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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/472,093	09/10/2021	Arun JANAKIRAMAN	1268807 (ZM-0134-US)	8509

176014 7590 10/10/2023

Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

EXAMINER	
RAMAKRISHNAIAH, MELUR	

ART UNIT	PAPER NUMBER
2651	

NOTIFICATION DATE	DELIVERY MODE
10/10/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

KTSDocketing2@kilpatrick.foundationip.com
Lopa.sengupta@zoom.us
ipefiling@kilpatricktownsend.com

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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APPLICATION NO.	ISSUE DATE	PATENT NO.
17/472,093	10-Oct-2023	11785063

Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Atlanta, GA 30309

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at https://patentcenter.uspto.gov

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit https://www.uspto.gov/electronicgrants

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 2 of 201

DocCode - PATENT.GRANT

SCORE Placeholder Sheet for IFW Content

Application Number: 17472093 Document Date: 10/10/2023

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

- Patent Grant with Color/Grayscale Drawings

At the time of document entry (noted above):

- USPTO employees may access SCORE content via DAV or via the SCORE web page.
- External customers may access SCORE content via PAIR using the Supplemental Content tab.

Form Revision Date: March 1, 2019

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/472,093	10/10/2023	11785063	1268807 (ZM-0134-US)	8509

176014 7590 09/20/2023

Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

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 Center (https://patentcenter.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 Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

Arun JANAKIRAMAN, San Francisco, CA;
Yeki GILES, Santa Clara, CA;
Ross Douglas MAYFIELD, Palo Alto, CA;
Shishir SHARMA, Ottawa, CANADA;

APPLICANT(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional applicants):

Zoom Video Communications, Inc., San Jose, CA

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 USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 5 of 201

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 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. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

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

176014 7590 03/30/2023

Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

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.

Letitia Alexander	(Typed or printed name)
/Letitia Alexander/	(Signature)
June 30, 2023	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/472,093	09/10/2021	Arun JANAKIRAMAN	1268807 (ZM-0134-US)	8509

TITLE OF INVENTION: SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

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	06/30/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
RAMAKRISHNAIAH, MELUR	2651	348-014030

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/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 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 Kilpatrick Townsend & Stockton LLP
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: Zoom Video Communications, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): San Jose, CA

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)

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

☒ Electronic Payment via Patent Center or 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. 20-1430

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

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.

☐ Applicant asserting small entity status. See 37 CFR 1.27

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.

☐ Applicant changing to regular undiscounted fee 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 / Carl Sanders / Date June 30, 2023

Typed or printed name Carl Sanders Registration No. 57,203

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 6 of 201

Electronic Patent Application Fee Transmittal

Application Number:	17472093
Filing Date:	10-Sep-2021
Title of Invention:	SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE
First Named Inventor/Applicant Name:	Arun JANAKIRAMAN
Filer:	Carl E. Sanders/Letitia Alexander
Attorney Docket Number:	1268807 (ZM-0134-US)

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:	48235606
Application Number:	17472093
International Application Number:	
Confirmation Number:	8509
Title of Invention:	SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE
First Named Inventor/Applicant Name:	Arun JANAKIRAMAN
Customer Number:	176014
Filer:	Carl E. Sanders/Letitia Alexander
Filer Authorized By:	Carl E. Sanders
Attorney Docket Number:	1268807 (ZM-0134-US)
Receipt Date:	30-JUN-2023
Filing Date:	10-SEP-2021
Time Stamp:	11:48:56
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	E20236TB49439422
Deposit Account	201430
Authorized User	Letitia Alexander

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

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

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)	IssueFeeTransmittalLetter_1268807.pdf	185819 8fa44119618e1d460f6f6448d63bd1c4ae68295d	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	38218 9c4e08290b5710993d6004a67285ea6ef90e2532	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	224037		

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.

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United States Patent and Trademark Office
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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

176014 7590 03/30/2023

Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

EXAMINER
RAMAKRISHNAIAH, MELUR

ART UNIT	PAPER NUMBER
2651	

DATE MAILED: 03/30/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/472,093	09/10/2021	Arun JANAKIRAMAN	1268807 (ZM-0134-US)	8509

TITLE OF INVENTION: SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

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	06/30/2023

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 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted 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. 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.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 11 of 201

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 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. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

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

176014 7590 03/30/2023

Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

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.
17/472,093	09/10/2021	Arun JANAKIRAMAN	1268807 (ZM-0134-US)	8509

TITLE OF INVENTION: SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

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	06/30/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
RAMAKRISHNAIAH, MELUR	2651	348-014030

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/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 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)

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

❑ Electronic Payment via Patent Center or 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

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.

❑ Applicant asserting small entity status. See 37 CFR 1.27

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.

❑ Applicant changing to regular undiscounted fee 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. _____

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 12 of 201

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/472,093	09/10/2021	Arun JANAKIRAMAN	1268807 (ZM-0134-US)	8509

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EXAMINER	
RAMAKRISHNAIAH, MELUR	
ART UNIT	PAPER NUMBER
2651	

DATE MAILED: 03/30/2023

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.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 13 of 201

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.

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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)).
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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 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.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 14 of 201

Notice of Allowability	Application No. 17/472,093	Applicant(s) JANAKIRAMAN et al.	
	Examiner MELUR RAMAKRISHNAIAH	Art Unit 2651	AIA (FITF) Status Yes

-- 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 2-27-23.
   ☐ 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 _____.
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 _____.

/MELUR RAMAKRISHNAIAH/
Primary Examiner, Art Unit 2651

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/472,093	JANAKIRAMAN et al.
	Examiner	Art Unit
	MELUR RAMAKRISHNAIAH	2651

CPC - Searched*		
Symbol	**Date**	**Examiner**
H04L 29/06	08/25/2022	mrk
G06F3/0482, 9/451	08/25/2022	mrk
H04N7/15, 7/147	08/25/2022	mrk
H04L 65/403	08/25/2022	mrk

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
348	14.01-14.16	08/25/2022	mrk
Search updated		03/28/2023	mrk

* 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**
PE2E search	08/25/2022	mrk
PE2E	03/28/2023	mrk

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/472,093	JANAKIRAMAN et al.
	Examiner	Art Unit
	MELUR RAMAKRISHNAIAH	2651

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
All classes & subclasses listed in the searched area.		03/28/2023	mrk

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IPR2026-00407 | EX2006 | Page 17 of 201

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/472,093	JANAKIRAMAN et al.
	Examiner	**Art Unit**
	MELUR RAMAKRISHNAIAH	2651

CPC						
Symbol					**Type**	**Version**
H04L	/	65	/	403	F	2013-01-01
G06F	/	9	/	452	I	2018-02-01
G06F	/	3	/	0482	I	2013-01-01

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

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/MELUR RAMAKRISHNAIAH/ Primary Examiner, Art Unit 2651	28 March 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

U.S. Patent and Trademark Office

Part of Paper No.: 20230328

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/472,093	JANAKIRAMAN et al.
	Examiner	**Art Unit**
	MELUR RAMAKRISHNAIAH	2651

INTERNATIONAL CLASSIFICATION				
CLAIMED				
H04L	/	65	/	403

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					
348	14.03	14.08				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/MELUR RAMAKRISHNAIAH/ Primary Examiner, Art Unit 2651	28 March 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

U.S. Patent and Trademark Office

Part of Paper No.: 20230328

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 19 of 201

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/472,093	JANAKIRAMAN et al.
	Examiner	**Art Unit**
	MELUR RAMAKRISHNAIAH	2651

☑ 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
	1		10		19										
	2		11		20										
	3		12												
	4		13												
	5		14												
	6		15												
	7		16												
	8		17												
	9		18												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/MELUR RAMAKRISHNAIAH/ Primary Examiner, Art Unit 2651	28 March 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

U.S. Patent and Trademark Office

Part of Paper No.: 20230328

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 20 of 201

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/472,093	JANAKIRAMAN et al.
	Examiner	Art Unit
	MELUR RAMAKRISHNAIAH	2651

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/25/2022	03/28/2023							
	1	✓	=							
	2	✓	=							
	3	✓	=							
	4	✓	=							
	5	✓	=							
	6	✓	=							
	7	✓	=							
	8	✓	=							
	9	✓	=							
	10	✓	=							
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	13	✓	=							
	14	✓	=							
	15	✓	=							
	16	✓	=							
	17	✓	=							
	18	✓	=							
	19	✓	=							
	20	✓	=							

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 8509

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
17/472,093	09/10/2021	348	2651	1268807 (ZM-0134-US)

APPLICANTS

Zoom Video Communications, Inc., San Jose, CA

INVENTORS

Arun JANAKIRAMAN, San Francisco, CA;
Yeki GILES, Santa Clara, CA;
Ross Douglas MAYFIELD, Palo Alto, CA;
Shishir SHARMA, Ottawa, CANADA;

**** CONTINUING DATA ***************************

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

Foreign Priority claimed ❑ Yes ☑ No 35 USC 119(a-d) conditions met ❑ Yes ❑ No Verified and Acknowledged /MELUR RAMAKRISHNAIAH/ Examiner's Signature	❑ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	11	20	3

ADDRESS

Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309
UNITED STATES

TITLE

SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

FILING FEE RECEIVED		
1820	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _____ ❑ Credit

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L24	39	H04N7/15.cpc. AND content near1 shar$ SAME software adj3 application AND @ad<"20210910"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/28 10:46 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 23 of 201

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L21	61	H04N7/147.cpc. AND content near1 shar$ SAME annotat$ AND @ad<"20210910"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/28 09:52 AM
L22	2	H04N7/147.cpc. AND content near1 shar$ SAME annotat$ SAME software AND @ad<"20210910"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/28 10:07 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L20	6	H04N7/147.cpc. AND G06F9/451.cpc. AND content near1 shar$ SAME edit$ AND @ad<"20210910"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/28 09:50 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 25 of 201

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L9	9	H04L65/403.cpc. AND (video near1 conference near1 application) SAME shar$ near1 content AND @ad<"20210910"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/23 01:26 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/472,093	09/10/2021	Arun JANAKIRAMAN	1268807 (ZM-0134-US)

CONFIRMATION NO. 8509

PUBLICATION NOTICE

176014
Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

OC00000137589794

Title:SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

Publication No.US-2023-0083688-A1
Publication Date:03/16/2023

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

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	Arun Janakiraman
Application No.	:	17/472,093
For	:	**Sharing and Collaborating on Content Objects During a Video Conference**
Filed	:	September 10, 2021
Examiner	:	Melur Ramakrishnaiah
Art Unit	:	2651
Confirmation No.	:	8509

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

Certificate of Electronic Filing
I hereby certify that this correspondence is being electronically filed with the United States Patent Office via EFS-Web on
February 27, 2023.

/Letitia Alexander /
Letitia Alexander

AMENDMENT AND RESPONSE TO NON-FINAL OFFICE ACTION

Sir:

The following Amendment and Remarks are submitted in response to the Office Action mailed September 2, 2022. Applicants believe that all fees necessary for this response have been submitted herewith; however, should an additional fee be deemed necessary, the Commissioner is hereby authorized to charge any fees required by this action to Deposit Account No. 20-1430.

Amendments to the Claims begin on page 2 of this paper.
Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method comprising:

joining, by a client device using a video conferencing application, a video conference hosted by a video conference provider, the video conference having one or more participants;

executing, by the client device within an execution environment provided by the video conferencing application, a software application to access a content object;

receiving, by the video conferencing application, a command to share the content object to the one or more participants; and

providing, by the video conferencing application, the content object to the one or more participants via the video conference provider.

2. (Original) The method of claim 1, further comprising displaying, within a first graphical user interface ("GUI") of the video conferencing application, a second GUI of the software application including the content object.

3. (Original) The method of claim 2, further comprising displaying, within the first GUI, a third GUI of the software application, the third GUI including content associated with the content object, the content included in the third GUI not provided to the one or more participants.

4. (Original) The method of claim 2, further comprising:

receiving a command to exit or terminate the video conference;

in response to receiving the command to exit or terminate the video conference, exiting or terminating, respectively, the video conference, and

continuing to display the content object in the second GUI.

5. (Original) The method of claim 1, further comprising:

receiving, from a first client device corresponding to a first participant of the one or more participants, a request for the software application; and

in response to the request for the software application, providing a copy of the software application to the first participant.

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6. (Original) The method of claim 1, further comprising receiving an indication of an access level corresponding to a participant for the content object.

7. (Original) The method of claim 6, wherein the indication of the access level includes an indication that the access level persists only for the duration of the video conference.

8. (Original) A client device comprising:

a communications interface;

a non-transitory computer-readable medium; and

one or more processors communicatively coupled to the communications interface and the non-transitory computer-readable medium, the one or more processors configured to execute processor-executable instructions to:

join, using a video conferencing application, a video conference hosted by a video conference provider, the video conference having one or more participants;

execute, within an execution environment provided by the video conferencing application, a software application to access a content object;

receive a command to share the content object to the one or more participants; and

provide the content object to the one or more participants via the video conference provider.

9. (Original) The client device of claim 8, wherein the one or more processors are configured to execute further processor-executable instructions stored in the non-transitory computer-readable medium to display, within a first graphical user interface ("GUI") of the video conferencing application, a second GUI of the software application including the content object.

10. (Original) The client device of claim 9, wherein the one or more processors are configured to execute further processor-executable instructions stored in the non-transitory computer-readable medium to display, within the first GUI, a third GUI of the software application, the third GUI including content associated with the content object, the content included in the third GUI not provided to the one or more participants.

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11. (Original) The client device of claim 9, wherein the one or more processors are configured to execute further processor-executable instructions stored in the non-transitory computer-readable medium to:

receive a command to exit or terminate the video conference;

in response to receiving the command to exit or terminate the video conference, exit or terminate, respectively, the video conference, and

continue to display the content object in the second GUI.

12. (Original) The client device of claim 8, wherein the one or more processors are configured to execute further processor-executable instructions stored in the non-transitory computer-readable medium to:

receive, from a first client device corresponding to a first participant of the one or more participants, a request for the software application; and

in response to the request for the software application, provide a copy of the software application to the first participant.

13. (Original) The client device of claim 8, wherein the one or more processors are configured to execute further processor-executable instructions stored in the non-transitory computer-readable medium to receive an indication of an access level corresponding to a participant for the content object.

14. (Original) The client device of claim 13, wherein the indication of the access level includes an indication that the access level persists only for the duration of the video conference.

15. (Original) A non-transitory computer-readable medium comprising processor-executable instructions configured to cause one or more processor to:

join, using a video conferencing application, a video conference hosted by a video conference provider, the video conference having one or more participants;

execute, within an execution environment provided by the video conferencing application, a software application to access a content object;

receive a command to share the content object to the one or more participants; and

provide the content object to the one or more participants via the video conference provider.

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16. (Original) The non-transitory computer-readable medium of claim 15, further comprising processor-executable instructions configured to cause the one or more processors to display, within a first graphical user interface ("GUI") of the video conferencing application, a second GUI of the software application including the content object.

17. (Original) The non-transitory computer-readable medium of claim 16, further comprising processor-executable instructions configured to cause the one or more processors to display, within the first GUI, a third GUI of the software application, the third GUI including content associated with the content object, the content included in the third GUI not provided to the one or more participants.

18. (Original) The non-transitory computer-readable medium of claim 16, further comprising processor-executable instructions configured to cause the one or more processors to:

receive a command to exit or terminate the video conference;

in response to receiving the command to exit or terminate the video conference, exit or terminate, respectively, the video conference, and

continue to display the content object in the second GUI.

19. (Original) The non-transitory computer-readable medium of claim 15, further comprising processor-executable instructions configured to cause the one or more processors to:

receive, from a first client device corresponding to a first participant of the one or more participants, a request for the software application; and

in response to the request for the software application, provide a copy of the software application to the first participant.

20. (Original) The non-transitory computer-readable medium of claim 15, further comprising processor-executable instructions configured to cause the one or more processors to receive an indication of an access level corresponding to a participant for the content object.

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REMARKS

This paper is filed in response to the Office Action mailed September 2, 2022 (the "Office Action").

Claims 1-20 are pending in the application. In this response, Applicant has amended claim 1. No new matter has been added.

Claims 1, 2, 6, 8, 9, 13, 15, 16, and 20 were rejected under 35 U.S.C. § 102(a)(1) as allegedly being anticipated by U.S. Pub. No. 2022/0103603 to Vendrow ("Vendrow").

Claims 3, 10, and 17 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Vendrow in view of U.S. Pat. No. 11,079,995 to Hulbert et al. ("Hulbert").

Claims 4, 11, and 18 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Vendrow in view of JP Pub. No. 2004-146913 to Okawa ("Okawa").

Claims 7 and 14 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Vendrow in view of U.S. Pub. No. 2020/0372140 to Jaber et al. ("Jaber").

Claims 5, 12, and 19 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Vendrow in view of U.S. Pub. No. 2004/0128350 to Topfl ("Topfl").

Applicant traverses each of the rejections of the claims and respectfully requests reconsideration and allowance of all claims in view of the amendments above and the remarks below.

I. § 102(a)(1) / § 103 – Claims 1-20

Applicant respectfully traverses the rejection of claims 1, 2, 6, 8, 9, 13, 15, 16, and 20 under 35 U.S.C. § 102(a)(1) as allegedly being anticipated by Vendrow, and the rejection of claims 3-5, 7, 10-12, 14, and 17-19 under 35 U.S.C. § 103 as allegedly being unpatentable over Vendro in view of Hulbert, Okawa, Jaber, or Topfl.

Because Vendrow does not disclose or make obvious "executing, by the client device within an execution environment provided by the video conferencing application, a software application to access a content object; receiving, by the video conferencing application, a command to share the content object to the one or more participants; and providing, by the video conferencing application, the content object to the one or more participants via the video conference provider" as recited in claim 1, claim 1 is allowable over Vendrow.

Unlike the present application, Vendrow describes a system where a central server access and shares content with multiple users. Vendrow, ⁋⁋ 47-48. However, claim 1 recites

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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that a participant in a video conference executes another application within their video conferencing application to access a content object and it is that video conferencing application on the user's device that "provid[es] ... the content object to the one or more participants via the video conference provider." The Vendrow system does not include such functionality at the client device. Vendrow has no additional application that is executed "by the client device within an execution environment provided by the video conferencing application." Further, Vendrow's participant devices do not share content objects accessed by such applications. Instead, the server generates a display of content to be shared and provides that display to the participants. *See, e.g.,* Vendrow, Fig. 2, 150 (Conference Management Server); *see also* Vendrow, ¶ 47 (" The application 210 also evaluates access control to the content, and subsequent causes the displaying of the shared content.").

For at least these reasons, Vendrow does not disclose or make obvious each element of claim 1. Thus, claim 1 is allowable of Vendrow. Independent claims 8 and 15 recite similar functionality and are each allowable over Vendrow for at least the same reasons. Dependent claims 2-7, 9-14, and 16-20 are each allowable based on their dependence from an allowable independent claim.

Applicant respectfully requests the Examiner withdraw the rejections of claims 1-20.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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CONCLUSION

Applicant respectfully asserts that in view of the amendments and remarks above, all pending claims are allowable and Applicant respectfully requests the allowance of all claims.

Should the Examiner have any comments, questions, or suggestions of a nature necessary to expedite the prosecution of the application, or to place the case in condition for allowance, the Examiner is courteously requested to telephone the undersigned at the number listed below.

Respectfully submitted,

Date: February 27, 2023

/ Carl Sanders /

Carl Sanders
Reg. No. 57,203

KILPATRICK TOWNSEND & STOCKTON LLP
4208 Six Forks Road, Suite 1400
Raleigh, NC, 27609
Phone: (919) 420-1728
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PTO/SB/22 (10-20)
Approved for use through 11/30/2020. OMB 0651-0031
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): 107477-1268807

Application Number: 17/472,093

Filed: 2021-09-10

For: SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

Art Unit: 2651

Examiner: Melur Ramakrishnaiah

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	$
☑ Three months (37 CFR 1.17(a)(3))	$1,480	$740	$370	$ 1480
☐ 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 20-1430.

☐ 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/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71. 37 CFR 3.73(b) statement is enclosed (Form PTO/SB/96).

☑ attorney or agent of record. Registration number _____.

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

/ Carl Sanders / — Signature

February 27, 2023 — Date

Carl E. Sanders — Typed or printed name

(919) 420-1728 — 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 _____ 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: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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.
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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:	17472093
Filing Date:	10-Sep-2021
Title of Invention:	SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE
First Named Inventor/Applicant Name:	Arun JANAKIRAMAN
Filer:	Carl E. Sanders/Letitia Alexander
Attorney Docket Number:	1268807 (ZM-0134-US)

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 - 3 months with $0 paid	1253	1	1480	1480
Miscellaneous:				
			Total in USD ($)	**1480**

Electronic Acknowledgement Receipt

EFS ID:	47592728
Application Number:	17472093
International Application Number:	
Confirmation Number:	8509
Title of Invention:	SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE
First Named Inventor/Applicant Name:	Arun JANAKIRAMAN
Customer Number:	176014
Filer:	Carl E. Sanders/Letitia Alexander
Filer Authorized By:	Carl E. Sanders
Attorney Docket Number:	1268807 (ZM-0134-US)
Receipt Date:	27-FEB-2023
Filing Date:	10-SEP-2021
Time Stamp:	10:22:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1480
RAM confirmation Number	E20232QA22578648
Deposit Account	201430
Authorized User	Letitia Alexander

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

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		ResponsetoNFOA_1268807.pdf	128953 409e0ea8ff6cb4fb939617ce7ef5a37c86e339cb	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Request for Reconsideration-After Non-Final Rejection	1	1
	Amendment Copy Claims/Response to Suggested Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	8

Warnings:

Information:

2	Extension of Time	PetitionforExtensionofTime_1268807.pdf	171295 33fc32ba56726b079d8754bb99ae8da51ea1be19	no	2

Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	38728 1d1b4b0373d4a10b00b34df0b6725dd9f9efad98	no	2

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Total Files Size (in bytes):	338976

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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.

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/472,093	Filing Date 09/10/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ 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).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	02/27/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/STEPHEN TYLER HOLLAND/
*** 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 number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 12 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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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/472,093	09/10/2021	Arun JANAKIRAMAN	1268807 (ZM-0134-US)

CONFIRMATION NO. 8509

176014
Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

37 CFR 1.48(f)
ACKNOWLEDGEMENT LETTER

OC000000136294620

Date Mailed: 09/15/2022

NOTICE OF ACCEPTANCE OF REQUEST UNDER 37 CFR 1.48(f)

This is in response to the applicant's request under 37 CFR 1.48(f) submitted on 09/13/2022.

The request under 37 CFR 1.48(f) to correct the inventorship, to correct or update the name of an inventor, or to correct the order of names of joint inventors is accepted.

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**.

/ylueng/

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IPR2026-00407 | EX2006 | Page 44 of 201

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/472,093	09/10/2021	2651	1820	1268807 (ZM-0134-US)	20	3

CONFIRMATION NO. 8509

UPDATED FILING RECEIPT

176014
Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

Date Mailed: 09/15/2022

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)

Arun JANAKIRAMAN, San Francisco, CA;
Yeki GILES, Santa Clara, CA;
Ross Douglas MAYFIELD, Palo Alto, CA;
Shishir SHARMA, Ottawa, CANADA;

Applicant(s)

Zoom Video Communications, Inc., San Jose, CA

Assignment For Published Patent Application

Zoom Video Communications, Inc., San Jose, CA

Power of Attorney: The patent practitioners associated with Customer Number 176014

Domestic Applications for which benefit is claimed - None.
A proper domestic benefit claim must be provided in an Application Data Sheet in order to constitute a claim for domestic benefit. See 37 CFR 1.76 and 1.78.

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

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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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.

Projected Publication Date: 03/16/2023

Non-Publication Request: No

Early Publication Request: No

Title

SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

Preliminary Class

348

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

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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).

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 46 of 201

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).

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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.

Doc Code: R48.REQ
Document Description: Request under Rule 48 correcting inventorship

PTO/AIA/40 (04-18)
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REQUEST FOR CORRECTION IN A PATENT APPLICATION RELATING TO INVENTORSHIP OR AN INVENTOR NAME, OR ORDER OF NAMES, OTHER THAN IN A REISSUE APPLICATION (37 CFR 1.48)

Application Number	17472093
Filing Date	2021-09-10
First Named Inventor	Arun Janakiraman
Art Unit	2651
Examiner Name	Melur Ramakrishnaiah
Practitioner Docket Number	1268807 (ZM-0134-US)

To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Applicant hereby **requests that the inventorship be corrected or changed, or that the name of the inventor or a joint inventor, or the order of the names of joint inventors, be changed,** in the above-identified application. **Note**: 37 CFR 1.48 applies to any request to correct inventorship filed on or after September 16, 2012, regardless of the application filing date. **Do not submit this form after payment of the issue fee or if the application has been patented.** See 37 CFR 1.324 for correction of inventorship in a patent.

Please check the applicable box(es) below.

For a nonprovisional application:

☐ 1. This request is to correct or change the inventorship in a **nonprovisional** application (**under 37 CFR 1.48(a)**) and includes:

☐ An application data sheet (ADS) in accordance with 37 CFR 1.76(c) with the corrected or updated information shown with markings (*e.g.*, underlining for insertions, strikethrough for deletions). See the Manual of Patent Examining Procedure (MPEP) section 601.05(a) for information about filing an ADS in an application filed on/after September 16, 2012. For information about filing a Supplemental ADS in an application filed before September 16, 2012, see MPEP 601.05(b).

☐ The processing fee set forth in 37 CFR 1.17(i). $ _____

☐ An inventor is being added. An inventor's oath or declaration by any actual inventor who has not yet executed an oath or declaration is required (see 37 CFR 1.48(b)). See MPEP 602.01(a) for information about an inventor's oath or declaration for an application filed on/after September 16, 2012 (*e.g.*, form **PTO/AIA/01**). For information about an inventor's oath or declaration for an application filed before September 16, 2012 (*e.g.*, form **PTO/SB/01**), see MPEP 602.01(b).

☐ This request is being filed after the first Office action on the merits has been given or mailed (see 37 CFR 1.48(c) and 1.17(d)). Check one of the following:

☐ This request to correct or change the inventorship is due solely to the cancellation of claims in the application.

OR

☐ The fee set forth in 37 CFR 1.17(d) is due (in addition to the fee set forth in 37 CFR 1.17(i)). $ _____

This collection of information is required by 37 CFR 1.48. 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 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.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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REQUEST FOR CORRECTION IN A PATENT APPLICATION RELATING TO INVENTORSHIP OR AN INVENTOR NAME, OR ORDER OF NAMES, OTHER THAN IN A REISSUE APPLICATION (37 CFR 1.48)

☑ 2. This request is to correct or update the name of the inventor or a joint inventor, or the order of names of joint inventors, in a **nonprovisional** application (**under 37 CFR 1.48(f)**) and includes:

☑ An application data sheet in accordance with 37 CFR 1.76(c) identifying the complete inventive entity, including the corrected or updated name of the inventor, or the new order of names shown with markings (*e.g.*, underlining for insertions, strikethrough for deletions). See the MPEP 601.05(a) for information about filing an ADS in an application filed on/after September 16, 2012. For information about filing a Supplemental ADS in an application filed before September 16, 2012, see MPEP 601.05(b).

☑ The processing fee set forth in 37 CFR 1.17(i). $ 140

For a provisional application:

☐ This request is to change or correct the inventorship, or correct or update the name of the inventor or a joint inventor, in a **provisional** application (**under 37 CFR 1.48(d)**) and includes:

☐ **Attached hereto** is a document that is signed by a party set forth in 37 CFR 1.33(b) and identifies each inventor by his or her legal name, in the preferred order. Note: the document may be an application data sheet in accordance with 37 CFR 1.76(c) that identifies the changes with markings (underlining for insertions, strikethrough for deletions).

☐ The processing fee set forth in 37 CFR 1.17(q). $ _____

Fee Payment Information:

☐ 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 is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 20-1430.

☑ 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 57,203

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

Signature / Carl Sanders /

Typed or printed name Carl E. Sanders

Date September 13, 2022

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. *Juristic entities must be represented by a patent practitioner (See 37 CFR 1.31, applicable to any paper filed on or after September 16, 2012 that is presented on behalf of a juristic entity, regardless of application filing date). Submit multiple forms if more than one signature is required, see below**.

☐ ** Total of _____ forms are submitted.

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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.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	~~107477-1268807~~ 1268807 (ZM-0134-US)
	Application Number	17/472,093

Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Arun		Janakiraman	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	San Francisco	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	State/Province	CA
Postal Code	95113	Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Yeki		Giles	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Santa Clara	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	State/Province	CA
Postal Code	95113	Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ross	Douglas	Mayfield	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	~~407477-1268807~~ 1268807 (ZM-0134-US)
	Application Number	17/472,093
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

City	Palo Also	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	State/Province	CA
Postal Code	95113	Country	US

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Shishir		Sharma	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Ottawa	Country of Residence	CA

Mailing Address of Inventor:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	State/Province	CA
Postal Code	95113	Country	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	176014		
Email Address	ipefiling@kilpatricktownsend.com	Add Email	Remove Email

Application Information:

Title of the Invention	Sharing and Collaborating on Content Objects During a Video Conference		
Attorney Docket Number	~~407477-1268807~~ 1268807 (ZM-0134-US)	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	11	Suggested Figure for Publication (if any)	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	~~107477-1268807~~ 1268807 (ZM-0134-US)
	Application Number	17/472,093
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	176014		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	~~107477-1268807~~ 1268607 (ZM-0134-US)
	Application Number	17/472,093
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	~~107477-1268807~~ 1268807 (ZM-0134-US)
	Application Number	17/472,093
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	~~107477-1268807~~ 1268807 (ZM-0134-US)
	Application Number	17/472,093
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

○ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
◉ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:	

If the Applicant is an Organization check here. ☒

Organization Name	Zoom Video Communications, Inc.

Mailing Address Information For Applicant:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	**State/Province**	CA
Country	US	Postal Code	95113
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	~~107477-1268807~~ 1268807 (ZM-0134-US)
	Application Number	17/472,093
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	Zoom Video Communications, Inc.

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	**State/Province**	CA
Country i	US	Postal Code	95113
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/ Carl Sanders /			Date (YYYY-MM-DD)	2022-09-13
First Name	Carl	Last Name	Sanders	Registration Number	57,203

Additional Signature may be generated within this form by selecting the Add button.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	~~107477-1268807~~ 1268807 (ZM-0134-US)
	Application Number	17/472,093
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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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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 records.

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 CooperationTreaty.

