
叠加模块
43
标记编码模块
47
标记发送模块
40
图像获取模块
42

图 6

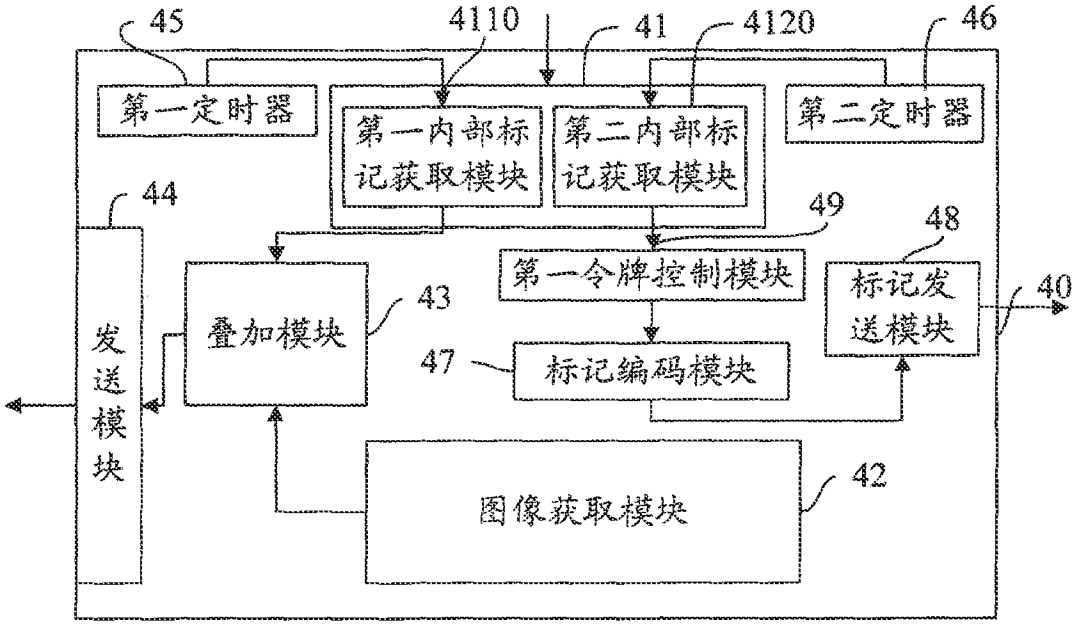

45
4110
41
4120
46
第一定时器
第一内部标记获取模块
第二内部标记获取模块
第二定时器
44
49
48
第一令牌控制模块
标记发送模块
40
发送模块
叠加模块
43
47
标记编码模块
42
图像获取模块

图 7

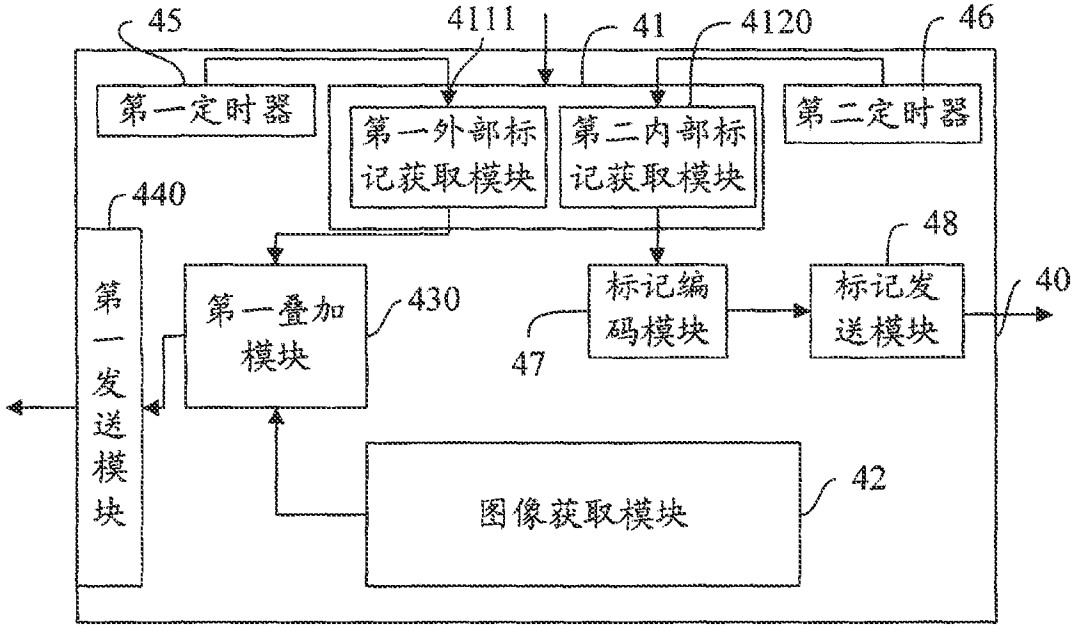

45
4111
41
4120
46
第一定时器
第一外部标记获取模块
第二内部标记获取模块
第二定时器
440
48
第一发送模块
第一叠加模块
430
标记编码模块
标记发送模块
40
47
42
图像获取模块

图 8

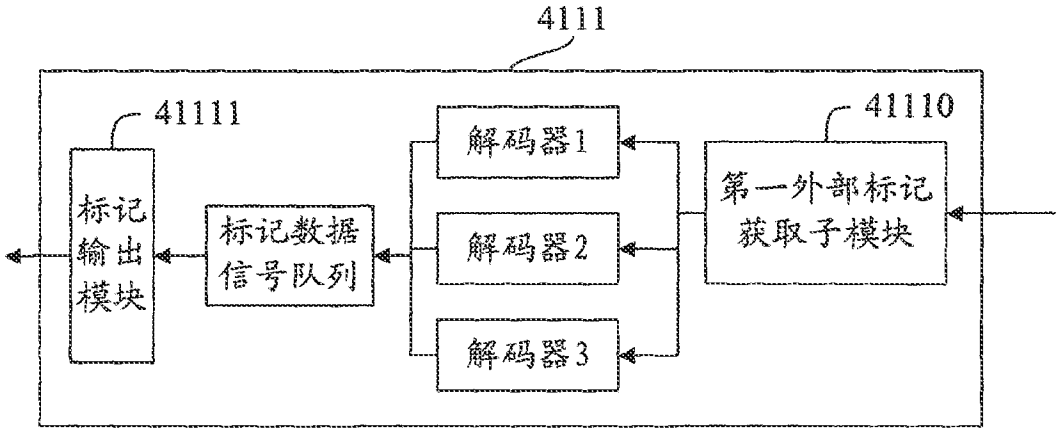

4111
41111
41110
标记输出模块
标记数据信号队列
解码器1
解码器2
解码器3
第一外部标记获取子模块

图 9

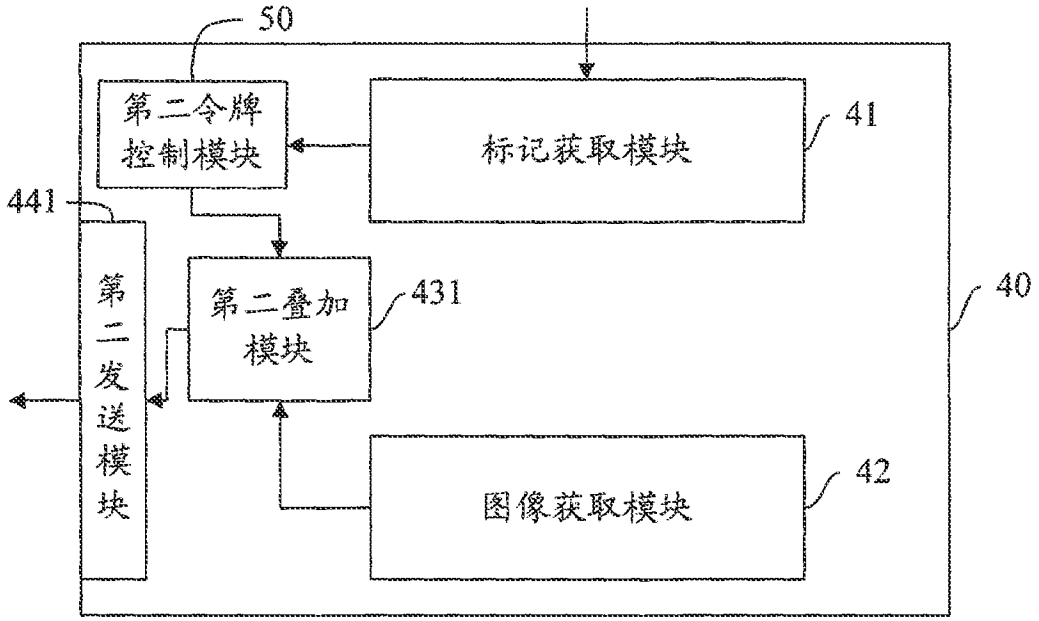

50
第二令牌控制模块
标记获取模块
41
441
第二发送模块
第二叠加模块
431
40
图像获取模块
42

图 10

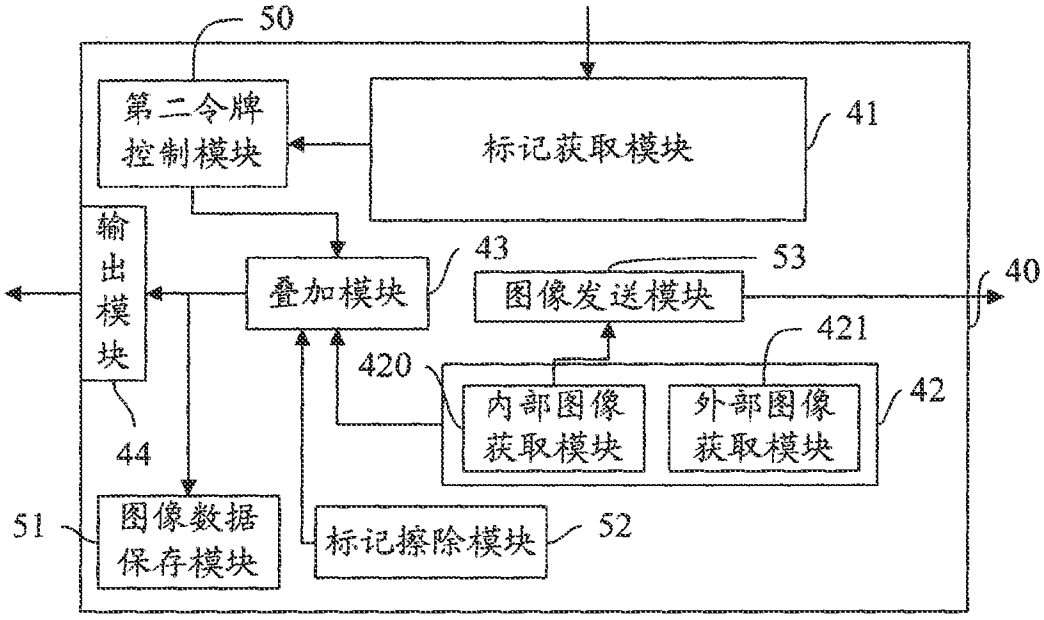

50
第二令牌控制模块
标记获取模块
41
输出模块
43
叠加模块
53
图像发送模块
40
421
420
内部图像获取模块
外部图像获取模块
42
44
51
图像数据保存模块
标记擦除模块
52

图 11

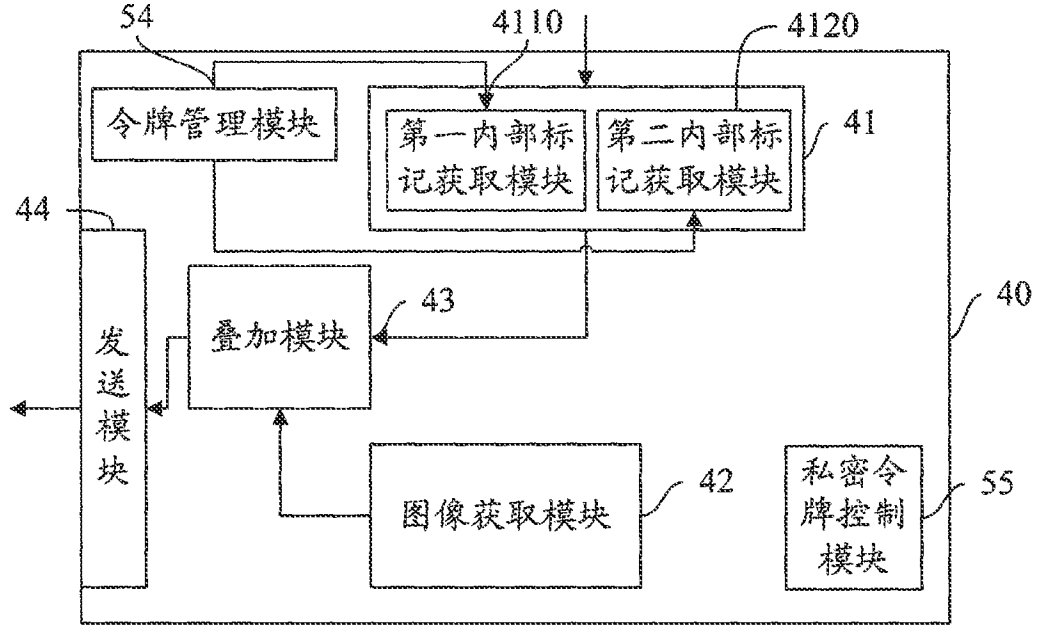

54
4110
4120
令牌管理模块
第一内部标记获取模块
第二内部标记获取模块
41
44
发送模块
43
叠加模块
40
图像获取模块
42
私密令牌控制模块
55

图 12

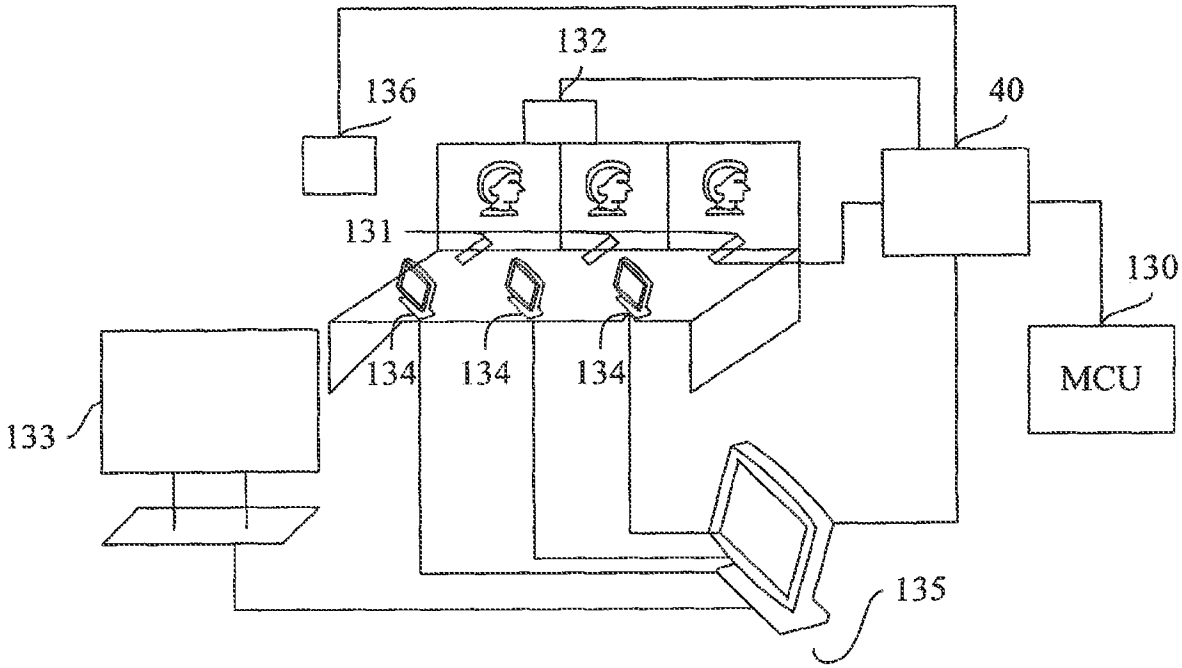

132
136
40
131
130
134
134
134
MCU
133
135

图 13

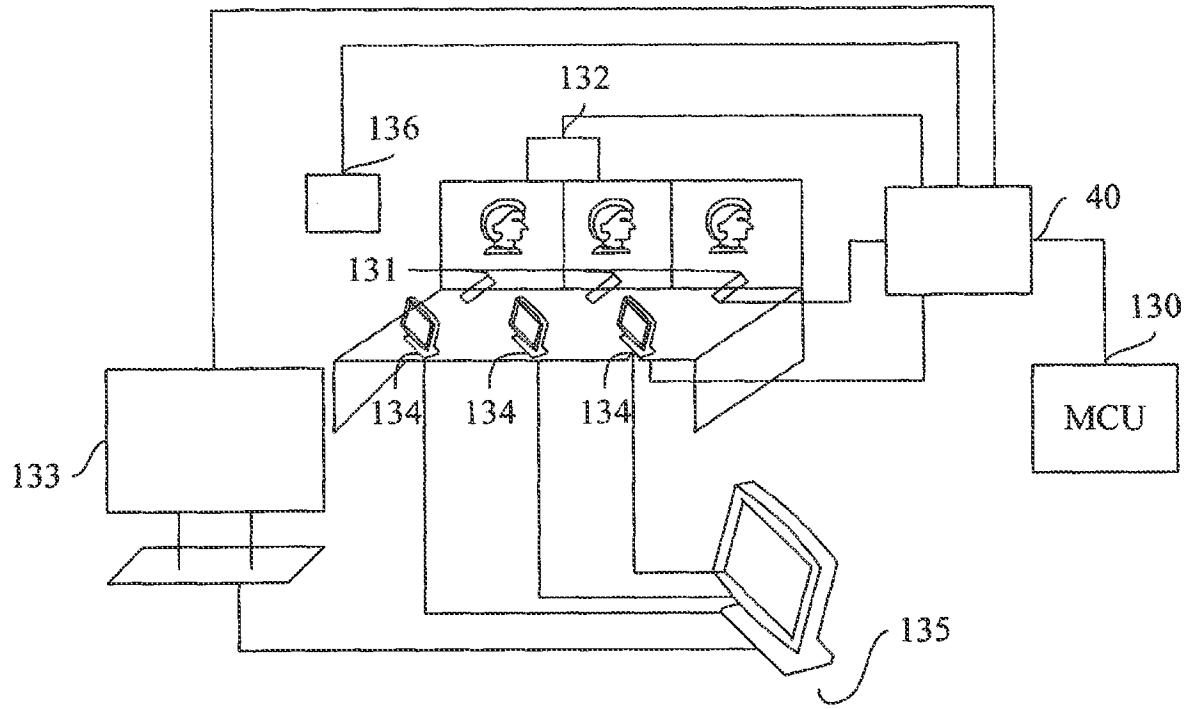

132
136
40
131
130
134
134
134
MCU
133
135

图 14

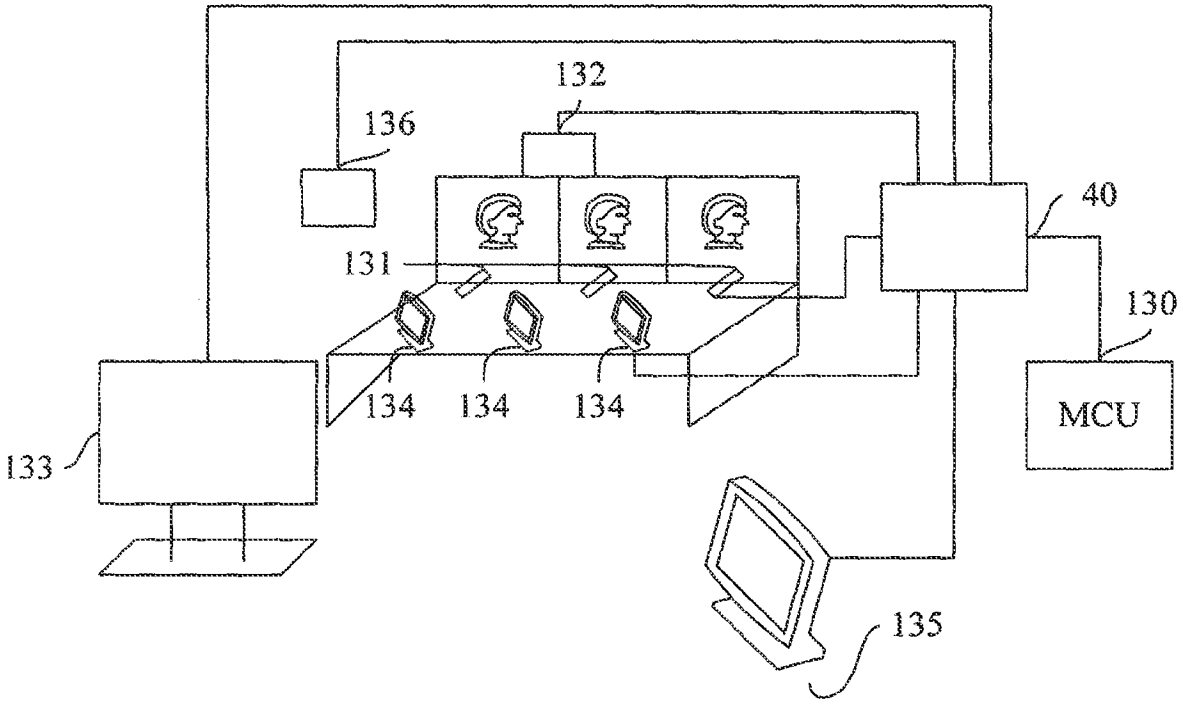

132
136
40
131
130
134
134
134
MCU
133
135

图 15

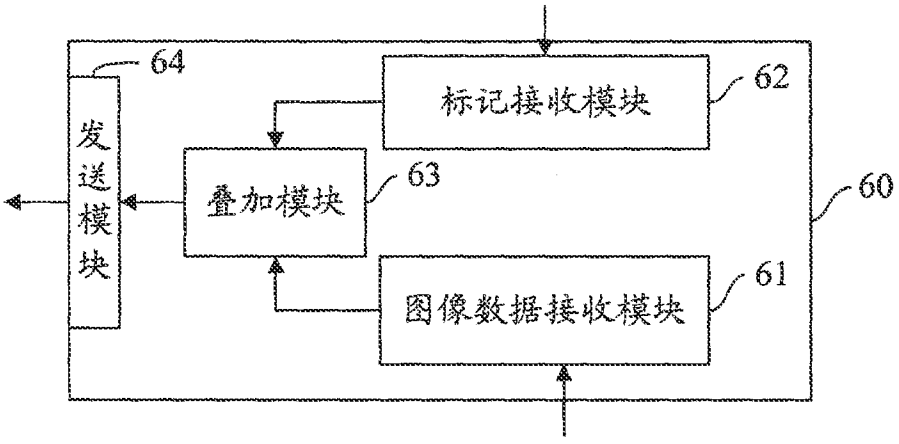

64
标记接收模块
62
发送模块
叠加模块
63
60
图像数据接收模块
61

图 16

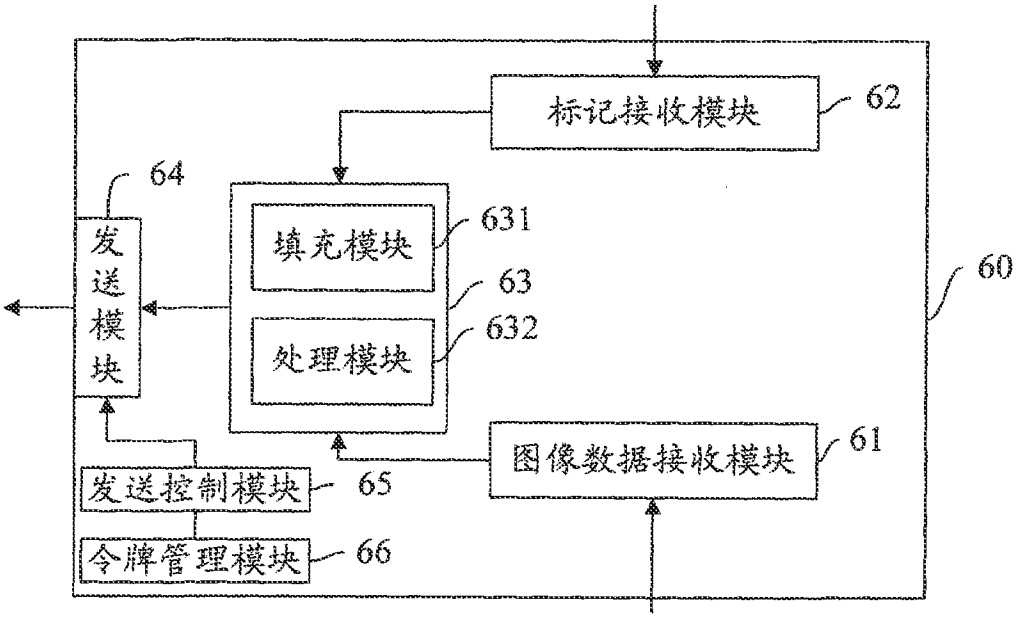

标记接收模块
62
64
发送模块
填充模块
631
63
处理模块
632
60
图像数据接收模块
61
发送控制模块
65
令牌管理模块
66

图 17

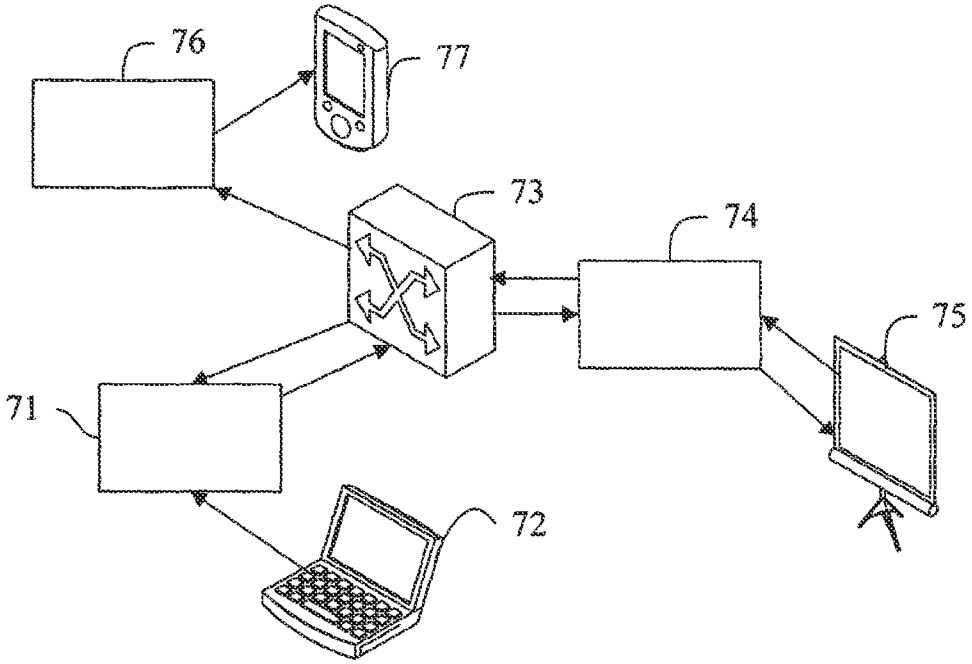

76
77
73
74
75
71
72

图 18

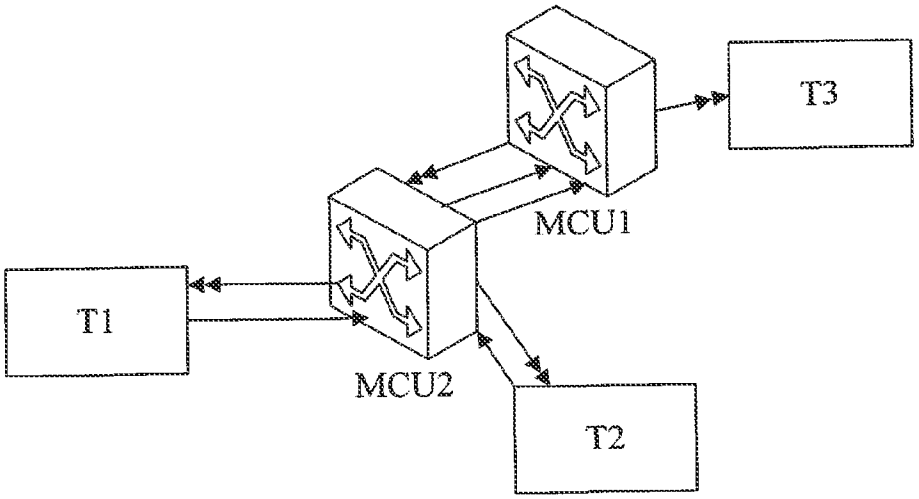


图 19

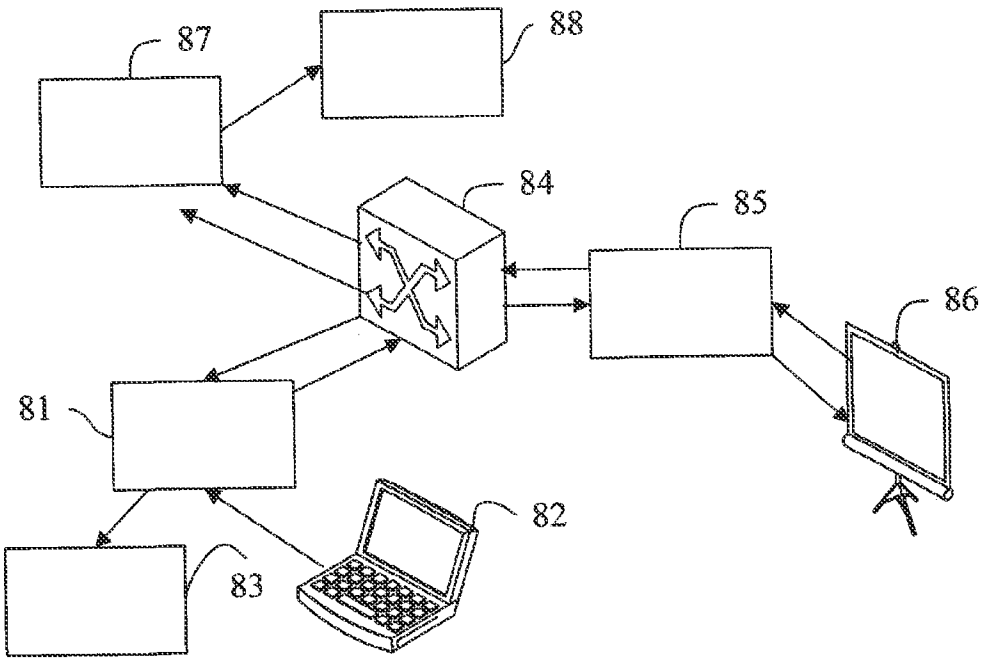


图 20

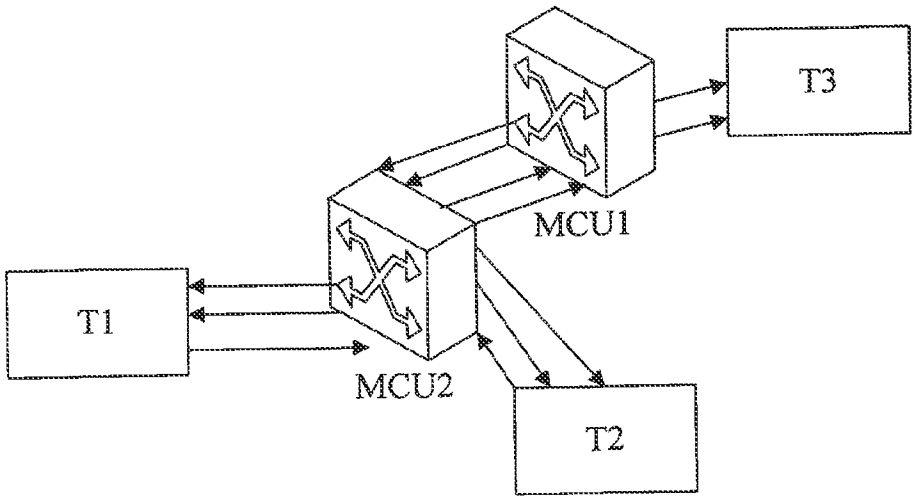


图 21

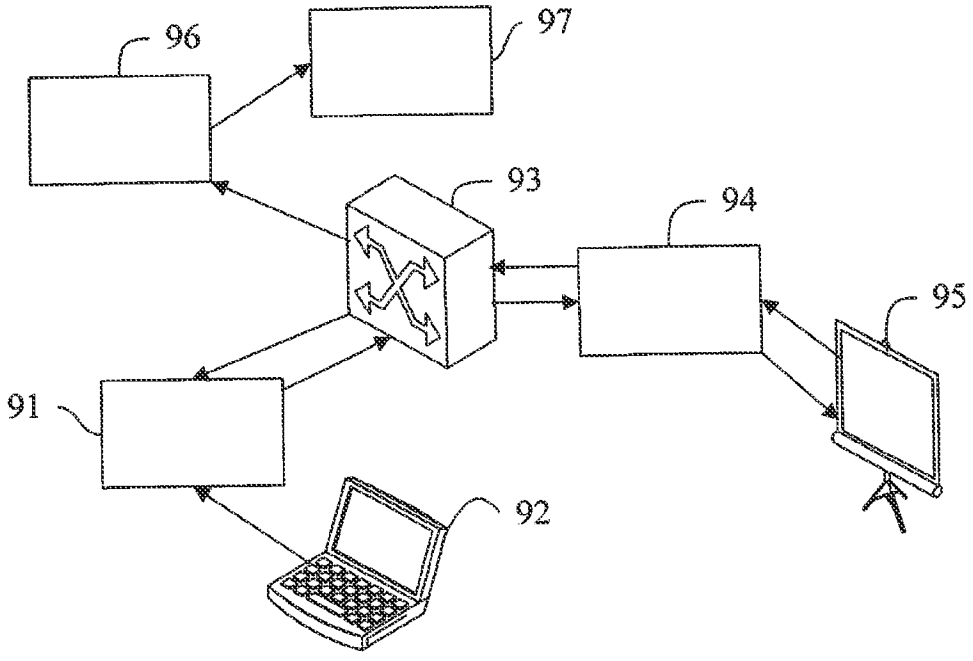


图 22

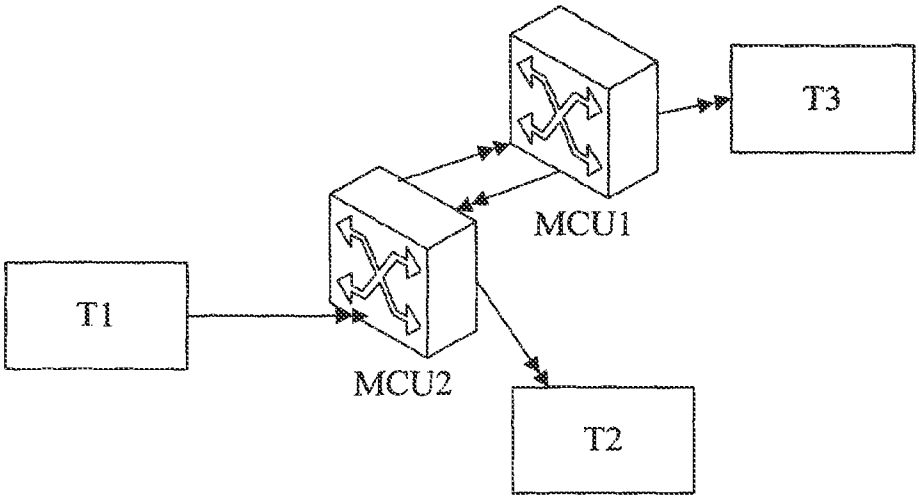

T3
MCU1
T1
MCU2
T2

图 23

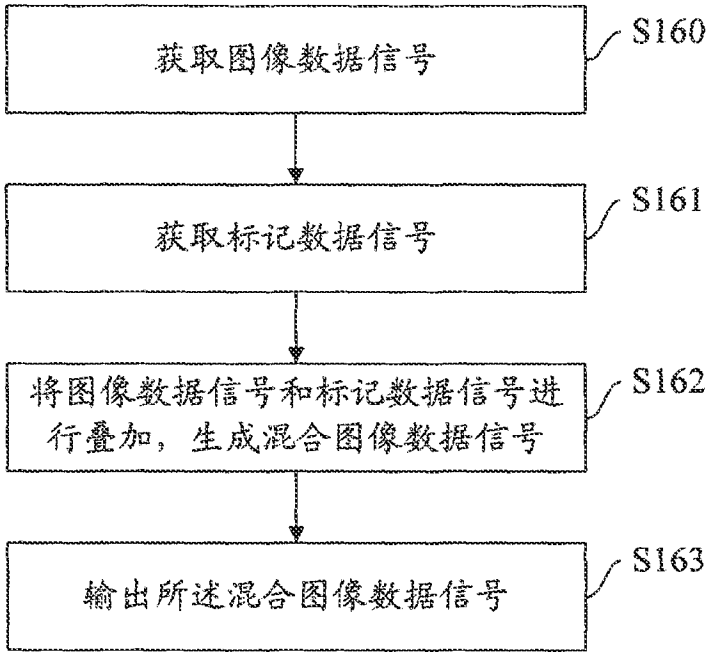

获取图像数据信号
S160
获取标记数据信号
S161
将图像数据信号和标记数据信号进行叠加，生成混合图像数据信号
S162
输出所述混合图像数据信号
S163

图 24

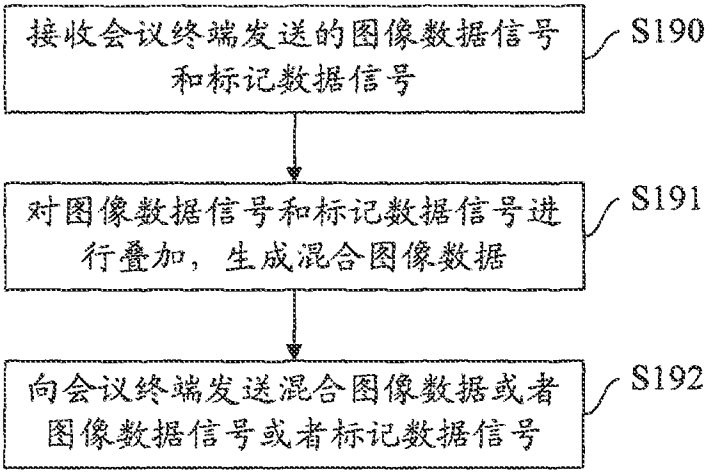

接收会议终端发送的图像数据信号和标记数据信号
S190
对图像数据信号和标记数据信号进行叠加，生成混合图像数据
S191
向会议终端发送混合图像数据或者图像数据信号或者标记数据信号
S192

图 25

(19)中华人民共和国国家知识产权局

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(22)申请日 2010.07.12

(71)申请人 中国电力科学研究院
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代理人 徐国文

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H04L 29/06(2006.01)
H04L 29/08(2006.01)
H04N 7/15(2006.01)

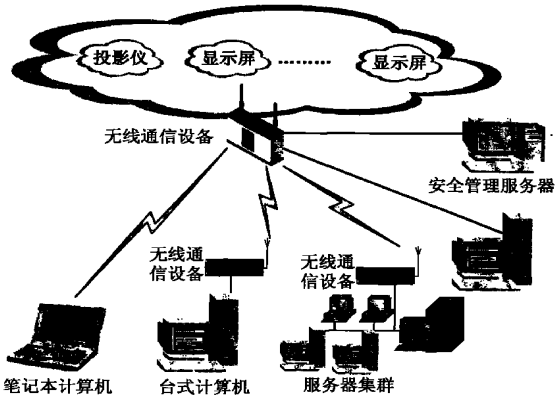
权利要求书 4 页 说明书 7 页 附图 9 页

(54)发明名称

一种保障安全性的电力调度云会商方法和装置

(57)摘要

本发明提出了一种保障安全性的电力调度云会商方法和装置，综合应用云计算、云会商、安全性、无阻塞性、高清晰视频会商及无线通信网络等技术，提供了一种保障安全性的电力调度云会商方法和装置。本发明通过随机服务排队论数学方法及6类优先级队列规则实现电力调度消息流事件的无阻塞性，通过集成物理防护、逻辑防护和安全管理措施实现安全性约束，通过高速通信网络实现显示1080p(20CIF)的高清晰视频流和幻灯图像。达到由投影仪和各类显示屏等构成的云端设备的资源共享，完成构筑保障安全性的电力调度动态云会商系统。服务于智能电网，促进智能调度全景可视化的发展。



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1. 一种保障安全性的电力调度云会商方法，其特征在于包括以下步骤：

(1) 保障安全性

S2.1 物理防护：用户安全认证卡、无线设备发射功率控制、定向波束天线、用多台无线设备同频干扰器搭建防护隔离边界；

S2.2 逻辑防护：IP 地址和 MAC 地址关联认证、加密、数字签名；

S2.3 安全管理措施：监视、控制、灾备、紧急情况服务；

(2) 无阻塞

S3.1 参会人员注册登记：参加电力调度云会商的人员注册登记，包括姓名、单位、部门、职务、IP 地址、MAC 地址、提交议题及内容；

S3.2 是否有主持人，若无则 S3.3 进入发言者自助模式，若有则 S3.10 进入主持人会商模式；

S3.3 发言者自助模式；

S3.4 是否有主持人模式请求，若无则 S3.5，若有则 S3.10 进入主持人会商模式；

S3.5 优先级规则选取；

S3.6 是否有优先级规则转换，若无则 S3.7，若有则 S3.5；

S3.7 依据优先级规则确定发言者及其顺序；

S3.8 发言者使用云会商，发出高清晰会议电视流，上送至显示云端；

S3.9 是否完毕或有人要求中断，若无则 S3.7，若有则 S3.4；

S3.10 主持人会商模式；

S3.11 主持人是否宣布结束，若否则 S3.12，若是则结束；

S3.12 主持人是否指定使用，若否则 S3.13，若是则 S3.15；

S3.13 发言者申请；

S3.14 主持人确认是否认可，若否则 S3.13，若是则 S3.15；

S3.15 发言者使用云会商，发出高清晰会议电视流，上送至显示云端；

S3.16 是否完毕或有人要求中断，若无则 S3.15，若有则 S3.11；

(3) 显高清

对应会商展示每路 720p 以上质量的高清晰会议电视流，包括以下 2 步骤：

构筑 IP 网络：有线和 / 或无线传输通道构成的网络的全双工带宽不小于 33Mbps；

展示高清：包括投影仪和显示屏在内的会商展示设备支持 720p 以上质量的高清晰会议电视。

2. 如权利要求 1 所述的方法，其特征在于步骤 S3.5 优先级规则包括以下 6 类：

其一，按照参会人员注册登记的提交议题及内容，重要性由大到小，确定优先级队列；

其二，按照参会人员注册登记的申请时间顺序，利用排队论离散时间随机过程 {Xi} 所具有 Markov 性质，确定优先级队列；

其三，按照参会人员注册登记的单位序列，确定优先级队列；

其四，按照参会人员注册登记的部门专业序列，确定优先级队列；

其五，按照参会人员注册登记的职务和姓名序列，职务由大到小，同职务按照姓名字母顺序，确定优先级队列；

其六，当电力调度云会商过程中陆续有人员加入会商时，应用随机服务排队论数学方

法确定优先级队列规则为：应急事件后到先服务（LCFS）即M/M/c/LCFS模型，重要议题及内容带优先服务权（PR）即M/M/c/PR模型，次重要议题及内容随机服务（SIRO）即M/M/c/SIRO模型，剩余的一般性议题及内容集合内采用先到先服务（FCFS）即M/M/c/PR模型。

3. 如权利要求1或2所述的方法，其特征在于所述（2）无阻塞是根据电力调度智能化的云会商的随机服务特点，利用排队论数学方法，建立数学模型，包括：

设共有c个会商云幻灯，每个需要会商的云幻灯的平均服务率均为u，在正常情况下，电力调度消息流事件的平均到达率为 λ，则 Δt 时间内有一个电力调度消息流事件到达的概率为 $P_1 = \lambda \Delta t$，在 Δt 时间内有一个电力调度消息流事件离去的概率为 $q_1 = \lambda \Delta t$；

分以下三种情况：

（1）当无电力调度消息流事件时，三种互不相容事件的概率分别为：

（a）在时间t内没有电力调度消息流事件排队，Δt 时刻也没有电力调度消息流事件到达的概率为 $P_0(1-\lambda \Delta t)$；

（b）在时间t内有一个电力调度消息流事件，Δt 内没有电力调度消息流事件到达，但有一位电力调度消息流事件接受云会商后离去的概率为 $P_1(1-\lambda \Delta t)u\Delta t$；

（c）在时间t内没有电力调度消息流事件排队，但在 Δt 时刻内有一位电力调度消息流事件到达，也有一位电力调度消息流事件接受云会商后离去的概率为 $P_0\lambda \Delta tu\Delta t$；

则 $P_0 = P_0(1-\lambda \Delta t)+P_1(1-\lambda \Delta t)u\Delta t+P_0\lambda u(\Delta t)^2$

略去二阶小量，整理得 $P_1 = \lambda P_0/u$；

（2）当已有n个电力调度消息流事件，且 $1 \leqslant n < c$ 时，可分为以下四种情况：

（a）时间t内有n-1个电力调度消息流事件在排队，Δt 时刻内有一位电力调度消息流事件到达，但没有任何电力调度消息流事件被云会商的概率为 $P_{n-1}\lambda \Delta t(1-nu\Delta t)$；

（b）时间t内有n+1个电力调度消息流事件在排队，Δt 时刻内没有电力调度消息流事件到达，但有一位电力调度消息流事件接受云会商后离去的概率为 $P_{n+1}(1-\lambda \Delta t)[(n+1)u\Delta t]$；

（c）时间t内有n个电力调度消息流事件在排队，Δt 时刻内没有电力调度消息流事件到达，也没有任何电力调度消息流事件被云会商的概率为 $P_n(1-\lambda \Delta t)(1-nu\Delta t)$；

（d）时间t内有n个电力调度消息流事件在排队，Δt 时刻内有一个电力调度消息流事件到达，也有一位电力调度消息流事件接受云会商后离去的概率为 $P_n\lambda \Delta tnu\Delta t$；

（3）电力调度消息流事件数 $n \geqslant c$ 时，与情况（2）类似，但相应的概率分别为：

（a）$P_{n-1}(\lambda \Delta t)(1-c\mu \Delta t)$

（b）$P_{n+1}(1-\lambda \Delta t)(c\mu \Delta t)$

（c）$P_n(1-\lambda \Delta t)(1-c\mu \Delta t)$

（d）$P_n(\lambda \Delta t)c\mu \Delta t$

由上面的公式得到：

$$\begin{cases} P_{n-1}=\left(\dfrac{\lambda+c\mu}{c\mu}\right)P_n-\left(\dfrac{\lambda}{c\mu}\right)P_{n-1} \\ P=\dfrac{\left(\dfrac{\lambda}{\mu}\right)^n}{n!}\times P_0,\quad 1\le n<c \\ P_n=\dfrac{\left(\dfrac{\lambda}{\mu}\right)^n}{c!c^{n-c}}P_0,\quad n\ge c \end{cases}$$

解得系统的稳态概率为：

$$P_0=\frac{1}{\sum_{n=0}^{c-1}\dfrac{\left(\dfrac{\lambda}{\mu}\right)^n}{n!}+\dfrac{\left(\dfrac{\lambda}{\mu}\right)^c}{c!\left(1-\dfrac{\lambda}{\mu}\right)}}$$

只有当 λ/cμ ＜1时，才能使会商云幻灯服务系统达到稳态而不会排成无限的队列，会商云幻灯系统的服务强度为 $\rho=\dfrac{\lambda}{c\mu}$，即会商云幻灯系统的利用率；

会商云幻灯系统的服务率为：

$$\mu_n=\begin{cases} n\mu & n=1,2,3,\cdots,c \\ c\mu & n=c+1,c+2,\cdots. \end{cases}$$

即当系统中有n(n＜c)个电力调度消息流事件时，系统的服务率为nμ；当系统中有c个电力调度消息流事件时，系统的服务率达到最大值cμ；当系统中的电力调度消息流事件数超过c时，由于c个服务台都忙着，其余电力调度消息流事件必须排队，这时的服务率仍为cμ；

由此可得，

系统中的电力调度消息流事件排队长度为 $L_q=\dfrac{\lambda\mu\left(\dfrac{\lambda}{\mu}\right)^c P_0}{(c-1)!(c\mu-\lambda)^2}$，

电力调度消息流事件在系统中的平均等候时间为 $W_q=\dfrac{\mu\left(\dfrac{\lambda}{\mu}\right)^c P_0}{(c-1)!(c\mu-\lambda)^2}$

电力调度消息流事件在系统中的平均逗留时间 $W_S=W_q+\dfrac{1}{\mu}=\dfrac{(c\rho)^c\rho P_0}{c!(1-\rho)^2\lambda}+\dfrac{1}{\mu}$，

系统中的平均电力调度消息流事件数 $L_S=W_S\lambda=\dfrac{\lambda}{\mu}+\dfrac{(c\rho)^c\rho P_0}{c!(1-\rho)^2}$，

其中，定义参数为：

L_q：系统中的平均排队长度；

W_q :电力调度消息流事件在系统中的平均等候时间,每个电力调度消息流事件都希望这段时间越短越好 ;

W_S :电力调度消息流事件在系统中的平均逗留时间 ;

L_S :系统中的平均电力调度消息流事件数 ;

λ :平均到达率 ;

μ :平均服务率 ;

c :系统中并联会商云幻灯的数目 ;

ρ :服务强度,即每个会商云幻灯单位时间间隔内的平均服务时间 ;

P_0 :系统的稳态概率。

4. 一种使用权利要求 1-3 任一所述方法的装置,其特征包括以下 8 种 :

其一,步骤保障安全性和无阻塞的实现在安全管理服务器内实现 ;

其二,无线服务器支持 IEEE 802.11b/g 和 100M 局域网络接口,带有与 720p 以上质量的投影仪 / 显示屏连接的信号接口,并且内置 H.264 的软解压软件,支持 DHCP 服务器功能,可以自动为客户端电脑分配 IP 地址 ;

其三,参加电力调度云会商的电脑安装云会商客户端软件,该软件包括权利要求 1-2 的步骤和 H.264 的软编码软件 ;

其四,在有线局域网应用场景,计算机云会商群通过普通以太网交换机汇聚,在经过以太网线连接至无线服务器,无线服务器连接安全管理服务器和 720p 以上质量的投影仪 / 显示屏,完成电力调度会商的显示与展现“云”化,实现显示与展现的资源共享,并保障其安全性 ;

其五,在无线局域网应用场景,计算机云会商群通过其内置或外置的无线局域网卡,经过无线 IEEE 802.11b/g 协议,连接至无线服务器,无线服务器连接安全管理服务器和 720p 以上质量的投影仪 / 显示屏,完成电力调度会商的显示与展现“云”化,实现显示与展现的资源共享,并保障其安全性 ;

其六,在无线局域网和有线局域网组成的混合网应用场景,计算机云会商群通过有线或无线局域网卡,有线场景通过普通以太网交换机汇聚,连接至无线服务器,无线服务器连接安全管理服务器和 720p 以上质量的投影仪 / 显示屏,完成电力调度会商的显示与展现“云”化,实现显示与展现的资源共享,并保障其安全性 ;

其七,参加电力调度云会商的电脑可以是笔记本计算机、台式计算机或服务器集群 ;

其八,用多台同频干扰器搭建防护隔离边界,具体做法是 :使同频干扰器的无线覆盖半径小于无线服务器的无线覆盖半径,在电力调度云会商会场周界外 1 个同频干扰器的无线覆盖半径的边界周围,用多台同频干扰器搭建防护隔离边界,相邻同频干扰器的间距为 1 个同频干扰器的无线覆盖半径。

一种保障安全性的电力调度云会商方法和装置

技术领域

[0001] 本发明属于电力领域，服务于智能电网，具体涉及电力调度智能化领域，综合云计算、云会商、安全性、无阻塞性、高清晰视频会商及无线通信网络技术，提出了一种保障安全性的电力调度云会商方法和装置。

背景技术

[0002] 云计算是一个比较热的新名词，资源池称为“云”，云的规模可以动态伸缩，它的边界是模糊的；云在空中飘忽不定，无法也无需确定它的具体位置，但它确实存在于某处。“云”是一些可以自我维护和管理的虚拟计算资源，通常为一些大型服务器集群，包括计算服务器、存储服务器、宽带资源等等。云计算将所有的计算资源集中起来，并由软件实现自动管理，无需人为参与。云计算 (Cloud Computing) 是并行计算 (Parallel Computing)、分布式计算 (Distributed Computing) 和网格计算 (Grid Computing) 的发展，或者说是这些计算机科学概念的商业实现。云计算是虚拟化 (Virtualization)、效用计算 (Utility Computing)、IaaS(基础设施即服务)、PaaS(平台即服务)、SaaS(软件即服务) 等概念混合演进并跃升的结果。当今流行的典型云计算解决方案包括 Google 云计算、Amazon 云计算、Salesforce 云计算、云安全等。

[0003] 基于自助服务的使用模型为用户提供了按需上传、构建、部署、调度、管理以及报告业务服务的能力。同时，给用户提供的自助服务越多，必要的运维管理活动就越少。基于该种云计算的理念，在电力调度会商全景可视化过程中，将显示展现“云”化，并结合安全性约束，本发明提出了一种保障安全性的电力调度云会商方法和装置。建设智能电网是国际电力工业积极应对未来挑战的共同选择，电力调度是智能电网的重要环节。在电力调度智能化的过程中，对电力调度会商的全景可视化要求越来越高。本发明的目的是实现电力调度会商的显示与展现“云”化，实现显示与展现的资源共享，并保障其安全性。

[0004] 目前的电力调度会商系统虽然有语音会商系统、视频会商系统和网真会商系统等多种形式，但存在以下 6 点不足。其一，必须在特定的会商室才能实现语音、视频或网真会商；其二，会商的显示与展现设备要么闲置、要么同时挣抢使用，要实现显示与展现资源共享的需求突出；其三，若发言者需要展现个人笔记本电脑内的信息，则拔插投影仪线 / 显示屏线非常麻烦，且电脑、投影仪 / 显示屏的信号插头 / 座及其电缆易出故障，影响会商进程；其四，无法在保障安全性的前提下混合使用有线和无线会商技术；其五，无法实现发言者自助模式，而且在电力调度会商过程中陆续有人员加入的情况下更无法实现发言者自助模式；其六，无法实现在电力调度会商过程中同时兼顾 2 种模式，即发言者自助模式和主持人模式。本发明的方法和装置能够克服以上 6 点不足，其一，具有发明的装置、投影仪 / 显示屏和电脑，不强求装备齐全的会商室，在通常的会议室，即可实现保障安全性的电力调度云会商；其二，达到由投影仪和各类显示屏等构成的云端设备的资源共享；其三，电力调度云会商流通过无线或 / 和有线局域网，用局域网线与发言者电脑连接即可；其四，电力调度云会商流可以通过无线局域网或有线局域网，也以通过无线局域网和有线局域网组成的混合

网，在保障安全性的前提下实现电力调度云会商；其五，能够实现发言者自助模式，而且在电力调度会商过程中陆续有人员加入的情况下也能实现发言者自助模式；其六，能够实现在电力调度会商过程中同时兼顾 2 种模式，即发言者自助模式和主持人模式。

发明内容

[0005] 本发明借助于云计算的理念，服务于智能电网，促进智能调度全景可视化的发展，以实现显示与展现的资源共享为目标。本发明提出了云会商 (Cloud Dynamic Consultation) 的概念，综合应用云计算、云会商、安全性、无阻塞性、高清晰视频会商及无线通信网络等技术，提交了一种保障安全性的电力调度云会商方法和装置。并给出了本发明的具体实施方式范例——保障安全性的电力调度动态云会商系统。

[0006] 本发明通过随机服务排队论数学方法实现电力调度消息流事件的无阻塞性，通过集成加密协议和认证协议实现安全性约束，通过高速通信网络实现显示 720p(9CIF) 和 1080p(20CIF) 的高清晰视频流和幻灯图像。达到由投影仪和各类显示屏等构成的云端设备的资源共享，完成构筑保障安全性的电力调度动态云会商系统。服务于智能电网，促进智能调度全景可视化的发展。

[0007] 本发明提出的一种保障安全性的电力调度云会商方法，其特征在于包括以下步骤：

[0008] (1) 保障安全性

[0009] S2.1 物理防护：用户安全认证卡、无线设备发射功率控制、定向波束天线、用多台无线设备同频干扰器搭建防护隔离边界；

[0010] S2.2 逻辑防护：IP 地址和 MAC 地址关联认证、加密、数字签名；

[0011] S2.3 安全管理措施：监视、控制、灾备、紧急情况服务；

[0012] (2) 无阻塞

[0013] S3.1 参会人员注册登记：参加电力调度云会商的人员注册登记，包括姓名、单位、部门、职务、IP 地址、MAC 地址、提交议题及内容；

[0014] S3.2 是否有主持人，若无则 S3.3 进入发言者自助模式，若有则 S3.10 进入主持人会商模式；

[0015] S3.3 发言者自助模式；

[0016] S3.4 是否有主持人模式请求，若无则 S3.5，若有则 S3.10 进入主持人会商模式；

[0017] S3.5 优先级规则选取；

[0018] S3.6 是否有优先级规则转换，若无则 S3.7，若有则 S3.5；

[0019] S3.7 依据优先级规则确定发言者及其顺序；

[0020] S3.8 发言者使用云会商，发出高清晰会议电视流，上送至显示云端；

[0021] S3.9 是否完毕或有人要求中断，若无则 S3.7，若有则 S3.4；

[0022] S3.10 主持人会商模式；

[0023] S3.11 主持人是否宣布结束，若否则 S3.12，若是则结束；

[0024] S3.12 主持人是否指定使用，若否则 S3.13，若是则 S3.15；

[0025] S3.13 发言者申请；

[0026] S3.14 主持人确认是否认可，若否则 S3.13，若是则 S3.15；

[0027] S3.15 发言者使用云会商，发出高清晰会议电视流，上送至显示云端；

[0028] S3.16 是否完毕或有人要求中断，若无则 S3.15，若有则 S3.11；

[0029] (3) 显高清

[0030] 对应会商展示每路 720p 以上质量的高清晰会议电视流，包括以下 2 步骤：

[0031] 构筑 IP 网络：有线和 / 或无线传输通道构成的网络的全双工带宽不小于 33Mbps；展示高清包括投影仪和显示屏在内的会商展示设备支持 720p 以上质量的高清晰会议电视；其中，步骤 S3.5 优先级规则包括以下 6 类：

[0032] 其一，按照参会人员注册登记的提交议题及内容，重要性由大到小，确定优先级队列；

[0033] 其二，按照参会人员注册登记的申请时间顺序，利用排队论离散时间随机过程 {Xi} 所具有 Markov 性质，确定优先级队列；

[0034] 其三，按照参会人员注册登记的单位序列，确定优先级队列；

[0035] 其四，按照参会人员注册登记的部门专业序列，确定优先级队列；

[0036] 其五，按照参会人员注册登记的职务和姓名序列，职务由大到小，同职务按照姓名字母顺序，确定优先级队列；

[0037] 其六，当电力调度云会商过程中陆续有人员加入会商时，应用随机服务排队论数学方法确定优先级队列规则为：应急事件后到先服务 (LCFS) 即 M/M/c/LCFS 模型，重要议题及内容带优先服务权 (PR) 即 M/M/c/PR 模型，次重要议题及内容随机服务 (SIRO) 即 M/M/c/SIRO 模型，剩余的一般性议题及内容集合内采用先到先服务 (FCFS) 即 M/M/c/PR 模型；

[0038] 其中，所述 (2) 无阻塞是根据电力调度智能化的云会商的随机服务特点，利用排队论数学方法，建立数学模型，包括：

[0039] 设共有 c 个会商云幻灯，每个需要会商的云幻灯的平均服务率均为 u，在正常情况下，电力调度消息流事件的平均到达率为 λ，则 Δt 时间内有一个电力调度消息流事件到达的概率为 $P_1 = \lambda \Delta t$，在 Δt 时间内有一个电力调度消息流事件离去的概率为 $q_1 = \lambda \Delta t$；

[0040] 分以下三种情况：

[0041] (4) 当无电力调度消息流事件时，三种互不相容事件的概率分别为：

[0042] (a) 在时间 t 内没有电力调度消息流事件排队，Δt 时刻也没有电力调度消息流事件到达的概率为 $P_0(1-\lambda \Delta t)$；

[0043] (b) 在时间 t 内有一个电力调度消息流事件，Δt 内没有电力调度消息流事件到达，但有一位电力调度消息流事件接受云会商后离去的概率为 $P_1(1-\lambda \Delta t)u\Delta t$；

[0044] (c) 在时间 t 内没有电力调度消息流事件排队，但在 Δt 时刻内有一位电力调度消息流事件到达，也有一位电力调度消息流事件接受云会商后离去的概率为 $P_0\lambda \Delta t u\Delta t$；

[0045] 则 $P_0 = P_0(1-\lambda \Delta t)+P_1(1-\lambda \Delta t)u\Delta t+P_0\lambda u(\Delta t)^2$

[0046] 略去二阶小量，整理得 $P_1 = \lambda P_0/u$；

[0047] (5) 当已有 n 个电力调度消息流事件，且 $1 \leqslant n < c$ 时，可分为以下四种情况：

[0048] (a) 时间 t 内有 n-1 个电力调度消息流事件在排队，Δt 时刻内有一位电力调度消息流事件到达，但没有任何电力调度消息流事件被云会商的概率为 $P_{n-1}\lambda \Delta t(1-nu\Delta t)$；

[0049] (b) 时间 t 内有 n+1 个电力调度消息流事件在排队，Δt 时刻内没有电力调度消

息流事件到达，但有一位电力调度消息流事件接受云会商后离去的概率为 $P_{n+1}(1-\lambda\Delta t)[(n+1)u\Delta t]$；

[0050] (c) 时间 t 内有 n 个电力调度消息流事件在排队，Δt 时刻内没有电力调度消息流事件到达，也没有任何电力调度消息流事件被云会商的概率为 $P_n(1-\lambda\Delta t)(1-nu\Delta t)$；

[0051] (d) 时间 t 内有 n 个电力调度消息流事件在排队，Δt 时刻内有一个电力调度消息流事件到达，也有一位电力调度消息流事件接受云会商后离去的概率为 $P_n\lambda\Delta tnu\Delta t$；

[0052] (6) 电力调度消息流事件数 $n \geq c$ 时，与情况 (2) 类似，但相应的概率分别为：

[0053] (a) $P_{n-1}(\lambda\Delta t)(1-c\mu\Delta t)$

[0054] (b) $P_{n+1}(1-\lambda\Delta t)(c\mu\Delta t)$

[0055] (c) $P_n(1-\lambda\Delta t)(1-c\mu\Delta t)$

[0056] (d) $P_n(\lambda\Delta t)c\mu\Delta t$

[0057] 由上面的公式得到：

[0058]
$$\begin{cases} P_{n-1}=\left(\dfrac{\lambda+c\mu}{c\mu}\right)P_n-\left(\dfrac{\lambda}{c\mu}\right)P_{n-1} \\ P=\dfrac{\left(\dfrac{\lambda}{\mu}\right)^n}{n!}\times P_0,\quad 1\leq n<c \\ P_n=\dfrac{\left(\dfrac{\lambda}{\mu}\right)^n}{c!c^{n-c}}P_0,\quad n\geq c \end{cases}$$

[0059] 解得系统的稳态概率为：

[0060]
$$P_0=\frac{1}{\sum_{n=0}^{c-1}\dfrac{\left(\dfrac{\lambda}{\mu}\right)^n}{n!}+\dfrac{\left(\dfrac{\lambda}{\mu}\right)^c}{c!\left(1-\dfrac{\lambda}{\mu}\right)}}$$

[0061] 只有当 $\lambda/c\mu<1$ 时，才能使会商云幻灯服务系统达到稳态而不会排成无限的队列，会商云幻灯系统的服务强度为 $\rho=\dfrac{\lambda}{c\mu}$，即会商云幻灯系统的利用率；

[0062] 会商云幻灯系统的服务率为：

[0063]
$$\mu_n=\begin{cases} n\mu & n=1,2,3,\cdots,c \\ c\mu & n=c+1,c+2,\cdots. \end{cases}$$

[0064] 即当系统中有 n(n < c) 个电力调度消息流事件时，系统的服务率为 nμ；当系统中有 c 个电力调度消息流事件时，系统的服务率达到最大值 cμ；当系统中的电力调度消息流事件数超过 c 时，由于 c 个服务台都忙着，其余电力调度消息流事件必须排队，这时的服务率仍为 cμ；由此可得，