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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DocuSign Envelope ID: 39EACBD7-CDCB-443A-B117-388474B28D32

COMBINED DECLARATION UNDER 37 C.F.R. § 1.63 AND ASSIGNMENT

WHEREAS I, a below named inventor (hereinafter referred to as ASSIGNOR), am the original or joint inventor of the invention entitled:

SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

which is:

☒ is attached hereto;

☒ identified as Docket No.: 107477-1268807

☒ was filed on September 10, 2021 as United States Application Serial No. 17/472,093.

☐ was filed on _____ as PCT International Application No. _____ and designated the United States.

As a below named inventor, I declare that:

1. The above-identified application was made or authorized to be made by me.

2. I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

3. I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

4. I have reviewed and understand the contents of the application, including the claims.

5. I am aware of the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56.

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, the ASSIGNOR, hereby:

Agree to sell, assign, transfer, and convey, and hereby do sell, assign, transfer, and convey to Zoom Video Communications, Inc., having a business address at 55 Almaden Boulevard, Suite 600, San Jose, California 95113, (hereinafter referred to as ASSIGNEE), the entire right, title, and interest in and to (a) any intellectual property (including without limitation any innovation, information, invention, discovery, product, process, work, copyright, or design) disclosed, embodied, affixed, shown, or claimed in the above-referenced patent application, implicitly or explicitly; (b) the above-referenced patent application, any application based in whole or in part upon the above-referenced patent application, and any application claiming priority to the above-referenced patent application (including without limitation any continuation, continuation-in-part, reissue, reexamination, or foreign patent application based in whole or in part on the above-referenced patent application or claiming priority to the above-referenced patent application); (c)

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DocuSign Envelope ID: 39EACBD7-CDCB-443A-B117-388474B28D32

the right to claim for any and all applications under (b) of this paragraph the full benefits and priority rights under the International Convention and any other international agreement to which the United States adheres; (d) any Patent (including without limitation domestic and foreign patents, utility models, industrial designs, divisional, reissues, and reexaminations) that is granted or issued upon, or that claims priority to, any and all applications under (b) of this paragraph or that discloses or claims intellectual property under (a) of this paragraph, in whole or in part; and (e) any provisional or other right to recover any and all past, present, and future damages, including royalties, for any and all past, present, and future infringements of any application for patent identified in the preceding paragraphs and of any and all patent thereon in the United States and in all other countries.

Authorize and request the Commissioner of Patents and Trademarks of the United States and any Official of any country or countries foreign to the United States, whose duty it is to issue patents or other evidence or forms of industrial property protection on applications, to issue said application (including without limitation any division(s), continuation(s) (in whole or in part), substitute(s), or reissue(s) thereof) to the said ASSIGNEE, their successors, legal representatives and assigns, in accordance with the terms of this instrument.

Agree to execute all papers and documents, including without limitation applications, declarations, oaths, petitions, and other papers, and perform any acts which are necessary in connection with the prosecution of patent applications or intellectual property and/or the enforcement of patents or other rights resulting from such applications or intellectual property.

Covenant and agree that I have the full right to convey the entire interest herein assigned, and that I have not executed, and will not execute, any agreement in conflict herewith.

Further covenant and agree that I will communicate to the said ASSIGNEE, their successors, legal representatives and assigns, any facts known to me respecting said invention, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing, reissue, and foreign applications, make all rightful oaths, and generally do everything possible to aid the said ASSIGNEE, their successors, legal representatives and assigns, to obtain and enforce proper protection for said invention in all countries.

I understand and agree that the attorneys and agents of the law firm prosecuting said application do not personally represent me or my legal interests, but instead represent the interests of the said ASSIGNEE; because said attorneys and agents cannot provide legal advice to me with respect to this agreement, I acknowledge my right to seek my own independent legal counsel.

I hereby authorize the prosecuting law firm to insert herein any further identification that may be necessary or desirable to comply with the rules of the U.S. Patent and Trademark Office for

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recordation of this Assignment, including but not limited to the application number and filing date of said application when known.

IN WITNESS WHEREOF, the undersigned inventor(s) has/have affixed their signature(s).

INVENTOR: Signature: DocuSigned by: Ross Mayfield 8E7254352ED54CB... Date: September 7, 2022

Legal Name: Ross Douglas Mayfield

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Electronic Patent Application Fee Transmittal

Application Number:	17472093
Filing Date:	10-Sep-2021
Title of Invention:	SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE
First Named Inventor/Applicant Name:	Arun JANAKIRAMAN
Filer:	Carl E. Sanders/Letitia Alexander
Attorney Docket Number:	107477-1268807

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:				
PROCESSING FEE, EXCEPT PROV. APPLS.	1830	1	140	140
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**140**

Electronic Acknowledgement Receipt

EFS ID:	46602321
Application Number:	17472093
International Application Number:	
Confirmation Number:	8509
Title of Invention:	SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE
First Named Inventor/Applicant Name:	Arun JANAKIRAMAN
Customer Number:	176014
Filer:	Carl E. Sanders/Letitia Alexander
Filer Authorized By:	Carl E. Sanders
Attorney Docket Number:	107477-1268807
Receipt Date:	13-SEP-2022
Filing Date:	10-SEP-2021
Time Stamp:	09:48:45
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$140
RAM confirmation Number	E20229C050090456
Deposit Account	201430
Authorized User	Letitia Alexander

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

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request under Rule 48 correcting inventorship	RequesttoCorrectInventorship_1268807.pdf	1336693 c1e7edc0cd19188812e3e55264a97d19e8bead57	no	3
Warnings:					
Information:					
2	Application Data Sheet	Supplemental_ADS_1268807.pdf	3493309 f381b487fa0fb2010dc17906b43a8d18b9b295ce	no	9
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
3	Oath or Declaration filed	InventorRossDouglasMayfield_CombinedDecandAssgmt_1268807.pdf	1234914 be03e12aa3b4951232b3c7d135c5749b0afd6a07	no	3
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	38048 af546d78acc482acdf677f7f4f9e06051670efd4	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	6102964		

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
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/472,093	09/10/2021	Arun JANAKIRAMAN	107477-1268807	8509

176014 7590 09/02/2022

Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

EXAMINER	
RAMAKRISHNAIAH, MELUR	

ART UNIT	PAPER NUMBER
2651	

NOTIFICATION DATE	DELIVERY MODE
09/02/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

KTSDocketing2@kilpatrick.foundationip.com
Lopa.sengupta@zoom.us
ipefiling@kilpatricktownsend.com

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Office Action Summary	Application No. 17/472,093	Applicant(s) JANAKIRAMAN et al.	
	Examiner MELUR RAMAKRISHNAIAH	Art Unit 2651	AIA (FITF) Status Yes

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 9-10-21.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ 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.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-20 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, 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.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ 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)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date 9-23-21; 10-5-21.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

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Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

3. Claim(s) 1-2, 6, 8-9, 13, 15-16, 20 is/are rejected under 35 U.S.C. 102 (a)(1) as being anticipated by Vendrow (US 2022/0103603A1, filed 9-30-20).

Regarding claim 1, Vendrow discloses: A method comprising: joining, using a video conferencing application ("softwareapplications that facilitate the user device to engage in communications": paragraph: 0045; and fig. 4), a video conference hosted by a video conference provider (reads on provider of services for video conference such as conference management server 150, etc. as shown in fig. 1) the video conference having one or more participants; executing, within an execution environment provided by the video conferencing application , a software application (reads on web browser: paragraph: 0063) to access a content object; receiving a command ("SHARE CONTROL 410": fig. 4) to share the content object to the one or more participants (130, FIG. 1); and providing the content object to the one or more participants via the video conference provider (figs. 1-7; abstract; paragraphs: 0001; 0004; 0031; 0033; 0036; 0039-0040; 0045; 0065-0069).

Regarding claim 8, Vendrow discloses: A client device (120, fig.

1)comprising: a communications interface; a non-transitory computer-readable medium; and one or more processors communicatively coupled to the communications interface and the non-transitory computer-readable medium, the one or more processors configured to execute processor-executable instructions to (paragraphs: 0035-36; 0045) : join, using a video conferencing application ("software applications that facilitate the user device to engage in communications": paragraph: 0045; and fig. 4), a video conference hosted by a video conference provider (reads on provider of services for video conference such as conference management server 150, etc. as shown in fig. 1), the video conference having one or more participants (130, FIG. 1); execute, within an execution environment provided by the video conferencing application, a software application (reads on web browser: paragraph: 0063) to access a content object; receive a command ("SHARE CONTROL 410": fig. 4) to share the content object to the one or more participants; and provide the content object to the one or more participants via the video conference provider (figs. 1-7; abstract; paragraphs: 0001; 0004; 0031; 0033; 0036; 0039-0040; 0045; 0065-0069).

Regarding claim 15, Vendrow discloses: A non-transitory computer-readable medium comprising processor-executable instructions configured to cause one or more processor (paragraphs: 0035-0036) to: join, using a video conferencing application ("software applications that facilitate the user device to engage in communications": paragraph: 0045; and fig. 4) , a video conference hosted by a video conference provider (reads on provider of services for video conference such as conference management server 150, etc. as shown in fig. 1) , the video conference having one or more participants (130, fig. 1); execute, within an execution environment provided by the video conferencing application, a software application (reads on web browser: paragraph: 0063) to access a content object; receive a command ("SHARE CONTROL 410": fig. 4) to share the content object to the one or more participants; and provide the content object to the one or more participants via the video conference provider (figs. 1-7; abstract; paragraphs: 0001; 0004; 0031; 0033; 0036; 0039-0040; 0045; 0065-0069).

Regarding claims 2, 6, 9, 13, 16, 20, Vendrow further discloses: further comprising displaying, within a first graphical user interface ("GUI') of the video

conferencing application (fig. 4A) a second GUI of the software application including the content object (for e.g., Document A, figs. 4B), further comprising receiving an indication of an access level corresponding to a participant for the content object (paragraph: 0063).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim(s) 3, 10, 17 is/are rejected under 35 U.S.C. 103 as being unpatentable over Vendrow in view of Hubert et al. (US PAT: 11,079,995A1, hereinafter Hubert).

Vendrow differs from claims 3, 10, 17 in that he does not specifically disclose: further comprising displaying, within the first GUI, a third GUI of the software application, the third GUI including content associated with the content object, the content included in the third GUI not provided to the one or more participants.

However, Hubert discloses: further comprising displaying, within the first GUI, a third GUI of the software application, the third GUI including content

associated with the content object, the content ("not shared"; fig. 10U) included in the third GUI not provided to the one or more participant (Fig. 11H: step 1170).

Thus, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify Vendrow's system to provide for: further comprising displaying, within the first GUI, a third GUI of the software application, the third GUI including content associated with the content object, the content included in the third GUI not provided to the one or more participants as this arrangement would provide private area of user interface to review his content for review or revise, etc. as taught by Hubert.

6. Claim(s) 4, 11, 18 is/are rejected under 35 U.S.C. 103 as being unpatentable over Vendrow in view of Ohkawa (JP2004-146913A).

Vendrow differs from claims 4, 11, 18 in that he does not specifically disclose: further comprising: receiving a command to exit or terminate the video conference; in response to receiving the command to exit or terminate the video conference, exiting or terminating, respectively, the video conference, and continuing to display the content object in the second GUI.

However, Ohkawa: further comprising: receiving a command to exit or terminate the video conference; in response to receiving the command to exit or terminate the video conference (reads on conference end: paragraph: 0056), exiting or terminating, respectively, the video conference, and continuing to display the content object in the second GUI (reads on delivering conference file to the selected terminal: paragraph: 0056).

Thus, it would have been obvious to one of ordinary skill in the art before

the effective filing date of the claimed invention to modify Vendrow's system to provide for:further comprising: receiving a command to exit or terminate the video conference; in response to receiving the command to exit or terminate the video conference, exiting or terminating, respectively, the video conference, and continuing to display the content object in the second GUI as this arrangement would facilitate send conference files to the selected participants after ending the conference as taught by Ohkawa.

7. Claim(s) 7, 14, is/are rejected under 35 U.S.C. 103 as being unpatentable over Vendrow in view of Jaber et al. (US 2020/0372140A1, hereinafter Jaber)

Vendrow differs from claims 7, 14 in that he does not specifically disclose: wherein the indication of the access level includes an indication that the access level persists only for the duration of the video conference.

However, Jaber discloses: wherein the indication of the access level includes an indication that the access level persists only for the duration of the video conference (paragraph: 0033).

Thus, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify Vendrow's system to provide for: further comprising: wherein the indication of the access level includes an indication that the access level persists only for the duration of the video conference as this arrangement would facilitate access to data only during meeting as taught by Jabber, thus preventing abuses.

8. Claim(s) 5, 12, 19 is/are rejected under 35 U.S.C. 103 as being unpatentable over Vendrow in view of Topfl (US 2004/0128350A1)

Vendrow differs from claims 5, 12, 19 in that he does not specifically disclose: further comprising: receiving, from a first client device corresponding to a first participant of the one or more participants, a request for the software

application; and in response to the request for the software application, providing a copy of the software application to the first participant.

However, Topfl discloses: further comprising: receiving, from a first client device corresponding to a first participant of the one or more participants, a request for the software application; and in response to the request for the software application, providing a copy of the software application to the first participant (paragraph: 0035).

Thus, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify Vendrow's system to provide for: receiving, from a first client device corresponding to a first participant of the one or more participants, a request for the software application; and in response to the request for the software application, providing a copy of the software application to the first participant as this arrangement would facilitate to obtain required software for participant for conferencing as taught by Topfl.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

--(US 2016/0330404A1) to Nelson et al. discloses integration of videoconferencing with interactive electronic whiteboard applications which

teaches: [0048] FIG. 3A depicts an example interactive whiteboard display **300** after interactive whiteboard appliance **102** has been powered up. Interactive whiteboard display **300** may be, for example, display **120** of FIG. 1 and includes an interactive whiteboard session window **302** and an interactive whiteboard session content area **304** that displays content items **306**. A set of interactive whiteboard controls **308** allows a user to perform various functions with respect to interactive whiteboard session window **302**, such as rotate, zoom and start annotation. A collaboration menu icon **310** is displayed and as depicted in FIG. 3B, selection of the collaboration menu icon **310** causes a collaboration menu **312** to be displayed in step **508**. Collaboration menu **312** provides user access to various controls for initiating and switching between an interactive whiteboard session window and a videoconferencing session window. At this point in time there is no current active videoconferencing session, so the "Show Videoconferencing Session" and "Share Whiteboard" menu options are disabled. The "Keyboard" menu option provides access to virtual keyboard displayed on display **120**. In addition, a set of interactive whiteboard sharing controls **314** is disabled, since at this point in time there is no sharing of interactive whiteboard session window **302** with another device. In other

embodiments, interactive whiteboard sharing controls **314** may not be displayed at all until interactive whiteboard session window **302** is shared with another device.

--(US 2019/0361694A1) to Gordon et al. discloses system, method, and computer program product for coordination among multiple devices which teaches:

[0778] FIG. 55A shows a user interface **5500** for executing a video conference, in accordance with one possible embodiment. As an option, the user interface **5500** may be implemented in the context of the architecture and environment of the previous Figures or any subsequent Figure(s). Of course, however, the user interface **5500** may be carried out in any desired environment. It should also be noted that the aforementioned definitions may apply during the present description.

[0779] As shown, a user interface for executing a video conference **5500** may be included. A status update of the video conference **5502** may be displayed. A first user (i.e. user of the device initializing the video conference, etc.) may be displayed **5504** (e.g. using the optical sensor or camera, displaying a static photo, etc.). Application command buttons **5506** may be included. Additionally, a function to select conference participants **5508**, the pane to select conference

participants **5512**, a selected conference participant **5510**, and function to initialize a video conference **5514**, may be included.

[0780] In one embodiment, a video conference may display the status of the application. For example, in various embodiments, the video camera may initialize, the participants may be added, the additional content may be initialized and added, the conference may be active (i.e. all participants initialized and connected, etc.), and/or any other status may be displayed to the user. In other embodiments, the user interface may display the status as a temporary overlay in the application window. Of course, the status may be disabled and/or otherwise configured by the user under a settings option.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELUR RAMAKRISHNAIAH whose telephone number is (571)272-8098. The examiner can normally be reached Flexible.

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, Duc M Nguyen can be reached on 27503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MELUR RAMAKRISHNAIAH/
Primary Examiner, Art Unit 2651

Notice of References Cited	Application/Control No. 17/472,093	Applicant(s)/Patent Under Reexamination JANAKIRAMAN et al.	
	Examiner MELUR RAMAKRISHNAIAH	Art Unit 2651	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20220103603-A1	03-2022	Vendrow; Vlad	H04L65/403	1/1
*	B	US-11079995-B1	08-2021	Hulbert; Thomas Steven	G06F3/0485	1/1
*	C	US-20200372140-A1	11-2020	JABER; Rayyan	H04L12/1822	1/1
*	D	US-20040128350-A1	07-2004	Topfl, Lou	H04N7/147	709/204
*	E	US-20160330404-A1	11-2016	Nelson; Steven	H04M7/0027	1/1
*	F	US-20190361694-A1	11-2019	Gordon; George Andrew	G06F1/3231	1/1
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N	JP-2004146913-A	05-2004	JP	OHKAWA T	H04N7/142
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/472,093	JANAKIRAMAN et al.
	Examiner	Art Unit
	MELUR RAMAKRISHNAIAH	2651

CPC - Searched*		
Symbol	Date	Examiner
H04L 29/06	08/25/2022	mrk
G06F3/0482, 9/451	08/25/2022	mrk
H04N7/15, 7/147	08/25/2022	mrk
H04L 65/403	08/25/2022	mrk

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
348	14.01-14.16	08/25/2022	mrk

* 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
PE2E search	08/25/2022	mrk

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 81 of 201

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/472,093	JANAKIRAMAN et al.
	Examiner	Art Unit
	MELUR RAMAKRISHNAIAH	2651

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/25/2022								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
	10	✓								
	11	✓								
	12	✓								
	13	✓								
	14	✓								
	15	✓								
	16	✓								
	17	✓								
	18	✓								
	19	✓								
	20	✓								

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 82 of 201

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L4	63	G06F3/0482.cpc. AND (video near1 confer$ OR videoconfer$) SAME (participants AND shar$ near1 content) AND @ad<"20210910"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/24 07:46 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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United States Patent and Trademark Office
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BIB DATA SHEET

CONFIRMATION NO. 8509

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
17/472,093	09/10/2021	348	2651	107477-1268807

APPLICANTS

Zoom Video Communications, Inc., San Jose, CA

INVENTORS

Arun JANAKIRAMAN, San Francisco, CA;
Yeki GILES, Santa Clara, CA;
Ross MAYFIELD, Palo Alto, CA;
Shishir SHARMA, Ottawa, CANADA;

**** CONTINUING DATA ***************************

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

09/21/2021

Foreign Priority claimed ❑ Yes ☑ No 35 USC 119(a-d) conditions met ❑ Yes ❑ No Verified and Acknowledged /MELUR RAMAKRISHNAIAH/ Examiner's Signature	❑ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	11	20	3

ADDRESS

Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309
UNITED STATES

TITLE

SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

FILING FEE RECEIVED		
1820	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _____ ❑ Credit

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Field

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. 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	17/472,093
	Filing Date	September 10, 2021
	First Named Inventor	Arun Janakiraman
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	107477-1268807

U.S. PATENT APPLICATION PUBLICATIONS

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	20100257451	A1	Oct. 7, 2010	Halevi et al.	

EXAMINER SIGNATURE

Examiner Signature	/MELUR RAMAKRISHNAIAH/	Date Considered	08/25/2022

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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.

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

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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.

ALL REFERENCES CONSIDERED EXCEPT WHERE [illegible]

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Field

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	First Named Inventor	Arun Janakiraman
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	107477-1268807

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	/ Carl Sanders /	Date (YYYY-MM-DD)	2021-10-05
Name/Print	Carl Sanders	Registration Number	57,203

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 [illegible]

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L16	58	G06F3/0482.cpc. AND (shar$ near1 content) SAME (access near1 level) AND @ad<"20210910"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/24 03:26 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Field

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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	Attorney Docket Number	107477-1268807

U.S. PATENTS

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	6243452	B1	June 5, 2001	O'Shaughnessey et al.	

EXAMINER SIGNATURE

Examiner Signature	/MELUR RAMAKRISHNAIAH/	Date Considered	08/25/2022

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OR

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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.

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 88 of 201

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	First Named Inventor	Arun Janakiraman
	Art Unit	To Be Assigned
	Examiner Name	To Be Assigned
	Attorney Docket Number	107477-1268807

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	/ Carl Sanders /	Date (YYYY-MM-DD)	2021-09-23
Name/Print	Carl Sanders	Registration Number	57,203

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ALL REFERENCES CONSIDERED EXCEPT WHERE [illegible]

VIDEO CONFERENCE SYSTEM AND TERMINAL USED FOR THE SAME, CONNECTION CONTROL METHOD, AND CONNECTION CONTROL PROGRAM

DOCUMENT ID
JP-2004146913-A

DATE PUBLISHED
2004-05-20

INVENTOR INFORMATION

NAME	CITY	STATE	ZIP CODE	COUNTRY
OKAWA YUKI	N/A	N/A	N/A	N/A
URAMATSU NAOYUKI	N/A	N/A	N/A	N/A

DATE FILED
2002-10-22

CPC CURRENT

TYPE	CPC	DATE
CPCI	H04N7/147	2013-01-01
CPCI	H04N7/142	2013-01-01
CPCI	H04N7/15	2013-01-01

Abstract

<P>PROBLEM TO BE SOLVED: To provide a serverless video conference system employing general-purpose PCs that avoids limitless extension of terminals otherwise resulting in exceeding the processing capability of the PCs. <P>SOLUTION: Participant terminals connected to a sponsor terminal comprises: utterer terminals (points B, D) capable of making two-way communication with the sponsor terminal and observer terminals (points A, C) capable of one-way communication with the sponsor terminal, let the number of the utterer terminals connected to the sponsor terminal be S, let the number of the observer terminals connected to the sponsor terminal be T, then the number M of lines of the participant terminals connected to the sponsor terminal is decided to be M=2S+T. As a result, the total communication volume is suppressed to S×(K-1), wherein (K=S+T), in comparison with prior ones wherein all participant terminals are configured with utterer terminals. <P>COPYRIGHT: (C)2004,JPO

Description

[0001]
TECHNICAL FIELD OF THE INVENTION
The present invention is a video conference system configured by connecting an organizer terminal for hosting a conference and a plurality of participant terminals participating in the conference via a communication line, a video conference system terminal used in the video conference system, The present invention relates to a video conference system connection control method and a video conference system connection control program.
[0002]

[Prior art]
2. Description of the Related Art A multi-point connection video conference system for holding a conference between a plurality of remote terminals is known. In particular, a video conference system in which a plurality of general-purpose personal computers (PCs) transmit and receive data in a circuit-switched manner using a public network without providing a server device (serverless) has a simple system configuration and has a low cost. Therefore, it is suitable for a small-scale video conference system (Patent Document 1 and the like).
[0003]
[Patent Document 1]
JP-A-5-22321
[0004]
However, since the server is serverless, the load of data processing performed on each terminal increases significantly with the increase in the number of connections, and parallel processing cannot be performed with the processing capacity of a PC. There is a restriction that the number of terminals that can be connected cannot be increased without limit.
[0005]
FIG. 1 is a diagram showing a configuration of a serverless video conference system. In FIG. 1, terminals at five locations A to E are connected to each other on a one-to-one basis. For example, when the transmitting site A transmits image data and audio data from the camera 211 and the microphone 212 and conference data generated by the PC to the sites B, C, D, and E, the transmitting process is performed four times. There is a need. On the other hand, the receiving-side bases B, C, D, and E need to receive image data, audio data, conference data, and the like from the mutually connected bases, and thus require a total of four reception and decoding processes. is there. Thus, assuming that the number of conference sites is K, data transmission processing is required K-1 times, data reception processing is required K-1 times, and reception data decoding processing is required K-1 times.
[0006]
[Problems to be solved by the invention]
In the above video conference system, if the communication volume transmitted from one location to another one location is 1, the total traffic volume in the conference is K × (K−1). Increase functionally. For this reason, if the number of bases is increased to the extent that parallel processing such as reception and decoding exceeds the processing capability of the PC, for example, when simultaneous display of bases is performed on a monitor of a terminal, there is a problem in that display is delayed and concurrency is lost. .
In addition, since speech can be made from all connected terminals, if speech is made simultaneously at each base, voices are output from the speakers of the terminals at each base, and the speaker is specified. There is a problem that it is difficult to perform.
[0007]
Problems to be solved by the present invention include, for example, the problem of unlimited addition of terminals exceeding the processing capability of a PC and the problem of difficulty in specifying a speaker, which occur in the above-described conventional technology. .
[0008]
[Means for Solving the Problems]
The invention according to claim 1 is a video conference system configured by connecting an organizer terminal for hosting a conference and a plurality of participant terminals participating in the conference via a communication line, wherein the host terminal is connected to the host terminal. The maximum number N of connection lines of the participant terminals that can be connected is set in advance, and the number M of connection lines of the participant terminals connected to the host terminal is M N.
[0009]
Further, the invention according to claim 6 is used in a video conference system configured by connecting an organizer terminal for hosting a conference and a plurality of participant terminals participating in the conference via a communication line, A terminal for a video conference system functioning as an organizer

terminal or the participant terminal, wherein the terminal has a function of setting in advance the maximum number of connection lines of the participant terminals that can be connected to the organizer terminal.
[0010]
The invention according to claim 12 is a connection control method for a video conference system configured by connecting an organizer terminal for hosting a conference and a plurality of participant terminals participating in the conference via a communication line. Setting a maximum number of connection lines N of the participant terminals connected to the host terminal in advance, and connecting the participant terminals to the host terminal so that the number M of connection lines of the participant terminals is M N. It is characterized by connecting.
[0011]
The invention according to claim 13 is a connection control program for a video conference system configured to connect an organizer terminal for hosting a conference and a plurality of participant terminals participating in the conference via a communication line. A function of presetting the maximum number of connection lines N of the participant terminals connected to the host terminal to the computer, and setting the number of connection lines M of the participant terminals to M so that M N. A function of connecting to the host terminal is realized.
[0012]
BEST MODE FOR CARRYING OUT THE INVENTION
Hereinafter, embodiments of the present invention will be described with reference to the drawings.
FIG. 2 is a diagram showing a configuration of the video conference system according to one embodiment of the present invention. In the video conference system according to the embodiment of the present invention, a plurality of video conference system terminals are connected one-to-one with each other via a public telephone network, and data is transmitted and received by a circuit switching method. The terminal 100 shown in FIG. 2 mainly shows a configuration of data processing, and includes a television image encoder 110, an audio encoder 111, a data transmission unit 112, a television image decoder 113, an audio decoder 114, and a data reception unit 115 as communication control units. And inputs and outputs with the outside via a camera 121, a microphone 122, a monitor 123, and a speaker 124. Note that the terminal 100 indicates the flow of data in the observer terminal, which will be described later, with an arrow. The input data to the terminal 100 is limited, and only the data output from the terminal 100 is processed.
[0013]
The terminal for a video conference system according to the present invention has a so-called video conference function, and can also handle business applications such as spreadsheets, word processors, and presentations. And the data written on the whiteboard can be shared by a plurality of terminals, and a conference can be held with the same content displayed on each terminal. The video (organizer, participant) of each site is displayed on the display of the terminal for the video conference system.
[0014]
FIG. 3 is a diagram showing a configuration of the terminal for a video conference system according to the embodiment of the present invention, and mainly shows a control function. The video conference system terminal 100 is configured by a general-purpose personal computer (PC), and includes a video conference control unit 10, a communication control unit 20, and an input / output unit 30.
[0015]
The video conference control unit 10 controls the entire conference such as establishment and progress of the conference. The video conference control unit further includes a terminal function selection unit 11 for selecting whether to use the video conference system terminal as a conference host terminal or a participant terminal, and a participant terminal as a speaker terminal or an observer terminal. And a participation mode setting unit 12 that switches between the speaker terminal function and the observer terminal function. The video conference control unit is stored in a memory (not shown) in the video conference system terminal 100 in the form of a program, and the CPU (not shown) in the video conference system terminal 100 executes the same. This is achieved by:
[0016]
The communication control unit 20 includes a transmitting unit and a receiving unit for controlling data communication in a conference, an image encoder / image decoder for encoding / decoding image data, and encoding / decoding audio data. Including an audio encoder and an audio decoder for performing The input /

output unit 30 is an interface with a video conference control unit and a communication control unit, and is connected to an input camera 40, a microphone 41, a keyboard 42, an output monitor 43, a speaker 44, and the like.
[0017]
Next, the function of the video conference control unit will be described. The video conference system terminal can use the same terminal as the host terminal or the participant terminal, and which terminal is used is set at the time of startup. It is also possible to change at any time during the meeting by a switching request. The selection operation is performed by an operator using a keyboard, a mouse, or the like according to a GUI (graphical user interface) displayed on the monitor by the terminal function selection unit 11. When selected as the host terminal, the terminal can be used to select a meeting participant base, specify a speaker terminal or an observer terminal, change the floor to be described later, set its priority, save and distribute conference data, etc. Various functions as a meeting organizer can be executed. On the other hand, when the terminal is selected as a participant terminal, the terminal executes only restricted functions such as transmission and reception of conference data including images and sounds.
[0018]
In addition, in the terminal for the video conference system, the maximum number of connection lines N is set in the video conference control unit in advance, and the connection of the number of terminals that requires the number of lines exceeding N is limited. Preferably, the maximum number of connection lines N is automatically set according to the setting of the processing capacity of the PC and the resolution (size) of the image displayed on the monitor. Further, manual setting may be performed within a predetermined range from an input unit such as a keyboard of the terminal.
[0019]
In addition, at the time of start-up or at any time during a conference, the terminal for the video conference system can designate from the organizer terminal to use as either the speaker terminal or the observer terminal. The designated operation is performed by the operator using a keyboard, a mouse, or the like according to a GUI displayed on the monitor by the participation mode setting unit 12. When specified as the speaker terminal, encoding and transmission processing of television image data and audio data from a camera or microphone connected to the terminal, and reception processing of image data and audio data received from another connected terminal And decryption processing (two-way: full-duplex communication). On the other hand, when the terminal is designated as the observer terminal, the connection is performed without performing the encoding process and the transmission process of the television image data and the audio data from the camera or the microphone connected to the terminal, as indicated by the mark x in FIG. It performs only reception processing and decoding processing of image data and audio data received from other terminals (one-way: half-duplex communication). The connection with the observer terminal is performed by half-duplex communication in order to transmit a floor right request to the host terminal.
[0020]
Furthermore, during a meeting, for example, when the organizer terminal changes the observer terminal to the speaker terminal due to a request from the observer terminal, or similarly, to change the requester's observer terminal to the speaker terminal For example, when the current speaker terminal is selected and changed to the observer terminal, the participation mode of the terminal can be switched. The switching operation is performed by an operator using a keyboard, a mouse, or the like according to a GUI displayed on the monitor by the participation mode setting unit 12.
[0021]
Next, assignment and setting of the speaker terminal and the observer terminal will be described. As described above, the maximum number of connection lines N is set in advance for the terminal for the video conference system, and the number M of lines of the participant terminals to be connected is M N. When the speaker terminal and the participant terminal are set in the organizer terminal, the number S of the speaker terminals and the number T of the observer terminals are allocated so that the total line number M of the connected participant terminals is M = 2S + T. . For example, assuming that the number of lines M of the participant terminals is 10 units for simple calculation, if four speaker terminals are set, two observer terminals are set, and if three speaker terminals are set, four observer terminals are calculated. Is done.
[0022]
As described above, by dividing the participant terminals into the speaker terminal performing the two-way

communication and the observer terminal performing the one-way communication, the communication volume in the conference can be suppressed, and therefore the number of participating bases can be increased. As described above, in the case of M = 10, since all the connected terminals conventionally perform full-duplex communication, M = 2K to K = 5, and the maximum number of bases is 5. On the other hand, in the video conference system according to the embodiment of the present invention, by setting M = 2S + T, for example, if the number of speaker terminals is limited to three bases (that is, S = 3), T = 4; It is possible to provide a maximum of four observer terminals. Therefore, the number of bases K (= S + T) can be increased from five in the past to seven.