[0065] 系统中的电力调度消息流事件排队长度为 $L_q = \frac{\lambda\mu\left(\frac{\lambda}{\mu}\right)^c P_0}{(c-1)!(c\mu-\lambda)^2}$，

[0066] 电力调度消息流事件在系统中的平均等候时间为 $W_q = \frac{\mu\left(\frac{\lambda}{\mu}\right)^c P_0}{(c-1)!(c\mu-\lambda)^2}$

[0067] 电力调度消息流事件在系统中的平均逗留时间 $W_S = W_q + \frac{1}{\mu} = \frac{(c\rho)^c \rho P_0}{c!(1-\rho)^2\lambda} + \frac{1}{\mu}$，

[0068] 系统中的平均电力调度消息流事件数 $L_S = W_S\lambda = \frac{\lambda}{\mu} + \frac{(c\rho)^c \rho P_0}{c!(1-\rho)^2}$，

[0069] 其中，定义参数为：

[0070] L_q：系统中的平均排队长度；

[0071] Wq：电力调度消息流事件在系统中的平均等候时间，每个电力调度消息流事件都希望这段时间越短越好；

[0072] W_S：电力调度消息流事件在系统中的平均逗留时间；

[0073] L_S：系统中的平均电力调度消息流事件数；

[0074] λ：平均到达率；

[0075] μ：平均服务率；

[0076] c：系统中并联会商云幻灯的数目；

[0077] ρ：服务强度，即每个会商云幻灯单位时间间隔内的平均服务时间；

[0078] P_0：系统的稳态概率。

[0079] 本发明还提出了使用上述方法的装置，其特征包括以下 8 种：

[0080] 其一，步骤保障安全性和无阻塞的实现在安全管理服务器内实现；

[0081] 其二，无线服务器支持 IEEE 802.11b/g 和 100M 局域网络接口，带有与 720p 以上质量的投影仪 / 显示屏连接的信号接口，并且内置 H.264 的软解压软件，支持 DHCP 服务器功能，可以自动为客户端电脑分配 IP 地址；

[0082] 其三，参加电力调度云会商的电脑安装云会商客户端软件，该软件包括权利要求 1-2 的步骤和 H.264 的软编码软件；

[0083] 其四，在有线局域网应用场景，计算机云会商群通过普通以太网交换机汇聚，在经过以太网线连接至无线服务器，无线服务器连接安全管理服务器和 720p 以上质量的投影仪 / 显示屏，完成电力调度会商的显示与展现“云”化，实现显示与展现的资源共享，并保障其安全性；

[0084] 其五，在无线局域网应用场景，计算机云会商群通过其内置或外置的无线局域网卡，经过无线 IEEE 802.11b/g 协议，连接至无线服务器，无线服务器连接安全管理服务器和 720p 以上质量的投影仪 / 显示屏，完成电力调度会商的显示与展现“云”化，实现显示与展现的资源共享，并保障其安全性；

[0085] 其六，在无线局域网和有线局域网组成的混合网应用场景，计算机云会商群通过有线或无线局域网卡，有线场景通过普通以太网交换机汇聚，连接至无线服务器，无线服务

器连接安全管理服务器和720p以上质量的投影仪/显示屏，完成电力调度会商的显示与展现“云”化，实现显示与展现的资源共享，并保障其安全性；

[0086] 其七，参加电力调度云会商的电脑可以是笔记本计算机、台式计算机或服务器集群；

[0087] 其八，用多台同频干扰器搭建防护隔离边界，具体做法是：使同频干扰器的无线覆盖半径小于无线服务器的无线覆盖半径，在电力调度云会商会场周界外1个同频干扰器的无线覆盖半径的边界周围，用多台同频干扰器搭建防护隔离边界，相邻同频干扰器的间距为1个同频干扰器的无线覆盖半径。

附图说明

[0088] 为了使本发明的内容被更清楚的理解，并便于具体实施方式的描述，下面给出与本发明相关的附图说明如下：

[0089] 图1是本发明的装置的结构示意图；

[0090] 图2是本发明的云会商过程描述图；

[0091] 图3是本发明的云会商过程电力调度消息流事件概率特征图；

[0092] 图4是本发明的视频分辨率分类图；

[0093] 图5是本发明的视频分辨率对比图；

[0094] 图6是本发明的具体实施例一的装置的结构示意图；

[0095] 图7是本发明的具体实施例二的装置的结构示意图；

[0096] 图8是本发明的具体实施例三的装置的结构示意图；

[0097] 图9是本发明的具体实施例四的装置的结构示意图；

[0098] 图10是依据本发明的方法中无阻塞步骤的流程示意图；

[0099] 图11是本发明的用多台同频干扰器搭建防护隔离边界的实施例图。

具体实施方式

[0100] 本发明的装置实现方式图见图1，具体说明如下。

[0101] 通过IEEE 802.11b/g无线通信设备构筑无线局域网，同时也可以通过网线或光缆构筑有线局域网，以星形拓扑结构的中心节点连接显示与展现云（具体云端设备包括投影仪和各类显示屏等），其他节点连接参与电力调度动态云会商的各类终端（例如笔记本计算机、台式计算机、服务器集群）。同时，安全管理服务器内置本发明的方法，通过拓扑结构中心节点管理整个电力调度动态云会商系统的安全性、无阻塞性和视频流的高清晰性，保障云端设备的资源共享。其中，计算机和服务器集群可以通过内置的无线通信网卡或外置的无线通信设备与中心节点连接，也可以通过有线局域网与中心节点连接，将电力调度消息流事件送到由投影仪和各类显示屏等构成的云端设备，进行动态的显示与展现。

[0102] 本发明可以解决的具体技术问题举例如下。

[0103] 当只有1台投影仪时，在会议室往往多人参加电力调度会商会议，轮流需要将自己的笔记本电脑连接到投影仪，拔插投影仪线非常麻烦。通过本发明可以非常方便地解决这一问题。图7是本发明的具体实施例一。无线云会商如下。在一台普通电脑上安装安全管理服务器软件，以太网线连接至无线服务器。无线服务器连接1080p质量的投影仪/显

示屏，每台参加云会商的计算机安装云会商客户端软件，并通过其无线局域网卡与无线服务器连接，完成无线云会商。

[0104] 当只有 1 块可用显示屏且不使用切换矩阵的情况下，多人参加的电力调度会商会议，轮流需要将自己的笔记本电脑连接到显示屏，拔插显示屏线非常麻烦。通过本发明可以非常方便地解决这一问题。图 8 是本发明的具体实施例二。

[0105] 当只有 1 台投影仪时，会商室具备有线局域网条件，通过本发明可以非常方便地实现投影仪共享。图 9 是本发明的具体实施例三。有线云会商如下。在一台普通电脑上安装安全管理服务器软件，以太网线连接至无线服务器。无线服务器连接 1080p 质量的投影仪 / 显示屏，每台参加云会商的计算机安装云会商客户端软件，并通过其有线局域网卡经过普通以太网交换机汇聚，连接至无线服务器，完成有线云会商。

[0106] 当只有 1 台投影仪时，会商室具备有线局域网条件，部分计算机会商群具备支持 IEEE802.11b/g 无线局域网功能，有线和无线可以混合使用，通过本发明可以非常方便地实现投影仪共享。图 10 是本发明的具体实施例四。有线和无线混合网云会商如下。在一台普通电脑上安装安全管理服务器软件，以太网线连接至无线服务器。无线服务器连接 1080p 质量的投影仪 / 显示屏，每台参加云会商的计算机安装云会商客户端软件。有线方式通过其有线局域网卡经过普通以太网交换机汇聚，连接至无线服务器，完成有线云会商。无线方式通过其无线局域网卡与无线服务器连接，完成无线云会商。

[0107] 上面通过特别的实施例内容描述了本发明，但是本领域技术人员还可意识到变型和可选的实施例的多种可能性，例如，通过组合和 / 或改变单个实施例的特征。因此，可以理解的是这些变型和可选的实施例将被认为是包括在本发明中，本发明的范围仅仅被附上的专利权利要求书及其同等物限制。

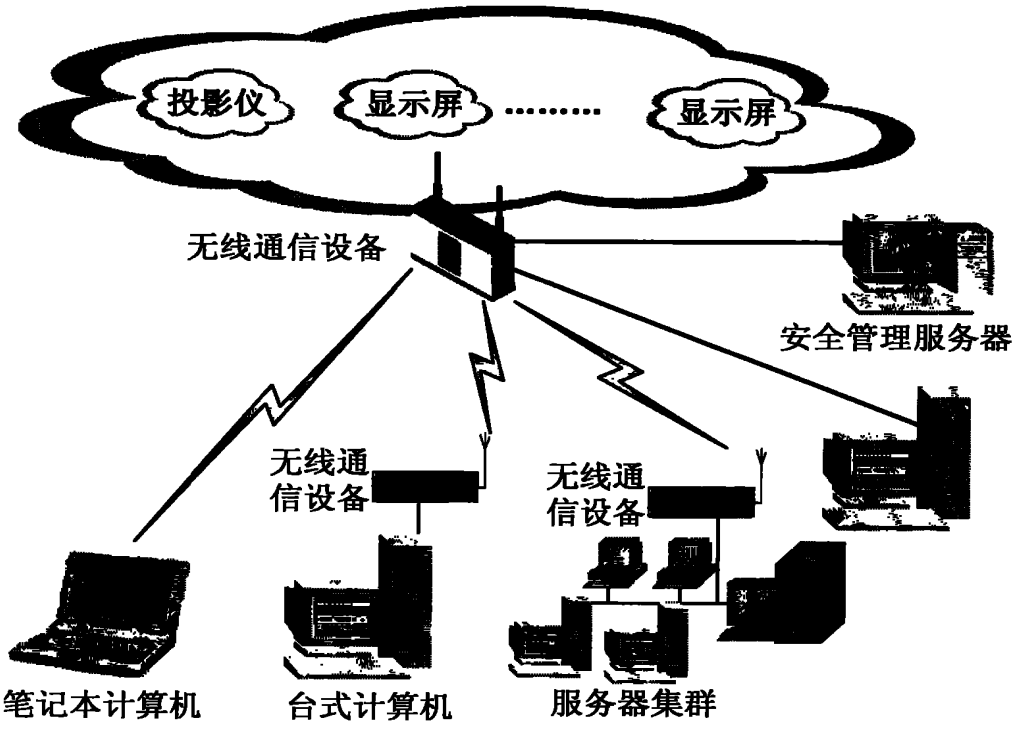

投影仪
显示屏
.....
显示屏
无线通信设备
安全管理服务器
无线通信设备
无线通信设备
笔记本计算机
台式计算机
服务器集群

图 1

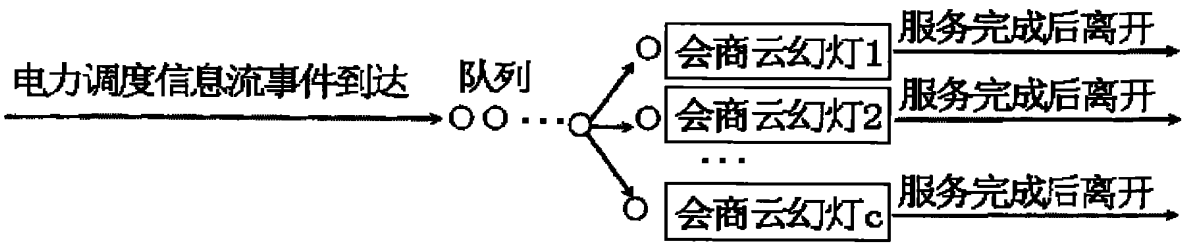

电力调度信息流事件到达
队列
会商云幻灯1
会商云幻灯2
会商云幻灯c
服务完成后离开
服务完成后离开
服务完成后离开

图 2

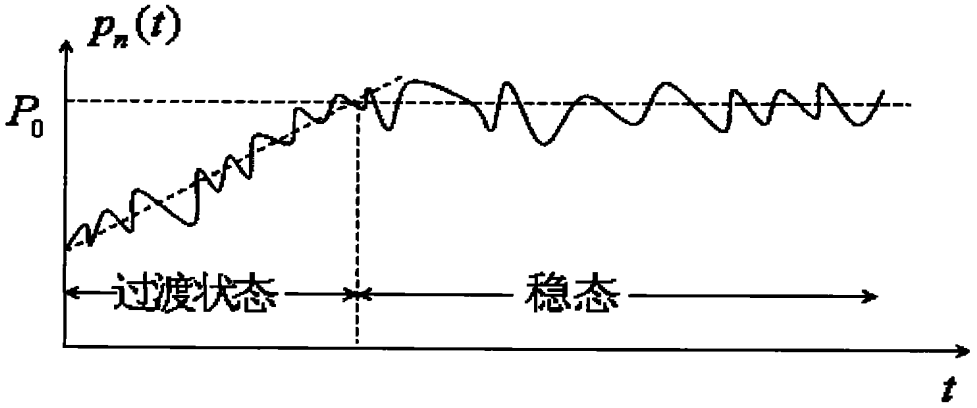

$p_n(t)$
P_0
过渡状态
稳态
t

图 3

13

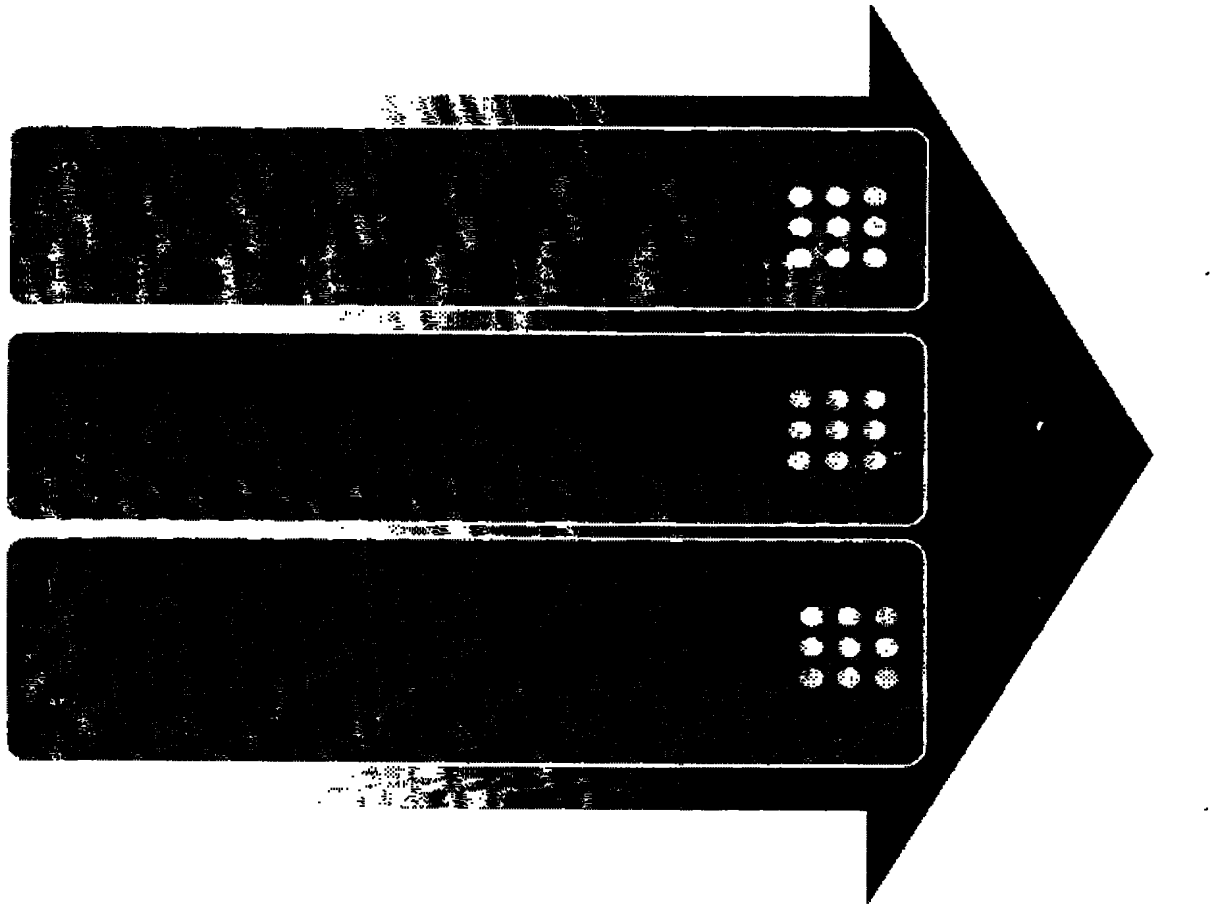
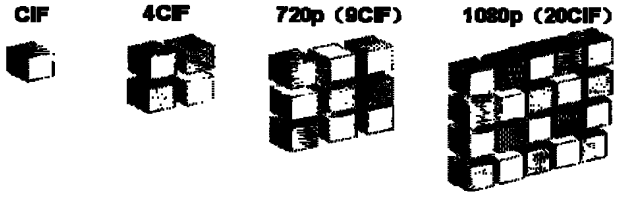
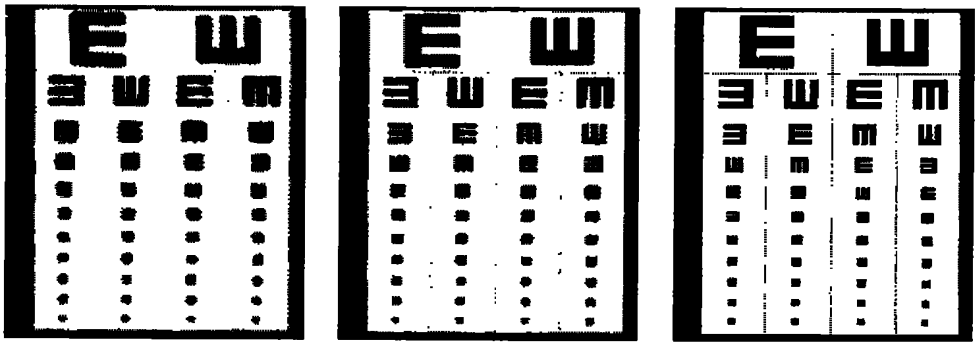
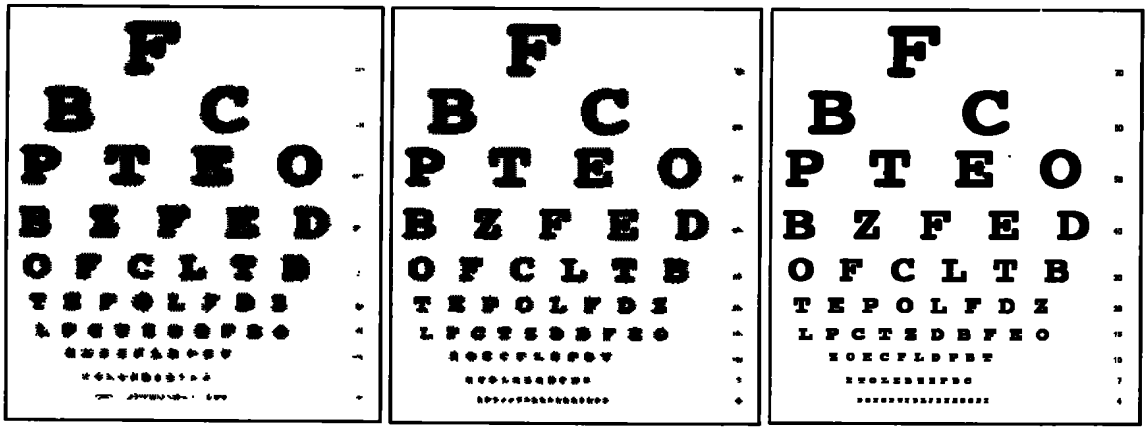


图 4


CIF
4CIF
720p (9CIF)
1080p (20CIF)


CIF
4CIF
9CIF


CIF
4CIF
(4 X CIF)
HD
(9 X CIF)

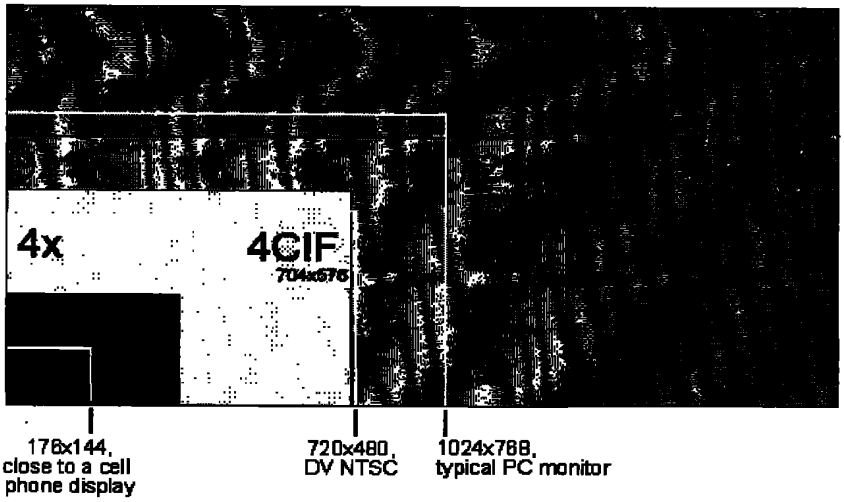

4x
4CIF
704x576
176x144,
close to a cell
phone display
720x480,
DV NTSC
1024x768,
typical PC monitor

图 5

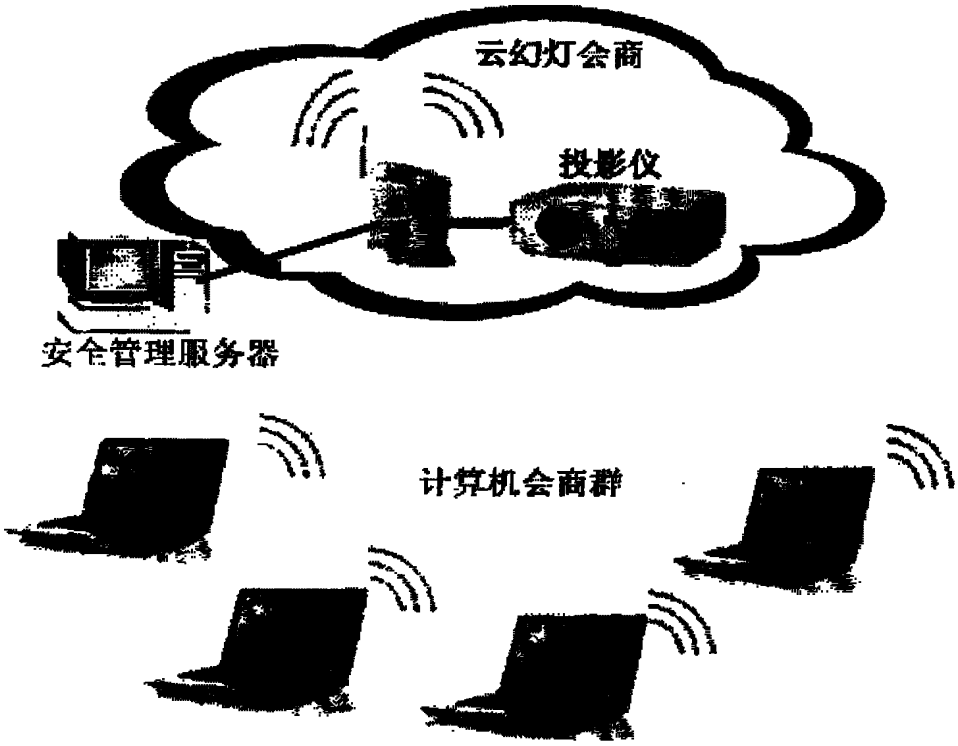


图 6

图 7

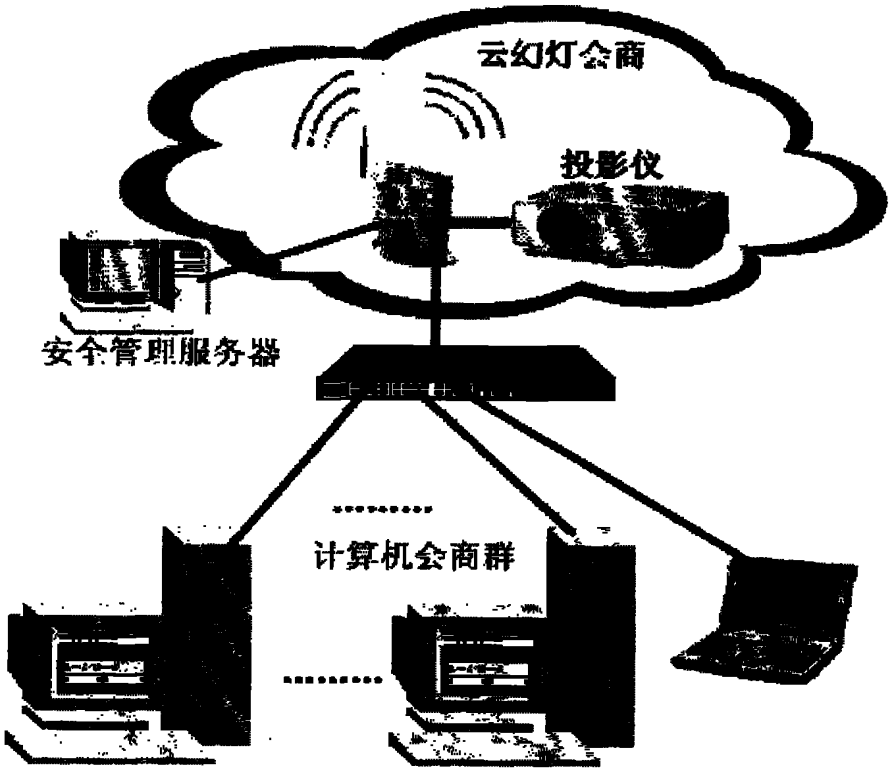


图 8

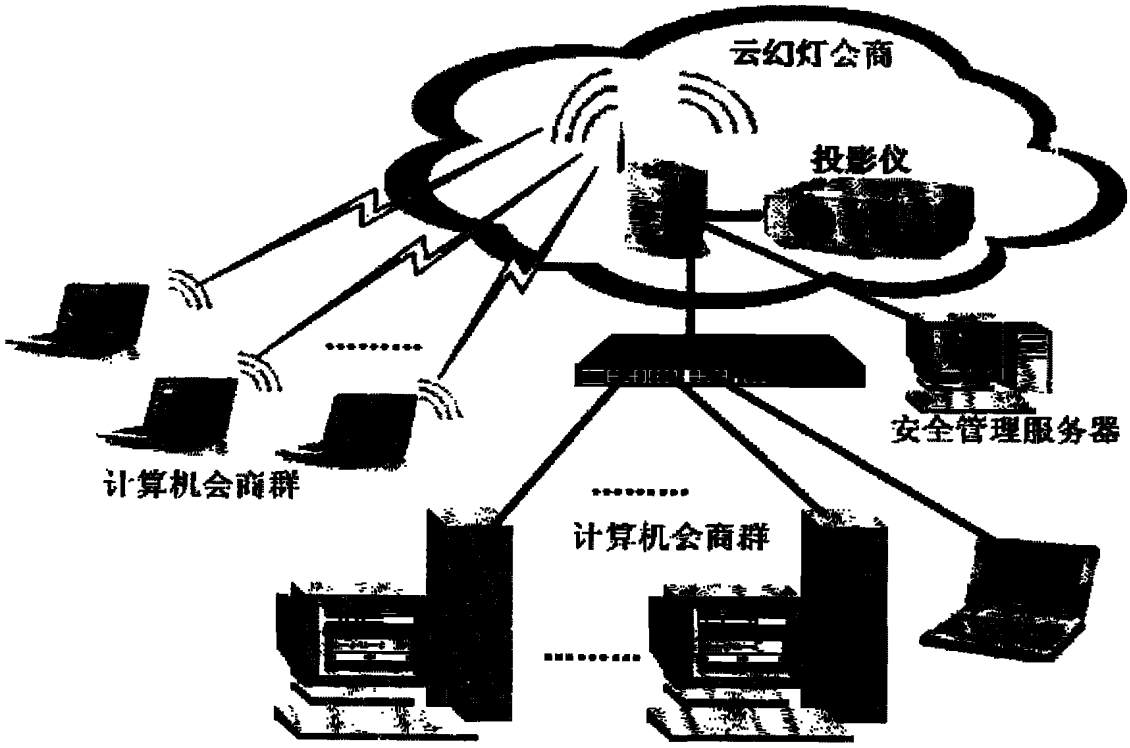


图 9

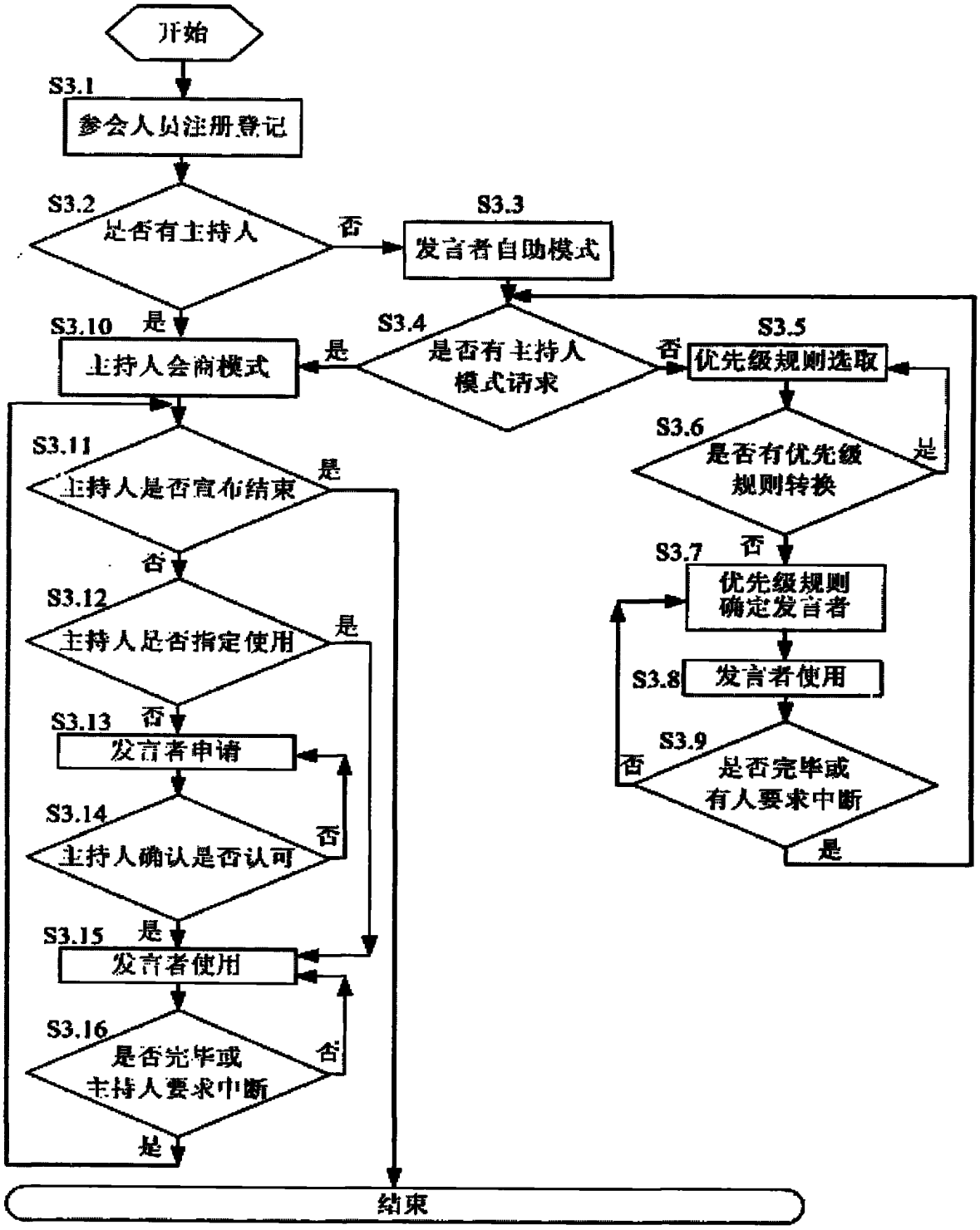

开始
S3.1
参会人员注册登记
S3.2
是否有主持人
否
S3.3
发言者自助模式
是
S3.10
主持人会商模式
S3.4
是否有主持人模式请求
是
否
S3.5
优先级规则选取
S3.6
是否有优先级规则转换
是
否
S3.7
优先级规则确定发言者
S3.8
发言者使用
S3.9
是否完毕或有人要求中断
否
是
S3.11
主持人是否宣布结束
是
否
S3.12
主持人是否指定使用
是
否
S3.13
发言者申请
S3.14
主持人确认是否认可
否
是
S3.15
发言者使用
S3.16
是否完毕或主持人要求中断
否
是
结束

图 10

图 11

CN101917402A Power dispatching cloud consultation method and device for guaranteeing safety

Data originating from sources other than the EPO may not be accurate, complete, or up to date.

The wording below is an initial machine translation of the original publication. To generate a version using the latest translation technology, go to the original language text and use Patent Translate.

Technical field

The invention belongs to the field of electric power and serves the smart grid, and particularly relates to the field of intelligent power dispatching. It integrates cloud computing, cloud consultation, security, non-blocking, high-definition video conference and wireless communication network technology, and provides a guarantee. Method and device for safe power dispatch cloud consultation.

Background technique

Cloud computing is a hot new term. The resource pool is called "cloud". The scale of the cloud can be dynamically expanded and its boundaries are blurred. The cloud is erratic in the air, and it is not necessary to determine its specific location, but it does Exist somewhere. "Clouds" are virtual computing resources that can be self-maintained and managed, usually large server clusters, including computing servers, storage servers, broadband resources, and so on. Cloud computing aggregates all computing resources and is automatically managed by software without human involvement. Cloud computing is the development of parallel computing, distributed computing, and grid computing, or commercial implementation of these computer science concepts. Cloud computing is the result of a mixed evolution of concepts such as Virtualization, Utility Computing, IaaS (Infrastructure as a Service), PaaS (Platform as a Service), and SaaS (Software as a Service). Typical cloud computing solutions that are popular today include Google Cloud Computing, Amazon Cloud Computing, Salesforce Cloud Computing, Cloud Security, and more.

The self-service-based usage model provides users with the ability to upload, build, deploy, schedule, manage, and report business services on demand. At the same time, the more self-services provided to users, the fewer necessary operations and maintenance management activities. Based on this kind of cloud computing concept, during the panoramic visualization of power dispatch conferences, the display will be "cloud" and combined with security constraints, the present invention proposes a method and device for power dispatch cloud conferences that guarantee security . Building a smart grid is a common choice for the international power industry to actively respond to future challenges, and power dispatch is an important part of the smart grid. In the process of intelligent power dispatching, the requirements for panoramic visualization of power dispatching consultations are increasing. The purpose of the present invention is to achieve "cloud" display and presentation of power dispatch conferences, to realize resource sharing of display and presentation, and to ensure its security.

Although the current power dispatch consultation system has various forms such as a voice consultation system, a video consultation system, and a telepresence consultation system, it has the following six shortcomings. First, voice, video, or telepresence consultation must be implemented in a specific conference room. Second, the display and presentation equipment of the conference is either idle or used at the same time. The demand for sharing display and display resources is outstanding. Third, if the speaker needs to display the information in the personal notebook computer, it is very troublesome to plug and unplug the projector cable / display cable, and the signal plugs / stands of the computer, projector / display and their cables are prone to failure, affecting The consultation process; fourthly, the wired and wireless consultation technology cannot be mixed under the premise of ensuring security; fifthly, the speaker self-service mode cannot be realized, and it is even more important when personnel are added during the power dispatching consultation process. Speaker self-help mode cannot be realized. Sixth, it is impossible to achieve two modes, namely speaker self-help mode and moderator mode, in the process of power dispatch consultation. The method and device of the present invention can overcome the above 6 shortcomings. First, it has an invented device, a projector / display screen, and a computer. It does not require a fully equipped conference room, and security can be guaranteed in ordinary conference rooms. Power dispatch cloud consultation; second, to achieve resource sharing of cloud devices composed of projectors and various display screens; third, power dispatch cloud consultation flow through wireless or / and wired LAN, using LAN lines and speech The computer can be connected to the computer. Fourth, the power dispatch cloud conference can be implemented through wireless LAN or wired LAN, or

through a hybrid network composed of wireless LAN and wired LAN, to ensure the security of power dispatch cloud conference; Fifth, the speaker self-help mode can be realized, and speaker self-help mode can also be realized when there are people joining in the power dispatch consultation process. Sixth, it can realize both modes in the power dispatch consultation process. , Namely speaker self-service mode and moderator mode.

Summary of the invention

The invention uses the concept of cloud computing to serve the smart grid, promotes the development of intelligent dispatching panoramic visualization, and aims at achieving display and display resource sharing. The present invention proposes the concept of Cloud Consultation, which comprehensively applies technologies such as cloud computing, cloud consultation, security, non-blocking, high-definition video consultation, and wireless communication networks, and submits a guarantee of security Method and device for power dispatch cloud consultation. An example of a specific implementation manner of the present invention is provided—a dynamic cloud consultation system for power dispatching that guarantees security.

The invention uses the random service queuing theory mathematical method to realize non-blocking of power dispatch message flow events, integrates security protocols and authentication protocols to achieve security constraints, and realizes high-definition display of 720p (9CIF) and 1080p (20CIF) through a high-speed communication network. Video streaming and slideshow images. Achieve the resource sharing of cloud devices composed of projectors and various display screens, and complete the construction of a dynamic cloud consultation system that guarantees security. Serve the smart grid and promote the development of intelligent dispatching panoramic visualization.

The present invention provides a method for power dispatch cloud consultation to ensure security, which is characterized by including the following steps:

(1)Guaranteed security

S2.1 physical protection: user security certification card, wireless device transmit power control, directional beam antenna, multiple wireless devices with the same frequency jammer to establish a protective isolation boundary;

S2.2 logical protection: IP address and MAC address association authentication, encryption, digital signature;

S2.3 Security management measures: surveillance, control, disaster recovery, emergency services;

(2)Non-blocking

S3.1 Registration of participants: Registration of participants in the power dispatch cloud conference, including name, unit, department, position, IP address, MAC address, submission topics and content;

Whether there is a host in S3.2, if not, S3.3 enters the speaker self-service mode, if there is, then S3.10 enters the host's consultation mode;

S3.3 speaker self-help mode;

Is there a moderator mode request in S3.4? If not, then S3.5; if so, S3.10 enters the moderator mode;

S3.5 priority rule selection;

Is there a priority rule conversion in S3.6, if not, then S3.7, if there is, then S3.5;

S3.7 determine the speakers and their order according to the priority rules;

S3.8 Speakers use cloud conferences to send high-definition conference TV streams and upload them to the display cloud;

Whether S3.9 is completed or someone requested interruption; if not, S3.7; if yes, S3.4;

S3.10 Host discussion mode;

S3.11 Whether the host announces the end, if not S3.12, if so, end;

S3.12 Whether the host designated the use, if not S3.13, if so S3.15;

S3.13 Speaker application;

S3.14 The host confirms whether to approve, if not S3.13, if so S3.15;

S3.15 Speakers use cloud conferences to send high-definition conference TV streams to the display cloud;

Whether S3.16 is completed or someone requested interruption; if not, S3.15; if so, S3.11;

(3)HD

Correspondence of each conference to display high-definition conference TV streams of 720p or higher quality, including the following 2 steps:

Build an IP network: The full-duplex bandwidth of the network formed by wired and / or wireless transmission channels is not less than 33Mbps; display conference display equipment including high-definition projectors and displays support high-definition conference televisions of 720p or higher quality; Step S3.5 priority rules include the following 6 categories:

First, determine the priority queue according to the submission topics and contents of the registration of participants, from large to small;

Second, in accordance with the application time sequence of the registration of participants, the Markov property of the discrete-time random process {Xi} in queuing theory is used to determine the priority queue;

Third, determine the priority queue according to the sequence of units registered by the participants;

Fourth, determine the priority queue according to the department's professional sequence in which the participants are registered;

Fifth, according to the registered job title and name sequence of the participants, the duties are from large to small, and the same job is determined according to the alphabetical order of the names;

Sixth, when people join the conference one after another during the power dispatch cloud conference, the random service queuing theory mathematical method is used to determine the priority queue rule: the first-come-first-served service (LCFS) is M / M / c / LCFS Model, important issues and content with priority service rights (PR) namely M / M / c / PR model, secondary important issues and content random service (SIRO) namely M / M / c / SIRO model, remaining general issues and content The first-come-first-served (FCFS) or M / M / c / PR model is used in the collection;

Among them, the (2) non-blocking is based on the random service characteristics of intelligent cloud consultation in power dispatching, and uses the queuing theory mathematical method to establish a mathematical model, including:

Suppose there are c consultation cloud slides, and the average service rate of each cloud slide that requires consultation is u. Under normal circumstances, the average arrival rate of the power dispatch message flow event is λ, then there is a power dispatch in Δt time. The probability of a message flow event arriving is $P1 = \lambda\Delta t$, and the probability of a power dispatch message flow event leaving within Δt time is $q1 = \lambda\Delta t$;

There are three cases:

(4)When no power dispatches message flow events, the probabilities of three mutually incompatible events are:

(a) There is no queue of power dispatch message flow events within time t, and the probability of no power dispatch message flow event arrival at time Δt is $P0 (1-\lambda\Delta t)$;

(b) There is a power dispatch message flow event within time t, no power dispatch message flow event arrives within Δt, but the probability of a power dispatch message flow event leaving after accepting cloud consultation is P1 (1-λΔt) uΔt ;

(c) There is no queue of power dispatch message flow events at time t, but there is a probability of a power dispatch message flow event arriving at time Δt, and a probability of leaving a power dispatch message flow event after cloud consultation is P0λΔtuΔt;

Then P0 = P0 (1-λΔt) + P1 (1-λΔt) uΔt + P0λu (Δt)2

Ignore the second-order small amount, finishing P1 = λP0 / u;

(5)When there are n power dispatch message flow events and 1≤n c, it can be divided into the following four cases:

(a) There are n-1 power dispatch message flow events in queue at time t, and a power dispatch message flow event arrives at time Δt, but the probability that no power dispatch message flow event is negotiated by the cloud is Pn-1λΔt (1-nuΔt);

(b) There are n + 1 power dispatch message flow events in queue at time t. No power dispatch message flow event arrives at time Δt, but the probability of a power dispatch message flow event leaving after accepting cloud consultation is Pn + 1 (1-λΔt) [(n + 1) uΔt];

(c) There are n power dispatching message flow events in queue at time t, and no power dispatching message flow event arrives at time Δt, nor is the probability of any power dispatching message flow event being negotiated by the cloud Pn (1-λΔt) (1-nuΔt);

(d) There are n power dispatch message flow events in the queue at time t, one power dispatch message flow event arrives at time Δt, and one power dispatch message flow event has the probability of leaving after accepting cloud consultations as PnλΔtnuΔt;

(6)When the number of power dispatch message flow events n ≥ c, it is similar to case (2), but the corresponding probabilities are:

(a) Pn-1 (λΔt) (1-cμΔt)

(b) Pn + 1 (1-λΔt) (cμΔt)

(c) Pn (1-λΔt) (1-cμΔt)

(d) Pn (λΔt) cμΔt

From the above formula:

The steady-state probability of the solution is:

Only when λ / cμ □1, can the consultation cloud slideshow service system reach a steady state without lining up in an infinite queue. The service intensity of the consultation cloud slideshow system is

, which means the utilization rate of the consultation cloud slideshow system;

The service rate of the conference cloud slideshow system is:

That is, when there are n (n □c) power dispatch message flow events in the system, the service rate of the system is nμ; when there are c power dispatch message flow events in the system, the service rate of the system reaches the maximum value cμ; When the number of power dispatching message flow events in C exceeds c, because c service desks are busy, the remaining power dispatching message flow events must be queued, and the service rate at this time is still cμ; therefore,

The queue length of the power dispatch message flow events in the system is

The average waiting time for power dispatch message flow events in the system is

Average time of power dispatch message flow events in the system

Average number of power dispatch message flow events in the system

Among them, the defined parameters are:

Lq: average queue length in the system;

Wq: the average waiting time of power dispatch message flow events in the system, each power dispatch message flow event hopes that this period is as short as possible;

WS: average stay time of the power dispatch message flow event in the system;

LS: the average number of power dispatch message flow events in the system;

λ: average arrival rate;

μ: average service rate;

c: the number of parallel consultation cloud slides in the system;

ρ: service intensity, that is, the average service time of each consultation cloud slide unit time interval;

P0: steady state probability of the system.

The present invention also proposes a device using the above method, which includes the following eight features:

First, the steps to ensure security and non-blocking implementation are implemented in the security management server;

Second, the wireless server supports IEEE 802.11b / g and 100M LAN interfaces, with a signal interface connected to a projector / display with a quality of 720p or higher, and a built-in H.264 soft decompression software that supports the DHCP server function. Automatically assign IP addresses to client computers;

Third, install the cloud consultation client software on the computers participating in the power dispatch cloud consultation. The software includes the steps of claims 1-2 and H.264 soft coding software;

Fourth, in the wired LAN application scenario, the computer cloud conference group is aggregated through an ordinary Ethernet switch, connected to a wireless server via an Ethernet cable, connected to a security management server and a projector / display with a quality of 720p or higher to complete power dispatch. The

display and display of conferences are "clouded" to realize the sharing of display and display resources and ensure its security;

Fifth, in the wireless LAN application scenario, the computer cloud conference group connects to the wireless server through the wireless IEEE 802.11b / g protocol through its built-in or external wireless LAN card, and the wireless server is connected to the security management server and a 720p or higher quality server. The projector / display screen completes the “cloud” display and presentation of power dispatch conferences, realizes the sharing of display and display resources, and guarantees its security;

Sixth, in a mixed network application scenario consisting of wireless LAN and wired LAN, the computer cloud conference group uses wired or wireless LAN cards, and the wired scenario is aggregated through a common Ethernet switch to connect to the wireless server. The wireless server is connected to the security management server and 720p. The projectors / display screens of the above quality can complete the "cloud" display and display of power dispatch conferences, realize the sharing of display and display resources, and ensure its security;

Seventh, the computers participating in the power dispatch cloud conference can be laptops, desktop computers, or server clusters;

Eighth, multiple co-frequency jammers are used to establish a protective isolation boundary. The specific method is to make the radio coverage radius of the co-frequency jammer smaller than the radio server's radio coverage radius, and to make a co-frequency interference outside the perimeter of the power dispatch cloud conference venue Around the boundary of the wireless coverage radius of the device, a plurality of co-frequency interferers are used to establish a protective isolation boundary. The distance between adjacent co-frequency interferers is the radio coverage radius of a co-frequency interferer.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to make the content of the present invention more clearly understood and to facilitate the description of specific embodiments, the accompanying drawings related to the present invention are described as follows:

FIG. 1 is a schematic structural diagram of a device of the present invention;

FIG. 2 is a diagram for describing a cloud consultation process of the present invention; FIG.

FIG. 3 is a probabilistic characteristic diagram of a power dispatch message flow event of the cloud consultation process of the present invention;

4 is a classification diagram of video resolution according to the present invention;

FIG. 5 is a video resolution comparison chart of the present invention;

6 is a schematic structural diagram of a device according to a first embodiment of the present invention;

7 is a schematic structural diagram of a device according to a second embodiment of the present invention;

8 is a schematic structural diagram of a device according to a third embodiment of the present invention;

9 is a schematic structural diagram of a device according to a fourth embodiment of the present invention;

10 is a schematic flowchart of a non-blocking step in a method according to the present invention;

FIG. 11 is a diagram of an embodiment of constructing a protective isolation boundary using multiple co-frequency interferers according to the present invention.

detailed description

The device implementation diagram of the present invention is shown in Fig. 1 and described in detail below.

The wireless LAN is constructed through IEEE802.11b / g wireless communication equipment, and the wired LAN can also be constructed through network cables or optical cables. The central node of the star topology is used to display and display the cloud (specific cloud devices include projectors and various display screens, etc.), Other nodes are connected to various terminals (such as notebook computers, desktop computers, server clusters) participating in the dynamic cloud consultation of power dispatching. At the same time, the security management server embeds the method of the present invention, and manages the security, non-blocking, and high-definition of the video stream of the entire power dispatching dynamic cloud consultation system through the topology center node to ensure resource sharing of cloud devices. Among them, the computer and server cluster can be connected to the central node through the built-in wireless communication network card or external wireless communication equipment, or can be connected to the central node through the wired local area network to send power dispatch message flow events to the projector and various displays Cloud devices composed of screens, etc., for dynamic display and presentation.

Examples of specific technical problems that can be solved by the present invention are as follows.

When there is only one projector, there are often many people in the conference room to participate in the power dispatch conference. It is necessary to connect your laptop to the projector in turn, and it is very troublesome to plug and unplug the projector cable. This problem can be solved very conveniently by the present invention. FIG. 7 is a first specific embodiment of the present invention. The wireless cloud consultation is as follows. Install the security management server software on an ordinary computer and connect the Ethernet cable to the wireless server. The wireless server is connected to a 1080p-quality projector / display. Each computer participating in the cloud conference installs the cloud conference client software and connects to the wireless server through its wireless LAN card to complete the wireless cloud conference.

When there is only one display screen available and the switch matrix is not used, the power dispatch conference meeting that many people attend will need to connect their laptops to the display screen in turn, and it is very troublesome to plug in the display cable. This problem can be solved very conveniently by the present invention. FIG. 8 is a second specific embodiment of the present invention.

When there is only one projector, the conference room has the conditions of a wired local area network, and the invention can easily realize the sharing of the projectors. FIG. 9 is a third specific embodiment of the present invention. The wired cloud consultation is as follows. Install the security management server software on an ordinary computer and connect the Ethernet cable to the wireless server. The wireless server is connected to a 1080p-quality projector / display. Each computer participating in the cloud conference installs the cloud conference client software, and converges through a wired Ethernet card through a common Ethernet switch, and connects to the wireless server to complete the wired cloud conference. Business.

When there is only one projector, the conference room has the conditions of wired LAN, and some computer conference groups have the function of supporting IEEE802.11b / g wireless local area network. Wired and wireless can be used in combination. Through the invention, projector sharing can be implemented very conveniently. . FIG. 10 is a fourth specific embodiment of the present invention. The wired and wireless hybrid network cloud consultation is as follows. Install the security management server software on an ordinary computer and connect the Ethernet cable to the wireless server. The wireless server is connected to a 1080p-quality projector / display, and each computer participating in the cloud conference installs the cloud conference client software. In wired mode, the wired LAN card is used to converge through an ordinary Ethernet switch and connected to a wireless server to complete wired cloud consultation. Connect wirelessly to the wireless server through its wireless LAN card to complete wireless cloud consultation.

The invention has been described above by means of specific embodiments, but those skilled in the art will also recognize the many possibilities of variations and alternative embodiments, for example, by combining and / or changing features of a single embodiment. Therefore, it can be understood that these modifications and alternative embodiments are considered to be included in the present invention, and the scope of the present invention is limited only by the attached patent claims and their equivalents.

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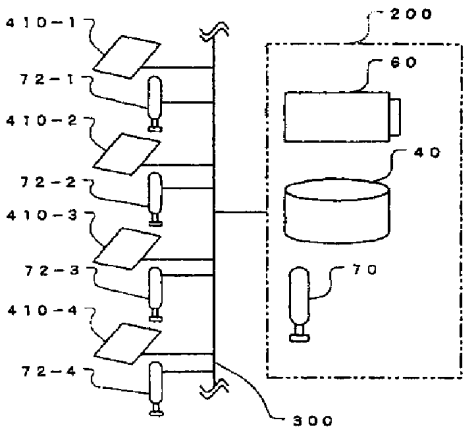
[54]发明名称 会议系统及信息存储媒体

[57]摘要

一种会议系统,包含通过传输线路从多个数据传送装置接收传送 数据并生成反映该传送数据的会议数据的会议数据生成装置。进一 步,上述会议数据生成装置,包含用于一边按上述每个数据传送装置 管理接收到的传送数据一边将其存储在存有规定的演示用数据的上述存储装置内并根据上述每个数据传送装置的再生指示从上述存储 装置读出包含着上述传送数据及上述演示用数据的至少一部分的会 议数据的数据控制装置。



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权　利　要　求　书

1. 一种会议系统，包含通过传输线路从多个数据传送装置接收传送数据并生成反映该传送数据的会议数据的会议数据生成装置，该会议系统的特征在于：上述会议数据生成装置，包含用于一边按上述每个数据传送装置管理接收到的传送数据一边将其存储在存有规定的演示用数据的上述存储装置内并根据上述每个数据传送装置的再生指示从上述存储装置读出包含着上述传送数据及上述演示用数据的至少一部分的会议数据的数据控制装置。

2. 根据权利要求 1 所述的会议系统，其特征在于：上述数据控制装置，一边按每个规定的单位管理接收到的传送数据一边进行存储，并根据上述再生指示按每个规定的单位读出上述会议数据。

3. 根据权利要求 2 所述的会议系统，其特征在于：上述会议数据生成装置，包含用于对会议情况进行摄像的摄像装置，上述数据控制装置，将摄像数据作为上述会议数据的一部分按上述每个规定的单位存储在上述存储装置内，上述数据控制装置，根据上述再生指示按上述每个规定的单位读出存储在上述存储装置内的上述会议数据。

4. 根据权利要求 1～3 中的任何一项所述的会议系统，其特征在于：上述会议数据生成装置，包含用于对上述读出的会议数据进行再生的再生装置。

5. 根据权利要求 1～4 中的任何一项所述的会议系统，其特征在于：上述会议数据生成装置，包含用于向其他处理装置传输上述读出的会议数据的传输装置。

6. 根据权利要求 1～5 中的任何一项所述的会议系统，其特征在于：上述数据传送装置，包含多个输入装置，上述数据控制装置，一边按每个上述输入装置管理从上述输入装置传送的上述传送数据一边将其存储在上述存储装置内，并根据上述再生指示从上述存储装置读出会议数据。

7. 根据权利要求 1～6 中的任何一项所述的会议系统，其特征在于：上述会议数据生成装置，包含投影机。

8. 一种信息存储媒体，存储用于通过传输线路从多个数据传送装置接收传送数据并生成反映该传送数据的会议数据的信息并可由计算机读取，该信息存储媒体的特征在于：上述信息，包含演示用信息、

用于一边按上述每个数据传送装置管理上述传送数据一边将其存储在存储装置内的存储用信息、及用于根据再生指示从上述存储装置读出包含着上述传送数据及上述演示用信息的至少一部分的会议数据的读出用信息。

9. 根据权利要求 8 所述的信息存储媒体，其特征在于：上述读出用信息，包含用于根据再生指示按上述每个数据传送装置读出存储在上述存储装置内的上述会议数据的信息。

10. 根据权利要求 8、9 的任何一项所述的信息存储媒体，其特征在于：上述信息，包含用于对会议情况进行摄像的信息，上述存储用信息，包含用于按规定单位将摄像数据作为上述会议数据的一部分存储在上述存储装置内的信息，上述读出用信息，包含用于根据上述再生指示按上述每个规定单位读出存储在上述存储装置内的上述会议数据的信息。

11. 根据权利要求 8～10 中的任何一项所述的信息存储媒体，其特征在于：上述信息，包含用于对上述读出的信息进行再生的信息。

12. 根据权利要求 8～11 中的任何一项所述的信息存储媒体，其特征在于：上述信息，包含用于将上述读出的信息向其他处理装置传输的信息。

说　明　书

会议系统及信息存储媒体

技术领域

本发明涉及会议系统及会议用信息存储媒体。

背景技术

在现有的会议系统中，当进行演示时，由演示者在某个会场上利用个人计算机和投影机对听众进行演示。

但是，实际上，在某些情况下，需要的不仅是这种单向演示，而是允许多人对演示屏面进行写入或当对屏面进行了写入时再次重放的在演示者与演示接收者之间的双向通信方式。

作为这种重放的方法，虽然也可以考虑用录像设备进行摄影并再生的方法，但是为了将会议中的一个场面或演示中的第几章之类的一个部分进行再生就必须进行倒放或快放，因而缺乏快速性。

另外，如果只是演示数据、即预先利用应用软件生成的数据，则上述的一部分的再生还比较容易，但对进行演示时的情景、例如指示棒的动作等进行再生实际上是不可能的。

发明的公开

本发明是鉴于上述课题而开发的，其目的是提供一种可以根据指示立即对过去的会议情况进行再生的会议系统及信息存储媒体。

为解决上述课题，本发明的会议系统，包含通过传输线路从多个数据传送装置接收传送数据并生成反映该传送数据的会议数据的会议数据生成装置，该会议系统的特征在于：上述会议数据生成装置，包含用于一边按上述每个数据传送装置管理接收到的传送数据一边将其存储在存有规定的演示用数据的上述存储装置内并根据上述每个数据传送装置的再生指示从上述存储装置读出包含着上述传送数据及上述演示用数据的至少一部分的会议数据的数据控制装置。

按照这种方式，会议参加者等，可以根据指示立即重放过去的会议数据。

另外，通过一边按每个数据传送装置进行管理一边存储，可以判别出从哪个数据传送装置接收到什么样的传送数据。

进一步，还可以对反映出每个数据传送装置的传送数据的会议数

据进行再生。具体地说，例如，当多个会议参加者用其各自的输入装置传送输入数据时，可以按各个输入装置、即按每个会议参加者进行重放。

此外，这里，作为上述再生指示，具体地说，例如可以是由会议参加者或演示者用规定的再生指示装置发出的再生指示等。

另外，上述数据控制装置，最好是一边按每个规定的单位管理接收到的传送数据一边进行存储，并根据上述再生指示按每个规定的单位读出上述会议数据。

这里，作为规定的单位，例如可以采用章单位、节单位、页单位等。即，例如，如果会议参加者发出第 3 章的第 2 节部分的再生指示，则可以立即对该部分进行重放。

另外，最好是，上述会议数据生成装置，包含用于对会议情况进行摄像的摄像装置，上述数据控制装置，将摄像数据作为上述会议数据的一部分按上述每个规定的单位存储在上述存储装置内，上述数据控制装置，根据上述再生指示按上述每个规定的单位读出存储在上述存储装置内的上述会议数据。

这里，作为会议情况，例如可以是讲述者（演示者）或会议参加者用指示棒、激光指示器或手指在屏幕前或图形输入板上指示的图象及反映这些指示的图象等。

即，由于在摄像对象中不仅包含所再生的演示数据而且还包含反映了会议参加者的指示的图象等，所以可以根据摄像结果立即对指示位置及指示内容进行再生，并能适当地掌握会议中讲述者与会议参加者相互间进行讨论的会议情况。

同样，最好是包含用于对会议情况进行录音的录音装置，上述数据控制装置，将录音数据作为上述会议数据的一部分按每个规定的单位存储在上述存储装置内。

这里，作为会议情况，例如可以是讲述者或会议参加者的发言或谈话等。按照这种方式，由于还可以将声音合在一起进行再生，所以能够进一步适当地掌握会议情况。

上述会议数据生成装置，最好是包含用于对上述读出的会议数据进行再生的再生装置。

按照这种方式，可以通过显示、投影、声音再生等对所读出的会

议数据进行再生，因而使会议参加者能够立即确认会议数据。

上述会议数据生成装置，最好是包含用于向其他处理装置传输上述读出的会议数据的传输装置。

按照这种方式，可以用例如显示装置、打印装置等其他处理装置执行对会议数据的再生、打印等。

上述数据传送装置，最好是包含多个输入装置，上述数据控制装置，最好是一边按上述每个输入装置管理从上述输入装置传送的上述传送数据一边将其存储在上述存储装置内，并根据上述再生指示从上述存储装置读出会议数据。

按照这种方式，可以按各个输入装置、即按每个会议参加者进行重放。具体地说，例如，可以对反映了会议参加者用鼠标或笔式图形输入板等输入的数据的会议数据进行再生，并能立即确认出是谁进行了什么样的操作。

这里，上述会议数据生成装置，最好是包含投影机。

按照这种方式，通过采用投影机，可以实现即使是大型会议也能适应的会议系统。

另外，本发明的信息存储媒体，存储用于通过传输线路从多个数据传送装置接收传送数据并生成反映该传送数据的会议数据的信息并可由计算机读取，上述信息，最好是包含演示用信息、用于一边按上述每个数据传送装置管理上述传送数据一边将其存储在存储装置内的存储用信息、及用于根据再生指示从上述存储装置读出包含着上述传送数据及上述演示用信息的至少一部分的会议数据的读出用信息。

按照本发明，会议参加者，可以根据指示立即重放过去的会议数据。

另外，上述读出用信息，最好是包含用于根据再生指示按上述每个数据传送装置读出存储在上述存储装置内的上述会议数据的信息。

按照这种方式，可以判别出从哪个数据传送装置接收到什么样的传送数据。

另外，也可以对反映每个数据传送装置的传送数据的会议数据进行再生。具体地说，例如，当多个会议参加者使用其各自的输入装置

传送输入数据时，可以按各个输入装置、即每个会议参加者进行重放。

另外，最好是，上述信息，包含用于对会议情况进行摄像的信息，上述存储用信息，包含用于按规定单位将摄像数据作为上述会议数据的一部分存储在上述存储装置内的信息，上述读出用信息，包含用于根据上述再生指示按上述每个规定单位读出存储在上述存储装置内的上述会议数据的信息。

这里，作为会议情况，例如可以是讲述者（演示者）或会议参加者用指示棒、激光指示器或手指在屏幕前或图形输入板上指示的图象及反映这些指示的图象等。

即，由于在摄像对象中不仅包含所再生的演示数据而且还包含反映了会议参加者的指示的图象等，所以可以根据摄像结果立即对指示位置及指示内容进行再生，并能适当地掌握会议中讲述者与会议参加者相互间进行讨论的会议情况。

同样，最好是包含用于对会议情况进行录音的录音用信息，上述存储用信息，最好是包含用于将录音数据作为上述会议数据的一部分按每个规定的单位存储在上述存储装置内的信息。

这里，作为会议情况，例如可以是讲述者或会议参加者的发言或谈话等。按照这种方式，由于还可以将声音合在一起进行再生，所以能够进一步适当地掌握会议情况。

另外，这里，作为上述规定的单位，例如可以采用章单位、节单位、页单位等。即，例如，如果会议参加者发出第 3 章的第 2 节部分的再生指示，则可以立即对该部分进行重放。

上述信息，最好是包含用于对上述读出的信息进行再生的信息。

按照这种方式，可以通过显示、投影、声音再生等对所读出的会议数据进行再生，因而使会议参加者能够立即确认会议数据。

上述信息，最好是包含用于将上述读出的信息向其他处理装置传输的信息。

按照这种方式，可以用例如显示装置、打印装置等其他处理装置执行对会议数据的再生、打印等。

附图的简单说明

图 1 是本实施形态一例的会议系统的简图。

图 2 是本实施形态一例的会议情况的说明图.

图 3 是本实施形态一例的会议系统的结构图.

图 4 是表示本实施形态的会议数据及管理表的数据结构一例的简图.

图 5 是表示本实施形态一例的会议系统中的处理流程的流程图.

图 6 是本实施形态的另一例的会议系统的功能框图.

图 7 是本实施形态的另一例的会议系统的功能框图.

图 8 是采用了控制装置的会议系统的简图.

图 9 是表示采用了控制装置的会议系统中的处理流程的流程图.

图 10 是表示管理表的一例的图.

图 11 是表示以分散方式进行图象显示时的图象显示的图，（A）是表示只采用 1 台液晶投影机时的图象显示例的图，（B）是表示采用 4 台液晶投影机时的图象显示例的图.

图 12 是采用 4 台液晶投影机并以分散方式进行图象显示时的示意图.

图 13 是表示采用了虚拟机时的通信方式的示意图，（A）是表示现有通信方式的图，（B）是表示本实施形态的通信方式的图.

图 14 是进行本实施形态的分散处理时的功能框图.

图 15 是投影机中的软件部和硬件部的功能框图.

图 16 是本实施形态一例的信息存储媒体的功能框图.

用于实施发明的最佳形态

[发明的实施形态]

以下，参照附图说明本实施形态的会议系统的最佳实施例.

作为本实施形态的会议系统，例如有由具有双向连接性的通信线路或系统总线连接多个显示装置和输入装置的会议系统等. 更具体地说，例如有在某个会议参加者指示显示装置的投影或显示画面的同时另一个会议参加者用输入装置对屏面上所显示的图象附加信息的会议系统、存在着多个分别配置在相隔很远的地区的即使作为单个系统也可以使用的会议系统并通过通信路径使各会议系统之间同步连接从而为使相隔很远的地区的参加者能够参加同一会议提供支持的会

议系统等。

（关于会议系统结构的说明）

图 1 是本实施形态一例的会议系统的简图。

如图 1 所示，会议系统，在结构上包含输入装置 400、输出装置 600、既具有作为生成会议数据的会议数据生成装置的功能又具有作为再生会议数据的会议数据再生装置的功能的会议数据处理装置 2、及处理装置 700，这些装置，通过作为高速传输线路的 IEEE1934 总线 300 相互连接。

会议数据处理装置 2，除了从输入装置 400 接收传送数据、根据该传送数据生成会议数据并向输出装置 600 发送所生成的会议数据以外，还与处理装置 700 进行传送数据的发送接收。

具体地说，作为输入装置 400，例如可以是图形输入板、鼠标、键盘、扫描器、数字摄像机、携带式信息终端、携带式电话、指示棒等。而作为由输入装置 400 向会议数据处理装置 2 传送的信息（传送数据），例如可以是由图形输入板数字化后的坐标信息、将指示器在图形输入板上的移动轨迹数字化后的信息、将鼠标装置的轨迹坐标化后的信息、通过键盘输入的文字信息、所采集的像素信息、数字化后的声音信息等。此外，作为输出装置 600，例如可以是显示器、携带式信息终端、打印机等。

另外，作为会议数据处理装置 2，例如可以是液晶投影机等，作为处理装置 700，例如可以是 PC（个人计算机）、WS（工作站）、NC（网络计算机）、服务装置、主机装置等。

即，这些装置构成由多个会议参加者在 1 个会场使用并通过使这些装置相互关联而进行会议数据的生成和再生的一个会议系统。

另外，作为 PC 等计算机的处理装置 700，不是会议系统所必需的结构，作为处理装置 700 的构成要素，有处理器、ROM、RAM、二次存储装置等，但这些要素也都可以看作是会议数据生成装置构成要素的一部分。考虑到装置总体的可携带性及可再用性，将处理装置 700 装在另一壳体内，因此处理装置 700 是以分离的形式记述的。

会议系统，不仅适用于围绕一个桌子进行会议的小型会议，而且也适用于像多国间的会议那样的将相隔很远的地区的多个装置相互连接的会议。

首先说明以 1 台液晶投影机为中心的小型会议中的实施形态，然后说明多个装置相关联的相隔很远地区之间的会议中的实施形态。

（会议情况的说明）

图 2 是本实施形态一例的会议情况的说明图。

其中，由作为会议数据处理装置 2 的液晶投影机 200 将图 1 所示的会议数据 44 投射到屏幕 1020 上，演示者 1000 用指示棒 1010 进行演示。

另一方面，会议参加者 1002，利用作为输入装置 400 的图形输入板 410 输入数据。所输入的数据，通过 IEEE1394 总线 300 传送到液晶投影机 200 的通信用接口部 30，液晶投影机 200，根据传送到的数据投射构成会议数据 44 的一部分的指示数据 1012。

这里，所谓指示数据 1012，例如可以是在所投射的图象的一部分上写入文字的文字数据、在所投射的图象的一部分上写入图形的图形数据、对所投射的图象中的文字加下划线的下划线数据、用圆圈围出所投射的图象的一部分的圆圈数据等。

会议参加者 1002，除了演示数据外，还可以看到用图形输入板 410 输入的指示数据 1012。

在实际的会议情况下，即使在会议进行中有时也希望再一次看到特别指定的演示数据中的第几章的第几节并且还包括演示者 1000 的动作，或有时想要确认会议参加者 1002 指出的部位等。

在这种情况下，如果是用 PC 的应用程序生成的演示数据、且只是演示数据则可以指定并再生第几章的第几节。但是，这种方法不能对会议参加者 1002 用图形输入板 410 附加的信息及附加时刻进行再生。

另外，虽然可以用录像设备等对会议整体进行摄影和再生，但考虑到为指定第几章的第几节并将其再生而必须进行快放或倒放所必需花费的时间，当有多个会议参加者时，就不可能仅仅再生出特定的会议参加者 1002 指示的部位。

如果能够实现上述设想，就可以用多种方式有效地进行会议。

为实现上述设想，本实施形态的液晶投影机 200，如图 1 所示，利用对讲述者等指示的图象等进行摄像的摄像部 60、对会议中的谈话等进行录音并将其数字化的录音部 70、输入装置 400 等对作为 PC

的处理装置 700 生成的演示数据附加信息，并且一边将该信息与分配给各装置的地址相结合并用管理表 42 进行管理，一边将其作为会议数据 44 存储在存储部 40 内。

以下，对本实施形态的会议系统进行更为具体的说明。

图 3 是本实施形态一例的会议系统的结构图。

如图 3 所示，在由 4 个人的会议参加者 1002 分别操作图形输入板 410—1～4 进行数据输入时，按每个图形输入板 410 将输入数据存在存储部 40 内。

同样，作为讲述者的演示者 1000 的发言，由录音部 70 录音，会议参加者 1002 的谈话或发言，由按每个会议参加者 1002 设置的用作录音装置的声音数字化装置 72 采集，并作为声音记录数据按演示者 1000 及每个会议参加者 1002 存储在存储部 40 内。

对录音部 70、声音数字化装置 72—1～4、图形输入板 410—1～4 分配不重复的设备地址。

另外，声音信息的一部分，根据预先登录的规定关键字进行声音识别。对声音识别结果进行字符代码变换并记录为对会议数据的附加信息，或解释为装置控制命令。在后者的情况下，将预先登录的「快放」、「倒放」等术语翻译为进行液晶投影机 200 的动作控制的控制命令，并输入到图 1 所示的控制部 90。

另外，由图 1 所示的生成部 10 生成并存储在存储部 40 内的会议数据 44，由图 1 所示的再生部 20 按每个演示者 1000 及每个会议参加者 1002 进行再生。

以下，详细说明会议数据。

（会议数据的说明）

图 4 是表示本实施形态的会议数据 44 及管理表 42 的数据结构的一例的简图。

会议数据 44，是从[会议数据开始]标记到[会议数据结束]标记包含着多个数据字段的电子文件。

另外，会议数据 44，包含预先准备好的固定的演示数据 1420 及随着会议情况而变化的可变的附加数据 1440。演示数据 1420，通常由 PC 的 OS 的文件系统管理，并保持在作为二次存储装置的存储部 40 内。

另一方面，附加数据 1440，由借助于液晶投影机 200 的内置 OS 的功能而动作的控制部 90 管理，并存储在存储部 40 内。

进一步，会议数据 44，按会议的每个规定单位根据标号进行识别。

这里，作为规定单位，例如可以是章单位、节单位、所显示单页的页单位等。例如，当采用章单位、节单位这样的单位时，可以指示出第几章的第几节，因而在演示中可以进行特别有效的指示。

如图 4 所示，本实施形态的演示数据 1420，以第 1 章、第 1 节、1 页之类的各种单位附加标号。此外，对演示数据 1420 的[图象]标记等，还设有指示附加数据的图象数据的地址的指针，其结果是，可以使会议数据 42 的整体都能通过指定第几章、第几节、第几页读出其数据。在图中，除符号的箭头外，箭头还指示出指针的所在位置及其指示的部位的一例。

另外，例如，当采用页单位这样的单位时，与打印资料的散发单位一一对应。在使用 PC 的演示中，可以对一个单页的部分附加动图象或声音记录数据，但这时仍始终存在着形成一页的帧，因而可以解释为在形成该帧的数据的一部分中包含着包括动作的部分。

在 PC 打印领域中的一种众所周知的技术中，采用着可以记述文档体裁及打印信息的的语言（页记述语言），其中广泛普及的一种是 Adobe 公司的 PostScript 语言。假如会议数据 44 的记述采用 PostScript 语言，则很容易理解。即，可以采用利用程序语言以页为单位记述图象信息、文字信息等的方法。

在该程序语言中，可以根据像素的集合进行包含着像素的记述。在会议数据 44 的记述语言中，这种概念进一步延伸为，通过程序记述，可以将再生所采集的声音的部分及再生动图象的部分都包含在内。作为一种通用程序语言的利用解释程序进行处理的众所周知的例子，有 BASIC 语言，虽然 BASIC 语言在不包含以页为单位记述图象等概念方面与 PostScript 语言的规格不同，但适用于声音数据的再生、动图象的再生等。

在本实施形态中，只不过是在实施例中列举了 JAVA 语言作为具有双方的少许特征的解释程序语言。在 JAVA 语言的情况下，例如，具有 AWT（Abstracted Window Tools；抽象的窗口工具）及 Swinng

等不受处理系统限制的抽象化绘图用分类定义。而 JAVA 是美国 SunMicrosystems 公司的商标。

应用软件，利用分类功能实现用于进行所需处理的功能。

例如，当想要使用绘图类别内的直线产生功能时，请求执行直线产生功能的命令字，产生发往上述类别的报文。在执行包含该命令字的程序片时，例如，如果安装着 JAVA 虚拟机作为图 1 所示的变换部 50 内的虚拟机 500，则可以在任何处理系统上绘制直线像素。同样，如果备有每单位时间进行多次绘制的图象生成程序，则可以再现动图象。

另外，声音数据，也同样用 JAVA 语言记述声音采集数据的处理。

这些程序，在人们能够读懂的被称作所谓高级语言的以字符代码记述的源代码级进行开发和存储。而会议数据 44 的记述，不限于 JAVA 语言。例如，也可以采用本申请人的特开平 6—4498 中的基于 PASCAL 语言的语言等各种高级语言。

另外，如特开平 6—4498 的图 1 所公开的，用上述高级语言记述的程序，由编译器变换为可由中间语言解释程序解释和执行的中间语言对象。在本实施形态中，将按上述程序产生的中间语言对象用作会议数据 44。

在图 4 中，从[页开始]标记到[页结束]标记，是与一个单页相关的单位。在该 1 个处理单位中，存储[图象]标记、[声音]标记。[图象]标记为一连串的可变长字段的标号。在可变长字段中，如上所述，根据从高级语言记述编译后的结果而生成的中间语言记述存储绘图命令。此外，表现为像素集合的静止图象数据，也通过与像素转移绘图命令结合而存储于可变长字段。

对于[声音]标记，也同样将数据存储于可变长字段。

另外，图 4 的演示数据 1420 及附加数据 1440，可以与一般计算机上的电子文件一样进行重写。

附加数据 1440 的重写部分，存储在从[附加数据开始]标记到[附加数据结束]标记所围出的可变长数据部分。在该可变长数据部分中，存储由图形输入板等附加的图象数据及由送话器等附加的声音数据。

图象数据，存储在[图象数据开始]标记到[图象数据结束]标记之

间，声音数据存储在[声音数据开始]标记到[声音数据结束]标记之间。

另外，在本实施例中，将对原始演示数据（演示数据 1420）附加在会议过程中附加的各种附加数据 1440 后的数据称作会议数据 44，以区别于原始演示数据。两种数据都是可用计算机处理的电子文件。

具体地说，输入到声音数字化装置 72 的声音数据，由声音数字化装置 72 内部装有的送话放大部放大到可识别的电平后，由声音数字化装置 72 内部装有的采样处理部采集为数字信号。该数据由控制部 90 根据应用软件作为会议数据 44 的一部分即附加数据 1440 存储在存储部 40 内。

在存储部 40 内，除了演示数据 1420 及传送到的附加数据 1440 以外，还存储着由控制部 90 使用的用于数据管理的管理表 42。

管理表 42，是用于识别和管理输入装置 400 等装置的表，其中包含用于识别装置的 ID、装置名、用于识别该装置的使用者的数据。

例如，演示者 1000 用指示棒 1010 操作的结果，作为附加数据 1440 的一部分存储在存储部 40 内。由于这种图象数据以与装置 ID 相结合的形式存储，所以例如当再现演示者 1000 的动作时，可以从管理表 42 进行检索而再现存储在附加数据 1440 内的该图象数据。

另外，通过将时刻数据作为附加数据 1440 附加于图象数据，也可以通过指定时刻而再现会议数据 44。

这样，按照本实施形态，可以根据第几章之类的指定立即再现会议情况，同时还可以根据演示者 1000 或会议参加者 1002 的个别指定或时刻指定有选择地再现会议情况。

以下，说明输入装置 400 的任务。作为输入装置 400 之一的图形输入板 410，在结构上包含数字化单元、坐标检测处理部、I／O 控制器、IEEE1394 总线级驱动器。

图形输入板 410 的 I／O 控制器，具有 SBP—2 协议的目标侧节点能力。另一方面，液晶投影机 200 的 I／O 控制器，控制具有 SBP—2 协议的启动端侧节点能力的 SBP—2 驱动器。

作为液晶投影机 200 的本机存储器的存储部 40，通过 SBP—2 驱动器，作为共享存储器向 IEEE1394 总线 300 开放。

由图形输入板 410 侧的 IEEE1394 总线级驱动器在与液晶投影机侧的 IEEE1394 总线级驱动器之间进行由 IEEE1394—1995 规定的总线级事务处理。通过该事务处理，图形输入板 410 通过 IEEE 总线级驱动器对 SBP—2 驱动器进行登录，并获得对上述共享存储空间的访问许可。

在获准登录的情况下，在图形输入板 410 通过 IEEE1394 总线级驱动器进行注销处理之前，可以由图形输入板 410 访问液晶投影机侧的作为共享存储空间的存储部 40。

在由数字化单元对会议参加者 1002 在图象输入板 410 上的指示动作进行了位置检测之后，由坐标检测处理部进行相对位置换算，从而变换为指示坐标及一连串的轨迹数据。通过上述的 SBP—2 协议的动作，将该指示坐标数据及轨迹数据存储在液晶投影机 200 提供的共享存储空间内。

共享存储空间，当从液晶投影机 200 观察时，是本机存储空间。因此，液晶投影机 200，可以根据需要通过内置 OS 的核心程序将该共享空间分配或复制到由虚拟机 500 的进程或线程管理的存储空间。如从另一观点考虑，则可以由液晶投影机 200 的虚拟机 500 的进程或线程随时监视（监控）使用者在图形输入板 410 上的指示动作的轨迹。

以下，说明实际会议系统中的会议数据生成处理。

（关于会议系统中的处理程序的说明）

图 5 是表示本实施形态一例的会议系统中的处理流程的流程图。

当会议开始时，开始会议数据生成处理，会议数据生成处理进行到会议结束为止。

首先，会议开始后，如会议没有结束（步骤 2），则由控制部 90 将会议数据 44 存储在存储部 40 内（步骤 4）。

在将由 PC 等生成的演示数据存储在存储部 40 内时（步骤 6），由再生部 20 对由控制部 90 从存储部 40 读出的演示数据 1420 进行再生（步骤 8）。

即，由液晶投影机 200 投影演示数据，当有声音时，还要对声音进行再生。

当没有演示数据时（步骤 6），不进行任何外部操作，而是继续进行内部处理。

当有外部输入数据时（步骤 10），控制部 90，一边按每个输入源管理输入数据一边将其存储在存储部 40 内（步骤 12）。

具体地说，例如，当传送包含着从图形输入板 410 传送到的绘图指示信息等的传送数据时，不仅存储传送数据而且还同时存储该图形输入板 410 的识别信息等，从而一边用管理表 42 按每个输入源进行管理一边进行存储。

另外，传送数据等的一部分，作为附加数据 1440 进行存储。而作为附加数据 1440，不仅包含从图形输入板 410 输入的数据，而且还包含图 2 所示的摄像部 60 的摄像范围 1060 内所含有的摄像数据。即，演示者 1000 用指示棒 1010 或手指指示的图象的位置数据，也作为附加数据 1440 进行存储。

按上述方式生成会议数据 44。

当没有外部输入数据时（步骤 10），不进行任何外部操作，而是继续进行内部处理。

另外，当由会议参加者 1002 通过操作遥控器等再生指示装置而发出再生指示时（步骤 14），控制部 90，根据再生指示的指定按每个规定单位读出会议数据 44（步骤 16～20）。

例如，如果再生指示是按每个输入源的指定（步骤 16），则按每个输入源再生会议数据 44（步骤 18）。

另外，如果再生指示不是按每个输入源的指定（步骤 16），则对所指定部分的会议数据进行再生（步骤 20）。具体地说，例如，控制部 90，判别所指定的是与演示数据 1420 对应的第几章第几节，并从存储部 40 读出与该部分对应的会议数据 44。因此，如果再生部 20 对该部分进行再生，则可以再生出所指定部分的数据。

当然，不仅是每个输入源或指定部分这种二者择一的选择，在结构上也可以将两种指定合在一起从而能同时选择两者。

按如上所述的方式进行会议数据的生成处理及再生处理。以上是将图形输入板 410 用作输入装置 400 的情况，以下说明将 PC420 用作输入装置 400 的情况。

（将 PC 用作输入装置时的会议系统例）

图 6 是本实施形态的另一例的会议系统的功能框图。

液晶投影机 202，通过 IEEE1394 总线 300 与外部存储装置 240 连接，液晶投影机 202 与 PC420 通过光纤网 310 连接。

这种会议系统，在进行联接相隔很远的地区间的会议时采用。这里，假定从设在美国的 PC420 向设在日本的液晶投影机 202 发出绘图命令。

即，所说明的例子是，在日本的会场采用液晶投影机 200 进行演示，在美国的会议参加者 1002，一边用 PC420 显示演示画面一边在由日本的液晶投影机 200 生成的演示图象上进行写入。

这里，PC420，在结构上包含具有显示演示画面的 Web 浏览器、OS（操作系统）、TCP／IP（Transmisssion Control Protocol／Internet Protocol;传输控制协议／网际协议）、PPP(Point to Point Protocol;点对点协议)等软件的控制部 422、及具有 ATM 交换机的发送接收部 424。

另外，液晶投影机 202，在结构上包含具有 CGI(Common Gateway Interface;公共网关接口）、httpd(Hyper Text Transfer Protocol Daemon;超文本传送协议守护程序)、绘图用 API(Application Programming Interface;应用程序设计接口)等软件的生成部 12、具有虚拟机 502 的变换部 52、具有分散 OS 核心程序、TCP／IP、PPP、设备驱动程序等软件的控制部 92、发送接收部（包含 ATM 交换机）、及具有 IEEE1394 总线级驱动器的通信用接口部 32。

另外，外部存储装置 240，在结构上包含控制部 290、及具有 IEEE1394 总线级驱动器等的通信用接口部 292。

以下，说明本会议系统中的会议数据生成处理。

首先，在美国，在 PC420 的屏面上显示着演示图象的状态下，操作 PC420 的会议参加者 1002，在画面的 Web 浏览器上进行用于对演示图象进行写入的操作。

该操作命令，由控制部 422 变换为以 TCP／IP 等协议为依据的形式，同时将包含操作命令的传送数据变换成可以由编译器变换为可生成会议数据的数据形式的形式，并由发送接收部 424 通过光纤网 310 向液晶投影机 202 发送。

在液晶投影机 202 中，由通信用接口部 32 接收发送到的传送数

据，并由控制部 92 进行传送控制等。发送到的传送数据，用虚拟机 500 变换为可生成会议数据的形式，并由生成部 12 生成会议数据。

从 PC420 发送到的传送数据及所生成的会议数据，由通信用接口部 32 通过 IEEE1394 总线 300 向外部存储装置 240 发送，并在外部存储装置 240 中一边由控制部 290 按每个处理装置及每个规定单位对由发送接收部 292 接收到的传送数据及会议数据进行管理一边进行存储。

另外，所生成的会议数据，用液晶投影机 202 在日本的会场显示，同时由通信用接口部 32 向 PC420 发送。在 PC420 中，将接收到的会议数据再次显示在屏面上。

上述的发送接收处理及数据传输，尽管是传输像会议数据这样的大型数据，但由于采用了 IEEE1394 总线 302 和光纤网 310，所以仍能极高的速度进行。

按照上述方式，在美国的会议参加者 1002，能够以与在日本的会场上操作液晶投影机 202 的同样的感觉从相隔很远的地方操作液晶投影机 202。

另外，传送数据及会议数据存储在外部存储装置 240 内，而且在 PC420 与外部存储装置 240 之间也由高速传输线路连接，所以可以响应从 PC420 进行的操作而立即再生出所需要的部分。

因此，可以实现即使在相隔很远的地区之间进行会议时也能迅速地重放会议数据的会议系统。

进一步，通过将存储会议日志（历史记录）的外部存储装置 240 与投影机 202 分别设置，即使是使构成外部存储装置 240 的硬盘为 RAID（Redundant Array of Inexpensive Disks; 廉价盘冗余阵列）结构从而提高数据的可靠性并确保大容量的存储容量时，也能实现通用性高的液晶投影机 202 而无须改变液晶投影机 202 本身的大小。

即使是如上所述将用于存储会议数据的存储装置与液晶投影机 202 分别设置时，也由于能以极高的速度进行液晶投影机 202 与外部存储装置 240 之间的通信，因此几乎不存在性能上的问题。

以上是将 PC420 用作输入装置 400 的例，以下，说明将服务装置用作数据传送装置而对传送数据进行传送的情况。

（将服务装置用作数据传送装置时的会议系统例）

图 7 是本实施形态的另一例的会议系统的功能框图。

本实施例中的会议系统，在结构上包含用于再生会议数据的液晶投影机 200 及服务装置 100。

液晶投影机 200，与上述的液晶投影机 200 相同。

服务装置 100，在结构上包含存储着显示用数据、控制用数据、组件对象等的存储部 102、发送接收部 104、及控制存储部 102 及发送接收部 104 的数据传输的控制部 106。

这里，作为显示用数据，例如可以是图象数据、演示数据、会议数据等，作为控制用数据，具体地说，例如可以是设备驱动程序、用于指定坐标等绘图范围的数据、用于指定线或圆等绘制对象类别的数据等。

特别是，考虑到图象数据以两种形式生成，因而需要设计处理系统。第 1 种形式是将图象整体作为像素集合而生成。当用图象扫描装置采集自然图象的照片时，将每个像素定义为伴有不同灰度等级的色彩数据，并将图象整体定义为该像素的集合。

第 2 种形式是由任何一种命令字产生像素。在利用直线、贝济埃曲线、圆弧等的组合表示图形的处理系统中，直线产生命令（通常是指定绘图起始坐标、终止端坐标、线宽），根据作为对象的处理系统的析像度或坐标系产生点列并形成像素，从而绘制出图形的一部分。

在大多数情况下，计算机装置的图象显示系统，用前者的像素集合表示图形，同时用后者的命令字表示图形。此外，采用轮廓字形产生文字的方式，由于原来的文字形状由直线?曲线绘图命令记述，所以是属于后者的例。如后文所述，根据命令字产生像素，是使用多台液晶投影机在大范围区域上绘图的应用例，是需要进行分散处理的最佳例。

当根据任何绘图命令产生像素时，必需有进行该操作的程序，而且，该程序必须是可以在包含着作为对象的处理器的硬件上执行的形式。在本实施形态中，将这种程序的执行单位称作「组件对象」。

组件对象，用作进行图象生成或再生用的软件的一部分。具体地说，例如可以是 JAVA 小应用程序或 JAVA Beans 等。

例如，假定服务装置 100 是 Web 服务器，并且是将各种用于会议数据生成的数据存储在存储部 102 内的形态。

液晶投影机 200，可以从服务装置 100 下载设备驱动程序、JAVA 小应用程序等。

按照这种方式，可以很容易地扩展液晶投影机 200 的功能。即，当必需召开新形态的会议时，会议的主办者将必要的信息存储在服务装置 100 内，会议参加者 1002，则可将必要的信息从服务装置 100 装入液晶投影机 200，从而能够迅速地适应新形态的会议。

具体地说，例如，在液晶投影机 200 中当前具有在屏面的一部分上画线的功能时，通过接收具有用圆圈围出屏面的一部分的功能的组件对象并装入会议数据生成用程序，可以追加用圆圈围出屏面的一部分的功能。

另外，由于不是用硬件而是可以用软件进行功能扩展，所以可以对液晶驱动电路等进行简化。即，一般来说，在液晶投影机中，由 AD 转换器将图象数据变换为数字信号，并将图象信息存储在第 1 帧存储器内。然后，由数字滤波电路对图象信息进行卷积运算并存储在第 2 帧存储器内。接着，以一定的周期读出第 2 帧存储器内的图象数据，以便由液晶控制器将其显示在液晶光阀上。

另外，这里，所谓卷积运算，指的是一种图象滤波技术，用于根据图象的清晰度改变抽头系数，从而改变画质。

在这些驱动电路中，因所输入的图象数据的不同等而造成由相位差引起的图象恶化，为了减小该相位差，必须采用高性能的 PLL 电路。此外，在假定将多台析像度不同的液晶投影机相互连接的情况下，必需提供用于进行图象插补的图象处理的换算电路。但这种图象处理将会使图象恶化。

另一方面，如果像本实施形态这样采用使装有虚拟机 500 的液晶投影机 200 的各部动作的应用软件并根据液晶的像素数对输入到液晶投影机 200 的图象数据进行数据变换，则不会产生因换算电路的图象处理而引起的图象恶化，由于不需要设置多个帧存储器，所以能够简化电路结构。

作为这种应用软件，例如可以采用通过虚拟机 500 将所输入的图象数据的显示图象在 VRAM（视频 RAM）内展开并进行将 VRAM 内的显示图象通过液晶控制器显示在液晶板上的处理的软件。

以上，以液晶投影机 200 和输入装置 400 为中心进行了说明，但

对于液晶投影机 200 和输出装置 600，也可以获得同样的作用效果。

即，例如，用液晶投影机 200 生成会议数据，并由通信用接口部 30 向输出装置 600 发送所生成的会议数据。

这里，作为输出装置 600，例如采用打印机时，会议参加者 1002，可以根据输出指示打印该会议数据。

另外，作为输出装置 600，例如采用显示器时，会议参加者 1002，可以根据输出指示显示该会议数据。

这种情况下的输出指示，也可以按每个输入装置 400 及每个规定单位进行，会议参加者 1002，可以根据指示立即得到自己请求的会议数据。

如上所述，虽然会议系统都能以液晶投影机 200 为中心构成，但如采用控制装置，则也可以实现新形态的会议系统。

（采用了控制装置的会议系统例）

图 8 是采用了控制装置 900 的会议系统的简图。

将 1 个控制装置 900 与进行会议数据处理的多个处理装置通过由作为传输线路的 IEEE1394 总线 300 构成的网络连接，在各处理装置之间进行传送数据的发送和接收并生成会议数据。

控制装置 900，在结构上包含存储部 910、在管理各处理装置与网络的连接状态的同时还管理存储部 40 内的数据的管理部 920、对控制装置 900 内的数据的传输进行控制的传输控制部 930。

另外，作为处理装置，例如可以采用携带式信息终端 402、扫描器 404、液晶投影机 200、PC400、打印机 602 等各种装置。

在这种形态中，按如下方式进行会议数据的处理。

图 9 是表示采用了控制装置 900 的会议系统中的处理流程的流程图。

开始时处于控制装置 900 起动并与 IEEE1394 总线 300 连接的状态，其他装置也与 IEEE1394 总线 300 连接。（步骤 32）。

当连接某个处理装置时，包含着指示连接后的状态及该处理装置提供的服务的信息包的传送数据被传送到控制装置 900。这里，所谓服务，指的是各处理装置提供的功能。

控制装置 900，当接收包含上述信息包的传送数据时，由管理部 920 在存储部 910 所存储的管理表中确认已完成登录的提供服务（步

骤 34），如已登录着同一种提供服务，则对优先级等进行调整（步骤 36）。

管理部 920，在确认提供服务后，将提供服务登录在管理表内（步骤 38）。

图 10 是表示管理表 912 的一例的图。

在管理表 912 中，主要存储着用于识别各处理装置的 ID、该处理装置提供的服务、该处理装置的状态。该识别用 ID，即使在多个处理装置与网络连接的情况下，也分配不重复的 ID 值。

控制装置 900，当接收包含着指示服务请求的信息包的传送数据时（步骤 40），用管理部 920 检索管理表 912，搜索可提供能够响应该服务请求的服务的处理装置。

例如，当从携带式信息终端 402 发出想要打印会议数据的一部分的请求时，控制装置 900，用管理部 920 检索管理表 912，搜索可提供打印服务的处理装置，当搜索到提供该项服务的打印机 602 后对其状态进行确认并处于能够进行处理的状态时，传送控制部 930 在请求服务的携带式信息终端 402 与响应该服务的打印机 602 之间建立连接。

一旦建立了连接，就可以在发出请求的处理装置与响应请求的处理装置之间发送和接收会议数据等传送数据而无须再通过控制装置 900。

在这种情况下，例如，建立连接后，将会议数据的一部分从携带式信息终端 402 发送到打印机 602，并由打印机 602 提供打印服务（步骤 42）。

这样，如采用控制装置 900，则可以实现能够对服务进行一元化管理并能根据所应用的会议的情况灵活地变更处理装置的会议系统。

即使在这样的会议系统中，也最好在控制装置 900 及各处理装置内安装虚拟机 500。其原因是，通过采用虚拟机 500，在发送传送数据时可以完全不考虑发送目的端的机型或 OS 等，从而可以增加装置结构的自由度，并能进行更为多样的会议。

作为将上述的控制装置 900 与多个处理装置连接的技术，例如有美国 SunMicrosystems 公司的 Jini，但本实施例在可以将图 4 所示

的会议数据 44 存储在控制装置 900 的存储部 910 内并能进行更新、管理这一点上与 Jini 截然不同。

在以上说明过的例中，说明了 1 个处理装置提供一项服务的例，但以下将对由多个会议数据再生装置提供一项服务、即边进行分散处理边再生会议数据的情况进行说明。

（关于分散处理的说明）

目前的大多数在商用 PC 的 OS 下开发的应用软件，通过编译，翻译为可由微处理器直接解释的机械语言。在这种方法中，一般必须从应用软件的开发阶段起就必须考虑到使用该应用软件的微处理器的体系结构及与 OS 的服务例程之间的程序间接口（通常称为 API: Application Programming Interface;应用程序设计接口）并进行程序设计。

可是，在本实施形态的会议系统中，以液晶投影机 200 或用作处理装置 700 的 PC 或 WS 为中心，翻译和执行会议数据 44 或原始演示数据。

液晶投影机 200，每当实际商品化时，即使从以适当的价格为使用者提供最佳的装置考虑，在设计时也不能限定于某种微处理器，对于处理装置 700 也可以说是同样的。此外，作为处理装置 700，不仅使用 PC 或 WS，也应设想到使用携带式信息终端，以便在外出要去的地方使用。

当以上述各种规格不同的微处理器及 API 不同的 OS 的混合环境为前提时，为了将各个环境的差别抽象化并提供可以共同使用的环境，应使用虚拟机的解释程序（例如虚拟机 500）。

使用虚拟机的解释程序可以解决的问题，主要是消除不同的计算机体系结构的差别（执行环境的抽象化）。

另一方面，在会议系统中发送接收的传送数据，是动图象这样的大型数据，而且，当会议要进行几小时之久时也要发送接收大量数据。

为能有效地处理这种大型且大量的数据，不仅需要虚拟机的解释程序，而且既需要高速传输线路又需要可以进行在各装置中动态地分散处理负荷的动态分散处理的结构。

图 11 是表示以分散方式进行图象显示时的图象显示的图，（A）

是表示只采用 1 台液晶投影机时的图象显示例的图，（B）是表示采用 4 台液晶投影机时的图象显示例的图.

当以 1 台液晶投影机 200 进行图象显示时，可以由将会议数据传送到液晶投影机 200 的 PC 进行 UXGA 显示、即 1600×1200 点的显示，但在该液晶投影机 200 只能对应地达到 XGA 显示、即 1024×768 点的显示的状态下，根据演示者的指示，有时指示器将可能指示出可以在 PC 上显示但在液晶投影机 200 上却不可能显示的坐标（1500，920）

在这种情况下，如图 11（A）所示，实际上在液晶投影机 200 上不能显示. 因此，由于演示者不能使指示器按照自己的操作而动作，所以也会发生不能进行有效的演示的情况.

为避免发生这种情况，如图 11（B）所示，可以采用 4 台液晶投影机 200，以分担的方式投射 4 个图象 1210—1～4，以便能够支持与 PC 上的显示对应的显示区域.

图 12 是采用 4 台液晶投影机 200—1～4 并以分散方式进行图象显示时的示意图.

当以分担的方式显示 1 个图象时，本来必须决定由哪个装置分担哪个区域. 采用 4 台液晶投影机将某个图象在空间上划分后进行显示，是典型的并行处理方式. 在用处理装置 700 的应用软件生成原始演示文件的阶段，如果记述适用于这种并行处理的并行句法，则在处理上是很方便的. 在特开平 6—4498 中，公开了一种书写和翻译 cobegin coend 中包含的并行执行单位的方法，这种方法在本实施形态中也可以使用.

图 13 是表示采用了虚拟机 500 时的通信方式的示意图，（A）是表示现有通信方式的图，（B）是表示本实施形态的通信方式的图.

为进行上述的动态分散处理，不仅需要在投影机 200 内安装虚拟机 500，而且在生成应用软件、即应用层程序 12 的阶段必须在充分考虑由哪台液晶投影机 200 分担哪个绘图区域后生成.

一般来说，为了对程序的某个执行单位进行并行处理，必须满足以下的 2 个条件. 首先，第 1 个条件是，包含 OS 的对象程序处理系统必须具有可以平行地执行某个程序片、亦即执行单位的资源，更具体地说，必需有与并行处理的个数相对应的独立的处理装置. 第 2 个条件是，必须将对象程序本身记述为具有可并行执行的处理单位且可

以在处理系统中对其进行判断。

另外，在本实施形态中，所谓「分散执行」，是并行执行的广义概念，在将某个处理单位分散到其他处理系统执行的情况中，将希望在时间上平行处理而且在取得结果的时刻必须同步的特殊情况称作「并行执行」。

例如，如图 13（A）所示，在将 2 台液晶投影机 200—5、6 通过 IEEE802.3 总线 192 连接的情况下，应在各应用层程序 12—5、6 之间建立在图象上相互呼应的连接。当开始对原始演示数据进行解释的第 1 台液晶投影机 200—5 在程序的语句中检测到超出了自己的显示范围时，便试着要与液晶投影机 200—6 对该部分进行分散处理。

这时，作为具体的动作，读取液晶投影机 200 的内置 OS 的传输控制程序的控制部，通过 IEEE802.3 总线 192 打开与液晶投影机 200—6 连接的线路，并传输分散处理的对象范围。

应用层程序 12—5，必须利用内置 OS 的服务例程依次执行网络连接、线路的打开，处理部分的传输等处理。另一个应用层程序 12—6，则被要求执行同样的网络连接、容许线路打开，处理部分的接收等服务侧的处理。

为了使用多台液晶投影机，只要求进行上述这些处理就使作为原始演示文件记述的应用层程序 12—5、6 的规格变得很复杂了，每次都必须根据执行环境专门改写。

如上所述，这里看到的应用层程序 12，实际上是由用于生成演示资料的另一个应用层程序生成的原始演示数据。如图 4 中的例所示，原始演示数据的内容，可以解释为由虚拟机 500 执行的中间语言对象的命令字集合。

为方便使用，必须设计成从开始时在应用层程序中就以一定程度的并行处理为前提交叉地记述着多种并行句法，并当执行环境允许并行处理时可以并行地执行。作为代替方法，也可以由虚拟机 500 在执行阶段以动态且独立的方式与其他虚拟机相互通信并将处理分散。

作为前者的预先记述多种并行处理句法的方法，可以安装本申请人在特开平 6—4498 中公开的中间语言解释程序间的通信方式。

另外，作为后者的在执行阶段以动态且独立的方式与其他虚拟机相互通信的方式，例如，可以采用使用 JAVA 虚拟机实现的方法、基

于多节点的方法等.

通过采用上述方法，即使是在液晶投影机的台数增加到 16 台、64 台等情况下，也无需再次改写原始演示数据。

在本实施形态中，如图 13（B）所示，采用了实现各节点之间的存储资源远距离访问的 IEEE1394 总线 300。

在安装本申请人在特开平 6—4498 中公开的中间语言解释程序间的通信方式的情况下，某台液晶投影机 200—1 的虚拟机 500—1 的主解释程序，在装入阶段，将以中间语言在作为所执行的进程的从属侧解释程序的工作区内记述的对象代码读入到另一台液晶投影机 200—2 的存储空间上，然后读入栈初始化数据，并根据该数据的指示将初始状态的数据存储在栈内并设定栈指针。

接着，读入表初始化数据，并进行对执行时数据块管理表及共享资源管理表的内容进行初始设定的一系列动作。上述动作，可以借助于采用了 RS232C 串行线路等的通信、或安装于通常在 UNIX 系统的 OS 中见到的网络文件系统等的传送层以上的上位层协议实现。但是，为了能以现实的处理速度进行远距离存储器访问，必须通过 IEEE1394 的总线事务处理进行安装。

按照这种方式，当生成应用层程序 12—1、2 时，无须考虑绘图分担区域等即可生成，并且可以在比应用层程序 12—1、2 低 1 级的各虚拟机 500 之间在图象上建立虚拟的连接。

以下，详细说明将 JAVA 虚拟机用作虚拟机 500 时的本实施形态的分散处理。

图 14 是进行本实施形态的分散处理时的功能框图。

液晶投影机 200—1，包含安装有用于将从作为数据传送装置的其他液晶投影机 200—2 等传送的传送数据变换为可生成或再生的数据形式的虚拟机 500 的变换部 50、及用于从输入装置 400 接收可由变换部 50 变换的传送数据的通信用接口部 30。

另外，液晶投影机 200，还包含根据由变换部 50 变换后的传送数据生成会议数据的生成部 10、一边按每个其他的液晶投影机 200 且按每个规定单位对所生成的会议数据进行管理一边将其存储在存储部 40 内并按每个其他的液晶投影机 200 且按每个规定单位读出会议数据的控制部 90、及对所读出的会议数据进行再生的再生部 20.

在存储部 40 内，除了包含着演示用数据及所传送到的传送数据的会议数据以外，还存储着由控制部 90 使用的管理用表 42 等。

另外，存储部 40，可以由其他的液晶投影机 200 等通过通信用接口部 30 访问。

以下，说明本实施形态中使用的虚拟机 500。

图 15 是投影机 200 中的软件部和硬件部的功能框图.

软件部，在结构上包含具有声音处理用 API(Application Programming Interface;应用程序设计接口)及图象处理用 API 的生成部 10、具有多个命令字、对命令字的调度程序、多个设备驱动程序、运行期程序库的控制部 90、及虚拟机 500。

另外，也可以代替声音处理用 API 或图象处理用 API 而安装声音处理级或图象处理级。

所谓本实施形态中使用的虚拟机 500，意味着读取通用的文件格式并因此可以进行所指定的操作的装置，具体地说，例如采用 JAVA 虚拟机或上述特开平 6－4498 中公开的装有可进行并行处理的解释程序的虚拟机等。

作为 JAVA 虚拟机的安装方式，可以采用安装在软件部的解释程序方式、编译方式、安装在硬件部的专用 CPU 方式等，但在本实施形态中安装在软件部内。

虚拟机 500，在结构上包含各具有 1 个程序计数器和 1 个栈的多个线程、及堆区域．即，栈和堆区域是工作区，也起着存储部 40 的作用。

另外，由于栈有多个，所以能够进行所谓的多线程处理．因此，可以提高分散处理时的执行性能及并行执行性.

另外，硬件部，在结构上包含装有显示部的再生部 20、具有视频控制器的控制部 90、具有视频 RAM（V－RAM）区域的存储部 40、及具有 IEEE1394 链路层和 IEEE1394 物理层的通信用接口部 30。

以下，说明采用了多台液晶投影机 200－1、2 的实际显示处理.

假定液晶投影机 200－1 用作主投影机，而液晶投影机 200－2 用作从属投影机。

假定液晶投影机 200－1 绘制图象 1210－1、即坐标（0，0）～坐标（1024，768）．该绘图信息存储在存储部 40 内.

当第 2 台液晶投影机 200—2 连接于 IEEE1394 总线 300 时，用作主投影机的液晶投影机 200—1 与用作从属投影机的液晶投影机 200—2 可以发送和接收传送数据。

在这一阶段，液晶投影机 200—2 可以判断液晶投影机 200—1 已经动作，同时参照液晶投影机 200—1 的存储部 40—1 的绘图信息，从而可以确认液晶投影机 200—1 分担的绘图区域。

液晶投影机 200—2，在该确认后，从液晶投影机 200—1 的存储部 40—1 读出应由自己显示的图象信息并由虚拟机 500 变换为可由自身装置处理的数据形式而写入 V—RAM 区域，并在视频控制器的控制下在显示部上进行显示。

如上所述，存储部 40 内的栈区域按每个线程提供。即使某个线程内的栈区域因多线程处理而处于使用之中，也仍可以使用其他线程的栈区域，所以即使在共享存储部 40 的情况下，其并行执行性也几乎没有降低。

另外，通过采用 IEEE1394 总线 300 及 IEEE1394 总线接口，可以高速地发送和接收传送数据，所以，即使在共享存储部 40 的情况下，各液晶投影机 200 也都能以与参照自己的存储部 40 几乎相同的速度参照其他液晶投影机 200 的存储部 40。

另外，例如，有时也可以是显示能力不同的液晶投影机 200 混合存在的情况，即某台液晶投影机 200 是 VGA 显示、即 640×480 点显示，另一台液晶投影机 200 是 SVGR 显示、即 800×600 点显示，而另外一台液晶投影机 200 是 XGR 显示、即 1024×768 点显示。

在上述情况下，即使是必须显示上述的坐标（1500，920）时，也可以通过将具有不同显示能力的液晶投影机 200 相互连接而进行显示。例如，如果主液晶投影机 200 是 VGR 显示、则如将全部 9 台液晶投影机 200 连接，则可以覆盖 1920×1440 点的显示区域，因此也就可以显示出坐标（1500，920）。

即使在这种情况下，从属液晶投影机 200 也可以通过参照主液晶投影机 200 的存储部 40 内的绘图信息而自动调整显示能力。

这样，由于可以通过有效的分散处理生成会议数据，所以即使是大型且大量的会议数据也能舒畅地生成和再生，因而可以实现响应快的会议系统。

另外，不仅是基于共享存储器方式的分散处理实现方式，也可以按对象传送方式进行上述的分散处理。

以上，说明了实现会议系统的方法，但也可以用计算机可读取的信息存储媒体实现取得上述作用效果的会议系统。

（关于信息存储媒体的说明）

图 16 是本实施形态一例的信息存储媒体的功能框图。

信息存储媒体 1400，将用于实现上述各种功能的信息存储在用于由计算机 1200 读取的存储信息内。

计算机 1200，在结构上包含用于通过通信线路 1300 与其他处理装置 1100 进行通信的发送接收部 1230、存储各种数据和程序等的存储部 1240、进行图象处理等的处理部 1250、进行图象显示等数据的再生的再生部 1220、从信息存储媒体 1400 读取信息的信息读取部 1290。

作为上述各部的硬件结构，例如，作为发送接收部 1230，可采用具有 IEEE1394 接口的通信设备、ATM 交换机等，作为存储部 1240，可采用 ROM、RAM 等，作为再生部 1220，可采用显示器、投影设备等，作为处理部 1250，可采用 CPU、图象处理用处理器等。

另外，作为信息存储媒体 1400，例如可以采用由激光读取信息的 CDROM 或 DVDROM 等、借助于磁性读取信息的硬盘、或存储器等。

此外，也可以不是将信息存储媒体 1400 直接连接于信息读取部 1290，而是由计算机 1200 通过通信线路 1300 下载和读取服务装置内的存储信息 1410。

另外，作为传输线路即通信线路 1300，例如可以采用 IEEE1394 总线、光纤等。

这里，例如当实现上述的日志功能时，存储信息 1410，是从多个处理装置 1100 通过传输线路即通信线路 1300 接收传送数据并生成反映该传送数据的会议数据的信息，该信息在结构上包含演示用信息、用于一边按上述每个处理装置 1100 管理上述传送数据一边将其存储在存储部 1240 内的存储用信息、用于根据会议参加者的再生指示从存储部 1240 读出包含着上述传送数据及上述演示用信息的至少一部分的会议数据的读出用信息。

按照这种方式，会议参加者，可以根据指示立即重放过去的会议数据。

另外，上述读出用信息，最好是包含用于根据再生指示按每个处理装置 1100 读出存储在存储部 1240 内的上述会议数据的信息。

按照这种方式，可以判别出从哪个处理装置 1100 接收到什么样的传送数据。

另外，也可以对反映每个处理装置 1100 的传送数据的会议数据进行再生。具体地说，例如，当多个会议参加者使用其各自的输入装置传送输入数据时，可以按每个输入装置、即每个会议参加者进行重放。

另外，最好是，存储信息 1410 包含用于对会议情况进行摄像的信息，上述存储用信息包含用于按规定单位将摄像数据作为上述会议数据的一部分存储在存储部 1240 内的信息，上述读出用信息包含用于根据上述再生指示按上述每个规定单位读出存储在存储部 1240 内的上述会议数据的信息。

按照这种方式，可以立即对会议情况的摄像结果进行再生。由于在摄像对象中不仅包含所再生的演示数据，而且还包含演示者的动作，所以能够适当地掌握会议情况。

同样，最好是，存储信息 1410 包含用于对会议情况进行录音的录音用信息，上述存储用信息，按规定单位将录音数据作为上述会议数据的一部分存储在上述存储装置内。

按照这种方式，由于还可以将声音合在一起进行再生，所以能够进一步适当地掌握会议情况。

这里，作为上述的规定单位，例如可以采用章单位、节单位、页单位等。即，例如，如果会议参加者发出第 3 章第 2 节部分的再生指示，则可以立即对该部分进行重放。

另外，存储信息 1410，最好还包含用于对上述读出的信息进行再生的信息。

按照这种方式，通过显示、投影、声音再生等对读出的会议数据进行再生，从而使会议参加者可以立即确认会议数据。

另外，存储信息 1410，最好还包含用于将上述的读出信息向处理装置 1100 传输的信息。

按照这种方式，可以用例如显示装置、打印装置等处理装置 1100 执行对会议数据的再生、打印等。

另外，为了提高上述的相互连接性，可以按如下的方式构成存储信息 1400.

例如，将存储信息 1410 构成为包含用于安装虚拟机 500 并由虚拟机 500 解释接收到的传送数据的解释用信息及用于根据该解释结果生成上述会议数据的生成用信息.

按照这种方式，通过采用将传送数据的形式通用化并变换为可由装置本身解释该传送数据的虚拟机 500，很容易进行处理装置间 1100 及计算机 1200 间的数据交换. 由此，可以实现能灵活更换各种处理装置的会议系统.

另外，作为另一种结构，将存储信息 1410 构成为包含用于生成可由虚拟机 500 解释的传送数据的信息及用于传送所生成的的传送数据的信息.

按照这种方式，通过将传送数据的形式通用化并生成和传送可由其他处理装置 1100 中的虚拟机 500 解释的传送数据，使接收到该传送数据的处理装置无须考虑传送数据的传送装置的机型或制造厂商即可处理传送数据. 因此，能使各处理装置 1100 间的数据交换易于进行. 由此，可以实现能灵活更换各种处理装置 1100 的会议系统.

进一步，作为另一种结构，将存储信息 1410 构成为包含演示用信息、用于一边对包含着从具有多个输入装置的上述处理装置传送的上述输入数据的已进行过上述解释的状态的传送数据按上述每个输入装置进行管理一边将其存储在存储装置内的存储用信息、及用于根据再生指示从上述存储装置再生包含着上述输入数据及上述演示用信息的至少一部分的会议数据的再生用信息.

按照这种方式，会议参加者，可以根据指示立即过去的会议数据进行重放.

另外，最好是，上述存储用信息，包含用于一边对包含着上述输入数据的已进行过上述解释的状态的传送数据按每个处理装置 1100 进行管理一边将其存储在存储部 1240 内的信息，上述再生用信息，包含用于根据上述再生指示按上述每个处理装置从上述存储装置再生包含着上述传送数据及上述演示用信息的至少一部分的会议数据的再生用信息.

按照这种方式，会议参加者，通过发出按每个处理装置对过去的

会议数据进行再生的指示，可以按每个处理装置 1100 进行重放。

具体地说，例如，当多个会议参加者使用其各自的输入装置传送输入数据时，可以按每个输入装置、即每个会议参加者进行重放。

另外，最好是，存储信息 1410 包含用于对会议情况进行摄像的信息，上述存储用信息包含用于按规定单位将包含摄像结果的上述传送数据存储在存储部 1410 内的信息，上述再生用信息包含用于根据上述再生指示按上述每个规定单位再生存储在存储部 1410 内的包含上述摄像结果的传送数据。

按照这种方式，可以立即对会议情况的摄像结果进行再生。由于在摄像对象中不仅包含所再生的演示数据，而且还包含演示者指示的图象等附加信息，所以能够适当地掌握会议情况。

另外，这里，作为上述的规定单位，例如可以采用章单位、节单位、页单位等。即，例如，如果会议参加者发出第 3 章第 2 节部分的再生指示，则可以立即对该部分进行重放。

另外，上述传送数据，最好包含图象数据、图象生成用对象、图象生成控制用对象、图象显示用对象、图象显示控制用对象中的至少一种。

按照这种方式，可以实现能够有效地交换会议中使用的各种数据的会议系统。

另外，上述传输线路，最好在结构上包含 IEEE1394 总线。

按照这种方式，可以在各处理装置之间高速地交换传送数据等。特别是，虽然图象数据等传输数据量很大，但通过采用 IEEE1394 总线而仍能很容易地进行实时处理。

以上是用于提高相互连接性的存储信息 1410 的结构，以下，说明用于提高分散处理的数据处理效率的存储信息 1410 的结构。

例如，将存储信息 1410 构成为用于一边在通过传输线路即通信线路 1300 连接的多个处理装置 1100 之间发送和接收可由虚拟机 500 解释的通用形式的传送数据并进行分散处理一边生成会议数据的信息，并使该信息包含用于安装与其他处理装置 1100 共享存储部 1240 用的通信用接口部 30 的信息。

按照这种方式，可以提供可由各处理装置 1100 访问的存储部 1240。由于实现这种存储方式，所以在分散处理中是特别有效的。

这里，上述传输线路，最好是 IEEE1394 总线，上述通信用接口部，最好是 IEEE1394 总线接口。

按照这种方式，可以使各处理装置 1100 就好像访问自身装置的存储区域一样高速地访问该共享的存储部 1240.

另外，作为另一种结构，将存储信息 1410 构成为用于一边在通过传输线路即通信线路1300连接的多个处理装置1100之间发送和接收可由虚拟机 500 解释的通用形式的传送数据并进行分散处理一边生成会议数据的信息，该信息在结构上包含用于生成上述通用形式的传送数据的信息、及用于向具有可由各处理装置 1100 访问的存储部的至少 1 个处理装置 1100 发送所生成的上述传送数据的信息。

按照这种方式，通过生成通用形式的传送数据并存储在共享形态的存储装置内，使各处理装置可以访问该存储部并取得传送数据，因而在分散处理中是特别有效的。

例如，在将 JAVA 小应用程序用作传送数据时，可以使多个处理装置同时下载存储在存储装置内的 JAVA 小应用程序，并能够很容易地进行规格变更或功能扩展等。

这里，上述传输线路，最好是 IEEE1393 总线。

按照这种方式，可以使各处理装置就好像访问自身装置的存储区域一样高速地访问所共享的存储区域。

另外，作为另一种结构，最好将存储信息 1410 构成为用于一边在通过传输线路连接的多个处理装置 1100 之间发送和接收可由虚拟机 500 解释的通用形式的传送数据并进行分散处理一边再生会议数据的信息，并将其构成为包含用于对具有可由各处理装置 1100 访问并存储着上述会议数据的存储部的至少 1 个上述处理装置 1100 读取存储在上述存储部内的上述会议数据的读取用信息、及用于再生所读取的图象数据的再生用信息。

另外，其中，上述读取用信息，在结构上包含用于生成指示读取请求的传送数据并将其变换为上述通用形式的传送数据的信息、及用于向具有上述存储部的处理装置 1100 发送变换后的传送数据并从该处理装置 1100 接收包含着会议数据的传送数据的信息，上述再生用信息，在结构上包含用于安装虚拟机 500 的信息、及用于根据接收到的传送数据用虚拟机 500 变换传送数据并对会议数据进行再生的信

息。

按照这种方式，通过采用通用形式的传送数据，可以适应 OS 或制造厂商的不同并能接收和显示图象数据而无须考虑图象提供侧的装置类别。

另外，作为另一种结构，最好将存储信息 1410 构成为用于一边在通过传输线路连接的多个处理装置 1100 之间发送和接收可由虚拟机 500 解释的通用形式的传送数据并进行分散处理一边生成会议数据的信息，并使其包含用于对其他处理装置 1100 请求规定的服务的请求用信息、及用于向其他处理装置 1100 提供规定的服务的提供用信息。

其中，上述请求用信息，包含用于生成指示上述规定的服务请求的传送数据并将其变换为上述通用形式的传送数据的信息、及用于向其他处理装置发送变换后的传送数据的信息，上述提供用信息，包含用于安装虚拟机 500 的信息、用于从其他处理装置接收指示服务请求的传送数据并用虚拟机 500 加以变换的信息、用于根据变换后的传送数据判断是否可以提供该项服务的信息、及当可以提供该项服务时用于提供该项服务的信息。

按照这种方式，可以使各处理装置一边相互交换信息一边以分担的方式进行图象处理。例如，如果由投影机请求打印服务，则可提供打印服务的打印机响应该请求而进行打印。

这种分散处理，也可以通过采用虚拟机 500 并使传送数据为通用形式从而简化各处理装置 1100 之间的数据交换来实现。

另外，上述传送数据，最好是包含会议数据、会议数据生成用对象、会议数据生成控制用对象、会议数据再生用对象、会议数据再生控制用对象中的至少一种。

按照这种方式，由于这些数据或对象已统一为通用形式，所以可以提高分散处理中的各种图象处理的通用性。

另外，上述传输线路，在结构上最好是包含 IEEE1304 总线。

按照这种方式，可以使各处理装置 1100 就好像访问自身装置的存储区域一样高速地访问所共享的上述存储装置。此外，还可以使各处理装置以高速进行上述的信息交换，因而能提高处理速度。

（变形例）

本发明的应用并不限于上述的实施例，可以应用于各种变形例。

例如，作为上述传输线路，说明了采用了 IEEE1394 总线 300 的实施例，但只要是高速传输线路则可以采用各种形式。具体地说，例如，可以采用光线信道或卫星通信线路等。

另外，在上述实施例中，说明了采用 2 个会议数据再生装置（液晶投影机 200）的分散处理，但采用 2 个会议数据生成装置、或 1 个会议数据生成装置和 1 个会议数据再生装置进行分散处理，也包括在本发明的应用范围内。

另外，作为演示中使用的数据，主要是所采集的声音、作为声音识别结果而得到的字符代码、在图形输入板等数字化装置上通过手写字符识别而得到的字符代码等二次信息的附加。对于这些识别处理，如采用在信息处理系统的运算功能上优越的 DSF（Digital Signal Processor;数字信号处理器），则可以实现高速的处理。从上述实施例可以清楚地看出，本发明的分散处理，基于虚拟机接口之间的通信及独立的处理分散。

如果是在现有的方式下，则为了使用 DSP，必须使应用软件（应用层程序）生成 DSP 所固有的特殊机器语言并由 DSP 系统传送和执行。但是，如采用本发明，则可以在通过 IEEE1394 总线连接的 DSP 系统上安装虚拟机解释程序，并应用于处理分散。其结果是，可以使用 DSP 的优异计算能力资源，而无须重写作为应用层程序的原始演示文件。

进一步，如上所述，用于实现本发明的程序语言，不限于 JAVA。存在着多种可以生成虚拟机的机器语言并能以上述机器语言级支持对处理器资源进行多路复用处理的语言。在这种语言中，可以进行与本发明中的上述绘图命令的记述相同的记述。本发明，可以使用不依赖于可达到用来生成绘图命令字的程度的高级语言级的句法词法分析规格的各种语言实现。

产业上的可应用性

本发明，可以应用于演示者用个人计算机和投影机对听众进行演示时适用的会议系统。

说 明 书 附 图

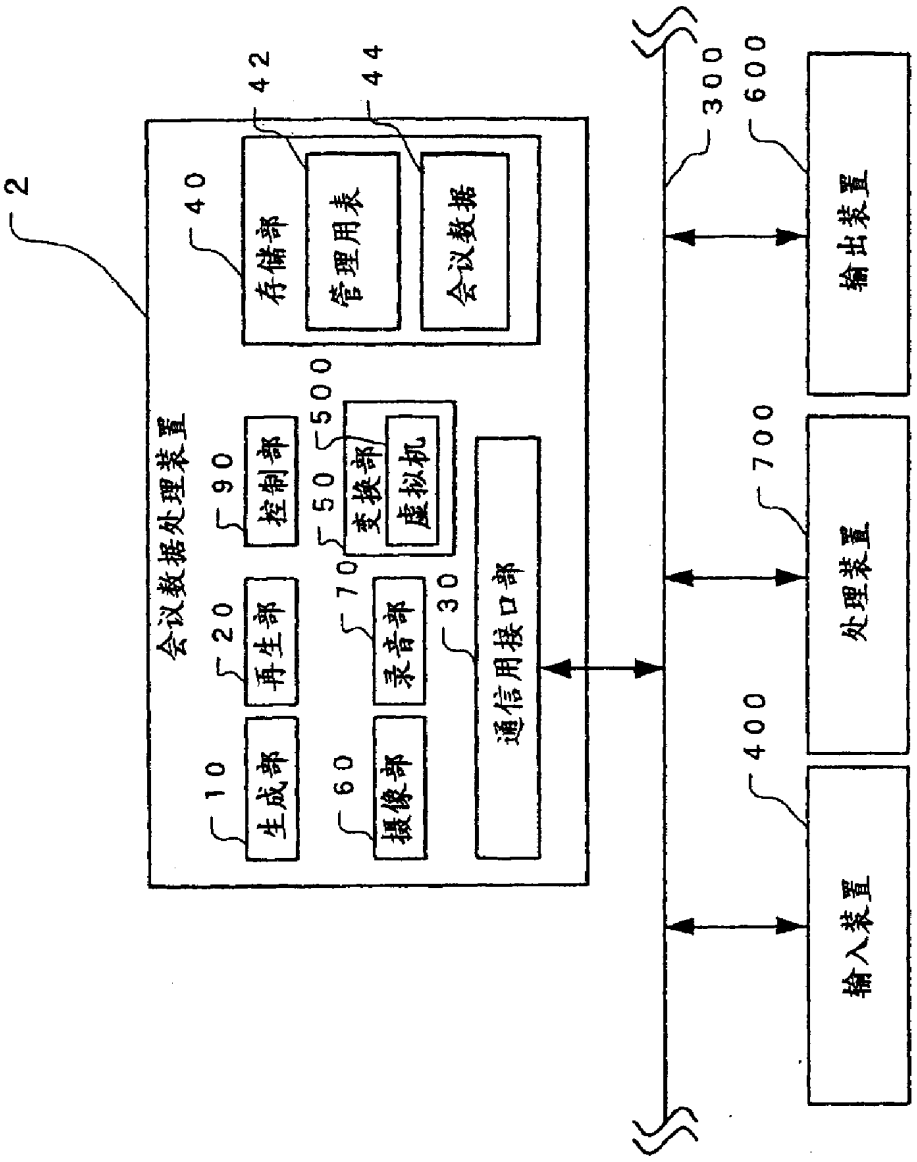
2
会议数据处理装置
40
存储部
42
管理用表
44
会议数据
10
生成部
20
再生部
60
摄像部
70
录音部
90
控制部
50
变换部
500
虚拟机
30
通信用接口部
300
600
输出装置
700
处理装置
400
输入装置