[0023]

Here, how the total communication amount is reduced by separating the speaker terminal and the observer terminal will be described with reference to FIG. In FIG. 2, sites B and D are set as speaker terminals, and sites A, C and E are set as observer terminals. The arrows in the figure show the flow and processing of data when a meeting is held at five sites. As shown in FIG. 2, since information (image data and audio data) is not transmitted from the observer terminal, data transmission from the data transmission unit 112 is prohibited as indicated by an X in the figure, and the observer In the terminals A, C, and E, only the processing of receiving and decoding information from other speaker terminals is performed, and the amount of information processing of the PC is reduced.

[0024]

Image data and voice data are transmitted from the speaker terminal to other terminals. Therefore, assuming that the communication volume transmitted from one location to another one location is 1, the television according to the embodiment of the present invention will be described. The total communication volume in the conference of the conference system is S × (K−1). Since K = S + T and S <K, especially when the number of speaker terminals S is limited to a small value, the communication amount can be significantly reduced as compared with the conventional total communication amount K × (K−1).

[0025]

In the setting of the number of speaker terminals and observer terminals, for example, if an attempt is made to set a base such that the total number of used lines of the speaker terminals and observer terminals exceeds the maximum number of connection lines N, It is preferable that a warning message be displayed on the display screen of the monitor so that the setting cannot be performed.

[0026]

FIG. 2 shows an example in which the system is configured with five terminals, but it is possible to connect more terminals within a range not exceeding the parallel processing capability of the PC, that is, the number N of connectable lines. Needless to say.

[0027]

Next, the operation of the video conference system according to the embodiment of the present invention will be described with reference to the flowcharts of FIGS. First, a flow of a terminal function selection process at the start of a conference in the video conference system according to the present embodiment will be described.

[0028]

FIG. 4 is a flowchart in a case where the host terminal calls a conference to a participant terminal connected to the host terminal. For convenience of explanation, FIG. 4 shows one of a plurality of participant terminals communicating with the host terminal.

[0029]

First, the control program (application) for the video conference system is activated on the host terminal and the participant terminal (steps S101 and S111). Next, when the operator operates the display screen of the host terminal monitor to enter the conference preparation mode (step S102), a dialog for selecting a base to participate in the host conference is displayed on the display screen of the monitor. (Step S103). FIG. 10 is a diagram showing a display example of a dialog box for selecting a participating base. As shown in FIG. 10, the operator of the host terminal selects a base (terminal) to participate in the conference when holding the conference, and further participates in whether the terminal is a speaker terminal or an observer terminal. The mode can be specified in advance. In selecting a participant terminal, selection of a participant terminal

exceeding a preset maximum number of connection lines is restricted.
[0030]
When the participant terminal is selected and the participation mode is specified, the selection status is displayed in a list such as a state where a check is displayed in a check box (step S104). After that, when the call button in the dialog box is pressed, the call of the selected base is executed (step S105).
[0031]
At the participant terminal that has received the call, a dialog asking whether to participate in the conference is displayed on the display screen (step S112). The operator of the participant terminal determines whether or not to participate in the conference, and a response of participation or non-participation is transmitted to the host terminal. If participation is selected, the terminal enters a conference preparation mode in which data communication with the host terminal is possible (step S113). On the other hand, the host terminal that has received a response from the participant terminal to participate or not participate in the conference updates and displays the response result in the same dialog box as in FIG. The same procedure is performed for all bases connected to the host terminal.
[0032]
As described above, the procedure for calling the participant terminals is completed, and the terminals at all bases for which the participation in the conference has been selected are set in the conference preparation mode in which transmission and reception with the host terminal are possible.
[0033]
Next, a flow of a participation mode setting process at the time of starting a conference in the video conference system according to the embodiment of the present invention will be described.
[0034]
FIG. 5 is a flowchart in the case where the organizer terminal sets either the speaker terminal or the observer terminal for the terminal at each base where the participation in the conference is selected. For convenience of explanation, in FIG. 5, in addition to the organizer terminal (terminal A), among a plurality of bases participating in the conference, a terminal (participant terminal B) for setting as a speaker terminal and a listener terminal One terminal (participant terminal C) for setting is displayed.
[0035]
First, an information transmission permission request for transmitting image data and voice data of the host terminal to each participant terminal in the conference preparation mode is transmitted from the host terminal A (step S201). Receiving the information transmission permission request, the participant terminals B and C start decoding the image data and the audio data transmitted from the host terminal (steps S202 and S203). Returns an information transmission permission response. With the start of the decoding process, the video and audio of the conference participant at the host terminal are acquired on the monitor of each participant terminal.
[0036]
On the other hand, so-called conference data such as data of various applications running on the host terminal and data input when using the whiteboard function of the monitor of the host terminal is transmitted from the host terminal A to the participant terminal. It is transmitted to B and the participant terminal C by one-way communication (step S204). When this procedure is completed, all the participant terminals have been given the functions as the observer terminals.
[0037]
Thereafter, the function of the speaker terminal is given to the terminal designated as the speaker terminal by the host terminal in step S103 of FIG. The host terminal A transmits a speaking right permission notice to the terminal designated as the speaker terminal at the start of the conference (step S205). In this case, the participant terminal B that has been designated as the speaker terminal and has received the floor permission notification receives the image data and the audio data acquired by the camera or microphone connected to its own terminal (that is, the conference participation at the participant terminal B). An information transmission request for transmitting the image or voice of the user to another terminal is transmitted to the other terminal (step S206).
[0038]
Upon receiving the information transmission permission request transmitted from the terminal B, the host terminal A and the participant terminal C start decoding the image data and the audio data transmitted from

the participant terminal B as the speaker terminal. (Steps S207 and S208), an information transmission permission response is returned to the speaker terminal B. At the host terminal A, the dialogue of the list of participating sites is updated and displayed (step S209), and one-way communication of information from the host terminal A to the observer terminal C and from the speaker terminal B to the observer terminal C starts. (Step S210) At the monitors of the organizer terminal A and the observer terminal C, the video and audio of the conference participant at the speaker terminal B are acquired. On the other hand, two-way communication of information starts between the host terminal A and the speaker terminal B (step S211). After the communication start processing, a conference holding notification is transmitted from the host terminal A to the terminals B and C (step S212). The same procedure is performed for all bases connected to the host terminal.

[0039]

With the above, the procedure of setting as the observer terminal or the speaker terminal has been completed for all the participant terminals, the reception of the information from the other terminal by the observer terminal, and the reception of the speaker terminal from the other terminal. It becomes possible to receive information and transmit information to other terminals.

[0040]

In the above, the setting procedure at the start of the conference has been described. However, as described above, in the video conference system according to the embodiment of the present invention, a speaker terminal performing two-way communication and a listener performing one-way communication during the conference It is possible to switch freely with the terminal. By performing this switching operation, it is possible to freely speak from each base, and the number of speaker terminals performing two-way communication is limited, and terminals that do not speak are set to one-way communication. Thus, a conference in which more bases are connected within a limited communication line (communication capacity) is realized.

[0041]

Next, a flow of a participation mode change process during a conference in the video conference system according to the present embodiment will be described.

[0042]

FIG. 6 shows a case where the organizer terminal selects a terminal to be changed to the observer terminal from the speaker terminals in response to the floor right request from the observer terminal, and changes the observer terminal to the speaker terminal. It is a flowchart. For convenience of explanation, in FIG. 6, in addition to the organizer terminal (terminal A), two speaker terminals (participant terminals B and C) among a plurality of bases participating in the conference are observed. One terminal (participant terminal D) is displayed.

[0043]

First, the host terminal A and the speaker terminal B, the speaker terminal B and the speaker terminal C, and the speaker terminal C and the host terminal A which are in the conference mode after the conference holding procedure are completed. In, two-way communication of conference data including images and sounds is performed (steps S301, S302, and S303). On the other hand, one-way communication of conference data including images and sounds is performed from the speaker terminal C to the observer terminal D, from the organizer terminal A to the observer terminal D, and from the speaker terminal B to the listener terminal D (step). S304, step S305, step S306).

[0044]

Here, when the operator of the observer terminal D wants to speak, when the button for requesting the speaking right is pressed on the display screen of the monitor, the speaking terminal request is made from the observer terminal D to the organizer terminal A. (Step S307). Upon receiving the floor request, the host terminal A displays a dialog indicating that the floor request has been received (step S308). When the request is rejected, when the operator presses the reject button, a rejection response is transmitted (step S309), and a dialog indicating that the floor request has been rejected is displayed on the display screen of the observer terminal D. .

[0045]

On the other hand, when granting the floor request of the participant terminal D, if the maximum number of connectable lines has already been used, the other speaker terminals must be changed to the observer

terminals. The operator of the host terminal selects one speaker terminal from the participation mode list of the participant terminals displayed on the monitor as shown in FIG. 11 and changes the speaker terminal to the observer terminal.
[0046]
For example, when the speaker terminal C is selected as the observer terminal (step S310), a speaking right cancellation notification is transmitted to the speaker terminal C (step S311). Upon receiving the floor right cancellation notification, the terminal C performs a process of stopping information transmission such as image data and audio data (step S312), and transmits an information transmission stop notification to all terminals (step S313). Each terminal that has received the information transmission notification stops decoding information from the terminal C (steps S314, S315, and S316). Thereafter, one-way communication of data is performed from the host terminal A and the speaker terminal B to the terminal C (step S317), and the terminal C becomes an observer terminal.
[0047]
Subsequently, a response to acquire the floor has been transmitted from the host terminal A to the terminal D (step S318). The terminal D receiving the response performs an information transmission start process (step S319), and the terminal D transmits an information transmission permission request to each terminal (step S320). Each terminal that has received the permission request starts decoding the information transmitted from the terminal D (steps S321, S322, and S323). Terminal D receives the information transmission permission response from each terminal and becomes a speaker terminal (step S324), and starts two-way communication of conference data with host terminal A, speaker terminal B, and observer terminal C (step S324). Steps S325 and S326).
[0048]
Thus, the process of changing the speaker terminal C to the observer terminal and changing the observer terminal D to the speaker terminal is completed. The change from the speaker terminal to the observer terminal may be performed by the operator of the organizer terminal manually selecting the speaker terminal when a request for the right to speak has been made. A priority list of speaker terminals is held in the participation mode setting unit 12, and when a floor request is generated, a setting is made so as to automatically switch between the speaker terminal and the observer terminal according to the priority list. It doesn't matter. Furthermore, the priority list may be created manually by the operator of the host terminal at the time of start-up or the like, or the priority list may be automatically organized based on the history of speeches during the meeting. Absent. For example, it is preferable to use a method in which a speaker terminal having a small number of speeches during a conference so far is presumed to have no further speech, and the priority of the change to the observer terminal is set higher.
[0049]
Next, the flow of a presenter change process during a conference in the video conference system according to the embodiment of the present invention will be described.
[0050]
Even the operator of the speaker terminal makes a presentation at one base. Therefore, it is necessary to appropriately change the presenter in the meeting according to the progress. FIG. 7 is a flowchart in the case of changing the presenter from the speaker terminal that is currently the presenter to the operator of another speaker terminal. For convenience of explanation, in FIG. 7, in addition to the organizer terminal (terminal A), two speaker terminals (participant terminals B and C) among a plurality of bases participating in the conference are observed. One terminal (participant terminal D) is displayed.
[0051]
First, when the operator of the speaker terminal B presses the announcement request button on the display screen and transmits a presenter change request to the host terminal (step S401), the display screen of the host terminal (step S402) that receives the change request Displays a dialog indicating that terminal B has made a presentation request (step S403). The operator of the host terminal A selects permission or rejection of the presenter change. When rejecting the presenter change, a rejection notification is transmitted to terminal B (step S404). On the other hand, when the presenter change is permitted, a conference suspension permission request is transmitted to each terminal to temporarily suspend the conference due to the change of the presenter (step S405).
[0052]

Upon receiving a response to the request for permission to interrupt the conference from each terminal (step S406), the host terminal A starts the presenter change process (step S407), and gives the presenter authority to the presenter, the speaker terminal C. A cancellation request is transmitted (step S408). The terminal C that has received the presenter authority cancellation request cancels the presenter process (step S409) and transmits a response to the cancellation request (step S410). The host terminal A, which has received the response of the presenter authority cancellation from the terminal C, transmits a response to the presenter change request to the terminal B requesting the presenter authority (step S411).
The speaker terminal B that has received the response starts the presenter process (step S412), and transmits a notification of resumption of the interrupted conference to each terminal (step S413).
[0053]
Thus, the process of changing the presenter from the speaker terminal C to the speaker terminal B is completed.
The change of the presenter may be manually performed by the operator of the host terminal when the request is issued, but the request is transmitted to the present presenter, and the present presenter determines and determines. You can do it. Further, the host terminal may be configured to automatically determine whether or not the presenter can be changed based on the presenter's speech history or the like. For example, at the time of a request for a presenter change, a presenter whose present time exceeds a predetermined time is forcibly moved to a speaker terminal requesting the change. Is preferred.
[0054]
Next, the flow of the presentation ending process of the video conference system according to the embodiment of the present invention will be described.
[0055]
FIG. 8 is a flowchart when the speaker terminal that is the presenter ends the presentation. For convenience of explanation, in FIG. 8, in addition to the host terminal (terminal A), two speaker terminals (participant terminals B and C) among a plurality of bases participating in the conference, and One terminal (participant terminal D) is displayed.
[0056]
First, the speaker terminal C, whose presentation has been completed, starts a conference end preparation process (step S501), and transmits a conference interruption permission request to all terminals (steps S502 and S503). Upon receiving a response to the conference interruption permission request from each terminal (step S504), the speaker terminal C saves the conference file created on the terminal C at the time of presentation (step S505), and the saved file is arbitrarily selected. Is delivered to the selected terminal (step S506).
[0057]
When the delivery of the conference file to each terminal is completed, the terminal C transmits a presenter authority revocation notification to the host terminal A (step S507), and simultaneously transmits an information transmission stop notification to each terminal (step S508). Each terminal that has received the information transmission stop notification stops the decoding process of the information from the terminal C (steps S509, S510, and S511).
[0058]
Here, an example is shown in which the speaker terminal C, which has finished the presentation, performs a conference end process (step S512) and leaves the conference.
[0059]
Thus, the presentation ending process of the speaker terminal C ends. Note that the conference end preparation process of step S501 is started not only when the presentation of the terminal C is completed but also when, for example, a speaker change request is generated from another speaker terminal and the change is permitted. Is done.
[0060]
Next, a flow of a conference end process of the video conference system according to the embodiment of the present invention will be described.
[0061]
FIG. 9 is a flowchart when all the terminals end the conference at the same time. For convenience of explanation, in FIG. 9, one speaker terminal (participant terminal B and participant terminal C) is used in

addition to the host terminal (terminal A), among a plurality of bases participating in the conference. And that one of the observer terminals (participant terminal D) is displayed.
[0062]
First, the host terminal A transmits a conference restart notification to the terminals B and D in order to restart the conference temporarily suspended in the presentation end processing of the participant terminal C (step S601). Next, the participant terminal A starts conference end preparation processing (step S602), and transmits a conference interruption permission request to the terminals B and D (step S603). The host terminal A that has received the response to the conference interruption permission request from the terminals B and D (step S604) saves the conference file in which the conference history is recorded (step S605), and stores the saved file in the terminal B and the terminal B. Select and distribute from terminal D (step S606). Lastly, a conference end notification is transmitted from the host terminal A to the terminals B and D (step S607), and the conference end processing is performed on all of the host terminals A, B, and D (steps S608, S609, and step S609). S610), the conference ends.
[0063]
Thus, the conference ending process is completed. Even after the end of the conference, if the control program (application) for the video conference system is activated on the terminal, it is possible to respond to the call when there is a call for holding the conference again.
[0064]
In the video conference system according to the embodiment described above, the maximum number of connection lines N of the participant terminals that can be connected to the host terminal is set in advance, and the number of connection lines M of the participant terminals connected to the host terminal is M ≤N. In addition, the video conference system terminal has a function (the video conference control unit 10 in FIG. 3) for presetting the maximum number of connection lines of the participant terminals that can be connected to the host terminal. Further, the connection control method of the video conference system sets a maximum number of connection lines N of the participant terminals connected to the host terminal in advance, and sets the number of connection lines M of the participant terminals so that M N. The terminal is connected to the host terminal (S103 in FIG. 4). The connection control program of the video conference system has a function of presetting the maximum number of connection lines N of the participant terminals connected to the host terminal to the computer, and the number M of connection lines of the participant terminals is M N. A function to connect the participant terminal to the organizer terminal is realized.
[0065]
According to the above embodiment, since the number M of connection lines of the participant terminals connected to the host terminal can be suppressed to the maximum number of connection lines or less which is set in advance, the number of terminals can be increased without limitation beyond the processing capacity of the PC. No more.
[Brief description of the drawings]
FIG. 1 is a diagram showing a configuration of a serverless video conference system.
FIG. 2 is a diagram illustrating a configuration of a video conference system according to an embodiment of the present invention.
FIG. 3 is a diagram illustrating a functional configuration of a terminal for a video conference system according to an embodiment of the present invention.
FIG. 4 is a flowchart in a case where the host terminal calls a conference to a participant terminal connected to the host terminal;
FIG. 5 is a flowchart in a case where an organizer terminal sets either a speaker terminal or an observer terminal for a terminal at each base where participation in a conference is selected.
FIG. 6 is a flowchart in a case where the organizer terminal selects a terminal to be changed to the observer terminal from the speaker terminals in response to a floor right request from the observer terminal, and changes the observer terminal to the speaker terminal. It is.
FIG. 7 is a flowchart in a case where a presenter is changed from a presenter terminal which is a presenter

to an operator of another speaker terminal.
FIG. 8 is a flowchart in a case where a speaker terminal that is a presenter ends a presentation.
FIG. 9 is a flowchart in the case where all terminals end the conference at once.
FIG. 10 is a diagram showing a display example of a dialog box for selecting a participating base.
FIG. 11 is a diagram showing a display example of a participation mode list displayed when changing the speaker terminal and the observer terminal.
[Explanation of symbols]
10 TV conference control unit
11 Terminal function selection section
12 Participation mode setting section
20 Communication control unit
30 Input / output unit
100 Teleconference system terminal
110 TV Image Encoder
111 audio encoder
112 Data transmission unit
113 TV Image Decoder
114 Audio Decoder
115 Data receiving unit

Claims

A video conference system configured by connecting an organizer terminal that hosts a conference and a plurality of participant terminals that participate in the conference via a communication line,
The maximum number N of connection lines of the participant terminals that can be connected to the host terminal is preset, and the number M of connection lines of the participant terminals connected to the host terminal is M N. Video conference system.
The participant terminal is composed of a speaker terminal capable of two-way communication with the host terminal and an observer terminal capable of one-way communication with the host terminal, and the number of connection terminals of the speaker terminal is S, 2. The video conference system according to claim 1, wherein the number of connection lines of the participant terminals connected to the host terminal is M = 2S + T, where T is the number of connection terminals of the observer terminal.
The host terminal selects a speaker terminal that can be transferred to the observer terminal in response to the floor request from the observer terminal, and transfers the selected speaker terminal to the observer terminal. The video conference system according to claim 2, wherein the video conference is transferred to a speaker terminal.
The said organizer terminal presets the speaker terminal which can be transferred to the observer terminal, selects the speaker terminal set in advance according to the floor right request, and transfers to the observer terminal. Item 4. The video conference system according to Item 3.
The organizer terminal assigns priorities to a plurality of speaker terminals that can be shifted to the observer terminal and sets them in advance, and, by the speaker request, the speaker terminal selected according to the priority order to the observer terminal. The video conference system according to claim 3, wherein the video conference is shifted.
Used in a video conference system in which a host terminal for hosting a conference and a plurality of participant terminals participating in the conference are connected via a communication line, and functions as the host terminal or the participant terminal when selected. A terminal for a video conference system,
A terminal for a video conference system, comprising a function of presetting a maximum number of connection lines of the participant terminals that can be connected to the host terminal.
7. The device according to claim 6, wherein the participant terminal functions as a speaker terminal capable of performing two-way communication with the host terminal by selection or an observer terminal capable of performing one-way communication with the host terminal. Terminal for TV conference system.
The terminal functioning as the host terminal selects a speaker terminal that can be transferred to the

observer terminal in response to a floor request from the participant terminal, transfers the selected speaker terminal to the observer terminal, and requests a floor. The terminal for a video conference system according to claim 7, further comprising a unit that shifts an observer terminal to be performed to a speaker terminal. The number of connection lines M of the participant terminals connected to the host terminal is M N, the number of connection terminals of the speaker terminal is S, and the number of connection terminals of the observer terminal is T, 9. The video conference system terminal according to claim 8, wherein the number M of connection lines of the participant terminals connected to the terminal is shifted in a relationship of M = 2S + T.

10. The terminal for a video conference system according to claim 8, wherein the speaker terminal is selected according to a priority set in advance.

A terminal that functions as the observer terminal, a unit that sends a request to the organizer terminal to shift to the speaker terminal, and shifts to the talker terminal based on a request permission from the organizer terminal. The video conference system terminal according to claim 7, comprising:

A connection control method for a video conference system configured by connecting an organizer terminal for hosting a conference and a plurality of participant terminals participating in the conference via a communication line,

The maximum number of connection lines N of the participant terminals connected to the host terminal is set in advance, and the participant terminals are connected to the host terminal such that the number of connection lines M of the participant terminal satisfies M N. A connection control method for a video conference system.

A connection control program for a video conference system configured by connecting an organizer terminal for hosting a conference and a plurality of participant terminals participating in the conference via a communication line, comprising:

A function of presetting the maximum number of connection lines N of the participant terminals connected to the host terminal; and setting the participant terminals to the host terminal so that the number of connection lines M of the participant terminals is M N. A connection control program for a video conference system, which realizes a connection function.

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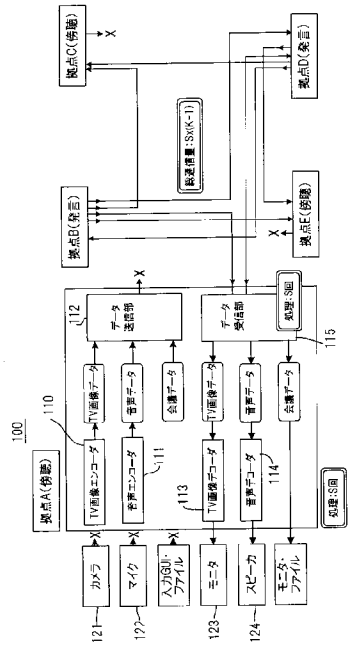
(54)【発明の名称】テレビ会議システム及びそれに用いる端末、接続制御方法並びに接続制御プログラム

(57)【要約】
【課題】サーバレス、汎用ＰＣを用いたテレビ会議システムにおいて、ＰＣの処理能力を超えるような無制限な端末の増設を回避する。
【解決手段】主催者端末に接続される参加者端末を、主催者端末と双方向通信が可能な発言者端末（拠点Ｂ、Ｄ）及び主催者端末と単方向通信が可能な傍聴者端末（拠点Ａ、Ｃ）で構成し、発言者端末の接続端末数をＳ、傍聴者端末の接続端末数をＴとして、主催者端末に接続される参加者端末の接続回線数Ｍを、Ｍ＝２Ｓ＋Ｔとする。この結果、全ての参加者端末を発言者端末で構成する従来に比べて総通信量がＳ×（Ｋ－１）に抑制される（Ｋ＝Ｓ＋Ｔ）。
【選択図】　図２



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【特許請求の範囲】
【請求項１】
会議を主催する主催者端末と会議に参加する複数の参加者端末とを通信回線を介して接続して構成するテレビ会議システムであって、
前記主催者端末に接続できる前記参加者端末の最大接続回線数Ｎが予め設定され、前記主催者端末に接続される参加者端末の接続回線数Ｍが、Ｍ≦Ｎであることを特徴とするテレビ会議システム。
【請求項２】
前記参加者端末は、前記主催者端末と双方向通信が可能な発言者端末及び前記主催者端末と片方向通信が可能な傍聴者端末で構成され、前記発言者端末の接続端末数をＳ、前記傍聴者端末の接続端末数をＴとして、前記主催者端末に接続される参加者端末の接続回線数Ｍが、Ｍ＝２Ｓ＋Ｔであることを特徴とする請求項１に記載のテレビ会議システム。
【請求項３】
前記主催者端末は、前記傍聴者端末からの発言権要求に応じて、傍聴者端末に移行可能な発言者端末を選択して傍聴者端末に移行させるとともに、発言権を要求する傍聴者端末を発言者端末に移行させることを特徴とする請求項２に記載のテレビ会議システム。
【請求項４】
前記主催者端末は、前記傍聴者端末に移行可能な発言者端末を予め設定し、前記発言権要求により、予め設定した発言者端末を選択して傍聴者端末に移行させることを特徴とする請求項３に記載のテレビ会議システム。
【請求項５】
前記主催者端末は、前記傍聴者端末に移行可能な複数の発言者端末を優先順位を付して予め設定し、前記発言者要求により、前記優先順位に従って選択した発言者端末を傍聴者端末に移行させることを特徴とする請求項３に記載のテレビ会議システム。
【請求項６】
会議を主催する主催者端末と会議に参加する複数の参加者端末とを通信回線を介して接続して構成するテレビ会議システムに使用され、選択により前記主催者端末又は前記参加者端末として機能するテレビ会議システム用端末であって、
前記主催者端末に接続できる前記参加者端末の最大接続回線数を予め設定する機能を備えたことを特徴とするテレビ会議システム用端末。
【請求項７】
前記参加者端末は、選択により前記主催者端末と双方向通信が可能な発言者端末又は前記主催者端末と片方向通信が可能な傍聴者端末として機能することを特徴とする請求項６に記載のテレビ会議システム用端末。
【請求項８】
前記主催者端末として機能する端末が、前記参加者端末からの発言権要求に応じて、前記傍聴者端末に移行可能な発言者端末を選択して傍聴者端末に移行させるとともに、発言権を要求する傍聴者端末を発言者端末に移行させる手段を備えることを特徴とする請求項７に記載のテレビ会議システム用端末。
【請求項９】
前記主催者端末に接続される参加者端末の接続回線数Ｍが、Ｍ≦Ｎ、かつ前記発言者端末の接続端末数をＳ、前記傍聴者端末の接続端末数をＴとして、前記主催者端末に接続される参加者端末の接続回線数Ｍが、Ｍ＝２Ｓ＋Ｔの関係を有して移行させることを特徴とする請求項８に記載のテレビ会議システム用端末。
【請求項１０】
予め設定した優先順位に従って前記発言者端末を選択することを特徴とする請求項８又は９に記載のテレビ会議システム用端末。
【請求項１１】
前記傍聴者端末として機能する端末が、前記主催者端末に対して前記発言者端末に移行したい旨の要求を送出する手段と、前記主催者端末からの要求許可に基づいて前記発言端末

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に移行する手段と、を備えることを特徴とする請求項７に記載のテレビ会議システム用端末。
【請求項１２】
会議を主催する主催者端末と会議に参加する複数の参加者端末とを通信回線を介して接続して構成するテレビ会議システムの接続制御方法であって、
前記主催者端末に接続する参加者端末の最大接続回線数Ｎを予め設定し、前記参加者端末の接続回線数Ｍが、Ｍ≦Ｎとなるように前記参加者端末を前記主催者端末に接続することを特徴とするテレビ会議システムの接続制御方法。
【請求項１３】
会議を主催する主催者端末と会議に参加する複数の参加者端末とを通信回線を介して接続して構成するテレビ会議システムの接続制御プログラムであって、コンピュータに、
前記主催者端末に接続する参加者端末の最大接続回線数Ｎを予め設定する機能、前記参加者端末の接続回線数Ｍが、Ｍ≦Ｎとなるように前記参加者端末を前記主催者端末に接続する機能を実現させることを特徴とするテレビ会議システムの接続制御プログラム。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】
本発明は、会議を主催する主催者端末と会議に参加する複数の参加者端末とを通信回線を介して接続して構成するテレビ会議システム、テレビ会議システムに使用されるテレビ会議システム用端末、テレビ会議システムの接続制御方法及びテレビ会議システムの接続制御プログラムに関する。
【０００２】
【従来の技術】
遠隔にある複数の端末間で会議を行う多地点接続のテレビ会議システムが知られている。特に、サーバ装置を設けず（サーバレス）、複数の汎用パーソナルコンピュータ（ＰＣ）を公衆網を用いて、回線交換方式でデータの送受信を行うテレビ会議システムは、システムの構成が容易で、しかもコストが低減できる利点があるため、小規模なテレビ会議システムに好適である（特許文献１等）。
【０００３】
【特許文献１】
特開平５－２２３２１号公報
【０００４】
しかし、サーバレスであるため、接続数の増加にともない、各端末で行うデータ処理の負荷が著しく増大し、ＰＣの処理能力では並列処理ができなくなるため、会議に参加可能な拠点数、すなわち、接続できる端末数を無制限に増やすことができないという制約がある。
【０００５】
図１はサーバレスのテレビ会議システムの構成を示す図である。図１において、ＡからＥまでの５拠点の端末が互いに１対１で接続されている。例えば、送信側の拠点Ａが、カメラ２１１やマイク２１２からの画像データや音声データ、ＰＣで生成した会議データなどを、拠点Ｂ、Ｃ、Ｄ、Ｅに送信する場合、送信処理を４回行う必要がある。一方、受信側の拠点Ｂ、Ｃ、Ｄ、Ｅは、画像データ、音声データ、会議データなどを相互に接続された拠点から受信する必要があるため、合計４回の受信及びデコード処理が必要である。このように、会議の拠点数をＫとすると、データ送信処理がＫ－１回、データ受信処理がＫ－１回、受信データのデコード処理がＫ－１回必要となる。
【０００６】
【発明が解決しようとする課題】
上記のテレビ会議システムにおいて、１拠点から他の１拠点に向けて発信する通信量を１とすると、会議における総通信量はＫ×（Ｋ－１）で、拠点数の増加に対して２次関数的に増加する。そのため、受信及びデコードなどの並列処理がＰＣの処理能力を超える程度