图 1

01-03-06

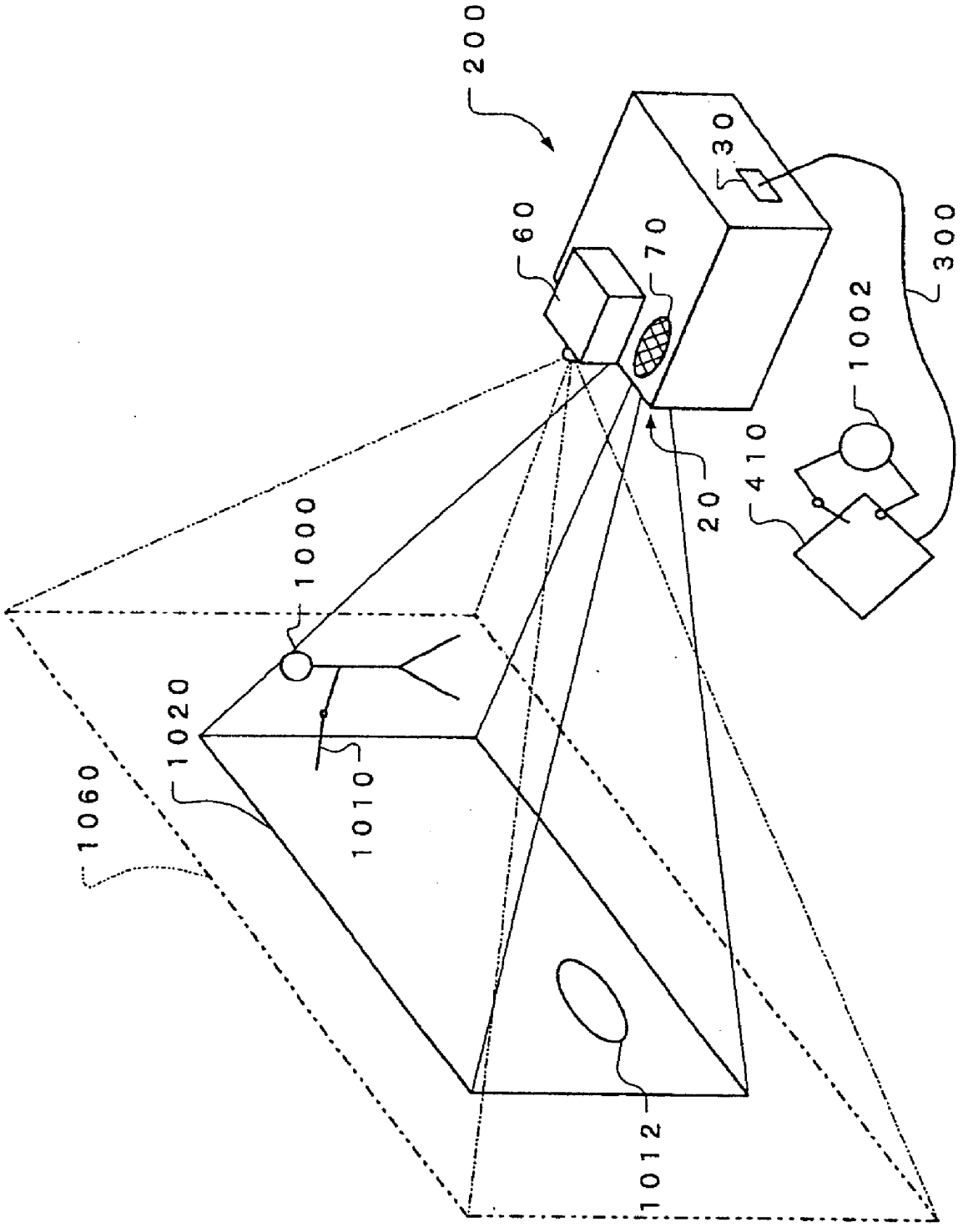

図2

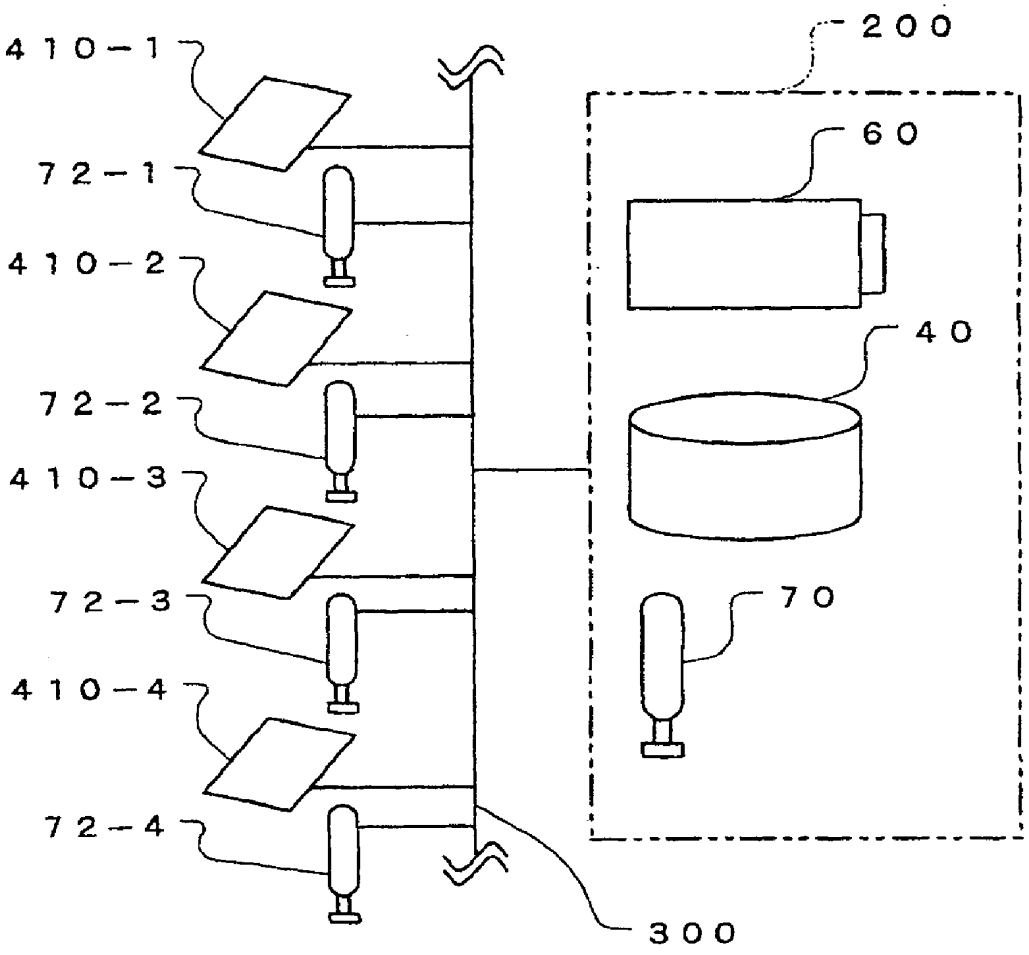

图 3

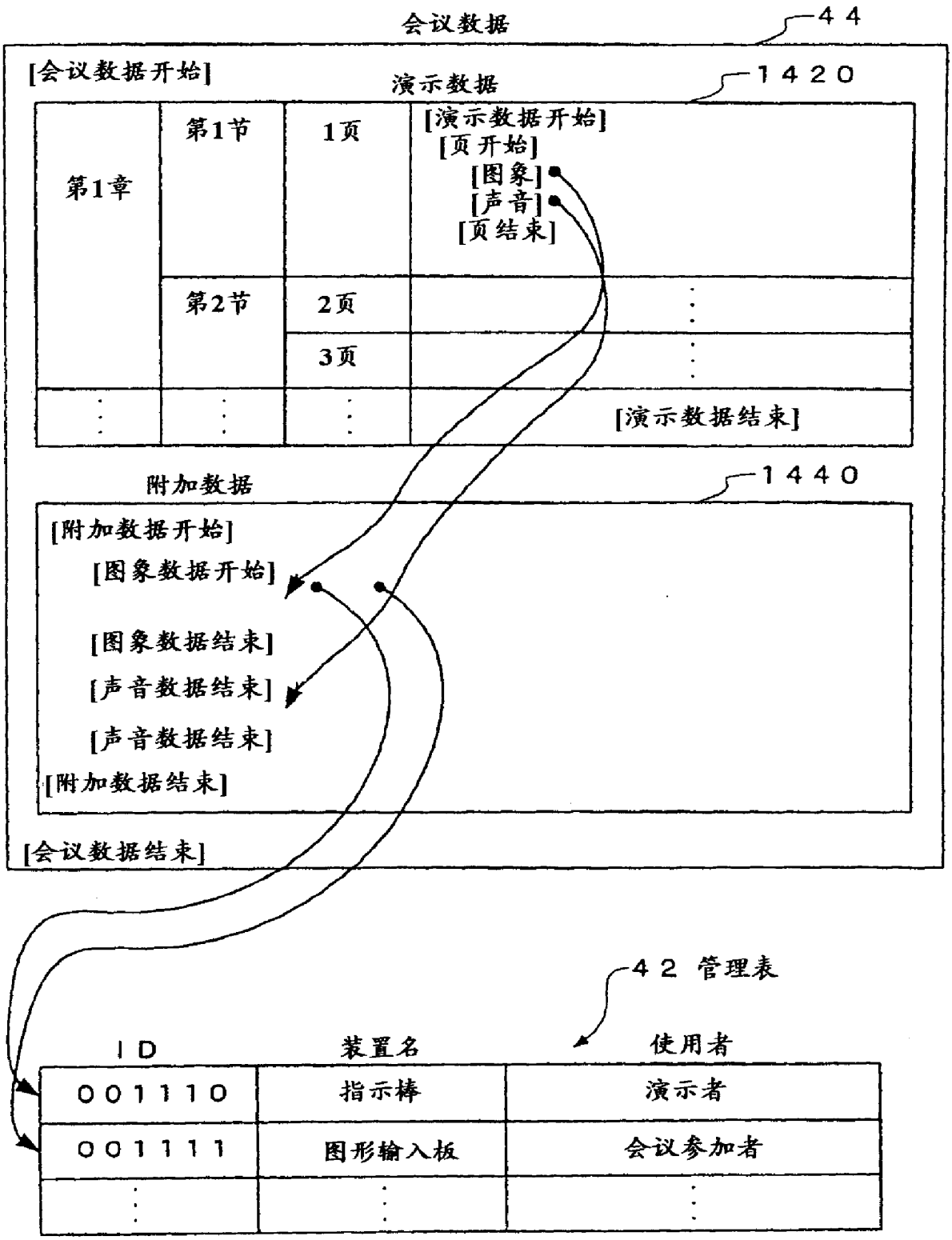
会议数据
44
[会议数据开始]
演示数据
1420
第1章
第1节
1页
[演示数据开始]
[页开始]
[图象]
[声音]
[页结束]
第2节
2页
3页
[演示数据结束]
附加数据
1440
[附加数据开始]
[图象数据开始]
[图象数据结束]
[声音数据结束]
[声音数据结束]
[附加数据结束]
[会议数据结束]
42 管理表
ID
装置名
使用者
001110
指示棒
演示者
001111
图形输入板
会议参加者

图 4

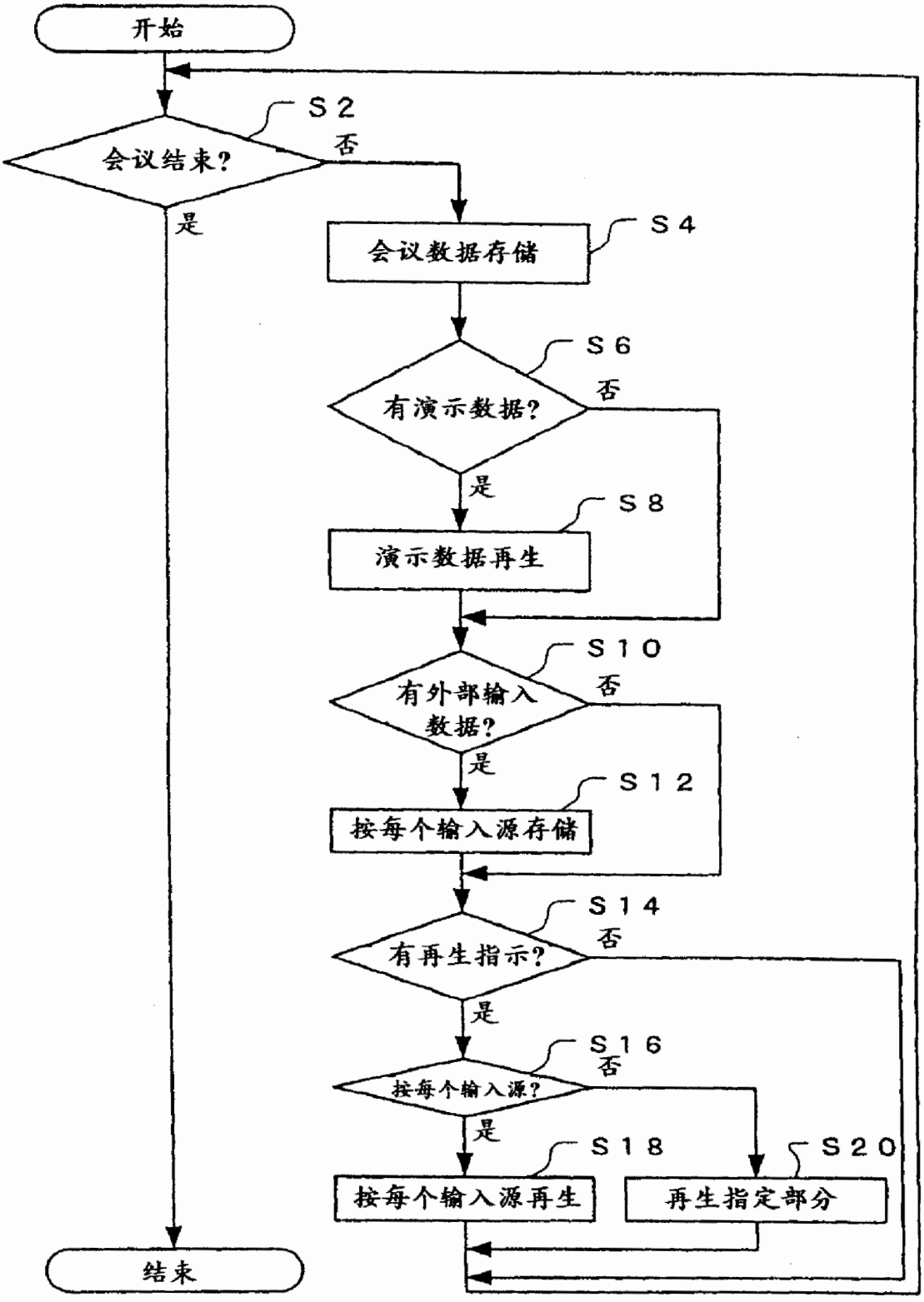
开始
S2
会议结束?
否
是
S4
会议数据存储
S6
有演示数据?
否
是
S8
演示数据再生
S10
有外部输入数据?
否
是
S12
按每个输入源存储
S14
有再生指示?
否
是
S16
按每个输入源?
否
是
S18
按每个输入源再生
S20
再生指定部分
结束

图 5

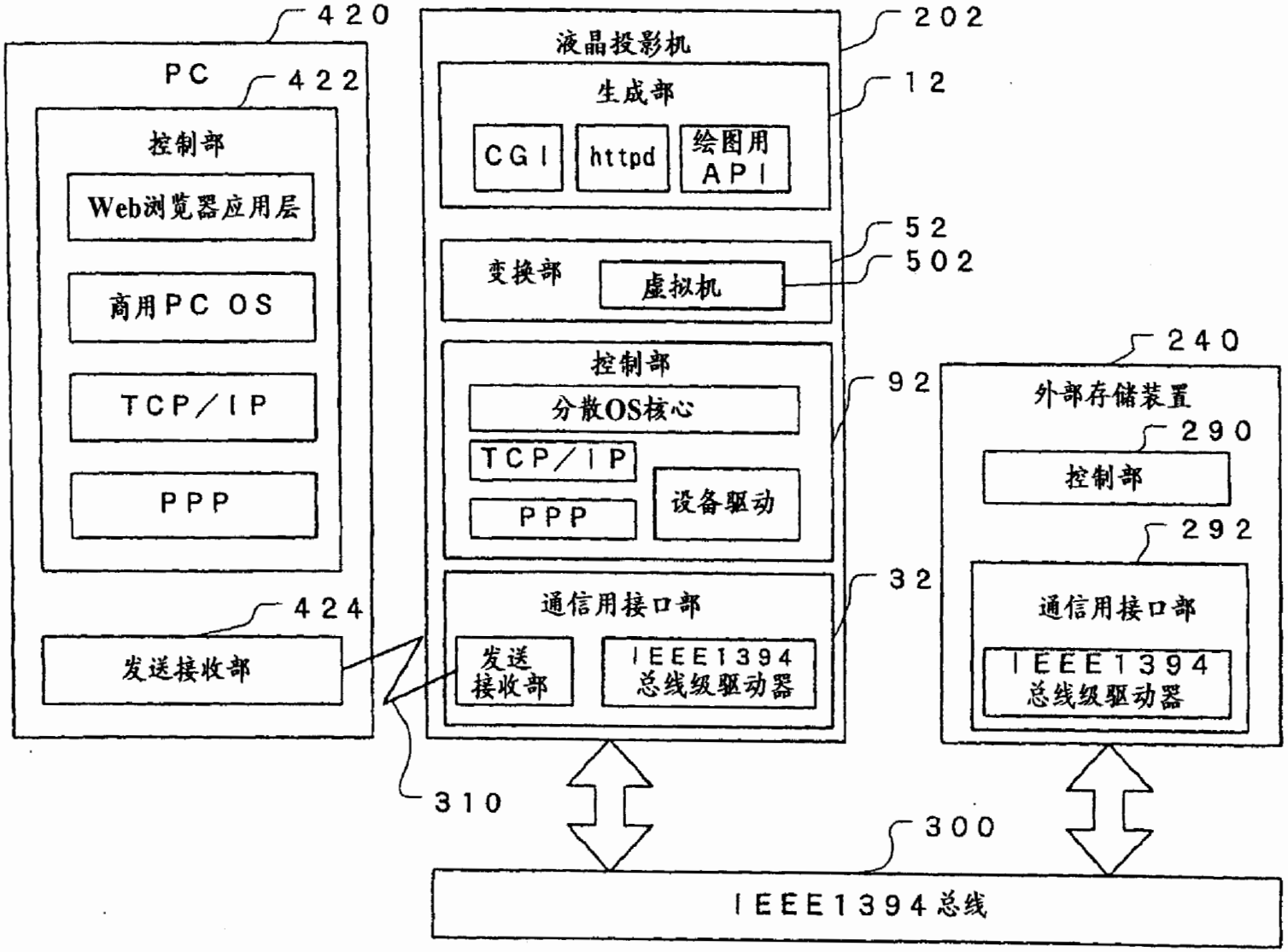
420
PC
422
控制部
Web浏览器应用层
商用PC OS
TCP/IP
PPP
424
发送接收部
液晶投影机
202
生成部
12
CGI
httpd
绘图用API
52
变换部
502
虚拟机
控制部
92
分散OS核心
TCP/IP
PPP
设备驱动
通信用接口部
32
发送接收部
IEEE1394总线级驱动器
240
外部存储装置
290
控制部
292
通信用接口部
IEEE1394总线级驱动器
310
300
IEEE1394总线

图 6

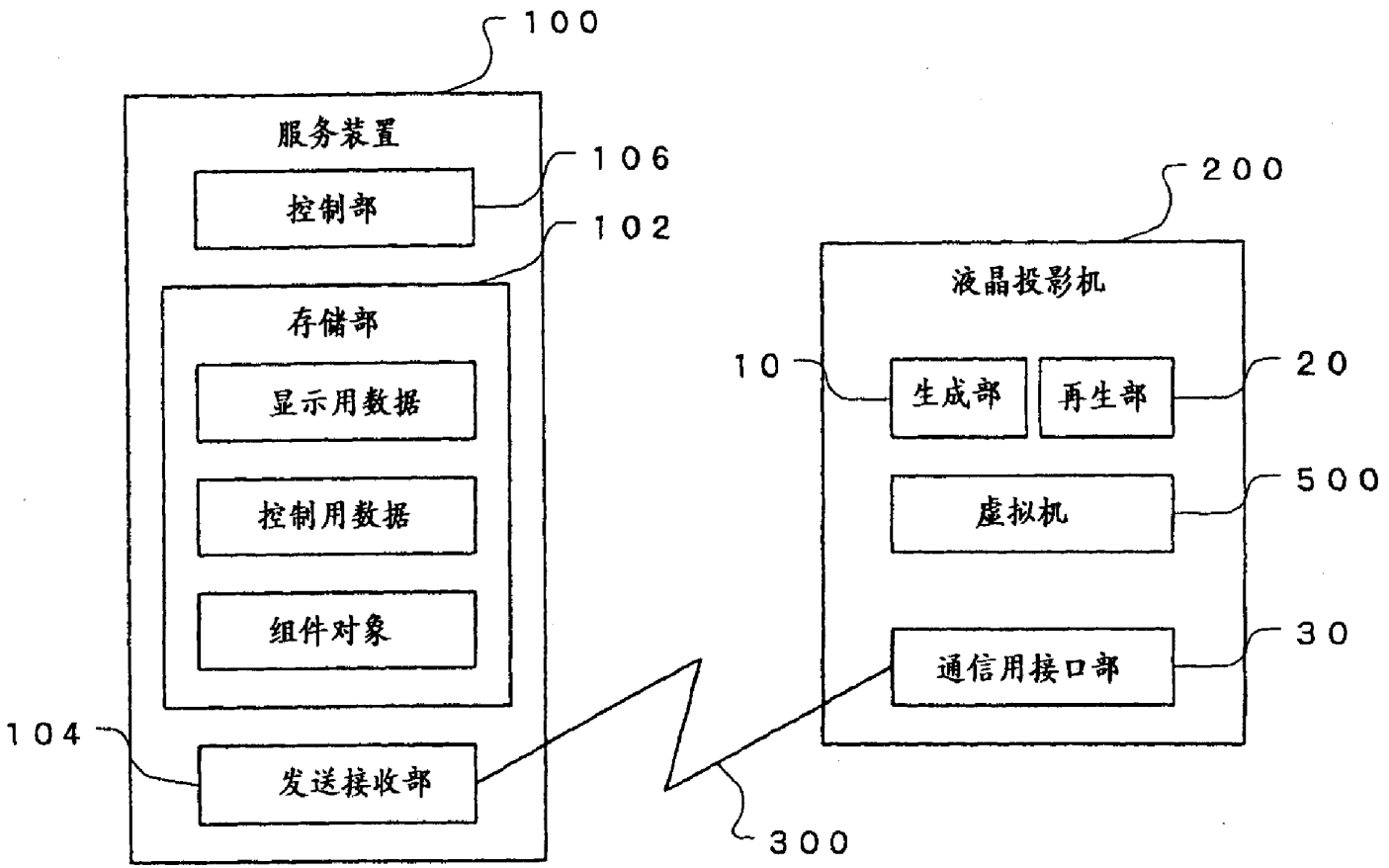
100
服务装置
106
控制部
102
存储部
显示用数据
控制用数据
组件对象
104
发送接收部
300
200
液晶投影机
10
生成部
再生部
20
500
虚拟机
通信用接口部
30

图 7

01-03-05

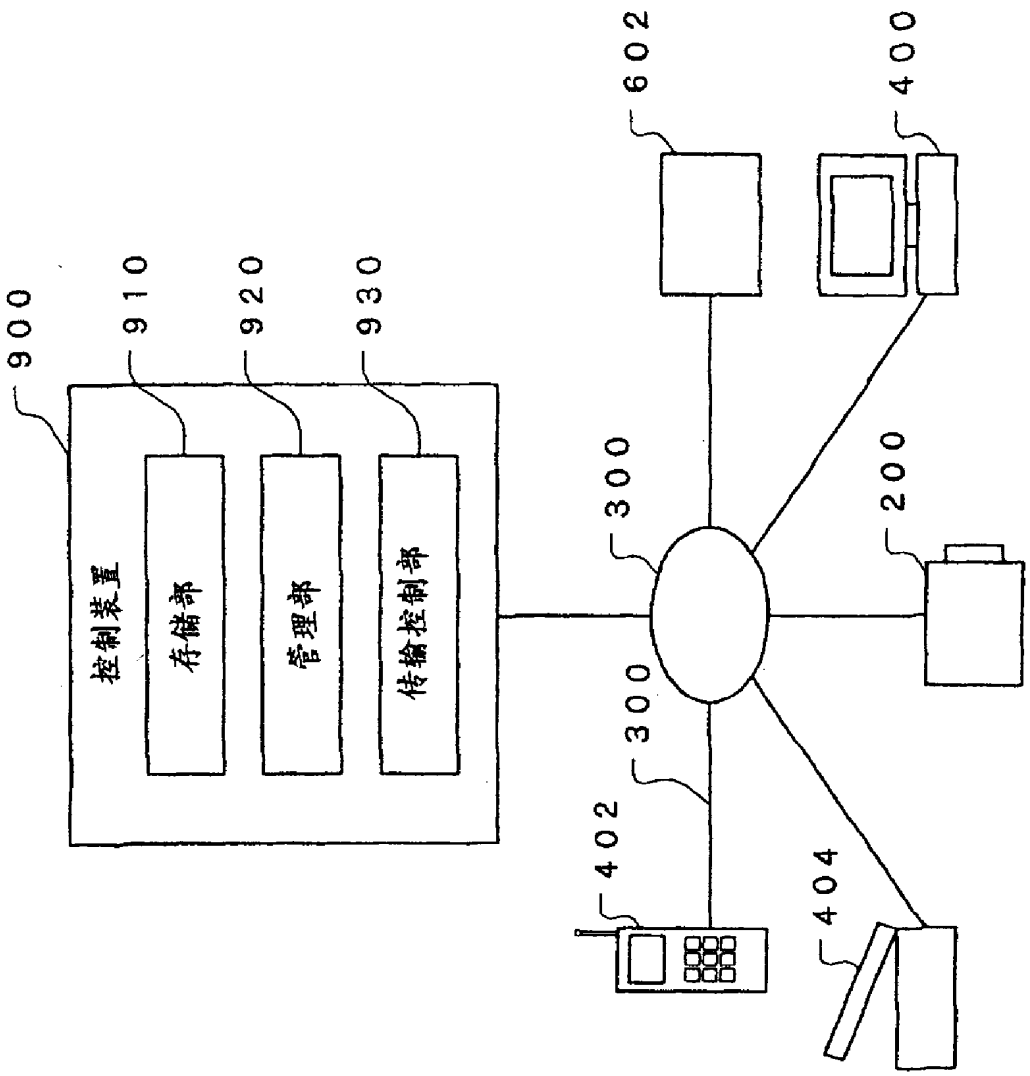

图 8

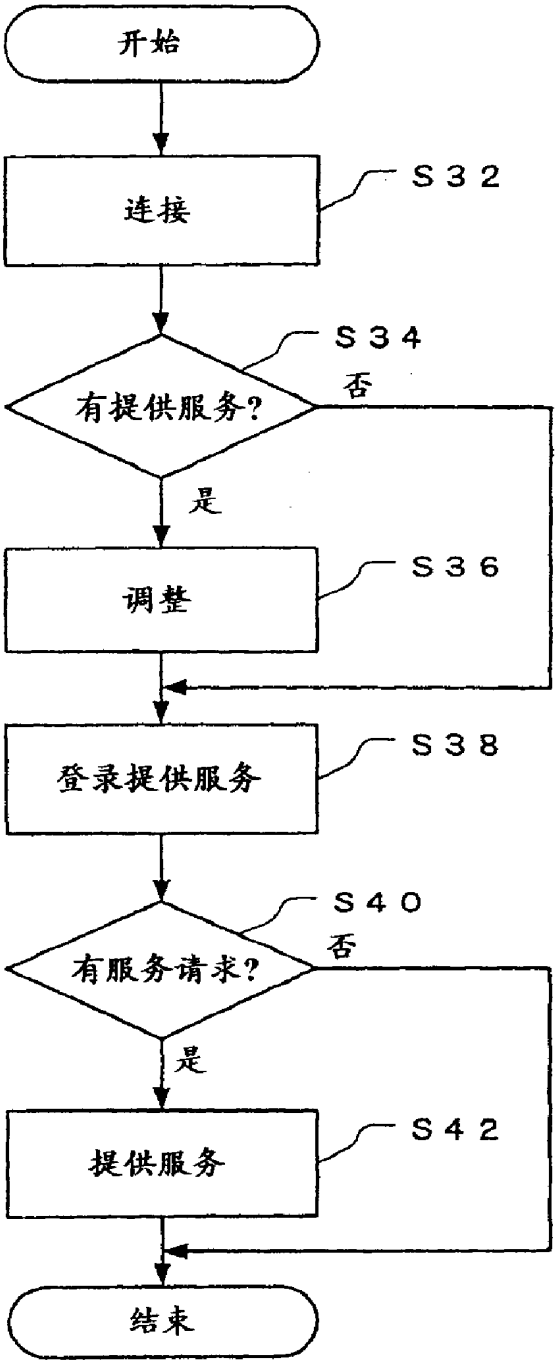
开始
连接
S32
S34
有提供服务?
否
是
调整
S36
登录提供服务
S38
S40
有服务请求?
否
是
提供服务
S42
结束

图 9

912

ID	提供服务	状态
…005	命令	可执行
…004	二维数据及三维数据的读取	执行中
…001	投影	执行中
…002	命令、运算、显示	不可执行
…003	打印	等待执行
⋮	⋮	⋮

图 10

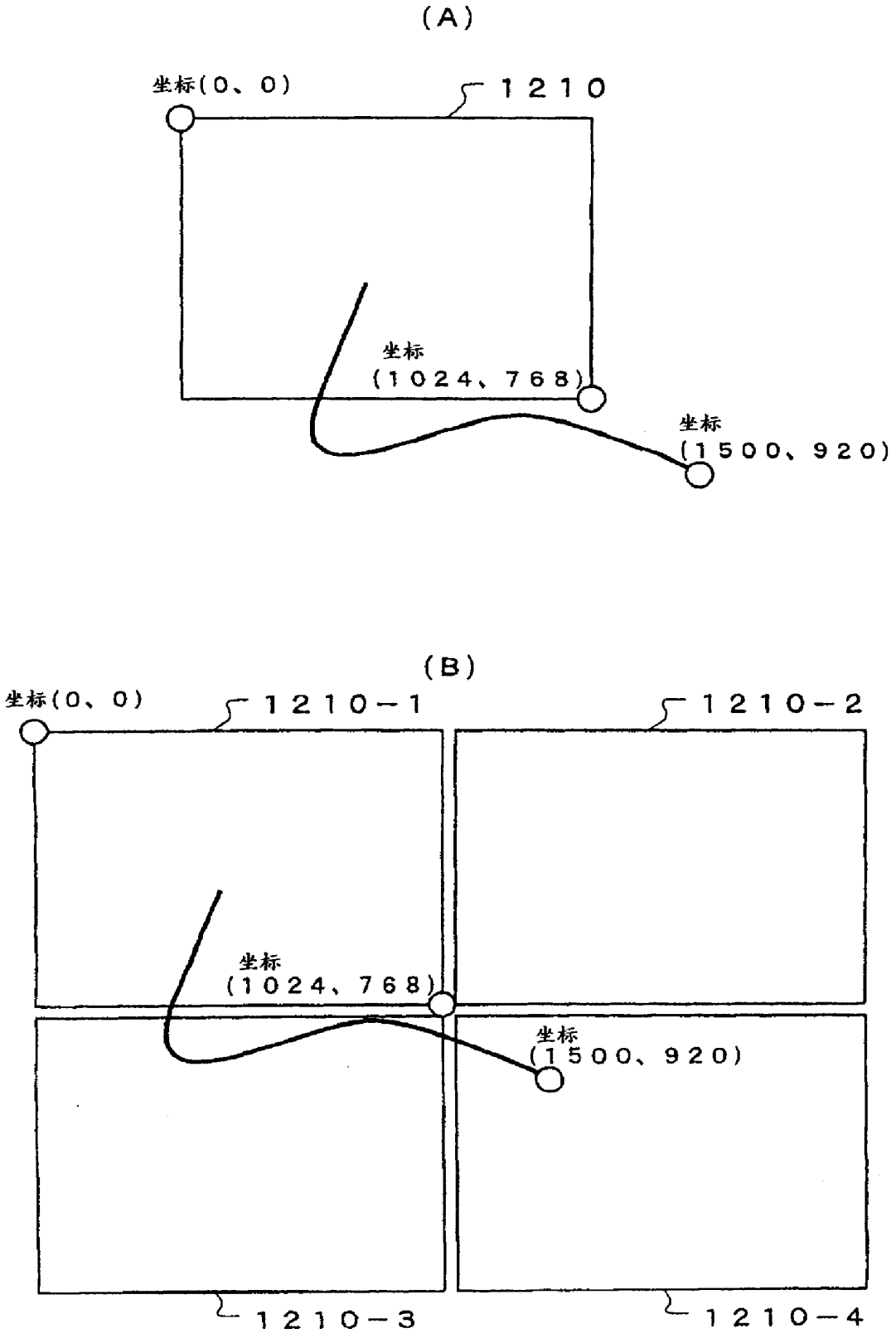
(A)
坐标(0、0)
1210
坐标
(1024、768)
坐标
(1500、920)
(B)
坐标(0、0)
1210-1
1210-2
坐标
(1024、768)
坐标
(1500、920)
1210-3
1210-4

图 11

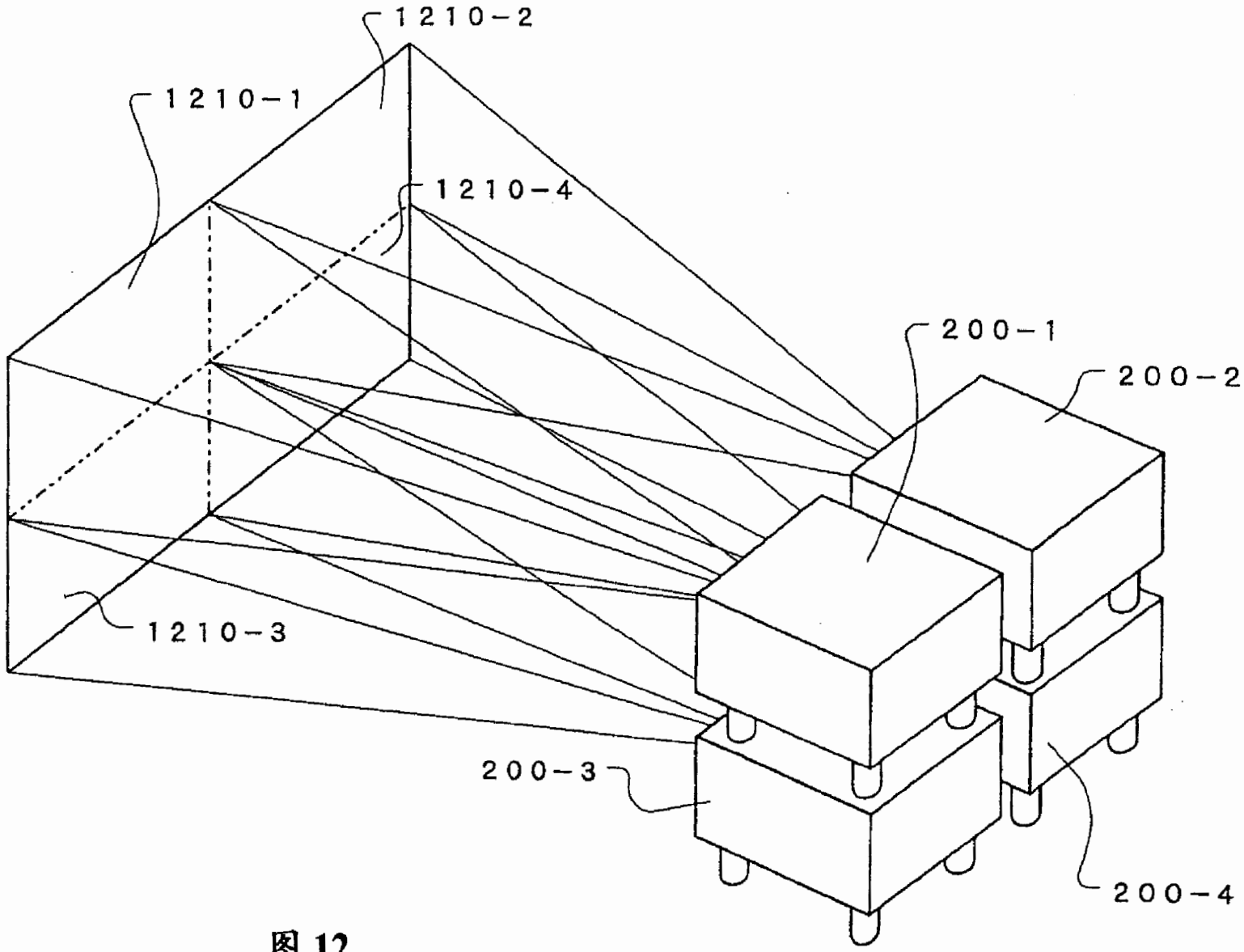

图 12

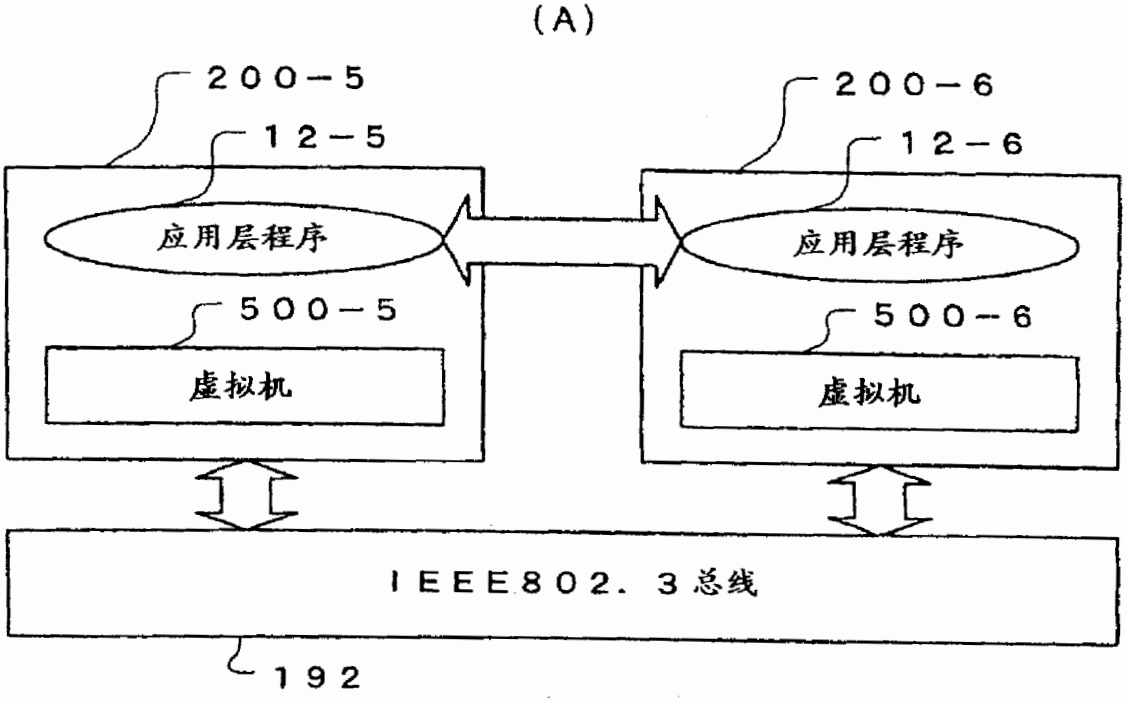
(A)
200－5
12－5
应用层程序
500－5
虚拟机
200－6
12－6
应用层程序
500－6
虚拟机
IEEE802．3总线
192
(B)
200－1
12－1
应用层程序
500－1
虚拟机
200－2
12－2
应用层程序
500－2
虚拟机
IEEE1394总线
300

图 13

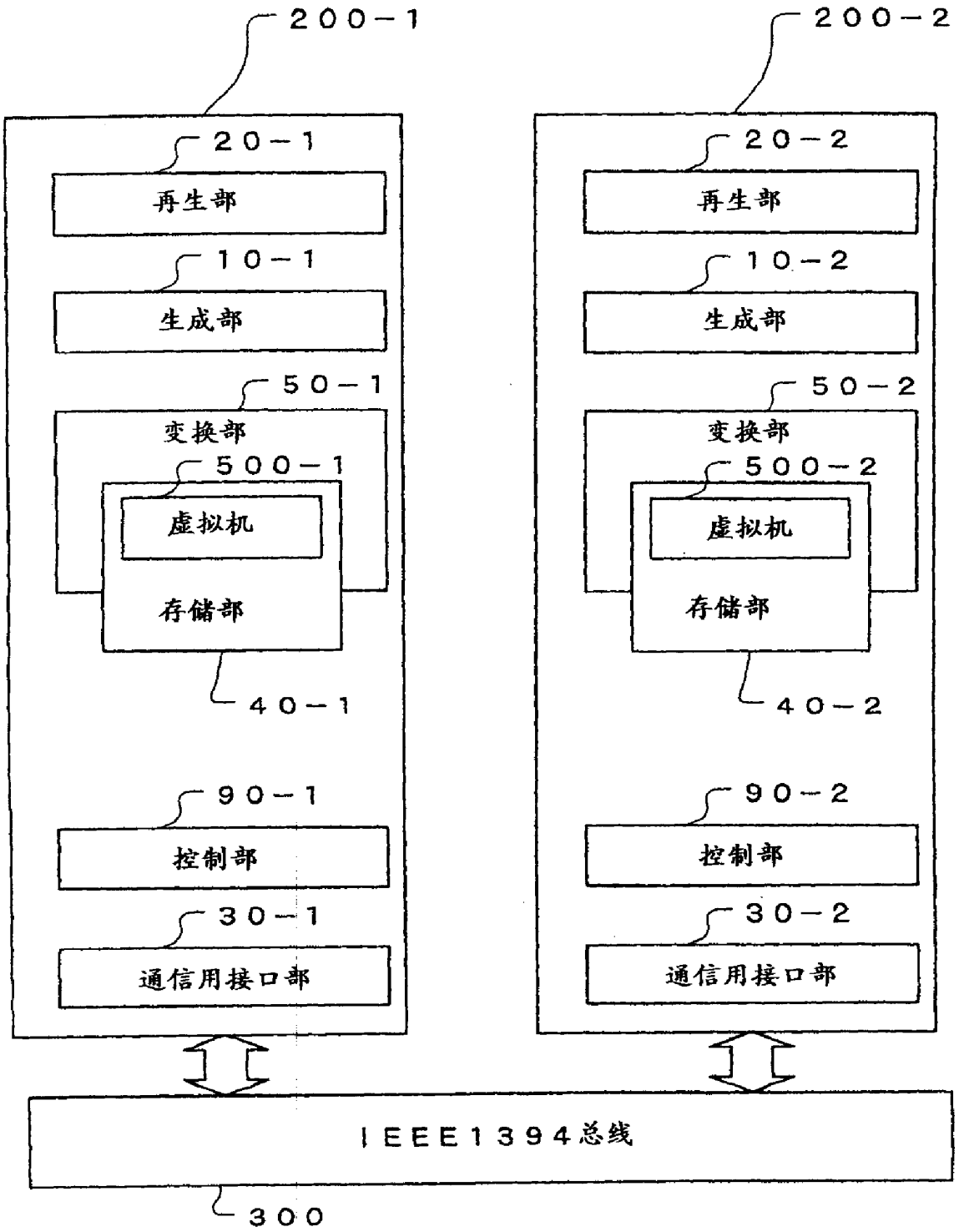
200－1
200－2
20－1
再生部
10－1
生成部
50－1
变换部
500－1
虚拟机
存储部
40－1
90－1
控制部
30－1
通信用接口部
20－2
再生部
10－2
生成部
50－2
变换部
500－2
虚拟机
存储部
40－2
90－2
控制部
30－2
通信用接口部
IEEE1394总线
300

图 14

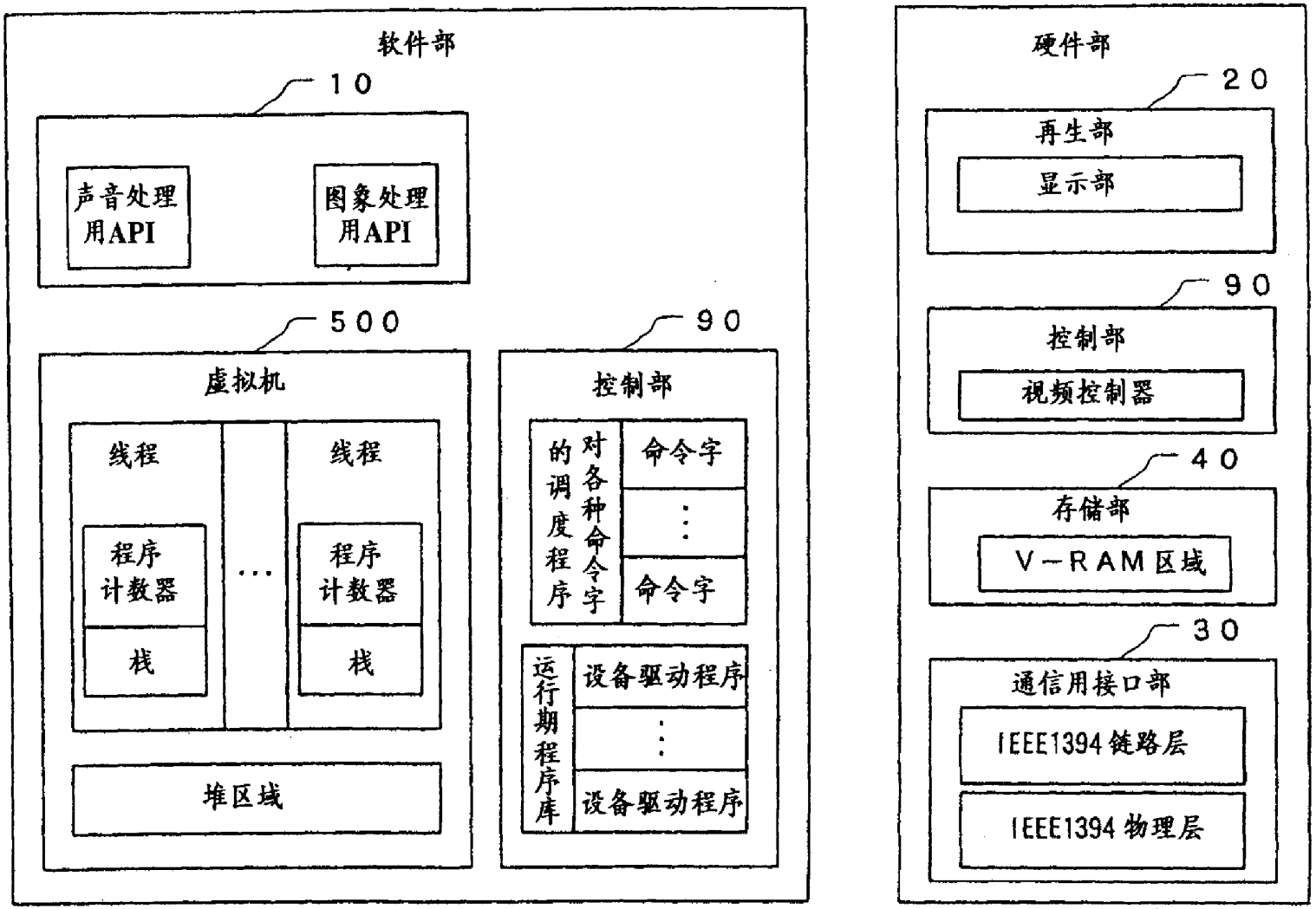
软件部
10
声音处理用API
图象处理用API
500
虚拟机
线程
程序计数器
栈
线程
程序计数器
栈
堆区域
90
控制部
对各种命令字的调度程序
命令字
命令字
运行期程序库
设备驱动程序
设备驱动程序
硬件部
20
再生部
显示部
90
控制部
视频控制器
40
存储部
V-RAM区域
30
通信用接口部
IEEE1394链路层
IEEE1394物理层

图 15

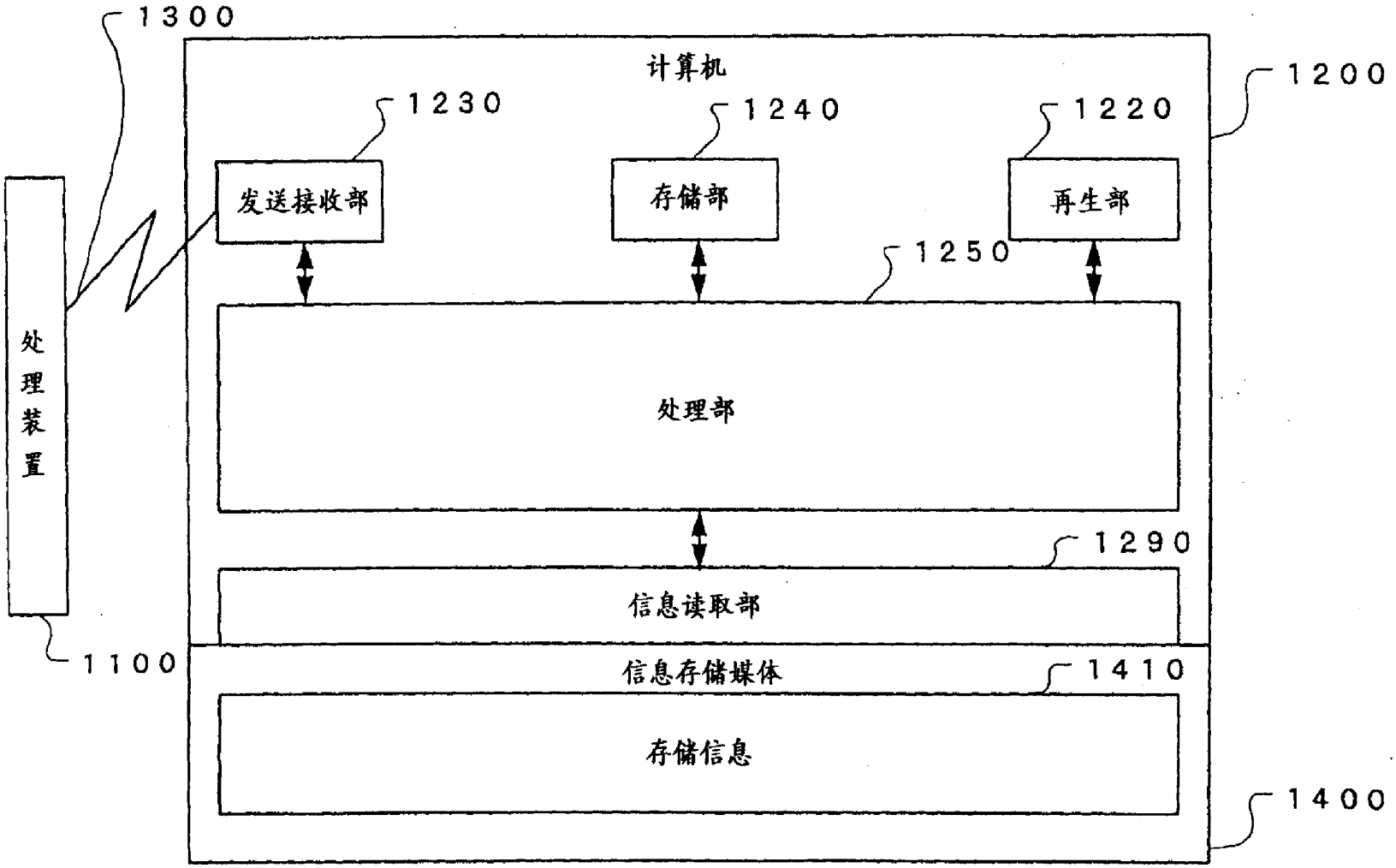
1300
计算机
1200
1230
1240
1220
发送接收部
存储部
再生部
1250
处理装置
处理部
1290
信息读取部
1100
信息存储媒体
1410
存储信息
1400

图 16

CN1317112A Meeting system and information storage medium

Data originating from sources other than the EPO may not be accurate, complete, or up to date.

The wording below is an initial machine translation of the original publication. To generate a version using the latest translation technology, go to the original language text and use Patent Translate.

Technical field

The present invention relates to a conference system and a conference information storage medium. Background technique

In the existing conference system, when the presentation is performed, the presenter uses a personal computer and a projector to demonstrate the audience at a certain venue.

However, in fact, in some cases, it is not only this one-way presentation, but the presenter who allows multiple people to write to the presentation screen or replay when the screen is written. Two-way communication with the demo recipient.

As a method of such playback, although a method of photographing and reproducing using a video recording device is also conceivable, in order to reproduce a scene in a conference or a portion such as a chapter in a presentation, it is necessary to perform reverse playback or Quick release, so lack of speed.

Further, if only the presentation data, that is, the data generated by the application software is used in advance, the reproduction of a part of the above is relatively easy, but it is practically impossible to reproduce the scene at the time of the presentation, for example, the operation of the pointing stick. Disclosure of invention

The present invention has been made in view of the above problems, and an object thereof is to provide a conference system and an information storage medium capable of immediately reproducing a past conference situation in accordance with an instruction.

In order to solve the above problems, a conference system of the present invention includes conference data generating apparatus that receives transmission data from a plurality of data transmission apparatuses via a transmission line and generates conference data reflecting the transmission data, and the conference system is characterized in that the conference data is generated. The apparatus includes, for storing the received transmission data for each of the data transfer devices, and storing the received transfer data in the storage device storing the predetermined presentation data and storing the storage from the storage device according to the regeneration instruction of each of the data transfer devices The device reads out data control means including conference data of at least a part of the transmission data and the presentation data.

In this way, the conference participant or the like can immediately replay the past conference data according to the instruction.

Further, by storing while managing each data transfer device, it is possible to determine from which data transfer device what transfer data is received.

Further, it is also possible to reproduce the conference data reflecting the transmission data of each data transmission device. Specifically, for example, when a plurality of conference participants transmit input data by their respective input devices, playback can be performed for each input device, that is, for each conference participant.

Here, as the reproduction instruction, specifically, for example, a reproduction instruction issued by a conference participant or a presenter by a predetermined reproduction instruction device may be used.

Further, it is preferable that the data control device stores the received transmission data while managing the predetermined transmission unit, and reads the conference data for each predetermined unit based on the reproduction instruction.

Here, as the predetermined unit, for example, a chapter unit, a unit of a chapter, a page unit, or the like can be used. That is, for example, if the conference participant issues a reproduction instruction in the second section of Chapter 3, the portion can be immediately reproduced.

Further, preferably, the conference data generating device includes an imaging device for imaging a conference situation, and the data control device stores the imaging data as the part of the conference data in the predetermined unit for each of the storage devices. The data control device reads the conference data stored in the storage device for each of the predetermined units in accordance with the reproduction instruction.

Here, as the meeting situation, for example, an image displayed by the narrator (presenter) or the conference participant with a pointing stick, a laser pointer or a finger on the front of the screen or on the tablet, an image reflecting the instructions, and the like may be used.

In other words, since the image to be captured includes not only the reproduced presentation data but also an image reflecting the instruction of the conference participant, the indication position and the instruction content can be immediately reproduced based on the imaging result, and the conference can be appropriately grasped. The meeting between the narrator and the conference participants to discuss each other.

Similarly, it is preferable to include a recording device for recording a conference situation, and the data control device stores the recorded data in the storage device as a part of the conference data for each predetermined unit.

Here, as the meeting situation, for example, it may be a speech or a conversation of a narrator or a conference participant. In this way, since the sounds can be combined and reproduced, it is possible to further appropriately grasp the situation of the meeting.

Preferably, the conference data generating device includes a playback device for reproducing the read conference data.

In this manner, the read conference data can be reproduced by display, projection, sound reproduction, etc., thereby enabling the conference participant to immediately confirm the conference data.

Preferably, the conference data generating device includes a transmission device for transmitting the read conference data to another processing device.

In this manner, reproduction, printing, and the like of the conference data can be performed by other processing means such as a display device, a printing device, or the like.

Preferably, the data transfer device includes a plurality of input devices, and the data control device preferably stores the transfer data transmitted from the input device for each of the input devices while storing the transfer data in the storage device. The conference data is read from the storage device in accordance with the above-described playback instruction.

In this way, playback can be performed for each input device, i.e., for each conference participant. Specifically, for example, it is possible to reproduce the conference data reflecting the data input by the conference participant using a mouse or a pen tablet, and to immediately confirm who performed what kind of operation.

Here, it is preferable that the conference data generating device includes a projector.

In this way, by using the projector, it is possible to realize a conference system that can be adapted even for a large conference.

Further, the information storage medium of the present invention stores information for receiving transmission data from a plurality of data transmission apparatuses via a transmission line and generating conference data reflecting the transmission data, and is readable by a computer, and the above information preferably includes a presentation. Information for storing storage information stored in the storage device while managing the transmission data by each of the data transfer devices, and for reading the transfer data and the presentation for the presentation from the storage device according to the playback instruction Information for reading the conference data of at least a part of the information.

According to the present invention, the conference participant can immediately replay the past conference data in accordance with the instruction.

Further, it is preferable that the read information includes information for reading the conference data stored in the storage device for each of the data transfer devices in accordance with the playback instruction.

In this way, it is possible to discriminate from which data transmitting device what kind of transmission data is received.

In addition, it is also possible to reproduce the conference data reflecting the transmission data of each data transmission device. Specifically, for example, when a plurality of conference participants transmit input data using their respective input devices, playback can be performed for each input device, that is, for each conference participant.

Further, preferably, the information includes information for capturing a situation of the conference, and the storage information includes information for storing the image data as a part of the conference data in the storage device in a predetermined unit, wherein The read information includes information for reading the conference data stored in the storage device for each of the predetermined units in accordance with the reproduction instruction.

Here, as the meeting situation, for example, an image displayed by the narrator (presenter) or the conference participant with a pointing stick, a laser pointer or a finger on the front of the screen or on the tablet, an image reflecting the instructions, and the like may be used.

In other words, since the image to be captured includes not only the reproduced presentation data but also an image reflecting the instruction of the conference participant, the indication position and the instruction content can be immediately reproduced based on the imaging result, and the conference can be appropriately grasped. The meeting between the narrator and the conference participants to discuss each other.

Similarly, it is preferable to include recording information for recording a conference situation, and the storage information preferably includes storing the recorded data in the storage unit for each predetermined unit as part of the conference data. Information.

Here, as the meeting situation, for example, it may be a speech or a conversation of a narrator or a conference participant. In this way, since the sounds can be combined and reproduced, it is possible to further appropriately grasp the situation of the meeting.

Here, as the predetermined unit, for example, a chapter unit, a unit unit, a page unit, or the like can be used. That is, for example, if the conference participant issues a reproduction instruction in the second section of Chapter 3, the portion can be immediately reproduced.

Preferably, the above information includes information for reproducing the read information.

In this manner, the read conference data can be reproduced by display, projection, sound reproduction, etc., thereby enabling the conference participant to immediately confirm the conference data.

Preferably, the above information includes information for transmitting the read information to other processing devices.

In this manner, reproduction, printing, and the like of the conference data can be performed by other processing means such as a display device, a printing device, or the like. Brief description of the drawing

Fig. 1 is a schematic diagram of a conference system according to an example of the embodiment.

Fig. 2 is an explanatory diagram of a conference situation in an example of the embodiment.

Fig. 3 is a block diagram showing a configuration of a conference system according to an embodiment of the present invention.

4 is a schematic diagram showing an example of a data structure of a conference data and a management table according to the embodiment.

Fig. 5 is a flow chart showing the flow of processing in the conference system according to an example of the embodiment.

Fig. 6 is a functional block diagram of a conference system according to another example of the embodiment.

Fig. 7 is a functional block diagram of a conference system according to another example of the embodiment.

Figure 8 is a simplified diagram of a conference system employing a control device.

Fig. 9 is a flow chart showing the flow of processing in the conference system using the control device.

FIG. 10 is a diagram showing an example of a management table.

Fig. 11 is a view showing image display when image display is performed in a distributed manner, wherein (A) is a view showing an image display example when only one liquid crystal projector is used, and (B) is a view showing four liquid crystal projections. The image of the machine is shown in the figure.

Fig. 12 is a view showing a state in which image display is performed in a distributed manner using four liquid crystal projectors.

FIG. 13 is a schematic diagram showing a communication method when a virtual machine is used. (A) is a view showing a conventional communication method, and (B) is a view showing a communication method according to the present embodiment.

Fig. 14 is a functional block diagram at the time of performing the dispersion processing of the embodiment.

Fig. 15 is a functional block diagram of a software unit and a hardware unit in the projector.

Fig. 16 is a functional block diagram of an information storage medium according to an example of the embodiment. Best form for implementing the invention

[Embodiment of the Invention]

Hereinafter, a preferred embodiment of the conference system of the present embodiment will be described with reference to the drawings.

As the conference system of the present embodiment, for example, a conference system in which a plurality of display devices and input devices are connected by a communication line or a system bus having bidirectional connectivity is provided. More specifically, for example, there is a conference system in which a conference participant instructs the projection or display screen of the display device while another conference participant uses the input device to attach information to the image displayed on the screen. A conference system that can be used in a remote area even if it is used as a single system and that synchronizes the conference systems through communication paths, so that participants who are far apart can participate in the same conference to support the conference. System, etc.

(Note on the structure of the conference system)

Fig. 1 is a schematic diagram of a conference system according to an example of the embodiment.

As shown in FIG. 1, the conference system includes, in structure, an input device 400, an output device 600, and conference data having both functions as a conference data generating device for generating conference data and a function as a conference data reproducing device for reproducing conference data. The processing device 2 and the processing device 700 are connected to each other by an IEEE 1934 bus 300 which is a high speed transmission line.

The conference data processing device 2 performs transmission and reception of transmission data with the processing device 700 in addition to receiving transmission data from the input device 400, generating

conference data based on the transmission data, and transmitting the generated conference data to the output device 600.

Specifically, the input device 400 may be, for example, a tablet, a mouse, a keyboard, a scanner, a digital camera, a portable information terminal, a portable telephone, a pointing stick, or the like. The information (transmission data) transmitted from the input device 400 to the conference data processing device 2 may be, for example, coordinate information digitized by the tablet, and information obtained by digitizing the movement track of the pointer on the tablet. The information after the coordinate of the mouse device is coordinated, the text information input through the keyboard, the collected pixel information, the digitized sound information, and the like. Further, as the output device 600, for example, a display, a portable information terminal, a printer, or the like can be used.

Further, the conference data processing device 2 may be, for example, a liquid crystal projector or the like, and the processing device 700 may be, for example, a PC (Personal Computer), a WS (Workstation), an NC (Network Computer), a service device, a host device, or the like.

That is, these devices constitute a conference system in which a plurality of conference participants use at one site and generate and reproduce conference data by associating these devices with each other.

Further, the processing device 700 of a computer such as a PC is not a configuration necessary for the conference system, and as a component of the processing device 700, there are a processor, a ROM, a RAM, a secondary storage device, etc., but these elements can also be regarded as A part of the components of the conference data generating device. The processing device 700 is housed in another housing in consideration of the overall portability and reusability of the device, and thus the processing device 700 is described in a separate form.

The conference system is not only suitable for small meetings for meetings around a table, but also for meetings where multiple devices in remote areas are interconnected, such as meetings between countries.

First, an embodiment in a small conference centered on one liquid crystal projector will be described, and then an embodiment in a conference between distant regions in which a plurality of devices are associated will be described.

(Description of the meeting situation)

Fig. 2 is an explanatory diagram of a conference situation in an example of the embodiment.

Here, the conference data 44 shown in FIG. 1 is projected onto the screen 1020 by the liquid crystal projector 200 as the conference data processing device 2, and the presenter 1000 performs the presentation using the pointer 1010.

On the other hand, the conference participant 1002 inputs data using the tablet 410 as the input device 400. The input data is transmitted to the communication interface unit 30 of the liquid crystal projector 200 via the IEEE1394 bus 300, and the liquid crystal projector 200 projects the instruction data 1012 constituting a part of the conference data 44 based on the transmitted data.

Here, the instruction data 1012 may be, for example, character data in which a character is written on a part of the projected image, graphic data in which a graphic is written on a part of the projected image, and in the projected image. The underlined data of the underlined text, the circled data of a part of the projected image surrounded by a circle, and the like.

The conference participant 1002 can see the indication data 1012 input by the tablet 410 in addition to the presentation data.

In the case of an actual meeting, sometimes it is sometimes desirable to see the first few chapters of the specially designated demo data and also include the actions of the presenter 1000, or sometimes to confirm the meeting participants, even during the progress of the meeting. The location indicated by 1002, etc.

In this case, if you are using the demo data generated by the PC application and only the demo data, you can specify and regenerate the sections of the chapters. However, this method cannot reproduce the information and the additional time added by the conference participant 1002 with the tablet 410.

In addition, although it is possible to photograph and reproduce the entire conference using a video recording device or the like, it is necessary to take time to perform fast playback or reverse playback in order to specify the sections of the first chapter and reproduce them. When a conference participant is present, it is impossible to reproduce only the location indicated by the specific conference participant 1002.

If you can achieve the above ideas, you can effectively conduct meetings in a variety of ways.

In order to realize the above-described concept, as shown in FIG. 1, the liquid crystal projector 200 of the present embodiment records and digitizes a conversation in a conference by using an image captured by an image or the like instructed by a narrator or the like. The recording unit 70, the input device 400, and the like add information to the presentation data generated by the processing device 700 as the PC, and combine this information with the address assigned to each device and manage it by the management table 42 as the conference data 44. It is stored in the storage unit 40.

Hereinafter, the conference system of the present embodiment will be described more specifically.

Fig. 3 is a block diagram showing a configuration of a conference system according to an embodiment of the present invention.

As shown in FIG. 3, when the data input is performed by the conference participants 1001 to 4, respectively, by the conference participants 1002 of the four individuals, the input data is stored in the storage unit 40 for each of the graphics input boards 410.

Similarly, the speech of the presenter 1000 as the narrator is recorded by the recording unit 70, and the conversation or speech of the meeting participant 1002 is collected by the sound digitizing device 72 used as the recording device set for each meeting participant 1002, and The sound recording data is stored in the storage unit 40 in accordance with the presenter 1000 and each meeting participant 1002.

The recording unit 70, the audio digitizers 72-1 to 4, and the tablet 4101 to 4 are assigned device addresses that are not duplicated.

Further, part of the voice information is voice-recognized based on a predetermined keyword registered in advance. The voice recognition result is subjected to character code conversion and recorded as additional information to the conference data, or as a device control command. In the latter case, terms such as "fast release" and "reverse" registered in advance are translated into control commands for controlling the operation of the liquid crystal projector 200, and are input to the control unit 90 shown in FIG.

Further, the conference data 44 generated and stored in the storage unit 40 by the generating unit 10 shown in FIG. 1 is reproduced by the reproducer 20 shown in FIG. 1 for each presenter 1000 and each conference participant 1002.

The conference data will be described in detail below.

(Description of meeting data)

FIG. 4 is a schematic diagram showing an example of the data structure of the conference data 44 and the management table 42 of the present embodiment.

The conference data 44 is an electronic file containing a plurality of data fields from the [Conference Data Start] mark to the [Conference Data End] mark.

In addition, the conference data 44 includes fixed presentation data 1420 prepared in advance and variable additional data 1440 that changes as the conference situation changes. The presentation data 1420 is generally managed by the file system of the OS of the PC and held in the storage unit 40 as a secondary storage device.

On the other hand, the additional data 1440 is managed by the control unit 90 that operates by the function of the built-in OS of the liquid crystal projector 200, and is stored in the storage unit 40.

Further, the conference data 44 is identified by a label according to each predetermined unit of the conference.

Here, the predetermined unit may be, for example, a chapter unit, a unit of a chapter, a page unit of a single page displayed, or the like. For example, when units such as chapter units and section units are used, the first few chapters of the chapters can be indicated, so that a particularly effective indication can be made in the demonstration.

As shown in FIG. 4, the presentation data 1420 of the present embodiment is assigned a reference numeral in various units such as the first chapter, the first section, and the first page. Further, a pointer to the address of the image data of the additional data is also provided to the [image] mark or the like of the presentation data 1420, and as a result, the entire chapter data 42 can be specified by specifying the first chapter and the The pages and pages read their data. In the figure, in addition to the arrow of the symbol, the arrow also indicates an example of the position of the pointer and the portion of the indication.

Further, for example, when a unit such as a page unit is used, it corresponds one-to-one with the distribution unit of the print material. In the demonstration using a PC, it is possible to add moving image or sound recording data to a single page portion, but at this time there is always a frame forming a page, which can be interpreted as being included in a part of the data forming the frame. The part that includes the action.

In a well-known technique in the field of PC printing, a language (page description language) that can describe a document genre and print information is used, and one of the widely popular ones is the PostScript language of Adobe. If the description of the conference data 44 is in the PostScript language, it is easy to understand. In other words, a method of describing image information, character information, and the like in units of pages in a program language can be employed.

In this programming language, a description including pixels can be performed based on a set of pixels. In the description language of the conference data 44, this concept is further extended by the fact that the portion of the reproduced sound and the portion of the reproduced moving image can be included by the program description. As a well-known example of processing a general-purpose programming language using an interpreter, there is a BASIC language. Although the BASIC language differs from the PostScript language in that it does not include a concept of describing an image in units of pages, it is suitable for sound data. Regeneration, reproduction of moving images, etc.

In the present embodiment, the JAVA language is merely cited as an interpreter language having a few features on both sides. In the case of the JAVA language, for example, an abstract drawing with AWT (Abstracted Window Tools) and Swinng is not limited by the processing system. JAVA is a trademark of Sun Microsystems, Inc. of the United States.

The application software uses the classification function to implement the functions for performing the required processing.

For example, when it is desired to use the line generation function in the drawing category, a command word for executing the line generation function is requested to generate a message addressed to the above category. When the program containing the command word is executed, for example, if the JAVA virtual machine is mounted as the virtual machine 500 in the conversion unit 50 shown in Fig. 1, straight line pixels can be drawn on any processing system. Similarly, if an image generating program that performs drawing multiple times per unit time is provided, the moving image can be reproduced.

In addition, in the sound data, the processing of the sound collection data is also described in the JAVA language.

These programs are developed and stored at source code levels, which are known as so-called high-level languages, which are described by character codes. The description of the conference data 44 is not limited to the JAVA language. For example, various high-level languages such as the PASCAL-based language in the applicant's Japanese Patent Laid-Open No. Hei 6-4498 can also be used.

Further, as disclosed in Fig. 1 of Japanese Patent Laid-Open No. Hei 6-4498, the program described in the above high-level language is converted by the compiler into an intermediate language object which can be interpreted and executed by the intermediate language interpreter. In the present embodiment, the intermediate language object generated by the above program is used as the conference data 44.

In Fig. 4, the [page start] mark to the [page end] mark are units related to one single page. In this one processing unit, an [image] mark and a [sound] mark are stored. [Image] is marked as a series of labels of variable length fields. In the variable length field, as described above, the drawing command is stored in the intermediate language description generated based on the result of the compilation in the high-level language description. In addition, still image data represented as a set of pixels is also stored in the variable length field by combining with the pixel transfer drawing command.

For the [sound] tag, the data is also stored in the variable length field.

In addition, the demo data 1420 and the additional data 1440 of FIG. 4 can be rewritten in the same manner as an electronic file on a general computer.

The rewritten portion of the additional data 1440 is stored in the variable length data portion enclosed by the [Additional Data Start] flag to the [Additional Data End] flag. In the variable length data portion, image data added by a tablet or the like and sound data added by a microphone or the like are stored.

The image data is stored between the [image data start] mark and the [image data end] mark, and the sound data is stored between the [sound data start] mark and the [sound data end] mark.

Further, in the present embodiment, the data after appending the original presentation data (presentation data 1420) to the various additional data 1440 attached during the conference is referred to as conference data 44 to be distinguished from the original presentation data. Both types of data are electronic files that can be processed by a computer.

Specifically, the sound data input to the sound digitizing device 72 is amplified by the transmission amplifying unit incorporated in the sound digitizing device 72 to an identifiable level, and then collected by the sampling processing unit installed in the sound digitizing device 72 as Digital signal. This data is stored in the storage unit 40 by the control unit 90 as additional data 1440 which is a part of the conference data 44 based on the application software.

In the storage unit 40, in addition to the presentation data 1420 and the additional data 1440 transmitted, the management table 42 for data management used by the control unit 90 is stored.

The management table 42 is a table for identifying and managing devices such as the input device 400, and includes an ID for identifying the device, a device name, and data for identifying a user of the device.

For example, the result of the presenter 1000 operating with the indicator stick 1010 is stored in the storage unit 40 as part of the additional data 1440. Since such image data is stored in a combination with the device ID, for example, when the action of the presenter 1000 is reproduced, the image data stored in the additional data 1440 can be reproduced by being searched from the management table 42.

Further, by adding the time data as the additional data 1440 to the image data, the conference data 44 can be reproduced by specifying the time.

Thus, according to the present embodiment, the conference situation can be immediately reproduced according to the designation of the chapters, and the conference situation can be selectively reproduced according to the individual designation or the time designation of the presenter 1000 or the conference participant 1002.

Hereinafter, the task of the input device 400 will be described. The tablet 410, which is one of the input devices 400, structurally includes a digitizing unit, a coordinate detecting processing unit, an I/O controller, and an IEEE 1394 bus level driver.

The I/O controller of tablet 410 has the target side node capability of the SBP-2 protocol. On the other hand, the I/O controller of the liquid crystal projector 200 controls the SBP-2 driver having the capability of the startup side node of the SBP-2 protocol.

The storage unit 40, which is the local memory of the liquid crystal projector 200, is opened to the IEEE1394 bus 300 as a shared memory by the SBP-2 driver.

The bus-level transaction specified by IEEE 1394-1995 is performed between the IEEE 1394 bus-level driver on the side of the tablet 410 and the IEEE 1394 bus-level driver on the side of the liquid crystal projector. Through this transaction processing, the tablet 410 logs in the SBP-2 driver through the IEEE bus level driver and obtains access permission to the above shared memory space.

In the case where the registration is permitted, the storage unit 40 as the shared storage space on the liquid crystal projector side can be accessed by the tablet 111 before the tablet 410 is deregistered by the IEEE 1394 bus driver.

After the positional detection of the instruction operation by the conference participant 1002 on the image input board 410 by the digitizing means, the coordinate detection processing unit performs relative position conversion, and converts it into the indication coordinates and a series of trajectory data. The indication coordinate data and the trajectory data are stored in the shared storage space provided by the liquid crystal projector 200 by the operation of the SBP-2 protocol described above.

The shared memory space, when viewed from the liquid crystal projector 200, is the local storage space. Therefore, the liquid crystal projector 200 can allocate or copy the shared space to the storage space managed by the process or thread of the virtual machine 500 through the core program of the built-in OS as needed. As can be seen from another point of view, the trajectory of the user's indication action on the tablet 410 can be monitored (monitored) by the process or thread of the virtual machine 500 of the liquid crystal projector 200 at any time.

Hereinafter, the conference data generation processing in the actual conference system will be described.

(Note on the handler in the conference system)

Fig. 5 is a flow chart showing the flow of processing in the conference system according to an example of the embodiment.

When the meeting starts, the meeting data generation process is started, and the meeting data generation process is performed until the end of the meeting.

First, after the start of the conference, if the conference has not ended (step 2), the conference unit 44 stores the conference data 44 in the storage unit 40 (step 4).

When the presentation data generated by the PC or the like is stored in the storage unit 40 (step 6), the reproduction unit 20 reproduces the presentation data 1420 read from the storage unit 40 by the control unit 90 (step 8).

That is, the presentation data is projected by the liquid crystal projector 200, and when there is sound, the sound is also reproduced.

When there is no demo data (step 6), no external operations are performed, but internal processing continues.

When there is external input data (step 10), the control unit 90 stores the input data for each input source and stores it in the storage unit 40 (step 12).

Specifically, for example, when the transfer data including the drawing instruction information and the like transmitted from the tablet 410 is transferred, not only the transfer data but also the identification information of the tablet 410 and the like are stored, thereby using the management table. 42 is stored while managing each input source.

Further, a part of the transmission data or the like is stored as the additional data 1440. The additional data 1440 includes not only the data input from the tablet 410 but also the image data included in the imaging range 1060 of the imaging unit 60 shown in FIG. 2 . That is, the presenter 1000 stores the position data of the image indicated by the pointing stick 1010 or the finger as the additional data 1440.

The conference data 44 is generated in the above manner.

When there is no external input data (step 10), no external operations are performed, but the internal processing is continued.

When the conference participant 1002 issues a reproduction instruction by operating a remote control or the like reproduction instruction device (step 14), the control unit 90 reads the conference data 44 for each predetermined unit in accordance with the designation of the reproduction instruction (steps 16 to 20).).

For example, if the reproduction indication is a designation for each input source (step 16), the conference data 44 is reproduced for each input source (step 18).

Further, if the reproduction instruction is not specified for each input source (step 16), the conference data of the designated portion is reproduced (step 20). Specifically, for example, the control unit 90 determines that the first few chapters corresponding to the presentation data 1420 are designated, and reads the conference data 44 corresponding to the portion from the storage unit 40. Therefore, if the reproduction unit 20 reproduces the portion, the data of the designated portion can be reproduced.

Of course, not only is each input source or a specified part of the alternative, but the two kinds of designations can also be combined to select both at the same time.

The conference data generation processing and the reproduction processing are performed as described above. The above is the case where the tablet 410 is used as the input device 400, and the case where the PC 420 is used as the input device 400 will be described below.

(Example of a conference system when a PC is used as an input device)

Fig. 6 is a functional block diagram of a conference system according to another example of the embodiment.

The liquid crystal projector 202 is connected to the external storage device 240 via the IEEE1394 bus 300, and the liquid crystal projector 202 and the PC 420 are connected via the optical fiber network 310.

This type of conference system is used when connecting meetings between regions that are far apart. Here, it is assumed that a drawing command is issued from the PC 420 provided in the United States to the liquid crystal projector 202 provided in Japan.

In other words, in the illustrated example, the presentation was performed by the liquid crystal projector 200 in the meeting place in Japan, and the conference participant 1002 in the US performed the presentation image generated by the Japanese liquid crystal projector 200 while displaying the presentation screen by the PC 420. Write.

Here, the PC 420 includes a Web browser with a display presentation screen, OS (Operating System), TCP/IP (Transmissive Control Protocol/Internet Protocol), PPP (Point to Point Protocol), and a point-to-point protocol. The software control unit 422 and the transmission/reception unit 424 having an ATM switch.

Further, the liquid crystal projector 202 includes a CGI (Common Gateway Interface), a httpd (Hyper Text Transfer Protocol Daemon), a drawing API (Application Programming Interface), and the like. The software generation unit 12, the conversion unit 52 having the virtual machine 502, the control unit 92 having distributed OS core programs, software such as TCP/IP, PPP, and device driver, the transmission/reception unit (including the ATM switch), and the IEEE 1394 bus. The interface unit 32 for communication of the level driver.

Further, the external storage device 240 includes a control unit 290 and a communication interface unit 292 having an IEEE1394 bus level driver or the like.

Hereinafter, the conference data generation processing in the conference system will be described.

First, in the United States, in the state where the presentation image is displayed on the screen of the PC 420, the conference participant 1002 operating the PC 420 performs an operation for writing the presentation image on the web browser of the screen.

The operation command is converted by the control unit 422 into a form based on a protocol such as TCP/IP, and the transfer data including the operation command is converted into a form that can be converted by the compiler into a data form in which the conference data can be generated, and transmitted. The receiving unit 424 transmits the liquid crystal projector 310 to the liquid crystal projector 202.

In the liquid crystal projector 202, the transmission data transmitted by the communication interface unit 32 is received, and the control unit 92 performs transmission control and the like. The transmitted transmission data is converted into a form in which conference data can be generated by the virtual machine 500, and the generation unit 12 generates conference data.

The transmission data transmitted from the PC 420 and the generated conference data are transmitted from the communication interface unit 32 to the external storage device 240 via the IEEE1394 bus 300, and are controlled by the control unit 290 for each processing device and each of the external storage devices 240. The predetermined units are stored while managing the transmission data and the conference data received by the transmission/reception unit 292.

Further, the generated conference data is displayed by the liquid crystal projector 202 at the venue in Japan, and is transmitted from the communication interface unit 32 to the PC 420. In the PC 420, the received conference data is displayed again on the screen.

Although the above-described transmission/reception processing and data transmission are large data such as transmission of conference data, the IEEE 1394 bus 302 and the optical fiber network 310 are used, so that the transmission can be performed at an extremely high speed.

According to the above-described manner, the conference participant 1002 in the United States can operate the liquid crystal projector 202 from a far distance from the same feeling as the operation of the liquid crystal projector 202 in the Japanese venue.

Further, the transmission data and the conference data are stored in the external storage device 240, and the PC 420 and the external storage device 240 are also connected by the high-speed transmission line. Therefore, it is possible to immediately reproduce the required portion in response to the operation from the PC 420.

Therefore, it is possible to realize a conference system that can quickly replay conference data even when a conference is held between regions that are far apart.

Further, by separately setting the external storage device 240 storing the conference log (history record) and the projector 202, even if the hard disk constituting the external storage device 240 is a RAID (Redundant Array of Inexpensive Disks) structure, When the reliability of data is improved and a large-capacity storage capacity is secured, the versatile liquid crystal projector 202 can be realized without changing the size of the liquid crystal projector 202 itself.

Even when the storage device for storing the conference data and the liquid crystal projector 202 are separately provided as described above, since the communication between the liquid crystal projector 202 and the external storage device 240 can be performed at an extremely high speed, there is almost no existence. Performance issues.

The above is an example in which the PC 420 is used as the input device 400. Hereinafter, a case where the service device is used as the data transfer device to transfer the transmission data will be described.

(Example of a conference system when a service device is used as a data transmission device)

Fig. 7 is a functional block diagram of a conference system according to another example of the embodiment.

The conference system in this embodiment structurally includes a liquid crystal projector 200 and a service device 100 for reproducing conference data.

The liquid crystal projector 200 is the same as the liquid crystal projector 200 described above.

The service device 100 includes a storage unit 102 that stores display data, control data, component objects, and the like, a transmission/reception unit 104, and a control unit 106 that controls data transmission between the storage unit 102 and the transmission/reception unit 104.

Here, the display data may be, for example, image data, presentation data, conference data, etc., and the control data may specifically be, for example, a device driver, data for specifying a drawing range such as coordinates, or the like. Drawing data such as lines or circles, etc.

In particular, in view of the fact that image data is generated in two forms, it is necessary to design a processing system. The first form is that the entire image is generated as a set of pixels. When a photo of a natural image is acquired by an image scanning device, each pixel is defined as color data accompanied by a different gray level, and the image as a whole is defined as a set of the pixels.

The second form is to generate pixels from any of the command words. In a processing system that uses a combination of a straight line, a Bezier curve, an arc, and the like to represent a figure, a line generation command (usually specifying a drawing start coordinate, a terminating end coordinate, and a line width) is performed according to the resolution of the processing system as an object The degree or coordinate system produces a list of points and forms pixels to draw a portion of the graph.

In most cases, an image display system of a computer device uses a set of pixels of the former to represent graphics while using the latter command words to represent graphics. In addition, the way in which the outline glyphs are used to generate text, since the original text shape is made up of straight lines? The curve drawing command is described, so it is an example of the latter. As will be described later, the generation of pixels based on the command word is an application example in which a plurality of liquid crystal projectors are used to draw over a wide area, and is a preferable example in which dispersion processing is required.

When a pixel is generated according to any drawing command, it is necessary to have a program for performing the operation, and the program must be in a form that can be executed on hardware including the processor as an object. In the present embodiment, the execution unit of such a program is referred to as a "component object".

A component object that is used as part of the software for image generation or reproduction. Specifically, for example, it may be a JAVA applet or JAVA Beans.

For example, it is assumed that the service device 100 is a web server, and is a form in which various data for conference data generation is stored in the storage unit 102.

The liquid crystal projector 200 can download a device driver, a JAVA applet, or the like from the service device 100.

In this way, the function of the liquid crystal projector 200 can be easily expanded. That is, when it is necessary to hold a new form of meeting, the organizer of the meeting stores necessary information in the service device 100, and the meeting participant 1002 can load necessary information from the service device 100 into the liquid crystal projector 200, thereby enabling Quickly adapt to new forms of meetings.

Specifically, for example, when the liquid crystal projector 200 currently has a function of drawing a line on a part of the screen, a component object having a function of enclosing a part of the screen with a circle is received and loaded into the conference data generating program. You can add a function to surround a part of the screen with a circle.

Further, since the function can be expanded by software instead of hardware, the liquid crystal drive circuit and the like can be simplified. That is, in general, in a liquid crystal projector, image data is converted into a digital signal by an AD converter, and image information is stored in a first frame memory. Then, the image information is convoluted by the digital filter circuit and stored in the second frame memory. Next, the image data in the second frame memory is read out at a certain period so as to be displayed on the liquid crystal light valve by the liquid crystal controller.

Further, here, the convolution operation refers to an image filtering technique for changing the tap coefficients in accordance with the sharpness of the image, thereby changing the image quality.

In these drive circuits, image deterioration due to phase difference is caused by the difference in input image data, and in order to reduce the phase difference, a high-performance PLL circuit must be employed. Further, in the case where a plurality of liquid crystal projectors having different resolutions are connected to each other, it is necessary to provide a scaling circuit for image processing for image interpolation. However, such image processing will deteriorate the image.

On the other hand, if the application software for operating the respective units of the liquid crystal projector 200 equipped with the virtual machine 500 is used as the embodiment, and the image data input to the liquid crystal projector 200 is converted based on the number of pixels of the liquid crystal, Image deterioration due to image processing by the scaling circuit does not occur, and since it is not necessary to provide a plurality of frame memories, the circuit configuration can be simplified.

As such an application software, for example, the display image of the input image data is developed by the virtual machine 500 in a VRAM (Video RAM) and the display image in the VRAM is displayed on the liquid crystal panel through the liquid crystal controller. Processing software.

Although the liquid crystal projector 200 and the input device 400 have been mainly described above, the same operational effects can be obtained for the liquid crystal projector 200 and the output device 600.

That is, for example, the conference data is generated by the liquid crystal projector 200, and the generated conference data is transmitted from the communication interface unit 30 to the output device 600.

Here, when the printer 600 is used as the output device 600, the conference participant 1002 can print the conference data in accordance with the output instruction.

Further, when the display device 600 is used as the output device 600, for example, the conference participant 1002 can display the conference data based on the output instruction.

The output instruction in this case may be performed for each input device 400 and each predetermined unit, and the conference participant 1002 may immediately obtain the conference data requested by himself according to the instruction.

As described above, although the conference system can be constructed mainly with the liquid crystal projector 200, a new form of conference system can be realized by using a control device.

(Example of a conference system using a control device)

FIG. 8 is a simplified diagram of a conference system employing a control device 900.

One control device 900 and a plurality of processing devices that perform conference data processing are connected via a network including an IEEE1394 bus 300 as a transmission line, and transmission and reception of transmission data are performed between the respective processing devices to generate conference data.

The control device 900 includes a storage unit 910, a management unit 920 that manages data in the storage unit 40 while managing the connection state of each processing device and the network, and a transmission for controlling transmission of data in the control device 900. Control unit 930.

Further, as the processing device, for example, various devices such as the portable information terminal 402, the scanner 404, the liquid crystal projector 200, the PC 400, and the printer 602 can be used.

In this form, the processing of the conference data is performed as follows.

FIG. 9 is a flow chart showing the flow of processing in the conference system using the control device 900.

Initially, the control device 900 is activated and connected to the IEEE1394 bus 300, and other devices are also connected to the IEEE1394 bus 300. (Step 32).

When a certain processing device is connected, the transmission data including the packet indicating the state after the connection and the service provided by the processing device is transmitted to the control device 900. Here, the term "service" refers to the function provided by each processing device.

When the control device 900 receives the transfer data including the packet, the management unit 920 confirms that the registered service has been completed in the management table stored in the storage unit 910 (step 34), and if the same service is registered, Then, the priority and the like are adjusted (step 36).

The management unit 920 registers the provided service in the management table after confirming the provision of the service (step 38).

FIG. 10 is a diagram showing an example of the management table 912.

In the management table 912, an ID for identifying each processing device, a service provided by the processing device, and a state of the processing device are mainly stored. This identification ID assigns an ID value that is not repeated even when a plurality of processing devices are connected to the network.

When receiving the transmission data including the packet indicating the service request (step 40), the control unit 900 searches the management table 912 to search for a processing device that can provide a service that can respond to the service request.

For example, when a request for printing a part of the conference data is issued from the portable information terminal 402, the control device 900 searches the management table 912 with the management unit 920 to search for a processing device that can provide a print service, when searching for the service is provided. When the printer 602 confirms its status and is in a state in which processing is possible, the transfer control unit 930 establishes a connection between the portable information terminal 402 requesting the service and the printer 602 that responds to the service.

Once the connection is established, transmission data such as conference data can be transmitted and received between the processing device that issued the request and the processing device that responds to the request without having to pass through the control device 900.

In this case, for example, after the connection is established, a part of the conference data is transmitted from the portable information terminal 402 to the printer 602, and the print service is provided by the printer 602 (step 42).

Thus, by adopting the control device 900, it is possible to realize a conference system capable of unitarily managing the service and flexibly changing the processing device in accordance with the situation of the applied conference.

Even in such a conference system, it is preferable to install the virtual machine 500 in the control device 900 and each processing device. The reason for this is that by using the virtual machine 500, the model of the destination end or the OS or the like can be completely ignored when transmitting the transmission data, so that the degree of freedom of the device structure can be increased, and more diverse conferences can be performed.

As a technique for connecting the above-described control device 900 to a plurality of processing devices, for example, Jini of Sun Microsystems, Inc., in the present embodiment, the conference data 44 shown in FIG. 4 can be stored in the storage unit 910 of the control device 900 and It is completely different from Jini in that it can be updated and managed.

In the example described above, an example in which one processing device provides one service has been described. However, a case where a plurality of conference data reproducing apparatuses provide one service, that is, while distributing the conference data while performing distributed processing, will be described. .

(Description on Dispersion Processing)

Most of the current application software developed under the OS of a commercial PC is compiled and translated into a mechanical language that can be directly interpreted by a microprocessor. In this method, it is generally necessary to consider the architecture of the microprocessor using the application software and the inter-program interface with the service routines of the OS from the development stage of the application software (generally called API: Application). Programming Interface; and programming.

However, in the conference system of the present embodiment, the conference data 44 or the original presentation data is translated and executed centering on the liquid crystal projector 200 or the PC or WS serving as the processing device 700.

The liquid crystal projector 200 can not be limited to a certain microprocessor at the time of design, even when it is actually commercialized, even if it is provided to the user at an appropriate price, and the processing device 700 can be said to be the same. of. Further, as the processing device 700, not only a PC or a WS but also a portable information terminal is used in order to be used in a place to go out.

In the case of a mixed environment of different microprocessors and APIs with different APIs as described above, in order to abstract the differences of environments and provide an environment that can be used together, a virtual machine interpreter (such as a virtual machine) should be used. 500).

The problem that can be solved by using the virtual machine's interpreter is to eliminate the differences in different computer architectures (the abstraction of the execution environment).

On the other hand, the transmission data transmitted and received in the conference system is large data such as moving images, and a large amount of data is also transmitted and received when the conference is to be performed for several hours.

In order to efficiently process such large and large amounts of data, not only an interpreter of a virtual machine is required, but also a structure of a high-speed transmission line and a dynamic dispersion processing capable of dynamically distributing processing load in each apparatus is required.

Fig. 11 is a view showing image display when image display is performed in a distributed manner, wherein (A) is a view showing an image display example when only one liquid crystal projector is used, and (B) is a view showing four liquid crystal projections. The image of the machine is shown in the figure.

When image display is performed by one liquid crystal projector 200, UXGA display, that is, 1600×1200 dots display can be performed by the PC that transmits the conference data to the liquid crystal projector 200, but the liquid crystal projector 200 can only correspond to In the state where the XGA display, that is, the display of 1024×768 dots is reached, according to the presenter's instruction, sometimes the indicator may indicate coordinates that can be displayed on the PC but not displayed on the liquid crystal projector 200 (1500, 920).)

In this case, as shown in FIG. 11(A), it is actually not displayed on the liquid crystal projector 200. Therefore, since the presenter cannot make the pointer operate according to his own operation, there is a case where an effective presentation cannot be performed.

In order to avoid this, as shown in FIG. 11(B), four liquid crystal projectors 200 can be used to project four images 1210-1 to 4 in a shared manner so as to be able to support the display corresponding to the display on the PC. Display area.

Fig. 12 is a view showing a state in which four liquid crystal projectors 200-1 to 4 are used and image display is performed in a distributed manner.

When displaying one image in a shared manner, it is necessary to decide which device to share which region. The use of four liquid crystal projectors to spatially divide an image for display is a typical parallel processing method. At the stage of generating the original presentation file by the application software of the processing device 700, it is convenient in processing if the parallel syntax applicable to such parallel processing is described. In JP-A-6-4498, a method of writing and translating parallel execution units included in a cobegin coend is disclosed, and this method can also be used in this embodiment.

FIG. 13 is a schematic diagram showing a communication method when the virtual machine 500 is used. (A) is a view showing a conventional communication method, and (B) is a view showing a communication method according to the present embodiment.

In order to perform the above-described dynamic dispersion processing, it is necessary to install not only the virtual machine 500 in the projector 200 but also the generation of the application software, that is, the application layer program 12, which must be generated after considering which drawing area is shared by which liquid crystal projector 200. .

In general, in order to perform parallel processing on a certain execution unit of a program, the following two conditions must be met. First, the first condition is that the object program processing system including the OS must have resources that can execute a certain program slice, that is, an execution unit in parallel, and more specifically, must have an independent correspondence with the number of parallel processing. Processing device. The second condition is that the object program itself must be described as having a processing unit that can be executed in parallel and can be judged in the processing system.

Further, in the present embodiment, "decentralized execution" is a broad concept of parallel execution. When a certain processing unit is distributed to another processing system, it is desirable to process in parallel in time and at the time of obtaining the result. A special case that must be synchronized is called "parallel execution."

For example, as shown in FIG. 13(A), when two liquid crystal projectors 200-5 and 6 are connected via the IEEE802.3 bus 192, they should be established between the application layer programs 12-5 and 6. Like the connection on the other side. When the first liquid crystal projector 200-5 that starts interpreting the original presentation data detects that it exceeds its own display range in the statement of the program, it tries to distribute the portion with the liquid crystal projector 200-6. .

At this time, as a specific operation, the control unit of the transmission control program of the built-in OS of the liquid crystal projector 200 is read, and the line connected to the liquid crystal projector 200-6 is opened by the IEEE802.3 bus 192, and the target range of the distributed processing is transmitted. .

The application layer program 12-5 must sequentially perform processing such as network connection, line opening, and processing part of the transmission using the service routine of the built-in OS. The other application layer program 12-6 is required to perform the same network connection, allow line opening, and receive part processing, etc., on the service side.

In order to use a plurality of liquid crystal projectors, it is only required to perform the above-described processes to make the specifications of the application layer programs 12-5 and 6 described as the original presentation files complicated, and it is necessary to rewrite them in accordance with the execution environment each time.

As mentioned above, the application layer program 12 seen here is actually the original presentation data generated by another application layer program for generating presentation material. As shown in the example of FIG. 4, the content of the original presentation data can be interpreted as a set of command words of intermediate language objects executed by virtual machine 500.

For ease of use, it must be designed to cross-describe a variety of parallel syntaxes from the beginning in the application layer program with a certain degree of parallel processing, and can be executed in parallel when the execution environment allows parallel processing. As an alternative, the virtual machine 500 can also communicate with other virtual machines in a dynamic and independent manner during the execution phase and disperse the processing.

As a method of pre-described a plurality of parallel processing syntaxes as the former, a communication method between the intermediate language interpreting programs disclosed by the applicant in Japanese Patent Laid-Open No. Hei 6-4498 can be installed.

In addition, as a way of communicating with other virtual machines in a dynamic and independent manner in the execution phase, for example, a method implemented using a JAVA virtual machine, a multi-node based method, or the like may be employed.

By adopting the above method, even when the number of liquid crystal projectors is increased to 16, 64, etc., it is not necessary to rewrite the original presentation data again.

In the present embodiment, as shown in Fig. 13(B), an IEEE 1394 bus 300 that realizes long-distance access of storage resources between nodes is employed.

In the case where the communication method between the intermediate language interpreting programs disclosed by the applicant in Japanese Patent Laid-Open No. Hei 6-4498 is installed, the main interpreter of the virtual machine 500-1 of a certain liquid crystal projector 200-1 is in the loading phase. Reading the object code

described in the working area of the slave side interpreter as the executed process in the intermediate language into the storage space of the other liquid crystal projector 200-2, and then reading the stack initialization data, and according to the The indication of the data stores the data of the initial state on the stack and sets the stack pointer.

Next, the table initialization data is read, and a series of operations for initial setting the contents of the execution block data management table and the shared resource management table are performed. The above operation can be realized by a higher layer protocol such as communication using an RS232C serial line or the like, or a network file system commonly found in an OS of a UNIX system. However, in order to perform remote memory access at a realistic processing speed, it is necessary to perform installation by IEEE 1394 bus transaction processing.

In this manner, when the application layer programs 12-1, 2 are generated, they can be generated without considering the drawing sharing area or the like, and can be between the virtual machines 500 lower than the application layer programs 12-1, 2 by one level. A virtual connection is established on the image.

Hereinafter, the distributed processing of this embodiment when the JAVA virtual machine is used as the virtual machine 500 will be described in detail.

Fig. 14 is a functional block diagram at the time of performing the dispersion processing of the embodiment.

The liquid crystal projector 200-1 includes a conversion unit 50 to which a virtual machine 500 for converting transmission data transmitted from another liquid crystal projector 200-2 or the like as a data transfer device into a data format that can be generated or reproduced is mounted, and The communication interface unit 30 that receives the transmission data that can be converted by the conversion unit 50 from the input device 400.

Further, the liquid crystal projector 200 further includes a generating unit 10 that generates meeting data based on the transfer data converted by the converting unit 50, and performs the generated meeting data for each of the other liquid crystal projectors 200 for each predetermined unit. The management unit 90 that stores the conference data in the storage unit 40 and reads the conference data for each of the other liquid crystal projectors 200 and the reproduction unit 20 that reproduces the read conference data is managed.

In the storage unit 40, in addition to the conference data including the presentation data and the transmitted transmission data, the management table 42 and the like used by the control unit 90 are stored.

Further, the storage unit 40 can be accessed by the communication interface unit 30 by another liquid crystal projector 200 or the like.

Hereinafter, the virtual machine 500 used in the present embodiment will be described.

FIG. 15 is a functional block diagram of a software unit and a hardware unit in the projector 200.

The software unit includes a generation unit 10 having an API for audio processing (Application Programming Interface) and an image processing API, a scheduler having a plurality of command words, a command word, and a plurality of device drivers. The control unit 90 of the runtime library and the virtual machine 500.

Alternatively, a sound processing stage or an image processing stage may be installed instead of the sound processing API or the image processing API.

The virtual machine 500 used in the present embodiment means a device that reads a common file format and thus can perform the specified operation, and specifically, for example, a JAVA virtual machine or the device disclosed in Japanese Laid-Open Patent Publication No. Hei 6-4498. There are virtual machines such as interpreters that can be processed in parallel.

As the installation method of the JAVA virtual machine, an interpreter method, a compiling method, a dedicated CPU method installed in the hardware unit, and the like installed in the software unit may be employed, but in the present embodiment, it is installed in the software unit.

The virtual machine 500 structurally includes a plurality of threads each having one program counter and one stack, and a heap area. That is, the stack and the heap area are work areas, and also function as the storage unit 40.

In addition, since there are a plurality of stacks, so-called multi-thread processing can be performed. Therefore, the execution performance and the parallel execution performance at the time of the distributed processing can be improved.

Further, the hardware unit includes a reproduction unit 20 equipped with a display unit, a control unit 90 having a video controller, a storage unit 40 having a video RAM (V-RAM) area, and an IEEE1394 link layer and IEEE1394 physics. The layer communication interface unit 30.

Hereinafter, actual display processing using a plurality of liquid crystal projectors 200-1 and 2 will be described.

It is assumed that the liquid crystal projector 200-1 is used as a main projector, and the liquid crystal projector 200-2 is used as a slave projector.

It is assumed that the liquid crystal projector 200-1 draws an image 1210-1, that is, coordinates (0, 0) to coordinates (1024, 768). This drawing information is stored in the storage unit 40.

When the second liquid crystal projector 200-2 is connected to the IEEE1394 bus 300, the liquid crystal projector 200-1 serving as a main projector and the liquid crystal projector 200-2 serving as a slave projector can transmit and receive transmission data.

At this stage, the liquid crystal projector 200-2 can judge that the liquid crystal projector 200-1 has been operated while referring to the drawing information of the storage unit 40-1 of the liquid crystal projector 200-1, thereby confirming that the liquid crystal projector 200-1 shares Drawing area.

After the confirmation, the liquid crystal projector 200-2 reads out the image information to be displayed by itself from the storage unit 40-1 of the liquid crystal projector 200-1, and converts it into a data format that can be processed by the own device by the virtual machine 500. Write to the V-RAM area and display it on the display under the control of the video controller.

As described above, the stack area in the storage section 40 is provided for each thread. Even if the stack area within a certain thread is in use due to multi-thread processing, the stack area of other threads can be used, so even in the case of the shared storage unit 40, the parallel execution is hardly lowered.

Further, since the transmission data can be transmitted and received at a high speed by using the IEEE1394 bus 300 and the IEEE1394 bus interface, even in the case of sharing the storage unit 40, each of the liquid crystal projectors 200 can be almost identical to the storage unit 40 that references itself. The same speed is referred to the storage unit 40 of the other liquid crystal projector 200.

Further, for example, there may be cases where the liquid crystal projectors 200 having different display capabilities are mixed, that is, one liquid crystal projector 200 is a VGA display, that is, 640×480 dots display, and the other liquid crystal projector 200 is an SVGR display. That is, 800 x 600 dots are displayed, and the other liquid crystal projector 200 is an XGR display, that is, a 1024 x 768 dot display.

In the above case, even when it is necessary to display the above-described coordinates (1500, 920), display can be performed by connecting liquid crystal projectors 200 having different display capabilities to each other. For example, if the main liquid crystal projector 200 is a VGR display, if all nine liquid crystal projectors 200 are connected, the display area of 1920 × 1440 dots can be covered, and thus the coordinates (1500, 920) can be displayed.

Even in this case, the slave liquid crystal projector 200 can automatically adjust the display capability by referring to the drawing information in the storage unit 40 of the main liquid crystal projector 200. In this way, since the conference data can be generated by the effective distributed processing, even a large and large amount of conference data can be smoothly generated and reproduced, so that a conference system with fast response can be realized. Further, not only the distributed processing implementation based on the shared memory method but also the above-described distributed processing may be performed in the target transfer manner.

Although the method for realizing the conference system has been described above, the conference system that achieves the above-described effects can also be realized by the computer-readable information storage medium.

(Note on information storage media)

Fig. 16 is a functional block diagram of an information storage medium according to an example of the embodiment. The information storage medium 1400 stores information for realizing the above various functions in the storage information for reading by the computer 1200. The computer 1200 includes a transmission/reception unit 1230 for communicating with another processing device 1100 via the communication line 1300, a storage unit 1240 that stores various data and programs, and the like, and a processing unit 1250 that performs image processing and the like. The reproduction unit 1220 that reproduces data such as the display, and the information reading unit 1290 that reads information from the information storage medium 1400.

As the hardware configuration of each of the above-described units, for example, as the transmission/reception unit 1230, a communication device having an IEEE1394 interface, an ATM switch, or the like can be used as the storage unit 1240. A ROM, a RAM, or the like can be used. As the reproduction unit 1220, a display, a projection device, or the like can be used. As the processing unit 1250, a CPU, an image processing processor, or the like can be used.

Further, as the information storage medium 1400, for example, a hard disk or a memory such as a CD ROM or a DVD ROM that reads information by a laser, and magnetic information can be used.

Further, instead of directly connecting the information storage medium 1400 to the information reading unit 1290, the computer 1200 may download and read the storage information 1410 in the service device via the communication line 1300.

Further, as the communication line 1300 which is a transmission line, for example, an IEEE 1394 bus, an optical fiber, or the like can be used.

Here, for example, when the log function described above is implemented, the storage information 1410 is information that receives transmission data from the plurality of processing devices 1100 via the transmission line, that is, the communication line 1300, and generates conference data reflecting the transmission data, the information including the structure. The presentation information, the storage information for storing the transmission data in each of the processing devices 1100, and the storage information stored in the storage unit 1240 and the reproduction instruction for the conference participant are read from the storage unit 1240. Information for reading the conference data of at least a part of the data and the presentation information.

In this way, the conference participants can immediately replay the past conference data according to the instructions.

Further, it is preferable that the read information includes information for reading the conference data stored in the storage unit 1240 for each processing device 1100 in accordance with the reproduction instruction.

In this way, it is possible to discriminate from which processing device 1100 what kind of transmission data is received.

In addition, the conference data reflecting the transmission data of each processing device 1100 may be reproduced. Specifically, for example, when a plurality of conference participants transmit input data using their respective input devices, playback can be performed for each input device, that is, for each conference participant.

Preferably, the storage information 1410 includes information for capturing a situation of the conference, and the storage information includes information for storing the image data as a part of the conference data in the storage unit 1240 in a predetermined unit, the reading. The usage information includes information for reading the conference data stored in the storage unit 1240 in each predetermined unit in accordance with the above-described reproduction instruction.

In this way, the camera results of the conference situation can be immediately reproduced. Since the image data includes not only the reproduced presentation data but also the motion of the presenter, the conference situation can be appropriately grasped.

Similarly, it is preferable that the storage information 1410 includes recording information for recording a conference situation, and the storage information stores the recorded data as a part of the conference data in the storage device in a predetermined unit.

In this way, since the sounds can be combined and reproduced, it is possible to further appropriately grasp the situation of the meeting.

Here, as the predetermined unit described above, for example, a chapter unit, a unit of a chapter, a page unit, or the like can be used. That is, for example, if the conference participant issues a reproduction instruction in the second section of Chapter 3, the portion can be played back immediately.

Further, the stored information 1410 preferably further includes information for reproducing the read information.

In this manner, the read conference data is reproduced by display, projection, sound reproduction, etc., so that the conference participants can immediately confirm the conference data. Further, the stored information 1410 preferably further includes information for transmitting the read information described above to the processing device 1100.

In this manner, the reproduction, printing, and the like of the conference data can be performed by the processing device 1100 such as a display device, a printing device, or the like.

Further, in order to improve the above-described mutual connectivity, the storage information 1400 can be configured as follows.

For example, the storage information 1410 is configured to include interpretation information for installing the virtual machine 500 and interpreting the received transmission data by the virtual machine 500, and generation information for generating the conference data based on the interpretation result.

In this manner, data exchange between the processing device 1100 and the computer 1200 can be easily performed by using the virtual machine 500 which generalizes the form of the transmitted data and converts it into the transfer data which can be interpreted by the device itself. Thereby, a conference system capable of flexibly replacing various processing devices can be realized.

Further, as another configuration, the storage information 1410 is configured to include information for generating transmission data that can be interpreted by the virtual machine 500 and information for transmitting the generated transmission data.

In this manner, by generalizing the form of the transmitted data and generating and transmitting the transfer data which can be interpreted by the virtual machine 500 in the other processing device 1100, the processing device receiving the transferred data does not need to consider the transfer device of the transfer data. The type or manufacturer can handle the transfer of data. Therefore, data exchange between the processing apparatuses 1100 can be facilitated. Thereby, a conference system capable of flexibly replacing various processing apparatuses 1100 can be realized.

Further, as another configuration, the storage information 1410 is configured to include presentation information for transmitting a state in which the above-described explanation has been performed on the input data including the processing device transmitted from the plurality of input devices. The data is stored in the storage device while the data is managed by each of the input devices, and the conference data for reproducing at least a part of the input data and the presentation information from the storage device based on the playback instruction. Information for recycling.

In this way, the conference participants can play back according to the conference data indicating the past.

Further, preferably, the storage information includes storage data for storing the transfer data including the input data in the state in which the above-described explanation has been performed, and storing the data in the

storage unit 1240. The information, the reproduction information, includes reproduction information for reproducing, from the storage device, at least a part of the conference data including the transmission data and the presentation information, in accordance with the reproduction instruction.

In this manner, the conference participants can perform playback for each processing device 1100 by issuing an instruction to reproduce past conference data for each processing device.

Specifically, for example, when a plurality of conference participants transmit input data using their respective input devices, playback can be performed for each input device, that is, for each conference participant.

Further, preferably, the storage information 1410 includes information for capturing a situation of the conference, and the storage information includes information for storing the transmission data including the imaging result in the storage unit 1410 in a predetermined unit, and the reproduction is performed. The information includes transmission data for reproducing the image pickup result stored in the storage unit 1410 in accordance with each of the predetermined units in accordance with the reproduction instruction.

In this way, the camera results of the conference situation can be immediately reproduced. Since the image data includes not only the reproduced presentation data but also additional information such as an image indicated by the presenter, the conference situation can be appropriately grasped.

Here, as the predetermined unit described above, for example, a chapter unit, a unit, a page unit, or the like can be used. That is, for example, if the conference participant issues a reproduction instruction in the second section of Chapter 3, the portion can be played back immediately.

Further, the transmission data preferably includes at least one of image data, an image generation object, an image generation control object, an image display object, and an image display control object.

In this way, a conference system capable of efficiently exchanging various data used in a conference can be realized.

Further, the above transmission line preferably includes an IEEE1394 bus in its structure.

In this way, it is possible to exchange transmission data and the like at high speed between the respective processing devices. In particular, although the amount of data transmitted by image data or the like is large, real-time processing can be easily performed by using the IEEE 1394 bus.

The above is the configuration of the storage information 1410 for improving the mutual connectivity. Hereinafter, the configuration of the storage information 1410 for improving the data processing efficiency of the distributed processing will be described.

For example, the storage information 1410 is configured to generate conference data while transmitting and receiving the general-purpose transmission data interpretable by the virtual machine 500 between the plurality of processing devices 1100 connected via the transmission line, that is, the communication line 1300, and performing distributed processing. The information includes information for installing the communication interface unit 30 for sharing the storage unit 1240 with the other processing device 1100.

In this manner, the storage unit 1240 accessible by each processing device 1100 can be provided. Since this storage method is realized, it is particularly effective in the dispersion processing.

Here, the transmission line is preferably an IEEE 1394 bus, and the communication interface unit is preferably an IEEE 1394 bus interface.

In this manner, each processing device 1100 can be made to access the shared storage unit 1240 at a high speed as if it were a storage area of the own device.

Further, as another configuration, the storage information 1410 is configured to transmit and receive the general-purpose transmission data interpretable by the virtual machine 500 between the plurality of processing devices 1100 connected through the transmission line, that is, the communication line 1300, and perform The distributed processing generates information of the conference data, the information including structure information for generating the general-purpose transmission data, and for transmitting to at least one processing device 1100

having a storage unit accessible by each processing device 1100. The generated information of the above transmitted data.

In this manner, by generating the general-purpose transmission data and storing it in the shared storage device, each processing device can access the storage portion and acquire the transmission data, which is particularly effective in the distributed processing.

For example, when the JAVA applet is used as the transfer data, the plurality of processing devices can simultaneously download the JAVA applet stored in the storage device, and the specification change, function expansion, and the like can be easily performed.

Here, the above transmission line is preferably an IEEE 1393 bus.

In this manner, each processing device can be made to access the shared storage area at a high speed as if accessing the storage area of the own device.

Further, as another configuration, it is preferable that the storage information 1410 is configured to transmit and receive a general-purpose transmission data interpretable by the virtual machine 500 between a plurality of processing apparatuses 1100 connected by a transmission line and perform distributed processing. The information of the conference data is reproduced and configured to include the conference stored in the storage unit by at least one of the processing devices 1100 having a storage unit that can access the conference data by the processing device 1100 and store the conference data. Information for reading data and information for reproducing reproduction of the read image data.

Further, the read information includes, in structure, information for generating transfer data indicating a read request and converting the transfer data into the general-purpose transfer data, and for processing the device 1100 having the storage unit. Transmitting the converted transmission data and receiving information of the transmission data including the conference data from the processing device 1100, the reproduction information including the information for installing the virtual machine 500 and the transmission data according to the reception The virtual machine 500 converts information for transmitting data and reproducing the conference data.

In this manner, by using the transfer data in a general form, it is possible to adapt to the difference of the OS or the manufacturer and to receive and display the image data without considering the device category on the image supply side.

Further, as another configuration, it is preferable that the storage information 1410 is configured to transmit and receive a general-purpose transmission data interpretable by the virtual machine 500 between a plurality of processing apparatuses 1100 connected by a transmission line and perform distributed processing. The information of the conference data is generated and includes request information for requesting a predetermined service from the other processing device 1100, and provision information for providing a predetermined service to the other processing device 1100.

The request information includes information for generating transmission data indicating the predetermined service request and converting the transmission data into the general-purpose transmission data, and information for transmitting the converted transmission data to another processing device. The above-mentioned providing information includes information for installing the virtual machine 500, information for receiving transmission data indicating a service request from another processing device, and converting the data by the virtual machine 500, and determining whether the information can be provided based on the converted transmission data. Information about the service and information that is used to provide the service when it is available.

In this manner, each processing device can perform image processing in a shared manner while exchanging information with each other. For example, if a print service is requested by a projector, a printer that can provide a print service prints in response to the request.

This decentralization processing can also be realized by simplifying data exchange between the respective processing apparatuses 1100 by employing the virtual machine 500 and making the transmission data into a general form.

Further, it is preferable that the transmission data includes at least one of conference data, a conference data generation target, a conference data generation control target, a conference data reproduction target, and a conference data reproduction control target.

In this way, since these data or objects have been unified into a general form, the versatility of various image processing in the distributed processing can be improved.

Further, the above transmission line preferably includes an IEEE1304 bus in structure.

In this manner, each processing device 1100 can be made to access the shared storage device at a high speed as if accessing the storage area of the own device. Further, each processing device can perform the above-described information exchange at a high speed, so that the processing speed can be improved.

(Modification)

The application of the present invention is not limited to the above embodiments, and can be applied to various modifications.

For example, an embodiment in which the IEEE1394 bus 300 is employed has been described as the above transmission line, but various forms can be adopted as long as it is a high-speed transmission line. Specifically, for example, a light channel or a satellite communication line or the like can be employed.

Further, in the above embodiment, the dispersion processing using two conference data reproducing apparatuses (liquid crystal projector 200) has been described, but two conference data generating apparatuses, one conference data generating apparatus, and one conference data reproducing apparatus are employed. Dispersion treatment is also included in the scope of application of the present invention.

Further, the data used for the presentation is mainly the addition of secondary information such as the collected sound, the character code obtained as a result of the voice recognition, and the character code obtained by handwritten character recognition on a digitizing device such as a tablet. For these recognition processes, high-speed processing can be realized by using a DSF (Digital Signal Processor) which is superior in the arithmetic function of the information processing system. As is apparent from the above embodiments, the distributed processing of the present invention is dispersed based on communication between virtual machine interfaces and independent processing.

If it is in the existing mode, in order to use the DSP, the application software (application layer program) must be generated by the special machine language inherent to the DSP and transmitted and executed by the DSP system. However, according to the present invention, a virtual machine interpreter can be installed on a DSP system connected through an IEEE 1394 bus, and applied to process dispersion. As a result, the DSP's superior computing power resources can be used without having to rewrite the original presentation file as an application layer program.

Further, as described above, the programming language for implementing the present invention is not limited to JAVA. There are a variety of languages that can generate virtual machines and can support multiplexing of processor resources at the machine language level described above. In this language, the same description as the description of the above-described drawing command in the present invention can be performed. The present invention can be implemented in a variety of languages that do not rely on high level language-level syntax lexical analysis specifications to achieve the degree of drawing command words. Industrial applicability

The present invention can be applied to a conference system in which a presenter applies a presentation to a listener using a personal computer and a projector.

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Espacenet

CN102065267A Method and apparatus for sharing data in video conference system

Applicants: LG ELECTRONICS INC

Inventors: MANCHUL CHOI

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Method and apparatus for sharing data in video conference system

Abstract

A method and an apparatus for sharing data in a Video Conference System (VCS) are provided. According to an embodiment, when a user wants to share data with the other party in the VCS, only a user selected region and not the entire screen is converted into a format optimized for the other party's display and then transmitted to the other party.

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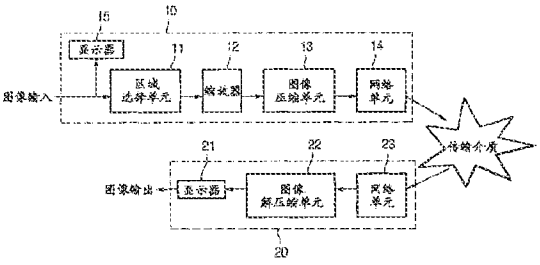
在视频会议系统中共享数据的方法和装置

(57)摘要

本发明涉及在视频会议系统中共享数据的方法和装置。根据实施方式，当用户希望在视频会议系统中与另一方共享数据时，仅将用户选择的区域而不是整个画面转换为针对另一方的显示器最优化的格式，然后将其发送到另一方。



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1. 一种用于与第二终端合作来提供视频会议的第一终端，该第一终端包括：

显示器，其被构成为显示包括第一窗口和第二窗口的多个窗口，所述第一窗口被构成为显示所述第二终端处的至少一个用户的图像，所述第二窗口被构成为显示所述第一终端的与所述视频会议相关联的内容；

用户输入单元，其被构成为接收用户对所述第二窗口上显示的内容的一部分的选择；

区域选择单元，其被构成为提取所述第二窗口上显示的内容的所选择部分；以及

网络单元，其被构成为向所述第二终端发送所述内容的所提取部分。

2. 根据权利要求 1 所述的第一终端，其中，所述第二窗口上显示的内容是图像或文本。

3. 根据权利要求 1 所述的第一终端，其中，当所述第二窗口上显示的内容包括文本时，所述显示器被进一步构成为显示请问是否将所述文本单独发送到所述第二终端的弹出窗口。

4. 根据权利要求 1 所述的第一终端，其中，所述多个窗口进一步包括第三窗口，该第三窗口用于显示所述内容的已发送部分在所述第二终端的显示图像。

5. 根据权利要求 1 所述的第一终端，该第一终端进一步包括：

图像压缩器，其被构成为对所述内容的所提取部分进行压缩；和 / 或

缩放器，其被构成为对所述内容的所提取部分进行缩放。

6. 根据权利要求 1 所述的第一终端，其中，所述显示器在弹出窗口中显示所述内容的所提取部分。

7. 根据权利要求 1 所述的第一终端，其中，所述网络单元从所述第二终端接收在所述第二终端上显示的已发送的所述内容的所提取部分的画面状态信息，并且，所述显示器显示接收到的画面状态信息。

8. 根据权利要求 1 所述的第一终端，其中，根据用户输入而改变在所述显示器上显示所述多个窗口的方式。

9. 根据权利要求 1 所述的第一终端，其中，所述显示器显示所述第二终端的显示器的分辨率信息或尺寸信息。

10. 根据权利要求 1 所述的第一终端，其中，所述显示器进一步在所述第二窗口上显示指示符，该指示符用于改变要选择的内容部分的尺寸。

11. 根据权利要求 1 所述的第一终端，该第一终端进一步包括：

确定单元，其被构成为确定在所述内容的所选择部分中是否包括文本；以及

文本提取单元，其被构成为如果所述确定单元确定了在所述内容的所选择部分中包括文本，则从所述内容的所选择部分中提取所述文本，

其中，所述网络单元仅仅将从所述文本提取单元输出的所提取文本发送到所述第二终端。

12. 根据权利要求 11 所述的第一终端，其中，在将任何内容发送到所述第二终端之前，所述显示器显示用于询问用户是否要将所提取的文本发送到所述第二终端的消息。

13. 一种用于与第二终端合作提供视频会议的方法，该方法包括以下步骤：

由第一终端的显示器显示包括第一窗口和第二窗口的多个窗口，所述第一窗口被构成为显示所述第二终端处的至少一个用户的图像，所述第二窗口被构成为显示所述第一终端的与所述视频会议相关联的内容；

由所述第一终端接收用户对所述第二窗口上显示的内容的一部分的选择；

由所述第一终端的区域选择单元提取所述第二窗口上显示的内容的所选择部分；以及

由所述第一终端将所述内容的所提取部分发送到所述第二终端。

14. 根据权利要求 13 所述的方法，其中，所述第二窗口上显示的内容是图像或文本。

15. 根据权利要求 13 所述的方法，该方法进一步包括以下步骤：

当所述第二窗口上显示的内容包括文本时，在所述第一终端的所述显示器上显示请问是否要将所述文本单独发送到所述第二终端的弹出窗口。

16. 根据权利要求 13 所述的方法，其中，所述多个窗口进一步包括第三窗口，该第三窗口用于显示所述内容的已发送部分在所述第二终端的显示图像。

17. 根据权利要求 13 所述的方法，该方法进一步包括以下步骤：

由所述第一终端对所述内容的所提取部分进行压缩；和 / 或

由所述第一终端对所述内容的所提取部分进行缩放。

18. 根据权利要求 13 所述的方法，其中，显示步骤在弹出窗口中显示所述内容的所提取部分。

19. 根据权利要求 13 所述的方法，该方法进一步包括以下步骤：

由所述第一终端从所述第二终端接收在所述第二终端上显示的已发送的所述内容的所提取部分的画面状态信息；以及

在所述第一终端的所述显示器上显示接收到的画面状态信息。

20. 根据权利要求 13 所述的方法，其中，在显示步骤中，根据用户输入而改变在所述显示器上显示所述多个窗口的方式。

21. 根据权利要求 13 所述的方法，该方法进一步包括以下步骤：

在所述第一终端的所述显示器上显示所述第二终端的显示器的分辨率信息或尺寸信息。

22. 根据权利要求 13 所述的方法，该方法进一步包括以下步骤：

在所述第二窗口上显示指示符，该指示符用于改变要选择的内容部分的尺寸。

23. 根据权利要求 13 所述的方法，该方法进一步包括以下步骤：

由所述第一终端确定在所述内容的所选择部分中是否包括文本；以及

如果确定步骤确定了在所述内容的所选择部分中包括文本，则由所述第一终端从所述内容的所选择部分中提取所述文本，

其中，所述第一终端仅仅将所提取的文本发送到所述第二终端。

24. 根据权利要求 23 所述的方法，该方法进一步包括以下步骤：

在将任何内容发送到所述第二终端之前，在所述第一终端的所述显示器上显示用于询问用户是否要将所提取的文本发送到所述第二终端的消息。

在视频会议系统中共享数据的方法和装置

技术领域

[0001] 本发明涉及在视频会议系统 (VCS) 中共享数据的方法和装置。

背景技术

[0002] 通过除图像传输以外还发送个人计算机 (PC) 的内容，VCS 具有促进视频会议发展的功能。通过在 VCS 中接收 PC 的视频输出信号，按 VCS 能够发送的尺寸来缩放所接收的信号，压缩经过缩放的画面的图像，并且经由网络发送压缩后的图像，从而实现内容传输。

[0003] 通常，由于 PC 的分辨率相对较高，所以 PC 基于 VCS 的图像压缩性能而降低其分辨率。与图像不同，由于内容在很多情况下包括文本，所以当由于降低分辨率的操作导致图像质量较差时，很难识别内容。尤其是，当通过应用于便携式装置的 VCS 功能来观看内容时，由于 PC 画面的缩放度相对较高，所以几乎不能识别文本。

[0004] 因此，非常需要一种方法来解决由于降低分辨率的操作而导致的上述限制。

发明内容

[0005] 本发明的实施方式提供了一种方法和装置，该方法和装置解决当用户和另一方的显示器在视频会议终端中具有各自不同的分辨率和尺寸时与现有技术向相关联的限制。

[0006] 本发明的实施方式还提供了一种方法和装置，该方法和装置通过当用户希望在视频会议系统中与另一方共享数据时仅提供用户利用为另一方的显示器进行了优化的格式所选择的部分，来解决与由于参与视频会议的不同用户的装置之间的不同性能而导致的与现有技术相关联的限制。

[0007] 本发明的实施方式还提供了一种方法和装置，该方法和装置通过考虑用户希望共享的数据是否仅包括文本来减少数据传数量。

[0008] 本发明的实施方式提供了一种用于提供视频会议的方法和装置，该方法和装置解决了与现有技术相关联的限制和缺点。

[0009] 根据实施方式，本发明中提供了一种 VCS 的数据共享方法，其中，如果用户希望与另一方共享数据，则不发送整个画面，而仅将用户选择的区域转换为针对另一方的显示器进行了优化的格式，以便按转换后的格式发送内容。

[0010] 在本发明的一个实施方式中，一种用于视频会议系统的终端包括：显示器，其被构成为显示用户或另一方的图像；用户输入单元，其被构成为接收用户的输入；区域剪切单元，其被构成为检测并捕捉用户选择的图像区域；以及网络单元，其被构成为发送捕捉到的图像区域。

[0011] 在本发明的另一个实施方式中，一种用于视频会议系统的终端包括：用户输入单元，其被构成为接收用户的输入；网络单元，其被构成为接收由另一方从显示在该另一方的显示器上的图像中选择的选择区域的图像；以及显示器，其被构成为显示接收到的所述选择区域的图像。

[0012] 在本发明的另一个实施方式中，一种在视频会议系统中发送数据的方法包括以下

步骤：检测在显示在用户终端的显示器上的图像的区域上的用户选择；捕捉所选择的区域的图像；以及向另一方的终端发送所捕捉到的图像。

[0013] 在本发明另一个实施方式中，一种在视频会议系统中接收数据的方法包括以下步骤：接收由另一方从显示在该另一方的显示器上的图像中选择的选择区域的图像；以及显示接收到的所述选择区域的图像。

[0014] 根据一个实施方式，本发明提供了一种用于与第二终端合作来提供视频会议的第一终端，该第一终端包括：显示器，其被构成为显示包括第一窗口和第二窗口的多个窗口，所述第一窗口被构成为显示所述第二终端的至少一个用户的图像，所述第二窗口被构成为显示与视频会议相关联的所述第一终端的内容；用户输入单元，其被构成为接收对所述第二窗口上显示的内容的一部分的用户选择；区域选择单元，其被构成为提取对所述第二窗口上显示的内容的所选择部分；以及网络单元，其被构成为向所述第二终端发送所述内容的所提取部分。

[0015] 根据另一个实施方式，本发明提供了一种用于与第二终端合作提供视频会议的方法，该方法包括以下步骤：通过第一终端的显示器显示包括第一窗口和第二窗口的多个窗口，所述第一窗口被构成为显示所述第二终端的至少一个用户的图像，所述第二窗口被构成为显示与视频会议相关联的所述第一终端的内容；通过所述第一终端接收对所述第二窗口上显示的内容的一部分的用户选择；通过所述第一终端的区域选择单元提取对所述第二窗口上显示的内容的所选择部分；以及通过所述第一终端向所述第二终端发送所述内容的所提取部分。

[0016] 在以下的附图和描述中阐述了根据本发明的一个或更多个实施方式的细节。根据这些描述和附图，并且根据权利要求，其它特征将更加明显。

附图说明

[0017] 附图被包括进来以提供对本发明的进一步理解，其被并入且构成本说明书的一部分，附图示出了本发明的实施方式，并与说明书一起用于解释本发明的原理。在附图中：

[0018] 图 1 是根据本发明一个实施方式的视频会议系统的结构。

[0019] 图 2 至 5 示出了根据本发明一个实施方式的发送用户终端的显示器上正在显示的用户显示的一部分的方法。

[0020] 图 5 是示出了根据本发明一个实施方式的 VCS 中的所选择区域的数据发送方法的流程图。

[0021] 图 6 是根据本发明一个实施方式的用于显示用户在用户终端 10 上选择的区域的图像的终端结构。

[0022] 图 7 至 9 示出了根据本发明一个实施方式的向用户提供要发送到另一方的图像的反馈的方法。

[0023] 图 10 是示出根据本发明一个实施方式的在将用户选择区域的图像发送到另一方之前或之后向用户提供反馈信息的方法的流程图。

[0024] 图 11 是根据本发明一个实施方式的如果用户选择区域的图像包括文本则基于用户选择仅发送文本的 VCS 的结构。

[0025] 图 12 示出根据本发明一个实施方式的当内容画面中的用户选择区域中存在文本

时确定是否仅向用户发送文本或图像的用户画面。

[0026] 图 13 是示出根据本发明一个实施方式的当在内容画面上显示的图像的用户选择区域中存在文本时仅提取并发送文本的方法的流程图。

具体实施方式

[0027] 现在将详细描述本发明的优选实施方式，在附图中示出了其示例。只要有可能，就在全部附图中使用相同的参考数字表示相同或类似的部件。

[0028] 此后，将参考附图更详细描述本发明的实施方式。

[0029] 图 1 是根据本发明一个实施方式的视频会议系统 (VCS) 的结构。视频会议系统的所有部件都得到有效连接和配置。

[0030] 参考图 1，发送端的用户终端 10 和接收端的另一方终端 20 通过诸如因特网、专用通信网或者其它网络的传输介质而相互交换数据。终端 10 和 20 可以是计算机、输入板 (tablet)、电视、移动终端、手机、智能手机、多媒体装置等。终端 10 和 20 可以是相同类型或不同类型的装置。

[0031] 用户终端 10 包括显示器 15、区域选择单元 11、缩放器 12、图像压缩单元 13、以及网络单元 14。显示器 15 向用户终端 10 处的用户显示视频会议图像。区域选择单元 11 从在显示器 15 的画面上显示的图像中剪切出选择的区域，并将所选择区域的图像作为附加图像临时存储在存储器中。存储器可以是终端 10 中的或者与终端 10 相关联的任何存储单元。缩放器 12 修改所选择区域的图像的分辨率和尺寸以使其适合另一方终端的显示器，从而产生缩放后的图像。图像压缩单元 13 压缩缩放后的图像。网络单元 14 经由传输介质发送压缩后的图像，并从另一方终端 20 接收预定数据，所述传输介质可以是通信网络、类似蓝牙的短距离或近场网络等。

[0032] 另一方终端 20 包括从用户终端 10 接收图像的网络单元 23、对所接收的图像进行解压缩并对图像进行处理的图像解压缩单元 22、以及基于处理后的图像显示视频会议图像的显示器 21。此外，另一方终端 20 可包括用于视频会议的显示单元。各个终端 10 和 20 可进一步包括用来捕捉相互发送的图像的摄像机。即，对于视频会议或其它用途，在用户终端 10 中进行的任何操作（例如，图像捕捉、图像发送、图像接收、区域选择、缩放等）可以在另一方终端 20 中执行，反之亦然。

[0033] 图 1 的视频会议系统用于从用户终端 10 向另一方终端 20 发送视频会议图像。由于在视频会议中实际上可以有多于两个的用户交换图像，所以用户终端 10 包括用于接收会议图像的配置单元，而另一方终端 20 包括用于发送图像的配置单元。此外，用于进行视频会议图像发送和接收的用户终端 10 和另一方终端 20 可以具有相同的结构。

[0034] 此外，可以通过一个专用处理器芯片或通用处理器来执行用户终端 10 和另一方终端 20 的部件功能，并且用户终端 10 和另一方终端 20 可以进一步包括用于处理器操作或其它操作的存储器或其它存储单元。

[0035] 图 2 示出根据本发明一个实施方式的 VCS 中的用户终端 10 的显示器 15 的用户画面 110 的示例。可以在画面 110 的一侧安装摄像机 111，以捕捉用户的图像。例如，用户终端 10 中可以包括摄像机，或者可以使用独立的（可拆卸的）摄像机。摄像机 111 可以安装在能够捕捉用户或者任何其它期望目标的图像的任何地方。

[0036] 用户画面 110 可包括用于表示用户端信息或者另一方信息的多个窗口。更详细地说，用户画面 110 可以包括用于显示另一方图像的另一方图像画面 / 窗口 112，用于显示用户端图像的用户图像画面 / 窗口 113，以及用于显示用户端的内容的用户内容画面 / 窗口 114。例如，另一方图像画面 112 可以显示从终端 20 向用户终端 10 发送的在另一方终端 20 的用户或任何期望目标的图像（例如，在终端 20 处摄像机捕捉的图像）。用户图像画面 113 显示在终端 10 处由摄像机 111 捕捉的图像。内容画面 114 是用于与另一方终端 20 处的另一方一起共享诸如文档、文本、视频、文件等的多媒体数据的窗口。用户内容画面 114 可以是用于除了显示用户端正在发送的图像之外还显示将要发送到在终端 20 处的另一方的多媒体数据的画面，因此，可以显示诸如文字处理器、幻灯片演示 (power point)、PDF 文件的各种格式的文档，还可以显示视频（例如，运动图像、静止图片等）。用户播放连接到用户终端 10 的 PC 或数据库中的内容，并显示它们，并且将用户内容画面 114 上的显示图像发送到另一方终端 20。

[0037] 根据实施方式，可以在终端 10 的画面 110 上提供其它窗口（另一方内容画面），其显示来自另一方的内容（例如，文档、PDF 文件等）。

[0038] 此外，尽管在上述示例中用户与一方进行视频会议，但是用户也可以与多方进行视频会议。在这种情况下，画面 110 可以对于各方都包括上述多个窗口（112、113 和 114 等）。

[0039] 作为变形，用户终端 10 处的用户可以选择另一方图像画面 112、用户图像画面 113、以及用户内容画面 114 中的一个或更多个以将其包括在用户画面 110 上。例如，用户可以根据用户偏好来配置画面 110 的显示方式。这种情况下，仅在用户画面 110 上显示所选择的画面。例如，用户可以安排仅显示另一方图像画面 112 或者仅显示另一方图像画面 112 和另一方内容画面（例如图 9 中的 124）。

[0040] 根据现有技术，如果使用常规技术将用户内容画面上显示的图像原样发送到另一方终端，那么，由于另一方终端的显示器的最优分辨率和图像尺寸与该用户终端的显示器的最优分辨率和图像尺寸不同，所以可能不能将图像像显示在用户内容画面上一样显示在另一方终端上，并且出现观看的问题。尤其是，如果用户终端的显示器具有较高的性能规格，那么，即使发送在用户内容画面上显示的图像，也不能在另一方终端的显示器上恰当地进行显示。此外，如果发送整个内容画面，则由于还发送了不需要的部分，所以浪费了资源。