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まで拠点数が増えると、例えば、端末のモニタに拠点の一斉表示を行う場合、表示が遅れ同時性が損なわれるという問題が生じる。
また、接続された全ての端末からの発言が可能となっているため、それぞれの拠点で同時に発言が行われると、各拠点の端末のスピーカから音声が重なって出力されるため、発言者を特定し難いという問題が生じる。
【０００７】
本発明が解決しようとする課題としては、上述した従来技術において生じるＰＣの処理能力を超えるような無制限な端末の増設という問題と、発言者の特定が困難であるという問題がそれぞれ一例として挙げられる。
【０００８】
【課題を解決するための手段】
請求項１に記載の発明は、会議を主催する主催者端末と会議に参加する複数の参加者端末とを通信回線を介して接続して構成するテレビ会議システムであって、前記主催者端末に接続できる前記参加者端末の最大接続回線数Ｎが予め設定され、前記主催者端末に接続される参加者端末の接続回線数Ｍが、Ｍ≦Ｎであることを特徴とする。
【０００９】
また、請求項６に記載の発明は、会議を主催する主催者端末と会議に参加する複数の参加者端末とを通信回線を介して接続して構成するテレビ会議システムに使用され、選択により前記主催者端末又は前記参加者端末として機能するテレビ会議システム用端末であって、前記主催者端末に接続できる前記参加者端末の最大接続回線数を予め設定する機能を備えたことを特徴とする。
【００１０】
また、請求項１２に記載の発明は、会議を主催する主催者端末と会議に参加する複数の参加者端末とを通信回線を介して接続して構成するテレビ会議システムの接続制御方法であって、前記主催者端末に接続する参加者端末の最大接続回線数Ｎを予め設定し、前記参加者端末の接続回線数Ｍが、Ｍ≦Ｎとなるように前記参加者端末を前記主催者端末に接続することを特徴とする。
【００１１】
また、請求項１３に記載の発明は、会議を主催する主催者端末と会議に参加する複数の参加者端末とを通信回線を介して接続して構成するテレビ会議システムの接続制御プログラムであって、コンピュータに、前記主催者端末に接続する参加者端末の最大接続回線数Ｎを予め設定する機能、前記参加者端末の接続回線数Ｍが、Ｍ≦Ｎとなるように前記参加者端末を前記主催者端末に接続する機能を実現させることを特徴とする。
【００１２】
【発明の実施の形態】
以下、本発明の実施の形態について図面を参照して説明する。
図２は、本発明の一実施の形態におけるテレビ会議システムの構成を示す図である。本発明の実施の形態におけるテレビ会議システムは、複数のテレビ会議システム用端末を公衆電話網で互いに１対１で接続し、回線交換方式でデータの送受信を行う。図２に示す端末１００は、主としてデータ処理の構成を示しており、通信制御部としてのテレビ画像エンコーダ１１０、音声エンコーダ１１１、データ送信部１１２、テレビ画像デコーダ１１３、音声デコーダ１１４及びデータ受信部１１５を有し、外部との入出力をカメラ１２１、マイク１２２、モニタ１２３及びスピーカ１２４を介して行う。なお、端末１００は、後述する傍聴者端末におけるデータの流れを矢印で示しており、端末１００への入力データは制限され、端末１００から出力されるデータのみを処理する。
【００１３】
本発明におけるテレビ会議システム用端末は、いわゆるテレビ会議機能を備える他、表計算、ワードプロセッサ又はプレゼンテーション等の業務用アプリケーションを扱うことができ、さらに端末のディスプレイがホワイトボードとしての機能を果たし、これらアプリケーションのデータやホワイトボードに書き込まれたデータを複数の端末で共有し、各端

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末にそれぞれ同一のコンテンツを表示させた状態で会議を行うことが可能である。また、テレビ会議システム用端末のディスプレイには、各拠点の映像（主催者、参加者）が表示される。

【００１４】

図３は、本発明の実施の形態におけるテレビ会議システム用端末の構成を示す図であり、主として制御機能を示している。テレビ会議システム用端末１００は、汎用パーソナルコンピュータ（ＰＣ）で構成され、テレビ会議制御部１０、通信制御部２０及び入出力部３０を備える。

【００１５】

テレビ会議制御部１０は、会議の確立や進行などの会議全般にわたる制御を行う。テレビ会議制御部は、更に、テレビ会議システム用端末を会議の主催者端末として使用するか参加者端末として使用するかを選択する端末機能選択部１１及び参加者端末を発言者端末又は傍聴者端末のいずれかに設定したり、発言者端末機能と傍聴者端末機能との切り替えを行う参加モード設定部１２を備える。なお、テレビ会議制御部は、プログラムの形でテレビ会議システム用端末１００内のメモリ（不図示）に格納されており、同じくテレビ会議システム用端末１００内のＣＰＵ（不図示）がこれを実行することにより実現される。

【００１６】

通信制御部２０は、会議におけるデータ通信を制御するための送信部、受信部で構成され、画像データの符号化・復号化を行うための画像エンコーダ・画像デコーダ、音声データの符号化・復号化を行うための音声エンコーダ・音声デコーダを含む。また、入出力部３０は、テレビ会議制御部や通信制御部とのインターフェースとなる部分で、入力用のカメラ４０、マイク４１、キーボード４２や出力用のモニタ４３、スピーカ４４などと接続する。

【００１７】

次に、テレビ会議制御部の機能について説明する。テレビ会議システム用端末は、同じ端末を主催者用端末としても参加者用端末としても使用することが可能であり、いずれの端末として使用するかは、起動時に設定を行う。また、会議中の任意の時点に、切り替え要求により変更することも可能である。選択の操作は、端末機能選択部１１がモニタに表示するＧＵＩ（グラフィカルユーザーインターフェース）に従い、操作者がキーボードやマウスなどで行う。主催者端末として選択されると、当該端末で会議の参加拠点の選択や、発言者端末や傍聴者端末の指定、後述する発言権の変更やその優先順位の設定、会議データの保存や配信などの会議主催者としての各種機能が実行できるようになる。一方、参加者端末として選択されると、当該端末では画像や音声を含む会議データの送受信など、制限された機能だけを実行する。

【００１８】

また、テレビ会議システム用端末は、テレビ会議制御部に、最大接続回線数Ｎが予め設定されており、Ｎを超える回線数が必要になる端末数の接続は制限される。なお、最大接続回線数Ｎは、ＰＣの処理能力やモニタに表示する画像の解像度（大きさ）の設定に応じて自動的に設定されることが好ましい。更に、端末のキーボードなどの入力部から所定の範囲内でマニュアル設定できるようにしてもよい。

【００１９】

また、テレビ会議システム用端末は、起動時又は会議中の任意の時点で、発言者端末又は傍聴者端末のいずれかの端末として使用することを、主催者端末から指定できる。指定の操作は、参加モード設定部１２がモニタに表示するＧＵＩに従い、操作者がキーボードやマウスなどで行う。発言者端末として指定されると、当該端末に接続するカメラやマイクからのテレビ画像データや音声データの符号化処理及び送信処理と、接続するその他の端末から受信する画像データや音声データの受信処理及び復号化処理を行う（双方向：全二重通信）。一方、傍聴者端末として指定されると、図２中×印で示すように、当該端末に接続するカメラやマイクからのテレビ画像データや音声データの符号化処理及び送信処理を行わず、接続するその他の端末から受信する画像データや音声データの受信処理及び復

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号化処理のみを行う（片方向：半二重通信）。傍聴者端末との接続を半二重通信で行うのは、主催者端末への発言権要求を送信するためである。

【００２０】

さらに、会議中に例えば傍聴者端末からの要求により、主催者端末が当該傍聴者端末を発言者端末に変更する場合や、同様に、要求を発した傍聴者端末を発言者端末に変更するため、現在の発言者端末を選択して傍聴者端末に変更する場合などは、端末の参加モードの切り替えが可能である。切り替えの操作は、参加モード設定部１２がモニタに表示するＧＵＩに従い、操作者がキーボードやマウスなどで行う。

【００２１】

次に、発言者端末及び傍聴者端末の割り当て及び設定について説明する。前述の通り、テレビ会議システム用端末は、予め最大接続回線数Ｎが設定されており、接続する参加者端末の回線数Ｍは、Ｍ≦Ｎとなる。主催者端末において発言者端末と参加者端末を設定する際、発言者端末数Ｓ及び傍聴者端末数Ｔは、接続する参加者端末の合計回線数Ｍが、Ｍ＝２Ｓ＋Ｔとなるように割り当てられる。例えば、単純な計算のために参加者端末の回線数Ｍを１０単位として説明すると、発言者端末を４拠点設定すると傍聴者端末が２拠点、３拠点設定すると傍聴者端末が４拠点、と算出される。

【００２２】

このように、参加者端末を、双方向通信を行う発言者端末と片方向通信を行う傍聴者端末とに分けることにより、会議における通信量が抑制でき、従って参加拠点数を増やすことができる。上記と同様に、Ｍ＝１０の場合で説明すると、従来は接続する全ての端末が全二重通信を行っていたため、Ｍ＝２ＫからＫ＝５となり、拠点数の最大数は５である。一方、本発明の実施の形態におけるテレビ会議システムでは、Ｍ＝２Ｓ＋Ｔとなるように設定することで、例えば、発言者端末を３拠点（即ち、Ｓ＝３）と制限すると、Ｔ＝４となり、傍聴者端末を最大４拠点設けることが可能となる。従って、拠点数Ｋ（＝Ｓ＋Ｔ）は、従来の５から７に増やすことができる。

【００２３】

ここで、発言者端末と傍聴者端末とに分離することにより総通信量が低減されることを図２を用いて説明する。図２では拠点Ｂ、Ｄが発言者端末として、拠点Ａ、Ｃ、Ｅが傍聴者端末として設定されている。図中の矢印は、５拠点で会議を行う場合のデータの流れと処理について示している。図２に示すように、傍聴者端末からは情報（画像データ及び音声データ）の送信が行われないので、図中×印で示すようにデータ送信部１１２からのデータ送信は禁止され、傍聴者端末Ａ、Ｃ、Ｅでは、その他の発言者端末からの情報の受信及び復号化処理だけが行われ、ＰＣの情報処理量が少なくなる。

【００２４】

発言者端末からは、その他の端末に向けて画像データや音声データが発信されるので、１拠点から他の１拠点に向けて発信する通信量を１とすると、本発明の実施の形態におけるテレビ会議システムの会議における総通信量はＳ×（Ｋ－１）となる。Ｋ＝Ｓ＋Ｔより、Ｓ＜Ｋであるため、特に発言者端末数Ｓを少なく制限する場合、従来の総通信量Ｋ×（Ｋ－１）に比較して通信量を大幅に低減できる。

【００２５】

なお、上記の発言者端末数や傍聴者端末の設定においては、例えば、発言者端末や傍聴者端末の合計使用回線数が最大接続回線数Ｎを超過するような拠点の設定を行おうとすると、モニタの表示画面に警告メッセージが表示され、設定ができないようにすることが好ましい。

【００２６】

また、図２では５台の端末でシステムを構成した例を示しているが、ＰＣの並列処理能力、即ち接続可能回線数Ｎを超えない範囲でさらに多くの端末を接続することが可能であることは言うまでもない。

【００２７】

次に、本発明の実施の形態におけるテレビ会議システムの動作を図４から図９のフローチ

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ャートを用いて説明する。はじめに、本実施の形態におけるテレビ会議システムの、会議開始時における端末機能選択処理の流れについて説明する。

【００２８】

図４は、主催者端末が主催者端末に接続する参加者端末に対して会議開催の呼び出しを行う場合のフローチャートである。なお、説明の便宜上、図４では主催者端末と通信を行う複数の参加者端末のうち１台を表示している。

【００２９】

はじめに、テレビ会議システム用の制御プログラム（アプリケーション）を主催者端末と参加者端末とで起動させておく（ステップＳ１０１及びステップＳ１１１）。次に、操作者が主催者端末モニタの表示画面を操作して、会議開催準備モードにすると（ステップＳ１０２）、主催する会議に参加させる拠点を選択するためのダイアログがモニタの表示画面に表示される（ステップＳ１０３）。図１０は、参加拠点を選択するためのダイアログボックスの表示例を示す図である。図１０に示すように、主催者端末の操作者は会議開催にあたり、会議に参加させる拠点（端末）を選択し、更に、それらの端末を発言者端末とするか傍聴者端末とするかの参加モードを予め指定できる。参加者端末の選択において、予め設定されている最大接続回線数を超える参加者端末の選択は制限される。

【００３０】

参加者端末の選択と参加モードの指定を行うと、チェックボックスにチェックが表示される等の形態で、選択の状態が一覧で表示される（ステップＳ１０４）。その後、ダイアログボックス内の呼び出しボタンを押すと、選択した拠点の呼び出しが実行される（ステップＳ１０５）。

【００３１】

呼出を受けた参加者端末では、表示画面に当該の会議に参加するかどうかを問うダイアログが表示される（ステップＳ１１２）。参加者端末の操作者は、会議参加の可否を決定し、参加又は不参加の応答が主催者端末へ送信される。参加を選択した場合、当該端末は主催者端末とのデータ通信が可能な会議開催準備モードになる（ステップＳ１１３）。一方、参加者端末より会議の参加又は不参加の応答を受けた主催者端末は、図１０と同様のダイアログボックスで応答結果を更新表示する（ステップＳ１０６）。同様の手順は、主催者端末に接続する全ての拠点に対して行われる。

【００３２】

以上で、参加者端末の呼出の手順が終了し、会議参加を選択した全ての拠点の端末は、主催者端末との送受信が可能な会議開催準備モードとなる。

【００３３】

次に、本発明の実施の形態におけるテレビ会議システムの、会議開始時における参加モード設定処理の流れについて説明する。

【００３４】

図５は、会議参加を選択した各拠点の端末に対して、主催者端末が、発言者端末又は傍聴者端末のいずれかの設定を行う場合のフローチャートである。なお、説明の便宜上、図５では、主催者端末（端末Ａ）の他に、会議に参加する複数の拠点のうち、発言者端末として設定を行う端末（参加者端末Ｂ）と傍聴者端末として設定を行う端末（参加者端末Ｃ）をそれぞれ１台表示している。

【００３５】

はじめに、会議開催準備モードの各参加者端末に対して、主催者端末の画像データや音声データを送信するための情報発信許可要求が、主催者端末Ａから送信される（ステップＳ２０１）。参加者端末Ｂ及びＣは、それぞれ情報発信許可要求を受けて、主催者端末から送信される画像データ及び音声データのデコード処理を開始して（ステップＳ２０２及びステップＳ２０３）、同時に主催者端末Ａへ情報発信許可応答を返信する。デコード処理の開始に伴い、各参加者端末のモニタでは、主催者端末における会議参加者の映像や音声が取得される。

【００３６】

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一方、主催者端末上で起動している各種アプリケーションのデータや、主催者端末のモニタのホワイトボード機能を使用する場合に入力されたデータなどのいわゆる会議データは、主催者端末Ａから参加者端末Ｂ及び参加者端末Ｃへ片方向通信で送信される（ステップＳ２０４）。この手順まで終了すると、全ての参加者端末が傍聴者端末としての機能を付与されたことになる。

【００３７】

以降は、図４のステップＳ１０３で主催者端末により発言者端末として指定された端末に対して、発言者端末の機能が付与される。主催者端末Ａは、会議開始時に発言者端末として指定した端末に対して発言権許可通知を送信する（ステップＳ２０５）。この場合、発言者端末として指定され、発言権許可通知を受信した参加者端末Ｂは、自らの端末に接続するカメラやマイクで取得する画像データ及び音声データ（即ち、参加者端末Ｂにおける会議参加者の画像や音声）を他の端末に送信するための情報発信要求を、他の端末に対して送信する（ステップＳ２０６）。

【００３８】

主催者端末Ａ及び参加者端末Ｃは、端末Ｂから送信される情報発信許可要求を受けて、発言者端末としての参加者端末Ｂから送信される画像データ及び音声データのデコード処理を開始して（ステップＳ２０７及びステップＳ２０８）、発言者端末Ｂへ情報発信許可応答を返信する。主催者端末Ａでは、参加拠点一覧のダイアログが更新表示され（ステップＳ２０９）、主催者端末Ａから傍聴者端末Ｃへ、発言者端末Ｂから傍聴者端末Ｃへの情報の片方向通信が開始し（ステップＳ２１０）、主催者端末Ａ及び傍聴者端末Ｃの各端末のモニタでは、発言者端末Ｂにおける会議参加者の映像や音声が取得されるようになる。一方、主催者端末Ａと発言者端末Ｂ間では、情報の双方向通信が開始する（ステップＳ２１１）。

上記通信の開始処理後、主催者端末Ａから端末Ｂ及び端末Ｃに対して会議開催通知が送信される（ステップＳ２１２）。同様の手順は、主催者端末に接続する全ての拠点に対して行われる。

【００３９】

以上で、全ての参加者端末に対して傍聴者端末又は発言者端末としての設定の手順が終了し、傍聴者端末では他の端末からの情報の受信が、発言者端末は他の端末からの情報の受信及び他の端末への情報の発信が可能な状態となる。

【００４０】

上記では、会議開始時点での設定手順について説明したが、前述の通り、本発明の実施の形態におけるテレビ会議システムでは、会議中に双方向通信を行う発言者端末と片方向通信を行う傍聴者端末とを自在に切り替えることが可能である。この切り替え動作を実行することにより、各拠点から自在に発言を行うことが可能となり、しかも、双方向通信を行う発言者端末の数を制限し、発言を行わない端末を片方向通信にすることで、限られた通信回線（通信容量）の中でより多くの拠点を接続した会議が実現される。

【００４１】

次に、本実施の形態におけるテレビ会議システムの、会議中における参加モード変更処理の流れについて説明する。

【００４２】

図６は、傍聴者端末からの発言権要求に応じて、主催者端末が、発言者端末の中から傍聴者端末に変更する端末を選択し、傍聴者端末を発言者端末に変更する場合のフローチャートである。なお、説明の便宜上、図６では、主催者端末（端末Ａ）の他に、会議に参加している複数の拠点のうち、発言者端末を２台（参加者端末Ｂ及びＣ）と、傍聴者端末（参加者端末Ｄ）を１台表示している。

【００４３】

はじめに、会議開催の手続きが終了して会議モードとなっている主催者端末Ａと発言者端末Ｂ間、発言者端末Ｂと発言者端末Ｃ間、発言者端末Ｃと主催者端末Ａ間のそれぞれにおいては、画像、音声を含む会議データの双方向通信が行われている（ステップＳ３０１、

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ステップＳ３０２、ステップＳ３０３）。一方、発言者端末Ｃから傍聴者端末Ｄ、主催者端末Ａから傍聴者端末Ｄ、発言者端末Ｂから傍聴者端末Ｄへは、画像、音声を含む会議データの片方向通信が行われる（ステップＳ３０４、ステップＳ３０５、ステップＳ３０６）。

【００４４】

ここで、傍聴者端末Ｄの操作者が発言を行いたい場合、モニタの表示画面で発言権要求のボタンを押すと、主催者端末Ａに対して、傍聴者端末Ｄから発言権要求が行われる（ステップＳ３０７）。発言権要求を受信した主催者端末Ａは、発言権要求を受けた旨のダイアログ表示を行う（ステップＳ３０８）。要求を拒否する場合、操作者が拒否ボタンを押すと、拒否応答が送信され（ステップＳ３０９）、傍聴者端末Ｄの表示画面に発言権要求が拒否されたことを示す旨のダイアログが表示される。

【００４５】

一方、参加者端末Ｄの発言権要求を許可するとき、既に接続可能な最大回線数を使用している場合は、他の発言者端末を傍聴者端末に変更しなければならない。主催者端末の操作者は、モニタに表示される図１１に示すような参加者端末の参加モードリストから発言者端末を１つ選択し、傍聴者端末へ変更する。

【００４６】

例えば、発言者端末Ｃを傍聴者端末として選択した場合（ステップＳ３１０）、発言者端末Ｃに発言権取り消し通知が送信される（ステップＳ３１１）。端末Ｃは、発言権取り消し通知を受信すると、画像データや音声データなどの情報発信を中止する処理を行い（ステップＳ３１２）、全ての端末に対して情報発信中止通知を送信する（ステップＳ３１３）。情報発信通知を受信した各端末は端末Ｃからの情報のデコードを中止する（ステップＳ３１４、ステップＳ３１５、ステップＳ３１６）。以降は、主催者端末Ａ及び発言者端末Ｂから端末Ｃへデータの片方向通信が行われ（ステップＳ３１７）、端末Ｃは傍聴者端末となる。

【００４７】

続いて、主催者端末Ａから端末Ｄへ発言権獲得の応答が送信される（ステップＳ３１８）。応答を受信した端末Ｄは情報発信開始処理を行い（ステップＳ３１９）、端末Ｄから情報発信許可要求が各端末に対して送信される（ステップＳ３２０）。許可要求を受信した各端末は端末Ｄから送信される情報のデコード処理を開始する（ステップＳ３２１、ステップＳ３２２、ステップＳ３２３）。端末Ｄは、各端末からの情報発信許可応答を受信して発言者端末となり（ステップＳ３２４）、主催者端末Ａ、発言者端末Ｂ、傍聴者端末Ｃと会議データの双方向通信を開始する（ステップＳ３２５、ステップＳ３２６）。

【００４８】

以上で、発言者端末Ｃを傍聴者端末に、傍聴者端末Ｄを発言者端末に変更する処理が終了する。なお、発言者端末から傍聴者端末への変更は、発言権の要求が発生した時に主催者端末の操作者が手動で発言者端末を選択してもよいが、予め傍聴者端末に変更する発言者端末の優先順位リストを参加モード設定部１２に保持しておき、発言権要求が発生した場合、その優先順位リストに従って自動的に発言者端末と傍聴者端末の切り替えを行うように設定してもかまわない。さらに、優先順位リストの作成は、起動時などに主催者端末の操作者が手動で行ってもよいが、会議中の発言履歴などから優先順位リストが自動的に編成されるようにしてもかまわない。例えば、これまでの会議中に発言回数が少ない発言者端末は、以降もあまり発言がないと推定し、傍聴者端末への変更の優先順位を上位にするなどの方法が好ましい。

【００４９】

次に、本発明の実施の形態におけるテレビ会議システムの、会議中における発表者変更処理の流れについて説明する。

【００５０】

発言者端末の操作者であっても、発表を行うのは１つの拠点である。従って、会議においては進行に従って発表者を適宜変更する必要がある。図７は、現在発表者となっている発

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言者端末から、別の発言者端末の操作者に発表者を変更する場合のフローチャートである。なお、説明の便宜上、図７では、主催者端末（端末Ａ）の他に、会議に参加している複数の拠点のうち、発言者端末を２台（参加者端末Ｂ及びＣ）と、傍聴者端末（参加者端末Ｄ）を１台表示している。

【００５１】

はじめに、発言者端末Ｂの操作者が表示画面の発表要求ボタンを押して、発表者変更要求を主催者端末に送信すると（ステップＳ４０１）、変更要求を受信した主催者端末（ステップＳ４０２）の表示画面には、端末Ｂが発表要求をしている旨のダイアログが表示される（ステップＳ４０３）。主催者端末Ａの操作者は、発表者変更の許可又は拒否を選択する。発表者変更を拒否する場合、拒否通知が端末Ｂへ送信される（ステップＳ４０４）。一方、発表者変更を許可する場合、発表者の変更で会議を一時中断するため、会議中断許可要求を各端末へ送信する（ステップＳ４０５）。

【００５２】

各端末から会議中断許可要求の応答を受信すると（ステップＳ４０６）、主催者端末Ａは発表者変更処理を開始し（ステップＳ４０７）、現在の発表者である発言者端末Ｃに対して発表者権限取り消し要求を送信する（ステップＳ４０８）。発表者権限取り消し要求を受信した端末Ｃは発表者処理を解除して（ステップＳ４０９）、取り消し要求への応答を送信する（ステップＳ４１０）。端末Ｃから発表者権限取り消しの応答を受信した主催者端末Ａは、発表者権限を要求している端末Ｂに対し、発表者変更要求への応答を送信する（ステップＳ４１１）。

応答を受信した発言者端末Ｂは、発表者処理を開始し（ステップＳ４１２）、中断していた会議の再開通知を各端末に対して送信する（ステップＳ４１３）。

【００５３】

以上で、発表者を発言者端末Ｃから発言者端末Ｂへ変更する処理が終了する。

なお、発表者の変更は、要求が発生した時に主催者端末の操作者が手動で可否を選択してもよいが、要求を現在の発表者に送信し、現在の発表者が判断して決定できるようにしてもかまわない。さらに、現在の発表者の発言履歴などから主催者端末が自動的に発表者変更の可否を決定できるようにしてもかまわない。例えば、発表者変更の要求が発生した時点で、これまでの発表時間が所定の時間を超えている発表者は、変更を要求している発言者端末に発表権が強制的に移動されるようにするなどの方法が好ましい。

【００５４】

次に、本発明の実施の形態におけるテレビ会議システムの、発表終了処理の流れについて説明する。

【００５５】

図８は、現在発表者となっている発言者端末が発表を終了する場合のフローチャートである。なお、説明の便宜上、図８では、主催者端末（端末Ａ）の他に、会議に参加している複数の拠点のうち、発言者端末を２台（参加者端末Ｂ及びＣ）と、傍聴者端末（参加者端末Ｄ）を１台表示している。

【００５６】

はじめに、発表が終了した発言者端末Ｃは、会議終了準備処理を開始し（ステップＳ５０１）、全ての端末に対して会議中断許可要求を送信する（ステップＳ５０２、ステップＳ５０３）。各端末から会議中断許可要求に対する応答を受信すると（ステップＳ５０４）、発言者端末Ｃは、発表の際に端末Ｃ上で作成した会議ファイルを保存し（ステップＳ５０５）、保存したファイルは任意に選択した端末に配信される（ステップＳ５０６）。

【００５７】

各端末への会議ファイルの配信が終了すると、端末Ｃは発表者権限取り消し通知を主催者端末Ａへ送信し（ステップＳ５０７）、同時に情報発信中止通知を各端末へ送信する（ステップＳ５０８）。情報発信中止通知を受信した各端末は、端末Ｃからの情報のデコード処理を中止する（ステップＳ５０９、ステップＳ５１０、ステップＳ５１１）。

【００５８】

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なお、ここでは発表を終了した発言者端末Ｃが会議終了処理を行い（ステップＳ５１２）、会議から退席する場合の例を示している。

【００５９】

以上で、発言者端末Ｃの発表終了処理が終了する。なお、ステップＳ５０１の会議終了準備処理は、端末Ｃの発表が終了した場合だけではなく、例えば、他の発言者端末から発表者変更要求が発生し、変更が許可されたような場合にも開始される。

【００６０】

次に、本発明の実施の形態におけるテレビ会議システムの、会議終了処理の流れについて説明する。

【００６１】

図９は、全ての端末が一斉に会議を終了する場合のフローチャートである。なお、説明の便宜上、図９では、主催者端末（端末Ａ）の他に、会議に参加している複数の拠点のうち、発言者端末を１台（参加者端末Ｂ、参加者端末Ｃは既に会議終了処理を行い退席している）と、傍聴者端末（参加者端末Ｄ）を１台表示している。

【００６２】

はじめに、主催者端末Ａは、参加者端末Ｃの発表終了処理で一時中断していた会議を再開させるため、端末Ｂと端末Ｄに対して会議再開の通知を送信する（ステップＳ６０１）。次に、参加者端末Ａは会議終了準備処理を開始し（ステップＳ６０２）、端末Ｂと端末Ｄに対して会議中断許可要求を送信する（ステップＳ６０３）。端末Ｂと端末Ｄから会議中断許可要求の応答を受信した主催者端末Ａは（ステップＳ６０４）、これまでの会議履歴を記録した会議ファイルを保存し（ステップＳ６０５）、保存したファイルを端末Ｂ及び端末Ｄから選択して配信する（ステップＳ６０６）。最後に主催者端末Ａから会議終了通知が端末Ｂと端末Ｄへ送信され（ステップＳ６０７）、主催者端末Ａ、端末Ｂ、端末Ｄの全てで会議終了処理を行い（ステップＳ６０８、ステップＳ６０９、ステップＳ６１０）、会議が終了する。

【００６３】

以上で、会議終了処理が終了する。会議終了後も、端末上でテレビ会議システム用の制御プログラム（アプリケーション）を起動していれば、再度会議開催の呼び出しがある場合には呼び出しに応答することが可能である。

【００６４】

以上説明した実施の形態におけるテレビ会議システムは、主催者端末に接続できる参加者端末の最大接続回線数Ｎが予め設定され、主催者端末に接続される参加者端末の接続回線数Ｍが、Ｍ≦Ｎとする。また、テレビ会議システム用端末は、主催者端末に接続できる参加者端末の最大接続回線数を予め設定する機能（図３のテレビ会議制御部１０）を備える。また、テレビ会議システムの接続制御方法は、主催者端末に接続する参加者端末の最大接続回線数Ｎを予め設定し、参加者端末の接続回線数Ｍが、Ｍ≦Ｎとなるように参加者端末を主催者端末に接続する（図４のＳ１０３）。また、テレビ会議システムの接続制御プログラムは、コンピュータに、主催者端末に接続する参加者端末の最大接続回線数Ｎを予め設定する機能、参加者端末の接続回線数Ｍが、Ｍ≦Ｎとなるように参加者端末を主催者端末に接続する機能を実現させる。

【００６５】

上記実施の形態によれば、主催者端末に接続される参加者端末の接続回線数Ｍが予め設定した最大接続回線数以下に抑えられるため、ＰＣの処理能力を超えて無制限に端末が増設されることがなくなる。