[0041] 本发明解决了现有技术的这些局限。根据本发明，用户终端 10 的用户从用户内容画面 114 选择要进行发送的区域。在图 2 中，如果从内容画面 114 用字母 / 文本选择了部分区域 115，则仅向另一方终端 20 发送所选择的部分区域 115。即，选择图 3 中所示的图像，并将其从当前显示在内容画面 114 上的图像中剪切出来然后进行复制，然后，将剪切图像的副本发送到另一方终端 20，以在其中进行存储和 / 或进行显示。无论此操作的情况如何，在内容画面 114 上显示的图像都可以连续显示。如果用户知道另一方终端 20 的显示器 21 的规格低于用户终端 20 的显示器 15 的规格，则选择用户希望发送到另一方的一部分图像，然后进行发送。

[0042] 通过缩放器 12 对选择区域 115 的图像进行缩放以适应另一方显示器 15 的图像尺寸和分辨率，并且通过图像压缩单元 13 对其进行压缩，然后利用网络单元 14 将其发送到另一方终端 20。关于这一点，可以从另一方终端 20 发送有关另一方显示器 21 的信息（例如，

有关对于另一方显示器 21 最优的分辨率和图像尺寸的信息），作为视频会议开始之前提供的系统信息的一部分。

[0043] 根据一个实施方式，当从另一方终端 20 接收了有关另一方显示器 21 的信息时，可以将其显示在用户终端 10 的用户画面 110 上。可以由终端 10 的用户选择是否显示另一方的显示器信息。

[0044] 根据一个实施方式，如图 4 所示，用户内容画面 114 显示指示符 116，该指示符 116 显示对于另一方显示器 21 最优的选择区域的尺寸。可以以很多不同的方式显示指示符 116，例如，当用户选择指定的指示符按钮 / 按键时，当用户在用户内容画面 114 上进行双击时，等等。终端 10 的用户可以移动指示符 116，以对用户希望发送到另一方的部分进行定位。例如，终端 10 的用户可以增大或减小指示符 116 的尺寸，并且 / 或者可以在画面 114 上沿任何方向移动指示符 116，以选择所显示图像的任何期望部分。这可以利用终端 10 的输入单元来完成，例如鼠标、遥控器、控制面板 / 控制台、键盘、软键等。一旦完成了指示符 116 的定位，用户就例如通过在指示符 116 上进行点击 / 选择等，来选择属于适当定位 / 定尺寸的指示符 116 的内容。将用户内容画面 114 的这个选中部分（包括其中显示的内容）指定为用户选择区域。然后，可以对用户选择区域进行缩放和 / 或图像压缩以及用于另一方终端 20 的任何其它处理，然后，例如经由网络单元 14 或者其它装置向另一方终端 20 发送经过处理的用户选择区域，然后将其在显示器 21 进行显示。可以基于用户的选择 / 命令将指示符 116 设置为不可见。

[0045] 根据一个实施方式，如果利用指示符 116 来选择将要按照针对另一方显示器 21 最优的分辨率和图像尺寸进行发送的区域，则可以省略缩放器 12 的缩小处理。

[0046] 结果，根据本发明，另一方终端 20 处的用户可以观看终端 10 处的用户为视频会议选择的部分图像。此操作可以按许多方式用于视频会议。例如，在视频会议期间，终端 10 处的用户可以仅仅将用户显示器 15 上当前显示的全部图像 / 内容的适当部分发送到另一方，以得到更集中的讨论和关注。其进一步减少了视频会议期间的数据传输时间量，这继而减少了等待时间量和视频会议时间量。此外，终端 10 处的用户能够控制另一方可以观看到什么信息。

[0047] 图 5 是示出了根据本发明一个实施方式的 VCS 中的画面的选择区域的数据发送方法的流程图。可以在图 1、6 或 11 的 VCS 中或者在本文讨论的本发明的任何其它 VCS 中实现图 5 的方法以及本文中讨论的本发明的任何其他方法。

[0048] 参考图 5，一旦在操作 S101 中启动 VCS，则在操作 S102 中在用户终端的用户显示器（例如，15）上显示内容画面（例如，用户内容画面 114），以便与另一方共享文档或者诸如视频的多媒体数据。如果用户终端处的用户在操作 S103 中选择内容画面的区域，则在操作 S104 中剪切并复制所选择的区域，并将所选择区域的副本作为附加图像存储在用户终端的存储器中。在操作 S105 中缩小剪切的图像 / 区域，并在操作 S106 中对其进行压缩，然后在操作 S107 中将其发送到另一方终端（例如，20）以进行诸如显示、编辑、存储、复制、传输、记录等的任何处理。根据一个实施方式，如果用户选择的区域具有对于另一方显示器（例如，21）最优的尺寸，则可以省略用户终端处的缩放。

[0049] 根据一个实施方式，在发送到另一方之前，可以在用户终端显示用户终端处的用户希望发送的所选择区域的图像（例如，用于用户终端处的用户进行检验）。

[0050] 图 6 是根据本发明一个实施方式的用于显示用户在用户终端 10 上选择的画面 / 窗口的区域的图像的终端结构。除了将缩放器 12 的输出（反馈）以及图像输入发送到显示器 15 并在其上进行显示之外，此实施方式大致与图 1 的实施方式相同。图 6 的 VCS 的所有部件都得到了有效连接及配置。

[0051] 根据以上结构，如图 7 所示，当用户（例如，终端 10 处的用户）选择区域 115 时，可以在显示器 15 的用户画面之一（例如，用户图像画面 113）上的弹出窗口中显示所选择区域的图像 117。通过这样做，用户可以接收关于是否恰当选择了要发送的图像的反馈。

[0052] 根据一个实施方式，在发送了用户选择区域 117 的图像之后，再次从另一方终端 20 接收关于正在另一方显示器 21 上显示的状态的信息，然后将其显示在用户端画面上。例如，因为在用户显示器 15 上显示正在另一方显示器 21 上显示的图像，所以可以提供所希望的关于是否在另一方显示器 21 上恰当显示了用户选择区域的图像的反馈。

[0053] 另一方终端 20 接收用户选择区域 17 的图像，然后将其显示在显示器 21 上。关于在另一方显示器上对于用户选择区域图像 17 的显示状态的信息可以是在显示器 21 处的上述显示画面的捕捉图像。

[0054] 如图 8 所示，可以在用户终端 10 的另一方图像画面 112 上的弹出窗口（117）中显示从另一方终端 20 接收的反馈信息（即，关于另一方显示器 21 上正在显示的图像的信息）。作为变形，当用户显示器 15 如图 9 所示地单独显示另一方内容画面 124（即，用于显示正在显示器 21 上显示的内容的画面）时，可以在另一方内容窗口 124 上的弹出窗口（117）中显示反馈信息。

[0055] 图 10 是示出根据本发明一个实施方式的提供反馈信息的方法的流程图，所述反馈信息关于在将用户选择区域的图像发送到另一方之前是否恰当选择了用户发送的图像、以及在发送图像之后是否在另一方显示器上恰当显示了图像。可以在图 6 的 VCS 中实现图 10 所示的方法。

[0056] 参考图 6，一旦在操作 S201 中启动了 VCS，就在操作 S202 中在用户终端（例如，10）上显示包括内容画面（例如，114）的用于视频会议的画面。在操作 S203 中，当用户从内容画面中选择了预定区域时，在操作 S204 中在用户显示器（例如，15）的弹出窗口中显示用户选择的区域。一旦用户确认了用户选择区域的图像并确定了将其发送，则在操作 S205 中剪切并复制用户选择区域，然后将副本另外存储在用户终端的存储器中。在操作 S206 中缩小用户选择区域以使其适于另一方的显示器，并在操作 S207 中进行压缩。然后，在操作 S208 中向另一方终端（例如，20）发送压缩后的图像。在操作 S209 中，在用户终端的显示器 15 上显示另一方终端 20 从用户终端 10 接收的图像，然后，再次向用户终端发送所捕捉的显示图像，如图 7 至 9 所示。然后，如图 8 至 9 所示，在操作 S210 中，在显示器 15 上显示所接收的反馈图像。用户确认反馈图像，如果有问题，则再次发送相同的图像，或者从用户终端 10 向另一方终端 20 发送具有不同尺寸的图像。

[0057] 根据一个实施方式，如果在视频会议期间用户希望发送给另一方的图像主要包括文本，那么，仅仅提取文本，然后进行发送。于是，相比图片或视频，文本具有明显小得多的数据传输量，从而可以显著减少视频会议的数据传输所消耗的资源。

[0058] 图 11 是根据本发明一个实施方式的如果用户选择区域的图像包括文本则基于用户选择仅发送文本的 VCS 的结构。图 11 的 VCS 与图 1 和 6 所示的 VCS 类似，但是可以进一

步包括用于单独处理文本的单元。图 11 的 VCS 的所有部件都得到有效连接和配置。

[0059] 如图 11 和 12 所示，用户终端 30 包括显示器 28、区域剪切单元 21、文本确定单元 25、文本提取单元 26、以及文本压缩单元 27。显示器 28 向用户终端 30 处的用户显示图像（如另一方的图像和 / 或内容、用户的内容和 / 或图像等）。区域选择单元 21 剪切出用户从显示在显示器 28 的画面 310 上的画面 / 窗口 112、113、114 等之中的用户内容画面 114 中选择的区域，对其进行复制，然后将剪切区域的副本作为附加图像临时存储在用户终端 30 的存储器中。文本确定单元 25 确定在用户选择区域中是否包括文本。如果确定了在用户选择区域中存在文本，则在用户确定了向另一方仅发送文本之后，文本提取单元 26 从用户选择区域中提取文本。文本压缩单元 27 压缩所提取的文本，或者将所提取的文本转换为用于传输的格式。另外，如果用户确定了发送图像（即，不是仅仅发送文本，而是发送可能包括图片、文本等的全部内容），那么，即使用户选择区域中包括文本或者用户选择区域中没有文本，用户终端 30 也包括 ：缩放器 22，其用于按对于另一方显示器 41 最优的分辨率和图像尺寸对选择的图像进行缩放 ；图像压缩单元 23，其用于对缩放后的图像进行压缩，并将其转换为适于传输的格式 ；以及网络单元 24，其用于发送图像或文本。

[0060] 另一方终端 30 包括用于接收图像和 / 或文本的网络单元 43、用于将图像 / 文本处理为可输出格式的图像和文本解压缩单元 42、以及用于输出经过处理的图像和 / 或文本的显示器 41。如图 1 或 6 中所示，图 11 是根据本发明一个实施方式的用于将用户从用户终端 30 中选择的区域的图像发送到另一方终端 40 的结构。然而，用户终端 30 和另一方终端 40 互相发送和接收数据，从而它们的结构可以相同。此外，可以通过专用处理器或通用处理器 / 控制器来执行上述部件的功能。即，图 1、6 和 11 的各个终端包括控制该终端的所有部件的操作的处理器 / 控制器。

[0061] 图 12 示出显示器 28 的用户画面 310 的示例，该用户画面 310 用于确认当内容画面 114 的用户选择区域中存在文本时是否向另一方仅发送文本还是向另一方发送图像。如图 12 所示，如果文本确定单元 25 确定了用户为传输而选择的用户选择区域 115 中存在文本，则向用户显示询问用户是发送用户选择区域 115 中的图像还是仅发送文本的消息 131。如果用户终端 30 的用户选择了“是”（例如，仅发送文本），则仅从用户选择区域 115 中提取文本，然后向另一方终端 40 仅发送所提取的文本，以进行诸如显示、再现、编辑、记录等的各种处理。接收到文本的另一方终端 40 可以在视频会议期间或之前以适当的格式在显示器 41 上显示该文本。另一方面，如果用户终端 30 的用户选择“否”（例如，发送用户选择区域的全部内容），则使用部件 22 至 24，根据图 1 和 6 所示的方法，对图像（即，用户选择区域的全部图像）进行选择、处理并发送到另一方终端 40。

[0062] 根据上述结构，当用户在视频会议期间希望从用户终端发送到另一方终端的图像仅包括文本时，传输数据量或者传输时间长度都可以得到显著降低。

[0063] 图 13 是示出根据本发明一个实施方式的当用户内容画面上显示的图像的用户选择区域中存在文本时仅提取并发送文本的方法的流程图。可以在图 11 的 VCS 中实现图 13 所示的方法。

[0064] 参考图 13，在操作 S301 中启动 VCS，在操作 S302 中在用户画面（例如，310）上显示各种画面 112、113、114（并且可能有类似 124 的另一方内容画面）。如果用户终端 30 的用户在操作 S303 中在用户内容画面 114 上选择一区域以与另一方共享，则在操作 S304 中，

文本确定单元 25 确定所选择的区域是否包括文本。如果在用户选择区域中存在文本，则在操作 S305 中，通过向用户显示消息（例如，131）来确认是否仅发送文本。如果用户终端 30 的用户选择仅发送文本，则在操作 S306 中，从用户选择区域中仅提取文本，在操作 S307 中将其压缩并 / 或转换为对传输最优化的格式，然后在操作 S308 中将其发送到另一方终端 40。

[0065] 如果在操作 S304 中文本确定单元 25 确定了用户选择区域中不存在文本，或者如果在操作 S305 中用户选择发送用户选择区域的全部图像，则在操作 S309 中，剪切全部的用户选择区域并将其作为附加图像存储在用户终端 30 中。然后，在操作 S310 中，按照对于另一方显示器 41 最优化的分辨率和尺寸缩小所存储的附加图像。接着，在操作 S311 中将缩放后的图像压缩为适于传输的格式，然后在操作 S312 中将其发送到另一方终端 40，以进行显示、记录、存储、再现、编辑、共享等。

[0066] 在图 1、6 和 11 的 VCS 中，部件之间的方向箭头仅是示例，VCS 的所有部件都可以根据需要提供相互双向通信。此外，控制器可以控制各个终端中的这些部件的操作。此外，一个实施方式的特征可以应用于其它实施方式。例如，图 1 所示的指示符 116 同样可以应用于图 6 和 11 所示的 VCS。

[0067] 根据本发明的实施方式，当用户希望对于视频会议或者在视频会议期间与一方或更多方相互共享数据时，仅仅用户选择的数据部分按照针对其他方的显示器最优化的格式来提供，从而可以抵消或者最小化参与视频会议的所有成员的装置之间的性能差异。

[0068] 此外，根据本发明，考虑用户希望共享的数据是否仅包括文本，可以降低传输的数据量或者数据传输时间。

[0069] 尽管已经参考本发明的多个示例性实施方式描述了本发明的实施方式，但是应当理解，本领域技术人员可以设计出落入本发明原理的精神和范围之内的很多其他修改和实施方式。更具体地说，在本公开、附图以及所附权利要求的范围之内，可以就组成部件和 / 或所考虑的组合安排进行各种变化和修改。除了对组成部件和 / 或安排的变化和修改之外，对于本领域普通技术人员，另选的用途也是非常明显的。

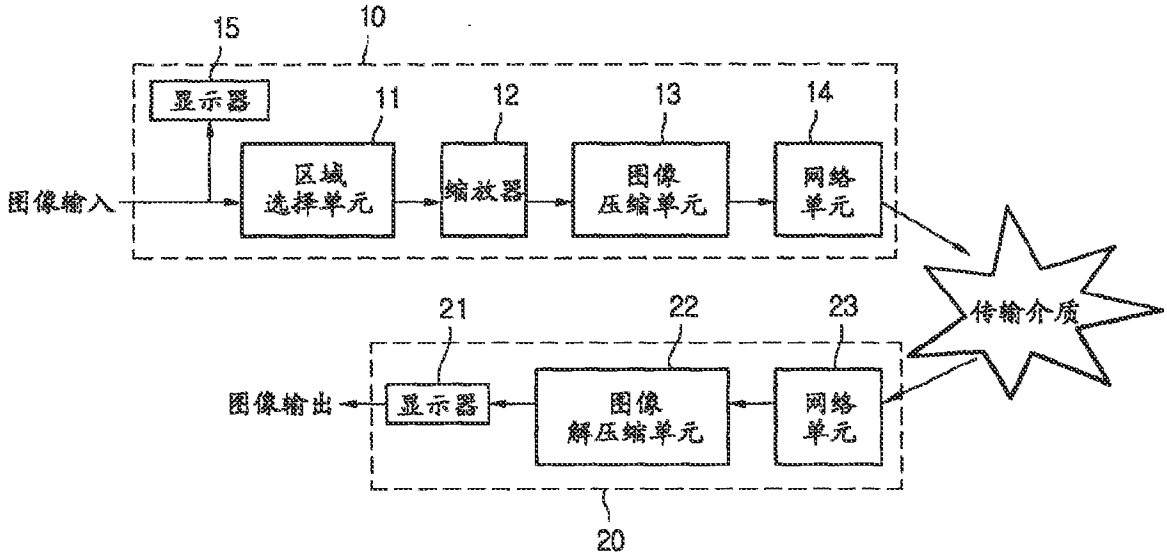
15
10
显示器
11
12
13
14
图像输入
区域
选择单元
缩放器
图像
压缩单元
网络
单元
传输介质
21
22
23
图像输出
显示器
图像
解压缩单元
网络
单元
20

图 1

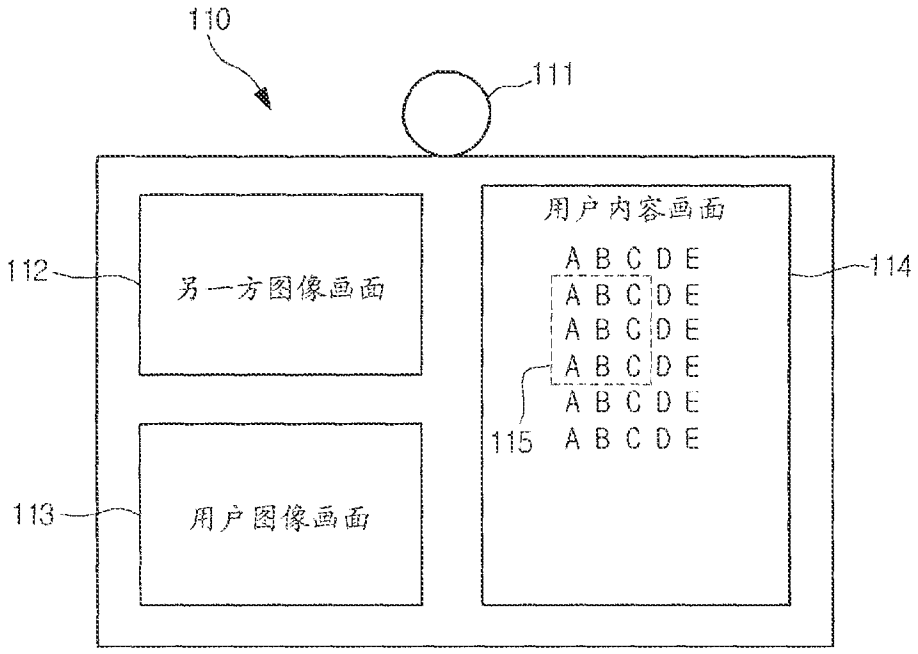
110
111
112
另一方图像画面
用户内容画面
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
114
115
113
用户图像画面

图 2

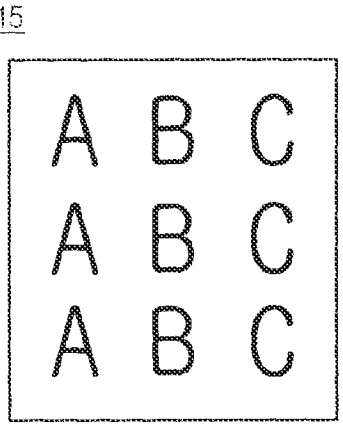
115
A B C
A B C
A B C

图 3

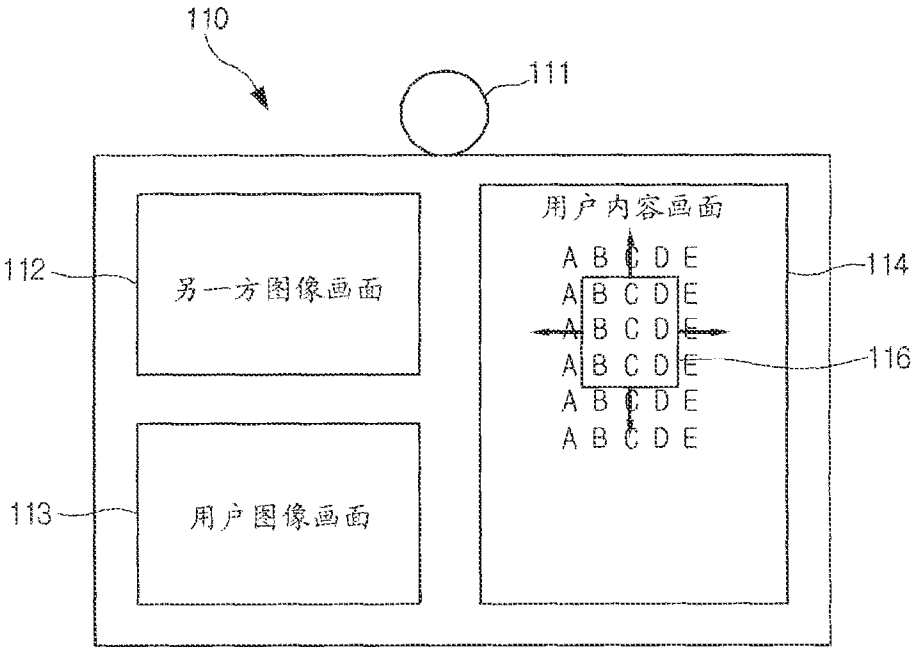
110
111
112
另一方图像画面
113
用户图像画面
用户内容画面
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
114
116

图 4

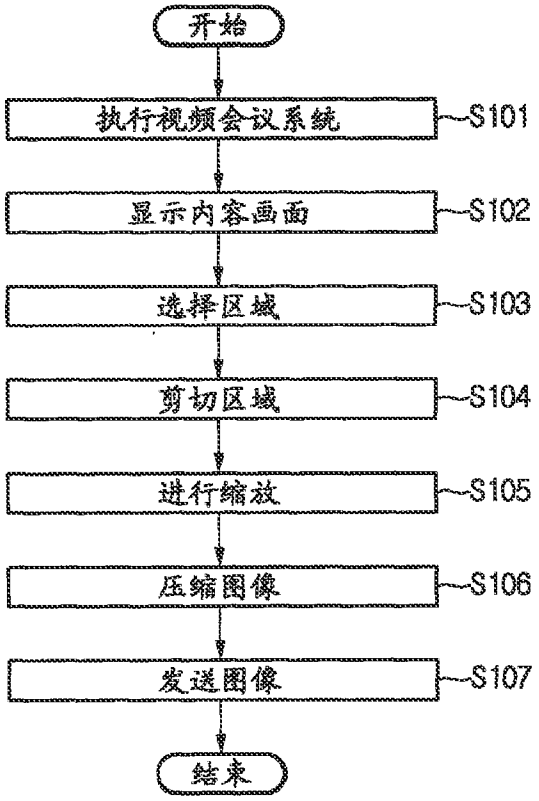
开始
执行视频会议系统
S101
显示内容画面
S102
选择区域
S103
剪切区域
S104
进行缩放
S105
压缩图像
S106
发送图像
S107
结束

图 5

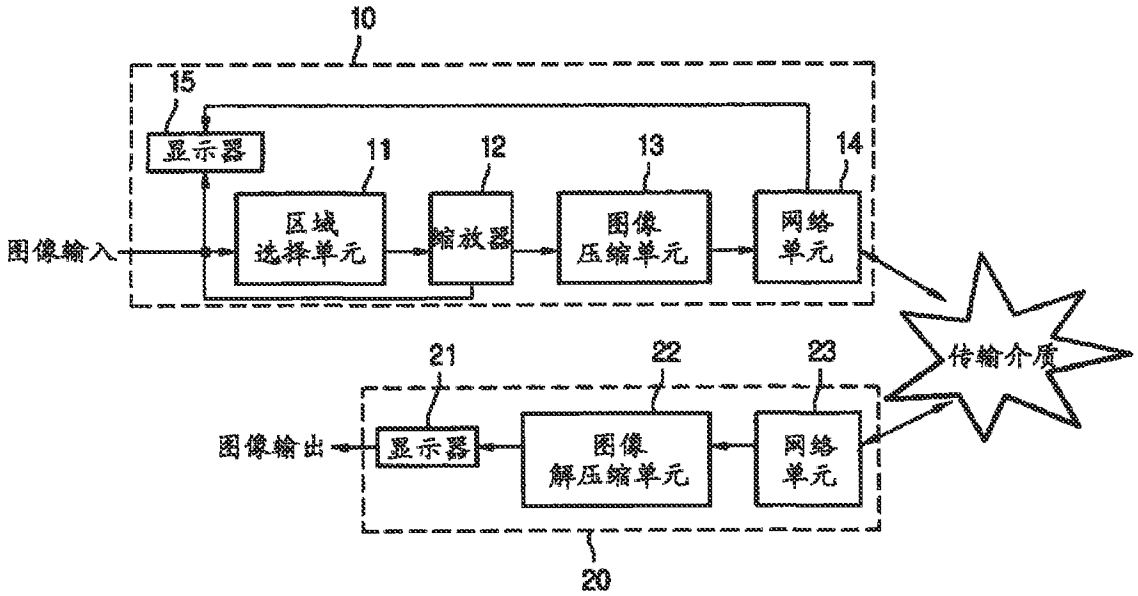
10
15
显示器
11
12
13
14
图像输入
区域选择单元
缩放器
图像压缩单元
网络单元
传输介质
21
22
23
图像输出
显示器
图像解压缩单元
网络单元
20

图 6

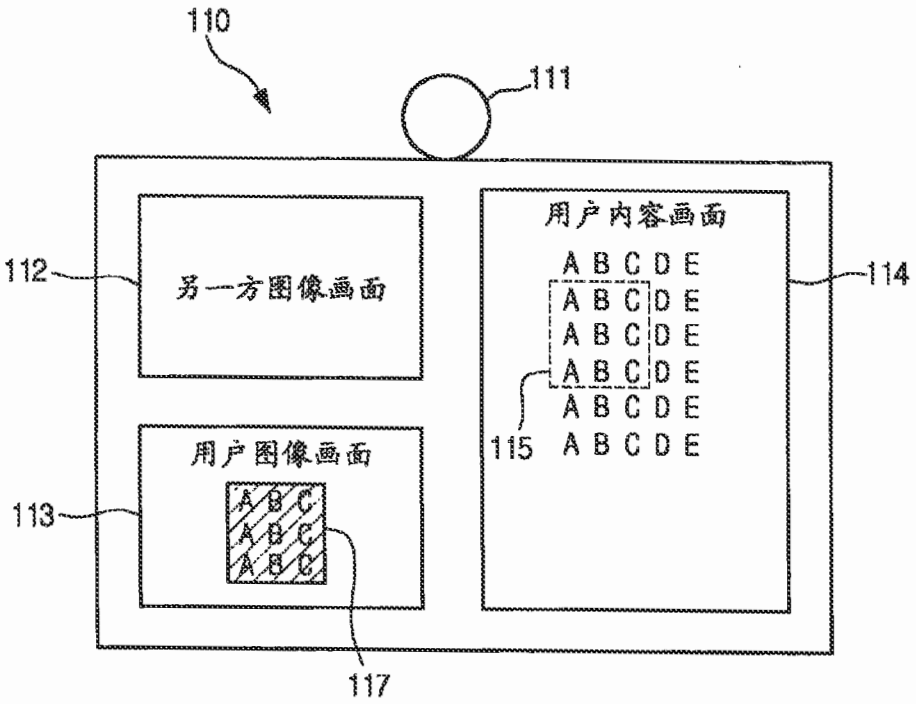
110
111
另一方图像画面
112
用户内容画面
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
114
115
用户图像画面
A B C
A B C
A B C
113
117

图 7

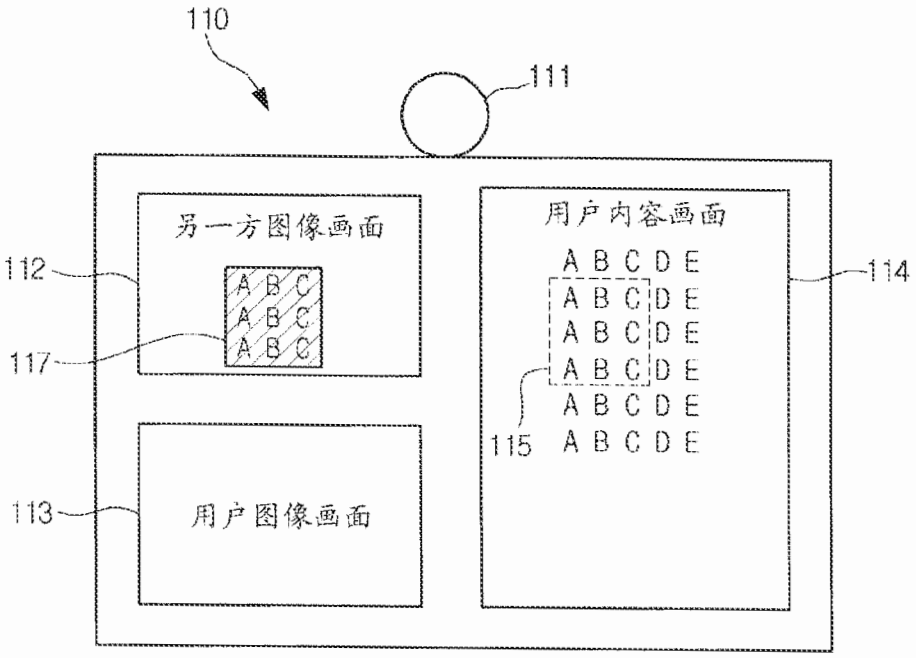
110
111
另一方图像画面
A B C
A B C
A B C
112
117
用户内容画面
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
114
115
用户图像画面
113

图 8

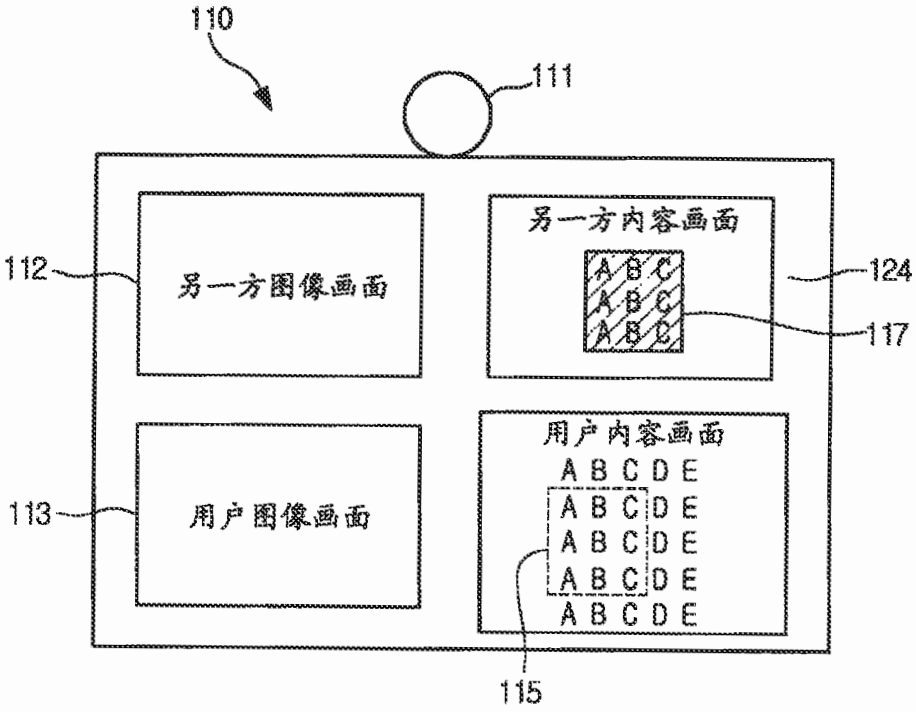
110
111
另一方图像画面
112
另一方内容画面
A B C
A B C
A B C
124
117
用户图像画面
113
用户内容画面
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
115

图 9

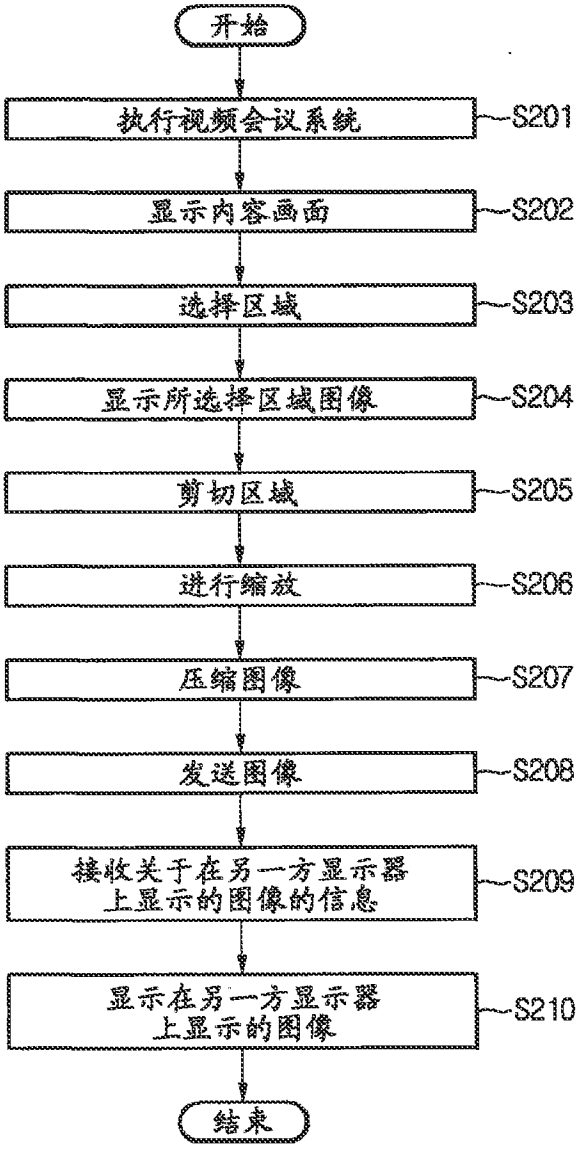
开始
执行视频会议系统
S201
显示内容画面
S202
选择区域
S203
显示所选择区域图像
S204
剪切区域
S205
进行缩放
S206
压缩图像
S207
发送图像
S208
接收关于在另一方显示器上显示的图像的信息
S209
显示在另一方显示器上显示的图像
S210
结束

图 10

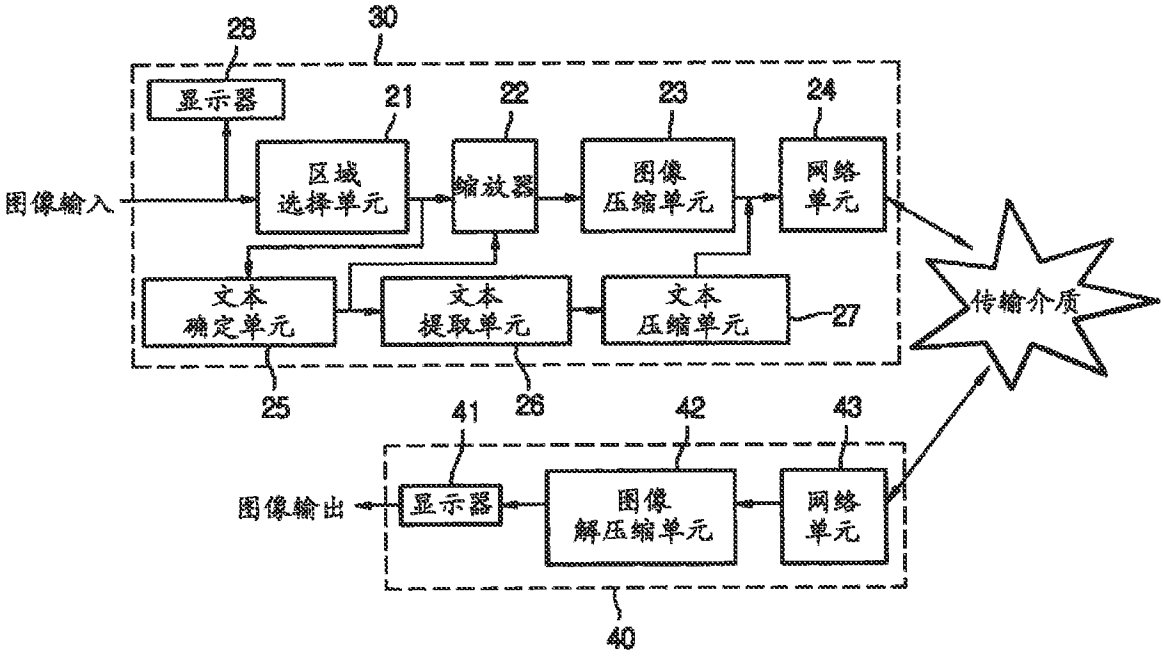
28
30
显示器
21
22
23
24
图像输入
区域
选择单元
缩放器
图像
压缩单元
网络
单元
传输介质
文本
确定单元
文本
提取单元
文本
压缩单元
27
25
26
41
42
43
图像输出
显示器
图像
解压缩单元
网络
单元
40

图 11

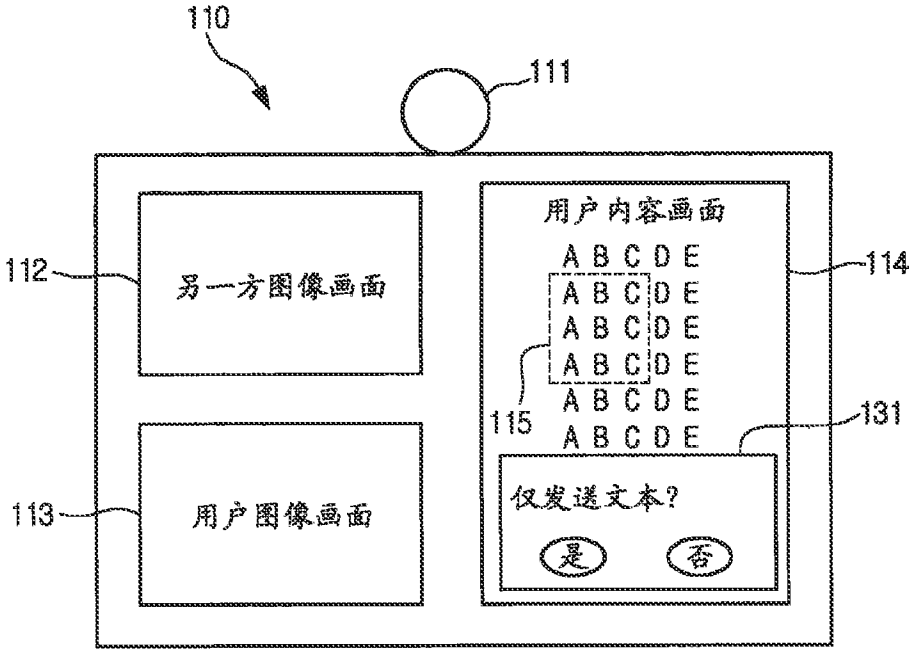
110
111
112
另一方图像画面
用户内容画面
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
A B C D E
114
115
131
113
用户图像画面
仅发送文本?
是
否

图 12

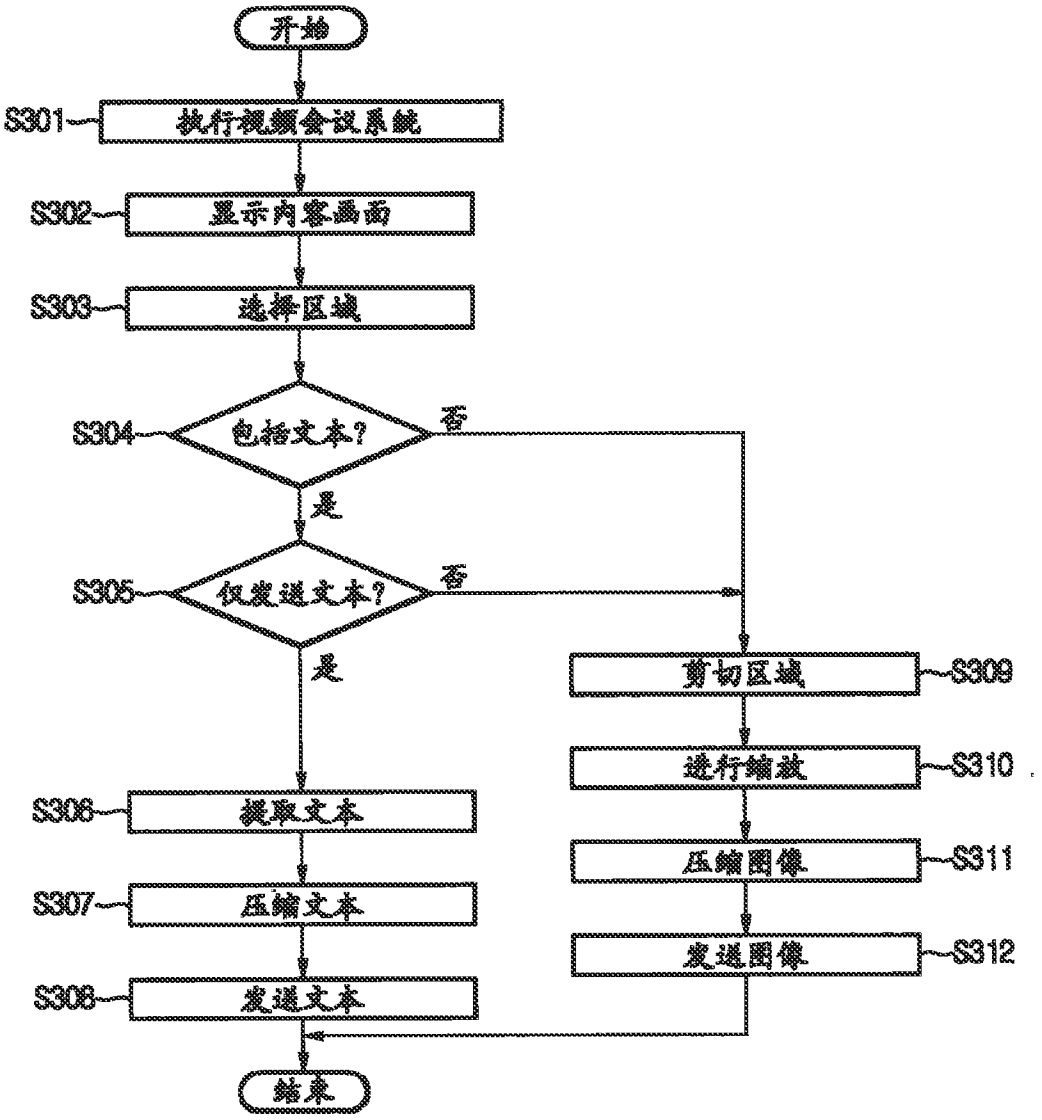
开始
S301
执行视频会议系统
S302
显示内容画面
S303
选择区域
S304
包括文本?
否
是
S305
仅发送文本?
否
是
S306
提取文本
S307
压缩文本
S308
发送文本
结束
剪切区域
S309
进行缩放
S310
压缩图像
S311
发送图像
S312

图 13

Europäisches Patentamt
European Patent Office
Office européen des brevets

Espacenet

CN1609780A Systems and methods for projecting content from computing devices

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Inventors: FULLER ANDREW J [US],MANION TODD R [US],SOIN RAVIPAL S [US],WILLIAM MAK [US],ZINK RONALD O [US]

Classifications:

IPC ***G06F13/00; G06F15/16; G06F15/173; G06F17/00; G06F19/00; G06F3/00; G06F3/033; G06F3/048; G06F3/14; G08C17/02; G09G5/00;*** (IPC1-7): G06F3/14;

CPC **G06F15/16 (KR); G06F3/14 (KR); G06Q50/10 (KR); G09G5/006 (EP);**

Priorities: US51433803P 2003-10-24; US78683304A 2004-02-25

Application: CN1609780A·2004-10-22

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Systems and methods for projecting content from computing devices

Abstract

Systems and methods are provided hat enable an alternate display device to wirelessly receive content from a computing device, freeing users from the burden of physically connecting the computing device via a cable. The content sent to the display device can also be simultaneously or separately viewed on the computing devices of other nearby computing devices. Generic mechanism(s) and corresponding user interfaces are provided for computing devices to engage in discovery of devices to which content may be delivered, for accepting delivery and for initiating transmission of content.

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[51] Int. Cl[7]
G06F 3/14

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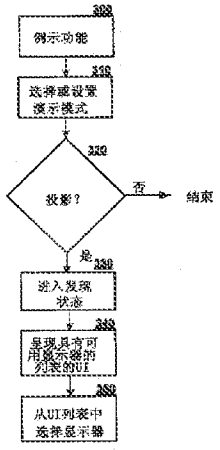
代理人 谢喜堂
权利要求书 11 页 说明书 35 页 附图 15 页

[54] 发明名称 用于投影来自计算装置的内容的系统和方法

[57] 摘要

提供了系统和方法，使备用显示器装置能够无线地从计算装置接收内容，把用户从物理地经由电缆连接计算装置的负担中解放出来。 要发送给所述显示装置的内容，还可以同时地或独立地在另一个邻近计算装置的计算装置上被观看。 为计算装置提供了通用装置和相应的用户界面，以使其发现内容所要传送的装置，用于接受传送并用于开始内容的发送。



ISSN1008-4274

1. 一种把内容从一个计算装置投影到备用显示器装置的方法，其特征在于，包括：

通过用户界面装置显示对应于可用的备用显示器装置的至少一个指示；

通过用户界面装置，从所述至少一个指示指示出为可用的备用显示器装置中选择至少一个备用显示器装置；以及

把所述内容传送到所选择的至少一个备用显示器装置。

2. 如权利要求 1 所述的方法，其特征在于，还包括：

根据发现协议发现能够接收所述内容的可用的备用显示器装置。

3. 如权利要求 1 所述的方法，其特征在于，所述传送包括，借助于远程协议在所述计算装置和所选的至少一个备用显示器装置之间建立远程对话。

4. 如权利要求 3 所述的方法，其特征在于，所述远程协议是远程桌面协议，所述远程对话是终端服务(TS)对话。

5. 如权利要求 1 所述的方法，其特征在于，还包括：当在所选择的至少一个备用显示器装置上呈现时，指明所述内容的至少一部分要隐藏。

6. 如权利要求 1 所述的方法，其特征在于，所述传送包括，当呈现所述内容时，传送要被呈现在所选择的至少一个备用显示器装置上的附加内容。

7. 如权利要求 6 所述的方法，其特征在于，所述附加内容输入到所述计算装置，以便作为正被呈现的内容上的一个亮点显示。

8. 如权利要求 7 所述的方法，其特征在于，所述附加内容是在所述至少一个备用显示器装置的显示器上被显示成（A）色点、(B)激光指针和(C)带有轨迹的指针中的任一种的所述计算装置的鼠标输入。

9. 如权利要求 1 所述的方法，其特征在于，所述传送包括：

传送对传送内容的请求到所选择的至少一个备用显示器装置中的备用显示器装置；以及

等待来自根据所述传送而允许内容的传送的备用显示器装置的响应。

10. 如权利要求 1 所述的方法，其特征在于，响应于所述传送，所述内容基本上同时地显示在所选择的至少一个备用显示器装置上。

11.如权利要求 2 所述的方法，其特征在于，所述发现协议是通用即插即用(UPnP)协议。

12.如权利要求 1 所述的方法，其特征在于，还包括借助于所述用户界面指定根据所述传送而要传送到所选择的至少一个备用显示器装置的内容。

13.如权利要求 3 所述的方法，其特征在于，还包括，为所述计算装置和所选择的至少一个备用显示器装置之间的每个远程对话，通过用户界面显示与所述远程对话相关联的信号强度的指示。

14.如权利要求 13 所述的方法，其特征在于，根据障碍物、距离和要维持的数据速率中的至少一个，为每个远程对话示出信号品质的预定水平数。

15.如权利要求 13 所述的方法，其特征在于，还包括储存与远程对话的信号强度相关联的文件。

16.一种计算机可读介质，其特征在于，包括计算机可执行模块，具有用于执行权利要求 1 所述的方法的计算机可执行指令。

17.一种计算装置，其特征在于，包括用于执行权利要求 1 所述的方法的装置。

18.一种载有用于执行权利要求 1 所述的方法的计算机可执行指令的已调数据信号。

19.至少一个计算机可读介质，其包括计算机可执行指令，用于实施与具有能够根据至少一个投影协议被投影到其他计算装置上的内容的计算装置的用户相连接的方法，该方法包括：

在计算装置上显示用户界面；

发现是否有至少一个备用显示器装置能够根据所述至少一个投影协议接收该内容；以及

根据所述发现，如果至少一个备用显示器装置能够接收所述内容，则通过所述用户界面显示所述至少一个备用显示器装置的至少一个指示。

20.如权利要求 19 所述的至少一个计算机可读介质，其特征在于，所述方法还包括：通过所述用户界面选择所述内容。

21.如权利要求 19 所述的至少一个计算机可读介质，其特征在于，所述发现包括，发现是否有至少一个备用显示器装置能够根据所述至少一个投影协议

接收所述内容。

22.如权利要求19所述的至少一个计算机可读介质，其特征在于，所述发现包括发现对应于所述至少一个备用显示器装置的至少一个网际协议(IP)地址。

23.如权利要求19所述的至少一个计算机可读介质，其特征在于，所述发现包括，检测根据通用即插即用(UPnP)协议通知其存在至少一个备用显示器装置。

24.如权利要求19所述的至少一个计算机可读介质，其特征在于，所述方法还包括：

通过所述用户界面选择所述至少一个指示中的一个指示；以及

控制与所选指示相关联的备用显示器装置的特征。

25.如权利要求24所述的至少一个计算机可读介质，其特征在于，所述控制包括根据远程桌面协议(RDP)进行控制。

26.如权利要求19所述的至少一个计算机可读介质，其特征在于，所述方法还包括：

通过所述用户界面选择所述至少一个指示中的一个指示；以及

创建到与所选指示相关联的备用显示器装置的远程连接。

27.如权利要求26所述的至少一个计算机可读介质，其特征在于，所述方法还包括：

经由所述远程连接，将内容传送到与所选指示相关联的所述备用显示器装置。

28.如权利要求26所述的至少一个计算机可读介质，其特征在于，所述创建包括下述中的至少一个：（A）创建与所述备用显示器装置的终端服务对话，以及(B)创建与通用即插即用(UPnP)技术的远程连接。

29.如权利要求19所述的至少一个计算机可读介质，其特征在于，所述方法还包括：

通过所述用户界面选择所述至少一个指示中的一个指示；以及

破坏到与所选指示相关联的备用显示器装置的远程连接。

30.至少一个计算机可读介质，其包括计算机可执行指令，用于实施与具

有能够显示独立的内容、有效地分散所述计算装置的显示的多个显示器的计算装置的用户相连接，该方法包括：

在所述计算装置的多个显示器中的第一个显示器上显示一用户界面；

根据至少一个扩展协议，发现是否至少一个备用显示器装置能够接收与所述计算装置的多个显示器中的一个显示器的至少一部分相关联的内容；以及

根据所述发现，如果至少一个备用显示器装置能够接收所述内容，则通过所述用户界面显示所述至少一个备用显示器装置的至少一个指示。

31. 如权利要求 30 所述的至少一个计算机可读介质，其特征在于，所述方法还包括：

通过用户界面，选择多个显示器中的一个显示器的至少一部分；

通过所述用户界面选择所述至少一个指示中的一个指示；

创建到与所选指示相关联的备用显示器装置的远程连接；以及

把至少一部分显示经由所述远程连接传送到与所选指示相关联的所述备用显示器装置。

32. 如权利要求 31 所述的至少一个计算机可读介质，其特征在于，所述创建包括创建与所述备用显示器装置的终端服务对话。

33. 如权利要求 31 所述的至少一个计算机可读介质，其特征在于，所述传送包括，传送由至少一部分显示所收到的输入，作为在所述备用显示器装置上的特定指示。

34. 如权利要求 33 所述的至少一个计算机可读介质，其特征在于，所述传送包括，传送由多个显示器中的一个显示器的至少一部分所收到的输入，作为在所述备用显示器装置上的彩色标志。

35. 如权利要求 30 所述的至少一个计算机可读介质，其特征在于，所述发现包括，发现是否有至少一个备用显示器装置能够根据所述至少一个扩展协议接收所述计算装置的至少一部分显示。

36. 如权利要求 30 所述的至少一个计算机可读介质，其特征在于，所述发现包括发现对应于所述至少一个备用显示器装置的至少一个网际协议(IP)地址。

37. 如权利要求 30 所述的至少一个计算机可读介质，其特征在于，所述发

现包括，检测根据通用即插即用(UPnP)协议通知其存在的至少一个备用显示器装置。

38.如权利要求 30 所述的至少一个计算机可读介质，其特征在于，所述方法还包括：

通过所述用户界面选择所述至少一个指示中的一个指示；以及

控制与所选指示相关联的备用显示器装置的特征。

39.如权利要求 38 所述的至少一个计算机可读介质，其特征在于，所述控制包括根据远程桌面协议(RDP)进行控制。

40.如权利要求 30 所述的至少一个计算机可读介质，其特征在于，所述方法还包括：

通过所述用户界面选择所述至少一个指示中的一个指示；以及

破坏到与所选的指示相关联的所述备用显示器装置的远程连接。

41.至少一个计算机可读介质，其包括计算机可执行指令，用于执行从第一计算装置传送内容到用于操作或进行呈现的至少一个第二计算装置的方法，所述方法包括：

发现可用来从包括所述至少一个计算机可读介质的第一计算装置接收内容的至少一个第二装置，所述至少一个第二装置包括下述中的至少一个：（A）至少一个可用的无线投影仪，以及(B)至少一个可用的其他计算机；

根据所述发现，通过用户界面显示反映了所发现的为可用的至少一个第二装置的列表；

从所述列表中选择一个装置；

建立与所述装置的远程计算对话；以及

根据与远程计算对话相关联的协议将内容传送到所述装置。

42.如权利要求 41 所述的至少一个计算机可读介质，其特征在于，所述方法还包括：通过用户界面，配置一设置，其中该设置控制根据所述建立而建立的所述远程计算对话的至少一个特征。

43.一种把内容从第一计算装置投影到至少一个其他计算装置的方法，其特征在于，包括：

把所述第一计算装置设置成演示模式；

在所述第一计算装置上例示与内容投影相关联的软件功能；

根据发现模式发现是否有至少一个其他计算装置可以用来接收和显示投影内容；

如果发现至少一个其他计算装置，则显示反映了可用的至少一个其他计算装置的用户界面；

通过所述用户界面，进行下述活动中的一种：（A）选择投影内容，（B）选择用于投影的目标装置，和（C）配置投影特征。

44. 如权利要求 43 所述的方法，其特征在于，所述例示包括，例示与下述中的内容投影相关联的软件功能：（A）在第一计算装置的启动时，（B）作为所述把第一计算装置设置成演示模式的一部分。

45. 如权利要求 43 所述的方法，其特征在于，所述设置包括通过任一下述方法把第一计算装置设置成演示模式：（A）在开始菜单下的菜单单元，(B)所述用户界面的用户界面装置的顶层，(C)显示条部分，（D）快捷方式，和(E)工具条。

46. 如权利要求 43 所述的方法，其特征在于，所述配置包括下述中的至少一种：(A)设置用于所述投影的密码，(B)选择克隆模式或扩展模式，(C)选择屏幕分辨率，和(D)选择视频或音频与视频。

47. 如权利要求 46 所述的方法，其特征在于，至少进行下述中的一种，(A)所述选择克隆模式或扩展模式默认为克隆模式，（B）所述选择屏幕分辨率默认为当前设置，和(C)所述选择视频或音频与视频默认为音频与视频。

48. 如权利要求 43 所述的方法，其特征在于，所述把第一计算装置设置成演示模式包括执行操作系统任务。

49. 如权利要求 48 所述的方法，其特征在于，所述执行操作系统任务包括下述中的至少一种：(A) 关闭通知，(B)关闭屏幕空白，(C)防止来自除了要被投影的所述内容之外的来源的音频，(D)改变电源分配/保护的特征 ，(E)改变桌面背景，和(F)改变屏幕分辨率。

50. 如权利要求 43 所述的方法，其特征在于，根据发现模式的所述发现，包括在设置了演示模式之后的进行预定时间的发现。

51. 如权利要求 43 所述的方法，其特征在于，根据发现模式的所述发现，

在第一计算装置的后台进程中发生而不需任何用户干预。

52.如权利要求 43 所述的方法，其特征在于，所述显示包括，通过所述用户界面显示下述内容中的至少一个：(A)投影的状态，(B)从至少一个其他计算装置断开连接的能力的指示，(C)其他附加装置可用的指示，(D)根据所述发现而发现的至少一个其他计算装置目前不能接收内容的指示，和(E)可以被选择的最近使用的(MRU)其他装置的指示，以省略用于所述最近使用的其他装置的发现。

53.如权利要求 43 所述的方法，其特征在于，还包括：

对内容制定一名称和密码，从而如果从选定的用于投影的目标装置收到该名称和密码，则所述内容仅被传送到该所选的目标装置。

54.如权利要求 43 所述的方法，其特征在于，还包括响应于所述选择内容以进行投影以及所述选择目标装置用于投影，在所述第一计算装置和所述目标装置之间创建远程对话，并把所述内容通过所述远程对话投影到所述目标装置。

55.一种计算机可读介质，包括计算机可执行模块，其具有用于执行权利要求 43 所述的方法的计算机可执行指令。

56.一种计算装置，其包括用于执行权利要求 43 所述的方法的装置。

57.一种载有用于执行权利要求 43 所述的方法的计算机可执行指令的已调数据信号。

58.一种服务器计算装置，用于把内容从所述服务器计算装置投影到客户显示器装置，其特征在于，包括：

发现部件，根据发现协议运行，以发现并控制能够接收所述内容的可用的客户显示设备；

远程对话部件，根据至少一个远程协议运行，以在所述服务器计算装置和可用的客户显示器装置之间建立远程对话，对用于投影的内容进行打包，并将打包内容传送到所选的客户显示器装置；

用户界面部件，用于下述中的至少一个，(A)显示对应于由所述发现部件发现并能够控制的可用的客户显示器装置的至少一个指示，以及(B)接收目标客户显示器装置的指示的选择和内容的选择，由此所述远程对话部件为所述目

标客户显示器装置以及所述服务器计算装置创建远程对话，并且所述内容被投影到所述目标客户显示器装置。

59.如权利要求58所述的服务器计算装置，其特征在于，所述发现部件根据所述发现协议发现通告了可用性的客户显示器装置。

60.如权利要求58所述的服务器计算装置，其特征在于，所述至少一个远程协议包括远程桌面协议，所述远程对话是终端服务(TS)对话。

61.如权利要求58所述的服务器计算装置，其特征在于，在发送内容到一选定的客户显示器装置以前，所述远程对话部件先发送一个授权请求到所述选定的客户显示器装置，并等待授权传送内容的选定的客户显示器装置的响应。

62.如权利要求58所述的服务器计算装置，其特征在于，所述发现协议是通用即插即用(UPnP)协议。

63.一种用于连接一计算装置到一备用显示器装置以便把内容从所述计算装置投影到所述备用显示器装置的方法，其特征在于，包括：

根据发现协议发现能够接收并呈现投影内容的至少一个备用显示器装置；

选择要投影的内容，和从所述至少一个备用显示器装置中选择一个备用显示器装置，由此所选定的内容将被投影到所选定的备用显示器装置；以及

在所述计算装置和所选定的备用显示器装置之间建立连接。

64.如权利要求63所述的方法，其特征在于，所述建立连接包括：

利用所述计算装置的远程接头部件生成一个票；

把该票传送给所选定的备用显示器装置；以及

利用所述远程接头部件接收对所述传送的响应。

65.如权利要求64所述的方法，其特征在于，所述票包括下述至少之一：（A）关于如何连至所述计算装置的信息，和(B)关于以何种模式连接的信息。

66.如权利要求65所述的方法，其特征在于，所述模式包括投影模式、扩展桌面模式和用于特定应用的模式中的至少一种。

67.如权利要求63所述的方法，其特征在于，还包括： 通过所述连接把所述选定内容传送给所述选定的备用显示器装置。

68.如权利要求63所述的方法，其特征在于，所述发现包括检测来自一备用显示器装置的接收投影内容的能力的至少一个通告。

69. 如权利要求 63 所述的方法，其特征在于，所述发现包括，通过所述发现协议发出对特定类型装置的搜索请求，由此收到所述搜索请求的所述特定装置的全部装置都通过发送消息给所述计算装置来响应。

70. 如权利要求 63 所述的方法，其特征在于，还包括，在发现至少一个备用显示器装置中的一个备用显示器装置之后，下载所述备用显示器装置的服务文档到所述计算装置。

71. 一种计算机可读介质，包括计算机可执行模块，其具有用于执行权利要求 63 所述的方法的计算机可执行指令。

72. 一种计算装置，其包括用于执行权利要求 63 所述的方法的装置。

73. 一种载有用于执行权利要求 63 所述的方法的计算机可执行指令的已调数据信号。

74. 一种用于控制备用显示器装置的方法，其特征在于，包括：

在计算装置和备用显示器装置之间建立一个连接，用于把内容从所述计算装置投影到所述备用显示器装置；

从所述备用显示器装置接收一识别所述备用显示器装置和所述计算装置之间的所述投影对话的对话标记，并对所述计算装置进行认证，以控制所述备用显示器装置的投影对话；以及

根据对对话标记的认证来控制所述备用显示器装置。

75. 如权利要求 74 所述的方法，其特征在于，所述控制至少包括下述中的一个，(A)断开所述连接，(B)为所述投影对话改变所述显示设置，(C)为所述投影对话检索所述显示设置，(D)把控制所述备用显示器装置的权限转移给第三方装置，和(E)中断在所述备用显示器装置上的所述投影对话。

76. 一种利用计算装置接收来自一内容发送装置的投影内容的方法，其特征在于，包括：

通过计算装置的用户界面装置确定计算装置可以用来接收投影内容；以及

借助于发现协议，广播所述计算装置的可用性，以便正在寻找可用的备用显示器装置的内容发送装置接收该机器可用的指示。

77. 如权利要求 76 所述的方法，其特征在于，还包括：

响应于所述广播，从所述内容发送装置接收对投影内容的请求；

通过所述用户界面确定所述请求是否被接受；

将所述请求是否被接受传送到所述内容发送装置；以及

如果接受所述请求，则从所述内容发送装置接收内容。

78. 如权利要求 77 所述的方法，其特征在于，还包括：在计算装置的显示器上显示所述内容。

79. 如权利要求 78 所述的方法，其特征在于，所述显示器包括在所述显示器上显示除了所述内容之外的备用内容。

80. 一种用于使一备用显示器装置能够从计算装置接收内容的方法，其特征在于，包括：

接收经由网络从所述计算装置传送所述内容的请求；

响应于所述接收、通过用户界面接受所述请求，并建立与所述计算装置的远程计算对话；以及

在网络上从所述计算装置接收所述内容。

81. 如权利要求 80 所述的方法，其特征在于，还包括：呈现从所述计算装置接收的所述内容。

82. 如权利要求 81 所述的方法，其特征在于，所述呈现包括，根据位于所述备用显示器装置的可访问的基本设施呈现所述内容。

83. 如权利要求 81 所述的方法，其特征在于，所述呈现包括，根据多语种的用户界面呈现所述内容以便根据另一种语言显示所述内容。

84. 一种用于使备用显示器装置从计算装置接收内容的方法，其特征在于，包括：

通过用户界面请求从所述计算装置接收投影内容；

发送从所述计算装置接收投影内容的请求；

从所述计算装置接收响应，包括建立一个与所述计算装置的远程计算对话的信息；

根据所述信息建立与所述计算装置的远程计算对话；以及

无线地从所述计算装置接收所述内容。

85. 一种用于把内容从多个计算装置投影到一个备用显示器装置的方法，其特征在于，包括：

根据发现协议发现能够接收并呈现投影内容的备用显示器装置；

通过远程协议，在所述多个计算装置中的第一计算装置和所述备用显示器装置之间建立远程对话；

通过所述远程对话，从所述第一计算装置传送第一内容到所述备用显示器装置；

通过所述第一计算装置的第一显示器呈现所述第一内容；

通过所述远程对话，从所述第二计算装置发送第二内容到所述备用显示器装置；以及

通过第二计算装置的第二显示器呈现第二内容。

86. 如权利要求 85 所述的方法，其特征在于，所述远程协议是远程桌面协议，所述远程对话是终端服务(TS)对话。

87. 如权利要求 85 所述的方法，其特征在于，所述第一内容的呈现基本上与所述第一内容的传送同时发生。

88. 如权利要求 85 所述的方法，其特征在于，所述发现协议是通用即插即用(UPnP)协议。

用于投影来自计算装置的内容的系统和方法

相关申请的交叉引用

本申请要求于2003年10月24日所提交的、名称为"Systems and Methods for Projecting Content from Computing Devices"的、号码为60/514,338（MSFT-2843/300525.01）的美国临时专利申请的权益。该申请涉及了共同转让未决的于2004年2月25日所提交的、号码为XX/YYY,YYY（MSFT-3501/300585.03）名称为"Systems and Methods for Projecting Content from Computing Devices"的美国专利申请，于2002年6月25日提交的、号码为10/179,431名称为"Data Projection System and Method"的美国专利申请，和于2003年10月23日所提交的、号码为10/692，384名称为"One to Many Data Projection System and Method"的美国专利申请。

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发明领域

本发明涉及了允许从计算装置到诸如投影仪这样的备用显示器上的内容的无线投影的方法和用户界面。

背景

个人计算机和便携式/移动式计算装置，诸如便携式计算机，平板计算机（Tablet computer），笔记本计算机，辅助笔记本计算机（sub－notebook computers）和手持式计算装置等等，以及其他现在和将来的便携式/移动式计算装置的变体，有时被用来把内容传输到用于操作或进行呈现的第三方装置。 此处，这种便携式或移动式计算装置将被简单地没有限制地称为"移动式计算装置"或"移动装置"。 例如，移动装置可被用于诸如会议这样

的情况，以在会议环境中的显示器上显示报告，诸如在象投影仪或监视器这样的大号显示面上。 目前，在出现这种情况的时候，利用移动式计算机作报告的用户物理地通过电缆把所述便携式/移动式计算机连接到投影仪或控制所述投影仪的中间电子控制系统上。 然而，想要在会议室作报告（present）的膝上计算机用户，必须坐在靠近投影仪地方，控制并切换 VGA 和可能还有音频电缆，以作报告。 电线通常不够长，因此每个想要做报告的人为了离投影仪足够近以便插上他们的膝上计算机，都会移到靠近投影仪的地方，这就会在每次报告之间产生抢座位游戏的效应。 每次新的报告者控制了所述投影仪显示器，则用户都可能必须调整屏幕分辨率和/或音频设置。 此外，理想地，用户想要把他们的显示不仅投影到会议室投影仪上还投影到会议室内的各参加者的膝上计算机上。

然而，由于种种原因，人们并不想物理地连接一电缆。 首先，需要移动式计算装置的用户知道移动式计算装置能够连接和如何连接所述移动式计算装置，即，知道他们的移动式计算装置包括一接头或端口用于安装所述投影仪电缆，而且这种连接加上某一模糊按键组合(例如功能键加上 F5 键)能把便携式或移动式计算装置的输出从所述移动式计算装置的正常显示转换到所述端口。 第二，任何时候，在计算过程中引入一个或多个物理步骤，都会增加完成该步骤所花费的时间。 例如，用户必须把移动装置带到电缆处，连上电缆，并固定住所述连接，以便不会轻易断开。 而且，就公与母接头部件是物理部件来说，他们常遭受机械损伤，和自然损耗. . 例如，所述接头的插脚常会变得弯曲、损坏、金属疲劳等等,无论在哪种情况下所述接头部件，公或母接头中的一个，都不能正常地起到作用。

此外，最终发送给投影仪的所述内容/数据不能同时在会议参加者的计算机上观看。 当无线技术在市场上迅速地走向高潮时，目前，没有通用装置用于通过诸如投影仪这样的显示器接收无线数据。 而且没有通用装置用于移动装置以无线地传输内容到显示器，诸如投影仪。 更进一步地，没有通用装置用于第三方计算装置来接收内容。

因此，在本领域中有这样一种需求，即，把无线技术增加到投影仪上以允许移动用户容易地进行访问，提供了把多个移动用户集合到同一用于合作会议的房间并提供有线解决方案不是实际的无缝连接的能力。 此外,在本领

域中有这样一种需求，即消除与架线有关的问题，使投影仪较容易地安装和整理，而在超过一较长距离时不会使信号恶化。 而且，在本领域中有这样一种需求，即在多个移动装置源之间进行转换，例如，多人利用他们的移动装置做报告。 人们还期望提供一种装置和相应的用户界面以允许用户发现可用的无线投影仪或其他计算机，改变或启用设置并把指定内容连接于其上。 类似地，在所述接收端，人们期望包括一种装置和相应的用户界面用于其他计算机的用户从源移动式计算机接收“投影”内容/数据。

发明概要

考虑到本领域中的上述缺点，本发明提供了这样的系统和方法，其使备用显示器装置能够无线地从计算装置接收内容，把用户从经由电缆物理地连接计算装置的负担中解放出来。 在另一方面，能够被发送给显示设备的内容还可以在其他靠近该计算装置的计算装置上同时地或分别地观看。 在不同的实施例中，本发明包括用于计算装置的通用装置和用户界面以使其能够发现可向其传递内容的装置，用于接收合适的内容的传输和用于开始内容的传输。

本发明的其他优点和特征描述如下。

附图的简短说明

参照附图，进一步描述用于根据本发明的无线投影内容的系统和方法，其中：：

图 1 是说明一种典型的现有技术方案的示范性的方框图；

图 2A 是表示一种具有多种计算装置的示例性网络环境的方框图，其能够实施本发明；

图 2B 和 2C 是表示能够实施本发明的示例性而不是限制性计算装置的框图；

图 3 示出了根据本发明运行一无线投影应用程序的示例性顺序；

图 4A 和 4B 说明了结合本发明所用的示范性体系结构；

图 5 示出了一种示例性的流程图，其关于用于连接备用显示器装置的处理；

图 6 示出了一种示例性的流程图，其关于用于控制备用显示器装置的处理；

图 7A －7H，示出了根据本发明的示例性的非限制性的各种用户界面方案的屏幕快照;以及

图 8A - 8C 示出了根据本发明的各种方案的示例性的非限制性的屏幕快照，其示出了公开的和非公开的内容之间的区别。

发明的详细说明

概述

本发明是要允许显示设备，诸如投影仪或大型显示监视器，无线地从计算装置接收内容的系统和方法，把用户从物理地经由电缆连接计算装置的负担中解放出来。 另一方面，能够被发送给显示装置的内容，还可以同时地或独立地在另一个邻近计算装置的计算装置上被观看。 在各种具体实施例中，投影仪具有无线功能，允许计算装置按顺序地把内容无线地发送给投影仪，例如，可用于合作会议和会议报告。 由于消除了架线的问题，所以比较容易安装投影仪，在有效距离内没有减少内容并且在多个计算装置信号源之间的换接变得更为方便。 从而，内容报告者在无线技术的信号能力之内可以更加灵活，而不会受诸如“投影仪附近”或“墙上插座附近”这样的物理位置的束缚。

定义

下列定义，应该被认为是对考虑一个或多个此处所用的术语的帮助，而不是试图限制如本领域普通技术人员所了解的任一术语的较广的含义。

Wi - Fi (无线保真度)：Wi - Fi 技术提供了利用无线电技术的联网技术。 Wi - Fi 网络在未经当局许可的 2.4 到 5 GHz 无线电频带内运行，其具有以 11Mbps 传输数据的能力，然而通常传递 7 Mbps 的实际数据通过量。 这就提供了类似于用于许多机关的 basic 10 Base - T 有线以太网的性能。根据本发明的备用显示器装置包括，但不局限于，Wi - Fi 802.11b 技术，其为当前在投影仪和计算机产业中最常见的无线通信形式。

对等（Peer - to - Peer ）(Ad Hoc) ：无线结构，其中一个或多个计算机能够共享具有相同无线性能的投影仪。 对等，意思是每个投影仪用户都具有相同的能力并且每个用户都能够启动与所述投影仪(或理论上彼此)的通信对话。 Ad hoc，是拉丁文，意思指‘为这’或‘只为该目的’，含有临时或自发装置的意思，如出入报告室的移动无线计算机的情况。 该装

置允许所有用户进行同样的访问并由此使合作会议或共享报告成为可能。

备用显示器装置，或投影仪装置：所述投影仪装置使用终端服务（Terminal Service）和 UPnP。 该装置揭露了 MRM 装置用来控制所述装置并经由终端服务（Terminal Services）建立连接的方法。 其可以是实际投影仪或别的装置，诸如连于投影仪上的膝上型电脑。

RA ：远程辅助设备。

终端服务（ TS）：终端服务负责用来“stream”用户屏幕的协议。

UPnP 装置主机和控制点：通用即插即用（UPnP)协议用于该装置的发现。此外，该装置是 UPnP 装置主机服务内被处理的。

RDP Salem 层：所述 RDP Salem 层了解用于建立连接的远程辅助设备的“票”。

用于 TS 的 Salem 层：Salem 层是用于远程辅助设备的当前票生成层。

示例性网络和分布式环境

本领域中普通技术人员可以明白，能够结合任一能够作为计算机网络的一部分而展开或在分布式计算环境中的计算机或其他客户或服务装置来实现本发明。 关于这一点，本发明适合于任一计算机系统或具有许多存储器或存储单元的环境，以及许多跨许多存储单元或卷（volume）发生的应用程序和处理，其可以根据本发明用在内容的无线发送方面。 本发明可以适用于这样一种环境，其带有在网络环境或分布式计算环境中所使用的具有远程的或本地存储的服务计算机和客户计算机。 本发明还可以被用于独立的计算装置，其具有编程语言功能、用于产生、接收和发送关于远程或本地服务的信息的解释以及执行的能力。 随着用于数字介质的网络源的激增，本发明尤其涉及了那些在网络或分布式计算环境中运行的计算装置，因此在所述环境中能够高效地应用根据本发明的所述转输技术。

分布式计算，通过在计算装置和系统之间进行交换，提供了计算机资源的共享和服务。 这些资源和服务包括信息交换、文件的高速缓冲存储和磁盘存储。 分布式计算利用网络连通性，允许客户补充（leverage）其集体的供电和存储量以使整个企业受益。 关于这一点，许多装置都可以具有可能涉及了通过本发明无线地投影内容的应用程序、对象或资源。

图 2A 提供了一示例性网络或分布式计算环境的原理图。 所述分布式计

算环境包括计算对象 10a、10b 等和计算对象或装置 110a、110b、110c 等。这些对象可以包含程序、方法、数据存储器、可编程逻辑等等。 所述对象可以包含相同或不同的装置部分，诸如 PDA、音频/视频设备、MP3 播放器、个人电脑等等。每个对象都能够与别的对象经由通信网络 14 进行通信。 所述网络本身可以包含其他向图 2A 的系统提供服务的计算对象和计算装置，并且其本身还可以表示多个相互连接的网络。 根据本发明的一个方面，每个对象 10a、10b 等或 110a、110b、110c 等都可以包含一应用程序，其可以使用一接口，诸如 API、或其他对象、软件固件和/或硬件，来进行请求，或使用根据本发明的无线内容投影处理。

还可以知道，对象，诸如 110c，可以在别的计算装置 10a、10b 等、或 110a、110b 等上被处理。 因此，虽然所画出的物理环境能够显示出所连接的装置是计算机，但是这种说明只是示例性的并且也可以把所述物理环境画成或描述成包括不同的诸如 PDA、电视、MP3 播放器等的数字装置、诸如接口、COM 对象这样的软件对象、或任一其使用与介质经验有关的装置。

有许多支持分布式计算环境的系统、元件、以及网络结构。诸如，可以通过有线或无线系统连起来的计算系统，其可以利用本地网络或广泛地分布式网络。 目前，许多网络都被连至因特网，这就为广泛地分布式计算提供了基础设施并拥有了许多不同的网络。 根据本发明，任何基础设施都可以用于无线内容投影设备所易发生的示例性通信。

在本地网络环境中，至少有 4 种完全不同的网络传输介质，其中每个都支持一种独特的协议，诸如输电线、数据（ 无线和有线两种）、语音(例如，电话)及娱乐介质。 大多数家用控制装置，诸如照明开关以及电器可以利用输电线来连接。 数据服务，可以随着宽带(例如，DSL 或电缆调制解调器)而进入家庭，并可利用无线(例如，HomeRF 或 802.11B)或有线(例如，Home PNA，Cat 5，以太网，甚至输电线)连接在家内对其进行访问。 作为有线(例如，Cat 3)或者无线(例如，蜂窝电话)的电话业务可以进入家庭内部，并利用 Cat 3 线路分布在家庭内部。 娱乐性介质，或其他图形数据，可以经由卫星或者电缆而进入家庭，并通常利用同轴电缆分布在家庭内。 IEEE 1394 和 DVI 也是用于介质装置群集的数字互连。所有的这些网络环境以及其他可以作为协议标准出现的网络环境，都可以相互连接以形成一种网络，诸如内

部网，其可以经由因特网而与外界发生联系。 简而言之，存在许多不同源用于数据的储存和发送，从而，前向移动，计算装置将需要共享数据的方法，诸如程序对象所容易访问或利用的数据，其需要或利用了根据本发明的无线内容发送装置。

所述因特网，一般指的是利用一套在计算机网络领域众所周知的协议TCP / IP的网络和网关的集合。TCP / IP是"Transmission Control Protocol / Internet Protocol"的缩写。 所述因特网可以被说成是一种利用执行联网协议的计算机相互连接的、从地理上讲远距离地分布的计算机网络的系统，其中所述联网协议允许用户在网络上进行交互并共享信息。 由于这种分布广泛的信息共享，诸如因特网这样的远程网络，到现在为止已经被逐渐地发展成了一种开放式的系统，开发者可以基本上不受限制地设计用于执行专门的操作或服务的软件应用程序。

因此，所述网络基础设施启用了大量的网络布局，诸如客户机/服务器、对等、或混合结构。 所述"客户机"是一类或一组使用其他与其无关的类或组的服务的成员。 因此，在计算中，客户机是一进程，即，一般说来是一组指令任务，其请求别的程序所提供的服务。 所述客户机进程，不须"知道"其他程序或服务本身的工作细节，就可使用所请求的服务。 在一客户机/服务器结构中，尤其是一网络系统中，客户机通常是访问别的计算机，例如服务器，所提供的共享网络资源的计算机。 在图2A的例子中，计算机110a、110b等可以被看作是客户机，而计算机10a、10b等可以被看作是服务器，其中服务器10a、10b等持有之后被复制到客户机计算机110a、110b等中的数据，尽管根据环境，任一计算机都可以被考虑为客户机、服务器或两者均可。 例如，计算机110a可以是膝上型电脑，计算装置10a、10b等可以是远程介质装置，或备用显示器装置。 任何计算装置，都可以请求涉及内容的无线发送/接收的服务或任务或处理数据。

服务器，通常是可在远程或局部网络上，诸如因特网上，访问的远程计算机系统。 所述客户机进程可以在第一计算机系统中有效而服务器进程可以在第二计算机系统中有效，它们在通信介质上相互通信，从而提供了分布式功能并允许多个客户机利用服务器的信息收集的性能。 任何按照本发明所使用的软件对象，都可以分布于多个计算装置或对象上。

客户机和服务器利用协议层所提供的功能相互通信。 例如，超文本传输协议（HTTP)是用于与万维网（WWW)或“网络”进行连接的公共协议。 例如，远程桌面协议（RDP)是远程计算所用的公共协议。 通常，诸如网际协议（IP)地址这样的计算机网络地址，或诸如通用资源定位符（URL)这样的其他坐标，可用于服务器或客户机计算机之间的互相识别。 所述网络地址可以被称为 URL 地址。 可以在通信介质上进行通信，例如，客户机和服务器可以通过用于大容量通信的 TCP / IP 连接而相互连接。

因此，图 2A 示出了一个可以使用本发明的示例性网络或分布式环境，其中服务器经由网络/总线与客户机计算机进行通信。 更详细地，根据本发明，大量服务器10a、10b等，经由通信网络/总线14，其可以是局域网(LAN)、广域网（WAN）、内部网、因特网等等，与大量客户机或远程计算装置110a、110b、110c、110d、110e等，诸如便携式计算机、手持式计算机、瘦客户机、联网电器、或其他装置，诸如录像机（VCR）、电视、烤箱、灯、加热器等等，相互连接。 因此，可以预计，就储存、创建、用户界面、呈现等而论，本发明能够适用于任何具有介质能力的计算装置。

在通信网络/总线 14 是因特网的网络环境中，例如，服务器 10a、10b等可以是网络服务器，其中客户机 110a、110b、110c、110d、110e 等经由已知的协议中的一种，诸如 HTTP，与该网络服务器进行通信。 服务器 10a、10b 等，还可以用作客户机 110a、110b、110c、110d、110e 等，其为分布式计算环境的特征。

通信可以是有线或无线的，只要适用。 客户机装置 110a、110b、110c、110d、110e 等，可以经由或可以不经由通信网络/总线 14 进行通信，并且可以具有与之相关的独立的通信。例如，在电视或录像机的情况下，可以有也可以没有对其控制的联网特征。每个客户机计算机 110a、110b、110c、110d、110e 等和服务器计算机 10a、10b 等都可以具有不同的应用程序模块或对象135，并且可以与各种存储元件或对象进行连接或对其进行访问，其中文件或数据流可以存于所述存储元件或对象上或部分文件或数据流可以下载、传输或移动到其上。 任意一个或多个计算机 10a、10b、110a、110b 等都可以负责维护或更新数据库 20 或其他存储元件，诸如存储根据本发明所处理的数据的数据库或存储器 20。因此，可以在下述计算机网络环境中使用本发明，

即，其具有能够访问或与计算机网路/总线14进行交互的客户机计算机110a、110b等，与客户机计算机110a、110b等进行交互的服务器计算机10a、10b等，以及其他类似装置和数据库20。

示例性计算装置

图2B以及下列论述，是用来对能够实施本发明的合适的计算环境的简要概述。然而，应该明白，各种手持式、便携式及其他计算装置和计算对象，都是为了与本发明相结合而被考虑的，即，无论在计算环境中的何处使用介质。当通用计算机作为示例性主机被如下描述时，其仅仅是个例子，本发明还可以用具有联网/总线互操作性和交互作用的瘦客户机实现。因此，本发明可以在只涉及了极少的或最小的客户机资源的联网主机服务的环境中实现，例如，联网环境，其中客户机装置只用作网络/总线的接口，诸如，置入电器中的对象。实质上，无论数据或内容可以被存于何处或从何处取回数据或被发送到别的计算机，都是可取的、或适合的用于根据本发明的内容的无线传输的操作的环境。

虽然不需要的，但是本发明仍可以通过一操作系统实现，以供用于装置或对象的服务的开发者使用，和/或包括在关于根据本发明的内容的无线传输而运行的应用软件中。 在计算机可执行指令的通常情况下，软件可以被描述成，诸如程序模块，其由一个或多个计算机，诸如客户工作站、服务器或其他装置执行。 通常，程序模块包括执行具体任务或实现具体抽象数据类型的例行程序、程序、对象、部件、数据结构等等。 通常，可以按照在不同的实施例中的要求，对程序模块的功能进行组合或分布。 而且，本领域技术人员将会明白，还可以用其他计算机系统结构和协议来实施本发明。其他众所周知的适于与本发明一起使用的计算系统、环境、和/或结构，包括但不局限于个人电脑（PC）、自动柜员机、服务器计算机、手持式或膝上型装置、多处理器系统、基于微处理器的系统、可编程的用户电子设备、网络PC、电器、灯、环境控制元件、小型机、主计算机等等。 本发明还可以在分布式计算环境中实施，其中利用经由通信网络/总线或其他数据传输介质所连接的远程处理装置执行任务。 在一分布式计算环境中，程序模块既可以位于本地的也可以位于远程的包括存储装置的计算机存储介质中，并且客户节点可以轮流充当服务器节点。

因此，图 2B 示出了可以实现本发明的合适的计算系统环境的一个例子，不过正如上所阐明的，计算系统环境 100 仅仅是合适的计算环境的一个例子而不是试图暗示是对本发明的功能或使用的范围的任何限制。也不应将计算环境 100 解释成，是对在示例性操作环境 100 中所示出的部件中的一个或其组合的依赖或必要条件。

参照图 2B，用于实施本发明的一示例性系统包括一通用计算装置，作为计算机 110。 计算机 110 的部件可以包括，但不局限于，一处理单元 120，一系统存储器 130、以及一个把包括所述系统存储器的各种系统部件连接到处理单元 120 的系统总线 121。系统总线 121 可以是下述几种类型的总线结构中的任一种，即，包括存储器总线或存储控制器、外围总线、以及利用各种总线体系结构中的任一种的局部总线。 举例来说，而不是，而不是限制，这种体系结构包括工业标准结构(ISA)总线、微通道结构(MCA)总线、增强 ISA (EISA)总线、视频电子标准协会(VESA)局部总线、以及外围部件互连(PCI)总线(又名 Mezzanine 总线)。

计算机 110 通常包括各种计算机可读介质。 计算机可读介质可以是任一可用介质，其可以被计算机 110 访问并包括易失以及非易失介质、可移动以及不可移动介质。 举例来说，而不是模仿，计算机可读介质可以包括计算机储存介质以及通信介质。 计算机存储介质，包括在任一方法或技术中所实施的用于诸如计算机可读指令、数据结构、程序模块或其他数据的信息存储的易失和非易失、可移动和不可移动的两种介质。计算机存储介质包括，而是不局限于，RAM、ROM、EEPROM、闪速存储器或其他存储技术、CDROM、数字视频光盘(DVD)或其他光盘存储、磁带盒、磁带、磁盘存储器或其他磁存储器、或任一其他可用于存储想要的信息的并可以被计算机 110 访问的介质。 通信介质通常包括计算机可读指令、数据结构、程序模块或其他在已调数据信号诸如载波或其他传送机构中的数据并包括任一信息传送介质。所述术语“已调数据信号”，指的是这样的一种信号，其具有一个或多个其特征集和以一种这样的方式改变以致对该信号中的信息进行编码。 举例来说，而不是限制，通信介质包括有线介质诸如有线网络或直接用线的连接（direct－wired connection）、以及诸如声波（acoustic）、RF（射频）、红外及其他无线介质这样的无线介质。上述介质的任意组合都将包括在计算

机可读介质的范围内。

系统存储器 130 包括计算机存储介质，作为易失和/或非易失存储器，诸如只读存储器（ ROM） 131 和随机存取存储器（ RAM） 132。 基本输入/输出系统 133 （ BIOS），含有有助于诸如在启动期间在计算机 110 内部的元件之间传输信息的基本例行程序，其通常存于 ROM 131 中。 RAM 132 通常含有数据和/或程序模块，其可被处理单元 120 直接访问和/或由其运行。 举例来说，而不是限制，图 2B 示出了操作系统 134、应用程序 135、其他程序模块 136、以及程序数据 137。

计算机 110 还可以包括其他可移动/不可移动、易失/非易失计算机存储介质。 仅举例来说，图 2B 示出了对不可移动、非易失磁介质进行读或写的硬盘驱动器 141，对可移动、非易失磁盘 152 进行读或写的磁盘驱动 151、对可移动、非易失光盘 156 进行读或写的光盘驱动器 155，诸如 CD - ROM 或其他光学介质。 可被用于示例性的操作环境的其他可移动/不可移动、易失/非易失计算机存储介质，包括但不局限于，盒式磁带、闪速存储卡、数字视频光盘、数字视频带子、固态 RAM、固态 ROM 等等。 硬盘驱动器 141，通常经由不可移动存储器接口，诸如接口 140，连接到系统总线 121，以及磁盘驱动器 151 和光盘驱动器 155 通常通过可移动存储器接口，诸如接口 150，连接到系统总线 121。

在图 2B 中所示出的并在上面讨论过的所述驱动器以及与其相连的计算机存储介质，提供了计算机可读指令、数据结构、程序模块及其他用于计算机 110 的数据的存储器。 例如，在图 2B 中，示出了硬盘驱动器 141，用于存储操作系统 144、应用程序 145、其他程序模块 146 以及程序数据 147。 应该注意到，这些部件既可以相同于也可以不同于操作系统 134、应用程序 135、其他程序模块 136 以及程序数据 137。 在这里，对操作系统 144、应用程序 145、其他程序模块 146 以及程序数据 147 给出了不同的编号，以说明至少他们是不同的。 用户可以把命令和信息，经由下述输入装置输入到计算机 110，诸如键盘 162 以及指示器 161，一般叫作鼠标、跟踪球或触摸板。 这些及其他输入装置，常常通过连接到系统总线 121 的用户输入接口 160 连接到处理单元 120，不过还可以利用其他接口和总线结构，诸如并行端口、游戏端口或通用串行总线（ USB） 进行连接。 图形接口 182，诸如北桥

（Northbridge），还可以连接到系统总线 121。北桥是与 CPU、主处理单元 120 进行通信的芯片组，并承担促进图形端口（ AGP)的通信的责任。一个和多个图形处理单元（CPU）184 可以与图形接口 182 进行通信。在这方面，GPU 184 通常包括单片存储器，诸如与视频存储器 186 进行通信的 GPU 184 和寄存器存储器，其中已经加入了本发明的应用程序变量。然而，GPU184，只不过是协处理器的一个例子，因此各种协同处理装置都可以被包括进计算机 110 中，并可以包括各种程序着色器，诸如像素和顶点着色器。监视器 191 或其他类型显示装置也经由一种接口，诸如可以按顺序与视频存储器 186 进行通信的视频接口 190，连接到系统总线 121。 除监视器 191 之外，计算机还可以包括其他外围输出设备，诸如扬声器 197 和打印机 196，其可以通过输出外围设备接口 195 来连接。[0042] 计算机 110 可以利用到一个和多个远程计算机的逻辑连接，诸如到远程计算机 180 的逻辑连接，在网络或分布式环境中运行。 远程计算机 180 可以是个人电脑、服务器、路由器、网络 PC、同等装置或其他公用网络节点，并且通常包括许多或全部关于计算机 110 而在上面描述的元件，尽管只在图 2B 中示出了一个存储装置 181。 在图 2B 中所描述的逻辑连接包括一个局域网（ LAN） 171 和一个广域网（ WAN） 173，但是还可以包括其他网络/总线。 在家里、行政机关、企业范围的计算机网络、内部网和因特网中，这种联网环境是很平常的。

当用于 LAN 联网环境时，计算机 110 通过网络接口或适配器 170 连接到 LAN 171。当用于 WAN 联网环境时，计算机 110 通常包括调制解调器 172 或其他用于建立在诸如因特网这样的 WAN 173 上的通信的装置。 调制解调器 172，其可以是内部的或外部的，可以经由用户输入接口 160、或其他合适的装置连接到系统总线 121。 在网络环境中，关于计算机 110 所描述的程序模块、或其一部分，可以存于远程存储器装置中。 举例来说，而不是限制，图 2B 示出了驻留在存储器件 181 上的远程应用程序 185。 应该明白，所示出的网络连接是示例性的并且可以使用其他在计算机之间建立通信链路的装置。

示例性的备用装置

如所提到的，本发明适用于任一装置，其中把内容从一个计算装置无线地投影到另一计算装置的显示器上。 图 2C 以及下列讨论试图补充对图 2B

的概述。 由此，应该明白，各种手持式、便携式及其他计算装置和计算对象打算结合本发明来使用，即，无论装置可能想要无线地把内容传递到何处的备用显示器上。 因此，如下所述的下列通用远程计算机仅仅是一个例子，本发明可以用任一具有网络/总线和交互作用的客户机实现。 因此，本发明可以在只涉及了极少的或最小的客户机资源的联网主机服务的环境中实现，例如，联网环境，其中客户机装置只用作网络/总线的接口，诸如，置入电器中的对象。

虽然不是必需的，但是本发明仍可以通过一操作系统来在一定程度上得以实现，以供用于装置或对象的服务的开发者使用，和/或包括在结合本发明的部件运行的应用软件中。 在计算机可执行指令的通常情况下，软件可以被描述成，诸如程序模块，其由一个或多个计算机，诸如客户工作站、服务器或其他装置执行。 而且，本领域技术人员将会明白，还可以用其他计算机系统结构和协议来实施本发明。

因此，图 2C 示出了可以实现本发明的合适的计算系统环境 100a 的一个例子，不过正如上所阐明的，计算系统环境 100a 仅仅是用于介质装置的合适的计算环境的一个例子而不是试图暗示是对本发明的功能或使用的范围的任何限制。 也不应将计算环境 100a 解释成，是对在示例性操作环境 100a 中所示出的部件中的一个或其组合的依赖或必要条件。

参照图 2C，用于实现本发明的一个示例性远程设备包括一通用计算装置，作为计算机 110a。 计算机 110a 的部件包括，但不局限于，处理部件 120a、系统存储器 130a、和把包括系统存储器在内的各种系统部件连接到处理部件 120a 的系统总线 121a。 系统总线 121a 可以是下述几种类型总线结构中的任一种类型，即包括存储器总线或存储控制器、外围总线、和利用各种总线体系结构种的任一种的局部总线。

计算机 110a 通常包括各种计算机可读介质。 计算机可读介质可以是任一可以被计算机 110a 访问的可用的介质。 例如，而不是限制，计算机可读介质可以包括计算机外部存储器介质和通信介质。 计算机外部存储器介质包括易失和非易失的、可移动和不可移动两种介质，其在任一方法或技术中实施，用于诸如计算机可读指令、数据结构、程序模块或其他数据这样的信息存储。 计算机外部存储介质包括，但不局限于，RAM、ROM、EEPROM、闪

速存储器或其他存储技术、CDROM、数字视频光盘(DVD)或其他光盘存储器、磁带盒、磁带、磁盘存储器或其他磁存储器、或任一其他可用于储存想要的信息并且能被计算机 110 访问的介质。 通信介质通常包括有计算机可读指令、数据结构、程序模块或其他在诸如载波或其他传送机构中的已调数据信号中的数据以及包括任一信息传输介质。

系统存储器 130a 可以包括计算机存储介质，作为易失和/或非易失存储器，诸如只读存储器(ROM)和/或随机存取存储器(RAM)。基本输入/输出系统(BIOS)，含有诸如在启动期间促进在计算机 110 内部元件之间传输信息的基本例行程序，其可以存于存储器 130a 中。 存储器 130a 通常还包含数据和/或程序模块，其能直接被处理部件 120a 访问和/或立刻由其运行。 举例来说，而不是限制，存储器还可以包括操作系统、应用程序、其他程序模块、和程序数据。

计算机 110a 还可以包括其他可移动/不可移动的、易失/非易失的计算机存储介质。 例如，计算机 110a 可以包括，对不可移动的非易失的磁性介质进行读或写的硬盘驱动器、对可移动非易失的磁盘进行读或写的磁盘驱动、和/或对诸如 CD - ROM 或其他光学介质这样的可移动非易失的光盘进行读或写的光盘驱动器。 其他可被用于示例性操作环境中的可移动/不可移动的、易失/非易失的计算机存储介质包括，但不局限于，盒式磁带、快擦写存储卡、数字视频光盘、数字视频带子、固态 RAM、固态 ROM 等等。 硬盘驱动器通常经由不可移动的存储接口，诸如一个接口，连接到系统总线 121a，而磁盘驱动器或光盘驱动器通常利用可移动存储器接口，诸如一个接口，连接到系统总线 121。

用户可以把命令和信息经由下述输入装置输入计算机 110a，诸如键盘和指示器，一般称为鼠标、跟踪球或触摸垫。 其他输入装置可以包括麦克风、操纵杆、游戏垫、圆盘式卫星电视天线、扫描仪等等。 这些及其他输入装置往往经由用户输入 140a 和连接到系统总线 121a 的相连的接口连接到处理部件 120a，但是还可以利用其他接口和总线结构，诸如并行端口、游戏端口或通用串行总线(USB)进行连接。 图形辅助系统还可以连接到系统总线 121a。 监视器或其他种显示设备也通过一个接口，诸如可以依次与视频存储器进行通信的输出接口 150a，连接到系统总线 121a。 除监视器之外，计

算机还可以包括其他外围输出设备，诸如扬声器和打印机，其可以通过输出接口 150a 进行连接。

计算机 110a，可以利用到一个或多个可以依次具有不同于装置 110a 的介质性能的其他远程计算机的逻辑连接，诸如到远程计算机 170a，而在联网或分布式环境中运行。 远程计算机 170a 可以是个人电脑、服务器、路由器、联网 PC、同等装置或其他公用网络节点、或任一其他远程介质消耗（consumption）或传输装置，并且可以包括任一或全部在上面所描述的关于计算机 110a 的元件。 在图 2C 中所画出的逻辑连接包括网络 171a、上述的局域网(LAN)或广域网(WAN)，但是还可以包括其他网络/总线。 上述的联网环境在家里、机关、企业范围计算机网络、内部网以及因特网内都是常见的。

当用于局域网联网环境时，计算机 110a 通过网络接口或适配器连接到 LAN 171a。 当用于 WAN 联网环境时，计算机 110a 通常包括调制解调器或其他装置，用于在诸如因特网这样的 WAN 上建立通信联系。 调制解调器，可以是内部的或外部的，其可以通过输入 140a 的用户输入接口或其他合适的机构连接到系统总线 121a。 在一联网环境中，关于计算机 110a 所描绘的程序模块，或其一部分，可以存于远程存储装置。 将意识到，所示出的和描述的网络连接是示例性的并且还可以使用在计算机之间建立通信链路的其他装置。

示例性分布式计算的框架或结构

考虑到个人计算和因特网的收敛性，已经和正在研发各种分布式计算框架。 单个的和相似的商业用户具有无缝可互操作的和可用网页（Web - enabled）的界面，用于应用程序和计算装置，使计算活动逐渐面向浏览器或网络。

例如，微软版权所有的管理代码（managed code）平台，即，.NET，包括服务器、构件块服务、诸如基于网页的数据存储和可下载软件。 一般说来，.NET 平台提供了 (1)使全部计算装置一起工作并使它们上的用户信息都自动地进行更新和同步，(2)用于网页的提高的交互性能，通过更多地使用 XML 而不是 HTML 来做到这一点，(3)特征定制访问的联机服务，和从一个中央起点到所述用户的产品和服务的传送，用于各种应用程序的管理，例如，

像电子邮件，或者像 Office .NET 这样的软件，(4)集中的数据储存，其提高了对信息的访问的效率和便利性，用户和装置之间的信息的同步，(5)具有集成像电子邮件、传真、和电话这样的各种传播介质的能力，(6)对于开发者来说，具有产生可重用模块的能力，由此提高了生产率并降低了程序设计错误的数目和(7)还有许多其他跨平台和语言的集成特征。

当在此处结合驻留在一计算装置上的软件来对某一示例性具体实施例进行描述时，本发明的一个或多个部分还可以通过一操作系统、应用编程接口(API)或“中间人（middle man）”对象、控制对象、硬件、固件、中间语言指令或对象等等来实施，以便本发明的方法可以包括在管理代码中，得到管理代码的支持或访问借助于管理代码所使用的全部语言和服务，诸如.NET 代码，和也在其他分布式计算框架中。

远程桌面协议和终端服务器对话概述

微软远程桌面协议(RDP)是协议的一个例子，其可用于把介质记录从主机导入到远程介质消耗装置。 RDP 提供了在用于在一服务器上运行的基于 windows 的应用程序的网络连接上面远程显示和输入的性能。RDP 被设计成支持不同类型的网络布局和多种局域网协议。

在服务器上，通过利用协议把提供信息构造成网络消息包并通过网络把他们发送到客户机，RDP 利用其自己的视频驱动器来提供显示器输出。在客户机上，RDP 接收提供数据并把所述消息包解释成相应的图形设备接口 API 调用。 对于输入路径来说，客户机的鼠标和键盘事件被重定向为从客户机到所述服务器。 在所述服务器上，RDP 利用其自己的虚拟键盘和鼠标驱动器来接收键盘和鼠标事件。 从一非限制特征观点来看，RDP 包括加密、带宽压缩特征、漫游断开(roaming disconnect)、剪贴板映射(clipboard mapping)、打印重定向、虚拟信道、遥控和网络负荷平衡（network load balancing）。

终端服务器提供了一种示例性的远程计算环境作为服务器的扩展，诸如 Windows NT 服务器。 只用瘦客户机，用户就可以体验完全脱离服务器的服务器桌面操作系统和应用程序。利用终端服务器，提供给用户从任何下列类型的桌面到基于 windows 的应用程序的访问：（A）低价硬件，一般称为基于 windows 的终端机，其通过第三方的硬件供应商而在市场上进行买卖。(B) Windows 桌面操作系统，诸如 Windows 95 或 Microsoft Windows NT

Workstation，通过运行 Terminal Server（终端服务器）客户机作为本地桌面环境内的视窗， 以及(C)基于 X 的终端、基于 UNIX 的桌面和苹果计算机（Apple Macintosh），MS - DOS 及其他网络计算机(通过附加软件)。

终端服务器包括三个主要部件：终端服务器多用户核心、远程桌面协议(RDP)以及瘦客户机软件。

终端服务器是多用户服务器核心，其提供了处理多个在其他装置上同时发生的客户机对话的能力。终端服务器，能够直接处理在各种基于 windows 的和非基于 windows 的硬件上运行的可兼容的多用户客户机桌面。标准的基于 windows 的应用程序不需修改就可在终端服务器上运行,以及所有标准的基于 Windows NT 的管理基础设施和技术可用于管理客户机桌面。用这种方法,公司可以利用对窗口环境所提供的应用程序和工具的各种选择。

RDP 是终端服务器的协议，其允许瘦客户机与终端服务器在网络上进行通信。 该协议基于国际电信联盟(ITU) T.120 协议、国际标准多信道会议协议。 为高带宽企业环境调整 RDP 并且 RDP 还支持加密对话。

所述瘦客户机部件，是在包括基于 windows 的终端装置和个人电脑的桌面硬件范围内提供或显示 Windows 用户界面的软件。

终端服务器的对象管理器，具有不冲突的不同的对话应用程序和系统程序。 在对话内所创建的每一个对象的，都被附加了一个与创建它的单个对话有关的唯一标识符编号(SessionID,对话 ID)。 所述终端服务器服务是完全独立的协议，因此其可以利用 RDP 或第三方附加协议,诸如 Citrix 的 ICA，来运行。

RDP 是一种多信道协议(multichannel capable protocol)，其允许独立的虚拟信道从服务器传送串行设备通信和描述数据（presentation data）、以及加密的客户机鼠标和键盘数据。 虚拟信道是软件扩展(software extension)，其可用于把有用的改进添加到终端服务应用程序（Terminal Services）上。 有用的改进的例子可以包括：支持特定类型的硬件、音频、或其他由终端服务 RDP 所提供的对核心功能的添加。 RDP 提供了对多虚拟信道的多路管理。

虚拟信道应用程序具有二个部分，客户机端部件和服务器端部件。 服务器端部件是一种运行在终端服务器上的可执行程序。客户端部件，是当终

端服务客户机程序运行时，载入到客户计算机上的存储器中的 DLL（动态链接库）。

虚拟信道可以把有用的改进添加到与 RDP 协议无关的终端服务客户机上。 利用虚拟信道的支持，可以添加新特征而不必更新客户或服务器软件，或 RDP 协议。

其他几种性能也是部分 T.120 标准定义，包括，例如，多点数据传送，其允许数据从一应用程序实时地传送到多方。 启用组播传送，允许了数据传输的可靠的传送服务。 其为用户提高了性能，但是同时也减少了网络基础设施上的负载。RDP 对连通性目的有好处，因为其提供了一个可扩展基础，通过该基础来逐步增加更多的性能。这是部分地由于 RDP 提供了高达 4,000 个用于数据传输的独立的信道、和用于多点传输的设备。

RDP，被设计成支持许多不同类型的网络布局，诸如 ISDN、POTS，和许多局域网协议，诸如 IPX、Netbios、TCP / IP 等等。

涉及了通过 RDP 堆栈（stack）发送和接收数据的活动，基本上与当今用于普通 LAN 联网的七层 OSI（开放系统互连)模型标准相同。 所要传输的来自应用程序或服务的数据，经由协议堆栈向下传递，被在网络协议上分段（sectioned）、送往信道，加密，封装、装配，打包，并且最后被寻址和经由电线发送到客户机。

返回数据，以相反的方式工作，信息包被剥掉地址、然后打开、解密等等，直到把数据提供给所述应用程序以供使用。 在第 4 和第 7 层之间发生了一些部分协议堆栈修改，其中数据被加密、封装、和装配、送往信道，以及按优先次序排列。

利用 RDP，有利地，处理协议堆栈的复杂性被从应用程序开发者处抽离。应用程序开发者简单地编写所述应用程序，并且终端服务器所实施的 RDP 堆栈及其客户机连接注意到了其余部分。

当开始时，终端服务器引导并装入核心操作系统，并且启动终端服务器服务以及开始等待对话连接。 每个连接都给出了一个唯一的对话标识符或“SessionID（对话 ID）”以向终端服务器提供一个专用的对话，并且在对话内所创建的每个进程都被“加上标签（tagged）”，相关联的 SessionID，以对其域名空间和其他对话域名空间进行区别。 当用户登录到启用终端服

务的计算机上时，就为用户启动一个对话，并利用唯一的对话 ID 来识别。由于每次登录到终端服务客户机上都收到一个独立的对话 ID，所以用户在感觉上类似于同时登录到多个计算机上，例如，办公计算机和家用计算机。

所述控制台(终端服务器键盘，鼠标，和图像）对话最先载入并被看作一个特定情况客户机连接和指定的对话 ID。 所述控制台对话作为普通系统对话启动， 同时载入所配置的显示器、鼠标、和键盘驱动程序。

在创建控制台对话之后，接着所述终端服务器服务程序调用对话管理程序以创建两个(默认)等候客户机连接的空闲客户机对话。 为创建空闲对话，对话管理程序执行客户机服务器运行时间辅助系统进程并且一个新的 SessionID 被分配给该进程。

不象控制台对话，客户机对话被配置成载入独立的用于显示器、键盘和鼠标的驱动程序。 新的显示器驱动程序是远程桌面协议(RDP)显示设备驱动程序，并且鼠标和键盘驱动程序被 RDP 驱动程序取代。 这些驱动程序允许 RDP 客户机对话是远程地可用的且交互的。 最后，终端服务器还调用一个用于 RDP 协议的连接监听程序线程，其监听 TCP 端口上的 RDP 客户机连接。防止带有不同 SessionID 的进程访问别的对话数据。

在一示例性的实施中，客户机启动一个经由 TCP 端口到终端服务器的连接。 所述终端服务器 RDP 监听程序线程检测所述对话请求并创建一个新的 RDP 堆栈实例以处理该新的对话请求。 监听程序线程，把输入的对话转交给新的 RDP 堆栈实例，并在 TCP 端口上继续监听其他连接尝试。 每个 RDP 堆栈，都作为所连接的以处理对话结构细节的协商的客户机对话，而被创建。

在用户登录之后，如果在单一应用程序模式中，则向用户显示所述桌面、或应用程序。当用户选定了一个应用程序以运行时，鼠标命令被传递到新的虚拟内存空间。

如果用户决定断开所述对话，则所述处理和所有的虚拟内存空间都搁置，并且如果其他处理需要物理存储器则被翻离该物理磁盘。 RDP 的一个额外的好处是，能根据用户对所述对话的要求来改变对话屏幕分辨率。 例如，如果用户以前已经以 800×600 的分辨率连接到终端服务器对话并断开，然后移到只支持 640×480 分辨率的不同的计算机处，并重新连接到已有对话，则将重绘桌面以支持新的分辨率。

实施注销通常很简单。一旦用户从对话注销，则所有与 SessionID 有关的处理都被终止，并释放分配给所述对话的所有的存储器。

用于无线地发送和接收内容的系统和方法

一方面，所述发明使显示装置，诸如投影仪或大型显示监视器，包括了无线技术，其允许显示装置从移动计算装置接收内容/数据。 因此，用户可以不必物理地把移动装置连接到电缆上。另一方面，将被从移动装置发送给显示装置的内容/数据，还可以被同时地在会议参加者的计算装置上观看。无线技术正在迅速地聚集了投影仪市场上的动向。 利用所制造的带有无线功能的投影仪，诸如 Wi-Fi，在“ad - hoc”模式中，投影仪允许移动用户容易地进行访问以提供内容。这种投影仪提供了把多个移动用户集合到同一房间或对于无线技术来说足够近的房间内的能力，以用于合作会议。 另外，本发明提供了一种容易的连接，其中有线解决方案并不是实际的，即，消除了架线问题。

因此，利用本发明，投影仪安装起来比较容易，整理者也比较容易，并且在有效距离内没有信号损失或降低。 利用本发明，在多个 PC 源之间转换也是还比较容易的，例如，如果有多个人通过他们自己的膝上计算机出席。因此，报告者可以在室内可以在室内更加灵活，或者相反在无线技术的能力范围之内，他们不必在投影仪附近或在墙上插座附近。 在本发明的一个实施例中，通过包括无线技术，诸如 Wi-Fi，其能够投影到移动装置的操作系统中的投影仪或其他移动装置，所述移动装置能够无线地进行投影而不必需要额外安装软件或硬件到移动装置上。

在一个实施例中，本发明支持嵌入到投影仪中的无线技术，并利用即插即用标准（UPnP)来通知投影仪的出现、用户便携式/移动式计算机，以发现并控制所述投影仪。 本发明能够利用终端服务对话把显示连接到所述用户机器上。

本发明简化了在便携式/移动式计算机驱动其他便携式/移动式计算机的投影仪和显示之间的综合技巧。 在投影仪上增加无线功能，这就允许了移动用户能够容易地进行访问，并提供了把大量移动用户集合到用于合作会议的同一房间中的能力，以及提供了一个并没有实际的有线解决方案的容易的连接。 由于消除了架线问题，所以投影仪的安装比较容易，整理也比较

容易，并且在较长的距离内没有信号损失。在多个 PC 源之间进行转换更加容易，尤其是如果多个人通过其自己的膝上计算机而出席时，并且报告者在室内能够更加灵活一他们不必在投影仪旁边或在墙上插座旁边。

根据本发明的无线技术中的一个主要的好处是，能够在一个有多个报告者的房间内体现出来，其中每个发言人都必须事先把他们的膝上计算机插入投影仪接头并且在用完时拔出，即，通过本发明，能够实现合作组报告而不需转换电缆。本发明所实现的三种情形包括 Mirror、Extended Monitor 和 1：N。 在一个示例性 Mirror 情形中，梅利莎走进会议室并把她的膝上计算机设置为会议模式。 她的机器发现了会议室内的投影仪。 她按在投影仪上的样子来无线地投影在其膝上计算机上的幻灯片放映。 在她完成了她的幻灯片的显示以后，由于其他会议参加者要使用该投影仪，她就从所述投影仪上断开。 在这里给出了许多例子，它们都不应被看作是对本发明的限制。 例如，在 1：1 或 1：n 投影环境中的任一种中，都能实现 Extended 情形。 所述 Mirror 情形也可以在 1：1 和 1：n 投影环境中实现，即，他们不是全部的情形。

在一个典型的 Extended Monitor 情形中，帕特里克在进入客户会议室时把他的膝上计算机设置为会议模式。 他的机器在室内发现了无线投影仪。 通过使所述投影仪能够用于伸展多监视器方式，投影仪投影所述报告，同时帕特里克的膝上计算机示出他的注释。 实际上，帕特里克的显示是分开的因此其能被用作第二监视器。

在一个典型的 1：N 情形中，佛瑞德在机场大厅遇见了他的同事，他们都有膝上计算机，或其他计算装置，其包括根据本发明的软件，例如，所述操作系统中，或作为一个应用程序。 从而，佛瑞德能够容易地把他的幻灯片投影在他所有同事的膝上计算机上，和/或一个投影仪上，如果有一个可用的话。

因此，本发明的解决方案提供了一个简单的用户界面（ UI），其允许用户发现可用的无线投影仪或其他计算机，进行设置并且连至其上。 此外，本发明包括一个用于其他计算机用户 UI，以接受来自源便携式/移动式计算机的“投影”内容/数据。

图 3 示出了一个示例性顺序，用于根据本发明运行一个无线投影应用程

序。 例如，在 300，一个用于投影的示例性用户交互从例示本发明的软件功能开始。 这可以发生在所述装置的开始阶段，或作为一个投影请求的一部分。 对于一个非限制性例子来说，用户能够通过一个在启动菜单下面的菜单单元或顶层或容易到达的 UI，诸如工具条来开始本发明。 在 310，所述用户把机器设置到“报告”模式。 报告模式能够影响其他在报告期间操作系统所调用的任务，例如，关掉通知，关掉屏幕空白，防止来自其它来源的音频，改变供电方案，改变桌面背景等。 在一个非限制性的而不是图 3 所示出的具体实施例中，如果顶层或容易到的 UI 可用，并且发现了一个或多个显示，就会出现一个显示条。 要让这发生，在已经选定了报告模式之后，所述机器可以处于例如 30 秒这样的预定时间的发现模式中，以便给本发明时间以便发现用于投影的显示器的存在。 在 320，如果用户想要投影内容，则通过 UI 对用户进行询问。如果为“是”，则所述机器在 330 进入发现状态。 如果为否，则所述软件退出或返回步骤 300，或 310。在 340，出现一个带有一显示器列表的对话框，例如，投影仪。 在一个实施例中，对于其他膝上计算机，所述报告者并不接收膝上计算机显示器列表，而是创建一个带有会议名称/密码虚拟会议，以便其他人利用这些加入会议。 在 350，所述用户选择一个显示器，例如，显示内容的投影仪。 在一个实施例中，相对于其他膝上计算机，如上，用户并不选择其他膝上计算机，而是创建一个带有会议名称/密码的虚拟会议，以便其他人使用。 在没有任何用户干预的背景下，也可能发现。

虽然发现进程可以返回所有的投影仪和膝上计算机，但是有些可能不能用于显示，即，目前别的投影正在使用。根据本发明，这些包括一个其正在被使用的标记，例如，在显示器上用一个“忙”图标把这些变灰。作为所述对话框的一部分，用户能够从最近使用的(MRU)投影仪列表中进行选择或直接输入投影仪名称，其可以包括指定一个 URL 或 IP 地址，而不需发现所述投影仪。也把选项给了所述用户以配置所述投影。

一旦备用显示器，例如，投影仪，已经选定，就可以开始投影。如果可用，则 UI 元件，例如，顶层部分或容易到达的 UI，诸如工具条，就允许用户：断开和/或添加更多的人到所述投影中。 例如，在一个实施例中，顶层的弹出部分或容易到达的 UI，诸如，工具条，允许用户查看谁在报告中，并

可能断开与他们的连接，而不是添加更多的。 在此实施例中，如果用户想要被加入其中，则用户通过会议名称/密码来选定一个报告以加入。 由此一个对话框，例如显示工具条，显示投影状态、断开的能力并添加更多的人到投影列表。

在图 4A 和 4B 中给出了本发明的结构。根据本发明的会议室投影仪技术结合了两种关键技术：UPnP 和 Terminal Services（终端服务）。 通过使用根据本发明的这两种技术，允许用户发现和远程控制一个投影仪，投影一个(桌面、PowerPoint 等)以及把桌面扩展到分开的显示设备。 图 4A 以及 4B 给出了根据本发明的会议室多监视（meeting room multimon）服务(MRM)的整个体系结构。 最底层是操作系统，在该层上逐步增加了通用即插即用标准部件 UPnP 和终端服务 TS1 及 TS2 和远程辅助设备 RA1 及 RA2 部件。MRM 利用了两种技术来解决本发明所要解决的问题。 通用即插即用标准用来发现和控制所述投影仪装置。 终端服务和远程辅助设备用于所述显示的呈现。

图 4A 和 4B 也出示了本发明是如何包括两个部分的：一部分被使用或控制（MRM 发送器），而另一个实际上被用来显示发送器的屏幕。

所述发送器(图 4A)通过服务 SS 提供功能，控制并发现所述装置。它利用通用即插即用标准所定义的机制来完成此功能。 此外，所述发送器包括终端服务服务器 TS1。 通过该服务器，所述发送器的屏幕信息被分发给终端服务客户机 TS2，即，备用显示器装置。

图 4A 的控制点发现、控制、并投影到图 4B 的所述会议室投影仪装置，其可以包括膝上计算机、投影仪、监视器等。 会议室投影仪装置利用通用即插即用标准来在网络上公布其自己。其利用了终端服务客户机 TS2“连接”到图 4A 的控制点中的终端服务服务器 TS1。 接着，其接收来自终端服务服务器 TS1 的描述所述屏幕的信息。

图 5 示出了一个关于连至一个备用显示器装置上的所述进程的示例性流程图。在 500，所述控制点(或 MRM)发现了备用显示器装置。 这可以通过下述步骤实现：1）发出对具体装置的一个通用即插即用搜索，在该情况下，该类型的所有装置都对该请求进行响应，或 2）监听公布其自己的装好自。一旦所述控制点知道了该具体装置，它就在 510 下载该装置的服务文件。

然后，所述发送器和装置彼此建立一个连接。在 520，通过在远程辅助

设备层调用合适的 API，生成一个“票（ticket）”，用于终端服务客户机。所述票给出了关于如何连至所述发送器的信息，以及连入模式（投影、扩展、桌面、显示一专用应用程序等）。 然后，在 530，用所述票调用所述装置的 UPnP 投影仪服务的（ ProjectorService） DS。 换句话说，所述发送器把该票发送到所述装置。 所述装置则在 540 把该票传递到在 OS2 上的远程辅助设备层或其他接收器。 在 550 所述票被解码并交给终端服务客户机 TS2。在 560，所述终端服务客户机 TS2 连至服务器 TS1 并建立连接。在 570，该发送器的屏幕数据被通过 RDP 呈现给所述装置。

图 6 示出了一个关于控制备用显示器装置的进程的示例性流程图。 一旦在 600 用户连至所述备用显示器装置，则在 610 所述备用显示器装置返回一个“SessionToken”，来识别专用连接。 在某段时间的给定点，单个人“拥有”备用显示器装置。换句话说起初只有一个人告知所述备用显示器装置要投影什么连接。 此外，该标记（ token）用于备用显示器装置。 利用该标记，用户能够：在 620 断开，在 630 为他们的对话改变/检索所述显示设置，在 640 转让所有权和/或“中断”他们的连接 650。

为一个 1：1 投影，所述投影仪控制点利用一个 API，诸如 SALEM 层 API，产生建立连接的票。 至于一个投影及其他扩展的监视器投影，在一个实施例中，所述投影仪利用一个来自终端服务层的通信和合作 API，允许多个客户机参加一个多影像（multi - shadowing）对话。 所述 API 也提供了一种邀请和不邀请客户参加影像对话的方法。 用户控制点的目的，是显示可用的备用显示器装置列表，通过该列表用户能够对连接进行选择。

如上所述，本发明提供了在一种无线环境中发现会议室投影仪的能力，把膝上计算机显示投影在投影仪（ mirror 1： 1)上的能力，把膝上计算机显示投影在投影仪上和/或会议参加者（1：m），甚至在没有基于投影仪的 WinCE 的情况下，以及在膝上计算机上具有发言人的笔记和在投影仪上有幻灯片放映(扩展的 multi - mon)。 如所提到的，本发明还提供了便于用户对投影进行交互的用户界面，现在将更详细地描述关于用户界面装置方面的内容。

根据本发明，用户有配置投影仪的选择。 根据本发明，一种布局的 UI 能够从对话框上的“选项”按钮开始，其允许该用户进行下述行为：设置投影密码，选择与扩展模式相对的复制模式（cloning mode），选择屏幕分辨

率和选择视频，或音频与视频。在一个实施例中，系统默认的克隆模式、屏幕分辨率默认当前系统环境一个以及把“音频和视频” 选为默认的。

一方面，本发明的用户界面使用户能够表示其是否想要“投影”或“允许其他人投影”到其膝上计算机。 如果所述用户选择“允许其他人投影”，则该机器就进入“可被发现”状态，即，该机器开始广播它的有效性，以便寻找可用的备用显示器装置的主机接收该机器是可用的的指示。 做为选择，如果用户从想要提供给他/她的膝上计算机的某人处收到一通知，则对该用户进行询问。 如果选择“是”，并且所述投影受密码保护，则要求该用户进入所述密码。

一旦已经开始了所述投影，则出现显示所述投影的客户投影窗口。 在一个实施例中，所述窗口包括两个输入元件(例如，按钮) ——一个用来断开连接，而另一个用来进行配置。 配置允许用户关掉音频或让别人发现显示器，使发送器发现其他可能的用于所述内容的接收器。 利用所述断开按钮，结束当前投影对话并取消所述投影窗口。 在一个非限制性具体实施例中，没有告知报告者哪个用户正在观看所述投影。 在另一非限制性具体实施例中，在投影期间所述指针变成一激光红点，以给报告者一种容易的方法来高亮度显示投影上的项目。

图 7A - 7H 示出了根据本发明的各种用户界面情形的示例性的非限制性的屏幕快照。 图 7A 示出了一个根据本发明要投影到备用显示器装置上的示例性屏幕 700a。 图 7B 示出了一个示例性屏幕快照 700b，其中询问用户是否参加会议，作为发送器或者接收器。 图 7C 示出了一个示例性屏幕快照 700c，其中用户从一个列表中选择备用显示器装置。 图 7D 示出了一个示例性屏幕快照 700d，其中提供给用户附加的显示器选项。 图 7E 示出了一个示例性屏幕快照 700e，其给出了一个投影仪条部分弹出的情形，如果顶层或容易到达的 UI，诸如工具条，是可用的话。 图 7F 示出了一个示例性屏幕快照 700f，其示出了备用显示器装置上的投影视图，其中所述指针装置已经变成一个激光点。 图 7G 示出了一个示例性屏幕快照 700g，其中报告者邀请一个会议参加者参加会议。 图 7H 示出了一个示例性屏幕快照 700h，其中所述用户接收并开始接收一个用于呈现所述投影内容的投影窗口。

当所述服务被配置成允许所述用户投影到一显示器上时，该服务可用于

发现已登记的 UPnP 投影仪装置，查询他们的当前状态，创建一个 TS 票以建立一个连接和从一对话断开。

MRM 不必与 TS 连接。 在一个实施例中，通过 UPnP API（UPnP 应用编程接口）来建立连接。 断开并控制所述远程显示，利用了所述连接调用返回的对话标记。 简单地获得状态信息，不需要使用任一关于投影仪的对话数据（例如投影仪状态，分辨率等）。

另外，所陈列的 UI 返回在现行设备环境(例如，DPI，分辨率)下的显示。从而，在 DPI 和分辨率不同的机器间保持尺寸的一致。 以下述方式提供 UI，以便用户不必处理前景和画像定位中的任一窗口管理问题。 因此，在各种实施例中，所投影的屏幕都适于所述装置的长宽比。

下列是一根据本发明用来支持投影情形的方法的示例性非限制性的子集。

(1) Connect ([in] BSTR bstrTicket, [in] BSTR bstrUser, [out, retval] BSTR *pbstrSession)

该方法把终端服务票和用户的名称传递给应用程序，该应用程序将试图建立一个回到发起机器的连接。 其返回一个可用于控制所述装置的对话字符串。 在一个实施例中，如果没有人正在使用所述装置，则随着连接的建立，起始状态将从 0（可用的)转变为 1（连接)到 3（使用中）。 如果所述装置在使用中，起不会被用户立即控制。 为了断开所述对话，用该方法所返回的对话字符串调用断开方法。

(2) Disconnect ([in] BSTR bstrSession)

该方法断开用所述字符串参数表示的对话。 该值与所述连接方法返回的字符串相同。 在一个实施例中，随着连接的减少且所述装置恢复到它的默认设置，所述状态将从 3（ 使用中)转变到 2（断开）和 0（可用）。

在已经更新了所述内部值之后，产生了用于下列变量的事件：A_CurrentUser, A_NextUser, A_UserCount 和 A_UserList。 值得注意的是，TS 网络协议具有下述特征，即调用在网络丢失事件中允许所述连接重新进行连接的自动重新连接。

(3) SetDisplayMode([in] BSTR bstrSession, [in] long DisplayMode)

如果对话参数与当前控制所述装置的用户的对话参数相匹配，该方法就改变显示模式。

(4) SetResolution ([in] BSTR bstrSession, [in] long width, [in] long height, [in] long colorDepth)

[0113] 该方法设置用于所述对话的分辨率。

(5) GetUserName ([in] long position, [out] BSTR * pbstrUser)

该方法对用户名称进行检索。

在一个实施例中，至于特性，实施下列非限制性功能：

(1) get_A_State([out, retval] long *pState)

其检索所述装置的当前状态，并且在一个实施例中，所述有效值是：

DISPLAYSTATE_AVAILABLE = 0，

DISPLAYSTATE_CONNECTING = 1，

DISPLAYSTATE_DISCONNECTING = 2，

DISPLAYSTATEJNUSE = 3，

DISPLAYS! ATE_INITIALIZING = 4。

所述默认值是 0。除了 0 之外的任一值表示设备忙并且不会试图进行连接。

(2) get_A_DisplayMode([out, retval] long *pDisplayMode)

[0118] 其对所述装置的当前显示模式进行检索。

(3) get_A_CurrentUser([out, retval] BSTR *pbstrUser)

其对在控制内的当前用户的当前名称进行检索。

(4) set A MaxUsers([out, retval] long *pcUsers)

其对所述装置能够处理的最大数目的用户进行检索。

(5) get_A_Width([out, retval] long *pWidth)

其对当前的水平分辨率进行检索。 在一个实施例中，该值可以在从 800 到一个默认值为 1024 的可变的最大整数值（MAXINT）范围内进行变化。 可以利用 SetResolution 来改变该值。

(6) get_A_Height([out, retval] long *pHeight)

其对当前的垂直分辨率进行检索。 在一个实施例中，该值可以在 600 到默认值为 768 的最大整数值（MAXINT）范围内变化。 setresolution 可用

于改变该值。

(7) get_A_ColorDepth([out, retval] long *pColorDepth)

这是用于该颜色的每像素的位数。在一个实施例中，该值可以是 8、16、24、32 中的一个。其具有一个默认值 32，并且 SetResolution 可用于改变该值。

本发明可以选择性地与各种现有的可访问的基本设施和用户界面相结合。例如，如果罗伯特具有移动性缺陷并且颈部以下没有运动神经控制，则罗伯特可能利用带有电子指示器的在屏幕上的键盘来实现其计算目的，即，他能够使用该快捷键、更大的字体来选择投影仪显示器。由此，在本发明的一个具体实施例中，可以通过屏幕读出器读取投影的输出。因此，罗伯特能够用键盘访问所有的特征，尤其是鼠标操作密集的动作，例如，选择投影仪和膝上计算机显示器。还在菜单项和控制上设有键盘加速器(例如，快捷键)。在一个具体实施例中，逻辑键盘导航序列用于对话框和相似组的对象。在这种意义上讲，“逻辑”通常等于从左到右、和从上到下，其可以根据语言/文化来交换国际用户。

在一个具体实施例中，不用单一的颜色来在项目间进行区分，保证所有的传送的带有颜色的信息不带颜色也是可用的。关于系统设置，在各种具体实施例中，本发明支持可能的颜色的控制面板设置，否则利用标准前景和底色来画出允许用户设定彩色图像。并且，当通过可访问性控制面板(Accessibility Control Panel)设置高对比度标志时，省略了位图图像或在文本后面的其他复杂的背景和控制，用单色而不是多种颜色画出所述图象，并且用通过控制面板定义的标准系统颜色来替换特定应用程序的颜色，最可能少地使用配色。利用在控制面板中所选择的尺寸(即，屏幕规格)画出所述对象。并且，如果是画线，则要确定出适当的宽度而不是利用固定值。而且，在各种具体实施例中，任一定制控制都包括有效的可访问性属性。

距离和障碍物可以降低无线性能。因此，在本发明的各种具体实施例中，通过本发明的 UI 装置显示一图标表示信号品质。可以相应于障碍物、距离和要维持的数据速率示出信号品质的预定水平号。

本发明还可能与国际语言和多语言的用户界面技术相结合，以便当把所

述内容传递到外国用户所有的装置时，将根据外国用户的语言选择性地进行显示。

本发明的所述投影，根据其在 IP 网络上的出现，可以是有线的或者无线的。 例如，在有线的情况中，约瑟夫在他的办公室(有线)中并且想要把一组幻灯片投影给在其办公室中的具有膝上计算机的(有线或者无线地连接)客人。 人们注意到本发明适用于任一计算装置、PC 或其他的、而不只是移动装置。