【図面の簡単な説明】

【図１】サーバレスのテレビ会議システムにおける構成を示す図である。

【図２】本発明の一実施の形態におけるテレビ会議システムの構成を示す図である。

【図３】本発明の一実施の形態におけるテレビ会議システム用端末の機能構成を示す図である。

【図４】主催者端末が主催者端末に接続する参加者端末に対して会議開催の呼び出しを行

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う場合のフローチャートである。
【図５】会議参加を選択した各拠点の端末に対して、主催者端末が発言者端末又は傍聴者端末のいずれかの設定を行う場合のフローチャートである。
【図６】傍聴者端末からの発言権要求に応じて、主催者端末が発言者端末の中から傍聴者端末に変更する端末を選択し、傍聴者端末を発言者端末に変更する場合のフローチャートである。
【図７】現在発表者となっている発言者端末から、別の発言者端末の操作者に発表者を変更する場合のフローチャートである。
【図８】現在発表者となっている発言者端末が発表を終了する場合のフローチャートである。
【図９】全ての端末が一斉に会議を終了する場合のフローチャートである。
【図１０】参加拠点を選択するためのダイアログボックスの表示例を示す図である。
【図１１】発言者端末と傍聴者端末とを変更する際に表示される参加モードリストの表示例を示す図である。
【符号の説明】
１０　テレビ会議制御部
１１　端末機能選択部
１２　参加モード設定部
２０　通信制御部
３０　入出力部
１００　テレビ会議システム用端末
１１０　テレビ画像エンコーダ
１１１　音声エンコーダ
１１２　データ送信部
１１３　テレビ画像デコーダ
１１４　音声デコーダ
１１５　データ受信部

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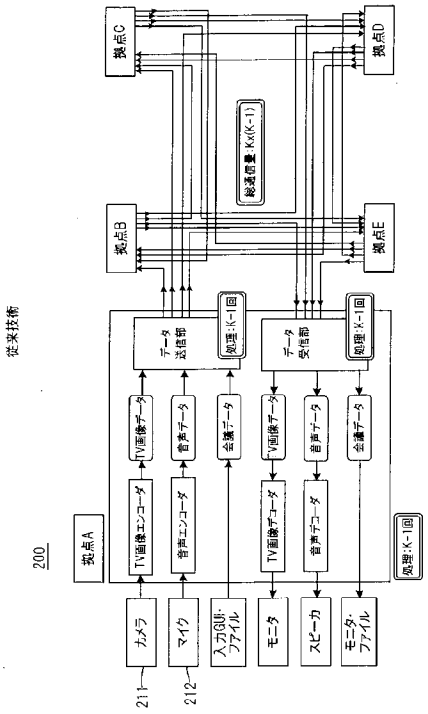
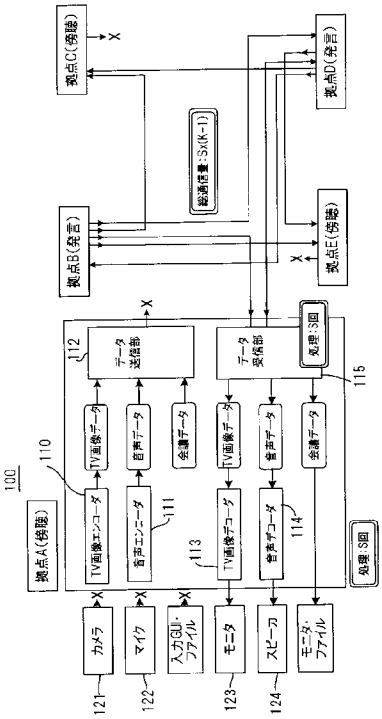
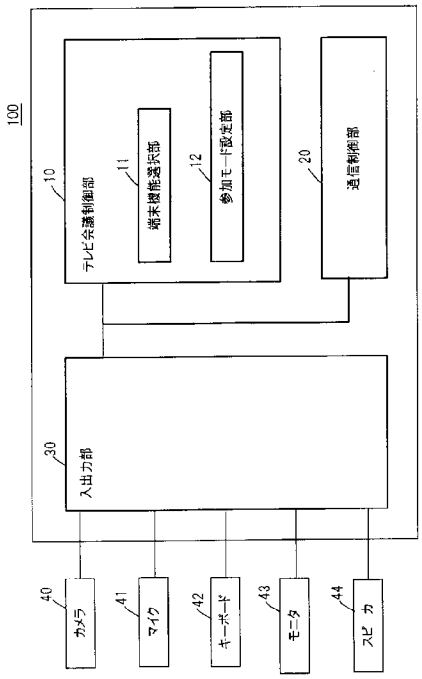
【図１】



【図２】



【図３】



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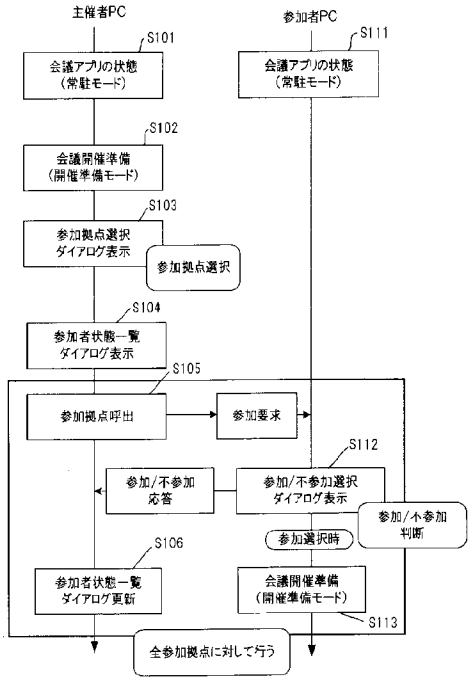

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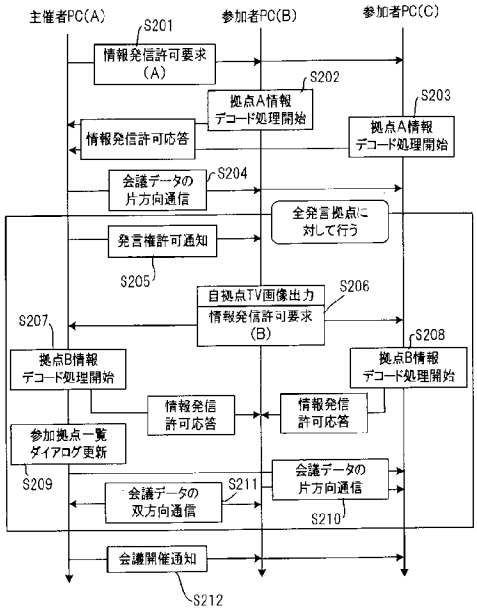
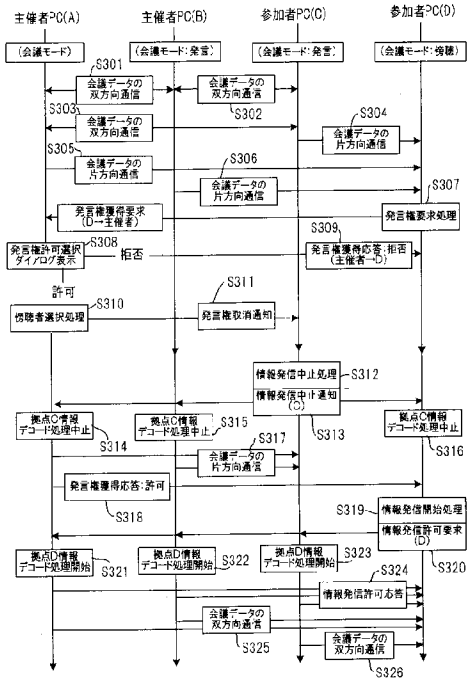
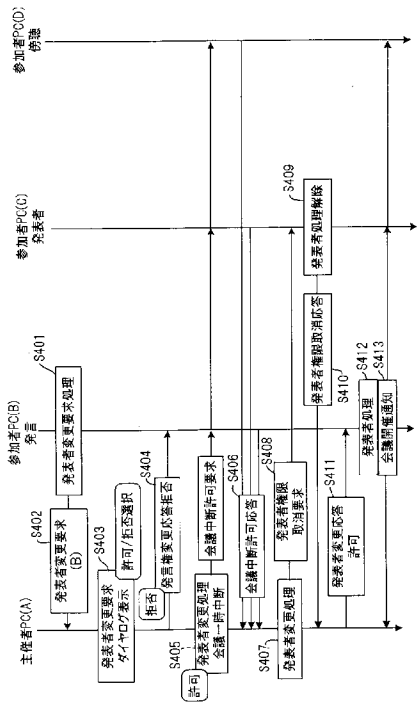
【図５】



【図６】



【図７】



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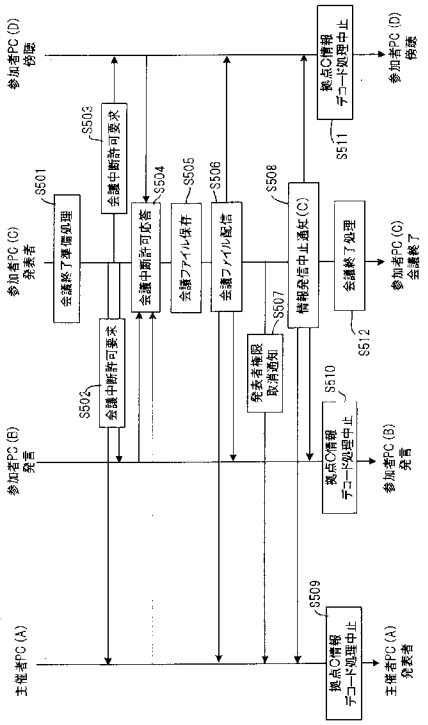

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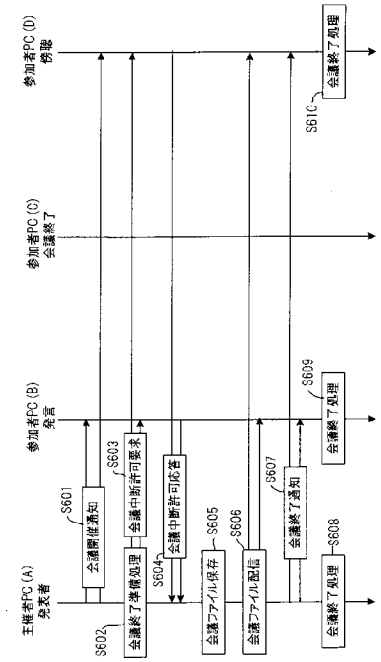
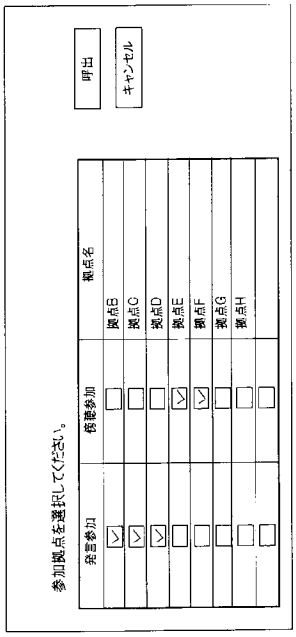
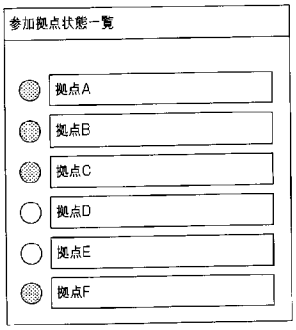
【図９】



【図１０】



【図１１】



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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/472,093
	Filing Date	September 10, 2021
	First Named Inventor	Arun Janakiraman
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	107477-1268807

U.S. PATENT APPLICATION PUBLICATIONS

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	20100257451	A1	Oct. 7, 2010	Halevi et al.	

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.

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.

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/472,093
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	First Named Inventor	Arun Janakiraman
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	107477-1268807

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	/ Carl Sanders /	Date (YYYY-MM-DD)	2021-10-05
Name/Print	Carl Sanders	Registration Number	57,203

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Application Number:	17472093
International Application Number:	
Confirmation Number:	8509
Title of Invention:	SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE
First Named Inventor/Applicant Name:	Arun JANAKIRAMAN
Customer Number:	176014
Filer:	Carl E. Sanders/Letitia Alexander
Filer Authorized By:	Carl E. Sanders
Attorney Docket Number:	107477-1268807
Receipt Date:	05-OCT-2021
Filing Date:	10-SEP-2021
Time Stamp:	09:53:01
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)	SupplementalIDS_1268807.pdf	124971 c3b0e46642e2ae6368b547cb3f904b493cd28319	no	2

Warnings:

Zoom Communications, Inc. v. Ricoh Company, Ltd.
IPR2026-00407 | EX2006 | Page 119 of 201

Information:	
This is not an USPTO supplied IDS fillable form	
Total Files Size (in bytes):	124971

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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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/472,093
	Filing Date	September 10, 2021
	First Named Inventor	Arun Janakiraman
	Art Unit	To Be Assigned
	Examiner Name	To Be Assigned
	Attorney Docket Number	107477-1268807

U.S. PATENTS

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	6243452	B1	June 5, 2001	O'Shaughnessey et al.	

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.

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.

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. 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	17/472,093
	Filing Date	September 10, 2021
	First Named Inventor	Arun Janakiraman
	Art Unit	To Be Assigned
	Examiner Name	To Be Assigned
	Attorney Docket Number	107477-1268807

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	/ Carl Sanders /	Date (YYYY-MM-DD)	2021-09-23
Name/Print	Carl Sanders	Registration Number	57,203

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.**

Electronic Acknowledgement Receipt

EFS ID:	43840853
Application Number:	17472093
International Application Number:	
Confirmation Number:	8509
Title of Invention:	SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE
First Named Inventor/Applicant Name:	Arun JANAKIRAMAN
Customer Number:	176014
Filer:	Carl E. Sanders/Letitia Alexander
Filer Authorized By:	Carl E. Sanders
Attorney Docket Number:	107477-1268807
Receipt Date:	23-SEP-2021
Filing Date:	10-SEP-2021
Time Stamp:	14:25:56
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)	IDS_Form_SB08_1268807.pdf	181647 42a21f36c264ce67b47d844188ef99a142353c7a	no	2

Warnings:

Zoom Communications, Inc. v. Ricoh Company, Ltd.
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Total Files Size (in bytes):	181647

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New Applications Under 35 U.S.C. 111

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

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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	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/472,093	09/10/2021		1820	107477-1268807	20	3

CONFIRMATION NO. 8509

FILING RECEIPT

176014
Zoom / Kilpatrick Townsend & Stockton LLP
Mailstop: IP Docketing - 22
1100 Peachtree Street
Suite 2800
Atlanta, GA 30309

OC000000128568164

Date Mailed: 09/23/2021

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)

Arun JANAKIRAMAN, San Francisco, CA;
Yeki GILES, Santa Clara, CA;
Ross MAYFIELD, Palo Alto, CA;
Shishir SHARMA, Ottawa, CANADA;

Applicant(s)

Zoom Video Communications, Inc., San Jose, CA

Assignment For Published Patent Application

Zoom Video Communications, Inc., San Jose, CA

Power of Attorney: The patent practitioners associated with Customer Number 176014

Domestic Applications for which benefit is claimed - None.
A proper domestic benefit claim must be provided in an Application Data Sheet in order to constitute a claim for domestic benefit. See 37 CFR 1.76 and 1.78.

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

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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: 09/21/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/472,093**

Projected Publication Date: 03/16/2023

Non-Publication Request: No

Early Publication Request: No

Title

SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

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

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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).

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Zoom Communications, Inc. v. Ricoh Company, Ltd.
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/472,093

APPLICATION AS FILED - PART I

	(Column 1)	(Column 2)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE($)	FEE($)		RATE($)	FEE($)
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)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
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)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
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.

DocuSign Envelope ID: 0AFBF9EE-D51A-4BF8-990A-60B51081DF19

Document Description: Power of Attorney

PTO/AIA/82B (07-13)
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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: 176014

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):

Zoom Video Communications, Inc.

☐ 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	Adam Avrunin	Date (Optional)	
Name	Adam Avrunin		
Title	Deputy General Counsel, IP and Litigation		

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.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

DocuSign Envelope ID: 4B24A0AD-FBBF-4C47-9517-98CD95E20E1C

PTO/AIA/01 (06-12)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [■] The attached application, or
- [ ] United States application or PCT international application number _____

filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Arun Janakiraman DocuSigned by: Arun Janakiraman 9E5E487CE587469... Date (Optional): September 10, 2021

Signature: /

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute 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.** KTS Ref. No.: 107477-1225516

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PTO/AIA/01 (06-12)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [■] The attached application, or
- [ ] United States application or PCT international application number _____

filed on _____.

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I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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LEGAL NAME OF INVENTOR

Inventor: Yeki Giles

Signature: / DocuSigned by: 1F293CA8C293451...

Date (Optional): September 10, 2021

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [■] The attached application, or
- [ ] United States application or PCT international application number _____

filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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LEGAL NAME OF INVENTOR

Inventor: Ross Mayfield DocuSigned by: Ross Mayfield 2AE7DE608E20451... Date (Optional): September 10, 2021

Signature: /

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As the below named inventor, I hereby declare that:

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LEGAL NAME OF INVENTOR

Inventor: Shishir Sharma DocuSigned by: Shishir Sharma B98ABE68E680431... Date (Optional): September 10, 2021

Signature: /

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Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE
First Named Inventor/Applicant Name:	Arun JANAKIRAMAN
Filer:	Carl E. Sanders/Letitia Alexander
Attorney Docket Number:	107477-1268807

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 APPLICATION FILING	1011	1	320	320
UTILITY SEARCH FEE	1111	1	700	700
UTILITY EXAMINATION FEE	1311	1	800	800
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1820**

Electronic Acknowledgement Receipt

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Application Number:	17472093
International Application Number:	
Confirmation Number:	8509
Title of Invention:	SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE
First Named Inventor/Applicant Name:	Arun JANAKIRAMAN
Customer Number:	176014
Filer:	Carl E. Sanders/Letitia Alexander
Filer Authorized By:	Carl E. Sanders
Attorney Docket Number:	107477-1268807
Receipt Date:	10-SEP-2021
Filing Date:	
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Payment Type	CARD
Payment was successfully received in RAM	$1820
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		CollaborateMode_FinalApplication_1268807.pdf	171101 216f60342756137379d883d951616a68a3397207	yes	39

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	33
	Claims	34	38
	Abstract	39	39

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2	Drawings-only black and white line drawings	CollaborateMode_FinalFigures_1268807.pdf	649344 c573eeccab66981f4750d415cab9919535f6383a	no	11

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3	Application Data Sheet	CollaborateMode_ApplicationDataSheet_1268807.pdf	1514129 3aee366c4ee7aa4947490dd4b2ed414cb07c3cee	no	9

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Warnings:					
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6	Oath or Declaration filed	Inventor_Arun_Janakiraman_Declaration_signed_1268807.pdf	459672 51fe2d8dfb814c2f79ff1e551c7d9ca398f04ee0	no	1
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7	Oath or Declaration filed	Inventor_Yeki_Giles_Declaration_signed_1268807.pdf	457706 6732cfa1ddb56722e385ff7c6044bc459ec875b5	no	1
Warnings:					
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8	Oath or Declaration filed	Inventor_Ross_Mayfield_Declaration_signed_1268807.pdf	458730 0783084cbc0509e8565640451b9672302836c1de	no	1
Warnings:					
Information:					
9	Oath or Declaration filed	Inventor_Shishir_Sharma_Declaration_signed_1268807.pdf	457042 2ae74ca644218fcf37e734d57c8bf1bdea972f8a	no	1
Warnings:					
Information:					
10	Fee Worksheet (SB06)	fee-info.pdf	43953 3ed859227141e6b6f18a98b4fe4bd5a8e809a1a0	no	2
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SHARING AND COLLABORATING ON CONTENT OBJECTS DURING A VIDEO CONFERENCE

FIELD

[0001] The present application generally relates to video conferencing and more particularly relates to sharing and collaborating on content objects during a video conference.

BACKGROUND

[0002] Videoconferencing has become a common way for people to meet as a group, but without being at the same physical location. Participants can be invited to a video conference meeting, join from their personal computers or telephones, and are able to see and hear each other and converse largely as they would during an in-person group meeting or event. The advent of user-friendly video conferencing software has enabled teams to work collaboratively despite being dispersed around the country or the world. It has also enabled families and friends to engage with each other in more meaningful ways, despite being physically distant from each other

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] The accompanying drawings, which are incorporated into and constitute a part of this specification, illustrate one or more certain examples and, together with the description of the example, serve to explain the principles and implementations of the certain examples.

[0004] Figures 1-2 show example systems for integrating software application content into video conferences;

[0005] Figures 3A-3B show an example system for sharing and collaborating on content objects during a video conference;

[0006] Figures 4A-4D show example graphical user interfaces for sharing and collaborating on content objects during a video conference;

[0007] Figures 5-6 show example methods for sharing and collaborating on content objects during a video conference; and

[0008] Figure 7 shows an example computing device suitable for use with example systems and methods for sharing and collaborating on content objects during a video conference.

DETAILED DESCRIPTION

[0009] Examples are described herein in the context of sharing and collaborating on content objects during a video conference. Those of ordinary skill in the art will realize that the following description is illustrative only and is not intended to be in any way limiting. Reference will now be made in detail to implementations of examples as illustrated in the accompanying drawings. The same reference indicators will be used throughout the drawings and the following description to refer to the same or like items.

[0010] In the interest of clarity, not all of the routine features of the examples described herein are shown and described. It will, of course, be appreciated that in the development of any such actual implementation, numerous implementation-specific decisions must be made in order to achieve the developer's specific goals, such as compliance with application- and business-related constraints, and that these specific goals will vary from one implementation to another and from one developer to another.

[0011] During a video conference, multiple participants may be discussing a common piece of content, such as a document, on which they are collaborating. Conventionally, a participant may share a view of the document by using a "share window" control which allows a view of a portion of the sharer's screen to be transmitted as a video feed to others, who can view whatever is shown in the shared window. However, the other participants are essentially watching a video of the sharer as they work on the document.

[0012] An example according to this disclosure allows a user to share a content object with other participants who can individually interact with the content object and, depending on the access level granted them, edit the content object contemporaneously with the rest of the participants in the video conference. To do so, the owner of the content object launches a corresponding software application to access the content object. The software application is launched through the video conferencing application and executes within an execution environment provided by

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the video conferencing application, such as a web application within an embedded web browser. The software application then becomes visible within the video conferencing application's graphical user interface ("GUI") and the owner can begin editing the content object.

[0013] To allow others in the video conference to access the content object, the owner can select an option to "share" or "collaborate" on the content object, which causes the video conferencing application to transmit the content object to the other participants in the video conference. To allow collaboration, the video conferencing application may transmit a uniform resource locator ("URL") to the other participants to allow them each to access the same copy of the content object, though a copy of the content object may be transmitted in some examples.

[0014] In addition to sending the content object, the owner also establishes access levels for each of the participants. These access levels may include read-only, comment-only, editor, or owner, and may be selected individually or *en masse* for all participants by the owner.

[0015] When the participant's video conferencing applications receive the content object, it attempts to execute the same software application that was launched by the owner. If the participant has the application installed, it is automatically launched and the content object is loaded. If the participant does not have the application installed, it is obtained from another source, such as the video conference provider, the application publisher, or the sharer of the content object, and it is executed within the video conferencing application's execution environment. Since the software application in this example is a web application, it may be seamlessly executed during the video conference, and once the video conference ends, it may be discarded or permanently installed, depending on the participant's ability to install software on their client device.

[0016] When the participant's execute the software application, the content object is loaded according to the access level granted by the owner. If a participant is unable to run the application, they may still be provided a view of the content object using conventional window sharing functionality, which grants them *de facto* read-only access. The participants are then able to interact with the content object using whatever tools are provided by the software application and, depending on their

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access levels, comment or edit the content object collaboratively with the other participants.

[0017] At the end of the video conference, or whenever the owner elects to stop sharing the content object, the owner's video conferencing application sends an indication to the other participants to terminate access to the content object, which may involve deleting the information needed to access the content object, such as the URL or any encryption keys. Thus, access to the content object can be bounded by the scope of the video conference and the owner is able to retain control over the content object.

[0018] Such techniques can enable individuals to more efficiently collaborate on content they are developing. By incorporating the software application and collaboration functionality into the video conferencing application, the functionality of each enhances the capabilities of the other, thus providing a more seamless collaboration experience. In addition, because the software applications execute within the context of the video conference application, it can be easier for a participant to gain access to the software application, rather than needing to manually install software and, potentially, involve a system administrator with appropriate access rights to the participant's client device. Thus, it can enable any participants to quickly join the collaborative session.

[0019] According to this disclosure, one example method for sharing and collaborating on content objects during a video conference includes joining, using a video conferencing application, a video conference hosted by a video conference provider, the video conference having one or more participants; executing, within an execution environment provided by the video conferencing application, a software application to access a content object; receiving a command to share the content object to the one or more participants; and providing the content object to the one or more participants via the video conference provider.

[0020] One example client device includes a communications interface; a non-transitory computer-readable medium; and one or more processors communicatively coupled to the communications interface and the non-transitory computer-readable medium, the one or more processors configured to execute processor-executable instructions to join, using a video conferencing application, a video conference hosted

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by a video conference provider, the video conference having one or more participants; execute, within an execution environment provided by the video conferencing application, a software application to access a content object; receive a command to share the content object to the one or more participants; and provide the content object to the one or more participants via the video conference provider.

[0021] One example non-transitory computer-readable medium includes processor-executable instructions configured to cause one or more processor to join, using a video conferencing application, a video conference hosted by a video conference provider, the video conference having one or more participants; execute, within an execution environment provided by the video conferencing application, a software application to access a content object; receive a command to share the content object to the one or more participants; and provide the content object to the one or more participants via the video conference provider.

[0022] These illustrative examples are given to introduce the reader to the general subject matter discussed herein and the disclosure is not limited to these examples. The following sections describe various additional non-limiting examples and examples of sharing and collaborating on content objects during a video conference.

[0023] Referring now to Figure 1, Figure 1 shows an example system 100 that provides videoconferencing functionality to various client devices. The system 100 includes a video conference provider 110 that is connected to multiple communication networks 120, 130, through which various client devices 140-180 can participate in video conferences hosted by the video conference provider 110. For example, the video conference provider 120 can be located within a private network to provide video conferencing services to devices within the private network, or it can be connected to a public network, e.g., the internet, so it may be accessed by anyone. Some examples may even provide a hybrid model in which a video conference provider 120 may supply components to enable a private organization to host private internal video conferences or to connect its system to the video conference provider 120 over a public network.

[0024] The system optionally also includes one or more user identity providers, e.g., user identity provider 115, which can provide user identity services

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to users of the client devices 140-160 and may authenticate user identities of one or more users to the video conference provider 110. In this example, the user identity provider 115 is operated by a different entity than the video conference provider 110, though in some examples, they may be the same entity.

[0025] Video conference provider 110 allows clients to create videoconference meetings (or "meetings") and invite others to participate in those meetings as well as perform other related functionality, such as recording the meetings, generating transcripts from meeting audio, manage user functionality in the meetings, enable text messaging during the meetings, create and manage breakout rooms from the main meeting, etc. Figure 2, described below, provides a more detailed description of the architecture and functionality of the video conference provider 110.

[0026] Meetings in this example video conference provider 110 are provided in virtual "rooms" to which participants are connected. The room in this context is a construct provided by a server that provides a common point at which the various video and audio data is received before being multiplexed and provided to the various participants. While a "room" is the label for this concept in this disclosure, any suitable functionality that enables multiple participants to participate in a common videoconference may be used. Further, in some examples, and as alluded to above, a meeting may also have "breakout" rooms. Such breakout rooms may also be rooms that are associated with a "main" videoconference room. Thus, participants in the main videoconference room may exit the room into a breakout room, e.g., to discuss a particular topic, before returning to the main room. The breakout rooms in this example are discrete meetings that are associated with the meeting in the main room. However, to join a breakout room, a participant must first enter the main room. A room may have any number of associated breakout rooms according to various examples.

[0027] To create a meeting with the video conference provider 110, a user may contact the video conference provider 110 using a client device 140-180 and select an option to create a new meeting. Such an option may be provided in a webpage accessed by a client device 140-160 or client application executed by a client device 140-160. For telephony devices, the user may be presented with an audio menu that they may navigate by pressing numeric buttons on their telephony

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device. To create the meeting, the video conference provider 110 may prompt the user for certain information, such as a date, time, and duration for the meeting, a number of participants, a type of encryption to use, whether the meeting is confidential or open to the public, etc. After receiving the various meeting settings, the video conference provider may create a record for the meeting and generate a meeting identifier and, in some examples, a corresponding meeting password or passcode (or other authentication information), all of which meeting information is provided to the meeting host.

[0028] After receiving the meeting information, the user may distribute the meeting information to one or more users to invite them to the meeting. To begin the meeting at the scheduled time (or immediately, if the meeting was set for an immediate start), the host provides the meeting identifier and, if applicable, corresponding authentication information (e.g., a password or passcode). The video conference system then initiates the meeting and may admit users to the meeting. Depending on the options set for the meeting, the users may be admitted immediately upon providing the appropriate meeting identifier (and authentication information, as appropriate), even if the host has not yet arrived, or the users may be presented with information indicating the that meeting has not yet started or the host may be required to specifically admit one or more of the users.

[0029] During the meeting, the participants may employ their client devices 140-180 to capture audio or video information and stream that information to the video conference provider 110. They also receive audio or video information from the video conference provider 210, which is displayed by the respective client device 140 to enable the various users to participate in the meeting.

[0030] At the end of the meeting, the host may select an option to terminate the meeting, or it may terminate automatically at a scheduled end time or after a predetermined duration. When the meeting terminates, the various participants are disconnected from the meeting and they will no longer receive audio or video streams for the meeting (and will stop transmitting audio or video streams). The video conference provider 110 may also invalidate the meeting information, such as the meeting identifier or password/passcode.

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[0031] To provide such functionality, one or more client devices 140-180 may communicate with the video conference provider 110 using one or more communication networks, such as network 120 or the public switched telephone network ("PSTN") 130. The client devices 140-180 may be any suitable computing or communications device that have audio or video capability. For example, client devices 140-160 may be conventional computing devices, such as desktop or laptop computers having processors and computer-readable media, connected to the video conference provider 110 using the internet or other suitable computer network. Suitable networks include the internet, any local area network ("LAN"), metro area network ("MAN"), wide area network ("WAN"), cellular network (e.g., 3G, 4G, 4G LTE, 5G, etc.), or any combination of these. Other types of computing devices may be used instead or as well, such as tablets, smartphones, and dedicated video conferencing equipment. Each of these devices may provide both audio and video capabilities and may enable one or more users to participate in a video conference meeting hosted by the video conference provider 110.

[0032] In addition to the computing devices discussed above, client devices 140-180 may also include one or more telephony devices, such as cellular telephones (e.g., cellular telephone 170), internet protocol ("IP") phones (e.g., telephone 180), or conventional telephones. Such telephony devices may allow a user to make conventional telephone calls to other telephony devices using the PSTN, including the video conference provider 110. It should be appreciated that certain computing devices may also provide telephony functionality and may operate as telephony devices. For example, smartphones typically provide cellular telephone capabilities and thus may operate as telephony devices in the example system 100 shown in Figure 1. In addition, conventional computing devices may execute software to enable telephony functionality, which may allow the user to make and receive phone calls, e.g., using a headset and microphone. Such software may communicate with a PSTN gateway to route the call from a computer network to the PSTN. Thus, telephony devices encompass any devices that can make conventional telephone calls and is not limited solely to dedicated telephony devices like conventional telephones.

[0033] Referring again to client devices 140-160, these devices 140-160 contact the video conference provider 110 using network 120 and may provide

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information to the video conference provider 110 to access functionality provided by the video conference provider 110, such as access to create new meetings or join existing meetings. To do so, the client devices 140-160 may provide user identification information, meeting identifiers, meeting passwords or passcodes, etc. In examples that employ a user identity provider 115, a client device, e.g., client devices 140-160, may operate in conjunction with a user identity provider 115 to provide user identification information or other user information to the video conference provider 110.

[0034] A user identity provider 115 may be any entity trusted by the video conference provider 110 that can help identify a user to the video conference provider 110. For example, a trusted entity may be a server operated by a business or other organization and with whom the user has established their identity, such as an employer or trusted third-party. The user may sign into the user identity provider 115, such as by providing a username and password, to access their identity at the user identity provider 115. The identity, in this sense, is information established and maintained at the user identity provider 115 that can be used to identify a particular user, irrespective of the client device they may be using. An example of an identity may be an email account established at the user identity provider 110 by the user and secured by a password or additional security features, such as biometric authentication, two-factor authentication, etc. However, identities may be distinct from functionality such as email. For example, a health care provider may establish identities for its patients. And while such identities may have associated email accounts, the identity is distinct from those email accounts. Thus, a user's "identity" relates to a secure, verified set of information that is tied to a particular user and should be accessible only by that user. By accessing the identity, the associated user may then verify themselves to other computing devices or services, such as the video conference provider 110.

[0035] When the user accesses the video conference provider 110 using a client device, the video conference provider 110 communicates with the user identity provider 115 using information provided by the user to verify the user's identity. For example, the user may provide a username or cryptographic signature associated with a user identity provider 115. The user identity provider 115 then either

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confirms the user's identity or denies the request. Based on this response, the video conference provider 110 either provides or denies access to its services, respectively.

[0036] For telephony devices, e.g., client devices 170-180, the user may place a telephone call to the video conference provider 110 to access video conference services. After the call is answered, the user may provide information regarding a video conference meeting, e.g., a meeting identifier ("ID"), a passcode or password, etc., to allow the telephony device to join the meeting and participate using audio devices of the telephony device, e.g., microphone(s) and speaker(s), even if video capabilities are not provided by the telephony device.

[0037] Because telephony devices typically have more limited functionality than conventional computing devices, they may be unable to provide certain information to the video conference provider 110. For example, telephony devices may be unable to provide user identification information to identify the telephony device or the user to the video conference provider 110. Thus, the video conference provider 110 may provide more limited functionality to such telephony devices. For example, the user may be permitted to join a meeting after providing meeting information, e.g., a meeting identifier and passcode, but they may be identified only as an anonymous participant in the meeting. This may restrict their ability to interact with the meetings in some examples, such as by limiting their ability to speak in the meeting, hear or view certain content shared during the meeting, or access other meeting functionality, such as joining breakout rooms or engaging in text chat with other participants in the meeting.

[0038] It should be appreciated that users may choose to participate in meetings anonymously and decline to provide user identification information to the video conference provider 110, even in cases where the user has an authenticated identity and employs a client device capable of identifying the user to the video conference provider 110. The video conference provider 110 may determine whether to allow such anonymous users to use services provided by the video conference provider 110. Anonymous users, regardless of the reason for anonymity, may be restricted as discussed above with respect to users employing telephony devices, and in some cases may be prevented from accessing certain meetings or other services, or may be entirely prevented from accessing the video conference provider 110.

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[0039] Referring again to video conference provider 110, in some examples, it may allow client devices 140-160 to encrypt their respective video and audio streams to help improve privacy in their meetings. Encryption may be provided between the client devices 140-160 and the video conference provider 110 or it may be provided in an end-to-end configuration where multimedia streams transmitted by the client devices 140-160 are not decrypted until they are received by another client device 140-160 participating in the meeting. Encryption may also be provided during only a portion of a communication, for example encryption may be used for otherwise unencrypted communications that cross international borders.

[0040] Client-to-server encryption may be used to secure the communications between the client devices 140-160 and the video conference provider 110, while allowing the video conference provider 110 to access the decrypted multimedia streams to perform certain processing, such as recording the meeting for the participants or generating transcripts of the meeting for the participants. End-to-end encryption may be used to keep the meeting entirely private to the participants without any worry about a video conference provider 110 having access to the substance of the meeting. Any suitable encryption methodology may be employed, including key-pair encryption of the streams. For example, to provide end-to-end encryption, the meeting host's client device may obtain public keys for each of the other client devices participating in the meeting and securely exchange a set of keys to encrypt and decrypt multimedia content transmitted during the meeting. Thus the client devices 140-160 may securely communicate with each other during the meeting. Further, in some examples, certain types of encryption may be limited by the types of devices participating in the meeting. For example, telephony devices may lack the ability to encrypt and decrypt multimedia streams. Thus, while encrypting the multimedia streams may be desirable in many instances, it is not required as it may prevent some users from participating in a meeting.

[0041] By using the example system shown in Figure 1, users can create and participate in meetings using their respective client devices 140-180 via the video conference provider 110. Further, such a system enables users to use a wide variety of different client devices 140-180 from traditional standards-based video

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conferencing hardware to dedicated video conferencing equipment to laptop or desktop computers to handheld devices to legacy telephony devices, etc.

[0042] Referring now to Figure 2, Figure 2 shows an example system 200 in which a video conference provider 210 provides videoconferencing functionality to various client devices 220-250. The client devices 220-250 include two conventional computing devices 220-230, dedicated equipment for a video conference room 240, and a telephony device 250. Each client device 220-250 communicates with the video conference provider 210 over a communications network, such as the internet for client devices 220-240 or the PSTN for client device 250, generally as described above with respect to Figure 1. The video conference provider 210 is also in communication with one or more user identity providers 215, which can authenticate various users to the video conference provider 210 generally as described above with respect to Figure 1.

[0043] In this example, the video conference provider 210 employs multiple different servers (or groups of servers) to provide different aspects of video conference functionality, thereby enabling the various client devices to create and participate in video conference meetings. The video conference provider 210 uses one or more real-time media servers 212, one or more network services servers 214, one or more video room gateways 216, and one or more telephony gateways 218. Each of these servers 212-218 is connected to one or more communications networks to enable them to collectively provide access to and participation in one or more video conference meetings to the client devices 220-250.

[0044] The real-time media servers 212 provide multiplexed multimedia streams to meeting participants, such as the client devices 220-250 shown in Figure 2. While video and audio streams typically originate at the respective client devices, they are transmitted from the client devices 220-250 to the video conference provider 210 via one or more networks where they are received by the real-time media servers 212. The real-time media servers 212 determine which protocol is optimal based on, for example, proxy settings and the presence of firewalls, etc. For example, the client device might select among UDP, TCP, TLS, or HTTPS for audio and video and UDP for content screen sharing.

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[0045] The real-time media servers 212 then multiplex the various video and audio streams based on the target client device and communicate multiplexed streams to each client device. For example, the real-time media servers 212 receive audio and video streams from client devices 220-240 and only an audio stream from client device 250. The real-time media servers 212 then multiplex the streams received from devices 230-250 and provide the multiplexed streams to client device 220. The real-time media servers 212 are adaptive, for example, reacting to real-time network and client changes, in how they provide these streams. For example, the real-time media servers 212 may monitor parameters such as a client's bandwidth CPU usage, memory and network I/O as well as network parameters such as packet loss, latency and jitter to determine how to modify the way in which streams are provided.

[0046] The client device 220 receives the stream, performs any decryption, decoding, and demultiplexing on the received streams, and then outputs the audio and video using the client device's video and audio devices. In this example, the real-time media servers do not multiplex client device 220's own video and audio feeds when transmitting streams to it. Instead each client device 220-250 only receives multimedia streams from other client devices 220-250. For telephony devices that lack video capabilities, e.g., client device 250, the real-time media servers 212 only deliver multiplex audio streams. The client device 220 may receive multiple streams for a particular communication, allowing the client device 220 to switch between streams to provide a higher quality of service.

[0047] In addition to multiplexing multimedia streams, the real-time media servers 212 may also decrypt incoming multimedia stream in some examples. As discussed above, multimedia streams may be encrypted between the client devices 220-250 and the video conference system 210. In some such examples, the real-time media servers 212 may decrypt incoming multimedia streams, multiplex the multimedia streams appropriately for the various clients, and encrypt the multiplexed streams for transmission.

[0048] In some examples, to provide multiplexed streams, the video conference provider 210 may receive multimedia streams from the various participants and publish those streams to the various participants to subscribe to

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and receive. Thus, the video conference provider 210 notifies a client device, e.g., client device 220, about various multimedia streams available from the other client devices 230-250, and the client device 220 can select which multimedia stream(s) to subscribe to and receive. In some examples, the video conference provider 210 may provide to each client device the available streams from the other client devices, but from the respective client device itself, though in other examples it may provide all available streams to all available client devices. Using such a multiplexing technique, the video conference provider 210 may enable multiple different streams of varying quality, thereby allowing client devices to change streams in real-time as needed, e.g., based on network bandwidth, latency, etc.

[0049] As mentioned above with respect to Figure 1, the video conference provider 210 may provide certain functionality with respect to unencrypted multimedia streams at a user's request. For example, the meeting host may be able to request that the meeting be recorded or that a transcript of the audio streams be prepared, which may then be performed by the real-time media servers 212 using the decrypted multimedia streams, or the recording or transcription functionality may be off-loaded to a dedicated server (or servers), e.g., cloud recording servers, for recording the audio and video streams. In some examples, the video conference provider 210 may allow a meeting participant to notify it of inappropriate behavior or content in a meeting. Such a notification may trigger the real-time media servers to 212 record a portion of the meeting for review by the video conference provider 210. Still other functionality may be implemented to take actions based on the decrypted multimedia streams at the video conference provider, such as monitoring video or audio quality, adjusting or changing media encoding mechanisms, etc.

[0050] It should be appreciated that multiple real-time media servers 212 may be involved in communicating data for a single meeting and multimedia streams may be routed through multiple different real-time media servers 212. In addition, the various real-time media servers 212 may not be co-located, but instead may be located at multiple different geographic locations, which may enable high-quality communications between clients that are dispersed over wide geographic areas, such as being located in different countries or on different continents. Further, in some examples, one or more of these servers may be co-located on a

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client's premises, e.g., at a business or other organization. For example, different geographic regions may each have one or more real-time media servers 212 to enable client devices in the same geographic region to have a high-quality connection into the video conference provider 210 via local servers 212 to send and receive multimedia streams, rather than connecting to a real-time media server located in a different country or on a different continent. The local real-time media servers 212 may then communicate with physically distant servers using high-speed network infrastructure, e.g., internet backbone network(s), that otherwise might not be directly available to client devices 220-250 themselves. Thus, routing multimedia streams may be distributed throughout the video conference system 210 and across many different real-time media servers 212.

[0051] Turning to the network services servers 214, these servers 214 provide administrative functionality to enable client devices to create or participate in meetings, send meeting invitations, create or manage user accounts or subscriptions, and other related functionality. Further, these servers may be configured to perform different functionalities or to operate at different levels of a hierarchy, e.g., for specific regions or localities, to manage portions of the video conference provider under a supervisory set of servers. When a client device 220-250 accesses the video conference provider 210, it will typically communicate with one or more network services servers 214 to access their account or to participate in a meeting.

[0052] When a client device 220-250 first contacts the video conference provider 210 in this example, it is routed to a network services server 214. The client device may then provide access credentials for a user, e.g., a username and password or single sign-on credentials, to gain authenticated access to the video conference provider 210. This process may involve the network services servers 214 contacting a user identity provider 215 to verify the provided credentials. Once the user's credentials have been accepted, the client device 214 may perform administrative functionality, like updating user account information, if the user has an identity with the video conference provider 210, or scheduling a new meeting, by interacting with the network services servers 214.

[0053] In some examples, users may access the video conference provider 210 anonymously. When communicating anonymously, a client device 220-250 may

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communicate with one or more network services servers 214 but only provide information to create or join a meeting, depending on what features the video conference provider allows for anonymous users. For example, an anonymous user may access the video conference provider using client 220 and provide a meeting ID and passcode. The network services server 214 may use the meeting ID to identify an upcoming or on-going meeting and verify the passcode is correct for the meeting ID. After doing so, the network services server(s) 214 may then communicate information to the client device 220 to enable the client device 220 to join the meeting and communicate with appropriate real-time media servers 212.

[0054] In cases where a user wishes to schedule a meeting, the user (anonymous or authenticated) may select an option to schedule a new meeting and may then select various meeting options, such as the date and time for the meeting, the duration for the meeting, a type of encryption to be used, one or more users to invite, privacy controls (e.g., not allowing anonymous users, preventing screen sharing, manually authorize admission to the meeting, etc.), meeting recording options, etc. The network services servers 214 may then create and store a meeting record for the scheduled meeting. When the scheduled meeting time arrives (or within a threshold period of time in advance), the network services server(s) 214 may accept requests to join the meeting from various users.

[0055] To handle requests to join a meeting, the network services server(s) 214 may receive meeting information, such as a meeting ID and passcode, from one or more client devices 220-250. The network services server(s) 214 locate a meeting record corresponding to the provided meeting ID and then confirm whether the scheduled start time for the meeting has arrived, whether the meeting host has started the meeting, and whether the passcode matches the passcode in the meeting record. If the request is made by the host, the network services server(s) 214 activates the meeting and connects the host to a real-time media server 212 to enable the host to begin sending and receiving multimedia streams.

[0056] Once the host has started the meeting, subsequent users requesting access will be admitted to the meeting if the meeting record is located and the passcode matches the passcode supplied by the requesting client device 220-250. In some examples additional access controls may be used as well. But if the network

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services server(s) 214 determines to admit the requesting client device 220-250 to the meeting, the network services server 214 identifies a real-time media server 212 to handle multimedia streams to and from the requesting client device 220-250 and provides information to the client device 220-250 to connect to the identified real-time media server 212. Additional client devices 220-250 may be added to the meeting as they request access through the network services server(s) 214.

[0057] After joining a meeting, client devices will send and receive multimedia streams via the real-time media servers 212, but they may also communicate with the network services servers 214 as needed during meetings. For example, if the meeting host leaves the meeting, the network services server(s) 214 may appoint another user as the new meeting host and assign host administrative privileges to that user. Hosts may have administrative privileges to allow them to manage their meetings, such as by enabling or disabling screen sharing, muting or removing users from the meeting, creating sub-meetings or "break-out" rooms, recording meetings, etc. Such functionality may be managed by the network services server(s) 214.

[0058] For example, if a host wishes to remove a user from a meeting, they may identify the user and issue a command through a user interface on their client device. The command may be sent to a network services server 214, which may then disconnect the identified user from the corresponding real-time media server 212. If the host wishes to create a break-out room for one or more meeting participants to join, such a command may also be handled by a network services server 214, which may create a new meeting record corresponding to the break-out room and then connect one or more meeting participants to the break-out room similarly to how it originally admitted the participants to the meeting itself.

[0059] In addition to creating and administering on-going meetings, the network services server(s) 214 may also be responsible for closing and tearing-down meetings once they have completed. For example, the meeting host may issue a command to end an on-going meeting, which is sent to a network services server 214. The network services server 214 may then remove any remaining participants from the meeting, communicate with one or more real time media servers 212 to stop streaming audio and video for the meeting, and deactivate, e.g., by deleting a

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corresponding passcode for the meeting from the meeting record, or delete the meeting record(s) corresponding to the meeting. Thus, if a user later attempts to access the meeting, the network services server(s) 214 may deny the request.

[0060] Depending on the functionality provided by the video conference provider, the network services server(s) 214 may provide additional functionality, such as by providing private meeting capabilities for organizations, special types of meetings (e.g., webinars), etc. Such functionality may be provided according to various examples of video conferencing providers according to this description.

[0061] Referring now to the video room gateway servers 216, these servers 216 provide an interface between dedicated video conferencing hardware, such as may be used in dedicated video conferencing rooms. Such video conferencing hardware may include one or more cameras and microphones and a computing device designed to receive video and audio streams from each of the cameras and microphones and connect with the video conference provider 210. For example, the video conferencing hardware may be provided by the video conference provider to one or more of its subscribers, which may provide access credentials to the video conferencing hardware to use to connect to the video conference provider 210.

[0062] The video room gateway servers 216 provide specialized authentication and communication with the dedicated video conferencing hardware that may not be available to other client devices 220-230, 250. For example, the video conferencing hardware may register with the video conference provider 210 when it is first installed and the video room gateway servers 216 may authenticate the video conferencing hardware using such registration as well as information provided to the video room gateway server(s) 216 when dedicated video conferencing hardware connects to it, such as device ID information, subscriber information, hardware capabilities, hardware version information etc. Upon receiving such information and authenticating the dedicated video conferencing hardware, the video room gateway server(s) 216 may interact with the network services servers 214 and real-time media servers 212 to allow the video conferencing hardware to create or join meetings hosted by the video conference provider 210.

[0063] Referring now to the telephony gateway servers 218, these servers 218 enable and facilitate telephony devices' participation in meetings hosed by the video

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conference provider 210. Because telephony devices communicate using the PSTN and not using computer networking protocols, such as TCP/IP, the telephony gateway servers 218 act as an interface that converts between the PSTN and the networking system used by the video conference provider 210.

[0064] For example, if a user uses a telephony device to connect to a meeting, they may dial a phone number corresponding to one of the video conference provider's telephony gateway servers 218. The telephony gateway server 218 will answer the call and generate audio messages requesting information from the user, such as a meeting ID and passcode. The user may enter such information using buttons on the telephony device, e.g., by sending dual-tone multi-frequency ("DTMF") audio signals to the telephony gateway server 218. The telephony gateway server 218 determines the numbers or letters entered by the user and provides the meeting ID and passcode information to the network services servers 214, along with a request to join or start the meeting, generally as described above. Once the telephony client device 250 has been accepted into a meeting, the telephony gateway server 218 is instead joined to the meeting on the telephony device's behalf.

[0065] After joining the meeting, the telephony gateway server 218 receives an audio stream from the telephony device and provides it to the corresponding real-time media server 212, and receives audio streams from the real-time media server 212, decodes them, and provides the decoded audio to the telephony device. Thus, the telephony gateway servers 218 operate essentially as client devices, while the telephony device operates largely as an input/output device, e.g., a microphone and speaker, for the corresponding telephony gateway server 218, thereby enabling the user of the telephony device to participate in the meeting despite not using a computing device or video.

[0066] It should be appreciated that the components of the video conference provider 210 discussed above are merely examples of such devices and an example architecture. Some video conference providers may provide more or less functionality than described above and may not separate functionality into different types of servers as discussed above. Instead, any suitable servers and network architectures may be used according to different examples.

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[0067] Referring now to Figures 3A-3B, Figure 3A shows an example system 300 for sharing and collaborating on content objects during a video conference. In this example system 300, a number of client device 330, 340a-*n* are connected to a video conference provider 310 via a communications network 320. In this example, the communications network 320 is the internet, however, any suitable communications network or combination of communications network may be employed, including LANs (e.g., within a corporate private LAN), WANs, etc.

[0068] Referring now to Figure 3B, each client device, e.g., client device 330, executes a video conferencing application 350, which connects to the video conference provider 310 and joins a meeting. During the meeting, the various participants (using video conference software at their respective client devices 330, 340a-*n*) are able to interact with each other to conduct the meeting, such as by viewing video feeds and hearing audio feeds from other participants, and by capturing and transmitting video and audio of themselves. However, during the meeting, a participant using client device 330 executes a software application 360 to access and collaborate on content with the other participants in the video conference. To do so, the participant selects an option in the video conferencing application 350 to launch a desired application, which is then executed within the context of an execution environment 370 provided by the video conferencing application 350, such as within an embedded web browser. For example an application may be hosted at a URL corresponding to the shared content object and by accessing the content via a corresponding web application.

[0069] Depending on the content to be provided, the user of client device 330 may execute any suitable software application. For example, to present a document, such as a word processing document, spreadsheet, presentation, etc., the user may execute a corresponding application to access, view, and edit the desired document. Other types of content may be presented using corresponding applications as well, such as videos, images, games, simulations, software development tools, visualization tools, etc. The software application 360 may access content objects stored within a local data store 332 or it may access content objects located remotely, such as on a cloud server 315 in a cloud computing environment.

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[0070] To share and collaborate on the content from the software application, the user may select an option in the application or the video conferencing application to share the content object with the other participants. After selecting the option to share, the software application 360 sends an indication to the video conferencing application 350, e.g., via an application programming interface ("API") 352, to share the content object. The video conferencing application 350 obtains the content object from the software application and provides it to the video conference provider 310, which provides it to the other participants, which may be done according to their respective capabilities. For example, the video conference provider 310 may not provide the content object to a participant who has dialed into the video conference using a telephone. Or if the participant has joined via dedicated video conferencing equipment, e.g., dedicated equipment for a video conference room 240, that may not be capable of receiving or accessing the content object, the video conference provider 310 may withhold the content object from such devices.

[0071] For client devices 340a-n that receive the content object, each may attempt to execute a software application associated with the content object, e.g., a document editor, a video editor, a presentation application, etc. This may be performed based on information sent with the content object, or based on information contained within the content object itself, e.g., based on a header in the content object, a file extension of the content object, etc. If the client device 340a-*n* has the corresponding application installed, it may launch the application within a corresponding execution environment provided by its copy of the video conferencing application. However, if the recipient client device 340a-n lacks the software application, it may send an indication to the video conference provider 310 that it needs a copy of the software application 360. In response, the video conference provider 310 may push a copy of the software application 360 to the client device 340a-n, or it may direct the client device to another computing device from which to obtain the software application, which may be client device 330 or a cloud server, e.g., cloud server 315.

[0072] In this example, the video conferencing application 350 employs an embedded web browser to provide an execution environment, thus, client devices 340a-n that need to obtain the application, may receive a web application from a

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remote computing device and run the web application within the web browser. Such a technique may allow a participant to view and interact with content during the video conference using functionality that otherwise is not available on their client device and which might otherwise involve assistance from a system administrator. Further, when the user exits the video conferencing application 350, leaves the video conference, or the owner of the content object stops sharing the content object, the software application 360 may exit and in some examples be removed from the client device, which may allow the owner to maintain control over the content object after the video conference has ended. Though in some examples, access to the content object may persist until the owner changes access settings for the content object.

[0073] In addition to sharing the content object, the client device 330 may also establish access levels to the content object for the participants in the video conference. For example, when the user selects an option to share the content object, they may be presented with options to assign access levels to other participants. Thus, when the respective participant accesses the shared content object, their ability to interact with the content object may be limited to certain functionality.

[0074] Once a participant receives a content object and launches the corresponding software application 360, they are presented with a GUI including a view of the content object. They may then interact with the content object independently of the other participants in the video conference. Thus, they may interact with the content object during the video conference and collaborate with other participants, without a single participant controlling the view and interaction with the content object. This may allow the participants to more easily and intuitively collaborate on the content object during the video conference.

[0075] If a participant is unable to obtain the corresponding application, e.g., they are using a client device without user input devices, such as in a dedicated video conferencing room, or that lacks the capability to run the software application 360, the video conferencing application 350 may send an indication to the client device 330 sharing the content object that they are unable to access the content object. The client device 330 may then generate and transmit an additional multimedia stream sharing the client device's view of the content object. This may

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allow the participant to view the content object, but without any ability to interact with it.

[0076] Once the participants have completed the video conference, or have finished collaborating on the content object, the participant sharing the content object can close their software application. In some examples, this may terminate access to the content object to the other participants. In other examples, however, the other participants may retain access to the content object and may continue to interact with it, including after the video conference concludes in some examples.

[0077] Referring now to Figures 4A-4D, Figures 4A-4D illustrate an example GUI 400 for sharing and collaborating on content objects during a video conference. Figure 4A shows the GUI 400 for a video conferencing application 350 while no content object is being shared. In this example, the GUI 400 includes a speaker view window 402 that presents the current speaker in the video conference. Above the speaker view window 402 are smaller participant windows 404, which allow the participant to view some of the other participants in the video conference, as well as controls ("<" and ">") to let the host scroll to view other participants in the video conference. Both the speaker view window 402 and the participant windows are overlaid on a background 406, which is a solid black background in the GUI 400.

[0078] Beneath the speaker view window 402 are a number of interactive elements 410-428 to allow the participant to interact with the video conference software. Controls 410-412 may allow the participant to toggle on or off audio or video streams captured by a microphone or camera connected to the client device. Control 420 allows the participant to view any other participants in the video conference with the participant, while control 422 allows the participant to send text messages to other participants, whether to specific participants or to the entire meeting. Control 424 allows the participant to share content from their client device. Control 426 allows the participant toggle recording of the meeting, and control 428 allows the user to select an option to join a breakout room. Finally, control 430 allows the participant to launch an application, which may share content with the other participants in the video conference as described within this disclosure.

[0079] Referring now to Figure 4B, the user of client device 330 has launched a software application 360 by selecting control 430 and identifying the desired

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application. The user has then selected a content object to open and share with the participants in the video conference, but has only initially opened it privately within its own GUI 440. This configuration allows a user to work within an application during a video conference, while retaining the default features of the GUI 400, such as the speaker view 402. However, the GUI 440 also provides the user with a "collaborate" option 442 to share a content object accessed by the software application with other participants in the video conference.

[0080] Referring now to Figure 4C, after selecting the "collaborate" option 442, the speaker window 402 is replaced by GUI 446 with the shared content object, and the user is presented with a menu 450 within which the user may identify participants and establish access levels for each. An additional GUI 444 is presented that includes information associated with the shared content object, but that is not shared with the other participants. For example the content object may include a presentation having a number of slides as well as talking points or notes for each slide. Depending on the participants' access levels, they may only be able to view the presentation slides, but not the talking points. However, in some examples, a separate GUI 444 with private information may not be displayed.

[0081] The menu 450 presents available access levels, which in this example include "owner," "editor," "commenter," and "read-only." The "owner" access level provides unfettered access to all aspects of the content and includes the ability to delete the content object, change any aspect of the content object, change access levels for other users, etc. The "editor" access level allows a user to edit the contents of the content object, but not to change access levels or delete the content object. The "commenter" access level allows a user to insert comments into the content object, but no other ability to edit the content object. The "read-only" access level only allows a user to view some (or all) of the contents within the content object. Still other or different access levels may be used for various types of content objects.

[0082] In this example, the user is presented with the menu 450 because it is the first time the content object is shared with the participants in the video conference. If the other participants had previously obtained access to the content object, the menu 450 may not be shown, or may only include participants that had not previously been granted access to the content object.

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[0083] While in this example, the sharing user is presented with a menu 450, in some examples, access levels may be established based on participants' roles in the meeting without the sharing user's intervention. For example, the meeting host (or co-host) may be granted "owner" or "editor" access, while ordinary participants may only be granted "commenter" or "read-only access." To establish permissions based on participant roles, the sharing user's video conferencing application 350 may obtain the role information for each participant from the video conference provider 310 and establish a corresponding access level for each participant for the content object.

[0084] Referring now to Figure 4D, Figure 4D shows the GUI 400 once the content object has been shared with the other participants and they are collaboratively interacting with the content object. At this time, the menu 450 has closed and the GUI 446 with the content object is displayed and usable by the user. Further, at their respective client devices, the participants interact with the content object according to their respective access levels. Further, the sharing user can also interact with GUI 444 to edit the privately accessible information associated with the shared content object.

[0085] At the end of the video conference, or when the participants finish collaborating on the shared content object, the GUI reverts to the configuration shown in Figure 4A or in Figure 4B, depending on whether the user closes the application or leaves it open. The access levels assigned to the various participants, in this example, persist and each of the participants is able to later access the shared content object and continue to interact with it according to the respective access level. However, in some examples, access levels may be assigned that only persist for the duration of the collaboration session and are reverted to previously existing access levels, if any, or access may be entirely revoked.

[0086] Referring now to Figure 5, Figure 5 shows an example method for sharing and collaborating on content objects during a video conference. This example will be discussed with respect to the system shown in Figures 3A-3B and the GUIs shown in Figures 4A-4D, but any suitable systems or GUIs may be employed according to different examples.

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[0087] At block 510, a user uses a video conferencing application 360 running on their client device 330 to join a video conference hosted by a video conference provider 310, generally as described above with respect to Figures 1 and 2.

[0088] At block 520, the user executes a software application 360 within an execution environment 370 provided by the video conferencing application 350 to access a content object. As discussed above, the video conferencing application 350 may provide an execution environment 370, such as an embedded web browser, a java virtual machine, etc., to allow software applications to execute within the context of the video conferencing application 350. In this example, the software application 360 has been previously installed on the user's client device 330, though in some examples, the user may install the software application 360 during the process of accessing the content object, or may select an option to install the software application 360 and subsequently execute it within the execution environment 370.

[0089] At block 530, the video conferencing application 350 receives a command to share the content object to one or more participants in the video conference. As discussed above with respect to Figure 4B, the user may select a "collaborate" option 442 to share a content object with the other participants. In this example, the "collaborate" option is provided by the software application 360 and the video conferencing application 350 receives the command to share the content object from the software application 360, though in some examples, the "collaborate" option is provided by the video conferencing application 350, which receives the command from the user, and may provide an indication to the software application 360 that the content object will be shared. Though in some examples, it may not notify the software application 360.

[0090] In some examples, the command may indicate one or more participants to share the content object with. For example, the user may be presented with an option to identify access levels for each participant, as was described above with respect to Figure 4C and will be described below with respect to block 540. One of the access levels may indicate "do not share," which indicates that the content object will not be shared with the corresponding participant. In some examples, whether content is shared with a particular participant may be mediated by the video conferencing application 350, which may only provide the

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content object to those identified as having access to it, though in some examples, it provides the content object to each participant, and allows the application to mediate access according to assigned access levels.