在各种具体实施例中，1：1 投影包括发现、连接到所述备用显示器装置以及数据传输。 发现可以是用户启动的或是当用户正在做某项工作时在所述背景中自动进行的，或者所述系统处于空闲状态，等等。1：1 的投影可以是伸展的或者镜像的（mirrored）。 在所述扩展情况下，用一 UI 来使人们能够对备用显示器上的报告进行导航。 例如，一个人可以使 PowerPoint 报告在投影仪上展示而一个人在发言人在膝上计算机屏幕上做记录时想要转向下一个幻灯片。在这种情况下，一个人可以利用膝上计算机屏幕上的 UI 来高亮度显示幻灯片上的某些东西或转到下一张幻灯片。 因此，本发明慎重地考虑了下述情形，即可能有发送器显示的某一部分(例如，注解)是发送器不希望在呈现端被看到的，本发明还慎重地考虑了下述情形，即，可能有发送器显示的某一部分而不是呈现端的一部分作为数据的正常投影的一部分，而除了把该部分添加到所述投影上以便其可在呈现端看见。

在不同的实施例中，1 ：n 投影包括对正在进行的报告的网络的通知。规则还可以与所述报告相关联，其是可修改/可扩充的。 规则的例子包括：（A）能够参加/观看报告的人，（B）密码或任一其他对报告的认证，（C）在观看者一侧的报告的注解和/或该注解的记录/储存以及（D）内容权利管理规则的执行，例如，禁止打印幻灯片屏幕的能力。

投影还包括广播网络上出现的报告的能力，而不是实际在网络上的人。非基于 UPnP 的发现还可以在备用的具体实施例中实现。 当发现可以经由如上所述的 IP 实现时，就可以利用任一协议实现发现，即，可以直接 ping 一台机器以便查看是否出现了报告。

作为用户经验部分，在一个实施例中，用户可以进入“View Presentation（观看报告）”模式并查看整个网络上正在进行的报告列表。 接收器还可

以接收关于报告的通知，例如，报告在附近或有人特别想向你报告。

本发明还包括转让对其他连接用户的报告的控制的能力，借此任一用户都可以转让对他人的报告的控制。 如上所提到的，可以有关于谁可以接受报告的控制、以及什么控制水平等的由拥有所述报告的人所指定的管理权。陈列了当前正在观看所述报告的人员列表的用户经验（user experience）包括如果被授权了，添加或删除某人的能力。 本发明还慎重考虑了下述能力，即同时参加不同控制水平的多目标显示，即，可以为每个报告指定规则。

本发明还包括，只要可能，组合 1：1 和 1：n 投影情形的能力。 因为备用显示器装置，诸如投影仪，可以具有一列为其各自的报告而想要使用该备用显示器装置的装置，本发明包括一种装置用于管理使用装置的报告的排列。 任一应用程序启动一种报告模式的能力，即，查看或启动一个新的报告。

如所提到的，本发明包括配置实际上显示什么的能力，即，音频和视频，只有音频，或只有视频。 在一个实施例中，本发明还包括“Laser Pointer（激光指针）”功能，即，在报告期间，借助于辅助输入装置用户可以临时高亮度显示正在进行的报告中的某些东西，诸如“激光点”，其效果与辅助显示效果相当。 例如，鼠标移动可以变为带有轨迹的激光指针的模仿。

在更多的具体实施例中，本发明提供了用于控制带有公开的和非公开的方面的内容的远程报告的系统和方法。 关于这一点，本发明在想要发送（即，远程的、广播或别的传输）给客户装置（其他膝上计算机、投影仪等）的报告的公开内容，和想要保留其诸如象显示这样的功能的、公开内容正在被远程显示在服务器计算装置上的非公开内容之间进行区分。 在本发明的用户界面的一个实施例中，默认地，在公布行为之前或与其同步地生成或改变的内容，诸如“打印”到 TabletPC（平板计算机）范围内的日志，是公开的内容，并且在公布行为之后所进行的内容的变更(例如,注解、高亮度显示、其他添加、公开内容的掩饰、删除等.)构成了非公开内容基础。 在本发明用户界面的另一个实施例中，用户可以对内容采取某一行动，并指定某一或全部用该行动所添加的、掩饰的或删除的最后所得到的内容为非公开的。从而，在内容远程经验期间，客户装置只显示公开内容，而用于显示的非公开内容仍留在服务器装置中。

有益地，包括服务器装置的非公开内容的所述报告，与客户装置的显示保持同步，例如，当正在呈现幻灯片的放映时，在服务器装置处的幻灯片的改变将相应地改变客户装置处的幻灯片。 还有一个优点，报告者能够控制经由本发明的用户界面装置发送给客户装置的不变的公开内容的显示，同时保留观看服务器计算装置上的非公开内容的能力（例如，通过输入页面上移/页面下移或其他用于 PowerPoint 幻灯片放映的类似命令）。

关于这一点，当利用软件显示内容时，诸如 PowerPoint，Journal、Excel、Word、XML、HTML 等等，所述报告者通常让其内容返回到屏幕。 例如，其可以笨拙地确保听众所看到内容与报告者正在谈及的内容相同，其要求发言人请其他人来向下放映公开的幻灯片组，或者，如果发言人正在向下放映该组幻灯片，则发言人必须不时地向后看屏幕以确保该组处于正确的点上，这会中断报告的流程。 因此本发明随着发言人在计算机上的非公开报告的进行，远程地进行所述卡片组的公开的报告。 因此，本发明有利地使发言人能利用计算机的性能对一份卡片组进行注释，但是当对公众进行显示时，只显示“公开”部分的卡片组—非公开注释并不对公众显示。 例如，发言人可以利用墨水标出其想要强调的点或利用补充的论点，对每个报告幻灯片进行注释， 当显示幻灯片组(在发言人计算装置的控制下）时，本发明的远程控制特征保证了公众正在观看的与发言人 PC 上所显示的幻灯片相同，同时，本发明的公开-非公开特征隐藏了非公开注释/涂改以便只显示所述幻灯片组的公开部分。

在图 8A 中给出了幻灯片放映的示例性幻灯片 800。幻灯片放映的示例性公开内容 810 包括一个“Agenda（议程）”标题和各种论点，所述论点包括“Introduction（介绍）”、“Current status（当前状态）”、“Options for consideration（考虑的选项）”和“Next Steps（下一步）”。 就象在此处所描述的其他具体实施例，当前所描述的具体实施例还使内容 810 从一个报告的背景中的计算装置扩展到一组人，不论他们是否在同一房间内或远程分散地。 在一个实施例中，考虑了一种笔触式计算装置，诸如 TabletPC（平板计算机）。例如，笔触式计算装置是用于诸如幻灯片放映报告的注释文件的大型工具。 因此，如图 8B 所示，幻灯片 800 包括公开内容 810，其可以带有发言人的注解、附图、视频、相片文字等等。 作为一个非限制性

例子，注释 840 给出了在对幻灯片 800 的陈述期间对陈述幻灯片放映的内容以进行演说的发言人的提示。 对于另一非限制性例子来说，幻灯片 800 部分可以利用高亮度显示 830 而被高亮度显示。 在每种情况中，发言人都会希望只远程地显示公开内容 810。 因此，根据本发明，结合执行诸如注释或高亮度显示这样的行动，改变了所述内容，作者可以指定所述行动的结果是非公开内容，以便该非公开内容只显示在服务器装置上，通过该服务器装置公开内容 810 正在被远程地显示到客户装置上。 如上述，默认行为也可以指定哪些内容是公开的和哪些内容是非公开的。 例如，一旦 TabletPC 的内容向 Journal 公布，则该内容包括公开内容，然而，默认地，随后对该内容的涂改可以被认为是非公开的。 因此，当图 8B 的所述内容(公开和非公开的)被远程显示在客户装置上时，例如其他膝上计算机、投影仪等等，所述客户装置就接收图 8A 所给出的视图。

在图 8C 所示出的另一类似的情形中，作者可能想要从公开内容 810 中删除或掩饰细节，例如，想要从报告细节中抽出某些内容。 例如，公开内容 810 可以包括发言人在讲演所述报告期间将发现其会分散大家的注意力的视频、相片等等。 因此，如图 8C 所示，作者可以删除、或屏蔽或掩饰一些公开内容 810,并指明擦除/掩饰的内容 850 作为非公开的内容，以便当图 8C 的内容(公开和非公开的)被远程显示给客户装置时，所述客户装置接收图 8A 中所示出的视图，而服务器装置将显示图 8C 中的视图。 作为选择，所述报告者可以取消非公开/公开的区别，由此客户装置将会收到所述非公开的内容。 并且，所述报告者还可以进行选择以便只观看所述公开内容(或只观看所述非公开的内容)。

因此，本发明可以在要被发送到备用显示器装置的文件的情况下实施，其中可以认为所述文件是两个版本，即，所述文件的第一个版本和第二个版本，前者为公开的，后者包括非公开的内容，其中所述非公开的内容用第一和第二版本（添加或删除）之间的增量（delta）表示。 如所提到的，本发明并不局限于此，诸如 TabletPC 这样的笔触式计算装置提供了一种示例性的环境用于实施本发明。 例如，平板计算机包括把文件输入 Journal (第一个版本)的能力，此后由此，所述平板笔可用于注释或改变文件图象(第二个版本)。 通过将其“打印（printing）”到所述 Journal 而把文件输入所述

Journal 中。汇报（Reports）、表格、报告、电子表格、图形、相片、网页等等都能被输入到所述 Journal 中。 在这点上，如果所述文件可以被打印，则其可以被输入所述 Journal 中并被注释，而不用改变输入文件的任何原始内容。 例如，如果一个人在去开会的途中，则一个人可以把会议议程(例如，一种便于携带的的文档格式（pdf)文件、字处理文件、电子表格、幻灯片放映文件、电子邮件文件等等）输入 Journal。 然后，利用所述平板笔，可以在正在演说的议程的项目上做笔记。 由此一个人对所述文件的感想可以被简单地记录并观看。 例如，一个人可以把平板计算机的内容投影到会议室中的大屏幕监视器上，把文件的图像输入 Journal 和/或开始把评论放到所述文件图象上。

所述 Journal 的作者是一台虚拟的打印机，其对把文件图象输入到 Journal 记录中进行管理。 因此，任一可以让你打印的程序都可以发送文件到所述 Journal 作者处，正象其正在打印到一物理打印机上一样。 所述 Journal 能因此把所述文件转换成一文件图象，其用作 Journal 记录的背景。在 Journal 中，至少可以用三种方法产生一文件图象：利用不同程序的打印命令(如果所述文件在另一程序中是打开的，则该命令是有用的)，利用 Journal 输入命令(如果你正在进入 Journal 并想要输入文件，则该该命令是有用的），和/或利用搜寻软件的拖放式特征，诸如 Windows Explorer（可用于直接把文件拖入 Journal 中)。 任一输入 Journal 中的文件都被输入一个新的记录中，作为一组背景图象。 这些背景图象的内容，不能在 Journal 中被改变，并由此，这些背景图象适于根据本发明发送给备用显示器装置的报告公开的内容。

有多种实施本发明的方法，例如，一个合适的 API、工具箱（tool kit）、驱动程序代码、操作系统、控制、独立的或可下载的软件对象等等，其使应用程序和服务能够使用本发明的无线投影系统和方法。 本发明基于下述内容慎重地考虑了本发明的使用问题，即 API（或其他软件对象)、以及接收内容和/或根据装置的发现进行请求的软件或硬件对象以及根据本发明的内容的接收和传送协议。 因此，在此所描述的本发明的各种实施，可以完全为硬件、部分为硬件和部分为软件、以及完全为软件。

如上述,当已经结合各种计算装置和网络体系结构描述了本发明的示例

性的具体实施例时，所述基础概念可以被用于任一想要把内容投影到另一装置或从另一装置接收投影内容的计算装置或系统。 例如，所述算法和本发明的硬件实现可以被用于计算装置的操作系统，其作为所述装置上的独立的对象/作为另一对象的一部分、作为一个可以再用的控制、作为一个可从服务器下载的对象、作为装置或对象以及所述网络之间的“中间人”、作为一个分布式对象、作为硬件而被提供，在存储器中，任何上述的组合等等。 当在此选择了示例性的编程语言、名称以及例子作为各种选择的代表时，这些语言、名称以及例子并不是用来进行限制的。 本领域中普通技术人员将知道，有多种提供与利用本发明各种具体实施例所实现的功能相同、类似或等效的目标代码和术语的方法。

如所提到的，此处所描述的各种技术可以结合硬件或软件或只要合适则为两者的组合来实施。 因此，本发明的方法和装置，或其某一方面或部分，可以采取包含在有形介质内的程序代码(即,指令)的像是，其中，当诸如计算机这样的机器载入并执行所述程序代码时，该机器就成为计算机，所述计算装置通常包括一处理器、一处理器可读的存储介质(包括易失和非易失性存储器和/或存储元件)，至少一个输入装置、和至少一个输出装置。 可以实施或利用本发明的无线内容投影技术的一个或多个程序，例如，通过使用数据处理 API、可重用的控制等等，最好用高级程序或面向对象的编程语言实现以与计算机系统进行通信。 然而，如果想要的话，所述程序还可以用汇编或机器语言来实现。总之，所述语言可以是一种编译或解释语言，并结合硬件实现。

本发明的所述方法和装置，还可以经由通信来实施，所述通信包括有在某种传输介质上面传输的程序代码，诸如在电线电缆上、通过光纤、或通过任一其他传输形式，其中，当收到程序代码并载入和由下述这样的机器执行时，诸如 EPROM、门阵列、可编程序逻辑设备（PLD)、客户计算机等等，该机器就变成了一个用于实施本发明的装置。 当在通用处理器上实现时，所述程序代码就结合该处理器来提供一个唯一的装置，该装置促使了对本发明的功能的调用。 另外，任一结合本发明所使用的存储技术一直可以是硬件和软件的结合。

当结合各附图的优选实施例来描述本发明时，应该理解的是，还可以使

用其他类似的具体实施例或者可以对所描述的具体实施例进行修改和添加，以执行和本发明相同的功能而不偏离本发明。 例如，当在联网环境的情况下，对本发明的示例性网络环境进行描述时，诸如对等网络环境，本领域中的普通技术人员将认识到本发明并不局限于此，并且在本申请中所描述的方法可以适用于任一计算装置或环境，诸如一个游戏控制台、手持式计算机、便携式计算机等等，不管有线还是无线，都可以应用于许多经由通信网络所连接的这种计算装置，并在网络上进行交互。 此外，应该强调一点，即，可以考虑各种计算机平台，包括手持式装置操作系统及其他特定应用的操作系统，尤其是随着无线联网装置数目的继续激增。

当示例性具体实施例，提及了在膝上计算机和投影仪的情况下使用本发明时，本发明并不局限于此，而是可以被实现为把来自任一包括本发明的功能的计算装置的内容的无线传输提供给一个或多个也包括本发明的功能的其他计算装置。 而且，源计算装置甚至不必单独具有显示器。 例如，利用一个带有最小处理资源的移动存储装置，可以根据本发明把内容从该移动存储装置传输给一个备用显示器装置，而不必具有单独的显示能力。 更进一步地，本发明可以在多个处理芯片或装置中或者跨多个处理芯片或装置地实施，并且可以跨多个装置地对存储器产生类似的影响。因此，本发明不应局限于任一单个具体实施例，而是应该广义地进行解释以及根据所附权利要求的范围进行解释。

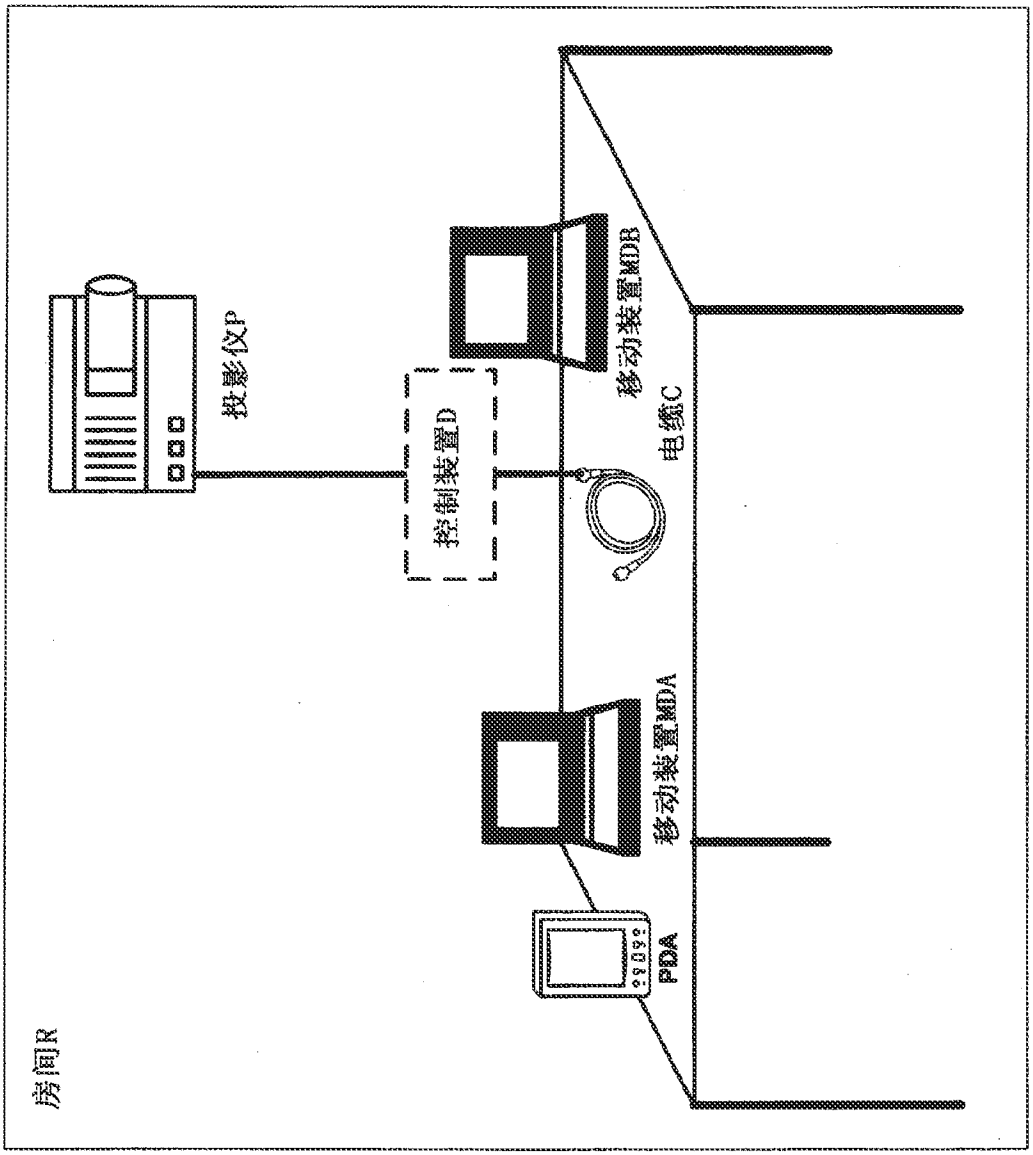

图 1
现有技术

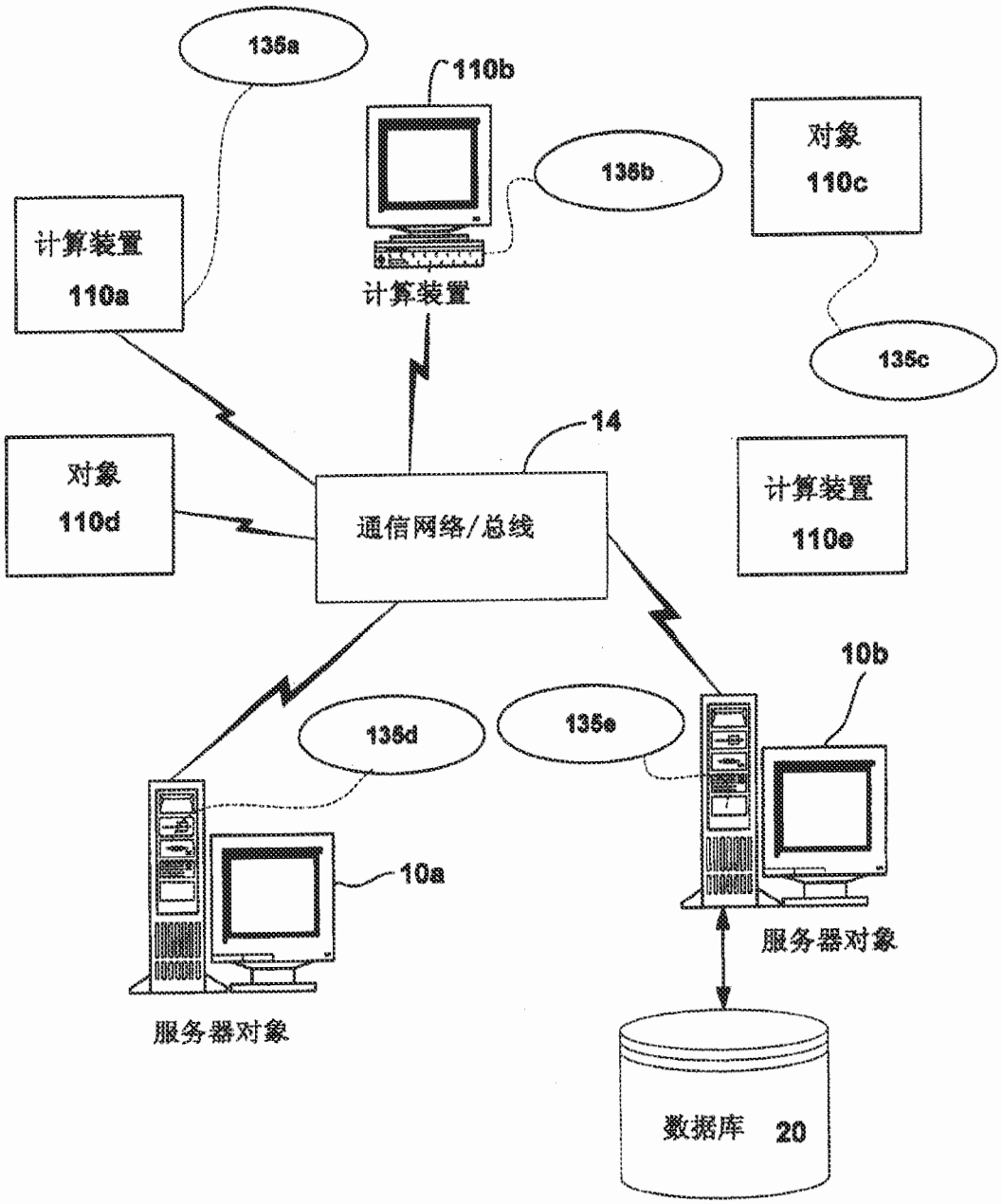
135a
110b
对象
110c
135b
计算装置
110a
计算装置
135c
14
对象
110d
通信网络/总线
计算装置
110e
10b
135d
135e
10a
服务器对象
服务器对象
数据库 20

图 2A

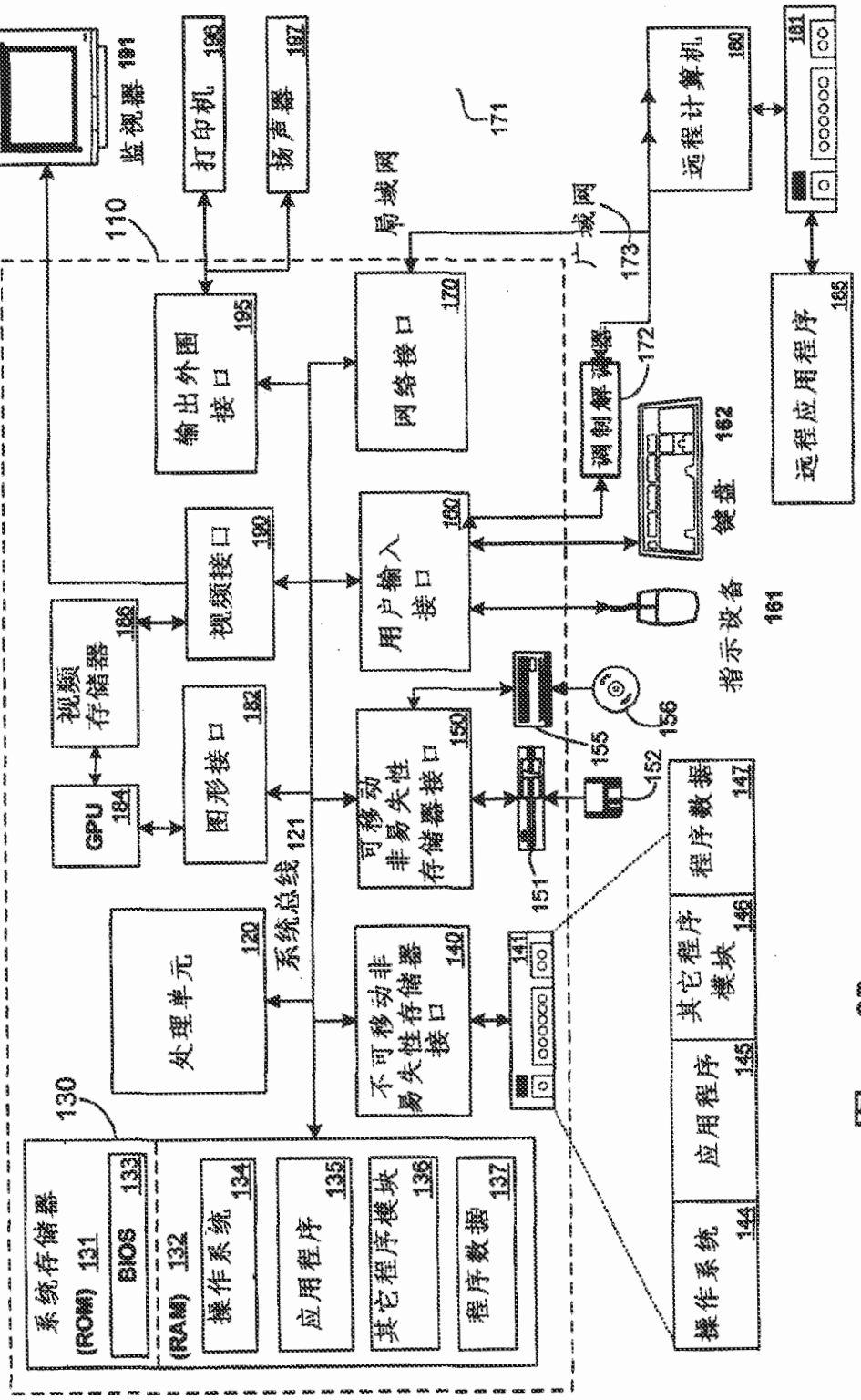
计算环境 100
110
监视器 191
打印机 196
扬声器 197
局域网 171
广域网 173
远程计算机 180
远程应用程序 185
输出外围接口 195
网络接口 170
调制解调器 172
键盘 162
指示设备 161
用户输入接口 160
视频接口 190
视频存储器 186
GPU 184
图形接口 182
系统总线 121
处理单元 120
可移动非易失性存储器接口 150
不可移动非易失性存储器接口 140
系统存储器 (ROM) 131
BIOS 133
(RAM) 132
操作系统 134
应用程序 135
其它程序模块 136
程序数据 137
130
操作系统 144
应用程序 145
其它程序模块 146
程序数据 147
151
152
155
156

图 2B

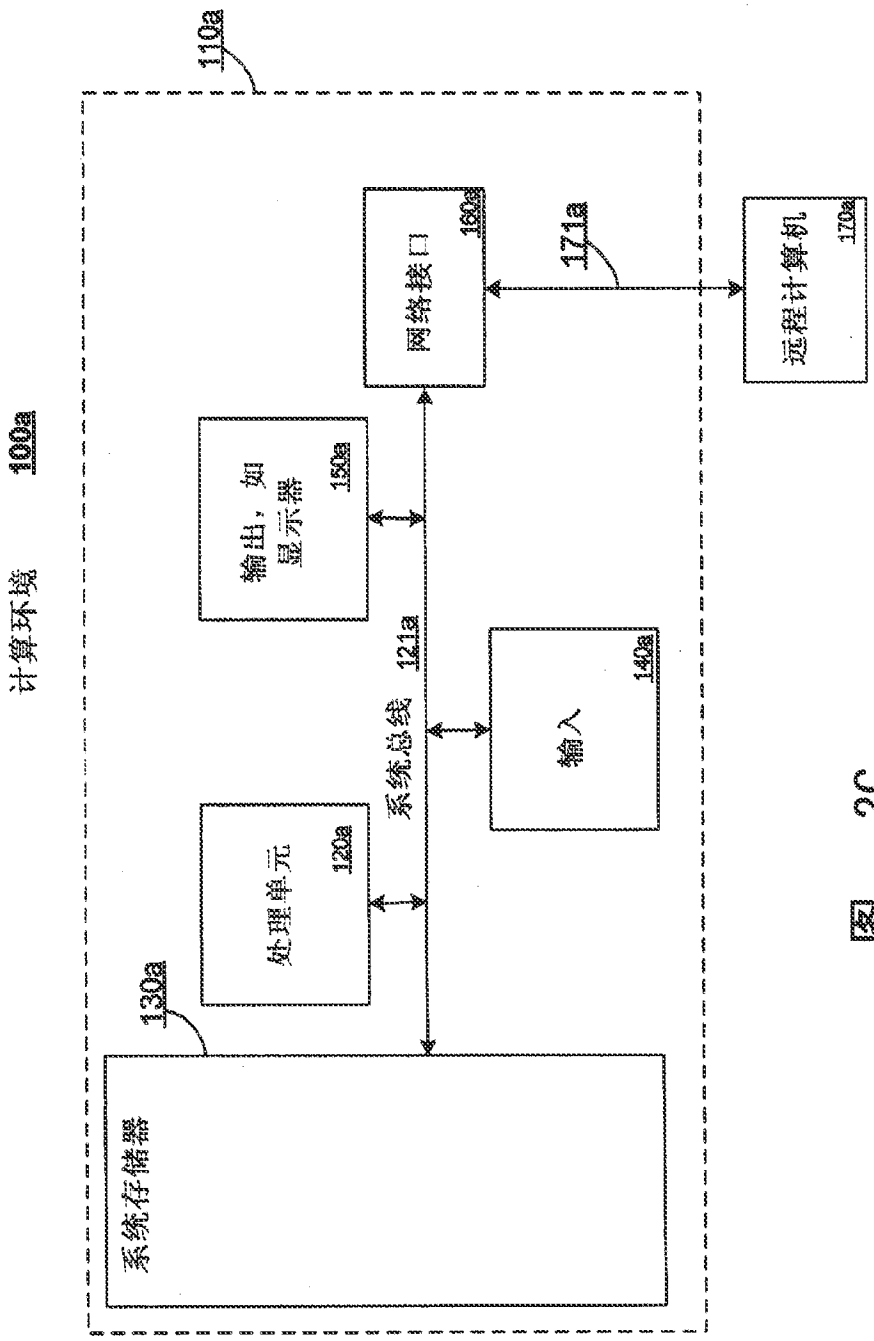
计算环境 100a
110a
系统存储器
130a
处理单元
120a
系统总线 121a
输出，如
显示器
150a
网络接口
160a
171a
远程计算机
170a
输入
140a

图 2C

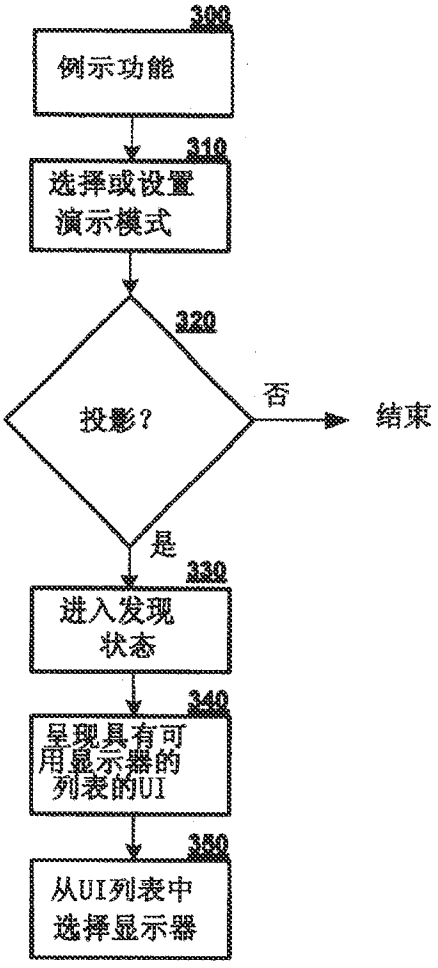
300
例示功能
310
选择或设置
演示模式
320
投影?
否
结束
是
330
进入发现
状态
340
呈现具有可
用显示器的
列表的UI
350
从UI列表中
选择显示器

图 3

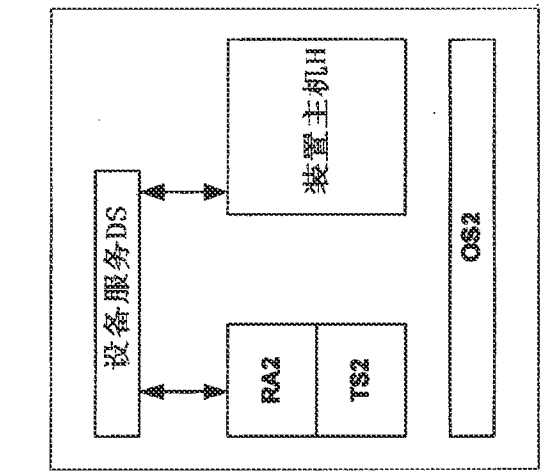

图 4B

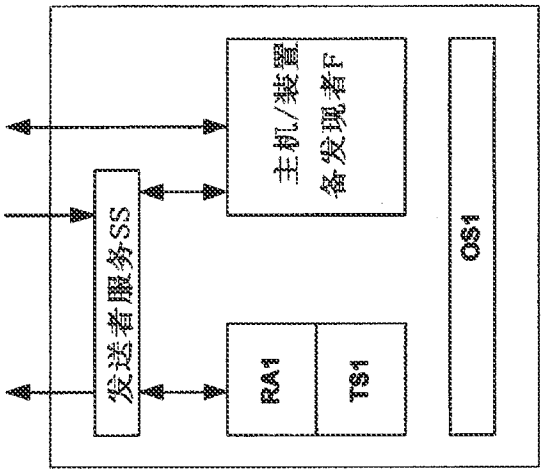

图 4A

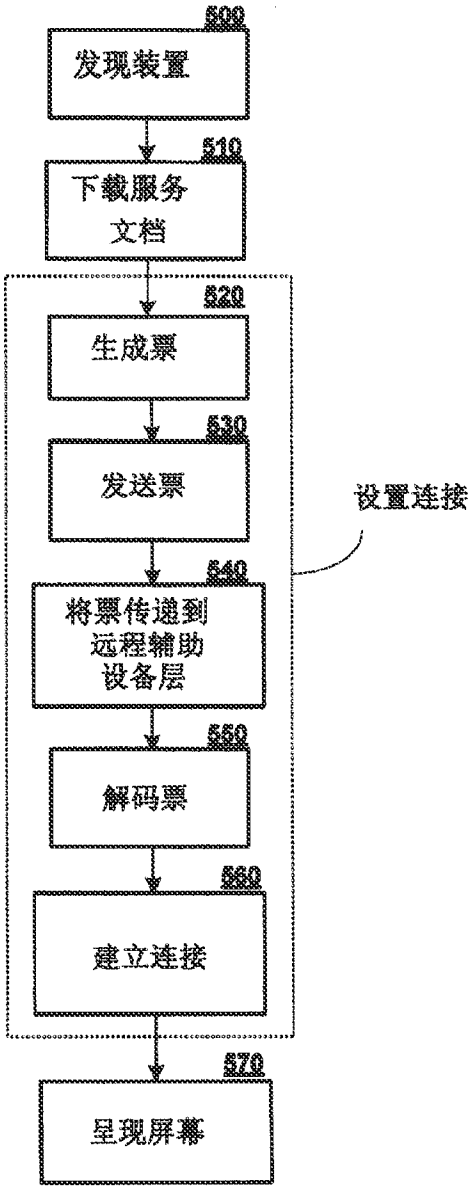
500
发现装置
510
下载服务文档
520
生成票
530
发送票
540
将票传递到远程辅助设备层
550
解码票
560
建立连接
570
呈现屏幕
设置连接

图 5

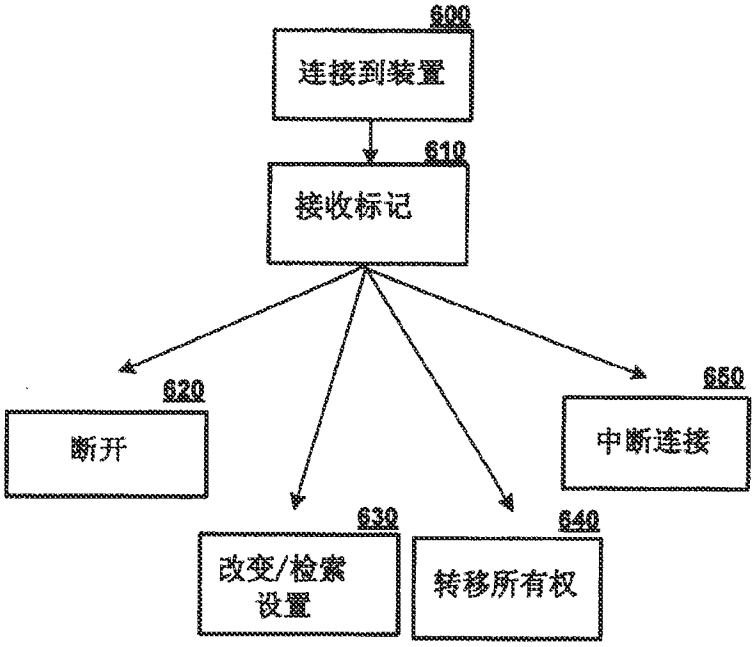

图 6

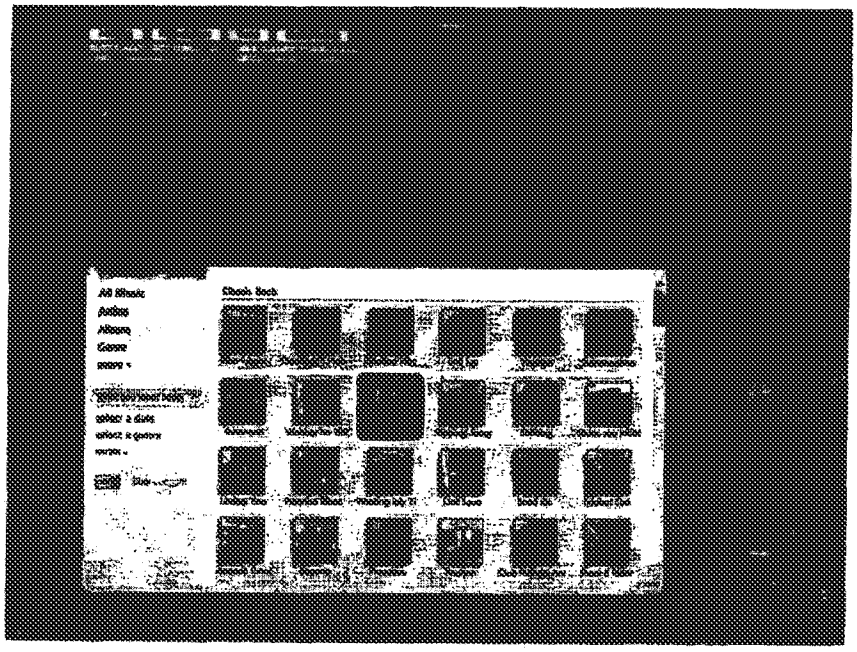

图 7A

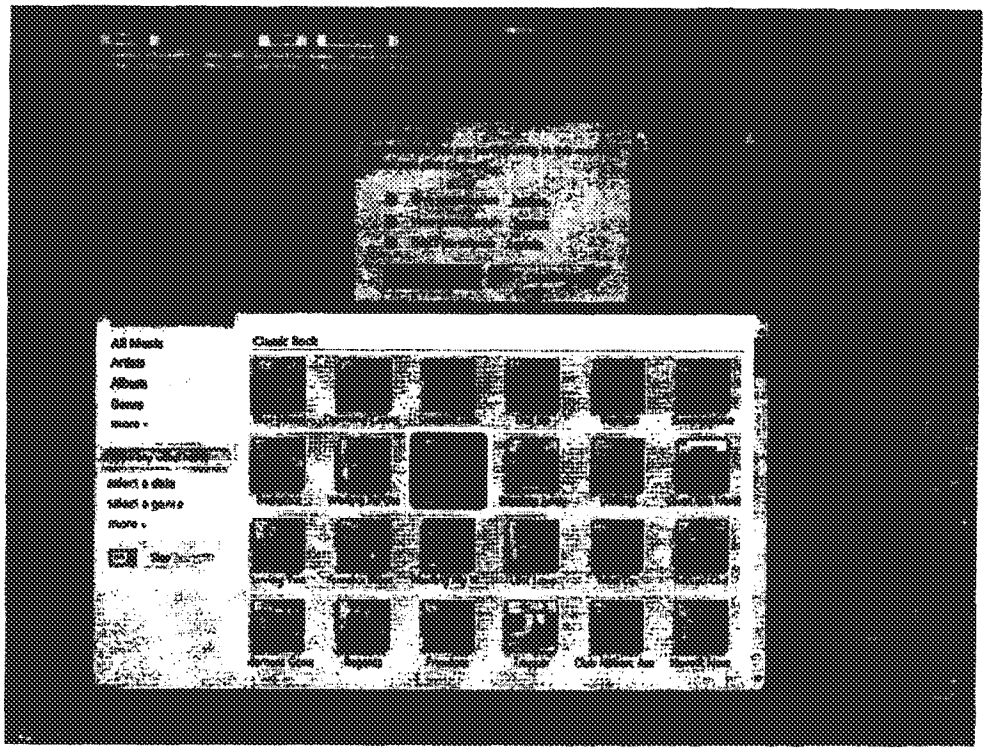

图 7B

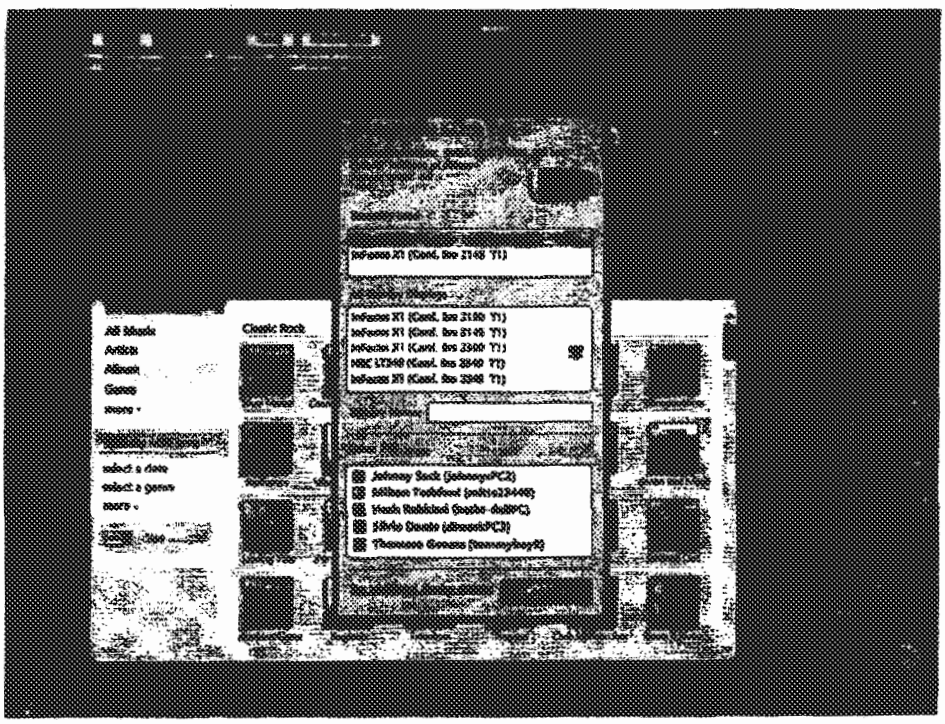
All Music
Artists
Albums
Genres
more ...
Classic Rock
select a date
select a genre
more ...

图 7C

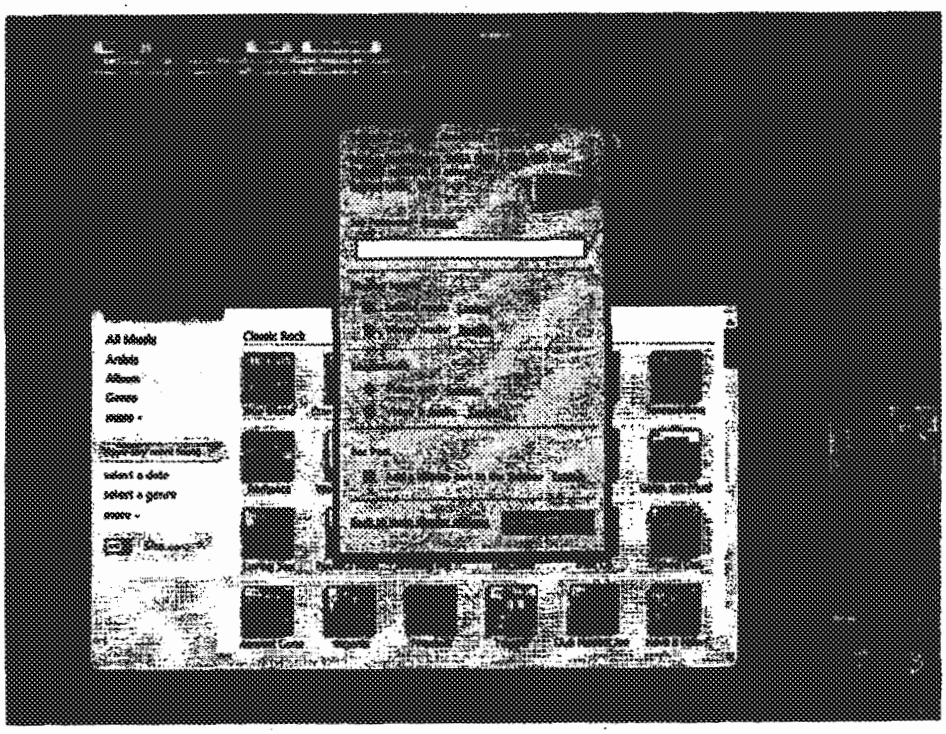
All Music
Artists
Albums
Genres
more ...
Classic Rock
select a date
select a genre
more ...

图 7D

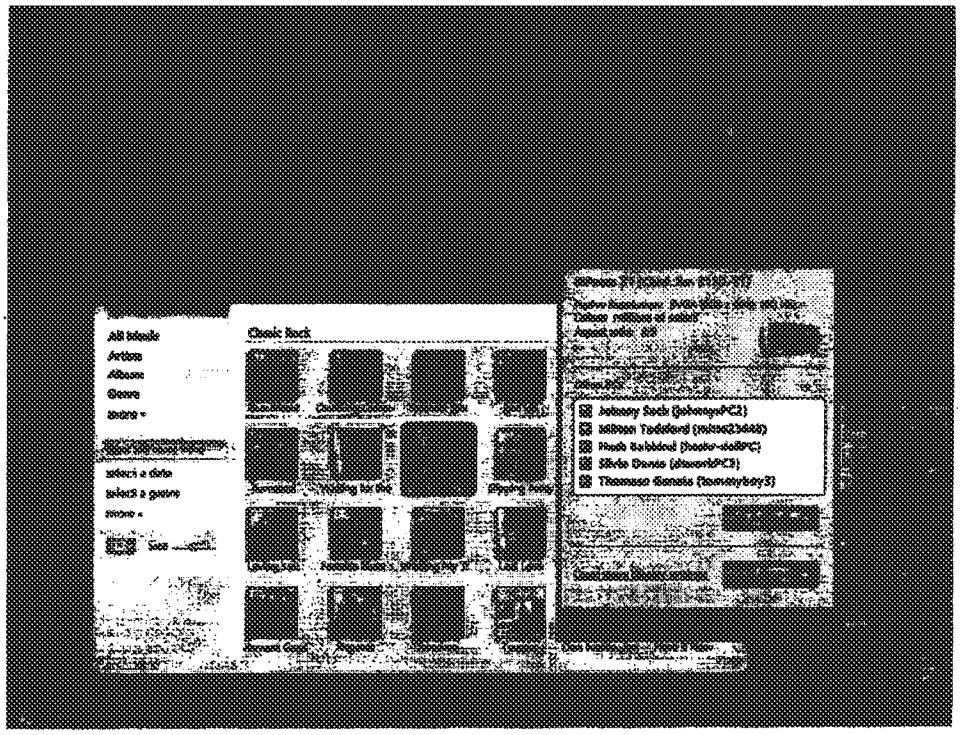
All Music
Artists
Albums
Genres
More ...
Classic Rock
select a date
select a genre
more ...

图 7E

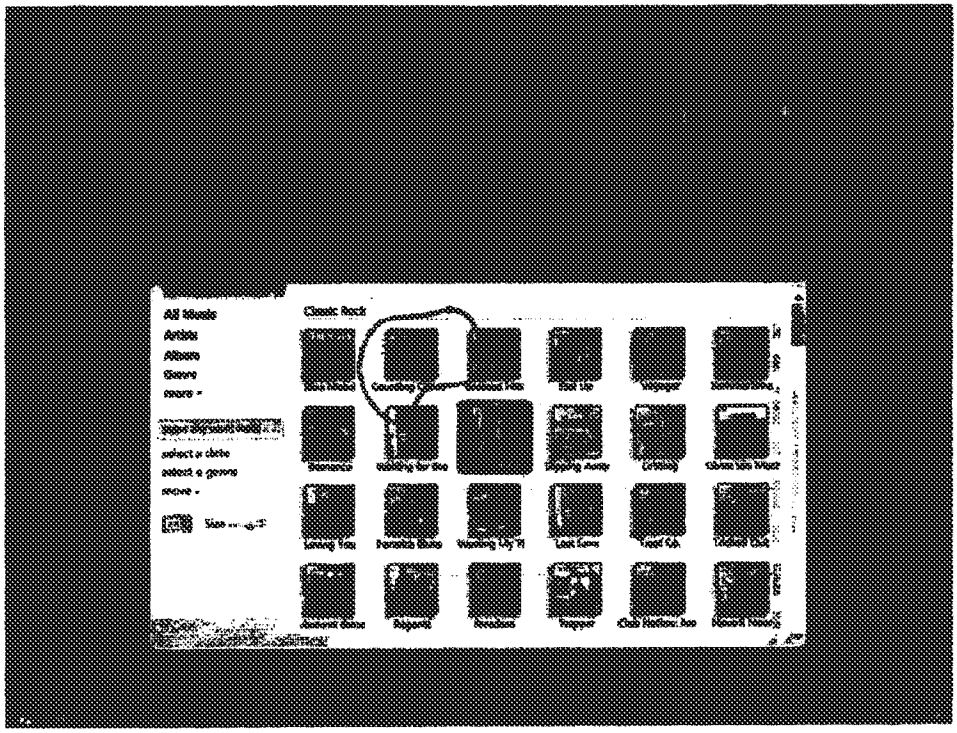
All Music
Artists
Albums
Genres
More ...
Classic Rock
select a date
select a genre
more ...

图 7F

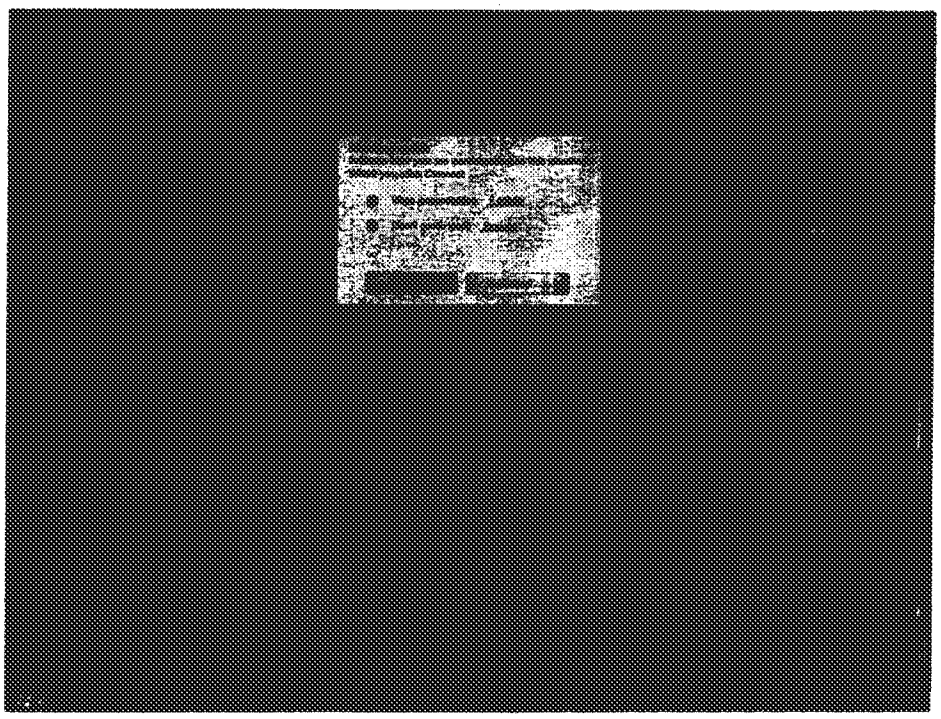

图 7G

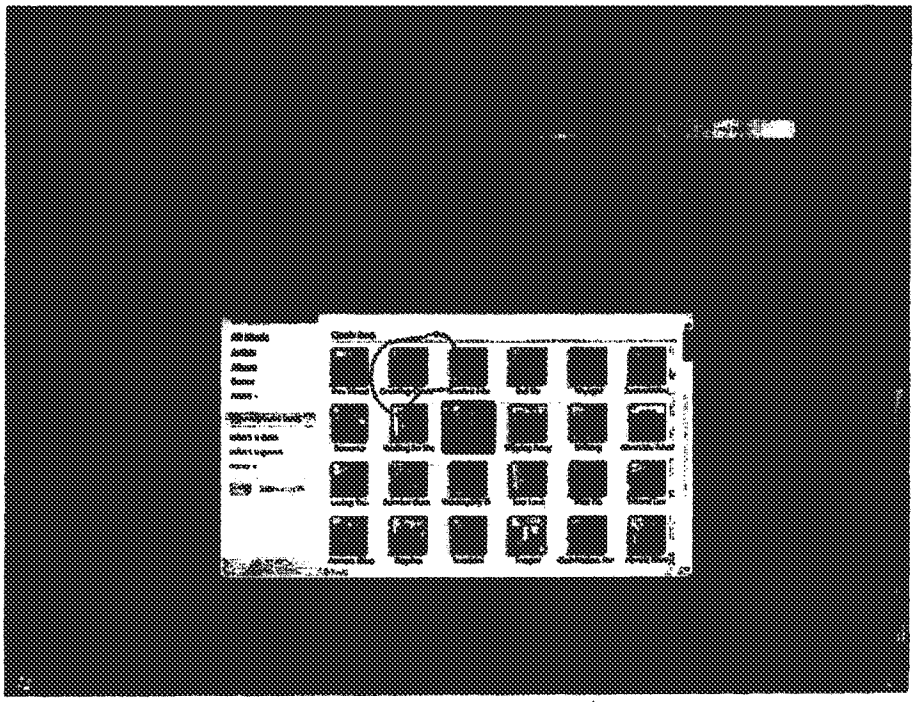

图 7H

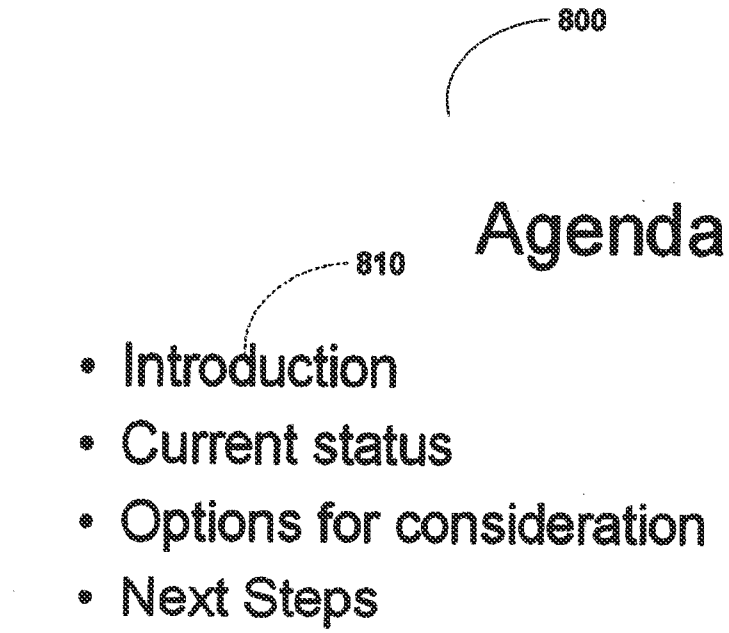
800
Agenda
810
• Introduction
• Current status
• Options for consideration
• Next Steps

图 8A

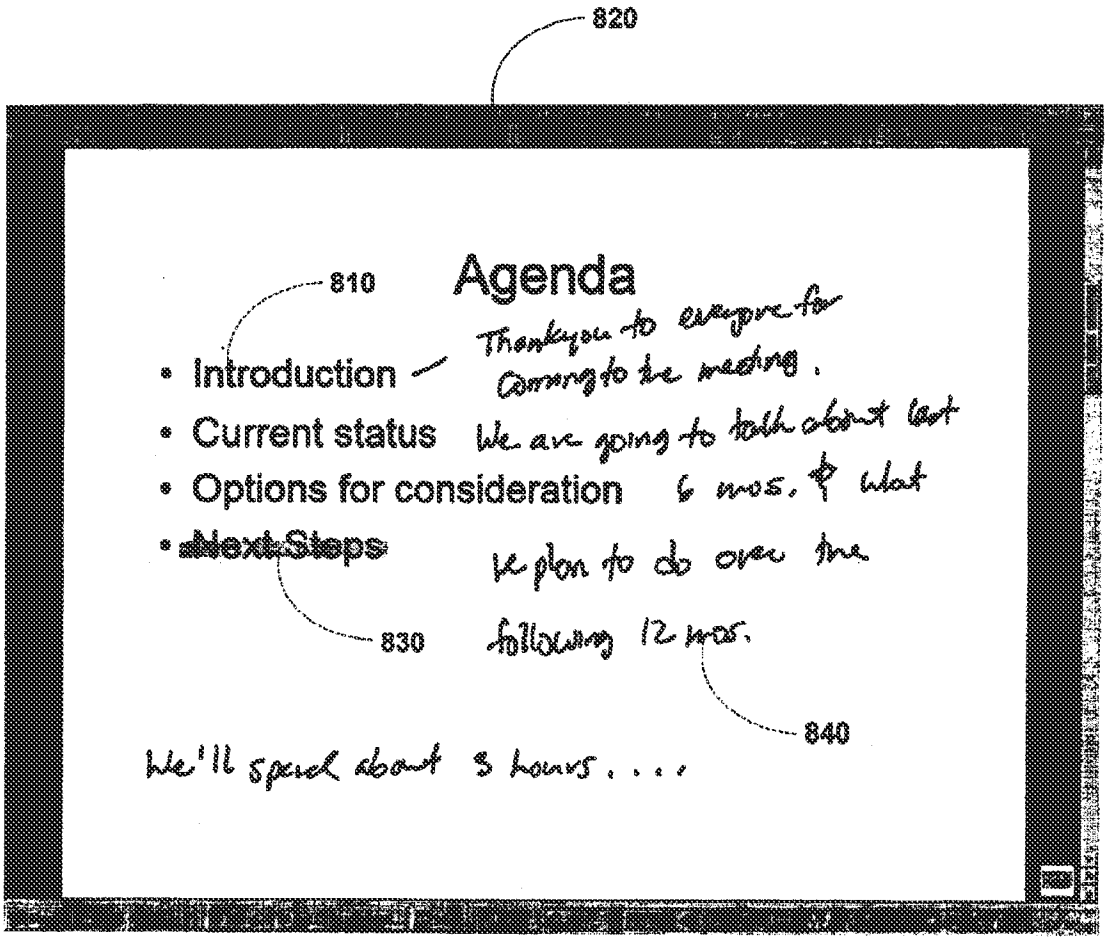
820
Agenda
810
• Introduction
• Current status
• Options for consideration
• Next Steps
830
840
Thank you to everyone for coming to the meeting.
We are going to talk about last 6 mos. & what we plan to do over the following 12 mos.
We'll spend about 3 hours....

图 8B

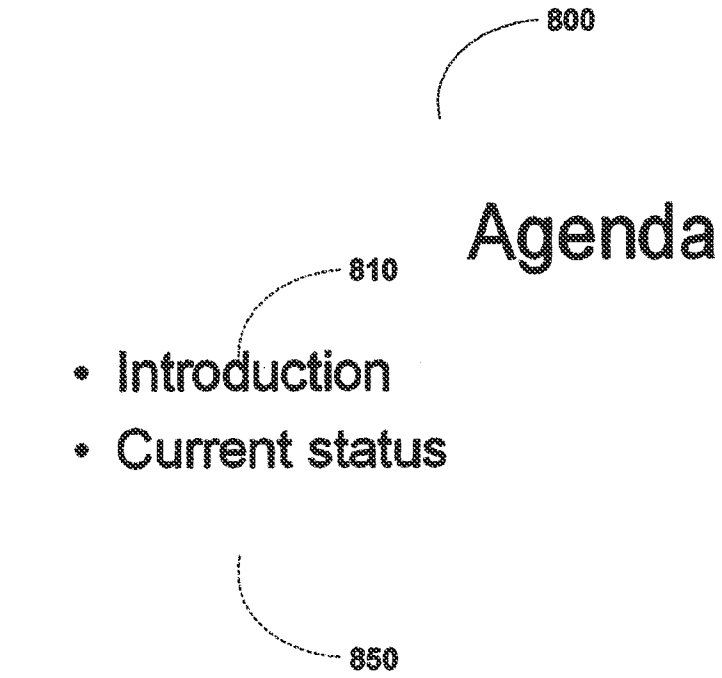

图 8C

Electronic Acknowledgement Receipt

EFS ID:	43253586
Application Number:	17121919
International Application Number:	
Confirmation Number:	2764
Title of Invention:	ELECTRONIC TOOL AND METHODS FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman BEEL
Customer Number:	23364
Filer:	Thomas Lee/Yanling Cottle
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	BEEL3002CIPC2/TJM
Receipt Date:	14-JUL-2021
Filing Date:	15-DEC-2020
Time Stamp:	19:48:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	SB08_0039USC3.pdf	1034931 8f21eff0972c5328987529ec9137e808ed0aba1f	no	4

Warnings:

Information:					
2	Foreign Reference	FR1_CN101572794A.pdf	3620728 47d8e44d44fefda173db423c7f61f516e6be24b3	no	58
Warnings:					
Information:					
3	Foreign Reference	FR2_CN101917402A.pdf	1185979 6e6ad9266fe176674fc88c8c5bab9ab34b49fa09	no	28
Warnings:					
Information:					
4	Foreign Reference	FR3_CN1317112A.pdf	4122567 6a96ce883780765e03e12707094e151739d4f9d9	no	74
Warnings:					
Information:					
5	Foreign Reference	FR4_CN102065267A.pdf	1470147 2c5c54aaf382a7abf4fcfec99520a167e4d1efba	no	20
Warnings:					
Information:					
6	Foreign Reference	FR5_CN1609780_A.pdf	4199950 f853ab31ee64fa5ae7976ac272eee7bb37d2991d	no	63
Warnings:					
Information:					
7	Other Reference-Patent/App/Search documents	NPL1_CNOA1_28May2021.pdf	12966226 52e69628435657257a7be15dc4e8f86818641204	no	17
Warnings:					
Information:					
8	Other Reference-Patent/App/Search documents	NPL2_CNOA1_28May2021.pdf	20168635 917980c2db213eac2d0a75f1fb679cfb500074d5	no	22
Warnings:					
Information:					

9	Other Reference-Patent/App/Search documents	NPL3_CNOA1_28May2021.pdf	12653389 af76c6ba1db6c2581ef4e53d0c505e5f036c3f6a	no	17

Warnings:	
Information:	
Total Files Size (in bytes):	61422552

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/82A (07-13)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	17/121919
Filing Date	2020-12-15
First Named Inventor	Koen Simon Herman BEEL
Title	ELECTRONIC TOOL AND METHODS FOR MEETINGS
Art Unit	
Examiner Name	
Attorney Docket Number	21044.0039USC3

SIGNATURE of Applicant or Patent Practitioner

Signature	/Thomas Lee/	Date (Optional)	2021-06-17
Name	Thomas Lee	Registration Number	66,396
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 52835

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

BARCO N.V.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	[signature]	Date (Optional)	26/05/2021.
Name	Jimmy Dirichx		
Title	NPI Services Manager.		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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