[0091] At block 540, the video conferencing application 350 receives access levels for one or more participants. In this example, the software application 360 employs the video conferencing application 350 via an API 352 to present a GUI element, e.g., menu 450, to obtain access level information for one or more of the participants. As discussed above, the access levels may indicate which actions a user may take with respect to the content object. Further, in some examples as discussed above, a participant may be denied access to the content object, such as by selecting a "no access" option corresponding to the participant.

[0092] It should be appreciated that in some examples, the video conferencing application 350 may not receive any information relating to access levels. For example, access levels may have already been established, or access levels may be entirely managed within the software application 360 without involving the video conferencing application 350. For example, one or more software applications 360 may be executed within the execution environment outside the context of a video conference.

[0093] At block 550, the video conferencing application 350 provides the content object to the one or more participants. Depending on the type of content object to be shared, the video conference application 350 may provide the content object in different ways. In some examples, the content object may be accessible via a URL, thus the video conferencing application 350 receives the URL from the software application 360 and provides it to the video conference provider 310 to distribute to the one or more participants. However, in some examples, the content object may be a file, in which case, the video conferencing application 350 transmits the file to the video conference provider 310, which distributes it to the one or more participants.

[0094] In some examples, a participant may not be able to access or execute a copy of the software application 360 to access the shared content object. To handle this, the video conference provider 310 may provide an indication to the video conferencing application 350 executing on the user's client device 330. In response,

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the video conferencing application 350 may generate a further multimedia stream sharing the graphical output of the software application 360 to the participant who is unable to access or execute the copy of the software application. To do so, the video conferencing application 350 may provide the multimedia stream to the video conference provider 310 and identify the participant to receive the multimedia stream. The video conference provider 310 may then distribute the multimedia stream to only the identified participant(s).

[0095] At block 560, the video conferencing application 350 receives a request for the software application from at least one participant. As discussed above, a participant may not have the software application installed on their client device. Thus, their client device may transmit a request for the software application. Such a request may be sent to different locations, but if it is received by the user's client device 330, the video conferencing application 350 may provide a copy of the software application 360 to the requesting client device, or it may provide a location, e.g., a URL, identifying where to obtain the software application.

[0096] At block 570, the video conferencing application 350 displays the shared content object during the video conference. As discussed above with respect to Figure 4D, the video conferencing application 350 displays a GUI 446 that includes the shared content object, within which the user may interact with the shared content object and also see actions taken by the other participants. In this example, the video conferencing application 350 also displays a GUI 444 that is only visible to the user to edit one or more content objects associated with the shared content object that are not shared with the other participants. And while the software application 360 is responsible for the display of such features, they are performed within the context of the video conferencing application 350 and created and output to the video conferencing application 350 for display via the API 352.

[0097] At block 580, the video conferencing application 350 transmits an indication to terminate access to the content object. In this example, access to the content object was provided temporarily during the video conference and, upon conclusion of the video conference, the video conferencing application 350 transmits an indication to the software application 360 that the video conference has concluded. In response, the software application 360 revokes access to the content

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object from the other participants. Alternatively, the indication may be sent if the user closes the content object or exits the software application 360, even if the video conference has not concluded.

[0098] However, in some examples, access to the content object may persist for the other participants even after the video conference has ended or after the software application 360 has closed the content object or exited. Thus, access to the content object may be adjusted by the software application 360 at various times, independently of any video conference.

[0099] While the method 500 has been described as having certain features, it should be appreciated that some or all of the blocks may be re-ordered or omitted. For example, blocks 540, 560, or 580 may be omitted in some examples. Further, if a participant joins the video conference after the content object has been shared, the method 500 may return (in part) to block 550 to provide the shared content object to the next participant. Still further variations may be employed in different example methods according to this disclosure.

[00100] Referring now to Figure 6, Figure 6 shows an example method for sharing and collaborating on content objects during a video conference. This example will be discussed with respect to the system shown in Figures 3A-3B and the GUIs shown in Figures 4A-4D, but any suitable systems or GUIs may be employed according to different examples.

[00101] At block 610, a participant joins a video conference using a video conferencing application executing on their client device, e.g., client device 340a, generally as described above with respect to Figures 1 and 2.

[00102] At block 620, the participant's video conferencing application 350 receives a shared content object from another participant in the video conference, generally as discussed above with respect to block 550.

[00103] At block 630, the participant's video conferencing application 350 determines a software application 360 corresponding to the shared content object and determines if the software application 360 is installed. If the software application 360 is installed, the method 600 proceeds to block 640. If the software application 360 is not installed, the video conferencing application 350 transmits a request to obtain the software application 360. As discussed above, the request may

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be transmitted to the client device that is sharing the content object. However, it may instead (or also) be sent to a cloud server, the video conference provider, or any other computing system. In response to receiving the software application 360, the method proceeds to block 640.

[00104] At block 640, the client device 340a executes the application within the execution environment 370 provided by the video conferencing application 350, generally as described above with respect to Figures 3A-3B and 4A-4D.

[00105] At block 650, the video conferencing application 350 provides access to the content object to the software application, such as by providing a URL for the content object to the software application or by providing a received file to the software application 360. Upon receiving the shared content object, the software application 360 accesses it according to the access level assigned to the participant.

[00106] At block 660, the video conferencing application 350 displays the shared content object during the video conference, generally as described above with respect to block 570.

[00107] At block 670, the software application 360 receives an indication terminating access to the content object. For example, the user may close the content object or exist the software application 360. Alternatively, the participant's access to the content object may be revoked, generally as described above with respect to block 580.

[00108] Referring now to Figure 7, Figure 7 shows an example computing device 700 suitable for use in example systems or methods for integrating software application content into video conferences according to this disclosure. The example computing device 700 includes a processor 710 which is in communication with the memory 720 and other components of the computing device 700 using one or more communications buses 702. The processor 710 is configured to execute processor-executable instructions stored in the memory 720 to perform one or more methods for providing dynamic content to video conference waiting rooms according to different examples, such as part or all of the example method described above with respect to Figure 9. The computing device 700, in this example, also includes one or more user input devices 750, such as a keyboard, mouse, touchscreen, microphone,

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etc., to accept user input. The computing device 700 also includes a display 740 to provide visual output to a user.

[00109] In addition, the computing device 700 includes video conference software 760 to enable a user to join and participate in a video conference, such as a conventional meeting or webinar, by receiving multimedia streams from a video conference provider, sending multimedia streams to the video conference provider, joining and leaving breakout rooms, providing software application content, etc. such as described throughout this disclosure, etc.

[00110] The computing device 700 also includes a communications interface 740. In some examples, the communications interface 730 may enable communications using one or more networks, including a local area network ("LAN"); wide area network ("WAN"), such as the Internet; metropolitan area network ("MAN"); point-to-point or peer-to-peer connection; etc. Communication with other devices may be accomplished using any suitable networking protocol. For example, one suitable networking protocol may include the Internet Protocol ("IP"), Transmission Control Protocol ("TCP"), User Datagram Protocol ("UDP"), or combinations thereof, such as TCP/IP or UDP/IP.

[00111] In addition to the examples discussed above, certain aspects of the disclosure may be combined in different examples. One aspect may involve joining, using a video conferencing application executed by a client device, a video conference hosted by a video conference provider, the video conferencing having one or more participants; receiving, by the video conferencing application, a content object from a first participant in the video conference; executing, within an execution environment provided by the video conferencing application, a software application corresponding to the content object; providing, by the video conferencing application to the software application, the content object; and displaying, within a graphical user interface of the video conferencing application, the software application and the content object.

[00112] A further aspect may involve determining, by the video conferencing application, whether the software application is installed on the client device; responsive to determining the software application is not installed on the device, transmitting, by the video conferencing application, a request for the software

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application; and receiving, by the video conferencing application, the software application.

[00113] Another aspect may involve the request for the software application being transmitted to the first client device or to the video conference provider.

[00114] A further aspect may involve receiving an indication to revoke access to the content object, and terminating access to the content object.

[00115] A still further aspect may involve deleting a local copy of the content object.

[00116] While some examples of methods and systems herein are described in terms of software executing on various machines, the methods and systems may also be implemented as specifically-configured hardware, such as field-programmable gate array (FPGA) specifically to execute the various methods according to this disclosure. For example, examples can be implemented in digital electronic circuitry, or in computer hardware, firmware, software, or in a combination thereof. In one example, a device may include a processor or processors. The processor comprises a computer-readable medium, such as a random access memory (RAM) coupled to the processor. The processor executes computer-executable program instructions stored in memory, such as executing one or more computer programs. Such processors may comprise a microprocessor, a digital signal processor (DSP), an application-specific integrated circuit (ASIC), field programmable gate arrays (FPGAs), and state machines. Such processors may further comprise programmable electronic devices such as PLCs, programmable interrupt controllers (PICs), programmable logic devices (PLDs), programmable read-only memories (PROMs), electronically programmable read-only memories (EPROMs or EEPROMs), or other similar devices.

[00117] Such processors may comprise, or may be in communication with, media, for example one or more non-transitory computer-readable media, that may store processor-executable instructions that, when executed by the processor, can cause the processor to perform methods according to this disclosure as carried out, or assisted, by a processor. Examples of non-transitory computer-readable medium may include, but are not limited to, an electronic, optical, magnetic, or other storage device capable of providing a processor, such as the processor in a web server, with

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processor-executable instructions. Other examples of non-transitory computer-readable media include, but are not limited to, a floppy disk, CD-ROM, magnetic disk, memory chip, ROM, RAM, ASIC, configured processor, all optical media, all magnetic tape or other magnetic media, or any other medium from which a computer processor can read. The processor, and the processing, described may be in one or more structures, and may be dispersed through one or more structures. The processor may comprise code to carry out methods (or parts of methods) according to this disclosure.

[00118] The foregoing description of some examples has been presented only for the purpose of illustration and description and is not intended to be exhaustive or to limit the disclosure to the precise forms disclosed. Numerous modifications and adaptations thereof will be apparent to those skilled in the art without departing from the spirit and scope of the disclosure.

[00119] Reference herein to an example or implementation means that a particular feature, structure, operation, or other characteristic described in connection with the example may be included in at least one implementation of the disclosure. The disclosure is not restricted to the particular examples or implementations described as such. The appearance of the phrases "in one example," "in an example," "in one implementation," or "in an implementation," or variations of the same in various places in the specification does not necessarily refer to the same example or implementation. Any particular feature, structure, operation, or other characteristic described in this specification in relation to one example or implementation may be combined with other features, structures, operations, or other characteristics described in respect of any other example or implementation.

[00120] Use herein of the word "or" is intended to cover inclusive and exclusive OR conditions. In other words, A or B or C includes any or all of the following alternative combinations as appropriate for a particular usage: A alone; B alone; C alone; A and B only; A and C only; B and C only; and A and B and C.

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CLAIMS

That which is claimed is:

1. A method comprising:

joining, using a video conferencing application, a video conference hosted by a video conference provider, the video conference having one or more participants;

executing, within an execution environment provided by the video conferencing application, a software application to access a content object;

receiving a command to share the content object to the one or more participants; and

providing the content object to the one or more participants via the video conference provider.

2. The method of claim 1, further comprising displaying, within a first graphical user interface ("GUI") of the video conferencing application, a second GUI of the software application including the content object.

3. The method of claim 2, further comprising displaying, within the first GUI, a third GUI of the software application, the third GUI including content associated with the content object, the content included in the third GUI not provided to the one or more participants.

4. The method of claim 2, further comprising:

receiving a command to exit or terminate the video conference;

in response to receiving the command to exit or terminate the video conference, exiting or terminating, respectively, the video conference, and

continuing to display the content object in the second GUI.

5. The method of claim 1, further comprising:

receiving, from a first client device corresponding to a first participant of the one or more participants, a request for the software application; and

in response to the request for the software application, providing a copy of the software application to the first participant.

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6. The method of claim 1, further comprising receiving an indication of an access level corresponding to a participant for the content object.

7. The method of claim 6, wherein the indication of the access level includes an indication that the access level persists only for the duration of the video conference.

8. A client device comprising:

a communications interface;

a non-transitory computer-readable medium; and

one or more processors communicatively coupled to the communications interface and the non-transitory computer-readable medium, the one or more processors configured to execute processor-executable instructions to:

join, using a video conferencing application, a video conference hosted by a video conference provider, the video conference having one or more participants;

execute, within an execution environment provided by the video conferencing application, a software application to access a content object;

receive a command to share the content object to the one or more participants; and

provide the content object to the one or more participants via the video conference provider.

9. The client device of claim 8, wherein the one or more processors are configured to execute further processor-executable instructions stored in the non-transitory computer-readable medium to display, within a first graphical user interface ("GUI") of the video conferencing application, a second GUI of the software application including the content object.

10. The client device of claim 9, wherein the one or more processors are configured to execute further processor-executable instructions stored in the non-transitory computer-readable medium to display, within the first GUI, a third GUI of the software application, the third GUI including content associated with the content object, the content included in the third GUI not provided to the one or more participants.

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11. The client device of claim 9, wherein the one or more processors are configured to execute further processor-executable instructions stored in the non-transitory computer-readable medium to:

receive a command to exit or terminate the video conference;

in response to receiving the command to exit or terminate the video conference, exit or terminate, respectively, the video conference, and

continue to display the content object in the second GUI.

12. The client device of claim 8, wherein the one or more processors are configured to execute further processor-executable instructions stored in the non-transitory computer-readable medium to:

receive, from a first client device corresponding to a first participant of the one or more participants, a request for the software application; and

in response to the request for the software application, provide a copy of the software application to the first participant.

13. The client device of claim 8, wherein the one or more processors are configured to execute further processor-executable instructions stored in the non-transitory computer-readable medium to receive an indication of an access level corresponding to a participant for the content object.

14. The client device of claim 13, wherein the indication of the access level includes an indication that the access level persists only for the duration of the video conference.

15. A non-transitory computer-readable medium comprising processor-executable instructions configured to cause one or more processor to:

join, using a video conferencing application, a video conference hosted by a video conference provider, the video conference having one or more participants;

execute, within an execution environment provided by the video conferencing application, a software application to access a content object;

receive a command to share the content object to the one or more participants; and

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provide the content object to the one or more participants via the video conference provider.

16. The non-transitory computer-readable medium of claim 15, further comprising processor-executable instructions configured to cause the one or more processors to display, within a first graphical user interface ("GUI") of the video conferencing application, a second GUI of the software application including the content object.

17. The non-transitory computer-readable medium of claim 16, further comprising processor-executable instructions configured to cause the one or more processors to display, within the first GUI, a third GUI of the software application, the third GUI including content associated with the content object, the content included in the third GUI not provided to the one or more participants.

18. The non-transitory computer-readable medium of claim 16, further comprising processor-executable instructions configured to cause the one or more processors to:

receive a command to exit or terminate the video conference;

in response to receiving the command to exit or terminate the video conference, exit or terminate, respectively, the video conference, and

continue to display the content object in the second GUI.

19. The non-transitory computer-readable medium of claim 15, further comprising processor-executable instructions configured to cause the one or more processors to:

receive, from a first client device corresponding to a first participant of the one or more participants, a request for the software application; and

in response to the request for the software application, provide a copy of the software application to the first participant.

20. The non-transitory computer-readable medium of claim 15, further comprising processor-executable instructions configured to cause the one or more

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processors to receive an indication of an access level corresponding to a participant for the content object.

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ABSTRACT

One example method includes joining, using a video conferencing application, a video conference hosted by a video conference provider, the video conference having one or more participants; executing, within an execution environment provided by the video conferencing application, a software application to access a content object; receiving a command to share the content object to the one or more participants; and providing the content object to the one or more participants via the video conference provider.

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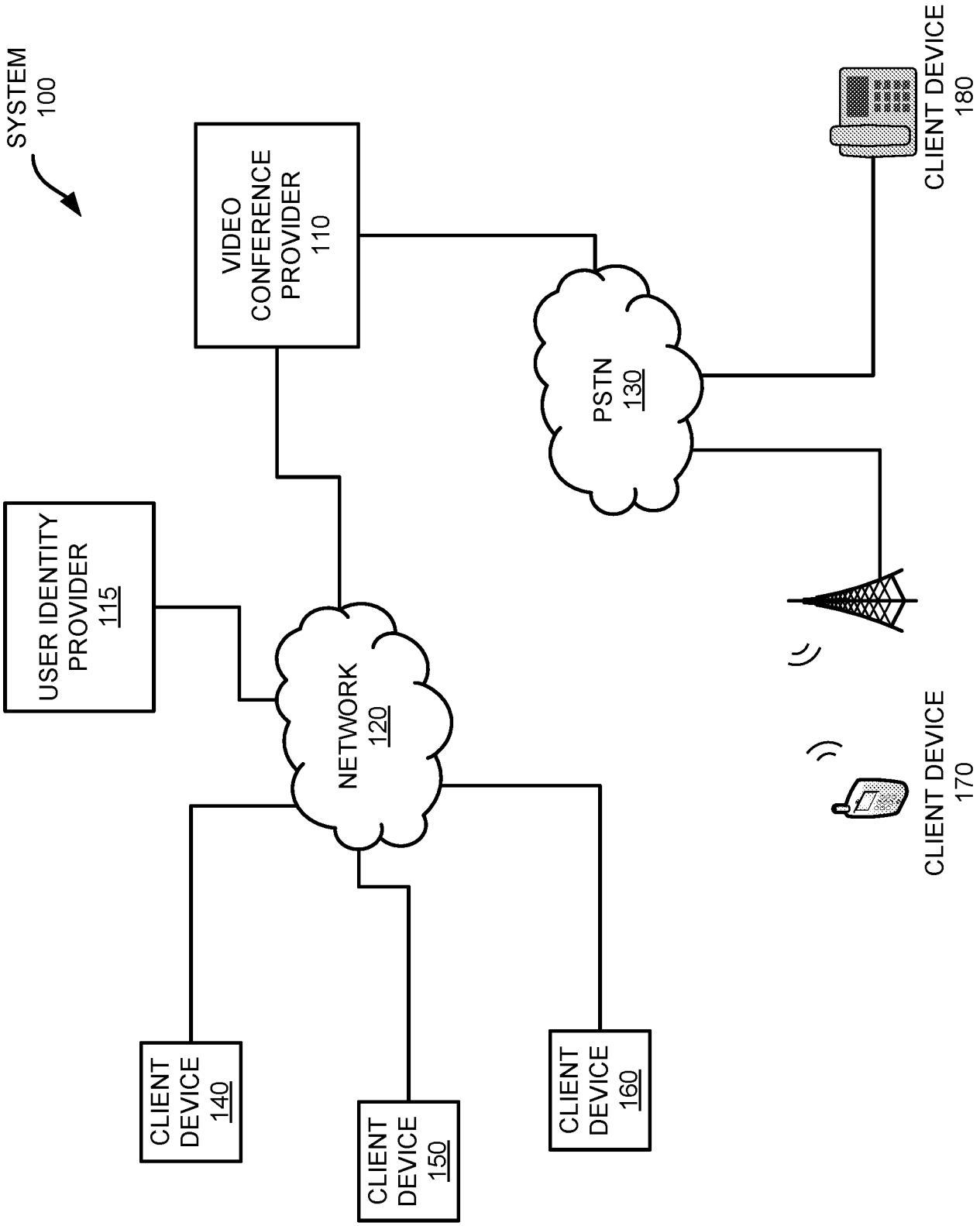
SYSTEM
100
VIDEO CONFERENCE PROVIDER
110
USER IDENTITY PROVIDER
115
NETWORK
120
PSTN
130
CLIENT DEVICE
140
CLIENT DEVICE
150
CLIENT DEVICE
160
CLIENT DEVICE
170
CLIENT DEVICE
180

FIG. 1

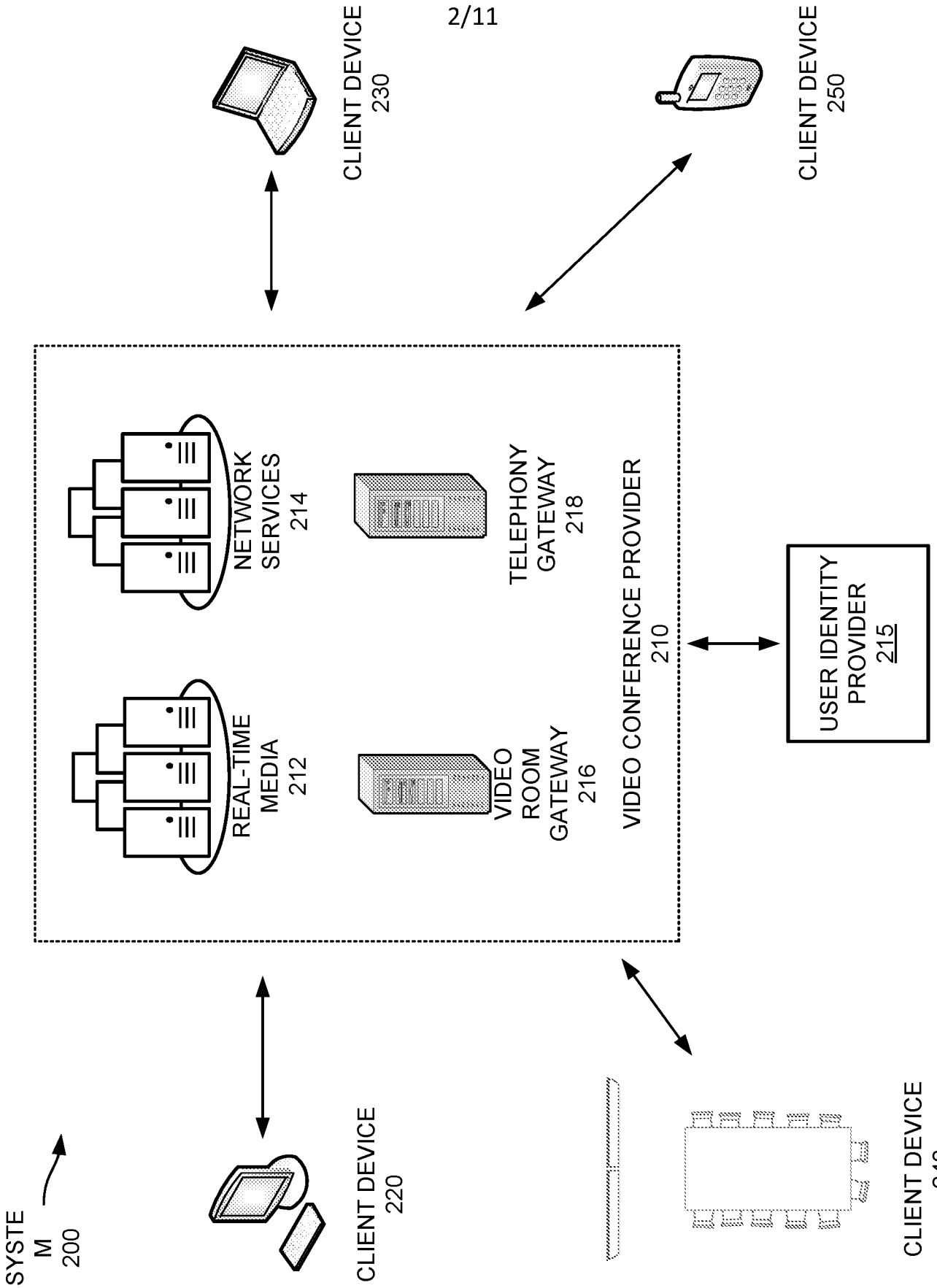
SYSTEM 200
CLIENT DEVICE 220
CLIENT DEVICE 240
VIDEO CONFERENCE PROVIDER 210
REAL-TIME MEDIA 212
NETWORK SERVICES 214
VIDEO ROOM GATEWAY 216
TELEPHONY GATEWAY 218
USER IDENTITY PROVIDER 215
CLIENT DEVICE 230
CLIENT DEVICE 250

FIG. 2

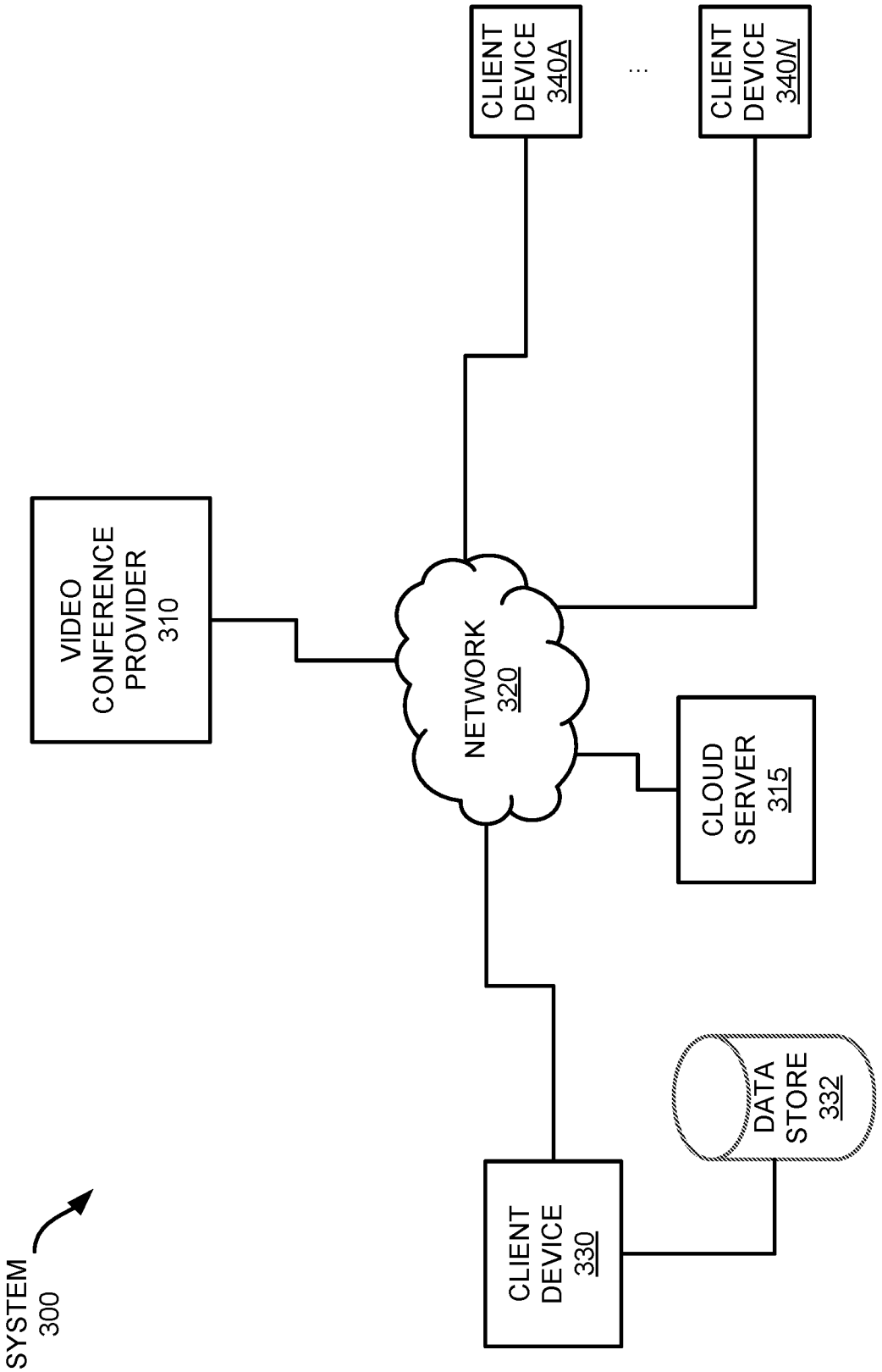
SYSTEM
300
CLIENT DEVICE
330
DATA STORE
332
CLOUD SERVER
315
NETWORK
320
VIDEO CONFERENCE PROVIDER
310
CLIENT DEVICE
340A
...
CLIENT DEVICE
340N

FIG. 3A

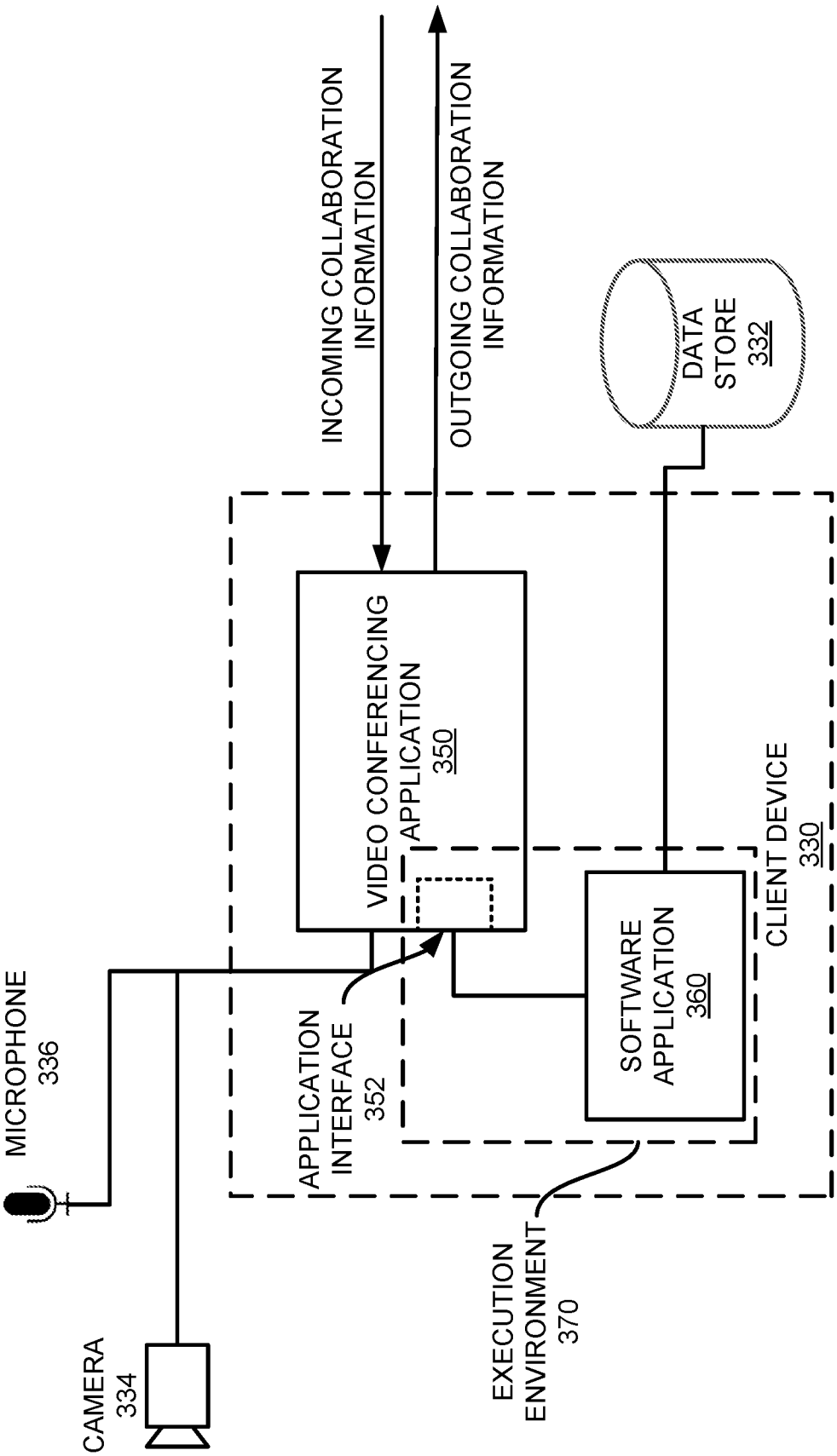
INCOMING COLLABORATION INFORMATION
OUTGOING COLLABORATION INFORMATION
DATA STORE 332
VIDEO CONFERENCING APPLICATION 350
CLIENT DEVICE 330
SOFTWARE APPLICATION 360
APPLICATION INTERFACE 352
MICROPHONE 336
CAMERA 334
EXECUTION ENVIRONMENT 370

FIG. 3B

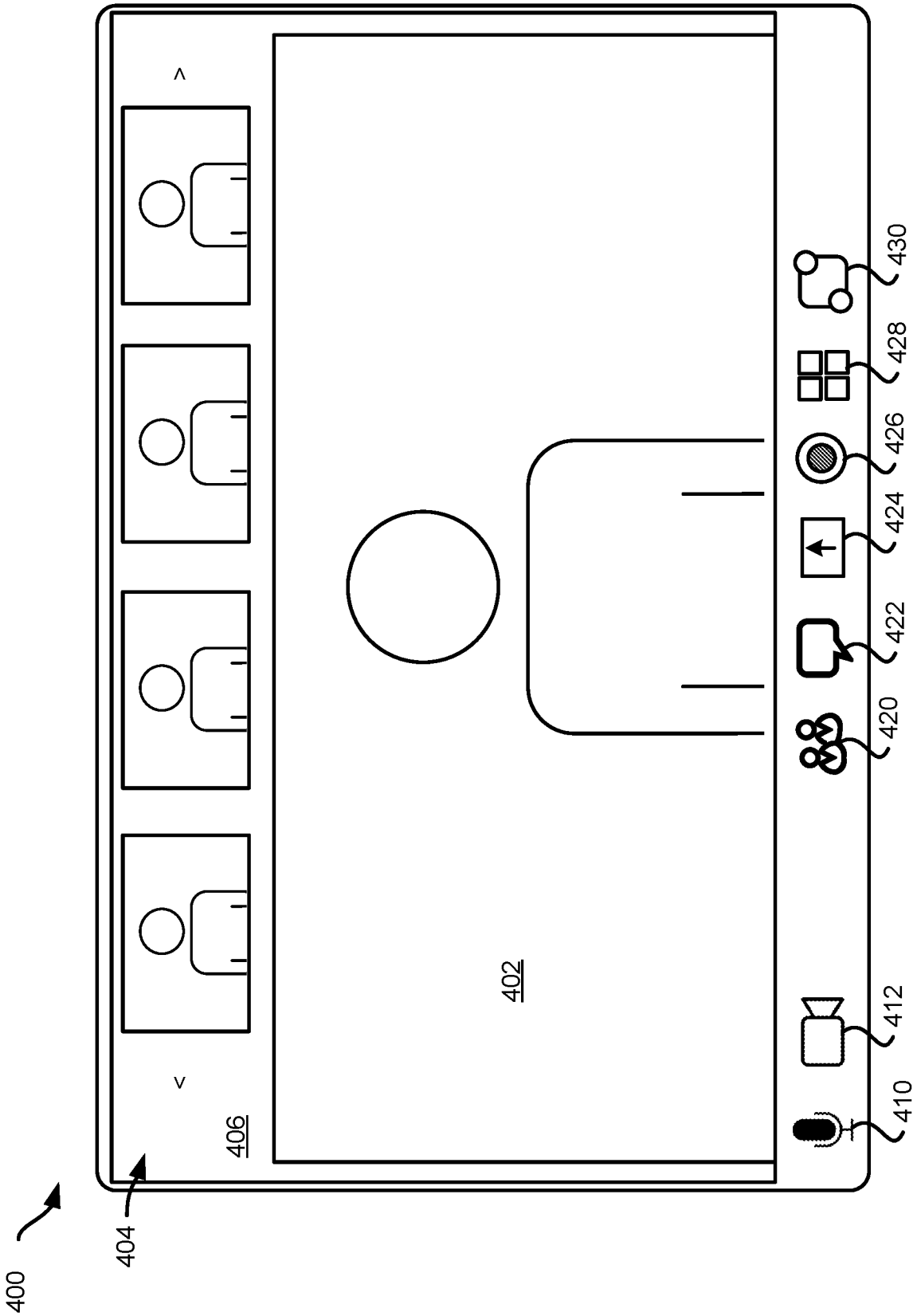

FIG. 4A

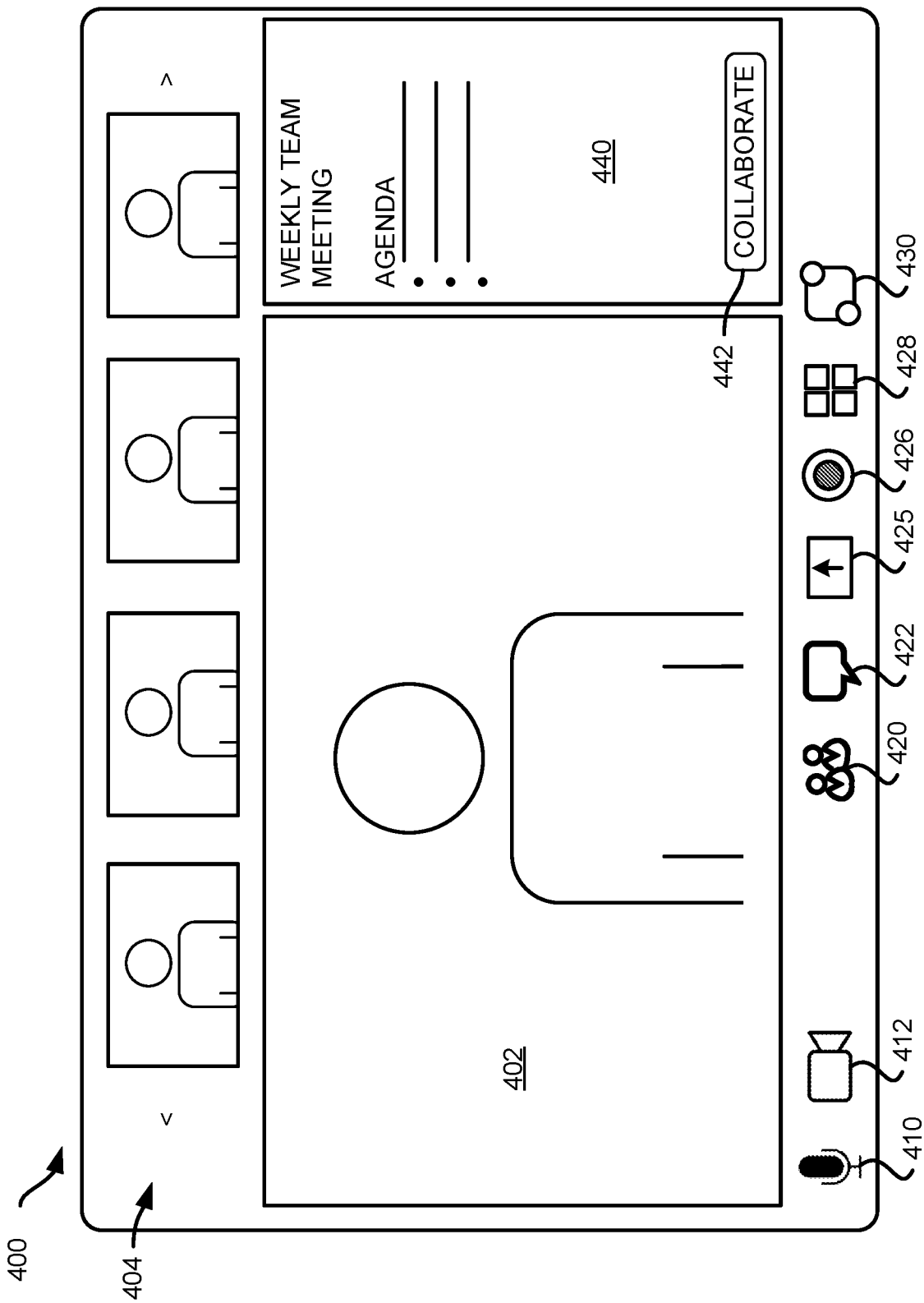
400
404
402
410
412
420
422
425
426
428
430
440
442
WEEKLY TEAM MEETING
AGENDA
COLLABORATE

FIG. 4B

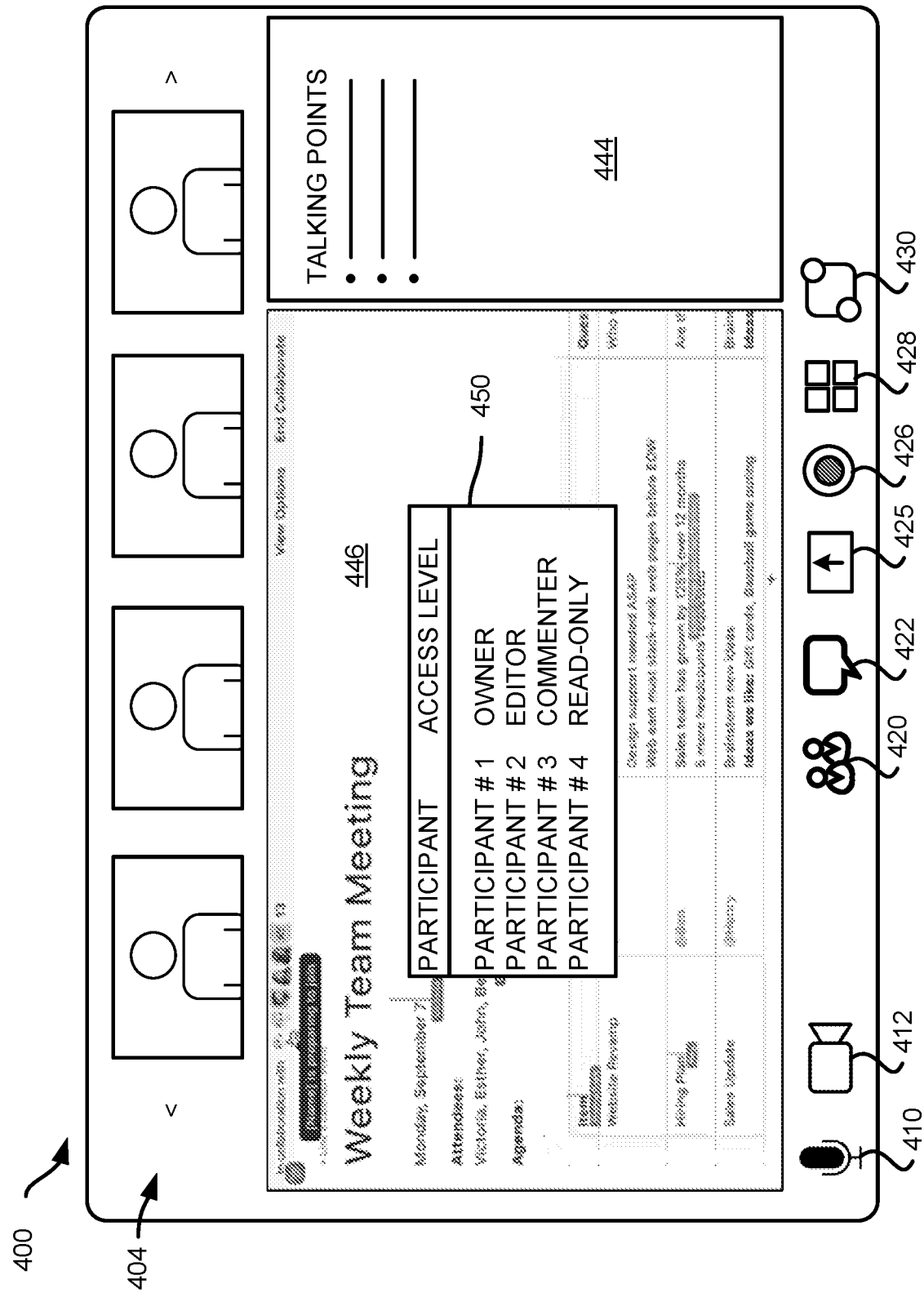
400
404
V
^
TALKING POINTS
444
446
Weekly Team Meeting
450
PARTICIPANT
ACCESS LEVEL
PARTICIPANT # 1
OWNER
PARTICIPANT # 2
EDITOR
PARTICIPANT # 3
COMMENTER
PARTICIPANT # 4
READ-ONLY
410
412
420
422
425
426
428
430

FIG. 4C

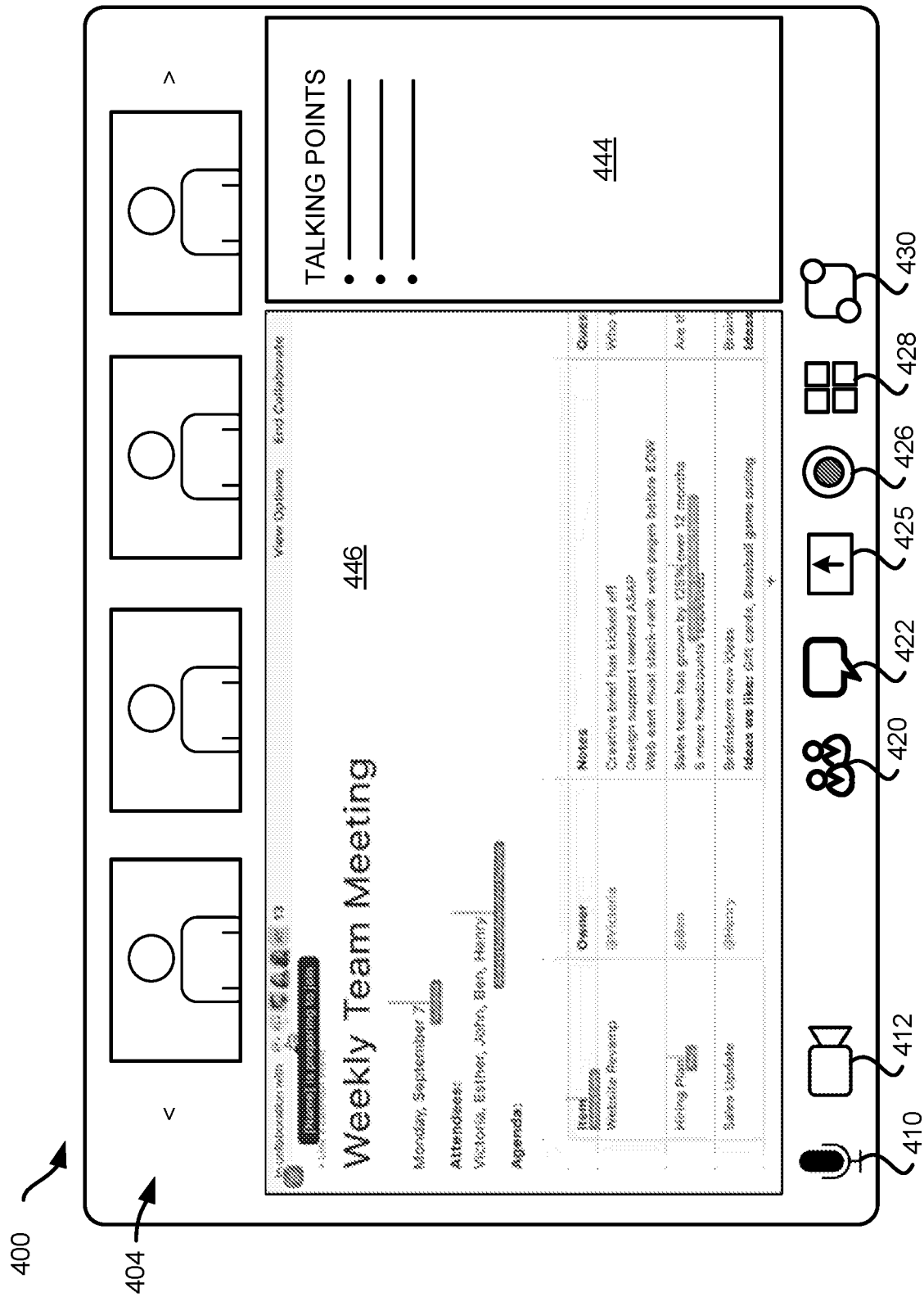
400
404
410
412
420
422
425
426
428
430
444
446
TALKING POINTS
Weekly Team Meeting

FIG. 4D

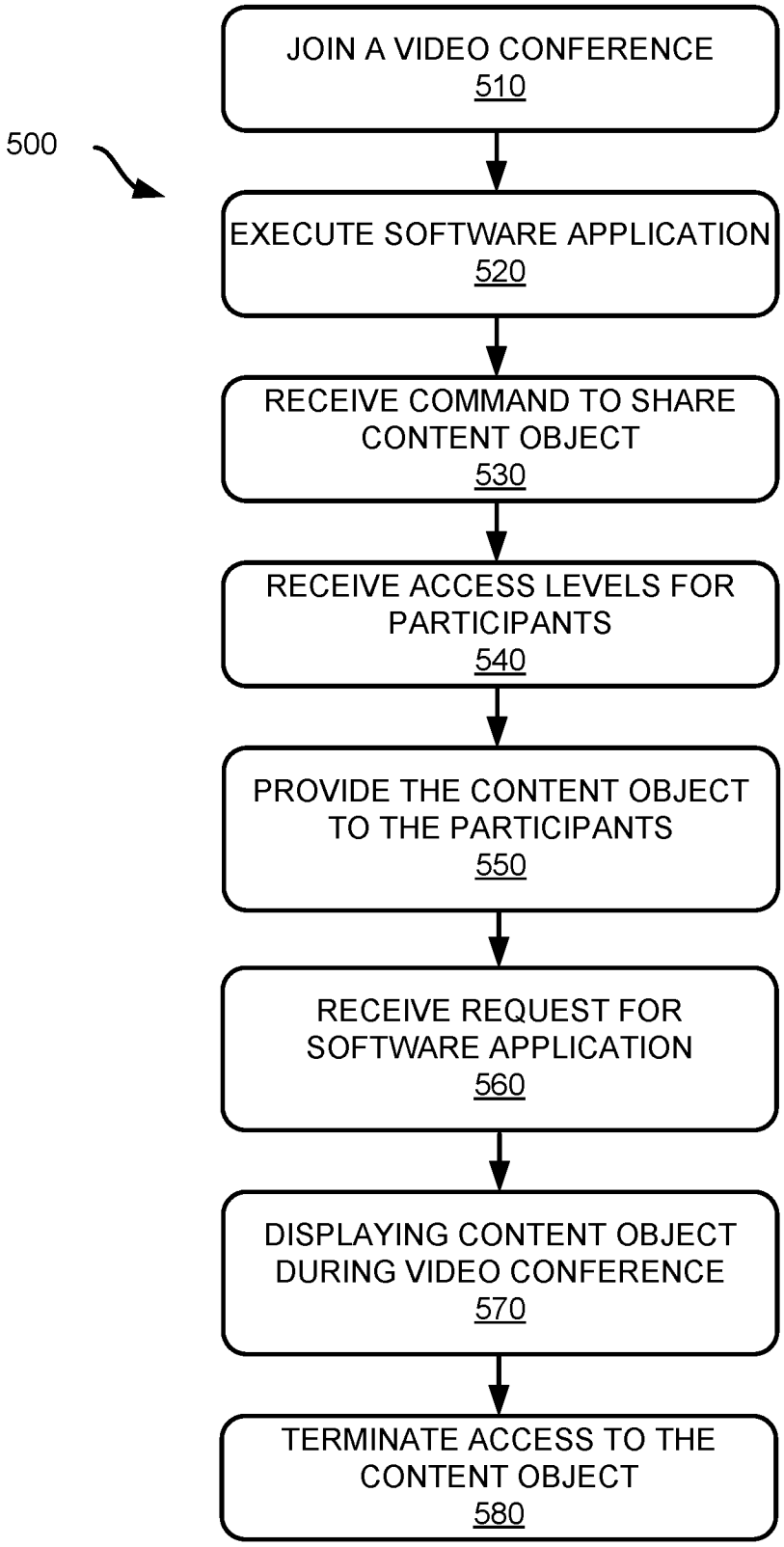
500
JOIN A VIDEO CONFERENCE
510
EXECUTE SOFTWARE APPLICATION
520
RECEIVE COMMAND TO SHARE CONTENT OBJECT
530
RECEIVE ACCESS LEVELS FOR PARTICIPANTS
540
PROVIDE THE CONTENT OBJECT TO THE PARTICIPANTS
550
RECEIVE REQUEST FOR SOFTWARE APPLICATION
560
DISPLAYING CONTENT OBJECT DURING VIDEO CONFERENCE
570
TERMINATE ACCESS TO THE CONTENT OBJECT
580

FIG. 5

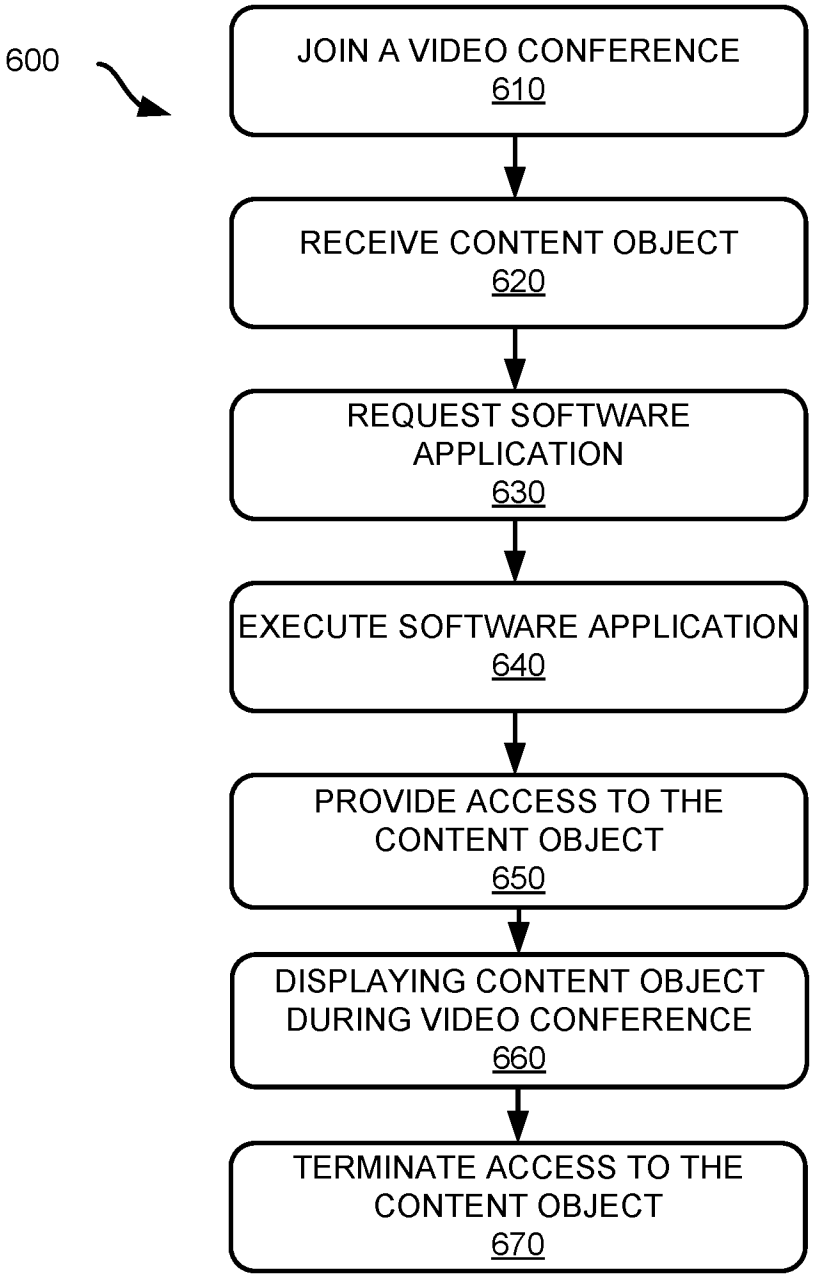
600
JOIN A VIDEO CONFERENCE
610
RECEIVE CONTENT OBJECT
620
REQUEST SOFTWARE APPLICATION
630
EXECUTE SOFTWARE APPLICATION
640
PROVIDE ACCESS TO THE CONTENT OBJECT
650
DISPLAYING CONTENT OBJECT DURING VIDEO CONFERENCE
660
TERMINATE ACCESS TO THE CONTENT OBJECT
670

FIG. 6

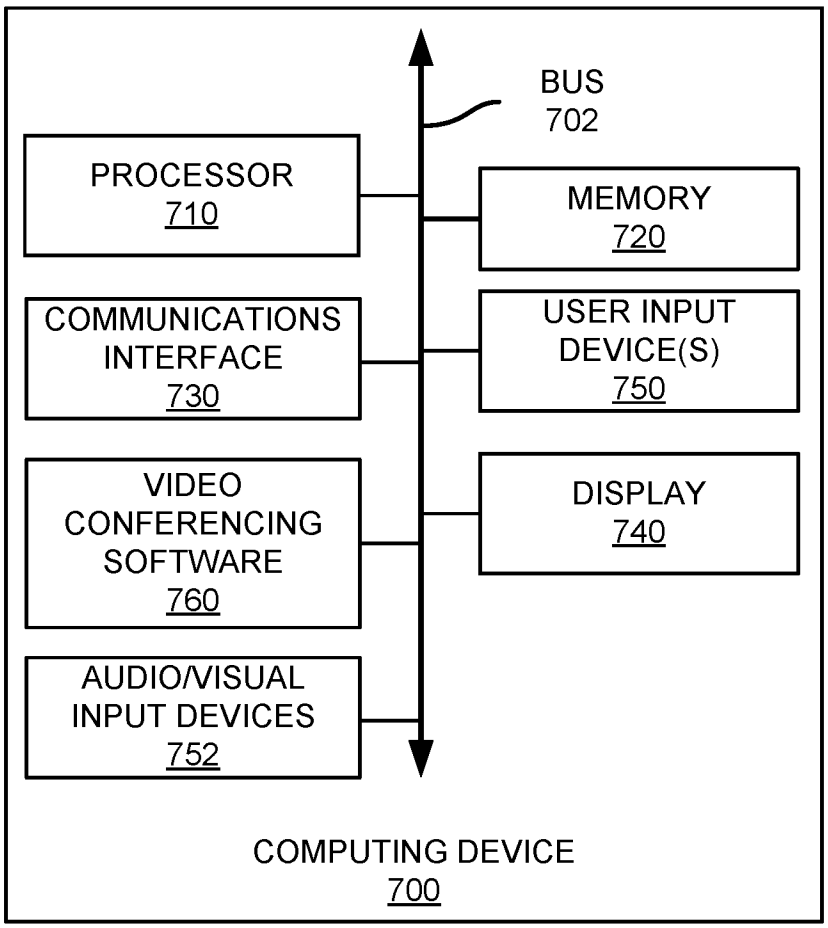
BUS
702
PROCESSOR
710
MEMORY
720
COMMUNICATIONS
INTERFACE
730
USER INPUT
DEVICE(S)
750
VIDEO
CONFERENCING
SOFTWARE
760
DISPLAY
740
AUDIO/VISUAL
INPUT DEVICES
752
COMPUTING DEVICE
700

FIG. 7

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	107477-1268807
	Application Number	
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Arun		Janakiraman	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	San Francisco	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	State/Province	CA
Postal Code	95113	Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Yeki		Giles	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Santa Clara	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	State/Province	CA
Postal Code	95113	Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ross		Mayfield	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	107477-1268807
	Application Number	
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

City	Palo Also	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	**State/Province**	CA
Postal Code	95113	**Country**	US

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Shishir		Sharma	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Ottawa	Country of Residence	CA

Mailing Address of Inventor:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	**State/Province**	CA
Postal Code	95113	**Country**	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	176014		
Email Address	ipefiling@kilpatricktownsend.com	Add Email	Remove Email

Application Information:

Title of the Invention	Sharing and Collaborating on Content Objects During a Video Conference		
Attorney Docket Number	107477-1268807	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	11	**Suggested Figure for Publication (if any)**	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	107477-1268807
	Application Number	
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	176014		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	107477-1268807
	Application Number	
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	107477-1268807
	Application Number	
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	107477-1268807
	Application Number	
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

○ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
◉ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	Zoom Video Communications, Inc.		
Mailing Address Information For Applicant:			
Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	**State/Province**	CA
Country	US	Postal Code	95113
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	107477-1268807
	Application Number	
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	Zoom Video Communications, Inc.

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	55 Almaden Boulevard		
Address 2	6th Floor		
City	San Jose	**State/Province**	CA
Country	US	Postal Code	95113
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/ Carl Sanders /			Date (YYYY-MM-DD)	2021-09-10
First Name	Carl	Last Name	Sanders	Registration Number	57,203

Additional Signature may be generated within this form by selecting the Add button.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	107477-1268807
	Application Number	
Title of Invention	Sharing and Collaborating on Content Objects During a Video Conference	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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 records.

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 CooperationTreaty.

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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Doc Code: PA..
Document Description: Power of Attorney

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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	Not Yet Assigned
Filing Date	September 10, 2021
First Named Inventor	Arun Janakiraman
Title	Sharing and Collaborating on Content Objects During a Video Conference
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	107477-1268807

SIGNATURE of Applicant or Patent Practitioner

Signature	/ Carl Sanders /	Date (Optional)	September 10, 2021
Name	Carl Sanders	Registration Number	57,203
Title (if Applicant is a juristic entity)	Attorney of Record		
Applicant Name (if Applicant is a juristic entity)	Zoom Video Communications, Inc.		

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.

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Application Number: 17472093 Document Date: 09/10/2021

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

- Drawing

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Form Revision Date: March 1, 2019